

The concentration of employment in several specific areas, most notably the downtowns of Raleigh and Durham, the Research Triangle Park area and the university/medical center areas associated with Duke University, UNC-Chapel Hill, NC State University and North Carolina Central University results in significant commuting across the MPO boundary. Figure 3.3.5 shows the growth in cross-county commuting in the region while Figure 3.3.6 shows commuting flows, with the largest flow consisting of 65,000 people who commute each day between Wake County on the one hand and Durham and Orange Counties on the other.

Figure 3.3.5 Cross-County Commuting

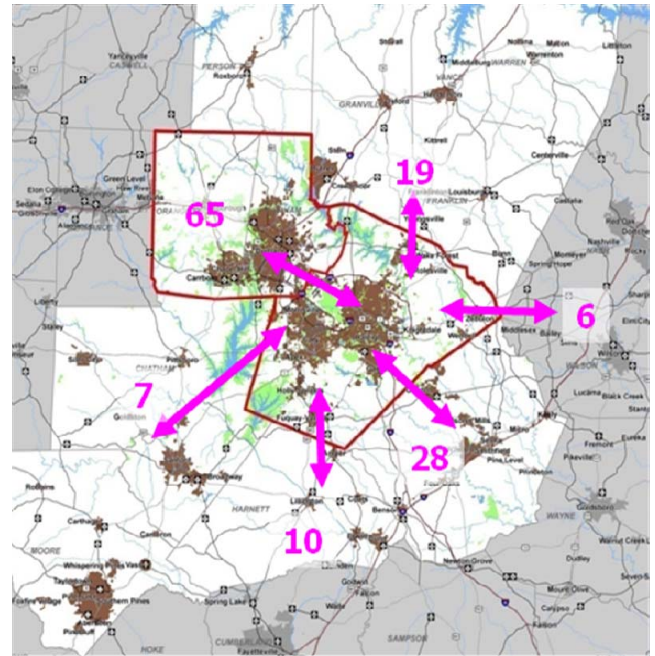
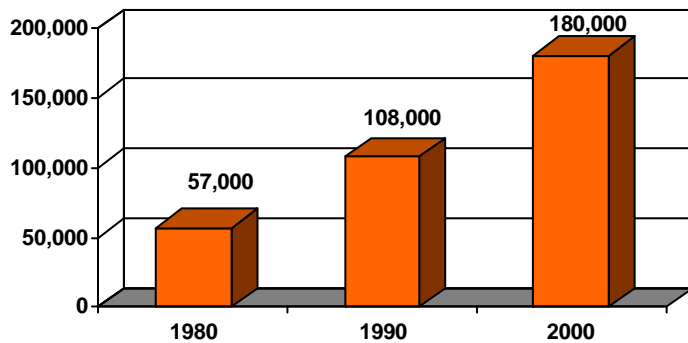


Figure 3.3.6 Daily Commuting Flows (in thousands of commuters)

3.4 Our Environment

Among the many environmental concerns in our region, land use, air quality and water resources are three that have critical connections to transportation investments. Land use is a particularly critical issue in a fast-growing region like the Triangle, since the pattern of future land use can have significant influence on the efficiency and effectiveness of different transportation investments, especially transit services. Much of the Triangle Region is characterized by low-density development with different types of land uses, such as homes, offices and stores, separated from one another, a pattern commonly referred to as “sprawl.”

According to a national study that carefully examined measures of density, land use mix, road connectivity and “centeredness,” the Triangle area ranked as the 3rd most sprawling among the 83 regions studied. The same study examined the environmental and social impacts of sprawl,



Flowers blooming in Downtown Durham

concluding that persons in the most sprawling areas add many more miles of travel each day to their schedule, suffer more traffic deaths, and tend to endure worse air quality.

Air quality is an increasingly important concern and is directly linked with the transportation system. Ozone is a strong oxidizer and irritant that has been shown to decrease lung function and trigger asthma attacks among the young, elderly, and adults who work or exercise outdoors.

Emissions from cars and trucks account for over one-half the emissions of nitrogen oxides (NO_x) – the controlling pollutant in the formation of ground level ozone – in the Triangle Area. Given the serious health effects of ozone, the reduction of ozone emissions is an important goal of the MPO’s long-range transportation system.

Figure 3.4.1 Regional Measures of Sprawl



The Environmental Protection Agency (EPA) has established standards for common air pollutants. A geographic area that meets or exceeds the standard for a particular air pollutant is called an “attainment area.” Likewise, an area that does not meet the standard is called a “non-attainment area.” Standards are set for a number of pollutants, including ozone, nitrous dioxide and carbon monoxide.

The non-attainment status can directly affect the community’s economic development efforts, and federal funding for transportation improvements can be delayed if a plan is not adopted that is deemed to bring the Triangle back into conformity. New or expanded industrial developments proposing to emit air pollutants face stricter and more costly technology standards in non-attainment areas.

Water quality is a regional concern as well. The Triangle Region is divided into two major drainage basins, both of which supply water for the Region’s drinking water reservoirs. The southern/western part of the Region drains into Jordan Reservoir and the Cape Fear River basin. The northern/eastern part of the Region drains into the Falls of the Neuse Reservoir and the Neuse River basin. All of the major watercourses in the Region drain to water supply reservoirs and affect the quality of their waters. The NC Division Water Quality (DWQ) classifies streams according to their best-intended uses. Surface waters, including streams and lakes, are rated as fully supporting, partially supporting or not supporting their intended uses. Intended uses could include water supply, aquatic life protection and swimming or other recreation. The DWQ has determined that several streams throughout the region do not support their intended uses. These streams include the New Hope, Third Fork and Northeast Creeks in the Cape Fear basin; and Ellerbe, Little Lick and Lick Creeks in the Neuse basin. All have impaired water quality.

The municipalities and counties in the region often apply special zoning regulations for the purposes of water supply watershed protection. These regulations often prohibit certain types of development in sensitive watershed areas, limit the intensity of development to minimize pollution from stormwater runoff, limit the amount of impervious surfaces allowed in new developments, and limit the disturbance of naturally vegetated areas on each side of most streams. Transportation plans must take into account the impact that new or widened roadways might directly have on water quality, and the indirect effects that transportation investments might have in spurring future development that could adversely impact water quality.