October 2004

Chapel Hill
2003 MOBILITY REPORT CARD

LSA
LSA ASSOCIATES, INC.

Summary of Findings

VEHICULAR ACTIVITY AND ARTERIAL LEVEL OF SERVICE

While traffic volumes are generally higher in 2003 than in 2001, overall congestion is largely unchanged with some roadway segments improving and some declining. Six roadway segments became substantially more congested and 3 segments substantially improved.

VEHICLE PEAK HOUR INTERSECTION OPERATIONS

The majority of intersections are uncongested or moderately congested and are unchanged from 2001. More intersections improved LOS than declined.

VEHICULAR TRAVEL TIME

Total corridor travel time decreased between 2001 and 2003. More corridors improved than corridors that declined. Many corridor segments improved substantially in travel time. Segments that did have increased travel time were mostly isolated incidents.

PEDESTRIAN FACILITIES

Total length of all sidewalks in the Town increased 14% between 2001 and 2003. Total length of sidewalks inside the transit area increased 10% and approximately 2/3 of all new sidewalk construction took place in the transit area.

PEDESTRIAN ACTIVITY

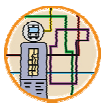
Improvement in pedestrian facilities had a direct impact on pedestrian activities. Total pedestrian activity in the Town increased by almost 25%. Most locations saw a greater than 10% increase in pedestrian activity.

BICYCLE FACILITIES

Total length of all bicycle facilities in the Town increased by 45% between 2001 and 2003. New facilities tend to integrate well with previously existing facilities.

BICYCLE ACITIVITY

Bicycle activity actually decreased between 2001 and 2003. Total bicycle activity in the Town decreased by 20%. However, much of this decrease may be due to a mode shift to transit. Future reports will be better able to determine if this is the case or not.



TRANSIT SERVICE

Approximately 75% of the Town is within ¼ mile of transit. Fixed route transit service hours increased by over 42% between 2001 and 2003 and total system operating hours increased by 36% over the same time.

TRANSIT RIDERSHIP

Ridership increased dramatically between 2001 and 2003 due to the conversion to a fare-free system in January 2002. System-wide ridership increased by 55% to over 4.6 million. System-wide riders per capita increased by 37% and riders per hour increased by 13%.

MULTIMODAL MOBILITY

Overall multimodal mobility in the Town is good. This is the first year of the multimodal mobility section, so no comparisons can be made to 2001. Corridors that have a high potential for multimodal mobility include Airport Road, South Road/Raleigh Road, and Franklin Street.

OFFICE PARKING

Several sites had parking lots which were less utilized in 2003 than in 2001 and several were unchanged. It is not clear why the parking lots are generally less utilized, whether it's due to use of different modes or due to lower occupancy rates of the offices.

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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. The first Mobility Report Card was conducted in 2001. The 2003 Mobility Report Card Update represents a snapshot of mobility in Chapel Hill during the fall of 2003 and is a follow-up to the original Mobility Report Card. This and future updates to the Report Card are a means to monitor and evaluate progress towards Town-wide mobility goals.

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.

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. This update adds an eleventh indicator, Multimodal Mobility, which combines the other indicators into one overview of all modes. The indicators in the original report, and 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. Transit Service
9. Transit Ridership
10. Multimodal Mobility
11. Office Parking

While the original Mobility Report Card provided a baseline for progress evaluation, this update allows, for the first time, for trend comparisons. This update will focus on comparative evaluations between 2001 and 2003 for the various mobility indicators set forth in the 2000 Comprehensive Plan.

Each of the 11 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 data and trend analyses.

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 2001 Mobility Report Card 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.

A technical appendix has been provided to Town staff that includes detailed data collection methodologies, much of the supporting data, and electronic data files and analyses. The information collected by LSA has been supplemented with data collected by the University of North Carolina to provide a more complete picture of total Town mobility.

Indicator:

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 weekdays.

2000 Chapel Hill Comprehensive Plan Action Item

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

This Mobility Report Card Update represents the first follow-up to the 2001 Mobility Report Card assessment of mobility in the Town of Chapel Hill. The Town is committed to performing mobility updates including daily traffic counts at least every three years.

For purposes of this study, 72 roadway locations were counted, including 58 in the Town of Chapel Hill and 14 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 2.

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.

Figure 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

It is important to note that during certain times during the data collection efforts of this update that the NC 54/I-40 ramps were closed for construction. These closings affected the data found in the Vehicular Activity and Arterial Level of Service, Vehicle Peak Hour Intersection Operations, and Vehicular Travel Time sections of the report. The anticipated effect of the closings is that traffic and congestion on NC 54 between Fordham Boulevard and I-40 will be reduced and that traffic and congestion will be increased on US 15/501 between I-40 and NC 54 as drivers seek alternative routes.

As indicated previously, 72 locations throughout the Town were counted for 24-hour daily volumes. This information is presented in Figures 3, 4, and 5 and Tables A, B, and C. The first set of tables and figures is for daily volumes. The second set is for the morning peak hour, and the third set is for the afternoon peak hour. Each map presents two items of information: the first is the traffic volumes, where the higher the volumes, 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 is shown for comparison purposes in the tables. The 2003 LOS column is color coded in each table to represent the level of service change from 2001. 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 2001. Also included in these tables are the resulting AM, PM, and daily volume-to-capacity ratios and levels of service for each location. The reason that the AM and PM peak-hour traffic is reported by peak direction is that the peak-hour capacities used to calculate the volume-to-capacity ratio are based on the peak direction. This indicates a worst case scenario and the non-peak direction would experience a similar or better level of service than the peak direction. 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 2 – 24-hour Auto Count Locations

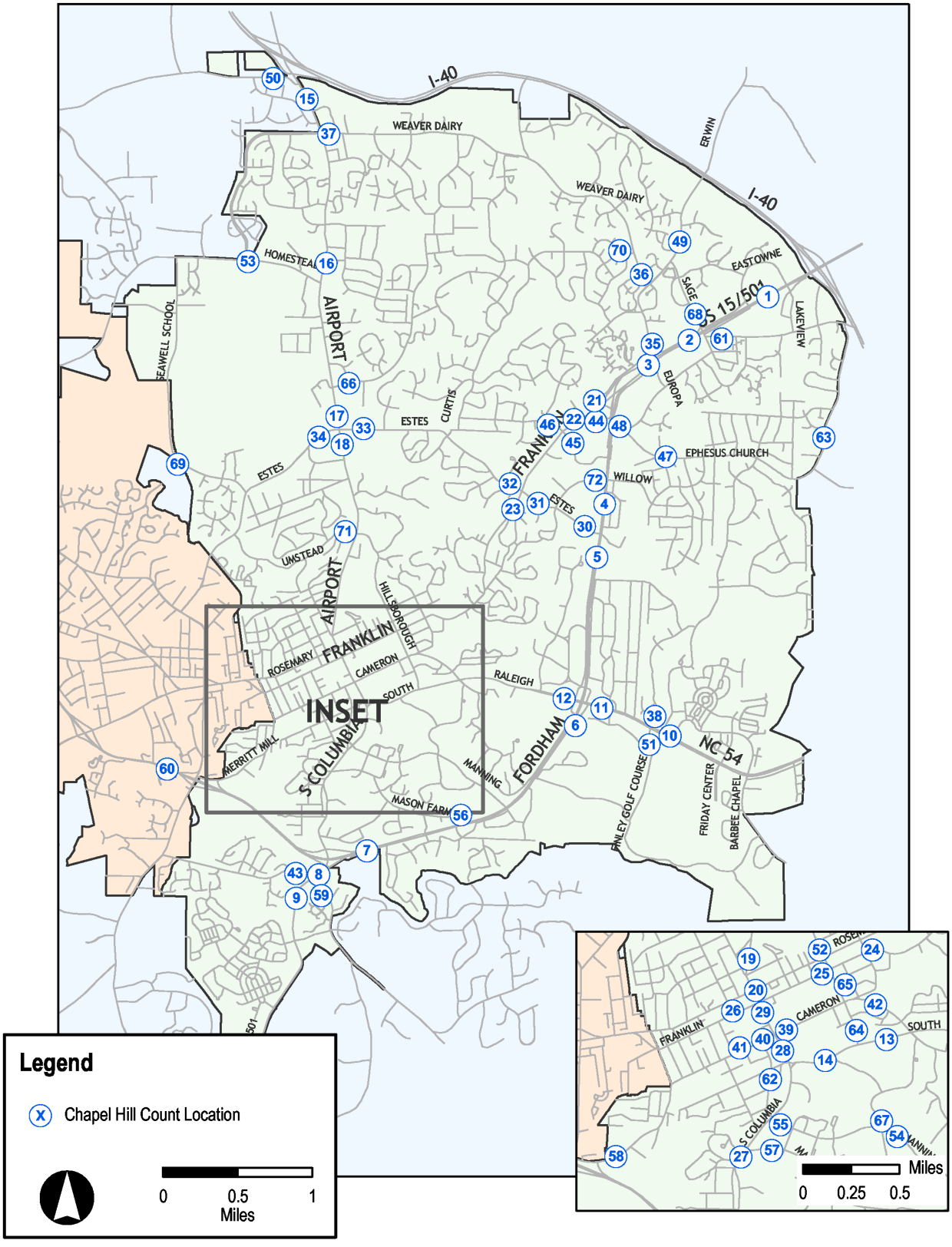


Table A – Roadway Daily Traffic Volumes and Level of Service

		Count Location	Daily Two Way Capacity	2001 24-Hour Two Way Volume	2001 Daily V/C	2001 LOS	2003 24-Hour Two Way Volume	2003 Daily V/C	2003 LOS	Percent Difference
US 15/501/Fordham Blvd	1	US 15/501 btw both Eastowne Dr	37,200	43,941	1.18	F	51,943	1.4	F	+18.2%
	2	US 15/501 west of Sage Rd	37,200	42,273	1.14	F	51,932	1.4	F	+22.8%
	3	US 15/501 west of Erwin Rd	37,200	40,430	1.09	F	61,979	1.67	F	+53.3%
	4	Fordham Blvd north of Estes Dr	37,200	36,545	0.98	E	36,372	0.98	E	-0.5%
	5	Fordham Blvd south of Estes Dr	37,200	40,088	1.08	F	41,304	1.11	F	+3.0%
	6	Fordham Blvd south of South Dr	37,200	50,485	1.36	F	44,373	1.19	F	-12.1%
	7	Fordham Blvd east of US 15/501 South Exit	37,200	42,652	1.15	F	36,899	0.99	E	-13.5%
	8	US 15/501 South north of Culbreth Rd	17,200	30,484	1.77	F	29,989	1.74	F	-1.6%
	9	US 15/501 South south of Culbreth Rd	17,200	20,261	1.18	F	19,329	1.12	F	-4.6%
NC 54/Raleigh Rd/South Rd	10	NC 54 East of Burning Tree Dr	52,300	42,333	0.81	D	42,288	0.81	D	-0.1%
	11	NC 54 East at Glen Lennox Shopping Center	52,300	45,395	0.87	D	44,170	0.84	D	-2.7%
	12	Raleigh Rd west of US 15/501 Interchange	34,700	13,988	0.4	A	26,980	0.78	C	+92.9%
	13	South Rd east of Raleigh St	13,700	9,840	0.72	C	9,995	0.73	C	+1.6%
	14	South Rd east of Columbia St	13,700	10,460	0.76	C	8,842	0.65	B	-15.5%
Airport Rd/ Columbia St	15	Airport Rd north of Chapel Hill North S/C	37,200	25,933	0.7	B	29,479	0.79	C	+13.7%
	16	Airport Rd north of Homestead Rd	37,200	30,343	0.82	D	35,851	0.96	E	+18.2%
	17	Airport Rd north of Estes Rd	37,200	31,567	0.85	D	32,588	0.88	D	+3.2%
	18	Airport Rd south of Estes Rd Dr	37,200	29,033	0.78	C	26,156	0.7	C	-9.9%
	19	Airport Rd north of North St	37,200	20,824	0.56	A	20,664	0.56	A	-0.8%
	20	Columbia St btw Rosemary St & Franklin St	25,800	17,727	0.69	B	18,701	0.72	C	+5.5%
Franklin St	21	Franklin St north of Eastgate S/C	37,200	20,469	0.55	A	30,663	0.82	D	+49.8%
	22	Franklin St north of Estes Dr	37,200	21,961	0.59	A	30,625	0.82	D	+39.5%
	23	Franklin St south of Estes Dr	37,200	23,410	0.63	B	23,830	0.64	B	+1.8%
	24	Franlink east of Boundary St	34,700	n/a	n/a	n/a	23,559	0.68	B	n/a
	25	Franklin St west of Raleigh Rd	34,700	n/a	n/a	n/a	19,258	0.55	A	n/a
	26	Franklin St btw Columbia St & Church St	34,700	15,516	0.45	A	19,356	0.56	A	+24.7%
South Columbia St	27	S Columbia St south of Mason Farm Rd	18,300	18,470	1.01	F	19,196	1.05	F	+3.9%
	28	S Columbia St btw South Rd And Cameron Ave	12,900	13,296	1.03	F	15,238	1.18	F	+14.6%
	29	S Columbia St south of Franklin St	25,800	20,720	0.8	D	19,057	0.74	C	-8.0%
Estes Dr	30	Estes Dr west of Fordham Blvd	34,700	14,377	0.41	A	13,660	0.39	A	-5.0%
	31	Estes Dr east of Franklin St	34,700	13,631	0.39	A	15,251	0.44	A	+11.9%
	32	Estes Dr west of Franklin St	17,200	15,915	0.93	E	19,229	1.12	F	+20.8%
	33	Estes Dr east of Airport Rd	17,200	17,557	1.02	F	17,032	0.99	E	-3.0%
	34	Estes Dr west of Airport Rd	17,200	12,956	0.75	C	15,710	0.91	E	+21.3%
Weaver Dairy Rd/ Erwin Rd	35	Erwin Rd north of Fordham Blvd	17,200	12,749	0.74	C	12,209	0.71	C	-4.2%
	36	Weaver Dairy Rd north of Erwin Rd	17,200	13,244	0.77	C	15,030	0.87	D	+13.5%
	37	Weaver Dairy Rd east of Airport Rd	34,700	7,511	0.22	A	14,371	0.41	A	+91.3%

	Count Location	Daily Two Way Capacity	2001 24-Hour Two Way Volume	2001 Daily V/C	2001 LOS	2003 24-Hour Two Way Volume	2003 Daily V/C	2003 LOS	Percent Difference
Other Arterials	38 Burning Tree Dr north of NC 54 E	13,700	2,193	0.16	A	2,765	0.2	A	+26.1%
	39 Cameron Ave east of S. Columbia St	12,700	9,070	0.71	C	8,334	0.66	B	-8.1%
	40 Cameron Ave btw Columbia St & Pittsboro St	17,200	14,767	0.86	D	21,218	1.23	F	+43.7%
	41 Cameron Ave west of Pittsboro St	18,300	9,820	0.54	A	8,303	0.45	A	-15.4%
	42 Country Club Rd north of South Rd	13,700	13,470	0.98	E	14,076	1.03	F	+4.5%
	43 Culbreth Rd west of US 15/501 South	17,200	4,937	0.29	A	5,979	0.35	A	+21.1%
	44 Eastgate Shopping Center Internal Road	13,700	7,575	0.55	A	6,717	0.49	A	-11.3%
	45 Elliot Rd east of Franklin St	17,200	4,667	0.27	A	7,559	0.44	A	+62.0%
	46 Elliot Rd west of Franklin St	17,200	10,611	0.62	B	5,128	0.3	A	-51.7%
	47 Ephesus Church Rd btw Frances St & Cypress Rd	17,200	3,814	0.22	A	8,955	0.52	A	+134.8%
	48 Ephesus Church Rd btw Fordham Blvd & Legion Rd	17,200	11,280	0.66	B	11,715	0.68	B	+3.9%
	49 Erwin Rd north of Covington Dr	17,200	9,301	0.54	A	11,011	0.64	B	+18.4%
	50 Eubanks Rd west of Airport Rd	16,100	5,163	0.32	A	6,647	0.41	A	+28.7%
	51 Finley Golf Course Rd south of NC 54 East	16,100	1,927	0.12	A	2,716	0.17	A	+40.9%
	52 Hillsborough St btw Rosemary St & North St	13,700	8,587	0.63	B	8,384	0.61	B	-2.4%
	53 Homestead Rd east of Railroad	13,700	8,702	0.64	B	9,210	0.67	B	+5.8%
	54 Manning Dr east of Ridge Rd	26,100	17,260	0.66	B	14,682	0.56	A	-14.9%
	55 Manning Dr east of Columbia St	18,300	14,100	0.77	C	13,215	0.72	C	-6.3%
	56 Mason Farm Rd north of Fordham Blvd	17,200	n/a	n/a	n/a	773	0.04	A	n/a
	57 Mason Farm Rd east of Columbia St	17,200	8,446	0.49	A	9,083	0.53	A	+7.5%
	58 Merritt Mill Rd east of Carboro City Limits	17,200	9,696	0.56	A	10,219	0.59	A	+5.4%
	59 Mount Carmel Church Rd east of US 15/501 South	17,200	10,889	0.63	B	11,140	0.65	B	+2.3%
	60 NC 54 Bypass at Kingwood Apts	37,200	34,420	0.93	E	31,716	0.85	D	-7.9%
	61 Old Durham Rd east of Scarlett Dr/US 15/501	17,200	2,884	0.17	A	7,819	0.45	A	+171.1%
	62 Pittsboro St south of Mccauley St	20,600	10,960	0.53	A	10,067	0.49	A	-8.1%
	63 Pope Rd north of Ephesus Church Rd	14,000	3,806	0.27	A	4,669	0.33	A	+22.7%
	64 Raleigh St north of South Rd	13,700	7,424	0.54	A	8,130	0.59	A	+9.5%
	65 Raleigh St south of Franklin St	12,700	14,470	1.14	F	10,710	0.84	D	-26.0%
	66 Piney Mountain Rd east of Airport Rd	17,200	2,667	0.16	A	6,554	0.38	A	+145.7%
	67 Ridge Rd at Manning Dr	13,700	8,320	0.61	B	7,872	0.57	A	-5.4%
	68 Sage Rd north of Fordham Blvd	34,700	8,036	0.23	A	8,935	0.26	A	+11.2%
	69 Seawell School Rd at Railroad	14,000	4,434	0.32	A	4,585	0.33	A	+3.4%
	70 Sedgefield Dr west of Foxwood Dr	13,700	1,789	0.13	A	1,800	0.13	A	+0.6%
	71 Umstead Dr west of Green St	13,700	1,244	0.09	A	2,568	0.19	A	+106.4%
	72 Willow Dr west of Fordham Blvd	17,200	7,786	0.45	A	11,822	0.69	B	+51.8%

