# Chapel Hill

# 2005 Mobility Report Card

January16, 2007

LSA

LSA ASSOCIATES, INC.

# Summary of Findings

**VEHICULAR ACTIVITY AND ARTERIAL LEVEL OF SERVICE**
Traffic volumes are generally lower in 2005 than in 2003 and congestion along major roadway segments is getting better. Fifteen roadway segments improved their level of congestion and only three became substantially more congested.

**VEHICLE PEAK HOUR INTERSECTION OPERATIONS**
The majority of intersections are uncongested or moderately congested. Some intersections improved LOS and some became worse between 2003 and 2005, but the majority stayed at the same general level of congestion.

**VEHICULAR TRAVEL TIME**
Total corridor travel time increased between 2003 and 2005. More corridors declined than improved. The travel time in several corridors increased substantially.

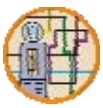
**PEDESTRIAN FACILITIES**
Total length of all sidewalks in the Town increased 9% between 2003 and 2005. Total length of sidewalks inside the transit area increased 7% and approximately 2/3 of all new sidewalk construction took place in the transit area.

**PEDESTRIAN ACTIVITY**
Pedestrian activity in 2005 is nearly identical to that experienced in 2003. Many locations improved and many declined in overall activity.

**BICYCLE FACILITIES**
Total length of all bicycle facilities in the Town increased by 14% between 2003 and 2005. New facilities build on previously existing facilities and a major new corridor has been added to the bicycle network: US 15/501 South.

**BICYCLE ACTIVITY**
Bicycle activity has continued to decrease between 2003 and 2005. Total bicycle activity in the Town decreased by 15%. Over 40% of the 2003 surveyed locations experienced a drop in the number of bicycles counted.

**PEDESTRIAN/BICYCLIST SAFETY**
This is the first year of this indicator, but analysis of past accidents involving pedestrians and bicyclists indicate that the number of accidents may be increasing. However, total pedestrian activity has also increased, so the pedestrian/bicyclist accident rate may not be increasing.

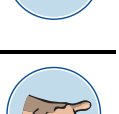


**TRANSIT SERVICE**
Approximately 75% of the Town is within ¼ mile of transit. Fixed route transit service hours increased by over 50% between 2001 and 2005 and total system operating hours increased by 47% over the same time. CHT continues to improve transit service within the Town.

**TRANSIT RIDERSHIP**
Ridership increased dramatically between 2001 and 2003 due to the conversion to a fare-free system in January 2002. These ridership increases have continued to 2005. System-wide ridership has almost doubled between 2001 and 2005 and has increased by 26% to almost 6 million since 2003. System-wide riders per capita increased by 27% and riders per hour increased by 19%.

**MULTIMODAL MOBILITY**
Overall multimodal mobility in the Town is good. The multimodal mobility assessment methodology is revised this year, but the indication is that mobility is comparable to 2003. Alternative transportation usage is highest in the downtown and campus area. Corridors that have a high potential for multimodal mobility include Martin Luther King Boulevard and South Road/Raleigh Road/NC 54.

**OFFICE PARKING**
Every site was more utilized in 2005 than 2003. It is not clear why the parking lots are generally more utilized, whether it's due to use of different modes or due to variances in office occupancy rates. Office parking utilization is less than Town minimum parking requirements.



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# Introduction

One of the action items of the 2000 Chapel Hill Comprehensive Plan was to create a mobility report card series to ensure that progress was being made to enhance the mobility of the citizens of Chapel Hill. Previous Mobility Report Cards were conducted in 2001 and 2003. This 2005 Mobility Report Card represents a snapshot of mobility in Chapel Hill during the fall of 2005 and is a follow-up to the 2001 and 2003 Mobility Report Cards. This and future updates to the Report Card are a means to monitor and evaluate progress towards Town-wide mobility goals.

The original report card focused on ten indicators to best balance the cost of data collection with the value of the resulting data in order to describe the current state of mobility within the Town and provide a meaningful baseline for future comparison. In 2003, a Multimodal Mobility indicator was added, which combines the other indicators into one overview of all modes. This Report Card adds a Pedestrian and Bicyclist Safety indicator. The indicators analyzed here, are:

1. Vehicular Activity and Arterial Level of Service
2. Peak Hour Intersection Operations
3. Vehicular Travel Time
4. Pedestrian Facilities
5. Pedestrian Activity
6. Bicycle Facilities
7. Bicycle Activity
8. Pedestrian and Bicyclist Safety
9. Transit Service
10. Transit Ridership
11. Multimodal Mobility
12. Office Parking

The second Report Card allowed, for the first time, for trend comparisons among these indicators. This third Report Card will go even further and will allow for even more in-depth analysis of those trends documented in 2003. Is the indicator getting better? Is it getting worse? Is the trend from 2001 to 2003 continuing? Or is it changing? This third Report Card will help to answer those questions and provide additional insight into mobility trends in Chapel Hill and Carrboro.

Each of the 12 indicators comprises a separate section of this document. Each indicator discussion includes three descriptions as follows:

- ***Why and How***: This section briefly highlights the purpose of the information and what type of data was collected.

- *Results*: This section of the indicator description will present the collected data. This information is presented in simple, easy to understand and read maps, tables and charts.

- *Findings and Conclusions*: For each indicator, key findings and conclusions are highlighted for both current conditions and for future comparisons. This section also incorporates comparisons with the 2001 and 2003 data and trend analyses.

*2000 Chapel Hill Comprehensive Plan Action Item – "Mobility Report Card"*

In order to assure progress in improved mobility for the citizens of Chapel Hill, the comprehensive plan proposed that periodic transportation mobility surveys be conducted. The survey results become the Town's Mobility Report Card that will be used by Town Council and staff to assist in prioritizing and modifying current transportation programs to address citizen needs. These mobility surveys should be conducted every three to five years, with the first survey becoming the benchmark for subsequent comparisons. Daily and peak hour traffic counts and transit ridership reports are often conducted annually. Survey elements would include the following:

- Daily traffic counts along key arterials.
- AM and PM peak hour intersection turn movement counts and level of service analysis of key intersections.
- AM and PM peak hour travel time and delay runs that determine the average time it takes to travel from one end of Chapel Hill to another along various corridors. This analysis should also identify key congestion points for each.
- Inventory of miles of sidewalk and bicycle lanes.
- Peak hour and/or daily bicycle and pedestrian counts at key locations.
- Annual and daily transit passenger summaries by total system and route.

For informational purposes, two different colors of sidebars are used in this report. Green sidebars include highlights from the 2000 Comprehensive Plan which provide background to the purpose and rationale for each of the indicators. Blue sidebars are highlights of the results and conclusions from the 2001and 2003 Mobility Report Cards for the sake of comparison.

In order to gain a better understanding of mobility in the entire region, this report is accompanied by a similar report for the Town of Carrboro. Some of the Carrboro data that is essential to understanding mobility issues in the Town of Chapel Hill is presented here. Further data is available in the Town of Carrboro Mobility Report Card.

# Chapter 1 - Vehicular Activity and Arterial Level of Service

**MEASUREMENT: Roadway Traffic Volumes and Volume/Capacity Ratio**
**DATA: 24-Hour Machine Counts**

## *Why and How*

Daily 24-hour traffic counts are one of the most common ways of presenting vehicular traffic activity. These counts are obtained through placement of a pneumatic tube or sensor across the whole street. These tubes or sensors send information to the machine counter on the roadside. Counts are only done on Tuesdays, Wednesdays or Thursdays.

For purposes of this study, 76 roadway locations were counted, including 58 in the Town of Chapel Hill and 18 counts provided by the University of North Carolina at Chapel Hill (UNC). The locations where 24-hour vehicle traffic counts were collected are presented in Figure 1.2. Those counts provided by the University are shown in blue and all other counts are shown in red.

***2000 Chapel Hill Comprehensive Plan Action Item***

- Conduct daily traffic counts along key arterials every three to five years.

*Since 2001, the Mobility Report Card, including newly collected daily traffic counts, has been updated every two years. The Town is committed to performing mobility updates including daily traffic counts at least every three years.*

The daily traffic counts can also be used to determine level of service. Level of service (LOS) is a measurement system that assesses how well a particular roadway or intersection operates. Level of service uses letter grades similar to grades at school. An LOS of "A" indicates a relatively low volume of traffic in relation to a roadway's capacity meaning vehicles can move freely down the roadway with few other automobiles on the road. The level of service system moves steadily down to an LOS of "F" indicating that traffic volume is above the roadway's capacity. The Town of Chapel Hill's standard for acceptable level of service is LOS D or better. This standard is chosen because it is an efficient use of the roadway: not too many vehicles but not too few, either. A higher letter grade is not necessarily better than a lower one, as a roadway with high capacity and low volume is not being used efficiently. Figure 1 presents general relationships for maneuverability, driver comfort, and average travel speed compared to the speed limit by level of service.

Level of service for roadways is based on a concept referred to as a volume-to-capacity (v/c) ratio, which simply is the daily volume divided by the facility's theoretical capacity. When the estimated or forecasted daily traffic volume exceeds the theoretical capacity, then the volume-to-capacity ratio is greater than one and would experience an "F" level of service. Volume-to-capacity ratios for the other levels of service are depicted in Figure 1.1.

**FIGURE 1.1 – LEVEL OF SERVICE CHARACTERISTICS**

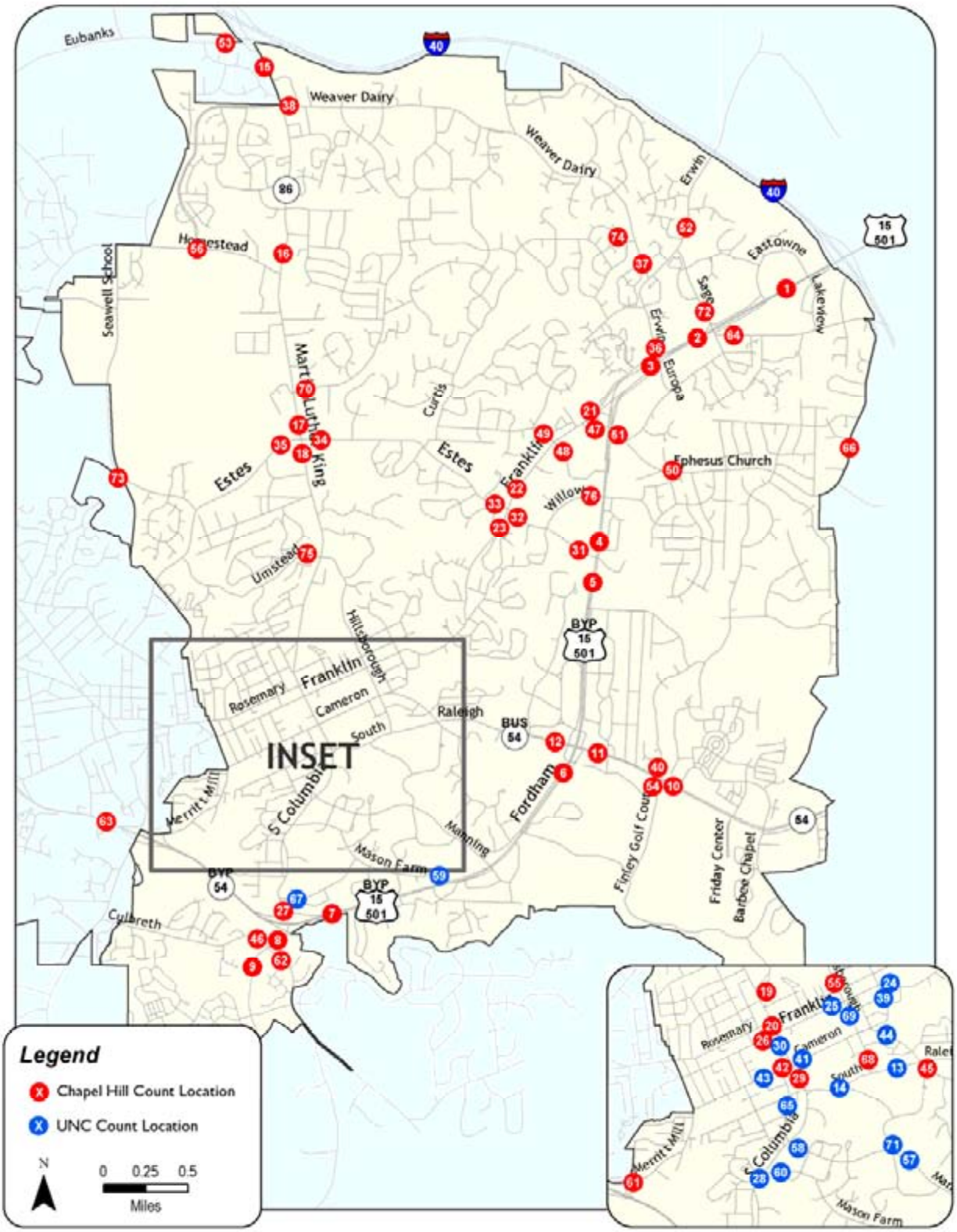
| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Intersection Delay (control delay per vehicle, sec) | < 10 | > 10 and < 20 | > 20 and < 35 | > 35 and < 55 | > 55 and < 80 | > 80 |
| Arterial Volume/ CapacityRatio | < 0.6 | 0.6–0.7 | 0.7–0.8 | 0.8–0.9 | 0.9–1.0 | > 1.0 |
| Maneuverability | Almost Completely Unimpeded | Only Slightly Restricted | Noticeably Restricted | Severely Limited | Extremely Unstable | Almost None |
| Driver Comfort | High | High | Some Tension | Poor | Extremely Poor | The Lowest |
| Average Traveling Speed | Speed Limit | Close to Speed Limit | Close to Speed Limit | Some Slowing | Significantly Slower than Speed Limit | Significantly Slower than Speed Limit |
| | ← CHAPEL HILL STANDARDS → | | | | | |

## *Results*

As indicated previously, 76 locations throughout the Town were counted for 24-hour daily volumes. This information is presented in Figure 1.3 and Table 1.1. Figure 1.3 presents two items of information: the first is the traffic volumes (the higher the volume, the wider the band) and the second item of information is the level of service. This information is color coded in a form similar to a traffic signal: uncongested conditions (LOS A, B and C) are green, moderate congestion (LOS D) is yellow, and congested conditions (LOS E and F) are red.

Data from 2001, 2003 and 2005 is shown for comparison purposes in the tables. The 2003 and 2005 LOS column is color coded in each table to represent the level of service change from the previous time period. Red text indicates a decrease in level of service resulting in increased congestion, while green indicates an improvement in level of service resulting in decreased congestion and black indicates no change or that no data was available from the previous year. Also included in these tables are the resulting daily volume-to-capacity ratios (for 2005) and levels of service (for all years) for each location. Table 1.1 also shows the overall percent change in traffic volume between 2001 and 2005. The count locations in this and future tables are grouped by corridor, with the corridors with the highest traffic volumes being listed first. Within each corridor section, count locations are listed from the outer edge of Town towards the downtown core.

## Figure 1.2 – 24 Hour Auto Count Locations



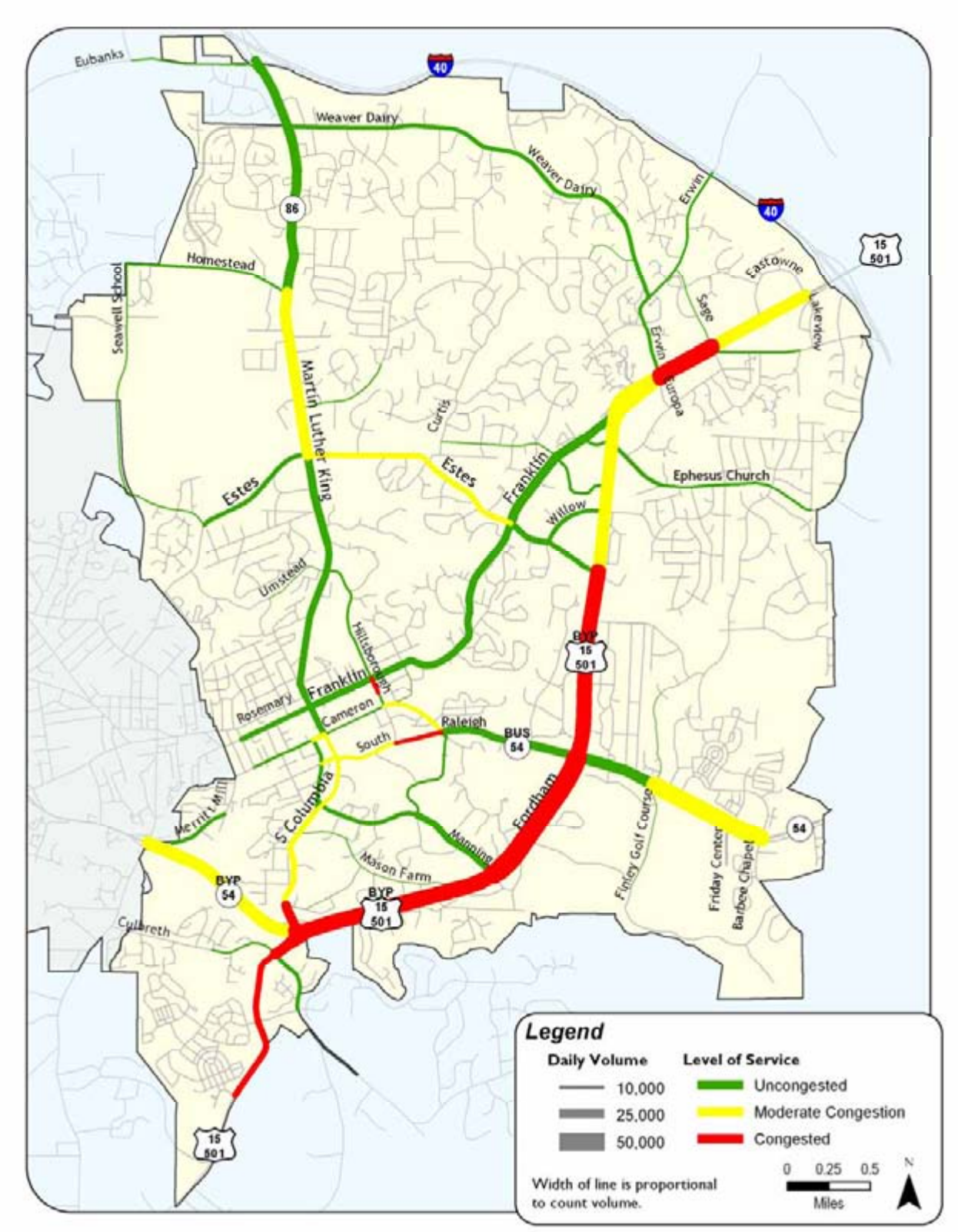
# Table 1.1 – Roadway Traffic Volumes and Level of Service

| | | Count Location | UNC Count | Daily Two Way Capacity | 2001 24-Hour Two Way Volume | 2001 LOS | 2003 24-Hour Two Way Volume | 2003 LOS | 2005 24-Hour Two Way Volume | 2005 Daily V/C | 2005 LOS | Percent Difference 2001-2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US 15/501/Fordham Blvd | 1 | US 15/501 btw both Eastowne Dr | | 37,200 | 43,941 | F | 51,943 | F | 30,900 | 0.83 | D | -29.7% |
| | 2 | US 15/501 west of Sage Rd | | 37,200 | 42,273 | F | 51,932 | F | 42,000 | 1.13 | F | -0.6% |
| | 3 | US 15/501 west of Erwin Rd | | 37,200 | 40,430 | F | 61,979 | F | 30,700 | 0.83 | D | -24.1% |
| | 4 | Fordham Blvd north of Estes Dr | | 37,200 | 36,545 | E | 36,372 | E | 31,000 | 0.83 | D | -15.2% |
| | 5 | Fordham Blvd south of Estes Dr | | 37,200 | 40,088 | F | 41,304 | F | 39,000 | 1.05 | F | -2.7% |
| | 6 | Fordham Blvd south of South Dr | | 37,200 | 50,485 | F | 44,373 | F | 51,000 | 1.37 | F | 1.0% |
| | 7 | Fordham Blvd east of US 15/501 South Exit | | 37,200 | 42,652 | F | 36,899 | E | 40,000 | 1.08 | F | -6.2% |
| | 8 | US 15/501 South north of Culbreth Rd | | 17,200 | 30,484 | F | 29,989 | F | 30,000 | 1.74 | F | -1.6% |
| | 9 | US 15/501 South south of Culbreth Rd | | 17,200 | 20,261 | F | 19,329 | F | 18,000 | 1.05 | F | -11.2% |
| NC 54/Raleigh Rd/South Rd | 10 | NC 54 East of Burning Tree Dr | | 52,300 | 42,333 | D | 42,288 | D | 43,000 | 0.82 | D | 1.6% |
| | 11 | NC 54 East at Glen Lennox Shopping Center | | 52,300 | 45,395 | D | 44,170 | D | 44,000 | 0.84 | D | -3.1% |
| | 12 | Raleigh Rd west of US 15/501 Interchange | | 34,700 | 13,988 | A | 26,980 | C | 20,000 | 0.58 | A | 43.0% |
| | 13 | South Rd east of Raleigh St | • | 13,700 | 9,840 | C | 9,995 | C | 12,900 | 0.94 | E | 31.1% |
| | 14 | South Rd east of Columbia St | • | 13,700 | 10,460 | C | 8,842 | B | 11,400 | 0.83 | D | 9.0% |
| MLK Blvd/ Columbia St | 15 | MLK Blvd north of Chapel Hill North S/C | | 37,200 | 25,933 | B | 29,479 | C | 25,000 | 0.67 | B | -3.6% |
| | 16 | MLK Blvd north of Homestead Rd | | 37,200 | 30,343 | D | 35,851 | E | 27,000 | 0.73 | C | -11.0% |
| | 17 | MLK Blvd north of Estes Rd | | 37,200 | 31,567 | D | 32,588 | D | 31,000 | 0.83 | D | -1.8% |
| | 18 | MLK Blvd south of Estes Rd Dr | | 37,200 | 29,033 | C | 26,156 | C | 22,000 | 0.59 | A | -24.2% |
| | 19 | MLK Blvd north of North St | | 37,200 | 20,824 | A | 20,664 | A | 19,000 | 0.51 | A | -8.8% |
| | 20 | Columbia St btw Rosemary St & Franklin St | | 25,800 | 17,727 | B | 18,701 | C | 16,000 | 0.62 | B | -9.7% |
| Franklin St | 21 | Franklin St north of Eastgate S/C | | 37,200 | 20,469 | A | 30,663 | D | 22,000 | 0.59 | A | 7.5% |
| | 22 | Franklin St north of Estes Dr | | 37,200 | 21,961 | A | 30,625 | D | 26,000 | 0.70 | B | 18.4% |
| | 23 | Franklin St south of Estes Dr | | 37,200 | 23,410 | B | 23,830 | B | 21,000 | 0.56 | A | -10.3% |
| | 24 | Franklin east of Boundary St | • | 34,700 | n/a | n/a | 23,559 | B | 20,200 | 0.58 | A | n/a |
| | 25 | Franklin St west of Raleigh Rd | • | 34,700 | n/a | n/a | 19,258 | A | 18,900 | 0.54 | A | n/a |
| | 26 | Franklin St btw Columbia St & Church St | | 34,700 | 15,516 | A | 19,356 | A | 14,000 | 0.40 | A | -9.8% |
| South Columbia St | 27 | S Columbia St south of Purefoy Rd | | 18,300 | n/a | n/a | n/a | n/a | 26,900 | 1.47 | F | n/a |
| | 28 | S Columbia St south of Mason Farm Rd | • | 18,300 | 18,470 | F | 19,196 | F | 16,200 | 0.89 | D | -12.3% |
| | 29 | S Columbia St btw South Rd And Cameron Ave | | 12,900 | 13,296 | F | 15,238 | F | 11,000 | 0.85 | D | -17.3% |
| | 30 | S Columbia St south of Franklin St | • | 25,800 | 20,720 | D | 19,057 | C | 17,500 | 0.68 | B | -15.5% |
| Estes Dr | 31 | Estes Dr west of Fordham Blvd | | 34,700 | 14,377 | A | 13,660 | A | 14,000 | 0.40 | A | -2.6% |
| | 32 | Estes Dr east of Franklin St | | 34,700 | 13,631 | A | 15,251 | A | 17,000 | 0.49 | A | 24.7% |
| | 33 | Estes Dr west of Franklin St | | 17,200 | 15,915 | E | 19,229 | F | 15,000 | 0.87 | D | -5.7% |
| | 34 | Estes Dr east of MLK Blvd | | 17,200 | 17,557 | F | 17,032 | E | 15,000 | 0.87 | D | -14.6% |
| | 35 | Estes Dr west of MLK Blvd | | 17,200 | 12,956 | C | 15,710 | E | 12,000 | 0.70 | B | -7.4% |
| Weaver Dairy Rd/Erwin Rd | 36 | Erwin Rd north of Fordham Blvd | | 17,200 | 12,749 | C | 12,209 | C | 10,000 | 0.58 | A | -21.6% |
| | 37 | Weaver Dairy Rd north of Erwin Rd | | 17,200 | 13,244 | C | 15,030 | D | 12,000 | 0.70 | B | -9.4% |
| | 38 | Weaver Dairy Rd east of MLK Blvd | | 34,700 | 7,511 | A | 14,371 | A | 12,000 | 0.35 | A | 59.8% |

# Table 1.1 (cont'd) –Roadway Traffic Volumes and Level of Service

| | Count Location | UNC Count | Daily Two Way Capacity | 2001 24-Hour Two Way Volume | 2001 LOS | 2003 24-Hour Two Way Volume | 2003 LOS | 2005 24-Hour Two Way Volume | 2005 Daily V/C | 2005 LOS | Percent Difference 2001-2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 39 Boundary south of Franklin St | • | 12,700 | n/a | n/a | n/a | n/a | 2,300 | 0.18 | A | n/a |
| | 40 Burning Tree Dr north of NC 54 E | | 13,700 | 2,193 | A | 2,765 | A | 1,900 | 0.14 | A | -13.36% |
| | 41 Cameron Ave east of S. Columbia St | • | 12,700 | 9,070 | C | 8,334 | B | 6,400 | 0.50 | A | -29.44% |
| | 42 Cameron Ave btw Columbia St & Pittsboro St | | 17,200 | 14,767 | D | 21,218 | F | 14,000 | 0.81 | D | -5.19% |
| | 43 Cameron Ave west of Pittsboro St | • | 18,300 | 9,820 | A | 8,303 | A | 8,500 | 0.46 | A | -13.44% |
| | 44 Country Club Rd north of South Rd | • | 13,700 | 13,470 | E | 14,076 | F | 12,200 | 0.89 | D | -9.43% |
| | 45 Country Club Rd south of South Rd | | 13,700 | n/a | n/a | n/a | n/a | 10,000 | 0.73 | C | n/a |
| | 46 Culbreth Rd west of US 15/501 South | | 17,200 | 4,937 | A | 5,979 | A | 5,600 | 0.33 | A | 13.43% |
| | 47 Eastgate Shopping Center Internal Road | | 13,700 | 7,575 | A | 6,717 | A | 9,500 | 0.69 | B | 25.41% |
| | 48 Elliot Rd east of Franklin St | | 17,200 | 4,667 | A | 7,559 | A | 7,700 | 0.45 | A | 64.99% |
| | 49 Elliot Rd west of Franklin St | | 17,200 | 10,611 | B | 5,128 | A | 4,200 | 0.24 | A | -60.42% |
| | 50 Ephesus Church Rd btw Frances St & Cypress Rd | | 17,200 | 3,814 | A | 8,955 | A | 7,400 | 0.43 | A | 94.02% |
| | 51 Ephesus Church Rd btw Fordham Blvd & Legion Rd | | 17,200 | 11,280 | B | 11,715 | B | 11,000 | 0.64 | B | -2.48% |
| | 52 Erwin Rd north of Covington Dr | | 17,200 | 9,301 | A | 11,011 | B | 7,300 | 0.42 | A | -21.51% |
| | 53 Eubanks Rd west of MLK Blvd | | 16,100 | 5,163 | A | 6,647 | A | 5,400 | 0.34 | A | 4.59% |
| | 54 Finley Golf Course Rd south of NC 54 East | | 16,100 | 1,927 | A | 2,716 | A | 2,300 | 0.14 | A | 19.36% |
| | 55 Hillsborough St btw Rosemary St & North St | | 13,700 | 8,587 | B | 8,384 | B | 7,300 | 0.53 | A | -14.99% |
| | 56 Homestead Rd east of Railroad | | 13,700 | 8,702 | B | 9,210 | B | 6,900 | 0.50 | A | -20.71% |
| | 57 Manning Dr east of Ridge Rd | • | 26,100 | 17,260 | B | 14,682 | A | 17,900 | 0.69 | B | 3.71% |
| | 58 Manning Dr east of Columbia St | • | 18,300 | 14,100 | C | 13,215 | C | 12,500 | 0.68 | B | -11.35% |
| | 59 Mason Farm Rd north of Fordham Blvd | • | 17,200 | n/a | n/a | 773 | A | 1800 | 0.10 | A | n/a |
| | 60 Mason Farm Rd east of Columbia St | • | 17,200 | 8,446 | A | 9,083 | A | 3,400 | 0.20 | A | -59.74% |
| | 61 Merritt Mill Rd east of Carboro City Limits | | 17,200 | 9,696 | A | 10,219 | A | 11,000 | 0.64 | B | 13.45% |
| | 62 Mount Carmel Church Rd east of US 15/501 South | | 17,200 | 10,889 | B | 11,140 | B | 11,000 | 0.64 | B | 1.02% |
| | 63 NC 54 Bypass at Kingwood Apts | | 37,200 | 34,420 | E | 31,716 | D | 32,000 | 0.86 | D | -7.03% |
| | 64 Old Durham Rd east of Scarlett Dr/US 15/501 | | 17,200 | 2,884 | A | 7,819 | A | 6,700 | 0.39 | A | 132.32% |
| | 65 Pittsboro St south of Mccauley St | • | 20,600 | 10,960 | A | 10,067 | A | 10,900 | 0.53 | A | -0.55% |
| | 66 Pope Rd north of Ephesus Church Rd | | 14,000 | 3,806 | A | 4,669 | A | 1,200 | 0.09 | A | -68.47% |
| | 67 Purefoy Rd east of Columbia | • | 12,700 | n/a | n/a | n/a | n/a | 1,100 | 0.09 | A | n/a |
| | 68 Raleigh St north of South Rd | | 13,700 | 7,424 | A | 8,130 | A | 7,000 | 0.51 | A | -5.71% |
| | 69 Raleigh St south of Franklin St | • | 12,700 | 14,470 | F | 10,710 | D | 13,100 | 1.03 | F | -9.47% |
| | 70 Piney Mountain Rd east of MLK Blvd | | 17,200 | 2,667 | A | 6,554 | A | 3,900 | 0.23 | A | 46.23% |
| | 71 Ridge Rd at Manning Dr | • | 13,700 | 8,320 | B | 7,872 | A | 7,300 | 0.53 | A | -12.26% |
| | 72 Sage Rd north of Fordham Blvd | | 34,700 | 8,036 | A | 8,935 | A | 2,800 | 0.08 | A | -65.16% |
| | 73 Seawell School Rd at Railroad | | 14,000 | 4,434 | A | 4,585 | A | 4,500 | 0.32 | A | 1.49% |
| | 74 Sedgefield Dr west of Foxwood Dr | | 13,700 | 1,789 | A | 1,800 | A | 1,600 | 0.12 | A | -10.56% |
| | 75 Umstead Dr west of Green St | | 13,700 | 1,244 | A | 2,568 | A | 2,000 | 0.15 | A | 60.77% |
| | 76 Willow Dr west of Fordham Blvd | | 17,200 | 7,786 | A | 11,822 | B | 12,000 | 0.70 | B | 54.12% |
| Other Arterials | | | | | | | | | | | |

## Figure 1.3 – Daily Traffic Volumes and Level of Service



## *Findings and Conclusions*

There are significant variations in daily traffic volumes throughout the Town of Chapel Hill. Daily volumes range from 1,000 to over 50,000. Daily volume ranges along major facilities include the following:

***2005 Daily Volume Ranges***

US 15/501 – 30,000 to 40,000
Columbia Street – 10,000 to 25,000
Franklin Street – 15,000 to 25,000
Estes Drive – 10,000 to 20,000
MLK Boulevard – 20,000 to 30,000
NC 54 – 25,000 to 45,000
Fordham Boulevard – 30,000 to 50,000

***2003 Daily Volume Ranges***

- US 15/501 – 30,000 to 60,000
- Columbia Street –15,000 to 20,000
- Franklin Street –20,000 to 30,000
- Estes Drive – 15,000 to 20,000
- MLK Boulevard – 20,000 to 35,000
- NC 54 – 30,000 to 45,000
- Fordham Boulevard – 35,000 to 45,000

***2001 Daily Volume Ranges***

- US 15/501 – 30,000 to 45,000
- Columbia Street –10,000 to 20,000
- Franklin Street –10,000 to 20,000
- Estes Drive – 10,000 to 20,000
- MLK Boulevard – 20,000 to 30,000
- NC 54 – 35,000 to 45,000
- Fordham Boulevard – 20,000 to 50,000

For the most part, traffic volumes throughout the Town are lower in 2005 than in 2003 along these major corridors. The volumes along US 15/501 are significantly lower in 2005 than in 2003. However, during much of the 2003 counts, the NC 54/I-40 ramps were closed which diverted traffic to use US 15/501. As expected, the traffic volumes on US 15/501 in 2005 are much closer to the 2001 volumes. In fact, the 2005 daily traffic volumes across most of the principal arterials are very similar to the volumes in 2001 and lower than the volumes in 2003.

As can be seen in Figure 1.3 and Table 1.1, daily traffic volumes along the majority of the principal arterials within Chapel Hill are operating at LOS D or better. This is true for all arterials except for US 15/501 and several other isolated cases. Levels of service have improved on 28 segments between 2003 and 2005, and only deteriorated on 7 segments. The count locations that saw a decline in LOS between 2003 and 2005 are:

- Fordham Boulevard East of US 15/501 South
- South Road East of Raleigh Street
- South Road East of Columbia Street
- Eastgate Shopping Center internal road
- Manning Drive East of Ridge Road
- Merritt Mill Road East of Carrboro City limits
- Raleigh Street South of Franklin Street

Of these, only South Road east of Raleigh Street and Raleigh Street south of Franklin Street deteriorated to unacceptable levels (LOS E or F).

***Newly Congested Principal Arterials***

The following principal arterials exceed LOS D in 2005, but did not in 2001 or 2003:

- Fordham Boulevard East of US 15/501 South
- South Road East of Raleigh Street

***Newly Uncongested Principal Arterials***

The following principal arterials exceeded LOS D in 2001 and 2003, but did not in 2005:

- US 15/501 between both Eastowne Drive
- US 15/501 West of Erwin Road
- Fordham Boulevard North of Estes Drive
- S Columbia Street South of Mason Farm Road
- S Columbia Street South of Cameron Avenue
- Estes Drive West of Franklin Street
- Estes Drive East of MLK Boulevard
- Country Club Road North of South Road

South Road between Columbia Street and Raleigh Road experienced the greatest decline in daily level of service. The two segments that make up this length of roadway dropped two LOS letter grades from LOS C to LOS E and from LOS D to LOS F between 2003 and 2005. Raleigh Street south of Franklin Street also fell two LOS letter grades, from LOS D to LOS F. The remaining four segments that declined in daily LOS only decreased by one letter grade and of the 28 locations that improved in daily LOS, four improved by three letter grades or more:

- Country Club Road North of South Road (LOS F to LOS B)
- Estes Drive West of MLK Boulevard (LOS E to LOS B)
- Franklin Street North of Eastgate Shopping Center (LOS D to LOS A)
- NC 54 East at Glenn Lennox Shopping Center (LOS D to LOS A)

By looking at the 2001, 2003 and 2005 data in a slightly different way, it can be seen whether small changes in daily level of service on a roadway segment cause it to "jump categories" in the broader categories of congested, moderate congestion, and uncongested. Figure 1.3 shows a matrix that represents the number of segments that fall into the particular categories. The green areas in the matrix represent segments that are either uncongested or are improving in regards to congestion. Red areas in the matrix represent segments that are becoming significantly more congested and yellow areas represent segments that still have some congestion issues and are neither improving nor declining. The larger numbers show the change from 2003 to 2005 and the smaller numbers in parenthesis show the change from 2001 to 2003.

