



2014 NORTH CAROLINA STATE REPORT

# PATHS

Providing Access to Healthy Solutions

The Diabetes Epidemic in North Carolina:  
Policies for Moving Forward

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PREPARED BY THE CENTER FOR HEALTH  
LAW AND POLICY INNOVATION OF  
HARVARD LAW SCHOOL



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# FOREWORD

## The Center for Health Law and Policy Innovation:

The Center for Health Law and Policy Innovation of Harvard Law School (CHLPI) works to promote legal, regulatory, and policy reforms to improve the health of underserved populations, with a focus on the needs of low-income people living with chronic illnesses and disabilities. CHLPI works with consumers, advocates, community-based organizations, health and social services professionals, food providers and producers,

government officials, and others to expand access to high-quality health care and nutritious, affordable food; to reduce health disparities; to develop community advocacy capacity; and to promote more equitable and effective healthcare and food systems. CHLPI is a clinical teaching program of Harvard Law School and mentors students to become skilled, innovative, and thoughtful practitioners as well as leaders in health, public health, and food law and policy.



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Center For Health Law & Policy Innovation  
Harvard Law School

## History of the Report

This report is a product of CHLPI's Providing Access to Healthy Solutions (PATHS) project. PATHS is funded through *Together on Diabetes*,<sup>TM</sup> the flagship philanthropic program of the Bristol-Myers Squibb Foundation. Launched in November 2010, *Together on Diabetes*<sup>TM</sup> strives to improve the health outcomes of people living with type 2 diabetes in the United States by strengthening patient self-management education, community-based supportive services and broad-based community mobilization. Consistent with the Bristol-Myers Squibb Foundation's mission to promote health equity and improve health outcomes, this initiative targets adult populations disproportionately affected by type 2 diabetes.<sup>1</sup> *Together on Diabetes*<sup>TM</sup> partners include non-profits, universities,

foundations, and associations, many of which provide direct services to people living with type 2 diabetes.<sup>2</sup>

PATHS brings a broad policy focus to the *Together on Diabetes*<sup>TM</sup> Initiative. The project works to strengthen federal, state, and local efforts to improve type 2 diabetes treatment and prevention through the development and implementation of strategic law and policy reform initiatives that can bolster these efforts.

This report was funded by the Bristol-Myers Squibb Foundation, which has no editorial control over the report's content. All analysis and recommendations are based on the PATHS team's independent research and discussions with state-based stakeholders.



## Overview of the PATHS Initiative

The first phase of CHLPI's PATHS initiative began in the summer of 2012, with two state-level policy initiatives, in New Jersey and North Carolina. These two states were selected because of their diversity from one another and the opportunity to create federal-level recommendations based on the findings from these states. These states were also selected because other *Together on Diabetes*™ grantees were already working in both New Jersey and North Carolina, and these organizations would be able to utilize our policy guidance. In future years, the PATHS team will conduct a federal-level policy analysis based on the state-level findings and identify common state best practices.

In order to gain a deep understanding of how the policies in New Jersey and North Carolina impact the prevention and treatment of type 2 diabetes, the PATHS teams conducted online research and interviewed *Together on Diabetes*™ grantees and other stakeholders in the states. The report below focuses on North Carolina, with three main goals: (1) to describe the impact of type 2 diabetes in the state; (2) to promote discussion of the policies and programs in North Carolina that affect type 2 diabetes; and (3) to advance recommendations for how the state can improve its diabetes-related policies and programs to reduce the prevalence and consequences of type 2 diabetes for North Carolinians.



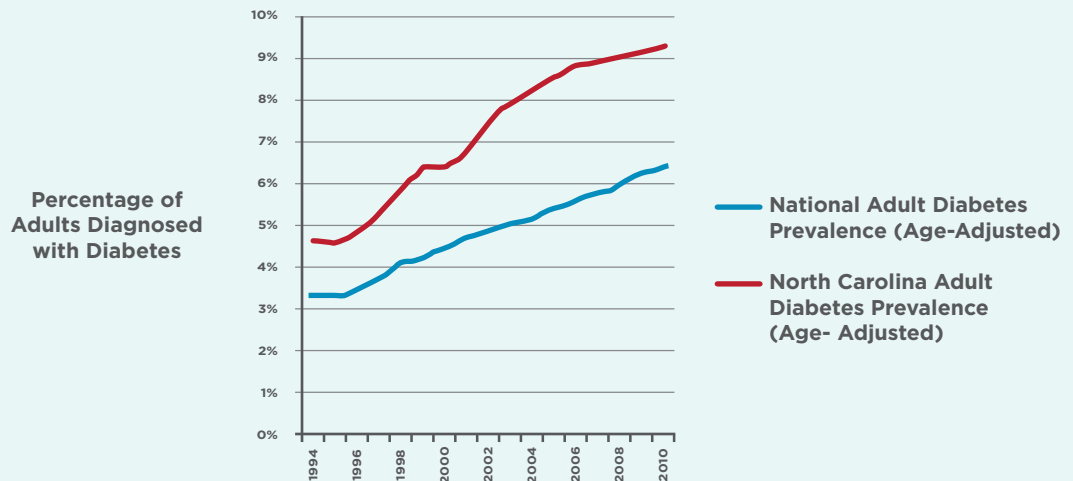


# EXECUTIVE SUMMARY

According to recent data, people who develop type 2 diabetes can lose as many as 15 years of life.<sup>3</sup> Unfortunately, North Carolina faces one of the highest diabetes burdens in the country. The rate of diabetes among North Carolinians has almost doubled over the last 20 years. Diabetes is now the seventh-leading cause of death in North Carolina, with a disproportionate impact on African Americans and American Indians, for whom the disease is the fourth and third leading cause of death, respectively.<sup>4</sup>

This growing threat to the health of North Carolinians is also a threat to the state's economy, costing billions of dollars each year. If the epidemic stays its current course, diabetes is on track to cost the state's public and private sectors more than \$17 billion per year in medical expenses and lost productivity by 2025.<sup>5</sup>

## SHARP GROWTH IN DIABETES DIAGNOSES AMONG NORTH CAROLINIANS



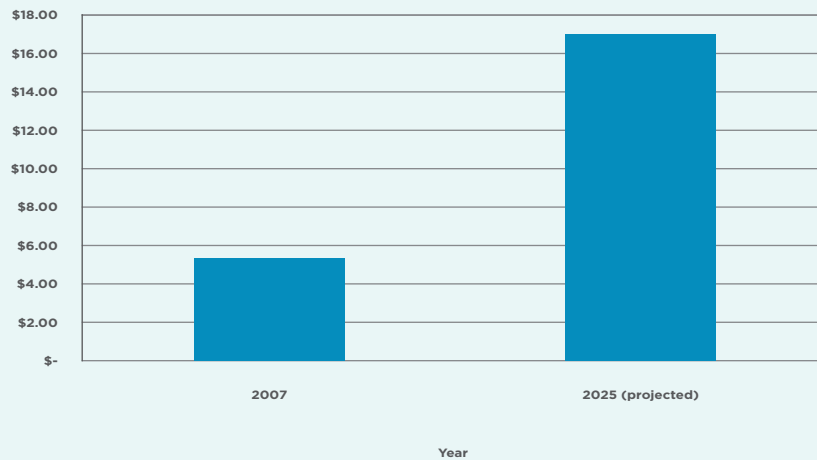
*The prevalence of diabetes in North Carolina is far higher than the national average, and is projected to increase in years to come.*

Source: Behavioral Risk Factor Surveillance System, 1994-2010, CTRS. FOR DISEASE CONTROL AND PREVENTION



## DIABETES COSTS IN NORTH CAROLINA WILL MORE THAN TRIPLE IF CURRENT TRENDS CONTINUE

**Economic  
Impact of  
Diabetes in  
North Carolina  
(in billions)**



### **North Carolina will lose billions of dollars per year to diabetes costs.**

With such high stakes, the state must take significant steps to address the disease from every angle, attacking known risk factors for the disease at a population level and improving access to and quality of care for every individual living with type 2 diabetes.

Fortunately, North Carolina has already demonstrated its ability to mobilize and use policy to address numerous public health concerns, from child mortality to cardiovascular disease; the state can do the same with type 2 diabetes. From its strong private-public partnerships to its history of making smart investments in public health, North Carolina has the tools to stop diabetes in its tracks.

This report is intended to be a useful tool for North Carolina policymakers, government

officials, providers, advocates, and others working to fight diabetes in the state. Through rigorous independent research and interviews with North Carolinians at the forefront of the fight against diabetes, the report first profiles notable successes that the state can seize upon to improve diabetes prevention and treatment. It then offers concrete policy recommendations that call for multipronged changes to the state's healthcare, nutrition, and physical activity landscapes, ranging from calls for new legislation to development of new diabetes-related task forces. Ultimately, this report strives to put forward practical policies that have the most potential to reduce the devastating human and financial toll of this epidemic on North Carolina. It is written for those who are committed to keeping the state on a secure and steady path of progress against type 2 diabetes through pursuit of evidence-based policy reforms.



### Recommendations: A Summary

#### PART 1: THE TYPE 2 DIABETES LANDSCAPE IN NORTH CAROLINA

Part 1 of the report begins with an overview of the diabetes epidemic facing North Carolina, as well as information about North Carolina's healthcare, fiscal, economic, and legislative landscapes relevant to shaping diabetes policy. The heart of the report lies in Part 2 and Part 3, which examine how to improve diabetes prevention and treatment in the state. Part 2 focuses on needed reforms within the healthcare and public health sectors, and Part 3 discusses policies to improve food policy and the built environment.

#### PART 2: IMPROVING NORTH CAROLINA'S HEALTH CARE SYSTEM TO TREAT AND PREVENT DIABETES

Part 2 of the report suggests ways to improve North Carolina's healthcare system so that it is more efficient and effective for patients and other stakeholders affected by type 2 diabetes. The first chapter describes ideal models of diabetes care, while the subsequent chapters provide specific policy recommendations and analysis for how to improve diabetes treatment and prevention within the healthcare system.

##### Chapter 1: Building a Whole-Person Model of Diabetes Care

People with diabetes require a "whole person" model of care, which meets their

physical, behavioral, and psychosocial needs, and addresses social determinants of health, such as availability of healthy food and opportunities to be physical active. An effective approach to managing diabetes will coordinate primary care, lifestyle modification and management, specialty care, and access to community resources. Chapter 1 describes the "whole person" care needs of people with diabetes and presents different coordinated care models currently operating in North Carolina, including patient-centered medical homes and Medicaid health homes. Chapter 1 also discusses several different payment systems, including case-management fees, bundled payments, and shared savings programs, and their potential application to diabetes care.

##### Chapter 2: Increasing Access to Needed Services for People with Diabetes

Diabetes management is complex and can be difficult for patients, particularly those who lack regular and dependable access to healthcare. Even for the fully insured, it can be challenging to make major changes in lifestyle, and adhere strictly to medication and blood glucose testing regimes. This section examines North Carolina's successes and challenges in providing necessary healthcare services for its residents living with type 2 diabetes, and offers recommendations for how to improve access to vital services, ranging from diabetes self-management to behavioral health treatment.



Goal	Selected Recommendations
Improve access to Diabetes Self Management Training (DSMT) <sup>i</sup>	<p>Establish a statewide Diabetes Self Management Training Task Force to coordinate approaches to billing and reimbursement challenges; improve data collection and analysis of DSMT programs; increase collaboration across DSMT programs and providers; and promote culturally tailored approaches to reduce diabetes disparities.</p> <p>Encourage communication between community DSMT providers and physicians, potentially through establishing “gold seal” DSMT programs recognized for their greater capacity for information sharing.</p> <p>Develop strong DSMT care teams through alternative financing models, including providing separate case-management fees and continuing to develop shared savings programs and other pay-for-performance initiatives.</p> <p>Offer reimbursement incentives for clinical practices that provide evidence-based DSMT care. North Carolina Medicaid and other insurers can build upon incentives provided by existing programs.</p> <p>Support new or alternative methods of providing DSMT, such as through online programs, mobile transfer of data, and telemedicine.</p> <p>Expand access to health insurance for low-income people, either through the Medicaid expansion or through a “private option” waiver that allows low-income people to access the health insurance exchanges.</p>
Strengthen Diabetes Prevention Programs	<p>Reimburse Medicaid providers for evidence-based lifestyle interventions for people with prediabetes. Current reimbursement rules do not allow reimbursement for the Diabetes Prevention Program or similar interventions until the patient is diagnosed with diabetes, giving doctors fewer chances to prevent the costly and dangerous progression to full diabetes.</p> <p>Promote alternative care delivery and payment models, including bundled payment and shared savings models. Pay-for-performance initiatives can be integrated into the existing fee for service system. The state can also increase support for entities that currently aid clinical practices, including the North Carolina Area Health Education Centers and the Office of Rural Health.</p> <p>Increase funds for targeted, evidence-based prevention efforts. Some highlighted suggestions include an increase in the state’s tobacco tax to finance diabetes prevention programs, as well as allotting state prevention funds specifically for the development of the state’s diabetes and chronic illness action plans required by the legislature. See Part 2, Chapter 2 for a comprehensive list of suggestions.</p> <p>Extend postpartum Medicaid benefits beyond 60 days to ensure that women with gestational diabetes receive the follow-up care they need to avoid progressing to type 2 diabetes.</p> <p>Cut costs and improve availability of diabetes prevention programs by adapting these programs for online use.</p> <p>Expand access to health insurance for low-income people, either through the Medicaid expansion or through a “private option” waiver that allows low-income people to access the health insurance exchanges.</p>

<sup>i</sup> There are a number of DSMT programs in North Carolina which go by different names, including the YMCA’s Diabetes Self-Management Education Program (DSME) and the Stanford Diabetes Self-Management Program (DSMP). Programs are also offered in Medical Nutrition Therapy (MNT). For the sake of simplicity, these programs will be referred to as DSMT programs when discussed collectively.



Goal (cont.)	Selected Recommendations (cont.)
Mitigate Transportation Difficulties through Expansion of Telemedicine	<p>Provide Medicaid coverage for remote patient monitoring for people with diabetes. Current state Medicaid rules allow reimbursement for interactive video consults, but not other innovative and effective approaches like remote patient monitoring.</p> <p>Encourage private health insurance coverage of telemedicine through outreach to insurers and publicizing successful telemedicine pilot programs in the state.</p> <p>Reimburse for digital retinal screening in Medicaid to reduce incidence of blindness in people with diabetes.</p>
Expand Access to Durable Medical Equipment and Insulin	<p>Provide assistance to help patients with copays and coinsurance to access insulin.</p> <p>Incentivize proper diabetes self-management by lowering the cost of testing supplies for patients who follow best-practices approaches to diabetes management.</p> <p>Expand access to health insurance for low-income people, either through the Medicaid expansion or through a “private option” waiver that allows low-income people to access the health insurance exchanges.</p>
Improve Behavioral Health Services for People with Diabetes	<p>Expand the use of telepsychiatry to better help rural or low-income patients with diabetes access behavioral health care cheaply and effectively. One promising option is to establish a network of on-call psychiatrists within the state who provide consultations to primary care providers.</p> <p>Incentivize providers and educators to incorporate behavioral health education into diabetes care. Potential options include increased reimbursement rates for diabetes education programs that discuss behavioral health and increasing Medicaid reimbursement levels for primary care doctors for basic behavioral health services, as well as for behavioral health providers who conduct training and consults with primary care doctors.</p> <p>Increase state support for measuring the implementation of a shared Medicaid case management system between primary and behavioral care management networks.</p> <p>Support efforts at integration of behavioral and physical health services for people with diabetes through options such as pay for performance incentives for providers who successfully integrate. The State should also increase support for entities such as the Office of Rural Health, North Carolina Area Health Education Centers, and the North Carolina Center for Excellence in Integrated Care, which offer providers and hospital networks technical and financial assistance to help them integrate their practices.</p> <p>Incentivize behavioral health providers to join the statewide Health Information Exchange through provision of financial incentives, similar to those available to physical health providers.</p>



### Chapter 3: Increasing Access to Providers for People with Diabetes

For people with or at risk for diabetes, a strong care team helps increase knowledge and skills as well as healthy behaviors. Physicians, nurses, nurse practitioners, physician assistants, pharmacists, community health workers, and other healthcare workers, all play central roles in helping patients understand the disease and develop the skills to manage it and prevent complications. North

Carolina still faces several major challenges in ensuring access to an adequate supply of healthcare providers to treat people with diabetes, including provider shortages and lack of payment systems promoting comprehensive care teams.<sup>6</sup> This chapter highlights opportunities to enhance access to whole person diabetes care through reduction of provider shortages and utilization of diverse healthcare workers, including nurse practitioners, pharmacists, and community health workers, as members of care teams.



Goal	Selected Recommendations
Reduce the Healthcare Provider Shortage	<p>Expand residency slots in North Carolina for medical school graduates, since studies show that doctors are more likely to continue practicing in the state where they completed residency.</p> <p>Expand the number of primary care nurse practitioners, since studies show that NPs provide effective treatment for people with diabetes. Bonuses for NPs working in underserved areas and increased salaries or flexible options for nursing professors would help increase supply of these vital providers.</p> <p>Target in-state residents for medical school and residency programs, since studies show that doctors are more likely to practice primary care in underserved areas of their home state. Some options include providing discounted rates for in-state residents or offering joint-programs that allow students to continue directly into residency programs from medical school.</p> <p>Incentivize providers to practice in primary care by maintaining the Affordable Care Act's increase in Medicaid reimbursement rates.</p> <p>Encourage minority recruitment into medical and nursing schools through a variety of initiatives (See Part 1, Chapter 3), since underrepresentation in the medical profession contributes to minority communities being underserved.</p> <p>Further examine North Carolina's scope of practice laws for nurse practitioners, since NPs are currently subject to strict physician oversight limitations.</p>
Better Integrate Pharmacists into Diabetes Care Teams	<p>Pilot a new Medicaid Medication Therapy Management (MTM) program. Alternately, re-implement Medicaid's previous MTM program, FORM.</p> <p>Further embed clinical pharmacists into North Carolina Medicaid.</p> <p>Expand the physician supervision limit for clinical pharmacists. Physicians are currently limited to supervising three pharmacists, and this limitation holds clinical pharmacists back from greater roles in diabetes care.</p>
Strategically Employ Community Health Workers within Diabetes Care Teams	<p>Provide greater financing for community health worker programs. Consider placing more CHWs into Medicaid health homes, patient-centered medical homes or accountable care organizations as potential sources of reimbursement.</p> <p>Adopt a standardized credentialing system which allows for reimbursement of CHWs but does not exclude existing CHWs by setting up unreasonable barriers, such as strict regulations and costs. More research needs to be done to determine what effect CHW credentialing has on access to care in underserved areas.</p>



### PART 3: DIABETES IN CONTEXT: CHANGING THE FOOD AND PHYSICAL LANDSCAPE TO SUPPORT HEALTHY LIVING

Part 3 addresses the environmental factors that exacerbate North Carolina's diabetes epidemic. In these chapters, the report confronts the affordability of nutritious food in North Carolina and discusses challenges to accessing healthy food in local communities. It describes the way North Carolina's built environment inhibits or encourages physical activity. It emphasizes the importance of widespread nutrition education in fighting the disease. Finally, the report suggests changes to the food environment for youth in childcare centers and schools that will enable a younger generation to avoid a type 2 diabetes diagnosis in the future.

#### Chapter 1: Economic Access to Healthy Food

Proper nutrition—an essential component of managing diabetes—depends critically on the ability to purchase food that makes up a healthful diet. However, many in North Carolina, particularly those in rural areas, struggle to afford nutritious food.<sup>7</sup> In order for low-income residents to have the means to purchase the food they need to lead a healthy life, North Carolina should work to increase participation in Food and Nutrition Services (FNS), which is North Carolina's SNAP program, and WIC. The state should also encourage farmers markets to accept EBT payments from FNS recipients.

Goal	Selected Recommendations
Improve Participation in the Supplemental Nutrition Assistance Program (North Carolina Food and Nutrition Services, or FNS)	<p>Streamline public information about income eligibility and application requirements for FNS. Studies have shown that many state residents are underinformed about the program and do not realize they are eligible.</p> <p>Facilitate the FNS application process by opening Department of Social Services offices on nights and weekends, when individuals can apply without missing work.</p> <p>Equip farmers markets to accept EBT cards, enabling more low-income North Carolinians to purchase local fruits and vegetables.</p>
Invest in scaling up state agency pilot programs that increase access to care for people with diabetes	Fund pilot program expansions through legislative action. Current pilot programs have demonstrated innovative and effective new ways to deliver care, but current funding levels do not allow successful programs to scale up.





### Chapter 2: Geographic Access to Healthy Food

Compounding the challenge of economic access, lack of geographic access to nutritious food can also be problematic for those living with diabetes. Many North Carolinians live in food deserts, areas where people have limited access to fruits, vegetables, and other nutritious foods. More than 1.85 million residents have low access to a grocery store, almost 20% of the total state population.<sup>8</sup> North Carolina can combat this problem through a multi-faceted approach that aims to increase the supply of healthy food in these areas. In particular, the state should build

on dialogue already in progress in the state legislature and introduce measures to increase the number of full-service grocery stores in low-access areas. Such measures could include creating tax incentives and financing options for stores willing to open in food desert areas. North Carolina can also encourage corner stores to stock more nutritious foods. The state can improve access to existing stores by investing in the infrastructure that allows people to easily walk and bike to stores, expanding public transportation options, and working with grocers to set up shuttle services.

Goal	Selected Recommendations
Increase the Number of Full-Service Grocery Stores in Low Access Areas	<p>Pass legislation encouraging full-service grocery stores in low-access areas through tax incentives and financing options.</p> <p>Engage in health-conscious zoning and community planning within municipalities. Revised zoning or new community plans can ensure that grocery stores can easily locate in underserved areas, while fast food retailers do not continue to dominate poor and underserved neighborhoods.</p>
Take Steps to Promote the Sale of Healthy Foods in Corner Stores	<p>Provide funding to expand the Healthy Corner Store Initiative, a program that works to transform convenience stores into healthy food vendors.</p>
Increase Options for Transportation to Healthy Food Vendors by Investing in Public Transit and Pedestrian Infrastructure	<p>Invest in sidewalks and other pedestrian-friendly projects so that residents can walk to their local grocery store.</p> <p>Provide tax incentives to grocery stores that offer shuttle service to areas with low food access.</p> <p>Expand public transportation options as well as Medicaid/Medicare transport services to grocery stores.</p>

### Chapter 3: Physical Activity and the Built Environment

In addition to a healthy diet, physical activity is a key factor in diabetes prevention and control. The built environment in which people live and work plays an important role in determining their level of physical activity. The Department of Transportation and other agencies should incorporate health impact assessments into the decision-making process for new state projects. Additionally, the state should closely

track the effects of the prohibition on using DOT funds for stand-alone pedestrian and bicycle projects on levels of physical activity throughout the state. Both the state and municipalities should take steps to encourage pedestrian-friendly development, along with parks, greenways, and other recreational areas. Finally, North Carolina should expand efforts to collect data on active transportation to give researchers a better picture of which projects are most cost-effective and will yield the largest health benefits.



Goal	Selected Recommendations
Increase Opportunities for Physical Activity by Investing in Infrastructure that Promotes Active Living	<p>Monitor the effect of the Strategic Transportation Investment Act, which prohibits spending Department of Transportation (DOT) funds on stand-alone pedestrian and bicycle projects. At present, DOT funds cannot be used to improve a sidewalk or repair a bike lane unless it also benefits a vehicle thoroughfare.</p> <p>Make the impact on community health of proposed transportation projects a required part of decision-making with respect to transportation funding. New research shows that bike paths and sidewalks have significant potential to reduce health costs and decrease mortality rates.</p> <p>Require new subdivisions to construct sidewalks and bike accommodations in all development.</p> <p>Collect more data on pedestrian and cycling activity in order to enable accurate calculation of future savings in health care costs from pedestrian and cyclist-focused transportation projects.</p>

#### Chapter 4: Nutrition and Cooking Education

Beyond having access to healthy food, people living with diabetes must know which foods to buy and how to prepare them. Despite the nutritional benefits of home-cooked meals, Americans are increasingly relying on ready-to-eat foods like fast food, take-out, and pre-packaged snacks that tend to be high in salt, sugar, and fat.<sup>9</sup> To combat this trend, the state can partner with food retailers and foundations to introduce pilot

programs to study store-level labeling of diabetes-appropriate food, an approach that has been proven successful in other contexts. North Carolina could also supplement SNAP-Education funds to increase educational programs targeted at low-income people with diabetes. To ensure that the next generation of North Carolina knows how to prepare healthy meals, the state can continue to support and expand cooking programs for young people and their families.

Goal	Selected Recommendations
Support measures that increase the transparency of nutrition information	The state should partner with private food retailers and foundations to design pilot programs that study the impact of store-level labeling of diabetes-appropriate foods on consumer purchasing patterns.
Increase prevalence of cooking and nutrition education for all age groups	Develop and fund pilot cooking and nutrition education classes that engage families, including adolescents. Taking a whole-family or adolescent-focused approach can help educate a new generation of healthy eaters.



### Chapter 5: Early Childhood, School Food, Nutrition, and Wellness Programs

The food environment for children is an extremely important determinant of children's health and likelihood of developing diabetes. The state can promote the health of its youngest residents by disseminating best practices in nutrition and physical activity education to all licensed childcare providers. It can also ensure that home visiting programs have personnel who are trained to speak with pregnant women and young families about instilling healthy eating and exercise habits as early as possible. North Carolina can also work to improve participation among eligible students in school meal programs, allowing low-income students to eat healthy meals every day at school. North Carolina should continue efforts to ensure that schools meet the new federal nutrition guidelines, both for school meals and for competitive and a la carte

offerings. The Summer Meals Program is another important opportunity to deliver balanced meals to children, and the state can take steps to increase participation rates. Finally, to supply schools with healthier foods, North Carolina can incentivize farmers to participate in the Farm to School Program and continue to support small farmers in the Good Agricultural Practices certification process.

In addition to improving nutrition, schools should also aim to increase students' physical activity level. To provide guidance and accountability in implementing wellness policies, school districts can assign an individual to oversee and coordinate implementation. Additionally, schools can open their facilities to the community after-hours and on weekends to provide a space for community members to be active in safe, familiar environments.

Goal	Selected Recommendations
Improve Participation in School Meal Programs and Invest in Helping Schools Meet Nutrition Standards	<p>Increase schools' ability to directly certify students for Free/Reduced Price (F/RP) lunch based on categorical eligibility. Most SNAP participant children are automatically enrolled in F/RP lunch programs, but some schools are unable to certify students enrolled in TANF, Head Start, or state foster care programs.</p> <p>The North Carolina Department of Public Instruction should apply to be part of the Demonstration Project to Evaluate Direct Certification with Medicaid. This program would allow schools to directly enroll students who have Medicaid coverage.</p> <p>Use the community eligibility option to provide free lunch to all students in high-poverty schools in 2014 and beyond.</p> <p>Provide additional state funding to transition schools to "breakfast in the classroom" and "grab and go" models, as these approaches have been shown to improve school breakfast participation.</p>
Improve Nutrition Profile of Food Offered on School Grounds Outside School Meal Programs	<p>Provide funding for the State Board of Education and local school food councils to give technical assistance to schools in transitioning their food programs in order to meet the new federal and state requirements for nutrition in competitive foods.</p>
Improve Participation in the Summer Meals Program	<p>Supplement federal funding for Summer Meals Programs to allow parents to eat meals along with their children. Currently, only school-age children are allowed to receive these meals, and are often unable to eat with their parents.</p> <p>Forge partnerships with local organizations to create fun, enriching activities to accompany the Summer Meals Program.</p>



Goal (cont.)	Selected Recommendations (cont.)
Publicize School Wellness Policies and Assign Monitoring of Implementation to a Member of the School Health Advisory Council	In order to ensure that school districts statewide are developing, implementing, and monitoring wellness policies, municipalities should assign monitoring of wellness policy implementation to a specific person, such as a member of the district's School Health Advisory Council.
Maximize Use of Municipal Resources for Community Recreation and Physical Activity	Use the Community and Clinical Connections for Prevention and Health Branch of the Division of Public Health to promote shared use of schools and municipal space and develop shared use agreements.
Promote Workplace Wellness Plans	<p>Provide tax credits for wellness programs. States such as Kentucky have recently conducted extensive impact assessments on these programs, and found that these tax credits were effective in increasing positive health outcomes.</p> <p>Incentivize and encourage physical activity and healthy eating at work. Potential avenues for employers include creating recreational sports leagues, fitness incentives, and providing on-site fitness opportunities as well as showers and changing rooms.</p> <p>Adopt workplace diabetes programs, such as the American Diabetes Association's "Stop Diabetes @Work" program for employers.</p> <p>Adopt smoke free workplace policies. Research has shown that employers with smoke-free workplace policies reduce the number of cigarettes their employees smoke, while also increasing the rate at which smokers quit.</p>

### Conclusion

No single person, organization or agency can implement all of these recommendations.

However, by working together, government, non-profit organizations, and motivated North Carolinians from every walk of life can truly move North Carolina forward.



# INTRODUCTION

According to recent data, type 2 diabetes robs people who develop the disease of up to 15 years of life.<sup>10</sup> Diabetes is on track to cost North Carolina's public and private sectors more than \$17 billion per year by 2025.<sup>11</sup> With such high stakes, the state must take significant steps to address the disease from every angle, including addressing known risk factors for the disease at a population level and improving access to and quality of care for every individual living with type 2 diabetes.

North Carolina has already demonstrated an incredible ability to mobilize and use policy to address public health concerns. For example:

- In 1988, the state had the second highest infant mortality rate in the nation, 12.3 per 1,000 live births. However, by 2010, the state's infant mortality rate had dropped to 7 per 1,000 live births, the lowest in the state's recorded history and the fifteenth highest rate in the nation.<sup>12</sup>
- Since 1991, death rates for children ages 1 to 14 have shown a 46% reduction.<sup>13</sup>
- In just one year, from 2010 to 2011, emergency room visits by individuals experiencing heart attacks declined 21%, representing an estimated \$3.3 to \$4.8 million in health care cost savings.<sup>14</sup>

How did the state achieve such notable improvements in a relatively short time? These successes are due in large part to concerted efforts across the state to address health-related crises including:

1. Increased **financial investments**.
  - Example: The drop in the infant mortality rate is due in large part to increased investment in outreach and care to high-risk pregnant women, including raising the eligibility level for Medicaid to 185% in 1987 and creation of the Baby Love program to coordinate health and social services resources and lower financial and cultural barriers to prenatal care.<sup>15</sup>
2. Development of **long-term public-private partnerships** across the state that brought together state, regional and local public health officials; legislators; providers; community-based organizations; and

advocates to forge solutions to pressing crises.

- Example: Since the creation of a Child Fatality Task Force in 1991, child death rates have dropped significantly.<sup>16</sup>

3. New **legislation**.

- Example: The state's Smoke-Free Restaurants and Bars Law took effect in 2010,<sup>17</sup> coinciding directly with the sudden drop in ER visits for heart attacks.

North Carolina can use similar tools to address diabetes. Mirroring the nation as a whole, the diabetes epidemic in North Carolina has been fast-growing: the percentage of North Carolinians with diabetes more than doubled in fifteen years, going from 4.6% (age-adjusted)<sup>ii</sup> in 1995 to 9.3% in 2010.<sup>18</sup> Minorities are particularly hard hit by the epidemic: 14.5% of African-Americans and 19.0% of American Indians reported a diabetes diagnosis in 2012, compared to 9.7% of whites.<sup>19</sup>

This rapid growth in type 2 diabetes has many severe consequences for the health of North Carolinians. Diabetes is now the seventh-leading cause of death in North Carolina, the fourth leading cause of death for African Americans and the third leading cause of death for American Indians.<sup>20</sup> Other conditions associated with diabetes, including cardiovascular disease and cerebrovascular disease, are also in the top ten causes of mortality.<sup>21</sup>

The diabetes crisis has also caused escalating health care costs and lost productivity throughout the state. In 2006, roughly \$5.3 billion of private and public funds were attributable to excess medical costs and lost productivity due to diabetes.<sup>22</sup> To put that figure into perspective, it is equivalent to over 25% of the state's General Fund budget (\$20.7 billion) for the 2007-2008 fiscal year.<sup>23</sup>

Despite these sobering statistics, North Carolina has a number of resources at its disposal to fight the type 2 diabetes epidemic. Just as it did when combating

ii Age-adjusted rates estimate what the rate would be if the age distribution were the same as in a "standard" population, and are useful for comparisons across states.



infant mortality or tobacco use, the state can draw upon an abundance of existing public-private partnerships and innovative policies and programs that are already addressing type 2 diabetes treatment and prevention. From the North Carolina Diabetes Advisory Council to the Eat Smart Move More North Carolina movement, to name just a few,<sup>iii</sup> these programs span the state, regional and local levels, and include work by task forces, local and state health officials, providers, hospitals, and food and physical activity advocates, among others.

However, as many North Carolinians on the front lines of the diabetes epidemic attest, numerous challenges remain. Large numbers of North Carolinians lack health insurance and regular access to needed diabetes services, including basic healthcare as well as diabetes self-management education and prevention programs. Disparities in diabetes mortality and morbidity persist based on racial, income and geographic divisions. Funding and reimbursement for critical services remain insufficient to fully combat the epidemic. Provider shortages, food deserts, lack of transportation, and inadequate spaces for physical activity are some of the other important barriers to promoting diabetes prevention and treatment.

This report aims to outline how North Carolina can build upon its existing resources and infrastructure in order to improve its response to type 2 diabetes. Through rigorous independent research and interviews with North Carolinians at the forefront of the fight against diabetes, the report profiles notable successes in the healthcare and environmental arena that the state can build upon to improve

diabetes prevention and treatment. The report then offers concrete policy recommendations that call for multipronged changes to the state's healthcare, nutrition, and physical activity landscapes, ranging from suggestions for new legislation to development of new diabetes-related task forces. Ultimately, this report strives to put forward practical policies that have the most potential to reduce the devastating human and financial toll of this epidemic on North Carolina. It is written as a tool for those who are committed to keeping the state on a secure and steady path of progress against type 2 diabetes through pursuit of carefully chosen and effective policy reforms.

## How to Navigate this Report

The report is divided into three main sections:

1. The Type 2 Diabetes Landscape in North Carolina
2. Improving Access to Healthcare for People with Type 2 Diabetes
3. Diabetes in Context: Changing the Food and Physical Activity Landscape to Support Healthy Living

Part 1 begins with an overview of the diabetes epidemic facing North Carolina, as well as information about North Carolina's healthcare, fiscal, economic, and legislative landscapes relevant to shaping diabetes policy. The report then examines how to improve diabetes prevention and treatment in the state, with a focus in Part 2 on needed reforms within the healthcare and public health sectors, and in Part 3, on policies to improve food policy and the built environment.

<sup>iii</sup> See Chapter 2 of this section for information on a number of organizations.



# PART 1: THE TYPE 2 DIABETES LANDSCAPE IN NORTH CAROLINA

Understanding of the effects of diabetes on North Carolinians is critical to preventing and mitigating the health consequences of the condition. Chapter 1 of this section begins with basic background information on type 2 diabetes and its impact on the state, including both general and diabetes-specific population health indicators. North Carolina also has a number of government, non-profit and private organizations that are heavily involved in implementation of diabetes-related health initiatives. Chapter 2 provides brief overviews of some of these organizations. Their feedback and research has heavily informed the policy recommendations mentioned later in the report. Since existing state laws, regulations, and policies shape the state's response to type 2 diabetes, Chapter 3 outlines state legislation, as well as budget and tax policies, relevant to type 2 diabetes. Together, these chapters provide an overview of North Carolina's type 2 diabetes epidemic and the existing policies and resources available to fight the disease within the state's borders.

## Chapter 1: The Facts Behind North Carolina's Diabetes Epidemic

### THE BASICS OF TYPE 2 DIABETES

Type 2 diabetes is a metabolic disorder in which the body either fails to produce sufficient insulin or becomes resistant to that insulin, which leads to high glucose levels in the blood. Over time, sustained high glucose levels cause damage to blood vessels, resulting in serious health complications including increased risk of major cardiovascular incidents such as heart attacks and strokes.<sup>24</sup> The microvascular damage associated with type 2 diabetes makes it the leading cause of new cases of blindness, kidney failure, and lower-limb amputations not related to

trauma.<sup>25</sup> The goal of diabetes control is to keep levels of glucose in the blood as close as possible to normal levels to reduce damage to the circulatory system, thus reducing the risks of complications. Common co-morbidities with diabetes include heart disease; high blood pressure; hearing impairment; obstructive sleep apnea; fatty liver disease; periodontal disease; bone fractures; certain types of cancer including liver, pancreatic, endometrial, colorectal, breast, and bladder; and cognitive impairments like dementia.<sup>26</sup>

Medical professionals use a test, referred to typically as the "A1C" or "hemoglobin A1C" test to measure the average amount of glucose in a person's blood over time. The test measures the percentage of hemoglobin (the protein in the blood that carries oxygen) that is coated in glucose. When a person's A1C test is at or above 6.5%, they are considered to have diabetes.<sup>27</sup> If the A1C test is between 5.7% and 6.4%, the person is considered to have prediabetes, and is at risk for developing diabetes.<sup>28</sup> Medical professionals use the A1C test for people already diagnosed with diabetes as well, in order to assess how well the disease is managed. It is common for patients to aim to keep their A1C level below 7% to control complications. A person with uncontrolled diabetes typically has an A1C level over 8%.<sup>29</sup>

### HOW IS DIABETES AFFECTING NORTH CAROLINA'S RESIDENTS?

North Carolina's rates of type 2 diabetes are significantly higher than the national average, and are much more likely to have diabetes than North Carolinians of the same age two decades ago. Type 2 diabetes in the state is also marked by significant racial, economic, and geographic disparities.





## Diabetes Prevalence

In 2010, approximately 9.3% (age-adjusted) of North Carolinians, representing 688,000 individuals, had received a diabetes diagnosis. (See Graph 1).<sup>30</sup> The estimated prevalence of diabetes nationally in 2010 was 6.4%.<sup>31</sup> Note that these data reflect all cases of diabetes, including both type 1 and type 2. However, because type 1 diabetes only accounts for approximately 5% of the total cases of diabetes, the bulk of this increase is attributable to the rise in type 2 diabetes.<sup>32</sup>

6.1% of North Carolinians (392,000) reported having prediabetes in 2010. However, many people remain unaware that they have prediabetes. According to the North Carolina Division of Public Health, only 61.4% of adults had a test for high blood sugar in 2009.<sup>33</sup>

## Diabetes Incidence

Diabetes rates among North Carolinians have almost doubled since the 1990s, going from 5.6 new cases per 1000 people in 1996 to 9.5 per 1000 people in 2010 (age-adjusted). This rate of new diagnoses continued to outpace the national growth rate of 8.1 new cases per 1000 people in 2010.<sup>34</sup> (See Graph 2).<sup>35</sup>

## Diabetes and Age

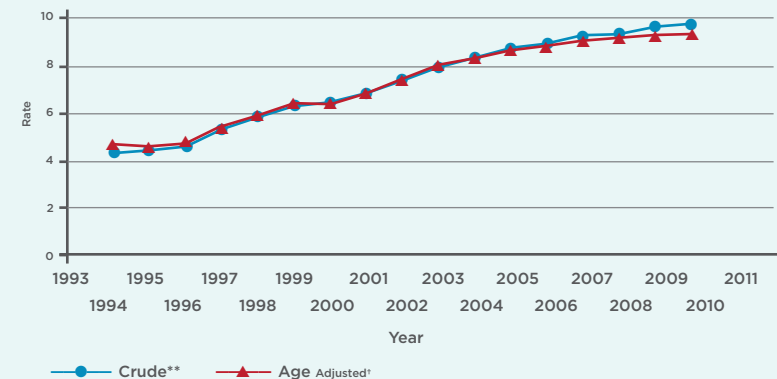
Prevalence of type 2 diabetes increases markedly with age. While only 2.2% of North Carolinians aged 18 to 34 reported a diagnosis of diabetes in 2012,<sup>iv</sup> this percentage increased to 5.4% of 35 to 44 year olds; 11.5% of 45 to 54 year olds; 16.9% of 55 to 64 year olds; 23.3% of 65 to 74 year olds and 20.1% of people over 75 years of age.<sup>36</sup> For people ages 45-64, diabetes was the fifth leading cause of death in 2012, while for people 65 and over, it ranked sixth.<sup>37</sup>

## Racial/Ethnic Inequalities in Diabetes Prevalence and Mortality

North Carolina is a diverse state. Of its 9,748,364 residents in 2012, 22% identified as African American, 1.5% as American Indian, 8.7% as Hispanic or Latino, and 64.7% as non Hispanic whites.<sup>38</sup>

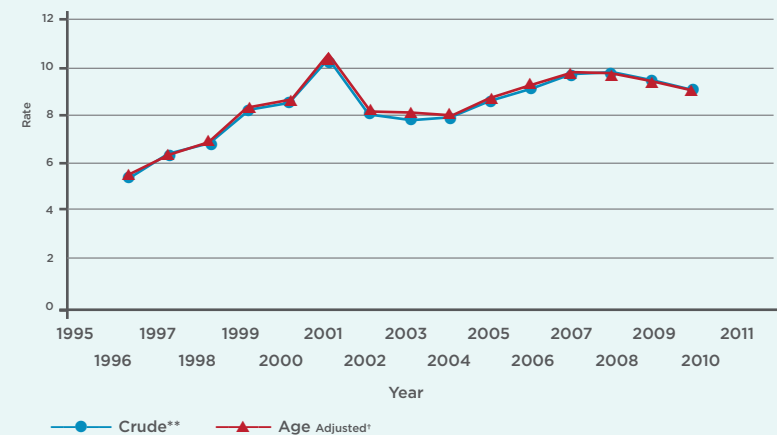
iv Due to a change in the CDC's Behavioral Risk Factor Surveillance System's (BRFSS) weighting methodology and other factors, data gathered after 2010 cannot be compared directly to data from preceding years. For this reason, the report uses the updated 2012 BFRSS data when providing the latest statistics, while using the 2010 BRFSS data when making comparisons over time.

**GRAPH 1:** North Carolina - Percentage of Adults (aged 18 years or older) with Diagnosed Diabetes, 1994 - 2010



Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (2010)

**GRAPH 2:** North Carolina - Rate of New Cases of Diagnosed Diabetes per 1000 Adults (Aged 18-76 Years), 1996-2010

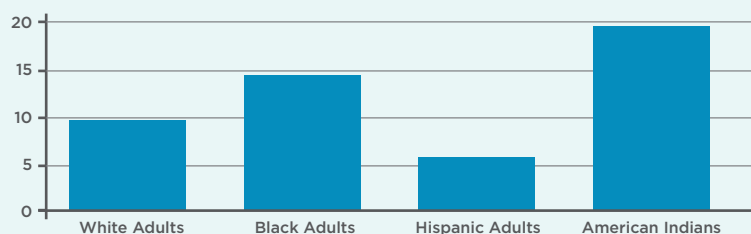


Source: North Carolina - Rate of New Cases of Diagnosed Diabetes per 1000 Adults (Aged 18-76 Years), 1996-2010, CTRS. FOR DISEASE CONTROL AND PREVENTION



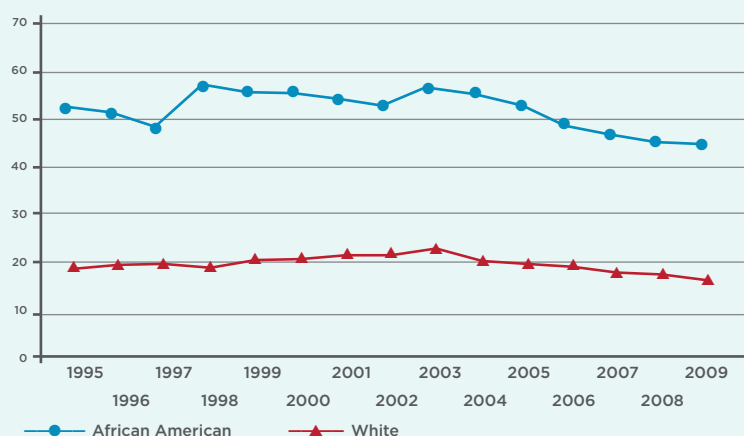


**Graph 3: Percentage of Diagnosed Diabetes by Race/Ethnicity in North Carolina, 2010**



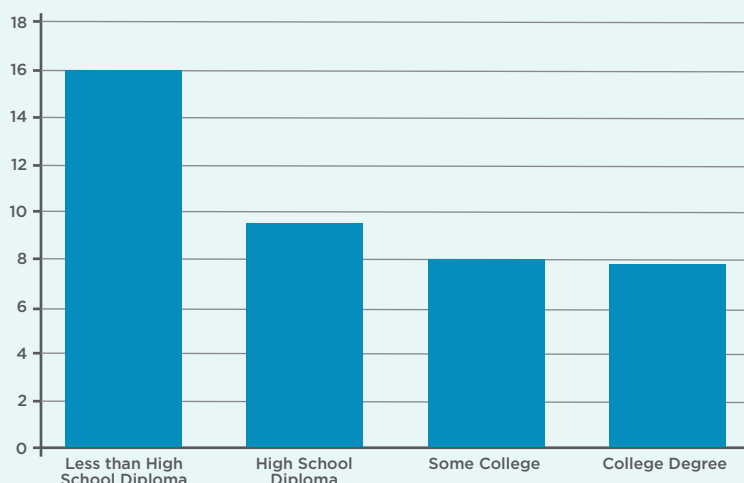
Source: 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS

**Graph 4: Trends in Diabetes Mortality: Number of Deaths Among African American and White North Carolina Residents, 1995-2009 (number of deaths/100,000) (age-adjusted)**



Source: Laura A. Young and Parvati Potru, *Diabetes in North Carolina: Descriptive Epidemiology and Meaningful Use of Electronic Health Records*, 72 N.C. Med. J.383 (2011)

**Graph 5: Percentage of Diagnosed Diabetes, by Education Level**



Source: 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS

Type 2 diabetes is not distributed equitably among these racial and ethnic groups. In 2012, 14.5% of African-Americans and 19.0% of American Indians reported a diabetes diagnosis, compared to 9.7% of whites and 6% of Hispanics, though the particularly low reported rate for Hispanics is likely due to undersampling and underreporting. Though diabetes prevalence increases with age for all racial groups, older African Americans are disproportionately affected by the disease. 28.1% of African Americans aged 55 to 64, and over a third of African Americans between the ages of 65 and 74 (36.3%) reported living with a diabetes diagnosis in 2012.<sup>40</sup> (See Graph 3)

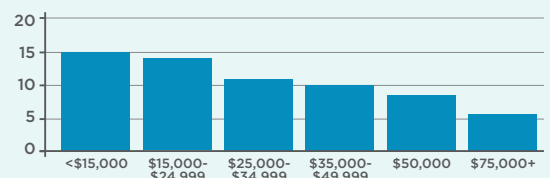
Statewide, diabetes was the seventh leading cause of death for white North Carolinians in 2012. For African Americans, it was the fourth-leading cause of death and for American Indians, the third.<sup>41</sup> (See Graph 4)

## Education and Income

Diabetes prevalence also correlates with education levels. In fact, diabetes prevalence for those without a high school diploma is more than double the prevalence for college graduates. In 2012, almost one in five North Carolinian adults (15.9%) who had less than a high school diploma had been diagnosed with diabetes, compared with only 7.4% of adults with college degrees.<sup>42</sup> (See Graph 5)

The disparities in diabetes rates by income level are also significant. Of those with less than \$15,000 in household income, 15.3% of people had diabetes in 2012. This group had almost twice the chance of having diabetes as people earning from \$50,000 to \$74,999, 8.4% of whom had diabetes. People earning over \$75,000 were over two and a half times less likely (5.9%) to have received a diabetes diagnosis than those in the lowest income bracket.<sup>43</sup> (See Graph 6)

**Graph 6: Percentage of Diagnosed Diabetes, by Annual Income**



Source: 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS



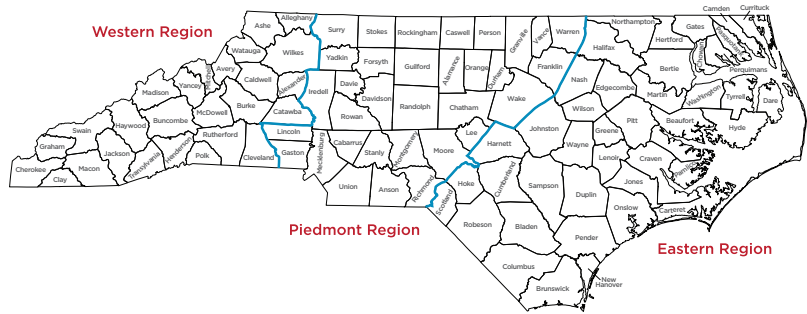
## Geographic Disparities

A regional analysis of North Carolina diabetes rates shows stark geographic differences across the state. North Carolina is generally divided into three broad geographic areas: the Mountains (the Western part of the state); the Piedmont region (the middle part of the state which includes Charlotte and the Research Triangle) and the Coastal Region (Eastern North Carolina).

In the Piedmont region, where most of the state's largest cities, including Charlotte, Raleigh, Greensboro, and Durham, are located, the rate of diagnosed diabetes is 9.9%. In the Eastern and Western regions, it is significantly higher, both at 11.1%. Racial disparities are pronounced within geographic regions. African Americans living in the Eastern region have the highest reported rate of diabetes of any group in the state, at 15.3%, compared to 9.9% of whites in the Eastern region.<sup>45</sup> 13.7% of African Americans in the Piedmont region report a diabetes diagnosis, while 9% of whites do so.<sup>46</sup> The Western region sees the highest rates of diabetes among whites, at 11.6% (African Americans are not included as a category for the Western region).<sup>47</sup>

Sources: *Faststats: Life Expectancy 2010*, CENTERS FOR DISEASE CONTROL AND PREVENTION, (2014). *LIFE EXPECTANCY: STATE & COUNTY ESTIMATES 2010-2012*, N.C. STATE CENTER FOR HEALTH STATISTICS, (2012).

Figures calculated using data from *Data for Life Expectancy at Birth by County, 2009-2011*, N.C. State Ctr. for Health Statistics; Arialdi M. Miniño and L. Murphy, *Death in the United States, 2010*, 99 NCHS Data Brief 1, 1-4 (2012)



Source: North Carolina Maps, University of North Carolina at Chapel Hill

**Table 1: Racial Disparities in Life Expectancies**

Life expectancies among North Carolinians show the same racial disparities as diabetes rates

Population	Life Expectancy (2012) (in years)
All Americans (average)	78.7
All North Carolinians	78.1
White Males (NC)	76.3
Black Males (NC)	72.3
White Females (NC)	81
Black females (NC)	78.8

**Table 2: Geographic Disparities in Life Expectancies**

Life expectancies also show significant disparities depending on where people live in the state

38 out of 44 counties (86%) in Eastern North Carolina have lower than average life expectancies when compared to the state average of 78.1 years. Of the 19 counties with life expectancies under 76 years, 13 (68%) are in the East.

14 of the 23 counties (61%) in the Western part of the state have life expectancies lower than the state average. The county with the lowest life expectancy in the state, Swain County (72.1 years), falls within this region.

Higher-than-average life expectancies are clustered around Mecklenberg County (80 years), where Charlotte is located, and the counties in and around the Research Triangle including Orange (81.2), Wake (81.3), and Chatham (80.5) counties. However, there is significant inequality within the Piedmont region. 25 out of 36 counties (69%) in this region have life expectancies lower than the state average. Not surprisingly, the Piedmont counties on the edge of the Eastern and Western regions generally have the lowest average life expectancies in the region.

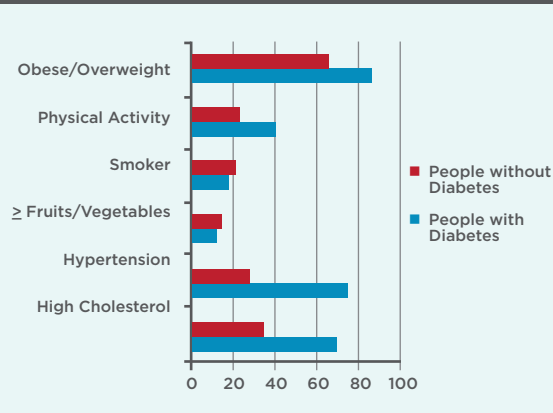


### WHAT RISK FACTORS FOR DIABETES DO NORTH CAROLINIANS HAVE?

Scientists are not sure about the exact mechanism that causes the body to ignore or stop making enough insulin. However, there are some known risk factors for the disease, including

- Being overweight: High levels of fatty tissue are associated with cells becoming resistant to insulin.<sup>48</sup>
- Fat distribution: If the body stores fat in the abdomen, the risk is greater than if the fat is stored in the hips or thighs.<sup>49</sup>
- Physical inactivity: Being active helps the body become more sensitive to insulin and also helps with weight control and using glucose as energy.<sup>50</sup>
- Age: Individuals over age forty-five are at higher risk, although this may be largely due to older people being less physically active. However, type 2 diabetes is becoming more common among children and adolescents.<sup>51</sup>
- Family history.<sup>52</sup>
- Gestational diabetes.<sup>53</sup>
- Giving birth to a baby over nine pounds.<sup>54</sup>
- Smoking.<sup>55</sup>
- High blood pressure.<sup>56</sup>
- Abnormal lipid metabolism (cholesterol).<sup>57</sup>

**Graph 7:** Percentage of North Carolina Adults with Select Type 2 Diabetes Risk Factors



Source: 2011 and 2012 BRFSS Survey Results: North Carolina, N. C. STATE CTR. FOR HEALTH STATISTICS

### Being Obese or Overweight

North Carolina ranks 16th in the nation in terms of its percentage of overweight and obese residents.<sup>58</sup> As of 2012, 36.2% adults were overweight (BMI  $\geq 25$  and  $\leq 29.9$ ) in the state, while 29.6% were obese (BMI  $> 30$ ).<sup>59</sup> The rates of obesity in the state have more than doubled over the past two decades.<sup>60</sup> Racial disparities are significant. 74.6% of blacks, 68% of Hispanics, and 73.5% of American Indians in North Carolina were overweight or obese in 2012, compared to 63.5% of whites.<sup>61</sup>

North Carolinians with diabetes are much more likely to be overweight and/or obese than those without diabetes. 56.6% of North Carolinians with diabetes were obese in 2012, while 28.1% were classified as overweight but not obese. In total, 84.7% of all people with diabetes were either overweight or obese. For people without diabetes, 26.4% were obese and 37.2% were overweight, for a combined total of 63.6% overweight or obese.<sup>62</sup>

According to the 2011 Survey of Children's Health, 31.4% of children in North Carolina aged 10-17 were overweight or obese (defined as having a BMI at the 85th percentile or above).<sup>63</sup> This is only slightly higher than the national rate of 31.3% for children aged 10-17.<sup>64</sup> The CDC's 2009 Youth Risk Behavior Study shows similar rates. Among North Carolina adolescents, 14.6% were classified as overweight (defined as being  $\geq 85$ th and  $< 95$ th percentiles for BMI by age and sex) while 13.4% were obese ( $\geq 95$ th percentile BMI by age and sex).<sup>65</sup> The CDC showed higher rates for children two to five years of age, with 16.2% overweight and another 15.5% obese in North Carolina.<sup>66</sup>

### Physical Activity

Adult physical activity guidelines defined in the CDC's 2011 Behavioral Risk Factor Surveillance System (BRFSS) recommend moderate physical activity for 150 minutes per week (30 minutes a day for at least 5 days per week) or vigorous physical activity for at least 60 minutes a week (20 or more minutes per day, three or more days per week).<sup>67</sup> 46.8% of North Carolina adults engaged in the recommended amount of aerobic activity in 2011, compared to the national average of 51.7%.<sup>68</sup>



In the 2012 BFRSS survey, 24.9% of all North Carolina adults reported that they had not participated in any physical activity in the past month.<sup>69</sup> Racial disparities in exercise were also pronounced, with 28.1% of all African Americans and 35.8% of all Native Americans reporting no exercise over the past month, compared to 22.9% of whites.<sup>70</sup>

When only adults with diabetes are considered, the number of North Carolinians reporting no exercise grows to 39.9%, compared to only 23.1% of adults without diabetes.<sup>71</sup>

### Smoking

People who smoke 16-25 cigarettes daily have a three-fold increased risk of developing prediabetes and diabetes.<sup>72</sup> 20.9% of North Carolina adults smoked in 2012.<sup>73</sup> 20.5% of non-Hispanic whites smoked in 2012, compared to 24.1% blacks, 35.8% of Native-Americans and 13.8% of Hispanics.<sup>74</sup> People with diabetes have a slightly lower rate of smoking than people without the condition, at 18.3% versus 21.1%, respectively.<sup>75</sup>

### Fruit/Vegetable Consumption

In 2011, only 13.7% of North Carolina adults reported consuming 5 or more servings of fruits, vegetables or beans per day. 12.7% of those with diabetes reported 5 servings or more a day, while 13.8% of those without diabetes did so.<sup>76</sup>

According to the CDC's 2011 Youth Risk Behavior Survey, only 27.6% of North Carolina high school students had consumed more than 2 servings of fruit or fruit juice per day and only 9.1% ate vegetables 3 or more times per day during the prior week. 32.5% of adolescents had consumed a can, bottle or glass of (non-diet) soda or pop at least once per day over the previous week.<sup>77</sup>

### High Blood Pressure and High Cholesterol

32.4% of North Carolina adults had hypertension in 2011 (the 2012 survey did not include high blood pressure). 38.8% of blacks reported a high blood pressure diagnosis, compared with 38.4% of Native Americans and 32.4% of whites.<sup>78</sup> People with diabetes had much higher rates of high blood pressure, with 72.9% reporting a diagnosis, compared to 27.5% of those without diabetes.<sup>79</sup>

38.5% of North Carolina adults reported high cholesterol in 2011 (the 2012 survey did not include cholesterol levels).<sup>80</sup> 40% of whites reported a diagnosis of high cholesterol, compared to 34.9% of African Americans and 35.4% of Native Americans.<sup>81</sup> Of people with diabetes, 67.6% reported high cholesterol, while only 32.4% of people without diabetes did so.<sup>82</sup>

### HOW MUCH DOES DIABETES COST NORTH CAROLINA?

The American Diabetes Association (ADA) has estimated that the total national costs associated with diabetes have risen from \$174 billion in 2007 to \$245 billion in 2012, increasing 41 % over just 5 years.<sup>83</sup> Across the nation, one in five healthcare dollars is spent to care for people who have been diagnosed with diabetes; over half of this amount is used to treat diabetes-related issues.<sup>84</sup> People with diabetes have medical expenditures approximately 2.3 times higher than what they would have incurred if they did not have diabetes.<sup>85</sup> Well over a majority (62.4%) of the costs are born by government programs, including Medicare, Medicaid and military health programs.<sup>86</sup> 72% of national diabetes costs are attributed to direct health care expenditures while 28% represent lost productivity from work-related absenteeism, unemployment and premature mortality.<sup>87</sup>

Like the nation as a whole, North Carolina continues to face significant increases in diabetes-related spending. In 2006, roughly \$5.3 billion of excess medical costs and lost productivity were attributable to diabetes within the state.<sup>88</sup> From July 2007 to June 2008, North Carolina Medicaid expended roughly \$525 million for diabetes-related medical care and prescription drugs for adults.<sup>89</sup> If the state does not manage to control the diabetes epidemic, annual healthcare costs are projected to surpass \$17 billion by 2025.<sup>90</sup>

As discussed in Chapter 3 of this section, North Carolina's 2014 state budget is approximately \$20.6 billion.<sup>91</sup> While the state does not pay the entire cost of diabetes directly out of the state budget, the comparison does illustrate the scale of the diabetes challenge facing the state. If the state did directly pay all the costs of diabetes, it would consume nearly a third of the annual



budget. This strongly suggests that North Carolina should prioritize diabetes prevention and management in order to reduce these unaffordable future costs. This report will identify a number of policy reforms and investments that the state can pursue to avert human and financial hardship.

### PORTRAIT OF THE UNINSURED IN NORTH CAROLINA

Having health insurance is a critical component in preventing diabetes and ensuring effective treatment for people already diagnosed with the disease. People with diabetes without health insurance have worse health outcomes from diabetes and lower life expectancies.<sup>92</sup> From 2011 to 2012, 17% of the total population in North Carolina lacked health insurance, including children, adults and the elderly.<sup>93</sup> However, among adults aged 19 to 64, 24% of residents were uninsured, higher than the national average of 21% of adults.<sup>94</sup> Largely because of programs such as Medicaid, which covers over a third of the children in the state, and the Children's Health Insurance Program ("CHIP"), only 10% of children under age 18 lacked health insurance.<sup>95</sup> When examining the adult (19-64) population in North Carolina, 56% received health insurance through an employer, 9% through Medicaid, 6% through other private insurance, and 4% through some other public insurance program.<sup>96</sup> 22.7% of adults aged 19-64 living in urban areas were uninsured, compared to 23.7% of those living in rural areas.<sup>97</sup> The percentage of uninsured varies significantly by race. Over half (58.8%) of Hispanics were uninsured from 2010-2011, compared to 27.9% of black adults (aged 19-64) and 17.4% of non-Hispanic whites.<sup>98</sup> (See Graph 8)

Having full-time work is a major contributor to having insurance: only 17.5% of full-time employed were uninsured in 2010-2011 versus 34.8% of part timers and 48.3% of unemployed adults.<sup>99</sup> Unfortunately, North Carolina's sharp increase in unemployment from 2007 to 2009 contributed to a 22.5% increase in the number of uninsured individuals during that time—the largest increase in the country.<sup>100</sup>

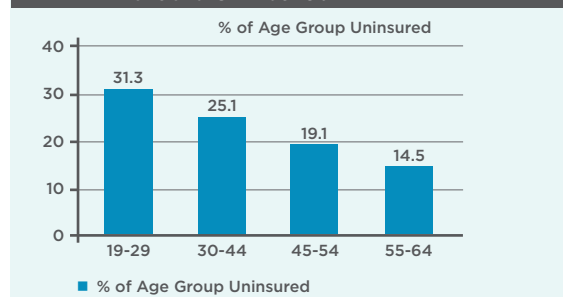
The likelihood of being uninsured increases steadily as income decreases. People under 100% of the federal poverty level are more than five times more likely to lack health insurance than people between 250% and 400% of the FPL. (See Table 3)

**Table 3:** Proportion of Uninsured North Carolinians by Income

% of Federal Poverty Level	% of Income Level Uninsured	Total Number of Uninsured
Less than 100% FPL	46.2	355,000
100-138%	43.1	183,000
138-200%	32.4	200,000
200-250%	27.1	142,000
250-400%	8.5	260,000

Source: *Characteristics of Uninsured North Carolinians, Data Snapshot, 2010-2011, N.C. INST. OF MED. 4*

**Graph 8:** Percentage of Each Age Group that is Uninsured



Source: *Characteristics of Uninsured North Carolinians, Data Snapshot, 2010-2011, North Carolina Institute of Medicine*





Insurance coverage rates also vary significantly depending on occupation. As Table 4 below indicates, people employed in agriculture, construction, and hospitality services have the highest proportions of uninsured employees in North Carolina, with almost half of agricultural workers and over 40% of construction workers lacking health insurance. People employed in the trade, construction, health and education, and hospitality sectors have the largest actual numbers of uninsured employees due to the greater size of these industries within the state.<sup>101</sup> (See Table 4)

**Table 4:** Proportion of Uninsured North Carolinians by Industry

Industry	% of Employees Uninsured	Number of Uninsured Employees
Trade	26.6	150,000
Other	20.7	146,000
Construction	41.5	126,000
Health/Education	12.4	121,000
Hospitality	36.1	99,000
Manufacture	17.1	71,000
Transport	18.6	30,000
Finance	8.3	21,000
Agriculture	48.1	20,000
Government	5.9	11,000

Source: *Characteristics of Uninsured North Carolinians, Data Snapshot, 2010-2011, N.C. INST. OF MED. 4 (January 2013)*

## THE AFFORDABLE CARE ACT'S INSURANCE OPTIONS

For the uninsured and underinsured in North Carolina, the Patient Protection and Affordable Care Act ("Affordable Care Act," or "ACA") offers several existing and potential opportunities to gain access to health insurance or increased healthcare coverage.

### Health Care Marketplace

Beginning on October 1, 2013, individuals were allowed to enroll in health insurance plans via online Health Insurance Marketplaces established in every state, which allow individuals to compare private insurance plans and purchase individual or family coverage. There is also a Marketplace in each state for small businesses to purchase coverage for their employees. The Marketplace is open to all non-incarcerated United States citizens and

legal residents currently living in the United States.<sup>102</sup> Individuals and families between 100% and 400% of the federal poverty line (who are not eligible for Medicaid or affordable employer-sponsored coverage)<sup>v</sup> are eligible for tax credits to offset the costs of premiums, while those between 100% and 250% of the FPL are eligible for subsidies to reduce cost-sharing (i.e. deductibles, copays and co-insurance).<sup>103</sup> Individuals who do not have minimum essential coverage are subject to an "individual shared responsibility payment."<sup>104</sup> However, there are numerous exemptions, including for people who would have to spend more than 8% of household income to purchase the lowest cost plan available to them in the Marketplace.<sup>105</sup>

States had the option to either administer their own Marketplace, defer to the federal government to run the entire Marketplace, or enter into a federal-state partnership. North Carolina decided to let the federal government run its Marketplace.<sup>106</sup> Each plan in the Marketplace must contain ten categories of services, known as the essential health benefit (EHB) package, which includes inpatient and outpatient services, certain preventive services, emergency services, and rehabilitation, among others.<sup>107</sup> In each state, a benchmark plan must be established, which sets the minimum standards for marketplace plans in that state (though if the benchmark is inadequate to meet the federal EHB standards, it must be supplemented). North Carolina's benchmark is the plan from the largest provider of small group insurance, Blue Cross and Blue Shield of North Carolina.<sup>108</sup> This plan covers primary care and specialist visits related to diabetes, routine foot care for persons with diabetes, and relevant medical devices and supplies for glucose regulation, among other services.<sup>109</sup> In addition to covering certain minimum services, no health insurance provider can deny coverage or raise premiums for individuals with pre-existing health conditions, such as diabetes, except for some grandfathered individual providers.<sup>110</sup>

Since North Carolina has deferred to federal administration of its Marketplace, consumers can compare plans and enroll through Healthcare.gov during a limited enrollment

<sup>v</sup> People who can get insurance from their employer at a cost equal to or below 9.5% of their household income are expected to take the employer's insurance, and cannot get federal subsidies.



period. For 2014 coverage, this period ran from October 1, 2013 to March 31, 2014, and for 2015, the proposed open enrollment period is November 15, 2014 to January 15, 2014.<sup>111</sup> To aid in this process, the Affordable Care Act included grants to North Carolina to set up Navigators, representatives who can answer questions and help patients enroll in the Marketplace.<sup>112</sup> The Navigators are present at county health sites and provide advice to individuals with diabetes about which plans in the Marketplace best suit their needs and how to enroll.

### Medicaid Expansion

North Carolina's Medicaid program covers low-income children and adults with disabilities, as well as parents of dependent children. However, without a disability, a parent of a dependent child can only qualify for Medicaid coverage by earning a household income of under \$472/month for a family of two and \$594 for a family of four (with a \$3000 assets limit).<sup>113</sup> Non-disabled adults without children are ineligible to receive any coverage.<sup>114</sup> These restrictions result in most non-disabled adults having no access to Medicaid even if they are not eligible for other types of insurance coverage.

The Affordable Care Act expands state Medicaid programs to cover all adults under age 65 up to 138% of the Federal Poverty Line, which, in 2014, is around \$16,105 a year for one person and \$32,913 for a family of four.<sup>115</sup> The federal government will pay for 100% of the costs for the first three years; this figure is gradually reduced to 90% for 2019 and thereafter.<sup>116</sup> The U.S. Supreme Court ruled in 2012 that states may choose whether or not to expand their Medicaid programs.<sup>117</sup> As of the 2013 legislative session, North Carolina has decided not to expand Medicaid.<sup>118</sup>

## Chapter 2: Relevant Health Organizations within North Carolina

Each of the following organizations, agencies, or departments helps administer North Carolina's health and public health infrastructures, including programs related to diabetes, nutrition and physical activity. Though this is not an exhaustive list, these departments, agencies, and organizations have contributed considerable feedback to the

report and many will be discussed frequently throughout the remainder of the report.