Figure 3 – 2003 Daily Traffic Volumes and Level of Service

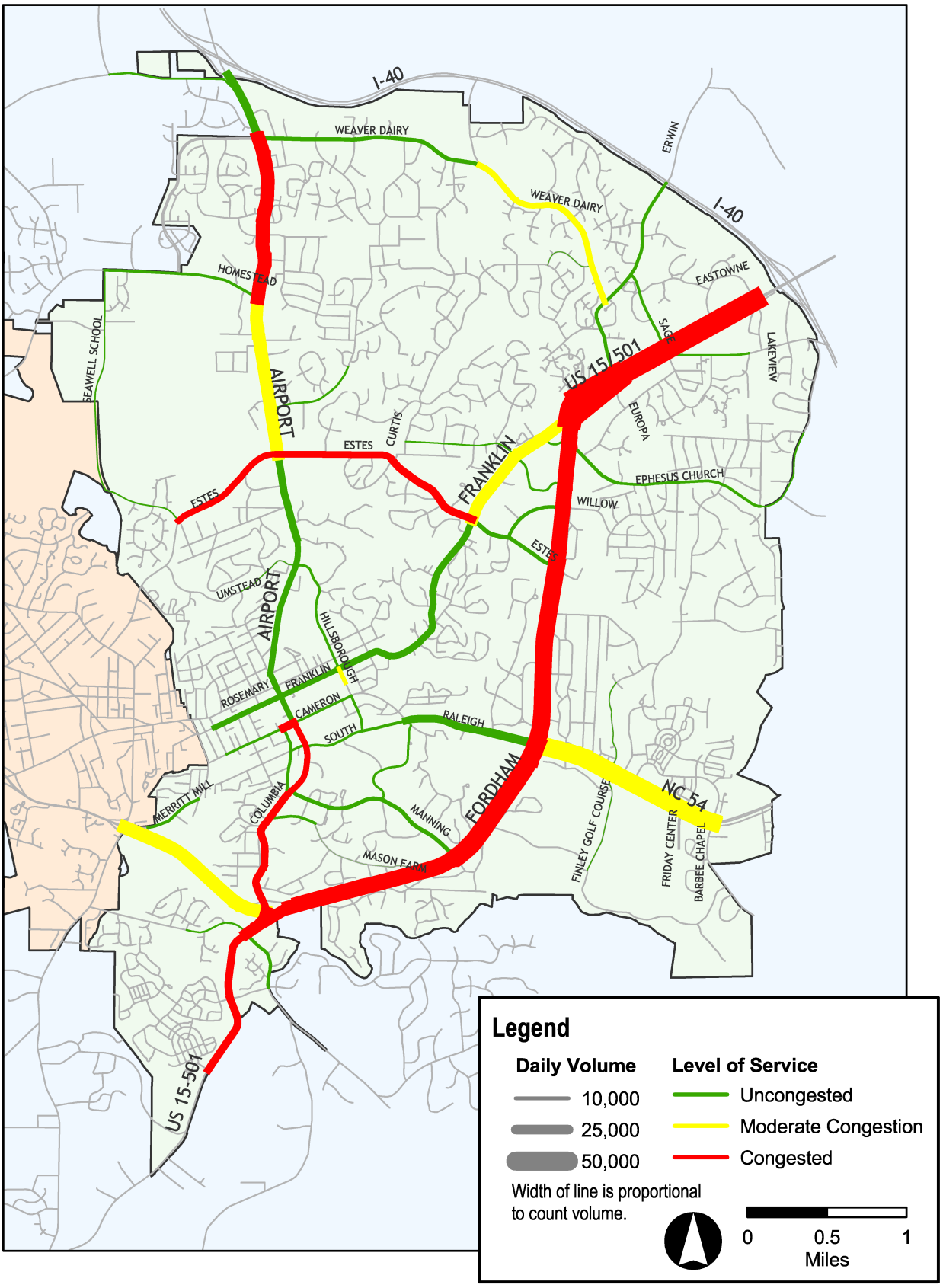


Table B – Roadway AM Traffic Volumes and Level of Service

		Count Location	Peak Hour One Way Capacity	2001 Peak Hour One Way Volume	2001 Daily V/C	2001 LOS	2003 Peak Hour One Way Volume	2003 Daily V/C	2003 LOS	Percent Difference
US 15/501/Fordham Blvd	1	US 15/501 btw both Eastowne Dr	1,700	1,766	1.04	F	2,226	1.31	F	+26.0%
	2	US 15/501 west of Sage Rd	1,700	1,599	0.94	E	1,901	1.12	F	+18.9%
	3	US 15/501 west of Erwin Rd	1,700	1,645	0.97	E	2,169	1.28	F	+31.9%
	4	Fordham Blvd north of Estes Dr	1,715	1,645	0.96	E	1,456	0.85	D	-11.5%
	5	Fordham Blvd south of Estes Dr	1,715	1,608	0.94	E	1,679	0.98	E	+4.4%
	6	Fordham Blvd south of South Dr	1,715	2,332	1.36	F	2,191	1.28	F	-6.0%
	7	Fordham Blvd east of US 15/501 South Exit	1,715	2,512	1.46	F	1,761	1.03	F	-29.9%
	8	US 15/501 South north of Culbreth Rd	745	1,795	2.41	F	1,896	2.54	F	+5.6%
	9	US 15/501 South south of Culbreth Rd	745	1,141	1.53	F	1,126	1.51	F	-1.3%
NC 54/Raleigh Rd/South Rd	10	NC 54 East of Burning Tree Dr	2,275	1,965	0.86	D	1,784	0.78	C	-9.2%
	11	NC 54 East at Glen Lennox Shopping Center	2,275	2,354	1.03	F	1,817	0.8	C	-22.8%
	12	Raleigh Rd west of US 15/501 Interchange	1,510	1,665	1.1	F	1,667	1.1	F	+0.1%
	13	South Rd east of Raleigh St	595	350	0.59	A	412	0.69	B	+17.7%
	14	South Rd east of Columbia St	595	371	0.62	B	344	0.58	A	-7.3%
Airport Rd/ Columbia St	15	Airport Rd north of Chapel Hill North S/C	2,275	1,352	0.59	A	1,623	0.71	C	+20.0%
	16	Airport Rd north of Homestead Rd	2,275	1,540	0.68	B	2,216	0.97	E	+43.9%
	17	Airport Rd north of Estes Rd	2,275	1,716	0.75	C	1,654	0.73	C	-3.6%
	18	Airport Rd south of Estes Rd Dr	2,275	1,629	0.72	C	818	0.36	A	-49.8%
	19	Airport Rd north of North St	2,275	1,089	0.48	A	1,007	0.44	A	-7.5%
	20	Columbia St btw Rosemary St & Franklin St	1,345	682	0.51	A	1,053	0.78	C	+54.4%
Franklin St	21	Franklin St north of Eastgate S/C	1,700	750	0.44	A	1,079	0.63	B	+43.9%
	22	Franklin St north of Estes Dr	1,700	748	0.44	A	1,079	0.63	B	+44.3%
	23	Franklin St south of Estes Dr	1,700	621	0.37	A	1,039	0.61	B	+67.3%
	24	Franlink east of Boundary St	1,510	n/a	n/a	n/a	843	0.56	A	n/a
	25	Franklin St west of Raleigh Rd	1,510	n/a	n/a	n/a	724	0.48	A	n/a
	26	Franklin St btw Columbia St & Church St	1,510	424	0.28	A	578	0.38	A	+36.3%
South Columbia St	27	S Columbia St south of Mason Farm Rd	795	1,351	1.7	F	1,298	1.63	F	-3.9%
	28	S Columbia St btw South Rd And Cameron Ave	560	777	1.39	F	1,023	1.83	F	+31.7%
	29	S Columbia St south of Franklin St	1,115	777	0.7	B	733	0.66	B	-5.7%
Estes Dr	30	Estes Dr west of Fordham Blvd	1,510	499	0.33	A	586	0.39	A	+17.4%
	31	Estes Dr east of Franklin St	1,510	601	0.4	A	652	0.43	A	+8.5%
	32	Estes Dr west of Franklin St	745	705	0.95	E	795	1.07	F	+12.8%
	33	Estes Dr east of Airport Rd	745	87	0.12	A	782	1.05	F	+798.9%
	34	Estes Dr west of Airport Rd	745	770	1.03	F	732	0.98	E	-4.9%
Weaver Dairy Rd/ Erwin Rd	35	Erwin Rd north of Fordham Blvd	745	702	0.94	E	759	1.02	F	+8.1%
	36	Weaver Dairy Rd north of Erwin Rd	745	671	0.9	E	713	0.96	E	+6.3%
	37	Weaver Dairy Rd east of Airport Rd	1,510	732	0.48	A	1,008	0.67	B	+37.7%

	Count Location	Peak Hour One Way Capacity	2001 Peak Hour One Way Volume	2001 Daily V/C	2001 LOS	2003 Peak Hour One Way Volume	2003 Daily V/C	2003 LOS	Percent Difference
Other Arterials	38 Burning Tree Dr north of NC 54 E	595	104	0.17	A	138	0.23	A	+32.7%
	39 Cameron Ave east of S. Columbia St	550	276	0.5	A	363	0.66	B	+31.5%
	40 Cameron Ave btw Columbia St & Pittsboro St	745	939	1.26	F	1,292	1.73	F	+37.6%
	41 Cameron Ave west of Pittsboro St	795	392	0.49	A	288	0.36	A	-26.5%
	42 Country Club Rd north of South Rd	595	543	0.91	E	492	0.83	D	-9.4%
	43 Culbreth Rd west of US 15/501 South	745	255	0.34	A	430	0.58	A	+68.6%
	44 Eastgate Shopping Center Internal Road	595	325	0.55	A	180	0.3	A	-44.6%
	45 Elliot Rd east of Franklin St	745	261	0.35	A	504	0.68	B	+93.1%
	46 Elliot Rd west of Franklin St	745	489	0.66	B	246	0.33	A	-49.7%
	47 Ephesus Church Rd btw Frances St & Cypress Rd	745	293	0.39	A	681	0.91	E	+132.4%
	48 Ephesus Church Rd btw Fordham Blvd & Legion Rd	745	472	0.63	B	493	0.66	B	+4.4%
	49 Erwin Rd north of Covington Dr	745	524	0.7	C	935	1.26	F	+78.4%
	50 Eubanks Rd west of Airport Rd	765	358	0.47	A	414	0.54	A	+15.6%
	51 Finley Golf Course Rd south of NC 54 East	765	98	0.13	A	166	0.22	A	+69.4%
	52 Hillsborough St btw Rosemary St & North St	595	486	0.82	D	225	0.38	A	-53.7%
	53 Homestead Rd east of Railroad	595	614	1.03	F	712	1.2	F	+16.0%
	54 Manning Dr east of Ridge Rd	1,130	1,189	1.05	F	498	0.44	A	-58.1%
	55 Manning Dr east of Columbia St	795	396	0.5	A	904	1.14	F	+128.3%
	56 Mason Farm Rd north of Fordham Blvd	745	n/a	n/a	n/a	96	0.13	A	n/a
	57 Mason Farm Rd east of Columbia St	745	447	0.6	B	712	0.96	E	+59.3%
	58 Merritt Mill Rd east of Carboro City Limits	745	711	0.95	E	670	0.9	D	-5.8%
	59 Mount Carmel Church Rd east of US 15/501 South	745	690	0.93	E	948	1.27	F	+37.4%
	60 NC 54 Bypass at Kingwood Apts	1,715	2,266	1.32	F	2,065	1.2	F	-8.9%
	61 Old Durham Rd east of Scarlett Dr/US 15/501	745	253	0.34	A	318	0.43	A	+25.7%
	62 Pittsboro St south of Mccauley St	895	942	1.05	F	816	0.91	E	-13.4%
	63 Pope Rd north of Ephesus Church Rd	640	235	0.37	A	239	0.37	A	+1.7%
	64 Raleigh St north of South Rd	595	263	0.44	A	335	0.56	A	+27.4%
	65 Raleigh St south of Franklin St	550	582	1.06	F	380	0.69	B	-34.7%
	66 Piney Mountain Rd east of Airport Rd	745	393	0.53	A	366	0.49	A	-6.9%
	67 Ridge Rd at Manning Dr	595	616	1.04	F	435	0.73	C	-29.4%
	68 Sage Rd north of Fordham Blvd	1,510	391	0.26	A	387	0.26	A	-1.0%
	69 Seawell School Rd at Railroad	640	398	0.62	B	402	0.63	B	+1.0%
	70 Sedgefield Dr west of Foxwood Dr	595	117	0.2	A	125	0.21	A	+6.8%
	71 Umstead Dr west of Green St	595	145	0.24	A	131	0.22	A	-9.7%
	72 Willow Dr west of Fordham Blvd	745	318	0.43	A	519	0.7	B	+63.2%

Figure 4 – 2003 AM Traffic Volumes and Level of Service

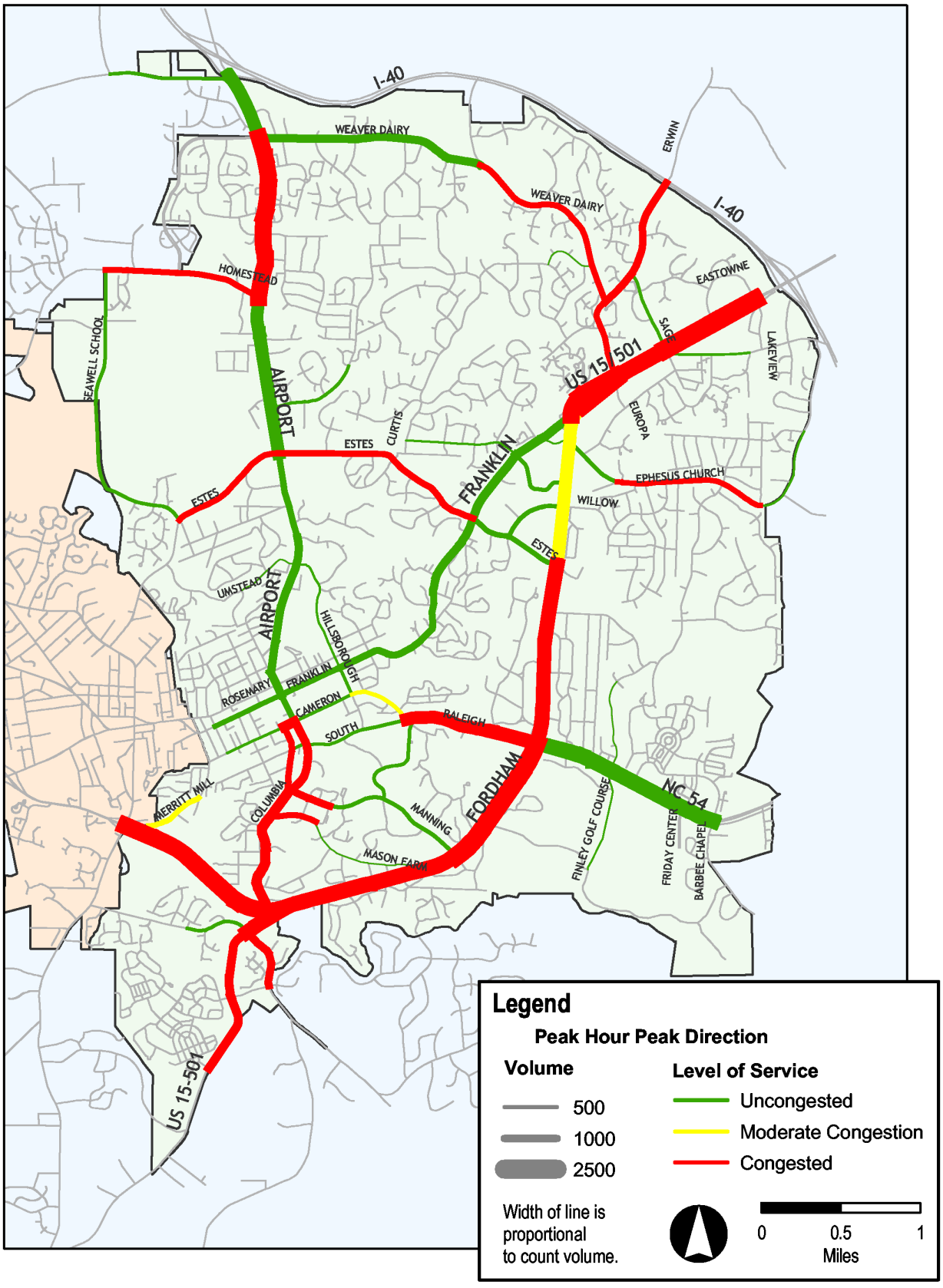
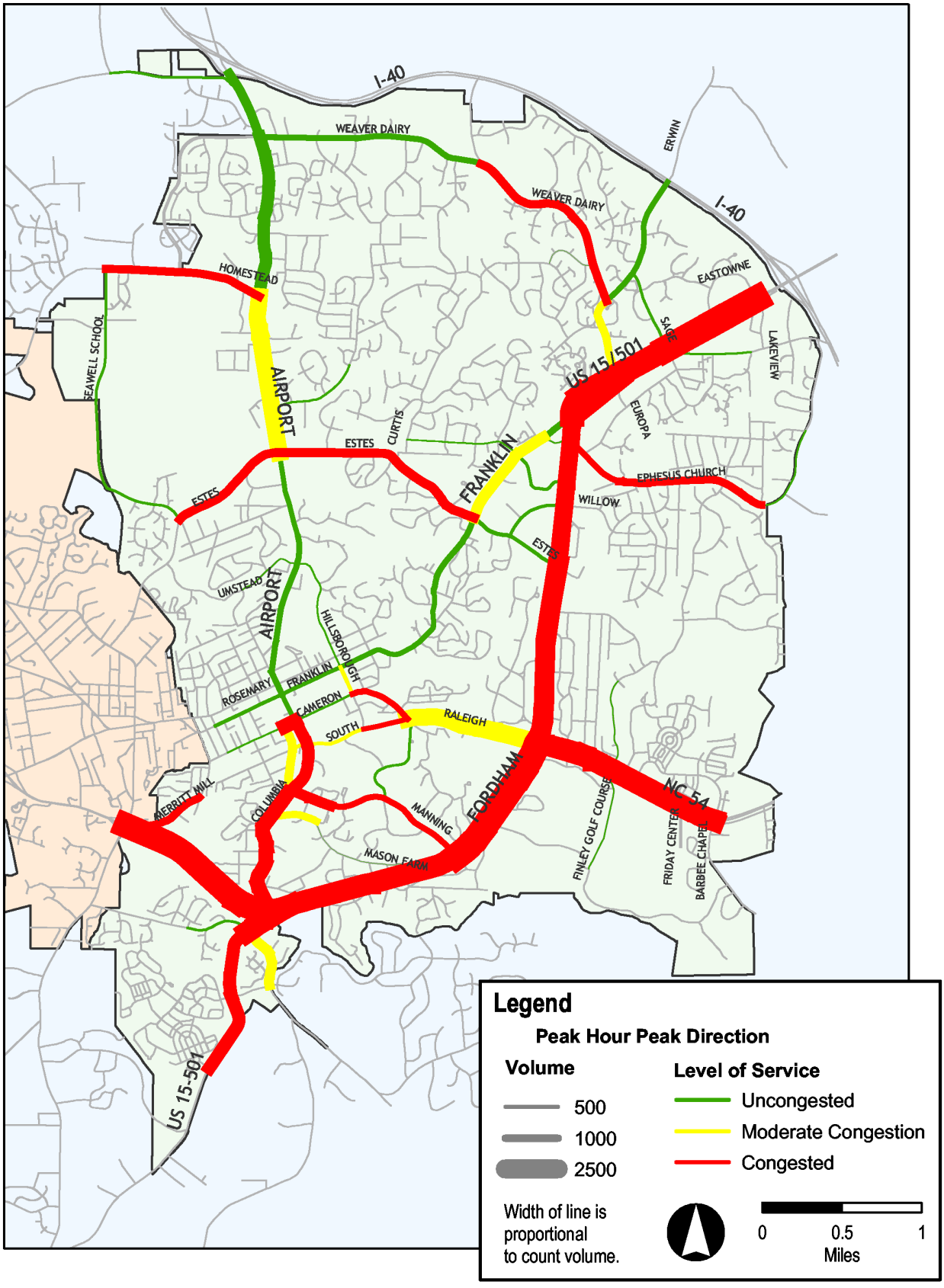


Table C – Roadway PM Traffic Volumes and Level of Service

	Count Location	Peak Hour One Way Capacity	2001 Peak Hour One Way Volume	2001 Daily V/C	2001 LOS	2003 Peak Hour One Way Volume	2003 Daily V/C	2003 LOS	Percent Difference
US 15/501/Fordham Blvd	1 US 15/501 btw both Eastowne Dr	1,700	1,877	1.1	F	2,190	1.29	F	+16.7%
	2 US 15/501 west of Sage Rd	1,700	1,811	1.07	F	2,069	1.22	F	+14.2%
	3 US 15/501 west of Erwin Rd	1,700	1,661	0.98	E	2,028	1.19	F	+22.1%
	4 Fordham Blvd north of Estes Dr	1,715	1,645	0.96	E	1,587	0.93	E	-3.5%
	5 Fordham Blvd south of Estes Dr	1,715	1,821	1.06	F	1,953	1.14	F	+7.2%
	6 Fordham Blvd south of South Dr	1,715	2,039	1.19	F	1,987	1.16	F	-2.6%
	7 Fordham Blvd east of US 15/501 South Exit	1,715	2,257	1.32	F	1,732	1.01	F	-23.3%
	8 US 15/501 South north of Culbreth Rd	745	2,113	2.84	F	1,413	1.9	F	-33.1%
	9 US 15/501 South south of Culbreth Rd	745	1,150	1.54	F	996	1.34	F	-13.4%
NC 54/Raleigh Rd/South Rd	10 NC 54 East of Burning Tree Dr	2,275	2,055	0.9	E	2,193	0.96	E	+6.7%
	11 NC 54 East at Glen Lennox Shopping Center	2,275	1,985	0.87	D	2,181	0.96	E	+9.9%
	12 Raleigh Rd west of US 15/501 Interchange	1,510	1,617	1.07	F	1,341	0.89	D	-17.1%
	13 South Rd east of Raleigh St	595	581	0.98	E	661	1.11	F	+13.8%
	14 South Rd east of Columbia St	595	600	1.01	F	485	0.82	D	-19.2%
Airport Rd/ Columbia St	15 Airport Rd north of Chapel Hill North S/C	2,275	1,370	0.6	B	1,794	0.79	C	+30.9%
	16 Airport Rd north of Homestead Rd	2,275	1,676	0.74	C	1,817	0.8	C	+8.4%
	17 Airport Rd north of Estes Rd	2,275	1,707	0.75	C	1,916	0.84	D	+12.2%
	18 Airport Rd south of Estes Rd Dr	2,275	1,503	0.66	B	1,532	0.67	B	+1.9%
	19 Airport Rd north of North St	2,275	987	0.43	A	977	0.43	A	-1.0%
	20 Columbia St btw Rosemary St & Franklin St	1,345	745	0.55	A	841	0.63	B	+12.9%
Franklin St	21 Franklin St north of Eastgate S/C	1,700	1,000	0.59	A	1,237	0.73	C	+23.7%
	22 Franklin St north of Estes Dr	1,700	1,086	0.64	B	1,412	0.83	D	+30.0%
	23 Franklin St south of Estes Dr	1,700	1,086	0.64	B	1,161	0.68	B	+6.9%
	24 Franlink east of Boundary St	1,510	n/a	n/a	n/a	1,184	0.78	C	n/a
	25 Franklin St west of Raleigh Rd	1,510	n/a	n/a	n/a	925	0.61	B	n/a
	26 Franklin St btw Columbia St & Church St	1,510	665	0.44	A	570	0.38	A	-14.3%
South Columbia St	27 S Columbia St south of Mason Farm Rd	795	1,406	1.77	F	1,436	1.81	F	+2.1%
	28 S Columbia St btw South Rd And Cameron Ave	560	n/a	n/a	n/a	1,508	2.69	F	n/a
	29 S Columbia St south of Franklin St	1,115	999	0.9	D	890	0.8	C	-10.9%
Estes Dr	30 Estes Dr west of Fordham Blvd	1,510	720	0.48	A	660	0.44	A	-8.3%
	31 Estes Dr east of Franklin St	1,510	770	0.51	A	755	0.5	A	-1.9%
	32 Estes Dr west of Franklin St	745	823	1.1	F	1,097	1.47	F	+33.3%
	33 Estes Dr east of Airport Rd	745	933	1.25	F	957	1.28	F	+2.6%
	34 Estes Dr west of Airport Rd	745	713	0.96	E	1,089	1.46	F	+52.7%
Weaver Dairy Rd/ Erwin Rd	35 Erwin Rd north of Fordham Blvd	745	644	0.86	D	655	0.88	D	+1.7%
	36 Weaver Dairy Rd north of Erwin Rd	745	649	0.87	D	771	1.03	F	+18.8%
	37 Weaver Dairy Rd east of Airport Rd	1,510	732	0.48	A	799	0.53	A	+9.2%

	Count Location	Peak Hour One Way Capacity	2001 Peak Hour One Way Volume	2001 Daily V/C	2001 LOS	2003 Peak Hour One Way Volume	2003 Daily V/C	2003 LOS	Percent Difference
Other Arterials	38 Burning Tree Dr north of NC 54 E	595	116	0.19	A	172	0.29	A	+48.3%
	39 Cameron Ave east of S. Columbia St	550	437	0.79	C	389	0.71	C	-11.0%
	40 Cameron Ave btw Columbia St & Pittsboro St	745	1,061	1.42	F	1,420	1.91	F	+33.8%
	41 Cameron Ave west of Pittsboro St	795	474	0.6	A	512	0.64	B	+8.0%
	42 Country Club Rd north of South Rd	595	842	1.42	F	742	1.25	F	-11.9%
	43 Culbreth Rd west of US 15/501 South	745	298	0.4	A	341	0.46	A	+14.4%
	44 Eastgate Shopping Center Internal Road	595	450	0.76	C	177	0.3	A	-60.7%
	45 Elliot Rd east of Franklin St	745	294	0.39	A	502	0.67	B	+70.7%
	46 Elliot Rd west of Franklin St	745	558	0.75	C	356	0.48	A	-36.2%
	47 Ephesus Church Rd btw Frances St & Cypress Rd	745	436	0.59	A	828	1.11	F	+89.9%
	48 Ephesus Church Rd btw Fordham Blvd & Legion Rd	745	752	1.01	F	856	1.15	F	+13.8%
	49 Erwin Rd north of Covington Dr	745	582	0.78	C	595	0.8	C	+2.2%
	50 Eubanks Rd west of Airport Rd	765	371	0.48	A	331	0.43	A	-10.8%
	51 Finley Golf Course Rd south of NC 54 East	765	140	0.18	A	157	0.21	A	+12.1%
	52 Hillsborough St btw Rosemary St & North St	595	419	0.7	C	396	0.67	B	-5.5%
	53 Homestead Rd east of Railroad	595	496	0.83	D	604	1.02	F	+21.8%
	54 Manning Dr east of Ridge Rd	1,130	1,129	1	E	1,170	1.04	F	+3.6%
	55 Manning Dr east of Columbia St	795	397	0.5	A	826	1.04	F	+108.1%
	56 Mason Farm Rd north of Fordham Blvd	745	n/a	n/a	n/a	68	0.09	A	n/a
	57 Mason Farm Rd east of Columbia St	745	614	0.82	D	619	0.83	D	+0.8%
	58 Merritt Mill Rd east of Carboro City Limits	745	695	0.93	E	791	1.06	F	+13.8%
	59 Mount Carmel Church Rd east of US 15/501 South	745	588	0.79	C	647	0.87	D	+10.0%
	60 NC 54 Bypass at Kingwood Apts	1,715	1,987	1.16	F	1,557	0.91	E	-21.6%
	61 Old Durham Rd east of Scarlett Dr/US 15/501	745	300	0.4	A	401	0.54	A	+33.7%
	62 Pittsboro St south of Mccauley St	895	978	1.09	F	799	0.89	D	-18.3%
	63 Pope Rd north of Ephesus Church Rd	640	201	0.31	A	234	0.37	A	+16.4%
	64 Raleigh St north of South Rd	595	424	0.71	C	529	0.89	D	+24.8%
	65 Raleigh St south of Franklin St	550	657	1.19	F	443	0.81	D	-32.6%
	66 Piney Mountain Rd east of Airport Rd	745	312	0.42	A	393	0.53	A	+26.0%
	67 Ridge Rd at Manning Dr	595	487	0.82	D	404	0.68	B	-17.0%
	68 Sage Rd north of Fordham Blvd	1,510	455	0.3	A	456	0.3	A	+0.2%
	69 Seawell School Rd at Railroad	640	346	0.54	A	204	0.32	A	-41.0%
	70 Sedgefield Dr west of Foxwood Dr	595	108	0.18	A	115	0.19	A	+6.5%
	71 Umstead Dr west of Green St	595	148	0.25	A	177	0.3	A	+19.6%
	72 Willow Dr west of Fordham Blvd	745	384	0.52	A	590	0.79	C	+53.6%

Figure 5 – 2003 PM 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 less than 1,000 to over 60,000. Daily volume ranges along major facilities include the following:

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
Airport Road – 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
- Airport Road – 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 higher in 2003 than in 2001 along these major corridors. The volumes along US 15/501 are significantly higher in 2003 than in 2001, reaching daily volumes that are 25% to 50% higher than 2001. However, much of this increase can be attributed to the fact that the NC 54/I-40 ramps were closed during the study. As a result of the ramp closures, much of the traffic that would have utilized NC 54 would be diverted to US 15/501.

