

5 Automobile Dependence

America is trapped in its automobiles. Because of the way we have built our communities, most people have no choice but to drive to work, shop, play, or worship. Huge numbers of cars, vast parking facilities, and a total lack of pedestrian amenities make walking unpleasant and dangerous. In most places, transit runs infrequently, is difficult to use, and is slower than driving. Automobile dependence is sustained and promoted by outmoded funding mechanisms and hidden subsidies that transfer its real costs from those who profit directly — developers and other beneficiaries — to the public at large, often to those who are least powerful.

The walkable community, by concentrating development in a defined area, preserves neighboring rural areas, encourages walking and community interaction, and supports more efficient and healthful mobility. Walkable communities flourish throughout northern and western Europe, where public policy encourages land conservation and alternative means of transportation. If we hope to preserve a decent quality of life for future generations, we must deal with the mounting environmental, social, and demographic pressures on our region by building walkable communities in Orange County and across the Triangle.

5.1 Increasing car use

A dramatic rise in automobile use has accompanied the rise of suburbia. The Federal Highway Administration reports that the number of vehicle miles traveled (VMT) in the U.S. increased by 59% from 1980 to 1995. VMT grew more than 3% per year during the 1980s, and is predicted to increase by another 25% between 1990 and 2010 (Office of Technology Assessment, 1994). This increase in the miles driven is the direct result of the growing distances between where we live and our jobs, shopping, and recreational facilities.

For much of the twentieth century, car use increased as transit use declined. Transit use peaked at 23 billion trips in 1946, then dropped to a low of 6.5 billion trips in 1972. After a period of stagnation, transit use began to rise again in 1995 and stood at 9.4 billion trips in 2000 (APTA, 2001). Although transit use is currently rising faster than car use, it still accounts for less than 3% of all trips.

5.2 Transportation funding in the United States

In the policy brief “Fit or Fat City: A ‘Lite’ Menu of European Policies to Improve Our Urban Form,” Nivola (1999) makes the following observations:

Few forces are more consequential for the shape of cities than are a society’s investments in transportation infrastructure. Government at all levels in the United States has committed hundreds of billions to the construction and maintenance of highways, passenger railroads, and transit systems. What counts, however, is not just the magnitude of the commitment, but also the distribution of the public expenditures among modes of transportation. In the United States, the share claimed by roads has dwarfed that of alternatives by almost 6 to 1. An unrelenting increase in automobile travel and a steady decline in transit usage, however heavily subsidized, was inevitable... Few other advanced nations have hitched the financing of their surface transportation systems to a cash cow like this one. Proponents of highway expenditures in most countries are forced to rummage amid general revenues for road-building dollars. Without a claim to an exclusive account, the highway lobby in this country, too, would have to vie with other interests for public resources...

From 1996 to 1997, 21 states spent over half of their federal transportation dollars on new road construction. Once they are built, new highways attract more cars and more automobile-oriented development (see section 5.3). Investing that money to maintain existing roads and build transportation alternatives would be far wiser. Instead, from 1993 to 1997, 26 states spent less than \$10 per urban resident per year on mass transit construction, and twelve states spent less than \$5 per urban resident per year (Pope, 1999).

Facts in Brief

- America’s total subsidy to automobiles adds up to some 22 cents per mile driven; for driving to pay its own way would require a gas tax increase of approximately \$6.60/gallon (Oren, 1997).
- Governing bodies and corporate entities typically oppose any mechanisms designed to shift the true costs of driving onto drivers themselves, such as raising gas taxes, converting free roads to toll roads, instituting smog fees, and eliminating free parking (Holtzclaw, 1997).
- Automobile subsidies include road construction and maintenance not covered by gas taxes, police, fire and ambulance services to motorists, taxes lost on land cleared for freeways, free parking, pollution, noise and vibration damage to structures, global warming, military expenditures to protect the petroleum supply, production subsidies, and congestion (Holtzclaw, 1997).

- The American Lung Association estimates medical costs associated with breathing gas fumes at 40 to 50 cents per gallon of gas (Oren, 1997).
- Approximately one-third of U.S. carbon dioxide emissions are transportation related (Beatley, 2000).

Regional Facts in Brief

- Since 1992, total daily VMT has risen 20% in Durham, 31% in Raleigh, and 48% in Fayetteville (Federal Highway Administration, 1998, cited in Brookings Institution, 2000).
- In the Charlotte region, both the total daily VMT on the region's freeways and the amount of fuel wasted each year from traffic congestion more than doubled since 1990. Annual congestion costs and annual freeway hours of delay more than tripled (Texas Transportation Institute, 1999, cited in Brookings Institution, 2000).

