



**PUBLIC HEALTH IMPACT OF REGIONAL TRANSPORTATION**  
**A POSITION PAPER FROM THE JEFFERSON COUNTY DEPARTMENT OF HEALTH**

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**STATEMENT OF POSITION:** The Jefferson County Department of Health supports efforts to develop a viable and integrated system of regional mass transportation for Birmingham-Hoover Metropolitan Area. Such a system would provide both health and economic benefits for area residents.

**RATIONALE FOR POSITION:** An improved mass transit system would benefit public health in several ways. Reducing dependence on passenger vehicles reduces numbers of vehicles on our roadways, thereby lowering both air pollutant emissions and the number of motor vehicle injuries. Improved public transportation increases access to employment and educational opportunities, which impact socioeconomic status, a key determinant of both health and healthcare access.

**BACKGROUND:** The population of the Birmingham-Hoover Metropolitan Statistical Area (MSA) has grown to over 1 million, and ranks 49<sup>th</sup> in population among MSA's in the United States. Birmingham's growth, like that of many urban centers, has been characterized by migration from the inner city to outlying suburbs, resulting in a pattern of unplanned growth referred to as "urban sprawl" and increased dependence on personal automobiles for transportation. Increased motor vehicle density results in increased traffic congestion and commute times, in turn resulting in increased economic costs (reduced employee productivity, delayed delivery of goods and services) and health consequences (air pollution, greater numbers of motor vehicle crash injuries, increased levels of personal anxiety and stress).

The number of annual vehicle miles traveled in the United States rose nearly 30% between 1990 and 2000.<sup>1</sup> Alabama ranks 7<sup>th</sup> among the states in per capita vehicle miles traveled.<sup>1</sup> Increases in annual vehicle miles traveled in the United States have been attributed in part to increases in population. Additionally, the civilian labor force has increased at twice the proportion of the increase in population, consequently increasing the number of commuters, and disposable per capita income has increased, resulting in an increase in numbers of automobiles purchased.<sup>1</sup>

Estimated annual vehicle miles traveled in the Birmingham metropolitan area nearly doubled between 1982 and 2001,<sup>2</sup> while miles traveled on public transportation declined from a peak of 33 million in 1992 to just 13 million in 2001.<sup>2</sup> The number of hours encompassed by "rush hour" more than doubled from 2.8 in 1982 to 6.0 in 2001, and annual hours of travel delay more than tripled.<sup>2</sup> The estimated annual dollar cost per person attributable to increases in travel congestion in Birmingham increased from \$28 in 1982 to \$67 in 1990 to \$296 per person in 2001.<sup>2</sup>

Experts suggest a combined approach to alleviating problems of traffic congestion, which includes increased system capacity (e.g., new roadways, developing mass transit), improvements in the efficiency of existing transportation systems (e.g., improved traffic signal light timing, improved routing of buses), management of demand away from peak travel times, and changes in community development patterns.<sup>3</sup>

Three determinants of public health are economics, education, and personal choices. Region 2020, a citizen-driven, non-profit organization dedicated to improving quality of life in the Central Alabama region, envisions an efficient public transit system, including alternative modes of transportation, that will provide improved access to employment, medical facilities, entertainment, and shopping, promote and enhance pedestrian activities, reduce congestion, reduce commute times, improve air quality, increase economic development, and improve overall quality of life.<sup>4</sup> The components of this vision impact each of the determinants of public health, which is fundamental to a community's quality of life.

## **Health Implications**

### ***Air Quality***

Ozone, carbon monoxide, nitrogen dioxide, and particulate matter are among the seven "criteria pollutants" for which the Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards.<sup>5</sup> Automobiles emit nitrogen oxides, carbon monoxide, and particulate air pollutants (soot), as well as carbon dioxide and hydrocarbons.<sup>6</sup> Hydrocarbons react with nitrogen oxides and sunlight to form ground-level ozone. Ground-level ozone has been associated with respiratory inflammation and reduced lung function.<sup>7</sup> Studies have linked particulate matter, especially fine particles, alone or in combination with other pollutants, with significant health problems, including both acute and chronic respiratory disease and exacerbation of existing asthma.<sup>8</sup> Automobiles also emit several pollutants classified by EPA as known or probable human carcinogens (benzene, formaldehyde, acetaldehyde, 1,3-butadiene).<sup>9</sup>

Alabama's Jefferson and Shelby Counties have been designated by the EPA as marginal non-attainment areas for National Ambient Air Quality Standards for ground-level ozone. Jefferson County, as part of the Birmingham Non-attainment Area (i.e., Jefferson and Shelby Counties), is obligated under the Clean Air Act to ensure that ozone levels remain below the EPA standard. Failure to meet this standard compromises not only the respiratory health of the community but its economic health as well. Failure to meet EPA standards may result in economic sanctions for non-compliance, imposition of costly additional remedial measures, and a moratorium on new industry that would provide employment.