As can be seen in the figures and tables, daily traffic volumes along principal arterials providing access into Chapel Hill (US 15/501, NC 54, US 15/501 South and Fordham Boulevard) operate at level of service D or worse. Arterials that exceed LOS D for either the AM or PM peak hour or on a daily basis include the following:

- Airport Rd north of Homestead Rd
- Cameron Ave between Columbia St & Pittsboro St
- Estes Dr east of Airport Rd
- Estes Dr west of Airport Rd
- Estes Dr west of Franklin St
- Fordham Blvd
- NC 54 Bypass at Kingswood Apartments
- S Columbia St
- US 15/501
- US 15/501 South

Newly Congested Principal Arterials
The following principal arterials exceed LOS D for either AM, PM or Daily in 2003, but did not in 2001:
- Airport Rd north of Homestead Rd
- Estes Dr west of Airport Rd

Newly Uncongested Principal Arterials
The following principal arterials exceeded LOS D for either AM, PM or Daily in 2001, but do not in 2003:
- Country Club Road north of South Road
- Columbia Street between South Road and Cameron Avenue

For the most part, the level of service throughout the Town remained unchanged between 2001 and 2003. Fifty segments did not experience a level of service change from 2001, ten roadway segments increased in level of service, and twelve segments decreased in level of service over the same time period.

Franklin Street, between Estes Drive and the US 15/501 merge experienced the greatest decline in daily level of service. The two segments that make up this length of roadway dropped from LOS A in 2001 to LOS D in 2003. Three segments – Estes Drive west of Airport Road, Raleigh Road west of US 15/501 and Cameron Avenue between Columbia

Street and Pittsboro Street – dropped two daily level of service letter grades from LOS C to LOS E, from LOS A to LOS C and from LOS D to LOS F, respectively. The other seven segments that declined in daily level of service only decreased by one letter grade.

The ten roadway segments showing improved daily levels of service are scattered throughout the Town and all only improved by one letter grade except for Raleigh Street south of Franklin Street, which improved two letter grades from LOS F to LOS D.

By looking at the 2001 and 2003 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 6 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. Figures 7 and 8 show the same information for the morning peak-hour and afternoon peak-hour, respectively.

Figure 6 – Roadway Segments with Major Changes in Daily Congestion

		2003		
		Uncongested	Moderate Congestion	Congested
2001	Uncongested	43	3	1
	Moderate Congestion	1	3	2
	Congested	0	2	13

Of the 68 segments with both 2001 and 2003 data available, 59 segments remained in the same category of congestion, while three segments improved and six segments were found to have worse congestion than in 2001. Forty-three segments remained uncongested between 2001 and 2003. One segment (South Columbia Street south of Franklin Street) improved significantly, moving from a "moderate" status to "uncongested" and two segments improved from "congested" to "moderate congestion." Thirteen segments remained "congested" between 2001 and 2003, three segments remained in the "moderate congestion" category. Of the six intersections that declined significantly, the worst segment (Estes Drive west of Airport Road) changed status from "uncongested" to "congested."

Looking at Figures 7 and 8, it becomes clear that roadway segments can be congested during the morning and/or afternoon peak hours yet still remain uncongested when the whole day is considered. Therefore, it is expected that the peak-hour congestion will fluctuate more than daily congestion. When the entire day is considered, the off-peak time periods tend to lessen the impact of the higher levels of congestion during the peak hours.

Figure 7 – Roadway Segments with Major Changes in AM Congestion

		2003		
		Uncongested	Moderate Congestion	Congested
2001	Uncongested	34	0	6
	Moderate Congestion	2	0	0
	Congested	4	3	19

Figure 8 – Roadway Segments with Major Changes in PM Congestion

		2003		
		Uncongested	Moderate Congestion	Congested
2001	Uncongested	30	4	2
	Moderate Congestion	2	2	3
	Congested	0	4	21

From Figure 7, it can be seen that 53 segments did not change morning peak-hour level of congestion between 2001 and 2003. Nine segments improved substantially, with 4 segments improving from "congested" to "uncongested." Six roadway segments declined, moving from "uncongested" to "congested." It can be seen in Figure 8 that the afternoon peak-hour faired slightly worse than the morning. Fifty-three segments did not change afternoon peak-hour level of congestion, six segments improved, and nine segments declined.

Indicator:

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."

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 2½- 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.

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.

Results

Morning, noon, and evening peak-hour turn-movement counts (TMCs) were collected for 75 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 9.

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 D and in Figures 10, 11, and 12 for the AM, noon, and PM peak hours, respectively, and the data acquired in 2001 is also included for comparison purposes. In the table, intersections where the level of service improves from 2001 to 2003 have the 2003 LOS shown in green. The 2003 LOS is shown in red for intersections with a degraded LOS between 2001 and 2003. Figures 10, 11, and 12 show the relative level of congestion for both 2001 and 2003. The outer symbol shows the 2001 level of congestion (uncongested, moderate congestion, or congested). The inner symbol shows the 2003 level of congestion. 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 9 – Auto Turning Movement Count Locations

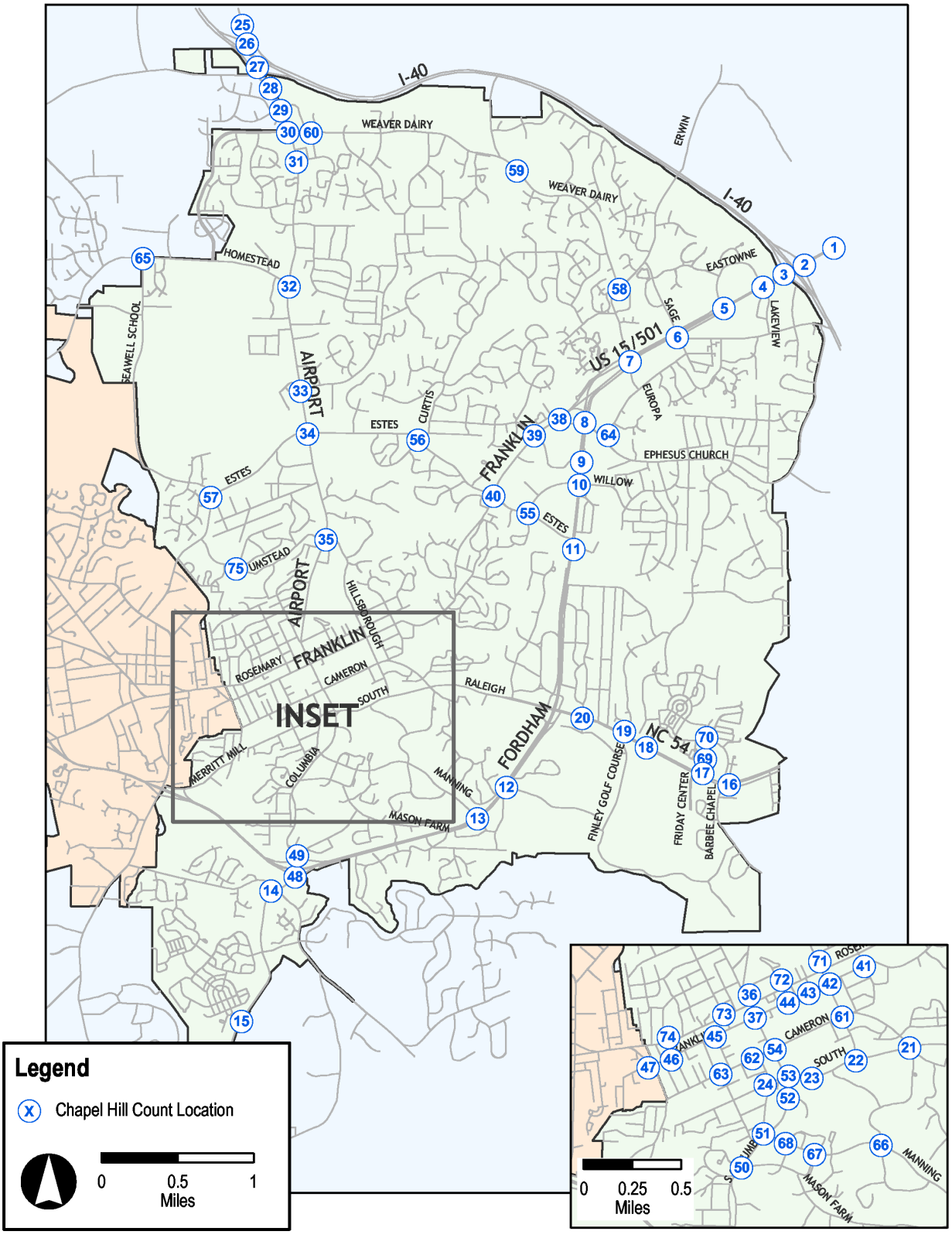


Table D – Intersection Level of Service

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

	Count Location	AM 2001	AM 2003	Mid-Day 2001	Mid-Day 2003	PM 2001	PM 2003
South Columbia St	48 South Columbia St/NC 54 CD Ramps	C	B	-	-	C	C
	49 South Columbia St/NC 54 AB Ramps	B	C	-	-	C	D
	50 South Columbia St/Mason Farm Rd/Westwood Dr	B	B	-	-	C	C
	51 South Columbia St/Manning Dr	A	A	A	A	A	A
	52 South Columbia St/Cross Walk	B	B	-	-	B	B
	53 South Columbia St/South Rd	B	B	-	-	D	D
	54 South Columbia St/Cameron Ave	B	B	-	-	C	C
	37 Columbia St/Franklin St	C	B	-	-	C	C
Estes Dr	11 Estes Dr/Fordham Blvd	C	C	-	C	D	D
	55 Estes Dr/Willow Dr	A	A	A	A	A	B
	40 Estes Dr/Franklin St	C	E	E	E	B	F
	56 Estes Dr/Caswell Rd	B	B	B	B	B	B
	34 Estes Dr/Airport Rd	-	C	-	C	-	E
	57 Estes Dr/Seawell School Rd	A	B	B	B	E	B
Weaver Dairy Rd/ Erwin Rd	58 Weaver Dairy Rd/Erwin Rd	C	F	D	F	B	C
	59 Weaver Dairy Rd/East Chapel Hill High School	A	A	A	A	A	A
	60 Weaver Dairy Rd/Kingston Dr	-	B	-	B	-	D
	30 Weaver Dairy Rd/Airport Rd	C	D	B	D	C	E
Other Arterials	61 Cameron Ave/Raleigh St/Country Club Rd	C	B	-	-	B	C
	62 Cameron Ave/Pittsboro St	B	A	-	-	B	B
	63 Cameron Ave/Ransom St	A	A	B	A	D	C
	64 Ephesus Church Rd/Legion Rd	C	B	B	B	C	C
	65 Homestead Rd/Seawell School Rd	B	E	A	E	B	E
	66 Manning Dr/ Skipper Bowles Dr	B	B	-	-	C	B
	67 Mannnig Dr/New East Dr	B	A	-	-	B	B
	68 Manning Dr/West Dr	A	A	-	-	A	A
	69 Meadowmont Ln/Meadowmont Apartments	-	B	-	B	-	A
	70 Meadowmont Ln/Barbee Chapel Rd	-	A	-	A	-	A
	71 Rosemary St/Hillsborough St	B	A	A	A	B	B
	72 Rosemary St/Henderson St	A	A	A	A	A	A
	73 Rosemary St/Church St	A	A	A	A	A	B
	74 Rosemary St/Roberson Ln	A	A	A	A	A	B
	75 Umstead Dr/Umstead Park	A	A	A	A	A	A

Figure 10 – AM Peak Hour Signalized Intersection Level of Service

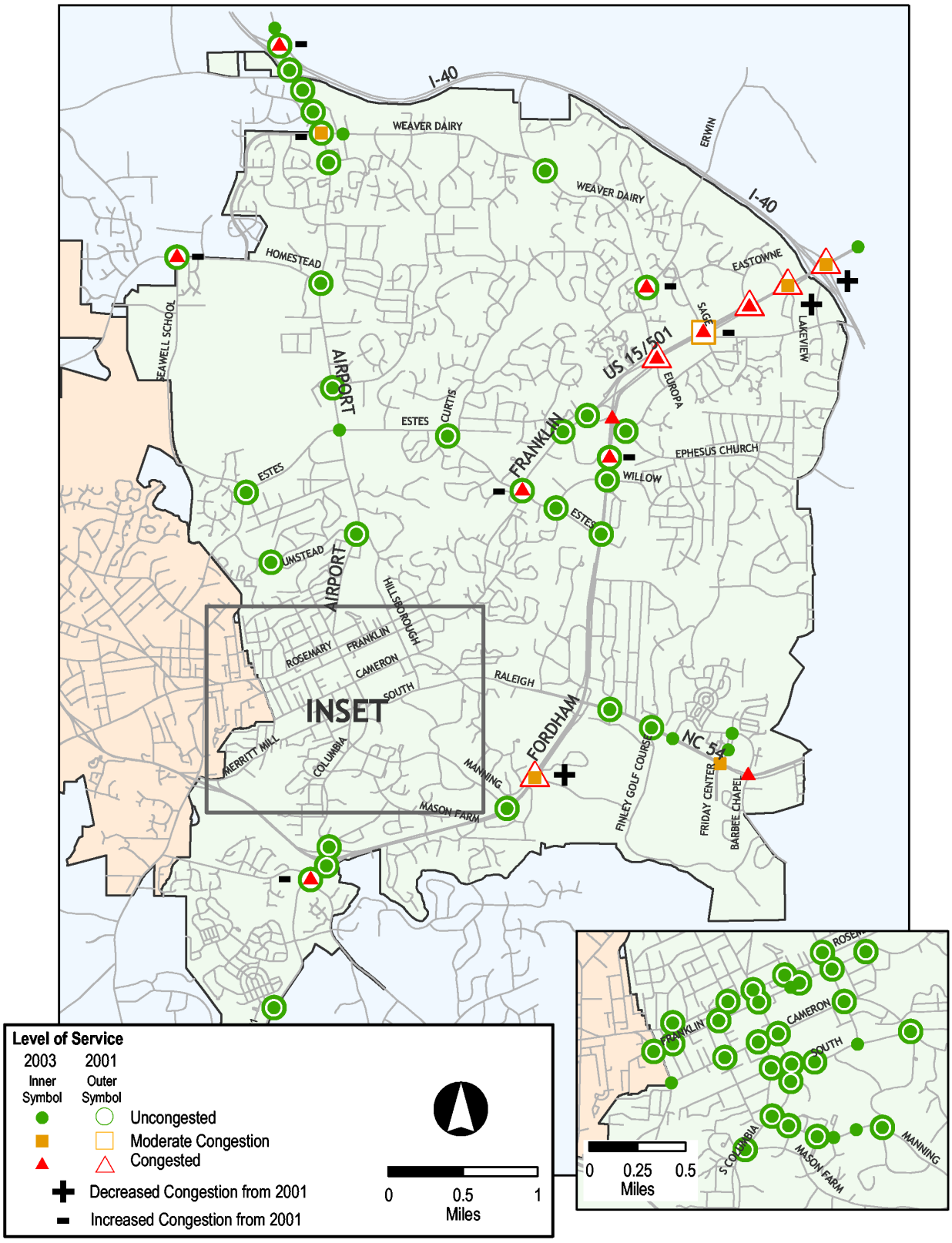


Figure 11 – Mid-Day Peak Hour Signalized Intersection Level of Service

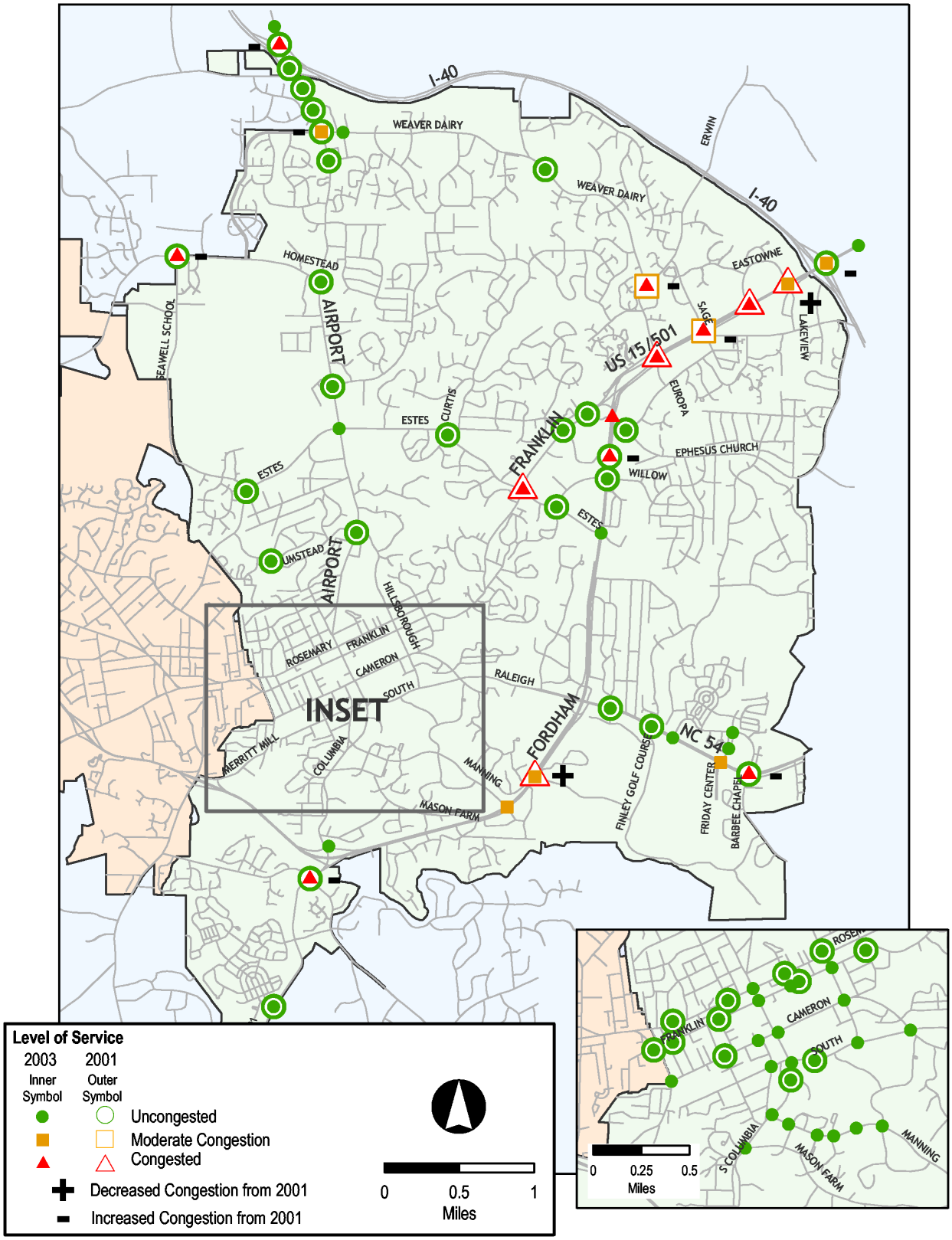
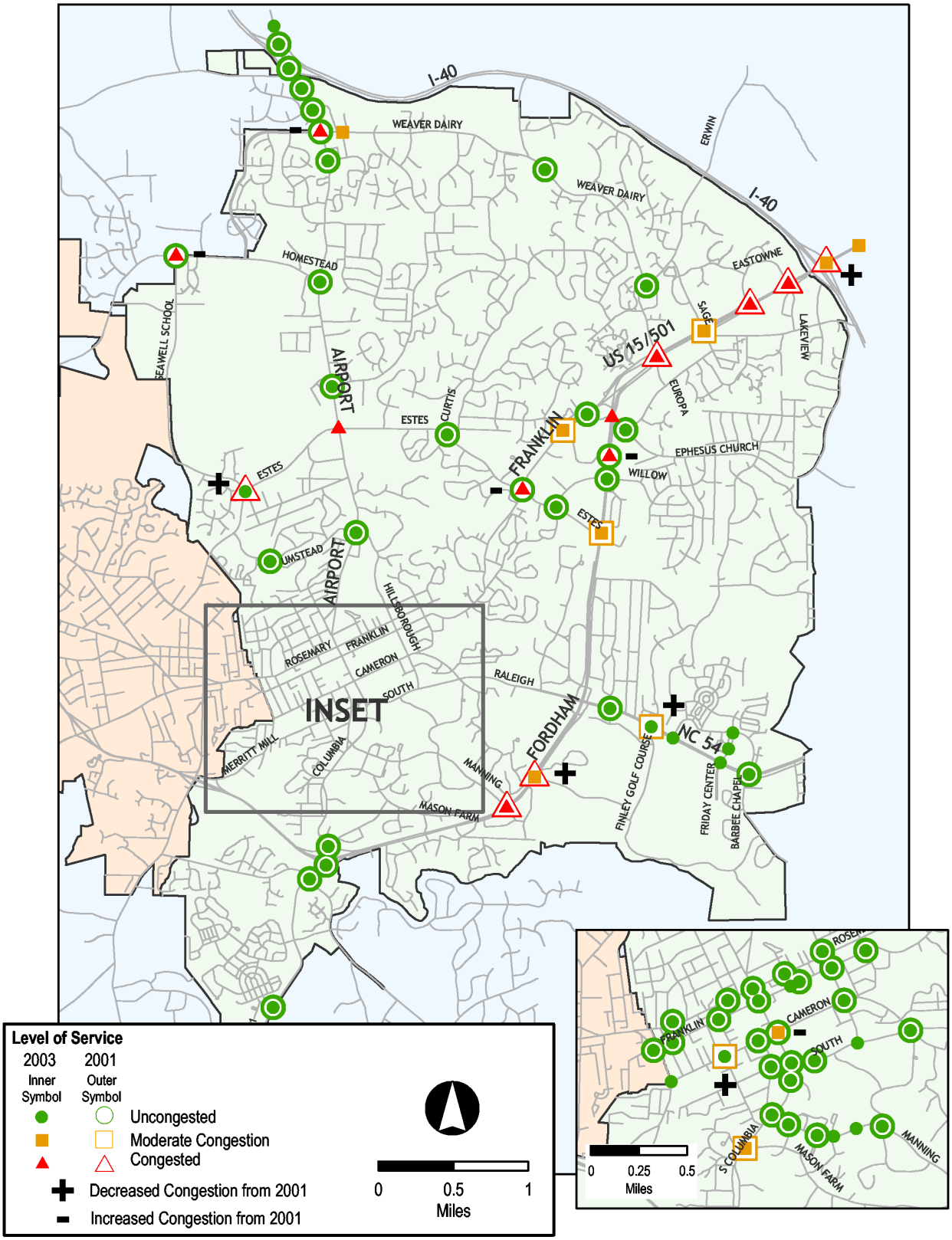