## Figure 1.4 – Roadway Segments with Major Changes in Daily Congestion

| | | 2005 (2003) | | |
|---|---|---|---|---|
| | | Uncongested | Moderate Congestion | Congested |
| 2003 (2001) | Uncongested | 45 (43) | 1 (3) | 1 (1) |
| | Moderate Congestion | 3 (1) | 4 (3) | 1 (2) |
| | Congested | 2 (0) | 9 (2) | 6 (13) |

Of the 72 segments with both 2003 and 2005 data available, 54 segments remained in the same category of congestion, while 15 segments improved and only three segments were found to have worse congestion than in 2001. Forty-five segments remained uncongested between 2003 and 2005. Two segments (MLK Boulevard north of Homestead and Estes Drive west of MLK Boulevard) improved significantly, moving from a "congested" status to "uncongested." Four segments improved from "moderate congestion" to "uncongested" and nine segments improved from "congested" to "moderate congestion." Only six segments remained "congested" between 2003 and 2005 and three segments remained in the "moderate congestion" category. Only three segments, all located in the University (South Road east of Raleigh Street, South Road east of Columbia Street, and Raleigh Street south of Franklin Street), declined significantly.

# Chapter 2 - Vehicle Peak Hour Intersection Operations

**MEASUREMENT: Peak Hour Intersection Level of Service (LOS)**
**DATA: Turn Movement Counts, Signal Timing Plans**

## *Why and How*

Whereas daily traffic volumes are often a common measurement used to compare one roadway with another, actual traffic engineering performance of the roadway system is based on how the intersections operate. This measurement is referred to as intersection level of service. As presented in the previous section, level of service is a universal measurement of operational performance of an intersection or corridor, utilizing a simple grading scale from "A" to "F."

***Comprehensive Plan Actions and Measures of Progress***

- Commit funding to conduct comprehensive intersection turn movement counts and develop multiple signal timing plans (Town Council).
- Secure long-term funding to update traffic counts and timing plans every five years (Town Council).
- Develop and implement a comprehensive signal-timing plan

*As part of regular Mobility Report Card Updates, the Town is committed to conducting comprehensive intersection turn movement counts every three years. These counts can serve as the basis for creating and updating a comprehensive signal timing plan.*

Critical to the evaluation of peak-hour intersection level of service is the collection of AM and PM peak hour intersection turn movement counts. These counts are manually recorded for the left-turn movement, the through movement, and the right-turn movement for each approach direction. In addition, these counts are recorded in 15-minute increments over a 2-hour AM peak period and a 2- to 3-hour PM peak period from which the respective peak hour is derived as the maximum of four consecutive 15-minute counts.

Understanding the relationship between the peak hour intersection level of service based on actual turn movement counts and the signal timing plans was an issue raised in the development of the 2000 Chapel Hill Comprehensive Plan. Extensive comments were received as part of the development of the plan that the signals in Chapel Hill were not properly timed. Providing a sound intersection turn movement database and a means to analyze and develop a signal timing plan for the various traffic conditions is an important element not only in assessing current conditions, but in improving them.

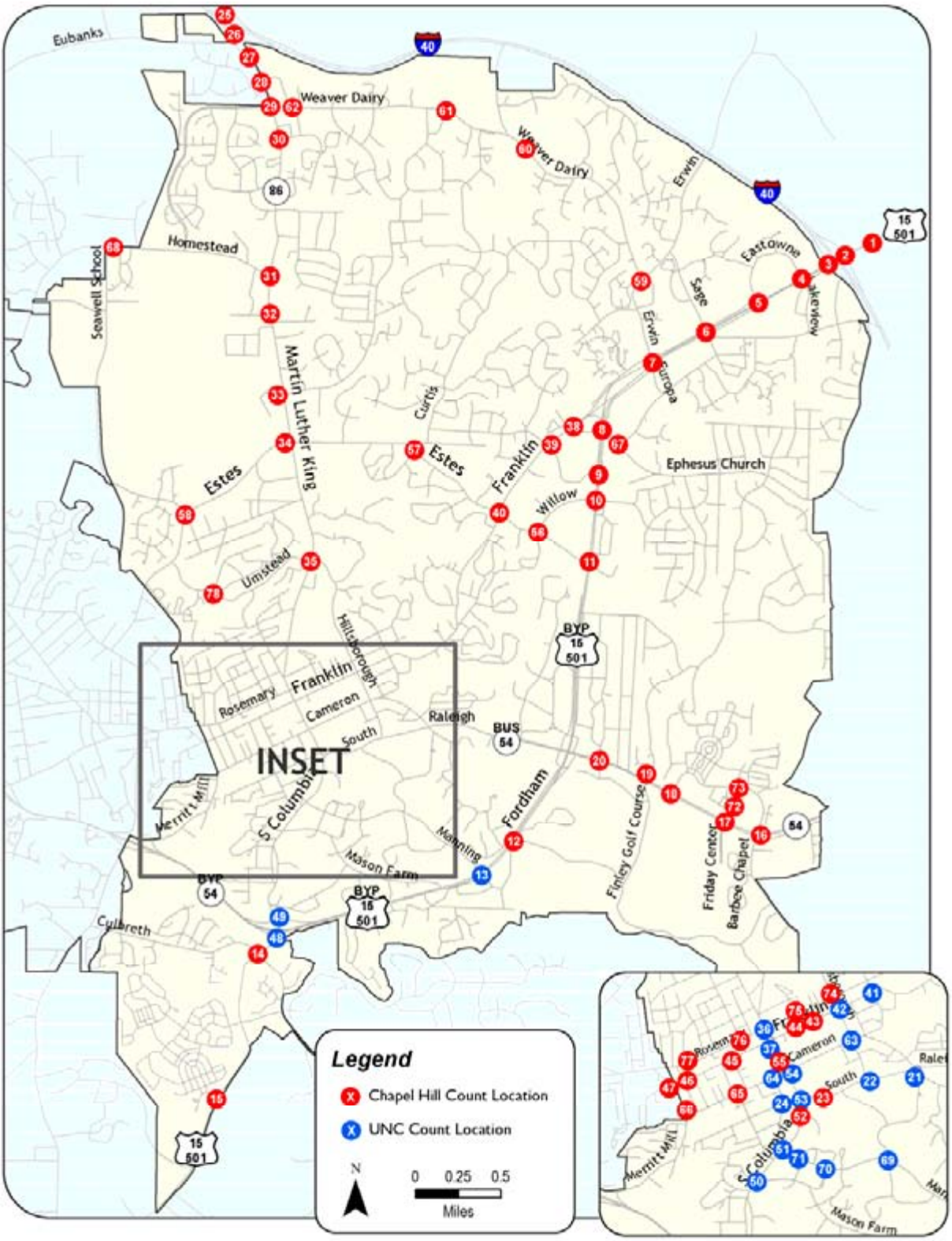
## Results

Morning, noon, and evening peak-hour turn-movement counts (TMCs) were collected for 78 intersections throughout Chapel Hill. These peak-hour turn-movement counts included supplemental counts from the University of North Carolina. The count locations are presented graphically in Figure 2.1.

As part of this assessment process, a Synchro Database was developed for the Town of Chapel Hill. Synchro is software that is dedicated to evaluate the ebb and flow of traffic throughout a signal system and calculates average intersection delay and corresponding level of service. This database development required input of all signal timing plans by period of day and required the actual geographic distribution of signalized intersections to calculate the relationships between speed, distance, and progression. These count data, coupled with the timing of the signal phases at the intersection, determine the level of service for each signalized intersection.

The results of this analysis are presented in Table 2.1 and in Figures 2.2, 2.3, 2.4, 2.5, 2.6 and 2.7 for the AM, noon, and PM peak hours for 2001, 2003 and 2005. In Table 2.1, the 2003 and 2005 LOS column is color coded to represent the level of service change from the previous time period. Red text indicates a decrease in level of service resulting in increased congestion, while green indicates an improvement in level of service resulting in decreased congestion and black indicates no change or that no data was available from the previous year. Figures 2.2, 2.4 and 2.6 show the relative level of congestion for 2003, as well as the change in congestion level between 2001 and 2003 for morning, mid-day and evening peak hours. Figures 2.3, 2.5 and 2.7 show the level of congestion for 2005 and the change in congestion level between 2003 and 2005 for the AM, mid-day and PM time periods. The symbol shows the level of congestion (uncongested, moderate congestion, or congested). Circles are used to indicate an uncongested condition (LOS A, B or C), squares are used to indicate a moderate level of congestion (LOS D), and triangles indicate a congested intersection (LOS E or F). Intersections that changed level of congestion are shown with a minus sign (-) next to them if they declined or a positive sign (+) if they improved.

## Figure 2.1 – Auto Turning Movement Count Locations



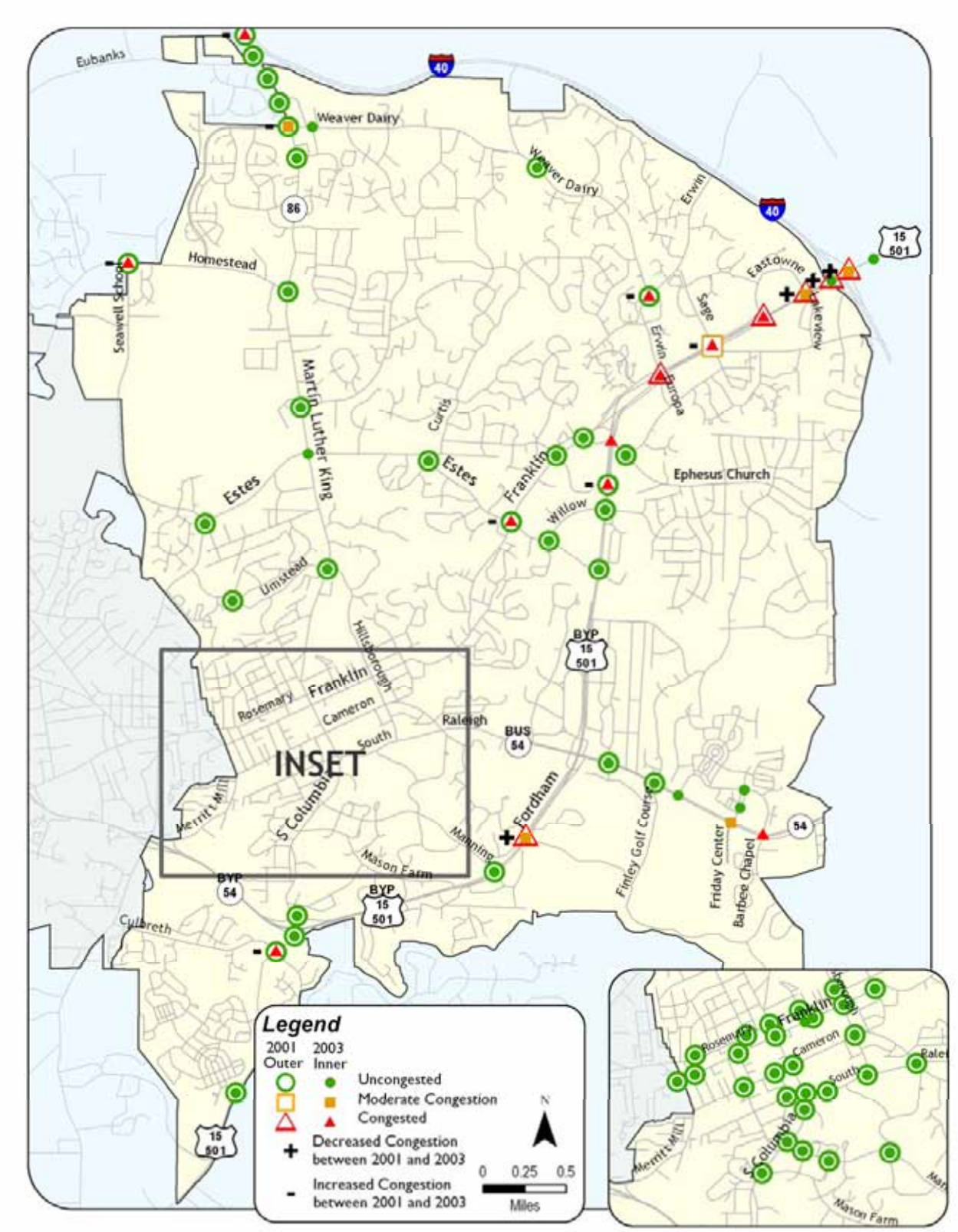
# Table 2.1– Intersection Level of Service

| | | Count Location | AM | | | Mid-Day | | | PM | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2001 | 2003 | 2005 | 2001 | 2003 | 2005 | 2001 | 2003 | 2005 |
| US 15/501/Fordham Blvd | 1 | US 15/501/Mt Moriah Rd | - | C | C | - | C | B | - | D | C |
| | 2 | US 15/501/I-40 WB Off/On Ramp | F | D | C | B | D | B | F | D | D |
| | 3 | US 15/501/I-40 EB On/Off Ramp | E | C | C | B | C | B | B | C | B |
| | 4 | US 15/501/Lakeview Dr/Eastowne Dr | F | D | F | F | D | F | F | F | F |
| | 5 | US 15/501/Harrison Conners Svc Rd/Eastowne Dr | F | F | F | F | F | F | F | F | F |
| | 6 | US 15/501/Sage Rd | D | E | F | D | E | E | D | D | F |
| | 7 | US 15/501/Europa Dr/Erwin Rd | E | F | F | - | F | F | F | F | F |
| | 8 | US 15/501/Ephesus Church Rd | - | F | F | - | F | F | - | F | F |
| | 9 | Fordham Blvd/Elliot Rd | C | F | C | B | F | D | B | E | C |
| | 10 | Fordham Blvd/Willow Dr | A | A | A | B | A | A | B | B | B |
| | 11 | Fordham Blvd/Estes Dr | C | C | F | - | C | C | D | D | F |
| | 12 | Fordham Blvd/Old Mason Farm Rd | E | D | C | E | D | B | E | D | C |
| | 13 | Fordham Blvd/Manning Dr | B | B | C | - | - | - | F | E | F |
| | 14 | US 15/501 South/Mt Carmel Church Rd/Culbreth Rd | C | E | C | B | E | C | B | C | C |
| | 15 | US 15/501 South/Main St | A | A | B | A | A | A | C | B | D |
| NC 54/Raleigh Rd/South Rd | 16 | NC 54/Barbee Chapel Rd | - | E | A | B | E | A | B | C | A |
| | 17 | NC 54/Meadowmount Ln/Friday Center Dr | - | D | F | - | D | B | - | C | C |
| | 18 | NC 54/Barbee Chapel Rd Ext | - | A | B | - | A | B | - | A | B |
| | 19 | NC 54/Burning Tree Dr | A | B | C | A | B | B | D | B | C |
| | 20 | NC 54/Hamilton Rd | A | A | A | A | A | A | A | B | A |
| | 21 | South Rd/Country Club Rd | B | B | B | - | - | - | C | C | C |
| | 22 | South Rd/Raleigh Rd | A | A | B | - | - | - | A | A | A |
| | 23 | South Rd/Bell Tower Parking Lot | A | A | B | A | A | A | B | B | B |
| | 24 | South Rd/Mccauley St/Pittsboro St | B | B | B | - | - | - | A | A | B |
| MLK Blvd/Columbia St | 25 | MLK Blvd/I-40 WB On/Off Ramp | B | F | B | A | F | A | C | C | F |
| | 26 | MLK Blvd/I-40 EB On/Off Ramp | A | A | A | A | A | A | A | A | B |
| | 27 | MLK Blvd/Eubanks Rd | B | B | A | A | B | A | A | A | A |
| | 28 | MLK Blvd/Perkins Dr | A | A | A | A | A | A | A | B | B |
| | 29 | MLK Blvd/Weaver Dairy Rd | C | D | C | B | D | B | C | E | E |
| | 30 | MLK Blvd/Westminster Dr | A | A | A | A | A | A | A | A | A |
| | 31 | MLK Blvd/Homestead Rd/Church Parking Lot | B | C | B | B | C | B | B | C | B |
| | 32 | MLK Blvd/Northfield Dr | - | - | B | - | - | A | - | - | B |
| | 33 | MLK Blvd/Piney Mountain Rd/Municipal Dr | B | B | B | B | B | B | C | C | D |
| | 34 | MLK Blvd/Estes Dr | - | C | B | - | C | B | - | E | C |
| | 35 | MLK Blvd/Hillsborough St/Umstead Dr | A | A | A | A | A | A | B | B | B |
| | 36 | Columbia St/Rosemary St | B | B | C | - | - | - | B | C | C |
| | 37 | Columbia St/Franklin St | C | B | C | - | - | - | C | C | C |
| Franklin St | 38 | Franklin St/Eastgate Shopping Center | A | A | A | B | A | B | A | C | A |
| | 39 | Franklin St/Elliot Rd | C | B | C | C | B | C | D | D | C |
| | 40 | Franklin St/Estes Dr | C | E | E | E | E | C | B | F | E |
| | 41 | Franklin St/Boundary St | A | B | A | A | - | - | B | B | A |
| | 42 | Franklin St/Raleigh Rd | B | B | B | - | - | - | B | B | B |
| | 43 | Franklin St/Robertson Ln/Morehead Planetarium | A | A | A | A | A | A | A | A | A |
| | 44 | Franklin St/Henderson St | - | A | A | - | A | A | - | A | A |
| | 37 | Franklin St/Columbia St | C | B | C | - | - | - | C | C | C |
| | 45 | Franklin St/Parking Lot/Mallette St | A | A | A | A | A | A | A | A | A |
| | 46 | Franklin St/Graham St | A | A | D | A | A | D | A | A | D |
| | 47 | Franklin St/Merritt Mill Rd/Brewer Ln | A | A | C | A | A | A | A | A | F |
| South Columbia St | 48 | South Columbia St/NC 54 CD Ramps | C | B | C | - | - | - | C | C | B |
| | 49 | South Columbia St/NC 54 AB Ramps | B | C | B | - | - | - | C | D | C |
| | 50 | South Columbia St/Mason Farm Rd/Westwood Dr | B | B | B | - | - | - | C | C | C |
| | 51 | South Columbia St/Manning Dr | A | A | D | A | A | - | A | A | B |
| | 52 | South Columbia St/Cross Walk | B | B | A | - | - | A | B | B | A |
| | 53 | South Columbia St/South Rd | B | B | C | - | - | - | D | D | C |
| | 54 | South Columbia St/Cameron Ave | B | B | C | - | - | - | C | C | D |
| | 55 | South Columbia St/Fraternity Ct | - | - | B | - | - | A | - | - | A |
| | 37 | Columbia St/Franklin St | C | B | C | - | - | - | C | C | C |

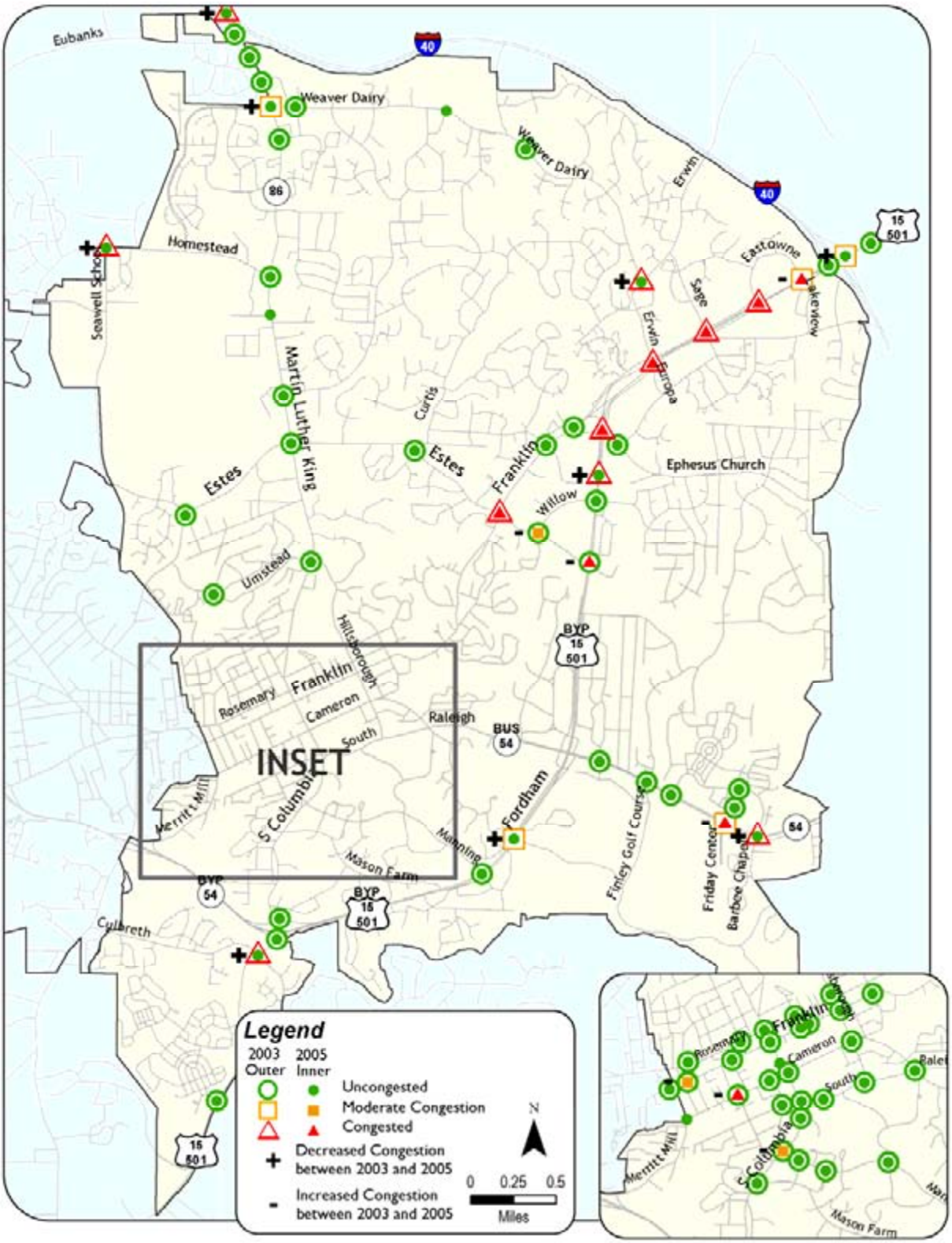
# Table 2.1 (cont'd) – Intersection Level of Service

| | | | AM | | | Mid-Day | | | PM | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Count Location | 2001 | 2003 | 2005 | 2001 | 2003 | 2005 | 2001 | 2003 | 2005 |
| Estes Dr | 11 | Estes Dr/Fordham Blvd | C | C | F | - | C | C | D | D | F |
| | 56 | Estes Dr/Willow Dr | A | A | D | A | A | D | A | B | C |
| | 40 | Estes Dr/Franklin St | C | E | E | E | E | C | B | F | E |
| | 57 | Estes Dr/Caswell Rd | B | B | B | B | B | B | B | B | B |
| | 34 | Estes Dr/MLK Blvd | - | C | B | - | C | B | - | E | C |
| | 58 | Estes Dr/Seawell School Rd | A | B | A | B | B | A | E | B | A |
| Weaver Dairy Rd | 59 | Weaver Dairy Rd/Erwin Rd | C | F | C | D | F | B | B | C | B |
| | 60 | Weaver Dairy Rd/East Chapel Hill High School | A | A | B | A | A | B | A | A | B |
| | 61 | Weaver Dairy Rd/Silo Dr | - | - | B | - | - | A | - | - | B |
| | 62 | Weaver Dairy Rd/Kingston Dr | - | B | B | - | B | A | - | D | A |
| | 29 | Weaver Dairy Rd/MLK Blvd | C | D | C | B | D | B | C | E | E |
| Other Arterials | 63 | Cameron Ave/Raleigh St/Country Club Rd | C | B | C | - | - | - | B | C | C |
| | 64 | Cameron Ave/Pittsboro St | B | A | B | - | - | - | B | B | B |
| | 65 | Cameron Ave/Ransom St | A | A | F | B | A | F | D | C | F |
| | 66 | Cameron Ave/Merritt Mil Rd | - | - | A | - | - | A | - | - | B |
| | 67 | Ephesus Church Rd/Legion Rd | C | B | B | B | B | B | C | C | B |
| | 68 | Homestead Rd/Seawell School Rd | B | E | A | A | E | A | B | E | A |
| | 69 | Manning Dr/ Skipper Bowles Dr | B | B | B | - | - | - | C | B | B |
| | 70 | Mannnig Dr/New East Dr | B | A | B | - | - | - | B | B | B |
| | 71 | Manning Dr/West Dr | A | A | A | - | - | - | A | A | A |
| | 72 | Meadowmont Ln/Meadowmont Apartments | - | B | B | - | B | B | - | A | C |
| | 73 | Meadowmont Ln/Barbee Chapel Rd | - | A | B | - | A | A | - | A | B |
| | 74 | Rosemary St/Hillsborough St | B | A | A | A | A | A | B | B | A |
| | 75 | Rosemary St/Henderson St | A | A | C | A | A | B | A | A | B |
| | 76 | Rosemary St/Church St | A | A | A | A | A | A | A | B | B |
| | 77 | Rosemary St/Roberson Ln | A | A | B | A | A | B | A | B | B |
| | 78 | Umstead Dr/Umstead Park | A | A | A | A | A | A | A | A | B |

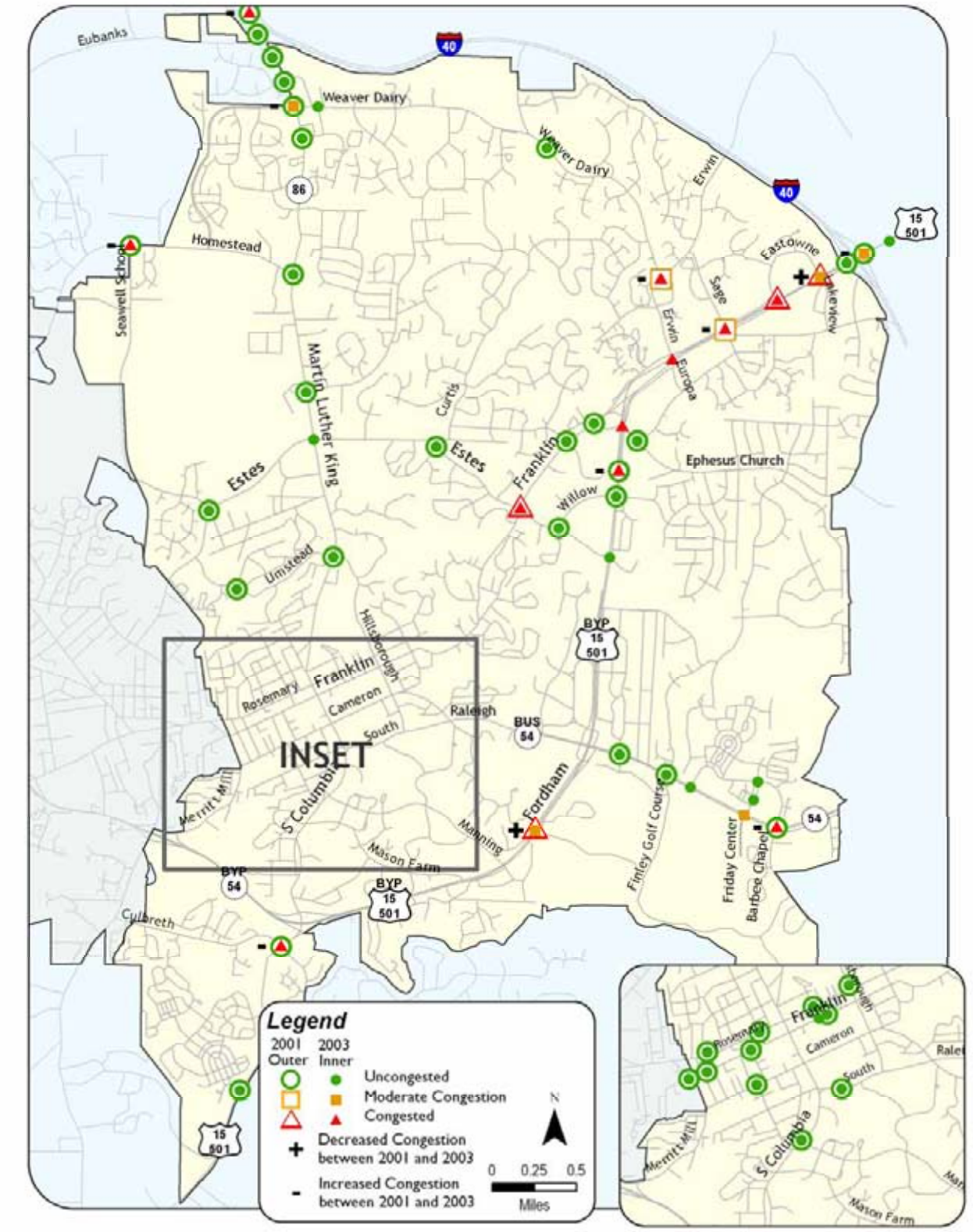
## Figure 2.2 – AM Peak Hour Intersection Level of Service 2001 – 2003



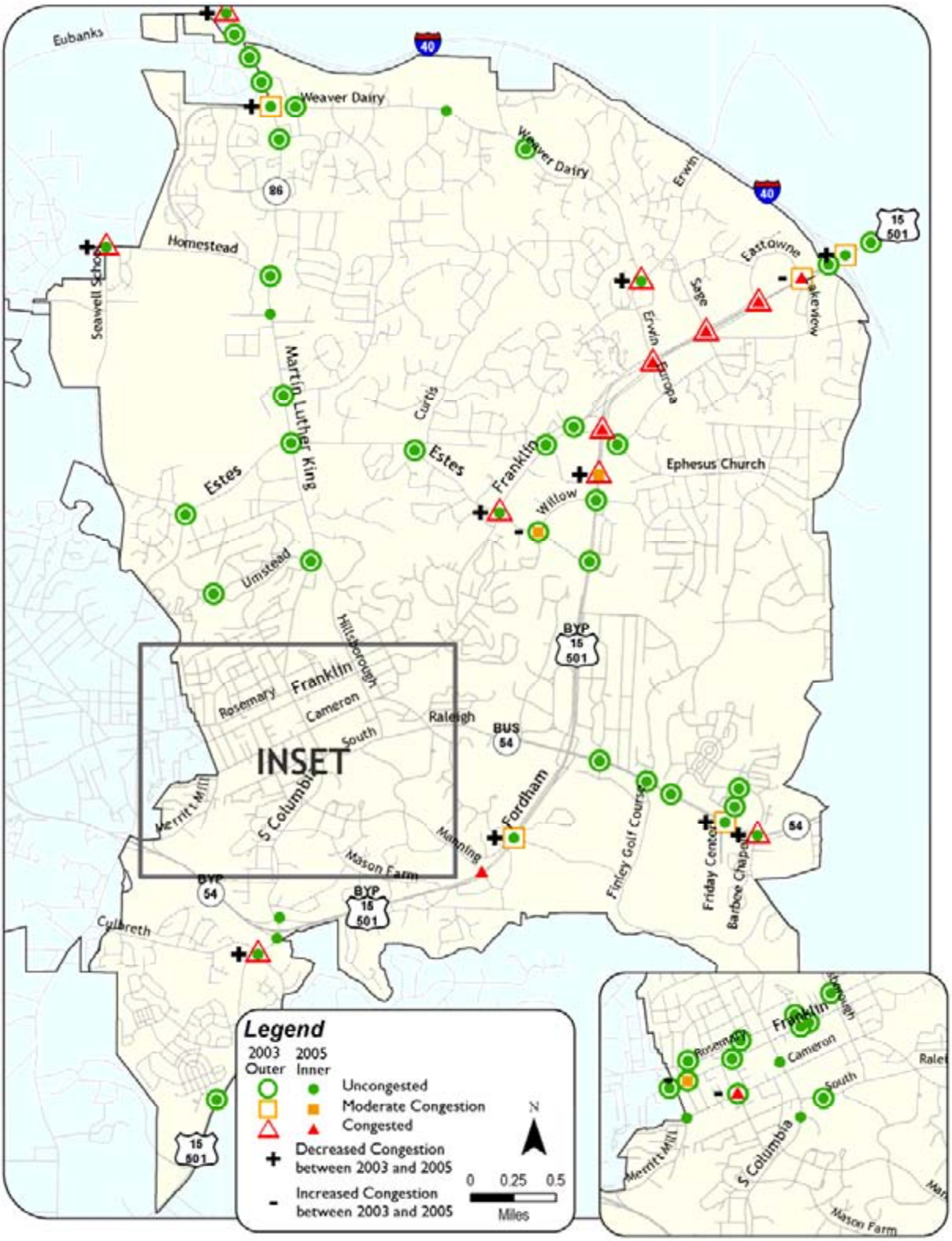
## Figure 2.3 – AM Peak Hour Intersection Level of Service 2003 - 2005



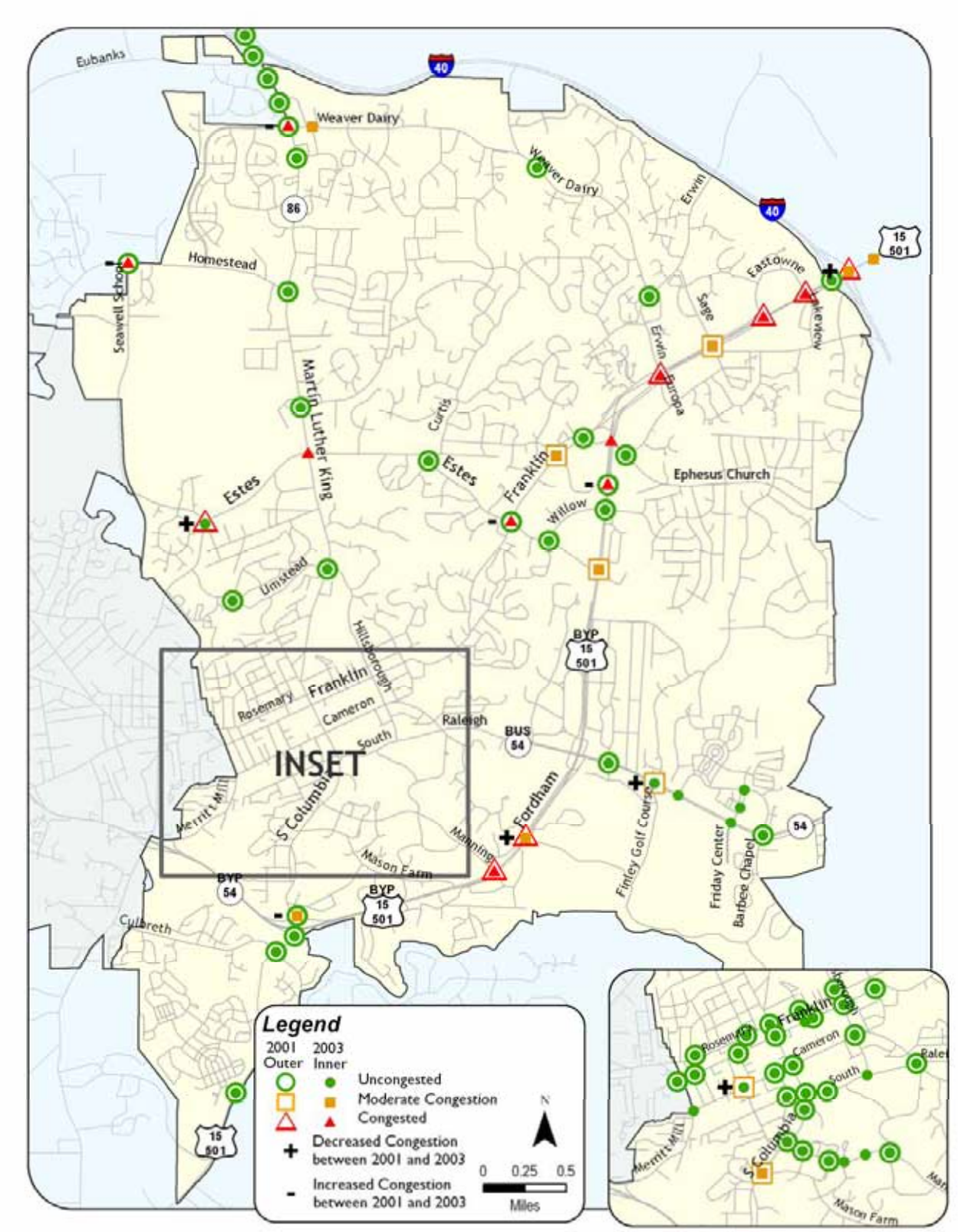
## Figure 2.4 – Mid-Day Peak Hour Intersection Level of Service 2001 - 2003



