

# Chapter 4

# Existing and Future Conditions



Kannapolis Cannon Baller Stadium. - Photo from Ballpark Digest

## Introduction

The CR MPO planning officials recognized that the major factors influencing the area's transportation infrastructure needs are population, employment, and land use. In an effort to develop an effective and efficient Metropolitan Transportation Plan, accurate base year socioeconomic measures were collected to provide an acceptable and rational estimate of future growth and demand for travel. The CR MPO developed socioeconomic projections as part of the update of the Metropolitan Transportation Plan and development of the Metrolina Regional Travel Demand Model. The Urban Area encompasses two full counties and fourteen municipalities, and is divided into 529 traffic analysis zones (TAZ's). (There is a total of 3,490 TAZ's in the Metrolina Regional Travel Demand Model). The Urban Area planning boundary includes both urban and rural populations residing in areas that are expected to become urban in nature by the year 2050. Due to the non-attainment designation and regional modeling effort, all of Cabarrus and Rowan Counties are expected to become urban by 2050. However, some small parts or pockets

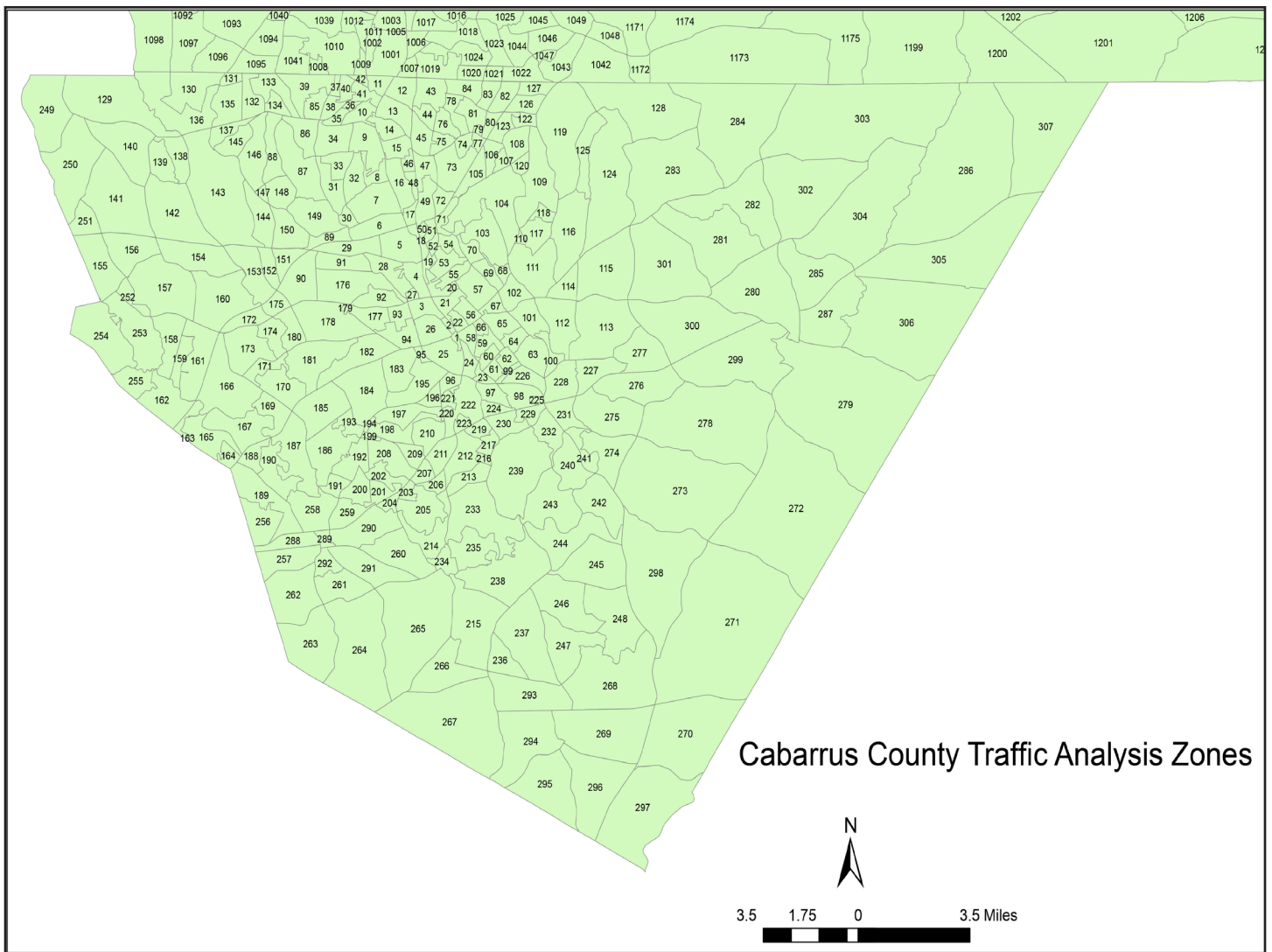
of both counties will remain rural in nature due to the unavailability of utilities and environmentally sensitive land.