Figure 12 – PM Peak Hour Signalized Intersection Level of Service



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. The high levels of congestion along US 15/501 are at least partially due to the fact that the NC 54/I-40 ramps were closed during the data collection effort. Much of the traffic from I-40 that would have ordinarily used NC 54 was instead diverted to US 15/501.

Unacceptable levels of service were also noted along Fordham Boulevard, south of NC 54, the Franklin Street/Estes Drive intersection, the Homestead Road/Seawell School Road intersection, the Weaver Dairy Road/Erwin Road intersection, the Airport Drive/ I-40 ramps westbound intersection, and the NC 54/Barbee Chapel Road intersection. In review of other locations within the Town that exceeded the minimum threshold, those intersections tended to have isolated problems during only one time period.

Comparison with 2001 Mobility Report Card

- Most of the intersection levels of service are uncongested and unchanged from 2001 to 2003.
- 39 Intersections did not change level of service in the morning and afternoon peak hour.
- 11 intersections in the morning and 8 intersections in the afternoon saw a decline in level of service
- 14 intersections in the morning and 18 intersections in the afternoon saw an increase in level of service.

Compared to the 2001 data, most of the intersections are not changing significantly in level of congestion. Figures 13, 14 and 15 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 13 – Intersections with Major Changes in AM Peak Congestion

AM		2003		
		Uncongested	Moderate Congestion	Congested
2001	Uncongested	50	1	6
	Moderate Congestion	0	0	1
	Congested	1	3	2

Figure 14 – Intersections with Major Changes in Mid-day Peak Congestion

Mid-Day		2003		
		Uncongested	Moderate Congestion	Congested
2001	Uncongested	31	2	5
	Moderate Congestion	0	0	2
	Congested	0	2	1

Figure 15 – Intersections with Major Changes in PM Peak Congestion

PM		2003		
		Uncongested	Moderate Congestion	Congested
2001	Uncongested	47	1	4
	Moderate Congestion	2	4	0
	Congested	1	2	4

In the morning peak hour, 52 intersections stayed at the same level of congestion. Four intersections improved, while eight intersections became more congested. The mid-day peak hour results show that 32 intersections remained unchanged, two intersections became less congested, and nine intersections became worse. Fifty-five intersections, in the afternoon peak hour time, stayed at the same level of congestion. Five intersections improved and five intersections became worse.

Indicator:

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 both 2001 and 2003) are presented in Tables E and F. The 2003 average corridor speed is shown in green if the 2003 average speed is more than 5 mph faster than in 2001. If the 2003 average speed is more than 5 mph below the 2001 speed, then the 2003 speed is shown in red. It should be noted that these travel speeds include delays associated with the signals along the corridor.

Table E – AM Corridor Travel Speeds

Corridor	From	To	Length (miles)	Speed Limit (mph)	Average Travel Speed (mph)					
					Inbound			Outbound		
					2001	2003	Difference	2001	2003	Difference
Franklin St	I-40	Merritt Mill Rd	4.95	20 - 45	23.0	21.8	-1.2 (-5%)	23.1	23.5	+0.4 (+2%)
Fordham Blvd/ NC 54 Bypass	Franklin St/ US 15/501 Merger	Main St (Carrboro)	7.11	45	36.1	32.9	-3.2 (-9%)	35.7	45.9	+10.2 (+28%)
S Columbia St/ US 15/501 S	Smith Level Rd	Franklin St	3.74	35 – 45	23.6	17.9	-5.7 (-24%)	29.4	25.2	-4.2 (-14%)
Erwin Rd	I-40	US 15/501	1.40	35	30.2	20.7	-9.5 (-31%)	30.8	34.5	+3.7 (+12%)
Weaver Dairy Rd	Airport Rd	Erwin Rd	2.70	35	37.5	30.3	-7.2 (-19%)	36.7	36.7	0.0 (0%)
Airport Rd	I-40	Franklin St	4.16	35 – 45	23.8	25.6	+1.8 (+8%)	31.3	29.4	-1.9 (-6%)
Estes Dr	Greensboro St	Fordham Blvd	3.70	35	25.6	26.9	+1.3 (+5%)	24.9	29.1	+4.2 (+17%)
NC 54/Raleigh Rd/South Rd	I-40	S Columbia St	4.30	25 - 45	24.6	23.1	-1.5 (-6%)	23.5	30.7	+7.2 (+30%)

Table F – PM Corridor Travel Speeds

Corridor	From	To	Length (miles)	Speed Limit (mph)	Average Travel Speed (mph)					
					Inbound			Outbound		
					2001	2003	Difference	2001	2003	Difference
Franklin St	I-40	Merritt Mill Rd	4.95	20 - 45	21.2	17.0	-4.2 (-20%)	21.9	20.1	-1.8 (-8%)
Fordham Blvd/ NC 54 Bypass	Franklin St/ US 15/501 Merger	Main St (Carrboro)	7.11	45	33.8	36.3	+2.5 (+7%)	35.5	37.5	+2.0 (+6%)
S Columbia St/ US 15/501 S	Smith Level Rd	Franklin St	3.74	35 – 45	28.4	20.7	-7.7 (-27%)	23.6	24.2	+0.6 (+3%)
Erwin Rd	I-40	US 15/501	1.40	35	30.9	30.7	-0.2 (-1%)	30.5	30.2	-0.3 (-1%)
Weaver Dairy Rd	Airport Rd	Erwin Rd	2.70	35	35.9	34.1	-1.8 (-5%)	36.6	35.5	-1.1 (-3%)
Airport Rd	I-40	Franklin St	4.16	35 – 45	23.6	27.5	+3.9 (+17%)	27.8	23.9	-3.9 (-14%)
Estes Dr	Greensboro St	Fordham Blvd	3.70	35	25.1	29.9	+4.8 (+19%)	19.5	27.6	+8.1 (+41%)
NC 54/Raleigh Rd/South Rd	I-40	S Columbia St	4.30	25 - 45	28.6	29.5	+0.9 (+3%)	29.4	29.9	+0.5 (+2%)

Figures 16 and 17 summarize the travel time for direction and time period for each roadway corridor segment. Time is shown as minutes:seconds (e.g., 4:20 is 4 minutes and 20 seconds). Figure 16 shows this information for the Town of Chapel Hill and Figure 17 shows the segments in the Town of Carrboro.

Figures 18, 19, 20, 21, 22 and 23 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 slightly 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 yellow, and segments with average speeds over 5 mph over the speed limit are shown in green. For a more complete picture of the region's conditions, travel time for the Town of Carrboro is also included on these maps.

Figure 24 shows roadway segments that had average travel times significantly higher than the speed limit (equal to or above 15mph over speed limit) for any time period or direction. Segments with average travel time significantly higher than the speed limit for one time period/direction are shown in orange and segments that significantly exceeded the speed limit for two time periods/directions are shown in red.

Figures 25, 26, 27, 28, 29 and 30 show the relative change in average travel time from 2001. The line widths are again used to show relative differences in 2003 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 2001. Red segments indicate that the 2003 average speed is more than 5 mph slower than the 2001 average speed. Yellow indicates that the 2003 average speed is within 5 mph of the 2001 average speed. Green indicates that the 2003 average speed is more than 5 mph over the 2001 average speed. Since Carrboro travel time data was not collected in 2001, comparisons for Carrboro roadways are not shown on these maps.