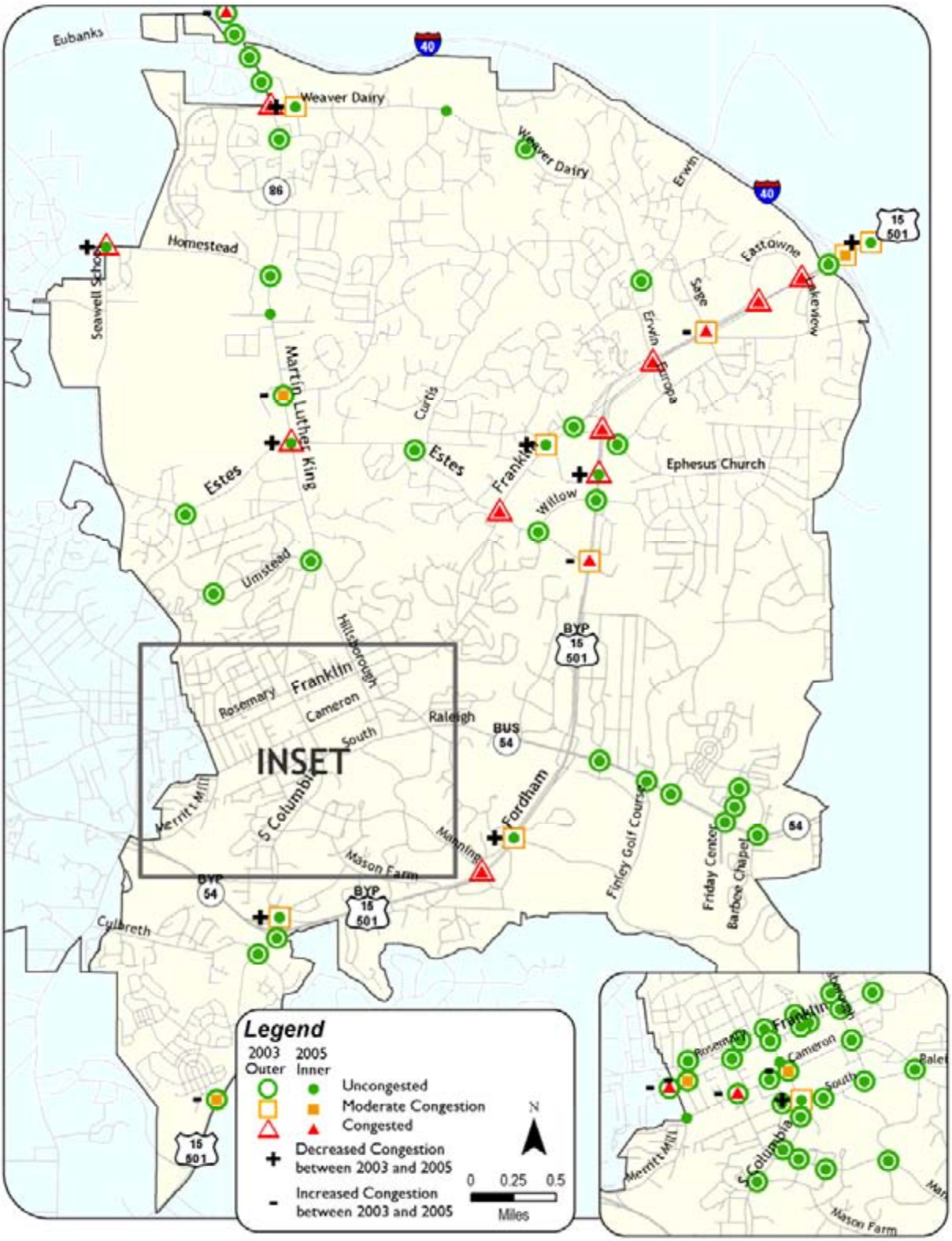
## Figure 2.5 – Mid-Day Peak Hour Intersection Level of Service 2003 - 2005



## Figure 2.6 – PM Peak Hour Intersection Level of Service 2001 – 2003



## Figure 2.7 – PM Peak Hour Intersection Level of Service 2003 - 2005



## *Findings and Conclusions*

The majority of signalized intersections operate at the Town's threshold of LOS D or better (moderate congestion or better). The primary exception is along the US 15/501 corridor between the US 15/501 and Franklin Street merge and I-40. These congested conditions tend to prevail during all three AM, noon, and PM peak hour time periods.

Unacceptable levels of service were also noted along Fordham Boulevard and Estes Drive and Cameron Avenue and Ransom Street. Other locations within the Town that exceeded the minimum threshold, those intersections tended to have isolated problems during only one time period. Overall, about the same number of intersections experienced congestion in more than one time period in 2005 as in 2003.

One area of substantial improvement in intersection level of service was the I-40 ramps at Martin Lither King Boulevard. Much of this improvement from 2003 to 2005 can be attributed to the fact that the I-40 and NC 54 interchange was closed during the 2003 counts, thereby diverting more traffic to use the US 15/501 and Martin Luther King Boulevard interchanges. The 2005 counts at the I-40/Martin Luther King Boulevard counts were much closer to the 2001 counts.

Compared to the 2003 data, most of the intersections are not changing significantly in level of congestion. Figures 2.8, 2.9 and 2.10 depict major changes in intersection congestion for the morning peak hour, mid-day peak hour, and afternoon peak hour, respectively. These figures utilize the traffic signal color coding to indicate intersections that are uncongested or improving (green), intersections that are not changing and have at least moderate congestion (yellow) and intersections that are getting worse (red).

### FIGURE 2.8 – INTERSECTIONS WITH MAJOR CHANGES IN AM PEAK CONGESTION

| AM | | 2005 (2003) | | |
|---|---|---|---|---|
| | | Uncongested | Moderate Congestion | Congested |
| 2003 (2001) | Uncongested | 53 (50) | 3 (1) | 2 (6) |
| | Moderate Congestion | 3 (0) | 0 (0) | 2 (1) |
| | Congested | 6 (1) | 0 (3) | 5 (2) |

## Figure 2.9 – Intersections with Major Changes in Mid-Day Peak Congestion

| Mid-Day | | 2005 (2003) | | |
|---|---|---|---|---|
| | | Uncongested | Moderate Congestion | Congested |
| 2003 (2001) | Uncongested | 35 (31) | 2 (2) | 1 (5) |
| | Moderate Congestion | 4 (0) | 0 (0) | 1 (2) |
| | Congested | 6 (0) | 1 (2) | 4 (1) |

## Figure 2.10 – Intersections with Major Changes in PM Peak Congestion

| PM | | 2005 (2003) | | |
|---|---|---|---|---|
| | | Uncongested | Moderate Congestion | Congested |
| 2003 (2001) | Uncongested | 48 (47) | 4 (1) | 3 (4) |
| | Moderate Congestion | 6 (2) | 1 (4) | 2 (0) |
| | Congested | 3 (1) | 0 (2) | 7 (4) |

In the morning peak hour, 59 intersections stayed at the same level of congestion. Nine intersections improved, while seven intersections became more congested. The mid-day peak hour results show that 39 intersections remained unchanged, 11 intersections became less congested, and four intersections became worse. Fifty-five intersections, in the afternoon peak hour time, stayed at the same level of congestion. Nine intersections improved and nine intersections became worse.

Compared with changes observed from 2001 to 2003, more intersections are improving while more are degrading, as well. Looking at the percent of intersections in each of the three levels of congestion (uncongested, moderate congestion and congested) in 2003 and 2005, the percent of intersections in the congested and uncongested categories is staying constant or increasing, while the percent in the moderate congestion category are decreasing.

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# Chapter 3 - Vehicular Travel Time

**Measurement: In-Flow Vehicle Travel Time**

**Data: Travel Time Surveys on Major Travel Corridors**

## *Why and How*

Travel-time analysis describes the amount of time it takes to get from one point to the next. Travel time is a measurement that is easy to understand by the typical citizen and is an effective way to assess the overall travel along a corridor. Traffic volumes, traffic control devices, signal timing, and delay are all elements that affect actual travel time. Vehicular travel time is measured by driving a particular route with the regular flow of traffic and timing the duration of the trip.

## *Results*

Travel times were collected for eight major travel corridors throughout the Town. These routes were driven during the AM, noon, and PM peak hours. Each route had multiple segments and was driven in each direction to capture inbound and outbound differences in the peak conditions. The corridors in which travel times were collected and the average travel speed by direction for the morning and afternoon peak time periods (for 2001, 2003 and 2005) are presented in Tables 3.1 and 3.2. The 2005 average corridor speed is shown in green if the 2005 average speed is more than 5 mph faster than in 2003. Likewise, if the 2003 average speed is more than 5 mph faster than in 2001, it is shown in green. If the 2005 or 2003 average speed is more than 5 mph below the 2003 or 2001 speed, respectively, then the 2005 or 2003 speed is shown in red. It should be noted that these travel speeds include any and all delays associated with the signals along the corridor.

### Table 3.1 – AM Corridor Travel Speeds

| Corridor | From | To | Length (miles) | Speed Limit (mph) | Average Travel Speed (mph) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Inbound | | | Outbound | | |
| | | | | | 2001 | 2003 | 2005 | 2001 | 2003 | 2005 |
| Franklin Street | I-40 | Merritt Mill Road | 4.95 | 20 - 45 | 23.0 | 21.8 | 28.6 | 23.1 | 23.5 | 22.8 |
| Fordham Boulevard/ NC 54 Bypass | Franklin Street/ US 15/501 Merger | Main Street (Carrboro) | 7.40 | 45 | 36.1 | 31.6 | 35.5 | 35.7 | 44.7 | 40.5 |
| S Columbia Street/ US 15/501 S | Smith Level Road | Franklin Street | 3.74 | 35 – 45 | 23.6 | 17.9 | 22.4 | 29.4 | 25.2 | 20.6 |
| Erwin Road | I-40 | US 15/501 | 1.40 | 35 | 30.2 | 20.7 | 21.4 | 30.8 | 34.5 | 17.9 |
| Weaver Dairy Road | MLK Boulevard | Erwin Road | 2.70 | 35 | 37.5 | 30.3 | 39.9 | 36.7 | 36.7 | 35.3 |
| Martin Luther King Boulevard | I-40 | Franklin Street | 4.16 | 35 – 45 | 23.8 | 25.6 | 26.7 | 31.3 | 29.4 | 29.0 |
| Estes Drive | Greensboro Street | Fordham Boulevard | 3.70 | 35 | 25.6 | 26.9 | 19.6 | 24.9 | 29.1 | 14.3 |
| NC 54/Raleigh Road/South Road | I-40 | S Columbia Street | 4.30 | 25 - 45 | 24.6 | 23.1 | 27.6 | 23.5 | 30.7 | 31.6 |

## Table 3.2 – PM Corridor Travel Speeds

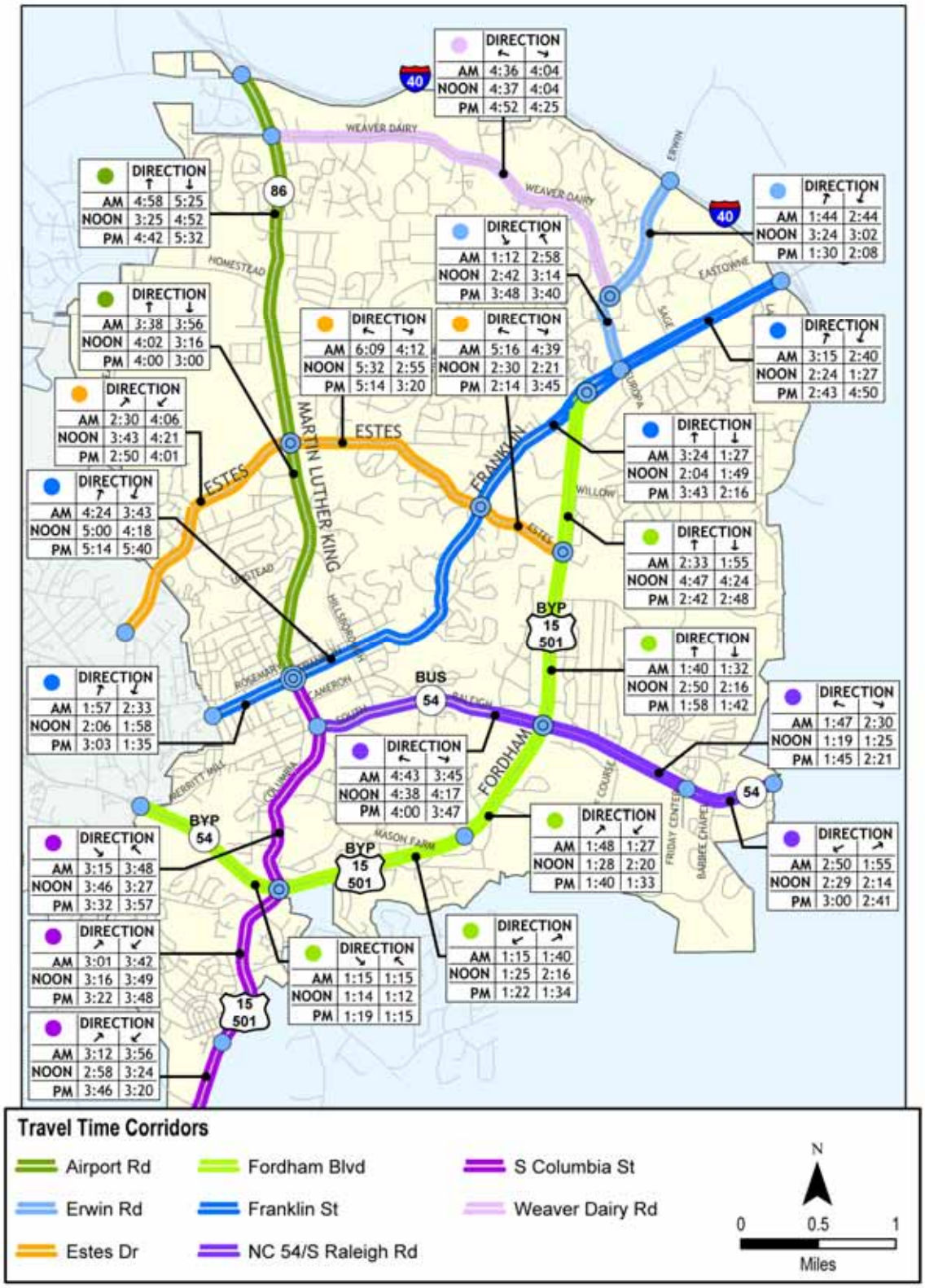
| Corridor | From | To | Length (miles) | Speed Limit (mph) | Average Travel Speed (mph) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Inbound | | | Outbound | | |
| | | | | | 2001 | 2003 | 2005 | 2001 | 2003 | 2005 |
| Franklin Street | I-40 | Merritt Mill Road | 4.95 | 20 - 45 | 21.2 | 17.0 | 20.7 | 21.9 | 20.1 | 20.2 |
| Fordham Boulevard/ NC 54 Bypass | Franklin Street/ US 15/501 Merger | Main Street (Carrboro) | 7.40 | 45 | 33.8 | 34.2 | 40.5 | 35.5 | 37.2 | 36.3 |
| S Columbia Street/ US 15/501 S | Smith Level Road | Franklin Street | 3.74 | 35 – 45 | 28.4 | 20.7 | 20.2 | 23.6 | 24.2 | 21.0 |
| Erwin Road | I-40 | US 15/501 | 1.40 | 35 | 30.9 | 30.7 | 14.2 | 30.5 | 30.2 | 16.3 |
| Weaver Dairy Road | MLK Boulevard | Erwin Road | 2.70 | 35 | 35.9 | 34.1 | 36.7 | 36.6 | 35.5 | 33.3 |
| Martin Luther King Boulevard | I-40 | Franklin Street | 4.16 | 35 – 45 | 23.6 | 27.5 | 29.3 | 27.8 | 23.9 | 28.7 |
| Estes Drive | Greensboro Street | Fordham Boulevard | 3.70 | 35 | 25.1 | 29.9 | 22.4 | 19.5 | 27.6 | 19.3 |
| NC 54/Raleigh Road/South Road | I-40 | S Columbia Street | 4.30 | 25 - 45 | 28.6 | 29.5 | 29.5 | 29.4 | 29.9 | 29.3 |

Figures 3.1 and 3.2 summarize the travel time for direction and time period for each roadway corridor segment. Total time for each segment is shown as minutes:seconds (e.g., 4:20 is 4 minutes and 20 seconds). This time includes any stopped time associated with signals or other delay. Figure 3.1 shows this information for the Town of Chapel Hill and Figure 3.2 shows the segments in the Town of Carrboro.

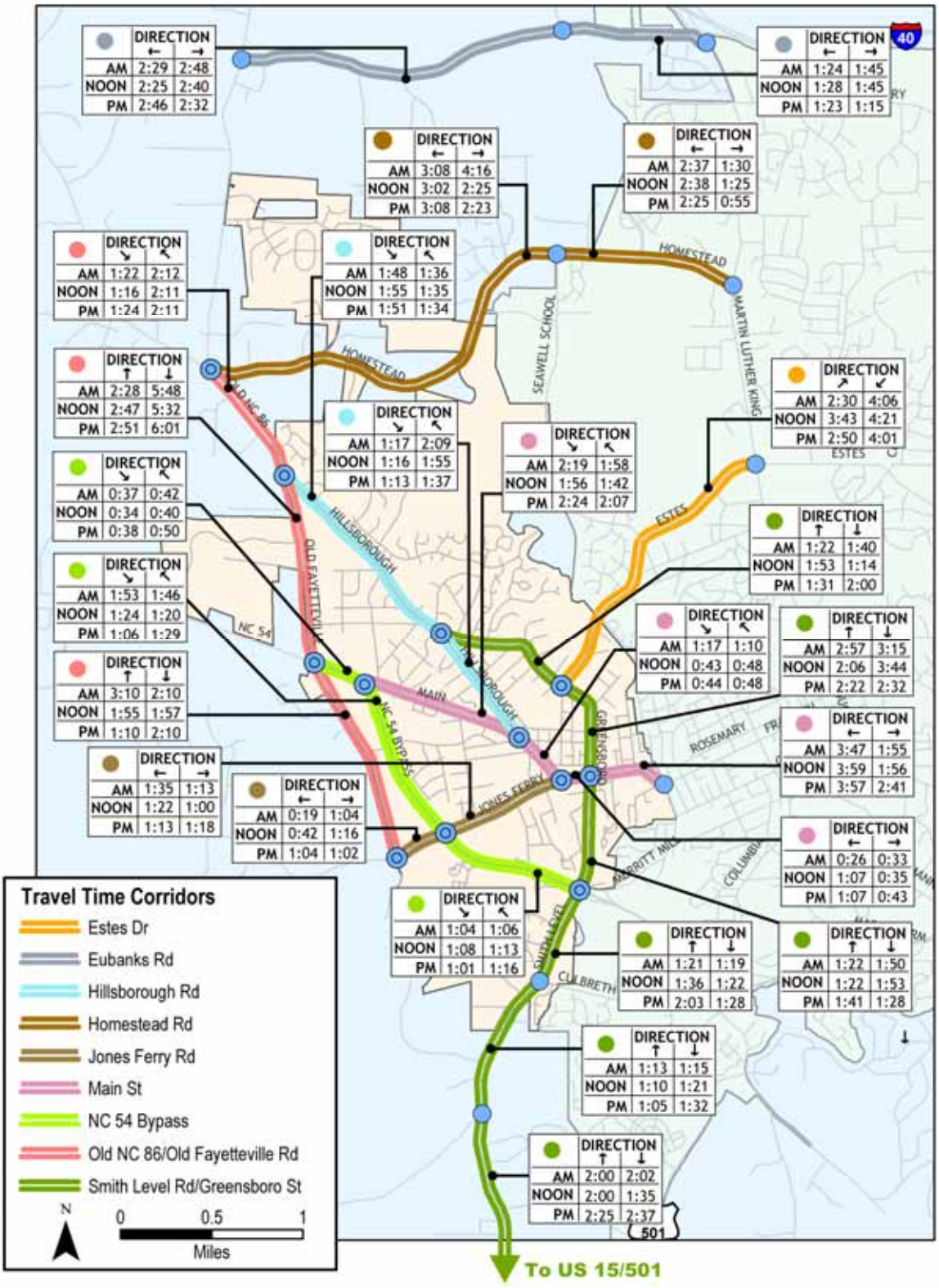
Figures 3.3, 3.4 and 3.5 show two pieces of information for each time period in which travel time was measured and for each direction. The width of the line indicates the relative average speed of the corridors as measured in 2003 and the color of the line shows the comparison of the corridor speed with the corridor speed limit. The average speed calculated includes time spent at signals, so the travel speed will be higher than the average speed. Red corridors indicate that the average corridor segment speed is more than 5 mph below that segment's speed limit. Segments with average speeds within 5 mph of the speed limit are shown in green, and segments with average speeds over 5 mph over the speed limit are shown in yellow. For a more complete picture of the region's conditions, travel time for the Town of Carrboro is also included on these maps.

Figures 3.6, 3.7 and 3.8 show the relative change in average travel time from 2003. The line widths are again used to show relative differences in 2005 average corridor segment speed. In these figures, however, the color is used to show the comparison with the average speed of the corridor segment in 2003. Red segments indicate that the 2005 average speed is more than 5 mph slower than the 2003 average speed. Yellow indicates that the 2005 average speed is within 5 mph of the 2003 average speed. Green indicates that the 2005 average speed is more than 5 mph over the 2003 average speed.

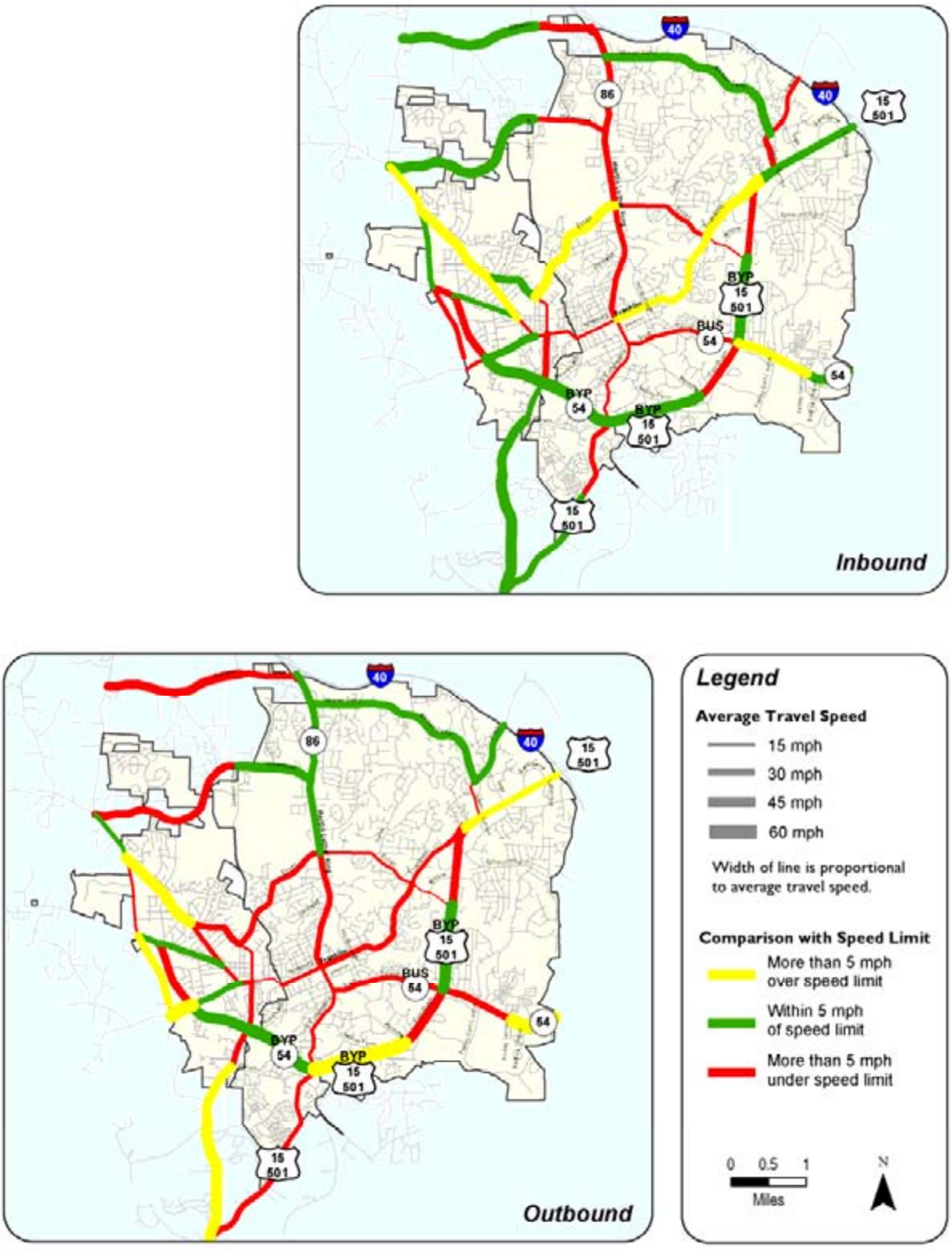
## FIGURE 3.1 – CHAPEL HILL 2005 AUTO TRAVEL TIME



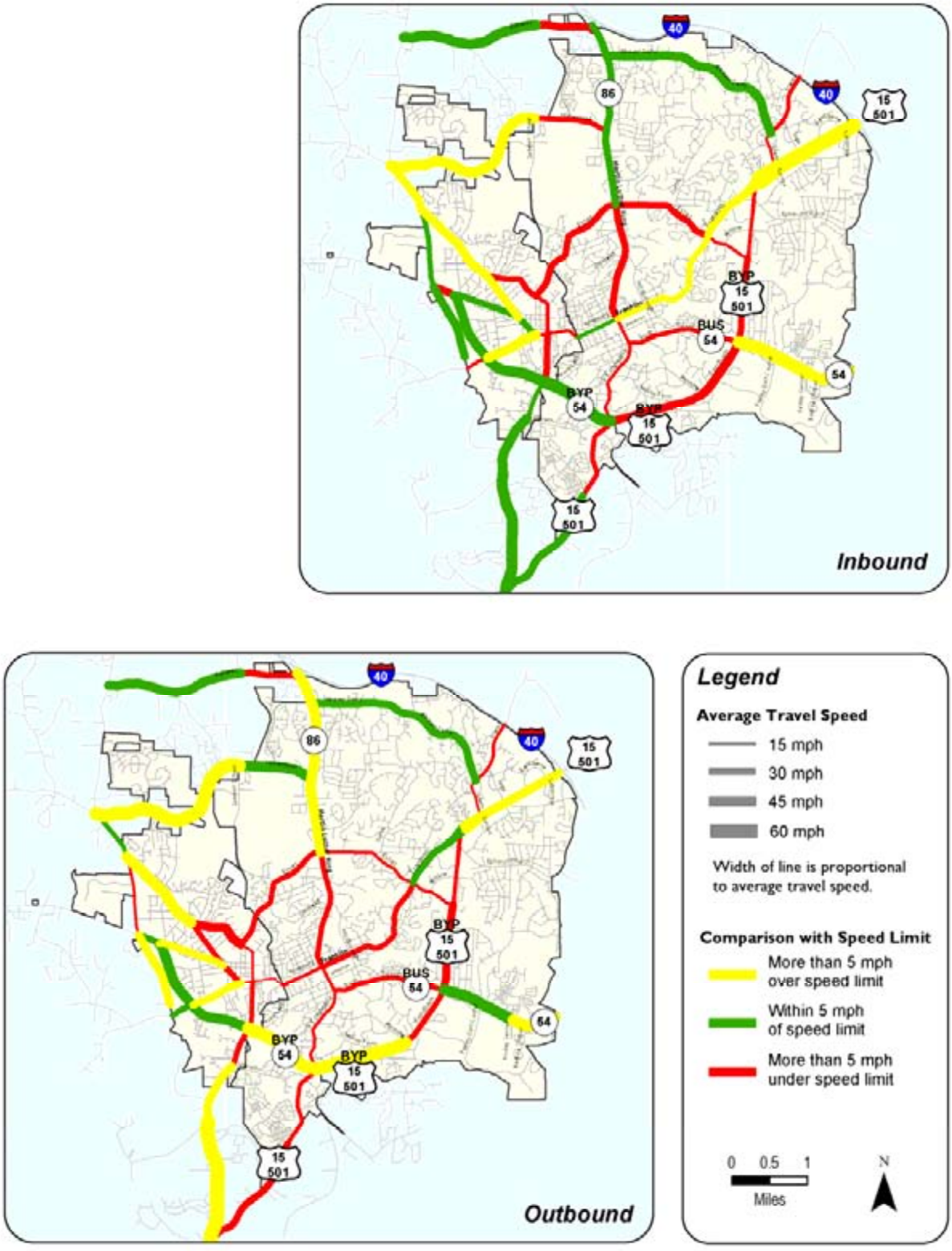
## Figure 3.2 – Carrboro 2005 Auto Travel Time



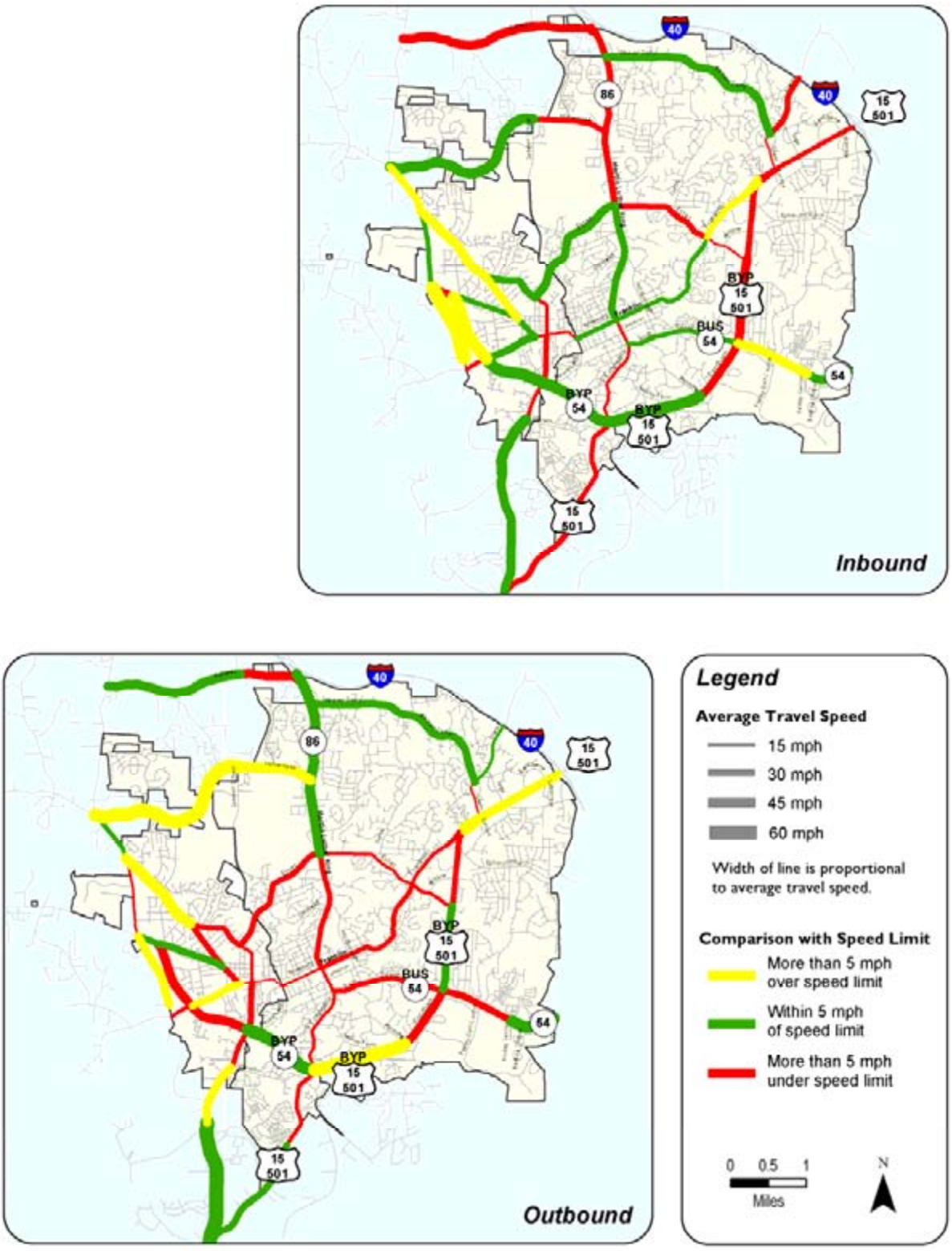
## Figure 3.3 – 2005 Average AM Speed Compared with Speed Limit