## Maps 4-1 and 4.2 show the Urban Area Traffic Analysis Zones (TAZs) for Cabarrus and Rowan

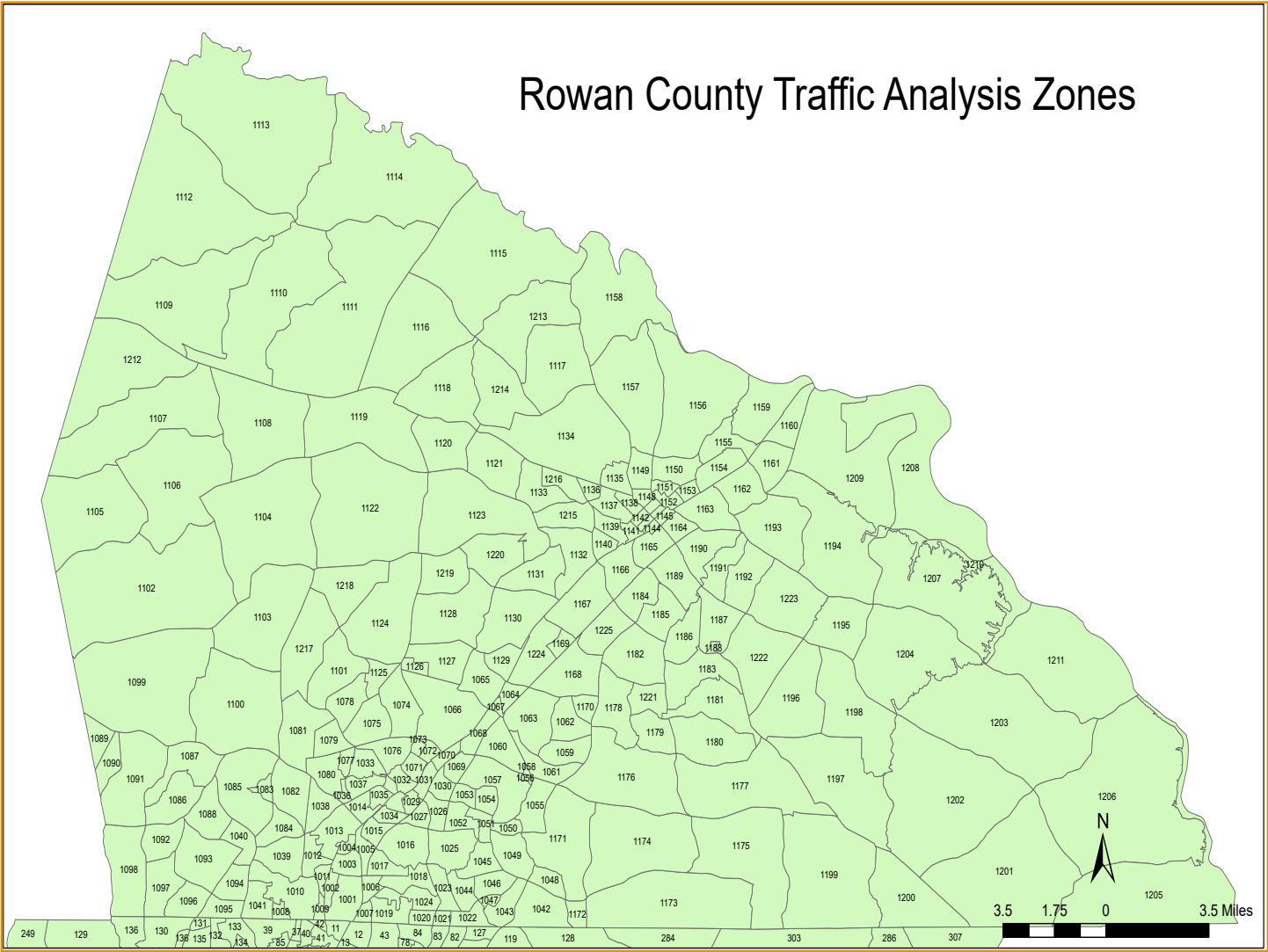
### Population and Employment Demographics

The purpose of the socioeconomic projections is to predict the amount and nature of future land use in the Urban Area and to provide the basis for future travel relationships used in the Urban Area Travel Demand Model. To plan for future transportation facilities, transportation planners must have a clear understanding of existing land uses and make rational predictions regarding future land uses.