Figure 16 – Chapel Hill Auto Travel Time

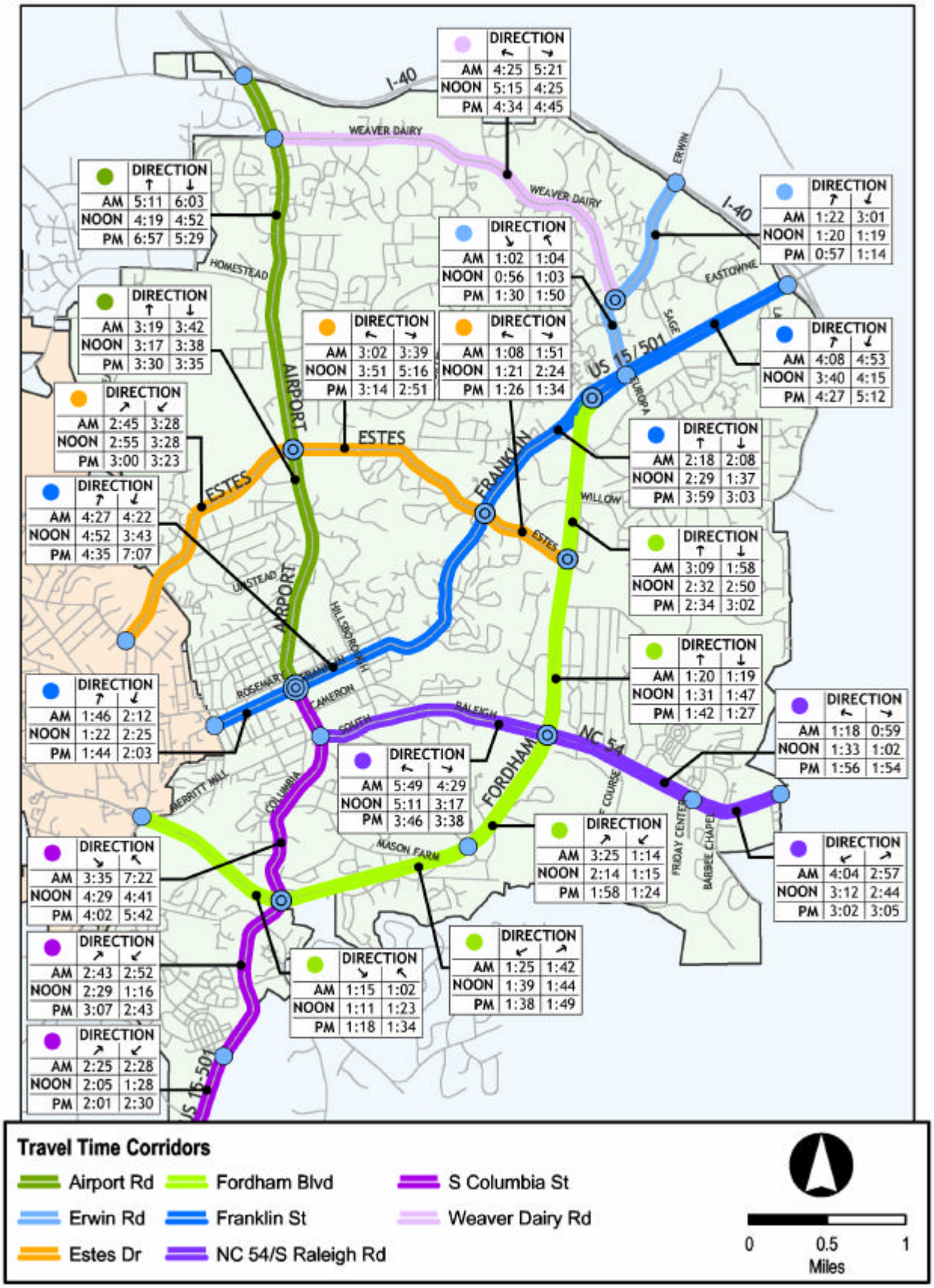


Figure 17 – Carrboro Auto Travel Time

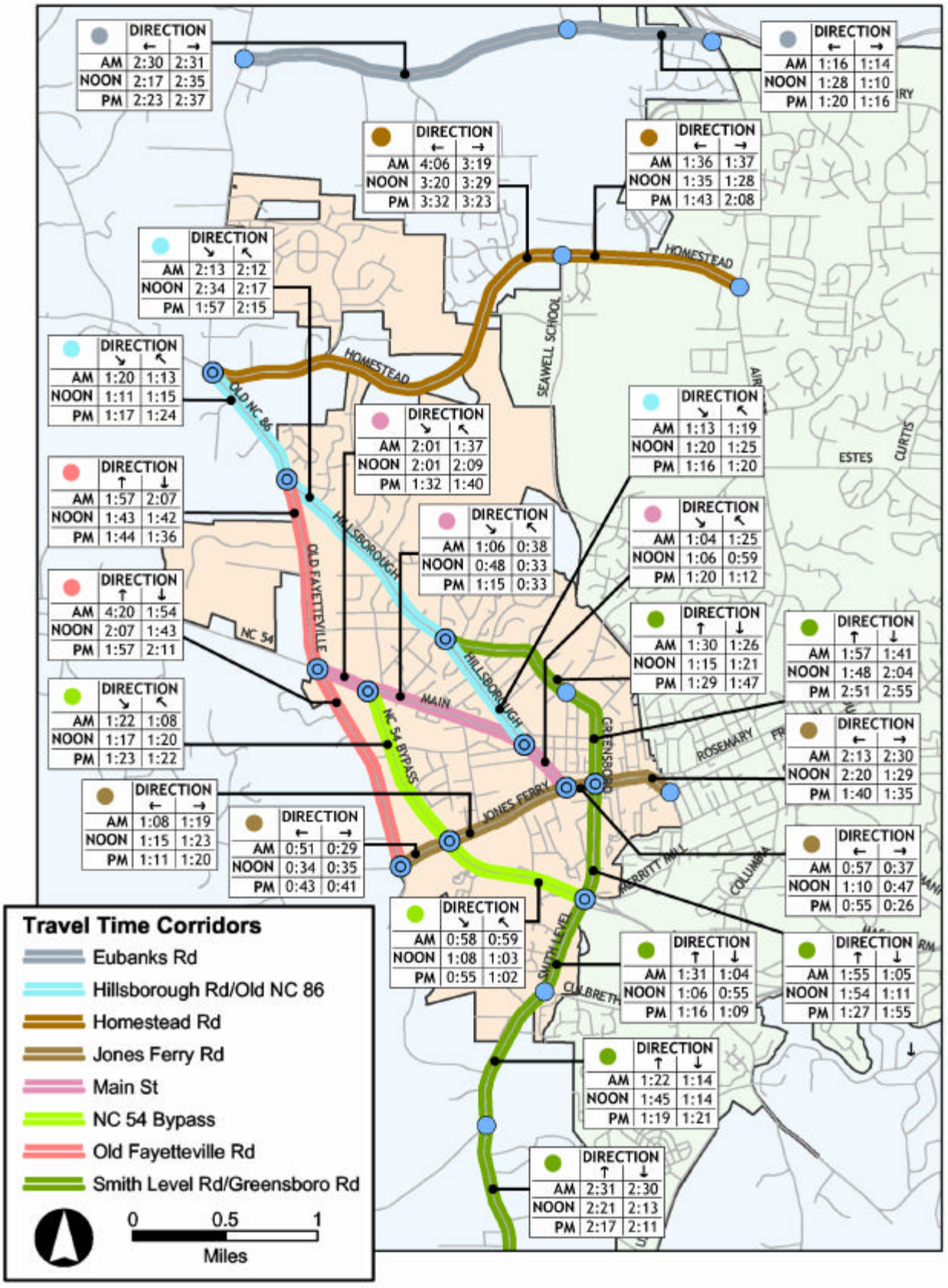


Figure 18 –Average AM Inbound Speed Compared with Speed Limit

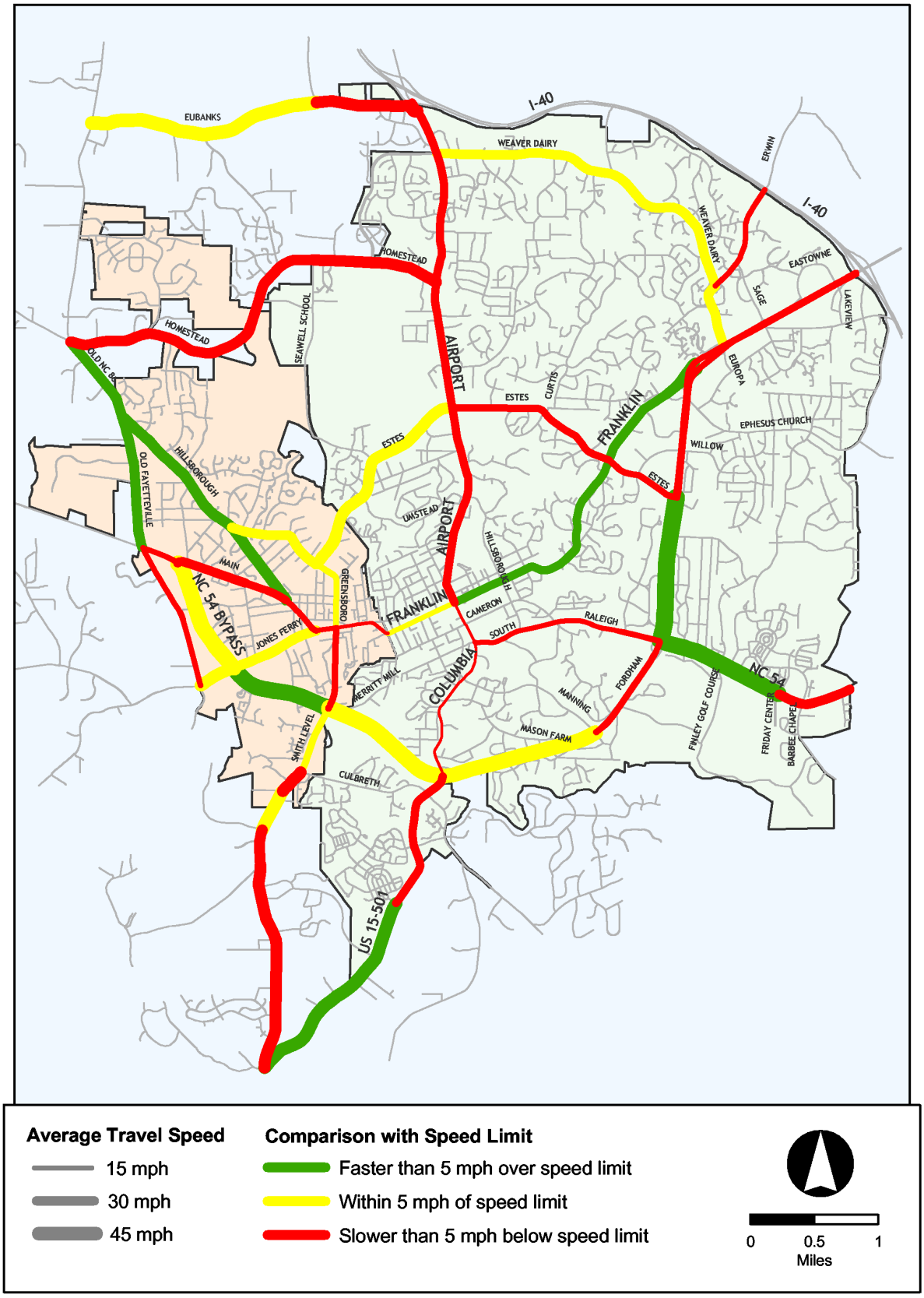


Figure 19 – Average AM Outbound Speed Compared with Speed Limit

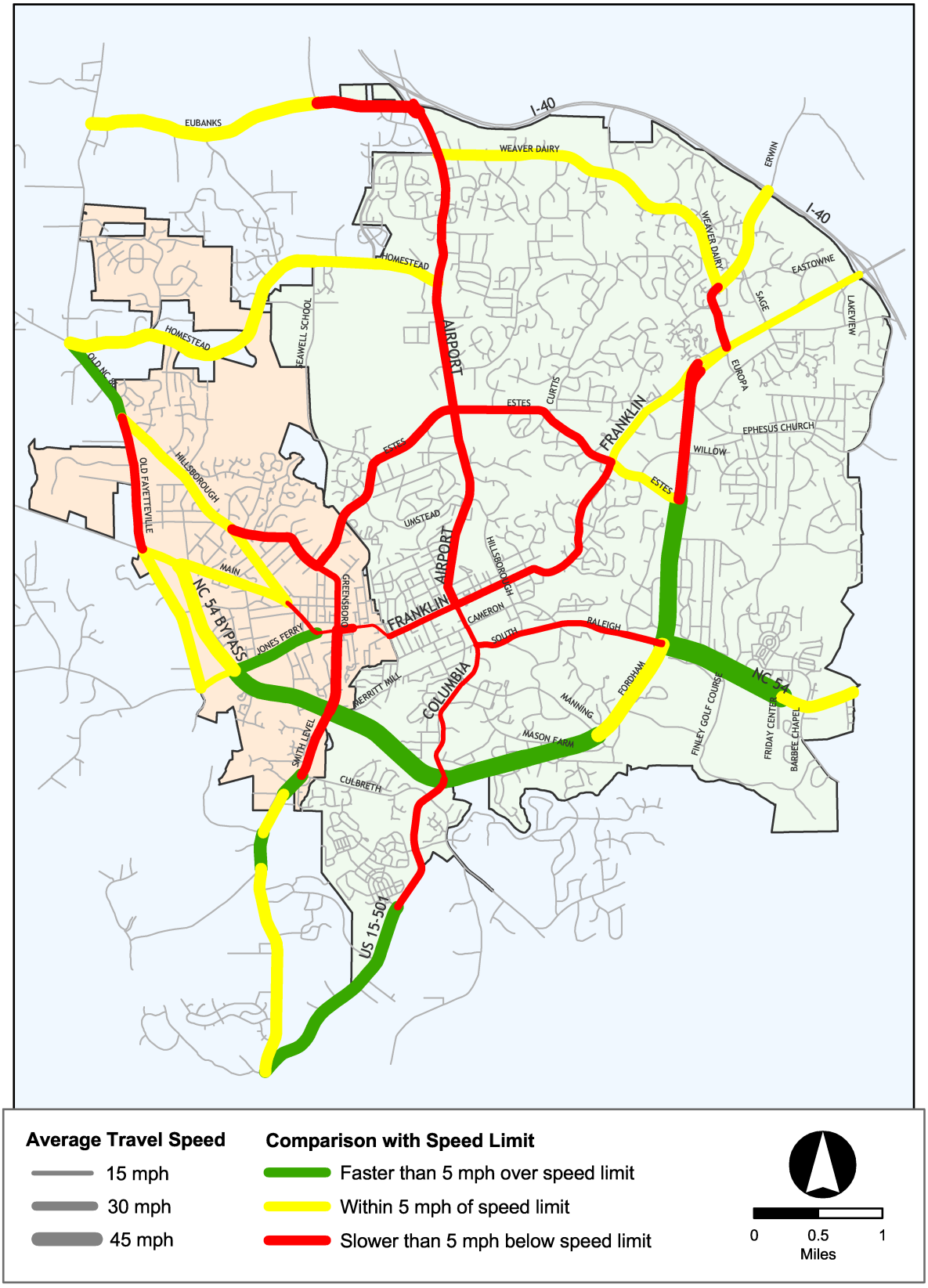


Figure 20 – Average Mid-Day Inbound Speed Compared with Speed Limit

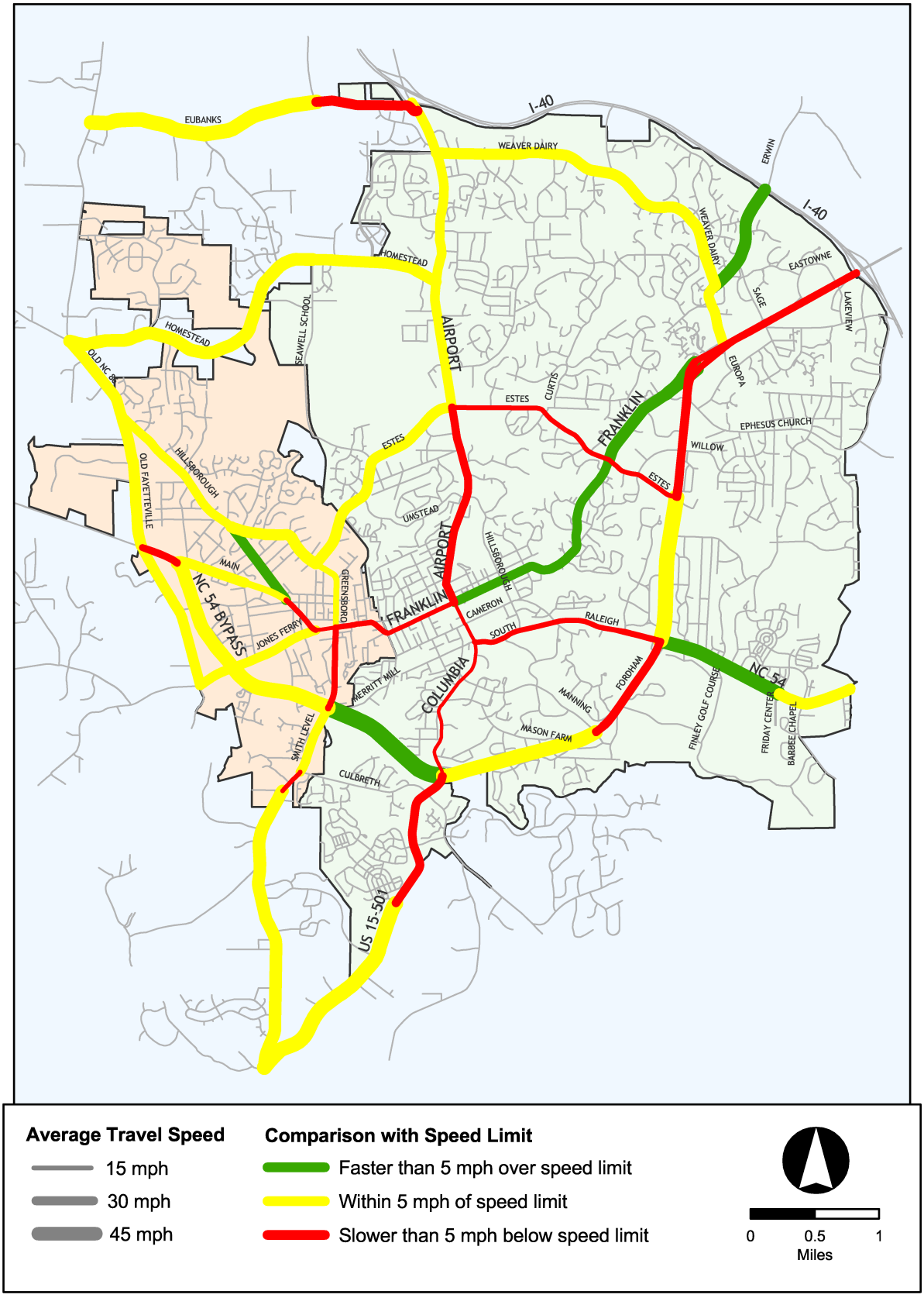


Figure 21 – Average Mid-Day Outbound Speed Compared with Speed Limit

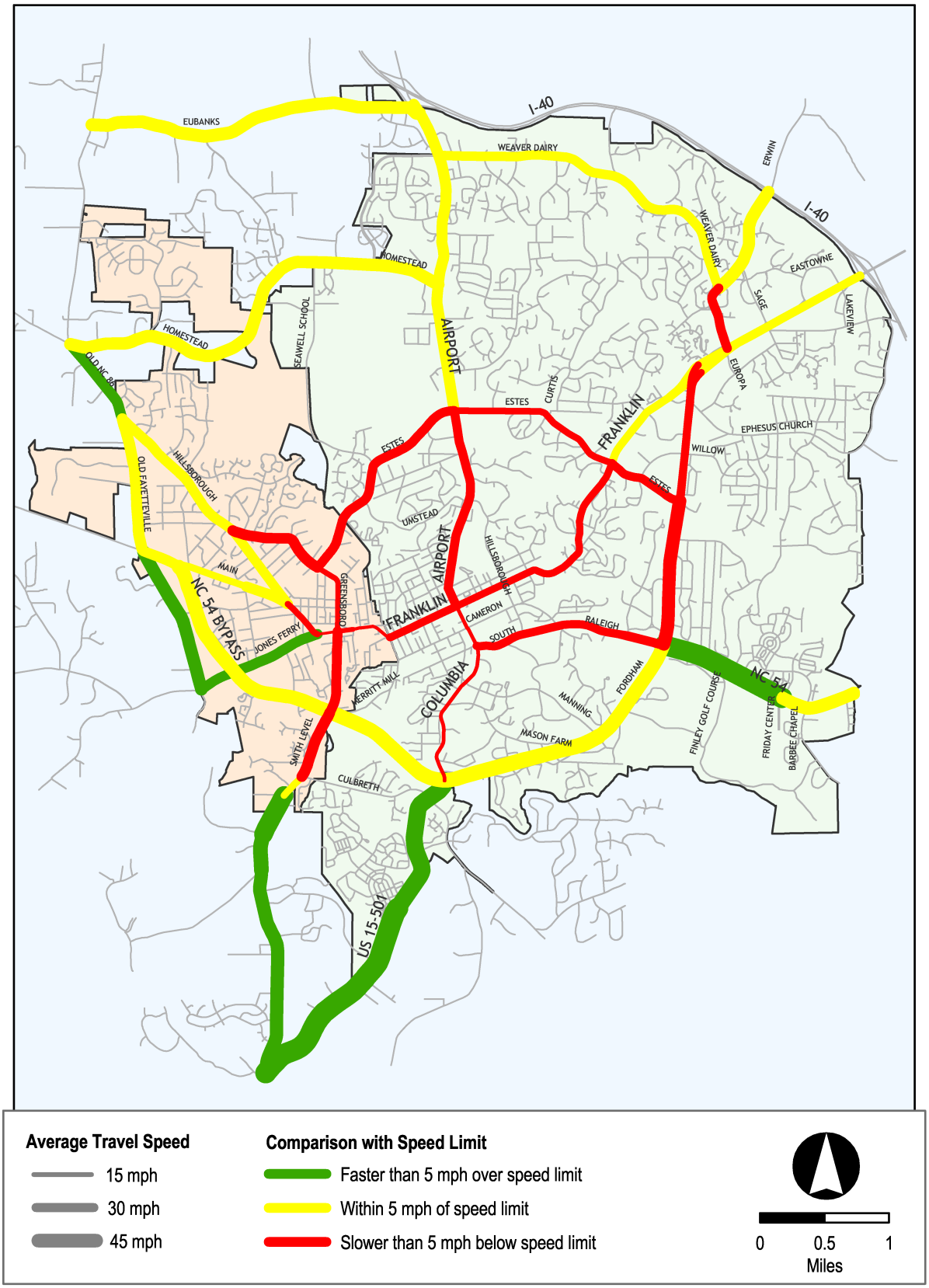


Figure 22 – Average PM Inbound Speed Compared with Speed Limit

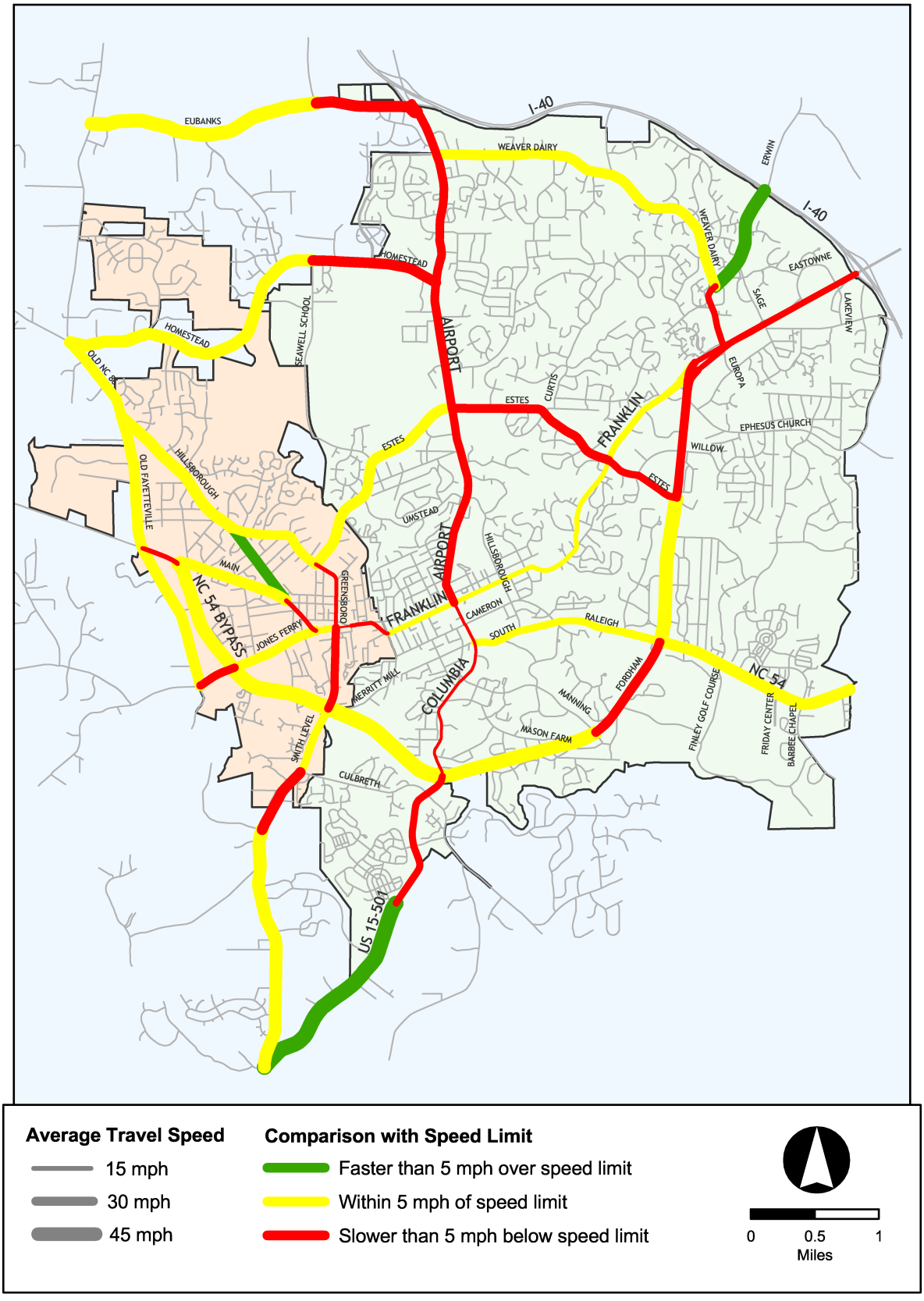


Figure 23 – Average PM Outbound Speed Compared with Speed Limit

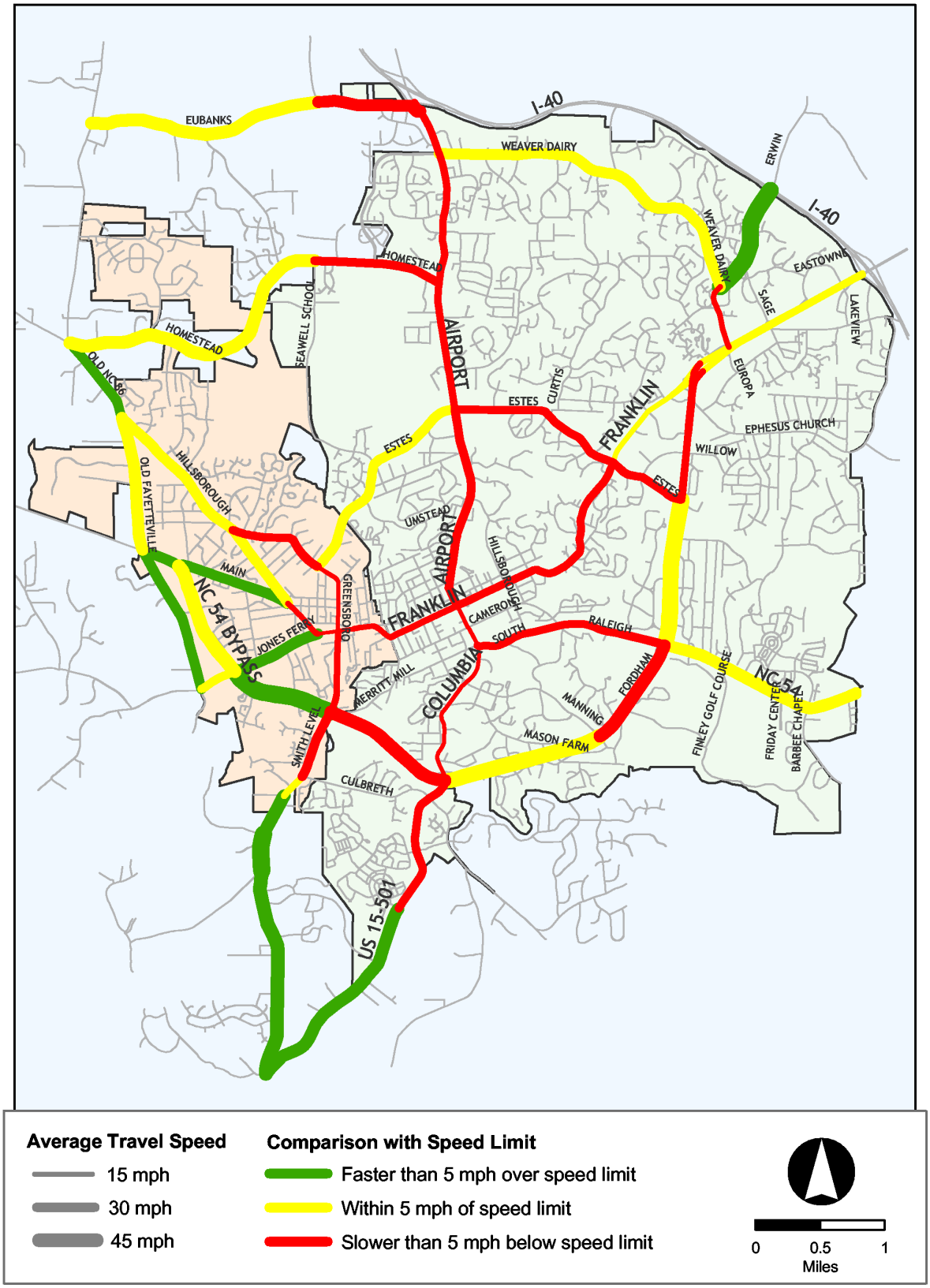
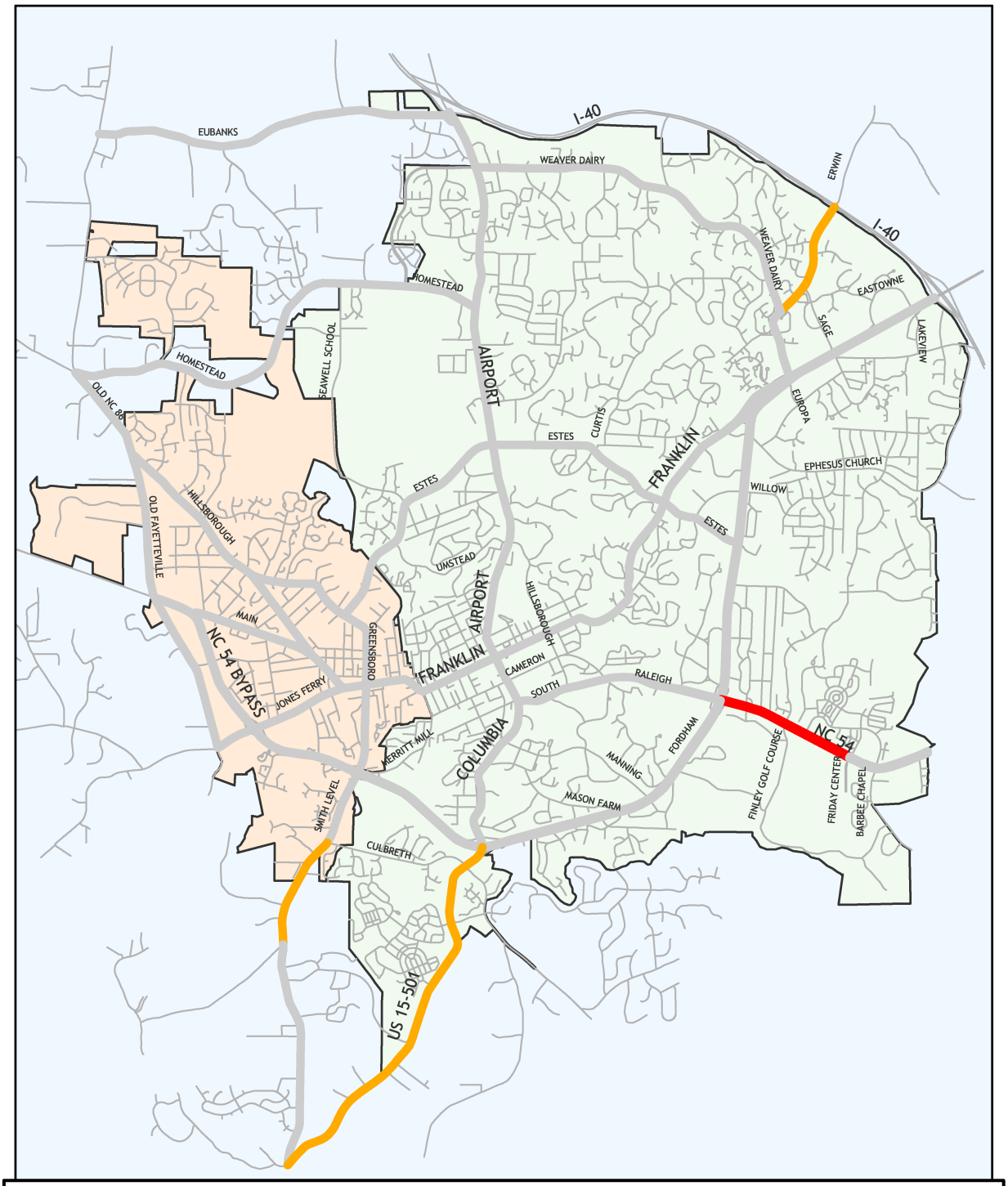