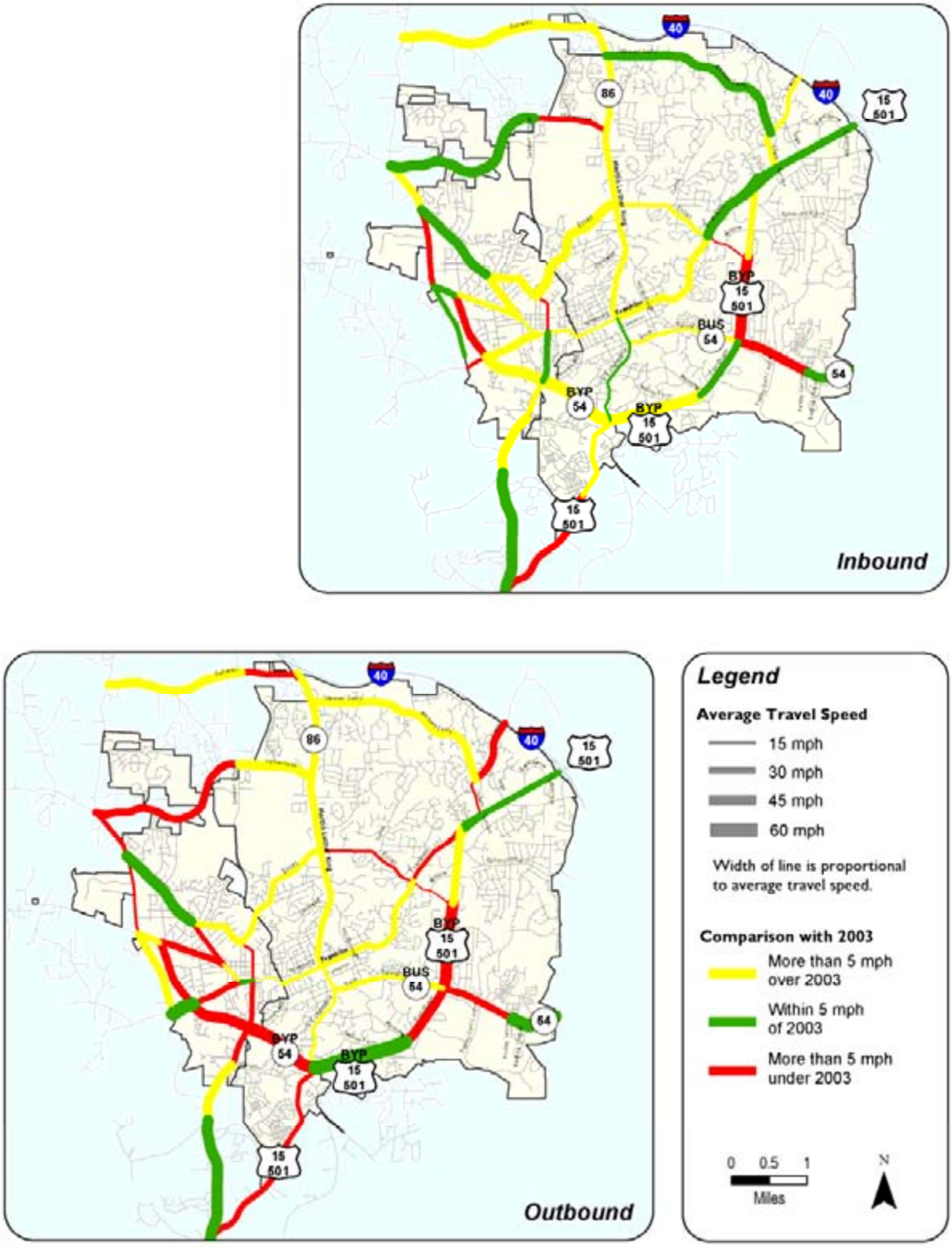
## Figure 3.4 – 2005 Average Mid-Day Speed Compared with Speed Limit



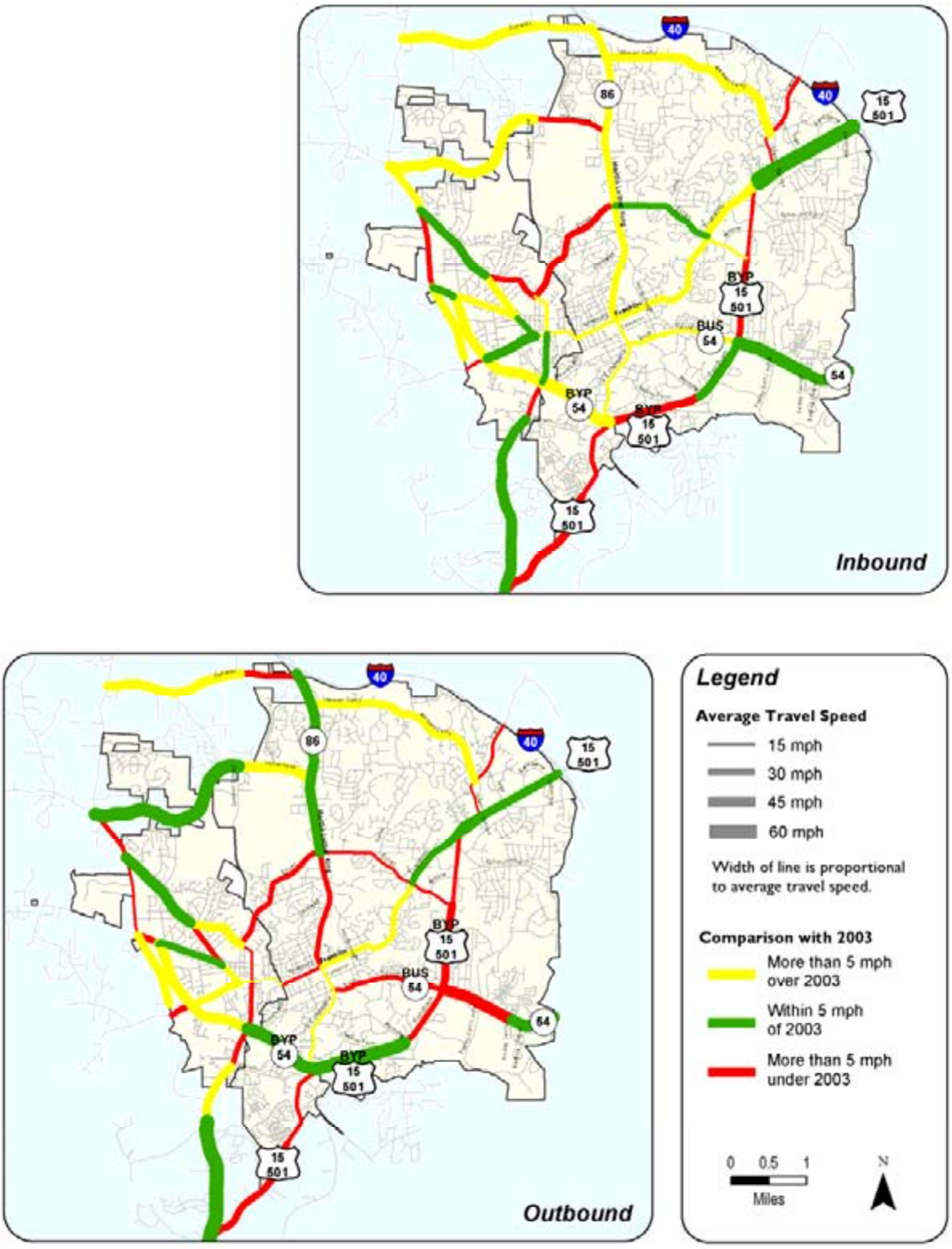
## Figure 3.5 – 2005 Average PM Speed Compared with Speed Limit



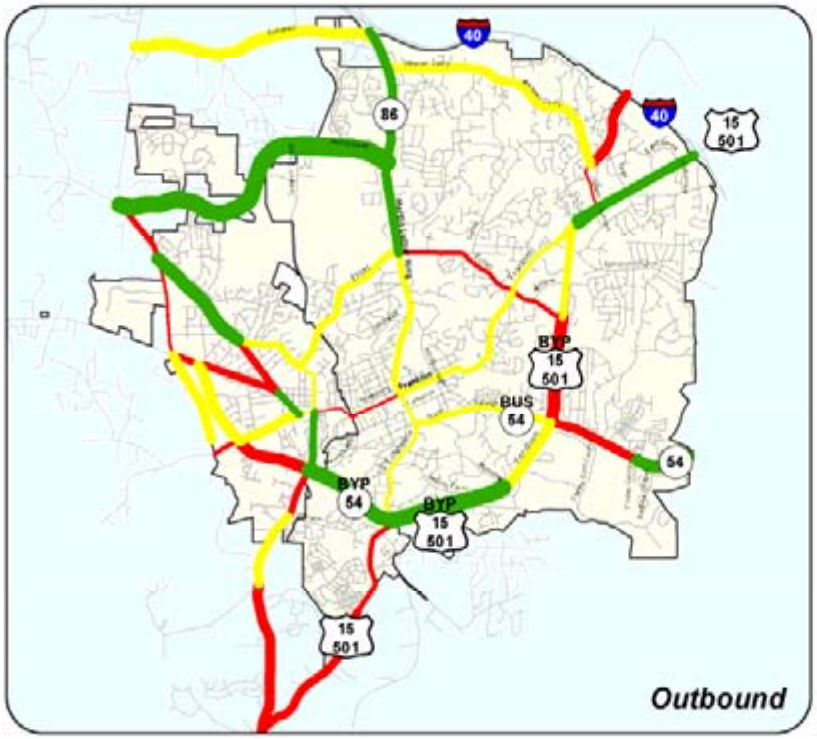
## Figure 3.6 – 2005 Average AM Speed Compared with 2003

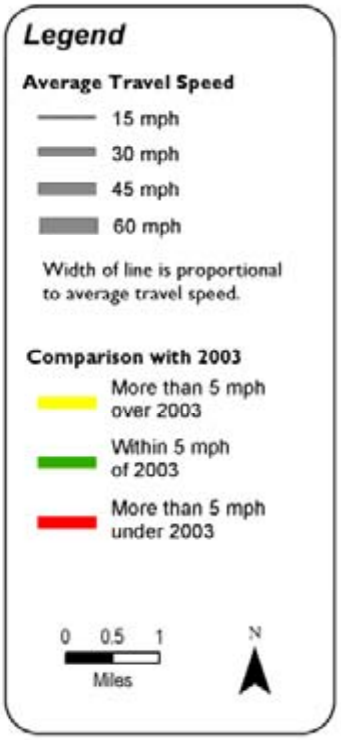


## Figure 3.7 – 2005 Average Mid-Day Speed Compared with 2003



## Figure 3.8 – 2005 Average PM Speed Compared with 2003

## *Findings and Conclusions*

The morning peak average speed of the 51 roadway segments was 28 mph in the inbound direction and 25 mph in the outbound direction. Average speed along the corridors ranged from 8 mph to 49 mph in the inbound direction and from 7 mph to 60 mph in the outbound direction.

The mid-day peak in-bound and outbound average speeds were 29 mph and 26 mph, respectively. Mid-day average speeds ranged from 12 mph to 61 mph inbound, and from 7 mph to 61 mph outbound.

The afternoon peak had an average speed of 27 mph in the inbound and 26 mph in the outbound direction. Average speeds ranged from 8 mph to 60 mph inbound and from 7 mph to 65 mph outbound.

Looking at the sum of travel time in both directions for all segments shows virtually identical numbers for both morning and afternoon. The total travel time of all segments in the morning is 3 hours and 51 minutes and in the afternoon the total is 3 hours and 52 minutes. Overall travel time has increased since 2003 in the surveyed corridors. The total travel time of both directions increased from 3 hours and 35 minutes to 3 hours and 51 minutes in the morning peak hour from 2003 to 2005. Similarly, the total time in the afternoon peak hour increased from 3 hours and 37 minutes in 2003 to 3 hours and 52 minutes in 2005. Average speeds for all corridors surveyed in the Town in 2003 have also decreased. The inbound direction saw a modest average speed increase in the morning, from 26 mph to 28 mph, and a slight decrease in the afternoon from 28 mph to 27 mph. The average speed in the outbound direction fell dramatically in the morning: dropping from 31 mph to 25 mph. The afternoon outbound average speed also decreased, though not as much, dropping from 29 mph in 2003 to 26 mph in 2005.

When the average speeds are compared to the speed limit, it's readily apparent that the core of the Town has lower average travel speeds for most directions and time periods than the speed limit allows. As one moves further away from the Town core, the travel speeds get closer to the allowable speed. The exceptions to this being the primary access points to I-40. Martin Luther King Boulevard, US 15/501 and NC 54 had much slower speeds, even in outlying areas, than the speed limit allows.

When comparing the travel times to 2003, it can be seen that the vast majority of roadway segments fared about the same (within 5 mph average speed) as in 2003 or improved between 2003 and 2005. The primary exception to this was Estes Drive, especially between Franklin and Fordham. This segment experienced some of the slowest average speeds in the region and relatively long travel times. This correlates with the decreased level of service at intersections along Estes and the increased delays that would cause. Also, given the relatively short length of the corridor segment, even small delays can have a large impact on the overall travel time and average travel speed.

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# Chapter 4 - Pedestrian Facilities

**MEASUREMENT: Miles of Sidewalk**
**DATA: GIS-Based Sidewalk Inventory**

## *Why and How*

As part of the Town of Chapel Hill's Comprehensive Plan, it was observed that the Town has been developed with very few sidewalks and the lack of these sidewalks affects both pedestrian and transit mobility. Sidewalks make it easy for pedestrians to get around, but since almost every transit trip begins and ends with a walk trip, pedestrian facilities are very important for transit mobility.

The inventory of pedestrian facilities is maintained by Town staff and updated as conditions change with new sidewalk construction or other pedestrian facility improvements. This information was collected, summarized, and mapped to understand the extent and distribution of facilities for pedestrians within the Town limits of Chapel Hill.

## *Results*

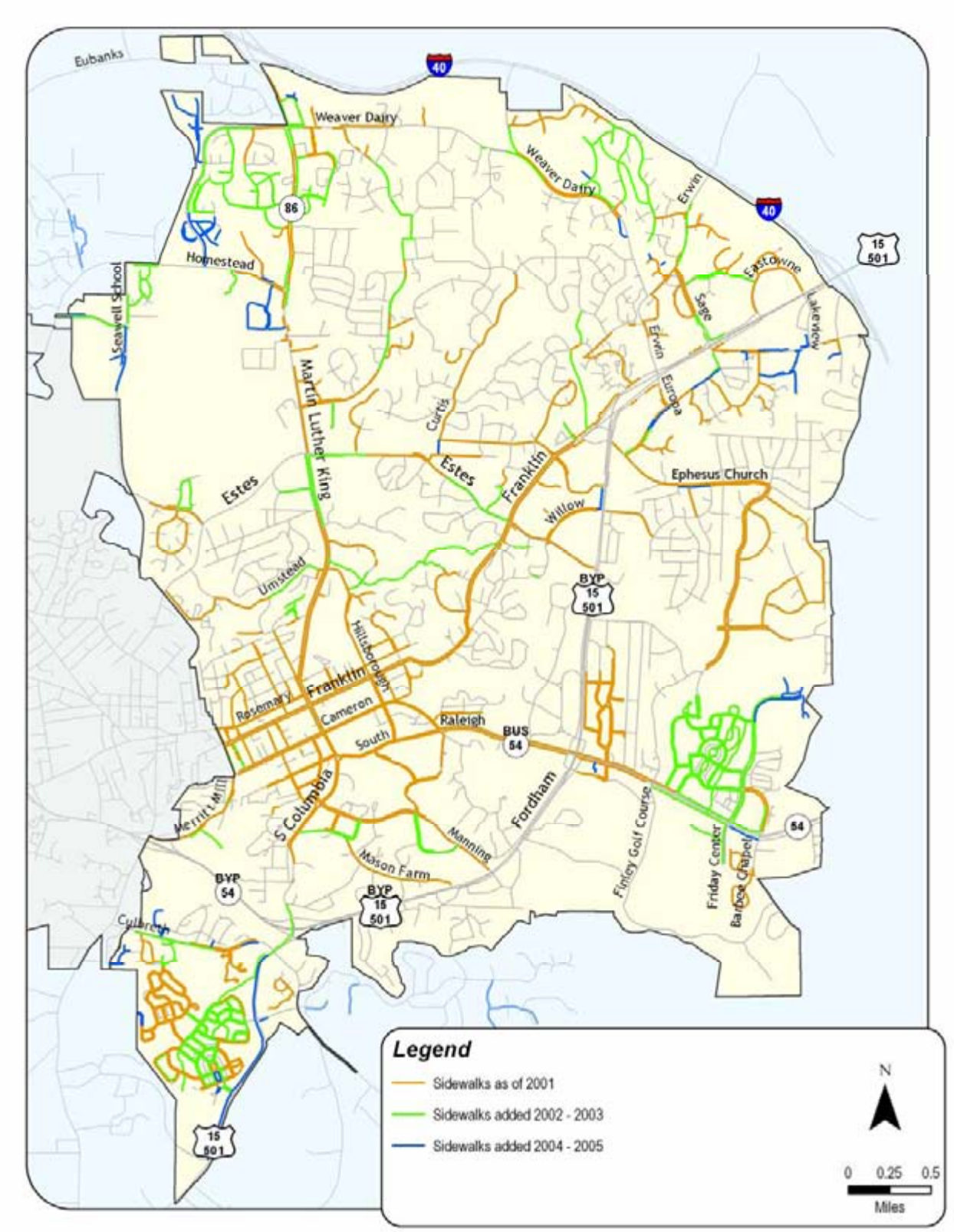
Locations of sidewalks within Chapel Hill for three different time periods are presented in Figure 4.1. The time periods displayed on the map correspond with previous Mobility Report Cards and include: up to 2001, 2002 to 2003, and 2004 to 2005. The differentiation between years is approximate and may occur at a slightly different time in order to correspond with the data used in previous report cards. Figure 4.2 shows pedestrian facilities along transit corridors. This map also includes a ¼ mile buffer around existing transit stops to show a typical transit walking area.

***Comprehensive Plan: Pedestrian Measures of Progress***

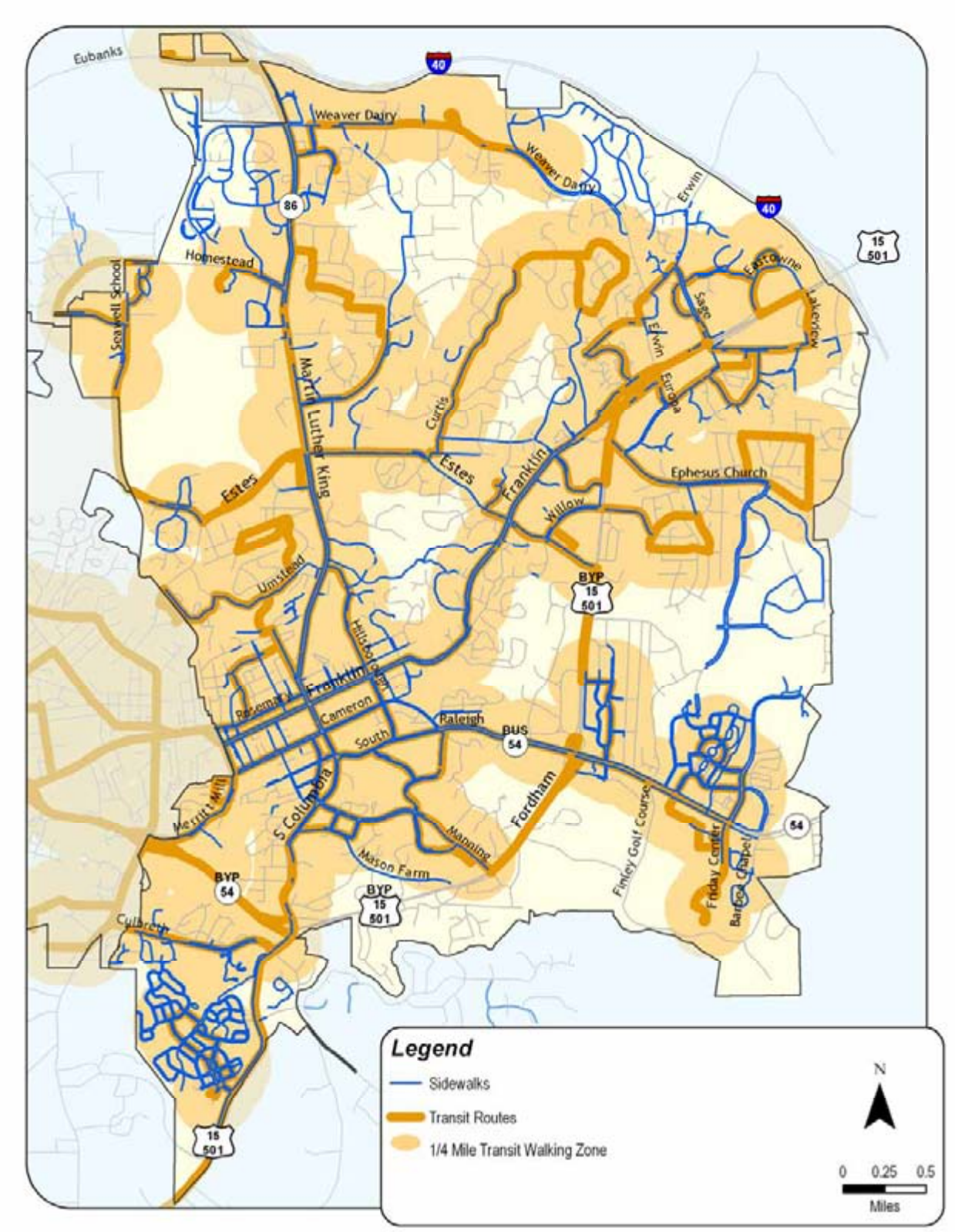
- Establish a funding source for Pedestrian and Bicycle Plan improvements by 2010.
- Improve the pedestrian network to acceptable performance levels within the downtown, UNC-CH, and activity corridors and centers by the year 2003.

*Only limited pedestrian facilities have been added within the downtown and University areas. Sidewalks are being added in outlying areas.*

## Figure 4.1 – Pedestrian Facilities



## Figure 4.2 – Pedestrian Facilities within ¼ Mile of Transit Service

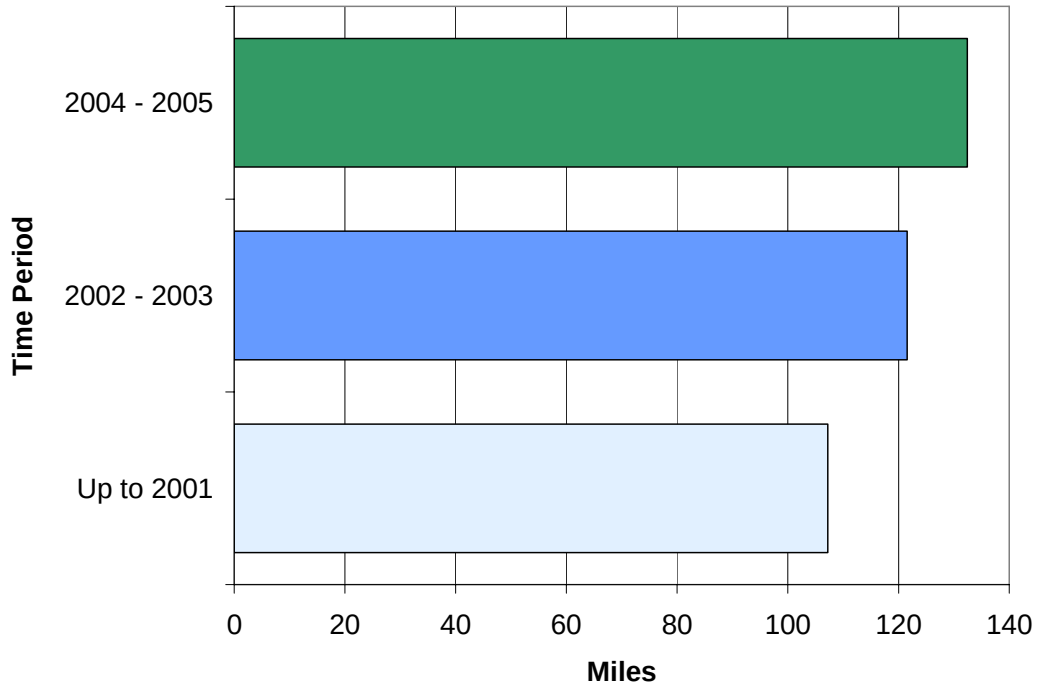


## *Findings and Conclusions*

Sidewalk coverage throughout the Town is best in the downtown and campus area, very good in Southern Village and Meadowmont, and generally lacking in many of the remaining residential areas. Sidewalks are present along Martin Luther King Jr. Boulevard, Franklin Street, and Estes Drive, though gaps exist in some areas. Weaver Dairy Road has substantial gaps in the sidewalk system, with complete sidewalk sections only near Martin Luther King, Jr. Boulevard and the High School.

Approximately 107 miles of sidewalk existed in the Town in 2001 and almost 15 miles were added between 2001 and 2003, resulting in a total of nearly 122 miles. Many gaps were filled in along Martin Luther King Jr. Boulevard and complete sections of sidewalk were constructed along Kingston Drive and Piney Mountain Drive as shown in Figure 4.3.

**FIGURE 4.3 – MILES OF SIDEWALKS**




The last two years (2004 and 2005) saw an additional 11 miles of sidewalk construction, a 9% increase. This sidewalk construction was spread around town, including along US 15/501 in the Southern Village area, additional sidewalks in the Meadowmont area, a few areas of development off Homestead Road, and additional sidewalks along and nearby Legion Road and Old Durham-Chapel Hill Road. Sidewalk construction occurring outside of the Town boundaries (primarily along Sylvan Way in the northwest and Rhododendron Drive and Madera Lane area in the south) is not included in the data presented in the tables and figures.

## Table 4.1 – Pedestrian Facilities

| Time Period | Total Length (miles) | Increase Over Prior Time Period | |
|---|---|---|---|
| | | Absolute (miles) | Percent |
| Up to 2001 | 107.2 | | |
| 2002 - 2003 | 121.6 | 14.4 | 13.4% |
| 2004 - 2005 | 132.4 | 10.9 | 8.9% |

Pedestrian facilities and transit service go hand in hand. An extensive sidewalk network, especially within close proximity to transit stops, makes access to transit much easier. Sidewalk coverage within transit areas in the Town is improving, but much of the residential areas within typical walking distance from transit stops are not served by sidewalks. The lack of sidewalks within the transit service area has a negative impact on transit service as well as on transit-dependent residents. Since 2001, the total length of sidewalks within the transit service area has increased by 20%. Approximately 75% of all new sidewalk construction since 2001 has occurred inside the transit service area. The rate of sidewalk construction inside the transit service area slowed somewhat in the 2004 – 2005 time period, dropping from 11.7 additional miles in 2002 – 2003 (82% of all sidewalks constructed in that time period) to 7.3 additional miles in 2004 – 2005 (67% of all sidewalks constructed in that time period). Table 4.2 shows the sidewalk construction within the transit service area over time. Note that all of these values are based on the transit routes and stops as of October 2005, so some differences will exist when compared to previous Report Cards due to transit system changes over time.

## Table 4.2 – New Sidewalk Construction within Transit Service Area

| Time Period | Total Length within Transit Service Area (miles) | Cumulative Total within Transit Service Area (miles) | Percent Increase over Prior Time Period |
|---|---|---|---|
| Constructed as of 2001 | 96.8 | 96.8 | |
| New Sidewalks 2002 - 2003 | 11.7 | 108.5 | 12.1% |
| New Sidewalks 2004 - 2005 | 7.3 | 115.8 | 6.7% |

It is important that new sidewalk construction and transit service continue to complement each other. This can be accomplished by focusing sidewalk construction within the transit service area and/or extending transit service to areas with good sidewalk coverage and continuity. This is especially imperative with the continued transit service and ridership increases.

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# Chapter 5 - Pedestrian Activity

**MEASUREMENT: Pedestrian Counts**
**DATA: 12-Hour Directional Counts**

## *Why and How*

In order to assess the condition of its pedestrian system, the Town of Chapel Hill needs to know what level of pedestrian activity is being experienced. It is also important to know where pedestrian activity is occurring in order to better understand the reasons why there may or may not be pedestrian activity in different areas of the Town.

***2000 Chapel Hill Comprehensive Plan Action Item***

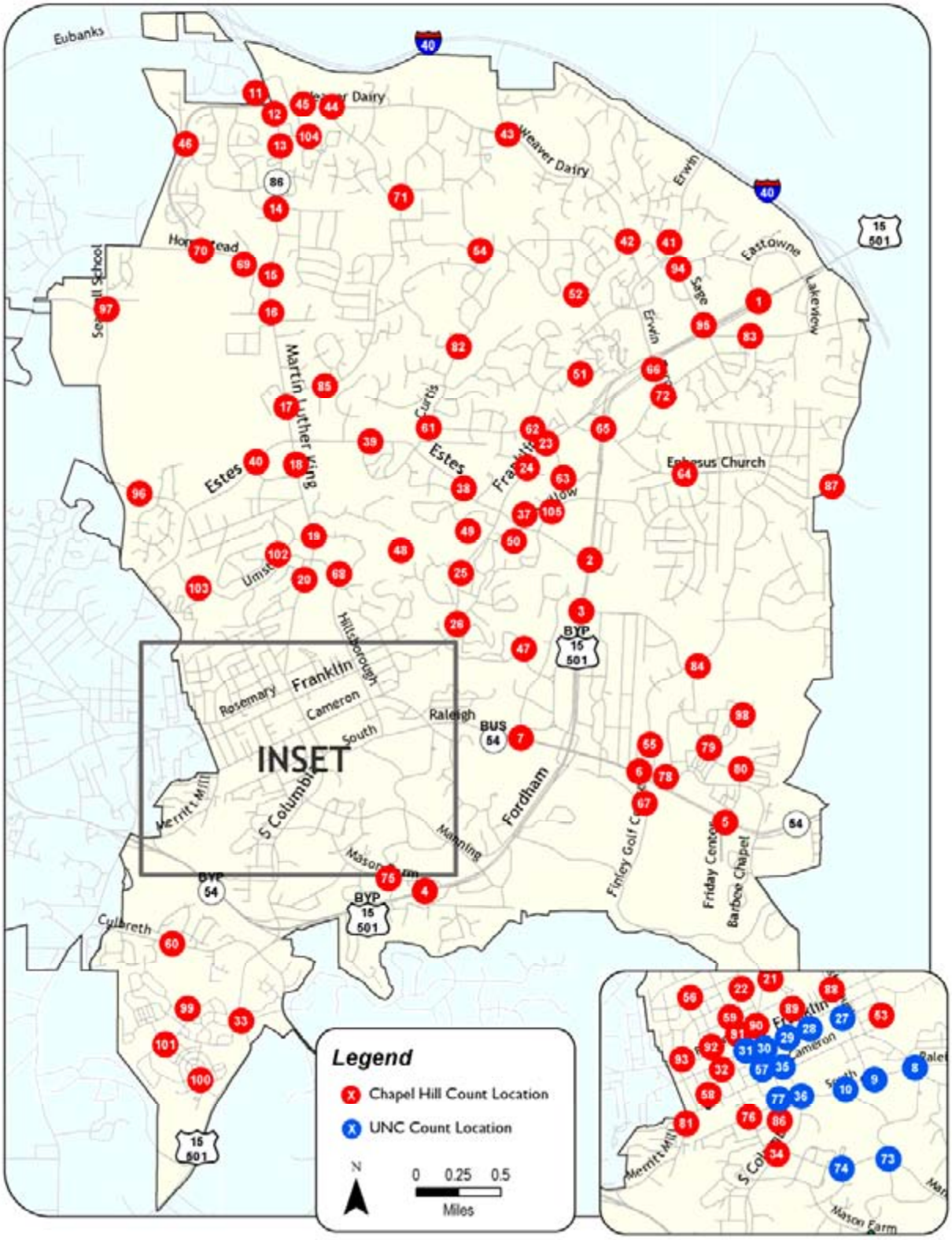
Develop and adopt procedures for evaluating performance of pedestrian facilities.

*The first two Mobility Report Cards developed a system for collecting pedestrian activity data. This update continues those procedures.*

In general, there are three ingredients necessary to promote pedestrian activity: land use, presence of facilities, and design of facilities. A mix of land use types and activities in close proximity to one another encourages walking. For people to walk, there needs to be sidewalk facilities. The design of those facilities can have a great impact on the desirability of walking and allow for the integration of the facilities into developments and other transportation modes. The attractiveness of other modes of travel also has a direct effect on pedestrian activity. A frequent and reliable transit system will encourage walking while an increase in parking availability or decrease in parking fees in the downtown or on campus will discourage walking. The Town of Chapel Hill's Comprehensive Plan identified the need to address all three of these ingredients. The plan called for the improvement of the pedestrian network and the establishment of development review requirements to ensure good pedestrian design for new developments. Periodic measurements of pedestrian activity are used to determine if these strategies are working.

Pedestrian activity is measured by the number of pedestrians observed at various locations throughout the Town. Wheelchair users, skateboarders, and rollerbladers are all counted as pedestrians. Counts were collected at 105 locations throughout the Town with 12 additional counts being performed on bikeways and greenways on Saturday in order to include high recreational use areas. These locations are presented in Figure 5.1. The counts were collected manually over a 12-hour period from 7:00 AM to 7:00 PM to understand the relative activity throughout the day.

## Figure 5.1 – Pedestrian Count Locations



## Results

The 12-hour pedestrian counts for the 117 counts ranged from a low of eight (Homestead Road east of Weaver Dairy Road) to a high of over 19,000 (South Road at the Bell Tower on the UNC campus). These counts are presented graphically in Figure 5.2 and in table form in Table 5.1. They include supplemental counts from the University of North Carolina. Figure 5.3 is a map showing the 2005 Pedestrian count. The size of the circle is proportional to the 12-hour count volume. Figure 5.4 shows the relative change from 2001 to 2003 and from 2003 to 2005.

The range of 12-hour pedestrian counts along key travel corridors includes the following:

***2005 Pedestrian Count Range***

- Columbia Street– 300 to 10,000
- Franklin Street – 100 to 11,000
- MLK Blvd – 100 to 800
- Cameron Avenue – 800 to 3,000
- South Road – 1,600 to 19,000

***2001/2003 Pedestrian Counts***

- Columbia Street– 200 to 8,000
- Franklin Street – 100 to 10,000
- MLK Boulevard – 100 to 800
- Cameron Avenue – 600 to 3,000
- South Road –1,000 to 24,000

Highest daily volume locations were along South Road and Franklin Street. Five locations in the downtown and UNC area had 12-hour pedestrian volumes over 6,000, including South Road and The Bell Tower (19,165), Franklin Street and Columbia Street (10,932), Franklin Street and the Coffee Shop (9,703), Columbia Street and Fraternity Court (9,646), and Manning Drive and Ridge Road (6,857). These locations have consistently been among the highest counted for each of the Mobility Report Cards to date.

