

The North Carolina Department of Transportation's Vision for Healthy Communities Through Sustainable Transportation

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The North Carolina Department of Transportation increasingly includes the health of North Carolinians in its transportation decision-making. With an expanded mission that now includes health, the agency is integrating public health considerations into its initiatives, plans, and policies, as well as exploring the use of health impact assessments.

North Carolina's economic vitality and the quality of life of its residents are highly dependent on having a safe, reliable, and efficient transportation network. Although the focus of the North Carolina Department of Transportation (NCDOT) is mobility (the movement of people and goods), its mission also includes safety, environmental sensitivity, and enhancement of the state's economy, health, and well-being. The NCDOT recognizes its role in supporting vibrant, healthy communities. The department also recognizes that it is continuously shaping the built environment throughout the state. North Carolina has the second-largest system of state-maintained roads in the United States. The NCDOT maintains nearly 80,000 miles of roads (approximately 75% of all roads in the state) and is considered to be the state's largest developer. In an attempt to optimize the overall benefits derived from the investments it is making on the public's behalf, the NCDOT is increasingly including the health of North Carolinians as a consideration in its transportation network decision-making.

The transportation network can serve as an enabler of or as a barrier to better health outcomes, especially through its ability to create a built environment that provides opportunities for physical activity. In North Carolina, the general preference of the state's residents for automobile travel, in combination with development patterns that contribute to increased travel distances, has resulted in a transportation network designed primarily for travel by motorized vehicle. At the same time, lifestyles have generally become more sedentary. This combined with other factors has led to an increase in obesity, which in turn is linked to high blood pressure, high cholesterol, diabetes, heart disease, stroke, arthritis, and cancer [1]. The public health and health care communities are working hard to encourage people to change behaviors that lead to these diseases, but signifi-

cant positive changes in public health will not be realized unless there are changes to the built environment. In this regard, making the healthy choice the easy choice not only applies to what we eat, but also how we move around our communities.

A 2007 survey found that 60% of adults in North Carolina believe that they would be more physically active if their communities had more accessible sidewalks or trails for walking or bicycling [2]. A research brief prepared by the Robert Wood Johnson Foundation in 2009 states in its conclusion that

A substantial body of research shows that certain aspects of the transportation infrastructure—public transit, greenways and trails, sidewalks and safe street crossings near schools, bicycle paths, traffic-calming devices, and sidewalks that connect schools and homes to destinations—are associated with more walking and bicycling, greater physical activity and lower obesity rates [3].

This evidence, coupled with the fact that the state's population is increasing and North Carolinians want more choices in the modes by which they travel, is motivating the NCDOT and its sister state agencies and local government partners to try to influence public health outcomes by considering the inclusion of active transportation features such as sidewalks and bike facilities when creating transportation and land-development plans.

Although accommodations for nonmotorized transportation, such as sidewalks and bike lanes, have been integrated into some parts of the transportation network, additional facilities that afford opportunities for active transportation are needed in other parts of the network. The key to this is working with communities to identify the areas in which investment in such facilities would provide the highest overall benefit to the public in terms of mobility, health, reduc-

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tion in health disparities, the environment, and the economy. Understanding where mutual mobility and health benefits can be derived requires that health, transportation, and land development professionals talk with one another and share data in order to better understand needs, evaluate options, and leverage resources to optimize outcomes.

Because the state owns or maintains a large proportion of the transportation system, the NCDOT can provide meaningful, immediate impact and can influence the built environment more effectively and more widely than can many other state and local entities. The NCDOT carries out more than a thousand projects across the state each year, materially changing the environment and altering the landscape daily. For example, the department's current Bridge Program involves the replacement or rebuilding of more than 1,800 bridges in the state over the next 3 years. As a part of decision-making, the agency is considering bicycle and pedestrian accommodations in a meaningful way. In the reconstruction and resurfacing of existing roads and on new projects, many transportation options are considered, including sidewalks, crosswalks, bicycle lanes, paved shoulders, and transit stops.

The Healthy Environments Collaborative is an inter-agency collaboration between the NCDOT, the North Carolina Department of Health and Human Services, the North Carolina Department of Commerce, and the North Carolina Department of Environment and Natural Resources; the agencies work closely with one another and with partners at the University of North Carolina at Chapel Hill and North Carolina State University to improve the health of North Carolina's people, economy, and environments. With support provided by the collaborative, NCDOT leaders are increasingly integrating health considerations into transportation decision-making through a programmatic focus. This includes setting policies that can serve as a compass for the efficient delivery of projects that will add value to the communities they serve. The department's mission statement was recently revised to underscore the importance of mobility in supporting healthy people and healthy places; it now states that the NCDOT's mission is "connecting people and places safely and efficiently with accountability and environmental sensitivity to *enhance the economy, health and well-being of North Carolina*." With the addition of this last part of the mission statement, the agency's mission has expanded to include how the transportation network can support economic growth and development, improved public health outcomes, livable communities, and improved quality of life [4].

North Carolina's Statewide Bicycle and Pedestrian Transportation Plan is currently being developed. It will guide the NCDOT and its partners in developing and implementing programs and projects that expand opportunities for walking and bicycling and will also increase safety. These programs and projects will, in turn, provide the opportunity for increased physical activity and will thus ultimately lead to improvements in overall health outcomes. The plan will

focus on bicycling and walking as basic means of transportation while recognizing their value in terms of public health, economic development, recreation, and tourism. The plan has strong support from other state agencies in the Healthy Environments Collaborative, given the benefits desired by each member. The Department of Commerce sees the increased appeal for businesses to locate in a state with a comprehensive bicycle and pedestrian network; the Department of Health and Human Services sees the benefit from increased access to physical activity and a resulting improvement in health status for the state's residents; and the Department of Environment and Natural Resources supports the prioritization of alternative forms of transportation over automobiles as a way to protect the environment.