(In alphabetical order)

**North Carolina Academy of Family Physicians (NCAFP)** has a membership of over 3,400 family physicians, making it the state's largest specialty medical association. NCAFP aims to increase education on the value of family medicine; expand the family medicine workforce to meet the needs of North Carolinians; and promote lower healthcare costs and improved outcomes, among other objectives.<sup>119</sup>

**North Carolina Alliance for Health** is an independent coalition of statewide partners which advocates for policies that promote wellness and reduce the impact of obesity and tobacco. Some of the organization's stated priorities include nutrition, physical education, and built environments.<sup>120</sup>

**North Carolina Area Health Education Centers (AHEC)** work to meet the state's healthcare workforce and delivery needs by providing educational programs and practice support through partnerships with academic institutions, health care agencies and other health-related organizations within the state. Examples of AHEC's activities include provision of continuing education to over 2,000 providers in the state; operation of 11 primary care networks within the state; programs to strengthen the healthcare workforce in rural communities; operation of a digital library system for physicians in AHEC's networks; and education programs to improve diversity and retention rates for the healthcare workforce.<sup>121</sup> AHEC also works on quality improvement in clinical practices, including promotion of "meaningful use" of health information technology. As of January 2014, AHEC's practice support had expanded to 1140 practices, with 45 coaches.<sup>122</sup>

**North Carolina Center for Excellence in Integrated Care** aims to integrate physical and behavioral health care throughout the state's healthcare system. The Center provides training and technical assistance to health care providers and organizations and works with stakeholders across the state to determine best practices in clinical assessment and tools.<sup>123</sup>



**North Carolina Center for Health and Wellness (NCCHW)** is a state hub for the coordination and promotion of healthy living initiatives, including promotion of healthy weights for children and youth, worksite wellness, and facilitation of healthy aging. NCCHW brings together health and wellness providers, develops tools for assessing program outcomes, and promotes applied research collaborations among universities and community-based organizations.<sup>124</sup>

**North Carolina Community Health Centers Association (NCCHCA)** represents North Carolina's 34 Federally Qualified Health Centers (FQHCs) and Look-alikes (LAs) across 64 counties and nearly 180 clinical sites.<sup>125</sup> NCCHCA provides training, technical assistance and education to clinics; seeks funding and support on behalf of clinics to increase access to primary care; and provides assistance to communities seeking to create new or expand existing health centers, among other responsibilities.<sup>126</sup>

**North Carolina Cooperative Extension (NCCE)** is a partnership of counties, the state and the federal government which provides educational programming in five key areas: sustaining agriculture and forestry; environmental protection; maintaining viable communities; developing responsible youth; and developing strong, healthy and safe families. NCCE plays a large role in administering North Carolina's Supplemental Nutrition Education Program (SNAP-Ed) as well as other educational programs. NCCE is based out of North Carolina State University's Department of College of Agriculture and Life Sciences.<sup>127</sup>

**North Carolina Department of Agriculture & Consumer Services (DACCS)** administers a number of programs that both support agriculture and protect consumers. In particular, the Department handles local food, drug, and cosmetic testing, agricultural marketing and promotion, state-run farmers markets, certain environmental issues, and issues related to pesticides, diseases, and seeds.<sup>128</sup>

**North Carolina's Department of Health and Human Services (DHHS)** oversees most of the major government healthcare-related programs within the state, including North Carolina's Medicaid and Medicare programs,

mental health and substance abuse programs, support for the disabled, and welfare programs like Temporary Assistance for Needy Families (TANF) and the Supplemental Nutrition Assistance Program (SNAP).<sup>129</sup> With a little under five billion dollars in funding, DHHS plays a critical role in coordinating and providing many of the services that benefit individuals with diabetes.<sup>130</sup>

› **The Department of Aging and Adult Services (DAAS)** is a part of DHHS that provides community-based services for North Carolina's elderly population, persons with disabilities and their families, including evidence-based healthy aging programs such as the Diabetes Self-Management Program (DSMP); the Chronic Disease Self-Management Program (CDSMP), Tomando Control de su Salud (Spanish CDSMP); Positive Self-Management Program (for HIV/AIDS); Chronic Pain Self-Management; and Arthritis Self-Management Program.<sup>131</sup> DAAS offers these programs through Area Agencies on Aging (AAAs) across the state, who work with partner organizations, including public health, clinical, community-based, and aging organizations as well as state entities such as North Carolina Medicaid.<sup>132</sup>

› **The Division of Medical Assistance (DMA)** is the part of DHHS that administers the state's Medicaid program, runs the Medical Care Advisory Committee that determines which services should be covered by Medicaid, and administers North Carolina's Children's Health Insurance Program (CHIP) for children with financial need who do not qualify under Medicaid.<sup>133</sup>

- **Community Care of North Carolina (CCNC)** is a private, non-profit medical home and case management infrastructure which oversees care coordination for most North Carolina Medicaid beneficiaries as well as others across the state. CCNC consists of a central office, 14 regional networks, and local care managers who work with CCNC-affiliated primary care physician practices to provide care management and coordination for roughly 1.4 million of North Carolina's 1.6 million Medicaid beneficiaries.<sup>134</sup> Under CCNC, providers and networks currently are paid a per-member per-month fee to provide





care management and coordination of patient care across different health care settings.<sup>135</sup> CCNC's 14 networks also develop quality improvement goals based on local needs and resources, while CCNC tracks quality measures across all 14 networks and provides feedback to providers on health outcomes.<sup>136</sup>

› ***The Division of Mental Health, Developmental Disabilities and Substance Abuse Services***

is the part of DHHS that administers and implements the state's public mental health, developmental disability and substance abuse service system.<sup>137</sup>

› ***The Division of Public Health (DPH)*** is an entity within DHHS that coordinates and assists local health departments and departments of public health. It conducts research on public health in North Carolina, proposes policies, provides services, and releases reports on important health issues facing citizens.<sup>138</sup> DPH is one of the main entities responsible for developing the state's diabetes strategic action plan.<sup>139</sup>

- ***Community and Clinical Connections for Prevention and Health Branch (CCCPH)***

is a component of DPH that administers programs to improve diabetes prevention and control; encourage physical activity and nutrition; prevent heart disease and stroke; and promote school health. In the past, the Centers for Disease Control and Prevention (CDC) funded each chronic disease program separately, but for 2013, the CDC combined funding for diabetes; heart disease and stroke prevention; nutrition, physical activity and obesity; and school health. Funding has been reduced from \$4 million annually to a total of \$625,549 (along with \$ 1,442,139 in one-time competitive funding).<sup>140</sup> This means that the former Physical Activity and Nutrition, Diabetes Prevention and Control, Heart Disease and Stroke Prevention Branches, and the School Health Program will now have only one funding source with reduced staff. These individual branches have been combined into the CCCPH.<sup>141</sup>

CCCPH works with partners, including local health departments and

communities, to establish evidence-based programs in these areas. The Branch receives funding from the Centers for Disease Control ("CDC") to work in four domains: epidemiology and surveillance; environmental approaches; health systems interventions; and clinical and community linkages.<sup>142</sup> **The North Carolina Diabetes Advisory Council** is a group of experts who work with this branch to prevent diabetes, reduce morbidity and mortality from diabetes, and eliminate diabetes-related health disparities.

- ***North Carolina Office of Minority Health and Health Disparities***

is a division of DPH that addresses health disparities among racial and ethnic minorities and other underserved populations in North Carolina. The Office's core functions include improvement of the quality and availability of health research and data; providing cultural diversity and interpreter training to health professionals; supporting policies and legislation to improve health in the state; partnership development; and advocacy to reduce health disparities in the state.<sup>143</sup>

› ***The Office of Rural Health and Community Care***

is an Office within DHHS focused on improving access to quality health care for low-income, uninsured, and rural residents and expanding the capacity of rural and safety net providers throughout the state.<sup>144</sup> The Office of Rural Health provides funding and technical support to rural health centers and safety-net providers across the state; works to recruit and retain providers in underserved communities through loan assistance and other programs; and offers programs to help the uninsured, including a medication assistance program and farmworker health program.<sup>145</sup> The Office of Rural Health also works with rural hospitals and providers to strengthen their health information technology, supports a statewide telepsychiatry initiative, and works with CCNC network providers and safety net organizations to provide underserved patients with high quality healthcare via a "medical home" model.<sup>146</sup>

**North Carolina Department of Public Instruction (DPI)** implements the General Assembly's laws on public schools and the State Board of Education's policies. These



include laws and policies related to awareness, management, and treatment of diabetes in children. DPI also directs all public school food programs in the state. It is responsible for ensuring that North Carolina schools meet federal and state requirements with respect to nutrition and physical activity.<sup>147</sup>

**Eat Smart Move More North Carolina** is a statewide movement to increase opportunities for healthy eating and physical activity in communities across the state, with a leadership team of statewide partners from across disciplines. Eat Smart Move More NC develops programs and tools designed for use by diverse groups, including providers, advocates and community leaders to promote healthy eating and physical activity. Eat Smart Move More NC released North Carolina's Obesity Prevention Plan (2013-2020) which serves as a blueprint for the state's obesity prevention efforts.<sup>148</sup>

**North Carolina Health Information Exchange (NC HIE)** operates North Carolina's statewide health information exchange (HIE). The HIE is a standardized electronic system to which providers can submit patient health information. Having a statewide system where providers can exchange health information can help avoid duplication of tests and treatments, identify gaps in medical care, and promote accuracy and reduce medical error. The NC HIE was incorporated in April 2010 and its board of directors consists of health care leaders across the state. NC HIE has several programs. One is the North Carolina Program for Advancing Technology for Health (PATH), which is a collaboration between NC HIE, Blue Cross Blue Shield of North Carolina and Allscripts,<sup>vi</sup> which helps independent primary care and specialty providers and free clinics obtain the technology needed to meet legislative requirements<sup>149</sup> and improve patient care.

NC HIE also collaborates with the Office of Rural Health to establish HIE connectivity to community health centers, rural health centers, local health departments, school based health centers and free clinics, as well as to develop data analytics and business intelligence tools to help safety net providers meet their health information technology needs.<sup>151</sup>

**North Carolina Institute of Medicine (NCIOM)** is an independent, quasi-state agency chartered by the North Carolina General Assembly in 1983 to provide nonpartisan information on health-related issues facing North Carolina's residents. NCIOM convenes task forces and working groups to study these issues and find ways to move the state forward.<sup>152</sup>

**North Carolina Nursing Association (NCNA)** represents all registered nurses in the state of North Carolina in pursuing legislative, educational, practice, and workforce advocacy issues relevant to the nursing profession. Within the NCNA is a Council of Nurse Practitioners which pursues programs and initiatives of importance to nurse practitioners within the state.<sup>153</sup>

**North Carolina Prevention Partners (NCP)** is a statewide nonprofit focused on reducing preventable illness and premature mortality caused by tobacco use, poor nutrition, and obesity. NCP creates web-based assessment and training products to help stakeholders change policies to improve workplaces, schools, hospitals and other entities.

### Chapter 3: Diabetes-related Legislation and Spending in North Carolina

North Carolina's legislature, the North Carolina General Assembly, is divided into two bodies: the Senate, which has 50 members (with tie votes decided by the lieutenant governor) and the House of Representatives, which has 120 members.<sup>154</sup> Both senators and representatives are elected for 2-year terms, with no term limits.<sup>155</sup>

The legislature has a biennial session, meeting in a regular session ("long session") starting January of every odd-numbered year, and reconvening the next year for the "short session." The sessions are not subject to any maximum length restrictions, though the long session normally lasts 6 months and the short session typically runs for 6 weeks the following year.<sup>156</sup> During the short session, legislators can only consider new legislation that affects the budget or bills that passed in the "house of origin" (either the Senate or House of Representatives) during the long session. The governor may call a special session anytime that a specific issue requires immediate action.<sup>157</sup>

vi BCBSNC is the largest health insurer in North Carolina and Allscripts is a company providing integrated electronic health record (HER) platforms.



### EXISTING STATUTES

Several North Carolina statutes specifically direct and enable the Department of Health and Human Services (DHHS) to create plans for helping individuals with diabetes and other chronic conditions.

- § 130A-221 enables DHHS to plan a program of education, service expansion, and direct services to prevent, diagnose, and treat diabetes.
- § 130A-221.1 mandates that the Division of Public Health, as well as the State Health Plan, work together to develop action plans to reduce diabetes incidence, improve care, and control complications. These departments must report every two years to the legislature with detailed information about the financial impact of diabetes; effectiveness of each department's diabetes-related programs; the level of coordination among the departments to treat and prevent diabetes; the development of diabetes action plans; and a detailed budget of resources required to implement the plans. There is no additional funding to assist the departments in fulfilling these duties.
- § 130A-222.5 mandates that the above departments also do the same with chronic disease care more generally. There is no additional funding provided for implementation.

A few statutes mandate that insurers cover basic diabetes-related services, including outpatient self-management education and supplies, though no required quantities are specified:

- § 58-67-74 mandates that HMOs provide and cover these services.
- § 58-51-61 and § 58-65-91 require the same for other health insurers, hospital service plans, and medical service plans.

A set of statutes also provide for diabetes education and management services in schools.

- § 115C-375.3 requires that Boards of Education adopt guidelines for helping students with diabetes manage their care and for training teachers and other staff on how to provide assistance.

- § 115C-12 requires that the Boards have procedures for establishing individualized diabetes care plans for students.
- § 115C-238.29F requires the same for all charter schools.

### PROPOSED LEGISLATION (2013-2014 SESSION)

- S347 would have the Department of Health and Human Services study the possibility of a unified public health system in North Carolina, which includes studying other state models using a variety of indicators, one of which is diabetes prevalence.
- S458 is a Senate resolution supporting measures that increase awareness for the dangers of sodium consumption and promote healthy alternatives, in part because of its risk for diabetes complications.
- S533 would create an interdepartmental group to study the promotion of telemedicine and health homes, both of which could benefit those with diabetes if adopted.
- S535 would provide certain protections for individuals with caretaker responsibilities to take leave from work. The bill notes that individuals with caretaker responsibilities are at a higher risk of diabetes as a result of increased stress.
- H84 would legalize medicinal cannabis, citing diabetes as a "debilitating medical condition" for which it could be prescribed.
- H960 appears to remove the requirement in § 115C-12 that the Boards of Education have procedures for individualized diabetes plans.

### NORTH CAROLINA STATE HEALTHCARE BUDGET

On July 26, 2013, North Carolina Governor McCrory signed into law a \$20.6 billion budget for the 2014 fiscal year and a \$21.0 billion budget for the 2015 fiscal year.<sup>158</sup> This budget increases state spending by 2.5%, but makes deep cuts in certain areas, particularly in public education and natural and economic resources.<sup>159</sup> Though healthcare spending



was not as heavily impacted, the budget does implement significant changes to North Carolina Medicaid and its public healthcare infrastructure more generally.

### **Medicaid Reform Proposal**

The budget established and funded a Medicaid Reform Advisory Group to advise the Division of Medical Assistance (“DMA”) within the DHHS in developing a detailed plan to implement significant Medicaid reforms. The Advisory Group was established to explore proposed reforms to allow competing private managed care organizations to deliver Medicaid services within the state, and to examine ways to improve the predictability, sustainability, and efficiency of Medicaid and its ability to provide whole person care.<sup>160</sup> The group consisted of one member of the House of Representatives; one senator; and three other appointments, including a chairman, named by the governor.<sup>161</sup> After receiving feedback from the Medicaid Reform Advisory Group, DHHS was required to submit the final reform plan to the General Assembly for legislative approval on or before March 17, 2014.<sup>162</sup> The final plan had to include eleven requirements, including an analysis of how the plan would accomplish its goals, the methodology for preferring the reform plan over alternative models, fiscal forecasts for the plan, draft State Plan Amendments and waivers, as well a comparison of the reform plan’s impact on providers and recipients when compared to existing Medicaid.<sup>163</sup>

On February 26, 2014, DHHS released a proposed list of reform recommendations after receiving feedback from the Medicaid Reform Advisory Group and other stakeholders.<sup>164</sup> The main recommendation was that North Carolina Medicaid services for physical health be coordinated through accountable care organizations (ACOs) which share any savings generated with the state, as well as the risk of financial loss if medical expenses exceed set targets. These ACOs would begin operating in 2015, and gradually increase the amount of financial risk they assumed until they were operating at full risk. Another recommendation focused on suggested improvements to the state’s behavioral health system, including enhancing performance measures, adding financial penalties and incentives, increasing

monitoring, and improving integration with Medicaid’s ACOs.<sup>vii</sup> An additional recommendation concerned improvements to the case management system for long-term services and supports.<sup>165</sup> At the time of writing, DHHS was planning to refine the proposal to present before the General Assembly in March for legislative approval.<sup>166</sup>

### **Government Health Spending**

The 2014 healthcare budget includes \$1.5 billion additional dollars in Medicaid funding over the next two years. The budget makes several changes to Medicaid services and payments, including:

- Requiring prior authorization for more than 10 visits a year, with a maximum of 22 visits a year. These limitations do not apply to chronic conditions.<sup>167</sup>
- Increasing patient co-pays up to the allowable federal maximum of \$3.90.<sup>168</sup>
- Reducing state reimbursements based on hospital costs from 80% to 70%.<sup>169</sup>
- Prohibiting automatic inflationary increases for Medicaid services, co-pays, reimbursement rates and fees. This rule does not apply to some entities, including Federally Qualified Health Centers (“FQHCs”), Rural Health Centers, critical access hospitals, Part B and D Premiums, drugs, and Managed Care Organization (“MCO”) capitation payments.<sup>170</sup>
- Replacing reimbursement rates for individual hospitals with new regional base rates for all hospitals within a region. Regions are to be defined through consultation of DHHS with hospitals.<sup>171</sup>

The budget also changes the scope of authority for DHHS in administering Medicaid by:

- Increasing legislative oversight over proposed changes to the Medicaid program. The budget prohibits DHHS from submitting amendments to the Medicaid State Plan for approval from the federal government unless directed to by the General Assembly, and prohibits DHHS from changing any of its services unless it conducts a five-year fiscal impact analysis and gets approval from the Office of State Budget and

vii See Part 2, Chapter 1 for more information about ACOs.



- Management if the impact exceeds \$500,000 in total requirements for Medicaid.<sup>172</sup>
- Granting DHHS the discretion to use funds to administer cost-containment strategies for Medicaid, including requiring more prior authorizations, creating service limits, and changing the definition of “medical necessity.”<sup>173</sup>
- Empowering the DMA (the branch of DHHS which administers Medicaid) to impose prior authorization requirements and other restrictions on access to prescription drugs prescribed to treat mental health conditions.<sup>174</sup>

The enacted budget includes several initiatives which attempt to reform models of healthcare delivery and payment, including:

### **Implementation of Shared Savings and Pay-for-Performance Plans within Medicaid**

- DHHS is required to withhold 3% of Medicaid provider payments for certain services<sup>175</sup> for the 2013-2015 fiscal years to pay physicians who meet incentives to provide “effective and efficient care that results in positive outcomes.”<sup>176</sup> Payments to physicians will begin January 2015. Funds withheld from drug payments to pharmacists will be used to improve coordination of care and provide pay-for-performance incentives for community pharmacies participating in Medicaid.<sup>177</sup>
- DHHS must contract with Community Care of North Carolina (“CCNC”), which manages the care of most Medicaid beneficiaries in the state, to replace its fixed per-member per-month coordination payments to providers with a pay-for-performance scheme, beginning in July 2014, with criteria to be developed by CCNC.<sup>178</sup> [See Part 2, Chapter 1 for more information on CCNC and payment models].

### **Increased Coordination of Care:**

- DHHS must work with CCNC to improve pharmacy management, including medication adherence by patients and protocol compliance by pharmacists. DHHS also must work with CCNC to identify high utilizers of prescription drugs and coordinate with physicians

and pharmacists to improve care management.<sup>179</sup>

- DHHS is mandated to improve the integration of primary and behavioral health care in the Medicaid system by requiring the coordination of information between Medicaid behavioral health providers and CCNC through an initiative entitled Total Care.<sup>180</sup>
- DHHS is required to coordinate health information technology (HIT) policies and programs for the state that meet both privacy and transparency needs,<sup>181</sup> along with replacing the current Medicaid Management Information System<sup>182</sup> and implementing “North Carolina Families Accessing Services through Technology,” which provides eligibility determinations for Medicaid applications on the federally facilitated healthcare marketplace.<sup>183</sup>

### **Reduction of Disparities:**

- The budget requires the Office of Rural Health to submit a plan for implementation of a statewide telepsychiatry program in collaboration with East Carolina University.<sup>184</sup>
- The budget creates a “Community-Focused Eliminating Health Disparities Initiative,” in which the Office of Minority Health will give grants-in-aid to community groups to eliminate disparities. One of the specific focus areas is diabetes.<sup>185</sup> There is also a special directive for DHHS to focus on chronic conditions affecting men.<sup>186</sup>

### **State Purchase of Private Insurance**

- DHHS is required to study opportunities to save state funds through purchase of private health insurance for people currently enrolled in state health programs, including, but not limited to, Medicaid, AIDS Drug Assistance Program, and disability programs. DHHS is required to report its findings to the Joint Legislative Oversight Committee on Health and Human Services by April 1, 2014.<sup>187</sup>

## **GOVERNMENT TAX REFORMS**

During budget negotiations, some legislators tried make up for the lost revenue with changes that may impact individuals with diabetes, such as measures to tax Social



Security payments, prescription drugs and food,<sup>188</sup> or removal of the tax exemption for non-profit organizations, including hospitals.<sup>189</sup> These attempts were not successful during the 2013 legislative session. However, the legislature has imposed several changes which may affect state revenue including:<sup>190</sup>

- A shift of the personal income tax from a three-tiered system of 6, 7 and 7.75% based on income to a flat rate of 5.8% in 2014 and 5.75% thereafter.
- Elimination of the personal exemption and earned income tax credit (though the child tax credit is increased for the poorest population).
- Elimination of deductions for retirement income, the North Carolina college savings plan, and personal business income. Individuals who want tax credits for child care, permanent and total disability, or education expenses, among other expenses, must now itemize their deductions rather than receiving credits.
- Reduction of the corporate tax to 6% in 2014, 5% in 2015, and potentially as low as 3% in 2017. Elimination of the estate tax.
- Capping of the state gas tax at 37.5 cents per gallon.
- Elimination of a number of sales tax exemptions, including for manufactured and modular homes, meals sold in college cafeterias, and back-to-school sales tax holidays.





# PART 2: IMPROVING NORTH CAROLINA'S HEALTHCARE SYSTEM TO TREAT AND PREVENT DIABETES

Proper treatment of type 2 diabetes requires provision of routine primary and specialty care and screenings, as well as long-term self-management and healthy diet and exercise. This care requires access to health insurance, coordinated healthcare services, and proper disease management, including accessible education programs and access to necessary medical supplies. Part 2 addresses the healthcare issues most critical to improving diabetes treatment and prevention in North Carolina, including the need to expand access to necessary medical and self-management services, improve insurance reimbursement, and better coordinate medical care among healthcare and community-based providers.

Chapter 1 provides a framework for effective diabetes care and treatment within the

state, as recommended by North Carolina stakeholders as well as national organizations such as the Centers for Disease Control and Prevention (CDC). The section emphasizes the need for the further development of collaborative entities across the state to improve diabetes treatment and prevention.<sup>viii</sup> Chapter 2 examines North Carolina's successes and challenges in providing necessary healthcare services for its residents living with type 2 diabetes, and offers recommendations for how to improve access to vital services. Chapter 3 discusses existing state successes and challenges in enhancing patient access to needed health professionals, as well as opportunities to reduce or eliminate provider shortages in the state.

viii While Part 2 as a whole focuses largely on issues that implicate the healthcare and public health systems, access to healthy food and physical activity—other essential needs—is examined in detail within Part 3 of the report.

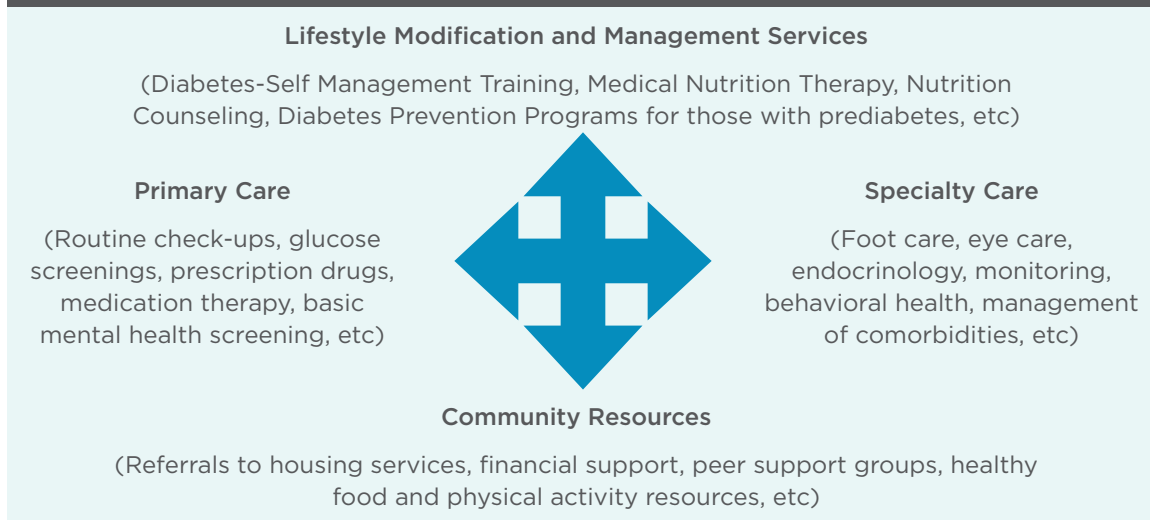


## Chapter 1: Building a Whole-Person Model of Diabetes Care

Necessary medical care for type 2 diabetes is complex, involving routine blood glucose screenings; screenings for nephropathy, retinopathy, and neuropathy; an annual comprehensive foot examination; and behavioral health care if needed.<sup>191</sup> Successful self-management requires programs to educate and support patients, as well as

provide continual follow-up education and support. Buy-in from government, community-based organizations, and other actors across the state is also a necessity. People with diabetes require not just medical care and self-management services, but also access to community-based resources, ranging from housing services to peer support programs. Chart 1 below is a visual depiction of needed services.

**CHART 1: WHOLE-PERSON PATIENT CENTERED CARE**





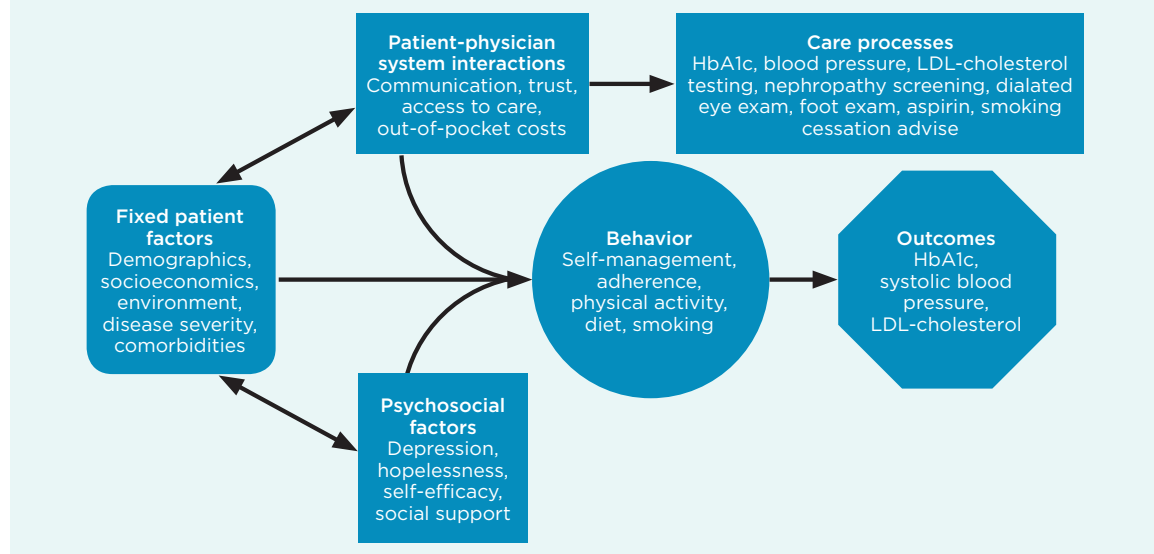


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These services should take place within an integrated system which takes into account all relevant factors, such as medical, socioeconomic and psychosocial indicators, as well as the specific processes used to produce

desired medical outcomes for people with type 2 diabetes. By necessity, this must include a comprehensive focus on medical, behavioral and psychosocial care, as depicted in Chart 2 below:

**CHART 2: PROCESSES FOR WHOLE-PERSON CARE**



Source: Centers for Disease Control and Prevention, *Translating Research Into Action for Diabetes (TRIAD) Fact Sheet, 2009*, available at <http://www.cdc.gov/diabetes/projects/research.htm>

Providing all of these components of diabetes care and treatment requires coordination among diverse actors and organizations within the health and public health systems. The overarching philosophy of care coordination is often called the “Triple Aim,” which refers to the three goals all programs share: improving the quality and patient experience of care, improving population health outcomes, and reducing costs.<sup>192</sup> The central idea of the Triple Aim is for all members of a health system to share responsibility for these three goals, rather than having responsibility diffused across multiple individuals and organizations. Stakeholders across North Carolina have identified increased “Triple Aim” coordination as critical to achieving sustained success in improving treatment and prevention of type 2 diabetes.

Coordination of all necessary elements of diabetes care is difficult to achieve within the fee-for-service system that currently dominates American healthcare. Under fee-for-service, the provider is paid for each service he or she provides. Fee-for-service generally rewards providers for higher volumes

of services, and often does not pay for time providers spend communicating with each other, time spent by physicians or other providers in educating patients, or time spent referring patients to needed medical and community-based services, including vital nutrition and education programs. Because reimbursement within fee-for-service focuses primarily on discrete services, it can act as a disincentive to promoting flexibility and innovation across the state.

### COORDINATED CARE MODELS IN NORTH CAROLINA

Across North Carolina, there is widespread agreement that alternative models of care delivery and financing are needed, to either coexist with or replace fee-for-service. In particular, shared savings models which incentivize physicians to improve quality of care while reducing costs are being promoted. Compared to many other states, North Carolina has a long history of developing care and financing models which emphasize increased coordination of care and provider communication across disciplines. To ground the discussion of these innovations,



below are brief explanations of some of the major emerging models of care coordination and financing which operate currently in North Carolina and across the country.

### Patient-Centered Medical Homes

Primary care offices can restructure their medical practices to improve care delivery through developing patient-centered-care coordination across providers and settings, usually using health information technology to ensure all providers have access to comprehensive patient information. The predominant example of this model is the patient-centered medical home (PCMH), wherein a patient has a “home,” typically his primary care provider, that works to ensure that his care is coordinated across all the different providers he sees, including specialists located outside of the primary care practice.<sup>193</sup>

The Agency for Healthcare Research and Quality of the US Department of Health and Human Services (“AHRQ”) describes Patient Centered Medical Homes as having five main functions:<sup>194</sup>

1. **Comprehensive Care:** providing patients with all of the services they need including physical and mental health services, acute and chronic care services, and prevention and wellness.
2. **Patient-Centered:** the system is oriented to whole-person medical care – understanding each patient’s individual needs and challenges.
3. **Coordinated Care:** open communication across providers and systems of different avenues of care, including hospitals, home health care, community services, and specialty care.
4. **Accessible Services:** services are easily accessible and use alternative methods of communication such as telephone or email based on urgency and the patient’s preferences.
5. **Quality and Safety:** a commitment to quality demonstrated by incorporating evidence based models of care, performance measurement, and population management.<sup>195</sup>

These five domains are the core of a care model that is fundamentally different from the

traditional fragmented approach. Providers must communicate with one another, both within and across practices, to deliver care that meets patients’ individual needs. For example, if a patient with diabetes is hospitalized and then stabilized and released from the hospital, the care team may call or visit the patient to schedule a primary care appointment immediately afterwards. Providers must also work with the patient to manage his/her health within the patient’s own life. For example, a member of the medical home team, such as a community health worker, may visit a diabetes patient at home and meet with the whole family to discuss how to incorporate healthier foods into the family diet, taking into account culturally-based food preferences. It is this capacity for preventive care and true coordination that led one PATHS partner to say that medical homes are the best thing to happen to health care in twenty years.<sup>196</sup>

The National Committee for Quality Assurance (NCQA) is the primary entity that certifies that a medical practice qualifies as a PCMH. There are nine standards that practices must meet in order to become certified by NCQA. These nine standards map onto the five domains identified by AHRQ:<sup>197</sup>

- (1) Care Management and (2) Self-Management Support—map onto AHRQ’s Patient-Centered and Comprehensive Care domains;
- (3) Patient Tracking and Registry Functions; (4) Electronic Prescribing; (5) Test Tracking; and (6) Referral Tracking—map onto AHRQ’s Coordinated Care domains;
- (7) Access and Communication—maps onto AHRQ’s Accessible Services domain; and
- (8) Performance Reporting and Improvement; and (9) Advanced Electronic Communications—map onto AHRQ’s Quality and Safety domain.

To meet the NCQA standards and succeed in AHRQ’s five domains, practices require health information technology, a strong primary care workforce, and funding mechanisms to finance the extra services that come with the PCMH model.<sup>198</sup>

As of April 2013, 461 North Carolina practices were NCQA-recognized PCMH practices,



including 332 practices within Community Care of North Carolina (CCNC) Medicaid networks.<sup>199</sup> CCNC provides support to practices seeking to become PCMHs through its PCMH Resource Center.<sup>200</sup> Among the most significant challenges in becoming a PCMH are the development of electronic health records (EHRs) and ensuring adequate staffing, including both healthcare professionals and administrative staff.<sup>201</sup>

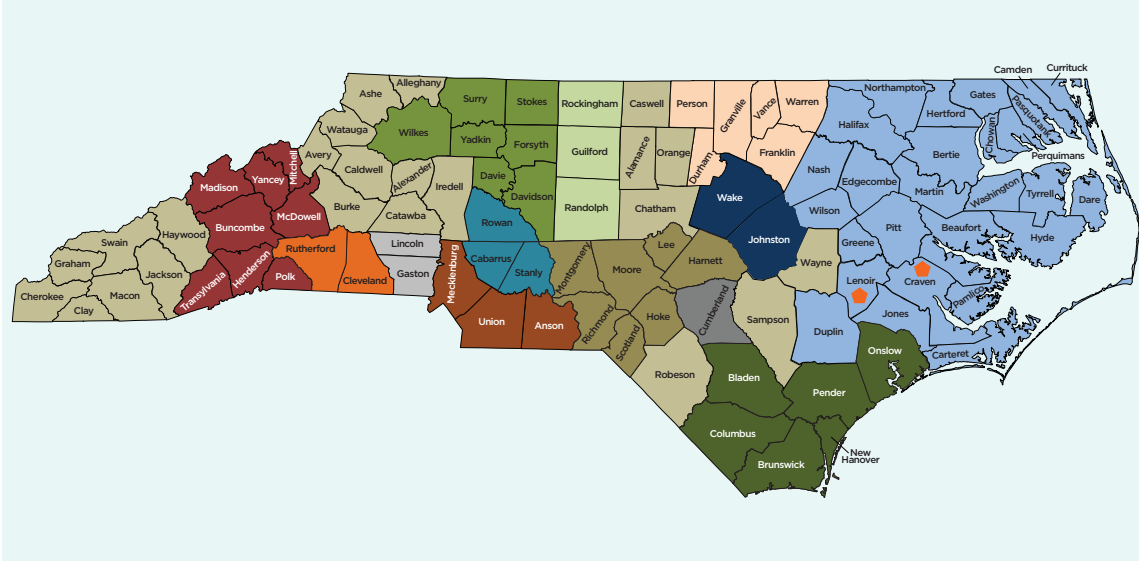
### *Profile: Patient-Centered Medical Homes in North Carolina Medicaid*

North Carolina Medicaid has been a primary innovator of the PCMH, using this approach to help patients navigate a fragmented healthcare system and give them easy access to comprehensive, coordinated care. North Carolina's Medicaid PCMHs are managed by CCNC, a public-private partnership that provides support to networks of medical professionals, hospitals, social service agencies, and other organizations that treat Medicaid patients. The aim of these partnerships is to provide coordinated, whole-

person care to Medicaid patients.<sup>202</sup> CCNC is divided into 14 provider networks in the state (see Figure 1)<sup>203</sup> comprised of physicians, nurses, pharmacists, hospitals, county health departments, and social service organizations.<sup>204</sup> Some networks have expanded to cover patients who are dually eligible for both Medicaid and Medicare and the uninsured populations in North Carolina.<sup>205</sup> In total, CCNC covers approximately 1.4 million of the 1.6 million Medicaid recipients in the state, along with over 70,000 low-income uninsured residents.<sup>206</sup>

Within the 14 networks, as depicted in Figure 1 below, each patient is assigned a primary care provider that serves as his "medical home." Primary care providers are responsible for providing preventive, acute, and chronic care. They are also responsible for referring patients to specialists and other services within the network, operating as the point of entry to a wide array of medical and non-medical services.<sup>207</sup>

**FIGURE 1: THE NETWORKS OF CCNC**



CCNC emphasizes the coordination of care for patients considered "high-risk," often those with chronic illnesses, like diabetes, and provides them with case managers. Case managers are embedded into the care networks, and assist providers by providing additional disease education, helping with follow-up, assisting with coordinating additional services, and collecting data on

health outcome measures.<sup>208</sup> Identifying high-risk patients early and providing them with proper management is essential not only for better health outcomes but also cost savings. Focusing on high-frequency utilizers of the healthcare system and helping patients reduce avoidable complications has helped save money for the state by reducing costs associated with emergency room visits and



hospitalizations. Several analyses have shown significant cost-savings associated with CCNC, with one analysis showing a cost savings to North Carolina Medicaid of nearly \$1.5 billion between 2007 and 2009.<sup>209</sup>

### Diabetes Programs within Medicaid

Care management can be especially effective for individuals with chronic conditions, and the proper management of diabetes is a significant part of North Carolina Medicaid's savings. In the early 2000s, the prevalence of diabetes and its poor management in North Carolina led CCNC to develop a "Diabetes Disease Management Program" to improve the quality of care received by Medicaid beneficiaries with diabetes. Through this initiative, CCNC developed "Diabetes Teams" to work with providers and help patients set goals for improving their condition, educate patients on self-management, help patients with follow-up, and work with providers to create standards for diagnosis and best practices.<sup>210</sup> CCNC's management helped Medicaid beneficiaries with diabetes avoid some of the serious consequences of mismanaged diabetes, including amputations, kidney damage, blindness, and other conditions that would lead to hospitalizations. These improved outcomes are estimated to have helped the state save over \$2 million in health costs from 2000 to 2002.<sup>211</sup>

### Use of Data

CCNC has utilized its electronic medical system to identify high-risk populations and individuals and analyze data from chart reviews to share this information with providers and help them address their gaps in care. In conjunction with the Centers for Medicare and Medicaid Services (CMS), the state Department of Health and Human Services (DHHS), and the Office of Rural Health, CCNC has maintained a highly developed electronic data exchange

infrastructure known as its "Informatics Center."<sup>212</sup> This incorporates a number of data feeds including Medicaid claims information, data from provider portals and care manager reports, lab results, hospital information from some hospitals in North Carolina, and pharmacy data.<sup>213</sup> This system is important in monitoring the quality of and access to care, and it allows CCNC to provide detailed, comprehensive reports that are used to provide feedback to patients, providers, and networks. This is essential to targeting certain groups and individuals that are particularly at-risk and helping to facilitate the necessary steps to improve care.

This system is particularly helpful for people with diabetes because their condition requires careful monitoring to avoid serious complications. For example, the informatics system would allow CCNC to see that a certain provider in the North Piedmont network has a low foot exam rate. In this situation, CCNC would work with providers in that network to identify podiatrists in the community that could help increase the rates of foot exams among people with diabetes within the network.

Similarly, the care managers within networks are able to use the data system to identify at-risk patients. For example, through a screening of the system, care managers can identify people with diabetes that have not had their A1C or blood glucose levels tested recently and help them identify available resources to have these measures tested.

A CCNC report showed that over 70% of its population with diabetes maintained A1Cs less than 9.0, compared with 55% of a national cohort of Medicaid beneficiaries with diabetes. CCNC patients with diabetes also had better blood pressure control and cholesterol levels.<sup>214</sup> These results illustrate the value of using a care management system to help people with diabetes manage their condition.



### Medicaid Health Homes

The Medicaid Health Home Program in the ACA provides enhanced federal matching funds for a limited time for states to provide coordinated care services for people living with chronic conditions. In the first two years that health homes operate, the federal government will pay 90% of the program's costs. The Medicaid Health Home model requires that health homes provide six core services geared towards improving care for people with chronic illnesses. These services include: comprehensive case management; care coordination; health promotion; comprehensive transitional care and follow-up; patient and family support; and referrals to community and social support services.

The ACA allows states to include Medicaid beneficiaries in their health home models if they a) have two or more chronic conditions, b) have one chronic disease and are at risk of developing a second, or c) have a serious or persistent mental illness. Having diabetes or being overweight are both qualifying conditions under the ACA, so states can choose to include patients with these conditions in their state health home models.

North Carolina began operating its Medicaid Health Home program in May 2012 after receiving approval from the Centers for Medicare and Medicaid Services. Medicaid beneficiaries with diabetes qualify to be in a Health Home simply on the basis of their single diagnosis, as North Carolina's plan considers diabetes to automatically place a patient at risk of another chronic condition. Other relevant conditions covered include heart disease, BMI over 25, chronic disease of the alimentary system, and chronic endocrine and metabolic disease. Women with gestational diabetes qualify if they also have an eligible chronic condition. North Carolina's Medicaid Health Home option is delivered through CCNC's existing Medicaid infrastructure. CCNC plans to continue operating the Medicaid Health Homes after the enhanced funding has expired, using its state funding to provide the health home services for the eligible chronically ill population.

*Sources: Health Homes, Medicaid.gov, <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Support/Integrating-Care/Health-Homes/Health-Homes.html>; Approved State Plan Amendment for Medicaid Health Home: North Carolina, <http://www.ncdhs.gov/dma/plan/HealthHomeApprovedSPA-Effective10012011.pdf>; Communications with CCNC officials, 2013, conducted by Maggie Morgan and Tiffany Lopinsky*

## FINANCING METHODOLOGIES

### Case management fees

The PCMH model can be financed within the existing fee-for-service payment system by adding a per-member-per-month payment (capitated payment) used for case management and coordination of a patient's care. For example, under this system, if Patient A has diabetes as well as depression, the mental health provider and primary care physician will still receive reimbursements for the specific services, such as counseling sessions and primary care, while a fee will be provided to coordinate the patient's physical and behavioral healthcare. CCNC is a prominent example of this model. As of March 2014, the medical services provided by doctors within CCNC networks are provided on a fee-for-service basis, but the coordination of care services are financed through a per-member-per-month payment plan. For example, services such as a visit to an endocrinologist, a retinal screening, or a surgery would be

paid for as separate reimbursements to the provider. Simultaneously, CCNC is paid a certain amount for each individual beneficiary every month to manage his care and help patients navigate the healthcare system.

Case management fees can be tiered, with PCMHs providing care to patients with more advanced conditions, or having higher capacity to treat certain illnesses, receiving higher payments. Pay-for-performance incentives can also be added, to reward providers within PCMHs who achieve improved health outcomes for their patients.

### Bundled Payments

Another payment approach is a bundled payment system, where the insurance plan pays a fixed amount, usually adjusted for the expected costs of a particular patient, for all the care the person will get either for a given period of time or for the duration of a particular treatment plan. These payments are intended to cover all care for a given period





of time or episode of care, not only case management and care coordination services. The payments bundled for a given period of time, such as one year, are called global bundled payments, while those designated for a particular treatment plan are called episodic bundled payments. Both types of bundled payment can help incentivize providers to coordinate care and invest time in case management activities that improve outcomes and prevent unnecessary utilization, such as hospitalizations.

The details of bundled payments can vary considerably, particularly regarding how the payment amount should be determined. Risk adjustment is a crucial element of this because if providers do not receive sufficient payment for more expensive patients, there will be a real incentive to avoid taking on such patients. This would be very damaging for patients living with type 2 diabetes. At the same time, payments that far exceed the real cost of caring for patients will fail to prevent unnecessary utilization. For patients with diabetes, “preventing unnecessary utilization” means keeping patients out of the hospital by managing care effectively to control blood glucose levels. Risk adjustment is a very technical matter that this report does not address in detail. However, payers and providers should work together to design payment models that are designed to accurately reflect patient costs.

#### **Accountable Care Organizations/Shared Savings Models**

One type of pay-for-performance model is the Accountable Care Organization (“ACO”). An ACO is a group of healthcare providers who receive payment based on patient outcomes and cost-savings.<sup>215</sup> The model has become more common and can be found in Medicare, Medicaid, and the private insurance market.

The ACA provides for an ACO program within Medicare. Known as the Shared Savings Program, this new model keeps the existing fee-for-service structure of Medicare payment while rewarding groups of providers for reducing healthcare costs by splitting any savings between the organization and Medicare.<sup>216</sup> Medicare ACOs must be incorporated entities that are initiated by providers (e.g., hospitals or physician groups), and must include healthcare professionals.<sup>217</sup>

To participate, provider groups must agree to be accountable for the care—including quality and cost—of any Medicare fee-for-service beneficiaries assigned to them. The patient assignment system is based on where a beneficiary receives most of his or her primary care.<sup>218</sup> ACOs also must agree to participate for at least three years and have enough primary care providers to accommodate at least 5,000 beneficiaries.<sup>219</sup> They must have a mechanism for shared governance and a legal structure to allow them to receive and distribute payments.<sup>220</sup> Importantly, ACOs must also meet a set of criteria relating to “patient-centeredness.”<sup>221</sup> These criteria include having a survey to evaluate beneficiary experience of care, mechanisms to coordinate care, individualized care plans, and population health needs assessments, as well as an infrastructure to report on cost and quality within the ACO.<sup>222</sup>

Medicare ACOs can choose to only have a chance to gain savings, or to also share in the risk if costs go up instead of down.<sup>223</sup> If an ACO agrees to share in the risk, it is eligible for a higher share of any savings.<sup>224</sup> The determination of whether costs have gone up or down will be based on the actual costs for the beneficiaries assigned to the ACO compared with the expected costs.<sup>225</sup> There are 33 quality measures for which ACOs will need to report measures.<sup>226</sup> ACOs that perform better on these measures will be rewarded with higher sharing rates for the savings they achieve.<sup>227</sup>

ACOs are intended to provide financial incentives for providers to work together to better coordinate care and lower costs while maintaining quality. For individuals with diabetes, the development of ACOs mean that groups of providers have incentives to work together to manage chronic illness more effectively and promote preventive care, helping chronically ill patients enjoy more efficient services and better overall health.

Currently a number of Medicare ACOs exist in North Carolina.<sup>228</sup> North Carolina has also seen the development of ACOs established by partnerships between private insurers and doctors and hospitals, such as Blue Cross Blue Shield North Carolina’s partnership with Key Physicians and Wilmington Health; Cigna’s partnerships with Key Physicians and



Cornerstone Health Care; and United Health Care's partnership with Cornerstone Health Care.<sup>229</sup>

North Carolina's Medicaid program has also sought to establish accountable care initiatives. One proposed program is the "Dual Eligible Initiative." This initiative would increase payments to Medicaid providers who meet certain performance metrics while reducing costs in caring for those persons eligible for both Medicaid and Medicare, a high-need, expensive population.<sup>230</sup> North Carolina has received a planning grant from the Centers for Medicare and Medicaid Innovation (CMMI) to develop a draft implementation plan for this initiative.<sup>231</sup> Another program operating in North Carolina is the Child Health Accountable Care Collaborative, which began in July 2012, also with funding by CMMI. This program provides enhanced care coordination to children with complex chronic illnesses served through Medicaid and the Children's Health Insurance Program (CHIP). This enhanced coordination is accomplished through funding for pediatric care managers to work in hospitals and specialty clinics to coordinate care between primary care providers and pediatric specialists.<sup>232</sup>

North Carolina's current budget also mandates that DHHS contract with CCNC to replace its fixed per-member per-month coordination payments to Medicaid providers with a pay-for-performance system, beginning in July 2014, with criteria to be developed by CCNC.<sup>233</sup> As of February 2014, DHHS has recommended that North Carolina Medicaid services for physical health be coordinated through ACOs which share any savings generated with the state, as well as the risk of financial loss if medical expenses exceed set targets. These ACOs would begin operating in 2015, and gradually increase the amount of financial risk they assumed until they were operating at full risk.<sup>234</sup>

## Chapter 2: Increasing Access to Needed Services for People with Diabetes

Diabetes management is complex and can be difficult for patients, particularly those who lack regular and dependable access to healthcare. Even for the fully insured, it can be challenging to make major changes in lifestyle

and adhere strictly to medication and blood glucose testing regimes. This section examines North Carolina's successes and challenges in providing necessary healthcare services for its residents living with type 2 diabetes, and offers recommendations for how to improve access to vital services, ranging from diabetes self-management to behavioral health treatment. Services discussed include:

- Diabetes Self-Management Training
- Diabetes Prevention Programs
- Durable Medical Equipment, Supplies and Insulin
- Screenings (Diabetes, Retinal, etc)
- Behavioral Health Services
- Transportation Assistance
- Telemedicine Services

Though this is not an exhaustive list of needed services, North Carolina stakeholders identified these services as in particular need of policy reform. Below are diabetes policy goals highlighted as especially important by stakeholders interviewed for this report.

### GOAL #1: IMPROVE ACCESS TO DIABETES SELF MANAGEMENT TRAINING

Lifestyle modification therapy for people living with or at risk for type 2 diabetes has been shown to provide greater health benefits compared to pharmacological treatment alone, and obtains results at a reasonable cost.<sup>235</sup> One important study, the Look AHEAD study, followed 5,000 overweight people with type 2 diabetes from 2001 through 2012.<sup>236</sup> The intervention group completed an intensive lifestyle intervention conducted by a multidisciplinary team including medical professionals and lay health coaches, often from the same ethnic group as the participants. The program included group educational classes with weigh-ins, dramatic diet modification, increase in physical activity, use of food journals, and optional follow-up programs, among other services.<sup>237</sup> The control group, meanwhile, received an enhanced standard regimen including diabetes support and education. Ultimately, participants in the Look AHEAD study who received these intensive lifestyle interventions lost a greater percentage of body weight and achieved





greater improvements in A1C levels, physical fitness, blood pressure, and cholesterol levels compared to the control group.<sup>238</sup>

### What are Diabetes Self-Management Programs?

In North Carolina, three of the primary diabetes education trainings that promote needed lifestyle modification are Diabetes Self-Management Education (DSME); Stanford's Diabetes Self-Management Program (DSMP); and Medical Nutrition Therapy (MNT). These outpatient interventions instruct patients on proper diabetes self-care, management, and healthy living. The programs will be identified individually by the acronyms above and collectively as diabetes self-management training (DSMT) throughout the report.

### Diabetes Self-Management Education

DSME programs focus on promoting broad behavioral change to slow the progression of diabetes and improve health outcomes. The American Association of Diabetes Educators (AADE) and American Diabetes Association (ADA) have identified seven behaviors essential to diabetes self-management. These include:

- Healthy Eating;
- Physical Activity;
- Taking Medications;
- Monitoring;
- Diabetes Self-Care Related Problem-Solving;
- Reducing Risk of Acute and Chronic Complications; and
- Psychosocial Aspects of Living with Diabetes.<sup>239</sup>

DSME programs meeting AADE or ADA requirements can receive the formal certification necessary to obtain reimbursement from Medicare and many state Medicaid programs.<sup>240</sup> DSME is typically provided by a multidisciplinary team, with registered nurses, registered dietitians and pharmacists being the most common health professionals serving as DSME instructors.<sup>241</sup> Research supports the combination of these three professionals on a DSME team as maximizing effectiveness.<sup>242</sup> However, studies also show the value of having non-

professionals such as community health workers on DSME teams, as they have been shown to enhance health outcomes of people with diabetes, particularly high risk patients suffering from poor glycemic control, and issues with self-management and medication adherence.<sup>243</sup>

### Stanford Diabetes Self Management Program (DSMP) Model

Like DSME, the Stanford Diabetes Self-Management Program (DSMP) seeks to help people with diabetes manage their disease in order to prevent avoidable complications. The DSMP model was developed initially for Spanish speakers; in 2008, the Stanford Patient Education Research Center conducted a randomized, controlled study to test the workshop's effectiveness for English-speakers. The study found that after six months, participants showed significant improvements in depression, healthy eating, hypoglycemia symptoms, communication with physicians, reading food labels, and self-efficacy.<sup>244</sup> After 12 months of participation, they continued to show improvements in depression, communication with physicians, healthy eating, and self-efficacy.<sup>245</sup> In some cases, the program has also shown to be effective in improving A1C levels.<sup>246</sup>

DSMP places significant emphasis on psychosocial elements of diabetes in addition to the clinical applications.<sup>247</sup> DSMP is administered through two and a half hour workshops every week for six weeks in community settings such as churches, libraries, hospitals, or community centers.<sup>248</sup> The workshop is facilitated by two trained laypersons, at least one of whom has diabetes. The laypersons are guided by a highly detailed manual that has been reviewed by physicians, dietitians, and diabetes educators.<sup>249</sup>

The curriculum for the workshops includes subject areas such as dealing with clinical symptoms of diabetes, addressing emotional problems including depression and frustration, exercise and diet, appropriate use of medication, and working with health care providers.<sup>250</sup> In North Carolina, DSMP programs are managed under the Division of Aging and Adult Services.<sup>251</sup>



### Medical Nutrition Therapy

MNT focuses specifically on improving a patient's nutritional self-care, involving an in-depth assessment of the individual's unique needs and long-term follow-up care. The primary goals of MNT are to promote healthy food choices and physical activity; encourage moderate weight loss, safe blood sugar, lipid and lipoprotein, and blood pressure levels; and slow the rate of complications.<sup>252</sup> Because MNT services are given one-on-one with a dietitian, MNT can address individual needs and take into account personal and cultural preferences, dietary restrictions, and willingness to make difficult lifestyle changes.<sup>253</sup> Several clinical trials have provided convincing evidence that MNT implemented by registered dietitians is effective in improving key metabolic levels and behavior.<sup>254</sup> These trials have typically referred to a set of practice guidelines developed by researchers at the International Diabetes Center in Minneapolis, Minnesota.<sup>255</sup> These guidelines require an initial visit of at least one to one and a half hours, two individual follow-up visits within two and four weeks respectively, and ongoing follow-up visits once every six to twelve months.<sup>256</sup> Each visit should be followed by communication with the other members of the patient's care team.<sup>257</sup>

The ADA has recognized that MNT is important to prevent and manage diabetes and to slow the rate of development of diabetes complications.<sup>258</sup> The ADA recommends that individuals with all stages of diabetes, including prediabetes, should receive "individualized MNT as needed to achieve treatment goals."<sup>259</sup>

### Cost-effectiveness of Diabetes Education Programs

In 2009, the AADE conducted a meta-analysis of studies examining the cost-effectiveness of DSMT. DSMT in this review referred not simply to formally accredited DSMT programs, but diabetes education programs provided in other settings, both by diabetes educators and

other professionals.<sup>260</sup> The AADE determined that 18 of the 26 studies found that DSMT was associated with decreased costs, cost-savings, cost-effectiveness or positive return on investment.<sup>261</sup> An actuarial study of more than 6 million people with private insurance or Medicare also found that DSMT saves money when compared to a patient's typical care.<sup>262</sup> Though the actuarial study found that pharmaceutical costs were higher for people receiving DSMT, this was due to strong patient compliance with recommendations, and these costs were offset by decreased use of expensive inpatient care.<sup>263</sup> Diabetes education appears to be particularly cost-effective when given to patients with the poorest glycemic control.<sup>264</sup>

In 2011, the AADE examined the cost-effectiveness of formal accredited and recognized DSME programs (either through AADE or ADA's accreditation programs) provided by diabetes educators.<sup>ix,265</sup> The AADE looked at commercial and Medicare payer-derived claims data.<sup>266</sup> This study found that people with diabetes who participated in accredited/recognized DSME programs provided by diabetes educators were likely to demonstrate lower cost patterns in comparison to a control group of people with diabetes who did not participate in these programs.<sup>267</sup> The study attributed the lower costs to reduced expenses for inpatient care for participants in diabetes education programs, though these participants showed higher outpatient and pharmacy costs when compared to those not participating in these programs. The study also found that people with diabetes who receive multiple episodes of DSME show higher compliance with treatment and pharmaceutical recommendations and therefore incur lower costs.<sup>268</sup> These results indicate that people in diabetes education programs end up seeking more primary preventive care and less acute care, which supports estimates that increased use of DSME will result in long-term cost reductions for diabetes-related care.<sup>269</sup>

ix The study included DSME programs based on 2 billing codes (G0108 and G0109).



### Federal Standard: Medicare's coverage of DSME and MNT

Under Medicare Part B, Medicare beneficiaries diagnosed with diabetes receive coverage for DSME. This includes 10 hours of training in the first year – 1 hour of individualized assessment and 9 hours of group classes, as well as two hours of follow-up training each year. The program must be accredited by the ADA, AADE, or the Indian Health Service.

Medicare Part B also covers MNT for individuals with diabetes or renal disease meeting specific blood glucose levels. Medicare MNT consists of comprehensive clinical care by registered dietitians and nutrition professionals who are required to follow national protocols. The MNT program covers a maximum of 3 hours of services in the first 12 months including an initial assessment, counseling, and assessment of lifestyle factors, and 2 hours per year thereafter for follow-up visits. This coverage meets the minimum recommendations developed by researchers at the International Diabetes Center in Minneapolis, MN, as outlined above.

Sources: *Medicare's Coverage of Diabetes Supplies & Services*, CENTERS FOR MEDICARE AND MEDICAID SERVICES, at 18, 21; <http://www.medicare.gov/Pubs/pdf/11022.pdf>; Medicare Benefit Policy Manual, CENTERS FOR MEDICARE AND MEDICAID SERVICES, ch.15 § 300.2; Ann Albright et al., *Medicare Diabetes Self-Management Training and Medical Nutrition Therapy Benefits: New Web Resources Offer Key Information*, 15 *DIABETES SPECTRUM* 272, 272 (2002) available at <http://spectrum.diabetesjournals.org/content/15/4/272.full>; Arlene Monk et al., *Practice Guidelines For Medical Nutrition Therapy Provided by Dietitians For Persons With Non-Insulin-Dependent Diabetes Mellitus*, 95 *J. AM. DIET. ASSOC.* 999 (1995).

### North Carolina Highlights: Diabetes Self-Management Training Programs

Below are some examples of North Carolina's policy successes relating to DSMT, as highlighted by stakeholders across the state.

### 1. North Carolina Covers DSME for People with Diabetes

#### Medicaid Coverage Requirements

North Carolina Medicaid beneficiaries diagnosed with diabetes are eligible to receive DSME taught by a defined list of practitioners, including registered nurses, registered dietitians, pharmacists and certified diabetes educators.<sup>270</sup> These services include an assessment of the beneficiary's educational needs and behavioral intervention to help the patient achieve his or her goals.<sup>271</sup> The program must be recognized by the ADA and meet its guidelines, which require a particular written curriculum and at least one nurse, dietitian or pharmacist on the management team.<sup>272</sup> Non-physicians on DSME teams, including nurse practitioners, registered nurses, registered dietitians, pharmacists, and certified diabetes educators, must be under the supervision of a physician in order to bill for DSME in Medicaid.<sup>273</sup> Up to 10 hours are covered within the first year, either in individual or group counseling. In subsequent years, a maximum of two hours of training is covered per year, similar coverage to that offered by Medicare.<sup>274</sup>

#### Required DSME Coverage for Private Insurers

North Carolina requires that all insurers cover DSME for persons diagnosed with diabetes.<sup>275</sup> DSME services may be offered by a physician or health care professional designated by the physician, and the insurer determines who may be reimbursed for these services.<sup>276</sup> The DSME programs covered by private insurers must also meet ADA guidelines.<sup>277</sup> BCBSNC was mentioned by some interviewees as a model program. It has three programs for outpatient diabetes self-management, including a basic program (three to six hours of counseling), a comprehensive program (twelve to sixteen hours), and follow-up review, with two follow-ups during the first year after completion, followed by a minimum of two hours each subsequent year.<sup>278</sup>

### 2. North Carolina Has Expanded its Medicaid Coverage of MNT

North Carolina Medicaid has recently expanded its coverage of MNT to serve a greater number of North Carolinians. Medicaid previously only covered MNT for pre-and post-partum women and children through 20 years of age.<sup>279</sup> However, the state recently



expanded its coverage to include all people with diabetes.<sup>280</sup> The Medicaid program requires that these services be face-to-face between the individual and her caretaker and provided by a dietician licensed by the North Carolina Board of Dietetics/Nutrition or a registered dietician.<sup>281</sup> Patients are limited to 5 hours of service per year, which meets the minimum guidelines established by the International Diabetes Center.<sup>282</sup>

### 3. North Carolina Has Supported its Health Departments in Providing Diabetes Education

The ADA Diabetes Education Recognition Program recognizes health centers that meet certain standards for administering diabetes education in their community.<sup>283</sup> Receiving this recognition can allow health centers to get recognized for their education programs under North Carolina Medicaid, as well as Medicare. In May 2007, the North Carolina Department of Public Health and the Brunswick County, North Carolina Health Department created an umbrella program, the North Carolina Diabetes Education Recognition Program (NC DERP) to expand the reach of the ADA's recognition program in North Carolina to the state's 85 community health departments.<sup>284</sup> NC DERP has helped county health departments by giving them technical assistance, taking care of administrative work, including applying for ADA recognition, and giving a small amount of funding to train educators and buy education materials for patients. From the start, each of the participating communities decided how it wanted to make its program sustainable, and sometimes, county health departments even made money from the program by saving on hospital visits through their patient education efforts. Since 2007, this program has helped serve over 7,000 people.<sup>285</sup> However, funding for this program has been cut considerably in recent years.<sup>286</sup> The program has now been consolidated into the Community & Clinical Connections for Prevention and Health Branch (CCCCH) due to a national funding decrease in diabetes control and prevention by the CDC.<sup>287</sup> NC DERP plans to continue providing funding for diabetes education but will target its efforts on fewer areas in order to maximize effectiveness.<sup>288</sup>

### 4. North Carolina Division of Aging and Adult Services has expanded DSMP programs statewide

The North Carolina Division of Aging and Adult Services (DAAS) has expanded Stanford DSMP programs, known in North Carolina as "Living Healthy with Diabetes," to all of its 16 Area Agencies on Aging (AAAs) statewide.<sup>289</sup> DAAS receives all of its federal funding for these programs from Older Americans Act funding. North Carolina also provides block grant state funds to DAAS to provide for all of its programs. However, because this money has to be distributed among all programs, its use for DSMP is limited.<sup>290</sup> AAAs also conduct Chronic Disease Management Programs (Living Healthy) and Chronic Disease Management programs tailored to the Spanish-speaking population. Sessions of these programs are led by pairs of trained laypersons, at least one of whom has the chronic disease in question.<sup>291</sup>

Though the DSMP programs are standardized, the regional AAAs have room for innovation in gaining funding and developing partnerships with vital community resources such as hospitals, provider networks, retirement communities, low income housing, and community health centers. One promising effort is the Centralina AAA's current work to become a Medicare certified agency and acquire Medicare reimbursement for its Living Healthy programs within its nine county coverage area around Charlotte.<sup>292</sup> Another is the collaboration between the Land of Sky Regional Council (an AAA in Western North Carolina) and community organizations such as the Asheville-Buncombe Institute of Parity Achievement (ABIPA), which is supported partly through Office of Minority Health Funding.<sup>293</sup> ABIPA does outreach to minority communities on diabetes education, including outreach at churches and subsidized housing, using community health workers to conduct much of this outreach.<sup>294</sup>

### 5. Integration of diabetes self-management into clinical practices

North Carolina Area Health Education Centers (AHEC) operate a successful program to incorporate diabetes self-management into clinical practices within their primary care networks. AHEC places a coach within practices to help providers use their electronic health records to identify



patients with high A1C levels that have not been in care for a long time. AHEC coaches also aid physicians in helping people with diabetes self-manage their disease, including encouraging providers to implement patient goal setting and motivational interviewing, as well as helping practices become more aware of community-based and county health department resources, including formal DSMT programs.<sup>295</sup>

### **North Carolina Challenges in Providing Diabetes Self-Management Training**

Some of the challenges reported by DSMT educators, physicians, state and local officials and health administrators include the following:

#### **Lack of Diabetes Self-Management Follow-up Support**

Diabetes educators in the state report that a major challenge in providing effective education is the lack of ability to offer proper follow up after the initial course ends. Studies show that initial improvements in health outcomes of people completing diabetes self-management programs have been found to diminish after approximately six months.<sup>296</sup> To sustain the successes achieved in the formal programs, participants require follow-up support. However, providers report that insurance coverage for follow-up DSME and MNT is inadequate (and there is no reimbursable follow-up support for DSMP or other diabetes education programs). Diabetes educators also cite the difficulty of tracking patients down, and then once they are reached, getting them in the door for follow-up.<sup>297</sup> This difficulty stems in part from the lack of necessary community support services, including peer management and phone support systems, which could improve the long-term linkage of diabetes educators with high-risk patients. It can be particularly difficult to schedule follow-up with inpatients who are discharged from the hospital, even though these patients are often at high risk of readmission and in need of continuous education.<sup>298</sup> Another challenge in many parts of the state is the lack of a standardized way for educators and physicians to access each other's patient records, thereby making it more difficult to identify and reach out to high-risk patients with an especially strong need for continued support.<sup>299</sup>

#### **Lack of Insurance Reimbursement for Stanford DSMP**

Though DSMP programs at AAAs currently serve a mostly Medicare-eligible population, as well as non-elderly individuals on Medicaid and private insurance, there is currently no insurance reimbursement for DSMP in the state (though the Centralina AAA is currently seeking certification to become a Medicare provider).<sup>300</sup> Given that research has demonstrated the success of DSMP,<sup>301</sup> North Carolina should consider reimbursing DSMP programs under Medicaid as it does for DSME. In the long-term, the state should also consider adding DSMP to the list of diabetes education services required to be reimbursed by private insurers.

#### **Inadequate Coverage of DSME by Some Private Insurers**

Even though North Carolina law requires insurers to cover at least some DSME, the law does not specify a minimum number of hours. Some partners have reported inadequate reimbursement for DSME services; others report inconsistent coverage from plan to plan, with wide variations in which services are reimbursed and no centralized way to find out this information.<sup>302</sup>

#### **Difficulty Becoming Reimbursable Providers**

A major barrier cited by state officials is the difficulty that many health departments have faced in becoming reimbursable providers of diabetes education services under major insurance programs, including Medicaid and private insurers. Even when health departments have met all the requirements to provide certified DSME programs and have adequate staff, their applications to become reimbursable providers are still often denied.<sup>303</sup>

#### **Billing Capacity of Local Health Departments**

Local health departments often lack the capacity to handle billing responsibilities in addition to their main responsibility of providing community health services. County health departments across the state report that they do not have the staff to address billing needs. For example, in a common scenario, a DSME program administrator in a rural county health department must serve both as educator for the program and as the employee responsible for billing, although he or she receives no reimbursement for the





extensive time spent on billing activities.<sup>304</sup> Moreover, staff is often limited in their capabilities because of their commitments to other programs. For example, as community partners have reported, dietitians are obligated to spend most of their work hours on federal programs such as WIC, and are thus less able to provide focused diabetes services such as DSME.<sup>305</sup> Given that county health departments typically lack the financial resources to hire another medical professional to provide these services, they often must forgo providing diabetes self-management programs. While NC DERP has been able to help departments with some of their issues by providing technical assistance and community based consultants, they are now more limited in their ability to provide this assistance due to the 2013 consolidation and funding decrease by the CDC, which has cut financing for diabetes control and prevention.

### Health Disparities

North Carolina diabetes educators, policymakers and health officials frequently point to the challenges inherent in providing appropriate diabetes self-education in a highly heterogeneous state with significant disparities in health status based on race, income and geography. Effectiveness of DSMT can be diminished due to cultural and socioeconomic distance between providers and patients, as well as inappropriately tailored educational materials and curriculum. African-American and American Indian communities are disproportionately affected by chronic illnesses such as diabetes and often face added hurdles to finding diabetes treatment, accessing prevention programs, and obtaining healthy nutrition and physical activity spaces, particularly in rural areas. The chronic stress associated with managing diabetes can be particularly strong in these populations, and is associated with poorer medication adherence and poorer glycemic control.<sup>306</sup> Approaches focused on addressing this stress are critical, including analysis of effective social support and educational strategies for different populations.

### Policy Opportunities

Below are major policy opportunities identified through independent research and stakeholder interviews to address the challenges described above.

### Highlighted Opportunity: Create and Fund a Statewide Diabetes Self-Management Training Task Force

State public health officials cite the need for the creation of a centralized task force—and in the long-term a permanent department—responsible for research, monitoring and support for diabetes self-management training programs across the state. This task force would involve numerous key players across the state, including AHEC, North Carolina Medicaid, the Office of Rural Health and others involved in diabetes self-management training and support.

The task force would have several key goals:

1. Work to find solutions to **DSMT billing and reimbursement challenges**.
2. Promote improved **collaboration and communication** among key players in the provision of diabetes education services, including educators, physicians, health department officials, insurers, and others.
  - Include the promotion of **technological tools**, such as the integration of the ADA's "Chronicle Diabetes" system<sup>x</sup> into North Carolina's Health Information Exchange (HIE),<sup>xi</sup> in order to strengthen communication among those involved in diabetes education and care and to increase capacity of providers to offer diabetes education services.
  - Act as a **data 'clearinghouse'** for diabetes education programs across the state in order to identify program successes, gaps and potential improvements.
3. Reduce health disparities by helping diverse communities across the state develop **culturally tailored and effective approaches** to diabetes self-management training programs.

As mentioned above, diabetes educators face several billing and reimbursement

<sup>x</sup> Chronicle Diabetes is an education tool which allows participating providers to enter data for new patients with diabetes, track their progress, and generate reports about their patients. Chronicle has no costs or subscription fees, unlike other services, which often have per patient fees, and is available to all diabetes education programs and sites recognized by the ADA. For more information, see Chronicle Diabetes, AM. DIABETES ASSOC., available at <http://professional.diabetes.org/Recognition.aspx?typ=15&cid=93585>

<sup>xi</sup> NC HIE is a standardized statewide electronic system to which providers can submit patient health information. See Part 1, Chapter 2 for more information.



challenges, including lack of reimbursement for certain services, such as DSMP and follow-up support. Creation of a task force would allow organizations and individuals with a stake in improving diabetes education to come together from across the state to find solutions on how to:

- Negotiate with insurers statewide to ensure adequate reimbursement for diabetes self-management programs across the state.
- Resolve billing and other staff capacity challenges facing health departments and other groups providing diabetes education.
- Promote and reward programs that maximize follow-up support for patients leaving diabetes self-management programs.

Stakeholders point out the need for one agency or department to assume primary responsibility for roll-out and implementation of the task force, and it should draw upon different funding sources, including both state and private funding.<sup>307</sup>

In the long-term, stakeholders point to the need to move beyond a task force to create a permanent agency or department responsible for managing these responsibilities (or have an existing agency take over the responsibility). To achieve maximum impact, this agency would have to be funded by the General Assembly. Given that data is continuing to show the cost-effectiveness of DSMT, stakeholders can emphasize the ability of the agency to reduce diabetes-related spending in the long-term. In particular, the state agencies who are working to complete the required diabetes action plan for 2015 could use findings of cost-savings and improved health outcomes to help promote the creation of a longer-term agency.

#### **Encourage Communication Between Community DSMT Programs and Clinical Providers**

Many diabetes educators across the state have cited the need for improved communication between physicians and providers of DSMT. In the words of one North Carolina physician, there is no “easy button” to click in the Electronic Health record system to find

information about how patients are doing in community-based education programs, and the same situation exists for diabetes educators.<sup>308</sup> Insufficient communication between the two sides can result in lower rates of physician referrals to DSMT programs and can impede the ability of physicians to gauge whether their patients are appropriately self-managing their disease. It can also decrease educators’ ability to adapt DSMT education to a patient’s particular medical needs.

Among the potential options suggested by North Carolina stakeholders to improve physician and educator communication include:

- Creating “gold seal” DSMT programs, which are recognized by the state as having greater capacity for coordination and information sharing.
- Providing reimbursement incentives within Medicaid and other programs, for “gold seal” programs, or for any DSMT programs and primary care providers who show a sustained ability to share medical and self-management information effectively.<sup>309</sup>

#### **Develop Strong DSMT Care Teams Through Adoption of Alternative Financing Models**

Many diabetes educators and officials in North Carolina have pointed to the need for diabetes educators to be part of comprehensive diabetes care teams which combine medical care with proper education and lifestyle management and support services. There are many professionals who provide diabetes education services across the state, including registered dietitians, nurse practitioners, certified nurse midwives, physician assistants, registered nurses, behaviorists, and pharmacists. Some programs, such as the Stanford DSMP, also include trained laypersons as educators. Community partners emphasize the need to maintain this provider diversity, as there is a wide range of needs within different ethnic, cultural and geographic communities across the state.

However, the current billing structure for diabetes education programs can make it difficult to sustain flexible programs. Providers such as pharmacists, physician assistants and nurse practitioners can be reimbursed individually for DSME but only through





'incidental to' billing through a physician, which adds complexity to the process and can make it difficult for DSME providers who live in areas with physician shortages. Further, there are some providers, such as community health workers,<sup>xii</sup> who have shown success at reaching communities across the state but cannot be reimbursed under traditional fee for service billing rules. This makes it more difficult for programs using these workers (such as DSMP) to obtain sustainable sources of financing.

Moving away from the fee for service system (whereby providers are billed for individual services) to alternative systems in which providers are incentivized to cut costs and improve health outcomes can help expand the feasibility of operating diverse DSMT care teams. Among the options available are shared savings models, whereby provider networks receive a share of any savings gained through prevention of diabetes complications among their patients.<sup>xiii</sup> Accountable Care Organizations (ACOs) would be incentivized to look for low-cost programs that show strong results, and there is significant evidence that the costs of diabetes education programs are much lower than the costs of treating advanced diabetes. Another option is to give bonus payments to providers who integrate diabetes educators into their care teams or pursue other pay for performance initiatives to reward providers for achieving certain health outcomes.