The MPO staff used 2018 as the base year for the Metropolitan Transportation Plan and updated the inventory from the 2050 MTP using a database of jobs for the Urban Area. The MPO verified 139,389 jobs and a population of 354,920 in the base year.



**Map 4-1 Cabarrus County Traffic Analysis Zones (TAZ)**



**Map 4-2 Rowan County Traffic Analysis Zones (TAZ)**

MPO staff also updated other demographic statistics for the base year including number of households, school enrollment by 3 categories, and distribution of employment by 8 SIC categories.

A variety of sources were used to establish base year (2018) inventories for employment, which were reconciled with each other to arrive at a common set of employment data used both at the regional or county level and the TAZ level. The MPO purchased Woods and Poole employment data for the year 2018.

The raw employment data was geocoded by employment address to determine any changes to the new base year 2018. MPO staff reviewed the location of the largest employers for Cabarrus and Rowan counties as well as incorporated education employment from all colleges and public elementary, middle and high schools. Through review by the local EDCs, additional verification of future employment development was identified and hard coded into the appropriate horizon years. The proportional employment (by type and total) was tabulated for each TAZ and adjusted to the regional control totals for 2025 through 2050.

As noted in previous MTP Updates, the Metrolina Regional Partners retained the services Dr. Stephen Appold to devise “top-down” employment and population projections to the year 2050.

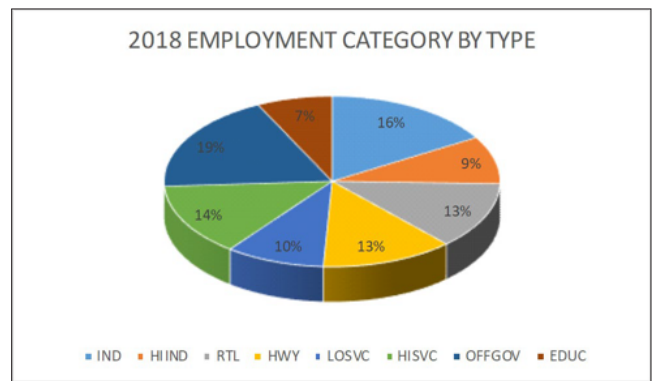
*For a copy of Dr. Appold’s Demographic and Economic Forecasts methodology and report, contact the MPO office, at (704) 791-0608.*

The CR MPO is expected to experience fairly healthy population growth over the next 30 years. The population is projected to increase 19 percent by 2025, 43 percent by 2035, 63 percent by 2045, and 75 percent by 2050 for an annual growth rate around 2 percent. As for employment, the number of jobs is projected to increase by 16 percent by 2025, 34 percent by 2035, 52 percent by 2045, and 62 percent by 2050. The annual rate of growth for employment is estimated to be

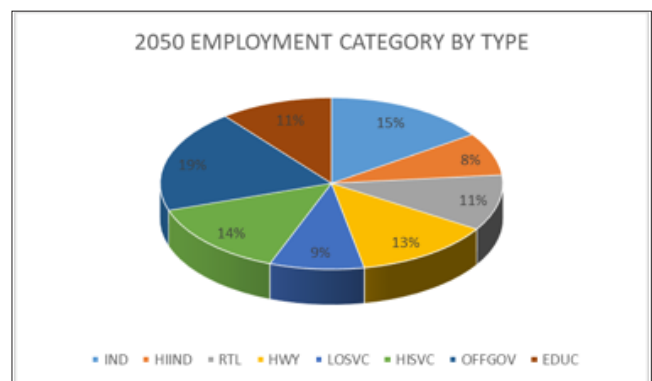
approximately 2 percent.

The pie charts below show the change in the employment makeup for the Cabarrus-Rowan MPO. Although the shift is subtle, the economic base continues to move towards a more service based economy rather than the traditional manufacturing economy. This shift is not unique to this region, but is the result of a trend nationwide. However, it is more pronounced in the CR MPO due to the continued loss of manufacturing jobs. Emerging sectors such as service and retail will displace many manufacturing jobs that have fallen prey to international competition.

