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Journal of Transport & Health

journal homepage: www.elsevier.com/locate/jth

Bicycling and walking in the Southeast USA: Why is it rare and risky?

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ARTICLE INFO

Article history:

Received 8 September 2015

Received in revised form

16 December 2015

Accepted 21 January 2016

Available online 12 February 2016

Keywords:

Bicycling

Walking

Southeast USA

Transportation

Health

Safety

ABSTRACT

Although the Southeast USA region of the United States has warm weather and relatively flat terrain, bicycling and walking for transportation are less prevalent in the region than in the rest of the United States. Moreover, these modes have higher rates of traffic crashes and fatalities in the Southeast USA than elsewhere. We examine factors that may contribute to this outcome, including urban sprawl, historical development patterns, policies, goals, legislation, infrastructure, and funding for active transportation. We find that the Southeast USA has undergone population growth following a distinct pattern, resulting in denser population in rural areas, and less dense population in urban areas, than the rest of the nation. Over the long term, the Southeast USA underwent a specific pattern of growth between 1940 and 1980 (the heyday of automobile-oriented development): the region transitioned from mostly rural to slightly over half urban, in terms of population. State and local policies and funding also play a role in the current status of active transportation in the Southeast USA. We conclude that while some emerging trends are promising, such as the adoption of Complete Streets policies, the Southeast USA faces unique challenges due to the patterns by which development has occurred there.

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1. Introduction

“Warm, flat, and scenic” is how Reuben (2014) described the Deep South region of the United States in an *Atlantic* article contrasting the region's potential for bicycle transportation with the reality of high bicycle crash rates and low mode share. While some research has been devoted to the prevalence of diseases related to the lack of physical activity (obesity and diabetes) in the Deep South compared to other regions, the question of why active transportation is less prevalent in the Deep South has yet to be fully examined. In this paper, we investigate the reasons why the Southeast USA states have remained a region with low levels of active transportation, while, paradoxically, colder and snowier regions have some of the highest shares of such modes in the country.

Why are the nation's most bicycle-friendly cities in colder and/or snowy northern regions (such as Madison, Minneapolis, Portland, or Seattle), rather than in the warmer South? Why does the Southeast USA continue to lead the nation in pedestrian and cyclist crashes and fatalities, as well as in rates of diseases associated with a less active lifestyle? And are there any emerging trends that suggest these things might change in the near future?

These are important questions to answer with clear policy implications. Many benefits have been shown to result from increased rates of biking and walking. Studies have demonstrated that incorporating physical activity into daily life has important health benefits, and is an achievable public health alternative to scheduled sports and exercise (Andersen et al., 2000; WHO, 2002; Cavill et al., 2008). Research has shown that bicycling for everyday travel can be sufficient to meet recommended levels of weekly physical activity, and that “connected neighborhood streets and a network of bicycle-specific infrastructure to encourage more bicycling among adults” leads to greater physical activity for utilitarian purposes (Dill, 2009: 95). Although previous research has demonstrated that a number of factors, including lower educational attainment and income inequality, contribute to health disparities (Duffy et al., 2009; Tjepkema, 2006: 16; Pickett et al.,

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2005), research has also shown that the physical environment, including lack of fitness centers and natural amenities for exercise, contribute significantly to excessive obesity rates in the Deep South (Slack et al., 2014).

Lack of activity and obesity are modifiable risk factors, which means that transportation planning that increases active transportation can lead to improved community health. Transportation planning that encourages physical activity not only improves community health, but also has measurable economic benefits. A recent meta-analysis of investment in active transportation infrastructure demonstrated that “cost-benefit analyses of bicycling and walking infrastructure generally produce positive benefit-cost ratios” (Cavill et al., 2008:14). Studies have examined various measures of community health, including reduced medical costs for active people, population-attributable risk of inactivity for specific diseases, relative risk of all-cause mortality, and the impact of a change in physical activity on the risk for particular types of diseases (Cavill et al., 2008). Overall, the literature demonstrates that costs involved in improving infrastructure and transportation system operations to increase physical activity produce net economic benefits in terms of reduced costs of diseases.

In addition, crashes involving pedestrians and bicyclists have a considerable cost to society, measurable in monetary terms. In 2010, the economic costs of these crashes were estimated at a total of \$11 billion, and the comprehensive costs at \$87 billion (Blincoe et al., 2015: 226). Just as is the case with increased mode share, reduced numbers of pedestrian and bicycle crashes can result in measurable overall benefits to economies, communities, and public health (Blincoe et al., 2015).