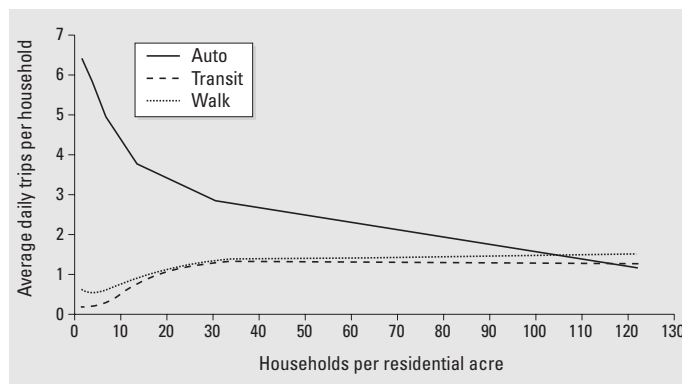
5.3 Induced travel

Recent studies show that building or widening highways leads to more traffic, called *induced travel*. Just after new lanes or roads are completed, public transit and carpool riders switch to driving and motorists take more and longer trips and switch routes. Traffic immediately increases to 10 to 50% of the new roadway capacity, a phenomenon called *short-term induced travel*. Over a period of three or more years, as motorists move farther from work and shopping, total induced travel rises to 50 to 100% of the roadway's new capacity (*long-term induced travel*). This extra traffic clogs local streets at both ends of the highway (Fulton et al., 2000; Goodwin, 1996; Hansen and Huang, 1997; Johnston and Ceerla, 1996; Marshall, 2000; Noland, 2000). The results of these studies are summarized below:

5.4 Density and the choice of travel mode

A 1990 study by the San Francisco Bay Area Metropolitan Transportation Commission surveyed the travel patterns of over 10,000 households and the residential density of each household's neighborhood. The study found that transit use and walking both increase and

automobile use decreases as residential density rises. Other data from the San Francisco Bay Area indicate that VMT per household declines 40% with every doubling of neighborhood density.



Based on Holtzclaw, 2000

European studies of driving, transit use, and walking have reached similar conclusions. Denser cities have less driving per capita. Public transit trips per capita increase with density, up to a maximum at moderate densities, then fall or remain constant at higher densities. Walking continues to increase as density rises (Holtzclaw, 2000).

Two studies further tested the hypothesis that automobile use is lower in denser neighborhoods (Holtzclaw, 1991; Holtzclaw, 1994). These studies found that people in a neighborhood will drive 20 to 30% less per capita or per household than the residents of another neighborhood half as densely populated. The lead author notes:

...if you live in a neighborhood twice as dense as your sister's neighborhood, on average you and your neighbors will drive 20 to 30% less than she and her neighbors, whether you both live in low-density areas, middle, or high... While this seems like a modest difference, it can really add up... The... densities of most post-WWII suburbs could be doubled 7 times to equal many Manhattan neighborhoods: 400 households/residential acre. At a 30% reduction in driving as density doubled, the Manhattan families would drive only 8% as much as the suburbanites. That's a huge decrease in air pollution. This general pattern has been found in New York, Chicago, Toronto, and across U.S. and British cities... (Holtzclaw, 1997).

Holtzclaw (1994) also observes:

The rate of auto travel to a central business district shopping area well served by rail and bus transit was found to be 75% lower than that to a comparable suburban shopping area (JHK and Associates, 1993). Compared to the suburban mall, auto use at the urban center dropped from 95% to 38% of shoppers, while transit use increased from 4% to 32% and walking increased from 1% to 29% (Holtzclaw, 1994).

Percentage of Road Capacity Filled with Traffic after New Road Construction, by Study

Study	Short-term	Long-term (3+ years)
SACTRA		50–100%
Goodwin	28%	57%
Johnson & Ceerla		60–90%
Hansen & Huang		90%
Fulton et al.	10–40%	50–80%
Marshall		76–85%
Noland	20–50%	70–100%

5.5 Reducing automobile dependence

America's dependence on automobiles is a deep-rooted problem. It will be resolved by policies implemented at all levels of government to promote new patterns of development and alternative modes of transportation (McCarthy, 1999).