State, regional and local officials and diabetes educators point to the increased flexibility that these alternative funding systems would give care teams to design tailored DSMT programs that meet the needs of the local community. Alternative funding systems could:

- Promote provision of increased follow-up support, including case management, that is not reimbursed under a typical fee for service system.
- Allow providers to hire DSMT instructors who may not be eligible for fee for service reimbursement, but who can effectively meet the needs of diverse populations. This would allow nontraditional instructors, such as community health workers, to join

xii See Part 2, Chapter 3 for more information about Community Health Workers

xiii See Part 2, Chapter 1 for more information about these payment models

diabetes education teams and reach out to patient populations who otherwise may be underserved or not provided culturally competent education.<sup>310</sup>

North Carolina is already moving towards adoption of some of these alternative models. For example, the 2014 budget requires DHHS to withhold 3% of Medicaid provider payments for certain services<sup>311</sup> for the 2013-2015 fiscal years to pay physicians and pharmacists who meet incentives to provide "effective and efficient care that results in positive outcomes."<sup>312</sup> CCNC is also required to work with DHHS to replace its fixed per-member per-month coordination payments to providers with a pay-for-performance scheme.<sup>313</sup>

### **Offer Reimbursement Incentives for Clinical Practices that Provide Evidence-Based DSMT Care**

In addition to community-based DSMT programs, self-management education also occurs in the clinical setting. Some of the self-management care provided by clinicians is reimbursed but much of it is not. One way to promote greater use of structured, evidence-based DSMT within the clinical setting is to promote use of incentives and rewards for clinicians who meet certain diabetes self-management measures. The National Committee on Quality Assurance's (NCQA) Diabetes Recognition Program (DRP) recognizes clinicians who use evidence-based measures and provide high quality care to their patients with diabetes.<sup>314</sup> NCQA's DRP looks at 11 quality measures, including patient control of A1C, blood pressure, and cholesterol levels, as well as provision of tobacco cessation advice and treatment.<sup>315</sup> Practices gaining NCQA recognition are often eligible for increased reimbursement and financial awards from health plans and insurers.<sup>316</sup>

Clinicians now have greater incentive to meet the NCQA diabetes standards because they align closely with those adopted by the federal government as part of its push to have health providers adopt electronic health records (EHR). In 2009, Congress passed the Health Information Technology for Economic and Clinical Health Act (HITECH Act), which created financial incentives for use of EHR. Medicare and Medicaid providers (including hospitals) can earn up to an extra \$44,000 and \$64,750, respectively, for using EHR



to record certain patient data (i.e., make meaningful use of EHR).<sup>317</sup> After 2015, failure to reach the “meaningful use” standards will result in financial penalties—lower reimbursement rates—in Medicare only.<sup>318</sup> What qualifies as meaningful use is defined in three stages, with increased requirements for what must be included in EHR in each stage.<sup>319</sup>

Some of the core measures that providers can choose to report under Stage 1 include control of A1C, cholesterol and blood pressure levels.<sup>320</sup> These are some of the same quality measures that NCQA requires programs to report when seeking recognition under the DRP. Thus, there is a clear financial incentive for clinicians to meet NCQA quality measures that focus on improving patient self-management of diabetes, as it can help them meet both DRP and meaningful use requirements. In addition to meaningful use funds provided by the federal government, if the state provided further incentives for clinical practices at the state or insurer level, it would help clinicians adopt evidence-based techniques for diabetes self-management. A state DSMT task force would be an ideal forum through which to brainstorm possible incentives for state insurance programs such as Medicaid, as well as for private insurers such as BCBSNC.

### **Support New or Alternative Methods of Providing DSMT**

Much DSMT education within the community takes place within formal programs, whether at health departments, local Ys, or other facilities. Community partners within different parts of the state have suggested alternatives to reach some of the population who currently cannot access formal programs in their communities. These approaches are not substitutes for formal DSMT but are ways to expand access to some of the valuable education resources offered by DSMT and reduce health disparities across the state. Again, these models would be more easily adopted through pay-for-performance or bundled payment models, rather than the traditional fee-for-service system.

### **Telemedicine**

When working with limited staff, telemedicine programs may be a good mechanism for providing DSMT to hard-to-reach populations. Areas with a shortage of professionals available to provide DSMT could utilize telemedicine options. Additionally, areas that lack physicians available to oversee diabetes educators who offer DSMT could allow physicians to provide support to DSMT educators via telemedicine networks.<sup>xiv</sup>

### **Mobile Capture of Diabetes-related Data**

Another supplemental option is to use mobile phones in which blood glucose data and other relevant self-management information is captured, stored, and transmitted in real time to a provider. Pilot programs implementing this technology have been developed in Washington D.C and other areas.<sup>321</sup> The ADA has also been exploring the potential of mobile devices and social media to increase diabetes self-management among younger patients.<sup>322</sup> However, obtaining reimbursement for this type of novel program is a primary difficulty, and some of the poorest patients with diabetes lack access to mobile phones.<sup>xv</sup>

### **Phone Support**

Stakeholders have suggested implementing phone-support systems for diabetes similar to the Quitline offered statewide for tobacco cessation. This would give patients support in between provider visits and also issue needed reminders for follow-up care and prescription renewals.<sup>323</sup>

### **Online DSME programs**

Online DSME programs are a promising option; however, one continued challenge to offering online programs is low participation. In North Carolina, an online DSMP program was offered statewide, but only 10 people signed up in one year, leading to its discontinuation.<sup>324</sup>

### **Mobile DSME Units**

Despite high rates of diabetes in rural areas of North Carolina, PATHS partners in some of these areas have had trouble getting patients to participate in their county’s diabetes self management programs. Oftentimes, the

xiv See Part 2, Chapter 2 for more information about Telemedicine.

xv See Part 2, Chapter 2 of this Section for more information about remote patient monitoring.



county health department is too far from the resident's home, and public and private transportation is not an option. In urban areas, many people with disabilities or lack of transportation also face problems in attending education meetings. PATHS partners in Graham County in the far western part of North Carolina have suggested that one way to help ameliorate this problem would be the expansion of cross-county mobile DSME units.<sup>325</sup> This would enable counties to make a more efficient use of their resources and expand their capabilities to reach a larger population.

A pilot program, "Diabetes Bus - Reaching Communities Project," was established in North Carolina in 2004 with funding by the BSBC NC Foundation. The Diabetes Bus provided a mobile classroom for patients with difficulty getting health services for their conditions, and initially was targeted at communities located at least 20 miles from diabetes services offered in Raleigh, Durham, and Chapel Hill. The program showed impressive results, with an average drop of A1C levels of 2.6 percent, and has since expanded to other communities.<sup>326</sup> Setting up a similar program in rural areas located far from a metropolitan area, such as Graham County, could be helpful in bringing DSMT to a hard-to-reach population.

### Reduce the Number of Uninsured

Many people cannot access DSMT, not because health plans don't offer it, but because they lack health insurance. The Affordable Care Act allows states to expand access to health insurance to all adults under 138% of the FPL. Though North Carolina declined the Medicaid expansion, it still may choose to expand at any time and receive greatly enhanced federal funding.<sup>xvi</sup> Further, the 2013 budget includes a requirement that DHHS study opportunities to save state funds through purchase of private health insurance for Medicaid beneficiaries and other specified groups.<sup>327</sup> One option some states are now pursuing is to enroll Medicaid beneficiaries in private plans within the state's marketplace, generally known as the "private option." States adopting this model can still receive the enhanced federal funding offered to states expanding their traditional Medicaid

programs. At the time of writing, Arkansas and Iowa had received federal approval to pursue this option, and several other states either have waiver applications pending or are considering filing for federal approval.<sup>328</sup>

### Case Study: The "Small Changes" Approach: Project EMPOWER

North Carolina has several evidence-based projects working with African American and American Indian populations to promote culturally appropriate diabetes self-management. One project which operated out of East Carolina University, known as the Project EMPOWER trial, used Community Health Workers ("CHWs") to help address diabetes self management. The study focused on 200 African American women living with type 2 diabetes in rural Eastern North Carolina. The study hired trusted African American women in three different communities to serve as CHWs who acted as interventionists regarding lifestyle management.<sup>329</sup> The intervention group received help from the CHWs, including face to face and phone meetings that were tailored to the patients' needs.<sup>330</sup> The patients were encouraged to set their own goals, and to make the goals realistic to their own situations. The control group got the standard diabetes materials produced by the AADE. The study found that the intervention group experienced small decreases in A1C levels, in contrast to a slight increase in A1C levels for the control group. The intervention group also experienced a 3% reduction in weight, surpassing the weight loss of the control group by over 2%. The project left A1C machines in local counties to facilitate low cost testing for patients and provided six trained CHWs in their home communities who will remain as a resource in their communities.

Project EMPOWER measured the impact that the CHWs have on improving the diabetes indicators of high risk, rural African American women —thus helping the state move forward in its understanding of how to tailor diabetes interventions in a culturally appropriate manner to this population.<sup>331</sup> The ECU investigators are also looking at the impact of social support networks on glycemic control in these rural women, who experience disproportionate levels of psychosocial stress when compared to other populations. Though there is a clear relationship between

xvi See Part 1, Chapter 1 for further information.



social support and type 2 diabetes self-management behaviors and health outcomes, it is difficult to define and measure social support as it relates to diabetes within underserved populations. Evidence indicates that African American communities perceive social support differently than other groups, placing more emphasis on family caregiving and reliance on informal social networks.<sup>332</sup> Project EMPOWER adapted one of the most commonly used social support scales, the Dunst Family Support Scale (FSS) to the rural African American community in North Carolina, through revision of questions and response options. Research thus far has shown that African American women participating in the study rated their primary physician, other family members with diabetes, and their children to be most helpful in providing support for diabetes self-management.<sup>333</sup>

The Project EMPOWER team has now begun a new grant-funded program, COMRADE, or Collaborative Care Management for Distress and Depression in Rural Diabetes, with three aims: 1) to evaluate a collaborative and stepped care intervention tailored to the severity of distress/depression of participants; 2) to examine the mediators of the relationship between improvement in psychological measures and improvement in A1C levels among the population; and 3) to study the business sustainability of the intervention in primary care settings with local community support.<sup>334</sup> This type of work will help enrich understanding of how to alter DSMT programs to meet the unique behavioral and social support needs of some of the state's underserved populations with diabetes.

#### **Case Study: Durham Diabetes Collaborative**

One promising approach to identify and target high-need populations with type 2 diabetes is being tested in Durham County, North Carolina through collaboration between Duke University Medical Center, University of Michigan, and Durham County Department of Health and Human Services. This evidence-based project combines the use of innovative technology based on electronic health record data and grassroots community-based interventions to identify and target care towards those communities and individuals who have the highest risk of complications and adverse events associated with diabetes.

The technological component involves geospatial mapping using EHR data from the Duke Health System and Lincoln Community Health Center as well as publicly available social data to stratify both individual patients and communities in Durham with the highest diabetes burdens and greatest complications and adverse events from the disease. The geographic health information system (GHIS) integrates patient healthcare information with geographically relevant information such as census data and the availability of community resources in the area in which patients live.<sup>335</sup> By integrating information from outside the health delivery system into existing health information systems, this technology allows healthcare teams to identify social and environment mechanisms affecting patient health outcomes, both at the individual and population health levels.<sup>336</sup>

The intense clinical intervention team, which includes a nurse practitioner, dietician, social worker and community health assistant, then use this information to make home visits to individuals identified at risk of having significant diabetes-related events within one year. As of December 2013, the clinical team had enrolled close to 100 patients. Using diabetes information officers equipped with data gleaned from the electronic health record and publicly available sources, a broader team known as the Durham Diabetes Coalition also targets neighborhoods with high diabetes burdens through community mobilization, education, outreach and culturally tailored healthcare.<sup>337</sup> The services provided include community diabetes screenings followed by consultations, visits by nurse practitioners to worksites, use of social media to spread awareness, dissemination of information by community health workers living with diabetes, and various health fairs. One particularly successful intervention was a men's health fair held at a local community health center, in which the Duke health team was there to conduct diabetes assessments and establish a point of care and follow up appointments for those at risk of diabetes or those receiving diagnoses.<sup>338</sup>

Scaling this type of collaborative project has the potential to use technology and "real time population data" coupled with community-based mobilization teams to improve identification of high-risk patients and



get them into care sooner, and is a promising model that hospitals, ACOs, and PCMHs, among others, should consider adopting.

### GOAL #2: STRENGTHEN DIABETES PREVENTION PROGRAMS

Effective diabetes prevention is vital to halting the growth of the disease within North Carolina. A person is considered to have prediabetes if his or her A1C is between 5.7% and 6.4% (6.5% or above is diabetes).<sup>339</sup> About 25% of those with prediabetes are expected to develop diabetes within three to five years of diagnosis.<sup>340</sup> Approximately 376,000 North Carolinians were estimated to have prediabetes as of 2010 and the number is expected to grow.<sup>341</sup>

National data shows that intensive lifestyle programs that include health education and physical activity components have been effective at reducing the risk of prediabetes.<sup>342</sup> The Diabetes Prevention Program (DPP), a major multi-center clinical research study that ran from 1996 to 2002, showed that delivering lifestyle interventions to those at high risk for developing type 2 diabetes reduced the incidence of the disease by 58%.<sup>343</sup> In fact, lifestyle interventions that included diet modification and exercise were more effective in reducing incidence of the disease than pharmacological treatment with the medication metformin.<sup>344</sup>

Diabetes prevention programs have also been shown to be cost-effective. While people with diabetes accrue approximately \$13,700 per year of medical costs per year (\$7,900 of which are attributed directly to diabetes),<sup>345</sup> prediabetes intervention programs can cost as little as \$400<sup>346</sup> and have been shown to be effective at reducing the incidence of diabetes among the treated population.<sup>347</sup> In short, diabetes prevention programs should be considered an investment that has the potential to not only improve population health but also dramatically reduce the state's long-term healthcare costs.

#### North Carolina Diabetes Prevention Highlights

Several initiatives in different parts of North Carolina have already begun to slow the progression of prediabetes among at-risk individuals. Programs at the YMCA and YWCA have reduced participants' rates of prediabetes and diabetes. Private insurers have also

begun expanding coverage and funding for prediabetes interventions.

#### 1. YMCA's Diabetes Prevention Program

The YMCA Diabetes Prevention Program ("YMCA DPP") is part of the CDC's National Diabetes Prevention Program ("NDPP"). The primary goals of the NDPP are to increase physical activity to at least 150 minutes per week and help individuals lose 7% of their body weight, based on the results from the DPP study.<sup>348</sup>

Several YMCAs in North Carolina now operate CDC-affiliated type 2 diabetes prevention programs as part of the NDPP. These include the YMCA of Northwest North Carolina, the YMCA of Western North Carolina, and the YMCA of Greensboro. These programs include 16 training sessions, a YMCA membership and access to the exercise facilities, weekly weigh-ins, and additional resources including support from trained lifestyle coaches.<sup>349</sup>

These programs have been immensely successful in North Carolina. For example, the program at the YMCA of Western North Carolina has significantly exceeded the national program's goals set by the CDC. In 2012, the average participant in this program decreased his or her total body weight loss by 10.92%, compared to the CDC's goal of a 5-7% reduction.<sup>350</sup> As of December 2013, the YMCA of Western North Carolina's DPP had served over 181 adults, and based on its results thus far, is expected to prevent 105 adults from developing type 2 diabetes.<sup>351</sup> Based on the average costs of treating type 2 diabetes, and taking into account the program's reimbursement rate of \$429 per person, this would result in a savings of approximately \$1,214,955 per year that these individuals do not develop diabetes.<sup>352</sup>

The CDC's NDPP receives national support from the Diabetes Prevention and Control Alliance (DPCA), a public-private partnership launched by United Health Group,<sup>353</sup> which includes both the CDC and the YMCA, as well as various retail pharmacies across the country.<sup>354</sup> In May 2013, the DPCA announced a partnership with the YMCAs in Greensboro and Winston-Salem. Under the partnership, the year-long YMCA DPP will be covered by health insurance, including all carriers in United Health Group.<sup>355</sup> The program is





also available to other health insurers as a reimbursable service.<sup>356</sup> The DPCA acts a third-party administrator between the YMCA and participating insurance carriers. Nationally, the senior vice president of the DPCA has also announced plans to expand the reach of the DPP by adapting it for virtual use, a move which would allow North Carolinians without access to one of these YMCAs to still participate in the program.<sup>357</sup>

## 2. YWCA Diabetes Wellness and Prevention Program

The YWCA of Asheville created the first comprehensive diabetes prevention program in Buncombe County, North Carolina with its Diabetes Wellness and Prevention Program.<sup>358</sup> This program is the only YWCA Prevention Program in the state and has been cited by many community partners as a model program for successfully preventing diabetes. The program has been serving individuals with prediabetes, as well as diabetes, for over ten years. The curriculum focuses not just on modifying lifestyle choices that predispose an individual to diabetes, but also on addressing individual barriers that impede positive changes. The program seeks to provide a supportive foundation in which individuals of low socio-economic and traditionally marginalized cultural backgrounds can come together in a wellness-focused group. Through gym and pool access, personal trainer support, and weekly education and motivation groups, individuals have a chance to make small changes over time, which allows for those changes to become habitual.<sup>359</sup> Further, the year-long program provides participants with opportunities to review medications with resident pharmacists, attend diabetes specific dinner lectures and cooking classes, and make lasting social connections that offer accountability and long-term partnership in wellness.<sup>360</sup>

One of the YWCA's preventive highlights is its "Salsa, Sabor, y Salud" program, which reaches the Latino community in Buncombe and surrounding counties. The program, developed by the National Latino Children's Institute (NCIL), helps families reach their physical activity and nutrition goals through culturally relevant activities and discussions. The program is offered entirely in Spanish, provides all families with a complete gym

and pool membership during the eight week sessions, and follows up with families about any relevant wellness opportunities.<sup>361</sup>

The YWCA's programs are predominately grant funded; however, program contributions are accepted and all participants do pay a fee based on a sliding scale payment plan.<sup>362</sup>

## 3. Blue Cross Blue Shield Coverage for At-Risk Individuals

Unlike public insurers and most private insurers in North Carolina, Blue Cross Blue Shield of North Carolina (BCBSNC) provides coverage for prediabetes services through its Member Health Partnerships program. The program provides coverage for 6 medical nutrition therapy visits, as well as disease management training from a registered nurse.<sup>363</sup> The plan has generous eligibility requirements. While it does not explicitly cover individuals with prediabetes, it provides coverage for individuals who are overweight, have high blood pressure, or metabolic syndrome, which are some of the major symptoms consistent with prediabetes.<sup>364</sup>

### *Policy Opportunities*

#### Reimburse for Evidence-Based Lifestyle Intervention Programs in Medicaid

Despite the strides made by UnitedHealth and BCBSNC, most private and all public health insurance plans in North Carolina still do not reimburse for diabetes prevention services. Reimbursement requires a diabetes diagnosis.<sup>365</sup> This poses a particular hardship for Medicaid recipients, who are at greater risk of developing diabetes than the general population.<sup>366</sup> Reimbursement at the prediabetes stage would allow the state to prevent beneficiaries from developing more serious and costly complications. Even for prevention programs that do receive some reimbursement from insurers, there is no standardization across plans regarding what programs they cover, or how much they reimburse, leading to patients having significantly different coverage and out of pocket costs for each program.<sup>367</sup>

Lifestyle intervention programs, like the one developed by the DPP, have been successful in helping to prevent at-risk individuals from developing diabetes. As noted, individuals who participated in the DPP reduced their risk for developing diabetes by 58%.<sup>368</sup> Reimbursing



for these evidence-based interventions in the prediabetes stage would help the state Medicaid program save significantly on healthcare costs in the future.

### Promote Alternative Payment Models

The fee-for-service model has its limitations, as noted in Part 2, Chapter 1. Expanding fee-for-service reimbursement to recognized providers of diabetes prevention programs is a strong first step, but in the long-term, new reimbursement models must be created to expand the role that community-based providers can play in preventing diabetes. Payment models such as bundled payments and pay-for-performance schemes can incentivize providers to provide cost-effective preventive services. For example, one pay-for-performance incentive would be to increase Medicaid reimbursement levels for reimbursable professionals who provide diabetes education and prevention. North Carolina Medicaid should also consider following the model of UnitedHealth, which includes in many of its plans reimbursement incentives when patients complete certain wellness-focused activities.<sup>369</sup> Alternative payment models could also be used to fund providers such as pharmacists, community health workers, and Y lifestyle coaches who otherwise would not receive reimbursement under the fee for service system.<sup>xvii</sup>

### Increase Funding for Targeted Prevention Efforts

The state and other important health organizations should increase funding for prevention efforts, taking advantage of the opportunity to save significantly in future healthcare costs. As stated earlier, while some of the intensive lifestyle intervention programs can cost between \$400 and \$1500 per person, they often reduce the risk of these individuals developing diabetes, which can cost over \$13,000 per person annually.<sup>370</sup> Considering that people with diabetes are at an increased risk for developing other conditions, and the inhibited productivity of these individuals, diabetes is clearly taking a significant toll on the state's economy.

As stated elsewhere in the report, in 2013, the CDC significantly reduced the amount of money available to fund diabetes prevention. In this difficult financial climate, PATHS

xvii See Part 2, Chapter 1 for more information.

partners suggested some ways the state could increase preventive funding for diabetes, including:

- An increase in the state's tobacco tax, which would generate revenue to reduce diabetes incidence but also promote public health more generally through discouraging tobacco use.
- Allotting state prevention funds specifically for the development of the state diabetes and chronic illness action plans required by the legislature. § 130A-221.1 requires state agencies to work together to develop action plans to reduce diabetes incidence, improve care and control complications, while § 130A-222.5 requires agencies to do the same for chronic illness. However, there is currently no funding to implement the action plans. Without funding, it is difficult for agencies to perform comprehensive evaluations of the economic, fiscal and health effects of prevention programs across the state. Adequate collection of data is required for state agencies to engage in sufficient program evaluation and develop effective outcome objectives which can be used to direct funds to the most effective sources.
- Providing financial incentives for prevention programs when the specified objectives outlined in the diabetes action plan are met. This extra financial support could bolster successful prevention programs and encourage collaboration among multiple entities to achieve state goals.

Some other possible ways that the state could invest in prevention funding include:

- Replicating the existing YMCA programs in other parts of the state, and partnering with private insurers to have these services offered under more plans. Local health departments could be ideal places for such a prediabetes program. For example, the Orange County (NC) Health Department already offers MNT to all Orange County residents and employees, including not only those with diabetes, but also those who have weight problems or other issues. The program currently accepts several types of private and





public insurance, including BCBSNC, Cigna, United Healthcare, Medicare, and Medicaid.<sup>371</sup>

- Prioritizing funding for prevention programs that engage in collaborative activities involving multiple entities, whether at the local, regional or state levels.
- Adopting a prediabetes program for state employees, which could serve as a pilot program before expanding it to other settings.
- Having prevention programs at health departments partner with community organizations that have access to or manage facilities designed for physical activity. Some schools and communities in the state have already been working together to share resources for physical activity.<sup>372</sup> For example, Wake County allows municipalities to contract for public access to outdoor spaces of the school system for twenty-five year terms at no cost.<sup>373</sup> Five other counties have similar arrangements, and N.C. Healthy Schools distributes a guide to enable joint use in more areas.<sup>374</sup>

### **Extend Pregnancy Medicaid for Women with Gestational Diabetes**

Another major contributing factor to the failure to diagnose prediabetes is the absence of effective tools to identify and reach people at high risk for diabetes. One group of particular concern cited by community partners consists of women who develop diabetes during pregnancy, known as gestational diabetes. Gestational diabetes affects from 2% to 10% of pregnant women in the United States. Though the condition typically resolves initially after delivery, it remains an important preventive health concern as 5% to 10% of women with gestational diabetes develop type 2 diabetes immediately after delivery. 15% to 50% of women with gestational diabetes will go on to develop type 2 diabetes within the following five to ten years, with estimates of lifetime risk reaching 70% according to some studies.<sup>375</sup>

Given these numbers, it is critical that women with gestational diabetes receive proper follow-up screening after delivery. However, low postpartum screening rates for diabetes

prevent women from getting diagnosed and receiving proper care for their diabetes. All women diagnosed with gestational diabetes are recommended to undergo screening for diabetes within six to twelve weeks after giving birth.<sup>376</sup> However, some studies suggest low postpartum screening rates for Medicaid recipients, ranging from estimates of 3.4% to 67% in varied locations and using different testing methods.<sup>377</sup>

One way to reduce postpartum diabetes rates among women with gestational diabetes is to expand the time that pregnant women are eligible for Medicaid. In North Carolina, pregnant women under 185% of the federal poverty level (for family income) are eligible to be covered under Medicaid until 60 days after delivery. State diabetes officials emphasize the need for Medicaid coverage to be extended until at least 90 days after delivery, in line with the guidelines for recommended postpartum diabetes testing. This extra month is critical, they say, because it will give high-risk women more time to get tested, and then to be placed in appropriate care and self-management settings. This expansion of the time limit has also been endorsed by studies of Medicaid recipients with gestational diabetes.<sup>378</sup>

Another option would be to expand Medicaid for one year for women with gestational diabetes who continue to display high glucose levels (prediabetes levels) two months post delivery. Given the differences between the cost of screening a patient and the cost of treating a patient who has already developed diabetes, this expansion would likely be cost-effective, particularly by targeting an already high-risk population. Either of the options above would likely require a State Plan Amendment to be filed with the Centers for Medicare and Medicaid Services (CMS), but CMS has approved similar requests and would likely do so again.<sup>379</sup>

A further option to ensure continuous care for at least some of the postpartum women at high risk for diabetes is for the state to expand access to health insurance to all adults under 138% of the FPL, an option available under the Affordable Care Act. Though North Carolina declined the Medicaid expansion, the 2013 budget does include a requirement that DHHS study opportunity to save state funds through purchase of private health



insurance for Medicaid beneficiaries and other specified group.<sup>380</sup> One option some states are now pursuing is to enroll Medicaid beneficiaries in private plans within the state's marketplace, generally known as the "private option." States adopting this model still receive the enhanced federal funding offered to states expanding their traditional Medicaid programs. At the time of writing, Arkansas and Iowa had received federal approval to pursue this option, and several other states either had waiver applications pending or were considering filing for federal approval.<sup>381</sup>

### Federal Policy Challenge: Screening for Prediabetes

The ACA requires non-grandfathered private plans (as well as Medicare) to cover certain preventive services without cost sharing if they are recommended by the United States Preventive Task Force (USPTF), an independent advisory body of health professionals. Among the required preventive services are diabetes screenings; however, USPSTF only recommends diabetes screenings in asymptomatic adults with sustained blood pressure (either treated or untreated) greater than 135/80 mm. Meanwhile, the ADA recommends diabetes screenings for a much greater proportion of individuals, including adults who are overweight or obese (BMI  $\geq 25$  kg/m<sup>2</sup>) and who have one or more additional risk factors for diabetes. In those without these risk factors, the ADA recommends testing beginning at age 45, with repeat testing at least every three years.

While there have been no definitive studies showing that expanded routine screenings lead to reduced diabetes incidence, at least one study has indicated that use of the USPSTF guidelines instead of the more expansive ADA guidelines result in a significantly lower number of screenings and diabetes diagnoses.\* The study cited some individuals with glucose levels as high as 220 who were not eligible for screening under the USPSTF recommendation because they did not have high blood pressure. Aligning screening recommendations more closely to the ADA recommendations may greatly increase the number of people with undiagnosed diabetes or prediabetes who receive diagnoses.

\*Ann M. Sheehy et. al., *Analysis of Guidelines for Screening Diabetes Mellitus in an Ambulatory Population*, MAYO CLIN PROC. 2010 January; 85(1): 27-35. The study of 47,000 patients showed that USPST recommendations resulted in 460 fewer diagnoses of diabetes, or greater than one-third of all cases detected, compared to screening criteria recommended by the American Diabetes Association.



### Cut Costs by Adapting Lifestyle Intervention Programs for Virtual Use

While eliminating cost barriers for participating in lifestyle intervention programs would significantly improve access to these programs, there would still be transportation barriers for many North Carolinians. In most rural areas of North Carolina, public transportation is very limited or non-existent, and a significant number of residents lack access to a car.<sup>xviii</sup> Adapting and promoting lifestyle intervention programs for virtual use would reduce this barrier and cut costs. Some private companies have developed their own versions of diabetes prevention programs for virtual use with motivational coaching, weight management, and healthy living tips, but they are prohibitively expensive, costing upwards of \$100 per month.<sup>382</sup> In September 2013, the Diabetes Prevention Program in Ohio began offering the first CDC-recognized virtual Diabetes Prevention Program that is free for all United Healthcare beneficiaries in Ohio.<sup>383</sup> The program consists of an online version of the program with tools including live webinars, access to a lifestyle coach online, a community of support, food and activity tracking, and a wireless scale that connects to the program website. To widen the impact of prediabetes programs statewide, in the long term, North Carolina insurers, both public and private, should consider following the path of UnitedHealth Group and begin covering virtual diabetes prevention as an investment to reduce future costs and improve long-term health.<sup>384</sup>

### Medicaid Incentives for Prevention of Chronic Disease

The Medicaid Incentives for Prevention of Chronic Diseases grant program tests the effectiveness of providing incentives to Medicaid recipients to adopt healthy behaviors. Ten states are participating in this program, and they are targeting various prevention goals, including reducing the risk for diabetes. For example, Nevada is piloting a program that distributes points, redeemable for rewards, when beneficiaries participate in programs that manage weight, control blood pressure, and reduce the risk of diabetes. Minnesota is piloting a specific prediabetes initiative that enrolls all Medicaid beneficiaries ages 18 – 75 who have been diagnosed with prediabetes or are at risk for developing type 2 diabetes into the CDC-modeled YMCA lifestyle intervention programs. Participants are provided with vouchers for exercise equipment, farmers markets, and healthy cookbooks. North Carolina should consider applying for this grant and participating in the program to have access to increased funding for diabetes prevention initiatives.

*Source: Medicaid Incentives for the Prevention of Chronic Diseases Model, CMS.gov, <http://innovation.cms.gov/initiatives/MIPCD/>*

### GOAL #3: MITIGATE TRANSPORTATION DIFFICULTIES THROUGH EXPANSION OF TELEMEDICINE

Adequate transportation to and from hospitals, appointments, and other health services is essential in order for people to access the healthcare they require. Having access to transportation is particularly important for people living with chronic conditions such as diabetes. Those with access to transportation can attend routine doctors' visits, receive greater counseling on self-management, and access the food and physical activity spaces that they need to manage their disease.

A study in 12 Western North Carolina counties of over 1000 households analyzed the relationship between transportation options and access to regular healthcare. The study found that people with drivers' licenses made over twice as many visits to health care providers for chronic care, as well as almost twice as many more visits for routine care, as those individuals lacking licenses. People with family or friends who could offer transportation had over one and a half times more visits for chronic care.<sup>385</sup>

xviii See Part 2, Chapter 2 for more information on transportation issues.



Many parts of North Carolina lack access to public transportation. Rural residents are much more likely than urban dwellers to experience problems accessing transportation for medical care. 40% of rural communities have no public transportation system, and another 28% of communities have very limited access to public transportation, making a private vehicle a necessity.<sup>386</sup> However, despite being a state with a large rural population, North Carolina has one of the lowest numbers of vehicles per capita in the country at 0.64 vehicles per person, well below the national average of 0.8 vehicles per person. Only New York, Nevada, and the District of Columbia have fewer vehicles per capita.<sup>387</sup> PATHS partners in the Eastern and Western Regions have reported that there are not even taxis available.<sup>388</sup> Further, minorities and low-income individuals are less likely to have access to the transportation to access their recommended healthcare, thereby creating even wider disparities.<sup>389</sup>

North Carolina Medicaid provides non-emergency medical transportation for people in rural areas if several requirements are met: the patient is receiving 1) a Medicaid covered service 2) by a Medicaid provider; 3) the county is responsible for arranging and paying for the transportation if the beneficiary is unable to do so him/herself; and 4) the beneficiary places a request at least 72 hours before the appointment.<sup>390</sup> While this policy does expand access to health care for Medicaid recipients, the geography of rural areas makes it difficult to cover a sufficient number of people. Common concerns reported include lack of awareness of the Medicaid service and lack of efficiency. If a person is in a rural area and has to travel a significant distance, the van service may have to pick him or her up hours in advance of the appointment—prohibiting people from going to work or completing other tasks that day. Additionally, because the van service picks up and drops off multiple people each time it operates, one person may have to spend the entire day waiting to be dropped off. Further, the service does not cover the uninsured population, which can make up a substantial proportion of the population in some rural areas.

### The Promise of Telemedicine

Telemedicine is one promising opportunity to expand access to care for people who lack access to regular transportation. The practice of telemedicine involves using electronic communication for the exchange of medical information between participants in different geographical locations. Telemedicine is not a separate service, but rather a way of delivering services to people, including rural residents and people with disabilities that cannot easily access care in the traditional face-to-face manner. Types of services provided through telemedicine include primary care and specialist consultations between provider and patient using interactive video or phone; remote patient monitoring in which patients collect and send health data to providers for interpretation; medical education for targeted groups in remote locations; or consultations between physicians in different sites.<sup>391</sup>

There are many benefits to telemedicine, including improved access to services and cost-efficiency. Research shows that telemedicine has resulted in cost savings for patients and reduced overall costs for state healthcare systems.<sup>392</sup> For patients who have to travel long distances for medical services, telemedicine can save on costs such as travel expenses and missed workdays; a study found that patients in rural areas saved an average of \$282 by participating in telemedicine.<sup>393</sup> Another study examined system savings of patients with pulmonary problems in rural areas using telemedicine and found that total costs were \$250 less than they would have been if patients had traveled to the hub site to receive care.<sup>394</sup>

### Telemedicine in the Context of Diabetes

For diabetes, telemedicine can be beneficial in improving access to and quality of care. In addition to reaching patients in rural areas through remote video conferencing, remote patient monitoring can be particularly useful for people with diabetes. With remote patient monitoring, patients can use mobile medical devices to measure health markers such as blood glucose and insulin and transmit this data to providers. Since diabetes requires such close monitoring of health markers, it is particularly well suited for this area of telemedicine.



A study of the use of remote patient monitoring in Tennessee has shown that this technology can be very effective for people with diabetes. In this study, telemedicine was used to transmit blood glucose information electronically to providers and facilitate live video consults between medical professionals and patients. Results showed that many of the patients improved their A1C levels, and researchers noted that there were very few hospitalizations among program participants.<sup>395</sup>

Telepsychiatry is a form of telemedicine applied to the field of psychiatry. The term is used to describe the two-way, real time interaction between a mental health professional and a patient at a separate location, usually through video conferencing. Since North Carolina suffers from significant shortages and maldistribution of mental health providers, telepsychiatry offers an innovative way to increase access to mental and behavioral health services.

While telemedicine is a useful tool that should be promoted in North Carolina, the use of new technologies like this one should not change the standards of care. Telemedicine should only be used as an alternative to face-to-face care when traditional medical services are not available, and when this technology is utilized, it should be held to the same standards of care as traditional medicine.

North Carolina has a number of successful policies and programs dedicated to expanding telemedicine. Below is a discussion of some of the most prominent policies and programs.

### **1. Medicaid Coverage of Telemedicine/Telepsychiatry Services**

North Carolina Medicaid covers both telemedicine and telepsychiatry services and reimburses telemedicine providers at the same rate they would be reimbursed for face-to-face interactions.<sup>396</sup> For Medicaid beneficiaries lacking access to traditional healthcare services, this coverage offers them the chance to receive needed care that they would otherwise go without.

North Carolina Medicaid covers medically necessary services furnished through telemedicine when a beneficiary lacks ready access to such services and is referred by an “originating physician” to a consulting

physician (the provider furnishing the telemedicine service) for treatment and diagnosis. The services are only covered if the service uses two-way, interactive audio and video; the beneficiary is present at the originating site; and the consulting provider has control of the medical examination of the beneficiary. Telephone calls, email messages, faxes and video cell phone interactions are not covered.<sup>397</sup> The providers eligible to practice telemedicine include physicians, physician’s assistants, nurse practitioners, and nurse midwives.<sup>398</sup> For telepsychiatry, eligible providers include physicians, advanced practice psychiatric nurse practitioners, advance practice psychiatric clinical nurse specialists, licensed psychologists, licensed clinical social workers, and community diagnostic assessment agencies.<sup>399</sup>

As of November 2013, Medicaid does not require that the consulting provider be physically located in the state. This rule replaces the previous requirement that the consulting provider be located in North Carolina or within a 40-mile radius of the state border.<sup>400</sup> Prior approval requirements for telemedicine services have also been relaxed. Prior approval is only required when the underlying service type or diagnosis would require such approval.<sup>401</sup>

### **2. Remote Patient Monitoring Services Pilot Program**

In 2006, a Federally Qualified Health Center (FQHC) in northeastern North Carolina, the Roanoke Chowan Community Health Center (RCCHC), developed a Patient Provider Telehealth Network (PPTN). The PPTN is a type of remote patient monitoring that allows the patient and physician to add information to “telehealth kiosks” to track health markers which the medical provider can use to monitor the patient’s condition, helping to detect problems early and develop plans to stabilize conditions.<sup>402</sup> RCCHC received funding from the North Carolina Health and Wellness Trust Fund to evaluate the program, which included 198 patients, for 3 years. Patients in the program either suffered from heart disease or heart disease and diabetes. Analysis of financial data revealed that among the program participants, RCCHC saved a total of about \$1.2 million in costs during every six-month period, and reduced hospital use and





emergency department visits.<sup>403</sup> Between 2009 and 2010, the PPTN expanded to eight more health centers and two hospitals due to state and federal funding. The PPTN serves primarily rural counties in North Carolina, with a high percentage of low-income, elderly, and minority populations who are less likely to receive preventive care and report fewer healthcare office visits than other groups.<sup>404</sup> The PPTN continues to provide daily remote monitoring for patients with cardiovascular disease, hypertension, and pulmonary disease in 28 counties, with funding through multiple sources, including federal and private grants.<sup>405</sup>

The PPTN has used several remote monitoring applications. One application used is a weight scale and blood pressure monitoring device placed in patients' homes. Each day, it transmits blood pressure and weight readings through telephone networks to a secure web server, where telehealth nurses monitor the data and notify the patient and/or patient's primary care provider in the case of abnormal readings. The use of remote patient monitoring through PPTN has shown that use of this technology can help patients manage their conditions effectively and reduce overall healthcare costs. As the RCCHC program has shown, remote patient monitoring has several distinct benefits. It allows providers to expand care beyond the typical 15 minute primary care visits. Additionally, it integrates electronic health records into a patient's care, since telehealth nurses have access to these records and communicate with the patient's primary care physician via the EMR. Further, it allows providers to intervene at an early stage when an individual's indicators appear to show a problem.<sup>406</sup>

### 3. Statewide Telepsychiatry Program

In its 2013 budget plan, the North Carolina legislature allocated funds to establish a statewide telepsychiatry program.<sup>407</sup> In October 2013, the Department of Health and Human Services ("DHHS") announced that the program would begin operating in January 2014. The program is based on a telepsychiatry project that was implemented by the Albemarle Hospital Foundation. Through this new statewide telepsychiatry program, psychiatric consultations are made in emergency rooms, where medical professionals connect patients to psychiatrists

in remote locations using a monitor screen conducted through an operating system at East Carolina University's Behavioral Health Telepsychiatry Center.<sup>408</sup> The \$4 million project is a significant step toward improving access to mental health providers in the state and helping the 58 North Carolina counties that suffer from a lack of mental health practitioners.<sup>409</sup>

### 4. Telestroke Program at Wake Forest University

North Carolina is one of 11 states located in the "Stroke Belt," with the Eastern region of the state known as the "buckle" of the stroke belt. In 2010, stroke was the fourth-leading cause of death for North Carolinians (and people with diabetes are at increased risk of stroke).<sup>410</sup> In many areas of the state, particularly in rural areas, hospitals face a shortage or absence of specialists, making it difficult to provide advanced care in critical situations. This occurs often in the case of ischemic stroke, where time-limited treatments may be needed. However, physicians in hospitals lacking stroke specialists may be reluctant to administer such treatments within the time frame required, due to lack of experience managing acute stroke, the risk of complications and a lack of neurological backup.<sup>411</sup> An innovative program that addresses this problem is the Wake Forest Baptist Telestroke Network. The program partners with community hospitals to provide patients in remote locations 24-hour access to stroke specialists (vascular neurologists) through two-way live video and audio consultation and image-sharing technology.<sup>412</sup> The telestroke network allows treating emergency room physicians to consult with specialists and determine the best course of action for a patient. The ER physician within the community hospital first reviews the patient's status, determines the need for stroke evaluation, and then, if needed, a telestroke mobile robot unit is used for direct communication between the telestroke specialist, patient and treating physician. The telestroke specialist conducts a consult examination to evaluate the presence or severity of stroke and discusses the best course of treatment with the network physician and patient. If necessary, hospital staff prepares the patient for air or ground transport to Wake Forest Baptist Medical Center.<sup>413</sup> The program's stated aims are



to decrease emergency department stays, reduce burdens on ER physicians and reduce expenses for partner hospitals. Clinical services are reimbursable by Medicare and most third-party payers.<sup>414</sup>

Over time, the program has shown promising results: as of October 2012, there had been 311 remote consultations within the network, with 34% of the patients involved in consultations receiving treatment with intravenous tPA, a critical time-limited treatment for stroke. As tPA was not available in some of the hospitals before telestroke started operating, it is believed that this program is having a positive impact on the health of stroke patients.<sup>415</sup>

### 5. Project I See in North Carolina: Increasing Retinal Screening for People with Diabetes

The leading cause of blindness in the United States is diabetic retinopathy,<sup>416</sup> a complication of diabetes that results in damaged blood vessels in the retina. Over 600,000 North Carolinians are at risk of losing their vision because of diabetic retinopathy.<sup>417</sup> Regular retinal screening, in the form of dilated eye examinations, can help prevent this damage through referral to specialist treatment, but access to basic retinal screening can be limited. A recent study of low-income patients in North Carolina found that only 6% of participants had received documented dilated eye examinations.<sup>418</sup> Retinal screenings are often not available to those with limited access to an eye doctor. The lack of coverage prevents some diabetics from receiving screenings that could help reduce their risk of developing blindness from diabetes related complications.

Project I See in North Carolina was developed to increase the number of Medicaid patients receiving annual eye exams in order to decrease their risk of developing blindness. The project was designed to evaluate the effectiveness and feasibility of high-resolution digital retinal screening, a form of telemedicine. All of the digital retinal screening was performed in primary care offices in the state, and the images were read at a centralized retinal photography reading center at Wake Forest School of Medicine. Out of the 1,688 patients involved in the study, 12% needed a referral to an ophthalmologist and 5% required urgent treatment. The study demonstrated that it was possible to use telemedicine to attain widespread retinal screening.<sup>419</sup>

### Policy Opportunities

#### Provide Medicaid Coverage of Remote Patient Monitoring

While North Carolina Medicaid reimburses for interactive video consults, it does not cover remote patient monitoring services. Remote patient monitoring is an effective, evidence-based way to help people with diabetes manage their condition and keep them out of the hospital and emergency room. It allows for earlier detection of preventable conditions and allows providers to act quickly after learning of abnormal readings. Currently, the only remote patient monitoring programs in North Carolina are operating through grant funds and partnerships with private organizations.<sup>420</sup> Unfortunately, lack of coverage under Medicaid or private insurance prevents remote patient monitoring from becoming a widely used service in the state.

North Carolina Medicaid should consider expanding its range of covered services to include remote patient monitoring in order to help diabetics manage their condition effectively. As the PTTN has indicated, investment in remote patient monitoring is cost-effective and has the potential to significantly reduce costly hospitalizations and other complications from chronic diseases such as diabetes. Medicaid reimbursement also promotes provider buy-in to the program and reduces out-of-pocket costs for many patients, thereby increasing their likelihood to participate.<sup>421</sup> At least 12 other states, including North Carolina's neighbor, South Carolina, provide some Medicaid coverage for this service.<sup>422</sup> One method for receiving reimbursement is to apply for a federal waiver. Federal waivers allow for states to be reimbursed for services that might not be available under conventional payment models. The Section 1115 waiver allows states "flexibility to test new or existing approaches to financing and delivering Medicaid and CHIP."<sup>423</sup> The 1915 (c) Home & Community-Based Waiver permits states to be reimbursed for services that relate to the "transitioning of individuals from institutional settings into their homes and community."<sup>424</sup> Additionally, North Carolina can apply for federal demonstration programs like "Money Follows the Person" (MFP). MFP allocates funds for Medicaid beneficiaries transitioning from institutions like hospitals





and nursing homes to the community. Kansas has successfully used MFP money to cover remote patient monitoring for elderly people with chronic illnesses.<sup>425</sup>

### **Encourage Private Health Insurance Coverage of Telemedicine**

Currently, 21 states and Washington D.C. have passed legislation requiring that private health insurance plans cover services delivered through telemedicine. Many other states have recently proposed legislation to do the same.<sup>426</sup> Short of mandating coverage, North Carolina should consider offering incentives for private insurers to offer telemedicine reimbursement for services aimed at people with chronic conditions such as diabetes. Currently, BCBSNC covers telemedicine for real-time interactive video and audio, but as of 2013, not telepsychiatry, while Aetna and UnitedHealth also reimburse for telepsychiatry, according to state officials.<sup>427</sup> The promising results of the telestroke program out of Wake Forest should be publicized, as most private insurers, Medicare and Medicaid reimburse for this service; private insurers should be encouraged to finance similar programs for people with diabetes.

### **Reimburse for Digital Retinal Screening in Medicaid**

Project I See in NC demonstrated that digital retinal screening is an effective way to increase retinal examinations among individuals with diabetes in North Carolina.<sup>428</sup> However, digital retinal screening is not covered under North Carolina Medicaid, though it is covered under Medicare and most private insurance plans. Medicaid covers retinal screening for diabetic retinopathy, but they specify that they will not reimburse for the service when “the final retinal images are graded using an automatic process only.”<sup>429</sup> Since most digital retinal screenings are read at centralized reading facilities, they are disqualified from being reimbursed by Medicaid. Recognizing the devastating social and economic consequences of blindness (an estimated \$493 million annually in the United States),<sup>430</sup> North Carolina should include the digital form of retinal screening in their coverage of ophthalmological services for people with diabetes.

## **GOAL #4: EXPAND ACCESS TO DURABLE MEDICAL EQUIPMENT AND INSULIN**

Durable medical equipment (DME) refers to the medical equipment and supplies prescribed by a physician to treat and manage a patient's condition. For people with diabetes, DME is essential for properly managing their condition and avoiding serious health complications that can arise as a result of poor self-management. There are a number of supplies needed by people with diabetes, including blood glucose monitors, blood glucose test strips, glucose control solutions, insulin pumps, insulin syringes, blood lancets, and therapeutic shoes or inserts. While all of these supplies are essential, testing supplies are often a concern because of their cost, the quantity needed, and their importance for monitoring glycemic control.

Providers in North Carolina note that many patients struggle to afford costly testing supplies.<sup>431</sup> This prevents people from adequately keeping track of their blood glucose levels. Lack of control over blood sugar levels prevents physicians and pharmacists from properly prescribing and managing a patient's insulin dosage, and potentially creates a life-threatening situation.<sup>432</sup> Because access to diabetes supplies is so critical to successful management of the disease, it is essential that insurers provide adequate coverage and that both the insured and uninsured have access to DME.

Another important issue is the high price of insulin. North Carolina providers report that there are not a sufficient number of pharmaceutical assistance programs (PAPs) providing insulin to uninsured people with diabetes in the state.<sup>433</sup> One significant problem pointed out by North Carolina pharmacists is the plight of people who have insurance but whose coverage is inadequate to afford insulin: they are not eligible for inclusion in PAPs, but they also have no other assistance programs to help them with high deductibles, co-pays and co-insurance.<sup>434</sup>

### **Coverage of Testing Strips**

Blood glucose testing supplies are often cited as one of the most expensive out-of-pocket expenses for people with diabetes. The cost



of testing strips can vary from \$0.40 to \$1.00 per strip. The number of strips needed per day can differ significantly – some people with diabetes may only test their levels once or twice per day, but people with insulin dependent diabetes need to test more frequently, even up to 8 times per day. The total cost per month therefore could go up to \$240.<sup>435</sup> Insurance coverage is essential to help defray the cost, but lack of insurance or inadequate coverage prevents people from buying the supplies they need.

### Medicaid Coverage

North Carolina Medicaid provides coverage for a range of durable medical equipment and supplies for people with diabetes (See Table 5).<sup>436</sup>

**Table 5:** Durable Medical Equipment Medicaid Coverage

Item Description	Quantity Covered
Blood glucose monitor	1 every 2 years
Replacement batteries	8 per year
Blood glucose test strips	300 strips per month (< age 20) 200 strips per month (> age 20)
Lancing Device	2 per year
Lancets	200 per month
Insulin pump	1 every 5 years
Infusion set for Insulin pump	16 per month
Insulin Syringes	200 per month
Calibrator Solution	4 per year

Source: Characteristics of Uninsured North Carolinians, Data Snapshot, 2010–2011, N.C. INST. OF MED. 4 (January 2013)

### Private Insurance

North Carolina providers have noted that even insured patients have significant difficulty paying for diabetes testing supplies, and the expense can prevent people from adequately testing their blood glucose levels.<sup>437</sup>

The quantity limits offered by several leading private insurance companies are fairly generous.<sup>438</sup> In June 2013, BCBSNC increased its maximum units of blood glucose test strips covered per patient for those with insulin dependent diabetes. Previously, BCBSNC offered a maximum of 12 boxes per quarter (200 strips per month) for people with insulin

dependent diabetes and now they offer 20 boxes per quarter (over 300 strips per month). For people with non-insulin dependent diabetes, they will be covered for 6 boxes per quarter (100 strips per month).<sup>439</sup> Aetna's preferred drug list for 2013 limits patients to 300 strips for 30 days and 900 strips for 90 days.<sup>440</sup>

However, though the quantity limits are fairly high, patients needing a large quantity of test strips face significant problems with high co-payments and co-insurance. BCBSNC charges their beneficiaries a 25% co-insurance rate for covered blood glucose strips.<sup>441</sup> Many of Cigna's health insurance plans charge 20% co-insurance rates for in-network providers and 40% for out-of-network providers for DME.<sup>442</sup> Many plans under Aetna, such as the North Carolina Open Access Managed Choice 2500 plan, have a coverage limit of \$2,000 for DME, along with a 25% coinsurance rate for in-network providers and a 50% coinsurance rate for out-of-network providers. People with diabetes in need of frequent testing may exceed this \$2,000 coverage limit through purchases of testing supplies alone. For example, a person with diabetes testing 8 times per day could spend up to \$2880 per year on glucose test strips alone, leaving \$880 of out-of-pocket expenses for testing strips, plus costs for other needed DME.

Providers interviewed, including clinical pharmacists, note that the high-coinsurance takes a particular toll on under-insured low income patients, as they are ineligible for PAPs (see below) because of their insurance coverage, but lack the ability to meet co-insurance requirements for the quantity of test strips they require.

### Uninsured

Unfortunately, the uninsured in North Carolina only have access to testing supplies through free samples and special programs. The high cost of testing supplies and equipment often prevent the uninsured from accessing these services altogether. However, there are a few programs in the state that help the uninsured get low-cost or free supplies. For example, the Partnership for Prescription Assistance in North Carolina connects low-income individuals with free or discounted medications.<sup>443</sup> The Partnership also connects people to programs offering free and low



cost diabetes supplies including glucose meters, test strips, insulin syringes and medical testing.<sup>444</sup> North Carolina's Assistive Technology Program refurbishes and sterilizes used medical equipment and then resells it at very low cost to individuals needing the equipment. North Carolina's Office of Rural Health also operates a Medicaid Assistance Program for uninsured North Carolinians.<sup>445</sup>

One notable national program is Rx Outreach. Rx Outreach provides low-cost prescription drugs to needy individuals throughout the country, offers help with diabetic supplies and delivers the supplies to homes.<sup>446</sup>

Unfortunately, these programs are unable to provide consistent coverage for the uninsured, forcing these individuals to forgo testing and leaving them unable to manage their diabetes.

### **Policy Opportunities**

Below is a description of possible measures North Carolina can take to reduce the cost of diabetic medical supplies and improve access to these materials for people with and without insurance.

#### **Provide State Assistance with Copays and Coinsurance for Insulin**

Though PAPs<sup>447</sup> do provided limited assistance to the uninsured to access insulin, more must be done for those who are underinsured who face debilitating deductibles, copayments and coinsurance. Some states provide financial assistance to insured individuals to purchase necessary medication. For example, New Jersey provides assistance with copayments for insulin for aged and disabled Medicare Part D beneficiaries, with a maximum copayment of \$7 per brand name prescription.<sup>448</sup> Pennsylvania also offers prescription drug assistance programs for people aged 65 and over to help pay for prescription drugs and insulin.<sup>449</sup> North Carolina provides assistance with medication copayments and out of pocket expenses for HIV+ clients enrolled in Medicare Part D.<sup>450</sup> A similar program for diabetes patients could help low-income people with diabetes improve their ability to self-manage their disease.

#### **Reduce the Cost of Diabetes Testing Supplies for Patients who Successfully Self-Manage**

Even without copay assistance programs, state insurers, including Medicaid and the State

Health Plan, could lower the costs of testing supplies through financial incentives offered to patients to improve self-management of their diabetes. For example, patients who maintained stable A1C levels, completed certain exercise requirements, or participated in diabetes self-management programs could receive discounted or free testing supplies. Private insurers could be encouraged to pursue this approach as well, to help motivate patients to improve health outcomes. Improved health outcomes could help offset the cost of the price reductions in the long-term.

#### **Expand Access to Health Insurance Coverage for Low-Income People**

The best opportunity North Carolina has to improve access to vital test strips is to offer health insurance to the population of adults who are newly eligible for Medicaid under the Affordable Care Act (adults under 138% of the FPL). One option allowed under the Medicaid expansion is for North Carolina to offer a "private option," enrolling eligible individuals into private plans on the Marketplace. Many of the currently uninsured (an estimated 500,000 North Carolinians in total)<sup>451</sup> would qualify, giving those with diabetes access to coverage for test strips instead of having to pay out of pocket or rely on PAPs or other charity service.

### **GOAL #5: IMPROVE BEHAVIORAL HEALTH SERVICES FOR PEOPLE WITH DIABETES**

One of the most urgent issues facing people with diabetes is the need for high-quality behavioral health care. Many providers interviewed for this report have cited behavioral health problems as some of the biggest challenges to treating patients with diabetes. Studies back up these claims, showing that illnesses such as depression contribute to poor self-management in diabetes patients, which can lead to severe health complications.<sup>452</sup>

People with diabetes are much more likely than the general population to develop behavioral illnesses, particularly depression and anxiety.<sup>453</sup> People with diabetes are twice as likely to experience depression as the general population.<sup>454</sup> Generally, comorbid depression is associated with a higher risk



of diabetes-related complications such as heart disease, kidney disease, blindness, amputations, stroke, and mortality.<sup>455</sup> Even mild depression may impair the ability of people with diabetes to effectively manage their disease, and as the severity of depressive symptoms increases, the quality of self-care decreases.<sup>456</sup> Further, some antipsychotic medications, used to treat certain behavioral health conditions, are correlated with an increased risk of diabetes.<sup>457</sup> Diabetes-related distress is also inequitably distributed across different ethnic, geographic, and socioeconomic groups.<sup>458</sup>

The presence of diabetes and comorbid behavioral health conditions not only worsen health outcomes but also create significant costs for the healthcare system, as people with behavioral illnesses suffer from more diabetes complications and have more hospitalizations than those without such conditions. One study showed that the total health costs of comorbid diabetes and depression were 70% higher, on average, than for people with diabetes who did not have depression.<sup>459</sup> Many providers in North Carolina report that their costliest patients are most often people with diabetes who also have behavioral health problems.<sup>460</sup>

For these reasons, it is critical that state health systems constantly seek ways to better coordinate and integrate diabetes care with treatment of behavioral health conditions. However, North Carolina faces several challenges in doing so – most notably, shortages of behavioral health providers and problems coordinating primary and behavioral health services. North Carolina has a collection of agencies and organizations who are working to improve integration and coordination of primary and behavioral health services, including the Division of Medical Assistance; the Division of Mental Health, Developmental Disabilities and Substance Abuse Services; Community Care of North Carolina (CCNC); the Office of Rural Health; and the Center for Excellence in Integrated Care, among others. After providing a brief overview of North Carolina's unique behavioral health system and its history, the following section highlights the state's successes, challenges, and opportunities in meeting the behavioral health needs of people with diabetes.

## North Carolina Highlights in Behavioral Health

North Carolina has implemented a number of successful initiatives in the past several years to improve the ability of state residents to access behavioral health services. Each of the successes highlighted below represents a promising opportunity to improve access to care for people living with diabetes and comorbid behavioral health conditions.

### 1. Statewide Telepsychiatry Program

In the 2013 appropriations bill, the North Carolina legislature allocated funds to establish a statewide telepsychiatry program to begin January 2014.<sup>461</sup> Many state officials have applauded the effort as an initiative that addresses the shortage of behavioral health professionals in the state.<sup>462</sup> Under this program, medical professionals in emergency rooms connect patients to psychiatrists in remote locations using a monitor screen conducted through an operating system at ECU's Behavioral Health Telepsychiatry Center.<sup>463</sup> The state is targeting approximately 60 hospital emergency departments throughout the state for participation in the program over a two-year period.<sup>464</sup> Because North Carolinians with diabetes living in rural or underserved areas often lack regular access to psychiatric consultations, this program can help those living with serious mental illness to better manage their diabetes and avoid serious complications. Stakeholders stress the need to involve multiple agencies and organizations in ensuring that each patient has access to the appropriate continuum of care and follow-up support services. The telepsychiatry program operates through a contract with DHHS and ECU, involving the Office of Rural Health, CCNC and North Carolina Medicaid. However, the initiative represents the work of a variety of other partners, including North Carolina Area Health Education Centers (AHEC).

### 2. Behavioral Health Integration and Monitoring

Also in the 2013 budget, the legislature passed a law mandating the implementation of a new initiative to improve integration between Medicaid behavioral health services and physical health services. Entities known



as “LME-MCOs”<sup>xix</sup> manage North Carolina Medicaid’s behavioral health services, while CCNC is responsible for managing primary care physical health services for most Medicaid beneficiaries. Under the new initiative, known as “Total Care,” LME-MCOs must “implement clinical integration activities” with CCNC.<sup>465</sup> The effort of the initiative is to improve care and reduce costs for patients who suffer jointly from behavioral health conditions and other conditions, in effect, ensuring that patients have access to whole person physical and behavioral care.

Specifically, the law requires LME-MCOs to submit claims data to the CCNC Informatics Center. CCNC is required to then “provide access to clinical data and care management information within the CCNC Informatics Center to LME-MCOs and authorized behavioral health providers to support (i) treatment, quality assessment, and improvement activities or (ii) coordination of appropriate and effective patient care, treatment, or habilitation.”<sup>466</sup> Additionally, DHHS, in consultation with CCNC and the LME-MCOs, must develop quality and performance statistics on the costs, outcomes, access, and utilization of services for behavioral health, developmental disabilities, and substance abuse.<sup>467</sup> Starting March 1, 2014, and semiannually thereafter, DHHS must submit a report to the Joint Legislative Oversight Committee on Health and Human Services and the Fiscal Research Division concerning “the progress, outcomes, and savings associated with the implementation of clinical integration activities with CCNC.”<sup>468</sup>

This integration effort is an attempt to improve data sharing within North Carolina Medicaid, and will strengthen the ability of diabetes providers to identify and treat the behavioral health conditions of people with diabetes, as well as allow behavioral health providers to identify those patients who may suffer from a chronic condition such as diabetes and link them to appropriate primary and specialty care.

### 3. Medicaid’s Behavioral Health Integration Program

North Carolina Medicaid has also made strides in educating primary care providers on

behavioral health issues and resources through creation of a Behavioral Health Integration Program (BHI) within CCNC in 2010. CCNC does not manage most behavioral health services, as these are the responsibility of the separate LME-MCO managed system. Before the creation of the BHI, most behavioral health services handled by CCNC were crisis services, and resources were limited.<sup>469</sup> However, the BMI sought to improve Medicaid’s ability to manage the care of its patients who suffered comorbid physical and behavioral health conditions. BHI hired 19 part-time psychiatrists and 14 full-time behavioral health coordinators to work in CCNC’s 14 networks throughout the state as advisors, rather than as practicing medical professionals.<sup>470</sup> Since the program was established, psychiatrists and behavioral health coordinators have been working with primary care physicians within CCNC’s networks to inform them about the behavioral health resources available to them, so they are more comfortable in making referrals to behavioral health providers across the state and engaging in care management involving behavioral health issues.<sup>471</sup> The program works to improve providers’ abilities to manage care for patients with complex medical and behavioral needs (typically multiple comorbidities), with a focus on getting these patients to follow the recommended treatment plan through motivational interviewing and other techniques.<sup>472</sup> For individuals with diabetes and comorbid behavioral conditions, this is especially useful because it allows primary care physicians to engage with patients’ behavioral health issues on the front end, rather than having to wait until a crisis develops; this improves the likelihood that the physician can improve a patient’s self-management and avoid dangerous complications. BMI also has created a toolkit for depression that they are targeting to Medicaid providers across the state; no funding for implementation of the depression toolkit has yet been located, though funding has been provided for CCNC’s toolkit on chronic pain.<sup>473</sup>

xix LME-MCO stands for Local Management Entity-Managed Care Organization.





## Challenges

Many of the barriers that people with diabetes face in receiving comprehensive, integrated behavioral health are not unique to individuals with their condition. However, problems such as provider shortages and fragmented care delivery have a particularly severe impact on people who suffer simultaneously from diabetes and behavioral health conditions, due to the necessity of maintaining a strict self-management regimen to avoid diabetes complications. The following section addresses some of the major challenges that North Carolina partners have identified that hinder the ability of North Carolinians with diabetes to receive whole person physical and behavioral care.

### CHALLENGE 1. SUPPLY OF BEHAVIORAL HEALTH PROVIDERS

Like many states, North Carolina faces a shortage of behavioral health providers to meet the needs of patients with complex medical and behavioral health needs. The behavioral health workforce shortage limits access to care, prevention, and treatment options for people with diabetes, particularly in rural areas. Three-quarters of North Carolina counties have fewer than half the number of behavioral health providers required to meet county needs.<sup>474</sup> Currently, North Carolina has 84 Mental Health Professional Shortage Areas, while neighboring state South Carolina has 44, Tennessee 62, Maryland 48, and Virginia 47.<sup>475</sup> These shortages have increased in the past decade. Between 2000 and 2005, there was a decrease in the proportion of psychiatrists to the general population in 32 counties in North Carolina.<sup>476</sup>

North Carolina's behavioral health providers are also not evenly distributed across the state, posing access to care challenges for people with diabetes living in underserved areas. Most providers are concentrated around one of North Carolina's four behavioral health hospitals, near major medical centers, or in other densely populated areas.<sup>477</sup> Thus, many rural areas are left without an adequate supply of behavioral health professionals. Researchers at University of North Carolina-Chapel Hill developed a useful scale to estimate the unmet need for health professionals for each county in the state. The scale ranged from 0 (for counties with no behavioral health

professionals) to less than 100 (for counties with some behavioral health professionals, but not enough to meet need), to more than 100 (for counties with more professionals than needed) Across the counties in the state, the percentage of need met for behavioral health professionals with the ability to prescribe medication ranged from 0 to 184, indicating that some counties had no behavioral health professionals at all, while others had significantly more than necessary to meet local need. For non-prescribing behavioral health professionals, such as psychologists and licensed social workers, the percentage of need met ranged from 9% to 801%. This is an even greater discrepancy, indicating that some areas of the state have an overabundance of nonprescribing professionals while others face significant unmet need. Statewide, the number of prescribing health professionals only meets 53% of the state's overall need; the researchers estimated that North Carolina would need more than 980 additional prescribing professionals to meet the full behavioral health needs of North Carolinians.<sup>478</sup>

### CHALLENGE 2. DELIVERY SYSTEM ISSUES

Especially for people with diabetes, the integration of behavioral and physical health is essential. Given that behavioral health problems threaten to impede self-care for people with diabetes, it is important that behavioral health specialists and primary care providers are equally informed about a patient's behavioral health needs, that they communicate across disciplines, and that patients have ready access to all services needed. However, as in the United States as a whole, North Carolina faces challenges in promoting an integrated delivery system which make it more difficult to provide comprehensive physical and behavioral care to people with diabetes.

#### Care Management

North Carolina Medicaid, through CCNC, has already implemented successful integration initiatives, such as the BHI program discussed above. CCNC includes care managers in all 14 networks across the state who assist providers by providing additional disease education, helping with follow-up, and connecting patients with referrals to specialists and making appointments. Case managers play a critical role in identifying unmet behavioral





needs in people with diabetes and linking them to appropriate care.

Since behavioral health providers are not included in CCNC's networks, primary care providers in these networks must make referrals outside the networks when patients need behavioral health care beyond that available in a primary care setting. Because of the separation of primary care and behavioral health care, there is a critical need to improve communication and coordination among primary care and behavioral health providers within Medicaid. However, providers report that several challenges inhibit integration of these two areas, including the lack of coordinated health information technology that allows providers to share information effectively, as well as billing and reimbursement challenges.

### **Difference in Payment Models and Multi-Payer Systems**

Within North Carolina Medicaid, physical and behavioral health services operate under different billing and payment structures. Physical health services in North Carolina, managed through CCNC's medical home model, operate on a fee-for-service payment model. This means each service is paid for separately. Medicaid providers such as primary care physicians and surgeons are paid for each lab test, check-up, discrete surgery, or other service. Behavioral and behavioral health services, however, operate on a per-member-per-month payment model, meaning that the LME-MCOs are paid an established monthly rate for the provision of the behavioral health services. Each LME-MCO has a different way of organizing its billing and reimbursement system.

Having different billing and payment systems for physical and behavioral health services has implications for the care of people with diabetes. The system may not provide proper financial incentives for individual providers and networks to encourage the provision of whole-person care to people who have conditions outside the provider's scope of work. Though CCNC provides case managers to coordinate care for high-need Medicaid beneficiaries, individual providers within CCNC and behavioral health networks do not receive sufficient financial incentives for helping coordinate care, thus leaving a critical gap in

attempts to coordinate and integrate primary and behavioral health care.

### ***Policy Opportunities***

As highlighted above, access to behavioral health resources and coordination between diabetes care providers and behavioral health specialists is essential for proper patient self-management. Many of the initiatives to improve access and coordination of whole-person care for individuals with diabetes are contingent on larger reforms to the overall healthcare system. However, there are focused initiatives that can be tailored to meet the behavioral health needs of individuals with diabetes. Detailed below are some opportunities identified by community partners in North Carolina as particularly promising in addressing the behavioral health needs of people with diabetes.

### **Expand Use of Telepsychiatry**

Promotion of telemedicine could expand access to behavioral health services for people with diabetes and other chronic conditions. Telemedicine can be used directly for patients to communicate with a behavioral health professional through secure two-way video conferencing to receive needed services, especially in underserved or geographically isolated areas. This can be targeted at areas with high incidences of diabetes and lower rates of health care access.<sup>xx</sup> Another use of telemedicine is to allow primary care providers to have remote consults with psychiatrists, thereby allowing physicians in underserved areas to receive advice concerning patients with complex behavioral health needs.<sup>479</sup>

As discussed above, DHHS has announced a statewide telepsychiatry program which began operating in January of 2014.<sup>480</sup> The \$4 million project is a step toward improving access to behavioral health providers in the state and helping the 58 North Carolina counties that suffer from a shortage of behavioral health practitioners.<sup>481</sup> However, stakeholders have acknowledged that there is room for improvement that will allow the program to extend access to behavioral health services to a larger population. Currently, the program is only provided in emergency rooms. In order to provide services to more people throughout the state, the program could in the future

xx See the discussion of the Duke geospatial mapping project in Part 2, Chapter 2.



expand to outpatient providers including primary care practices and community health centers in areas with provider shortages.<sup>482</sup> While some have acknowledged concerns that smaller practices may not have the capacity to support telepsychiatry, this option should be explored as another way to increase access to behavioral health services.<sup>483</sup> Federal grants also exist to help practices in rural or underserved areas develop the infrastructure to provide telemedicine services to patients.<sup>484</sup>

Another potentially more feasible option is to establish a network of on-call psychiatrists, likely at academic centers, who provide consultations to primary care providers. State officials have acknowledged that while issues of liability would need to be addressed, this plan has the potential to increase access to psychiatric services, reduce the need for specialty referrals, and provide incidental training to primary care providers in mental health prescribing.<sup>485</sup> One LME-MCO, Cardinal Innovations, provides reimbursement for psychiatrist consultation services to primary care providers as part of a 1915 (b)(3)<sup>xxi</sup> waiver. As of January 2014, this program was only available in five counties in the state and is subject to availability of funds.<sup>486</sup>

North Carolina HHS should also explore the option of providing incentives, financial or otherwise, to Medicaid providers that offer telemedicine services, with extra incentives for smaller practices or providers offering services directed at areas with shortages of behavioral health professionals. Further incentives can be implemented to encourage psychiatrists to become trained in providing telepsychiatric services, including free training classes, guaranteed referrals post-training, and increased reimbursement for clients seen through telepsychiatry for a one-year period following the training. Providers who care for patients with a large disease burden could also receive financial incentives. This would be a way to promote access to behavioral health services for people with diabetes, as this patient population is significantly more likely to be high utilizers.

### **Incentivize Providers and Educators to Incorporate Behavioral Health Education and Screening into Diabetes Care**

Having primary care physicians bear some responsibility for behavioral health assessment is one of the World Health Organization's best practices in integrating primary care and behavioral health services, and is one of the goals of previously mentioned programs such as CCNC's BHI program.<sup>487</sup> Provider awareness of the relationship between diabetes and behavioral health is important because they can act on their knowledge by doing basic behavioral health screening, making appropriate referrals for patients in need of specialty behavioral care, and educating their patients about the need for treatment. However, providers in North Carolina report that there is still a significant lack of awareness about the strong connection between diabetes and behavioral health issues among both providers and patients. Further, stigma concerning behavioral health treatment persists among some patients.<sup>488</sup>

One way to help remedy this problem is to encourage incorporation of discussion of behavioral health into all diabetes self-management education and training programs through financial incentives, such as an increase in reimbursement. The ADA recommends incorporating ongoing psychosocial assessment as a part of diabetes management, particularly for individuals with poor self-management, while the AADE have encouraged DSME providers to include information about depression in DSME and help ensure that patients are screened for depression.<sup>489</sup> This approach could also help reduce stigma attached to receiving treatment for behavioral health conditions, as well as encourage patients to talk frankly with their providers about these issues.