# Table 5.1 – 12-Hour Pedestrian Counts: 2001 – 2003 – 2005

| | | Location | 2001 | 2003 | Change 2001 - 2003 | 2005 | Change 2003 - 2005 |
|---|---|---|---|---|---|---|---|
| US 15/501/ Fordham | 1 | US 15-501/West Eastowne Dr | n/a | 86 | n/a | 114 | +32.6% |
| | 2 | Fordham Blvd/Estes Dr | n/a | n/a | n/a | 359 | n/a |
| | 3 | Fordham Blvd/Cleland Rd | n/a | n/a | n/a | 868 | n/a |
| | 4 | Fordham Blvd/Kings Mill Rd | n/a | n/a | n/a | 600 | n/a |
| NC 54/Raleigh Rd/ South Rd | 5 | NC 54 Bike Path/Meadowmont Ln | n/a | 212 | n/a | 122 | -42.5% |
| | 5S | NC 54 Bike Path/Meadowmont Ln (Saturday) | n/a | 298 | n/a | 100 | -66.4% |
| | 6 | NC 54/Hamilton Rd | 308 | 495 | +60.7% | 636 | +28.5% |
| | 7 | Raleigh Rd/Greenwood Rd | n/a | 180 | n/a | 37 | -79.4% |
| | 8 | South Rd/Country Club Rd | 1,032 | 1,484 | +43.8% | 1,636 | +10.2% |
| | 9 | South Rd/Raleigh St | 5,645 | 4,682 | -17.1% | 5,632 | +20.3% |
| | 10 | South Rd/The Bell Tower | 12,765 | 24,206 | +89.6% | 19,165 | -20.8% |
| MLK Blvd/Columbia St | 11 | MLK Blvd/Northwood Dr | n/a | 352 | n/a | 115 | -67.3% |
| | 12 | MLK Blvd/Weaver Dairy Rd | n/a | 99 | n/a | 71 | -28.3% |
| | 13 | MLK Blvd/Westminster Dr | n/a | 112 | n/a | 211 | +88.4% |
| | 14 | MLK Blvd/Stateside Dr | 117 | 121 | +3.4% | 191 | +57.9% |
| | 15 | MLK Blvd/Homestead Rd | n/a | 306 | n/a | 57 | -81.4% |
| | 16 | MLK Blvd/Northfield Dr | n/a | n/a | n/a | 703 | n/a |
| | 17 | MLK Blvd/Shadow Dr | 269 | 319 | +18.6% | 230 | -27.9% |
| | 18 | MLK Blvd/YMCA Driveway | 91 | 129 | +41.8% | 428 | +231.8% |
| | 19 | MLK Blvd/Bolin Creek Greenway | n/a | 405 | n/a | 797 | +96.8% |
| | 19S | MLK Blvd/Bolin Creek Greenway (Saturday) | n/a | 519 | n/a | 177 | -65.9% |
| | 20 | MLK Blvd south of Hillsborough St | n/a | 737 | n/a | 669 | -9.2% |
| | 21 | MLK Blvd/Stephens St | 856 | 463 | -45.9% | 769 | +66.1% |
| | 22 | Columbia St/Town Hall | 353 | 1,083 | +206.8% | 254 | -76.5% |
| Franklin St | 23 | Franklin Street and Eastgate Shopping Center Rd | n/a | n/a | n/a | 882 | n/a |
| | 24 | Franklin St/Franklin Woods Bus Stop | 183 | 564 | +208.2% | 740 | +31.2% |
| | 25 | Franklin St/Elizabeth St | n/a | 261 | n/a | 388 | +48.7% |
| | 26 | Franklin St/Roosevelt St | 291 | 121 | -58.4% | 58 | -52.1% |
| | 27 | Franklin St/Hillsborough St/Raleigh St | 1,368 | 1,865 | +36.3% | 1,320 | -29.2% |
| | 28 | Franklin St/Henderson St | 6,670 | 7,178 | +7.6% | 5,442 | -24.2% |
| | 29 | Franklin St/Coffee Shop | 8,890 | 9,709 | +9.2% | 9,703 | -0.1% |
| | 30 | Franklin St/Columbia St | 9,635 | 10,123 | +5.1% | 10,932 | +8.0% |
| | 31 | Franklin St/Church St | 2,960 | 2,657 | -10.2% | 2,294 | -13.7% |
| | 32 | Franklin St/Kenan St | 1,302 | 2,483 | +90.7% | 1,903 | -23.4% |
| US 15/501 South/South Columbia St | 33 | US 15-501 South/Bennett Rd | n/a | n/a | n/a | 302 | n/a |
| | 34 | Columbia St/Old Pittsboro St | 181 | 172 | -5.0% | 414 | +140.7% |
| | 35 | Columbia St/Fraternity Ct | 3,095 | 8,276 | +167.4% | 9,646 | +16.6% |
| | 36 | Columbia St/McCauley St | 7,040 | 4,461 | -36.6% | 5,204 | +16.7% |
| Estes Dr | 2 | Estes Dr/Fordham Blvd | n/a | n/a | n/a | 359 | n/a |
| | 37 | Estes Dr/Community Center | 192 | 377 | +96.4% | 474 | +25.7% |
| | 38 | Estes Dr/Granville Rd | n/a | n/a | n/a | 114 | n/a |
| | 39 | Estes Dr/Phillips Middle School | 142 | 89 | -37.3% | 60 | -32.6% |
| | 40 | Estes Dr/Horace Williams Airport Driveway | 24 | 3 | -87.5% | 26 | +766.7% |

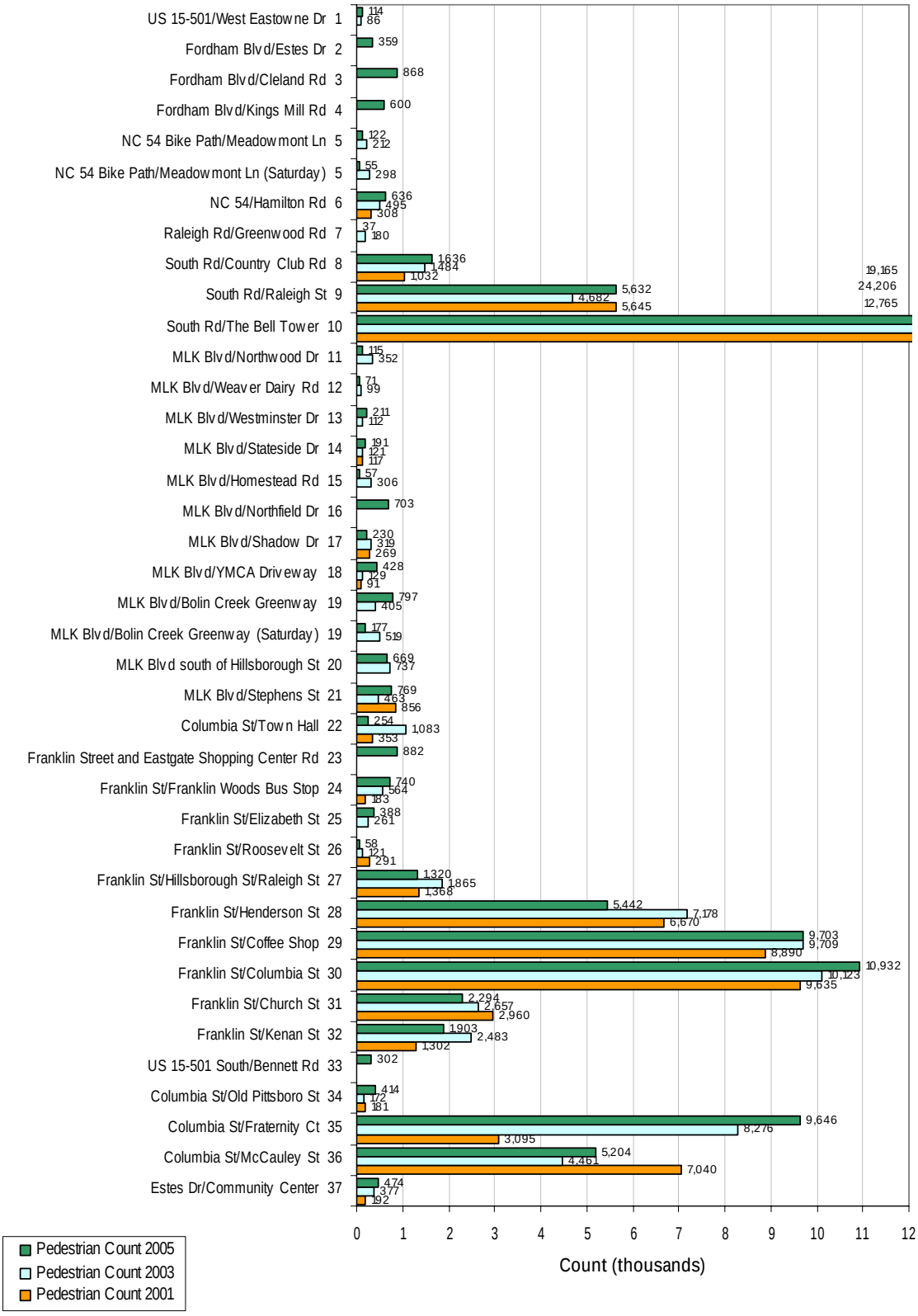
# Table 5.1 (cont'd) – 12-Hour Pedestrian Counts: 2001 – 2003 – 2005

| | | Location | 2001 | 2003 | Change 2001 - 2003 | 2005 | Change 2003 - 2005 |
|---|---|---|---|---|---|---|---|
| Weaver Dairy Rd/ Erwin Rd | 41 | Erwin Rd/Sage Rd | 34 | 48 | +41.2% | 55 | +14.6% |
| | 42 | Weaver Dairy Rd and Sedgefield Dr | n/a | n/a | n/a | 51 | n/a |
| | 43 | Weaver Dairy Rd/Rowe Rd | n/a | n/a | n/a | 251 | n/a |
| | 44 | Weaver Dairy Rd/Sunrise Ln | 34 | 59 | +73.5% | 199 | +237.3% |
| | 45 | Weaver Dairy Rd/Kingston Dr | n/a | n/a | n/a | 774 | n/a |
| | 45S | Weaver Dairy Rd/Kingston Dr (Saturday) | n/a | n/a | n/a | 587 | n/a |
| | 46 | Weaver Dairy Rd/Perkins Dr/Banks Dr | 86 | 87 | +1.2% | 384 | +341.4% |
| Other Locations | 47 | Battle Branch Greenway | n/a | 255 | n/a | 435 | +70.6% |
| | 47S | Battle Branch Greenway | n/a | 255 | n/a | 355 | +39.2% |
| | 48 | Bolin Creek Greenway btw MLK Blvd and Bolinwood Dr | 180 | 245 | +36.1% | 180 | -26.5% |
| | 48S | Bolin Creek Greenway btw MLK Blvd and Bolinwood Dr (Saturday) | n/a | n/a | n/a | 177 | n/a |
| | 49 | Bolin Creek Greenway btw Elizabeth St and Franklin St | 260 | 553 | +112.7% | 484 | -12.5% |
| | 49S | Bolin Creek Greenway/Elizabeth St Trailhead (Saturday) | n/a | 731 | n/a | 406 | -44.5% |
| | 50 | Bolin Creek Trail/Community Center Dr | n/a | 460 | n/a | 723 | +57.2% |
| | 50S | Bolin Creek Trail/Community Center Dr (Saturday) | n/a | 705 | n/a | 225 | -68.1% |
| | 51 | Booker Creek Bike Path | n/a | 223 | n/a | 412 | +84.8% |
| | 51S | Booker Creek Bike Path (Saturday) | n/a | 224 | n/a | 55 | -75.4% |
| | 52 | Booker Creek Road at Booker Creek Greenway | n/a | n/a | n/a | 507 | n/a |
| | 53 | Boundary St and Forest Theatre | 239 | 387 | +61.9% | 244 | -37.0% |
| | 54 | Brookview Drive and Kenmore Road | n/a | n/a | n/a | 39 | n/a |
| | 55 | Burning Tree Dr north of NC 54 | 57 | 87 | +52.6% | 466 | +435.6% |
| | 56 | Caldwell St at Tanyard Branch Trailhead (east of Mitchell Ln) | n/a | n/a | n/a | 1,729 | n/a |
| | 57 | Cameron Avenue/Pittsboro St | 3,085 | 3,089 | +0.1% | 3,025 | -2.1% |
| | 58 | Cameron Avenue/Roberson St | 662 | 571 | -13.7% | 775 | +35.7% |
| | 59 | Church Street and Carr Street | n/a | n/a | n/a | 249 | n/a |
| | 60 | Culbreth Rd west of Adams Wy | 90 | 159 | +76.7% | 158 | -0.6% |
| | 61 | Curtis Rd/Elliott Rd (path to school) | 144 | 298 | +106.9% | 410 | +37.6% |
| | 62 | Elliott Rd btw Franklin St and Old Oxford Rd | n/a | n/a | n/a | 127 | n/a |
| | 63 | Elliott Rd/Plaza Theatre | 290 | 272 | -6.2% | 143 | -47.4% |
| | 64 | Ephesus Church Rd/Churchill Dr | 474 | 425 | -10.3% | 118 | -72.2% |
| | 65 | Ephesus Church Road east of Fordham Blvd | n/a | n/a | n/a | 246 | n/a |
| | 66 | Europa Dr and Service Rd | n/a | n/a | n/a | 196 | n/a |
| | 67 | Finley Golf Course Rd south of Prestwick Rd | 62 | 57 | -8.1% | 325 | +470.2% |
| | 68 | Hillsborough St/Bolinwood Apts | 778 | 473 | -39.2% | 92 | -80.5% |
| | 69 | Homestead Rd West of Brookstone Apts | 26 | 109 | +319.2% | 65 | -40.4% |
| | 70 | Homestead Road east of Weaver Dairy Road | n/a | n/a | n/a | 8 | n/a |
| | 71 | Kingston Dr and Partin St | n/a | n/a | n/a | 41 | n/a |
| | 72 | Legion Rd/Europa Dr | 33 | 87 | +163.6% | 113 | +29.9% |
| | 73 | Manning Dr/Craig Rd | 1,296 | 3,929 | +203.2% | 3,561 | -9.4% |
| | 74 | Manning Dr/Ridge Rd | 6,983 | 6,857 | -1.8% | 7,310 | +6.6% |

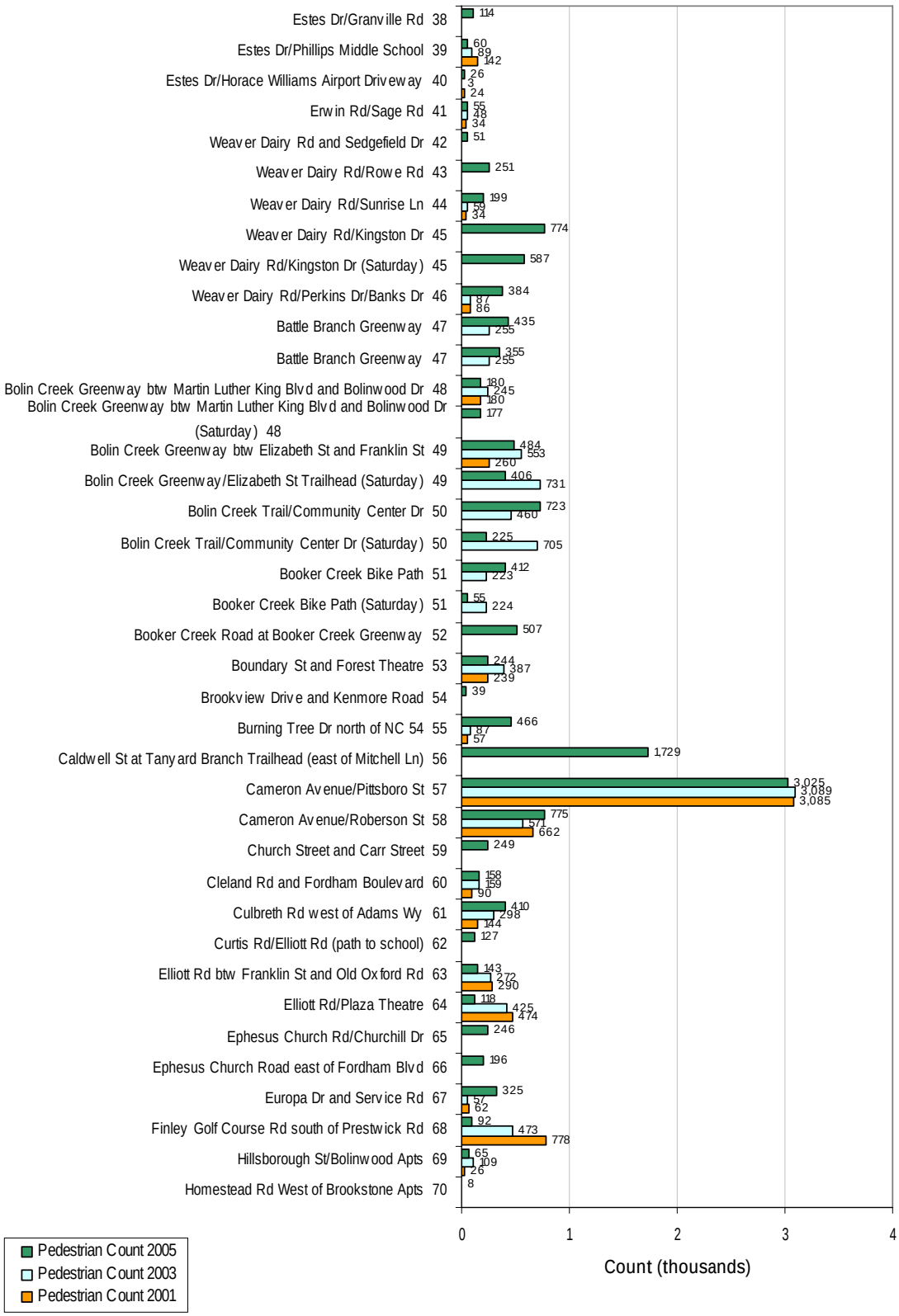
# Table 5.1 (cont'd) – 12-Hour Pedestrian Counts: 2001 – 2003 – 2005

| | | Location | 2001 | 2003 | Change 2001 - 2003 | 2005 | Change 2003 - 2005 |
|---|---|---|---|---|---|---|---|
| Other Locations | 75 | Mason Farm Rd/Otey's Rd | 451 | 17 | -96.2% | 128 | +652.9% |
| | 76 | McCauley St/ Ransom St | 710 | 815 | +14.8% | 666 | -18.3% |
| | 77 | McCauley St/Pittsboro St | 2,278 | 1,980 | -13.1% | 1,946 | -1.7% |
| | 78 | Meadowmont Bike Path/Pinehurst Dr | n/a | 93 | n/a | 229 | +146.2% |
| | 78S | Meadowmont Bike Path/Pinehurst Dr (Saturday) | n/a | 150 | n/a | 225 | +50.0% |
| | 79 | Meadowmont Village Core | n/a | 184 | n/a | 241 | +31.0% |
| | 79S | Meadowmont Village Core (Saturday) | n/a | 165 | n/a | 213 | +29.1% |
| | 80 | Meadowmont Lane and Sprunt St | n/a | n/a | n/a | 96 | n/a |
| | 81 | Merritt Mill Rd/Crest St | 427 | 475 | +11.2% | 1,520 | +220.0% |
| | 82 | N. Lakeshore Dr south of Arlington St | n/a | n/a | n/a | 97 | n/a |
| | 83 | Old Durham Rd btw Cooper and Standish Dr | 152 | 264 | +73.7% | 85 | -67.8% |
| | 84 | Pinehurst Drive at Burning Tree Drive | n/a | n/a | n/a | 168 | n/a |
| | 85 | Piney Mountain Rd east of Woodshire Ln | 86 | 98 | +14.0% | 50 | -49.0% |
| | 86 | Pittsboro St/Vance St | 782 | 2,964 | +279.0% | 1,214 | -59.0% |
| | 87 | Pope Rd/Ephesus Church Rd | n/a | 12 | n/a | 18 | +50.0% |
| | 88 | Rosemary St/Hillsborough St | 1,071 | 963 | -10.1% | 1,690 | +75.5% |
| | 89 | Rosemary St/Henderson St | n/a | 1,514 | n/a | 1,949 | +28.7% |
| | 90 | Rosemary St west of Columbia St | 692 | 758 | +9.5% | 577 | -23.9% |
| | 91 | Rosemary St/Church St | n/a | 1,232 | n/a | 1,832 | +48.7% |
| | 92 | Rosemary St/UNC Parking Lots | 1,510 | 1,074 | -28.9% | 520 | -51.6% |
| | 93 | Rosemary St/Roberson St | n/a | 345 | n/a | 421 | +22.0% |
| | 94 | Sage Road and Old Sterling Drive | n/a | n/a | n/a | 91 | n/a |
| | 95 | Sage Rd and Dobbins Dr | n/a | n/a | n/a | 106 | n/a |
| | 96 | Seawell School Road and Hanover Pl | n/a | n/a | n/a | 78 | n/a |
| | 97 | Seawell School Rd/High School Rd | n/a | 176 | n/a | 200 | +13.6% |
| | 98 | Simerville Rd at Meadowmont Greenway | n/a | n/a | n/a | 456 | n/a |
| | 99 | Southern Village Bike Path | 259 | 297 | +14.7% | 255 | -14.1% |
| | 99S | Southern Village Bike Path (Saturday) | n/a | 162 | n/a | 302 | +86.4% |
| | 100 | Southern Village Core | n/a | 694 | n/a | 499 | -28.1% |
| | 100S | Southern Village Core (Saturday) | n/a | 308 | n/a | 627 | +103.6% |
| | 101 | Southern Village Greenway near Edgewater Cir and Brookgreen Dr | n/a | n/a | n/a | 415 | n/a |
| | 102 | Umstead Dr between Bradley Rd and Greene St | 734 | 97 | -86.8% | 114 | +17.5% |
| | 103 | Umstead Drive and Village Drive | n/a | n/a | n/a | 245 | n/a |
| | 104 | Westminster Dr/Banks Dr | n/a | 155 | n/a | 201 | +29.7% |
| | 105 | Willow Dr/Conner Dr | 132 | 224 | +69.7% | 312 | +39.3% |

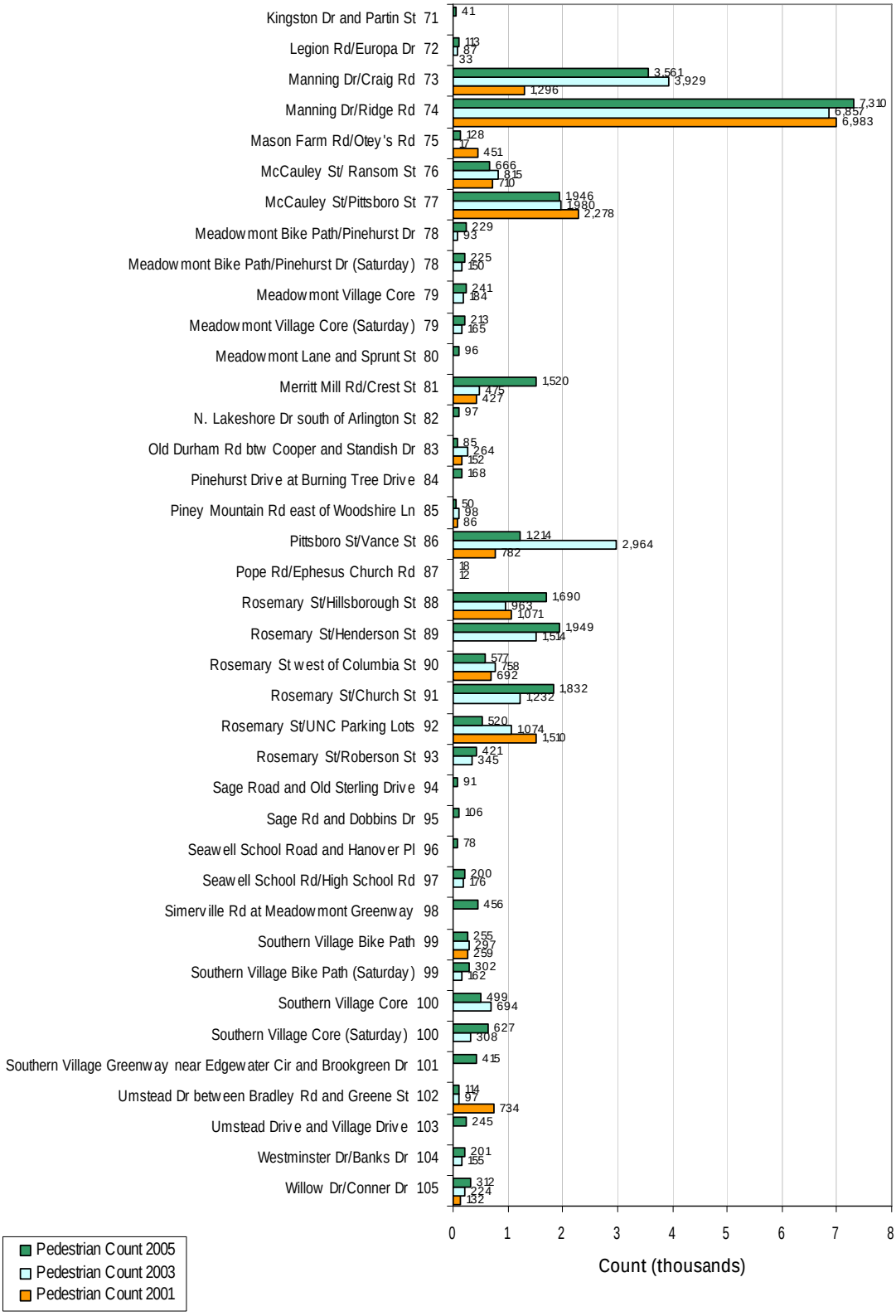
# Figure 5.2 – 12-Hour Pedestrian Activity: 2001 – 2003 – 2005



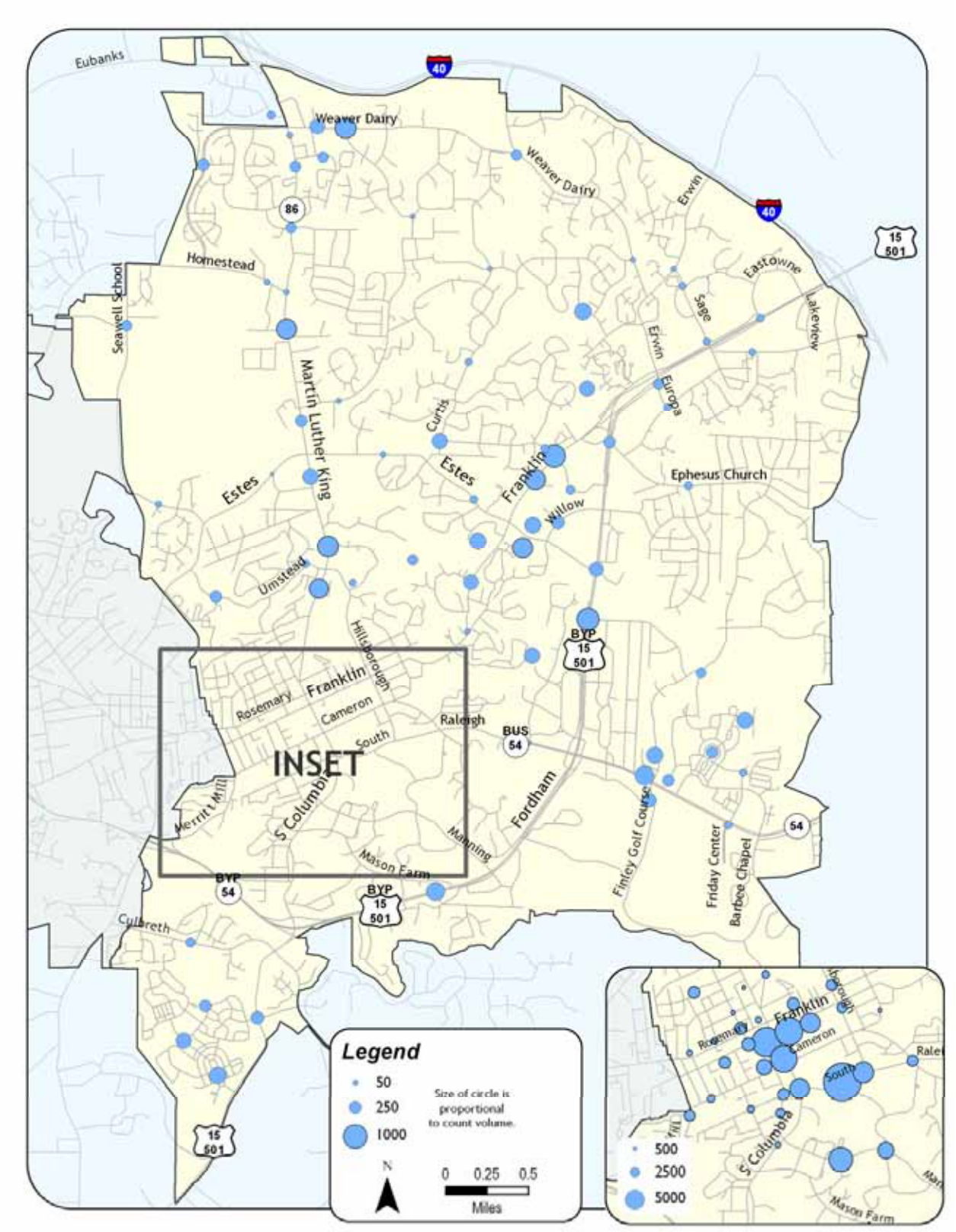
# Figure 5.2 (cont'd) – 12-Hour Pedestrian Activity: 2001 – 2003 – 2005



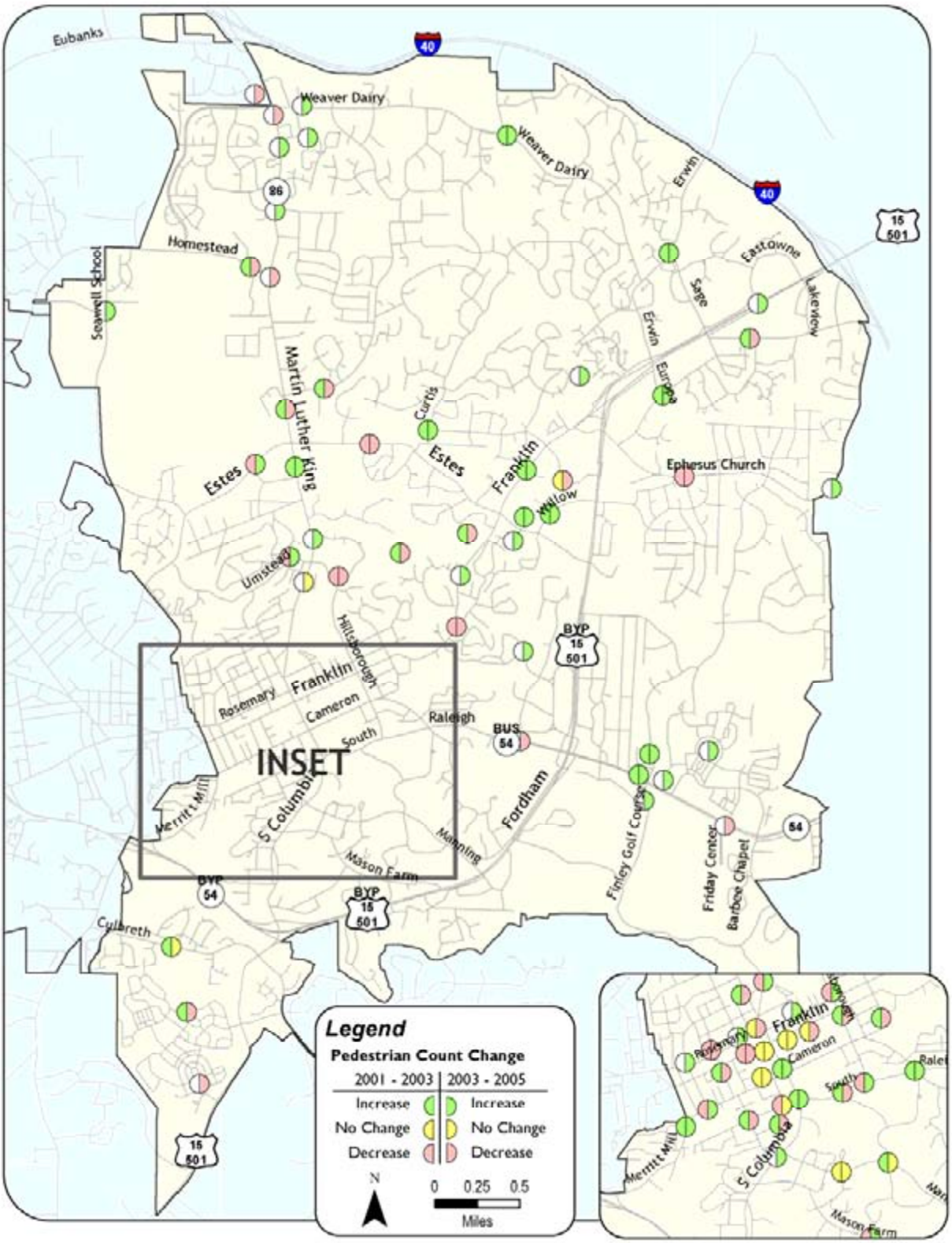
# Figure 5.2 (cont'd) – 12-Hour Pedestrian Activity: 2001 – 2003 – 2005



## Figure 5.3 – 12-Hour Pedestrian Counts 2005



## Figure 5.4 – Change in Pedestrian Counts 2001 – 2003 – 2005



## *Findings and Conclusions*

As would be expected and consistent with earlier report cards, the Town of Chapel Hill experiences the highest pedestrian volumes in the Town Center area and on the University of North Carolina campus. This area has the three ingredients needed to promote pedestrian activity: mixed uses, pedestrian facilities, and good design.

Pedestrian activity tends to decrease as the distance from the downtown and campus area increases. Part of this is because these areas tend to lack mixed use activities and the general design of the developments, which does not appear to promote pedestrian activities. The two mixed use developments in town (Southern Village and Meadowmont) appear to have higher pedestrian counts than other areas at a similar distance from the downtown/campus area.

Between 2003 and 2005, overall pedestrian activity stayed about the same, which was a substantially higher level than that in 2001. Total pedestrian activity for all locations that were surveyed in 2001 rose from almost 88,000 to 109,000 in 2003 and fell slightly to 104,000 in 2005. Looking just at locations surveyed in 2003 and 2005, total activity dropped slightly from 120,000 to 117,000. About half of the 87 locations surveyed in both 2003 and 2005 saw a greater than10% increase in pedestrian activity (45 locations). Eight pedestrian count locations stayed about the same (within 10%) from 2003 to 2005 and 34 locations experienced more than a 10% drop in pedestrian activity. Comparing 2003 to 2001, 27 locations increased by more than 10%, ten stayed about the same, and 18 declined.

The largest increases in pedestrian activity between 2003 and 2005 occurred on the UNC campus. The largest increases in pedestrian counts occurred at Columbia Street and Fraternity Court (8,276 to 9,646), Merritt Mill Road and Crest Street (475 to 1,520) and South Road and Raleigh Street (4,682 to 5,632).

The largest decrease in pedestrian activity also occurred on an around the UNC campus. The largest decreases occurred at South Road and the Bell Tower (24,206 to 19,165), Pittsboro Street and Vance Street (2,964 to 1,214), and Franklin Street and Henderson Street (7,178 to 5,442). Based on the 2001, 2003 and 2005 data, it appears that activity at individual locations in the campus and downtown areas fluctuates more than in other areas.

# Chapter 6 - Bicycle Facilities

**MEASUREMENT: Miles of Bicycle Routes, Paths, and Lanes**
**DATA: GIS-Based Bicycle Facility Inventory**

## *Why and How*

In a college community with a favorable climate, such as Chapel Hill, there is a major opportunity to promote bicycle mobility if a comprehensive system of bicycle trails, lanes, and routes exists.

The objective of this inventory is to determine the extent of the bicycle network in Chapel Hill. The inventory of bicycle facilities is maintained by Town staff and is updated as conditions change with new development or bicycle lane and path improvements. This information was collected, summarized, and mapped to understand the extent and distribution of facilities for bicyclists in the Town limits of Chapel Hill.

***Comprehensive Plan Actions: Bicycle Networks***

- Develop and maintain a system of safe and efficient bikeways designed to contribute to Town-wide mobility by connecting neighborhoods with activity centers, schools, parks, and other neighborhoods.
- Develop and adopt bicycle improvement action plans to achieve target performance measures.
- Develop a funding and implementation program to construct priority bicycle improvements identified by the plans (Town staff, Town Council).

*Total length of all bicycle facilities in the Town increased by 12% between 2003 and 2005. These new facilities integrate well with the existing facilities, working towards a complete system and connecting activity centers.*

## *Results*

Locations of bicycle facilities within Chapel Hill for three different time periods are presented in Figure 6.1. The time periods displayed on the map correspond with previous Mobility Report Cards and include: up to 2001, 2002 to 2003, and 2004 to 2005. The differentiation between years is approximate and may occur at slightly different times in order to correspond with the data used in previous report cards. The length of existing bicycle facilities available to the Town of Chapel Hill are also presented in tabular form in Table 6.1. Numbers may differ slightly from previous report cards, as additional GIS data layers were made available for this effort and existing data has been updated to better reflect actual alignments.

## *Findings and Conclusions*

As can be seen on the Bicycle Facilities map, much progress has been made since 2001. The 2001 bicycle network encompassed approximately 23 miles of various types of paved facilities, from wide shoulders and wide outside lanes to bicycle lanes and bicycle paths. An additional five miles of unpaved bicycle trails existed in 2001. Fourteen miles of bicycle facilities have been added since 2001, an almost 50% increase in the total length of bicycle facilities. Nine miles of facilities were added between 2002 and 2003 and an additional five miles since 2003.