Figure 24 – Average Speed in Excess of 15 mph over Speed Limit



Legend

Average Travel Speed Greater than 15mph over Speed Limit

- For 1 Time Period/Direction
- For 2 Time Periods/Directions

0 0.5 1
Miles

Figure 25 – Average AM Inbound Speed Compared with 2001

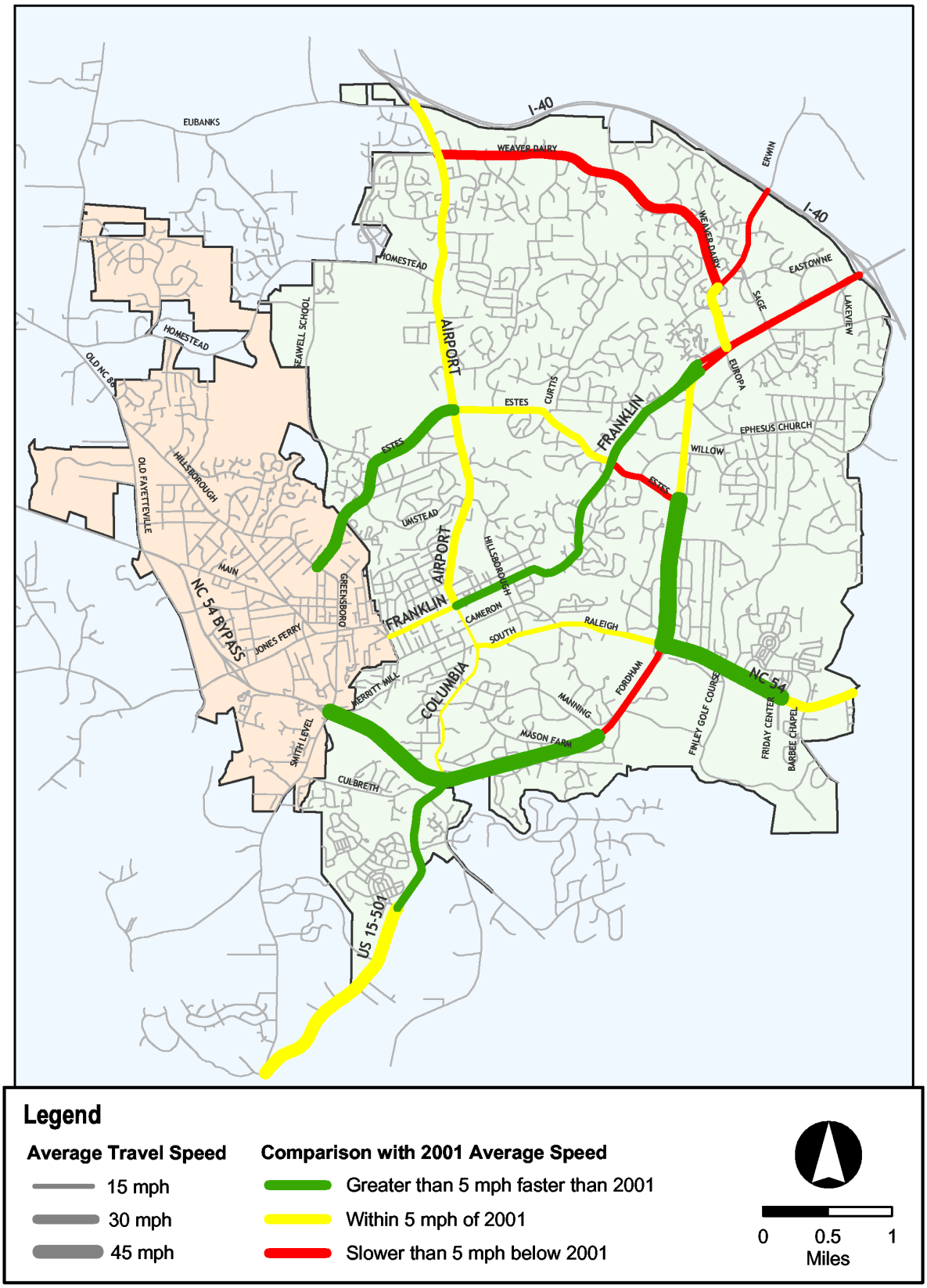


Figure 26 – Average AM Outbound Speed Compared with 2001

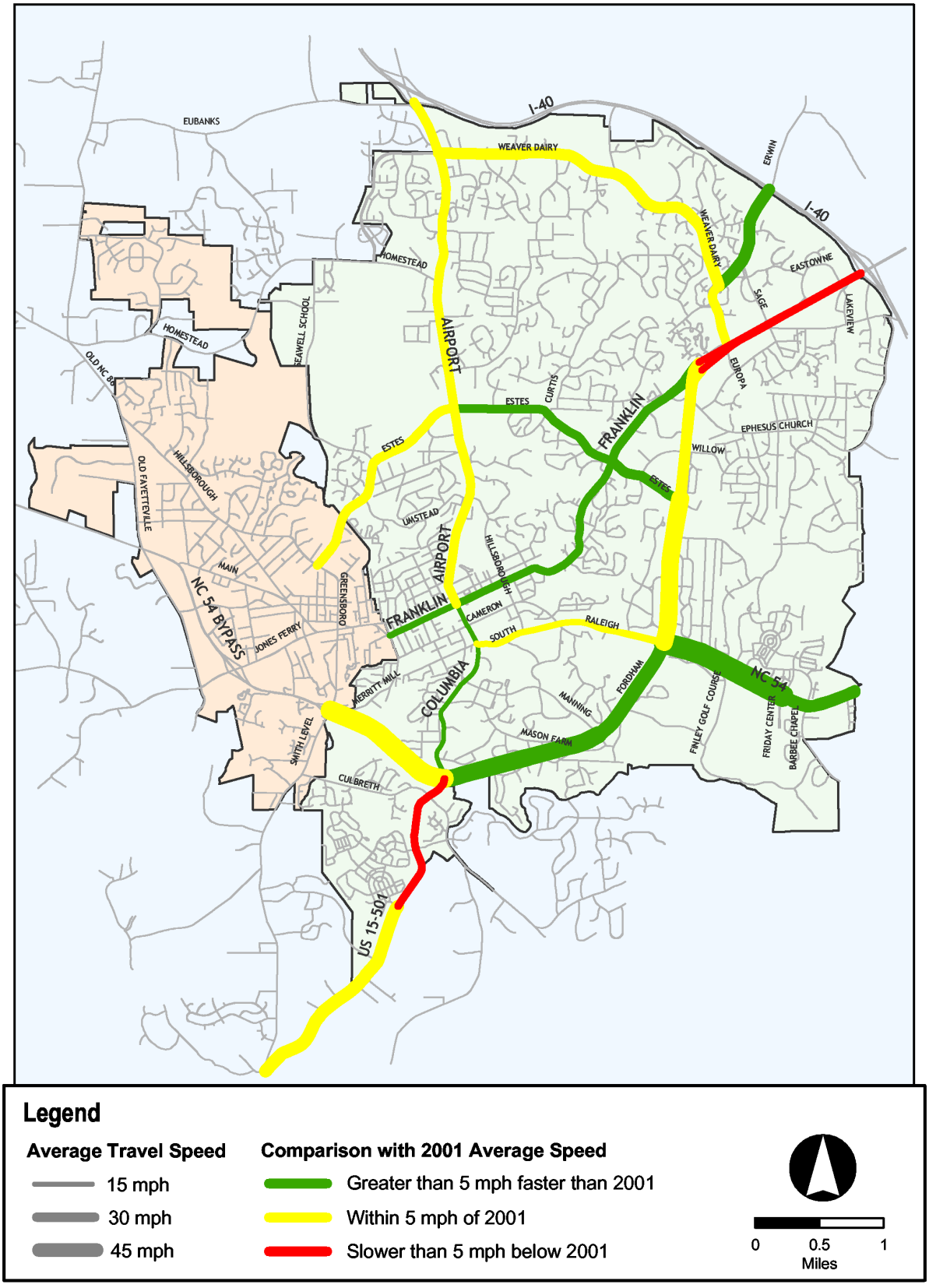


Figure 27 – Average Mid-Day Inbound Speed Compared with 2001

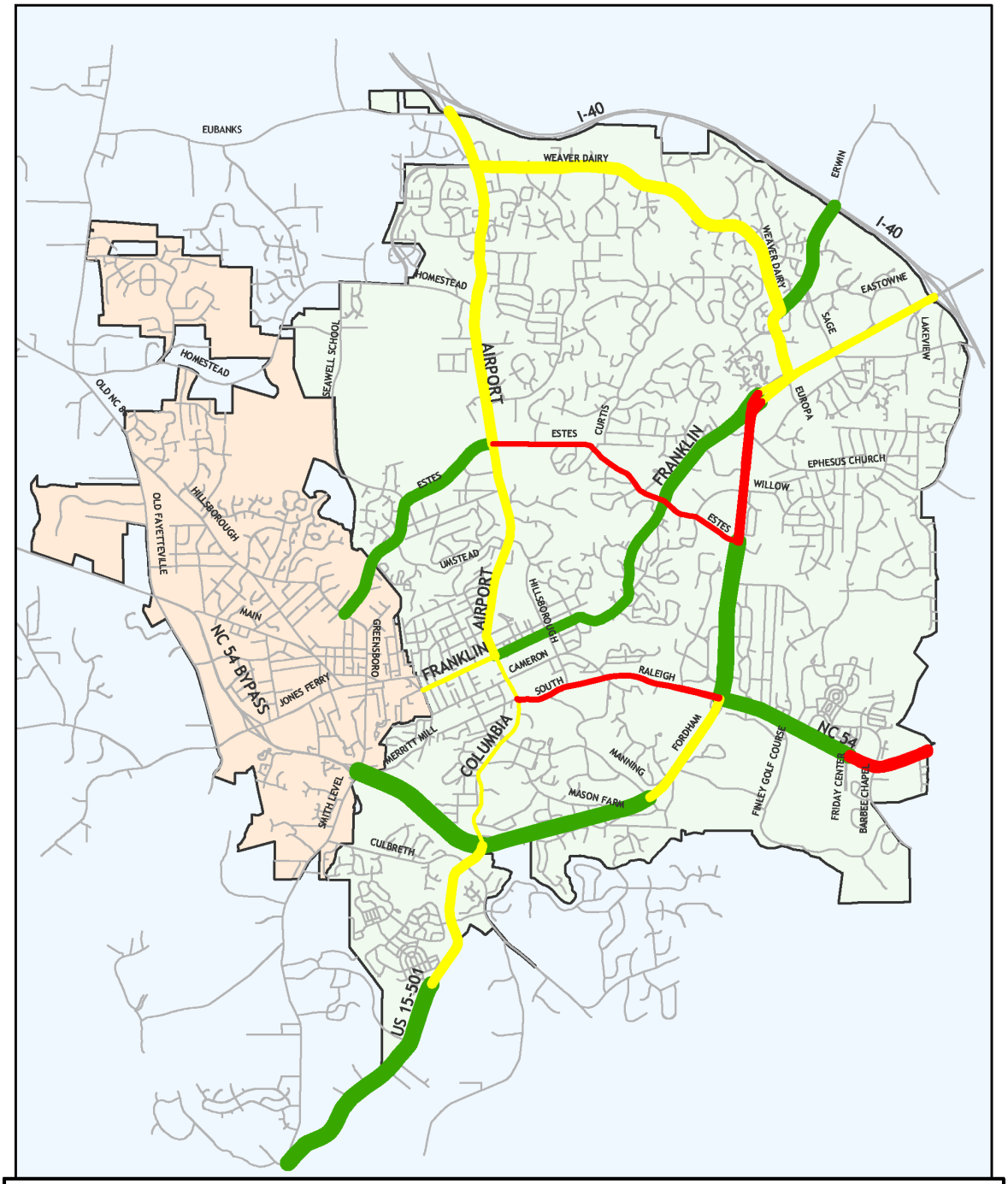


Figure 28 – Average Mid-Day Outbound Speed Compared with 2001

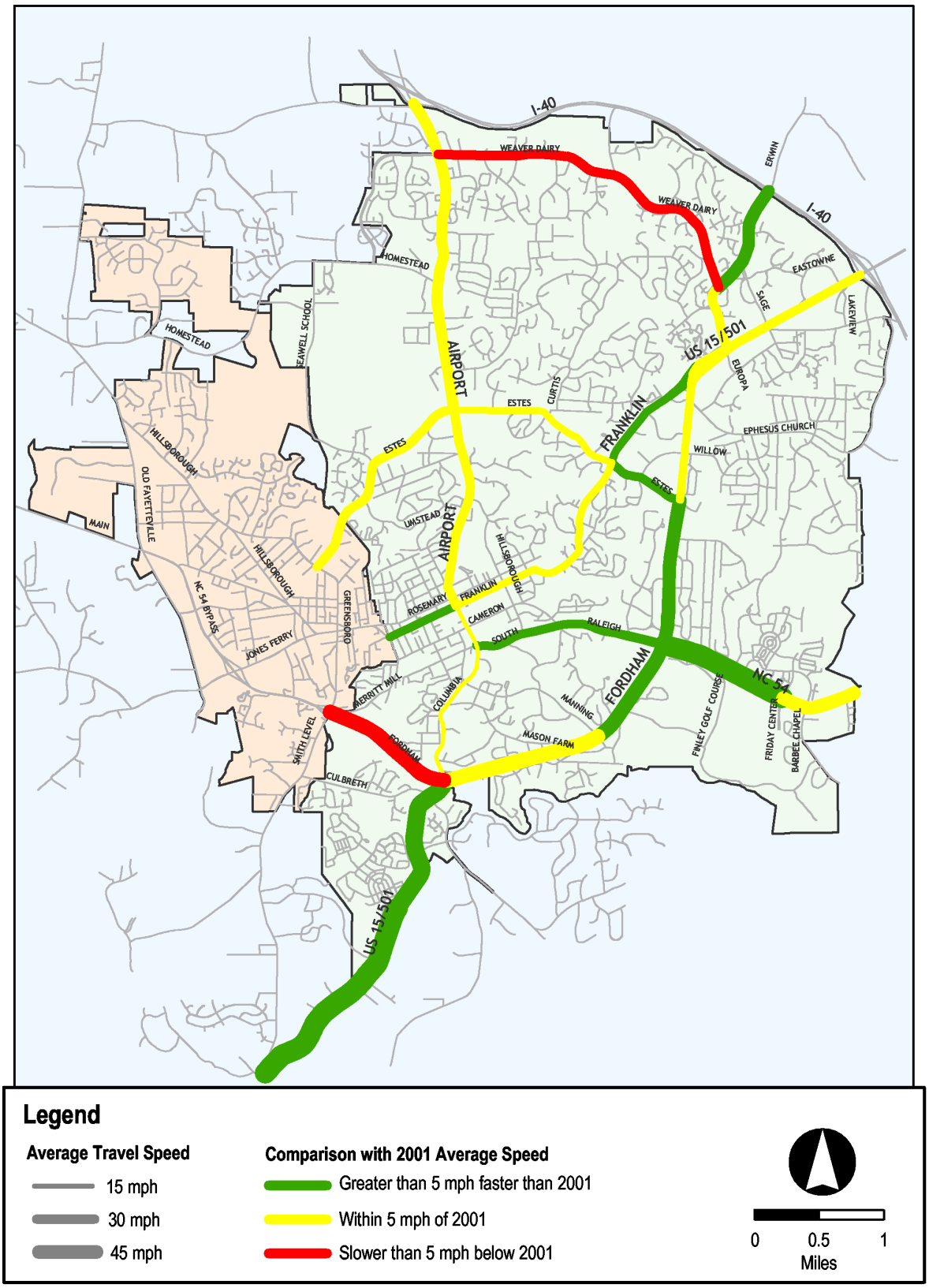


Figure 29 – Average PM Inbound Speed Compared with 2001

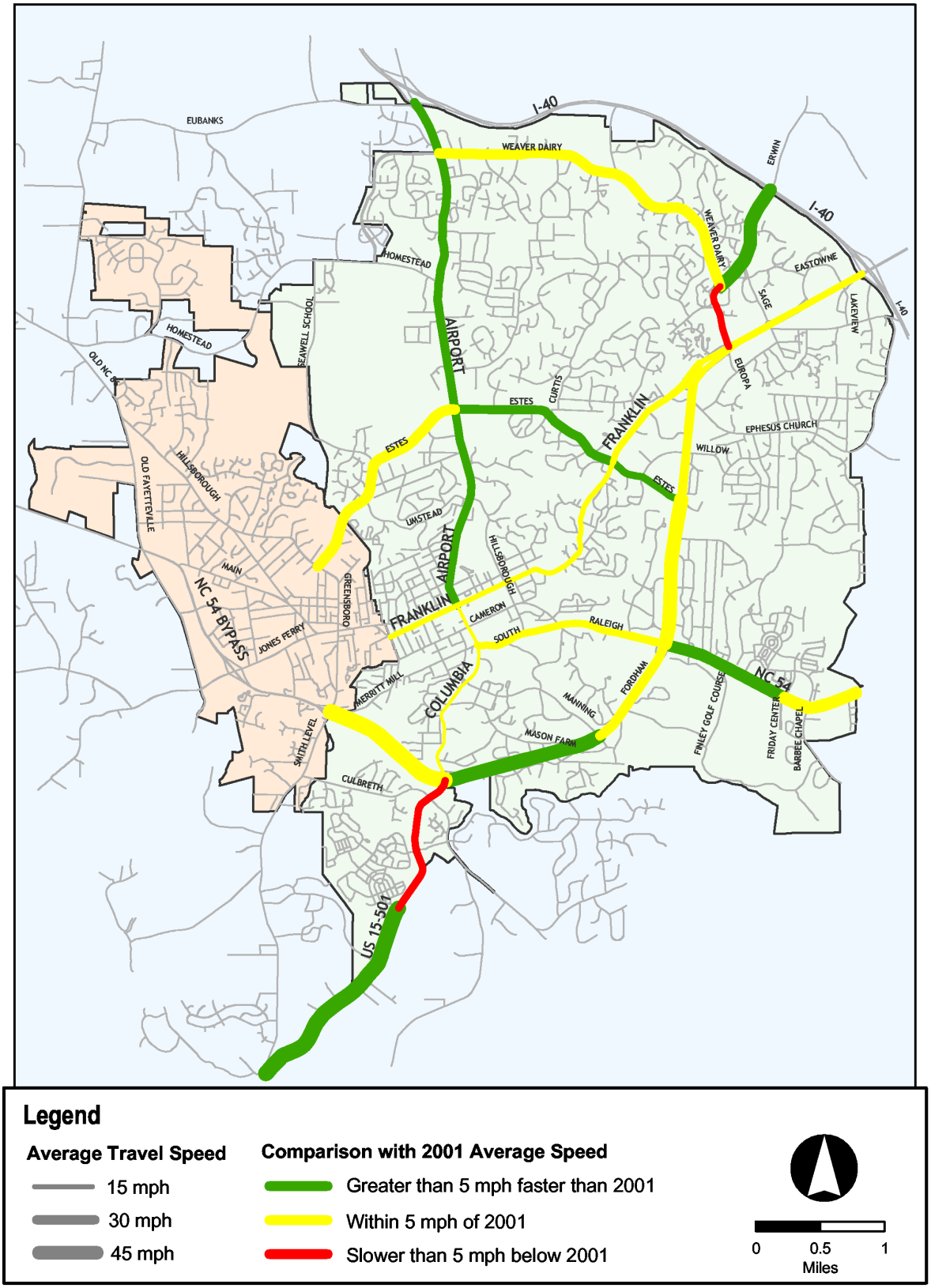
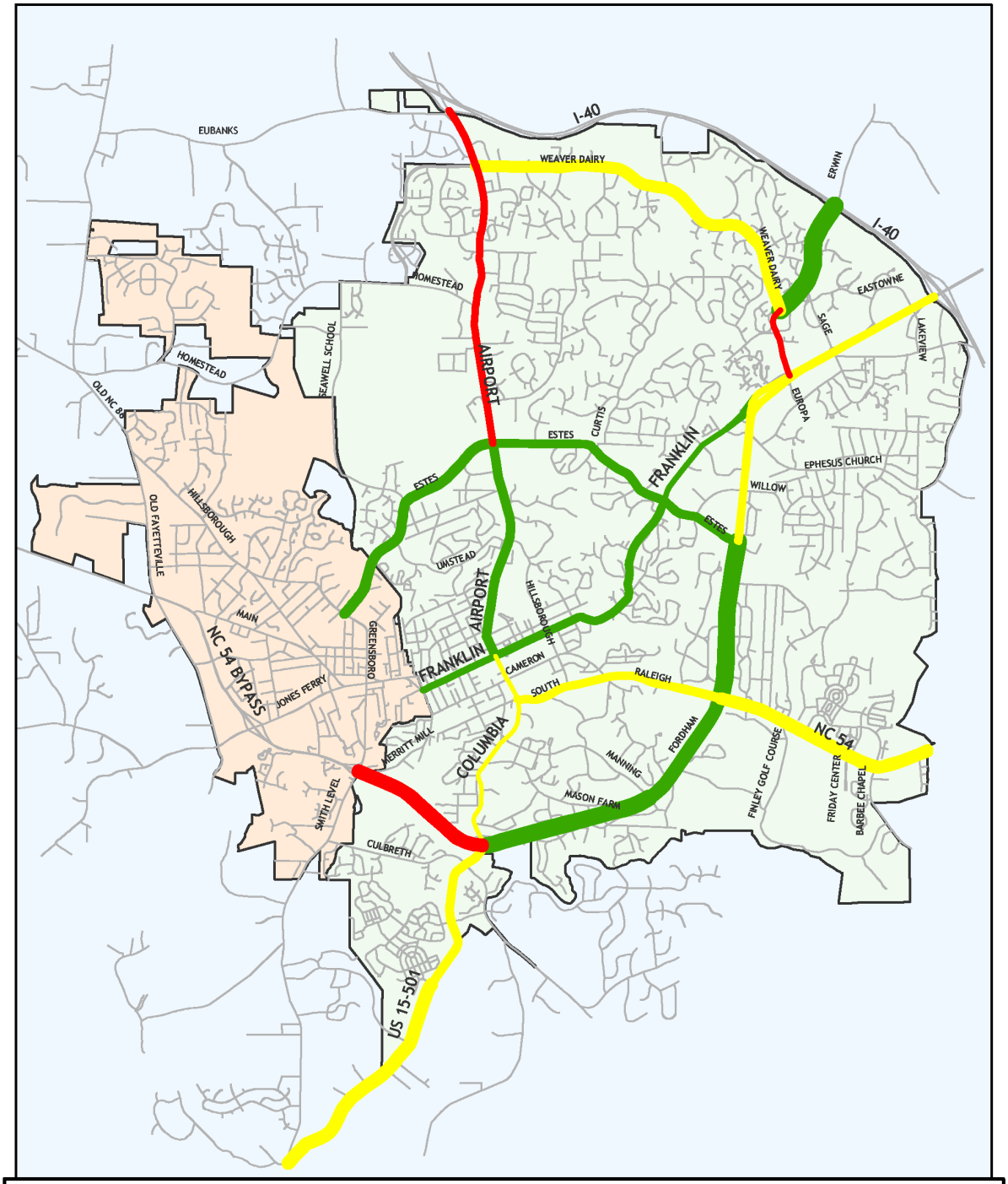


Figure 30 – Average PM Outbound Speed Compared with 2001



Legend

Average Travel Speed

- 15 mph
- 30 mph
- 45 mph

Comparison with 2001 Average Speed

- Greater than 5 mph faster than 2001
- Within 5 mph of 2001
- Slower than 5 mph below 2001

0 0.5 1
Miles

Findings and Conclusions

The morning peak average speed of the 52 roadway segments was 26mph in the inbound direction and 31mph in the outbound direction. Average speed along the corridors ranged from 7mph to 53mph in the inbound direction and from 10mph to 65mph in the outbound direction.