An additional strategy is to increase Medicaid reimbursement levels for primary care doctors for basic behavioral health services, as well as for behavioral health providers who conduct training and consults with primary care doctors. As payment models within the state change towards pay for performance initiatives, new financial incentives should be explored as a vehicle for encouraging providers to integrate basic behavioral health services into patient care. The incentives

xxi This waiver allows the state to use savings gained from a managed care delivery system to provide additional services.



could target providers treating large numbers of people with diabetes, or people with high rates of diabetes and comorbidities. These financial incentives could be tied to providers meeting quality measures around behavioral health, including offering financial incentives to primary care providers to conduct depression screenings for people with chronic conditions requiring self-management, such as diabetes. Incentives should also be provided to behavioral specialists who identify patients at high risk of chronic illness such as diabetes and make appropriate referrals, or encourage patients to speak with their primary care physician.

A third opportunity to strengthen diabetes providers' involvement in helping their patients receive adequate behavioral health treatment is to establish an awareness campaign about the connection between these two issues. In Connecticut, for example, the state's Diabetes Prevention and Control program partnered with a number of organizations in the state to develop and provide seminars to providers about the relationship between diabetes and depression.<sup>490</sup> North Carolina can take advantage of its strong state, regional and local partnerships to launch a similar initiative to educate providers and increase awareness about the interrelatedness of diabetes and behavioral health problems.

### **Increase State Support for North Carolina's Medicaid Case Management System to Improve Information-Sharing between Physical and Behavioral Health Providers**

One concern among providers when asked to screen for additional conditions is the challenge they face after finding a condition is present. Oftentimes, physical health providers do not feel comfortable screening for certain behavioral health conditions if they do not feel that there is a system in place for the individual to be treated quickly and appropriately.<sup>491</sup> This indicates that larger changes in the system, including improved coordination and integration of services (see following recommendation), are necessary to increase access to behavioral health providers

North Carolina's 2013 FY budget requires the coordination of information between Medicaid behavioral health providers and CCNC.<sup>492</sup> The Division of Mental Health's contracts with LME-MCOs already require care coordination

between behavioral and physical health services. Known as "the Four Quadrant Care Management Model," this system requires assessment of a patient's health needs and a determination of whether CCNC or an LME-MCO should assume primarily responsibility for the patient's care management.<sup>493</sup>

Officials say further state support is needed for state agencies to have the capacity to measure whether this model is being properly implemented.<sup>494</sup> A strong case management system would allow Medicaid care managers, whether they are within CCNC or LME-MCO networks, to enter care coordination information as well as use the system for screening and population management. Developing a shared case management system would enable primary care case managers to be more aware of the behavioral health resources in the community, and vice versa, and allow both sets of practitioners to communicate more easily and make appropriate referrals when needed.

An improved case management system would allow care managers to have a more complete view of patients' overall health and ability to self-manage their diabetes. At the population level, having access to physical and behavioral health information would allow the Medicaid program to identify and target patients with comorbid diabetes and behavioral health conditions for additional treatment, as well as gather the data needed to make policy reforms focused on the most urgent health issues.

### **Support Integration Efforts of Behavioral and Physical Health Services for Individuals with Diabetes**

Throughout the report, the need for team-based interdisciplinary care has been emphasized because it offers a way to meet the comprehensive and complex needs of people with diabetes. Behavioral health specialists play an important role on diabetes patients' care teams by providing the behavioral health resources needed to manage their condition. The ADA recommends social workers, psychologists, psychiatrists, and family therapists as professionals useful for helping people with diabetes cope with pre-existing psychosocial problems as well as those that might arise due to living with diabetes.<sup>495</sup>



One way to achieve more integrated care is through establishing “fully integrated” or “fully shared” practices.” Fully integrated practices are practices in which behavioral and physical health providers fully share treatment plans with each other, regularly communicate, and work together to coordinate patient care. Fully shared spaces mean that behavioral and physical health providers share the same rooms, in comparison to co-located spaces in which behavioral and physical health providers are located in different parts of the same building.<sup>496</sup> Fully integrated and fully shared practices offer a unique way to unite the silos in delivering behavioral and physical care. These models, while not necessarily appropriate for all practices, could be implemented in suitable locations within the state, with a particular emphasis on underserved areas with high rates of comorbidities. These practice models could ease stigma and make referrals easier, thereby alleviating common barriers to obtaining behavioral health services in traditional practice settings.

To further establish these innovative practices, North Carolina could provide more pay for performance incentives, such as shared savings schemes, for Medicaid practices that adopt a model integrating primary care and behavioral healthcare systems. This incentive structure allows doctors to share in the savings that come with better coordination of services and makes it more likely that practices will integrate. Increased support to entities such as the Division of Mental Health, Office of Rural Health, North Carolina Medicaid, AHEC, and North Carolina Center for Excellence in Integrated Care, could offer providers and hospital networks more opportunities to receive technical and financial assistance to help them implement these practices.

Another way to support integration efforts would be to expand behavioral health integration programs, such as the one implemented in Medicaid through CCNC, which focus on managing care for patients with complex medical conditions. For people with diabetes, the program is useful in helping patients deal with complications of their multiple conditions. Through state funding for these programs, Medicaid could hire additional behavioral health coordinators to facilitate connections between primary care

providers and psychiatrists. This expansion would help fill in gaps in the program, where, currently, some primary care providers are left without close contacts with a psychiatrist. Under this system, doctors, both in primary care and behavioral health, should be reimbursed for time spent coordinating care, in addition to their ordinary fee-for-service payments, to incentivize appropriate use of the behavioral health networks. The additional state expenditures should be seen as an investment, since early identification of a patient’s complex health needs can prevent costly hospitalizations and complex care in the future, thus driving down healthcare costs.

### **Incentivize Behavioral Health Providers to Join the Health Information Exchange**

For treatment of chronic conditions like diabetes, which require a complete picture of a patient’s health condition, ready access to patient health information is extremely important. Enabling and incentivizing behavioral health providers to participate in information sharing technologies such as the North Carolina Health Information Exchange (HIE)<sup>xxii</sup> will help providers and care managers have a more comprehensive picture of their patient’s health status and improve their ability to make informed medical decisions.

The North Carolina HIE is a standardized electronic information system that allows providers throughout the state to share patient health information.<sup>497</sup> While many providers of physical health services are already participating in the HIE, most behavioral health providers are not. This is likely due to the fact that most physical health service providers are eligible for federal financial incentives under the Health Information Technology Act (HITECH), while many behavioral health providers are largely excluded. One way to address this issue and incentivize Medicaid behavioral health providers to join the North Carolina HIE would be for the state to offer subsidies or other financial incentives to defray behavioral providers’ setup costs in joining the HIE.

## **Chapter 3: Increasing Access to Providers for People with Diabetes**

For people with or at risk for diabetes, a strong care team helps increase knowledge

xxii See Part 1, Chapter 2 for more information about NC HIE.



and skills as well as healthy behaviors. Physicians, nurses, nurse practitioners, physician assistants, pharmacists, community health workers, and other healthcare workers all play central roles in helping patients understand the disease and develop the skills to manage it and prevent complications. North Carolina still faces several major challenges in ensuring access to an adequate supply of healthcare providers to treat people with diabetes, including provider shortages and lack of payment systems promoting comprehensive care teams.<sup>498</sup> This chapter highlights opportunities to enhance access to whole person diabetes care through reduction of provider shortages and utilization of diverse healthcare workers, including nurse practitioners, pharmacists and community health workers, as members of care teams.

### GOAL #1: REDUCE THE HEALTHCARE PROVIDER SHORTAGE

Availability of care is expected to be a growing problem due to the increase in demand for diabetes care in the state combined with a reduction in the supply of health professionals, particularly primary care professionals.<sup>499</sup> The increased demand for diabetes care is driven by the expectation of population growth, the expansion of access to health insurance under the Affordable Care Act, and the growing prevalence of diabetes within the population. The Office of State Budget and Management estimates that the general population will grow by about 17% between July 2010 and July 2020.<sup>500</sup> Moreover, the aged population, a cohort much more likely to utilize healthcare services, is expected to grow at even higher rates.<sup>501</sup> Further, the population of people with diabetes has grown at a rapid rate, almost doubling from 1996 to 2010.<sup>502</sup> More health providers are needed to address the complex needs of this growing population.

The shortage of physicians, both in primary care and specialty practices, is a growing problem in North Carolina, as it is in other areas across the country. The quality of healthcare is linked closely to patients receiving adequate primary care with 1.44 fewer deaths per 10,000 population for each primary care physician added to the workforce.<sup>503</sup> People with diabetes also require easy access to specialists, from podiatrists

to ophthalmologists. Some key statistics are presented below:

- There are 117 areas in North Carolina designated as Primary Care Health Professional Shortage Areas (HPSA). A primary care HPSA occurs where there are 3,500 or more people per primary care physician.<sup>504</sup> Only 72.51% of primary care need in the state is met; to meet this need, the state would require 139 additional primary care physicians.<sup>505</sup>
- 24 counties lack even one general surgeon.<sup>506</sup>
- North Carolina had 21.9 physicians per 10,000 population in 2010. This is below the national median of 23.7.<sup>507</sup>
- North Carolina had 7.6 primary care physicians per 10,000 population in 2010, compared to a national average of 7.9. This is higher than the surrounding states of Georgia (7.1) and South Carolina (7.3) but slightly lower than Tennessee (7.9).<sup>508</sup> In 2011, Orange County had the highest ratio of primary care physicians in the state, at 23.7 per 10,000 while northeastern Tyrrell County had the lowest, with no primary care physicians at all.<sup>509</sup>

North Carolina had 22,088 active allopathic physicians (MDs) and 942 active osteopathic physicians (DOs) in 2012.<sup>510</sup> 7,664 of the active MDs (35%) were primary care physicians, as compared to 422 (45%) of the DOs.<sup>511</sup> North Carolina Institute of Medicine (NCIOM) estimates that the state will experience a 12% decrease in per capita physician supply by 2020, and a 26% decline by 2030.<sup>512</sup> This shortage is expected to be particularly acute among physicians practicing primary care, general surgery, and psychiatry.<sup>513</sup> This is due in part to a significant portion of the health workforce approaching retirement age (almost 23% of active physicians in the state are aged 60 or over)<sup>514</sup> and the inability of the state to retain a large portion of the students graduating from in-state medical schools. Over the past 40 years, only about 40% of the students trained in North Carolina medical schools have stayed in the state to practice.<sup>515</sup>

Among physicians, there has been a longstanding shift of providers away from primary care. Nationally, medical school





graduates are selecting more lucrative specialties or specialties that would allow them to have a better quality of life. Between 2005 and 2010, the number of first-year residents choosing Family Medicine and General Practice specialties only increased by 3.1% and pediatrics, only by 1.1%. More attractive specialties like Anesthesiology, Dermatology, and Allergy & Immunology increased their numbers by 11.7%, 10.6%, and 22.2%, respectively.<sup>516</sup>

In addition to a supply shortage, North Carolina also faces a highly unequal geographic distribution of physicians. Physicians in the state are concentrated in populous areas with hospitals or large research universities. In 2011, only 18% of primary care physicians practiced in a rural county, despite the fact that 45% of the state's population resided in a rural county.<sup>517</sup> Providers in the rural Western and Eastern regions of the state confirm that specialists in particular are very difficult to access, requiring some residents to drive over 200 miles round-trip for a specialist appointment.<sup>518</sup>

This unequal distribution is present at the residency level. 83% of Graduate Medical Education (GME) residents in the state are training at one of five academic health centers, predominantly located in more populated areas, all of which are east of Mecklenburg County.<sup>519</sup> The state's remaining residents train at five freestanding AHEC residency centers.<sup>520</sup> The Mountain Area AHEC in Western North Carolina only hosts 1.9% of the state's residents.<sup>521</sup> This leaves most of western North Carolina and other rural areas isolated from GME programs, reducing their prospects of increasing the number of physicians practicing in these areas.

In addition to physicians, other important providers who practice medicine under physician supervision include licensed nurse practitioners (NPs) and physician assistants (PAs). NPs are part of a professional category known as Advanced Practice Registered Nurses (APRN), which also includes nurse anesthetists, nurse-midwives, and clinical nurse specialists.<sup>522</sup> In 2011, there were approximately 3,972 NPs practicing in the state; this number has since grown to approximately 4,600 NPs practicing in North Carolina.<sup>523</sup> However, the state has a lower

ratio of NPs than surrounding states. North Carolina has a ratio of approximately 41 NPs per 100,000 people compared to states such as Arkansas at 92 and Tennessee at 91 NPs per 100,000 people.<sup>524</sup> In 2011, there were 3,881 PAs practicing in the state, growing 6.8% from the previous year. In 2010, the ratio of PAs per 100,000 people was 42 in North Carolina, much higher than surrounding states South Carolina and Tennessee which both had 19 PAs per 100,000 people.<sup>525</sup> The long-term growth rate of NPs and PAs is much higher than that of physicians in the state; between 1990 and 2010, the NP workforce grew by 383% and the PA workforce grew by 214%, compared to a 35% growth rate for physicians.<sup>526</sup>

Like physicians, PAs are also moving towards specialty care in greater numbers. Up to 60% of PAs nationally are estimated to practice in specialty areas, particularly in surgery and emergency care, with only 10% practicing internal medicine.<sup>527</sup> The overwhelming majority of NP graduates nationwide (84%) in 2012 were trained to be a primary care NP, while the estimated number of NPs practicing in primary care is lower, around 55% to 66%.<sup>528</sup>

Of particular concern is the shortage of health care providers from minority groups. In North Carolina, data from 2007 showed that though African Americans represented 21% of the population, they only accounted for 6% of physicians, and 5% of NPs. By comparison, non-Hispanic whites accounted for 69% of the state's population, while constituting 82% of the physician population and 90% of the NP population.<sup>529</sup> This shortage of minority providers has consequences for access to health care among minority populations. Research shows patients are much more likely to see providers of the same ethnic or racial background and are more likely to be satisfied with the care received.<sup>530</sup> Minority groups are also more likely to practice in shortage areas.<sup>531</sup>

Currently, North Carolina has programs to help encourage recruitment of minorities into health professions. The North Carolina Health Access Program, a consortium of educational institutions and community health service agencies based out of UNC-Chapel Hill, offers a variety of pre-college and college activities for students from disadvantaged backgrounds to encourage them to enter health training and professional health programs.<sup>532</sup>





### North Carolina Highlights

North Carolina has a number of programs aimed at addressing the state's provider shortage. Among the highlights include:

#### 1. Loan Repayment and Recruitment Incentives

In efforts to increase the amount of providers in underserved areas, the state, led by the Office of Rural Health, helps medical professionals and dentists pay off their loans if they commit to practicing for four years in an underserved area. For primary care physicians and general practice dentists, the maximum principle plus interest repayment is \$100,000 for a four-year commitment.<sup>533</sup> For nurse practitioners, physician assistants, nurse midwives, and dental hygienists, the maximum principle plus interest repayment is \$60,000.<sup>534</sup> For professionals without loans, bonuses are provided. For physicians and dentists, the maximum bonus is \$50,000, and for nurse practitioners, physician assistants, nurse midwives, and dental hygienists, the maximum bonus is \$30,000 for 4-year commitments.<sup>535</sup> General surgeons are not eligible for loan repayment services.<sup>536</sup>

A federal loan repayment program also complements the state's incentives. The National Health Service Corps' (NHSC) scores Health Professional Shortage Areas (HPSA) based on each area's amount of primary care providers and assesses need scores between 0 to 25 for primary care and mental health, and 0 to 26 for dental services, with the highest scores representing the greatest need.<sup>537</sup> The NHSC will pay full-time primary care providers working in areas with HPSA scores of 14 or above a sum of up to \$60,000. Those working in areas with HPSA scores of 13 or below can receive up to \$40,000.<sup>538</sup>

The Office of Rural Health has been successful in its recruiting efforts. Over the last six years, an average of 150 placements have been made each year.<sup>539</sup> 68% of placements were in a geographic, population, or facility HPSA.<sup>540</sup> The Office of Rural Health estimates that \$48 million was generated in the health sector from these placements in 2013. It has also found that there was a 9.6 to 1 return on investment (each dollar spent generated \$9.6). When only state dollars are considered, the return on investment was 28.8 to 1.<sup>541</sup>

North Carolina's AHEC have also been successful in providing residency programs that keep physicians in state. 46% of physicians who finish an AHEC residency stay in North Carolina to practice, compared to only 31% of physicians in a non-AHEC residency.<sup>542</sup> AHEC trained residents who stay in North Carolina are also slightly more likely to practice in rural areas, with 15% of AHEC trained residents in the state practicing in rural areas, compared to 12% of those in non-AHEC residencies. In general surgery the difference is even more pronounced, with 30% of AHEC-trained general surgeons practicing in rural areas versus 19% of general surgeons trained in non-AHEC programs.<sup>543</sup>

#### 2. Expansion of North Carolina Medical Schools

There has been an expansion of medical schools in North Carolina in recent years in an effort to address the physician shortage in the state.

The Jerry M. Wallace School of Osteopathic Medicine opened its doors at Campbell University for the 2013-2014 school year with a class size of 150.<sup>544</sup> Nationwide, approximately 60% of new osteopathic graduates (DOs) practice in primary care specialties, compared to only 24% of MDs.<sup>545</sup> Campbell University expects roughly half of its osteopathic graduates to enter primary care practice and at least a quarter to enter family practice.<sup>546</sup> Since a higher proportion of DOs in North Carolina practice in rural and underserved areas,<sup>547</sup> this significant increase in DO providers should expand access to primary care in shortage areas. Campbell University's School of Osteopathic Medicine has also partnered with Southeastern Health to offer two approved residency programs—a 24-position family medicine program and a 39-position internal medicine residency program.<sup>548</sup> The School aims to increase the number of residents practicing in rural and underserved communities.<sup>549</sup>

Currently, North Carolina has four allopathic (MD) medical schools with an annual enrollment of 458 first-year students. The two public medical schools for MDs in North Carolina have recently increased their enrollment: the University of North Carolina increased enrollment in 2012 by about 12%, and the Brody School of Medicine at ECU expanded enrollment by almost 10%.<sup>550</sup> Both



schools are still seeking increased enrollment, but plans for further expansion have stalled due to lack of funding.<sup>551</sup>

### 3. Family Medicine Interest and Scholars Program

The Blue Cross and Blue Shield of North Carolina (BCBSNC) Foundation provided a \$1.18 million grant to the N.C. Academy of Family Physicians (NCAFP) Foundation to establish the Family Medicine Interest and Scholars Program. The Program pairs North Carolina medical students with family physicians in clinical practice settings and also offers programs increasing interaction between practicing family physicians and students at each of North Carolina's medical schools. The Program hopes to yield a significant return on investment; according to the Robert Graham Center for Policy Studies, one new family physician who practices in North Carolina adds an estimated \$950,000 in annual economic impact.<sup>552</sup>

### 4. Physician Assistants Program for Veterans

In 2012, BCBSNC provided a four-year \$1.2 million grant to establish a master's level program for military veterans to receive training to become physician assistants. A national survey showed that nine out of 10 medics in the Special Forces desired to continue pursuing a health career, and half were interested in becoming physician assistants. The program focuses on educating veteran medics and emphasizes practice in underserved communities across the state. Students will complete training rotations at UNC hospitals and free clinics across the state. The four years of funding goes to creating a curriculum, hiring staff and faculty and providing scholarships for former Special Forces medics to train as physician assistants. The program is being established with input from the U.S. Army Special Operations Command at Fort Bragg and is expected to begin enrolling students in 2015.<sup>553</sup>

### *Policy Opportunities*

#### **Expand Current GME Programs and Create New Programs**

While the state has recently increased enrollment at the two public medical schools in the state in an effort to grow the number of physicians, reports show that

the increase in Graduate Medical Education (GME), also known as "residency," has not been keeping pace.<sup>554</sup> Research shows that the location of a medical student's GME is a greater determining factor in where he will practice than the location of his or her medical school. Nationwide, 38.6% of physicians end up practicing in the same state as their medical school, while 47.8% of physicians practice in the state where they completed their residency program.<sup>555</sup> While the national average is 3.6 GME positions per 10,000 population, North Carolina only has a rate of about 3.1 GME positions per 10,000 population.<sup>556</sup> However, the large number of physicians in New York and Massachusetts skew the national average. The national median is 2.6 residents per 10,000 residents.<sup>557</sup>

Since medical school graduates are more likely to practice where they completed their residency program, compared to where they graduated from medical school, North Carolina should focus on expanding enrollment in its residency programs. Additionally, since most residency programs are in more populated parts of the states, UNC should consider expanding its program at Mountain Area Health Education Center (MAHEC), which currently has only 1.9% of medical residents in the state,<sup>558</sup> to open up more residency positions in the Western region of the state. The state should also consider expanding the number of resident positions available at ECU and Vidant Medical Center, which serve the rural eastern part of the state and account for only 11% of all residencies in the state.<sup>559</sup>

One possible policy solution offered by the Program on Health Workforce Research & Policy, based out of UNC Chapel Hill's Cecil G. Sheps Center for Health Services Research, is for the state to create a GME board which makes decisions about financing and distribution of GME programs statewide. The board would consist of a variety of stakeholders interested in health workforce issues and would allocate new GME funds and positions based on need. To do so, the board's work could draw upon the existing Health Professions Data Systems operating out of the Sheps Center.<sup>560</sup>



However, the focus should not just be on direct expansion of enrollment in medical and residency programs. Further state support for programs such as AHEC and the Office of Rural Health, which have been successful in increasing the number of physicians and residents practicing in the state, can also boost retention of essential health care providers.

### **Expand the Number of Primary Care Nurse Practitioners within the State**

One way to expand the primary care workforce is to increase the numbers of NPs across the state who practice in primary care. There is some evidence that primary care NP education uniquely prepares practitioners to improve outcomes for patients with diabetes; one study found that family medicine practices employing NPs were more likely than physician-only practices to assess patients' A1C and cholesterol levels.<sup>561</sup> NPs have also received higher patient satisfaction scores in some studies, and have been shown to spend more time with patients per visit and to request that patients return more often.<sup>562</sup>

One way to expand the NP workforce in underserved areas is to offer increased financial incentives for NPs who work in rural areas or HPSAs. The state could model these incentives upon some of the ACA's provisions which seek to expand the role of nurses, including NPs.<sup>xxiii</sup> Among the ACA's initiatives include a 10% Medicare bonus from 2011 to 2016 to primary care providers, including NPs who work in areas with physician shortages, as well as a boost to 100% Medicare parity for nurse midwives.<sup>563</sup> North Carolina Medicaid should consider providing equivalent bonuses for NPs who work in areas with significant physician shortages.

Another way to address the gap in primary care is to increase the number of nursing faculty who train NPs. There is a shortage of nursing faculty due in part to the aging of the faculty workforce as well as the lower salaries received by nursing faculty when compared to other faculty with advanced degrees.<sup>564</sup>

As a result, many more qualified applicants apply to advanced nursing programs than can be admitted. Given the efficiency of

xxiii The ACA provides \$50 million to nurse-managed health clinics offering primary care to low-income patients and \$50 million annually for three years (2012-2015) for hospitals to train advanced practice nurses and other nurses with advanced degrees to care for Medicare patients.

training more NPs,<sup>xxiv</sup> increasing the number of faculty within NP programs can help promote the graduation of more trained NPs across the state. One method of doing so is to increase nursing faculty salaries to be commensurate with faculty with similar credentialing. Another would be to encourage working nurses to become part-time faculty members. To improve the supply of NPs, other options include increasing scholarships and loan assistance for master's programs, and expanding the availability of online or distance-learning courses. For a more in-depth examination of policy recommendations to increase the nursing supply, please see the 2007 report by NCIOM's taskforce on the nursing workforce.<sup>565</sup>

### **Target In-State Residents for Medical School and Residency Programs**

Students from North Carolina are more likely to practice in the state after completing their medical residency programs.<sup>566</sup> ECU's Brody School of Medicine has a higher in-state population of medical students, and the highest retention rate of any school in the state, with 60% of its medical students remaining in the state to practice.<sup>567</sup> To attract more in-state medical students and residents, programs pursue several options, including offering in-state students discounted rates to attend public medical schools, or offering joint-programs that allow students to continue directly into residency programs in state. The process of applying to residency programs for medical students is arduous and expensive. Permitting students to enter directly into GME programs in state would save the student money, time, and anxiety spent on applications, and could potentially increase the number of students remaining in North Carolina after they complete their residency programs. If the state partnered with residency programs in underserved areas, this could help ameliorate the shortages that many counties are facing.

xxiv Between three and twelve nurse practitioners can be trained for the cost of putting one doctor through medical school. See *Nurse Practitioners Are In — and Why You May Be Seeing More of Them*, Wharton School of Business, Feb. 13, 2013, available at <http://knowledge.wharton.upenn.edu/article/nurse-practitioners-are-in-and-why-you-may-be-seeing-more-of-them/>



### Incentivize Providers to Practice in Primary Care by Maintaining Increased Medicaid Reimbursement Rates

A recent study found that only 2% of medical student graduates nationally were planning to go into general internal medicine.<sup>568</sup>

This comes as no surprise, as primary care providers are paid less, work grueling hours, and spend more time dealing with things like referrals and billing issues. The state can help attract more doctors, NPs and PAs to primary care by increasing reimbursement rates for primary care providers. One opportunity available to the state is to extend the 2013-2014 increases in Medicaid reimbursement for primary care providers under the ACA. The ACA authorizes Medicaid primary care providers to receive the higher Medicare Part B rates for services provided from 2013 to 2014.<sup>569</sup> Though the ACA increase is temporary, the state can continue to reimburse Medicaid providers at these higher rates to support the primary care workforce and encourage provider participation in the Medicaid program.

### Encourage Recruitment of Minorities into Medical and Nursing Schools

Research shows patients are much more likely to see providers of the same ethnic or racial background and are more likely to be satisfied with the care received.<sup>570</sup> Minority groups are also more likely to practice in shortage areas.<sup>571</sup> However, despite the urgent need for more primary care providers in minority areas, data shows that minorities are underrepresented as primary care physicians and NPs. This is a national problem: 2012 residency matching rates showed low minority participation<sup>572</sup> and only 11% of nurse practitioners nationwide are from a minority ethnic or racial group—4.9% are African American, 3.7% are Asian or Pacific Islander and 2% are Hispanic.<sup>573</sup> In North Carolina, data from 2007 showed that though African Americans represented 21% of the population, they only accounted for 6% of physicians, and 5% of NPs. By comparison, non-Hispanic whites accounted for 69% of the state's population, while constituting 82% of the physician population and 90% of the NP population.<sup>574</sup> Some suggestions for increasing the supply of physicians and NPs from minority groups include:

- Increasing state support for programs and coalition building among state agencies which work to improve representation of minority and rural individuals in the healthcare workforce. These agencies include, among others, the NC Department of Public Instruction; the NC Health Access Program; NC Area Health Education Centers Program; and academic institutions across the state.<sup>575</sup>
- Targeting enhanced state funding at medical and nursing schools, as well as residency programs, which increase production of healthcare professionals who practice in underserved areas.
- Build on existing efforts to develop new health professions training programs at historically minority public or private colleges and universities.

### Further Examine North Carolina's Scope of Practice Laws for Nurse Practitioners

Scope of practice laws and regulations govern the authority of licensed medical professionals to provide certain services, as well as determine the level of autonomy these professionals are allowed to have when providing services. These laws vary widely by state, and significantly influence the quality, delivery, and cost of health services. For NPs, scope of practice rules determine the amount of physician oversight needed to diagnose, treat, and prescribe medication. In North Carolina, NPs must receive physician oversight in order to diagnose, treat, and prescribe medication, as well as to provide preventive services, maintenance of health, and individual and family guidance.<sup>576</sup> NPs in North Carolina must enter into Collaborative Practice Agreements (CPAs) with a supervising physician. CPAs are contracts that define their working relationship. According to North Carolina state law the CPA must make the arrangement for "continuous availability to each other for ongoing supervision, consultation, collaboration, referral and evaluation of care provided by the nurse practitioner."<sup>577</sup>

Beyond these elements, the scope of practice setup can vary significantly depending on what the supervising physician is willing to permit. However, the CPA usually limits NPs to 1) working in a hospital, 2) working in an



existing practice or under a physician, or 3) paying a fee for physician supervision so a NP can practice independently.<sup>578</sup>

There is a difference of opinion within the state about whether to loosen the scope of practice requirements for NPs. Many NPs and supporters point to studies linking greater independence for NPs with improved health outcomes, fewer delays in filling prescriptions, and improvements in management of hospital records.<sup>579</sup> Some NPs in North Carolina have reported facing delays in receiving patient records and in being able to deliver care as a result of the need for physician supervision within all elements of practice.<sup>580</sup> However, other NPs and physicians in the state report that they have not experienced these problems.<sup>581</sup>

Some NPs also state that loosening the scope of practice restrictions could increase the number of NPs practicing in rural areas. They point to the difficulty of finding a supervising physician in rural areas. However, some physicians have pointed out that the CPAs generally require only that the NP and supervising physician meet twice a year and that the requirement is not onerous when considering issues such as patient safety. They further point to the fact that there is a lack of data showing that increasing the number of NPs will lead to an increase in rural practice.

Further study should be undertaken in the state to evaluate the likely impact of reducing the scope of practice restrictions on NPs, including projections of cost-benefit analysis, health outcomes, and inflow of NPs into rural and underserved areas. The NCIOM has recommended that a workgroup be convened comprised of representatives of the NC Board of Nursing, the NC Medical Board, nursing and physician professional associations and other groups to study issues surrounding NP practice.<sup>582</sup>

### GOAL #2: BETTER INTEGRATE PHARMACISTS INTO DIABETES CARE TEAMS

Studies from across the country have shown that using pharmacists on care teams can help people with diabetes control their A1C levels, as well as save money on healthcare expenses.<sup>583</sup> Pharmacists are readily accessible, even in many underserved communities, and

have high rates of patient interaction.<sup>584</sup> In fact, more people routinely access pharmacists than any other health care professional.<sup>585</sup> Pharmacists' skill-set also allows them to play multiple roles in caring for people with complex medical needs. For diabetes care specifically, pharmacists can help identify high-risk patients, educate patients about proper self-management, address adherence to medications, refer patients to other needed health services, and monitor a patient's condition for complications.<sup>586</sup> Pharmacists can also be certified as diabetes care educators and provide additional specialized education, including formal courses on diabetes self-management. North Carolina had roughly 8,600 pharmacists in 2008, a rate of 9.3 pharmacists per 10,000 people, which is higher than the national average of 8.0 per 10,000 people.<sup>587</sup> The following section outlines the types of services pharmacists can offer as part of comprehensive health care teams, and identifies state-specific policy opportunities for improving integration of pharmacists into diabetes care and treatment.

#### Types of Services Provided by Pharmacists

##### 1. Medication Therapy Management (MTM)

A 2012 study found that the national cost of non-adherence to diabetes drug regimens is approximately \$24.6 billion per year.<sup>588</sup> This is driven by the fact that an estimated 32% of type 2 diabetes patients fail to refill their prescriptions or to take their medications as prescribed.<sup>589</sup> There have been some improvements in this area in recent years, as adherence increased approximately 7% between 2009 and 2012.<sup>590</sup> Availability of lower cost generic medications has helped, as has improved use of health information technology to track whether patients have in fact filled prescriptions.<sup>591</sup> Given the high rates of co-morbid conditions for those at risk for and living with diabetes, the complex medication regimes of this population, and the challenges patients face in adhering to drug regimens, pharmacists are a particularly suitable group to provide treatment and education while also ensuring that a medication regimen is safe and affordable.

One specific service that pharmacists can provide is medication therapy management (MTM). MTM is a service or group of services aimed at optimizing therapeutic outcomes





for individual patients.<sup>592</sup> Services include assessing and evaluating the patient's complete medication therapy regimen; developing an action plan to identify, prevent, and resolve medication-related problems; counseling patients about their medications; making referrals; and following up with patients as needed.<sup>593</sup> These services can reduce the risk that people with complex health needs suffer complications from medicinal interactions or experience problems adhering to their treatment regime.

Medicare Part D requires that all its prescription drug plans offer a limited set of MTM services.<sup>594</sup> The ACA improved this requirement by stating that MTM services must include strategies to improve adherence. As of 2013, Medicare reimburses pharmacists for MTM for beneficiaries who meet certain criteria. Medicare plans must provide MTM to beneficiaries with multiple chronic conditions<sup>595</sup> who take eight drugs or more. Medicare can also choose to cover beneficiaries who take fewer drugs, with a two drug minimum requirement. Beneficiaries also must spend at least \$3,144 on medications to qualify.<sup>596</sup>

For these patients, the Part D MTM requirement includes an annual comprehensive medication review, identification of medication-related problems, and creation of an action plan to resolve any issues identified.<sup>597</sup> Unfortunately, pharmacists have consistently listed reimbursement problems as a major barrier to providing MTM under Medicare Part D.<sup>598</sup> Reimbursement for pharmacists is discretionary for Part D plan providers, and even those who do get reimbursed cite the low reimbursement rates as preventing their full integration into primary care teams.<sup>599</sup>

North Carolina offers its own MTM program for Medicare beneficiaries which, unlike standard Part D MTM, is open to any North Carolina resident aged 65 or older who participates in a Medicare Prescription Drug Plan, with no minimum illness or medication requirement. Through CheckMeds, pharmacists are reimbursed for providing services like comprehensive medication review, counseling on medication use, detection of problems that arise from complex medication regimens, and counseling on over the counter medications.

CheckMeds served over 21,000 of North Carolina's seniors in its first two years of operation and is estimated to have saved \$13.2 million for the state of North Carolina based on an initial investment of less than \$1 million.<sup>600</sup> The North Carolina Health and Wellness Trust Fund formerly funded the program before the Fund's dissolution.<sup>601</sup> Afterwards, CheckMeds has relied on other sources for its funding, but major concerns about long term funding exist.<sup>602</sup>

North Carolina's state Medicaid program provided MTM services under its Focused Risk Management (FORM) program, which replaced the standard MTM Program in 2007.<sup>603</sup> This program was discontinued as of December 15, 2010.<sup>604</sup> FORM required that patients receiving more than 11 prescriptions per month be evaluated by their pharmacist. The pharmacist performed a comprehensive medication review; ensured the dose, safety, and effectiveness of medications; and attempted to mitigate and prevent adverse drug outcomes as well as improve patient adherence.<sup>605</sup> FORM compensated pharmacists up to a rate of \$30 per patient per quarter, which was a substantially lower rate than some other states' MTM programs.<sup>606</sup> Currently, North Carolina Medicaid does not reimburse for MTM services.<sup>607</sup>

## 2. Collaborative Practice Agreements

CPAs between providers and pharmacists establish defined protocols for pharmacists, allowing them to perform such functions as patient assessment, counseling, referrals, ordering lab tests, administering drugs, and selecting and adjusting drug regimens. CPAs vary by state; North Carolina's CPA rules are governed by the Clinical Pharmacist Practitioner Act, which allows pharmacists to serve as Clinical Pharmacist Practitioners (CPPs). CPPs must obtain licensing and an agreement with a supervising physician, as well as meet certain educational certification requirements.<sup>608</sup> CPPs work under the direction or supervision of a physician; allowable duties include ordering, changing, or substituting medications, as well as ordering tests. The agreement must include an in-person conference between the pharmacist and supervising physician whereby they review plans for quality control and orders. The physician is responsible for the evaluation of any treatment provided by the pharmacist.<sup>609</sup>





### From the Asheville Project to Project IMPACT: Clinical Pharmacy to Improve Health Outcomes

A prominent model for integrating pharmacists within diabetes clinical teams began in Asheville, North Carolina, with a project for city employees, known as the “Asheville Project,” which met with clinical and cost-control success. The Patient Self-Management Program (PSMP) modified the Asheville model and scaled it into 5 self-insured employer groups. Like the Asheville program, the PSMP showed very promising results. The patients’ mean A1C level decreased from 7.9% to 7.1%, and mean LDL-C (bad cholesterol) and blood pressure also decreased significantly. Influenza vaccination rates increased from 52% to 77%, the eye examination rate increased from 46% to 82%, and the foot examination rate increased from 38% to 80%. The total mean healthcare costs decreased by \$918 per patient, compared to the cost projections for the first year of the program. The reduction in overall costs is especially interesting because it happened while the patients were consuming more healthcare services in the form of diabetes medication and screenings. However, the improvements in diabetes management led to improved health and lower costs, because expensive interventions such as hospitalizations were averted.

The model was further refined and scaled into 10 cities in the Diabetes Ten City Challenge. Pharmacists held scheduled consultations, used clinical goal setting, monitoring, collaborative drug therapy management with physicians, and referrals to diabetes educators. Pharmacists also used an assessment tool to gauge patient knowledge and skills relating to diabetes in order to target their counseling to areas of need. Pharmacists completed accredited diabetes certification programs so as to be able to provide the relevant assistance.

Project IMPACT: Diabetes is a current national project seeking to improve the care of patients with diabetes. It seeks to scale the Asheville Project and the Diabetes Ten Cities Challenge across 25 communities in the U.S which are disproportionately affected by diabetes, including several sites in North Carolina. The North Carolina sites are based out of Wingate University’s School of Pharmacy. Project IMPACT has identified several specific goals: to expand the proven care model to patients who need it most; improve the indicators of diabetes care; and help establish sustainable change in these communities. The factors that are utilized to identify the target communities include a high geographic incidence of diabetes, sub-optimal outcomes, limited access to quality diabetes care, and socioeconomic challenges.

This type of program, where pharmacists work directly with diabetic patients to provide education and counseling on disease management as well as lifestyle factors, has been effective in many different settings across the United States. Project IMPACT’s interim results show reductions in A1C levels, LDL cholesterol, systolic blood pressure, and body mass index. The improvements in clinical indicators combined with reduced cost make it a natural fit for a state ready to invest in the physical and fiscal health of its population. However, one of the main barriers to expanding these programs nationwide is the lack of reimbursement schemes within insurance programs to compensate pharmacists for these services. As a result, these programs typically must rely on grant funding to operate across the country.

Sources: Daniel G. Garrett and Benjamin M. Bluml, *Patient self-management program for diabetes: first-year clinical, humanistic, and economic outcomes*, 45 J. AM. PHARM. ASSOC. 130 (2005); *Welcome, THE DIABETES TEN CITIES CHALLENGE*, <http://www.diabetestencitychallenge.com/index.php?> (last visited Dec. 6, 2013); *Project IMPACT: Diabetes*, APHA FOUND., <http://www.aphafoundation.org/project-impact-diabetes/results>

Through CPAs, pharmacists can become part of patient-centered medical homes (PCMHs) that unite diverse practitioners to provide whole-person care. The CPP licensing is designed in part to facilitate the creation of new PCMH practices.<sup>610</sup> In North Carolina, there have already been several successful PCMHs which have incorporated pharmacists on some

level. In 2007, pharmacists were incorporated into the CCNC Medicaid networks in response to an increase in high-risk, blind, aged, and/or disabled patients receiving multiple, diverse medications and at high risk for medication related problems. CCNC’s regional networks usually employ two pharmacists who handle education, medication management,



coordination, and pharmacy benefit oversight.<sup>611</sup> The medication management services include reviewing medication reconciliations, which are reviews of a patient's medication schedule during transitions in care; performing comprehensive reviews to identify potential issues, such as drug interactions, care gaps, and non-adherence; and alerting primary care providers to problems.<sup>612</sup> This model is supported by CCNC's Pharmacy Home Project, which created a medication management application that both patients and their various service providers can access to input information.<sup>613</sup> The Pharmacy Home improves care through "drug use storytelling," where information is provided and arranged in a way that creates a narrative that allows providers to notice and address non-adherence or gaps in care.<sup>614</sup>

The use of pharmacists within CCNC has reduced healthcare costs and patient hospitalizations, while improving patient outcomes. Specific results have included a 7.9% increase in generic prescription use between January 2009 and January 2010 as well as the creation of network-wide accessible lists of patient medications.<sup>615</sup>

Pharmacists have also been successfully integrated into other PCMH care models in North Carolina. At the Mountain Area Health Education Family Health Center, for example, the Department of Pharmacotherapy is embedded within the practice's clinic for family medicine. Pharmacists in the department provide direct services and medication management services.<sup>616</sup> Further, University of North Carolina's Eshelman School of Pharmacy has a residency program that places pharmacists into PCMH settings to learn more about working in a collaborative care team.<sup>617</sup> Wingate University, with support from Project IMPACT, places pharmacists within clinical care teams in the Charlotte area. It is hoped that this increased focus on clinical integration of pharmacists will contribute to the growth of PCMHs throughout the state.

### ***Policy Opportunities***

#### **Pilot a new Medicaid MTM program or Reimplement FORM**

A promising opportunity would be to reinstitute the FORM program for Medicaid. The original FORM was limited to a very

specific class of patients with very high medication burdens. However, catching patients at an earlier stage could prevent complications from developing and reduce future medication costs. Well-implemented MTM services have been demonstrated to reduce costs and improve outcomes; a pilot program focused on patients with diabetes could allow the state to assess the effectiveness of an expanded MTM program. The requirements for participation could be based on a lowered minimum medication burden, or alternatively, could be focused on those with high A1C levels, comorbidities, or who are otherwise at risk for serious complications.

However, it is important that any MTM program initiated not operate in a silo, and instead be coordinated with other aspects of care, particularly primary care. One way of achieving this goal is to embed clinical pharmacists into existing clinical networks within North Carolina Medicaid, as discussed below.

#### **Further Embed Clinical Pharmacists into North Carolina Medicaid**

North Carolina Medicaid should use existing successes as a launching pad to expand the role of pharmacists in diabetes management, building on the successful clinical pharmacist model discussed above. North Carolina's existing CPA laws make it much easier for pharmacists and physicians to work together in care teams, jointly managing patient treatment and education. The work done at Wingate University and other sites in the state through Project IMPACT is a model that can be used by other provider networks as well.

However, sustainability is a key concern. One challenge for providers wishing to develop sustainable clinical pharmacy programs is how to obtain a sufficient funding stream to compensate for the money expended on pharmacists' salaries as well as start-up costs (e.g training costs). Whether this is possible would be a function of the level of reimbursement and the volume of patients receiving the service. Primary care settings where a significant amount of care includes pharmaceutical treatments would be ideal for embedding clinical pharmacists. Further, adding pharmacists to care teams should not mean adding yet another provider to the list



of fee-for-service recipients. The care team and coordinated care approach lends itself much better to holistic payment approaches, especially bundled payments and shared savings approaches.

In order to address these payment challenges, North Carolina Medicaid should discuss opportunities to expand their existing pharmacy pilots within CCNC. A pilot would most naturally be located within CCNC, one of the nation's most successful PCMH models, and one that already employs pharmacists to provide medication review services for some of the highest-risk patients within its networks. While successful, this program does not have the resources to provide a sufficient number of pharmacists within its 14 networks or to embed clinical pharmacists directly within its primary care practices. Only a few large practices within CCNC's networks have sufficient numbers of Medicaid patients to have the funding available to hire a full-time clinical pharmacist. Adopting a multipayer<sup>618</sup> model—where public insurance programs as well as private insurers help fund clinical pharmacists—is the most viable option for adding more clinical pharmacists into practices where they can help improve the care of high-risk patients.

A clinical pharmacy program within CCNC has the potential to be highly cost-effective. If the program were as successful as the Patient Self-Management Program, Medicaid could find its costs decreasing by \$900 per patient per year.<sup>619</sup> If not able to expand statewide, CCNC could focus the program on those providers having a particularly high volume of Medicaid patients, such as FQHCs and physicians located in lower-income areas, as these are likely to be the most financially feasible sites. By bringing together Medicaid providers and payers—and using the leverage that comes from being the ultimate Medicaid payer—North Carolina can help launch a program that, if successful, can spread throughout the healthcare delivery system.

### **Incorporating Pharmacists into North Carolina's Medicaid Chronic Health Homes**

The Affordable Care Act offers states the opportunity to provide enhanced PCMHs, known as chronic health homes, to Medicaid beneficiaries with multiple or severe chronic conditions in order to better manage and

coordinate their care.<sup>620</sup> Eligible Medicaid beneficiaries include those who have at least two chronic conditions; have one condition and are at risk for a second; or those with severe mental health condition.<sup>621</sup> North Carolina chose to implement the chronic health home option, which is delivered through the state's existing CCNC network, and includes type 2 diabetes as a condition which qualifies a Medicaid beneficiary for participation in a health home. One opportunity for the state is to focus on providing targeted pharmacist-services to this particularly vulnerable population.<sup>622</sup> Having pharmacists incorporated into chronic health homes can also be a way to integrate them into primary care teams even though they are not recognized as providers under the existing Medicaid fee-for-service system.

### **Expand Physician Supervision Limit**

CPPs in North Carolina have reported improved patient outcomes, efficiency and continuity of care, as well as increased reimbursement and career opportunities, as some of the successes of North Carolina's CPA legislation. However, one remaining barrier to serving as a CPP is the limit on the number of CPPs a physician can supervise. According to the North Carolina Board of Pharmacy, supervising physicians of CPPs shall, "supervise no more than three pharmacists."<sup>623</sup> This has limited the ability of some physicians to be a supervising physician to a CPP if they are already supervising others. At the same time, physicians do not have any limits for supervising other non-physician providers such as Nurse Practitioners or Physician's Assistants.<sup>624</sup> Considering that pharmacists can play such a vital role not only in caring for diabetics but also other patients with complex medical needs, the North Carolina Board of Pharmacy should consider eliminating or expanding this limit.

### **GOAL #3: STRATEGICALLY EMPLOY COMMUNITY HEALTH WORKERS WITHIN DIABETES CARE TEAMS**

In addition to primary care physicians and advanced practice nurses, other healthcare professionals can contribute enormously to the care of people living with, or at risk for, type 2 diabetes. Community health workers (CHWs) have the capacity to join healthcare teams and assist in type 2 diabetes



prevention and management. CHWs are also able to connect with patients in a way that medical professionals often are not, in particular because they usually come from the community they are serving, and have a cultural competency that medical professionals may lack.

The ACA defines a CHW as:

an individual who promotes health or nutrition within the community in which the individual resides: a) by serving as a liaison between communities and health care agencies; b) by providing guidance and social assistance to community residents; c) by enhancing community residents' ability to effectively communicate with health care providers; d) by providing culturally and linguistically appropriate health and nutrition education; e) by advocating for individual and community health; f) by providing referral and follow-up services or otherwise coordinating; and g) by proactively identifying and enrolling eligible individuals in Federal, State, and local private or nonprofit health and human services programs.<sup>625</sup>

CHWs are known by a variety of names. These include community health advisor, outreach worker, community health representative, promotora/promotores de salud, patient navigator, peer counselor, lay health advisor, peer health advisor, peer supporter, and peer leader.

CHWs can serve as an integral part of a patient care team for chronic disease management—including for diabetes. In a meta-analysis of eighteen studies, involvement of CHWs was associated with greater improvements in diabetes knowledge, positive lifestyle changes, increased self-management behaviors, and decreased use of the emergency department.<sup>626</sup> In a two-year study of African American diabetes patients, those working with teams of nurse case managers and CHWs had greater decreases in A1C levels, cholesterol, and blood pressure compared with patients in routine care as well as those managed by a nurse case manager or CHW alone.<sup>627</sup>

CHWs are particularly useful for connecting patients to formal medical services in rural areas and health professional shortage areas where there is inadequate access to

medical professionals, or cultural disconnects between the patient population and medical professionals. Providers from East Carolina University involved in Project EMPOWER report that diabetic patients typically only make four medical visits per year. In between those visits, they need continual support and follow-up. However, because of factors such as long geographic distances, cultural barriers, lack of reimbursement for non face-to-face time; and many providers' lack of training in lifestyle management issues, medical providers are not always in the best position to fill this role.<sup>628</sup> Programs in this region report that CHWs are able to successfully provide ongoing counseling, support, and referrals in between visits, as well as help patients in rural counties who are unable to reach any medical professionals.<sup>629</sup>

In some parts of the state, there is an acute shortage, not just of physicians, but also of dietitians and others qualified to educate patients on diabetes lifestyle management. Partners in eastern North Carolina emphasize that CHWs are in a prime position to undertake the responsibility of providing limited diabetes self-management (with training and follow-ups from supervising medical professionals) and have shown promising results in studies that have been performed.<sup>630</sup> In fact, the CDC recommends integrating CHWs into diabetes health care teams and using them to expand diabetes education. CHWs can be used to develop and teach culturally appropriate messages on diabetes self-management, motivate their patients to make small lifestyle changes to address their diabetes, and help them access care to appropriately monitor their health markers.<sup>631</sup>

CHWs can also play a role in lifestyle intervention programs for diabetes. Unfortunately, formal programs, such as those at the YMCA, are out of reach to many people in the state, especially those in rural areas. One solution to this problem is the use of CHWs to administer diabetes education and encourage lifestyle changes. One study evaluated the effectiveness of an intervention in which CHWs delivered a community-based translation of the Diabetes Prevention Program. They found that enrollees in the program decreased their blood glucose, insulin resistance, weight, and BMI at significantly greater rates than those receiving enhanced usual care.<sup>632</sup>



The major barrier to expanding use of CHWs in North Carolina is the limited funding for CHWs, as CHWs are not reimbursed by any insurance carrier in the state.<sup>633</sup> If a community health center or primary care office wants to hire a CHW, the funding for his or her salary must come out of general operating expenses or a grant. This is not sustainable because grant funding is almost always temporary. As community partners in Project EMPOWER reported, they cannot fund community ambassadors' transportation and therefore it can be difficult for CHWs as they have to self-finance their transportation to visit patients.<sup>634</sup> Other sources of funding sources such as Medicaid reimbursement or local and state appropriations are needed.<sup>635</sup>

### Policy Opportunities

#### Finance Community Health Worker Programs

In order to expand the use of CHWs, North Carolina must find sustainable ways to finance CHW programs. Most programs are funded by grants from either government agencies or charitable foundations.<sup>636</sup> Oftentimes grants are given to county health departments or local clinics and organizations that operate CHW programs. While these programs are effective and this funding option should be considered, grant funding lacks sustainability because the funding periods are often limited.

While Medicaid provider regulations have historically prevented CHWs from becoming reimbursable providers, new opportunities are emerging. As of January 2014, state Medicaid agencies are allowed to reimburse for preventive services provided by CHWs as long as the service was recommended by a physician or other licensed practitioner<sup>xxv</sup> States can also apply for Medicaid Section 1115 waivers that allow for creative service delivery methods otherwise not permitted under Medicaid regulations as long as the new system does not cost the federal government more than it would without the waiver.<sup>637</sup> Like Minnesota has done, states can also apply for amendments to their Medicaid state plan. This gives states the ability to cover some CHW programs under Medicaid. In Minnesota, after the CHW Alliance developed credentialing and training standards, in 2008 the state authorized hourly Medicaid reimbursement for certified CHWs.<sup>638</sup> North Carolina could

also follow this approach, using existing state credentialing and training standards. An hourly reimbursement model is reasonable in that CHW services tend to take significant time and are usually not easily broken into a set of discrete tasks that can be reimbursed individually.

#### The Minnesota Example: CHWs in Medicaid

On the legislative front, Minnesota is one of only two states (in addition to Alaska) to reimburse community health workers under the Medicaid program. The state legislature first authorized reimbursements for CHWs in 2007. In 2008, the Centers for Medicare and Medicaid Services approved a state plan authorizing Medicaid payments for trained CHWs supervised by Medicaid approved physicians and advanced practice nurses. To qualify for reimbursements, workers must complete the state's 14 credit-certificate program for CHWs. This system improves sustainability for CHW programs by guaranteeing specific training programs and job security while also providing an effective means to eliminate health disparities among the state's underserved populations.

*Source: Minnesota Department of Human Services, Community Health Worker, available at [http://www.dhs.state.mn.us/main/idcplg?IdcService=GET\\_DYNAMIC\\_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=dhs16\\_140357](http://www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=dhs16_140357)*

At the same time, because CHWs will, ideally, practice within new coordinated care models, long-term reimbursement should not be handled merely as an addition to the fee-for-service system. This risks encouraging CHWs and their supervisors to prioritize volume of service, just as the fee-for-service system encourages volume in other parts of the healthcare system today. States have the alternative option to incorporate Medicaid reimbursement for CHWs into payments to managed care or pay-for-performance organizations. These programs typically have more freedom in choosing ways in which they want to use their funds and are encouraged to find cost-effective solutions. North Carolina should consider using alternative financing models to operate CHW programs, including making CHWs part of any ACO organizations that develop within North Carolina Medicaid in the coming years. Certain areas, such as rural

xxv 78 FR 42226





communities and health professional shortage areas, should be targeted with these programs.

Incorporating CHWs into North Carolina's Medicaid Chronic Health Home is one option to overcome the rules limiting Medicaid reimbursement for CHWs. North Carolina's State Plan Amendment submitted for federal approval did not mention any role for CHWs within the health homes, but CHWs could be incorporated into the care teams of health home networks, particularly in rural or underserved areas where they can be particularly useful in linking patients with the formal medical system. This option would allow CHWs to work with patients with diabetes who are most in need of care, and receive funding without being formally eligible for Medicaid reimbursement.

#### **CHWs in Oregon's Health Homes** **Oregon's Example:** CHWs in Chronic Health Homes

Oregon's Medicaid State Plan Amendment for its chronic health homes specifically included CHWs, as well as "Personal Health Navigators" and "Peer Wellness Workers" as individuals allowed to be part of their health home teams. Some clinics participating in the health home program in the state have already used CHWs in their networks. For example, Central City Concern and Old Town Clinic in Portland provide supports, including housing, job and medical support to Medicaid and uninsured populations, including the homeless. They use community health workers in these networks, with a strong culture of hiring people who have experienced recovery themselves.

*Source: Call with Oregon Health Authority officials, July 11th 2013*

#### **Gather Data on CHW Certification Programs**

While many states lack a certification process for CHWs, North Carolina established a

certification program in the early to mid 1990s.<sup>639</sup> Additionally, the state is one of just two states that have implemented statewide standards for CHW training.<sup>640</sup> The certification and training processes focus on health education and outreach and farm worker outreach, administered by the Office of Rural Health and other partners.<sup>641</sup> These training and certification programs are not required for people to work as a CHW in the state.

Some level of standardization, including training and certification standards, must be implemented in order for CHWs to gain access to reimbursement. However, there is a concern among some CHW programs that rigid certification standards could create inflexible programs that are not appropriately tailored to the diverse populations that they serve.

One challenge is to ensure that the credentialing system does not exclude traditional CHWs by setting up unreasonable barriers, such as strict regulations and costs. One approach that may help with this concern is to create alternative paths that can yield a credential. For example, in Texas, a person can obtain a credential either by completing a 160-hour training program or by having at least 1,000 hours of experience doing community health work in the past six years.<sup>642</sup> This would protect the existing workforce from having to obtain new training to keep working. At the same time, the existing workforce would be subject to continuing education requirements, so that they can continue to grow professionally and keep up with new developments in the field. In the Texas system, there is no cost to getting a credential; this is another important barrier to avoid, since most CHWs do not have significant disposable income.<sup>643</sup> More research needs to be done to determine what effect CHW credentialing has on access to care in underserved areas; CHW programs which do not use credentialed CHWs should also be studied to determine outcomes of a more informal CHW system.





# PART 3: DIABETES IN CONTEXT: CHANGING THE FOOD AND PHYSICAL ACTIVITY LANDSCAPE TO SUPPORT HEALTHY LIVING

Preventing and controlling diabetes is a pressing concern for North Carolinians. Although many advocates, government agencies, and legislators have made progress in working to improve public health in ways that target diabetes, much more remains to be accomplished. Addressing diabetes and prediabetes is particularly challenging because no single remedy is enough. Real solutions require lifestyle changes and must fully address diet and physical activity, which touch nearly every aspect of daily life. Studies have found that making significant changes to lifestyle behaviors can be extremely effective in preventing and managing diabetes.<sup>644</sup> For example, the Diabetes Prevention Program, a major multi-center clinical research study, found that delivering lifestyle interventions to those at high risk for diabetes reduced the incidence of the disease by 58%.<sup>645</sup> In fact, lifestyle interventions that included diet modification and exercise were more effective in reducing the incidence of the disease than pharmacological treatment with the commonly prescribed diabetes drug metformin.<sup>646</sup> Given these facts, this report recommends a comprehensive approach to influencing the lifestyle choices that affect the incidence of diabetes and prediabetes in North Carolina, focusing on the following policy areas:

**Economic access to healthy food.** Proper nutrition—an essential component of managing diabetes—depends critically on the ability to purchase food that makes up a healthful diet. However, many in North Carolina, particularly those in rural areas, struggle to afford nutritious food.<sup>647</sup> In order for low-income residents to have the means to purchase the food they need to lead a healthy life, North Carolina should work to increase participation in Food and Nutrition Services (FNS), North Carolina's SNAP program, and WIC. The state should also encourage farmers markets to accept EBT payments from FNS recipients.

**Geographic access to healthy food.** Compounding the challenge of economic access, lack of geographic access to nutritious food can also be problematic for those living with diabetes. Many North Carolinians live in food deserts, areas where people have limited access to fruits, vegetables, and other nutritious foods. More than 1.85 million residents have low access to a grocery store, almost 20% of the total state population.<sup>648</sup> North Carolina can combat this problem through a multi-faceted approach that aims to increase the supply of healthy food in these areas. In particular, the state should build



on dialogue already in progress in the state legislature and introduce measures to increase the number of full-service grocery stores in low-access areas. Such measures could include creating tax incentives and financing options for stores willing to open in food desert areas. North Carolina can also encourage corner stores to stock more nutritious foods. The state can improve access to existing stores by investing in the infrastructure that allows people to easily walk and bike to stores, expanding public transportation options, and working with grocers to set up shuttle services.

**Physical activity and the built environment.** In addition to a healthy diet, physical activity is a key factor in diabetes prevention and control. The built environment in which people live and work plays an important role in determining their level of physical activity. The Department of Transportation and other agencies should incorporate health impact assessments into the decision-making process for new state projects. Additionally, the state should closely track the effects of the prohibition on using DOT funds for stand-alone pedestrian and bicycle projects on levels of physical activity throughout the state. Both the state and municipalities should take steps to encourage pedestrian-friendly development, along with parks, greenways, and other recreational areas. Finally, North Carolina should expand efforts to collect data on active transportation to give researchers a better picture of which projects are most cost-effective and will yield the largest health benefits.

**Nutrition and cooking education.** Beyond having access to healthy food, people living with diabetes must know which foods to buy and how to prepare them. Despite the nutritional benefits of home-cooked meals, Americans are increasingly relying on ready-to-eat foods like fast food, take-out, and pre-packaged snacks that tend to be high in salt, sugar, and fat.<sup>649</sup> To combat this trend, the state can partner with food retailers and foundations to introduce pilot programs to study store-level labeling of diabetes-appropriate food, an approach that has been proven successful in other contexts. North Carolina could also supplement SNAP-Ed funds to increase educational programs targeted at low-income people with diabetes. To ensure that the next generation of North

Carolina knows how to prepare healthy meals, the state can continue to support and expand cooking programs for young people and their families.

**Early childhood, school food, nutrition, and wellness programs.** The food environment for children is an extremely important determinant of children's health and likelihood of developing diabetes. The state can promote the health of its youngest residents by disseminating best practices in nutrition and physical activity education to all licensed childcare providers. It can also ensure that home visiting programs have personnel who are trained to speak with pregnant women and young families about instilling healthy eating and exercise habits as early as possible. North Carolina can also work to improve participation among eligible students in school meal programs, allowing low-income students to eat healthy meals every day at school. North Carolina should continue efforts to ensure that schools meet the new federal nutrition guidelines, both for school meals and for competitive and a la carte offerings. The Summer Meals Program is another important opportunity to deliver balanced meals to children, and the state can take steps to increase participation rates. Finally, to supply schools with healthier foods, North Carolina can incentivize farmers to participate in the Farm to School Program and continue to support small farmers in the Good Agricultural Practices certification process.

In addition to improving nutrition, schools should also aim to increase students' physical activity level. To provide guidance and accountability in implementing wellness policies, school districts can assign an individual to oversee and coordinate implementation. Additionally, schools can open their facilities to the community after-hours and on weekends to provide a space for community members to be active in safe, familiar environments.

These challenges and solutions are addressed in more detail below. Implementing these policy recommendations has significant potential to stem the growth of the diabetes epidemic and move North Carolina toward a healthier future.



### Chapter 1: Economic Access to Healthy Food

To adopt and maintain healthy lifestyles, people must be able to afford the types of foods that make up a healthful diet. Across the nation, the economic recession has exacerbated the difficulties many individuals experience in obtaining adequate, nutritious food for themselves and their families. 17.9% of North Carolinians live in poverty, and more than one quarter of the state's children live below the federal poverty line.<sup>650</sup> North Carolinians are also struggling to find work, with 9.5% of residents unemployed as of 2012.<sup>651</sup> Residents living in the state's rural areas are particularly affected by unemployment, poverty, and resource limitations. 11.8% of rural North Carolinians are unemployed, and more than 1 in 5 rural residents live in poverty.<sup>652</sup> A much higher proportion of North Carolina's population live in rural areas compared with other states, making the economic challenges faced by the state's rural residents particularly impactful.<sup>653</sup>

Economic challenges have contributed to widespread food insecurity across the state. In a food insecure household, not all household members are able to get enough food at all times to lead active, healthy lives.<sup>654</sup> North Carolina has the 5th highest overall food insecurity rate in the United States, and is ranked number 2 in the country with respect to food insecurity among children under 5 years old.<sup>655</sup> The Greensboro-High Point area in eastern North Carolina has the second highest metropolitan area food insecurity rate in the country, and the city of Asheville in the western part of the state is ranked 9th nationally.<sup>656</sup> Food insecurity is linked to increased risk of "diabetes, heart disease, and depression or anxiety in adults; and asthma, cognitive impairment, or behavioral problems in children."<sup>657</sup> Adults facing food insecurity are twice as likely to become diabetic as those who are food secure.<sup>658</sup> Additionally, food insecure adults with type 2 diabetes are 40% more likely to have poor glycemic control, meaning that they will suffer health complications earlier and at a higher rate than those who have regular access to adequate food.<sup>659</sup>

With more than 1 in 5 North Carolinians (and more than 1 in 4 children in the state)

struggling simply to get enough to eat, many of North Carolina's most vulnerable residents cannot afford the fresh, high-quality foods they need to maintain a healthy lifestyle.<sup>660</sup> Fresh fruits, vegetables, whole grains, lean meats, and fish are often significantly more expensive than the nutritionally-poor, refined-carbohydrate-based processed foods available in many low-income communities, up to \$1.50 more per day.<sup>661</sup> Furthermore, there is evidence to suggest that people who worry about getting enough to eat alter their purchasing behavior and reduce the variety in their diet by directing their resources toward low-cost, energy-dense, nutritionally-poor food.<sup>662</sup> For people living with or at risk for type 2 Diabetes who are challenged by poverty, access to food assistance programs can mean the difference between maintaining health and falling ill.

This section describes two safety-net programs that play a significant role in addressing food insecurity for North Carolinians living in poverty: the Supplemental Nutrition Assistance Program, (SNAP, or Food and Nutrition Services (FNS) as it is known in North Carolina), and the Special Supplemental Nutrition Program for Women, Infants, and Children program, known as WIC. It discusses how North Carolina administers these two federal programs and identifies steps the state can take to improve them and support efforts to maximize their potential impact on benefit recipients.

#### GOAL #1: IMPROVE PARTICIPATION IN THE SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM (NORTH CAROLINA FOOD AND NUTRITION SERVICES OR FNS)

*The Supplemental Nutrition Assistance Program (SNAP): North Carolina Food and Nutrition Services (FNS)*

The Supplemental Nutrition Assistance Program (SNAP) is the largest federal food assistance program, with more than 47 million people, or about 15% of the US population, enrolled as of August 2013.<sup>663</sup> With SNAP benefits, formerly known as food stamps, participants receive a monthly transfer of funds onto an Electronic Benefit Transfer (or EBT) card that can be used to purchase eligible items at authorized food retailers.<sup>664</sup> While SNAP is a federally funded program,



the federal government splits administrative costs and duties with states, giving states the opportunity to implement their own policies for some aspects of SNAP.<sup>665</sup> The federal government is responsible for making major program decisions about basic eligibility requirements (although in some cases states can alter these requirements), providing funds for the benefits, and sharing in certain funding and administrative duties.<sup>666</sup> State governments are responsible for administering the program and providing some funding for administrative costs.<sup>667</sup> North Carolina's version of SNAP is called Food and Nutrition Services (FNS).<sup>668</sup>

In January of 2013, 1,726,000 people in North Carolina (18% of the state's population) received SNAP benefits.<sup>669</sup> 45% of these recipients were children, and another 23% were adults living with children.<sup>670</sup> 81% of North Carolina households receiving FNS in 2012 had incomes below the poverty line, and 45% of those households were in deep poverty, meaning that household income was below 50% of the poverty line.<sup>671</sup> For these vulnerable residents, FNS benefits were a lifeline, allowing them to supplement their scant food purchasing dollars by, on average, \$121.37 per month per household member, or \$1.35 per person per meal.<sup>672</sup> In November of 2013, recipients saw their FNS dollars decrease when the 2009 Recovery Act's temporary boost to benefits expired.<sup>673</sup> North Carolina's federal FNS dollars were reduced by more than \$166 million following the cut.<sup>674</sup> A household of four lost \$36 per month in benefits, or \$396 per year.<sup>675</sup> For low-income people living with diabetes, reductions in FNS benefits are dangerous and costly. According to a 2014 study, poor people with diabetes are significantly more likely to go to the hospital for extremely low blood sugar at the end of the month when food budgets are exhausted.<sup>676</sup>

Although FNS offers critical assistance to those who might otherwise suffer from hunger, only 78% of eligible North Carolinians participate.<sup>677</sup> This means that more than 1 in 5 people who are eligible for aid in the state do not receive it. Additionally, many farmers markets, which provide fresh produce to residents throughout the state, do not accept EBT cards, thus effectively excluding FNS recipients. In addition to addressing food

insecurity, maximizing participation in FNS and EBT acceptance at farmers markets will yield other benefits. FNS also helps stimulate the local economy, generating approximately \$1.70 in economic activity for every dollar spent.<sup>678</sup> In 2012, FNS benefits generated \$4.3 billion in economic activity in North Carolina alone.<sup>679</sup> The state should do more to increase participation rates in this vital program.

### *Policy Opportunities*

#### **Streamline Public Information About Income Eligibility and Application Requirements for FNS.**

Barriers to FNS participation include: (1) lack of knowledge about one's own eligibility status; and (2) the difficulty of completing an application and meeting recertification requirements.

First, many potential FNS participants do not understand the program's eligibility requirements. One study found that only 45% of eligible people who were not participating in the program nationwide believed themselves to be eligible.<sup>680</sup>

The federal government bases eligibility for the SNAP program on a household's income. In order to qualify for SNAP, the federal government requires a household to have a gross monthly income of less than 130% FPL, net monthly income less than 100% FPL, and assets totaling less than \$2,000.<sup>681</sup> The federal government also decides what categories of individuals are automatically excluded from the program; this includes people on strike, undocumented immigrants, certain legal immigrants, and certain convicted felons.<sup>682</sup> In North Carolina, the income eligibility level for FNS for most households is 200% FPL and the asset test is waived.<sup>683</sup> However, the information about income eligibility available through the government's website is difficult to understand; two different income cut-offs are presented without explanation (130% and 200% FPL).<sup>684</sup> Further, the online self-screening eligibility tool, ePASS (part of NC FAST technology), recommends that participants be familiar with twenty-two categories of information to complete the screening and/or application, including items like burial contracts and annuities.<sup>685</sup> For user-friendly information about FNS eligibility, North Carolinians are forced to rely



on trips to the Division of Social Services, which administers FNS, and other in-person information mediators such as food bank personnel and health center caseworkers.

The Department of Health and Human Services should revise the information available on its website so that potential FNS participants can quickly learn basic eligibility information and decide whether to engage with the self-screening tool. In addition, the welcome screen for ePASS should prioritize the information that the typical FNS applicant is most likely to need to complete the self-screening.

### **Facilitate the Application Process for FNS Recipients by Opening More DSS Offices on Evenings and Weekends.**

Second, the state should make it easier to apply for and be recertified for FNS benefits. North Carolina's FNS is administered through local Departments of Social Services (DSS), all or most of which are only open Monday through Friday from 8am to 5pm.<sup>686</sup> Applicants can apply for FNS online, by mail, fax, or in person, but must interview with a FNS caseworker in person or by phone as part of the application process (or send an authorized representative to interview in their place).<sup>687</sup> Certification lasts for 12 months before reapplication is required.<sup>688</sup>

As each county generally has only one DSS office, it can be challenging for residents without transportation to reach the DSS office to submit applications and participate in interviews. The state has recently taken two important steps to increase the ability of those without cars or access to public transportation to successfully apply: first, it allows applicants to conduct their interviews by phone instead of in person, and second, it now allows applicants to submit web-based applications.<sup>689</sup> However, because the application requires a volume of diverse and somewhat technical information, it may be difficult for applicants with literacy issues or other challenges to complete it without assistance.

In addition, the online program, called NC FAST, has repeatedly experienced technical glitches since going live in early 2013.<sup>690</sup> The issues with NC FAST have been so significant that the U.S. Department of Agriculture (USDA) threatened to suspend North Carolina's federal

administration dollars for the program if the Department of Health and Human Services did not implement "significant corrective action" within 60 days of December 11, 2013.<sup>691</sup> Applicants who register on the system have a probable wait time of 60 days before receiving benefits, double the 30-day limit required by federal law.<sup>692</sup> According to data released by the state's Department of Health and Human Services to the USDA, over 20,000 households had experienced significant delays, with more than 6,000 households waiting more than three months to receive benefits.<sup>693</sup> People who complete the required recertification online are also experiencing delays in disbursement of benefits, forcing some FNS recipients to rely on food pantries while they wait.<sup>694</sup> Many FNS recipients claim they cannot get their benefits at all and are indefinitely put on hold when calling the local DSS office for assistance.<sup>695</sup>

For applicants that are not computer-savvy, do not have access to the internet, or have questions about the application process, visiting the local branch of DSS to meet with an employee who can walk them through the process may be the best choice. For example, the Guilford County DSS office has used county funds to create a computer lab in the DSS office where a state employee or case worker helps clients navigate the ePASS website.<sup>696</sup> Offering expanded evening and weekend hours at DSS offices would enable applicants who work typical business hours to visit DSS in person.

### **Equip Farmers Markets to Accept EBT Cards.**

In addition to increasing participation in FNS, North Carolina should increase direct farm-to-consumer sales by encouraging farmers markets to accept EBT. Studies have shown that as the volume of direct farm sales (including farmers market sales) increases, rates of obesity and diabetes in the community fall.<sup>697</sup> As of 2011, North Carolina had 217 registered farmers markets, placing it well above the national average, but many individuals in low-income areas lack easy access to these markets.<sup>698</sup> The CDC has suggested that increasing the density of farmers markets and other direct farm sales mechanisms in low-income areas can make healthy fruits and vegetables available to individuals at lower cost, and can improve





both dietary decision-making and diet-related health outcomes.<sup>699</sup>

In many places, farmers markets do not accept EBT cards, leaving SNAP recipients unable to access locally-grown produce.<sup>700</sup> Although the acceptance of EBT benefits has been growing since EBT was first introduced as a replacement for paper Food Stamps, only about 14% of farmers markets in North Carolina accepted EBT as of January 2013.<sup>701</sup> In order to successfully set up a system that accepts EBT, farmers markets need electricity for a wireless internet connection, a landline phone, or a wireless cell phone signal.<sup>702</sup> North Carolina can speed the acceptance of EBT at farmers markets by providing grants or other resources to purchase the necessary equipment to interested farmers market groups.