Asthma has been increasing in prevalence since 1980 and its reduction is a component of the Healthy People 2010 objectives.<sup>10</sup> African Americans are disproportionately affected by asthma, with higher rates of emergency room treatment, hospitalization, and death.<sup>10</sup> (According to the year 2000 U.S. Census, Jefferson County's population is 39.4% African American.) According to data from the Behavioral Risk Factor Surveillance System (BRFSS) for Jefferson County, 9.9% of Jefferson County residents have been diagnosed with asthma.<sup>11</sup> This represents

a substantial proportion of residents at risk for exacerbation of their disease as a result of ozone and other air contaminants. The potential impact of reduced automobile emissions is illustrated by a study conducted by the Centers for Disease Control during the 1996 Olympic Games in Atlanta. During the Games, automobile use decreased by 22.5%, which resulted in significantly decreased ozone concentrations. Also during this time period, the Georgia Medicaid claims file showed a 41.6% decrease in emergency room and hospital admissions for asthma among children aged 1 to 16 years in the five-county Atlanta metropolitan area.<sup>12</sup>

Since enactment of the Clean Air Act of 1970, improved technology has reduced automobile exhaust emissions; however, some of these gains have been offset by increases both in numbers of vehicles and numbers of miles traveled per vehicle. Urban sprawl has contributed to this increase in vehicle miles traveled. Nationwide, mobile sources of air pollutants (primarily cars and trucks) are responsible for nearly a third of NO<sub>x</sub> emissions and a third of hydrocarbon emissions. In metropolitan areas this proportion may be much higher, such as in Atlanta, where mobile sources contribute 58% of NO<sub>x</sub> emissions and 47% of hydrocarbon emissions.<sup>13</sup> The Clean Air Act lists reduction in vehicle miles traveled as an official U.S. Government policy goal. Dependence on individual motor vehicles can be reduced through implementation of efficient transit systems if they are made attractive and convenient both to inner city residents and to commuters in outlying suburbs.

### ***Injuries***

The mortality rate for motor vehicle crashes in Alabama in 2001 was 22.3 deaths per 100,000 population, as compared with a nationwide rate of 14.8.<sup>14</sup> Data collected by the National Highway Traffic Safety Administration (NHTSA) show that more densely populated cities with more extensive public transportation systems (e.g., San Francisco, New York, and Portland) have lower rates of fatalities due to motor vehicle crashes than more sprawling cities (e.g., Atlanta, Dallas and Phoenix).<sup>13</sup> The same pattern has been found for pedestrian fatalities, and data from Atlanta show that as urban sprawl increased, the rate of fatalities among pedestrians increased.<sup>13</sup> Improved public transportation, with accompanying improved pedestrian access, has the potential to reduce both motor vehicle and pedestrian injuries by decreasing traffic density and increasing the availability of safer transportation alternatives.

### ***Physical Activity***

Decreased levels of physical activity contribute to the epidemic of overweight and obesity and the risk for many chronic diseases. As travel to and from transit stops typically requires walking, improved public transportation, with accompanying improved pedestrian access, increases levels of physical activity. In 2002, a research firm conducted a national random sample telephone survey on behalf of the Surface Transportation Policy Project.<sup>15</sup> Among the findings of the survey were that more than half (55%) of Americans would like to walk more, either for exercise or to reach specific destinations; however, they are deterred from doing so by poorly designed communities where walking is dangerous or inconvenient.<sup>15</sup> A coordinated system of transportation that includes opportunities for walking and bicycling, as well as public transit and automobile use, provides transportation alternatives for the community while encouraging physical activity.<sup>16</sup>