## Figure 6.1 – Bicycle Facilities

Table 6.1 shows the distribution of bicycle facilities in the town and when improvements were made. The focus on type of facility has changed in recent years. Between 2001 and 2003, six miles of wide outside lanes were added, an increase of more than 300 percent for that type of facility. The total length of bike lanes increased by 1.4 miles (41 percent) and bike paths increased by 1.6 miles (27 percent) in the 2002 to 2003 time period. In the 2004 to 2005 time period, bike lanes accounted for the greatest increase, both in overall length and percent increase over prior time periods. Total length of bike lanes grew by almost 3 miles (almost 60 percent) in the 2004 to 2005 time period. Small increases were also made in wide shoulders (1.4 miles or 13 percent) and paved bike paths (0.4 mile or 5 percent) during this time period. No new wide outside lanes were added between 2004 and 2005.

## TABLE 6.1 – BICYCLE FACILITIES

| | Up to 2001 | Added 2002 - 2003 | | Added 2004 - 2005 | |
|---|---|---|---|---|---|
| | Length (miles) | Length (miles) | Percent Increase | Length (miles) | Percent Increase |
| Bike Path (paved) | 6.2 | 1.6 | 26.5% | 0.4 | 4.6% |
| Bike Trail (unpaved) | 4.9 | 0.0 | 0.0% | 0.0 | 0.0% |
| Bike Lane | 3.3 | 1.4 | 41.2% | 3.3 | 70.1% |
| Wide Shoulder | 11.3 | 0.0 | 0.0% | 1.4 | 12.6% |
| Wide Outside Lane | 2.2 | 6.3 | 287.8% | 0.0 | 0.0% |
| PAVED total | 23.0 | 9.3 | 40.5% | 5.1 | 15.7% |
| **TOTAL** | **27.9** | **9.3** | **33.4%** | **5.1** | **13.7%** |

While there are still large areas without any type of bicycle facility, new facilities have been constructed that extend and integrate with the existing system. New facilities also are being added along the arterials in town. Between 2002 and 2003, new facilities were added along Estes Drive, Franklin Street, and South Road. Since 2003, new facilities were added along US 15/501 South and Estes Drive, among other places. In general, this is a positive move as the lower volume, lower speed local streets have less need for dedicated bicycle facilities. Other areas with new facilities since 2003 include the extension of existing facilities in the Meadowmont area, along Seawell School Road, and along Weaver Dairy Road Extension.

Several corridor enhancement opportunities identified in earlier report cards are still appropriate for improvements such as Martin Luther King Jr. Boulevard and Raleigh Road. While Martin Luther King Jr. Boulevard has bicycle facilities along most of its length, they are primarily made up of wide shoulders and wide outside lanes. Raleigh Road and NC 54 would also be a prime corridor for enhancements, linking the Meadowmont area and its expanding bicycle network with the UNC campus.

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# Chapter 7 - Bicycle Activity

**MEASUREMENT: Bicycle Counts**
**DATA: 12-Hour Directional Counts**

## *Why and How*

Bicycle activity is measured by the number of cyclists observed at various locations throughout the Town. Counts were collected at 105 locations, with 12 locations also being counted on a Saturday in order to account for recreational activity. Counts were collected over a 12-hour period from 7:00 AM to 7:00 PM to understand the relative activity throughout the day. These locations are shown in Figure 7.1.

***2000 Chapel Hill Comprehensive Plan Action Item***

- Develop and adopt a procedure for evaluating bicycle activity.

*The first two Mobility Report Cards developed a system for collecting pedestrian activity data. This update continues those procedures.*

## *Results*

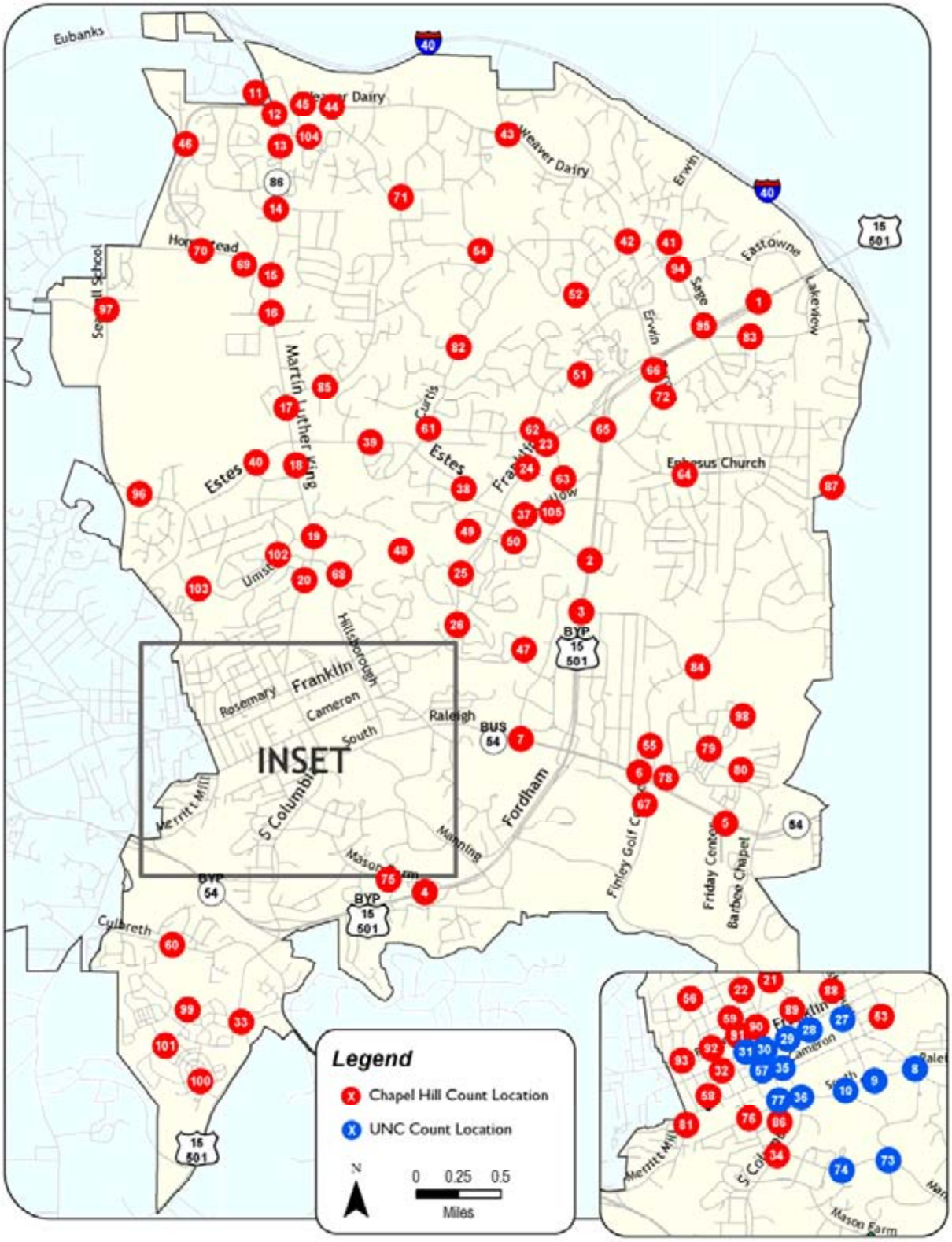
The 12-hour bicycle counts for the 117 counts ranged from a low of one (Kingston Drive and Partin Street) to a high of almost 600 (Cameron Avenue and Pittsboro Street). These counts are presented graphically in Figure 5.2 and in table form in Table 5.1. They include supplemental counts from the University of North Carolina.

The observed counts are presented graphically in Figure 7.2 and in table form in Table 7.1. Figure 7.3 is a map showing the 2005 bicycle count with the size of the circle being proportional to the 12-hour count volume. Figure 7.4 shows the relative change from 2001 to 2003 and from 2003 to 2005.

As can be seen in these figures and the table, bicycle activity is extremely high around the downtown and university areas, in spite of the fact that these areas do not have extensive on-street lanes or off-street paths.

The highest bicycle volumes were observed on campus locations. Cameron Avenue and Pittsboro Street was the busiest intersection for bicyclists, with 578, Franklin Street and Columbia Street had 459 and Columbia Street and McCauley Street had 393.

## Figure 7.1 – Bicycle Count Locations



# Table 7.1 – 12-Hour Bicycle Counts: 2001 – 2003 – 2005

| | | Location | 2001 | 2003 | Change 2001 - 2003 | 2005 | Change 2003 - 2005 |
|---|---|---|---|---|---|---|---|
| US 15/501/ Fordham | 1 | US 15-501/West Eastowne Dr | n/a | 5 | n/a | 34 | +580.0% |
| | 2 | Fordham Blvd/Estes Dr | n/a | n/a | n/a | 71 | n/a |
| | 3 | Fordham Blvd/Cleland Rd | n/a | n/a | n/a | 122 | n/a |
| | 4 | Fordham Blvd/Kings Mill Rd | n/a | n/a | n/a | 157 | n/a |
| NC 54/Raleigh Rd/ South Rd | 5 | NC 54 Bike Path/Meadowmont Ln | n/a | 30 | n/a | 7 | -76.7% |
| | 5S | NC 54 Bike Path/Meadowmont Ln (Saturday) | n/a | 55 | n/a | 36 | -34.5% |
| | 6 | NC 54/Hamilton Rd | 45 | 37 | -17.8% | 342 | +824.3% |
| | 7 | Raleigh Rd/Greenwood Rd | n/a | 65 | n/a | 26 | -60.0% |
| | 8 | South Rd/Country Club Rd | 123 | 165 | +34.1% | 150 | -9.1% |
| | 9 | South Rd/Raleigh St | 386 | 295 | -23.6% | 241 | -18.3% |
| | 10 | South Rd/The Bell Tower | 862 | 390 | -54.8% | 89 | -77.2% |
| MLK Blvd/Columbia St | 11 | MLK Blvd/Northwood Dr | n/a | 37 | n/a | 42 | +13.5% |
| | 12 | MLK Blvd/Weaver Dairy Rd | n/a | 23 | n/a | 136 | +491.3% |
| | 13 | MLK Blvd/Westminster Dr | n/a | 13 | n/a | 54 | +315.4% |
| | 14 | MLK Blvd/Stateside Dr | 19 | 35 | +84.2% | 35 | 0% |
| | 15 | MLK Blvd/Homestead Rd | n/a | 38 | n/a | 13 | -65.8% |
| | 16 | MLK Blvd/Northfield Dr | n/a | n/a | n/a | 71 | n/a |
| | 17 | MLK Blvd/Shadow Dr | 214 | 40 | -81.3% | 64 | +60.0% |
| | 18 | MLK Blvd/YMCA Driveway | 73 | 71 | -2.7% | 63 | -11.3% |
| | 19 | MLK Blvd/Bolin Creek Greenway | n/a | 79 | n/a | 149 | +88.6% |
| | 19S | MLK Blvd/Bolin Creek Greenway (Saturday) | n/a | 125 | n/a | 32 | -74.4% |
| | 20 | MLK Blvd south of Hillsborough St | n/a | 108 | n/a | 69 | -36.1% |
| | 21 | MLK Blvd/Stephens St | 363 | 130 | -64.2% | 26 | -80.0% |
| | 22 | Columbia St/Town Hall | 111 | 206 | +85.6% | 95 | -53.9% |
| Franklin St | 23 | Franklin Street and Eastgate Shopping Center Rd | n/a | n/a | n/a | 88 | n/a |
| | 24 | Franklin St/Franklin Woods Bus Stop | 63 | 52 | -17.5% | 67 | +28.8% |
| | 25 | Franklin St/Elizabeth St | n/a | 72 | n/a | 68 | -5.6% |
| | 26 | Franklin St/Roosevelt St | 174 | 56 | -67.8% | 9 | -83.9% |
| | 27 | Franklin St/Hillsborough St/Raleigh St | 199 | 200 | +0.5% | 119 | -40.5% |
| | 28 | Franklin St/Henderson St | 213 | 142 | -33.3% | 134 | -5.6% |
| | 29 | Franklin St/Coffee Shop | 247 | 223 | -9.7% | 192 | -13.9% |
| | 30 | Franklin St/Columbia St | 618 | 417 | -32.5% | 459 | +10.1% |
| | 31 | Franklin St/Church St | 275 | 279 | +1.5% | 294 | +5.4% |
| | 32 | Franklin St/Kenan St | 170 | 271 | +59.4% | 87 | -67.9% |
| US 15/501 South/South Columbia St | 33 | US 15-501 South/Bennett Rd | n/a | n/a | n/a | 37 | n/a |
| | 34 | Columbia St/Old Pittsboro St | 60 | 48 | -20.0% | 58 | +20.8% |
| | 35 | Columbia St/Fraternity Ct | 442 | 416 | -5.9% | 325 | -21.9% |
| | 36 | Columbia St/McCauley St | 523 | 397 | -24.1% | 393 | -1.0% |
| Estes Dr | 2 | Estes Dr/Fordham Blvd | n/a | n/a | n/a | 71 | n/a |
| | 37 | Estes Dr/Community Center | 76 | 101 | +32.9% | 96 | -5.0% |
| | 38 | Estes Dr/Granville Rd | n/a | n/a | n/a | 41 | n/a |
| | 39 | Estes Dr/Phillips Middle School | 20 | 14 | -30.0% | 29 | +107.1% |
| | 40 | Estes Dr/Horace Williams Airport Driveway | 13 | 23 | +76.9% | 56 | +143.5% |

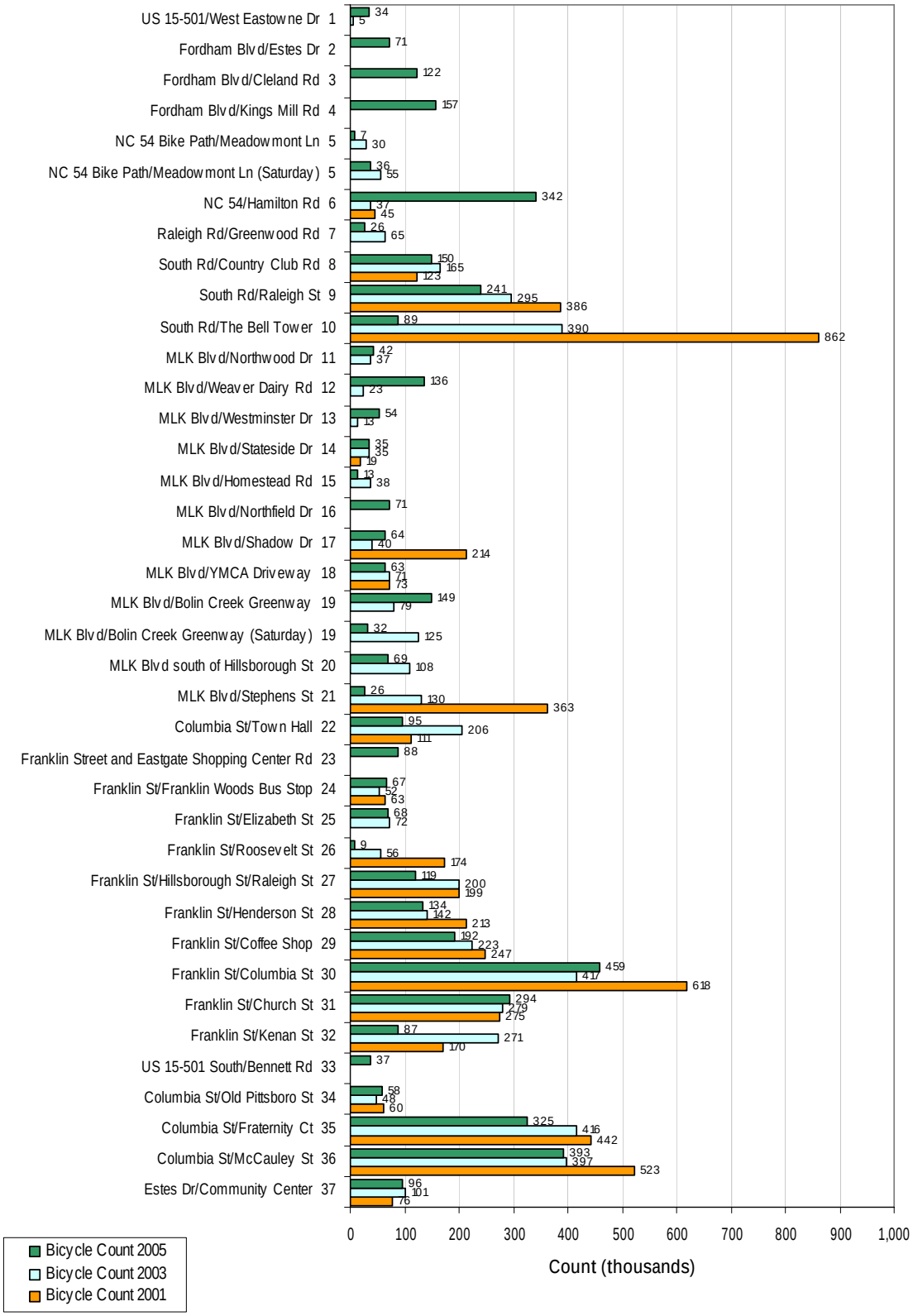
# Table 7.1 (cont'd) – 12-Hour Bicycle Counts: 2001 – 2003 – 2005

| | | Location | 2001 | 2003 | Change 2001 - 2003 | 2005 | Change 2003 - 2005 |
|---|---|---|---|---|---|---|---|
| Weaver Dairy Rd/ Erwin Rd | 41 | Erwin Rd/Sage Rd | 3 | 5 | +66.7% | 30 | +500.0% |
| | 42 | Weaver Dairy Rd and Sedgefield Dr | n/a | n/a | n/a | 6 | n/a |
| | 43 | Weaver Dairy Rd/Rowe Rd | n/a | n/a | n/a | 30 | n/a |
| | 44 | Weaver Dairy Rd/Sunrise Ln | 5 | 18 | +260.0% | 43 | +138.9% |
| | 45 | Weaver Dairy Rd/Kingston Dr | n/a | n/a | n/a | 276 | n/a |
| | 45S | Weaver Dairy Rd/Kingston Dr (Saturday) | n/a | n/a | n/a | 26 | n/a |
| | 46 | Weaver Dairy Rd/Perkins Dr/Banks Dr | 20 | 23 | +15.0% | 39 | +69.6% |
| Other Locations | 47 | Battle Branch Greenway | n/a | 61 | n/a | 133 | +118.0% |
| | 47S | Battle Branch Greenway | n/a | 61 | n/a | 151 | +147.5% |
| | 48 | Bolin Creek Greenway btw MLK Blvd and Bolinwood Dr | 9 | 24 | +166.7% | 9 | -62.5% |
| | 48S | Bolin Creek Greenway btw MLK Blvd and Bolinwood Dr (Saturday) | n/a | n/a | n/a | 16 | n/a |
| | 49 | Bolin Creek Greenway btw Elizabeth St and Franklin St | 42 | 89 | +111.9% | 71 | -20.2% |
| | 49S | Bolin Creek Greenway/Elizabeth St Trailhead (Saturday) | n/a | 221 | n/a | 76 | -65.6% |
| | 50 | Bolin Creek Trail/Community Center Dr | n/a | 86 | n/a | 87 | +1.2% |
| | 50S | Bolin Creek Trail/Community Center Dr (Saturday) | n/a | 193 | n/a | 211 | +9.3% |
| | 51 | Booker Creek Bike Path | n/a | 25 | n/a | 85 | +240.0% |
| | 51S | Booker Creek Bike Path (Saturday) | 6 | 26 | +333.3% | 36 | +38.5% |
| | 52 | Booker Creek Road at Booker Creek Greenway | n/a | n/a | n/a | 169 | n/a |
| | 53 | Boundary St and Forest Theatre | 90 | 82 | -8.9% | 80 | -2.4% |
| | 54 | Brookview Drive and Kenmore Road | n/a | n/a | n/a | 7 | n/a |
| | 55 | Burning Tree Dr north of NC 54 | 20 | 33 | +65.0% | 81 | +145.5% |
| | 56 | Caldwell St at Tanyard Branch Trailhead (east of Mitchell Ln) | n/a | n/a | n/a | 375 | n/a |
| | 57 | Cameron Avenue/Pittsboro St | 904 | 655 | -27.5% | 578 | -11.8% |
| | 58 | Cameron Avenue/Roberson St | 1,086 | 811 | -25.3% | 98 | -87.9% |
| | 59 | Church Street and Carr Street | n/a | n/a | n/a | 14 | n/a |
| | 60 | Culbreth Rd west of Adams Wy | 12 | 27 | +125.0% | 64 | +137.0% |
| | 61 | Curtis Rd/Elliott Rd (path to school) | 19 | 27 | +42.1% | 150 | +455.6% |
| | 62 | Elliott Rd btw Franklin St and Old Oxford Rd | n/a | n/a | n/a | 62 | n/a |
| | 63 | Elliott Rd/Plaza Theatre | 37 | 15 | -59.5% | 7 | -53.3% |
| | 64 | Ephesus Church Rd/Churchill Dr | 62 | 40 | -35.5% | 13 | -67.5% |
| | 65 | Ephesus Church Road east of Fordham Blvd | n/a | n/a | n/a | 80 | n/a |
| | 66 | Europa Dr and Service Rd | n/a | n/a | n/a | 31 | n/a |
| | 67 | Finley Golf Course Rd south of Prestwick Rd | 26 | 7 | -73.1% | 101 | +1342.9% |
| | 68 | Hillsborough St/Bolinwood Apts | 144 | 48 | -66.7% | 39 | -18.8% |
| | 69 | Homestead Rd West of Brookstone Apts | 2 | 35 | +1650.0% | 11 | -68.6% |
| | 70 | Homestead Road east of Weaver Dairy Road | n/a | n/a | n/a | 5 | n/a |
| | 71 | Kingston Dr and Partin St | n/a | n/a | n/a | 1 | n/a |
| | 72 | Legion Rd/Europa Dr | 13 | 11 | -15.4% | 38 | +245.5% |
| | 73 | Manning Dr/Craig Rd | 136 | 74 | -45.6% | 126 | +70.3% |
| | 74 | Manning Dr/Ridge Rd | 356 | 179 | -49.7% | 363 | +102.8% |

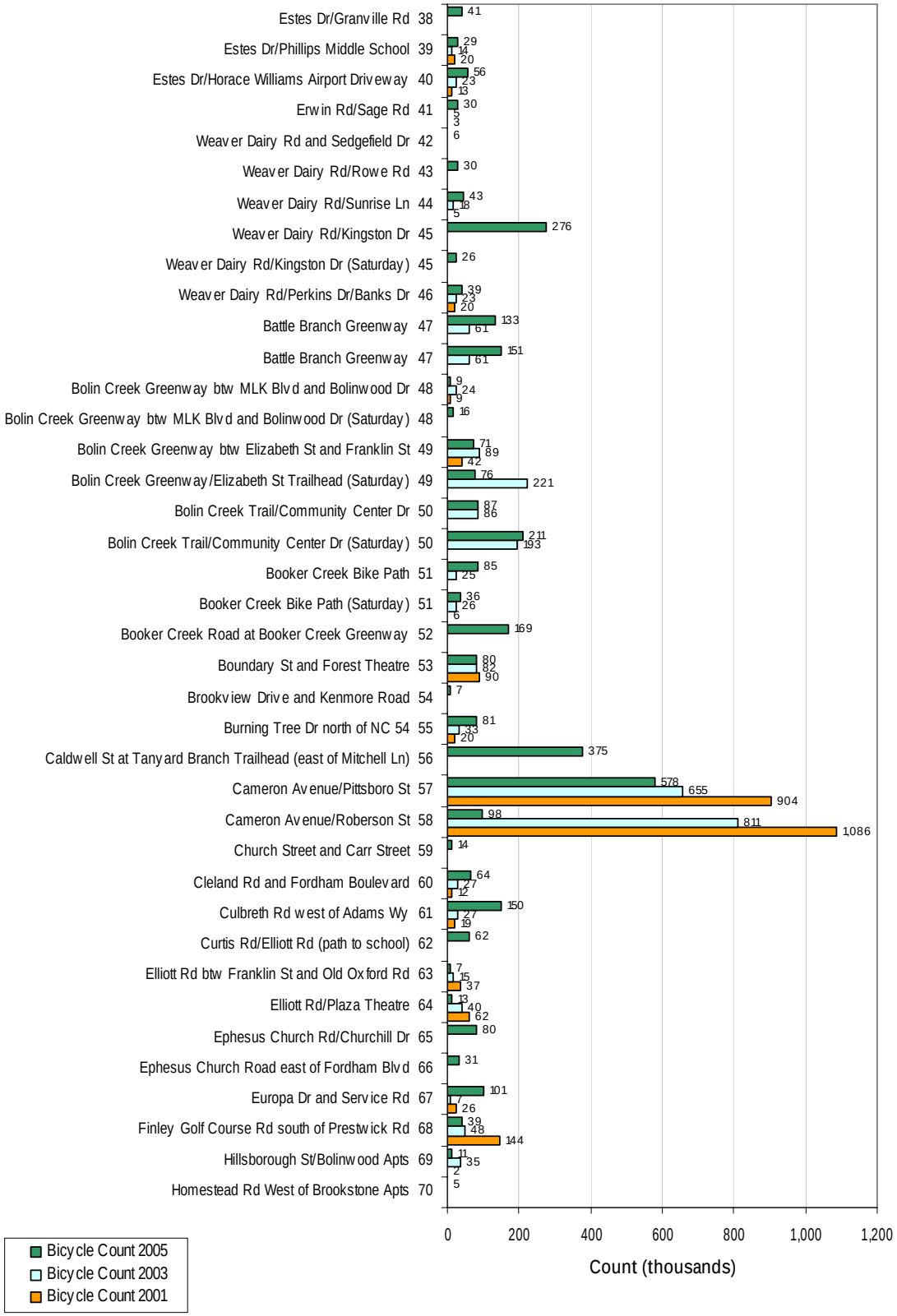
# Table 7.1 (cont'd) – 12-Hour Bicycle Counts: 2001 – 2003 – 2005

| | | Location | 2001 | 2003 | Change 2001 - 2003 | 2005 | Change 2003 - 2005 |
|---|---|---|---|---|---|---|---|
| Other Locations | 75 | Mason Farm Rd/Otey's Rd | 165 | 15 | -90.9% | 10 | -33.3% |
| | 76 | McCauley St/ Ransom St | 376 | 415 | +10.4% | 194 | -53.3% |
| | 77 | McCauley St/Pittsboro St | 373 | 217 | -41.8% | 298 | +37.3% |
| | 78 | Meadowmont Bike Path/Pinehurst Dr | n/a | 6 | n/a | 77 | +1183.3% |
| | 78S | Meadowmont Bike Path/Pinehurst Dr (Saturday) | n/a | 48 | n/a | 211 | +339.6% |
| | 79 | Meadowmont Village Core | n/a | 10 | n/a | 64 | +540.0% |
| | 79S | Meadowmont Village Core (Saturday) | n/a | 9 | n/a | 37 | +311.1% |
| | 80 | Meadowmont Lane and Sprunt St | n/a | n/a | n/a | 43 | n/a |
| | 81 | Merritt Mill Rd/Crest St | 204 | 549 | +169.1% | 56 | -89.8% |
| | 82 | N. Lakeshore Dr south of Arlington St | n/a | n/a | n/a | 14 | n/a |
| | 83 | Old Durham Rd btw Cooper and Standish Dr | 3 | 2 | -33.3% | 10 | +400.0% |
| | 84 | Pinehurst Drive at Burning Tree Drive | n/a | n/a | n/a | 13 | n/a |
| | 85 | Piney Mountain Rd east of Woodshire Ln | 45 | 18 | -60.0% | 12 | -33.3% |
| | 86 | Pittsboro St/Vance St | 158 | 488 | +208.9% | 103 | -78.9% |
| | 87 | Pope Rd/Ephesus Church Rd | n/a | 4 | n/a | 0 | -100.0% |
| | 88 | Rosemary St/Hillsborough St | 76 | 114 | +50.0% | 44 | -61.4% |
| | 89 | Rosemary St/Henderson St | n/a | 263 | n/a | 192 | -27.0% |
| | 90 | Rosemary St west of Columbia St | 135 | 95 | -29.6% | 23 | -75.8% |
| | 91 | Rosemary St/Church St | n/a | 192 | n/a | 247 | +28.6% |
| | 92 | Rosemary St/UNC Parking Lots | 249 | 134 | -46.2% | 40 | -70.1% |
| | 93 | Rosemary St/Roberson St | n/a | 138 | n/a | 58 | -58.0% |
| | 94 | Sage Road and Old Sterling Drive | n/a | n/a | n/a | 33 | n/a |
| | 95 | Sage Rd and Dobbins Dr | n/a | n/a | n/a | 50 | n/a |
| | 96 | Seawell School Road and Hanover Pl | n/a | n/a | n/a | 24 | n/a |
| | 97 | Seawell School Rd/High School Rd | n/a | 10 | n/a | 53 | +430.0% |
| | 98 | Simerville Rd at Meadowmont Greenway | n/a | n/a | n/a | 182 | n/a |
| | 99 | Southern Village Bike Path | 28 | 75 | +167.9% | 76 | +1.3% |
| | 99S | Southern Village Bike Path (Saturday) | n/a | 23 | n/a | 97 | +321.7% |
| | 100 | Southern Village Core | n/a | 5 | n/a | 9 | +80.0% |
| | 100S | Southern Village Core (Saturday) | n/a | 18 | n/a | 27 | +50.0% |
| | 101 | Southern Village Greenway near Edgewater Cir and Brookgreen Dr | n/a | n/a | n/a | 63 | n/a |
| | 102 | Umstead Dr between Bradley Rd and Greene St | 474 | 25 | -94.7% | 41 | +64.0% |
| | 103 | Umstead Drive and Village Drive | n/a | n/a | n/a | 51 | n/a |
| | 104 | Westminster Dr/Banks Dr | n/a | 5 | n/a | 25 | +400.0% |
| | 105 | Willow Dr/Conner Dr | 24 | 29 | +20.8% | 55 | +89.7% |

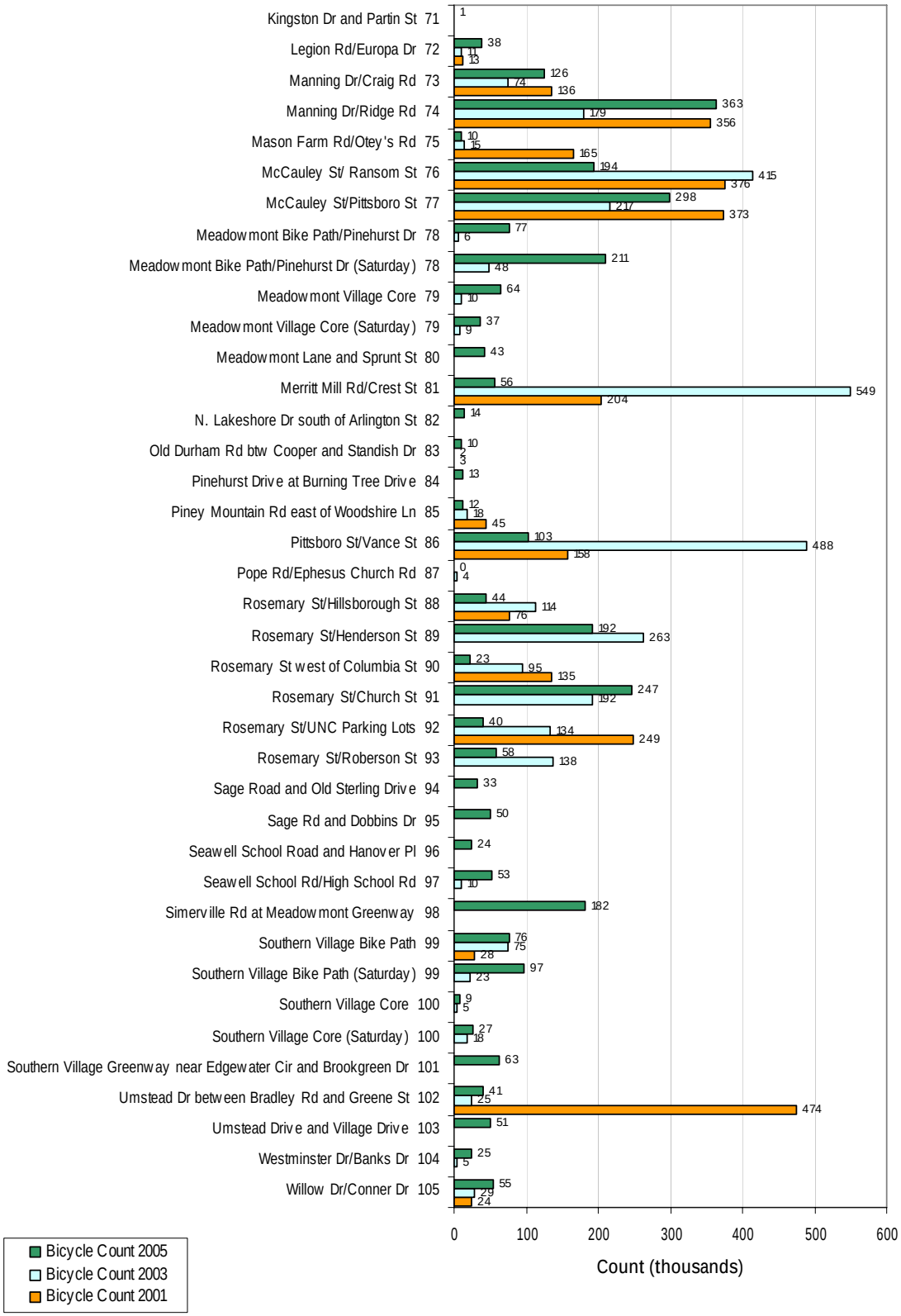
# Figure 7.2 – 12-Hour Bicycle Activity: 2001 – 2003 – 2005



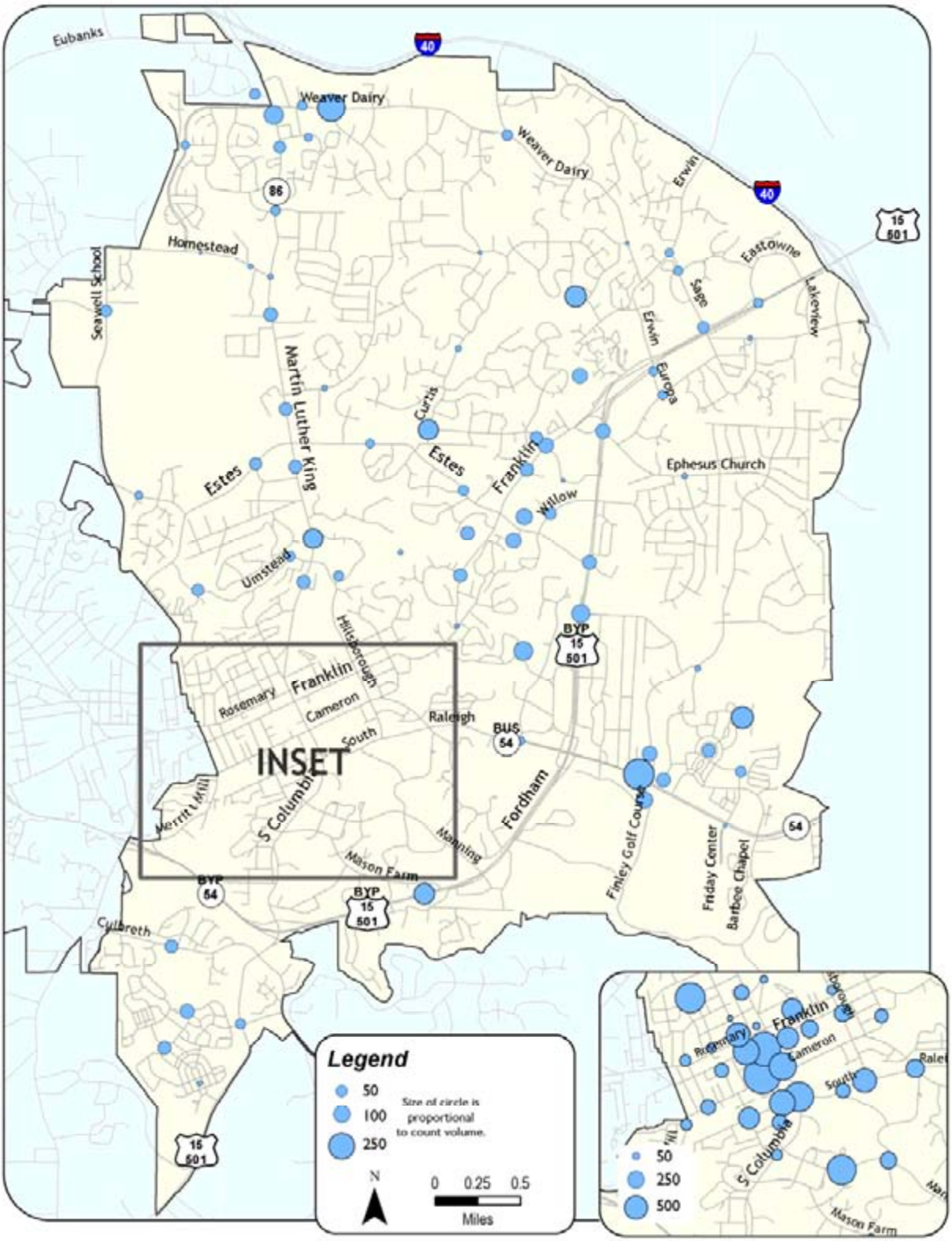
# FIGURE 7.2 (CONT'D) – 12-HOUR BICYCLE ACTIVITY: 2001 – 2003 – 2005