## GOAL #2: INVEST IN SCALING UP STATE AGENCY PILOT PROGRAMS THAT INCREASE ACCESS TO CARE FOR PEOPLE WITH DIABETES.

*The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)*

The Special Supplemental Nutrition Program for Women, Infants and Children, more commonly known as WIC, is the second largest nutrition assistance program funded by the federal government and administered by states.<sup>703</sup> This program, unlike North Carolina FNS, serves a targeted population: pregnant women, breastfeeding women, non-breastfeeding postpartum women, infants up to one year old, and children up to five years old that are found to be at nutritional risk.<sup>704</sup> The program is far reaching: an estimated 8.9 million people in the U.S. used WIC in 2012,<sup>705</sup> and the USDA estimates that WIC serves 53% of all infants born in the U.S.<sup>706</sup>

WIC plays a crucial role in helping an extremely vulnerable population gain access to the nutritious foods needed for healthy development. Mothers' participation in WIC is associated with having healthy birthweight infants and improved family diets.<sup>707</sup> Studies have found that WIC participants eat more fruits and vegetables and consume fewer added sugars.<sup>708</sup>

In North Carolina, the WIC program serves approximately 270,000 individuals each year, providing a benefit value of approximately \$45

per person per month.<sup>709</sup> To be eligible, WIC applicants must live in North Carolina and have a household income that falls below 185% of the federal poverty level.<sup>710</sup> They must also "be at nutritional risk," according to a nutritionist or other qualified health professional.<sup>711</sup> Individuals who receive Medicaid, Temporary Assistance for Needy Families (known as Work First Families Assistance in North Carolina), or FNS are automatically eligible for WIC.<sup>712</sup>

Unlike FNS, for which any qualified individual will receive benefits, state agencies receive a set amount of funding from the federal government for WIC, which they must then apportion among eligible participants in their state.<sup>713</sup> Also unlike FNS, which has broad guidelines for qualifying foods, WIC has a strict set of eligible foods for which participants can use their benefits, including whole-grain cereal and bread, brown rice, whole-wheat and soft corn tortillas, milk, cheese or tofu, eggs, peanut butter, dried or canned beans, peas or lentils, fruit or vegetable juices, and fruits and vegetables (fresh, frozen, and canned).<sup>714</sup> The program promotes breastfeeding practices by offering mothers who breastfeed exclusively a greater quantity and variety of food.<sup>715</sup>

In North Carolina, participants exchange "WIC food instruments" for specific foods at authorized retail grocery stores.<sup>716</sup> Under federal WIC regulations, as part of their WIC food package, North Carolina provides WIC participants with additional food instruments valued at \$6-\$10 a month called cash value vouchers (CVVs), which they can use to purchase fresh fruits and vegetables on a monthly basis.<sup>717</sup> While one-third of states have authorized farmers to accept CVVs at farmers markets, North Carolina WIC recipients do not have this option.<sup>718</sup>

WIC recipients are required to receive nutrition education at least four times per year.<sup>719</sup> In North Carolina, this education is delivered in the WIC office when participants make the required in-person visit to retrieve 90 days worth of food instruments.<sup>720</sup> The WIC program strives to meet each individual participant's unique needs with respect to the type of education it provides. Women who are pregnant and some individuals who are considered to be "high-risk," including those with type 2 diabetes or gestational diabetes,





will receive one-on-one counseling with one of the program's nutritionists. Others might attend a class or receive a "mini-lesson" on how to use WIC foods in new ways or how to change diet behaviors to be in line with goals set by the CDC, such as increasing intake of fruits and vegetables and decreasing consumption of sugar-sweetened beverages.<sup>721</sup> All participants can visit the WIC website to complete online nutrition education modules.<sup>722</sup>

The federal Healthy, Hunger-Free Kids Act of 2010 requires all states to transition to electronic WIC benefits delivery by 2020. North Carolina has a relatively low WIC participation rate compared to other states; the program's coverage rate in the state is 56%.<sup>723</sup> This is due in part to the difficulty and stigma of redeeming food instruments as opposed to purchasing approved foods with an EBT card, as FNS participants do. North Carolina WIC is still in the process of planning its transition from food instruments to electronic benefits.<sup>724</sup> The program currently uses its quarterly in-person interaction with participants to deliver nutritional counseling and provide valuable referrals to other resources and programs that could serve its client population. The move to electronic benefits will require significant changes to the structure of the North Carolina program in order to both deliver benefits and maintain a high level of individualized client service.

### **Legislators Should Appropriate Additional Funds to Expand Pilot Programs that Maximize Resources Through Innovative Interagency Collaborations.**

Currently, the WIC program, in partnership with the University of North Carolina at Chapel Hill and three health departments in counties with high rates of gestational diabetes, is participating in a small type 2 diabetes screening pilot program.<sup>725</sup> When participants return to the WIC office for their post-partum visit to recertify for benefits as a new mother, they are screened for type 2 diabetes and, as indicated by their tests, referred to diabetes programs at local health departments. This type of partnership between health departments with extensive diabetes resources and assistance programs will increase the number of women who receive comprehensive diabetes care and are able to lower their

healthcare costs by participating in Diabetes Self-Management Education Programs and related healthy lifestyle education sessions. Current funding levels do not allow successful pilot collaborations to be scaled up and made available to vulnerable populations across the state.

## **Chapter 2: Geographic Access to Healthy Food**

In both urban and rural parts of North Carolina, many people live in areas with limited access to fresh fruits and vegetables and other foods essential to a healthy diet. These areas are commonly referred to as *food deserts*. The CDC defines a food desert as "an area that lacks access to affordable fruits, vegetables, whole grains, low-fat milk, and other foods that make up the full range of a healthy diet."<sup>726</sup> In the past the USDA has defined a food desert as a low-income area where a significant number or percentage of residents is at least 1 mile away from a supermarket in urban areas or more than 10 miles away in rural areas.<sup>727</sup> More recently, the USDA updated its analysis to reflect the fact that many factors besides distance to a grocery store can affect access to healthy foods. Factors such as income level, vehicle ownership, and public transportation networks can prevent individuals and families from reaching a healthy food retailer even if they live only a short distance away.<sup>728</sup> Environmental factors such as hills, lack of sidewalks, major highways, and high crime areas can also create obstacles to food access for individuals who have to walk or take public transportation to reach a nearby grocery store.

In North Carolina, more than 1.85 million residents—almost 20% of the total state population—have low access to a grocery store.<sup>729</sup> That number includes almost half a million children and about a quarter of a million seniors.<sup>730</sup> Additionally, out of the total number of North Carolinians with low access to a store, 622,400 are low-income, and more than 100,000 North Carolina residents have low access to a store and no household vehicle, making it extremely difficult for them to purchase food on a regular basis.<sup>731</sup> These numbers are higher in North Carolina than in the country as a whole. 6.5% of North Carolinians are low-income and have low access to a store compared to



5.6% nationwide. 1.1% of North Carolinians have low access to a store and no household vehicle compared to 0.67% nationwide.<sup>732</sup> North Carolina has a much higher number of residents with low access to a store and no household vehicle than either Georgia or Michigan, two states with comparable total populations.<sup>733</sup> North Carolina also has the 5th highest overall food insecurity rating in the United States, and ranks 2nd highest for food insecurity among children under the age of 5.<sup>734</sup>

Designation as a food desert doesn't mean an area lacks all food retail options. In fact, many North Carolinians live in food deserts that have a high concentration of unhealthy fast food and snack food vendors relative to healthy food options.<sup>735</sup> These areas are sometimes referred to as *food swamps*.<sup>736</sup> Studies have indicated that greater availability of fast food restaurants and lower prices of food at these restaurants is associated with poor diets, even when healthy food sources are also available in the area.<sup>737</sup> According to the CDC, only 11 out of every 100 food stores and restaurants in North Carolina offered healthy foods, such as fruits and vegetables.<sup>738</sup> North Carolina has more than 6,600 fast food restaurants and almost 5,000 convenience stores statewide, compared to just 1,785 grocery stores.<sup>739</sup> In 2007, North Carolinians spent an average of \$746 per person on fast food annually, a figure that has risen more than \$200 since 2002.<sup>740</sup> Nationwide, per capita spending on fast food is just \$644 annually, and almost all of North Carolina's neighboring states spend less on fast food.<sup>741</sup>

Studies by epidemiologists have demonstrated that access to grocery stores and other markets selling fruits, vegetables, and other healthy foods has an impact on a range of important health outcomes, including cardiovascular disease, obesity, hypertension, and diabetes.<sup>742</sup> Individuals who live in food deserts or food swamps have worse health outcomes and are at much greater risk of suffering from diet-related diseases, including diabetes.<sup>743</sup> By contrast, people who live near a supermarket are more likely to have healthy diets and consume higher numbers of fruits and vegetables.<sup>744</sup> Studies have also demonstrated that adults who live in neighborhoods with easily accessible supermarkets and healthy grocery stores

have lower rates of obesity and are less overweight.<sup>745</sup> With more than 1 in 4 obese residents and almost one million North Carolinians diagnosed with diabetes, it is increasingly urgent that North Carolina take steps to improve geographic access to healthy food for individuals in low access and low-income areas.<sup>746</sup>

### GOAL #1: INCREASE NUMBER OF FULL-SERVICE GROCERY STORES IN LOW ACCESS AREAS

North Carolina can combat the problems caused by food deserts and food swamps by encouraging healthy food retailers to establish new stores in areas that currently have limited access to these foods. Studies have shown that people living in areas with higher densities of markets that sell fresh produce have lower rates of obesity and a lower risk of developing diabetes and other diet-related diseases.<sup>747</sup> Researchers estimate that adding a new grocery store to a high poverty neighborhood can translate into a three pound weight decrease, and that eliminating a fast food restaurant from a fast food dense neighborhood could translate into a one-pound weight decrease.<sup>748</sup> In addition to these health benefits, there are positive economic impacts in neighborhoods that add fresh food retailers.<sup>749</sup> Direct economic benefits include the creation of new jobs and increased local tax revenues.<sup>750</sup> Indirect economic benefits include revitalization of the housing market, additional spending in the local economy, and creation of new businesses surrounding these stores.<sup>751</sup>

#### Pass Legislation that Encourages the Establishment of Full-Service Grocery Stores in Low Access Areas.

North Carolina legislators are already thinking about ways to attract grocery stores to food desert areas in the state. In April of 2013, for example, North Carolina Representative Yvonne Lewis Holley drafted a Food Desert Zones bill designed to encourage healthy food vendor development.<sup>752</sup> The American Heart Association, Wake County Health and Human Services, and the NC Department of Agriculture also collaborated on the creation of the bill, which offered tax-incentives to large groceries and mom-and-pop stores that open new locations in food desert areas and receive more than 10% of their gross receipts



from the sale of nutrient-dense foods such as fresh vegetables, fruits, whole grains, nuts, seeds, beans and legumes, and low-fat dairy products.<sup>753</sup> The bill also provided tax credits to businesses that create jobs in food desert areas, with increased credits available for hiring a resident of the area or a longtime unemployed worker.<sup>754</sup> Although the bill did not leave committee, it sparked an ongoing conversation among legislators on food issues in the state, and House Speaker Thom Tillis included Food Desert Zones in the list of topics designated for exploration by a House Study Committee in early 2014.<sup>755</sup> The Study Committee on Food Desert Zones, co-chaired by Representatives Edgar V. Starnes and Chris Whitmire, is scheduled to meet several times over the spring of 2014, and is charged with investigating: (1) how many individuals in North Carolina live in communities classified as food desert zones; (2) national research and trends aimed at addressing food deserts; (3) examples of job-based tax incentives for food retailers in food desert zones; and (4) the proportional relationship between rural and urban communities classified as food desert zones.<sup>756</sup> North Carolina should pass legislation that encourages the development of grocery stores and other healthy food retailers in food desert areas.

For example, the state could encourage grocery stores to open locations in low-income areas by creating a program similar to the Pennsylvania Fresh Food Financing Initiative (FFFI).<sup>757</sup> The FFFI is a statewide financing program designed to attract supermarkets and grocery stores to underserved urban and rural communities throughout Pennsylvania.<sup>758</sup> Launched in 2004 as a public-private partnership between the Commonwealth of Pennsylvania, The Reinvestment Fund, The Food Trust, and Urban Affairs Coalition, the FFFI financed 88 projects over the course of 6 years and created 5,023 jobs and almost 1.67 million square feet of new food retail space in underserved communities.<sup>759</sup> The stores range from large full-service supermarkets to natural foods cooperatives and small greengrocers, and almost all are independent, locally-owned businesses.<sup>760</sup> In total the FFFI disbursed \$12.1 million worth of grants and more than \$73.2 million in loans to support land development, acquisition, equipment and construction costs, and employee recruitment and training.<sup>761</sup>

Estimates suggest that the 88 stores funded by the FFFI have provided more than 400,000 Pennsylvania residents with healthier food choices in their communities.<sup>762</sup> The public-private partnership has proven so successful that many states—including New York, New Jersey, Illinois, Louisiana, and Colorado—have used it as a model to develop or begin developing similar initiatives.<sup>763</sup>

### **Municipalities Should Engage in Health-Conscious Community Planning or Revise Zoning Laws in Order to Make It Easier for Healthy Food Vendors to Locate in Underserved Areas and Discourage Fast Food Retailers from Locating in Areas Already Saturated with Fast-Food Establishments.**

Local governments can also engage in health-conscious community planning or revise zoning laws to reduce food deserts by making it easier for permanent and mobile retailers of healthy foods to operate in low-income areas. Local governments can streamline permitting procedures for mobile vendors and create municipal tax incentives for full-service grocery stores that open in food deserts. They can also restrict the construction of new fast-food restaurants or other sources of highly unhealthy foods in areas that already have high concentrations of these retailers and/or limited access to healthier food options.<sup>764</sup> Local governments can assess impact fees that will fund pedestrian infrastructure improvements or other measures to support overall community health as a condition for approving new fast-food establishment construction and licensing.

### **GOAL #2: TAKE STEPS TO PROMOTE THE SALE OF HEALTHY FOOD IN CORNER STORES**

Throughout North Carolina, convenience stores (also known as corner stores) are far more prevalent than grocery stores. In 2009, North Carolina had about 2.75 convenience stores for every grocery store statewide, and in many counties the ratio was far higher, with as many as 7 convenience stores for each grocery store.<sup>765</sup> In areas where grocery stores are distant or otherwise inaccessible, convenience stores often serve as a primary location for residents to purchase food. These stores are easily accessible and familiar for residents and generally have extended business hours, making it easy for parents working swing



shifts and older children who are responsible for feeding younger siblings to regularly shop for food in these establishments. However, the majority of corner store offerings are unhealthy, processed foods rather than fresh fruits or vegetables. Stocking and promoting healthier foods at small corner stores in North Carolina has been shown to significantly increase healthy food consumption.<sup>766</sup>

#### **Provide State Funding to Expand the Healthy Corner Store Initiative.**

Funded by the Centers for Disease Control and Prevention's Community Transformation Grant Project, the North Carolina Department of Health and Human Services launched a Corner Store Initiative in 2011 that aims to work with convenience store owners in low-income communities to provide more healthy food options in corner stores.<sup>767</sup> As part of the initiative, researchers surveyed customers and convenience store managers in areas with limited access to larger grocery stores in order to explore the feasibility of providing more healthy food options at affordable prices through existing retail outlets.<sup>768</sup> Their study indicated that rural customers in particular rely heavily on corner stores for their food shopping and that these customers would purchase more healthy foods if they were readily available.<sup>769</sup> Store owners in turn reported that they would like to stock more healthy foods, but were concerned there would be inadequate demand for these items.<sup>770</sup> However, pilot programs suggested that store owners who began stocking healthy items were more likely to continue to do so based on elevated customer demand.<sup>771</sup> The study also indicated that, in addition to increasing the number and variety of healthy foods available, convenience store owners can improve demand for these foods by changing their placement within the store to make them more visible or by lowering pricing or offering special promotions to make customers more aware of healthy options.<sup>772</sup>

The state health department has been working with a Philadelphia-based non-profit, The Food Trust, to create a state-wide corner store project based on the current programs.<sup>773</sup> In Davidson County, a local corner store owner used funding from the grant to plant an oversized fruit and vegetable garden next to his store.<sup>774</sup> He also received funds from an

Action Communities for Health, Innovation, and Environmental Change Grant to buy new coolers for storing fruits and vegetables.<sup>775</sup> His store is now serving as a model for others to follow.

#### **GOAL #3: INCREASE OPTIONS FOR TRANSPORTATION TO HEALTHY FOOD VENDORS BY INVESTING IN PUBLIC TRANSIT AND PEDESTRIAN INFRASTRUCTURE.**

The vast majority of Americans use personal vehicles to shop for groceries, and vehicle ownership is a crucial component of food accessibility.<sup>776</sup> Individuals who must walk, bike, or take public transportation to the grocery store are limited in terms of how much food they can purchase and carry in a single trip, and therefore must visit the grocery store more frequently than those individuals with access to a car. Despite being a state with a large rural population, North Carolina has one of the lowest numbers of vehicles per capita in the country at 0.64 vehicles per person, well below the national average of 0.8 vehicles per person.<sup>777</sup> Only New York, Nevada, and the District of Columbia have fewer vehicles per capita than North Carolina.<sup>778</sup>

#### **Invest in Sidewalks and Other Pedestrian-Friendly Capital Improvement Projects to Ensure that Residents are Able to Access Grocery Stores on Foot.**

Unlike New York and the District of Columbia, North Carolina has little or no public transportation, and North Carolina's largest cities are some of the "least walkable" large cities in the country.<sup>779</sup> Out of a ranking of 74 of the largest cities in the country, Raleigh ranked 55th, Greensboro 66th, and Charlotte 73rd in terms of how pedestrian-friendly the cities were and how easily basic errands could be accomplished on foot.<sup>780</sup> All three cities were rated as "car-dependent," meaning that it would be difficult to carry out errands without a car.<sup>781</sup> By comparison, New York and San Francisco received walk scores that are more than twice as high as Raleigh's score.<sup>782</sup> Even in comparison to other cities in the South, North Carolina's largest cities rate poorly. New Orleans, Atlanta, Tampa, and Houston all rate higher, and have walk scores indicating that at least some errands can be comfortably accomplished on foot.<sup>783</sup> Raleigh also had the lowest transit accessibility score out of any



city on the list with only “minimal transit,”<sup>784</sup> and Raleigh, Greensboro, and Charlotte all were rated near the bottom of the list for bike accessibility with only “minimal bike infrastructure.”<sup>785</sup>

This combination of low vehicle ownership, limited public transit networks, and poor infrastructure for pedestrians makes it difficult for many North Carolina residents in lower-income areas to reach stores that supply healthy foods, and makes it much more likely that residents will choose instead to purchase less-healthy options that are more convenient. Studies have indicated that low-income families who are at higher risk of developing type 2 diabetes are also more likely to live farther away from healthy grocery stores in neighborhoods with a high ratio of fast-food restaurants.<sup>786</sup>

One of the simplest ways to improve health outcomes for these individuals is to make it easier for them to access existing healthy food outlets through improved transportation infrastructure. Constructing sidewalks and pedestrian bridges—especially beside or across busy roads and highways—and creating bike lanes on major roads can allow residents without cars to reach grocery stores in their area more easily and safely. Particularly in urban areas, these types of improvements can go far in making grocery stores more accessible.

### **Provide Tax Incentives to Grocery Stores that Offer Shuttle Service to Areas with Low Food Access.**

North Carolina could also create incentives for grocery stores to offer shuttle services from food desert areas to their retail sites. For example, in Baltimore, Maryland, a free shuttle service takes residents who live in Baltimore’s food desert neighborhoods to Santoni’s Supermarket. To make the service available six days per week, the supermarket partnered with the local community’s Revitalization Plan board.<sup>787</sup> Providing free shuttle service can yield significant profits for stores in addition to improving food access in resource-challenged areas, according to one study of several low-income urban neighborhoods in California.<sup>788</sup>

*Expand Public Transportation Options and Medicaid and Medicare Transportation Services to Increase Access to Grocery Stores.*

Although North Carolina has a public transportation system in every county, the routes do not necessarily provide easy access to grocery stores.<sup>789</sup> To increase geographic access to healthy food, North Carolina could expand public transportation service and design routes in ways that provide residents with direct access to grocery stores. The state should consider expanding both public and Medicaid and Medicare transportation services to include stops at grocery stores. The on-call transportation services for the disabled and elderly—funded by a mixture of federal, state, and local dollars—often cannot keep pace with the demand for rides.<sup>790</sup> The state can increase funding for these programs and add grocery stores as an approved stop. For example, rural Pierce County in Georgia operates a small shuttle that provides relatively low-cost transportation for all county residents only to doctor’s offices, medical appointments, pharmacies, and grocery stores.<sup>791</sup> Pierce County in Washington state’s Beyond the Borders initiative has also expanded its Medicaid and Medicare paratransit services to low-income people who live in rural areas outside the county’s established transit routes.<sup>792</sup> The service takes residents to medical appointments and grocery stores or connects them with existing public transit routes when possible.<sup>793</sup>

## **Chapter 3: Physical Activity and the Built Environment**

Engaging in regular physical activity is an important part of preventing or effectively managing type 2 diabetes. Regular exercise helps to stabilize blood glucose levels, preventing post-meal spikes in blood sugar and helping the body use insulin more efficiently.<sup>794</sup> The American Diabetes Association recommends 150 minutes per week of moderate to vigorous aerobic exercise along with sessions of strength training, spread out over the course of the week with no more than two days between bouts of activity.<sup>795</sup>

### **GOAL #1: INCREASE OPPORTUNITIES FOR PHYSICAL ACTIVITY BY INVESTING IN INFRASTRUCTURE THAT PROMOTES ACTIVE LIVING**

For many, the ability to be active and exercise is hampered by a lack of safe, accessible, appropriate spaces for engaging in physical





activity. Many residents cannot afford to join private gyms or lack the ability to travel to low-cost recreational facilities such as local YMCAs or YWCAs. Walking, running, or biking outside is hazardous in areas without sidewalks or bike lanes. Many neighborhoods lack parks and playgrounds. Others lack the resources to maintain these areas, causing residents to avoid existing outdoor recreation spaces because they are overgrown or littered with trash and contain outdated, unsafe equipment in need of repair. Some members of urban communities also report feeling unwelcome or unsafe at neighborhood parks due to gang activity or perceived tension between different ethnic groups.<sup>796</sup>

Beyond parks and playgrounds, a built environment that promotes walking and biking is essential to active living. In fact, North Carolina has already taken a significant step in the right direction by creating Walk Bike NC, a comprehensive plan to encourage walking and biking throughout the state.<sup>797</sup> By reaching out to over 600,000 North Carolinians to understand their lifestyle and habits, the Department of Transportation (DOT) created a plan focused on five pillars: Mobility, Safety, Health, Economy, and Environment.<sup>798</sup>

North Carolina can take the following steps to improve the built environment:

### ***Policy Opportunities***

#### **Monitor the Effect of N.C. Gen. Stat. § 136-189.10 which Prohibits Spending Department of Transportation Funds on Stand-Alone Pedestrian and Bicycle Improvement Projects.**

Efforts to increase opportunities for residents to be active are already underway across the state. The state's Department of Transportation (DOT) recently revised its mission to include supporting the health of North Carolinians along with the state's economy and general well-being, making community health a required component of long-term planning discussions.<sup>799</sup> DOT also adopted a "Complete Streets" policy in 2009, which signals its commitment to encouraging the use of non-vehicle modes of transportation and increasing neighborhood connectivity when building new projects.<sup>800</sup> "Complete Streets" refers to the goal of designing and operating roadways for all users, including bicyclists, public transportation vehicles

and users, and pedestrians of all ages and abilities.<sup>801</sup>

However, DOT's ability to retrofit and build new infrastructure for pedestrians and cyclists was limited in 2013 by the Strategic Prioritization Funding Plan for Transportation Investments, which prohibits the Department from providing financial support for "independent bicycle and pedestrian improvement projects."<sup>802</sup> This means that funds cannot be allocated to build a sidewalk at a dangerous intersection or repaint or create a bike lane unless the project also includes some improvement to a roadway. The statutory limit on independent bicycle or pedestrian projects may hinder the Department's ability to implement Walk Bike NC, fulfill its health mission, and implement the Complete Streets policy. The state should carefully monitor the law's impact, particularly the impact on low-income communities which may be disproportionately affected by this funding limitation. After observing the effects of N.C. Gen. Stat. § 136-189.10, the state may want to reconsider this restriction on DOT funds.

#### **Make the Community Health Impact of Proposed Transportation Projects a Required Part of Decision-Making with Respect to Transportation Funding.**

In a 2012 Commentary for the North Carolina Medical Journal, the Department of Transportation articulated a strong vision for supporting healthy communities through sustainable transportation.<sup>803</sup> The article highlighted current research demonstrating the impact of transportation infrastructure on physical activity and obesity and discussed the results of a 2007 survey showing that 60% of adults in North Carolina believed they would be more physically active if their communities had more accessible sidewalks for walking or bicycling. Based on these findings, DOT emphasized the potential impact of multi-agency partnerships and health-conscious internal policy-setting on the development of more active communities.<sup>804</sup> New research at the University of North Carolina at Chapel Hill has monetized the public health benefits of biking and pedestrian projects and demonstrated that these projects would save public dollars in the long run by lowering healthcare costs – including those associated





with diabetes – and mortality rates.<sup>805</sup> In particular, the research showed that planned bike and pedestrian projects in both rural and urban areas would provide a high return on investment.<sup>806</sup> While the 2013 Strategic Prioritization Funding Plan for Transportation, made major changes to the way that DOT could allocate funds to various transportation projects in the state, it made no mention of including public health as a factor in project decision-making.<sup>807</sup> DOT should strive to incorporate health-related criteria as additional factors to be considered in selecting and funding transportation projects throughout the state, and use economic impact models such as the one developed by researchers at UNC Chapel Hill to aid in decision-making.

### **Require New Subdivisions to Construct Sidewalks and Bike Accommodations in All New Development.**

In order to support healthy, active communities, both the state and individual municipalities must encourage pedestrian-friendly development that requires the inclusion of appropriate areas for exercise and active play, like playgrounds and greenways. Rapidly developing suburban and rural areas must think like cities as they expand, retrofitting existing transportation routes for the convenience of pedestrians, requiring the inclusion of sidewalks and bike lanes in new subdivisions, and aiming for a density of development around town and village centers that permits residents to complete day-to-day errands on foot. “Cities without sidewalks are cities without walkers...or runners,” noted one community partner.<sup>808</sup> In addition to promoting physical activity, keeping communities walkable is a smart economic choice that supports property values.<sup>809</sup> For example, in Charlotte, an increase in Walk Score – a measure from 0 to 100 of how easy it is to do various necessary errands on foot – from the overall city average of 54 (somewhat walkable) to 71 (very walkable) correlates with an increase in average house price from \$280,000 to \$314,000.<sup>810</sup> Residents who are able to cut back on time in their vehicles have more expendable income that they are likely to spend locally; by contrast, an estimated 85% of dollars spent on cars and gas leaves the local economy.<sup>811</sup> Community

design that takes pedestrian access and public transportation connectivity into account also allows people to stay healthy and remain situated in their neighborhood into their senior years. Community partners across North Carolina have expressed concern that rapidly developing suburbs just outside of city limits are growing just as fast – in some cases even faster – than city neighborhoods, without requiring the same investments in pedestrian infrastructure and density of essential services.<sup>812</sup>

In addition to requiring new developments to build sidewalks, municipalities should set aside funds to connect sidewalks that link new developments with main roads and primary services. For example, the town of Winterville, North Carolina recently instituted an ordinance requiring sidewalks in newly constructed neighborhoods.<sup>813</sup> Unfortunately, because no funds were set aside to connect those sidewalks with sidewalks on main roads, a gap between sidewalks in a new development and the local elementary school prevented students from safely walking to school.<sup>814</sup> For this reason, municipalities should allocate funds that support connectivity between new sidewalk systems and major services such as schools, health clinics and grocery stores. Additionally, new developments should be required to have bike lanes or bike-accommodating streets. By making these changes in the built environment, North Carolina can encourage residents to lead more active lifestyles.

### **Collect More Data on Pedestrian and Cycling Activity.**

Researchers report that lack of data on pedestrian and cycling activity limits their ability to comprehensively assess the economic impact of proposed bike and pedestrian projects.<sup>815</sup> To better understand the role of the built environment in public health and diabetes prevention, the North Carolina Department of Health and Human Services should add questions about active transportation to the CDC survey it administers annually. In particular, a question that asks about time that people spend walking or biking—as opposed to the number of trips—would be useful for future research.<sup>816</sup>



## Chapter 4: Nutrition and Cooking Education

In order to prevent or combat type 2 diabetes, consumers must understand which foods make up a healthy diet and, especially when they purchase fresh, unprocessed foods, they must also know how to transform these foods into meals. People with prediabetes and diabetes are bombarded with conflicting dietary advice from health professionals, advocacy groups, the food industry, diet books, and television. A 2012 Food and Health Survey commissioned by the International Food Information Council Foundation found that more than half of Americans believe it is “easier to figure out their taxes than to figure out what they should and shouldn’t be eating.”<sup>817</sup> Beyond choosing what to eat to maintain or regain health, people with prediabetes and diabetes also need the time and knowledge to prepare healthy food for themselves and their families. Nationwide, the percentage of Americans who cook has dramatically declined since 1965; only slightly more than half cook a meal on any given day.<sup>818</sup> Although most calories (approximately 72%) are still consumed at home, this does not mean that the food is home-cooked.<sup>819</sup> Americans are relying more heavily on ready-to-eat foods that require no preparation, like fast food, take-out, and pre-packaged snacks that tend to be high in salt, sugar, and fat.<sup>820</sup> Children in particular consume half of all their fast food calories at home.<sup>821</sup> The state must support efforts to make nutrition information transparent for consumers and promote cooking education.

### GOAL #1: SUPPORT MEASURES THAT INCREASE TRANSPARENCY OF NUTRITION INFORMATION.

Diabetes educators in North Carolina assert that while their patients want to make lifestyle changes, they are often confused by misleading labels on processed products (for example, thinking that a high-sugar, strawberry-flavored item is a healthy choice that contains real fruit).<sup>822</sup> Many people also do not know how to prepare meals from fresh, whole foods. One community partner described the disappointing response to a local food bank’s efforts to offer fresh produce grown in a nearby community garden to food bank clients. Many of the fresh fruits and vegetables went to waste because clients

refused them, not knowing how to process, cook, or eat them.<sup>823</sup> Another community partner described the challenges very low-income people face even when they do know what to buy and how to prepare it. “We’re asking them to buy and cook fresh food,” she said, “but they don’t have a stove or a refrigerator. They don’t have kitchen utensils. Sometimes they don’t even have pots.”<sup>824</sup>

For families who struggle financially, often with members holding down multiple jobs to make ends meet, serving home-cooked healthy meals can be a challenge due to time constraints. As parents rush to a second or third job, young children are left in the care of an older brother or sister. In many households, “older kids are responsible for feeding their younger siblings,” noted one community partner. “These kids may not have the knowledge or ability to use sharp knives or the stove.”<sup>825</sup> Across all socioeconomic groups, time spent preparing food has declined since the mid-1960’s.<sup>826</sup>

On a national level, the Affordable Care Act directed the Food and Drug Administration to promulgate labeling rules for restaurants with 20 or more locations and vending machine operators with 20 or more machines.<sup>827</sup> Under the law, restaurants are required to list calorie content information for standard menu items on restaurant menus and menu boards and vending machines must prominently display calorie information.<sup>828</sup> The Food and Drug Administration has not yet released a final rule on labeling, and the timeline for implementation of federal menu-labeling requirements is unclear. However, even when the final rule is released, states and local governments will not be preempted from regulating menu labels at additional venues beyond 20-location chain restaurants.<sup>829</sup>

### Policy Opportunities

**The State Should Partner with Private Food Retailers and Foundations to Design Pilot Programs that Study the Impact of Store-Level Labeling of Diabetes-Appropriate Foods on Consumer Purchasing Patterns.**

Nutrition education is paramount in the effort to combat type 2 diabetes. Many community partners emphasized the importance of nutrition labels for diabetics or others who are trying to modify their diets.<sup>830</sup>



Some advocated for the development of a recognizable “diabetes-friendly” symbol that grocery store owners could choose to place on foods recommended for pre-diabetic and diabetic diets. Easy-to-interpret labels have been shown to make a difference in raising consumer awareness of the nutrition of potential purchases and influencing purchasing patterns. In a pilot study at Massachusetts General Hospital, simple “traffic-light” labeling of food items in the hospital cafeteria where red denoted an unhealthy food, yellow a semi-healthy food, and green a healthy food caused survey respondents to become more attuned to analyzing nutrition labels and to be more likely to assert that health and nutrition were important considerations for them in making food purchases.<sup>831</sup> The Blue Zones Project, a national community well-being improvement initiative, demonstrated the power of simple labels by placing an easily-identified Blue Zones tag on various healthy foods in one grocery store; sales of the labeled products jumped 40%.<sup>832</sup> Both store owners and consumers stand to benefit from store-level labeling of healthy products.

### GOAL #2: INCREASE PREVALENCE OF COOKING AND NUTRITION EDUCATION CLASSES FOR ALL AGE GROUPS.

Cooking education can also influence food choice and improve food preparation skills for people who are living with or at risk for type 2 diabetes. A study of cooking classes offered throughout New Mexico by the New Mexico Cooperative Extension Service showed that healthy food knowledge and behaviors increased for all ethnic groups, both genders, and a wide range of ages following participation in hands-on cooking classes.<sup>833</sup> The New Mexico program included people with diabetes and their families, and was offered in both English and Spanish. Significantly, healthy food knowledge and behaviors also increased for non-diabetic adolescent children of the diabetic participants upon completion of the program, demonstrating that hands-on cooking education can influence the food behaviors of a new generation of young eaters.<sup>834</sup> Involving the entire family in diabetes and healthy lifestyle education and designing culturally competent curriculum content can increase the impact of lifestyle modification and cooking programs. For example, the YMCA of

Northwest North Carolina offers Salsa, Sabor y Salud, a popular healthy lifestyles program for Latino families that focuses on improving nutrition, increasing levels of physical activity, and encouraging healthy lifestyle habits for the whole family.<sup>835</sup>

In North Carolina, the Cooperative Extension Service plays a huge role in providing inclusive nutrition and cooking education for people living with or at risk for type 2 diabetes and their families. Educators welcome family members to the cooking demonstrations and hands-on cooking classes offered through the YWCA’s Diabetes Self-Management Education program, and also hold occasional classes and demonstrations open to the larger community.<sup>836</sup> Cooking and nutrition educators from the Cooperative Extension Service are also stepping in to fill the knowledge gap in how to prepare and cook fresh local produce purchased at farmers markets or provided through food pantries.<sup>837</sup> However, one challenge is finding funds to pay for the food used in demonstrations, since grant funding often cannot be used for food.<sup>838</sup>

One source of funding for cooking and nutrition education in the state is federal SNAP-Ed dollars. Along with receiving federal dollars to administer SNAP benefits (known as FNS in North Carolina), the state also receives federal money for SNAP-Ed, which functions as an important vehicle for delivering nutrition information. SNAP-Ed, the Nutrition Education and Obesity Prevention Grant Program, provides funding to states to create nutritional education programs and activities that increase healthy eating habits and promote a physically active lifestyle for SNAP participants. For fiscal year 2014, North Carolina will receive \$2,945,642 for its SNAP-Ed Program, an amount partly based on the state’s percentage of national SNAP-Ed expenditures and partly based on the state’s percentage of national SNAP participation.<sup>839</sup> A 2013 study performed by the USDA found that SNAP-Ed nutrition education interventions are effective in increasing the consumption of healthy foods.<sup>840</sup> The most successful intervention focused on engaging children in a school setting while simultaneously providing caregivers at home with information about providing healthy foods on a tight budget.<sup>841</sup> In North Carolina, SNAP-Ed money is distributed through the



Department of Social Services to six entities: North Carolina State University, Surry County Health and Nutrition Center, Durham County Health Department, University of North Carolina at Greensboro, University of North Carolina at Chapel Hill, and the Alice Aycok Poe Center for Health Education in Raleigh.<sup>842</sup>

### **Policy Opportunities**

#### **Develop and Fund Pilot Cooking and Nutrition Education Programs that Engage Families, including Adolescents.**

Rates of type 2 diabetes among children are on the rise, and the disease is more aggressive in children and adolescents, progressing to serious complications at a much faster rate.<sup>843</sup> Good self-management skills and an understanding of the basics of healthy eating and cooking are crucial for young people living with or at risk for the disease. Educators note that while cooking and demonstration classes welcome family members, they are generally targeted at adults. They believe that classes designed to engage adolescents and mobilize their families around supporting healthy behaviors would have a significant impact on lifelong health outcomes for these children.

### **Chapter 5: Early Childhood, School Food, Nutrition, and Wellness Programs**

Habits that lead to an unhealthy lifestyle often begin in childhood. Studies have indicated that overweight teens have a 70% chance of becoming overweight or obese adults, and thus have a greatly heightened risk of developing diet-related health problems later in life, including high cholesterol, hypertension, asthma, sleep apnea, and diabetes.<sup>844</sup> North Carolina has the 5th highest rate of childhood obesity in the nation, with more than one third of children between the ages of 10 and 17 categorized as either overweight or obese, and this figure has been increasing steadily since 1995.<sup>845</sup> As a result of this increase in childhood obesity, rates of type 2 diabetes (formerly known as adult-onset diabetes) among children are rising.<sup>846</sup> Type 2 diabetes is more aggressive in children than adults, progressing to serious complications only a few years after diagnosis.<sup>847</sup> Moreover, children with diabetes tend to be poor self-managers, which quickly leads to serious negative health outcomes.<sup>848</sup> Even with coordinated, high-quality care,

children have experienced high blood pressure, eye damage, damage to beta cells, and initial signs of kidney disease only four years post-diagnosis.<sup>849</sup> Children diagnosed before age 20 have a life expectancy 15-27 years less than that of people without diabetes.<sup>850</sup> The consequences of the increase in early diabetes diagnosis are so severe and far-reaching that some scientists predict the current generation of children will be the first to live shorter lives than their parents.<sup>851</sup>

Both obesity and diabetes can be attributed in part to poor eating habits and sedentary lifestyles.<sup>852</sup> Unfortunately, studies indicate that many North Carolina children are consuming diets that lack adequate nutrition. One in three typically consumes less than one serving of vegetables per day, and 86% of North Carolina high school students eat fewer than the recommended servings of fruits and vegetables daily.<sup>853</sup> At the same time, 19% of children and adolescents consume three or more high calorie sugar-sweetened beverages each day, and one in three children eats fast food two or more times per week.<sup>854</sup> Moreover, many North Carolina children and adolescents are failing to engage in adequate physical activity. Approximately 20% of elementary-school-aged children are not physically active for at least 60 minutes per day, and this percentage increases to 45% for middle-school students and 56% for high-school students.<sup>855</sup> At the same time, more than 45% of children under the age of 10 watch at least two hours of television per day.<sup>856</sup>

#### **GOAL #1: IMPROVE EARLY CHILDHOOD NUTRITION AND PHYSICAL ACTIVITY EDUCATION FOR CHILDCARE PROVIDERS AND FAMILIES WITH CHILDREN AGES 0-6.**

North Carolina recognizes the importance of addressing high rates of overweight and obesity in early childhood. The state has made this issue a priority, by creating the Legislative Task Force on Childhood Obesity in 2009 and through other policy initiatives to improve the health of children ages 0-6. Together with the Blue Cross Blue Shield of North Carolina Foundation, the North Carolina Institute of Medicine (NCIOM) created the Task Force on Early Childhood Obesity Prevention (ECOP) to “develop a blueprint to promote healthy weight and to prevent and reduce childhood





obesity.”<sup>857</sup> Chartered in 1983 by the North Carolina General Assembly, the NCIOM is a quasi-state agency charged with providing “balanced, nonpartisan information on issues of relevance to the health of North Carolina’s population.”<sup>858</sup> In its advisory role, the NCIOM released a policy report in 2013 noting the prevalence and severity of early childhood obesity in North Carolina and describing how the state can work to ameliorate the situation. Research demonstrates that introducing healthy habits in exercise and nutrition to young children can prevent the childhood onset of chronic illnesses such as diabetes, and can also prevent health problems for children as they grow into adults.<sup>859</sup>

The percentage of overweight and obese children age 2-4 in North Carolina has grown over time to 16.2% and 15.4% respectively.<sup>860</sup> The state currently has the 5th highest rate of early childhood obesity in the United States.<sup>861</sup> Because children who are overweight by age 6 are over 50% more likely to become obese as adults, it is crucial to intervene at the early childhood level and provide nutritional guidance and education about physical activity to these children and their families.<sup>862</sup> Higher rates of overweight and obesity put children at significantly increased risk of developing type 2 diabetes.<sup>863</sup>

### **Policy Opportunities**

#### **Expand Nutrition and Physical Activity Education to Childcare Centers and Providers and Offer Financial Incentives to Childcare Facilities that Meet Enhanced Standards for Health and Wellness Recognition.**

At any given moment, one in four children age 0-5 in North Carolina is cared for in a licensed, regulated childcare program.<sup>864</sup>

The state must target these institutions as it strives to decrease the number of children in North Carolina who are overweight or obese. The North Carolina Division of Child Development and Early Education (DCDEE), which is charged with implementing quality standards and enhancing the delivery of child care and education, can educate and coach childcare providers about obesity prevention strategies that can be incorporated into childcare programs.<sup>865</sup> To promote high quality childcare centers for children, DCDEE has set in place the North Carolina Star Rated License System.<sup>866</sup> Using this system, DCDEE

rates childcare facilities on a scale of one to five stars, with one star signifying that the child care program meets the minimum licensing standards for child care in North Carolina and five stars signifying exceptional staff education and adherence to program standards.<sup>867</sup> To encourage child care centers to address healthy eating and physical activity among enrolled children, DCDEE can revise the criteria for the Star Rated License system to give quality points to centers that offer education on these issues for staff and adhere to program standards that incorporate healthy practices.

Many center-based and home-environment childcare centers in North Carolina participate in the Child and Adult Care Food Program (CACFP). Through this program, centers that meet the program’s nutritional requirements receive partial “reimbursements for food served to young children in child care centers, family day care homes, [and] after-school programs” that meet certain nutritional requirements.<sup>868</sup> Children in programs participating in CACFP are less likely to be in poor health, and are more likely to be a healthy weight and height for their age.<sup>869</sup> In North Carolina, CACFP is administered by the Nutrition Services Branch within the Division of Public Health, and has a broad reach because “all child care facilities are required to follow the CACFP meal pattern guidelines.”<sup>870</sup> CACFP also provides consultants to help childcare centers comply with the nutrition standards that are required under the program. In addition to providing technical assistance to centers that implement CACFP meal patterns, CACFP consultants can offer resources and training on how to educate children about healthy food.

In 2012, the North Carolina Child Care Commission, which is charged with implementing the childcare laws enacted by the General Assembly, adopted new, enhanced standards for nutrition in childcare programs based on the Division of Public Health’s recommendations. The standards set minimum requirements for physical activity and limitations on beverages able to be served in childcare settings that receive federal CACFP funds.<sup>871</sup> For example, according to the new rules, only breast milk, formula, water, unflavored milk, and six ounces of 100% fruit juice per day are allowed to be served in



childcare programs.<sup>872</sup> The Division of Public Health also recommended implementing rules that will limit the amount and type of grains that the programs are allowed to serve; however, new standards for grains have not yet been adopted by the Child Care Commission.<sup>873</sup>

Within the North Carolina Star Rated License system, the state should create a voluntary recognition program for those childcare and early childhood education institutions that meet the standards for nutrition, breastfeeding, physical activity, and outdoor learning environment settings.<sup>874</sup> Centers that meet the standards for enhanced health and wellness should be eligible for additional funding. Centers that go above and beyond to promote the health of young children should receive additional financial incentives to maintain a high level of programming.

The state should also help successful pilot programs disseminate their best practices to every region of North Carolina. For example, the organization Shape NC has created the Nutrition and Physical Activity Self-Assessment in Child Care to help childcare providers set goals and develop action plans for changing physical activity and nutrition practices in daycare settings. Shape NC also transforms outdoor environments of childcare centers through the Preventing Obesity by Design program, making outdoor areas more conducive to active play and incorporating fruit and vegetable gardens to support healthy eating habits. Finally, Shape NC trains childcare providers to use the Be Active Kids® curricula to enhance children's ability to master key motor skills, an important factor in children's ability and desire to be active. Combining these three innovative programs, Shape NC supports child care provider training and technical assistance across the state and has created model childcare centers where evidence-based best practices in nutrition, physical activity, and outdoor learning are implemented.<sup>875</sup> The state should invest in disseminating Shape NC to other childcare centers across the state as well, especially those located in high-need areas.

### **Enhance Family Education about Early Childhood Healthy Weight and Obesity Prevention through Existing Maternal, Infant, and Early Childhood Home Visiting and Family Strengthening Programs.**

As the majority of children in North Carolina are cared for in their homes, the state must disseminate information about healthy eating and physical activity to family caregivers. Home visiting programs, where nurses or trained peer workers travel to the homes of pregnant women and families with young children to provide healthy development support and resources, represent an important point of intervention for delivering messages about proper nutrition and the importance of physical activity. In North Carolina, there are two innovative home visiting programs. First, in June 2011, North Carolina was given a three-year award of \$3.2 million per year through the Affordable Care Act to implement the North Carolina Maternal, Infant, and Early Childhood Home Visiting Program.<sup>876</sup> Second, the state has also introduced the Positive Parenting Program (Triple P) to promote positive and nurturing parent relationships as a means of reducing the number of behavioral and emotional problems in young children.<sup>877</sup> Individuals who visit the homes of young children and their parents have an invaluable opportunity to educate families about healthy nutrition and physical activity habits. The Children and Youth Branch in the North Carolina Division of Public Health (DPH) can offer training to home visitors in these programs about "early childhood physical activity, nutrition, healthy weight, and obesity prevention."<sup>878</sup> By educating parents and caregivers to children in the home, the state can decrease the number of children age 0-5 who become overweight and obese and, ultimately, the number of children who develop type 2 diabetes in adolescence or adulthood.

### **School Food, Physical Activity, and Wellness**

Because of the significant health risks associated with escalating rates of childhood obesity and diabetes, it is crucial for North Carolina policy-makers to improve youth nutrition and physical activity. The public education system is one of the primary venues where environmental and policy changes can have a significant impact on diet and activity





levels among youth. Approximately 1.4 million children are enrolled in the state's public school system, which is overseen by the North Carolina Department of Public Instruction (NCDPI).<sup>879</sup> This system encompasses 115 local public school districts and more than 2,500 individual public schools throughout the state.<sup>880</sup> On schooldays, children consume somewhere between one-third and one-half of their total daily calories at school and are present for 7–9 of their waking hours.<sup>881</sup> Improving the nutritional quality of school food and increasing opportunities for physical activity can have a tremendous impact on the diet and health of millions of children.

This section describes a number of school food, nutrition, and wellness programs currently in place in North Carolina public schools, and discusses ways that these programs can be adapted or expanded to improve overall nutrition and wellness among North Carolina's public schoolchildren. First, the section will analyze the various food programs offered through public schools, including the National School Lunch Program (NSLP), the National School Breakfast Program (NSBP), and other on-campus food offerings such as competitive foods and in-school vending machines. It will also describe school-based food programs that extend beyond the traditional school year, like the Summer Meals program. Next, this section addresses changes that could increase participation by schools and small farmers in the state's Farm to School program. Finally, the section discusses ways in which the state can take steps to foster a physically active student population both inside and outside of the classroom.

### GOAL #2: IMPROVE PARTICIPATION IN SCHOOL MEAL PROGRAMS AND INVEST IN HELPING SCHOOLS MEET NUTRITION STANDARDS

#### National School Lunch Program (NSLP)

The United States Department of Agriculture's National School Lunch Program (NSLP) provides in-kind donations of USDA agricultural commodities and per-meal cash reimbursements to state public schools to help them provide affordable and nutritious meals to their students. These meals must comply with federal nutrition requirements and with statewide nutrition standards that are set by the State Board of Education in collaboration

with local directors of child nutrition services.<sup>882</sup> In 2011, North Carolina had 948,641 students participate in the NSLP, almost two-thirds of the total number of students enrolled in public schools.<sup>883</sup> However, there is room for improvement in participation rates: 77% of eligible students participate in Elementary School, 69% in Middle School, and only 42% in High School.<sup>884</sup> Especially if children live in food insecure households, eating school meals can reduce the likelihood that they will be overweight or obese, thus also reducing the risk of developing diabetes in childhood or beyond.<sup>885</sup>

The main goal of the NSLP is to provide meals for free or at a reduced price (referred to as F/RP meals) to students from low-income families. In 2011, approximately 52% of North Carolina students were eligible to receive F/RP meals.<sup>886</sup> Eligibility for these free and reduced-price meals can be determined in one of the following ways: categorical eligibility, income-based eligibility, or community eligibility.<sup>887</sup>

Children who participate in certain programs have categorical eligibility for free school lunches. Categorical eligibility covers all children living in a household receiving Supplemental Nutrition Assistance Program (SNAP) benefits, Temporary Assistance for Needy Families (TANF), or Food Distribution Program on Indian Reservations (FDPIR) benefits; children participating in Head Start; and children who are in foster care, are homeless, or are migrant.<sup>888</sup> These children can have their eligibility for F/RP meals confirmed through a process known as direct certification, in which the relevant state agency shares data directly with the school district to certify that a particular student meets the eligibility requirements.<sup>889</sup> All school districts nationwide are required to certify children living in households that receive SNAP for free school lunches, but direct certification for other programs is more varied.<sup>890</sup>

Those students who are not categorically eligible may also qualify for F/RP meals on the basis of household income eligibility, which is determined based on a paper application. Children from families with household incomes at or below 130% of the poverty level are eligible for free lunches; children from families with household incomes between 130% and 185% of the poverty level are eligible for



reduced-price lunches.<sup>891</sup> Unfortunately, many children who are eligible based on household income are not ultimately certified for F/RP meals due to family members' inability or unwillingness to fill out the necessary paperwork or parents feeling too embarrassed to turn in the form.<sup>892</sup>

A newer option for certification for F/RP meals is community eligibility, which allows schools with high percentages of low-income children to provide free meals to all students without collecting school meal applications.<sup>893</sup> Schools can use this option if 40% or more of its students are directly certified for free meals.<sup>894</sup> The option has been available in Illinois, Kentucky, and Michigan since the start of the 2011-2012 school year, and beginning in the 2014-2015 school year, all schools nationwide that meet the 40% direct certification threshold will be eligible to participate in this option.<sup>895</sup>

### **Policy Opportunities**

#### **Increase Schools' Ability to Directly Certify Students for F/RP Lunch Based on Categorical Eligibility.**

Currently North Carolina determines student eligibility for F/RP meals through categorical eligibility (with direct certification for SNAP recipients) and income-based eligibility. During the 2011-2012 school year, 88% of school-aged SNAP participant children in North Carolina were directly certified for free school meals.<sup>896</sup> However, the Healthy, Hunger-Free Kids Act of 2010 requires states to increase their direct certification of SNAP-recipient children to 90% and 95% in the coming school years.<sup>897</sup> Additionally, not all school districts in the state are able to certify students who are categorically eligible based on programs other than SNAP, such as TANF, Head Start, or state foster care. These students' families instead must complete the paper application in order to determine their eligibility for F/RP meals, and the additional administrative burden on families means that many of these children are not ultimately certified to receive the F/RP meals to which they are entitled.<sup>898</sup>

In order to reach needy children and increase participation rates in school food programs, North Carolina should continue to expand its direct certification programs for students who are categorically eligible for F/RP

meals. In August 2012, North Carolina was awarded a grant from the USDA Food and Nutrition Service to improve the state's direct certification process and automate many direct certification applications.<sup>899</sup>

#### **The North Carolina Department of Public Instruction should apply to be part of the Demonstration Project to Evaluate Direct Certification with Medicaid.**

North Carolina can expand its ability to directly certify low-income students for F/RP meals by participating in a USDA demonstration project that aims to evaluate the efficacy of direct F/RP school meal certification for children receiving Medicaid. Florida, Illinois, Kentucky, Massachusetts, New York, and Pennsylvania already participate in the project, which certifies students by matching data with Medicaid agencies and requires no other household information.<sup>900</sup> The USDA Food and Nutrition Service is seeking additional participating states for the 2014-2015 school year.<sup>901</sup>

#### **Use the Community Eligibility Option to Provide Free Lunch to All Students in High-Poverty Schools When It Becomes Available in 2014.**

In addition to expanding direct certification, North Carolina should take advantage of the new community eligibility option for high-poverty schools created by the Healthy, Hunger-Free Kids Act of 2010 for the 2014-2015 school year.<sup>902</sup> Under this option, schools that meet the threshold percentage of eligible students (currently 40%) may serve free lunches and breakfasts to all students.<sup>903</sup> This option eliminates the administrative costs associated with processing applications and tracking eligibility categories in the lunch line, thereby making more resources available to increase participation rates and improve the nutritional quality of the meals served.<sup>904</sup> Although participating schools receive the federal free meal subsidy for only a portion of meals, school districts who have implemented the program report that administrative savings make up for the meal charges they must forgo, and parents and staff have reacted positively to the program.<sup>905</sup> Additionally, by making free meals available to all students, community eligibility reduces the stigma associated with receiving a free meal and thus encourages more eligible students to take advantage



of the program. In districts that have implemented community eligibility, average daily lunch participation rose from 72% in October 2010 to 78% in October 2011.<sup>906</sup>

### National School Breakfast Program (NSBP)

Much like the NSLP, the National School Breakfast Program (NSBP) provides federally subsidized meals at reduced or no cost to schoolchildren.<sup>907</sup> Eligibility requirements for NSBP are the same as those for NSLP.<sup>908</sup> However, far fewer students participate in the breakfast program, both nationwide and in North Carolina. During the 2010-2011 school year, fewer than half the students who received F/RP meals at lunch also participated in the School Breakfast Program.<sup>909</sup> In North Carolina in 2011, participation rates in the School Breakfast Program were just 37% in elementary school, 19% in middle school, and 12% in high school.<sup>910</sup> Participation in the School Breakfast Program is associated with lower BMIs as well as lower probability of both overweight and obesity, thereby reducing the risk of developing diabetes in childhood or beyond.<sup>911</sup>

In order to encourage more students to take advantage of school breakfasts, in 2011 the North Carolina state legislature appropriated funds to provide school breakfast at no cost to all students.<sup>912</sup> Starting in the 2011-2012 school year, the state provided \$2.2 million annually to schools to eliminate the reduced-price payment for school breakfasts.<sup>913</sup> Unfortunately, this sum is not sufficient to cover the loss from eliminating the student payment for RP meals, so schools have the option to use other funds to cover the cost of offering meals free to all students or to offer the free breakfast benefit for only part of the year.<sup>914</sup> In schools with a high percentage of low-income students (75% or higher), universal free breakfasts can also be funded under Provision 2 of the National School Lunch Act, under which schools pay the difference between the cost of the meals and the federal reimbursement rate.<sup>915</sup> Because the marginal costs of serving additional meals in these schools is relatively low, these costs are likely to be offset by eliminating the administrative costs associated with verifying eligibility for each student individually.<sup>916</sup>

### Provide Additional State Funding to Transition More Schools to “Breakfast in the Classroom” and “Grab and Go” Models.

In 2011, the DC-based non-profit No Kid Hungry, in partnership with the North Carolina Department of Public Instruction, launched a pilot program designed to improve school breakfast programs in 24 high-need schools throughout the state.<sup>917</sup> The initiative provided \$35,000 in grants to the schools that had implemented universal free breakfast to help them transition to new models for serving breakfast, such as “breakfast in the classroom” and “grab and go meals,” that have been shown to improve school breakfast participation.<sup>918</sup> At the conclusion of the pilot programs in May 2012, participating schools were serving 783 more breakfast meals per day than they were in September 2011, totaling more than 140,000 additional breakfasts over the course of the school year.<sup>919</sup>

Transitioning more schools to universal free breakfast using breakfast in the classroom and grab and go models will likely increase participation rates, which in turn will increase the amount of federal reimbursement funds schools receive.<sup>920</sup> Offering free breakfast to all students can also remove the stigma associated with receiving free meals, encouraging more low-income students to participate and thereby ensuring that the program serves more of the students it is designed to reach. Furthermore, studies have demonstrated that students who eat breakfast at school perform better on math and reading assessments and make healthier dietary choices at lunch including eating more fruit, drinking more milk, and consuming a broader variety of foods than students who skip breakfast or eat at home.<sup>921</sup> Schools that offer universal free breakfast have also reported better overall learning environments, decreases in discipline and behavior problems, fewer visits to school nurses, and lower rates of tardiness.<sup>922</sup>



### GOAL #3: IMPROVE NUTRITION PROFILE OF FOOD OFFERED ON SCHOOL GROUNDS OUTSIDE SCHOOL MEAL PROGRAMS.

#### A la Carte Foods, Competitive Foods, and Vending Machines

Beginning in the 1980s, schools began to offer a la carte items alongside the traditional school meals as a way of generating additional revenue to offset massive cuts in federal funding for school meal programs.<sup>923</sup> North Carolina law stipulates that all school food services must be operated on a nonprofit basis, with any profits from these programs going to reduce the cost of food, serve better quality food, or provide free or reduced-price lunches to low-income students.<sup>924</sup> However, North Carolina schools are allowed to sell “competitive” or “a la carte” food items in the lunchroom to students so long as those food and beverages are not sold in competition with the nonprofit meals programs.<sup>925</sup> This means that the revenue generated by the sale of these foods during the lunch period must be put towards the school meal programs and must be spent in ways consistent with federal and state regulations of those programs.<sup>926</sup> By contrast, revenue generated by the sale of these products outside of the established lunch period goes to the school and does not have to be used to fund NSLP or other school nutrition programs.<sup>927</sup> Local school boards are allowed to determine whether school lunchrooms in their district should be permitted to offer a la carte food and beverages to students.<sup>928</sup>

A la carte foods offered for sale in school lunchrooms are required to meet minimum nutrition standards outlined by the USDA and the NC State Board of Education.<sup>929</sup> Since 2006 the SBE has imposed regulations on the types of foods that may be offered in schools as well as the size of products that may be sold (for instance, single-serving dairy products must contain fewer than 200 calories, or 100% frozen fruit products must be 8 oz. or smaller and contain no added sweeteners).<sup>930</sup> The SBE also requires that all a la carte offerings be “limited to foods contributing to the nutritional well-being of the child and aiding in the establishment of good food habits.”<sup>931</sup>

More recently, in June of 2013 the USDA released nutritional requirements for foods sold on campus – including a la carte foods and those sold in vending machines – pursuant to the Healthy, Hunger-Free Kids Act of 2010.<sup>932</sup> These new rules, which will go into effect on July 1, 2014, articulate enhanced nutritional requirements for all competitive and a la carte foods.<sup>933</sup> For example, the new USDA rules require that all competitive foods have no more than 35% sugar by weight; that snack items sold a la carte have no more than 200 calories and that entrée items sold a la carte have no more than 350 calories; that no item may contain more than 10% of total calories from saturated fat; and that all items have zero grams of trans fat.<sup>934</sup> The rules also prohibit the sale of caffeinated beverages in elementary and middle schools and restrict the size of these beverages available for sale in high schools.<sup>935</sup>

#### *Policy Opportunities*

##### **Provide Funding for the State Board of Education and Local School Food Councils to Give Technical Assistance to Schools in Transitioning Their Food Programs in Order to Meet the New Federal and State Requirements for Nutrition in Competitive Foods.**

Many school districts face significant financial and logistical hurdles in implementing these new nutrition requirements for competitive foods and vending machine sales. Implementation of existing state nutrition requirements for these foods has been uneven across different school districts throughout the state, and in some cases, school districts will simply maintain local nutrition policies on paper without ever putting them into practice in their lunchrooms, meaning that many students continue to have access to foods of limited nutritional value in their schools.<sup>936</sup> In addition to providing technical assistance in implementing new standards, the state can facilitate information-sharing among different districts via online forums, message boards, and at annual regional or statewide conferences, so that individual food service directors can exchange ideas about programs or strategies they have found successful in helping their schools meet higher nutritional standards.



### GOAL #4: IMPROVE PARTICIPATION IN THE SUMMER MEALS PROGRAM

North Carolina maintains several programs that provide meals to low-income students during the summer. The Simplified Summer Food Service Program (Simplified Summer) is run through the Division of Public Health at the North Carolina Department of Health and Human Services and offers summer meals to eligible children through partnership with sponsors such as non-profit groups, school food authorities, and local government.<sup>937</sup> The meals are hosted by sponsor organizations in community locations such as parks, schools, playgrounds, housing authorities, day camps, community centers, and churches from May to September.<sup>938</sup> In addition to Simplified Summer, schools can supply summer meals as a continuation of NSLP to students enrolled in a qualifying required academic summer school. Students pay according to their eligibility status as during the program year: free, reduced, or paid.<sup>939</sup> The North Carolina Department of Public Instruction also runs a program called the Seamless Summer Option that combines features of NSLP, NSBP, and Simplified Summer.<sup>940</sup>

Unfortunately, participation rates in all of these programs are extremely low. Although almost 600,000 North Carolina students participated in NSLP during the 2009-2010 school year, only about 78,000 students participated in one of the state's summer nutrition programs, just 13% of NSLP participants.<sup>941</sup> This puts North Carolina below the national average in terms of summer nutrition program participation rates.<sup>942</sup> Similarly, out of the nearly 760,000 children in North Carolina who were eligible to receive Simplified Summer meals in 2011, only 12 out of every 100 of them were served.<sup>943</sup> In contrast, South Carolina served summer meals to about 27% of eligible children, and New Mexico served more than 30% of eligible children.<sup>944</sup>

#### *Policy Opportunities*

#### **Supplement Federal Funding for Summer Meal Programs to Provide Meals for Parents who Accompany Their Eligible Children.**

One issue reported by community partners is that many summer meal programs are hosted in sites that are difficult for families to access if they do not have a household vehicle and must

rely on public transportation. Furthermore, if families do travel to a summer meal program, only the school-aged children are eligible to receive food; parents are not provided with free meals and so are unable to eat with their children.<sup>945</sup> This puts families in the difficult position of choosing whether to spend money on gasoline to make the trip to a summer meal site or on purchasing lower-quality food that could feed the whole family. North Carolina should consider supplementing program funding to provide free or reduced-price meals to parents along with their children. Providing meals to all family members would make it more worthwhile for families to use time and resources to travel to host sites and thus would encourage more families to take advantage of the summer meal programs.

#### **Forge Partnerships with Local Organizations to Create Integrated Programming for Children that Will Increase Program Participation.**

North Carolina could also increase participation in summer food programs by adopting programs or strategies that have been used successfully in other states. For example, in Arizona, Yuma County public schools collaborated with local community organizations to offer integrated programming for children.<sup>946</sup> The summer food program coordinated with an existing children's summer reading program at the public library to create an integrated event where children would check out a book from the library and then pick up packaged lunches they could eat as a picnic in an adjacent park.<sup>947</sup> Pairing up with existing programs can help summer meal programs attract participants and provide additional enrichment while supplying children with nutritious food.

#### **Farm to School Program**

Many North Carolina school districts procure local fresh fruits and vegetables for their students through the North Carolina Farm to School Program (NCFSP). The NCFSP was formed in 1997 by the North Carolina Department of Agriculture and Consumer Services (NCDA & CS) in partnership with the U.S. Department of Defense Produce Merchandising Office, and was designed to create a system for North Carolina schools across the state to receive fresh produce grown by local farmers.<sup>948</sup> As of 2009, the Department of Defense ceased to be involved





with the program, which now is operated solely by the North Carolina Department of Agriculture and Consumer Services Food Distribution and Marketing Divisions.<sup>949</sup>

The NCFSP was the first major farm to school program in the country, and it is currently the nation's largest.<sup>950</sup> All school districts in North Carolina are eligible to take part in NCFSP. During the 2012-2013 school year, 95 out of a total of 117 school districts participated in the program, and more than 1 million students were served at 1,599 schools across the state.<sup>951</sup> Schools received more than 1.5 million pounds of local produce, equaling a total value of over \$1.2 million.<sup>952</sup> Produce offerings include watermelons, cantaloupes, tomatoes, peaches, cucumbers, squash, apples, sweet potatoes, broccoli, kale, collards, romaine, cabbage, and blueberries.<sup>953</sup> The program has been a tremendous success not only because it has increased the number of children who have access to fresh, locally-grown fruits and vegetables, but also because it has created a new market for North Carolina farmers.

North Carolina requires that farmers who wish to sell produce directly to a school be GAP (Good Agricultural Practices) certified, a process that is both expensive and time-consuming, especially for small farmers.<sup>954</sup> In order to expand the pool of small farmers who can sell directly to schools, North Carolina has created a cost-share program to assist fruit and vegetable growers with the cost of the initial certification audit. The NCDA & CS pays up to \$600 of the audits cost for first time participants and up to \$300 thereafter. Funds are available on a first-come, first-serve basis until they are depleted.<sup>955</sup> In addition to the NCDA & CS program, the Carolina Farm Stewardship Association, a nonprofit that focuses on supporting organic, local food production in the Carolinas, also offers assistance in defraying the cost of GAP certification.<sup>956</sup>

### **Nutrition, Physical Education, and Physical Activity**

In addition to school food programs, the North Carolina public school system has a tremendous opportunity to shape the health outcomes of students through nutrition and physical education programs that teach children how to take responsibility for their own health, exercise, and eating habits.

North Carolina law requires that all students in grades K-9 receive health and nutrition education.<sup>957</sup> Pursuant to this requirement, the SBE has created the NC Healthy Living Course of Study, which outlines a model health and physical education curriculum and appropriate benchmarks for each grade level.<sup>958</sup> The health curriculum encompasses basic nutrition education as well as instruction on first aid, reproductive health, growth and development, and drug and alcohol abuse prevention.<sup>959</sup> The SBE has also developed guidelines for physical fitness testing in schools that track students' aerobic capacity, muscular strength and endurance, flexibility, and body composition.<sup>960</sup>

Additionally, in 2005 the Board of Education enacted the Healthy Active Children policy with the goal of addressing issues such as "overweight, obesity, cardiovascular disease, and type 2 diabetes."<sup>961</sup> The policy requires each school district to develop a comprehensive wellness policy for its schools and to establish a local School Health Advisory Council to draft this wellness policy, oversee its implementation, and provide ongoing monitoring.<sup>962</sup> School Health Advisory Councils are typically composed of school personnel, parents, business and community leaders, and representatives of the local health department.<sup>963</sup> The Healthy Active Children policy also outlines requirements for physical activity and education in schools. It encourages schools to move toward 150 minutes per week of physical education in elementary schools and 225 minutes per week of physical education and healthy living education in middle schools.<sup>964</sup> The policy also requires that all students in grades K-8 participate in a minimum of 30 minutes of moderate to vigorous physical activity each day.<sup>965</sup> This requirement can either be filled through regular physical education classes or through other forms of physical activity such as dance, unstructured recess, or other classroom activities offered in addition to weekly physical education classes.<sup>966</sup> Beyond these broad requirements, the policy leaves it up to individual districts and their School Health Advisory Councils to design and implement specific physical activity and wellness programs, so districts have very broad discretion in determining how to incorporate physical activity into their own curricula.<sup>967</sup>





### GOAL #5: PUBLICIZE SCHOOL WELLNESS POLICIES AND ASSIGN MONITORING OF IMPLEMENTATION TO A MEMBER OF THE SCHOOL HEALTH ADVISORY COUNCIL.

In order to facilitate the development of more comprehensive wellness programs, the Department of Public Instruction and the Division of Public Health in the Department of Health and Human Services jointly established the North Carolina Healthy Schools program with funding from the CDC.<sup>968</sup> The goal of NC Healthy Schools was to create a coordinated school health program in schools and communities across the state by creating or strengthening the infrastructure between local education and health departments.<sup>969</sup> The NC Division of Public Health maintains a Nutrition Education and Training (NET) Program through its Nutrition Services Branch.<sup>970</sup> The NET Program provides training and resources relating to wellness and nutrition to school staff and food service personnel, including menu templates, school garden information, and fruit and vegetable lesson plans.<sup>971</sup> The Nutrition Services Branch also hosts training sessions for sponsors of after-school care programs for children and Simplified Summer programs.<sup>972</sup>

#### *Policy Opportunities*

**In Order to Ensure that School Districts Statewide are Developing, Implementing, and Monitoring Wellness Policies, Municipalities Should Assign Monitoring of Wellness Policy Implementation to a Specific Person, such as a Member of the District's School Health Advisory Council.**

The North Carolina State Board of Education issued the Healthy Active Children Policy, which requires all school districts to establish and maintain School Healthy Advisory Councils that will address eight components of a "Coordinated School Health Program:" safe environment; physical education; health education; staff wellness; health services; mental and social health; nutrition services; and parental/family involvement.<sup>973</sup> To comply with the policy, districts must submit the total minutes of physical education and physical activity in which the district's students

engage.<sup>974</sup> In addition to the School Health Advisory Councils required by the SBE, the federal Healthy Hunger-Free Kids Act of 2010 requires all schools participating in the National School Lunch Program to establish a local school wellness policy, which sets goals for nutrition and physical activity promotion and education.<sup>975</sup> These policies are required to be available to the public. However, some district wellness policies are not published in a central location for easy access by interested parties. The Department of Public Instruction should publish all of the districts' wellness policies on its website, enabling parents, wellness advocates, and district personnel to compare wellness policy content and incorporate best practices into their own policies.

Although North Carolina has made great strides by articulating statewide standards for school wellness policies, the implementation of these policies varies widely across the state. In many districts, wellness plans have been drafted but new nutrition and physical education programs have not been implemented or have not been subject to ongoing monitoring by the local School Health Advisory Council.<sup>976</sup> At the same time, some school districts have embraced the opportunity to craft wellness programs in their schools and have set requirements for nutrition education and physical fitness that go beyond the minimum levels mandated by the state. For instance, the Durham Public Schools system has written a detailed wellness policy that regulates school nutrition education, eating environment, lunch periods, classroom celebrations, and physical education curriculum.<sup>977</sup> Significantly, the policy also created a strong infrastructure for accountability and implementation of wellness programs, primarily through a district Wellness Coordinator.<sup>978</sup> The Wellness Coordinator provides leadership, coordination, and technical support for all school wellness initiatives and is also charged with articulating and overseeing district-wide wellness policies.<sup>979</sup> Additionally, schools within the Durham Public School system receive wellness plan templates each year to ensure they are reviewing and updating their programming on a regular basis.<sup>980</sup>



### Case Study of Local Community Action: The STEP UP Diabetes Coalition of Graham County

Graham County of rural western North Carolina has taken a number of initiatives to promote health and wellness among all community members as well as improve the health of its residents at risk for or living with diabetes. Community leaders attribute the success of their initiatives to “working together” and building their programs through cooperative community efforts.

The STEP UP Diabetes Coalition for Graham county is a diverse group of representatives from the county schools, the health department, North Carolina’s cooperative extension office, other local organizations, and the town of Robbinsville. The Coalition focuses on increasing physical activity and improving diets. Some of the Coalition’s accomplishments have included repairing and upgrading community trails, offering diabetes education classes, and providing healthy cooking and food shopping trainings.

Additionally, the Graham Revitalization Economic Action Team (GREAT) has partnered with the coalition and a number of other community groups to sponsor programs like school-wide fitness competitions, family fitness fairs, employee wellness programs, produce markets, and extending and enhancing the county’s greenway and walking trails. Funding for these projects comes from Bristol Myers Squibb’s Together on Diabetes program, Marshall University, the NC Community Transformation Grant Project, and the CDC.