### ***Inadequate Transportation Contributes to Health Disparities***

Transportation and land use decisions disproportionately affect lower income, elderly, disabled, and minority populations. Inadequate transportation limits access to healthcare, nutritious food, and healthy recreational activities for these populations. Several studies have reported that lower income and minority patients often miss medical appointments and forego treatment for reasons of inadequate transportation.<sup>17</sup>

The elderly compose an ever-increasing proportion of our population. The post-war baby-boom generation's entry into old age will result in a dramatic shift in the age structure of our population and consequently a shift in economic and social forces. For many older residents who no longer drive (estimated at nearly 7 million nationwide),<sup>18</sup> transportation by automobile is not available. These elderly residents are limited to public transportation or walking. Lack of efficient public transportation and safe pedestrian walkways limits the mobility and independence of these senior citizens, as well as limiting their access to healthcare and other services.

### **Economic Benefits**

According to the U.S. Bureau of Transportation Statistics "Transportation exists to help people and businesses overcome the distance between places (e.g., work and home, factory and store, store and home)."<sup>19</sup> Increased mobility can produce economic benefits, while decreased mobility results in economic barriers to growth and productivity.<sup>19</sup>

Improved transportation offers the potential for a strong impact on the economic circumstances of individual residents and their families. Transportation represents 18% of household spending in American families, and is the second-largest household expense, after the expense of housing itself.<sup>19</sup> Reduced dependence on personal automobiles allows families to reduce their transportation expenditures, leaving more financial resources for basic needs, such as food, shelter and healthcare. Improved transportation also offers improved access to employment.

Improved mass transit may facilitate re-vitalization of the downtown area of Birmingham. Downtown revitalization projects, including enhanced public transportation, have contributed to the renaissance of a number of American cities. Thirty years ago, Portland, Oregon began development of a regional transit system, including light rail, a bus network, and a streetcar line, which was integral to reviving its downtown and surrounding neighborhoods.<sup>20</sup>

Some have argued that if improved public transportation were needed, existing buses would be filled to capacity; however this conclusion fails to consider that low levels of ridership may be symptomatic of an inefficient system. Access to current bus routes is inconvenient for many, service is infrequent and unpredictable on some routes, connections to other routes are

unreliable, and bus schedules and hours of operation are not always compatible with the work and school schedules of potential riders. As a result only those residents who are disabled or without other means of transportation utilize the system. This perpetuates the misperception that public transit only benefits residents of lower socioeconomic status; however, in many metropolitan areas, residents of all socioeconomic levels choose to use the public transit system.

The Director of the Multnomah County Health Department (Portland, Oregon) credits improved housing, urban planning and alternative transportation with placing Portland first among the 100 largest U.S. cities in meeting key Healthy People 2000 goals.<sup>20</sup> Employing a similar strategic model, including improved public transportation, will enable the Birmingham area to become a healthier region in which to live.

**ACTION PLAN:** The Birmingham Regional Transportation Alternatives Analysis identified a strong need for improvements in public transportation service and funding. The plan arising from this analysis recommends specific improvements, including a downtown streetcar system with transit centers, high occupancy vehicle (HOV) lanes on interstate highways, bus rapid transit lanes, state-of-the-art buses, improved bus routes, and a park-and-ride system facilitating transit access.<sup>21</sup> The proposed transit plan has been evaluated by Federal Transportation Administration (FTA) and is eligible for New Starts funding in the amount of \$87 million.<sup>22</sup> The FTA requires a matching contribution equal to 20% of the funding amount.

The Jefferson County Department of Health supports adoption of the proposed transit system plan as recommended by the Birmingham Regional Transportation Alternatives Analysis and approved for funding by the Federal Transportation Administration (FTA). Moreover, the Department supports aggressive pursuit of sources of dedicated revenue in order to meet the FTA's matching requirement to fund this project.

**SUMMARY:** Birmingham has lagged behind other metropolitan areas of similar size in adopting a comprehensive public transit plan. Such a plan offers health benefits, which include improved air quality, decreased motor vehicle crash and pedestrian injuries, and increased physical activity. Public transit can help to lessen health disparities, improving access to jobs and healthcare, as well as other services for disadvantaged minority populations and the elderly. Public transit also holds the potential for improved economic health, contributing to downtown revitalization and improved economic circumstances for area residents.

For more information call 930-1480 or visit [www.jcdh.org](http://www.jcdh.org).

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