Walking

- Designate towns for pedestrians first and cars second, always giving pedestrians the right-of-way.
- Make transit stops easy to reach on foot from residential, commercial, and recreational areas.
- Use the wide variety of available design techniques to make walking enjoyable and safe.
- Link major destinations, such as residences, schools, libraries, hospitals, and shopping centers, to pedestrian networks.
- Site local facilities such as schools, shops, and workplaces within walking or cycling distance of most neighborhoods in a town or city.

Cycling

- Treat cycling as the normal, usual way to travel short and intermediate distances.
- Provide infrastructure for all potential cycling trips. Cycling could replace at least half of all present car trips (Friends of the Earth, 1992, cited in McCarthy, 1999).
- Employ separate cycling lanes to promote safety and encourage cycling in suitable situations.
- Design and build numerous safe bicycle parking facilities and encourage interfaces with public transit.

Transit

- Let public transit be the dominant mode of middle- and long-distance travel. Group travel saves energy and is more economical and sustainable than personal automobile travel.
- Subsidize transit as needed to assure equal access. Vigorously support and maintain transit systems so they can compete with the automobile.
- Integrate all modes of transit.
- Provide good facilities for bicycles on buses and trains.
- Provide sheltered waiting areas with accurate schedules at all transit stops.
- Ensure that service is frequent and reliable.
- Systems must respond to public comments.

Limiting Motor Vehicle Use

The European Union has recognized that traffic reduction in the twenty-first century must reverse the explosion of vehicle use in the twentieth century. The U.S.

must also accept that sustainable transportation will require restraint of vehicle use and road construction. Car Free Cities (<http://www.eurocities.org/cfc>) is one group of local agencies in Europe that promotes sensible vehicle use.

- Use comprehensive strategies; avoid reductions in vehicle use at locations that lead to increases elsewhere.
- Integrate traffic reduction with increased cycling and walking, better public transit, and improvements in urban form; reduce the need for car-dependent facilities such as large malls and megamarts.
- Employ tree-lined streets, narrower roads, and other traffic-calming techniques to reduce vehicle speeds and make walking and cycling safer and more enjoyable.
- Make certain streets or areas "pedestrian only" to reduce traffic volumes permanently or intermittently.
- Use bans (closing off areas to certain kinds of traffic) and permit schemes (introducing bus or high-occupancy vehicle lanes) to provide incentives to not use cars.
- Incorporate external costs in car travel through taxes on parking spaces, licenses, the buying and selling of vehicles, fuel, and road use.

Under the Clean Air Act, urban policies that reduce car dependence and reduce vehicular emissions may count towards state attainment of clean air standards. The EPA hopes to encourage local zoning policies that reduce VMT and encourage urban redevelopment and infill. Such policies would encourage greater density around mass transit facilities, provide incentives to use mass transit, and eliminate policy obstacles to mixed-use neighborhoods (Schmidt, 1998).

5.6 Conclusion

American cities must offer alternatives to the single-occupancy vehicle, make the cost of car use reflect external costs, and dramatically improve public transit. Our current automobile-based system cannot meet the environmental, social, and demographic challenges we face as a nation and planet. Building walkable communities around mass transit nodes is both desirable and necessary for a number of reasons (Beatley, 2000):

- All citizens have the right to decent public transport. Relegating the poor, the young, the disabled, and the old of our society to second- or third-rate mobility while overinvesting in auto-based travel is unethical and unwise.
- Sustainable mobility and walkable communities will become greater issues of national security as oil reserves are depleted and production slows over the next century (see section 4.8).
- As airport congestion worsens, frustration with delays grows, and the quality of airline service continues to

decline, travel by rail — especially high-speed rail — will become much more attractive.

The Triangle region can take measures to reduce automobile dependence:

- Institute progressive land use planning initiatives like those in Portland, Boulder, and Europe that emphasize mass transit, situate development next to mass-transit systems, mix residential and business uses, limit downtown commuter parking, and bound urban growth around cities and towns. Progressive land use policies are discussed further in section 9.
- Raise local gasoline taxes to include externalized costs of automobiles. Consider additional local taxation of SUVs, light trucks, and other vehicles that do not comply with fuel efficiency and pollution standards.
- Develop a comprehensive rail system serving all towns and cities in the region. Transfer funds earmarked for highway expansions into mass-transit initiatives and seek matching federal funds for innovative mobility alternatives.
- Provide incentives to developers and property owners for renovation of existing structures or new construction in urban areas to accommodate more residential units per acre, which supports mass transit and lively, pedestrian-friendly communities.

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