Through this work, Graham County has highlighted a number of successful ways to engage rural communities to participate in health and wellness programs:

**Embrace Community:** Community members and leaders in Graham County have said that much of their success is due to cooperative community efforts that reach across many different departments and organizations in the area including the township, schools, health department, local businesses, and churches.

**Engage Entire Families:** Many of the successful initiatives in Graham County do not target one age group, but rather incorporate entire families into programs aimed at promoting healthier lifestyles. For example, in a program lead by the schools, community leaders organized a family fitness fair to increase awareness of physical activity opportunities in the community and help families commit to leading healthy lifestyles together. Another program based on improving employee wellness gave town and school employees access to fitness machines, and addressed the potential barrier of childcare by providing a children’s play area in the same facility.

**Eliminate Transportation Barriers:** In many rural areas, transportation can be a huge obstacle to both receiving proper medical care and participating in healthy activities. Graham County representatives pointed to transportation barriers as an enormous obstacle to improving the health of local residents.

**Develop Outdoor Opportunities:** Many rural communities have bountiful outdoor resources, and Graham County has demonstrated innovative ways to capitalize on these resources. GREAT has focused on improving county’s walking and biking trails to engage the community in participating in physical activity and simultaneously increase tourism in their county. They will continue to develop their trails and hope to build a bike sharing system to give community members who cannot afford bikes a fun opportunity to explore the county trails and attract members from other communities to explore as well.

**Used Faith-Based Approaches:** Many communities, especially religious rural areas, can be engaged by using faith based approaches to physical activity. For example, Graham County sponsors community activities such as “The Walk to Bethlehem” and support groups where people discuss and focus on their faith to find the motivation to make important lifestyle interventions.

### GOAL #6: MAXIMIZE USE OF MUNICIPAL RESOURCES FOR COMMUNITY RECREATION AND PHYSICAL ACTIVITY.

Municipalities can increase opportunities for physical activity by maximizing the use of existing public buildings and grounds for community recreation. Even in resource-challenged areas, public schools and municipal buildings like town halls and libraries have spaces that can be utilized beyond normal school or business hours for open play, group exercise or other recreation programs. Many states encourage the community use of

public buildings by promoting the creation of simple, formal contracts called shared use agreements that lay out the responsibilities and expectations for sharing public space.

**The Community and Clinical Connections for Prevention and Health Branch of the Division of Public Health Should Work with Community Partners to Promote Shared Use of School and Municipal Space and Develop Shared Use Agreements.**

The state has passed two laws that encourage the development of joint use agreements and



protect schools that open their doors after-hours from increased exposure to liability. N.C. Gen. Stat. § 115c-12 (35) requires the State Board of Education to encourage local boards of education to enter into joint use agreements with local governments and other entities.<sup>981</sup> N.C. Gen. Stat. § 115c-524 exempts schools from liability for personal injury suffered on school property during times when the buildings and grounds are open according to a joint use agreement.<sup>982</sup> The North Carolina Division of Public Health together with the Department of Public Instruction and NC Healthy Schools have published a guide that schools and other entities can use to develop joint use agreements and implement community use programs and initiatives.<sup>983</sup>

Despite legal protections against increased liability for community use, many schools fail to engage in joint use or do so in a haphazard or informal way.<sup>984</sup> Communities in California and Arizona have found that assigning the creation and implementation of joint use initiatives to a specific municipal or school employee increases the likelihood that public spaces will be shared with community members outside normal hours of operation.<sup>985</sup> In North Carolina, the Community and Clinical Connections Branch for Prevention and Health (CCCCPH) within the Division of Public Health can work with partner organizations across the state to identify staff that will be responsible for collaborating with school and municipal personnel to develop shared use initiatives and draft agreements. For example, CCCPH can tap into the statewide network of Active Routes to School Coordinators, positions created by the Department of Transportation using North Carolina's federal Safe Routes to School dollars. These coordinators will focus on strengthening possibilities for physical activity in and around K-8 schools.<sup>986</sup>

### GOAL #7: PROMOTE WORKPLACE WELLNESS PLANS

As prevalence of chronic disease and associated healthcare costs continue to rise, employers are experiencing some of the consequences. They suffer a financial burden both from the direct costs related to their employees' healthcare expenses as well as the indirect costs related to being in poor health. Indirect costs from poor health relate to productivity, which is affected by absenteeism from being out of work sick, as well as on-the-job productivity that declines when health is suboptimal.<sup>987</sup>

Diabetes especially can impose significant financial burdens on employers. Employees with diabetes can incur significant costs to their employers compared to their non-diabetic counterparts when considering medical costs and estimated costs for loss of productivity due to diabetes-related causes.<sup>988</sup> One study found that adult employees with diabetes on average cost their employers \$4,413 more than their counterparts without diabetes, as a result of their medical costs and loss of productivity.<sup>989</sup> Another study estimated that 15 million workdays per year are lost as a result to diabetes in the US, leading to a national cost of about \$2.6 billion in 2007.<sup>990</sup>

Implementing workplace wellness programs can help reduce these costs both by preventing the onset of chronic diseases like diabetes as well as providing proper management for employees that are already suffering from these illnesses. Workplace wellness programs can take many different forms. Some services offered within workplace wellness programs include disease screening, lifestyle management programs, disease-specific management programs, health promotion activities, wellness events, and well-being incentives.<sup>991</sup> Results and analysis of workplace wellness programs show that they can be successful at improving health outcomes such as BMI. Employers with workplace wellness programs have reported that their programs have helped to decrease absenteeism, increase productivity and reduce overall healthcare costs to the employer.<sup>992</sup>



## North Carolina Highlights

### 1. NC OFFICE OF STATE PERSONNEL WORKSITE WELLNESS POLICY

In 2010, North Carolina adopted a wellness program for state employees with the goal of working to develop work environments and policies to support their health. This included developing initiatives such as creating incentives to recognize health promotion activities, designating space for exercise, making healthy food more available in vending machines and cafeterias, and providing stress management programs.<sup>993</sup> In one example, Department of Health and Human Services employees in the Raleigh area have access to a gymnasium on the campus of the nearby Dorothea Dix Hospital.<sup>994</sup>

### 2. DUKE'S EMPLOYEE WELLNESS PROGRAM

Duke, the second largest private employer in North Carolina, has a comprehensive employee wellness program called "Live for Life." It offers employees access to discounted membership at fitness facilities throughout the state, an online health and fitness tracking web site, tobacco cessation programs, and many other benefits.<sup>995</sup> The program seeks to "promote a work culture and environment that supports healthy and safe behaviors/lifestyles" in order to enhance the productivity and efficiency of Duke's workforce.<sup>996</sup>

### 3. UNITED HEALTHCARE'S WELLNESS FOCUSED PLANS FOR EMPLOYERS

UnitedHealthcare offers specific health insurance plans for employers that incorporate employee wellness benefits into the plan. For example, UnitedHealthcare's "UnitedHealth Wellness" includes services such as online health assessments, online health improvement programs, and discounts on other health and wellness services.<sup>997</sup> Additionally, within UnitedHealthcare's Small Business insurance policy, UnitedHealthcare will reimburse gym membership costs for beneficiaries who go to the gym on a regular basis. As part of the Fitness Reimbursement Program, beneficiaries can get reimbursed \$20 per month if they visit a fitness center or a YMCA at least 12 times in that month.<sup>998</sup> By offering employer health insurance plans that include wellness

benefits, insurers are making it more feasible for employers to adopt wellness programs.

#### *Policy Opportunities*

##### **Provide Tax Credits for Wellness Programs**

While large employers have a greater capacity to adopt wellness programs, small employers might wish to adopt such programs, but may lack the resources to take action. In order to incentivize small companies to develop worksite wellness programs at their sites, North Carolina should offer a tax credit for small employers operating these programs.

In 2007 Indiana began offering a tax credit to small employers for 50 percent of the costs incurred from operating a qualified workplace wellness program which the state funded through a cigarette tax initiated in the same year.<sup>999</sup> Kentucky has been considering offering a worksite wellness tax credit as well, and its Department of Public Health recently conducted an extensive impact assessment to evaluate the potential effects of the tax credit. After the assessment, the ultimate recommendation was to adopt the tax credit. The assessment emphasized that this tax benefit would benefit the employers, employees, and the families of the employees. It also stressed that the tax credit would benefit the state because it would help create a healthier workforce of more satisfied and productive people, which would lead to a healthier economy.<sup>1000</sup>

##### **Adopt Workplace Diabetes Programs**

The American Diabetes Association's Stop Diabetes @Work is a program that works with employers to address diabetes prevention, detection, and management. The program offers online portals for employers and employees. Through the portals employees can learn about healthy lifestyle tips and track their health improvements.<sup>1001</sup> Another option for employers is the National Diabetes Education Program's DiabetesAtWork.org program. This is an online tool to help employers develop create and implement a diabetes management program at their workplace.<sup>1002</sup> Employers looking for a framework to implement diabetes prevention and management programs at their workplace should consider using these resources.



### Incentivize and Encourage Physical Activity and Healthy Eating at Work

Employers can adopt a number of initiatives to create healthier environments for their employees as part of a workplace wellness program. North Carolina *Eat Smart Move More* offers a list of suggestions for employers to promote physical activity through initiatives like hosting walk-and-talk meetings, informing employees about recreational sports leagues, offering cash incentives for regular participation in physical activity, providing on-site physical fitness opportunities as well as shower and changing facilities, and encouraging employees to bike to work by making bicycle racks convenient and accessible.<sup>1003</sup> In terms of healthy eating, *Eat Smart Move More* suggests providing local fruits and vegetables at the workplace, establishing a space and dedicating a time for breaks and lunch, serving healthier foods at meetings, and making kitchen equipment available so employees can bring lunch from home.<sup>1004</sup> Employers should consider adopting a combination of these physical activity

and healthy eating initiatives to start their workplace wellness programs. These initiatives help to create a workplace that makes it easier for employees to live a healthier lifestyle, and this results not only in benefits for the individual but increased productivity and decreased costs for the employer.

### Adopt Smoke Free Workplace Policies

North Carolina employers should adopt smoke free workplace policies in order to maintain the air quality and wellbeing of all of the company's employees. Research shows that adoption of smoke free workplace policies contributes to smokers consuming fewer cigarettes per day than those who work in companies without a smoking policy. Additionally, research has shown that employees of smoke-free worksites are more likely to attempt quitting smoking and more likely to be successful at these attempts.<sup>1005</sup> Having fewer employees that smoke will likely result in cost savings for the employer – it is estimated that smokers generate 31% higher medical claims for medical costs than non-smokers.<sup>1006</sup>





# CONCLUSION

Many factors affect North Carolinians' ability to prevent and control type 2 diabetes. Access to health insurance, funding for key services, and availability of healthcare providers, along with the structure of the healthcare system, all contribute to whether individuals with type 2 diabetes in North Carolina can stay healthy and manage the condition. Policies shaping the food system—such as food assistance programs, school food, consumer access to healthy food, the built environment and physical activity, and the infrastructure that supports North Carolina food system—play an integral role in preventing and mitigating the impacts of type 2 diabetes. North Carolina is at a critical place in its fight to reduce the incidence of diabetes and help those living

with the condition prevent complications. Outlined in this report are recommendations that the state can consider and adopt to accomplish this goal.

Residents of North Carolina who are living with type 2 diabetes and those at risk for the condition, along with advocates, officials, and healthcare providers, have demonstrated their commitment to stopping the epidemic in its tracks. Their tireless efforts to transform their communities and leverage resources bode well for the state's future. As North Carolina looks towards a future of new opportunities in both the healthcare and food systems, the dedication of these constituencies will be the state's most important asset.



# REFERENCES

1. Together on Diabetes, BRISTOL-MYERS SQUIBB FOUND., <http://www.bms.com/togetherondiabetes/pages/home.aspx> (last visited Dec. 31, 2013).
2. Our Partners and Projects, BRISTOL-MYERS SQUIBB FOUND., <http://www.bms.com/togetherondiabetes/partners/Pages/default.aspx> (last visited Dec. 31, 2013).
3. Joseph Konen and Joyce Page, The State of Diabetes in North Carolina, N.C. Med. J., 2011 Sept-Oct 72(5), 373-8.
4. Leading Causes of Death, North Carolina Residents, 2012, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/deaths/lcd/2012/pdf/TblsA-F.pdf> (last visited March 10, 2014).
5. Joseph Konen and Joyce Page, The State of Diabetes in North Carolina, N. C. Med. J., 2011 Sept-Oct 72(5), 373-8.
6. Jesse Lichstein, Hugh Holliman, Rony Rand, Allen Dobson, Julia Lerche, Mark Holmes, Pam Silberman, Expanding Access to Health Care in North Carolina: The NCIOH Health Access Study Group, <http://www.ncbi.nlm.nih.gov/pubmed/19835246>.
7. See poverty data based on the Census Bureau's annual American Community Survey, as posted by the National Priorities Project, U.S. People in Poverty: 2011, <http://nationalpriorities.org/interactive-data/database/mashups/vv1n87jxixw8stsz/?gclid=CJL7lpy9-LgCFctxOgoduEIAYg>.
8. Food Environment Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-environment-atlas.aspx> (last updated Sept. 18, 2013).
9. Smith, Lindsey P., et al., Trends in US Home Food Preparation and Consumption, analysis of national nutrition surveys and time use studies from 1965-1966 to 2007-2008, NUTRITION J., vol. 12 (April 2013), 45, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3639863/>.
10. Joseph Konen and Joyce Page., The State of Diabetes in North Carolina, 72 N.C. MED. J. 375 (2011); National Diabetes Statistics, National Diabetes Information Clearinghouse (NDIC) (2011).
11. Joseph Konen and Joyce Page., The State of Diabetes in North Carolina, 72 N.C. MED. J. 375 (2011); Diabetes 2025 forecasts, INSTIT. FOR ALTERNATIVE FUTURES (2011).
12. Infant Mortality and Low Birthweight in North Carolina: The Last 10 Years, 4, N. C. CTR. FOR HEALTH STATISTICS (1999), <http://www.schs.state.nc.us/SCHS/pdf/schs112.pdf> (last visited March 10, 2014); North Carolina's Infant Mortality Rate Lowest In Recorded History: Marked Improvement Among African American Birth, 7, N. C. DEPT. OF HEALTH AND HUMAN SERVS. (2010), [http://www.ncdhhs.gov/pressrel/2011/2011-11-01\\_IMR\\_low.htm](http://www.ncdhhs.gov/pressrel/2011/2011-11-01_IMR_low.htm) (last visited March 14, 2014); North Carolina Program Helps Keep More Babies Alive, New York Times (September 2, 1991), <http://www.nytimes.com/1991/09/02/us/north-carolina-program-helps-keep-more-babies-alive.html> (last visited March 10, 2014); 2011 Child Deaths in North Carolina, N. C. CTR. FOR HEALTH STATISTICS (2011), <http://www.schs.state.nc.us/schs/deaths/child/CFinNC2011.pdf> (last visited March 10, 2014).
13. Keys to Success of a Long-Term Task Force, 1-2, N.C. DIV. PUB. HEALTH AND THE N.C. CHILD FATALITY TASK FORCE (2013), <http://www.apha.org/NR/rdonlyres/9B336FC2-8290-4E09-8201-11CA3BAA5A5C/0/PolicyCaseStudyNorthCarolinaFinal.pdf> (last visited March 10, 2014).
14. N.C. Heart Attack Rates Down Since Passage of Smoke-free Law, N.C. DEPT. OF HEALTH AND HUM. SERV. (2011), [http://www.ncdhhs.gov/pressrel/2011/2011-11-09\\_heart\\_attack\\_down.htm](http://www.ncdhhs.gov/pressrel/2011/2011-11-09_heart_attack_down.htm) (last visited March 10, 2014).
15. Infant Mortality and Low Birthweight in North Carolina: The Last 10 Years, N. C. CTR. FOR HEALTH STATISTICS (1999), <http://www.schs.state.nc.us/SCHS/pdf/schs112.pdf> (last visited March 10, 2014); 2011 Child Deaths in North Carolina, N. C. CTR. FOR HEALTH STATISTICS (2011), <http://www.schs.state.nc.us/schs/deaths/child/CFinNC2011.pdf> (last visited March 10, 2014); North Carolina's Infant Mortality Rate Lowest In Recorded History: Marked Improvement Among African American Birth, N. C. DEPT. OF HEALTH AND HUMAN SERVS., [http://www.ncdhhs.gov/pressrel/2011/2011-11-01\\_IMR\\_low.htm](http://www.ncdhhs.gov/pressrel/2011/2011-11-01_IMR_low.htm) (last visited March 14, 2014); North Carolina Program Helps Keep More Babies Alive, New York Times (September 2, 1991), <http://www.nytimes.com/1991/09/02/us/north-carolina-program-helps-keep-more-babies-alive.html> (last visited March 10, 2014).
16. Keys to Success of a Long-Term Task Force, N.C. DIV. PUB. HEALTH & THE N.C. CHILD FATALITY TASK FORCE, 2 (2013), <http://www.apha.org/NR/rdonlyres/9B336FC2-8290-4E09-8201-11CA3BAA5A5C/0/PolicyCaseStudyNorthCarolinaFinal.pdf>.
17. N.C. Heart Attack Rates Down Since Passage of Smoke-free Law, N.C. DEPT. OF HEALTH AND HUM. SERV. (2011), [http://www.ncdhhs.gov/pressrel/2011/2011-11-09\\_heart\\_attack\\_down.htm](http://www.ncdhhs.gov/pressrel/2011/2011-11-09_heart_attack_down.htm) (last visited March 10, 2014).
18. North Carolina - Percentage of Adults (aged 18 years or older) with Diagnosed Diabetes, 1994 - 2010. CTRS. FOR DISEASE CONTROL AND PREVENTION, <http://apps.nccd.cdc.gov/DDTSTRS/Index.aspx?statelid=37&state=North%20Carolina&cat=prevalence&Data=data&view=TO&trend=prevalence&id=1> (last visited November 19, 2013).
19. 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/all/DIABETE3.html> (last visited March 10, 2014); Laura A. Young et. al., Diabetes in North Carolina: Descriptive Epidemiology and Meaningful Use of Electronic Health Records, 72 N.C. MED. J. 383 (2011), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3392185/> (last visited March 14, 2014).
20. Leading Causes of Death, North Carolina Residents, 2012, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/deaths/lcd/2012/pdf/TblsA-F.pdf> (last visited March 10, 2014).
21. Id.
22. North Carolina Diabetes Prevention & Control Fact Sheet: Diabetes in North Carolina, N.C. DIABETES PREVENTION & CONTROL BRANCH (2007); Joseph Konen and Joyce Page, The State of Diabetes in North Carolina, 72 N.C. MED. J. 5 (2012), <http://www.ncmedicaljournal.com/wp-content/uploads/2011/09/72505-web.pdf> (last visited March 14, 2014); The estimated prevalence and cost of diabetes in North Carolina, American Diabetes Association (ADA) (2007).
23. The North Carolina State Budget, Post-Legislative Budget Summary, 2007-2009, N.C. OFFICE OF STATE BUDGET & MGMT., [http://www.osbm.state.nc.us/files/pdf\\_files/pls2007\\_09.pdf](http://www.osbm.state.nc.us/files/pdf_files/pls2007_09.pdf).
24. Diabetes Basics: Facts about Type 2, AMERICAN DIABETES ASSOCIATION, <http://www.diabetes.org/diabetes-basics/type-2/facts-about-type-2.html> (last visited November 19, 2013); Timothy M. Dall et al., The Economic Burden of Diabetes, 29 HEALTH AFFAIRS 297, 302 (2010).
25. National Diabetes Fact Sheet, 2011, CTRS. FOR DISEASE CONTROL & PREVENTION AND U.S. DEP'T HEALTH & HUMAN SERVS. (2011), [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2011.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf).
26. Am. Diabetes Ass'n, Standards of Medical Care in Diabetes - 2012, 35 DIABETES CARE (SUPPLEMENT 1) S11, S38 (2012), [http://care.diabetesjournals.org/content/33/Supplement\\_1/S11.full.pdf+html](http://care.diabetesjournals.org/content/33/Supplement_1/S11.full.pdf+html) (last visited Nov. 19, 2013).



27. Am. Diabetes Ass'n, Standards of Medical Care in Diabetes – 2012, 35 DIABETES CARE (SUPPLEMENT 1) S11, S11(2012), [http://care.diabetesjournals.org/content/33/Supplement\\_1/S11.full.pdf+html](http://care.diabetesjournals.org/content/33/Supplement_1/S11.full.pdf+html) (last visited Nov. 19, 2013)
28. Am. Diabetes Ass'n, Standards of Medical Care in Diabetes – 2012, 35 DIABETES CARE S (SUPPLEMENT 1) S11, S13 (2012), [http://care.diabetesjournals.org/content/33/Supplement\\_1/S11.full.pdf+html](http://care.diabetesjournals.org/content/33/Supplement_1/S11.full.pdf+html) (last visited Nov. 19, 2013)
29. A1C Test: Results, THE MAYO CLINIC, <http://www.mayoclinic.com/health/A1c-test/MY00142/DSECTION=results> (last visited May 22, 2013).
30. North Carolina - Percentage of Adults(aged 18 years or older) with Diagnosed Diabetes, 1994 – 2010, CTRS. FOR DISEASE CONTROL AND PREVENTION, <http://apps.nccdc.cdc.gov/DDTSTRS/Index.aspx?statelid=37&state=North%20Carolina&cat=prevalence&Data=data&view=TO&trend=prevalence&id=1> (last visited November 19, 2013).
31. Crude and Age-Adjusted Percentage of Civilian, Noninstitutionalized Population with Diagnosed Diabetes, United States, 1980–2011. CTRS. FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/diabetes/statistics/prev/national/figage.htm> (last visited Nov. 19, 2013).
32. Diabetes Data and Trends: Frequently Asked Questions, CTRS. FOR DISEASE CONTROL AND PREVENTION, [http://apps.nccdc.cdc.gov/DDT\\_STRS2/FAQ.aspx](http://apps.nccdc.cdc.gov/DDT_STRS2/FAQ.aspx) (last visited Nov. 19, 2013).
33. Prediabetes in North Carolina 2011 NC Diabetes Prevention and Control Program Fact Sheet, Diabetes Prevention and Control Branch, N.C. DIV. OF PUBLIC HEALTH, [https://www.co.forsyth.nc.us/publichealth/documents/Prediabetes\\_NC.pdf](https://www.co.forsyth.nc.us/publichealth/documents/Prediabetes_NC.pdf), [https://www.co.forsyth.nc.us/publichealth/documents/Prediabetes\\_NC.pdf](https://www.co.forsyth.nc.us/publichealth/documents/Prediabetes_NC.pdf) (last visited March 10, 2014); N.C. 2009 BRFSS, STATE. CTR FOR HEALTH STATISTICS
34. North Carolina - Rate of New Cases of Diagnosed Diabetes per 1000 Adults (Aged 18-76 Years), 1996-2010, Ctrs. for Disease Control and Prevention, <http://apps.nccdc.cdc.gov/DDTSTRS/Index.aspx?statelid=37&state=North%20Carolina&cat=prevalence&Data=data&view=TO&trend=prevalence&id=1&ext=incidence> (last visited Nov. 22, 2013).
35. Note that these data reflect all cases of diabetes, including both type 1 and type 2. However, because type 1 diabetes only accounts for 5% to 10% of the total cases of diabetes, the bulk of this increase is attributable to the rise in type 2 diabetes.
36. 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/all/DIABETE3.html> (last visited Nov. 20, 2013)
37. Leading Causes of Death, North Carolina Residents, 2012, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/deaths/lcd/2012/pdf/TblsA-F.pdf> (last visited March 10, 2014)
38. North Carolina Quick Facts, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/states/37000.html>
39. 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/all/DIABETE3.html> (last visited Nov. 20, 2013); Laura A. Young et. al., Diabetes in North Carolina: Descriptive Epidemiology and Meaningful Use of Electronic Health Records, 72 N.C. MED. J.383 (2011).
40. 2012 BRFSS Survey Results: North Carolina, Diabetes-AFRICAN AMERICANS, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/SCHS/brfss/2012/nc/afam/DIABETE3.html> (last visited Nov. 20, 2013).
41. Leading Causes of Death, North Carolina Residents, 2012, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/deaths/lcd/2012/pdf/TblsA-F.pdf> (last visited March 10, 2014)
42. 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/all/DIABETE3.html> (last visited Nov. 20, 2013).
43. Id.
44. 2012 BRFSS Survey Results: North Carolina, Diabetes, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/all/DIABETE3.html> (then sort by region) (last visited Nov. 20, 2013).
45. Id.
46. Id.
47. Id.
48. Type 2 Diabetes: Risk Factors, THE MAYO CLINIC, <http://www.mayoclinic.com/health/type-2-diabetes/DS00585/DSECTION=risk-factors> (last visited Dec. 20, 2013).
49. Id.
50. Id.
51. Id.
52. Id.
53. Id.
54. Id.
55. Modifiable Risk Factors, AM. DIABETES ASSOCIATION, <http://professional.diabetes.org/ResourcesForProfessionals.aspx?cid=60382#Abnormal%20Lipid%20Metabolism> (visited March 10, 2014)
56. Id.
57. Id.
58. North Carolina: Percent of Adults who are Overweight or Obese, 2012, THE HENRY J. KAISER FAMILY FOUND. <http://kff.org/other/state-indicator/adult-overweightobesity-rate/> (last visited Oct. 27, 2013); 2012 BRFSS Survey Results, CTRS. FOR DISEASE CONTROL AND PREVENTION.
59. North Carolina: Percent of Adults who are Overweight or Obese, 2012, THE HENRY J. KAISER FAMILY FOUND. <http://kff.org/other/state-indicator/adult-overweightobesity-rate/> (last visited Oct. 27, 2013); Prevalence of Self-Reported Obesity Among U.S. Adults, BRFSS 2012, CTRS. FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/obesity/data/adult.html> (last visited March 14, 2014); 2012 BRFSS Survey Results: North Carolina, Derived Variables and Risk Factors--By Risks, Conditions, and Quality of Life Measures, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/SCHS/brfss/2012/nc/risk/rf1.html> (last visited Nov. 20, 2013).
60. Physical Activity, Nutrition and Obesity in North Carolina Quick Facts, Eat Smart Move More, NC (2013), <http://www.eatsmartmovemorenc.com/Data/Texts/Quick%20Facts.pdf> (last visited March 10, 2014)
61. North Carolina: Overweight and Obesity Rates by Race/Ethnicity, 2012, THE HENRY J. KAISER FAMILY FOUND., <http://kff.org/other/state-indicator/adult-overweightobesity-rate-by-re> (last visited Oct. 27, 2013), based on 2012 BRFSS Survey Results, CTRS. FOR DISEASE CONTROL AND PREVENTION.
62. 2012 BRFSS Survey Results: North Carolina, Derived Variables and Risk Factors--By Risks, Conditions, and Quality of Life Measures, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/SCHS/brfss/2012/nc/risk/rf1.html> (last visited Nov. 20, 2013).
63. North Carolina: Percent of Children (10-17) Who are Overweight or Obese, 2011, THE HENRY J. KAISER FAMILY FOUND., <http://kff.org/other/state-indicator/overweightobese-children/>
64. North Carolina: Overweight and Obesity Rates by Race/Ethnicity, 2012, THE HENRY J. KAISER FAMILY FOUND., <http://kff.org/other/state-indicator/overweightobese-children/> (last visited Oct. 27, 2013); Child and Adolescent Health Measurement Initiative, 2011 National Survey of Children's Health, Data Resource Center for Child and Adolescent Health, <http://childhealthdata.org/browse/survey/results?q=2612&r=1&r2=35> (last visited Oct.27, 2013)



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65. North Carolina State Nutrition, Physical Activity, and Obesity Profile, CTRS. FOR DISEASE CONTROL AND PREVENTION 2 (2012), <http://www.cdc.gov/obesity/stateprograms/fundedstates/pdf/north-carolina-state-profile.pdf>; The 2009 Youth Risk Behavior Survey, CTRS. FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/HealthyYouth/yrbs/index.htm> (last visited December 31, 2013).
66. North Carolina State Nutrition, Physical Activity, and Obesity Profile, CTRS. FOR DISEASE CONTROL AND PREVENTION 3 (2012), <http://www.cdc.gov/obesity/stateprograms/fundedstates/pdf/north-carolina-state-profile.pdf>; 2010 Pediatric Nutrition Surveillance System, Table 6 (PedNSS). CTRS. FOR DISEASE CONTROL AND PREVENTION 3, [http://www.cdc.gov/pednss/pednss\\_tables/tables\\_health\\_indicators.htm](http://www.cdc.gov/pednss/pednss_tables/tables_health_indicators.htm). Note that BMI data include low-income children from the PedNSS sample and do not represent all children.
67. Physical Activity, Nutrition and Obesity in North Carolina Quick Facts (1), EAT SMART, MOVE MORE NORTH CAROLINA (2013), <http://www.eatsmartmovemorenc.com/Data/Texts/Quick%20Facts.pdf>; 2011 BRFSS Survey Results: North Carolina, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2011/nc/all/rf1.html> (last visited Nov. 20, 2013).
68. Id.
69. 2012 BRFSS Survey Results: North Carolina, Exercise--By Risks, Conditions, and Quality of Life Measures, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/risk/exerany2.html> (last visited Nov. 20, 2013).
70. 2012 BRFSS Survey Results: North Carolina, Exercise, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/all/exerany2.html> (last visited Nov. 20, 2012).
71. 2012 BRFSS Survey Results: North Carolina, Exercise--By Risks, Conditions, and Quality of Life Measures, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2012/nc/risk/exerany2.html> (last visited Nov. 20, 2013).
72. Prediabetes in North Carolina 2011 NC Diabetes Prevention and Control Program Fact Sheet, 3 DIABETES PREVENTION AND CONTROL BRANCH, N.C. DIV. OF PUBLIC HEALTH, [https://www.co.forsyth.nc.us/publichealth/documents/Prediabetes\\_NC.pdf](https://www.co.forsyth.nc.us/publichealth/documents/Prediabetes_NC.pdf).
73. 2012 BRFSS Survey Results: North Carolina, Tobacco Use--By Risks, Conditions, and Quality of Life Measures, N. C. STATE CTR. FOR HEALTH STATISTICS, [http://www.schs.state.nc.us/schs/brfss/2012/nc/risk/\\_rfsmok3.html](http://www.schs.state.nc.us/schs/brfss/2012/nc/risk/_rfsmok3.html) (last visited Nov. 20, 2013).
74. 2012 BRFSS Survey Results: North Carolina, Tobacco Use, N. C. STATE CTR. FOR HEALTH STATISTICS, [http://www.schs.state.nc.us/schs/brfss/2012/nc/all/\\_rfsmok3.html](http://www.schs.state.nc.us/schs/brfss/2012/nc/all/_rfsmok3.html) (last visited Nov. 20, 2013).
75. 2012 BRFSS Survey Results: North Carolina, Tobacco Use--By Risks, Conditions, and Quality of Life Measures, N. C. STATE CTR. FOR HEALTH STATISTICS, [http://www.schs.state.nc.us/schs/brfss/2012/nc/risk/\\_rfsmok3.html](http://www.schs.state.nc.us/schs/brfss/2012/nc/risk/_rfsmok3.html).
76. 2011 BRFSS Survey Results: North Carolina, Fruits and Vegetables--By Risks, Conditions, and Quality of Life Measures, N. C. STATE CTR. FOR HEALTH STATISTICS, (last visited Nov. 20, 2013), [http://www.schs.state.nc.us/schs/brfss/2011/nc/risk/DAILY\\_5.html](http://www.schs.state.nc.us/schs/brfss/2011/nc/risk/DAILY_5.html).
77. The 2009 Youth Risk Behavior Survey, 112, 116, CTRS. FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/HealthyYouth/yrbs/index.htm> (last visited Nov. 20, 2013).
78. 2011 BRFSS Survey Results: North Carolina, Hypertension Awareness, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2011/nc/all/BPHIGH4.html> (last visited Nov. 20, 2013).
79. 2011 BRFSS Survey Results: North Carolina, Hypertension Awareness, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2011/nc/risk/BPHIGH4.html> (last visited Nov. 20, 2013).
80. 2011 BRFSS Survey Results: North Carolina, Cholesterol Awareness, N. C. STATE CTR. FOR HEALTH STATISTICS, (last visited Nov. 20, 2012), <http://www.schs.state.nc.us/schs/brfss/2011/nc/all/toldhi2.html> (last visited Nov. 20, 2013).
81. 2011 BRFSS Survey Results: North Carolina, Cholesterol Awareness, N. C. STATE CTR. FOR HEALTH STATISTICS, <http://www.schs.state.nc.us/schs/brfss/2011/nc/white/toldhi2.html> and <http://www.schs.state.nc.us/schs/brfss/2011/nc/afam/toldhi2.html>, (last visited Nov. 20, 2013).
82. 2011 BRFSS Survey Results: North Carolina, Cholesterol Awareness, N. C. STATE CTR. FOR HEALTH STATISTICS, (last visited Nov. 20, 2012), <http://www.schs.state.nc.us/schs/brfss/2011/nc/risk/toldhi2.html> (last visited Nov. 20, 2013).
83. Am. Diabetes Ass'n, Economic Costs of Diabetes in the U.S. in 2012, 36 DIABETES CARE 1033, 1033 (2013), <http://care.diabetesjournals.org/content/early/2013/03/05/dc12-2625.full.pdf+html> (last visited March 10, 2014).
84. Id.
85. Id.
86. The Cost of Diabetes, AMERICAN DIABETES ASSOCIATION, <http://www.diabetes.org/advocate/resources/cost-of-diabetes.html>.
87. Am. Diabetes Ass'n, Economic Costs of Diabetes in the U.S. in 2012, 36 DIABETES CARE 1033, 1038 (2013), <http://care.diabetesjournals.org/content/early/2013/03/05/dc12-2625.full.pdf+html> (last visited March 10, 2014).
88. The Burden of Diabetes in North Carolina, 2010, NC Diabetes Prevention and Control Fact Sheet, N.C. DIV. OF PUBLIC HEALTH, [http://www.gvhd.org/download/CHA%20Appendix%20K\\_Diabetes%20Burden%20in%20NC\\_%202010%20Fact%20Sheet\\_2012.pdf](http://www.gvhd.org/download/CHA%20Appendix%20K_Diabetes%20Burden%20in%20NC_%202010%20Fact%20Sheet_2012.pdf) (last visited March 14, 2014).
89. Joseph Konen and Joyce Page, The State of Diabetes in North Carolina, 72 NORTH CAROLINA MEDICAL JOURNAL 5 (2012), <http://www.ncmedicaljournal.com/wp-content/uploads/2011/09/72505-web.pdf>.
90. Id.
91. Governor Pat McCrory, Governor Pat McCrory Signs Fiscally Responsible Budget (2013), <http://www.governor.state.nc.us/newsroom/press-releases/20130726/governor-pat-mccrory-signs-fiscally-responsible-budget>.
92. Karen Pollitz et. al., Health Insurance and Diabetes: The Lack of Available, Affordable, and Adequate Coverage, 23 CLINICAL DIABETES 88, 90 (2005); Joseph Konen and Joyce Page, The State of Diabetes in North Carolina, N.C. Med. J., 2011 Sept-Oct 72(5), 375; National diabetes statistics, National Diabetes Information Clearinghouse (NDIC) (2011).
93. North Carolina: Health Coverage and Uninsured, THE HENRY J. KAISER FAMILY FOUND., STATE HEALTH FACTS, <http://www.statehealthfacts.org/profileind.jsp?cat=3&rgn=35> (last visited Nov. 16, 2012).
94. Health Insurance Coverage of Adults 19-64, THE HENRY J. KAISER FAMILY FOUND., <http://kff.org/other/state-indicator/adults-19-64/?state=NC> (last visited Nov. 23, 2013).
95. Health Insurance Coverage of Children 0-18, THE HENRY J. KAISER FAMILY FOUND., <http://kff.org/other/state-indicator/children-0-18/> (last visited Nov. 23, 2013).
96. Health Insurance Coverage of Adults 19-64, THE HENRY J. KAISER FAMILY FOUND., <http://kff.org/other/state-indicator/adults-19-64/?state=NC> (last visited Nov. 23, 2013).
97. Characteristics of Uninsured North Carolinians, Data Snapshot, 2010-2011, N.C. INST. OF MED. 4 (January 2013), [http://www.nciom.org/wp-content/uploads/2010/08/Uninsured-Snapshot\\_1-28-13.pdf](http://www.nciom.org/wp-content/uploads/2010/08/Uninsured-Snapshot_1-28-13.pdf) (last visited March 10, 2014).
98. Id.
99. Id. at 5.
100. Ceci Connolly, Recession Leads to Health-Care Crisis in North Carolina, WASH. POST., April 20, 2009, <http://www.washingtonpost.com/wp-dyn/content/article/2009/04/19/AR2009041902239.html>





101. Characteristics of Uninsured North Carolinians, Data Snapshot, 2010-2011, N.C. INST. OF MED. 4 (January 2013), [http://www.nciom.org/wp-content/uploads/2010/08/Uninsured-Snapshot\\_1-28-13.pdf](http://www.nciom.org/wp-content/uploads/2010/08/Uninsured-Snapshot_1-28-13.pdf)
102. Am I eligible for coverage in the Marketplace?, HEALTHCARE.GOV, <https://www.healthcare.gov/am-i-eligible-for-coverage-in-the-marketplace> (last visited Nov. 21, 2013)
103. Explaining Health Care Reform: Questions About Health Insurance Subsidies, KAISER FAMILY FOUND. 1-2 (July 2012), <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/7962-02.pdf>
104. How do I get an exemption from the fee for not having health coverage?, HEALTHCARE.GOV, <https://www.healthcare.gov/exemptions> (last visited Nov. 21, 2013)
105. Id.
106. NCDOT Approves Rates for Potential Health Insurance Marketplace Plans, N.C. DEPT. INS., <http://www.ncdoi.com/media/news2/year/2013/073013.asp>
107. Essential Health Benefits, healthcare.gov, <https://www.healthcare.gov/glossary/essential-health-benefits/>
108. North Carolina EHB Benchmark Plan, CTR. FOR MEDICARE & MEDICAID SERVS. (2013), <http://www.cms.gov/CCIIO/Resources/Data-Resources/Downloads/north-carolina-ehb-benchmark-plan.pdf>
109. Id.
110. What if I have a pre-existing health condition?, HEALTHCARE.GOV, <https://www.healthcare.gov/what-if-i-have-a-pre-existing-health-condition> (last visited Nov. 21, 2013)
111. Welcome to the Marketplace, HEALTHCARE.GOV, <https://www.healthcare.gov/marketplace/individual/#state=north-carolina> (last visited Nov. 21, 2013); Open Enrollment Period, HEALTHCARE.GOV, <https://www.healthcare.gov/glossary/open-enrollment-period/>
112. In-Person Assistance in the Health Insurance Marketplace, THE CTR. FOR CONSUMER INFO. & INS. OVERSIGHT, <http://www.cms.gov/CCIIO/Programs-and-Initiatives/Health-Insurance-Marketplaces/assistance.html> (last visited Nov. 21, 2013)
113. Medicaid Eligibility, N.C. DEPT. OF HEALTH AND HUMAN SERVS (2013), <http://www.ncdhhs.gov/dma/medicaid/families.htm#families>
114. Id.
115. Quick Check Chart: Do I qualify to save on health insurance coverage? Healthcare.gov, <https://www.healthcare.gov/how-can-i-save-money-on-marketplace-coverage-chart/>
116. Affordable Care Act, Medicaid.gov, <http://www.medicaid.gov/AffordableCareAct/Affordable-Care-Act.html>
117. Nat'l Fed. of Independent Business v. Sebelius, 132 S. Ct. 2566 (2012).
118. North Carolina Medicaid, MEDICAID.GOV, <http://www.medicaid.gov/medicaid-chip-program-information/by-state/north-carolina.html>
119. Mission, Vision and Strategic Objectives, N.C. ACADEMY OF FAMILY PHYSICIANS, <http://www.ncafp.com/academy/mission>
120. About Us, North Carolina Alliance for Health, <http://www.ncallianceforhealth.org/AboutUs.aspx>; Conversations with NCAH officials, December 2013
121. About North Carolina AHEC, <http://www.ncahec.net/about/mission.htm>; Call with Ann Lefebvre, N.C. AREA HEALTH EDUCATION CENTER, January 17, 2014
122. About North Carolina AHEC, <http://www.ncahec.net/about/mission.htm>; Call with Ann Lefebvre, N.C. AREA HEALTH EDUCATION CENTER, January 17, 2014
123. iCare: Introduction, N.C. FOUNDATION FOR ADVANCED HEALTH PROGRAMS, <http://www.ncfahp.org/icare.aspx>
124. Welcome, N.C. CENTER FOR HEALTH & WELLNESS, <http://ncchw.unca.edu/>; Conversations with NCCHW officials, 2013
125. About us, N.C. ASSOCIATION OF COMM. HEALTH CENTERS, <http://www.ncchca.org/>
126. Id.
127. About NC Cooperative Extension, N.C. COOPERATIVE EXTENSION, <http://www.ces.ncsu.edu/about/>
128. See generally N.C. DEPT. OF AGRIC., <http://www.ncagr.gov> (last visited Nov. 21, 2013)
129. See generally DEPT. OF HEALTH AND HUMAN SERVS., <http://www.ncdhhs.gov>, (last visited Nov. 21, 2013).
130. Id.
131. Evidence-Based Healthy Aging Programs, N.C. DIV. OF AGING AND ADULT SERVICES (2013), <http://www.ncdhhs.gov/aging/>
132. Id.
133. See generally DIV. OF MED. ASSISTANCE, <http://www.ncdhhs.gov/dma/index.htm> (last visited Nov. 21, 2013).
134. L. Allen Dobson et. al. Community Care of North Carolina in 2013, 74 N.C. MED. J. S12, [http://www.ncmedicaljournal.com/wp-content/uploads/2013/03/74S02\\_Dobson\\_web.pdf](http://www.ncmedicaljournal.com/wp-content/uploads/2013/03/74S02_Dobson_web.pdf); CCNC Care Management, CMTY. CARE OF N.C., <https://www.communitycarenc.org/media/related-downloads/care-management-plan.pdf> (last visited Nov. 21, 2013).
135. CCNC Care Management, CMTY. CARE OF N.C., <https://www.communitycarenc.org/media/related-downloads/care-management-plan.pdf> (last visited Nov. 21, 2013);
136. Id.
137. About Us, N.C. DIV. MENTAL HEALTH, DEV.L DISABILITIES AND SUBSTANCE ABUSE SERV. <http://www.ncdhhs.gov/mhddsas/divisioninfo.htm> (last visited March 14, 2014)
138. See generally DIV. OF MED. ASSISTANCE, <http://www.ncdhhs.gov/dma/index.htm> (last visited Nov. 21, 2013).
139. Id.
140. State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health, CENTERS FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/chronicdisease/about/state-public-health-actions.htm>
141. Id.
142. Transition: State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health ("1305"), N.C. DIV. OF PUB. HEALTH, On file with Center
143. About Us, N.C. OFFICE OF MINORITY HEALTH AND HEALTH DISPARITIES, <http://www.ncminorityhealth.org/aboutus.htm>
144. Office of Rural Health and Community Care: 2013 Profile, N.C. OFF. RURAL HEALTH & COMM. CARE. Received from ORHCC officials; North Carolina Rural Hospital Program, 2013 Profile, N.C. OFF. RURAL HEALTH & COMM. CARE. Received from ORHCC officials.
145. Id.
146. North Carolina HealthNet: 2013 Profile, N.C. OFF. RURAL HEALTH & COMM. CARE. Received from ORHCC officials.
147. See generally N.C. DEPT. OF PUB. INSTRUCTION, <http://www.dpi.state.nc.us> (last visited Nov. 21, 2013)
148. North Carolina's Plan to Address Obesity: Healthy Weight and Healthy Communities 2013-2020, Eat Smart Move More Carolina, <http://www.eatsmartmovemorenc.com/ESMMPlan/ESMMPlan.html>
149. In 2009, Congress passed the Health Information Technology for Economic and Clinical Health Act (HITECH Act), which created financial incentives for use of EHR: Medicare and Medicaid providers (including hospitals) can earn up to an extra \$44,000 and \$64,750, respectively,





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for using EHR to record certain patient data (i.e., make meaningful use of EHR). After 2015, failure to reach the “meaningful use” standards will result in financial penalties—lower reimbursement rates—in Medicare only. What qualifies as meaningful use is defined in three stages, with increased requirements for what must be included in EHR in each stage.

150. NC PATH, NC HIE, <http://nchie.org/our-programs-and-partnerships/programs/nc-path/>

151. Safety Net Data Warehouse and Enhanced Reporting System Project, NC HIE, <http://nchie.org/our-programs-and-partnerships/programs/safety-net/>

152. About Us, N.C. INST. OF MED., <http://www.nciom.org/about-us/>

153. About NCNA, N.C. NURSING ASSOC., <http://www.ncnurses.org/aboutUs/>; Council of Nurse Practitioners, N.C. NURSING ASSOC., [http://www.ncnurses.org/practice/nurse\\_practitioners/](http://www.ncnurses.org/practice/nurse_practitioners/)

154. North Carolina Senate, GEN. ASSEMBLY OF N.C., <http://www.ncga.state.nc.us/Senate/Senate.html?bPrintable=true&> (last visited Nov. 16, 2012); North Carolina House of Representatives, GEN. ASSEMBLY OF N.C., <http://www.ncga.state.nc.us/House/House.html?bPrintable=true&> (last visited Nov. 16, 2012)

155. North Carolina Senate, GEN. ASSEMBLY OF N.C., <http://www.ncga.state.nc.us/Senate/Senate.html?bPrintable=true&> (last visited Nov. 16, 2012); North Carolina House of Representatives, GEN. ASSEMBLY OF N.C., <http://www.ncga.state.nc.us/House/House.html?bPrintable=true&> (last visited Nov. 16, 2012)

156. Legislative Information, GEN. ASSEMBLY OF N.C., <http://www.ncga.state.nc.us/gascripts/Help/KnowledgeBase/viewItem.pl?nID=35> (last visited Nov. 16, 2012); Structure of General Assembly, GEN. ASSEMBLY OF N.C., <http://www.ncga.state.nc.us/NCGAInfo/educational/structure.html>

157. Structure of General Assembly, GEN. ASSEMBLY OF N.C., <http://www.ncga.state.nc.us/NCGAInfo/educational/structure.html> (last visited Nov. 16, 2012)

158. Governor Pat McCrory, Governor Pat McCrory Signs Fiscally Responsible Budget (2013), <http://www.governor.state.nc.us/newsroom/press-releases/20130726/governor-pat-mccrory-signs-fiscally-responsible-budget>.

159. See Current Operations and Capital Improvements Appropriations Act of 2013, 2013 N.C. Sess. Laws 36 § 12H.1(a)

160. Current Operations and Capital Improvements

Appropriations Act of 2013, 2013 N.C. Sess. Laws 36 § 12H.1(a)

161. Id. at § 12H.1(e)

162. Id. at § 12H.1(d)

163. Id. at § 12H.1(b)

164. N.C. Medicaid Reform Plan, N.C. DEPT. OF HEALTH AND HUMAN SERVICES, <http://www.ncdhhs.gov/medicaidreform/>

165. Medicaid Reform Recommendations, N.C. DEPT. OF HEALTH AND HUMAN SERVICES, February 24, 2014, [http://gallery.mailchimp.com/58ec19aeea4630b1baad0e5e4/files/Medicaid\\_Reform\\_High\\_Level\\_Recommendations\\_Feb\\_2014.pdf](http://gallery.mailchimp.com/58ec19aeea4630b1baad0e5e4/files/Medicaid_Reform_High_Level_Recommendations_Feb_2014.pdf) (last visited March 14, 2014)

166. N.C. Medicaid Reform Plan, N.C. DEPT. OF HEALTH AND HUMAN SERVICES, <http://www.ncdhhs.gov/medicaidreform/>

167. Current Operations and Capital Improvements Appropriations Act of 2013, 2013 N.C. Sess. Laws 36 § 12H.13. (d).

168. Id. at § 12H.13.(c).

169. Id. at § 12H.13. (e).

170. Id. at § 12H.13.(b).

171. Id. § 12H.20.(b).

172. Id. at § 108A-54.2 (d).

173. Current Operations and Capital Improvements

Appropriations Act of 2013, 2013 N.C. Sess. Laws 36 §12H.26. (a).

174. Id. § 12H.13.(g).

175. Services subject to the 3% cut include inpatient care, physician services (excluding primary care until 2015); dental; optical services and supplies; podiatry; chiropractors; hearing aids; personal care services; nursing homes; adult care services; and dispensation of drugs.

176. Id. § 12H.18 (a) and (b).

177. Id. § 12H.18 (d).

178. Id. § 12H.22.

179. Id. § 12H.13.(a).

180. Id. at § 12F.4A

181. Id. at § 12A.3.

182. Id. at § 12A.4.

183. Id. at § 12A.6.

184. Id. at § 12A.2B.

185. Id. at § 12E.6.

186. Id. at § 12E.7.

187. Id. at § 12H.12.

188. Dan Kane and John Frank, Far-reaching Senate tax plan closes loopholes, adds sales taxes, Newsobserver (2013), <http://www.newsobserver.com/2013/05/30/2927179/nc-lawmakers-get-details-on-three.html#storylink=cpy> (last visited March 10, 2014)

189. Ames Alexander, Senate proposal would require NC hospitals to pay sales taxes, Newsobserver (2013), <http://www.newsobserver.com/2013/05/30/2928247/senate-proposal-would-require.html#storylink=cpy> (last visited March 10, 2014)

190. Tax Simplification and Reduction Act, H.B. 998 / S.L. 2013-316, <http://www.ncleg.net/Sessions/2013/Bills/House/PDF/H998v0.pdf>; Gary Robertson, Major N.C. tax changes start in new year, CHARLOTTE OBSERVER, December 28, 2013, <http://www.charlotteobserver.com/2013/12/28/4572812/major-nc-tax-changes-start-in.html#UyOsQWAjzhs>; Mark Binker, Breaking down the 2013 tax package, WRAL.com (2013), <http://www.wral.com/breaking-down-the-2013-tax-package/12678653/>

191. Am. Diabetes Ass’n, Standards of Medical Care in Diabetes – 2012, 35 DIABETES CARE S25-38 (Supp. 2012). [http://care.diabetesjournals.org/content/33/Supplement\\_1/S11.full.pdf+html](http://care.diabetesjournals.org/content/33/Supplement_1/S11.full.pdf+html). (last visited March 10, 2014)

192. The Triple Aim was developed by the Institute for Healthcare Improvement. IHI has developed an entire framework for helping the healthcare system to better achieve these three goals. For our purposes, it is helpful simply to know that this framework underlies many of the projects described below. See IHI’s website on the Triple Aim for more on their framework: <http://www.ihl.org/offerings/Initiatives/TripleAim/Pages/default.aspx> (last visited Nov. 20, 2013).

193. Defining the PCMH, AGENCY HEALTHCARE RESEARCH & QUALITY, <http://pcmh.ahrq.gov/page/defining-pcmh>.

194. Id.

195. Id.

196. Telephone interview with anonymous PATHS partner (April 15, 2013) (on file with authors).

197. Leveraging Health IT to Achieve Ambulatory Quality: The Patient-Centered Medical Home (PCMH), NAT’L COMM. QUALITY ASSURANCE & HEALTHCARE INFO. & MGMT. SYS. SOC’Y, (2010), [http://www.ncqa.org/Portals/0/Public%20Policy/HIMSS\\_NCQA\\_PCMH\\_Factsheet.pdf](http://www.ncqa.org/Portals/0/Public%20Policy/HIMSS_NCQA_PCMH_Factsheet.pdf) (last visited Nov. 20, 2013).

198. Patient Centered Medical Home Resource Center: Tools and Resources, U.S. DEP’T HEALTH & HUMAN SERVS., AGENCY FOR HEALTHCARE RESEARCH & QUALITY, <http://pcmh.ahrq.gov/portal/>



SERVER.PT/COMMUNITY/PCMH\_\_HOME/1483/PCMH\_TOOLS\_\_\_\_RESOURCES\_v2 (last visited Nov. 20, 2013).

199. Resources for practices seeking PCMH Recognition, COMM. CARE N.C., <https://www.communitycarenc.org/emerging-initiatives/pcmh-central/>

200. Id.

201. Federally Qualified Health Centers: A Medical Home Model That Works!, N.J. PRIMARY CARE ASSOC., (2013), <http://www.njpc.org/whatsnew/Medical%20Home%20Document.pdf> (last visited Nov. 20, 2013).

202. The Community Care Story, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/about-us/> (last visited March 1, 2014).

203. Community Care Network County Maps, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/ccnc-network-nc-county-maps/>.

204. The Community Care Story, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/about-us/> (last visited March 1, 2014).

205. Carolina ACCESS (CA) Monthly Dual Eligible Status Reports, N.C. DIV. OF MED. ASSISTANCE, <http://www.ncdhhs.gov/DMA/ca/dualstatus/index.htm>; Uninsured Program, PARTNERSHIP FOR COMM. CARE, <http://www.p4communitycare.org/about-us/history>

206. Communications with CCNC officials, January 2014; Uninsured Program, PARTNERSHIP FOR COMM. CARE, <http://www.p4communitycare.org/about-us/history> (last visited March 1, 2014).

207. The Community Care Story, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/about-us/> (last visited May 1, 2013).

208. Care Management, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/population-management/care-management/>

209. CCNC Saves Money, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/our-results/ccnc-saves-money/>

210. Diabetes Disease Management Program, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/media/related-downloads/diabetes-program-brief.pdf>. (last visited March 10, 2014)

211. CCNC of North Carolina, Putting Health Reform Ideas into Practice in Medicaid, KAISER FAMILY FOUND., [http://kaiserfamilyfoundation.files.wordpress.com/2013/01/7899\\_es.pdf](http://kaiserfamilyfoundation.files.wordpress.com/2013/01/7899_es.pdf) (last visited March 10, 2014)

212. Informatics Center, COMMUNITY CARE OF NORTH CAROLINA, <https://www.communitycarenc.org/informatics-center/>; Personal Communication with CCNC officials, 2013, conducted by Maggie Morgan and Tiffany Lopinsky

213. Informatics Center, CCNC OF NORTH CAROLINA, <https://www.communitycarenc.org/informatics-center/>.

214. Enhanced Primary Care Case Management System Legislative Report, North Carolina CCNC Networks, Inc. Quarterly report, January 2011, COMMUNITY CARE OF NORTH CAROLINA

215. Accountable Care Organizations, CMS.gov, <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html?redirect=/ACO/> (last visited Nov. 20, 2013).

216. Shared Savings Program, CTRS. FOR MEDICARE & MEDICAID SERVS, <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/index.html?redirect=/sharedsavingsprogram/> (last visited Nov. 20, 2013).

217. Medicare Shared Savings Program, CTRS. FOR MEDICARE & MEDICAID SERVS. (February 2013), [ftp://ftp.cdc.gov/pub/CLIAAC\\_meeting\\_presentations/pdf/Addenda/cliac0212/Tab\\_22\\_November\\_CLIAAC\\_2012Feb15\\_ACO\\_Overview\\_Final\\_Rule.pdf](ftp://ftp.cdc.gov/pub/CLIAAC_meeting_presentations/pdf/Addenda/cliac0212/Tab_22_November_CLIAAC_2012Feb15_ACO_Overview_Final_Rule.pdf) (last visited August 22, 2013).

218. Id.

219. Id.

220. Id.

221. Id.

222. Id.

223. Id.

224. Id.

225. Id.

226. Id.

227. Id.

228. Medicare ACOs in the state include Accountable Care Coalition of Caldwell County; Accountable Care Coalition of Eastern North Carolina; Coastal Carolina Quality Care; Cornerstone Health Care; Physicians HealthCare Collaborative; and Triad Healthcare Network.

229. North Carolina Accountable Care Organizations, North Carolina Medical Society (2013), [http://www.ncmedsoc.org/pages/advocacy\\_govt\\_affairs/nc\\_acos.html](http://www.ncmedsoc.org/pages/advocacy_govt_affairs/nc_acos.html)

230. National Academy of State Health Policy, North Carolina, September 2013, <http://www.nashp.org/aco/north-carolina> (last visited March 10, 2014)

231. Id.

232. Child Health Accountable Care Collaborative, CTR. FOR MEDICARE AND MEDICAID INNOVATION (2013), <https://www.communitycarenc.org/emerging-initiatives/child-health-accountable-care-collaborative/>; National Academy of State Health Policy, North Carolina, September 2013, <http://www.nashp.org/aco/north-carolina>;

233. Current Operations and Capital Improvements Appropriations Act of 2013. § 12H.22.(4).

234. Medicaid Reform Recommendations, N.C. DEPT. OF HEALTH AND HUMAN SERVICES, February 24, 2014, [http://gallery.mailchimp.com/58ec19aeea4630b1baad0e5e4/files/Medicaid\\_Reform\\_High\\_Level\\_Recommendations\\_Feb\\_2014.pdf](http://gallery.mailchimp.com/58ec19aeea4630b1baad0e5e4/files/Medicaid_Reform_High_Level_Recommendations_Feb_2014.pdf) (last visited March 14, 2014)

235. See e.g., J. Jaime Caro et al., Economic Evaluation of Therapeutic Interventions to Prevent Type 2 Diabetes in Canada, 21 DIABETIC MEDICINE 1229 (2004); Diabetes Prevention Research Group, Within-trial cost-effectiveness of lifestyle intervention or metformin for the primary prevention of type 2 diabetes, 26 DIABETES CARE 2518 (2003); Duncan et. al., Assessing the value of diabetes education, 35 DIABETES EDUCATOR 752 (2009) 760; Look AHEAD Research Group, The Look AHEAD Study: A Description of the Lifestyle Intervention and the Evidence Supporting It, 14 OBESITY 737 (2006).

236. Look AHEAD Research Group, The Look AHEAD Study: A Description of the Lifestyle Intervention and the Evidence Supporting It, 14 OBESITY 737 (2006).

237. Look AHEAD Research Group, The Look AHEAD Study: A Description of the Lifestyle Intervention and the Evidence Supporting It, 14 OBESITY 737 (2006); David A. Renjilian et al., Individual vs. Group Therapy for Obesity: Effects of Matching Participants to Their Treatment Preference, 69 J. CONSULTING & CLINICAL PSYCHOLOGY 717 (2001); Deneen Vojta et al., Effective Interventions for Stemming the Growing Crisis of Diabetes and Prediabetes: A National Payer's Perspective, 31 HEALTH AFFAIRS 20 (2012); Thomas A. Wadden et al., Four Year Weight Losses in the Look AHEAD Study: Factors Associated with Long-Term Success, 19 OBESITY 10 (2012).

238. Deneen Vojta et al., Effective Interventions for Stemming the Growing Crisis of Diabetes and Prediabetes: A National Payer's Perspective, 31 HEALTH AFFAIRS 20 (2012).

239. Linda Haas, et. al., National Standards for Diabetes Self-Management Education and Support, 38 THE DIABETES EDUCATOR 619, 625 (2012). [http://www.diabeteseducator.org/export/sites/aade/\\_resources/pdf/general/2012NationalStandards.pdf](http://www.diabeteseducator.org/export/sites/aade/_resources/pdf/general/2012NationalStandards.pdf).



## 2014 NORTH CAROLINA STATE REPORT

240. Id.
241. Anne Daly et al., Diabetes white paper: Defining the delivery of nutrition services in Medicare medical nutrition therapy vs. Medicare diabetes self-management training programs, 109 J. AM. DIET. ASSOC. 528, 529 (2009).
242. Linda Haas, et. al., National Standards for Diabetes Self-Management Education and Support, 38 THE DIABETES EDUCATOR 619, 622 (2012). [http://www.diabeteseducator.org/export/sites/aade/\\_resources/pdf/general/2012NationalStandards.pdf](http://www.diabeteseducator.org/export/sites/aade/_resources/pdf/general/2012NationalStandards.pdf).
243. Moskowitz et. Al., Peer Coaching to Improve Diabetes Self-Management: Which Patients Benefit Most? 28 J GEN INTERN MED.938-42 (2013); Thom. et. Al. Impact of Peer Health Coaching on Glyce- mic Control in Low-Income Patients With Diabetes: A Randomized Controlled Trial, see also Thanh et. al. 11 ANN.FAM.MED. 137-143 (2013); Effectiveness of a diabetes self-management support intervention in Vietnamese adults with type 2 diabetes, 11 J. SCI, TECHN., AND HUM.41-79 (2013); Fisher et. Al. Peer Support For Self- Management Of Diabetes Improved Outcomes In International Settings, 31 HEALTH AFFAIRS, 130-139 (2012)
244. Diabetes Self-Management Education, Stanford University School of Medicine, PATIENT EDUCATION RESEARCH CENTER, <http://patienteducation.stanford.edu/programs/diabeteseng.html>; Duncan et al, Assessing the Value of the Diabetes Educator, 37 THE DIABETES EDUCATOR 638, 640 (2011), [http://www.diabeteseducator.org/export/sites/aade/\\_resources/pdf/research/Duncan2011TDE.pdf](http://www.diabeteseducator.org/export/sites/aade/_resources/pdf/research/Duncan2011TDE.pdf)
245. Diabetes Self-Management Education, Stanford University School of Medicine, PATIENT EDUCATION RESEARCH CENTER <http://patienteducation.stanford.edu/programs/diabeteseng.html>
246. Kate Lorig et al., Spanish diabetes self-management with and without automated telephone reinforcement: two randomized trials., 31 DIABETES CARE 408, 414 (2008). <http://www.ncbi.nlm.nih.gov/pubmed/18096810/>.
247. Communication with Official at Land-of-Sky Regional Council, November 14, 2013. Interview conducted by Maggie Morgan.
248. Diabetes Self-Management Program, STANFORD SCHOOL MED., <http://patienteducation.stanford.edu/programs/diabeteseng.html>.
249. Id.
250. Id.
251. Id.
252. Nutrition Recommendations and Interventions for Diabetes, 30 DIABETES CARE S48, S48 (2007).
253. Id.
254. Sara Morris & Judith Wylie-Rosett, Medical Nutrition Therapy: A Key to Diabetes Management and Prevention, 28 CLINICAL DIABETES 12, 14-15 (2010); Anne Daly et al., Diabetes white paper: Defining the delivery of nutrition services in Medicare medical nutrition therapy vs. Medicare diabetes self-management training programs, 109 J. AM. DIET. ASSOC. 528, 529-30 (2009).
255. Arlene Monk et al., Practice Guidelines For Medical Nutrition Therapy Provided by Dietitians For Persons With Non-Insulin-Dependent Diabetes Mellitus, 95 J. AM. DIET. ASSOC. 999 (1995).
256. Id.
257. Id.
258. Am. Diabetes Ass'n, Nutrition Recommendations and Interventions for Diabetes, 30 DIABETES CARE S48, S48 (2007).
259. Am. Diabetes Ass'n, Executive summary: standards of medical care in diabetes—2009, 35 DIABETES CARE S4, S5 (2012).
260. Boren et. al. Costs and benefits associated with diabetes education: a review of the literature, 35 Diabetes Educ. 72-96 (2009). Four studies reported neutral results while one older study reported a cost increase.
261. Id.
262. Duncan et.al., Assessing the value of diabetes education, 35 DIABETES EDUCATOR.752, 760 (2009), [http://www.diabeteseducator.orgwww.diabeteseducator.org/export/sites/aade/\\_resources/pdf/research/Solucia\\_Study\\_\\_2009.pdf](http://www.diabeteseducator.orgwww.diabeteseducator.org/export/sites/aade/_resources/pdf/research/Solucia_Study__2009.pdf)
263. Id.
264. See e.g. Keers et. al., Cost and benefits of a multidisciplinary intensive diabetes education programme, 11 J EVAL CLIN PRACT, 293-303 (2005)
265. Duncan et al, Assessing the Value of the Diabetes Educator, 37 THE DIABETES EDUCATOR 638, 638 (2011), [http://www.diabeteseducator.org/export/sites/aade/\\_resources/pdf/research/Duncan2011TDE.pdf](http://www.diabeteseducator.org/export/sites/aade/_resources/pdf/research/Duncan2011TDE.pdf).
266. Id.
267. Id.
268. Id. at 652-655.
269. Id. at 652-655.
270. Diabetes Outpatient Self-Management Education, NC DIVISION OF MEDICAL ASSISTANCE, MEDICAID AND HEALTH CHOICE CLINICAL COVERAGE POLICY 1A-24 § 3.2 (a) & § 7.3.
271. Diabetes Outpatient Self-Management Education, NC DIVISION OF MEDICAL ASSISTANCE, MEDICAID AND HEALTH CHOICE CLINICAL COVERAGE POLICY 1A-24 § 1.0 (a)-(d).
272. Martha M. Funnell et al., National Standards for Diabetes Self-Management Education, 31 DIABETES CARE S97, [http://care.diabetesjournals.org/content/31/Supplement\\_1/S97.full.pdf+html](http://care.diabetesjournals.org/content/31/Supplement_1/S97.full.pdf+html); Diabetes Self Management Education Curriculum, NORTH CAROLINA DIABETES PREVENTION AND CONTROL BRANCH, <http://www.ncdiabetes.org/programs/selfManagement.aspx>; Diabetes Outpatient Self-Management Education, NC DIVISION OF MEDICAL ASSISTANCE, MEDICAID AND HEALTH CHOICE CLINICAL COVERAGE POLICY 1A-24 § 5.3.
273. Diabetes Outpatient Self-Management Education, NC DIVISION OF MEDICAL ASSISTANCE, MEDICAID AND HEALTH CHOICE CLINICAL COVERAGE POLICY 1A-24 § 7.3.
274. Diabetes Outpatient Self-Management Education, NC DIVISION OF MEDICAL ASSISTANCE, MEDICAID AND HEALTH CHOICE CLINICAL COVERAGE POLICY 1A-24 § 5.3.
275. 58 N.C. STAT. ANN. ch. 51 § 61 (policy or contract of accident or health insurance), 58 N.C. STAT. ANN. ch. 65 § 91 (Hospital service plan or medical service plan), 58 N.C. STAT. ANN. ch. 67 § 74 (Health maintenance organizations).
276. 58 N.C. STAT. ANN. ch. 51 § 61 (policy or contract of accident or health insurance), 58 N.C. STAT. ANN. ch. 65 § 91 (Hospital service plan or medical service plan), 58 N.C. STAT. ANN. ch. 67 § 74 (Health maintenance organizations).
277. Martha M. Funnell et al., National Standards for Diabetes Self-Management Education, 31 DIABETES CARE S97, [http://care.diabetesjournals.org/content/31/Supplement\\_1/S97.full.pdf+html](http://care.diabetesjournals.org/content/31/Supplement_1/S97.full.pdf+html); Diabetes Self Management Education Curriculum, NORTH CAROLINA DIABETES PREVENTION AND CONTROL BRANCH, <http://www.ncdiabetes.org/programs/selfManagement.aspx>
278. 10.26.2 NPI- PA and nurse practitioner, The Blue Book, Provider eManual, Blue Cross Blue Shield NC, <http://www.bcbsnc.com/assets/providers/public/pdfs/BlueBook-July2010.pdf>.
279. North Carolina Medicaid Bulletin, DIVISION OF MEDICAL ASSISTANCE, N.C. MEDICAID (June 2001) <http://www.ncdhs.gov/dma/bulletin/pdfbulletin/0601bulletin.pdf>.
280. Communication with Official at North Carolina Diabetes Education Recognition Program, July 11, 2013, Interview conducted by Maggie Morgan and Tiffany Lopinsky; Joanne Rinker and Maggi Birdsell, and Melissa Black, Billing DSMT and MNT Services, Presentation as part of Webinar conducted by Nat. Association of County and City Health Officials, June 17, 2013, <https://cc.readytalk.com/cc/>



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281. Dietary Evaluation and Counseling, NC DIVISION OF MEDICAL ASSISTANCE, MEDICAID AND HEALTH CHOICE CLINICAL COVERAGE POLICY 11 § 5.21 & §6.1.

282. Dietary Evaluation and Counseling, NC DIVISION OF MEDICAL ASSISTANCE, MEDICAID AND HEALTH CHOICE CLINICAL COVERAGE POLICY 11 § 5.22.

283. Haas et. al., National Standards for ADA Self-Management Education and Support, 35 DIABETES CARE 1-5, <http://professional.diabetes.org/admin/UserFiles/2012%20ERP/2012-revised-standard-final.pdf>

284. Joanne Rinker & Marti Wolf, N.C. Diabetes Education Recognition Program: ADA Recognition for a Combined Program at Local Health Departments and Community Health Centers in North Carolina, 30 CLINICAL DIABETES 110 (2012), <http://clinical.diabetesjournals.org/content/30/3/110.extract> (last visited March 14, 2014)

285. Communication with Official at North Carolina Diabetes Education Recognition Program, July 11, 2013, Interview conducted by Maggie Morgan and Tiffany Lopinsky.

286. Joanne Rinker & Marti Wolf, N.C. Diabetes Education Recognition Program: ADA Recognition for a Combined Program at Local Health Departments and Community Health Centers in North Carolina, 30 CLINICAL DIABETES 110 (2012), <http://clinical.diabetesjournals.org/content/30/3/110.extract> (last visited March 14, 2014)

287. Communication with Official at North Carolina Diabetes Education Recognition Program, July 11, 2013, Interview conducted by Maggie Morgan and Tiffany Lopinsky.

288. Communication with Official at North Carolina Division of Public Health, November 20, 2013, Interview conducted by Maggie Morgan and Sarah Downer.

289. Communication with Officials at North Carolina Division of Aging and Adult Services, November 17 and 19, 2013. Interviews conducted by Maggie Morgan and Tiffany Lopinsky.

290. Communication with Officials at North Carolina Division of Aging and Adult Services, November 17 and 19, 2013. Interviews conducted by Maggie Morgan and Tiffany Lopinsky.

291. Communication with Officials at North Carolina Division of Aging and Adult Services, November 17 and 19, 2013. Interviews conducted by Maggie Morgan and Tiffany Lopinsky.

292. Communication with Official at Centralina Area Agency on Aging, November 13, 2013. Interview conducted by Maggie Morgan.

293. Communication with Official at Land of Sky Regional Council, November 13, 2013. Interview conducted by Maggie Morgan.

294. Communication with Official at Land of Sky Regional Council, November 13, 2013. Interview conducted by Maggie Morgan.

295. Communication with AHEC official, N.C. AHEC, January 17, 2014, Conducted by Maggie Morgan and Tiffany Lopinsky

296. Martha M. Funnell et al., National Standards for Diabetes Self-Management Education, 31 DIABETES CARE S97, [http://care.diabetesjournals.org/content/31/Supplement\\_1/S97.full.pdf+html](http://care.diabetesjournals.org/content/31/Supplement_1/S97.full.pdf+html);

297. Focus Groups with Providers, Asheville, North Carolina, November 6-7, 2013; Interviews with YWCA officials, Asheville, NC, July, 2013; Interviews with State and Local Officials at DAAS, November 2013; Focus Group with Providers, Durham, North Carolina, November 15, 2013

298. Focus Groups with Providers, Asheville, North Carolina, November 6-7, 2013; Interviews with YWCA officials, Asheville, NC, July, 2013; Communications with State and Local Officials at DAAS, November 2013; Focus Group with Providers, Durham, North Carolina, November 15, 2013

299. Focus Groups with Providers, Asheville, North Carolina, November 6-7, 2013; Interviews with YWCA officials, Asheville, NC, July, 2013; Communications with State and Local Officials at DAAS, November 2013; Focus Group with Providers, Durham, North Carolina, November 15, 2013

300. Specifically, the Stanford DSMP model does not use a nurse, pharmacist or dietician for administration of the program, excluding them from Medicare accreditation and subsequent reimbursement. Diabetes Self-Management Training Accreditation and Medicare Reimbursement Frequently Asked Questions, Dept. on Aging, May 2013, <http://www.ncoa.org/improve-health/center-for-healthy-aging/content-library/DSMT-FAQs-FINAL-3-19-13.pdf>.