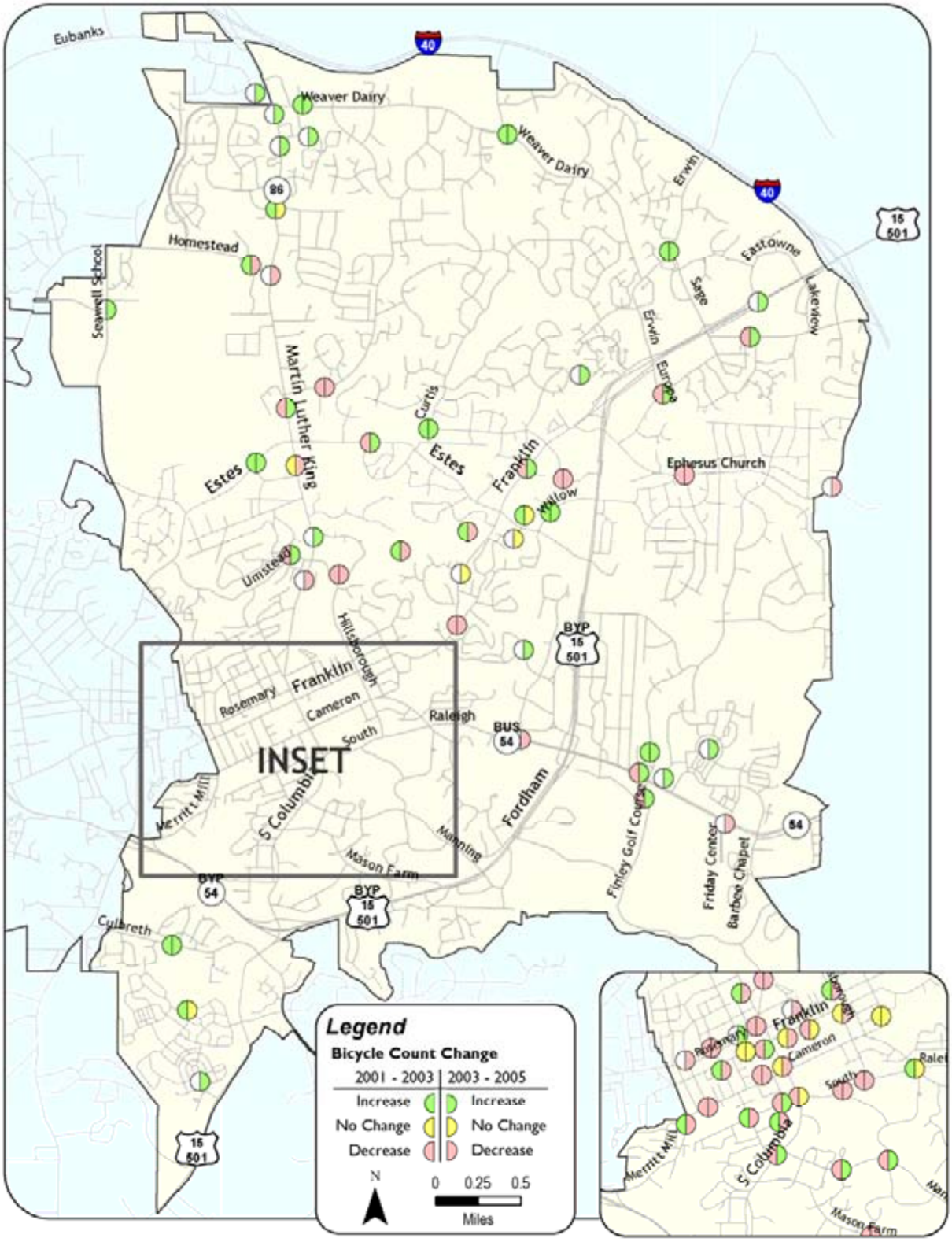
# Figure 7.2 (cont'd) – 12-Hour Bicycle Activity: 2001 – 2003 – 2005



## Figure 7.3 – 12-Hour Bicycle Counts 2005



## Figure 7.4 – Change in Bicycle Counts: 2001 – 2003 – 2005



## *Findings and Conclusions*

The highest bicycle activity in the Town of Chapel Hill remains within the University of North Carolina campus. Outside of the UNC campus, areas to the east along NC 54 and in the Meadowmont area had the highest bicycle counts.

Between 2001 and 2005, overall bicycle activity has declined substantially. The total bicycles counted for all locations that were surveyed in 2001 fell by 40%, from 10,600 in 2001 to 8,400 in 2003 to 6,400 in 2005. Over half (30) of the 56 locations surveyed in both 2001 and 2005 decreased by more than 10%. Six locations stayed about the same (within 10%) and 20 locations increased by more than 10%.

Total bicycle activity for locations surveyed in both 2003 and 2005 fell by 15%, from 10,400 to 8,900. Of the 87 locations surveyed in both 2003 and 2005, 36 decreased by more than 10%, 11 stayed about the same, and 40 increased by more than 10%.

Two of the largest increases in bicycle activity between 2003 and 2005 occurred to the east at NC 54 and Hamilton Road (37 to 342) and at the Meadowmont Bike Path at Pinehurst Drive on Saturday (48 to 211). Many of the locations that experienced increased bicycle activity between 2003 and 2005 are in outlying areas, and much of the decreases occurred in the downtown and campus area.

Even with improvements and additions to the bicycle system, bicycle activity in the Town has declined. However, the few areas that do have bicycle facilities generally have higher utilization by cyclists than those that do not have comparable facilities.

As noted in the 2003 Report, much of the decrease in bicycle activity may be due to the success of the fare-free transit system implementation. Bicycle activity decreased substantially from 2001 to 2003 and was accompanied by large increases in transit ridership. Both of these trends have continued from 2003 to 2005.

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# Chapter 8 – Pedestrian and Bicyclist Safety

**MEASUREMENT: Pedestrian/Bicyclist Accidents**
**DATA: NCDOT Accident data**

## *Why and How*

Even an extensive bicycle and pedestrian network will not be used if people aren't safe and/or don't feel safe. Having safe facilities is critical to encouraging and maintaining pedestrian and bicycle activity as well the obvious benefits to the community and the quality of life of its residents.

***2000 Chapel Hill Comprehensive Plan Action Item***

- Develop and maintain a comprehensive network of streets and highways that support safe automobile, transit, bicycle, and pedestrian mobility within Town.

*This Mobility Report card introduces a pedestrian and bicyclist safety indicator so that progress and effort towards improving safety in Town can be measured.*

This valuable indicator is new to the Mobility Report Card for 2005. To measure this indicator, 3 ½ years of accident data from the Traffic Engineering Accident Analysis System (TEAAS) provided by the North Carolina Department of Transportation (NCDOT) was analyzed. The number of motor vehicle accidents involving pedestrians and bicyclists was summed for each travel time corridor segment. The data was disaggregated by bicyclists and pedestrians, as well as by fatal, injury and non-injury accidents.

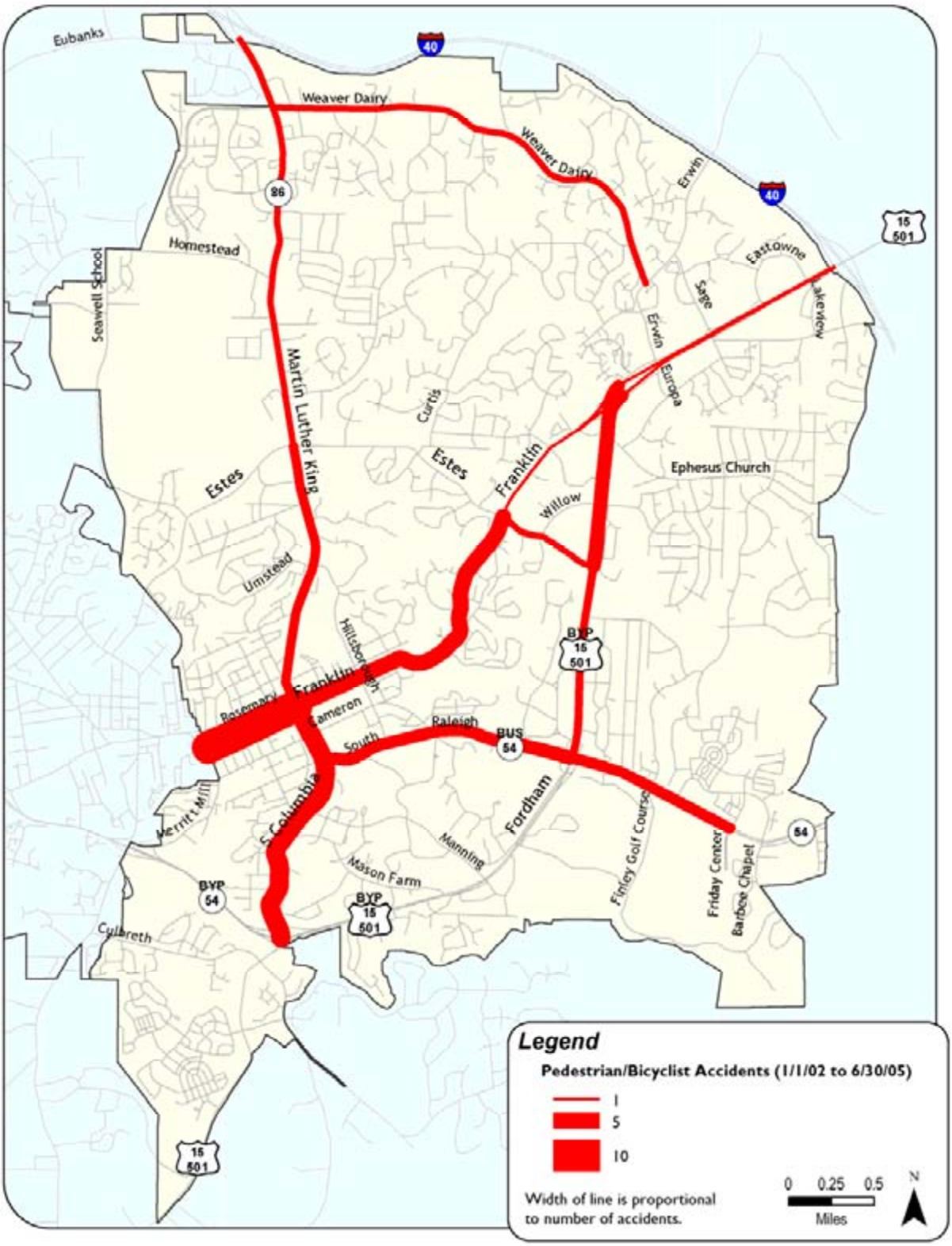
## *Results*

Results of the safety analysis are presented for each corridor in Table 8.1. Figure 8.2 shows the average pedestrian/bicyclist accident rate per year for the major corridors in Chapel Hill. Along the major corridors in Town, on average 13 accidents occur each year involving pedestrians or bicyclists, 11 of which involve injuries. In the last 3 ½ years, one pedestrian was killed in a motor vehicle accident.

## Table 8.1 – Accidents Involving Pedestrians and Bicyclists January 1, 2002 to June 30, 2005

| Corridor | Involving Pedestrians | | | Involving Bicyclists | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Fatalities | Injuries | Total | Fatalities | Injuries | Total | Fatalities | Injuries |
| Fordham Blvd/NC 54 Bypass | 3 | 0 | 3 | 3 | 0 | 3 | 6 | 0 | 6 |
| Estes Dr | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 2 |
| S. Columbia St/US 15/501 South | 4 | 0 | 4 | 2 | 0 | 1 | 6 | 0 | 5 |
| Erwin Rd | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Weaver Dairy Rd | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 2 |
| Franklin St/US 15/501 North | 12 | 1 | 9 | 5 | 0 | 4 | 17 | 1 | 13 |
| NC 54/S Raleigh Rd | 4 | 0 | 3 | 3 | 0 | 3 | 7 | 0 | 6 |
| MLK Blvd | 1 | 0 | 1 | 4 | 0 | 4 | 5 | 0 | 5 |
| Homestead Rd | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eubanks Rd | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 26 | 1 | 22 | 19 | 0 | 17 | 45 | 1 | 39 |

## Figure 8.1 – Pedestrian/Bicyclist Accidents



## *Findings and Conclusions*

Of the corridors analyzed, the Franklin Street corridor experiences the most number of pedestrian/bicyclist accidents per year. On average, there are more than twice as many pedestrian/bicyclist accidents occurring in this corridor than any other. South Columbia Street also experiences a high number of accidents per year. These findings are intuitive, as both of these corridors have high numbers of pedestrians and bicyclists and also high traffic volumes. The possibility of interactions is higher than in other areas.

Of importance, and also expected, is the fact that almost every accident (89%) involves an injury. The likelihood of injury is about the same for both bicyclists and pedestrians. About 58% of accidents involving a pedestrian or bicyclist involve a pedestrian, and 42% involve a bicyclist. Given the numbers observed in the Pedestrian and Bicycle Activity sections, it is much more likely for a bicycle to become involved in an accident with a motor vehicle. Again, this goes back to the level of interaction. Pedestrian and vehicle interaction is fairly well divided, while bicycles are much more likely to interact with vehicle traffic by sharing a lane or shoulder. This reinforces the need for dedicated bicycle facilities and/or well designated and signed bicycle lanes and routes.

### FIGURE 8.2 – PEDESTRIAN/BICYCLIST ACCIDENTS PER YEAR 2002 - 2005

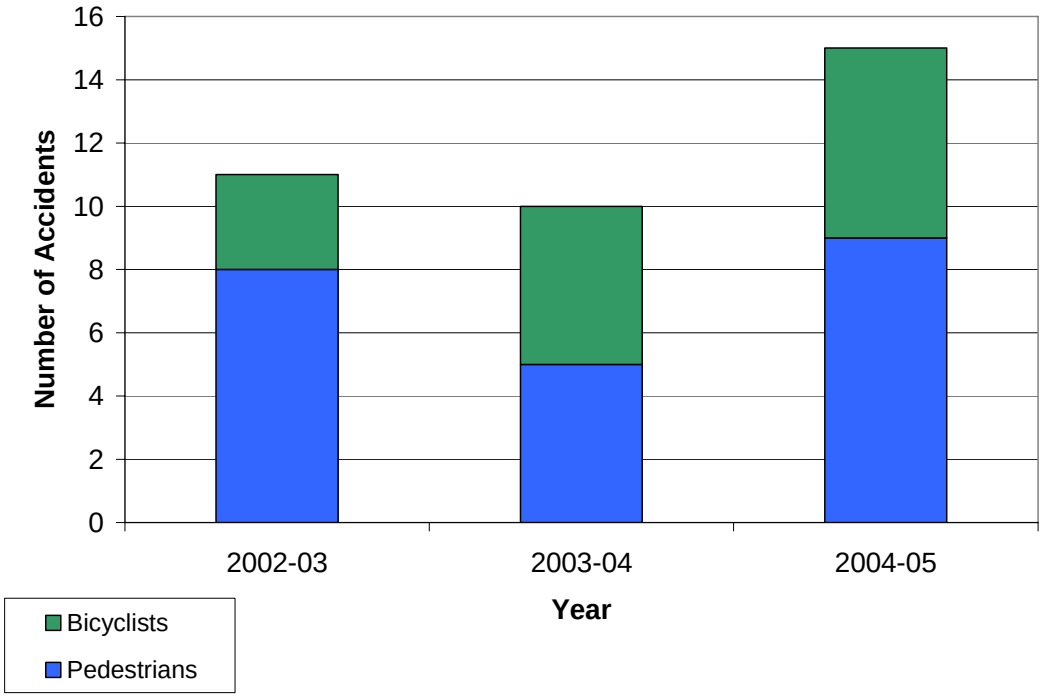
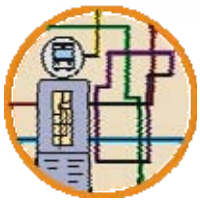



Figure 8.2 above shows the number of pedestrian/bicyclist accidents per year (July 1 to June 30). While overall accidents decreased in the 2003-04 time period, the number of bicycle accidents increased and remained about the same level into 2004-05. Pedestrian accidents decreased from 2002-03 to 2003-04, and then increased substantially in 2004-05. Future analyses will help in uncovering any trends in the data.



# Chapter 9 - Transit Service

**MEASUREMENT: Frequency, Coverage, and Capacity**

**DATA: Route Coverage, Headways, Number and Capacity of Buses**

## *Why and How*

Transit service refers to the character and amount of transit service available throughout the Town. Factors that effect this measurement are the geographic extent of the coverage, frequency of the service, and the actual capacities of the buses that are in service. All local transit service provided by Chapel Hill Transit (CHT) is examined for this measure, not just the area of the Town of Chapel Hill. A typical measurement of transit service is annual service hours of operation.

***Comprehensive Plan Action: Expand Local Transit Service***

- Aggressively promote the use of transit and explore creative options to fixed route transit (Chapel Hill Transit, Planning Department).
- Identify funding sources to improve transit service (Town Council).

*The Town has been successful in creatively enhancing fixed route service. Through the conversion of CHT to a fare-free system and the accompanying increased service hours, the transit system has increased ridership and maintained and increased productivity as well.*

## *Results*

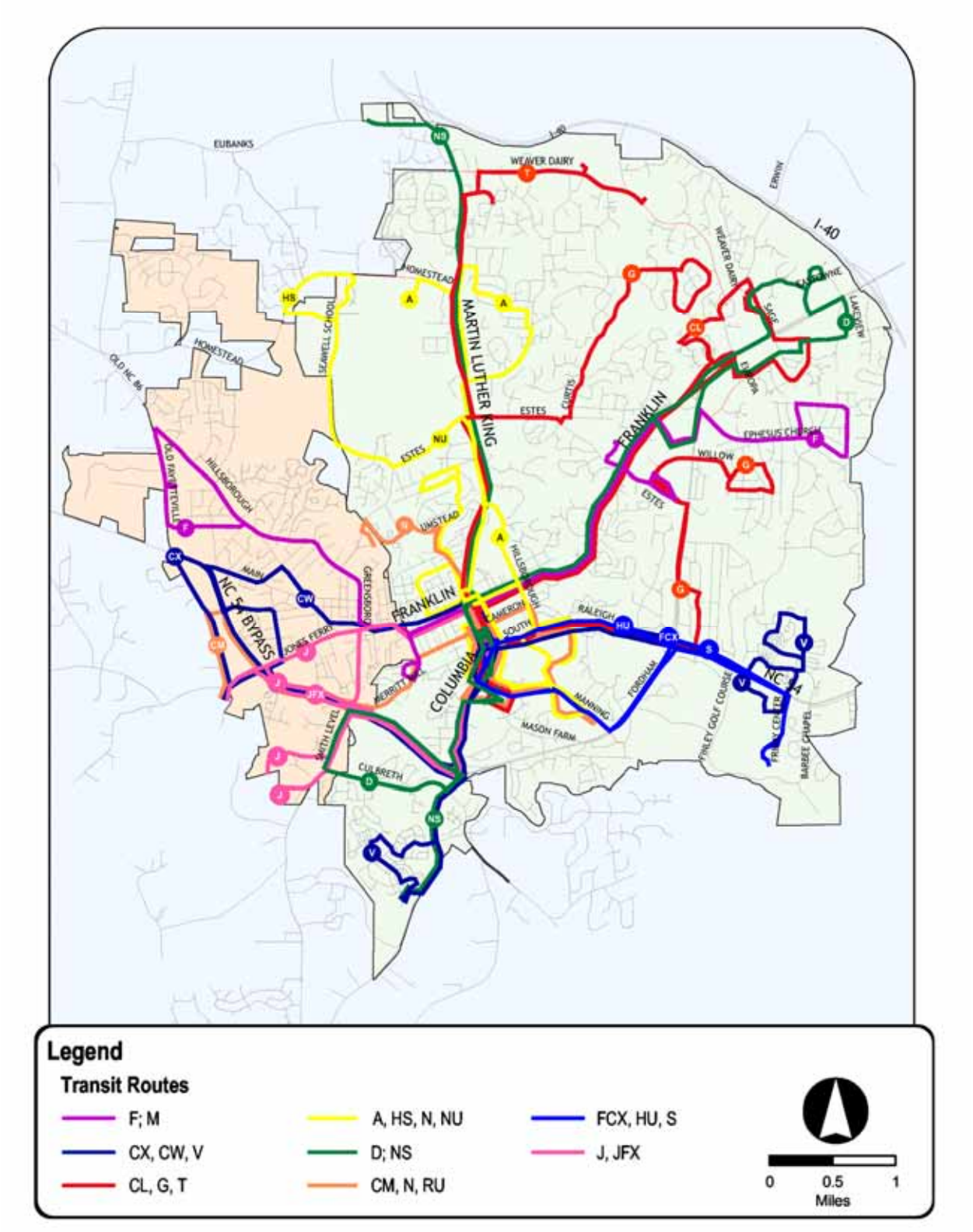
Chapel Hill Transit provides public transit service within the Chapel Hill, Carrboro, and UNC area, serving approximately 25 square miles.

October 2005 service included 22 fixed routes with weekday, evening, and weekend service. CHT also provided an EZ Rider service for mobility-impaired patrons and a demand-responsive Shared Ride service for areas outside of the fixed-route coverage. Weekday fixed-route service is presented graphically in Figure 9.1.

Fixed-route hours of operation are generally from 6:00 AM to 8:00 PM. In addition to the one evening route operating from 7:00 PM to midnight, eleven of the routes operate past 8:00 PM and four routes operate past 10:00 PM. The last regular route completes service at 12:56 AM. Three routes have a “safe ride” service, operating from 11:30 PM to 2:30 AM on most Friday and Saturday nights.

Shared Ride Evening and Sunday services are used on weekday evenings and Sundays when there is not enough demand to warrant a fixed route. This service is available for a fee. Shared Ride feeder service is used for areas that do not receive regular bus service. Patrons are transported to the nearest fixed route. This free service operates from 6:45 AM to 6:15 PM.

## Figure 9.1 – Weekday Fixed Route Transit Service

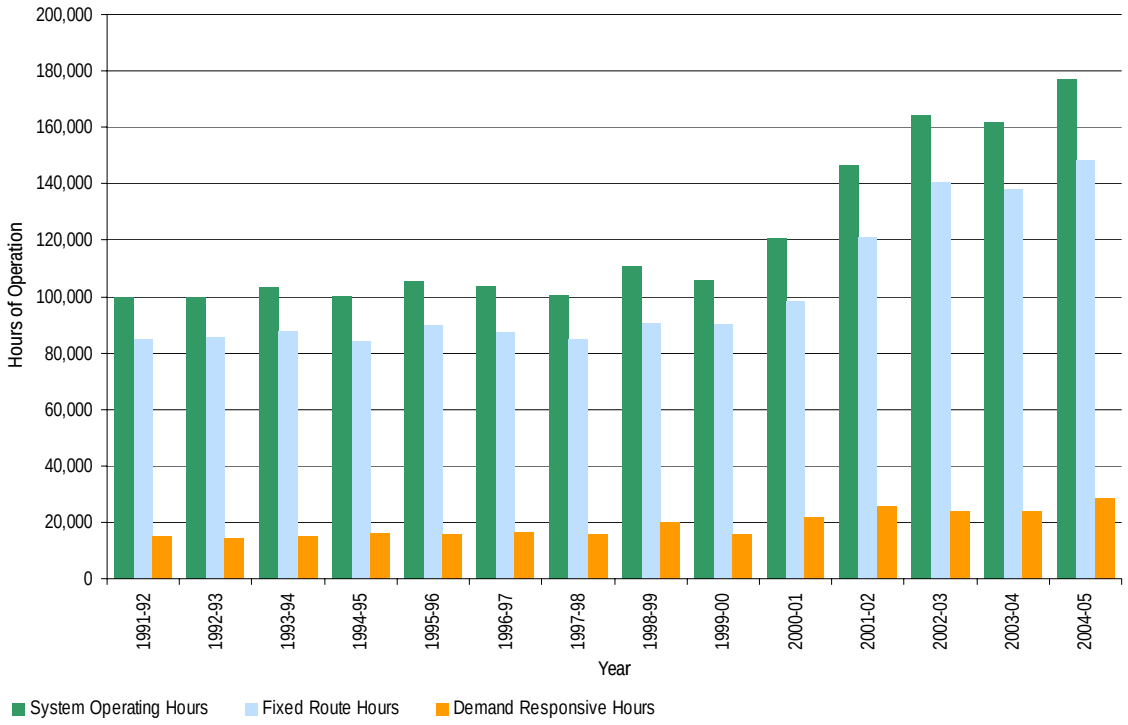


## *Findings and Conclusions*

The Town of Chapel Hill has excellent transit coverage, because approximately three-fourths of the Town is within one-quarter mile of transit. As mentioned in the Pedestrian Facilities section, some of this accessibility is without sidewalks, which has a direct effect on choice riders.

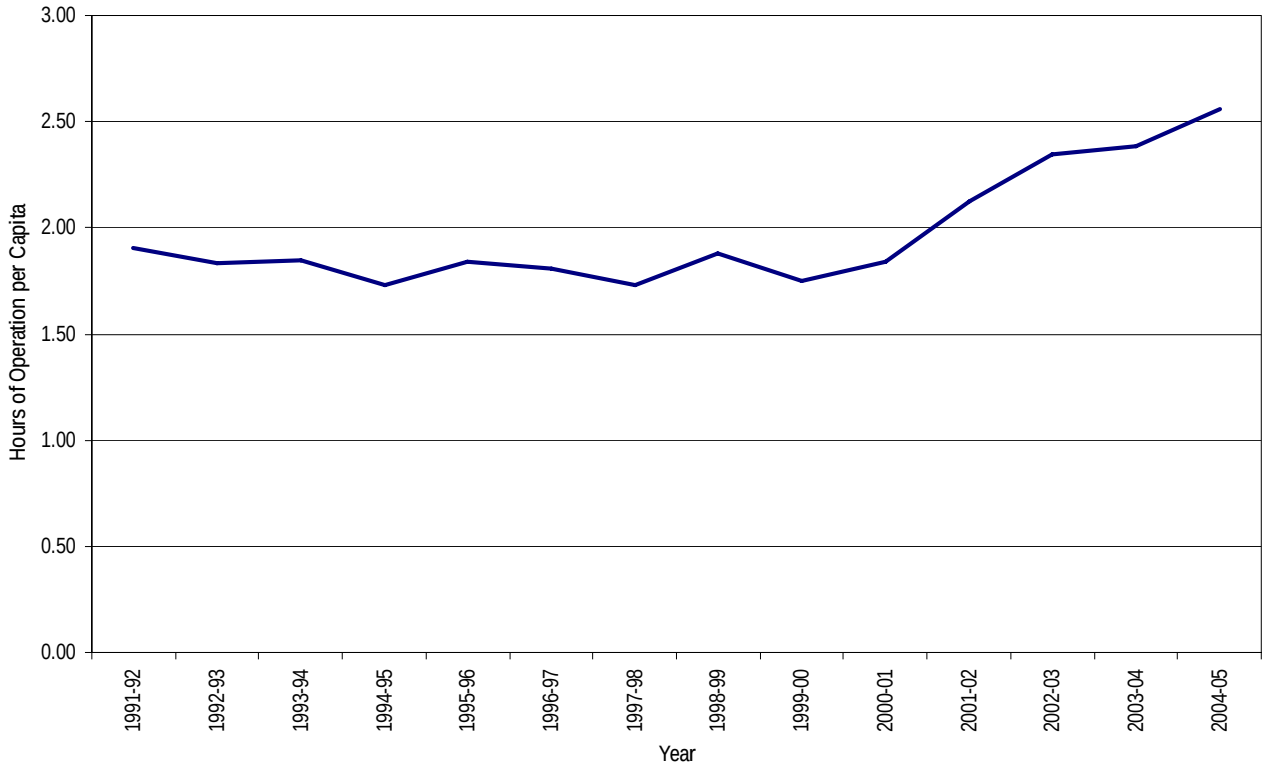
As can be seen in Figure 9.2, the Town of Chapel Hill increased fixed route transit service hours by approximately 16% between 1991 and 2001 and overall service hours increased by 20%. However, in just four years between 2001 and 2005, fixed route transit service hours increased by over 50% and total system operating hours increased by 47%. Much of this increase is due to the conversion of the fixed route system to fare-free service and associated service changes. In anticipation of increased demand, service hours were increased when the system was converted to fare-free. Additional service hours were also added to accommodate further increases in ridership. Both service hours and ridership have continued to increase since the system went fare-free, with the exception of the 2003-2004 year which saw a slight dip in service hours.

### FIGURE 9.2 – TRANSIT OPERATING HOURS




Even when the hours of operation are standardized by the population of the service area, a sharp increase is still evident in the fare-free years between 2001 and 2005. As can be seen in Figure 9.3, the hours of operation per capita were relatively stable between 1991 and 2001. A sharp increase occurred in the 2001-2002 year when the system was converted to fare-free. This increase in hours of operation per capita has continued through 2005.

## Figure 9.3 – Transit Operating Hours per Capita



# Chapter 10 - Transit Ridership

**MEASUREMENT: Transit Boardings and Exits**

**DATA: Transit Boardings and Exits**

## *Why and How*

***Comprehensive Plan Action: Expand Local Transit Service***

- Aggressively promote the use of transit and explore creative options to fixed route transit (Chapel Hill Transit, Planning Department).
- Identify funding sources to improve transit service (Town Council).

*The Town has been successful in creatively enhancing fixed route service. Through the conversion of CHT to a fare-free system and the accompanying increased service hours, the transit system has increased ridership and maintained and increased productivity as well.*

Transit ridership is the direct measurement of how well a transit system is operating. Typically, these measurements are annual in order to average out various daily and weekday variations. Transit ridership is measured by the number of boardings at each stop along each bus route. This information is collected and maintained by Chapel Hill Transit. All local transit service provided by Chapel Hill Transit is examined for this measure, not just the Town of Chapel Hill. In addition to the data provided by Chapel Hill Transit, a boarding and alighting survey was primarily in October 2005. This survey provides the number of people boarding and alighting at each stop for every route.

Ridership information is important when considering the type of service to provide. Because of limited funds, most communities must address whether they want to focus on coverage or productivity. An emphasis on coverage attempts to provide transit service to the majority of the residences and businesses within the community. Often, however, this coverage comes with sacrifices such as longer wait times for a bus. The alternative, productivity, uses the same limited resources, but increases the frequency of service for those routes that have higher ridership. Whereas this method improves statistics such as riders per mile or service hour, the area of Town without transit service increases.

Another important reason for this time series study of ridership is to analyze the effect on ridership of Chapel Hill Transit's conversion of the fixed route system to a fare-free system in January 2002. It is expected that a free system would generate significantly more ridership than a system that charges patrons.

## *Results*

Transit ridership statistics are presented in Table 10.1 and Figure 10.1. Table 10.2 shows average daily ridership and service hours for a typical month for 2001, 2003 and 2005. As can be seen in Figure 10.1, transit ridership per year has steadily increased between 1991 and 2001. Since conversion to a fare-free system, ridership has sharply increased since 2001. As can be seen in Table 10.1, ridership per service hour and ridership per capita has also increased accordingly since 2001, even though it had been relatively stable for the previous decade. Table 10.3 shows the ridership results of the boarding/alighting survey.