2. Definition of the region

Many competing definitions of the Deep South exist. The focus of this study is the Southeast USA: Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. We have chosen these eight states as our study area because they make up a contiguous region with several factors in common: warm weather; similar urbanization patterns; relatively flat terrain (except for a small portion of the Appalachian Mountains that extend into the study area); demographic similarities; and a combination of high pedestrian and bicyclist fatality rates, high obesity and diabetes rates, and low rates of biking and walking (as shown in Fig. 1).

We hypothesize that urbanization patterns and long-term population growth have been key factors in the development of the Southeast USA as a less pedestrian- and bicycle-friendly region. Consequently, Florida was excluded from this analysis because its rapid population growth (891% from 1940 to 2010) and urbanized character (with 91% of the population in urban areas as of the 2010 Census) set it apart from the other states in the region, which have urban populations ranging between 49% and 74% and grew by between 36% and 210% from 1940 to 2010. Other definitions of the Deep South have included Texas, which we exclude for similar reasons to those for which we exclude Florida; and Kentucky, Virginia, and West Virginia, which were excluded because this study places an emphasis on warm weather and flat terrain as offering potential for non-motorized transportation. For the purposes of this study, the northern state lines of Arkansas, Tennessee, and North Carolina, lying roughly between the 36th and 37th parallels, seemed an appropriate cutoff latitude for distinguishing warmer states from those with colder winters. A more granular study, conducted at the county or metro-area level, might

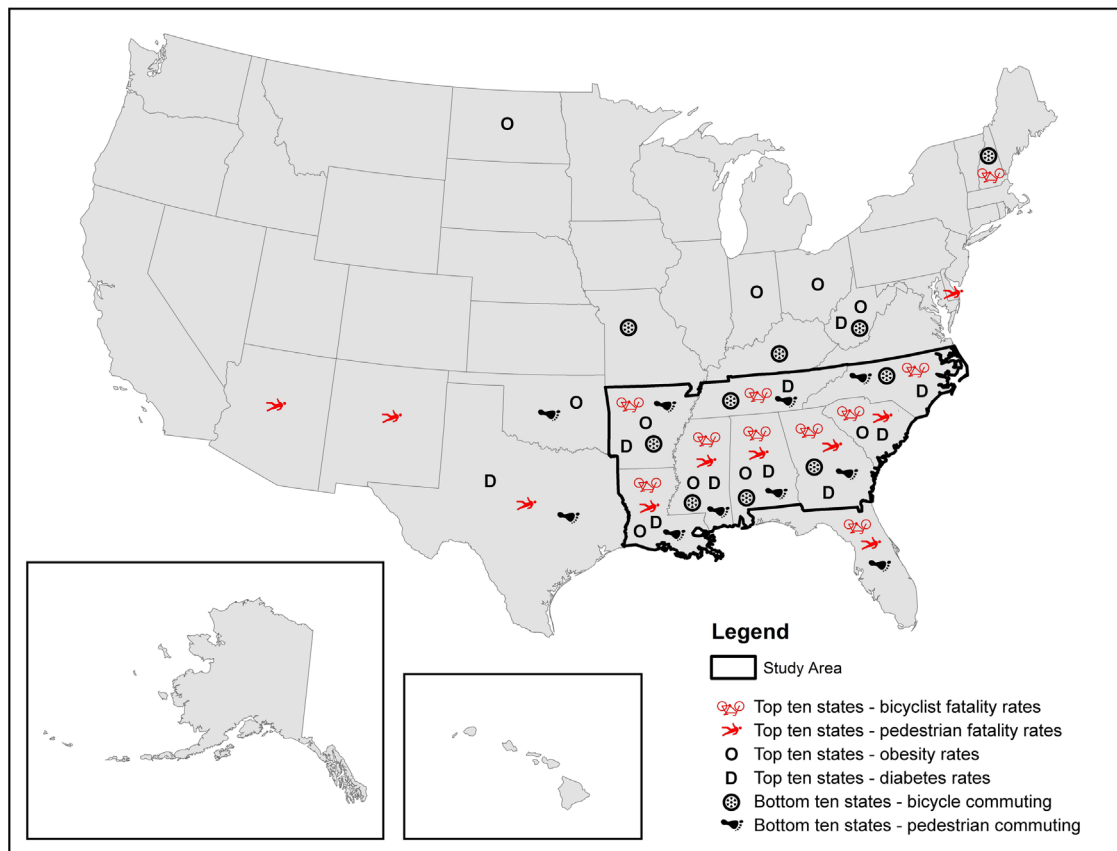


Fig. 1. Top 10 states for pedestrian and bicyclist fatality rates (2011–2013), obesity rates (2014), and diabetes rates (2013), and bottom ten states for bicycle and pedestrian commute mode share (2011–2013). Data sources: CDC (2013, 2014); NHTSA (2013, 2013a, 2014, 2014a, 2015, 2015a); United States Census Bureau (2013b).

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