301. Kate Lorig et al., Community-based peer-led diabetes self-management: a randomized trial., 35 DIABETES EDUC. 641, 651 (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19407333>; Kate Lorig et al., Spanish diabetes self-management with and without automated telephone reinforcement: two randomized trials., 31 DIABETES CARE 408, 414 (2008), <http://www.ncbi.nlm.nih.gov/pubmed/18096810/>

302. Communication with Official at North Carolina Diabetes Education Recognition Program, July 11, 2013, Interview conducted by Maggie Morgan and Tiffany Lopinsky; Focus Groups with Providers, Asheville, North Carolina, November 6-7, 2013

303. Focus Group with Officials at North Carolina Division of Public Health, January 2, 2014, Interview conducted by Maggie Morgan, Sarah Downer, and Tiffany Lopinsky

304. Personal Communication, County Health Department Director, June 17, 2013, Conducted by Maggie Morgan and Tiffany Lopinsky.

305. Personal Communication, County Health Department officials, June 18, 2013, Conducted by Tiffany Lopinsky

306. See e.g. Diabetes Self-Management Education for African Americans: Using the PEN-3 Model to Assess Needs, American Journal of Health Education, Vol. 44, No. 4, <http://www.questia.com/library/journal/1G1-341126605/diabetes-self-management-education-for-african-americans>

307. Communication with AHEC officials, January 17, 2014, Conducted by Maggie Morgan; Focus Group with Officials at North Carolina Division of Public Health, January 2, 2014, Interview conducted by Maggie Morgan, Sarah Downer, and Tiffany Lopinsky

308. Focus Groups with Providers, Asheville, North Carolina, November 6-7, 2013, Maggie Morgan, Sarah Downer, Tiffany Lopinsky, Nathaniel Counts, and Leigh Broadwell; Focus Group with Officials at North Carolina Division of Public Health, January 2, 2014, Interview conducted by Maggie Morgan, Sarah Downer, and Tiffany Lopinsky

309. Communication with AHEC Officials, January 17, 2014, Maggie Morgan and Tiffany Lopinsky

310. Focus Groups with Providers, Asheville, North Carolina, November 6-7, 2013, Conducted by Maggie Morgan, Sarah Downer, Tiffany Lopinsky, Nathaniel Counts, and Leigh Broadwell

311. Services subject to the 3% cut include inpatient care, physician services (excluding primary care until 2015); dental; optical services and supplies; podiatry; chiropractors; hearing aids; personal care services; nursing homes; adult care services; and dispensation of drugs.

312. Current Operations and Capital Improvements Appropriations Act of 2013, N.C. Sess. Laws 36 §12H.18.(b)

313. Id. at 12H.22.(a)

314. NCQA, Diabetes Recognition Program (DRP), <http://www.ncqa.org/Programs/Recognition/DiabetesRecognitionProgramDRP.aspx>

315. Diabetes Care, National Committee on Quality Assurance, [http://www.ncqa.org/portals/0/programs/recognition/DRP\\_web.pdf](http://www.ncqa.org/portals/0/programs/recognition/DRP_web.pdf)





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316. Id.
317. 42 U.S.C. § 1395w-4(o); 42 U.S.C. § 1395ww(n); see also Medicare and Medicaid EHR Incentive Program Basics, Ctrs. for Medicare & Medicaid Servs., (April 4, 2013), <http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Basics.html> (last visited Nov. 20, 2013).
318. Id.
319. 75 Fed. Reg. 44321
320. The full list of diabetes-related measures for Stage 1 of Meaningful Use include; 1) Diabetes: HbA1c Poor Control (>9%); 2) Diabetes: HbA1c Control (<8%); 3) Diabetes: LDL Management and Control; 4) Diabetes: Blood Pressure Management; 5) Diabetes: Eye Exam; 6) Diabetes: Urine Screening; and 7) Diabetes: Foot Exam.
321. Jennifer Prestigiacomo, Healthcare Informatics, Mobile Diabetes Management Pilot integrates diabetes self-management information into EHR, <http://www.welldoc.com/LinkClick.aspx?fileticket=3x3pRTUcdIo%3D&tabid=104>
322. T. Tran et al., Evaluation of a Mobile Diabetes Self-Management Platform: A Pilot Case Study with Pediatric Users, 1 JOURNAL MTM 35-36 (2012), <http://www.journalmtm.com/2012/evaluation-of-a-mobile-diabetes-self-management-platform-a-pilot-case-study-with-pediatric-users/>
323. Focus Groups with Providers, Asheville, North Carolina, November 6-7, 2013, Conducted by Maggie Morgan, Sarah Downer, Tiffany Lopinsky, Nathaniel Counts, and Leigh Broadwell
324. Interviews with State and Local Officials at DAAS, November 2013
325. Personal Communication, Graham County Diabetes Coalition Meeting, July 2013, Conducted by Maggie Morgan and Tiffany Lopinsky.
326. Blue Cross and Blue Shield of North Carolina Foundation Awards Grant to Expand Reach of Diabetes Bus, Blue Cross Blue Shield NC, <http://mediacenter.bcbnsnc.com/news/59542>
327. Id. § 12E.5(a).
328. See e.g. Medicaid Waivers' Role in Innovation, Coverage Expansion, STATELINE, Pew Charitable Trust, January 27, 2014, <http://www.pewstates.org/projects/stateline/headlines/medicaid-waivers-role-in-innovation-coverage-expansion-85899535587>
329. Interviews with Project EMPOWER leaders and CHWs, November 2012, Conducted by Maggie Morgan and Celeste Davis
330. Id.
331. Id.
332. See e.g. Diabetes Self-Management Education for African Americans: Using the PEN-3 Model to Assess Needs, American Journal of Health Education, Vol. 44, No. 4, <http://www.questia.com/library/journal/1G1-341126605/diabetes-self-management-education-for-african-americans>
333. Personal Communications, Project Empower leaders, East Carolina University, November 2012. Conducted by Maggie Morgan and Celeste Davis (on file with Center)
334. Doyle Cummings, Presentation, COMRADE: Collaborative Care Management for Distress and Depression in Rural Diabetes, Together on Diabetes Summit, February 26, 2013 (on file with Center).
335. Miranda et. al., Geographic Health Information Systems: A Platform To Support The 'Triple Aim,' 32 HEALTH AFFAIRS 1608-1615, <http://content.healthaffairs.org.ezp-prod1.hul.harvard.edu/content/32/9/1608.full.pdf>
336. Id.
337. Interviews with Durham Diabetes Coalition Leaders, 2012-2013, Conducted by Maggie Morgan and Sarah Downer
338. Conversations with Durham Diabetes Coalition officials, January 2014, Conducted by Maggie Morgan and Sarah Downer; Bristol Myers Squibb Foundation Together on Diabetes Annual Report 2013, 5, [http://www.bms.com/Documents/together\\_on\\_diabetes/TOD-2013-Annual-Report.pdf](http://www.bms.com/Documents/together_on_diabetes/TOD-2013-Annual-Report.pdf)
339. Am. Diabetes Ass'n, Standards of Medical Care in Diabetes – 2012, 35 DIABETES CARE SUPPLEMENT 1) S11, S13 (2012), [http://care.diabetesjournals.org/content/33/Supplement\\_1/S11.full.pdf+html](http://care.diabetesjournals.org/content/33/Supplement_1/S11.full.pdf+html).
340. Gregory A. Nichols et al., Progression from Newly Acquired Impaired Fasting Glucose to Type 2 Diabetes, 30 DIABETES CARE 228, 228-29 (2007).
341. The burden of diabetes in North Carolina, N.C. DIABETES PREVENTION AND CONTROL BRANCH (2010), [http://www.ncdiabetes.org/library/\\_pdf/Diabetes%20burden%20in%20North%20Carolina%202010%20Fact%20Sheet%20WEB.pdf](http://www.ncdiabetes.org/library/_pdf/Diabetes%20burden%20in%20North%20Carolina%202010%20Fact%20Sheet%20WEB.pdf).
342. Thomas J. Hoerger et al., Cost-Effectiveness of Screening for Prediabetes Among Overweight and Obese U.S. Adults, 30 Diabetes Care 2874, 2877 (2007), <http://care.diabetesjournals.org/content/30/11/2874.full>; Am. DIABETES ASS'N, Economic costs of diabetes in the U.S. in 2007, 31 DIABETES CARE 396 (2008), <http://www.ncbi.nlm.nih.gov/pubmed/18308683>.
343. William C. Knowler et al., 10-Year Follow-up of Diabetes Incidence and Weight Loss in the Diabetes Prevention Program Outcomes Study, 374 THE LANCET 1677 (2009).
344. Id.
345. The Cost of Diabetes, 2013, Am. DIABETES ASS'N, <http://www.diabetes.org/advocate/resources/cost-of-diabetes.html>
346. Personal Communication, YMCA of Western North Carolina, notes on file at Center; Greensboro, UnitedHealth Group, YMCA partner on diabetes prevention program, THE BUSINESS JOURNAL, May 1, 2013, <http://www.bizjournals.com/triad/news/2013/05/01/unitedhealth-group-ymca-partner-on.html?page=all>;
347. Am. DIABETES ASS'N, Economic costs of diabetes in the U.S. in 2007, 31 DIABETES CARE 396 (2008), <http://www.ncbi.nlm.nih.gov/pubmed/18308683>.
348. William C. Knowler et al., 10-Year Follow-up of Diabetes Incidence and Weight Loss in the Diabetes Prevention Program Outcomes Study, 374 THE LANCET 1677 (2009).
349. YMCA Diabetes Prevention Program, NAT. DIABETES PREVENTION PROGRAM, CTR. FOR DISEASE CONTROL & PREVENTION, <http://www.ymcawnc.org/sites/default/files/YMCA%20Diabetes%20Prevention%20Program.pdf>.
350. Results from YMCA of Western North Carolina, 2013 Program Stats. (on file with author); Personal Communication, YMCA West NC, Jun. 20, 2013, Conducted by Maggie Morgan and Tiffany Lopinsky.
351. Working Together, Living Better: Diabetes Prevention Program YMCA of Western North Carolina, YMCA, <http://www.ymcawnc.org/sites/default/files/YMCA%20Diabetes%20Prevention%20Program.pdf> (last visited November 20, 2013)
352. Note that the approximate savings may be overstated because the figure on diabetes savings is diabetes versus not-diabetes, not diabetes versus prediabetes, which many of the individuals may continue to have and which will have costs associated with it.
353. United Health Group is one of the largest health insurers in North Carolina and in the United States.
354. YMCA, Diabetes Prevention Program: Partners, Donors and Community Organizations, <http://www.ymca.net/diabetes-prevention/partners-community.html>; Diabetes Prevention and Control Alliance, Program Partners, <http://notme.com/dpca/memberPartners.html>; Jennifer Corbett





- Dooren, The Y Takes On Diabetes, WALL ST. J., Apr. 16, 2012, at R8, <http://online.wsj.com/news/articles/SB10001424052702304459804577281473673825662> (last visited November 20, 2013).
355. The Business Journal, Greensboro, UnitedHealth Group, YMCA partner on diabetes prevention program, May 1, 2013, <http://www.bizjournals.com/triad/news/2013/05/01/unitedhealth-group-ymca-partner-on.html?page=all>; Personal Communication, YMCA Greensboro and Winston-Salem officials, July 2013. Conducted by Tiffany Lopinsky; Focus Group with Community Partners, Asheville, North Carolina, November 6, 2013.
356. Personal Communication, YMCA Greensboro and Winston-Salem officials, July 2013. Conducted by Tiffany Lopinsky; Focus Group with Community Partners, Asheville, North Carolina, November 6, 2013. See also Jennifer Corbett Dooren, The Y Takes On Diabetes, WALL ST. J., at Apr. 16, 2012, at R8, <http://online.wsj.com/news/articles/SB10001424052702304459804577281473673825662>.
357. Personal Communication, YMCA Greensboro and Winston-Salem officials, July 2013. Conducted by Tiffany Lopinsky; Focus Group with Community Partners, Asheville, North Carolina, November 6, 2013.
358. Communications with YWCA of Asheville Officials, July and November 2013; YMCA of Asheville, Diabetes Prevention and Wellness Program, [http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive\\_Health.htm](http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive_Health.htm)
359. Communications with YWCA Official Katie Souris, July and November 2013, YMCA of Asheville, Diabetes Prevention and Wellness Program, [http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive\\_Health.htm](http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive_Health.htm)
360. Communications with YWCA Official Katie Souris, July and November 2013, YMCA of Asheville, Diabetes Prevention and Wellness Program, [http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive\\_Health.htm](http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive_Health.htm)
361. Email communication with YWCA Official Katie Souris, YMCA of Asheville, Diabetes Prevention and Wellness Program, November 19, 2013, on file with author.
362. Communications with YWCA of Asheville Officials, July and November 2013, YMCA of Asheville, Diabetes Prevention and Wellness Program, [http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive\\_Health.htm](http://www.ywcaofasheville.org/site/c.7oIEJQPXGeISF/b.8131591/k.A7A9/Preventive_Health.htm)
363. The Blue Book, Provider eManual, Chapter 9, Medical Nutrition Therapy Benefits <http://www.bcbsnc.com/assets/providers/public/pdfs/BlueBook-July2010.pdf>,
364. The Blue Book, Provider eManual, Chapter 9, Medical Nutrition Therapy Benefits <http://www.bcbsnc.com/assets/providers/public/pdfs/BlueBook-July2010.pdf>,
365. Diabetes Related Services, CTRS. FOR MEDICARE & MEDICAID SERV., DEP'T OF HEALTH AND HUM. SERV., <http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/DiabetesSvc.pdf>; NC DIVISION OF MEDICAL ASSISTANCE DIABETES OUTPATIENT SELF-MANAGEMENT EDUCATION, Policy 1A-24, 3.1, <http://www.ncdhhs.gov/dma/mp/1A24.pdf>.
366. V Connolly et al., Diabetes prevalence and socioeconomic status: a population based study showing increased prevalence of type 2 diabetes mellitus in deprived areas, 54 J Epidemiol. Community Health 173, 175 (2000).
367. Personal Communication, YMCA Diabetes Prevention Program Director, North Carolina, November 6, 2013, Asheville, North Carolina
368. William C. Knowler et al., 10-Year Follow-up of Diabetes Incidence and Weight Loss in the Diabetes Prevention Program Outcomes Study, 374 THE LANCET 1677 (2009).
369. Diabetes Health Plan, [https://www.unitedhealthcareonline.com/b2c/CmaAction.do?channelId=e6685b4365272210VgnVCM2000003010b10a\\_\\_\\_\\_\\_](https://www.unitedhealthcareonline.com/b2c/CmaAction.do?channelId=e6685b4365272210VgnVCM2000003010b10a_____)
370. AM. DIABETES ASS'N, The Cost of Diabetes, 2013, <http://www.diabetes.org/advocate/resources/cost-of-diabetes.html>
371. Nutrition Counseling Services, <http://www.orangecountync.gov/health/nutrition.asp>
372. Examples of North Carolina Joint Use, Examples of North Carolina Joint Use, [http://www.eatsmartmovemorenc.com/PromotingPhysicalAct/Texts/Promoting%20Physical%20Activity%20through%20Joint%20Use%20Agreements\\_FINAL.pdf](http://www.eatsmartmovemorenc.com/PromotingPhysicalAct/Texts/Promoting%20Physical%20Activity%20through%20Joint%20Use%20Agreements_FINAL.pdf).
373. Joint Use, Wake County Public School System (2013), <http://www.wcpss.net/about-us/our-facilities/real-estate/joint-use.html>. See also Wake County Board of Education, Joint Use Agreement Renewal: Broughton High, [http://www.wcpss.net/about-us/our-leadership/board-of-education/agendas\\_schedules/O6\\_18\\_2013-agenda.pdf](http://www.wcpss.net/about-us/our-leadership/board-of-education/agendas_schedules/O6_18_2013-agenda.pdf).
374. Promoting Physical Activity Through Joint Use Agreements, N.C. Departments of Public Instruction and Health and Human Services (2012), <http://www.nchealthyschools.org/docs/home/use-agreements.pdf>.
375. NC Division of Public Health, Gestational Diabetes (GDM) Postpartum Testing, 2010, <http://whb.ncpublichealth.com/provpart/docs/preconceptionHealth/HealthCareProviderFactSheet-GestationalDiabetes.pdf>; M.V. Chireau et. al. Gestational diabetes testing among pregnant medicaid recipients: implications for clinical care. 13 Journal of Clinical Outcomes Management 323-332 (2006).
376. M.V. Chireau et. al. Gestational diabetes testing among pregnant medicaid recipients: implications for clinical care. 13 Journal of Clinical Outcomes Management 323-332 (2006).
377. NL Hale et. al, Postpartum screening for diabetes among Medicaid-eligible South Carolina women with gestational diabetes. 22 WOMENS HEALTH ISSUES.163-9 (2012), <http://www.ncbi.nlm.nih.gov/pubmed/21963202>; K. V., Smirnakis et. al. Postpartum diabetes screening in women with a history of gestational diabetes. 106 OBSTETRICS AND GYNECOLOGY 1297-1303 (2005)
378. See e.g. NL Hale et. al, Postpartum screening for diabetes among Medicaid-eligible South Carolina women with gestational diabetes. 22 WOMENS HEALTH ISSUES.163-9 (2012), <http://www.ncbi.nlm.nih.gov/pubmed/21963202>;
379. 43 U.S.C. § 1396 (a) (the Secretary of HHS "shall approve" any amendment meeting the requirements listed in 43 U.S.C. § 1396(a) and its accompanying regulations).
380. Id. § 12E.5(a).
381. See e.g. Medicaid Waivers' Role in Innovation, Coverage Expansion, STATELINE, Pew Charitable Trust, January 27, 2014, <http://www.pewstates.org/projects/stateline/headlines/medicaid-waivers-role-in-innovation-coverage-expansion-85899535587>
382. Prevent, <https://preventnow.com/signup>; Retrofit, <http://www.retrofitme.com/plansandpricing?loc=nav>.
383. Diabetes Prevention Program, Take Charge Live Well Ohio, <http://tclw.das.ohio.gov/DiabetesPreventionProgram.aspx>.
384. Personal Communication, YMCA Greensboro and Winston-Salem officials, July 2013 Conducted by Tiffany Lopinsky
385. Arcury et al. Access to Transportation and Health Care Utilization in a Rural Region, 21 J. RURAL HEALTH 31-38 (2005)
386. The 2005 Report to the Secretary: Rural Health and Human Service Issues, NAT. ADVISORY COM. RURAL HEALTH & HUM. SERV, [http://www.hrsa.gov/advisorycommittees/rural/2005\\_secretary's\\_report.pdf](http://www.hrsa.gov/advisorycommittees/rural/2005_secretary's_report.pdf).
387. Data is from 2009. Population data, Table 13 – Intercensal Resident Population – States, <http://www.census.gov>.



- gov/prod/2011pubs/12statab/pop.pdf; Vehicle ownership data, Table 1096 – State Motor Vehicle Registrations: 1990-2009, <http://www.census.gov/compendia/statab/2012/tables/12s1096.pdf>, and Table 1098 – State Motor Vehicle Registrations, 1990 to 2009, Motorcycle Registrations and Licensed Drivers by State: 2009, <http://www.census.gov/compendia/statab/2012/tables/12s1098.pdf>.
388. Communication, YMCA Asheville officials, June 20, 2013, Conducted by Maggie Morgan and Tiffany Lopinsky; Communication, Graham County Diabetes Coalition officials, July 2013
389. Gaskin, Daniel J. Hoffman Catherine, Racial and Ethnic Differences in Preventable Hospitalizations across 10 States, *MED CARE RES REV* November 1, 2000 vol. 57 no. suppl 1 85-107; Kevin Fiscella et. al., Inequality in Quality Addressing Socioeconomic, Racial, and Ethnic Disparities in Health Care. *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. 2000;283(19):2579-2584
390. Adult Medicaid Manual A-2910 Medicaid Transportation, NC DEPT. HEALTH & HUM. SERV., <http://info.dhhs.state.nc.us/olm/manuals/dma/abd/man/MA2910-03.htm#TopOfPage>.
391. What is Telemedicine?, AMER. TELEMEDICINE ASSOC., <http://www.americantelemed.org/learn>.
392. Bynum et al., The impact of telemedicine on patients' cost savings: some preliminary finds, *TELEMED J. E HEALTH*, <http://www.ncbi.nlm.nih.gov/pubmed/14980093>; Agha et al., Cost effectiveness of telemedicine for the delivery of outpatient pulmonary care to a rural population, *TELEMED J. E HEALTH*, 2002, <http://www.ncbi.nlm.nih.gov/pubmed/12419022>.
393. Bynum et al., The impact of telemedicine on patients' cost savings: some preliminary finds, *TELEMED J. E HEALTH*, 365 <http://www.ncbi.nlm.nih.gov/pubmed/14980093>.
394. Agha et al., Cost effectiveness of telemedicine for the delivery of outpatient pulmonary care to a rural population, *TELEMED J. E HEALTH*, 2002, <http://www.ncbi.nlm.nih.gov/pubmed/12419022>.
395. Dimmick et al., Outcomes of an integrated telehealth network demonstration project, 9 *Telemed J. E Health* 1, <http://www.ncbi.nlm.nih.gov/pubmed/12699604>.
396. Telemedicine and Telepsychiatry, Medicaid and Health Choice Clinical Coverage Policy No: 1H, Attachment A, NC DIVISION OF MED. ASSISTANCE, November 2013, <http://www.ncdhhs.gov/dma/mp/1H.pdf>
397. Telemedicine and Telepsychiatry, Medicaid and Health Choice Clinical Coverage Policy No: 1H, 3.1.1; 4.3. & 5.3, NC DIVISION OF MED. ASSISTANCE, November 2013, <http://www.ncdhhs.gov/dma/mp/1H.pdf>
398. Telemedicine and Telepsychiatry, Medicaid and Health Choice Clinical Coverage Policy No: 1H, 6.1, NC DIVISION OF MED. ASSISTANCE, November 2013, <http://www.ncdhhs.gov/dma/mp/1H.pdf>
399. Telemedicine and Telepsychiatry, Medicaid and Health Choice Clinical Coverage Policy No: 1H, 6.2., NC DIVISION OF MED. ASSISTANCE, November 2013, <http://www.ncdhhs.gov/dma/mp/1H.pdf>
400. Telemedicine and Telepsychiatry, Medicaid and Health Choice Clinical Coverage Policy No: 1H, 8.0, NC DIVISION OF MED. ASSISTANCE, November 2013, <http://www.ncdhhs.gov/dma/mp/1H.pdf>
401. Telemedicine and Telepsychiatry, Medicaid and Health Choice Clinical Coverage Policy No: 1H, 8.0, NC DIVISION OF MED. ASSISTANCE, November 2013, <http://www.ncdhhs.gov/dma/mp/1H.pdf>
402. Schwartz & Britton, Using Telehealth to Improve Chronic Disease Management, *NC MED. J.*, 217 <http://www.ncmedicaljournal.com/wp-content/uploads/2011/05/72311-web.pdf>. (last visited March 14, 2014)
403. Id.
404. 2010 National Healthcare Quality and Disparities Report, Agency for Healthcare Research and Quality (AHRQ), [http://www.healthit.gov/sites/default/files/pdf/RCCHCandPHS\\_CaseStudy.pdf](http://www.healthit.gov/sites/default/files/pdf/RCCHCandPHS_CaseStudy.pdf)
405. 2010 National Healthcare Quality and Disparities Report, Agency for Healthcare Research and Quality (AHRQ), 3, [http://www.healthit.gov/sites/default/files/pdf/RCCHCandPHS\\_CaseStudy.pdf](http://www.healthit.gov/sites/default/files/pdf/RCCHCandPHS_CaseStudy.pdf); Schwartz & Britton, Using Telehealth to Improve Chronic Disease Management, *NC MED. J.*, 217, <http://www.ncmedicaljournal.com/wp-content/uploads/2011/05/72311-web.pdf>.
406. Schwartz & Britton, Using Telehealth to Improve Chronic Disease Management, *NC MED. J.*, <http://www.ncmedicaljournal.com/wp-content/uploads/2011/05/72311-web.pdf>.
407. Session Law 2013-360, Section 12A.2B.(a) Establish Statewide Telepsychiatry Program
408. Statewide Telepsychiatry Program Starts this Year, Dept. Health & Hum. Services, October 22, 2013, [http://www.ncdhhs.gov/pressrel/2013/2013-10-22\\_telepsychiatry\\_program.htm](http://www.ncdhhs.gov/pressrel/2013/2013-10-22_telepsychiatry_program.htm).
409. Statewide Telepsychiatry Program Starts this Year, Dept. Health & Hum. Services, October 22, 2013, [http://www.ncdhhs.gov/pressrel/2013/2013-10-22\\_telepsychiatry\\_program.htm](http://www.ncdhhs.gov/pressrel/2013/2013-10-22_telepsychiatry_program.htm).
410. Telestroke Network, Wake Forest Baptist Health, <http://www.wakehealth.edu/Referring-Physicians/Neurosciences/Telestroke/Telestroke-Network.htm> (last visited March 14, 2014)
411. Id.
412. Id.
413. How Telestroke Works, Wake Forest Baptist Health Center, <http://www.wakehealth.edu/Referring-Physicians/Neurosciences/Telestroke/How-Telestroke-Works.htm> (last visited March 14, 2014)
414. Telestroke Network, Wake Forest Baptist Health, <http://www.wakehealth.edu/Referring-Physicians/Neurosciences/Telestroke/Telestroke-Network.htm> (last visited March 14, 2014)
415. Id.
416. Facts about Diabetic Retinopathy, *NAT. EYE INST.*, <http://www.nei.nih.gov/health/diabetic/retinopathy.asp>. (last visited March 14, 2014)
417. Velez et al., Project I See in NC: Initial Results of a Program to Increase Access to Retinal Examinations Among Diabetic Individuals in North Carolina, *N.C. MED. J.*, 3, <http://www.ncmedicaljournal.com/wp-content/uploads/2011/09/72502-web.pdf>. (last visited March 14, 2014)
418. R.A. Bell, et. al., Improving diabetes care among low-income North Carolinians: Project IDEAL. 66 *N.C. MED. J.* 96-102 (2005).
419. Velez et al., Project I See in NC: Initial Results of a Program to Increase Access to Retinal Examinations Among Diabetic Individuals in North Carolina, <http://www.ncmedicaljournal.com/wp-content/uploads/2011/09/72502-web.pdf>. (last visited March 14, 2014)
420. Schwartz & Britton, Using Telehealth to Improve Chronic Disease Management, *NC MED. J.*, <http://www.ncmedicaljournal.com/wp-content/uploads/2011/05/72311-web.pdf>.
421. Id.
422. State Policy Toolkit Improving Access to Covered Services for Telemedicine, AMER. TELEMEDICINE ASSOC., <http://www.americantelemed.org/docs/default-source/policy/ata-state-policy-toolkit.pdf?sfvrsn=18>.
423. Waivers, Medicaid.gov, <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/Waivers.html>



424. 1915 (c) Home & Community-Based Waivers, CTRS FOR MEDICARE & MEDICAID, <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/Home-and-Community-Based-1915-c-Waivers.html>.
425. State Medicaid Best Practice Remote Patient Monitoring and Home Video Visits, July 2013, AMER. TELEMEDICINE ASSOC., <http://www.americantelemed.org/docs/default-source/policy/state-medicare-best-practice---remote-patient-monitoring-and-home-video-visits.pdf?sfvrsn=4>.
426. National Conference of State Legislators, State Coverage for Telehealth Services, <http://www.ncsl.org/research/health/state-coverage-for-telehealth-services.aspx>
427. Telemedicine Corporate Medical Policy, BCBSNC, April 2013, <https://www.bcbsnc.com/assets/services/public/pdfs/medicalpolicy/telemedicine.pdf>; Interviews with Community Care officials, 2013
428. Velez et al., Project I See in NC: Initial Results of a Program to Increase Access to Retinal Examinations Among Diabetic Individuals in North Carolina, <http://www.ncmedicaljournal.com/wp-content/uploads/2011/09/72502-web.pdf>.
429. Clinical Coverage Policy No.: 1T-2, Special Ophthalmological Services, NC Division of Medical Assistance 4.2.4 b. Fundus Photography, <http://www.ncdhhs.gov/dma/mp/1T-2.pdf>.
430. Rein et al., The economic burden of major adult visual disorders in the United States, Arch. Ophthalmology, 2006, <http://www.ncbi.nlm.nih.gov/pubmed/17159036>.
431. Communication with Pharmacists, Wingate School of Pharmacy, February 20, 2013, Maggie Morgan and Sarah Downer; Communication with Pharmacists, Asheville, NC, July and November 2013; Communication with Pharmacists, Durham, NC, November, 2013
432. Communication with Pharmacists, Wingate School of Pharmacy, February 20, 2013, Maggie Morgan and Sarah Downer; Communication with Pharmacists, Asheville, NC, July and November 2013; Communication with Pharmacists, Durham, NC, November, 2013
433. Communication with Pharmacists, Wingate School of Pharmacy, February 20, 2013, Maggie Morgan and Sarah Downer; Communication with Pharmacists, Asheville, NC, July and November 2013; Communication with Pharmacists, Durham, NC, November, 2013
434. Communication with Pharmacists, Wingate School of Pharmacy, February 20, 2013, Maggie Morgan and Sarah Downer; Communication with Pharmacists, Asheville, NC, July and November 2013; Communication with Pharmacists, Durham, NC, November, 2013
435. Durable Medical Equipment, Clinical Coverage Policy No:5a, <http://www.ncdhhs.gov/dma/mp/dmepdf.pdf>; NC PATHS Trip, 2/19/13, Sitting in with pharmacist visits with patients; Communication with Pharmacists, Asheville, Durham and Charlotte, NC
436. Durable Medical Equipment, Clinical Coverage Policy No:5a, <http://www.ncdhhs.gov/dma/mp/dmepdf.pdf>.
437. NC PATHS Trip, 2/19/13, Sitting in with pharmacist visits with patients
438. Blue Cross Blue Shield of North Carolina Enhanced Formulary, BCBSNC, April 2013, <http://www.bcbsnc.com/assets/services/public/pdfs/formulary/printable-formulary-guide.pdf>.
439. Glucose Strips Unit Increase, BCNSNC, [http://www.bcbsnc.com/content/providers/news-and-information/news/Glucose\\_Strips\\_Unit\\_Increase.htm](http://www.bcbsnc.com/content/providers/news-and-information/news/Glucose_Strips_Unit_Increase.htm).
440. 2013 Aetna Preferred Drug Guide, <https://pcms.plansource.com/store/published/docs/0050/5805/505805/original/2013%20RX%20Formulary%20Guide.pdf?1350429992>
441. Blue Cross Blue Shield of North Carolina Enhanced Formulary, BCBSNC, April 2013, <http://www.bcbsnc.com/assets/services/public/pdfs/formulary/printable-formulary-guide.pdf>.
442. Individual and Family Plans, Cigna, <http://www.cigna.com/individuals-families/north-carolina>.
443. Partnership for Prescription Assistance North Carolina, <http://www.pparxnc.org/pap/>.
444. Diabetes Programs and Supplies, Partnership for Prescription Assistance, <https://www.pparx.org/en/node/481#supplies>.
445. Medication Assistance Program, N.C. Office of Rural Health and Community Care, Notes on file with author.
446. Diabetic Supplies, Rx Outreach, <http://rxoutreach.org/diabetic/>.
447. For a comprehensive database of pharmaceutical assistance programs, see [www.rxassist.org](http://www.rxassist.org)
448. New Jersey Department of Human Services, Division of Aging Services, Pharmaceutical Assistance to the Aged and Disabled (PAAD), <http://www.state.nj.us/humanservices/doas/home/paaddetail.html>
449. Pennsylvania Department of Aging, PACE, PACENET, and PACE Plus Medicare, [http://www.portal.state.pa.us/portal/server.pt/community/pace\\_and\\_affordable\\_medications/17942](http://www.portal.state.pa.us/portal/server.pt/community/pace_and_affordable_medications/17942)
450. North Carolina HIV SPAP Fact Sheet for Case Managers, The North Carolina AIDS Drug Assistance/HIV Medications Program (ADAP) Communicable Disease Branch – Division of Public Health, NC DHHS, <http://ww1.aegis.org/factshts/network/access/states/nc/nc-spap.pdf>
451. Medicaid Expansion Option Issue Brief, N.C. INST. OF MED., <http://www.nciom.org/wp-content/uploads/2013/01/Medicaid-summary-FINAL.pdf>
452. Jeffrey S. Gonzalez et al., Depression, Self-Care, and Medication Adherence in Type 2 Diabetes. DIABETES CARE. Sep 2007; 30(9): 2222-2227.
453. MM Collins et. al., Anxiety and depression symptoms in patients with diabetes. 26 DIABETES MED. 153-61 (2009), <http://www.ncbi.nlm.nih.gov/pubmed/19236618>
454. Anderson RJ, et al. The Prevalence of Comorbid Depression in Adults with Diabetes: a Meta-Analysis. 24 DIABETES CARE 1069, <http://www.ncbi.nlm.nih.gov/pubmed/11375373>.
455. 3. de Groot M, Anderson R, Freedland KE, Clouse RE, Lustman PJ, Association of depression and diabetes complications: a meta-analysis. PSYCHOSOMATIC MEDICINE 2001;63:619-630.
456. Jeffrey S. Gonzalez et al., Depression, Self-Care, and Medication Adherence in Type 2 Diabetes. 30 DIABETES CARE. 2222-2227 (2007) Diabetes, Psychiatric Disorders, and the Metabolic Effects of Antipsychotic Medications, 24 CLINICAL DIABETES 18-24 (2006), <http://clinical.diabetesjournals.org/content/24/1/18.full> (last visited March 14, 2014)
457. Id.
458. Doyle Cummings, Presentation, COMRADE: Collaborative Care Management for Distress and Depression in Rural Diabetes, Together on Diabetes Summit, February 26, 2013 (on file with Center).
459. Simon G, et al., Diabetes complications and depression as predictors of health service costs, GEN HOSP. PSYCHIATRY. <http://www.ncbi.nlm.nih.gov/pubmed/16168795>.
460. Communications, Focus Groups with North Carolina providers, Asheville, Durham, and Wingate, NC (2013)(on file with Center).
461. Session Law 2013-360, Section 12A.2B.(a) Establish Statewide Telepsychiatry Program
462. Personal Communication with State Officials at the



## 2014 NORTH CAROLINA STATE REPORT

Department of Public Health, January 3, 2014, Conducted by Maggie Morgan, Sarah Downer, and Tiffany Lopinsky.

463. Statewide Telepsychiatry Program Starts Next Year, DEPT. HEALTH & HUM. SERVICES, October 22, 2013, [http://www.ncdhhs.gov/pressrel/2013/2013-10-22\\_telepsychiatry\\_program.htm](http://www.ncdhhs.gov/pressrel/2013/2013-10-22_telepsychiatry_program.htm). (last visited March 14, 2014)

464. Telepsychiatry Program Plan, DEPT. HEALTH & HUM. SERVICES, <http://governor.nc.gov/sites/default/files/TelepsychiatryProgramPlan.pdf>.

465. Session Law 2013-360, Section 12F.4A.(a) Behavioral Health Clinical Integration and Monitoring

466. Law 2013-360, Section 12F.4A.(b) Behavioral Health Clinical Integration and Monitoring

467. Session Law 2013-360, Section 12F.4A.(a) Behavioral Health Clinical Integration and Monitoring

468. Id.

469. Dickens et al., Primary Care/Behavioral Health Integration Efforts in North Carolina, NC MED. J., [http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ\\_73311\\_FINAL.pdf](http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ_73311_FINAL.pdf)

470. Behavioral Health Integration, Community Care, <http://www.communitycarenc.com/population-management/behavioral-health-page/>; Dickens et al., Primary Care/Behavioral Health Integration Efforts in North Carolina, NC MED. J., [http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ\\_73311\\_FINAL.pdf](http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ_73311_FINAL.pdf)

471. Personal Communication, Community Care official, October 1, 2013 and January 17, 2014, conducted by Maggie Morgan and Tiffany Lopinsky.

472. Id.

473. Id.

474. North Carolina's Behavioral Health Workforce: Unmet Need, Maldistribution, and No Quick Fixes., [http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ\\_73302\\_FINAL.pdf](http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ_73302_FINAL.pdf)

475. Behavioral Health Care Health Professional Shortage Areas (HPSAs), July 2013, KAISER FAM. FOUND., <http://kff.org/other/state-indicator/mental-health-care-health-professional-shortage-areas-hpsas/>

476. North Carolina's Healthcare Needs and Provider Supply Trends, 20, NC INST. MED., <http://www.nciom.org/wp-content/uploads/2007/06/chapter1.pdf>.

477. Silberman et al., Weathering the Practitioner Workforce Shortage, NC MED. J., <http://www.ncmedicaljournal.com/wp-content/uploads/NCMJ/may-jun-07/Silberman.pdf> (last visited March 14, 2014)

478. Thomas et al., North Carolina's Behavioral Health Workforce: Unmet Need, Maldistribution, and No Quick Fixes, NC MED. J., 2012, [http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ\\_73302\\_FINAL.pdf](http://www.ncmedicaljournal.com/wp-content/uploads/2012/05/NCMJ_73302_FINAL.pdf). (last visited March 14, 2014)

479. Fortney et al., A Randomized Trial of Telemedicine-based Collaborative Care for Depression, J GEN. INTERNAL MED., August 2007, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2305730/>. (last visited March 14, 2014)

480. Statewide Telepsychiatry Program Starts this Year, DEPT. HEALTH & HUM. SERVICES, October 22, 2013, [http://www.ncdhhs.gov/pressrel/2013/2013-10-22\\_telepsychiatry\\_program.htm](http://www.ncdhhs.gov/pressrel/2013/2013-10-22_telepsychiatry_program.htm). (last visited March 14, 2014)

481. Id.

482. Personal Communication, Community Care official, October 29, 2013, conducted by Maggie Morgan and Tiffany Lopinsky.

483. Personal Communication with Official at N.C. Division of Mental Health, January 13, 2014, Conducted by Maggie Morgan and Tiffany Lopinsky.

484. See Telehealth Resource Center Grants, HEALTH

RESOURCES & SERV. ADMIN., <http://www.hrsa.gov/ruralhealth/about/telehealth/>

485. Conversations with AHEC and Division of Mental Health Officials, January 2014; 3mail from official, N.C. Division of Mental Health, Jan. 14, 2014 (on file with Center)

486. Email from official, N.C. Division of Mental Health, Jan. 14, 2014 (on file with Center); Cardinal Innovations, Medicaid Psychiatric Consultation, Adults and Children, Medicaid Billable Services, [http://www.cardinalinnovations.org/docs/PBH\\_b-3\\_Psychiatric\\_Consultation\\_0911.pdf](http://www.cardinalinnovations.org/docs/PBH_b-3_Psychiatric_Consultation_0911.pdf) (last visited March 14, 2014)

487. World Health Organization, Integrating behavioral health into primary care, [http://www.who.int/behavioral\\_health/policy/Integratingmhintoprimarycare2008\\_lastversion.pdf](http://www.who.int/behavioral_health/policy/Integratingmhintoprimarycare2008_lastversion.pdf)

488. Interviews with North Carolina primary care providers, Asheville, Durham and Greenville, North Carolina, 2012 and 2013

489. Am. Diabetes Ass'n, Standards of Medical Care in Diabetes - 2010, 33 DIABETES CARE S11-S61, [http://care.diabetesjournals.org/content/33/Supplement\\_1/S11.full.pdf+html](http://care.diabetesjournals.org/content/33/Supplement_1/S11.full.pdf+html); Ruth Lipman & Dawn Sherr, Depression Screening in Diabetes Self-Management Education and Support: Acknowledging the Elephant in the Room, 4 SELF CARE 75 (2013), [http://www.diabeteseducator.org/export/sites/aade/\\_resources/pdf/research/DepressionScreeningInDiabetesSelfManagementAndSupport.pdf](http://www.diabeteseducator.org/export/sites/aade/_resources/pdf/research/DepressionScreeningInDiabetesSelfManagementAndSupport.pdf).

490. Connecticut Educates Providers on the Connection Between Depression and Diabetes in Women, NAT'L ASSOC. CHRONIC DISEASE DIRECTORS, [http://cymcdn.com/sites/www.chronicdisease.org/resource/resmgr/ct\\_-\\_educating\\_providers\\_on\\_.pdf](http://cymcdn.com/sites/www.chronicdisease.org/resource/resmgr/ct_-_educating_providers_on_.pdf).

491. Personal Communication with Official at Division of Behavioral Health of North Carolina, January 13, 2014, Conducted by Maggie Morgan and Tiffany Lopinsky.

492. Current Operations and Capital Improvements Appropriations Act of 2013, 2013 N.C. Sess. Laws 36, <http://ncleg.net/Sessions/2013/Bills/Senate/PDF/S402v7.pdf>.

493. Email from official, N.C. Division of Mental Health, Jan. 14, 2014 (on file with Center)

494. Email from official, N.C. Division of Mental Health, Jan. 14, 2014 (on file with Center); Communications with CCNC official, January 2014

495. Your Health Care Team, AMER. DIABETES ASS'N, <http://www.diabetes.org/living-with-diabetes/treatment-and-care/who-is-on-your-healthcare-team/your-health-care-team.html>.

496. Lexicon for Behavioral Health and Primary Care Integration, AGEN HEALTHCARE RES. & QUAL., <http://integrationacademy.ahrq.gov/sites/default/files/Lexicon.pdf>.

497. Mission, NC HEALTH INFO. EXCHANGE, <http://nchie.org/nchie/about/mission/>

498. Jesse Lichstein, Hugh Holliman, Rony Rand, Allen Dobson, Julia Lerche, Mark Holmes, Pam Silberman, Expanding Access to Health Care in North Carolina: The NCIOM Health Access Study Group, <http://www.ncbi.nlm.nih.gov/pubmed/19835246>.

499. AAMC 2010

500. County/State Population Projections, Office of State Budget and Management, [http://www.osbm.state.nc.us/ncosbm/facts\\_and\\_figures/socioeconomic\\_data/population\\_estimates/county\\_projections.shtm](http://www.osbm.state.nc.us/ncosbm/facts_and_figures/socioeconomic_data/population_estimates/county_projections.shtm).

501. Id.; Expanding Access to Health Care in North Carolina, NC INST. MEDICINE, [http://www.nciom.org/wp-content/uploads/NCIOM/projects/access\\_study08/HealthAccess\\_FinalReport.pdf](http://www.nciom.org/wp-content/uploads/NCIOM/projects/access_study08/HealthAccess_FinalReport.pdf).

502. North Carolina - Rate of New Cases of Diagnosed Diabetes per 1000 Adults (Aged 18-76 Years), 1996-2010,





- Ctrs. for Disease Control and Prevention, <http://apps.nccdc.cdc.gov/DDTSTRS/Index.aspx?stateId=37&state=North%20Carolina&cat=prevalence&Data=data&view=TO&trend=prevalence&id=1&ext=incidence> (last visited Nov. 22, 2013).
503. Shi et.al., Income inequality, primary care, and health indicators. *J FAM PRACT.* 1999 Apr;48(4):275-84; How Is a Shortage of Primary Care Physicians Affecting the Quality and Cost of Medical Care? *AM. COLLEGE OF PHYSICIANS*, 2008, [http://www.acponline.org/advocacy/current\\_policy\\_papers/assets/primary\\_shortage.pdf](http://www.acponline.org/advocacy/current_policy_papers/assets/primary_shortage.pdf) (last visited March 2, 2014)
504. State Health Facts: Primary Care Health Professional Shortage Areas, KAISER FAMILY FOUND., (July 2013), <http://kff.org/other/state-indicator/primary-care-health-professional-shortage-areas-hpsas/> (last visited March 2, 2014); Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations, HEALTH SERV. & RESOURCES ADMIN., <http://www.hrsa.gov/shortage/> (last visited March 2, 2014)
505. State Health Facts: Primary Care Health Professional Shortage Areas, KAISER FAMILY FOUND., (July 2013), <http://kff.org/other/state-indicator/primary-care-health-professional-shortage-areas-hpsas/> (last visited Nov. 19, 2013).
506. J. Spero et. al., CECIL B. SHEPS CENTER FOR HEALTH SERVICES RESEARCH, U.N.C. CHAPEL HILL, July 31, 2013, [http://www.nciom.org/wp-content/uploads/2013/04/Spero\\_7-31-13.pdf](http://www.nciom.org/wp-content/uploads/2013/04/Spero_7-31-13.pdf) (last visited March 2, 2014)
507. North Carolina Health Professions, Data Book: 2011, UNC CTR. FOR HEALTH SERVICES RESEARCH, 19, [http://www.shepscenter.unc.edu/hp/publications/2011\\_HPDS\\_Databook.pdf](http://www.shepscenter.unc.edu/hp/publications/2011_HPDS_Databook.pdf) (last visited March 2, 2014)
508. Id.
509. Id. at 20-21
510. 2013 State Physician Workforce Data Book, CENTER FOR WORKFORCE STUDIES, ASSOCIATION OF AMERICAN MEDICAL COLLEGES, 9, <https://www.aamc.org/download/362168/data/2013statephysicianworkforcedatabook.pdf>
511. Id. at 13
512. Expanding Access to Health Care in North Carolina, NC INST. MEDICINE, 100, [http://www.nciom.org/wp-content/uploads/NCIOM/projects/access\\_study08/HealthAccess\\_FinalReport.pdf](http://www.nciom.org/wp-content/uploads/NCIOM/projects/access_study08/HealthAccess_FinalReport.pdf) (last visited March 2, 2014)
513. Id. at 18-19, 102
514. 2013 State Physician Workforce Data Book, CENTER FOR WORKFORCE STUDIES, 7, ASSOCIATION OF AMERICAN MEDICAL COLLEGES 2013, <https://www.aamc.org/download/362168/data/2013statephysicianworkforcedatabook.pdf> (last visited March 3, 2014)
515. Expanding Access to Health Care in North Carolina, 107, NC INST. MEDICINE (2009), [http://www.nciom.org/wp-content/uploads/NCIOM/projects/access\\_study08/HealthAccess\\_FinalReport.pdf](http://www.nciom.org/wp-content/uploads/NCIOM/projects/access_study08/HealthAccess_FinalReport.pdf); Providers in Demand: North Carolina's Primary Care and Specialty Supply, N.C. INST. OF MED. 2007, 20-21, [http://www.nciom.org/wp-content/uploads/2007/06/provider\\_supply\\_report.pdf](http://www.nciom.org/wp-content/uploads/2007/06/provider_supply_report.pdf)
516. 2012 Physician Specialty Data Book, Association of American Medical Colleges, 38, <https://members.aamc.org/eweb/upload/2012%20Physician%20Specialty%20Data%20Book.pdf>
517. The Maldistribution of Health Care Providers in Rural and Underserved Areas in North Carolina, 75 N.C. MED. J., 74, 77, <http://www.ncmedicaljournal.com/wp-content/uploads/2014/01/75119.pdf> (last visited March 16, 2014); US Census Bureau. Intercensal Estimates of the Resident Population for Counties and States: April 1, 2000 to July 1, 2010.
518. Personal Communication, GREAT Coalition Meeting, June 20, 2013. Conducted by Tiffany Lopinsky and Maggie Morgan, Notes on file with authors; Personal Communication, East Carolina University providers, November 2012, Conducted by Maggie Morgan, Notes on file with authors.
519. Erin Fraher et. al., Trends in Graduate Medical Education in North Carolina: Challenges and Next Steps, UNC CTR. FOR HEALTH SERVICES RESEARCH, 2, [http://www.shepscenter.unc.edu/hp/publications/GME\\_Mar2013.pdf](http://www.shepscenter.unc.edu/hp/publications/GME_Mar2013.pdf).
520. Id.
521. Id.
522. 21 NCAC 32S.0213 (d); 21 NCAC 36.0120(5)
523. North Carolina Health Professions, Data Book: 2011, UNC CTR. FOR HEALTH SERVICES RESEARCH, 10, [http://www.shepscenter.unc.edu/hp/publications/2011\\_HPDS\\_Databook.pdf](http://www.shepscenter.unc.edu/hp/publications/2011_HPDS_Databook.pdf) (last visited March 2, 2014); NC using new health care models to tackle doctor shortage, WNCN, January 1, 2014, <http://www.wncn.com/story/24021428/nc-using-new-health-care-models-to-tackle-doctor-shortage> (last visited March 3, 2014)
524. Total Nurse Practitioners per 100,000 Population, KAISER FAM. FOUND. (2011), <http://kff.org/other/state-indicator/nurse-practitioners-per-100000-pop/>
525. North Carolina Health Professions, Data Book: 2011, UNC CTR. FOR HEALTH SERVICES RESEARCH, 10, [http://www.shepscenter.unc.edu/hp/publications/2011\\_HPDS\\_Databook.pdf](http://www.shepscenter.unc.edu/hp/publications/2011_HPDS_Databook.pdf) (last visited March 2, 2014); Total Physician Assistants per 100,000 Population, KAISER FAM. FOUND. (2011), <http://kff.org/other/state-indicator/physician-assistants-per-100000-pop/>
526. The Maldistribution of Health Care Providers in Rural and Underserved Areas in North Carolina, 75 N.C. MED. J., 74, 78, <http://www.ncmedicaljournal.com/wp-content/uploads/2014/01/75119.pdf> (last visited March 16, 2014).
527. Physician Assistants and Nurse Practitioners in Specialty Care: Six Practices Make It Work, CALIFORNIA HEALTHCARE FOUNDATION, 2009, 3, <http://www.chcf.org/-/media/MEDIA%20LIBRARY%20Files/PDF/N/PDF%20NPPAModels.pdf>; Task Force on the North Carolina Nursing Workforce Report, Updated 2007, N.C. INSTITUTE. OF MED., 37, <http://www.nciom.org/wp-content/uploads/NCIOM/projects/nursingworkforce/fullreport.pdf>
528. The Latest Data On Primary Care Nurse Practitioners and Physicians: Can We Afford To Waste Our Workforce? Health Affairs Blog, 2013, <http://healthaffairs.org/blog/2013/06/18/the-latest-data-on-primary-care-nurse-practitioners-and-physicians-can-we-afford-to-waste-our-workforce/>
529. Providers in Demand: North Carolina's Primary Care and Specialty Supply, N.C. INST. OF MED. 2007, 20-21, [http://www.nciom.org/wp-content/uploads/2007/06/provider\\_supply\\_report.pdf](http://www.nciom.org/wp-content/uploads/2007/06/provider_supply_report.pdf)
530. Disparities in patient experiences, health care processes, and outcomes: The role of patient-provider racial, ethnic, and language concordance, THE COMMONWEALTH FUND; July 2004; LaViest TA and Nuru-Jeter A. Is doctor-patient race concordance associated with greater satisfaction with care? 43 J HEALTH SOC BEHAV. 296-306 2(002)
531. Providers in Demand: North Carolina's Primary Care and Specialty Supply, N.C. INST. OF MED. 2007, [http://www.nciom.org/wp-content/uploads/2007/06/provider\\_supply\\_report.pdf](http://www.nciom.org/wp-content/uploads/2007/06/provider_supply_report.pdf)
532. North Carolina Health Careers Access Program, <http://nchcap.unc.edu/>
533. Medical, Dental, and Psychiatric Recruitment Opportunities: For Providers, N.C. OFF. FOR RURAL HEALTH, <http://www.ncdhhs.gov/orhcc/recruitment/medical.htm> (last visited March 10, 2014)
534. Id.
535. Id.
536. Id.
537. Full-Time Loan Repayment Program, NAT. HEALTH SERV. CORPS, <http://nhsc.hrsa.gov/loanrepayment/fulltimeprogram/>





## 2014 NORTH CAROLINA STATE REPORT

- index.html.
538. Id.
539. 2013 North Carolina Medical, Dental, and Psychiatric Placement Services and Shortage Designation, OFF. OF RURAL HEALTH, [http://www.ncdhhs.gov/orhcc/profile\\_placement\\_services.pdf](http://www.ncdhhs.gov/orhcc/profile_placement_services.pdf) (last visited March 10, 2014)
540. Id.
541. Id.
542. J. Spero et. al., CECIL B. SHEPS CENTER FOR HEALTH SERVICES RESEARCH, U.N.C. CHAPEL HILL, July 31, 2013, [http://www.nciom.org/wp-content/uploads/2013/04/Spero\\_7-31-13.pdf](http://www.nciom.org/wp-content/uploads/2013/04/Spero_7-31-13.pdf) (last accessed March 10, 2014)
543. Id.
544. Campbell University's medical school partners with Southeastern Health, Campbell University, Feb. 20, 2013, <http://www.campbell.edu/news/item/campbell-university-medical-school-partners-with-southeastern-health>
545. National Center for the Analysis of Healthcare Data 2011; Osteopathic Physicians: An Answer To Rural Health Care Needs? Kaiser Health News, March 11, 2013, <http://www.kaiserhealthnews.org/stories/2013/march/11/osteopaths-answer-to-rural-health-care-needs.aspx> (last accessed March 10, 2014)
546. New Campbell Med School Trains Rural Health Doctors, North Carolina Health News, Aug. 23, 2013, <http://www.northcarolinahealthnews.org/2013/08/23/new-campbell-med-school-trains-rural-health-doctors/>
547. Miller et. al., Characteristics of osteopathic physicians choosing to practice rural primary care, J Am Osteopath Assoc. 106(5):274-9 (2006), <http://www.ncbi.nlm.nih.gov/pubmed/16717369> (showing male osteopathic physicians in Texas were more than twice as likely to practice in rural areas than other physician groups); Chen et. al., Which Medical Schools Produce Rural Physicians? A 15-Year Update, Academic Medicine, Vol. 85, No. 4 (2010) (national survey showing 18% of osteopathic physicians practicing in rural areas compared to 11% of physicians overall), [http://www.siumed.edu/academy/jc\\_articles/Distlehorst\\_0410.pdf](http://www.siumed.edu/academy/jc_articles/Distlehorst_0410.pdf) (last accessed March 10, 2014)
548. Med school receives approval for first residency program, Campbell University, December 5, 2013, <http://www.campbell.edu/news/item/med-school-receives-approval-for-first-residency-programs>
549. Id.
550. Erin Fraher et. al, Trends in Graduate Medical Education in North Carolina: Challenges and Next Steps, UNC CTR. FOR HEALTH SERVICES RESEARCH, [http://www.shepscenter.unc.edu/hp/publications/GME\\_Mar2013.pdf](http://www.shepscenter.unc.edu/hp/publications/GME_Mar2013.pdf).
551. Id.
552. Innovative Program Tackles Shortages in Primary Care, N.C. ACADEMY OF FAMILY PHYSICIANS, June 1, 2010, [http://www.ncafp.com/residents\\_and\\_students/innovative-program-tackles-shortage-primary-care](http://www.ncafp.com/residents_and_students/innovative-program-tackles-shortage-primary-care)
553. Jay Price, Blue Cross and UNC create medical training program for veterans, NEWS & OBSERVER, December 3, 2012, <http://www.newsobserver.com/2012/12/03/2522883/blue-cross-and-unc-create-medical.html>
554. Erin Fraher et. al , Trends in Graduate Medical Education in North Carolina: Challenges and Next Steps, UNC CTR. FOR HEALTH SERVICES RESEARCH, [http://www.shepscenter.unc.edu/hp/publications/GME\\_Mar2013.pdf](http://www.shepscenter.unc.edu/hp/publications/GME_Mar2013.pdf).
555. 2011 State Physician Workforce Data Book, Section 4-Retention, AAMC, <https://www.aamc.org/download/263512/data>.
556. Erin Fraher et. al, Trends in Graduate Medical Education in North Carolina: Challenges and Next Steps, UNC CTR. FOR HEALTH SERVICES RESEARCH, 2, [http://www.shepscenter.unc.edu/hp/publications/GME\\_Mar2013.pdf](http://www.shepscenter.unc.edu/hp/publications/GME_Mar2013.pdf).
557. Id.
558. Id.
559. Id.
560. Id. at 12
561. Pamela A. Ohman-Strickland, et al., Quality of Diabetes Care in Family Medicine Practices: Influence of Nurse Practitioners and Physician Assistants, 6 ANNALS OF FAMILY MED. 14 (2008).
562. Nurse Practitioners and Primary Care, HEALTH AFFAIRS, Health Policy Brief (2012); P. Venning et al., Randomised control trial comparing cost effectiveness of general practitioners and nurse practitioners to primary care , BRIT. MED. J. 320 (2000), <http://www.ncbi.nlm.nih.gov/pubmed/11934775>; Summaries for Patients: Quality of Health Care Provided by Nurse Practitioners, Physician Assistants, and Doctors, 143 ANNALS OF INTERNAL MED. 10, 1172 (2005); Ira B. Wilson et al., Quality of HIV Care Provided by Nurse Practitioners, Physician Assistants, and Physicians., 143 ANNALS OF INTERNAL MED. 10, 729-36 (2005).
563. Section 330A-1 of the Public Health Service Act (42 U.S.C. 254b et seq.) as added by Section 5208 of the Patient Protection and Affordable Care Act, Public Law 111-148; and Section 4002 of the Patient Protection and Affordable Care Act, Public Law 111-148; Section 3114 of the Patient Protection and Affordable Care Act, Public Law 111-148
564. Task Force on the North Carolina Nursing Workforce Report, Updated 2007, N.C. INSTITUTE OF MED., <http://www.nciom.org/wp-content/uploads/NCIOM/projects/nursingworkforce/fullreport.pdf>
565. Id.
566. Expanding Access to Health Care in North Carolina, NC INST. MEDICINE, [http://www.nciom.org/wp-content/uploads/NCIOM/projects/access\\_study08/HealthAccess\\_FinalReport.pdf](http://www.nciom.org/wp-content/uploads/NCIOM/projects/access_study08/HealthAccess_FinalReport.pdf).
567. Id. at 107
568. Mark Schwartz et. al., Changes in Medical Students' Views of Internal Medicine Careers From 1990 to 2007, 8 ARCH. INTERN. MED. 744, <http://archinte.jamanetwork.com/article.aspx?articleid=227186>. (last visited March 10, 2014)
569. Provider Payments, Medicaid.gov, <http://www.medicaid.gov/AffordableCareAct/Provisions/Provider-Payments.html>
570. Disparities in patient experiences, health care processes, and outcomes: The role of patient-provider racial, ethnic, and language concordance, TheCommonwealth Fund; July 2004; LaViest TA, Nuru-Jeter A. Is doctor-patient race concordance associated with greater satisfaction with care? 43 J HEALTH SOC BEHAV. (2002) 296-306
571. Providers in Demand: North Carolina's Primary Care and Specialty Supply, N.C. INST. OF MED. 2007, [http://www.nciom.org/wp-content/uploads/2007/06/provider\\_supply\\_report.pdf](http://www.nciom.org/wp-content/uploads/2007/06/provider_supply_report.pdf)
572. Fitzhugh Mullen et. al., The Social Mission of Medical Education: Ranking the Schools, ANNALS OF INTERNAL MED.,
573. The Registered Nurse Population: Findings from the 2008 National Sample Survey of Registered Nurses, U.S. DEPT. OF HEALTH AND HUM.SERV., HRSA
574. Providers in Demand: North Carolina's Primary Care and Specialty Supply, N.C. INST. OF MED. 2007, [http://www.nciom.org/wp-content/uploads/2007/06/provider\\_supply\\_report.pdf](http://www.nciom.org/wp-content/uploads/2007/06/provider_supply_report.pdf)
575. Id.
576. Limitations on Nurse Practitioners, N.C. GENERAL STATUTES, Ch. 90, § 18.2; <http://www.aanp.org/legislation-regulation/state-practice-environment>
577. 21 N.C. Admin. Code § 36.0801(4)
578. Tyler Youths, Nurse Practitioner Independence is Good for Patients and Pocketbooks, NC INST. CON. L, 2013, <http://ncicl.org/article/868>.



579. Jeffrey Traczynski & Victoria Udalova, Nurse Practitioner Independence, Health Care Utilization, and Health Outcomes (March 15, 2013), [http://www.lafollette.wisc.edu/research/health\\_economics/Traczynski.pdf](http://www.lafollette.wisc.edu/research/health_economics/Traczynski.pdf); Tract Yee et al., Primary Care Workforce Shortages: Nurse Practitioner Scope-of-Practice Laws and Payment Policies, 13 Nat. Inst. For Health Care Reform (2013), <http://www.nihcr.org/PCP-Workforce-NPs>.
580. Conversations with officials at North Carolina Board of Nursing, July 2013; Interviews with Nurse Practitioners, July 2013, Conducted by Maggie Morgan and Tiffany Lopinsky.
581. Id.
582. Task Force on the North Carolina Nursing Workforce Report, Updated 2007, N.C. INSTITUTE OF MED., <http://www.nciom.org/wp-content/uploads/NCIOM/projects/nursingworkforce/fullreport.pdf>
583. Cripps et al., An evaluation of diabetes-related measures of control after 6 months of clinical pharmacy specialist intervention., 24 J. PHARMACY PRACTICE, 332, 338; Marie Smith et al., In Connecticut: Improving Patient Medication Management In Primary Care., 30 J. PHARMACY PRACTICE, 646, 654 (2011), <http://content.healthaffairs.org/content/30/4/646.full>; Carole W. Cranor, Barry A. Bunting, and Dale B. Christensen, The Asheville Project: Long-Term Clinical and Economic Outcomes of a Community Pharmacy Diabetes Care Program, 43 J. OF THE AM. PHARM. ASSOC. 173, 179-80 (2003), [http://healthmaprx.com/yahoo\\_site\\_admin/assets/docs/Cranor31.90105431.pdf](http://healthmaprx.com/yahoo_site_admin/assets/docs/Cranor31.90105431.pdf).
584. See Jane Sarasohn-Kahn, Pharmacists are a valuable member of the primary care team, HEALTHPOPULI (Oct. 1, 2012), <http://healthpopuli.com/2012/10/01/pharmacists-are-a-valuable-member-of-the-primary-care-team/>; The Informed Patient, The Pharmacist Is In and Nudging You to Take Your Pills, WALL ST. J., (June 26, 2012), <http://online.wsj.com/article/SB10001424052702304765304577483033614613256.html>.
585. See Frequently Asked Questions, THE ASHEVILLE PROJECT, [http://www.theashevilleproject.net/frequently\\_asked\\_questions](http://www.theashevilleproject.net/frequently_asked_questions) (last visited Apr. 27, 2013) ("Studies have shown consistently that more people have access to some form of health care via the pharmacy than any other source.")
586. R. Keith Campbell, Role of Pharmacists in Diabetes Management, 59 AM. J. HEALTH-SYS. PHARM. S18, S19 (2002), [http://www.hawaii.edu/hivandaids/Role\\_of\\_the\\_Pharmacist\\_in\\_Diabetes\\_Management.pdf](http://www.hawaii.edu/hivandaids/Role_of_the_Pharmacist_in_Diabetes_Management.pdf).
587. Trends in the Supply of Pharmacists in North Carolina, CECIL G. SHEPS CTR. FOR HEALTH SERVS. RESEARCH 1-2 (March 2010), [http://www.shepscenter.unc.edu/hp/publications/NCpharmacists\\_march2010.pdf](http://www.shepscenter.unc.edu/hp/publications/NCpharmacists_march2010.pdf).
588. IMS INST. FOR HEALTHCARE INFORMATICS, AVOIDABLE COSTS IN U.S. HEALTHCARE: THE \$200 BILLION OPPORTUNITY FROM USING MEDICINES MORE RESPONSIBLY (2013), [http://www.imshealth.com/deployedfiles/imshealth/Global/Content/Corporate/IMS%20Institute/RUOM-2013/IHIL\\_Responsible\\_Use\\_Medicines\\_2013.pdf](http://www.imshealth.com/deployedfiles/imshealth/Global/Content/Corporate/IMS%20Institute/RUOM-2013/IHIL_Responsible_Use_Medicines_2013.pdf) (last visited Nov. 20, 2013).
589. Id.
590. Id.
591. Id.
592. A Program Guide for Public Health: Partnering with Pharmacists in the Prevention and Control of Chronic Diseases, NAT'L CTR. FOR CHRONIC DISEASE PREVENTION AND HEALTH PROMOTION 3 (Aug. 2012), [http://www.cdc.gov/dhdsp/programs/nhdsp\\_program/docs/pharmacist\\_guide.pdf](http://www.cdc.gov/dhdsp/programs/nhdsp_program/docs/pharmacist_guide.pdf).
593. I A Program Guide for Public Health: Partnering with Pharmacists in the Prevention and Control of Chronic Diseases, NAT'L CTR. FOR CHRONIC DISEASE PREVENTION AND HEALTH PROMOTION 3, 5-11 (Aug. 2012), [http://www.cdc.gov/dhdsp/programs/nhdsp\\_program/docs/pharmacist\\_guide.pdf](http://www.cdc.gov/dhdsp/programs/nhdsp_program/docs/pharmacist_guide.pdf); Thomas Reinke, Medication Therapy Management Program in N.C. Saves \$13 Million, MANAGED CARE (Oct. 2011), <http://www.managedcaremag.com/content/medication-therapy-management-program-nc-saves-13-million>; Medication Therapy Management in Pharmacy Practice: Core Elements of an MTM Service Model, AM. PHARM. ASSOCIATION AND THE NAT'L ASSOC. OF CHAIN DRUG STORES FOUND. 5 (2d ed., 2008), [http://www.pharmacist.com/sites/default/files/files/core\\_elements\\_of\\_an\\_mtm\\_practice.pdf](http://www.pharmacist.com/sites/default/files/files/core_elements_of_an_mtm_practice.pdf), American Society of Health-System Pharmacists and National Community Pharmacists Association) support this definition.
594. Health Care Reform: Affordable Care Act, AM. PHARM. ASSOC., <http://www.pharmacist.com/health-care-reform-affordable-care-act> (last visited December 7, 2013).
595. Plan sponsors cannot require a beneficiary to have more than 3 chronic diseases in order to be eligible for the MTM program. Sponsors can set the minimum threshold at 2 or 3 chronic diseases.
596. CTR. FOR MEDICARE, DEPT. OF HEALTH & HUMAN SERVS., MEMORANDUM, CY2013 MEDICATION THERAPY MANAGEMENT PROGRAM GUIDANCE AND SUBMISSION INSTRUCTIONS 5 (2012), <http://www.cms.gov/MEDICARE/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/Downloads/Memo-Contract-Year-2013-Medication-Therapy-Management-MTM-Program-Submission-v041012.pdf>. (last visited March 14, 2014)
597. Id.
598. See e.g., Anandi Law, Mark Okamoto, and Peter Chang, Prevalence and types of disease management programs in community pharmacies in California, 11 J. MANAG. CARE PHARM., 505 (2005); Christina MacIntosh, et. al, Attitudes toward and factors affecting implementation of medication therapy management services by community pharmacists, 49 J. OF THE AM. PHARM. ASSOC. 26 (2009). See also Communication with Pharmacists, Asheville, North Carolina, November 17 and 19, 2013. Interviews conducted by Maggie Morgan, Tiffany Lopinsky, Sarah Downer, Leah Broadwell, and Nathaniel Counts.
599. Communication with Pharmacists, Asheville, Charlotte and Durham, N.C., February, March and November 2013. Interviews conducted by Maggie Morgan and Sarah Downer (Notes on file with Center)
600. Thomas Reinke, Medication Therapy Management Program in N.C. Saves \$13 Million, MANAGED CARE (Oct. 2011), <http://www.managedcaremag.com/content/medication-therapy-management-program-nc-saves-13-million>; Checkmeds NC Program Served over 21,000 Seniors in First Two Years, N.C. HEALTH & WELLNESS TRUST FUND (Oct. 29, 2009), <http://www.healthwellinc.com/NCHWTFSiteAdmin/Documents/PressCheckMedNCOutcomes10-29-09.pdf>.
601. Clayton Henkel, Life after the loss of the HWTF, THE PROGRESSIVE PULSE (June 17, 2011), <http://pulse.ncpolicywatch.org/2011/06/17/life-after-the-loss-of-the-hwtf/> (discussing the dissolution of the Health and Wellness Trust Fund and quoting Pam Seamans', the Executive Director of the NC Alliance for Health, remarks about the loss of the Health and Wellness Trust Fund).
602. Communication with Pharmacists, Wingate School of Pharmacy, February 2013. Interviews conducted by Maggie Morgan and Sarah Downer
603. North Carolina Medicaid Special Bulletin, DEPT. OF HEALTH AND HUMAN SERVS. (Jul. 2007), <http://www.ncdhhs.gov/dma/bulletin/PharmacyBulletin0707.pdf> (last visited March 14, 2014)
604. North Carolina Medicaid Pharmacy Newsletter, DEPT. OF HEALTH AND HUMAN SERVS. 3 (Nov. 2010), <http://www.ncdhhs.gov/dma/pharmnews/1110pharm.pdf> (last visited March 14, 2014)
605. Lisa Daigle and David Chen, Pharmacist Provider Status in 11 State Health Programs, AM. SOC. OF HEALTH-SYSTEM PHARM. (Sept. 2008), <http://www.ashp.org/DocLibrary/Advocacy/ProviderStatusPrograms.aspx>. (last visited March 14, 2014)
606. Id.