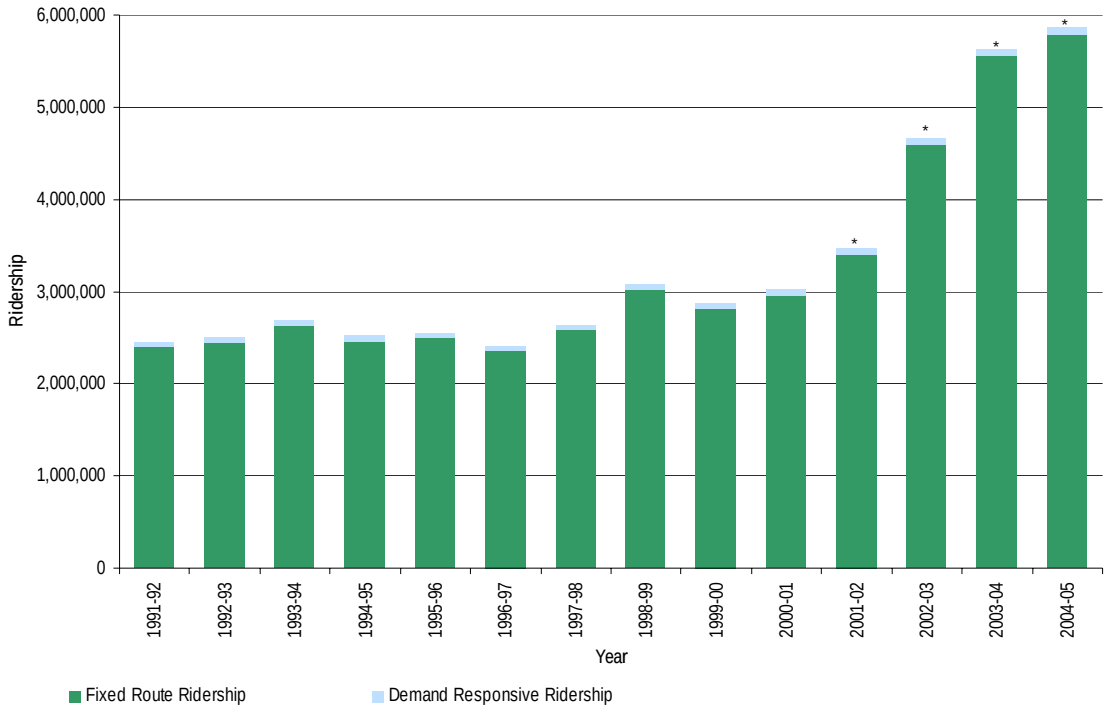
## Table 10.1 – Transit Ridership Statistics

| | 1991-1992 | 1992-1993 | 1993-1994 | 1994-1995 | 1995-1996 | 1996-1997 | 1997-1998 | 1998-1999 | 1999-2000 | 2000-2001 | 2001-2002* | 2002-2003* | 2003-2004* | 2004-2005* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Population | | | | | | | | | | | | | | |
| Chapel Hill Population | 39,765 | 41,524 | 42,918 | 44,470 | 43,549 | 43,429 | 43,977 | 44,015 | 44,343 | 48,715 | 51,598 | 52,440 | 51,519 | 52,440 |
| Carrboro Population | 12,552 | 12,740 | 12,931 | 13,465 | 13,633 | 13,784 | 14,274 | 14,733 | 16,012 | 16,782 | 17,460 | 17,585 | 16,425 | 16,782 |
| Combined Service Area Population | 52,317 | 54,264 | 55,849 | 57,935 | 57,182 | 57,213 | 58,251 | 58,748 | 60,355 | 65,497 | 69,058 | 70,025 | 67,944 | 69,222 |
| System | | | | | | | | | | | | | | |
| System Ridership (thousands) | 2,565 | 2,644 | 2,852 | 2,651 | 2,670 | 2,522 | 2,857 | 3,243 | 2,976 | 3,017 | 3,459 | 4,662 | 5,627 | 5,872 |
| System Operating Hours | 99,805 | 99,675 | 103,065 | 100,110 | 105,407 | 103,540 | 100,735 | 110,463 | 105,753 | 120,486 | 146,708 | 164,282 | 161,968 | 177,114 |
| System Riders/Hour | 25.70 | 26.53 | 27.68 | 26.48 | 25.34 | 24.36 | 28.36 | 29.36 | 28.15 | 25.04 | 23.58 | 28.38 | 34.74 | 33.15 |
| System Riders/Capita | 49.03 | 48.73 | 51.07 | 45.76 | 46.71 | 44.09 | 49.05 | 55.20 | 49.32 | 46.07 | 50.09 | 66.58 | 82.83 | 84.83 |
| Fixed Route | | | | | | | | | | | | | | |
| Fixed Route Ridership (thousands) | 2,391 | 2,450 | 2,630 | 2,463 | 2,493 | 2,357 | 2,592 | 3,024 | 2,809 | 2,957 | 3,398 | 4,589 | 5,558 | 5,796 |
| Fixed Route Hours | 84,836 | 85,288 | 87,700 | 84,142 | 89,969 | 87,088 | 85,091 | 90,516 | 90,203 | 98,649 | 121,114 | 140,391 | 138,115 | 148,367 |
| Fixed Route Riders/Hour | 28.18 | 28.73 | 29.99 | 29.27 | 27.71 | 27.08 | 30.46 | 33.41 | 31.15 | 29.98 | 28.06 | 32.69 | 40.24 | 39.06 |
| Fixed Route Riders/Capita | 45.70 | 45.16 | 47.09 | 42.51 | 43.60 | 41.21 | 44.50 | 51.48 | 46.56 | 45.15 | 49.22 | 65.54 | 81.80 | 83.73 |
| Demand Responsive | | | | | | | | | | | | | | |
| Demand Responsive Ridership | 58,336 | 58,056 | 67,496 | 60,690 | 51,528 | 51,861 | 56,077 | 57,605 | 60,314 | 59,835 | 60,333 | 72,559 | 69,587 | 76,173 |
| Demand Responsive Hours | 14,969 | 14,387 | 15,365 | 15,968 | 15,438 | 16,452 | 15,644 | 19,947 | 15,550 | 21,837 | 25,594 | 23,891 | 23,852 | 28,747 |
| Demand Responsive Riders/Hour | 3.90 | 4.04 | 4.39 | 3.80 | 3.34 | 3.15 | 3.58 | 2.89 | 3.88 | 2.74 | 2.36 | 3.04 | 2.92 | 2.65 |
| Demand Responsive Riders/Capita | 1.12 | 1.07 | 1.21 | 1.05 | 0.90 | 0.91 | 0.96 | 0.98 | 1.00 | 0.91 | 0.87 | 1.04 | 1.02 | 1.10 |

* Effective January 2002, all standard CHT routes became fare-free.

Source: Town of Chapel Hill

## Figure 10.1 – Transit Ridership




* Effective January 2002, all standard CHT routes became fare-free.

## Table 10.2 – October Transit Statistics

| | October 2001 | October 2003 | October 2005 | Percent Increase |
|---|---|---|---|---|
| Average Daily Weekday | 14,273 | 23,001 | 19,408 | 36.0% |
| Average Daily Weekend | 535 | 828 | 1,237 | 131.2% |
| Daily Service Hours Weekday | 428.4 | 540.1 | 549.5 | 28.3% |
| Daily Service Hours Weekend | 62.0 | 82.2 | 82.8 | 33.5% |

## Table 10.3 – Boarding/Alighting Survey Ridership by Route

Weekday

| Route | Ridership |
|---|---|
| A | 940 |
| CPX | 433 |
| CL | 236 |
| CM/CW | 1,229 |
| D | 1,768 |
| F | 1,151 |
| FCX | 1,493 |
| G | 853 |
| HS | 85 |
| HU | 1,028 |
| J | 3,304 |
| JFX | 653 |
| M | 136 |
| NS | 2,545 |
| NU | 1,150 |
| N | 648 |
| RU | 1,431 |
| S | 1,664 |
| T | 1,194 |
| TG | 68 |
| U | 1,528 |
| V | 565 |
| Total | 24,102 |

Saturday

| Route | Ridership |
|---|---|
| CM/CW | 222 |
| DM | 242 |
| FG | 220 |
| JN | 194 |
| NU | 214 |
| U | 408 |
| T | 191 |
| Total | 1691 |

Sunday

| Route | Ridership |
|---|---|
| U | 283 |
| NU | 491 |
| Total | 774 |

## Findings and Conclusions

For the 2004–2005 service years, annual service hours totaled over 177,000 hours (148,000 fixed route hours and 29,000 demand response hours). Annual ridership reached almost 5.9 million passengers (5.8 million fixed route passengers and 76,000 demand response passengers). This equates to over 28 passengers per service hour.

For the example month of October, average daily weekday ridership increased by 36% from 2001 to 2005, and was even higher in 2003. This increase is higher than the 28% increase in service hours, so it is safe to assume that other factors are contributing to the ridership increase other than just a service increase. Weekend average daily ridership and service hours increased also, with a large increase in average weekend ridership. Average daily weekend ridership increased by 131% and average daily weekend service hours increasing by 34%.

According to the Town of Chapel Hill 2003 On-Board Rider Profile Survey, access between home and UNC is the primary purpose of transit system usage. Over 80% of trip origins and 70% of trip destinations are either home or UNC, and almost two-thirds of passengers' surveyed ride the bus five or more times per week. Most of the passengers utilizing Chapel Hill Transit (CHT) are students, with two-thirds of all passengers' full-time college students. Overall, 89% of passengers either work or go to school on the UNC campus.

Chapel Hill Transit's conversion to almost an entirely free system has had a dramatic effect on the transit system. The trends evidenced in the 2003 Mobility Report Card have continued. Between 2001 and 2005:

- System-wide ridership has almost doubled (3.0 to 5.9 million);
- System-wide riders per capita increased by 84% (46.1 to 84.8); and
- System-wide riders per hour increased by 32% (25.0 to 33.2).

Fixed route ridership saw similar increases to the system-wide performance. Between 2001 and 2005:

- Fixed-route ridership almost doubled (3.0 to 5.8 million);
- Fixed-route riders per capita increased by 85% (45.2 to 83.7); and
- Fixed-route riders per hour increased by 30% (30.0 to 39.1).

Since the conversion to a fare-free system took place in January 2002, in the middle of the 2001-2002 reporting year, ridership increased much more between 2002 and 2005 than in the 2001 to 2002 reporting year. The 2001-02 year only included a partial year with free fares, while the free fares were in place for the entire 2002-03 and later reporting years.

The ridership increases seen between 2001 and 2005 resulted in part from the conversion to fare-free, but also from the increase in service hours and other service changes that were made over the same time period. Transit fares and service both impact ridership. A decrease in fares will increase ridership, as will an increase in transit service hours and an increase in duration of service. By combining free fares, more service hours, and longer service, ridership was sure to increase. CHT was able to nearly double ridership between 2001 and 2005 and still maintain productivity (as evidenced by a 30% increase in route riders per hour).

# Chapter 11 - Multimodal Mobility

**MEASUREMENT: Accessibility, Vitality, and Attractiveness of Various Modes**
**DATA: Number of Users by Mode**

## *Why and How*

> ***2000 Chapel Hill Comprehensive Plan Objectives***
>
> - Increase emphasis on transit, bicycle, and pedestrian mobility town-wide. Achieve an increase in the percentage of total trips within Chapel Hill by alternative transportation modes and a corresponding reduction in the percentage of trips by automobiles.
>
> *This Mobility Report Card Update builds on the multimodal indicator previously reported and seeks to establish a quantifiable base condition for future analyses.*

While it is very useful to examine each transportation mode individually, it is also important to view the system as a whole and understand the interactions between the different modes. This way the Town can measure a quality of life for all corridor users, not just drivers. For example, a person who is biking will experience the street differently based on street features, safety, and level of bicycle activity versus a person driving an automobile that may only feel the congestion and travel speed indicators. A pedestrian or transit rider will have a very different level of service for the same corridor based on totally different corridor characteristics. That is why development of a multimodal street and highway system is a key part of the Chapel Hill Comprehensive Plan. The Plan calls for consideration of all modes of travel and for an increased emphasis on transit, bicycle, and pedestrian mobility.

In the 2003 Mobility Report Card, a multimodal mobility index was defined based on facilities that serve each mode (presence of bicycle lanes, presence of sidewalks, etc) as well as performance indicators that represent current levels of activity (volumes, travel time, etc). The indicators used were:

- Automobile Mobility
- Transit Mobility
- Bicycle Mobility
- Pedestrian Mobility

This report builds on the ideas set forth in the 2003 Report Card and establishes a more quantifiable method to assess the multimodal mobility of the Town.

This multimodal mobility assessment is based on the number of users of individual corridor segments using the corridor between 7:00 am and 7:00 pm, including auto occupants, transit riders, bicyclists and pedestrians. The corridor segments analyzed are based largely on the travel time corridors, with minor changes. Two travel time corridor segments were divided to provide more detailed and accurate data for the campus area. Franklin Street from Estes Drive to Columbia Street was divided into two segments at Boundary Street. Likewise, Raleigh Road/South Road from Fordham Boulevard to South Columbia Street was divided into two segments at Country Club Road.

For each of the corridor segments, the total users of the corridor were estimated to create a complete multimodal picture of the corridor. The users include auto occupants (estimated based on daily traffic counts), transit users (from the boarding/alighting survey) and bicyclists and pedestrians (from the bicycle/pedestrian counts).

The estimated number of auto occupants was calculated by averaging the daily traffic counts that were taken within each corridor segment. A factor based on time of day of the 2003 daily traffic counts was applied to the daily traffic volumes to reflect the 7:00 am to 7:00 pm time period. The year 2003 counts were used to calculate this factor because the 2005 traffic count data was not available at a level less than a 24-hour period. An auto occupancy rate of 1.1 persons per vehicle (based on Census trip to work data for Chapel Hill and Carrboro) was applied to the resulting traffic volume to arrive at an estimated number of auto occupants using the corridor segment.

Transit use in individual corridor segments was estimated based on the boarding/alighting survey. The number of people who boarded or exited the bus at each stop in one day within a corridor segment was summed to create an estimate of transit activity in the corridor segment.

For the bicycle and pedestrian components, the directional weekday bicycle and pedestrian counts were analyzed and the number of bicyclists and pedestrians moving along (not perpendicular to or crossing) the corridor segment was summed to calculate the number of pedestrian and bicycle users of the corridor segment.

## *Results*

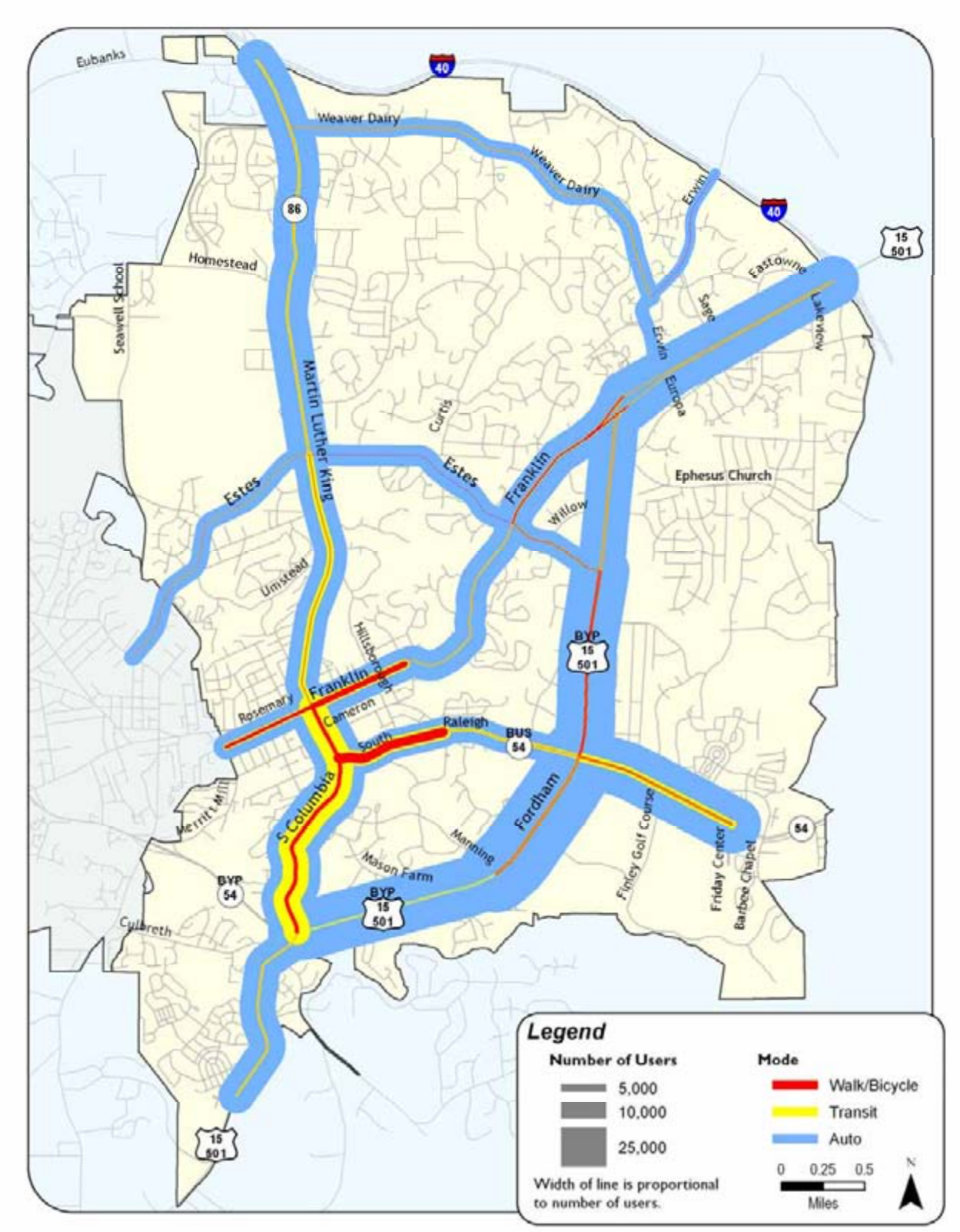
The results of the multimodal mobility assessment by corridor segment are shown in Table 11.1 and graphically in Figure 11.1. Figure 11.1 is a map that shows the number of users of each corridor segment by mode. The width of the various lines shows the relative volumes using that particular corridor segment. The color of the lines shows the mode being represented. Due to their relatively small numbers, pedestrians and bicyclists were combined for clarity purposes.

# Table 11.1 – Estimated Daily Users of Corridor Segments by Mode

| Corridor | Endpoints | Total Users of Corridor | Auto | | Transit | | Pedestrian | | Bicycle | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number | Percent of Total | Number | Percent of Total | Number | Percent of Total | Number | Percent of Total |
| Fordham Blvd. | US 15/501 South to Manning Dr. | 36,840 | 36,300 | 98.5% | 540 | 1.5% | * | | * | |
| Fordham Blvd. | Manning Dr. to NC 54/Raleigh Rd. | 47,229 | 46,282 | 98.0% | 399 | 0.8% | 430 | 0.9% | 118 | 0.2% |
| Fordham Blvd. | NC 54/Raleigh Rd. to Estes Dr. | 36,306 | 35,392 | 97.5% | 182 | 0.5% | 642 | 1.8% | 90 | 0.2% |
| Fordham Blvd. | Estes Dr. to Franklin St. and US 15/501 | 28,754 | 28,132 | 97.8% | 424 | 1.5% | 176 | 0.6% | 22 | 0.1% |
| Estes Dr. | Greensboro St. to MLK Blvd. | 11,312 | 10,890 | 96.3% | 340 | 3.0% | 26 | 0.2% | 56 | 0.5% |
| Estes Dr. | MLK Blvd. to Franklin St. | 13,773 | 13,612 | 98.8% | 59 | 0.4% | 73 | 0.5% | 29 | 0.2% |
| Estes Dr. | Franklin St. to Fordham Blvd. | 15,083 | 14,065 | 93.3% | 617 | 4.1% | 329 | 2.2% | 73 | 0.5% |
| S.Columbia St. | Main St. to Fordham Blvd. | 23,145 | 21,780 | 94.1% | 1,212 | 5.2% | 134 | 0.6% | 19 | 0.1% |
| S.Columbia St. | Fordham Blvd. to Franklin St. | 32,137 | 16,243 | 50.5% | 13,248 | 41.2% | 2,548 | 7.9% | 98 | 0.3% |
| Erwin Rd. | I-40 to Weaver Dairy Rd | 6,672 | 6,624 | 99.3% | 0 | 0.0% | 33 | 0.5% | 15 | 0.2% |
| Erwin Rd. | Weaver Dairy Rd to Fordham Blvd. | 9,075 | 9,075 | 100.0% | 0 | 0.0% | * | | * | |
| Weaver Dairy Rd. | MLK Blvd. to Erwin Rd. | 11,507 | 10,890 | 94.6% | 407 | 3.5% | 159 | 1.4% | 51 | 0.4% |
| Franklin St. | I-40 to Franklin St. and US 15/501 | 32,125 | 31,339 | 97.6% | 631 | 2.0% | 130 | 0.4% | 25 | 0.1% |
| Franklin St. | Franklin St. and US 15/501 to Estes Dr. | 23,296 | 21,780 | 93.5% | 709 | 3.0% | 740 | 3.2% | 67 | 0.3% |
| Franklin St. | Estes Dr. to Boundary St. | 19,640 | 18,694 | 95.2% | 767 | 3.9% | 159 | 0.8% | 20 | 0.1% |
| Franklin St. | Boundary St. to S. Columbia St. | 20,835 | 14,928 | 71.6% | 2,231 | 10.7% | 3,565 | 17.1% | 111 | 0.5% |
| Franklin St. | S. Columbia St. to Merritt Mill Rd. | 16,461 | 12,705 | 77.2% | 1,430 | 8.7% | 2,207 | 13.4% | 119 | 0.7% |
| NC 54 | Friday Center Dr. to Fordham Blvd. | 35,628 | 31,581 | 88.6% | 3,697 | 10.4% | 230 | 0.6% | 120 | 0.3% |
| Raleigh Rd | Fordham Blvd. to Country Club Rd. | 16,987 | 14,928 | 87.9% | 2,000 | 11.8% | 37 | 0.2% | 22 | 0.1% |
| South Rd | Country Club Rd. to S. Columbia St. | 19,354 | 10,345 | 53.5% | 3,219 | 16.6% | 5,689 | 29.4% | 101 | 0.5% |
| MLK Blvd. | I-40 to Estes Dr. | 26,711 | 25,107 | 94.0% | 1,456 | 5.5% | 113 | 0.4% | 35 | 0.1% |
| MLK Blvd. | Estes Dr. to Franklin St. | 21,431 | 17,242 | 80.5% | 3,795 | 17.7% | 337 | 1.6% | 57 | 0.3% |

** No bicycle/pedestrian count was performed in this corridor segment.*

## Figure 11.1 – Multimodal Mobility Assessment



## *Findings and Conclusions*

While the multimodal mobility assessment performed here is more quantitative than that done previously, the results are very similar. Mobility is highest in the downtown and campus areas. South Columbia Street, South Road, and Franklin Street close to downtown provide a large number of mobility options. So it is not surprising that alternative transportation usage is highest in these areas.

Bicycle use on the corridors averaged less than 1% in all cases. The highest bicycle usage on a percent basis was on Franklin Street in the downtown area, with a 0.7% mode split. In raw numbers, it was second only to the NC 54 corridor between Fordham Boulevard and Friday Center Drive. Fordham Boulevard between Manning Drive and NC 54 also had a fairly high number of bicyclists, but due to the high traffic volumes, its percent bicycle usage was fairly low.

The percent of pedestrians using the corridor segments varied greatly. For the most part, as the distance from the downtown and campus increased, the number of pedestrians decreased dramatically. Two exceptions to this are Martin Luther King Boulevard (formerly Airport Road) and NC 54 east of Fordham Boulevard. While the number of pedestrians along these corridors was not nearly as high as in the downtown and campus area, they were considerably higher than other outlying areas.

Transit use along the corridors also followed a similar trend as the pedestrians. Transit use was very high in the downtown and campus area, as well as along Martin Luther King Boulevard and NC 54 east of Fordham Boulevard. In fact, two of the three highest corridor segments for transit usage were NC 54 from Friday Center Drive to Fordham Boulevard and Martin Luther King Boulevard from Estes Drive to Franklin Street.

As expected, auto usage was quite high throughout the Town. The exceptions to this were South Road between Country Club Road and South Columbia Street and South Columbia Street between Fordham Boulevard and Franklin Street. The South Columbia Street corridor segment had only 51% of its users transported by auto and the South Road corridor segment was slightly higher at 54%. In both raw numbers and percent by auto, Fordham Boulevard was very high, moving between 28,000 and 46,000 people per day by auto. While Fordham Boulevard moves a lot of people overall, alternative mode usage is virtually non-existent.

It is important to realize that not all corridors need to rank high for multimodal mobility. Some corridors, such as US 15/501/Fordham Boulevard are not well suited for multimodal travel and will not serve pedestrians and bicyclists well. The Town has done well on, and should continue, concentrating its efforts on enhancing multimodal mobility on corridors that have a high potential for alternative mode usage, such as Martin Luther King Boulevard and South Road/Raleigh Road/NC 54.

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# Chapter 12 - Office Parking

**MEASUREMENT: Parking Survey**

**DATA: Parking Lot Utilization Data at Major Employers**

## *Why and How*

*Actions: Comprehensive Parking Strategy*

- Prepare and adopt revised parking standards, including maximum in addition to minimum standards, the requirement that all surface parking be within 250 feet of the proposed use, and provisions for shared parking.

*In 2004, The Chapel Hill Parking Study surveyed different land uses at various times of day throughout the Town. That study provided the basis for revising the Town's parking standards.*

Towns and cities typically have zoning ordinances that require a minimum number of parking spaces per 1,000 square feet or per dwelling unit to accommodate the on-site demand for parking. Over the years, this practice has been questioned in many communities because minimum standards often yield an overabundance of parking places. This practice of "more is better" can be detrimental to a community that is trying to promote a multimodal transportation system, and the cost of providing spaces greater than necessary can be very high. Communities can also encourage the use of alternative modes through parking policy. Limiting the number of available parking spaces and/or increasing the cost of parking can encourage transit, bicycle, and pedestrian modes of travel. Many communities are evaluating actual parking demand and, in some cases, setting both minimum and maximum on-site parking standards.

Four office park locations that are representative of different areas in Town were selected for analysis. The selected locations are the Meadowmont Office Park, Franklin Park, the Europa building, and Chapel Hill North. These office park locations are presented in Figure 12.1. Each location was initially sketched and the total supply of available spaces was established. Parking utilization, which is simply the total number of parking spaces occupied divided by the total parking supply, was collected in October 2005. Each site was surveyed at least twice a day and on at least two days.

## *Results*

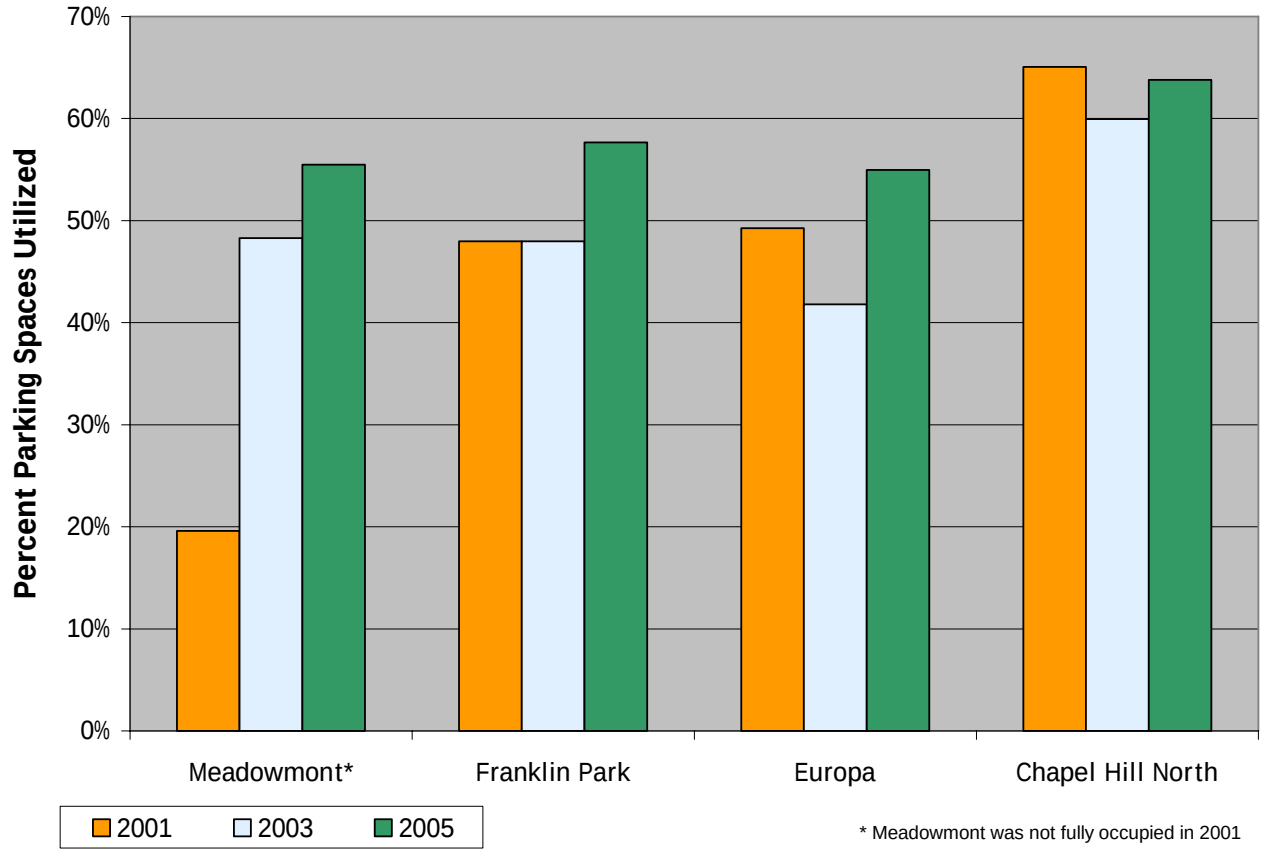
The results of the Office parking survey for each of the survey areas are presented in the following pages. A summary of the building size, total number of spaces, and occupied spaces for 2001, 2003 and 2005 is presented in Table 12.1 and in graphic form in Figure 12.1.

## Table 12.1 – Office Parking Utilization

| Site | | Building Size (sq ft) | Parking Spaces | Occupied Parking Spaces 2001 Number | 2001 Percent | 2003 Number | 2003 Percent | 2005 Number | 2005 Percent |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Meadowmont | 202,357 | 750 | 147* | 19.6%* | 362 | 48.3% | 416 | 55.5% |
| 2 | Franklin Park | 70,886 | 196 | 94 | 48.0% | 94 | 48.0% | 113 | 57.7% |
| 3 | Europa | 198,820 | 615 | 303 | 49.3% | 257 | 41.8% | 338 | 55.0% |
| 4 | Chapel Hill North | 81,400 | 312 | 203 | 65.1% | 187 | 59.9% | 199 | 63.8% |

** Meadowmont was not fully occupied in 2001*

## Figure 12.1 – Office Parking Utilization




* Meadowmont was not fully occupied in 2001

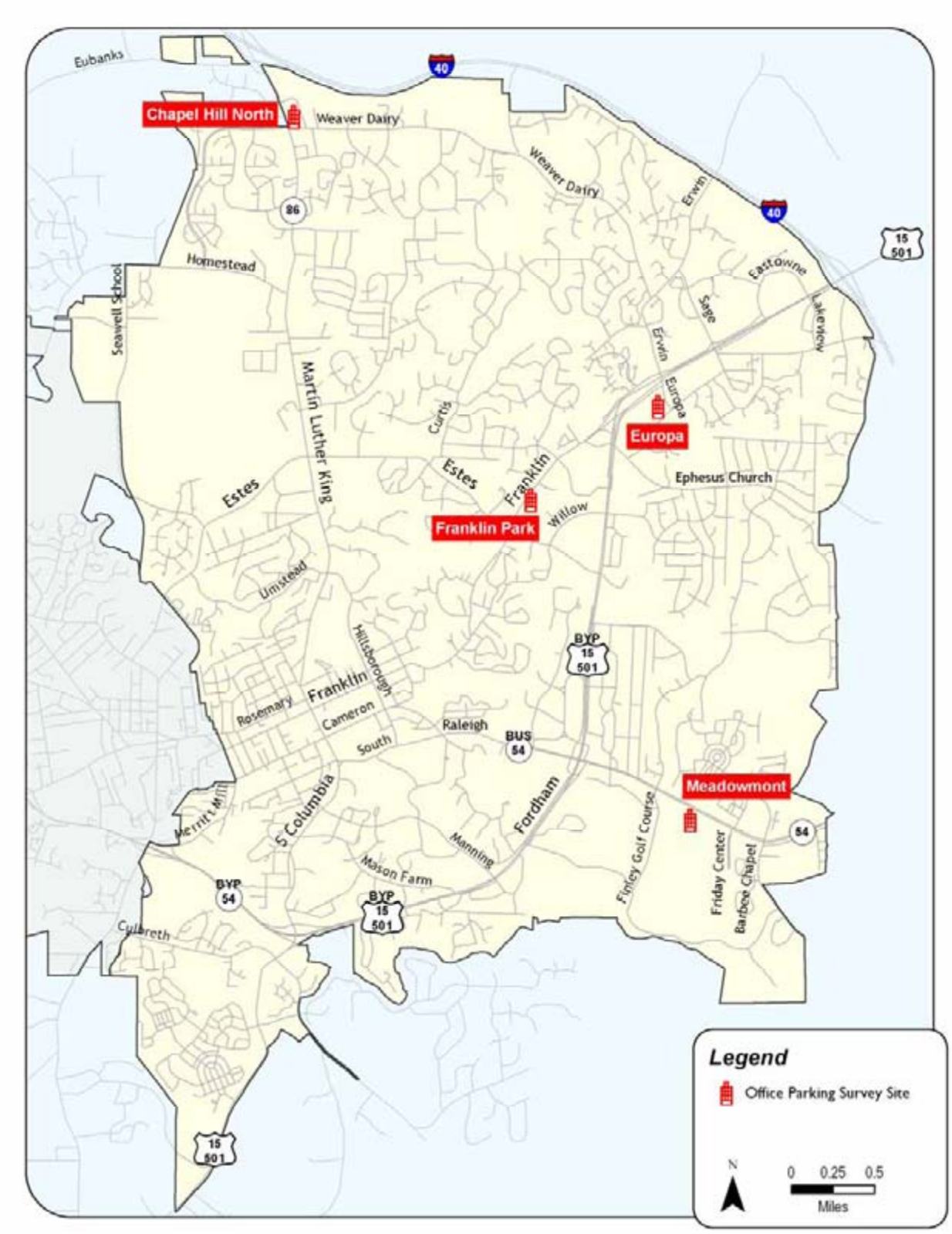
## *Findings and Conclusions*

On the supply side, available parking ranged from 2.3 to 5.5 parking spaces per 1000 square feet. On the demand side, parking utilization ranged from 1.6 to 2.4 spaces per 1000 square feet and lot occupation ranged from 55% occupied to almost 64% occupied. None of the sites exceeded the Town minimum standards for spaces per 1000 square feet during the survey.

Between 2003 and 2005, the total number of occupied spaces increases from 900 to 1066 spaces (48% occupied to 57% occupied), an 18% increase. Parking demand increased at all locations between 2003 and 2005. Compared with 2001, all the 2005 counts were higher except for Chapel Hill North, which was virtually the same in 2001 as in 2005 (203 and 199, respectively).

Figure 12.2 shows the geographic location of the parking survey locations and more detailed information for each location follows.

## Figure 12.2 – Office Parking Survey Locations



### *Meadowmont Office Park*

- Available Spaces – 750
- Maximum Occupied Spaces – 416
- Percent Utilized – 55.5%
- Building Square Footage – 202,357
- Parking Spaces per 1000 SF – 3.7
- Parking Utilization per 1000 SF – 2.1

The Meadowmont Office Park consists of two multistory office buildings, Meadowmont East and Meadowmont West, located immediately south of NC 54 near Barbee Chapel Road. Vehicular access to the site is located at the intersection of Barbee Chapel Road and NC 54 near the western edge of the site. Access is also provided at the southeast corner of the site to the adjacent Friday Center. The number of occupied spots was 396 to 416 in the morning and 395 to 384 in the afternoon. Overall, the parking utilization has increased substantially since 2001 and 2003. In 2001, the building was recently completed at the time of the survey and did not have many tenants at the time. Parking utilization increased 15% between 2003 and 2005.

**FIGURE 12.3 – MEADOWMONT OFFICE PARK**

### *Franklin Park*

- Available Spaces – 196
- Maximum Occupied Spaces – 113
- Percent Utilized – 57.7%
- Building Square Footage – 70,886
- Parking Spaces per 1000 SF – 2.8
- Parking Utilization per 1000 SF – 1.6

Franklin Park has three office buildings and is accessed at two locations along Franklin Street. Unlike the previous study in 2003, Franklin Park experienced very little in parking turnover in 2005. The office park had 112 to 113 spaces occupied in the morning and 98 to 103 in the afternoon. The parking utilization at this site is higher than that found in 2001 or 2003.

**FIGURE 12.4 – FRANKLIN PARK**

### *Europa*

- Available Spaces – 615
- Maximum Occupied Spaces – 338
- Percent Utilized – 55.0%
- Building Square Footage – 198,820
- Parking Spaces per 1000 SF – 3.1
- Parking Utilization per 1000 SF – 1.7

Located near the corner of Europa Drive and Legion Road, the Europa parking area consists of a three-level parking structure with approximately one-third of the total parking on each level. Access to the structure is available from Europa Drive and Legion Road. The maximum utilization occurred in the morning (334 to 338), with slightly lower utilization in the afternoon (310 to 325). Utilization was above both the 2001 and 2003 inventories.

**FIGURE 12.5 – EUROPA**

### *Chapel Hill North*

- Available Spaces – 312
- Utilized Spaces – 199
- Percent Utilized – 63.8%
- Building Square Footage – 81,400
- Parking Spaces per 1000 SF – 3.8
- Parking Utilization per 1000 SF – 2.4

Chapel Hill North is located at the northeast corner of MLK Boulevard and Weaver Dairy Road. Three office buildings and the associated parking in the southwest corner of the Chapel Hill North area were analyzed at this location. The parking area is accessible at two points along Perkins Drive. Parking utilization was fairly steady throughout the day, with 191 to 199 spaces occupied in the morning and 179 to 199 spaces occupied in the afternoon. Utilization was up slightly from the 2003 study and comparable to the 2001 inventory.

## FIGURE 12.6 – CHAPEL HILL NORTH