2001 Mobility Report Card

Travel times tend to be longer and overall travel speed lower for inbound routes during the AM and outbound routes during the PM, reflecting peak hour directional travel.

Peak hour travel times tend to be longer during the PM than during the AM and noon periods.

The mid-day peak inbound and outbound average speeds of 29 mph and 31 mph, respectively, were much closer than that found in the morning. Mid-day average speeds ranged from 8 mph to 52 mph inbound, and from 11 mph to 69 mph outbound.

The afternoon peak had an average speed of 28 mph in both the inbound and outbound directions. Average speeds ranged from 6 mph to 50 mph inbound and from 11 mph to 56 mph outbound.

Looking at the sum of travel time in both directions for all segments shows very close numbers for both morning and afternoon. The total travel time of all segments in the morning is 3 hours and 37 minutes and in the afternoon the total is 3 hours and 39 minutes. When the total travel time of all segments is summed only for those segments surveyed in 2001, a decrease in travel time and resultant increase in average speed can be seen for the Town as a whole. The total travel time of both directions for all segments surveyed in 2001 dropped from 2 hours and 33 minutes to 2 hours and 15 minutes in the morning peak hour from 2001 to 2003. Similarly, the total time in the afternoon peak hour dropped from 2 hours and 50 minutes in 2001 to 2 hours and 18 minutes in 2003. Average speeds for all corridors surveyed in the Town in 2001 have also increased. The inbound direction saw a modest average speed increase: from 20 mph to 21 mph in the morning and from 19 mph to 21 mph in the afternoon. The outbound direction saw a greater increase in average speed from 2001 to 2003: from 22 mph to 26 mph in the morning and from 18 mph to 23 mph in the afternoon.

When the average speeds are compared to the speed limit, it's readily apparent that the core of the Town has much 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 much closer to the allowable speed. The exceptions to this being the primary access points to I-40. Airport Road and US 15/501 had much slower speeds, even in outlying areas, than the speed limit allows. However, the NC 54/I-40 ramps were closed during the survey, forcing additional traffic to use alternative access points to I-40 (such as US 15/501) and the increased congestion thereby lowered the average travel speed.

Several roadway segments in the Town exhibited average travel speeds well in excess of the posted speed limit in one or more time period/direction combinations. Sections of US 15/501 South and Erwin Road in Chapel Hill and parts of Smith Level Road in Carrboro had average travel speeds over 15 mph over the posted speed limit in one time period/direction. NC 54 between Fordham Boulevard and Friday Center Drive experienced excessive average travel speeds for two time periods/directions. The excessive

speed along these stretches of road is particularly concerning, not only because of the implications to automobile safety, but also because the excessive travel speeds highly discourage bicycle and pedestrian use of the roadways and also have a significant impact on pedestrian and bicycle safety.

There are a variety of methods that can be used to reduce travel speed and/or increase bicycle safety. Some of these methods include more traffic enforcement, geometric changes to the roadway to reduce travel speed, and geometric changes to the roadway to further separate bicycles and pedestrians from the vehicle travel lanes. The Town has recently completed the NC 86/Airport Road Bicycle and Pedestrian Safety Study, which includes a detailed evaluation of bicycle and pedestrian activity in the corridor between I-40 and the Downtown. The Study also includes recommendations on improvements within the corridor to increase pedestrian and bicycle safety. This Study could be used as a guide to evaluating and implementing pedestrian and bicycle improvements along other corridors in Town.

When comparing the travel times to 2001, it can be seen that the vast majority of roadway segments fared about the same (within 5 mph average speed) as in 2001 or improved between 2001 and 2003. The primary exceptions to this were stretches of US 15/501, especially north of the Franklin Street merger and Weaver Dairy Road. The remaining segments with longer travel times than in 2001 were isolated to only one direction and time period in which they were longer than in 2001. Franklin Street stands out as the major segment with improved travel times for the most time periods and directions. Fordham Boulevard between US 15/501 South and Manning Street improved in both directions in the morning peak hour. During the mid-day peak hour, US 15/501 South south of Main Street, Fordham Boulevard between NC 54 and Estes Drive and NC 54 between Fordham Boulevard and Friday Center Drive improved in both directions. In the afternoon peak hour, Airport Road between Estes Drive and Franklin Street, Estes Drive between Airport Road and Fordham Boulevard, Fordham Boulevard between US 15/501 South and Manning Drive, and Erwin Road between I-40 and Weaver Dairy Road improved in both directions.

Indicator:

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.

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 have primarily been added in the Meadowmont development.

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 constructed prior to 2001 and those sidewalks constructed since then are presented in Figure 31. Figure 32 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.

Figure 31 – Pedestrian Facilities

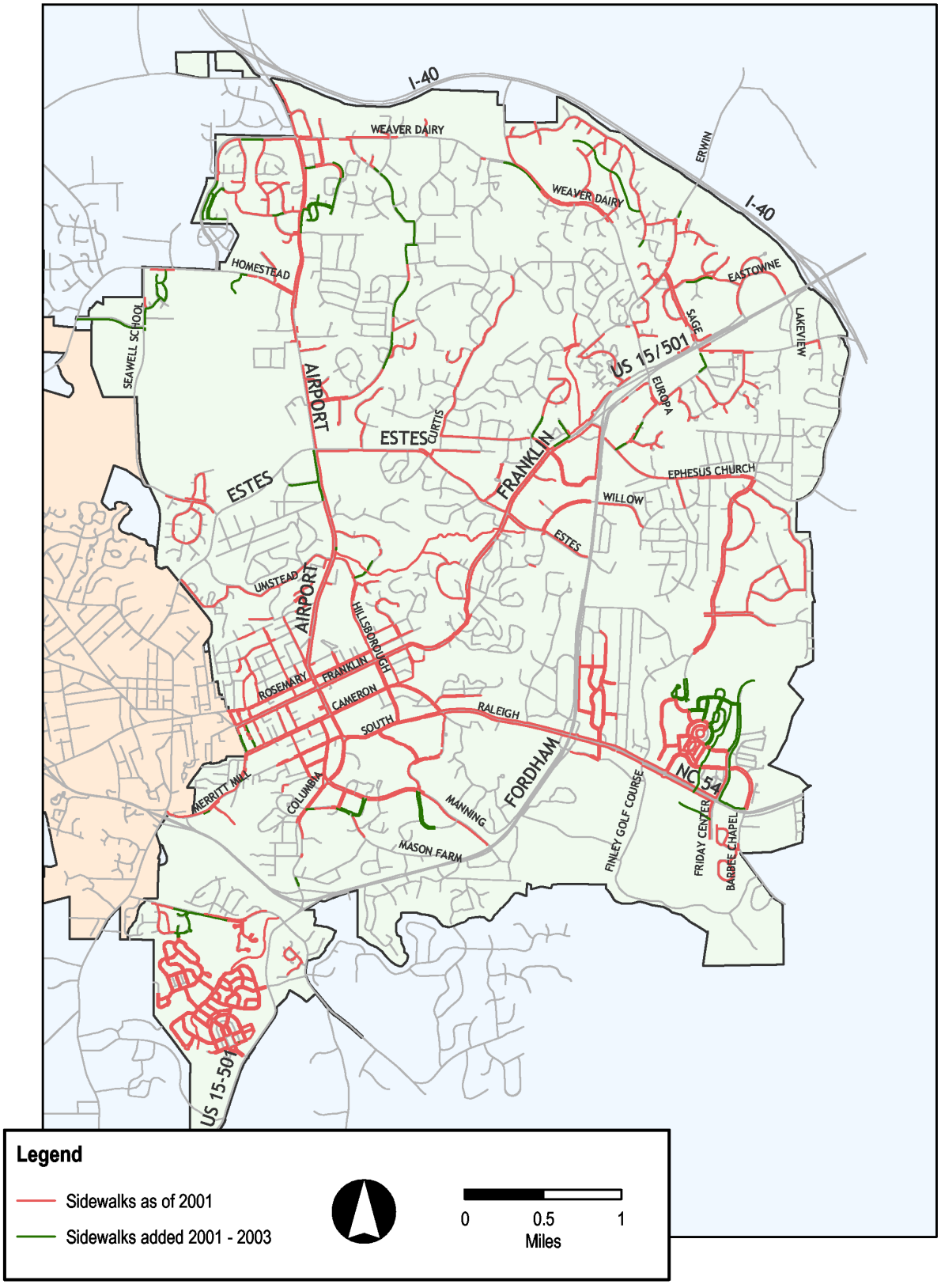
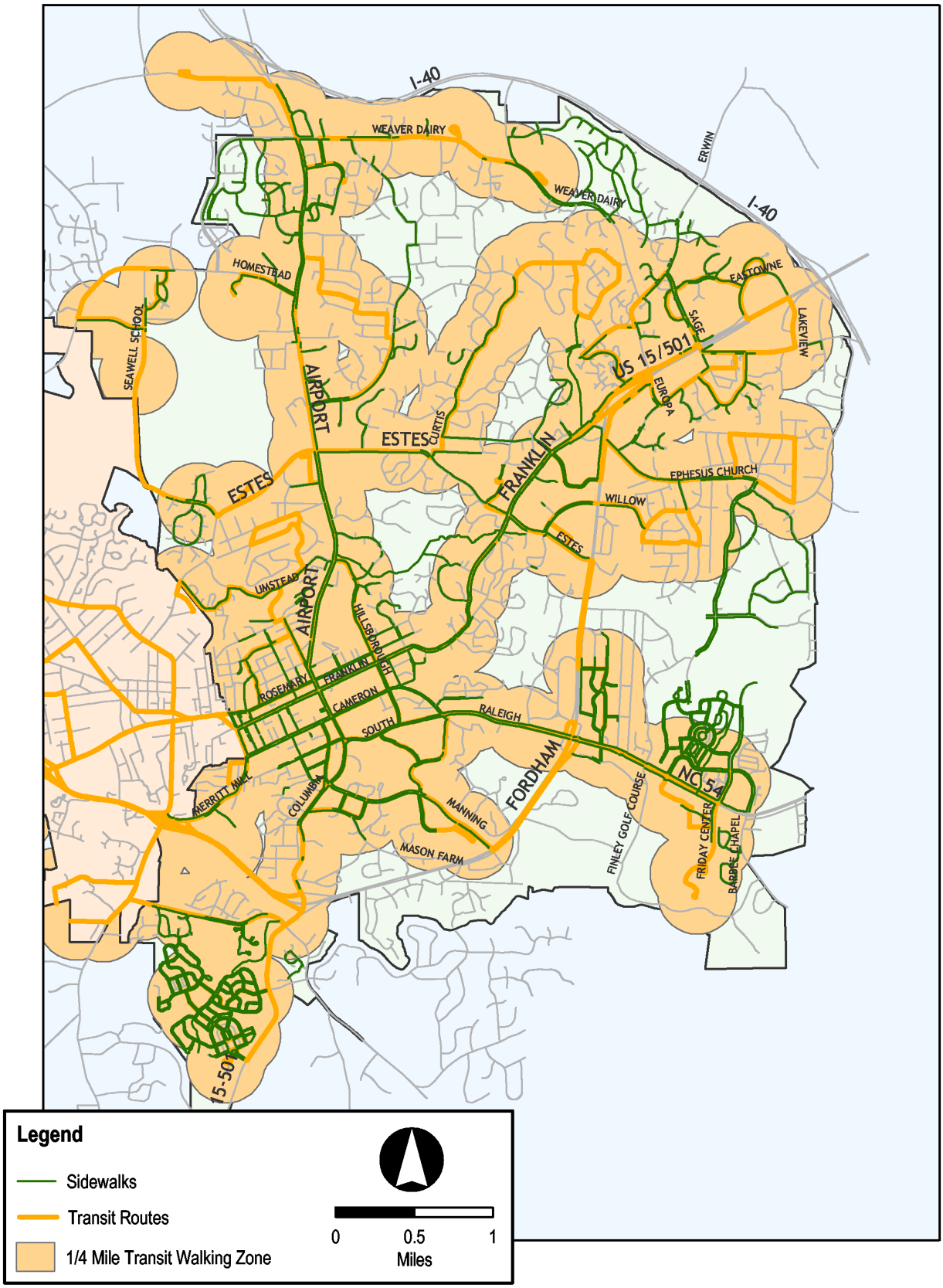


Figure 32 – Pedestrian Facilities Within ¼ Mile of Transit Service



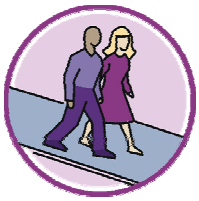
Findings and Conclusions

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 Airport Road, 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 Airport Road and the High School.

Approximately 107 miles of sidewalk existed in the Town in 2001. To that total, approximately 15 miles, or 14%, has been added. Much of the new sidewalk construction since 2001 has occurred in the Meadowmont area. Additionally, sidewalks have been added to most of the length of Kingston Drive and Piney Mountain Drive. The remaining new sidewalk construction is distributed around the Town, with some large areas of new sidewalk on campus, in areas east and west of north Airport Road, and in areas near the Franklin Street and US 15/501 merger.

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. As presented in Figure 32, and consistent with the findings in 2001, much of the Town's residential area that is within a typical ¼-mile transit walking area is not served by sidewalks. This 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 10%. Approximately 64% of all new sidewalk construction since 2001 has occurred inside the transit service area.

It is important that new sidewalk construction continue to be focused inside the transit service area. This is especially imperative with the transit service improvements being made and the increases in ridership.



Indicator:

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.

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 have 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.

2000 Chapel Hill Comprehensive Plan Action Item

Develop and adopt procedures for evaluating performance of pedestrian facilities.

The original Mobility Report Card developed a system for collecting pedestrian activity data. This update continues that procedure and enhances it through additional locations as well as Saturday counts at certain locations to better understand recreational activity.

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 81 locations throughout the Town with 11 additional counts being performed on bikeways and greenways on Saturday in order to include high recreational use areas. These locations are presented in Figure 33. 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.

Results

The 12-hour pedestrian counts for the 92 counts ranged from a low of three (Estes Drive at Horace Williams Airport driveway) to a high of 24,206 (South Road at the Bell Tower on the UNC campus). These counts are presented graphically in Figure 34 and in table form in Table G and include supplemental counts from the University of North Carolina. Figure 34 is a map showing the 2003 Pedestrian count and the relative change from 2001. The size of the circle is proportional to the 12-hour count volume. Note that due to the very

high count volumes in the downtown and campus areas, the inset area uses a different circle scale. The color indicates relative change from 2001. Locations with a greater than 10% increase over 2001 counts are shown in green. Locations with 2003 counts within 10% of 2001 are shown in yellow, and locations with more than 10% decrease from 2001 to 2003 are shown in red. Both the 2001 and 2003 pedestrian counts are also presented in chart form in Figure 35.

Figure 33 – Pedestrian Count Locations and Volumes

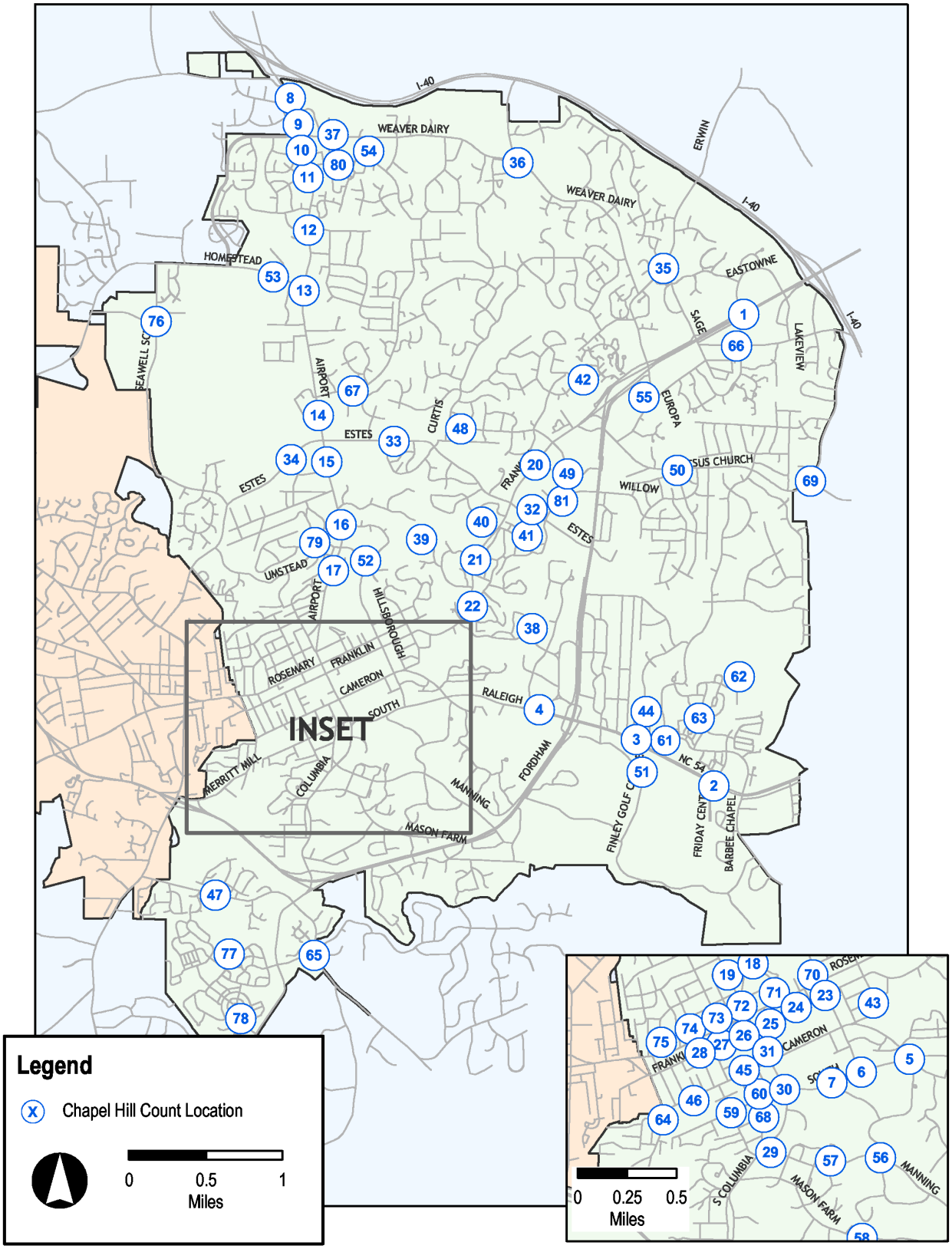


Table G – 12-Hour Pedestrian Counts

		Count Location	2001	2003
US 15/501	1	US 15-501/West Eastowne Dr	n/a	86
NC 54/Raleigh Rd/ South Rd	2	NC 54 Bike Path/Meadowmont Ln	n/a	212
	2	NC 54 Bike Path/Meadowmont Ln (Saturday)	n/a	298
	3	NC 54/Hamilton Rd	308	495
	4	Raleigh Rd/Greenwood Rd	n/a	180
	5	South Rd/Country Club Rd	1,032	1,484
	6	South Rd/Raleigh St	5,645	4,682
	7	South Rd/The Bell Tower	12,765	24,206
Airport Rd/Columbia St	8	Airport Rd/Perkins Rd	n/a	77
	9	Airport Rd/Northwood Dr	n/a	352
	10	Airport Rd/Weaver Dairy Rd	n/a	99
	11	Airport Rd/Westminster Dr	n/a	112
	12	Airport Rd/Stateside Dr	117	121
	13	Homestead Rd/Airport Rd	n/a	306
	14	Airport Rd/Shadow Dr	269	319
	15	Airport Rd/YMCA Driveway	91	129
	16	Airport Rd/Bolin Creek Greenway	n/a	405
	16	Airport Rd/Bolin Creek Greenway (Saturday)	n/a	519
	17	Airport Rd south of Hillsborough St	n/a	737
	18	Airport Rd/Stephens St	856	463
	19	Columbia St/Town Hall	353	1,083
Franklin St	20	Franklin St/Franklin Woods Bus Stop	183	564
	21	Franklin St/Elizabeth St	n/a	261
	22	Franklin St/Roosevelt St	291	121
	23	Franklin St/Hillsborough St/Raleigh St	1,368	1,865
	24	Franklin St/Henderson St	6,670	7,178
	25	Franklin St/Coffee Shop	8,890	9,709
	26	Franklin St/Columbia St	9,635	10,123
	27	Franklin St/Church St	2,960	2,657
	28	Franklin St/Kenan St	1,302	2,483
South Columbia St	29	Columbia St/Old Pittsboro St	181	172
	30	Columbia St/McCauley St	3,095	8,276
	31	Columbia St/Fraternity Ct	7,040	4,461
Estes Dr	32	Estes Dr/Community Center	192	377
	33	Estes Dr/Phillips Middle School	142	89
	34	Estes Dr/Horace Williams Airport Driveway	24	3
Erwin Rd/ Weaver Dairy Rd	35	Erwin Rd/Sage Rd	34	48
	36	Weaver Dairy Rd/Sunrise Ln	34	59
	37	Weaver Dairy Rd/Perkins Dr/Banks Dr	86	87
Other Locations	38	Battle Branch Greenway	n/a	255
	38	Battle Branch Greenway (Saturday)	n/a	255
	39	Bolin Creek Greenway btw Airport Rd and Bolinwood Dr	180	245
	40	Bolin Creek Greenway btw Elizabeth St and Franklin St	260	553
	40	Bolin Creek Greenway/Elizabeth St Trailhead (Saturday)	n/a	731