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607. See North Carolina Division of Medical Assistance website, <http://www.ncdhhs.gov/dma/pharmacy/>
608. The certification requirement can include “certification (BCPS, CGP) or ASHP Residency including two years clinical experience”, “PharmD degree with three years experience, plus completion of one NCCPC or ACPE Certificate Program”, or “BS degree with five years experience, plus completion of two certificate programs.” Betty Dennis, An Overview of the Clinical Pharmacist Practitioner in NC, N.C. ASSOC. OF PHARM., <http://www.ncap.affiniscape.com/displaycommon.cfm?an=1&subarticlenbr=98> (last visited March 10, 2014).
609. Id.
610. L. Douglas Ried, Home sweet medical home, 51 J. OF THE AM. PHARM. ASSOC. 152 (2003), <http://japha.org/article.aspx?articleid=1043919>. (last visited March 14, 2014)
611. Role of pharmacy in Community Care of North Carolina, CMTY. CARE OF N.C., <http://www.communitycarenc.com/population-management/pharmacy/> (last visited May 1, 2013).
612. Role of pharmacy in Community Care of North Carolina, CMTY. CARE OF N.C., <http://www.communitycarenc.com/population-management/pharmacy/> (last visited May 1, 2013); Michael Pentecost, Improving Health Care Quality: Current Concepts, 11 THE PERMANENTE J. 75 (2007), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3061389/>.
613. Pharmacy Administration Efforts, CMTY. CARE OF N.C. 5-7, <http://www.communitycarenc.com/media/related-downloads/overview-of-pharmacy-administration.pdf> (last visited May 1, 2013).
614. Id.
615. Id.
616. Mollie Ashe Scott et al., Integration of pharmacists a into patient-centered medical home, 52 J. OF THE AM. PHARM. ASSOC. 161, 166 (2011).
617. PGY1 Pharmacy Practice Residency with Managed Care Emphasis, THE UNIV. OF N.C. AT CHAPEL HILL, <https://pharmacy.unc.edu/programs/residencies/pgy1-pharmacy-practice-residency-with-managed-care-emphasis> (last visited Dec. 6, 2013); Hub on policy and advocacy, June 2013, AM. PHARM. ASSOC. (June 1, 2013), <http://www.pharmacist.com/hub-policy-and-advocacy-june-2013>.
618. Interviews with CCNC officials, December 2013 and January 2014, conducted by Maggie Morgan and Tiffany Lopinsky
619. Daniel G. Garrett and Benjamin M. Bluml, Patient self-management program for diabetes: first-year clinical, humanistic, and economic outcomes, 45 J. AM. PHARM. ASSOC. 130 (2005);
620. Focus on Health Reform: Medicaid’s New “Health Home” Option, THE HENRY J. KAISER FAMILY FOUND. 1 (Jan. 01, 2011), <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/8136.pdf>.
621. Focus on Health Reform: Medicaid’s New “Health Home” Option, THE HENRY J. KAISER FAMILY FOUND. 1, 2 (Jan. 01, 2011), <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/8136.pdf>.
622. Focus on Health Reform: Medicaid’s New “Health Home” Option, THE HENRY J. KAISER FAMILY FOUND. 1,2 (Jan. 01, 2011), <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/8136.pdf>.
623. 21 N.C. ADMIN CODE 46.3101(2)(g)(4), <http://www.ncbop.org/LawsRules/rules.3100.pdf>.
624. NNCC’s State-by-State Guide to Regulations Regarding Nurse Practitioner and Physician Practice, NAT’L NURSING CTR. CONSORTIUM (2008), <http://timeswampland.files.wordpress.com/2009/05/nncc-guide-to-np-practice-regulations-2008.pdf>; Physician Assistant FAQs, N.C. MED. BOARD, [http://www.ncmedboard.org/faqs/list/category/physician\\_assistant/](http://www.ncmedboard.org/faqs/list/category/physician_assistant/) (last visited Dec. 6, 2013).
625. ACA § 5313
626. Addressing Chronic Disease through Community Health Workers: A Policy and Systems-Level Approach, ctrS. for DiSeaSe coNtrol & preveNtioN, [http://www.cdc.gov/dhdsdp/docs/chw\\_brief.pdf](http://www.cdc.gov/dhdsdp/docs/chw_brief.pdf) (last visited Nov. 20, 2013).
627. Id.
628. Interviews at East Carolina University, Conducted by Maggie Morgan, Celeste David and Emily Aguirre. November 29-30, 2012.
629. Id.
630. See interim results from Peers for Progress/Alivio Medical Center study on use of promotores (on file at Center)
631. Community Health Workers/Promotores de Salud: Critical Connections in Communities, CTR. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/diabetes/projects/pdfs/comm.pdf>.
632. One-year results of a community-based translation of the Diabetes Prevention Program: Healthy-Living Partnerships to Prevent Diabetes (HELP PD) Project, 34 DIABETES CARE 1451, <http://www.ncbi.nlm.nih.gov/pubmed/21593290>.<http://www.ncbi.nlm.nih.gov/pubmed/21593290>.
633. Interviews, East Carolina University Conducted by Maggie Morgan, Celeste David and Emily Aguirre. November 29-30, 2012.
634. Id.
635. Id.
636. Lisa Sprague, Community Health Workers: A Front Line for Primary Care? Nat. Health Policy Forum, Sept. 2012, [http://www.nhpf.org/library/issue-briefs/IB846\\_CHW\\_09-17-12.pdf](http://www.nhpf.org/library/issue-briefs/IB846_CHW_09-17-12.pdf).
637. Section 1115 Demonstrations, <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/Section-1115-Demonstrations.html>.
638. Addressing Chronic Disease through Community Health Workers: A Policy and Systems-Level Approach, CTRS. FOR DISEASE CONTROL & PREVENTION, [http://www.cdc.gov/dhdsdp/docs/chw\\_brief.pdf](http://www.cdc.gov/dhdsdp/docs/chw_brief.pdf) (last visited Nov. 20, 2013).
639. Joan Van Nostrand, Community Health Worker Certification and Training: A National Survey of Regionally and State-Based Programs, May 2005, Southwest Rural Research Ctr., [http://medqi.bsd.uchicago.edu/documents/CHW\\_cert\\_final2005.pdf](http://medqi.bsd.uchicago.edu/documents/CHW_cert_final2005.pdf).
640. State Certification Programs, RURAL ASSISTANCE CTR., <http://www.raonline.org/communityhealth/chw/module3/certification.php>.
641. Joan Van Nostrand, Community Health Worker Certification and Training: A National Survey of Regionally and State-Based Programs, May 2005, Southwest Rural Research Ctr., [http://medqi.bsd.uchicago.edu/documents/CHW\\_cert\\_final2005.pdf](http://medqi.bsd.uchicago.edu/documents/CHW_cert_final2005.pdf).
642. Susan Mayfield-Johnson, Learning from Community Health Worker Certification and Credentialing Models: Texas, Ohio, Minnesota, Massachusetts, New Mexico and New York, CTR. FOR RESEARCH IN LEARNING & EDUC., UNIV. OF S. MISS., [http://www.michigan.gov/documents/mdch/CHW\\_Certification\\_and\\_Credentialing\\_MICHW\\_8.24.11\\_376346\\_7.pdf](http://www.michigan.gov/documents/mdch/CHW_Certification_and_Credentialing_MICHW_8.24.11_376346_7.pdf) (last visited Nov. 20, 2013).
643. Carl H. Rush, Basic of Community Health Credentialing, UNIV. OF ARIZ., <http://www.chw-nec.org/PDF/BASICS%20OF%20COMMUNITY%20HEALTH%20WORKER%20CREDENTIALING.PDF> (last visited Nov. 20, 2013).
644. See, e.g., Look AHEAD Research Group, Long-term Effects of a Lifestyle Intervention on Weight and Cardiovascular Risk Factors in Individuals With Type 2 Diabetes Mellitus: Four-Year Results of the Look AHEAD Trial, 170 ARCHIVES OF INTERNAL MED. 1566 (2010); William C. Knowler et al., 10-Year Follow-up of Diabetes Incidence and Weight



- Loss in the Diabetes Prevention Program Outcomes Study, 374 *THE LANCET* 1677 (2009).
645. William C. Knowler et al., 10-Year Follow-up of Diabetes Incidence and Weight Loss in the Diabetes Prevention Program Outcomes Study, 374 *THE LANCET* 1677 (2009).
646. *Id.*
647. See poverty data based on the Census Bureau's annual American Community Survey, as posted by the National Priorities Project, U.S. People in Poverty: 2011, <http://nationalpriorities.org/interactive-data/database/mashups/vv1n87jqixw8stsz/?gclid=CJL7lpy9-LgCFctxOgoduEIAYg>.
648. Food Environment Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-environment-atlas.aspx> (last updated Sept. 18, 2013).
649. Smith, Lindsey P., et al., Trends in US Home Food Preparation and Consumption, analysis of national nutrition surveys and time use studies from 1965-1966 to 2007-2008, *NUTRITION J.*, vol. 12 (April 2013), 45, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3639863/>.
650. Defined as having an annual income of \$10,890 or less for a single adult, or \$22,350 or less for a family of four in 2011. Annual Update of the Poverty Guidelines, 76 Fed. Reg. 3637 (Jan. 20, 2011), <http://aspe.hhs.gov/poverty/11fedreg.shtml>. Poverty data is based on the Census Bureau's annual American Community Survey, as posted by the National Priorities Project, U.S. People in Poverty: 2011, <http://nationalpriorities.org/interactive-data/database/mashups/vv1n87jqixw8stsz/?gclid=CJL7lpy9-LgCFctxOgoduEIAYg>; KIDS COUNT DATA CENTER, Children in Poverty (2011), North Carolina, data from the U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE), <http://datacenter.kidscount.org/data/tables/43-children-in-poverty#detailed/2/10-19,2,20-29,3,30-39,4,40-49,5,50-52,6-9/false/868,867,133,38,35/any/321,322> (last visited Mar. 14, 2014).
651. Database, Tables, and Calculators by Subject (North Carolina), U.S. DEP'T LABOR, BUR. LABOR STATISTICS, <http://data.bls.gov/timeseries/LASST37000003>.
652. State Fact Sheets: North Carolina, U.S. DEP'T AGRIC. ECON. RES. SERV. (Sept. 2012), at [http://www.ers.usda.gov/data-products/state-fact-sheets/state-data.aspx?StateFIPS=37&StateName=North Carolina](http://www.ers.usda.gov/data-products/state-fact-sheets/state-data.aspx?StateFIPS=37&StateName=North%20Carolina) (last visited Mar. 2014).
653. About 70% of North Carolina's population lives in urban areas and the remaining 30% in rural areas. By comparison, nationally only about 16.5% of the population lives in rural areas. State Fact Sheets: United States, U.S. DEP'T AGRIC., ECON. RES. SERV. (Sept. 2012), <http://www.ers.usda.gov/data-products/state-fact-sheets/state-data.aspx?StateFIPS=00>.
654. Definitions of Food Security, U.S. DEP'T AGRIC., ECON. RES. SERV., at <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx> (last visited Mar. 2014).
655. Alisha Coleman-Jensen, et al., Household Food Security in the United States in 2012, ECONOMIC RESEARCH REPORT NO. 155 (Sept. 2013), <http://www.ers.usda.gov/publications/err-economic-research-report/err155.aspx>; FOOD RES. & ACTION CTR., FOOD HARDSHIP IN AMERICA 2012 (Feb. 2013), [http://frac.org/pdf/food\\_hardship\\_2012.pdf](http://frac.org/pdf/food_hardship_2012.pdf) [hereinafter Food Hardship].
656. Alisha Coleman-Jensen, et al., Household Food Security in the United States in 2012, ECONOMIC RESEARCH REPORT NO. 155 (Sept. 2013), <http://www.ers.usda.gov/publications/err-economic-research-report/err155.aspx>.
657. White Paper: Health Impact Assessment of Proposed Changes to the Supplemental Nutrition Assistance Program, HEALTH IMPACT PROJECT 18 (July 2013), <http://www.healthimpactproject.org/resources/body/Health-Impact-Project-Farm-Bill-SNAP-white-paper-07-30-13.pdf>.
658. Hilary K. Seligman & Dean Schillinger, Hunger and Socioeconomic Disparities in Chronic Disease, 363 *NEW ENG. J. MED.* 1, 7 (2010).
659. *Id.*
660. FOOD RES. & ACTION CTR., FOOD HARDSHIP IN AMERICA 2012 (Feb. 2013), [http://frac.org/pdf/food\\_hardship\\_2012.pdf](http://frac.org/pdf/food_hardship_2012.pdf).
661. Feldscher, Karen, Pinpointing the higher cost of a healthy diet: HSPH study finds it takes \$1.50 more per day to eat a nutritious diet rather than an unhealthy one, *HARVARD GAZETTE*, (Dec. 5, 2013), <http://news.harvard.edu/gazette/story/2013/12/pinpointing-the-higher-cost-of-a-healthy-diet/>.
662. Seligman & Schillinger, *supra* note 658, at 6.
663. SNAP/Food Stamp Participation: SNAP Caseloads Slightly Increase from July to August 2013, FOOD RES. & ACTION CTR., at <http://frac.org/reports-and-resources/snapfood-stamp-monthly-participation-data/#aug> (last visited December 9, 2013).
664. Building a Healthy America: A Profile of the Supplemental Nutrition Assistance Program, U.S. DEP'T AGRIC., (April 2012), <http://www.fns.usda.gov/ora/MENU/Published/snap/FILES/Other/BuildingHealthyAmerica.pdf> [hereinafter Building a Healthy America].
665. *Id.*
666. See e.g., 7 C.F.R. pt. 273 (2012) (certification of eligible households); 7 C.F.R. pt. 277 (2012) (payments of certain administrative costs of state agencies).
667. *Id.*
668. See U.S. DEP'T AGRIC., FOOD & NUTR. SERVS., SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM STATE OPTIONS REPORT 46 (Nov. 2010), [http://www.fns.usda.gov/snap/rules/Memo/Support/State\\_Options/9-State\\_Options.pdf](http://www.fns.usda.gov/snap/rules/Memo/Support/State_Options/9-State_Options.pdf).
669. CTR. BUDGET & POL'Y PRIORITIES, NORTH CAROLINA FOOD AND NUTRITION SERVICES, <http://www.cbpp.org/files/1-14-13fa/NC.pdf> [hereinafter N.C. Food and Nutrition Services] (last viewed August 16, 2013).
670. *Id.*
671. *Id.*
672. These amounts do not include the temporary 13.6% boost in benefits provided by economic recovery legislation, which expired in November 2013. N.C. Food and Nutrition Services, *supra* note 669.
673. Stacy Dean & Dottie Rosenbaum, SNAP Benefits Will Be Cut for All Participants in November 2013, Ctr. Budget & Pol'y Priorities, (August 2, 2013), <http://www.cbpp.org/cms/?fa=view&id=3899>.
674. *Id.*
675. *Id.*
676. Seligman, Hilary K. et al. Exhaustion of Food Budgets at Month's End and Hospital Admissions for Hypoglycemia, *Health Affairs*, (Jan. 2014) Vol. 33 no. 1, 116-123.
677. N.C. Food and Nutrition Services, *supra* note 669.
678. N.C. Food and Nutrition Services, *supra* note 669.
679. N.C. Food and Nutrition Services, *supra* note 669.
680. FOOD RES. & ACTION CTR., Access and Access Barriers to Getting Food Stamps: A Review of the Literature 20 (Feb. 2008), <http://frac.org/wp-content/uploads/2009/09/fspaccess.pdf>.
681. Building a Healthy America, *supra* note 664.
682. In North Carolina, any individual convicted of a felony involving the possession, use, or distribution of a controlled substance on or after August 23, 1996 is permanently disqualified from receiving FNS benefits in the state. Exceptions may apply for individuals convicted of a Class H or Class I felony. A Quick Guide to Food Stamp Eligibility and Benefits, CTR. BUDGET & POL'Y PRIORITIES, at <http://www.cbpp.org/cms/index.cfm?fa=view&id=1269> (last visited Oct.





## 2014 NORTH CAROLINA STATE REPORT

13, 2012); North Carolina DHHS On-Line Manual: Food and Nutrition Services FSs290.01-290.02.

683. Do I Qualify for Benefits? Morefood.org, <http://morefood.org/do-i-qualify-for-benefits-start-by-looking-at-gross-income/>.

684. FNS Eligibility Requirements, N.C. Dep't Health & Hum. Servs., Div. Soc. Servs. <http://www.ncdhhs.gov/dss/foodstamp/index.htm> (last visited Aug. 26, 2013).

685. ePass Getting Started, N.C. DEP'T HEALTH & HUM. SERVS., <https://epass.nc.gov/CitizenPortal/cw/PlayerPage.do?&id=5485196169&page=NCIntakeOptionalLoginNoCreate> (last visited Aug. 26, 2013).

686. If social security is the only source of income in a household, FNS administration is handled by the Social Security Administration (SSA). SSA is open Monday through Friday from 9am to 3:30 pm in North Carolina. Local County Directory, N.C. DEP'T HEALTH & HUM. SERVS., DIV. SOC. SERVS at <http://www.ncdhhs.gov/dss/local/index.htm> (last visited Nov. 18, 2012).

687. Application for Food & Nutrition Services, N.C. DEP'T HEALTH & HUM. SERVS., <http://info.dhhs.state.nc.us/olm/forms/dss/dss-8207.pdf> (last visited Mar. 18, 2014).

688. Id.

689. North Carolina DHHS On-line Manual: Food and Nutrition Services FSs310.01, N.C. DEP'T HEALTH & HUM. SERVS., [http://info.dhhs.state.nc.us/olm/manuals/dss/ei-30/man/FSs310.htm#P12\\_65](http://info.dhhs.state.nc.us/olm/manuals/dss/ei-30/man/FSs310.htm#P12_65) (last viewed Mar. 14, 2014).

690. Thomas Goldsmith & Annalise Frank, NC's Online Food Assistance Program Produces Long Waits, Frustration, NEWSOBSERVER.COM (August 5, 2013), <http://www.newsobserver.com/2013/08/05/3085320/states-online-food-assistance.html>.

691. Letter from the U.S.D.A. Food & Nutrition Serv. to N.C. Secretary of Dep't of Health & Hum. Servs., (December 11, 2013). <http://www.ncdhhs.gov/dss/dcdl/dssdirector/DIR-07-2013a2.pdf>

692. Thomas Goldsmith & Annalise Frank, NC's Online Food Assistance Program Produces Long Waits, Frustration, NEWSOBSERVER.COM (August 5, 2013), <http://www.newsobserver.com/2013/08/05/3085320/states-online-food-assistance.html>.

693. Letter from the U.S.D.A. Food and Nutrition Serv. to N.C. Secretary of Dep't of Health & Hum. Servs., (December 11, 2013). <http://www.ncdhhs.gov/dss/dcdl/dssdirector/DIR-07-2013a2.pdf>

694. Thomas Goldsmith & Annalise Frank, NC's Online Food Assistance Program Produces Long Waits, Frustration, NEWSOBSERVER.COM (August 5, 2013), <http://www.newsobserver.com/2013/08/05/3085320/states-online-food-assistance.html>.

695. Mollerus, Meghann, Guilford DSS Adds Resources for Food Stamp Issues, WWW.DIGTRIAD.COM, (Dec. 31, 2013), <http://www.digtriad.com/news/local/article/311142/57/Guilford-DSS-Adds-Resources-for-Food-Stamp-Issues>.

696. Id.

697. Salois, Matthew J., Obesity and Diabetes, The Built Environment, and the 'Local' Food Economy in the United States, 2007, 10 J. ECONOMICS AND HUMAN BIOLOGY 35, 38 (2012).

698. More than 1,000 New Farmers Markets Recorded Across Country as USDA Directory Reveals 17 Percent Growth, U.S. Dep't Agric., <http://www.usda.gov/wps/portal/usda/usdahome?contentid=2011/08/0338.xml&contentidonly=true> (last visited Sept. 25, 2013).

699. Recommended Community Strategies and Measurements to Prevent Obesity in the United States: Implementation and Measurement Guide 15 (July 2009), [http://www.cdc.gov/obesity/downloads/community\\_strategies\\_guide.pdf](http://www.cdc.gov/obesity/downloads/community_strategies_guide.pdf); Matthew J. Salois, Obesity and

Diabetes, The Built Environment, and the 'Local' Food Economy in the United States, 2007, 10 J. ECONOMICS AND HUMAN BIOLOGY 35, 36 (2012).

700. A Guide to SNAP/EBT at Farmers' Markets in North Carolina, (January 2013), [http://www.eatsmartmovemorenc.com/NCFarmersMarketsGuideSNAP\\_EBT/Texts/Guide%20to%20SNAP%20at%20Farmers%20Markets%20in%20North%20Carolina%20%20Steps,%20Best%20Practices%20and%20ResourcesKat%20Bawden\\_January%202013.pdf](http://www.eatsmartmovemorenc.com/NCFarmersMarketsGuideSNAP_EBT/Texts/Guide%20to%20SNAP%20at%20Farmers%20Markets%20in%20North%20Carolina%20%20Steps,%20Best%20Practices%20and%20ResourcesKat%20Bawden_January%202013.pdf).

701. Id.

702. Id.

703. Women, Infants, and Children, U.S. DEP'T AGRIC., FOOD & NUTR. SERVS., at <http://www.fns.usda.gov/wic/> (last visited Mar. 14, 2014).

704. About WIC: WIC at a Glance, U.S. DEP'T AGRIC., FOOD & NUTR. SERVS., at <http://www.fns.usda.gov/wic/aboutwic/wicataglace.htm> [hereinafter WIC at a Glance] (last visited Mar. 14, 2014).

705. WIC Program: Total Participation, U.S. DEP'T AGRIC., FOOD & NUTR. SERVS., at <http://www.fns.usda.gov/pd/26wifypart.htm> [hereinafter WIC: Total Participation] (as of Aug. 9, 2013).

706. WIC at a Glance, *supra* note 704.

707. Effects of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC): A Review of Recent Research, U.S. DEP'T AGRIC., FOOD & NUTR. SERVS., 14, 39 (Jan. 2012), <http://www.fns.usda.gov/Ora/menu/Published/WIC/FILES/WICMedicaidLitRev.pdf>.

708. Id.

709. WIC at a Glance, *supra* note 673; U.S. Dep't Agric., Food & Nutr. Servs., WIC Program, Average Monthly Benefit Per Person, at <http://www.fns.usda.gov/pd/25wifavgfd.htm> [hereinafter WIC Monthly Benefit] (as of August 9, 2013).

710. Women, Infants, & Children: Who Is Eligible for WIC?, NUTRITIONNC.COM, <http://www.nutritionnc.com/wic/wiceligb.htm> (last viewed August 27, 2013).

711. Id.

712. Id.

713. WIC at a Glance, *supra* note 704.

714. WIC Food Packages, U.S. DEP'T AGRIC., FOOD & NUTR. SERVS., <http://www.fns.usda.gov/wic/benefitsandservices/foodpkg.htm> (last visited Mar. 14, 2014).

715. Id.

716. Women, Infants, & Children: Who Is Eligible for WIC?, NUTRITIONNC.COM, <http://www.nutritionnc.com/wic/wiceligb.htm> (last viewed Aug. 27, 2013).

717. 7 C.F.R. § 246.12 (2012); Nell Tessman & Andy Fisher, State Implementation of the New WIC Produce Package: Opportunities and Barriers for WIC Clients to Use Their Benefits at Farmers Markets, CMTY. FOOD SEC. COAL. 2, 5 (2009), [http://alichelaw.org/uploads/asset\\_file/420/2009\\_WIC\\_Farmers\\_Market\\_Report.pdf](http://alichelaw.org/uploads/asset_file/420/2009_WIC_Farmers_Market_Report.pdf) (last visited Mar. 14, 2014).

718. Nell Tessman & Andy Fisher, State Implementation of the New WIC Produce Package: Opportunities and Barriers for WIC Clients to Use Their Benefits at Farmers Markets, CMTY. FOOD SEC. COAL. 2, 5 (2009), [http://alichelaw.org/uploads/asset\\_file/420/2009\\_WIC\\_Farmers\\_Market\\_Report.pdf](http://alichelaw.org/uploads/asset_file/420/2009_WIC_Farmers_Market_Report.pdf) (last visited Mar. 14, 2014); States that Authorize Farmers to Accept WIC Cash Value Vouchers (revised as of October 4, 2012), U.S. Dep't of Agric., Food & Nutrition Serv., <http://www.fns.usda.gov/wic/WIC-CVV-map.pdf> (last visited Mar. 14, 2014). The states that authorize CVV at farmers markets are: California, Oregon, Alaska, Montana, Colorado, Arizona, Oklahoma, Minnesota, Michigan, Ohio, South Carolina, Maryland, District of Columbia, New Jersey, New York, Connecticut, Massachusetts, Rhode Island, and Maine, as well as the Choctaw Nation, Guam, and the Northern Mariana Islands.





719. 7 C.F.R. §246.11 (2012).
720. Personal communication with N.C. WIC personnel, Dec. 12, 2013. Conducted by Sarah Downer.
721. Id.
722. Id.
723. Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Eligibles and Coverage – 2010, U.S. DEP'T AGRIC., FOOD & NUTR. SERVS., (Jan. 2013), <http://www.fns.usda.gov/Ora/menu/Published/WIC/FILES/WICEligibles2010Sum.pdf>.
724. Personal communication with N.C. WIC personnel, Dec. 12, 2013. Conducted by Sarah Downer.
725. Id.
726. A Look Inside Food Deserts, CTRS. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/features/fooddeserts/> (last updated Mar. 14, 2014).
727. About the Atlas, USDA Econ. Research Serv., <http://www.ers.usda.gov/data-products/food-access-research-atlas/about-the-atlas.aspx#.UjsFDRb5jU4> (last updated Sept. 18, 2013).
728. Id.
729. Food Environment Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-environment-atlas.aspx> (last updated Sept. 18, 2013).
730. North Carolina has 458,553 children with low access to a store and 226,360 seniors. Food Environment Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-environment-atlas.aspx> (last updated Sept. 18, 2013).
731. Id.
732. 6.5% of North Carolinians are low income and have low access to a store compared to 5.6% nationwide. 1.1% of North Carolinians have low access to a store and no household vehicle compared to 0.67% nationwide. Id.
733. Id.
734. Alisha Coleman-Jensen et al., Household Food Security in the United States in 2012, E.R.R. No. 155, USDA Econ. Research Serv. 19 (Sept. 2013), <http://www.ers.usda.gov/publications/err-economic-research-report/err155.aspx#.Ujsa6Bb5jU5>; Food Hardship in America 2012, FOOD RESEARCH AND ACTION CENTER (FRAC), (Feb. 2013), [http://frac.org/pdf/food\\_hardship\\_2012](http://frac.org/pdf/food_hardship_2012).
735. Rose, Donald et al., Deserts in New Orleans?: Illustrations of Urban Food Access and Implications for Policy. Electronic conference proceedings from Understanding the Economic Concepts and Characteristics of Food Access, UNIV. OF MICH. NAT'L POVERTY CTR. 15-16 (Feb. 2009), <http://www.npc.umich.edu/news/events/food-access/index.php>, [http://www.npc.umich.edu/news/events/food-access/rose\\_et\\_al.pdf](http://www.npc.umich.edu/news/events/food-access/rose_et_al.pdf).
736. Id.
737. Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences, U.S. DEP'T OF AGRIC., p. 52 (Ch. 4), [ap036d\\_1\\_1\(1\).pdf](http://www.ers.usda.gov/data-products/food-environment-atlas.aspx).
738. Julie Henry, Corner Stores Key to Reducing North Carolina's Food Deserts, N.C. DEP'T OF HEALTH & HUM. SRVS. (May 5, 2011), [http://www.ncdhs.gov/pressrel/2011/2011-05-05-corner\\_stores.htm](http://www.ncdhs.gov/pressrel/2011/2011-05-05-corner_stores.htm).
739. Food Environment Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-environment-atlas.aspx> (last updated Sept. 18, 2013).
740. Id.
741. Per capita spending on fast food in 2007 for neighboring states is as follows: South Carolina \$711.51, Virginia \$721.82, Tennessee \$702.97, Kentucky \$666.23. Only Georgia's per capita spending on fast food was comparable to North Carolina's at \$749.66. Increase in food spending was calculated using the raw data available for download in the Food Environment Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-environment-atlas.aspx> (last updated Sept. 18, 2013).
742. Examining the Impact of Food Deserts on Public Health in Chicago, MARI GALLAGHER RESEARCH & CONSULTING GROUP 5 (2006), <http://www.yaleruddcenter.org/resources/upload/docs/what/policy/ChicagoFoodDesertReport.pdf>.
743. Healthier Food Retail: Beginning the Assessment Process in Your State or Community, CTRS. FOR DISEASE CONTROL & PREVENTION, DIV. OF NUTR., PHYSICAL ACTIVITY, & OBESITY 1, <http://www.cdc.gov/obesity/downloads/HFRassessment.pdf>, (last visited Oct. 16, 2013); Examining the Impact of Food Deserts on Public Health in Chicago, Mari Gallagher Research & Consulting Group 29 (2006), <http://www.yaleruddcenter.org/resources/upload/docs/what/policy/ChicagoFoodDesertReport.pdf>.
744. Sarah Treuhaft & Allison Karpyn, The Grocery Gap: Who Has Access to Healthy Food and Why it Matters, POLICY LINK & THE FOOD TRUST 17 (2010) [hereinafter The Grocery Gap], <http://www.policylink.org/atf/cf/%7B97C6D565-BB43-406D-A6D5-ECA3BBF35AF0%7D/FINALGroceryGap.pdf>.
745. Id.
746. New Report: North Carolina is the 14th Most Obese State in the Nation, [WWW.HEALTHYAMERICANS.ORG](http://www.healthymamericans.org/reports/obesity2011/release.php?stateid=NC), <http://www.healthymamericans.org/reports/obesity2011/release.php?stateid=NC> (last visited Mar. 14, 2014).
747. Giang, T. et al. Closing the Grocery Gap in Underserved Communities: The Creation of the Pennsylvania Fresh Food Financing Initiative, J. PUBLIC HEALTH MGMT. & PRACTICE 14, no. 3 (2008): 272-279; Morland, K, et. al. Supermarkets, other Food Stores, and Obesity: The Atherosclerosis Risk in Communities Study, Am. J. Prev. Med. 30, no 4. (2006): 333-339.
748. Examining the Impact of Food Deserts on Public Health in Chicago, MARI GALLAGHER RESEARCH & CONSULTING GROUP 29 (2006), <http://www.yaleruddcenter.org/resources/upload/docs/what/policy/ChicagoFoodDesertReport.pdf>.
749. The Grocery Gap, *supra* note 744.
750. Id.
751. Id.
752. House Bill 957, 2013-2014 Session, N.C. GEN. ASSEMBLY, <http://www.ncga.state.nc.us/gascripts/BillLookup/BillLookup.pl?Session=2013&BillID=H957>.
753. Taylor Shaw, Respite in N.C.'s Food Deserts, THE CHARLOTTE POST (May 22, 2013), <http://www.thecharlottepost.com/index.php?src=news&refno=5627&category=News>.
754. House Bill 957, 2013-2014 Session, N.C. GEN. ASSEMBLY, <http://www.ncga.state.nc.us/gascripts/BillLookup/BillLookup.pl?Session=2013&BillID=H957>.
755. Letter to the Chairmen of the N.C. Gen. Assembly Legislative Research Commission from Sen. Phil Berger and Rep. Thom Tillis, (Oct. 29, 2013), <http://www.ncleg.net/documents/sites/committees/lrc/LRC%202013%20Authorization%20Letter.pdf>.
756. Id.
757. Pennsylvania Fresh Food Financing Initiative, THE REINVESTMENT FUND, <http://www.trfund.com/pennsylvania-fresh-food-financing-initiative/> (last visited Oct. 16, 2013).
758. Id.
759. Id.
760. Id.
761. Id.
762. Obama's Budget Funds National Healthy Food Financing Initiative, PR NEWswire, <http://www.prnewswire.com/news-releases/obamas-budget-funds-national-healthy-food-financing-initiative-83360382.html> (last visited Oct. 16, 2013).
763. Id.



## 2014 NORTH CAROLINA STATE REPORT

764. Matthew J. Salois, Obesity and Diabetes, The Built Environment, and the 'Local' Food Economy in the United States, 2007, 10 J. ECONOMICS AND HUMAN BIOLOGY 35, 41 (2012).
765. Food Access Research Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-access-research-atlas/download-the-data.aspx#.UkJTkBb5jU4> (last updated May 8, 2013).
766. Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences, U.S. DEP'T AGRIC., FOOD & NUTR. SRVS., p. 52 (Ch. 4), ap036d\_1\_1(1).pdf.
767. Julie Henry, Corner Stores Key to Reducing North Carolina's Food Deserts, N.C. DEP't of Health and Human Serv., (May 5, 2011), [http://www.ncdhhs.gov/pressrel/2011/2011-05-05-corner\\_stores.htm](http://www.ncdhhs.gov/pressrel/2011/2011-05-05-corner_stores.htm); Community Transformation Grants (CTG), CENTERS FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/nccdphp/dch/programs/communitytransformation/> (last updated Oct. 25, 2013); Julie Henry, North Carolina Awarded \$7.4 Million to Help Create Healthier Communities (Sept. 27 2011), [http://www.ncdhhs.gov/pressrel/2011/2011-09-27\\_NC\\_awarded.htm](http://www.ncdhhs.gov/pressrel/2011/2011-09-27_NC_awarded.htm).
768. Julie Henry, Corner Stores Key to Reducing North Carolina's Food Deserts, N.C. DEP't OF HEALTH AND HUMAN SERV., (May 5, 2011), [http://www.ncdhhs.gov/pressrel/2011/2011-05-05-corner\\_stores.htm](http://www.ncdhhs.gov/pressrel/2011/2011-05-05-corner_stores.htm).
769. Jilcott Pitts, Stephanie B. et al., Formative Evaluation for a Healthy Corner Store Initiative in Pitt County, North Carolina: Engaging Stakeholders for a Healthy Corner Store Initiative, Part 2, 10 PREVENTING CHRONIC DISEASE 120319 (Jul. 18, 2013), <http://dx.doi.org/10.5888/pcd10.120319>.
770. Id.
771. Id.
772. Id.
773. Nash Dunn, 'Corner Store' Recognized by Nonprofit, THE DISPATCH (Jul. 31, 2013), <http://www.the-dispatch.com/article/20130731/News/307319977?p=1&tc=pg>.
774. Id.
775. Id.
776. About the Atlas, USDA ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-access-research-atlas/about-the-atlas.aspx#.UjsFDRb5jU4> (last updated Sept. 18, 2013).
777. Data is from 2009. Population data, Table 13 – Intercensal Resident Population – States, <http://www.census.gov/prod/2011pubs/12statab/pop.pdf>; Vehicle ownership data, Table 1096 – State Motor Vehicle Registrations: 1990–2009, <http://www.census.gov/compendia/statab/2012/tables/12s1096.pdf>, and Table 1098 – State Motor Vehicle Registrations, 1990 to 2009, Motorcycle Registrations and Licensed Drivers by State: 2009, <http://www.census.gov/compendia/statab/2012/tables/12s1098.pdf>.
778. Id.; Highway Finance Data Collection, U.S. DEP'T OF TRANSP., FED. HIGHWAY ADMIN., (2011), <http://www.fhwa.dot.gov/policyinformation/pubs/hf/pl11028/chapter3.cfm>.
779. WALK SCORE, <http://www.walkscore.com/cities-and-neighborhoods/> (last visited Mar. 14, 2014).
780. Id.
781. Living in Raleigh, WALK SCORE, <http://www.walkscore.com/NC/Raleigh> (last visited Mar. 14, 2014); Living in Greensboro, WALK SCORE <http://www.walkscore.com/NC/Greensboro> (last visited Mar. 14, 2014); Living in Charlotte, WALK SCORE <http://www.walkscore.com/NC/Charlotte> (last visited Mar. 14, 2014).
782. WALK SCORE, <http://www.walkscore.com/cities-and-neighborhoods/> (last visited Mar. 14, 2014).
783. Id.; Walk Score Methodology, Walk Score, <http://www.walkscore.com/methodology.shtml> (last visited Mar. 14, 2014).
784. Living in Raleigh, WALK SCORE, <http://www.walkscore.com/NC/Raleigh> (last visited Mar. 14, 2014).
785. Id.; Living in Greensboro, WALK SCORE <http://www.walkscore.com/NC/Greensboro> (last visited Mar. 14, 2014); Living in Charlotte, WALK SCORE <http://www.walkscore.com/NC/Charlotte> (last visited Mar. 14, 2014).
786. Matthew J. Salois, Obesity and Diabetes, the Built Environment, and the 'Local' Food Economy in the United States, 2007, 10 J. ECONOMICS AND HUMAN BIOLOGY 35, 40 (2012).
787. Santoni's Provides Free Grocery Shuttle for Baltimore Residents in Food Deserts, (April 1, 2013) <http://baltimore.cbslocal.com/2013/04/01/santonis-provides-free-grocery-shuttle-for-baltimore-residents-in-food-deserts/> (last viewed Dec. 6, 2013).
788. A market analysis of five low-income neighborhoods in the cities of Bakersfield, Fresno, Long Beach, Oakland, and San Diego concluded that a supermarket-sponsored shuttle service would be financially viable and yield shuttle-driven revenues of \$545,700 to \$1.5 million. The revenue estimates conservatively assumed that 20 percent of households without cars in the study areas would use a shuttle once a week to buy \$25 in groceries. Free Shuttles Can Close the Grocery Gap, (April 14, 2003), <http://www.ucdmc.ucdavis.edu/publish/news/newsroom/2793>.
789. Personal communication with N.C. DEP't of Transportation personnel, (January 2014). Conducted by Sarah Downer.
790. Id.
791. Pierce County Transit, Rural Public Transportation System, [http://www.piercecountyga.org/Transit\\_files/Transit.htm](http://www.piercecountyga.org/Transit_files/Transit.htm) (last visited Dec. 6, 2013).
792. Beyond the Borders, Rider's Guide: Providing Transportation in Rural Pierce County, <http://www.co.pierce.wa.us/DocumentCenter/Home/View/599> (last viewed Dec. 6, 2013); Inventory of Special Needs Transportation Services and Programs: Puget Sound Regional Council, [http://www.psrc.org/assets/4490/Appendix\\_C\\_Inventory\\_of\\_Services\\_FINAL.pdf](http://www.psrc.org/assets/4490/Appendix_C_Inventory_of_Services_FINAL.pdf).
793. Id.
794. Boule et al. Effects of Exercise Training on Glucose Homeostasis, DIABETES CARE, Jan 2005, vol. 28 no. 1, 108-114.
795. , Exercise Can Help Tame Type 2 Diabetes, Says New Guidelines, DIABETES.ORG, AMERICAN DIABETES ASSOCIATION <http://www.diabetes.org/for-media/2010/exercise-can-help-tame-type-2.html> (last visited Mar. 14, 2014).
796. Personal community with focus group, Asheville, NC, (Feb. 2013). Conducted by Maggie Morgan and Sarah Downer.
797. Personal communication with N.C. DEP't of Transportation personnel, (January 2014). Conducted by Sarah Downer.
798. Id.
799. N.C. DEP'T OF TRANSPORTATION, [www.ncdot.gov/](http://www.ncdot.gov/) (last visited Mar. 9, 2014).
800. Complete Streets NC, <http://www.completestreetsnc.org/> (last visited Mar. 14, 2014).
801. , National Complete Streets Coalition, [www.smartgrowthamerica.org/](http://www.smartgrowthamerica.org/) complete-streets (last visited Mar. 14, 2014).
802. N.C. Gen. Stat. § 136-189.10 and § 136-189.11 (2013).
803. Conti, Morris, and Hunkins, The North Carolina Department of Transportation's Vision for Healthy Communities Through Sustainable Transportation, NC MED JOURNAL, vol. 73, No. 4 (2012), 274-277.
804. Id.
805. Id.
806. Id.
807. N.C. Gen. Stat. § 136-189.10 and § 136-189.11 (2013).



808. Presentation by Joel Spoonheim, Director of Community Programs at the Blue Zone Project by Healthways, Inc., SOUTHERN OBESITY SUMMIT, (November 19, 2013), Nashville TN.
809. Speck, Jeff. Walkable City: How Downtown Can Save America One Step At A Time. North Point Press. 2013.
810. Id.
811. Id.
812. Focus groups with community partners, Asheville and Raleigh, NC, Feb. 2013, Apr. 2013, Nov. 2013. Conducted by Maggie Morgan and Sarah Downer.
813. Personal communication with Ted Mansfield, MCRP, MSEE, Doctoral Student at Gillings School of Global Public Health, U.N.C. Chapel Hill, ( January 2014). Conducted by Sarah Downer and Lindsey Beckett.
814. Id.
815. Id.
816. Id.
817. Kelly Phillips Erb, More Americans Believe It's Easier to Understand Tax Than How to Eat Healthy, FORBES.COM, (May 23, 2012), <http://www.forbes.com/sites/kellyphillipserb/2012/05/23/more-americans-believe-its-easier-to-understand-tax-than-how-to-eat-healthy/>.
818. Lindsey P Smith et al. Trends in US Home Food Preparation and Consumption, analysis of national nutrition surveys and time use studies from 1965-1966 to 2007-2008, April 2013, NUTR. J. 12:45, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3639863/>.
819. Id.
820. Id.
821. Id.
822. Personal communication with Diabetes Provider and Advocate Focus Group, Charlotte, NC, (November 2013). Conducted by Maggie Morgan and Sarah Downer.
823. Id.
824. Id.
825. Id.
826. Lindsey P Smith et al. Trends in US Home Food Preparation and Consumption, analysis of national nutrition surveys and time use studies from 1965-1966 to 2007-2008, April 2013, NUTR. J. 12:45, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3639863/>.
827. Patient Protection and Affordable Care Act, Pub. L. No. 111-148, §2702, 124 Stat. 119, 318-319 (2010), §4205.
828. Id.
829. Guidance for Industry: Questions and Answers Regarding the Effect of Section 4205 of the Patient Protection and Affordable Care Act of 2010 on State and Local Menu and Vending Machine Labeling Laws, C. Effect of Section 4205 on state and local nutrition labeling requirements for restaurants, similar retail food establishments, and vending machine operators, 7. What if my state or local government already has a law in effect on menu labeling? FOOD & DRUG ADMIN., <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm223408.htm> (last viewed Dec. 9, 2013).
830. Personal communication with Diabetes Provider and Advocate Focus Group, Charlotte, NC, (November 2013). Conducted by Maggie Morgan and Sarah Downer.
831. Cassandra Aviles, "Traffic-Light" Labeling Increases Attention to Nutritional Quality of Food Choices, www.EUREKALERT.ORG, (October 17, 2013), [http://www.eurekalert.org/pub\\_releases/2013-10/mgh-ii101713.php](http://www.eurekalert.org/pub_releases/2013-10/mgh-ii101713.php).
832. Presentation by Joel Spoonheim, Director of Community Programs at the Blue Zone Project by Healthways, Inc., SOUTHERN OBESITY SUMMIT, (November 19, 2013), Nashville TN.
833. Martha Archuleta et al., Diabetes Cooking Classes Improve Knowledge and Skills in Making Healthful Food Choices, J. EXTENSION, April 2012 Vol. 50, No. 2, <http://www.joe.org/joe/2012april/a6.php>.
834. Id.
835. YMCA of Northwest North Carolina, YMCAWNC.org, <http://ymcanwnc.org/news/salsagrant/> (last visited Mar. 14, 2014).
836. Personal communication with personnel from Cooperative Extension Service, (Dec. 12, 2013). Conducted by Sarah Downer.
837. Id.
838. Id.
839. Guidance from USDA FNS to Regional SNAP Directors Re: SNAP-ED FY 2014 Allocations (Aug. 2013), <http://snap.nal.usda.gov/snap/Guidance/SNAPedFY2014fundingallocation.pdf>.
840. Study Shows Strong Nutrition Education Can lead to healthier Food Choices by Supplemental Nutrition Assistance Program (SNAP) Recipients, Press release FNS-0013.13, Dec. 5, 2013, <http://www.fns.usda.gov/pressrelease/2013/fns-001313>.
841. Id.
842. USDA SNAP-Ed Connection: State SNAP-Ed Contacts State and Implementing Agencies: North Carolina, <http://snap.nal.usda.gov/state-snap-ed-contacts/state-and-implementing-agencies/north-carolina>.
843. The Burden of Obesity in North Carolina, N.C. DEP'T HEALTH & HUM. SRVS., 64, 67 (May 2009) [hereinafter Burden of Obesity], [http://www.eatsmartmovemorenc.com/ObesityInNC/Texts/OBESITY\\_BURDEN\\_2009\\_WEB.pdf](http://www.eatsmartmovemorenc.com/ObesityInNC/Texts/OBESITY_BURDEN_2009_WEB.pdf).
844. Moving Our Children Toward a Healthy Weight: Finding the Will and the Way, N.C. DEP'T HEALTH & HUM. SRVS, vi (June 2003), [http://www.eatsmartmovemorenc.com/ESMMPlan/Texts/healthy\\_weight\\_initiative.pdf](http://www.eatsmartmovemorenc.com/ESMMPlan/Texts/healthy_weight_initiative.pdf).
845. 20% of children age 10-17 are categorized as overweight and 14% are categorized as obese. Burden of Obesity, supra note 812 at 5.
846. Burden of Obesity, supra note 843 at 64, 67.
847. Serena Gordon, Type 2 Diabetes Progresses Faster in Kids, Study Finds, HEALTHDAY (May 23, 2013), <http://consumer.healthday.com/diabetes-information-10/diabetes-management-news-180/type-2-diabetes-progresses-faster-in-kids-study-finds-676716.html>.
848. P. Zeitler, et al., A Clinical Trial to Maintain Glycemic Control in Youth with Type 2 Diabetes, 366 NEW ENG. J. MED. 2247 (2012).
849. Serena Gordon, Type 2 Diabetes Progresses Faster in Kids, Study Finds, HEALTHDAY (May 23, 2013), <http://consumer.healthday.com/diabetes-information-10/diabetes-management-news-180/type-2-diabetes-progresses-faster-in-kids-study-finds-676716.html>.
850. Elizabeth Mayer-Davis et al. The Many Faces of Diabetes in American Youth: Type 1 and Type 2 Diabetes in Five Race and Ethnic Populations: The SEARCH for Diabetes in Youth Study, DIABETES CARE, vol. 32 no. Supp. 2 S99, [http://care.diabetesjournals.org/content/32/Supplement\\_2/S99.full.pdf+html](http://care.diabetesjournals.org/content/32/Supplement_2/S99.full.pdf+html).
851. Burden of Obesity, supra note 843 at 6.
852. Id. at 5.
853. Id.
854. Physical Activity, Nutrition, and Obesity in North Carolina: Quick Facts 2010, EAT SMART MOVE N.C., 3 (May 2013) <http://www.eatsmartmovemorenc.com/Data/Texts/Quick%20Facts.pdf>; Burden of Obesity, supra note 812 at 5.



## 2014 NORTH CAROLINA STATE REPORT

855. Burden of Obesity, *supra* note 843 at 6.
856. Physical Activity, Nutrition, and Obesity in North Carolina: Quick Facts 2010, EAT SMART MOVE MORE N.C., 3 (May 2013) <http://www.eatsmartmovemorenc.com/Data/Texts/Quick%20Facts.pdf>.
857. Promoting Healthy Weight for Young Children: A Blueprint for Preventing Early Childhood Obesity in North Carolina, N.C. INST. MED. (September 2013) [hereinafter Promoting Healthy Weight], 5, [http://www.nciom.org/wp-content/uploads/2013/09/ChildObesityRpt\\_090513.pdf](http://www.nciom.org/wp-content/uploads/2013/09/ChildObesityRpt_090513.pdf).
858. Mission, N.C. Inst. Med., <http://www.nciom.org/about-us/mission/>.
859. Promoting Healthy Weight, *supra* note 857 at 13.
860. 2011 levels. *Id.* at 13.
861. Burden of Obesity, *supra* note 843 at 5.
862. Promoting Healthy Weight, *supra* note 857 at 13.
863. *Id.* at 14.
864. *Id.* at 72.
865. *Id.* at 74.
866. About Us, N.C. DIV. CHILD CARE & EARLY ED., [http://ncchildcare.nc.gov/general/mb\\_aboutus.asp](http://ncchildcare.nc.gov/general/mb_aboutus.asp).
867. Star Rated License: Overview, N.C. DIV. CHILD CARE & EARLY ED., [http://ncchildcare.nc.gov/parents/pr\\_sn2\\_ov\\_sr.asp](http://ncchildcare.nc.gov/parents/pr_sn2_ov_sr.asp).
868. The Child and Adult Care Food Program in Massachusetts, HARVARD FOOD LAW & POLICY CLINIC (Jan.2013), 1, <http://blogs.law.harvard.edu/foodpolicyinitiative/files/2013/01/FINAL-Massachusetts-CACFP-Analysisv2.pdf>.
869. *Id.*
870. North Carolina Enhanced Nutrition Standards for Child Care, N.C. DIV. PUBLIC HEALTH, (2010), 4, [http://ncchildcare.dhhs.state.nc.us/pdf\\_forms/child\\_nutrition\\_study.pdf](http://ncchildcare.dhhs.state.nc.us/pdf_forms/child_nutrition_study.pdf).
871. N.C. Gen. Stat. § 110-91 (2013).
872. N.C. Gen. Stat. § 110-91 (2013).
873. N.C. Gen. Stat. § 110-91 (2013).
874. Promoting Healthy Weight, *supra* note 857 at 101.
875. *Id.* at 74-77.
876. *Id.* at 102-104.
877. *Id.* at 103.
878. *Id.* at 104.
879. Facts and Figures 2011-2012, N.C. DEP'T OF PUBLIC INSTRUCTION, <http://www.ncpublicschools.org/docs/fbs/resources/data/factsfigures/2011-12figures.pdf> (last visited Jan. 25, 2013).
880. Organization, STATE BOARD OF ED. DEP'T OF PUBLIC INSTRUCTION, <http://www.ncpublicschools.org/organization/> (last visited Jan. 23, 2013).
881. School Foods and Beverages, ROBERT WOOD JOHNSON FOUNDATION, <http://www.rwjf.org/en/about-rwjf/program-areas/childhood-obesity/strategy/policy-priority-school-foods-and-beverages.html> (last visited Oct. 10, 2013); The Weight of the Nation: Community Activation Kit, Kaiser permanente, [http://share.kaiserpermanente.org/static/weightofthenation/docs/topics/WOTNCommActTopic\\_School%20Food\\_F.pdf](http://share.kaiserpermanente.org/static/weightofthenation/docs/topics/WOTNCommActTopic_School%20Food_F.pdf) (last visited Oct. 10, 2013).
882. National School Lunch Program, Food Research & Action Ctr., <http://frac.org/federal-foodnutrition-programs/national-school-lunch-program/> (last visited Jan. 23, 2013); The statewide nutrition standards for North Carolina were established in 2005. N.C. Gen. Stat. § 115C-264.3 (2005); N.C. Gen. Stat. § 115C-263 (1981).
883. National School Lunch Program Participation and Lunches Served: January 2013, USDA FOOD & NUTRITION SERVICE, [http://www.fns.usda.gov/pd/NSLP\\_excel-data.xls](http://www.fns.usda.gov/pd/NSLP_excel-data.xls) (last visited Jan. 23, 2013); Facts and Figures, 2011-12, Public Schools of North Carolina, N.C. DEP'T OF PUBLIC INSTRUCTION, <http://www.dpi.state.nc.us/docs/fbs/resources/data/factsfigures/2011-12figures.pdf> (last visited Oct. 10, 2013).
884. Lynn Harvey, School Nutrition Programs in North Carolina, NC HOUSE SELECT COMMITTEE ON CHILDHOOD OBESITY, 26 (Dec. 8, 2011), <http://www.ncleg.net/DocumentSites/Committees/HSCCO/Meeting.%20December%208,%202011/Lynn%20Harvey%20-%20School%20Nutrition%20Program.pdf>.
885. Jones et al. Lower Risk of Overweight in School-aged Food Insecure Girls Who Participate in Food Assistance, ARCHIVES OF PEDIATRIC AND ADOLESCENT MEDICINE, Aug. 2013.
886. Lynne Harvey, Report to the North Carolina General Assembly: An Overview of Child Nutrition Programs Administered by the NC Department of Public Instruction SL 2011-342 (SB 415), sec. 2 (Feb. 2012), <http://www.ncleg.net/documentsites/committees/JLEOC/Committee%20Meetings/2011-2012%20Committee%20Meetings/February%207-8,%202012/Lynn%20Harvey%20-%20Child%20Nutrition.pdf>.
887. School Meal Eligibility, FOOD RESEARCH AND ACTION CENTER, [hereinafter School Meal Eligibility] <http://frac.org/federal-foodnutrition-programs/school-breakfast-program/eligibility/> (last visited Oct. 4, 2013).
888. *Id.*
889. *Id.*
890. *Id.*
891. *Id.*
892. Amy Zimmer, Universal Free School Lunch Plan Will Remove Stigma, Advocates Claim, (Aug. 14, 2013), DNaInfo.com.; <http://www.dnainfo.com/new-york/20130814/civic-center/universal-free-school-lunch-plan-will-remove-stigma-advocates-claim>.
893. School Meal Eligibility, *supra* note 887.
894. *Id.*
895. *Id.*
896. There were 522,000 school-aged SNAP participants and 461,700 NSLP direct certifications. Direct Certification in the National School Lunch Program: State Implementation Progress School Year 2011-2012, U.S.D.A, 12 (Oct. 2012), <http://www.fns.usda.gov/ora/MENU/Published/CNP/FILES/DirectCert2012.pdf>.
897. *Id.*
898. School Meal Eligibility, *supra* note 887.
899. FY 2010-2012 Direct Certification Grant Summaries, USDA, [http://www.fns.usda.gov/cnd/Grants/2010dc\\_grantsummaries.htm#NorthCarolina](http://www.fns.usda.gov/cnd/Grants/2010dc_grantsummaries.htm#NorthCarolina) (last visited Feb. 6, 2013).
900. SP12-2014: RFA for Participation in Demonstration Projects to Evaluate Direct Certification with Medicaid in SY 2014-15 (Dec 6, 2013) <http://www.fns.usda.gov/sp12-2014-rfa-participation-demonstration-projects-evaluate-direct-certification-medicaid-sy-2014-15>.
901. *Id.*
902. Federal Food & Nutrition Programs: Community Eligibility, FOOD RESEARCH & ACTION CTR. [hereinafter Community Eligibility], <http://frac.org/federal-foodnutrition-programs/national-school-lunch-program/community-eligibility/>.
903. Community Eligibility, *supra* note 902.
904. *Id.*
905. Nate Frentz & Zoe Neuberger, Key Steps to Improve Access to Free and Reduced-Price School Meals, CTR. ON BUDGET & POLICY PRIORITIES, 20-21 (Sept. 6, 2012), <http://www.cbpp.org/files/9-6-12fa.pdf>.
906. *Id.*





907. The School Breakfast Program, USDA FOOD AND NUTRITION SERVICE (Sept. 2013), <http://www.fns.usda.gov/sites/default/files/SBPfactsheet.pdf>.
908. Id.
909. During the 2010-2011 school year, 319,674 F/RP students participated in the SBP in North Carolina compared to 647,726 F/RP students who participated in the NSLP. School Breakfast Scorecard: School Year 2010-2011, FOOD RESEARCH & ACTION CTR., 17 (Jan. 2012), [http://frac.org/pdf/school\\_breakfast\\_scorecard\\_2010-2011.pdf](http://frac.org/pdf/school_breakfast_scorecard_2010-2011.pdf).
910. Lynn Harvey, School Nutrition Programs in North Carolina, NC HOUSE SELECT COMMITTEE ON CHILDHOOD OBESITY, 26 (Dec. 8, 2011), <http://www.ncleg.net/DocumentSites/Committees/HSCCO/Meeting,%20December%208,%202011/Lynn%20Harvey%20-%20School%20Nutrition%20Program.pdf>.
911. Gleason, P. M. & Dodd, A. H. (2009). School breakfast program but not school lunch program participation is associated with lower body mass index. J. AM. DIETETIC ASS'N, 109 (2 Supplement 1), S118-S128; Millimet, D. L., Tchernis, R., & Husain, M. (2009). School nutrition programs and the incidence of childhood obesity. J. HUMAN RESOURCES, 45(3), 640-654.
912. 2011 N.C. Sess. Laws 342.
913. 2011 N.C. Sess. Laws 342.
914. School Breakfast Scorecard: School Year 2010-2011, FOOD RESEARCH & ACTION CTR., 14 (Jan. 2012) [hereinafter School Breakfast Scorecard], [http://frac.org/pdf/school\\_breakfast\\_scorecard\\_2010-2011.pdf](http://frac.org/pdf/school_breakfast_scorecard_2010-2011.pdf).
915. See Provision 2 of the National School Lunch Act, FOOD RESEARCH & ACTION CTR., <http://frac.org/newsite/wp-content/uploads/2009/05/provision2.pdf>.
916. Id.
917. Jane Stancill, Breakfast Program Will Feed More N.C. Students, NEWS & OBSERVER (Sept. 14, 2011), <http://www.newsobserver.com/2011/09/14/1486609/no-kid-hungry.html>.
918. Id.; States with the highest participation rates in SBP have all implemented breakfast in the classroom programs of some sort. School Breakfast Scorecard, *supra* note 883.
919. School Breakfast, NO KID HUNGRY NORTH CAROLINA, <http://nc.nokidhungry.org/school-breakfast> (last visited Oct. 10, 2013).
920. School Breakfast Scorecard, *supra* note 914.
921. Why Offer School Breakfast Free to All Children, FOOD RESEARCH & ACTION CTR., [http://frac.org/wp-content/uploads/2009/09/universal\\_sbp.pdf](http://frac.org/wp-content/uploads/2009/09/universal_sbp.pdf).
922. Id.
923. Lynn Harvey, School Nutrition Programs in North Carolina, NC HOUSE SELECT COMMITTEE ON CHILDHOOD OBESITY, 11-12 (Dec. 8, 2011), <http://www.ncleg.net/DocumentSites/Committees/HSCCO/Meeting,%20December%208,%202011/Lynn%20Harvey%20-%20School%20Nutrition%20Program.pdf>.
924. N.C. Gen. Stat. § 115C-264 (c) (2005).
925. N.C. State Bd. of Educ. Policy TCS-S-000 (1993), <http://sbepolicy.dpi.state.nc.us/policies/TCS-S-000.asp?pri=04&cat=S&pol=000&acr=TCS>.
926. Local Wellness Policies: Guidance on Food and Beverage Sales in Schools, N.C. DEP'T OF PUBLIC INSTRUCTION (Mar. 2006), <http://childnutrition.ncpublicschools.gov/information-resources/competitive-foods/competitive-foods/food-beverage-letter.pdf>.
927. Id.
928. N.C. State Bd. of Educ. Policy TCS-S-002 (2006), <http://sbepolicy.dpi.state.nc.us/policies/TCS-S-002.asp?pri=04&cat=S&pol=002&acr=TCS>.
929. Child Nutrition Reauthorization Healthy, Hunger-Free Kids Act of 2010, LET'S MOVE, 1, [http://www.whitehouse.gov/sites/default/files/Child\\_Nutrition\\_Fact\\_Sheet\\_12\\_10\\_10.pdf](http://www.whitehouse.gov/sites/default/files/Child_Nutrition_Fact_Sheet_12_10_10.pdf) (last visited Oct. 10, 2013); N.C. State Bd. of Educ. Policy TCS-S-002 (2006); <http://sbepolicy.dpi.state.nc.us/policies/TCS-S-002.asp?pri=04&cat=S&pol=002&acr=TCS>.
930. N.C. State Bd. of Educ. Policy TCS-S-002 (2006), <http://sbepolicy.dpi.state.nc.us/policies/TCS-S-002.asp?pri=04&cat=S&pol=002&acr=TCS>.
931. Id.
932. USDA Releases Interim Final for Competitive Foods in Schools, FOOD SERVICE DIRECTOR (June 27, 2013), <http://www.foodservicedirector.com/news/articles/usda-releases-interim-final-competitive-foods-schools>.
933. Id.
934. Id.
935. High schools may offer calorie-free beverages including calorie-free, flavored, or carbonated water in servings of no more than 20 ounces, as well as beverages with up to 40 calories per 8-fluid ounces in a serving of up to 12 ounces. Id.
936. See Telephone Interview with Community Partner discussing North Carolina Healthy Schools program (Jan. 23, 2013). Conducted by Katie Cohen.
937. Summer Food Service Program, N.C. DEP'T OF HEALTH AND HUMAN SERVICES, <http://www.nutritionnc.com/snp/sfsp.htm> (last visited Oct. 6, 2013).
938. Id.
939. 2012 Summer Feeding Information At-a-Glance For NC School Food Authorities, N.C. DEP'T OF HEALTH AND HUMAN SERVICES, 1 (2012), <http://childnutrition.ncpublicschools.gov/programs/sso/seamless-summer-option-sso/sumfeedaag.pdf>.
940. 2009 Edition of Questions and Answers for the National School Lunch Program's Seamless Summer Option (SSO), USDA, 2 (2009), <http://childnutrition.ncpublicschools.gov/programs/sso/seamless-summer-option-sso/ssoqa.pdf>.
941. Hunger Doesn't Take a Vacation: Summer Nutrition Status Report 2011, FOOD RESEARCH & ACTION CTR., 7 (Jun. 2011), [http://frac.org/pdf/summer\\_report\\_2011.pdf](http://frac.org/pdf/summer_report_2011.pdf).
942. Id.
943. Summer Food Service Program, N.C. DEP'T OF HEALTH AND HUMAN SERVICES, <http://www.nutritionnc.com/snp/sfsp.htm> (last visited Oct. 6, 2013).
944. Hunger Doesn't Take a Vacation: Summer Nutrition Status Report 2011, FOOD RESEARCH & ACTION CTR., 7 (Jun. 2011), [http://frac.org/pdf/summer\\_report\\_2011.pdf](http://frac.org/pdf/summer_report_2011.pdf).
945. Personal communications with community partner in Asheville, North Carolina, (Apr. 22, 2013). Conducted by Sarah Downer and Maggie Morgan.
946. Summer Nutrition Programs: Model Programs, FOOD RESEARCH AND ACTION CENTER, [http://frac.org/newsite/wp-content/uploads/2009/06/models\\_summer.pdf](http://frac.org/newsite/wp-content/uploads/2009/06/models_summer.pdf) (last visited Feb. 4, 2013).
947. Id.
948. N.C. Farm to School Program, N.C. DEP'T OF AGR. & CONSUMER SVC, <http://www.ncfarmtoschool.com/index.htm> (last visited Jan. 25, 2013).
949. North Carolina Farm to School: History, <http://www.ncfarmtoschool.com/htm/about/history.htm> (last visited Mar. 14, 2014).
950. Interview with Heather Barnes, Marketing, N.C. Dep't of Agr. & Consumer Svc, in Raleigh, N.C. (Jan. 14, 2013).
951. Id.
952. N.C. Farm to School Program: Poundage, N.C. DEP'T OF AGR. & CONSUMER SVC, <http://www.ncfarmtoschool.com/htm/about/poundage.htm> (last visited Jan. 25, 2013).





## 2014 NORTH CAROLINA STATE REPORT

953. NC Farm to School Calendar, NC FARM TO SCHOOL PROGRAM, <http://www.ncfarmtoschool.com/htm/downloads/cal.htm> (last visited Feb. 6, 2013).
954. Newsletter, NC FARM TO SCHOOL (Mar. 2012), <http://www.ncfarmtoschool.com/htm/newsletter/documents/2012MarchNCFarmToSchoolNewsletter.pdf>.
955. NC Good Agricultural Practices Certification Assistance Program, N.C. DEP'T OF AGRICULTURE & CONSUMER SRVS. Authorization Form, <http://www.ncagr.gov/markets/NCgradesvc/documents/Gap%20Audit%20Authorization%20form%202013.pdf>.
956. Carolina Farm Stewardship Association, Local Produce Safety, <http://www.carolinafarmstewards.org/local-produce-safety/>.
957. N.C. Gen. Stat. § 115C-81(e1)-(e2) (2003).
958. Standard Course of Study, Healthful Living, N.C. Public Schools, <http://www.ncpublicschools.org/curriculum/healthfuliving/scos/> (last visited Mar. 14, 2014); North Carolina Essential Standards: Physical Education, N.C. PUBLIC SCHOOLS <http://www.ncpublicschools.org/docs/acre/standards/new-standards/healthful-living/khs.pdf> (last visited Mar. 14, 2014).
959. N.C. Gen. Stat. § 115C-81(e1)-(e2) (2003).
960. Fitness Testing Guidelines, NORTH CAROLINA PUBLIC SCHOOLS, 4 (Jun. 2011), <http://legislative.ncpublicschools.gov/committee-presentations/2011206-fitness-guidelines.pdf>.
961. State Bd. of Educ. Policy GCS-S-000 § 2(a) (2005); <http://sbepolicy.dpi.state.nc.us/policies/GCS-S-000.asp?pri=01&cat=S&pol=000&acr=GCS>.
962. Id.
963. Id.; Effective School Health Advisory Councils: Moving from Policy to Action, PUBLIC SCHOOLS OF N.C. & DEP'T HEALTH AND HUMAN SRVS. 1-2 (Oct. 2003) [http://www.schoolwellnesspolicies.org/resources/NC\\_SHAC\\_FINAL.pdf](http://www.schoolwellnesspolicies.org/resources/NC_SHAC_FINAL.pdf).
964. State Bd. of Educ. Policy GCS-S-000 § 2-3 (2005); <http://sbepolicy.dpi.state.nc.us/policies/GCS-S-000.asp?pri=01&cat=S&pol=000&acr=GCS>.
965. Id.
966. Id.
967. Personal communication with David Gardner, (Nov. 2, 2013). Conducted by Maggie Morgan.
968. Id.; Effective School Health Advisory Councils: Moving from Policy to Action, PUBLIC SCHOOLS OF N.C. & DEP'T HEALTH AND HUMAN SRVS. 1-2 (Oct. 2003) [http://www.schoolwellnesspolicies.org/resources/NC\\_SHAC\\_FINAL.pdf](http://www.schoolwellnesspolicies.org/resources/NC_SHAC_FINAL.pdf).
969. Personal communication with David Gardner, (Nov. 2, 2013). Conducted by Maggie Morgan; NC Healthy Schools, EAT SMART, MOVE MORE N.C., <http://www.eatsmartmovemore.nc.com/NCHealthySchools/NCHealthySchools.html> (last visited Nov. 29, 2013); Effective School Health Advisory Councils: Moving from Policy to Action Public Schools of N.C. & Dep't Health and Human Srvs.1-2 (Oct. 2003), [http://www.schoolwellnesspolicies.org/resources/NC\\_SHAC\\_FINAL.pdf](http://www.schoolwellnesspolicies.org/resources/NC_SHAC_FINAL.pdf).
970. Resources for Schools, NC Dep't of Health, <http://www.nutritionnc.com/ResourcesForSchools/index.htm> (last visited Feb. 6, 2013).
971. Id.
972. Special Nutrition Program Trainings, NC DEP'T OF HEALTH & HUMAN SRVS., <http://www.nutritionnc.com/snp/training.htm> (last visited Feb. 6, 2013).
973. Effective School Health Advisory Councils: Moving from Policy to Action, NC HEALTHY SCHOOLS, <http://www.nchealthyschools.org/docs/school/tools/shacmanual.pdf>.
974. Id.
975. Healthy, Hunger Free Kids Act, Pub. Law 111-296 Sec. 204 (2010).
976. Interview with Community Partner, Raleigh, N.C. (February 2013). Conducted by Sarah Downer.
977. Durham Public Schools Policy 3021. <http://www.dpsnc.net/about-dps/district-policies/523/3021-school-wellness-policy> (last visited Mar. 14, 2014).
978. Id.
979. Id.
980. Telephone Interview with Kate Turner, Wellness Coordinator, Durham Public Schools (Jan.15, 2013).
981. N.C. Gen. Stat. § 115C-12 (35).
982. N.C. Gen. Stat. § 115C-524; Promoting Physical Activity Through Joint Use Agreements: A Guide for North Carolina Schools and Communities to Develop Joint Use Agreements, [hereinafter NC Joint Use Guide], <http://www.nchealthyschools.org/docs/home/use-agreements.pdf>.
983. N.C. Joint Use Guide, *supra* note 982.
984. North Carolina: Strengthening Joint Use Agreements for Schools and Committees, WWW.ASTHO.ORG, <http://www.astho.org/North-Carolina-Joint-Use-Agreements-Case-Study/> (last visited Mar. 14, 2014).
985. Personal communication with Natasha Frost and Eloisa Gonzalez, (Jan. 21, 2013). Conducted by Sarah Downer.
986. Personal communication with Safe Routes to School Personnel (Jan 9, 2014), Conducted by Sarah Downer.
987. Goetzel et al., Health, Absence, Disability, and Presenteeism Cost Estimates of Certain Physical and Mental Health Conditions Affecting U.S. Employers, 46 J. Occupational & Environmental Med., April 2004, <http://www.ncbi.nlm.nih.gov/pubmed/15076658>.
988. Ramsey et al., Productivity and medical Costs of Diabetes in a Large Employer Population, 25 DIABETES CARE J 1, Jan. 2002, <http://care.diabetesjournals.org/content/25/1/23.full.pdf+html>.
989. Ramsey et al., Productivity and medical Costs of Diabetes in a Large Employer Population, 25 DIABETES CARE J 1, Jan.2002, <http://care.diabetesjournals.org/content/25/1/23.full.pdf+html>.
990. Economic Costs of Diabetes in the U.S. in 2007, AMER. DIABETES ASSOC., 31 DIABETES CARE 3, March 2008, <http://web.caller.com/2013/pdf/ADA-diabetes-cost-paper.pdf>.
991. Mattke et al., Workplace Wellness Programs Study, RAND Health, 2013, <http://www.dol.gov/ebsa/pdf/workplacewellnessstudyfinal.pdf>.
992. Mattke et al., Workplace Wellness Programs Study, RAND Health, 2013, <http://www.dol.gov/ebsa/pdf/workplacewellnessstudyfinal.pdf>.
993. Worksite Wellness, State Human Resources Manual, Off. State Hum. Resources, July 2010, [http://www.oshr.nc.gov/Guide/Policies/8\\_Workplace%20Environment%20and%20Health/Worksite%20Wellness.pdf](http://www.oshr.nc.gov/Guide/Policies/8_Workplace%20Environment%20and%20Health/Worksite%20Wellness.pdf).
994. Use of Haywood Gymnasium, DEPT. HEALTH & HUM. SERV., Nov. 2007, <http://info.dhhs.state.nc.us/olm/manuals/dhs/pol-92/man/HaywoodGym1.htm>.
995. Services & Programs, Duke Human Resources, <http://www.hr.duke.edu/about/departments/liveforlife/programs.php>.
996. About LIVE FOR LIFE, Duke Human Resources, <http://www.hr.duke.edu/about/departments/liveforlife/about.php>.
997. UnitedHealth Wellness, UNITEDHEALTHCARE, [http://www.uhc.com/employers/programs\\_tools/for\\_employees/unitedhealth\\_wellness.htm](http://www.uhc.com/employers/programs_tools/for_employees/unitedhealth_wellness.htm).
998. Fitness Reimbursement Program, UNITEDHEALTHCARE, <http://uhctogether.com/uhcwellness/16181.html>.
999. Indiana Code 6-3.1-31.2 Small Employer Qualified Wellness Tax Credit, IN Dep. Health, <http://www.in.gov/isdh/25139.htm>.



1000. Kentucky Worksite Wellness Tax Credit: A Health Impact Assessment, Jan. 2012, Kentucky Dept. Pub. Health

1001. Stop Diabetes @ Work Employer Playbook, Amer. Diabetes Assoc., <http://www.diabetes.org/in-my-community/programs/stop-diabetes-at-work/assets/sdw-employer-playbook.pdf>.

1002. DiabetesAtWork.org, Nat. Diabetes Education Program, <https://diabetesatwork.org/index.cfm>.

1003. Saving Dollars and Making Sense, Eat Smart Move More NC, <http://www.eatsmartmovemorenc.com/ManagementGuide/Texts/WorksitesMgmtGuide.pdf>.

1004. Saving Dollars and Making Sense, Eat Smart Move More NC, <http://www.eatsmartmovemorenc.com/ManagementGuide/Texts/WorksitesMgmtGuide.pdf>.

1005. Glasgow et al., Relationship of worksite smoking policy to changes in employee tobacco use: findings from COMMIT. Community Intervention Trial for Smoking Cessation, Tobacco Control, 1997, <http://www.ncbi.nlm.nih.gov/pubmed/9583652>.

1006. Health Workforce 2010, Partnership for Prevention, Fall 2001, [http://www.acsworkplacesolutions.com/documents/Healthy\\_Workforce\\_2010.pdf](http://www.acsworkplacesolutions.com/documents/Healthy_Workforce_2010.pdf)



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Providing Access to Healthy Solutions



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