### 2018 Employment Category by Type



### 2050 Employment Category by Type



**Appendices 4-1 and 4-2 illustrate the Population and Employment by TAZ for the planning area.**



## Land Use

The generation of traffic on a particular roadway (non-freeway) is directly related to the land use of adjacent properties. Different types of businesses generate different levels of traffic. For example, a restaurant with 30 employees would generally attract substantially more traffic consistently than an industrial park with 30 employees. Even though the industrial park has the same number of employees, the restaurant will attract more customers and trips because of the type of business. As a result, the type of land use and intensity of development along a roadway corridor will have a direct impact on the amount of traffic generated.

The CR MPO has had many changes in land use over the past decade. The primary changes in land use have occurred through rezoning and annexations. The jurisdictions within the MPO have also conducted updates of the individual Land Use Plans in response to growth and future development in the region.

The MPO and member jurisdictions along the NC 73 corridor have actively participated in the NC 73 Transportation and Land Use Corridor Plan. This effort is a coordinated land use and multi-modal transportation plan for a 35 mile corridor from Lincolnton to the Concord/Kannapolis area. The CR MPO maintains planning jurisdiction over the segment between I-85 and the joint MPO/CRTPO Boundary. The Study includes an access management strategy, various road typologies, bicycle and pedestrian accommodations, etc. As part of this study, several priority segments were identified to be funded through the State TIP at one point. It is now a partially funded project with right-of-way funds in FY 2029 in the most recent item N of the STIP.

Projected traffic along this corridor ranges from 32,000 vehicles per day in 2040 at the MPO Boundary/County Line to 40,000 vehicles per day at I-85. These estimates represent a 45 percent increase in traffic over current traffic. Future land use could include residential densities ranging from 1 to 3 units per acre with a mix of

employment between the Kannapolis Parkway and I-85. More specifically, a Neighborhood Center is to be located at Poplar Tent Road and Mixed-Use Centers are to be located at NC 73/Odell School Road, I-85/NC 73 and at the Kannapolis Parkway and I-85. In addition, a village node will be located in the area around Moss Creek, in the southwest quadrant of the intersection of NC 73 and Odell School Road.

The NC 73 Study also identified future road typologies for the corridor beginning with a 4 lane urban boulevard in Mecklenburg County transitioning to a 4 lane rural parkway at the Cabarrus Crossing entrance to a 4 lane rural boulevard at Johnson Street to a 4 lane suburban boulevard at the Kannapolis Parkway through the I-85 interchange. These typologies are predicated on future traffic growth and consistency with future land use. In terms of additional infrastructure improvements to NC 73, the Study also recommends the conversion of the Poplar Tent Road intersection into a grade separated interchange and a diverging diamond interchange of NC 73 and I-85. By combining a land use vision with transportation infrastructure for NC 73, the CR MPO can ensure a functional multi-modal corridor that moves both people and traffic while maximizing both development potential and quality of life.

## Development Regulations

The majority of municipalities (Concord, Kannapolis, Mt. Pleasant, and Harrisburg) in Cabarrus County have adopted a Unified Development Ordinance (UDO). The UDO has provisions for incorporating transportation facilities into the local planning process. The UDO endorses the concepts of the adopted Transportation Plan. This UDO regulates street construction by requiring the developer to meet right-of-way standards, cross-section standards, and road design standards. Pedestrian, bike, and transit facilities are also mentioned in the UDO. All regulations are designed to ensure that streets constructed by developers will fit into the overall transportation network.

As a part of the regulations, the UDO requires developers with property adjacent to a major thoroughfare to allow a larger setback to their structures than would normally be required for that district. This requirement provides adequate protection of residential properties and preserves the right-of-way for future thoroughfares. The UDO also encourages and provides standards for Transit Oriented Design and Traditional Neighborhood Design concepts.

The City of Salisbury and Rowan County have regulations within their subdivision ordinance that defers to the Comprehensive Transportation Plan. Rowan County can exert an authority to limit access and establish building setbacks on thoroughfares, while the City of Salisbury can require reservation of future rights-of-way as part of the development review process. Development regulations are an important part of project implementation. The land use and planning authority of local government is critical to protecting corridors and in some cases to constructing roads, sidewalks, and pedestrian and transit amenities that improve mobility within the urban area.