Identifying common transportation and health goals is of key importance in making the best decisions to support healthy people and healthy communities. As additional evidence of NCDOT's increasing support of including health in all policies, the department is working with transportation and health professionals to better integrate public health considerations into the 25-year comprehensive long-range transportation planning process. Comprehensive transportation plans are developed at the county or local level and set the stage for the location and type of transportation improvements needed to serve future growth and other goals of the community. Public health goals can be part of these local transportation-planning efforts, but it is important for the public health community to be engaged as a stakeholder so that unique health interests are reflected in the comprehensive goals of the planning area. Because the built environment, development patterns, and transportation are so interrelated, the NCDOT is working with its partners in the Healthy Environments Collaborative and with local planning entities to better link transportation and land-development planning. Integrated and coordinated planning efforts can result in projects that better support community goals such as more choices in how to travel, increased access to transportation options for lower-income households, improved public health outcomes, and reduced environmental impacts. The effort to improve the long-range transportation planning process also includes better integration of active transportation modes such as walking, biking, and transit into local or regional transportation plans.

NCDOT's Complete Streets Policy, which was adopted in 2009, has tremendous potential to shape the built environment to be more supportive of nonmotorized transportation and increased physical activity. For the past 50 years, streets were generally designed to serve one mode of transportation: motor vehicles. Sidewalks and bike facilities were often neglected. In contrast, the Complete Streets Policy is intended to serve all modes of transportation and to be safe and comfortable for all users, including pedestrians, bicyclists, transit riders, motorists, and individuals of all ages and capabilities. (NCDOT Complete Streets information is available at <http://www.nccompletestreets.org>.) North

Carolina's nationally renowned Complete Streets pilot program carries out projects that demonstrate value to communities through efficient mobility, safety for all travelers using all modes of transportation, improved physical health, enhanced economic opportunity, and a clean environment.

The NCDOT also has established Traditional Neighborhood Development Street Design Guidelines with the intent of supporting community development that encourages walking and biking, enhances transit service opportunities, and improves traffic safety through promoting low-speed, cautious driving while fully accommodating the needs of pedestrians and bicyclists. The overall function, comfort, and safety of the multipurpose or "shared" streets in traditional neighborhoods are deemed more important than vehicular efficiency alone. Other elements of traditional neighborhoods that encourage walking and biking are higher proportions of interconnected streets, sidewalks, and paths.

Other programmatic approaches that are being explored by the NCDOT include accounting for health impacts, costs, and benefits throughout the transportation planning, programming, and project decision-making processes. Actions that may be taken include setting health-related criteria as part of transportation funding decisions, as well as conducting health impact assessments to help inform what the NCDOT and its local planning and funding partners will do and when. Health impact assessments can be used as evidence-based tools to document the health costs of land use and transportation decisions. It is important to evaluate the benefits that can be derived from investments and to evaluate how prosperity, a clean environment, and improved or expanded mobility can lead to better public health outcomes.

The cumulative effects of transportation projects, along with the impacts of projects carried out by other entities also need to be considered in transportation decision-making. The consequences of decisions, including those related to public health, may be realized immediately upon completion of a particular project, but they can also be felt much later in time. In addition, the impacts of multiple decisions related to projects across sectors (transportation, development, and other infrastructure projects) are cumulative over time, influencing the public health within an area. For example, paved surfaces can create heat islands that make the temperatures higher, especially in urban areas. Higher temperatures, coupled with pollutants from vehicle exhaust, create a chemical reaction that worsens air quality and can exacerbate associated diseases, such as asthma and cardiovascular disease.

The silver tsunami—the near doubling of people over the age of 60 in North Carolina's population by 2030 [5]—must also be considered. As North Carolinians live longer and as older residents form a growing percentage of the total population, it will become more challenging and important to provide appropriate mobility options for people over 65

years of age. The NCDOT recognizes that it must respond to this and other demographics-related challenges, which will result in substantial impacts on travel patterns, increased traffic congestion, and inadequate transportation infrastructure. Confronting the challenges presented by the current built environment, an automobile-dependent culture, and projected growth in vulnerable and general populations will necessitate new approaches.

Although the NCDOT's primary business is building transportation infrastructure that moves people and goods, it can also be considered an applied research organization with goals of continuous improvement and innovation. In many ways, it is conducting applied research in the health arena. The department's shift to "health in all policies" involves the integration of public health considerations into broad agency policy including funding, programs, guidelines, processes, projects, performance measurement, and incentives.

The NCDOT cannot simply put sidewalks, bike lanes, and greenways everywhere—funding is limited. Strategic decisions must be made to ensure that the public is getting the highest return on the state's investment. This means figuring out what the communities' needs are with regard to mobility, as well as considering where facilities have the greatest potential to create increased physical activity, especially for at-risk populations. In partnership with other agencies, the NCDOT is looking for opportunities to implement policies, plans, and projects to make the biggest difference in communities that have made mobility and health a priority. Effective decision-making can only occur if the public health community, local planners, and transportation planners are at the table and engaged in dialogue. The decision-making process must include the identification of issues and community needs; data collection, sharing and analysis; solution generation and evaluation; implementation strategies and funding; monitoring and measurement; and communication and capacity building.

In support of a more integrated approach to transportation planning and consistent with its mission, which acknowledges the connection between transportation and public health, the NCDOT is committed to working with its partners at the state and local levels to provide safe, efficient, and reliable transportation options, including bicycle, pedestrian and transit facilities. It is also committed to considering public health issues and concerns as they relate to transportation decisions. **NCMJ**

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