*Contact the MPO office (704) 791-0608 for excerpts from the UDO, City of Salisbury, or Rowan County ordinances related to transportation facilities.*

### **Economic Trends**

The economic base of an area is an important factor to consider in the estimation of future traffic growth. The CR MPO has a retail and service-based economy as well as a tremendous growth in the hospitality and tourism sector (NASCAR, etc.). The NC Research Campus continues to emerge as a major player in both Cabarrus County and the Region and will spin-off thousands of jobs into the future. The Concord Regional Airport also has major expansion plans and has developed an Airport Master Plan. The total commercial service passengers for calendar 2021 was 273,077, which was 23 percent below pre-pandemic highs. The Airport area is attracting professional and technical firms that support the “Industrial Park” concept and design. Other major development

contributors are University City, Charlotte Motor Speedway, and Concord Mills Mall.

The CR MPO has maintained a database of the major employers (greater than 75 employees) in the 2 county area. This database was assembled using several reputable sources of economic data and verified through random phone interviews. The distribution of employment in the 2018 base year is as follows: industrial/manufacturing represented 25 percent of the area’s employment, service jobs comprised 23 percent, retail 26 percent, education 7 percent, and office/government 19 percent.

As the economy and demographics of the area changes, so will the employment characteristics. Concord Mills Mall continues to be a regional draw for retail growth with more than 2 million square feet of floor area. Local planning staff believes that the CR MPO will experience above average retail and service growth and substantial increases in all other areas of employment by the year 2050. The projected distribution of employment in 2050 is as follows: industrial/manufacturing represented 23 percent of the area’s employment, service jobs comprised 24 percent, retail 23 percent, education 11 percent, and office/government 19 percent. This distribution indicates a shift from the traditional manufacturing sector to a more service-based local economy.

*For a copy of the Socioeconomic Data for 2018, 2025, 2035, 2045 and 2050, contact the MPO office, at (704) 791-0608.*

### **Transportation System Deficiencies**

Among the transportation planning services that the Cabarrus-Rowan Metropolitan Planning Organization (CR MPO) provide to the public in Cabarrus and Rowan Counties are the identification of current needs, forecasts of future trends, and the programming of transportation facilities to improve mobility for people and goods. To effectively provide these services, the CR MPO planners must possess current information on the travel behavior of people who live, work, and travel in the Urban Area.

## Highway System Deficiencies

The CR MPO, in coordination with the Metrolina Regional Partners and NCDOT, has developed a regional travel demand model for the Metrolina Area, which includes parts of 12 counties. The model incorporates the empirical data collected and projected for the base year of 2018 and the future year 2050. The primary focus of the model is to identify new relationships between future land use and travel. Using these relationships, the existing land use has been projected into the future for deficiency analysis and development of the Highway Element of the Metropolitan Transportation Plan.

Definitions of Capacity and Level of Service can be found in Generalized Chapters for Thoroughfare Plan Reports, Transportation Planning Division, and NCLOS, dated 1997.

The capacity of a roadway is defined as the number of vehicles that can be reasonably processed for a given level-of-service. Standard capacity values have been developed by NCDOT for different types of roadway facilities. A capacity value depends on the cross-section, number of signals, and access points along the segment of roadway. The primary performance measure for congestion is the volume-to-capacity or v/c ratio. A v/c ratio of 1 or greater indicates that the travel demand volume exceeds the available capacity of the roadway and forced flow conditions will inevitably result.

The CR MPO partners and the NCDOT to operate and maintain a multi-modal travel demand model (MRM). One measure of performance is to assess congestion using the ratio of volume to capacity. The MRM provides estimates for the base year and forecast year out to year 2050 for volumes at the daily and hourly increment.

The CR MPO has chosen to highlight the congested corridors in the MPO area using peak hour volume to capacity (v/c) in the PM. This ratio enables the MPO to assign a level of service to various highly traveled routes. In addition, the visual display of the v/c as a thematic map indicates system performance over time in comparing the base year (2018) to the

forecast year (2050). These maps are one tool to evaluate system predictability and performance in the MPO's toolbox.

The projected development in and around the Cabarrus-Rowan area is expected to overload many of the existing facilities. The base year provides a good starting point for evaluating system deficiencies. Using the base year population and employment, the following map indicates the hour volume to capacity ratios for Rowan and Cabarrus Counties.

**Appendix 4-3 shows those facilities that are over capacity in the 2018 base year.**

To identify future travel deficiencies, the 2050 socioeconomic projections discussed previously were loaded into the Regional Travel Model. All committed projects (identified as funded in the 2020-2029 TIP) and fiscally constrained projects for 2025, 2035, 2045, and 2050 were included in the analysis to reflect future conditions.

**Appendix 4-4 shows those facilities that will still be over capacity by the year 2050 if all of the 2050 MTP project improvements are made.**