		Count Location	2001	2003
Other Locations	41	Bolin Creek Trail/Community Center Dr	n/a	460
	41	Bolin Creek Trail/Community Center Dr (Saturday)	n/a	705
	42	Booker Creek Bike Path	n/a	223
	42	Booker Creek Bike Path (Saturday)	n/a	224
	43	Boundary St and Forest Theatre	239	387
	44	Burning Tree Dr north of NC 54	57	87
	45	Cameron Avenue/Pittsboro St	3,085	3,089
	46	Cameron Avenue/Roberson St	662	571
	47	Culbreth Rd west of Adams Wy	90	159
	48	Curtis Rd/Elliott Rd (path to school)	144	298
	49	Elliott Rd/Plaza Theatre	290	272
	50	Ephesus Church Rd/Churchill Dr	474	425
	51	Finley Golf Course Rd south of Prestwick Rd	62	57
	52	Hillsborough St/Bolinwood Apts	778	473
	53	Homestead Rd West of Brookstone Apts	26	109
	54	Kingston Dr South of Timberlyne Entrance	n/a	122
	54	Kingston Dr South of Timberlyne Entrance (Saturday)	n/a	47
	55	Legion Rd/Europa Dr	33	87
	56	Manning Dr/Craig Rd	1,296	3,929
	57	Manning Dr/Ridge Rd	6,983	6,857
	58	Mason Farm Rd/Otey's Rd	451	17
	59	McCauley St/ Ransom St	710	815
	60	McCauley St/Pittsboro St	2,278	1,980
	61	Meadowmont Bike Path/Pinehurst Dr	n/a	93
	61	Meadowmont Bike Path/Pinehurst Dr (Saturday)	n/a	150
	62	Meadowmont School	n/a	51
	63	Meadowmont Village Core	n/a	184
	63	Meadowmont Village Core (Saturday)	n/a	165
	64	Merritt Mill Rd/Crest St	427	475
	65	Mt. Carmel Church Rd/Bennett Rd	13	20
	66	Old Durham Rd btw Cooper and Standish Dr	152	264
	67	Piney Mountain Rd east of Woodshire Ln	86	98
	68	Pittsboro St/Vance St	782	2,964
	69	Pope Rd/Ephesus Church Rd	n/a	12
	70	Rosemary St/Hillsborough St	1,071	963
	71	Rosemary St/Henderson St	n/a	1,514
	72	Rosemary St west of Columbia St	692	758
	73	Rosemary St/Church St	n/a	1,232
	74	Rosemary St/UNC Parking Lots	1,510	1,074
	75	Rosemary St/Roberson St	n/a	345
	76	Seawell School Rd/High School Rd	n/a	176
	77	Southern Village Bike Path	259	297
	77	Southern Village Bike Path (Saturday)	n/a	162
	78	Southern Village Core	n/a	694
	78	Southern Village Core (Saturday)	n/a	308
	79	Umstead Dr between Bradley Rd and Greene St	734	97
	80	Westminster Dr/Banks Dr	n/a	155
	81	Willow Dr/Conner Dr	132	224

Figure 34 – 12-Hour Pedestrian Counts

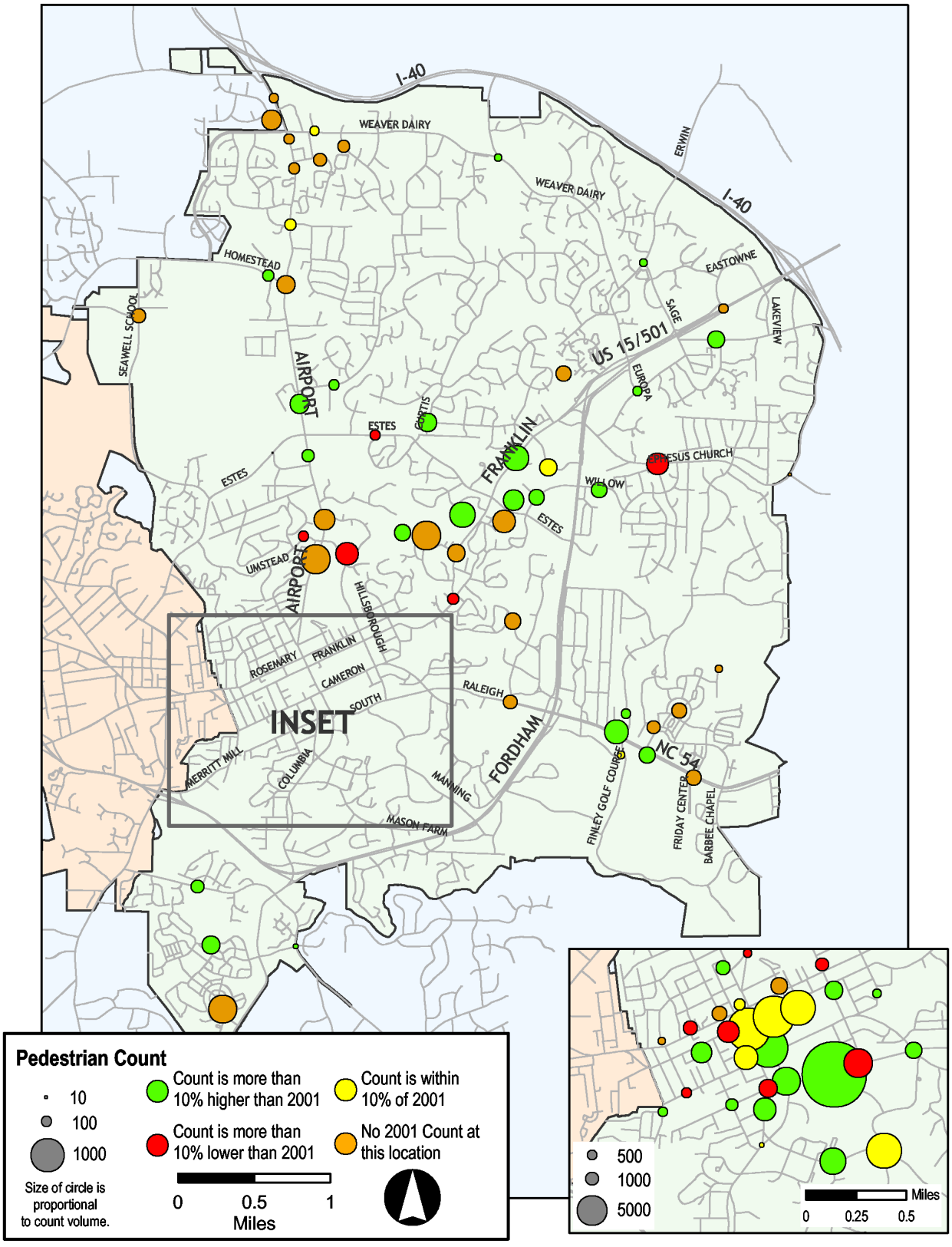
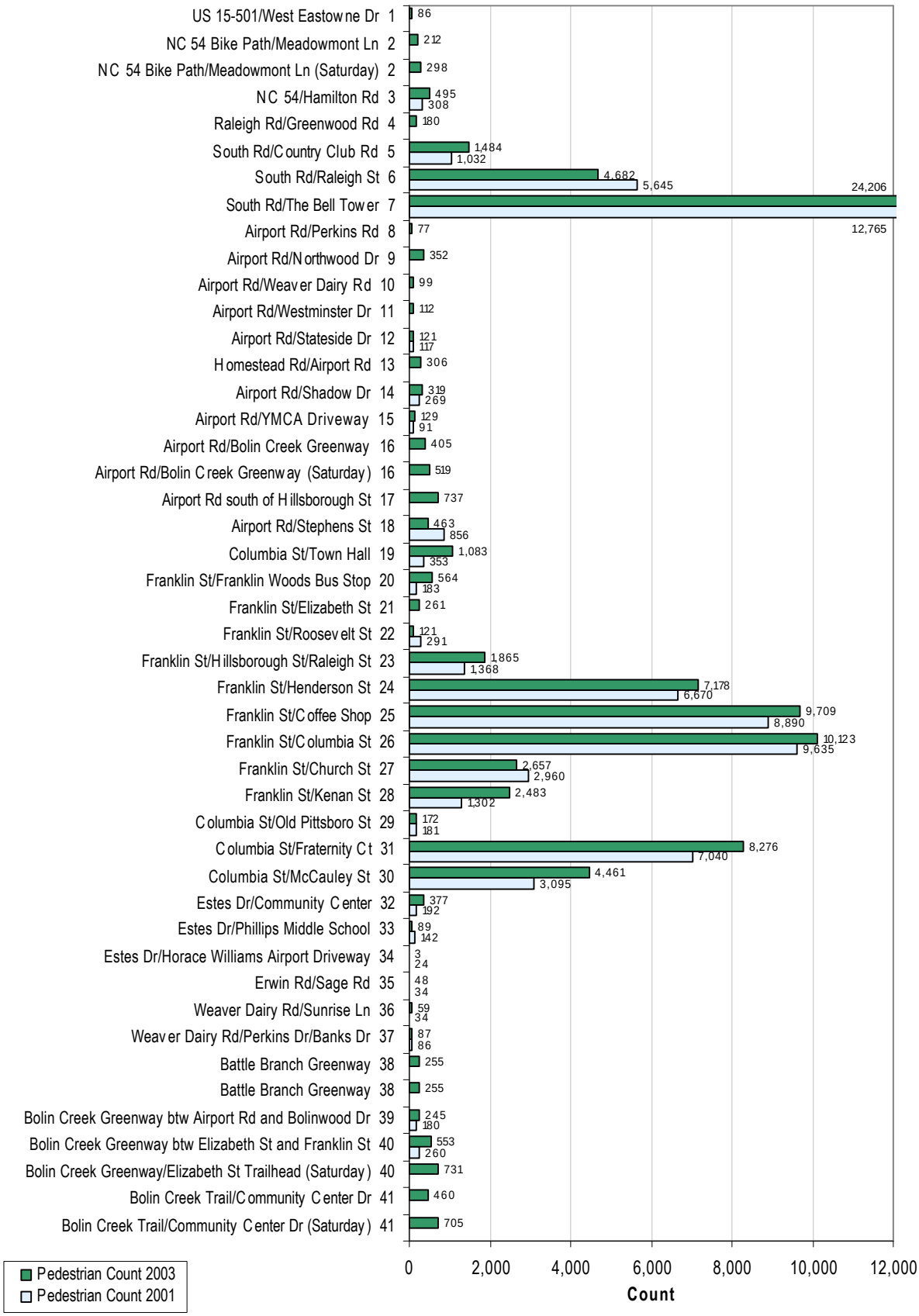
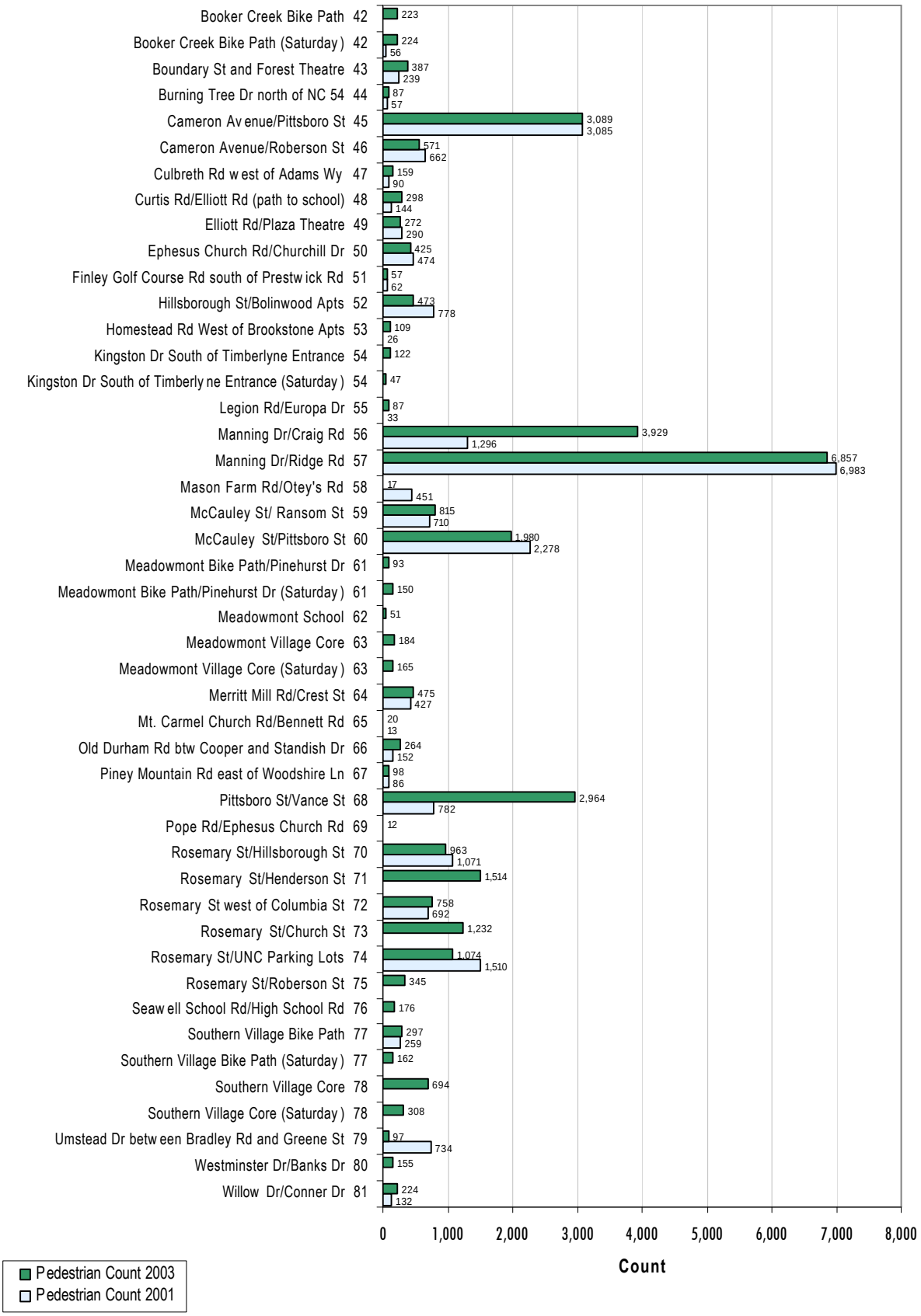


Figure 35 – 12-Hour Pedestrian Activity

Part 1




Booker Creek Bike Path 42
Booker Creek Bike Path (Saturday) 42
Boundary St and Forest Theatre 43
Burning Tree Dr north of NC 54 44
Cameron Avenue/Pittsboro St 45
Cameron Avenue/Roberson St 46
Culbreth Rd west of Adams Wy 47
Curtis Rd/Elliott Rd (path to school) 48
Elliott Rd/Plaza Theatre 49
Ephesus Church Rd/Churchill Dr 50
Finley Golf Course Rd south of Prestwick Rd 51
Hillsborough St/Bolinwood Apts 52
Homestead Rd West of Brookstone Apts 53
Kingston Dr South of Timberlyne Entrance 54
Kingston Dr South of Timberlyne Entrance (Saturday) 54
Legion Rd/Europa Dr 55
Manning Dr/Craig Rd 56
Manning Dr/Ridge Rd 57
Mason Farm Rd/Otey's Rd 58
McCauley St/ Ransom St 59
McCauley St/Pittsboro St 60
Meadowmont Bike Path/Pinehurst Dr 61
Meadowmont Bike Path/Pinehurst Dr (Saturday) 61
Meadowmont School 62
Meadowmont Village Core 63
Meadowmont Village Core (Saturday) 63
Merritt Mill Rd/Crest St 64
Mt. Carmel Church Rd/Bennett Rd 65
Old Durham Rd btw Cooper and Standish Dr 66
Piney Mountain Rd east of Woodshire Ln 67
Pittsboro St/Vance St 68
Pope Rd/Ephesus Church Rd 69
Rosemary St/Hillsborough St 70
Rosemary St/Henderson St 71
Rosemary St west of Columbia St 72
Rosemary St/Church St 73
Rosemary St/UNC Parking Lots 74
Rosemary St/Roberson St 75
Seawell School Rd/High School Rd 76
Southern Village Bike Path 77
Southern Village Bike Path (Saturday) 77
Southern Village Core 78
Southern Village Core (Saturday) 78
Umstead Dr between Bradley Rd and Greene St 79
Westminster Dr/Banks Dr 80
Willow Dr/Conner Dr 81
223
224
56
387
239
87
57
3,089
3,085
571
662
159
90
298
144
272
290
425
474
57
62
473
778
109
26
122
47
87
33
3,929
1,296
6,857
6,983
17
451
815
710
1,980
2,278
93
150
51
184
165
475
427
20
13
264
152
98
86
2,964
782
12
963
1,071
1,514
758
692
1,232
1,074
1,510
345
176
297
259
162
694
308
97
734
155
224
132
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1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
Count
Pedestrian Count 2003
Pedestrian Count 2001

The range of 12-hour pedestrian counts along key travel corridors include these:

2003 Pedestrian Count Range

- Columbia Street– 172 to 8,276
- Franklin Street – 121 to 10,123
- Airport Road – 99 to 737
- Cameron Avenue – 571 to 3,089
- South Road – 1,484 to 24,206

2001 Pedestrian Count Range

- Columbia Street– 180 to 7,040
- Franklin Street – 180 to 9,635
- Airport Road – 90 to 850
- Cameron Avenue – 660 to 3080
- South Road – 0 to 12,765

Highest daily volume locations were along South Road and Franklin Street. Six locations in the downtown and UNC area had 12-hour pedestrian volumes over 6,000, including South Road and The Bell Tower (24,206), Franklin Street and North Columbia (10,123), Franklin Street and the Coffee Shop (9,709), Columbia Street and Fraternity Court (8,276), Franklin Street and Henderson Street (7,178), and Manning Drive and Ridge Road (6,857). It is important to note that the 2001 pedestrian count at South Road and the Bell Tower (12,765) did not include all of the pathways that the 2003 count (24,206) does for the same general location. The 2003 count more accurately reflects pedestrian activity in the area, and future mobility report cards will include this more accurate definition of this location.

Pedestrian travel for campus locations were high during the morning and afternoon peak. Ten percent of all UNC provided pedestrian counts occurred in the morning peak and 13% occurred in the afternoon peak. These percentages were slightly higher than the counts for the rest of the Town, with 9% of all Town counts accounted for in the morning peak (8:00 – 9:00 am) and almost 11% in the afternoon peak (5:00 – 6:00 pm). The Bolin Creek Greenway had very high pedestrian use during the 5 PM hour, as did several locations on Pittsboro and Rosemary Streets.

Findings and Conclusions

As would be expected, 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 to promote pedestrian activity: mixed use, pedestrian facilities, and good design.

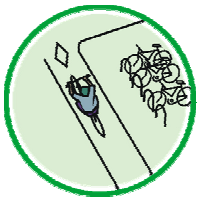
Pedestrian activity outside the downtown and UNC area is generally low, even for areas that have sidewalks. Part of this is because of the lack of mixed use activities and the design of the development, which does not promote pedestrian activities. Even the two mixed use developments in the town (Southern Village and Meadowmont) did not have substantially more pedestrian activity than other locations.

Between 2001 and 2003, overall pedestrian activity rose. Total pedestrian activity for all locations that were surveyed in 2001 rose from 87,605 to 109,370. The majority of the 58 locations surveyed in both 2001 and 2003 saw a greater than10% increase in pedestrian activity (33 locations). Eleven pedestrian count locations stayed about the

same (within 10%) from 2001 to 2003 and 14 locations experienced more than a 10% drop in pedestrian activity.

The largest increases in pedestrian activity between 2001 and 2003 occurred on the UNC campus. Aside from the previously discussed count location at South Road and the Bell Tower, the largest increases in pedestrian counts occurred at Manning Drive at Craig Road (1,296 to 3,929), Pittsboro Street at Vance Street (782 to 2,964), McCauley Street at Columbia Street (3,095 to 4,461), and Columbia Street at Fraternity Court (7,040 to 8,276).

The largest decrease in pedestrian activity also occurred on the UNC campus, at the South Road and Raleigh Street intersection (5,645 to 4,682). However, the two neighboring count locations both experienced large increases in pedestrian activity (South Road/Bell Tower increased from 12,765 to 24,206 and South Road/Country Club Road increased from 1,032 to 1,484), so it is likely that the decrease at this location was diverted to neighboring locations.



Indicator:

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.

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 45% between 2001 and 2003. These new facilities integrate well with the existing facilities, working towards a complete system and connecting activity centers. The Town is also currently preparing a Bicycle and Pedestrian Action Plan to create a network of bikeways and sidewalks that serves citizens' needs.

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.

Also of importance to bicycle facilities is the speed and traffic volume of the adjacent roadway for on-street bicycle facilities. Generally, a road with slower traffic and lower traffic volumes will be a more attractive route for bicyclists than other roadways.

Results

The existing bicycle facilities available to the Town of Chapel Hill are presented in Figure 36. Figure 37 shows daily roadway traffic volume and areas with average travel speed over 15 mph over the speed limit for major corridors since these factors have a large effect on the quality of on-street bicycle facilities. The daily traffic volumes are shown by the width of the line, while areas that experienced excessive auto average speed are shown in orange or red.

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 21 miles of different types of facilities, from wide shoulders and wide outside lanes to bicycle lanes and bicycle paths. Almost 10 miles of bicycle facilities have been added since 2001, a 45% increase in the total length of bicycle facilities. As can be seen in Table H, wide outside lanes saw the largest increase with almost 7 miles being added between 2001 and 2003, a 300% increase over 2001. The total length of all bike path facilities increased by 1.4 miles or 32% and bike lane mileage increased by 1.4 miles, or 41%. No new wide shoulder facilities were designated between 2001 and 2003. It is also important to note that the

wide outside lane on Cameron Avenue between Merritt Mill Road and Pittsboro Street was removed in 2002.

Table H – 12-Hour Pedestrian Counts

Facility Type	Facility Length As of 2001	Facility Length Added Between 2001- 2003	Percent Increase
Bike Path	4.4	1.4	32.1%
Bike Lane	3.3	1.4	40.8%
Wide Shoulder	11.3	0.0	0.0%
Wide Outside Lane	2.2	6.8	310.8%
All Facilities	**21.2**	**9.6**	**45.2%**

While there are still large areas without any type of bicycle facility, new facilities have been constructed that integrate very well into the previously existing system. Since 2001, bicycle lanes and paths have been added in the Meadowmont area. Wide outside lanes have been added to Estes Drive, Franklin Street, Elliot Road, Erwin Road, Sage Road, South Road, South Columbia Street and Manning Drive.

2001 Mobility Report Card

Some important corridors are available for bicycle facility improvements:

- Airport
- Franklin Street
- Raleigh Road

The new facilities on the University campus (South Road, South Columbia Street, and Manning Drive) integrate with existing bike lanes on Cameron Street and Pittsboro Street as well as with the wide outside shoulders on Fordham Boulevard. New facilities on Estes Drive tie together Fordham Boulevard, Bolin Creek Greenway and new facilities on Franklin Street.

Figure 36 – Bicycle Facilities

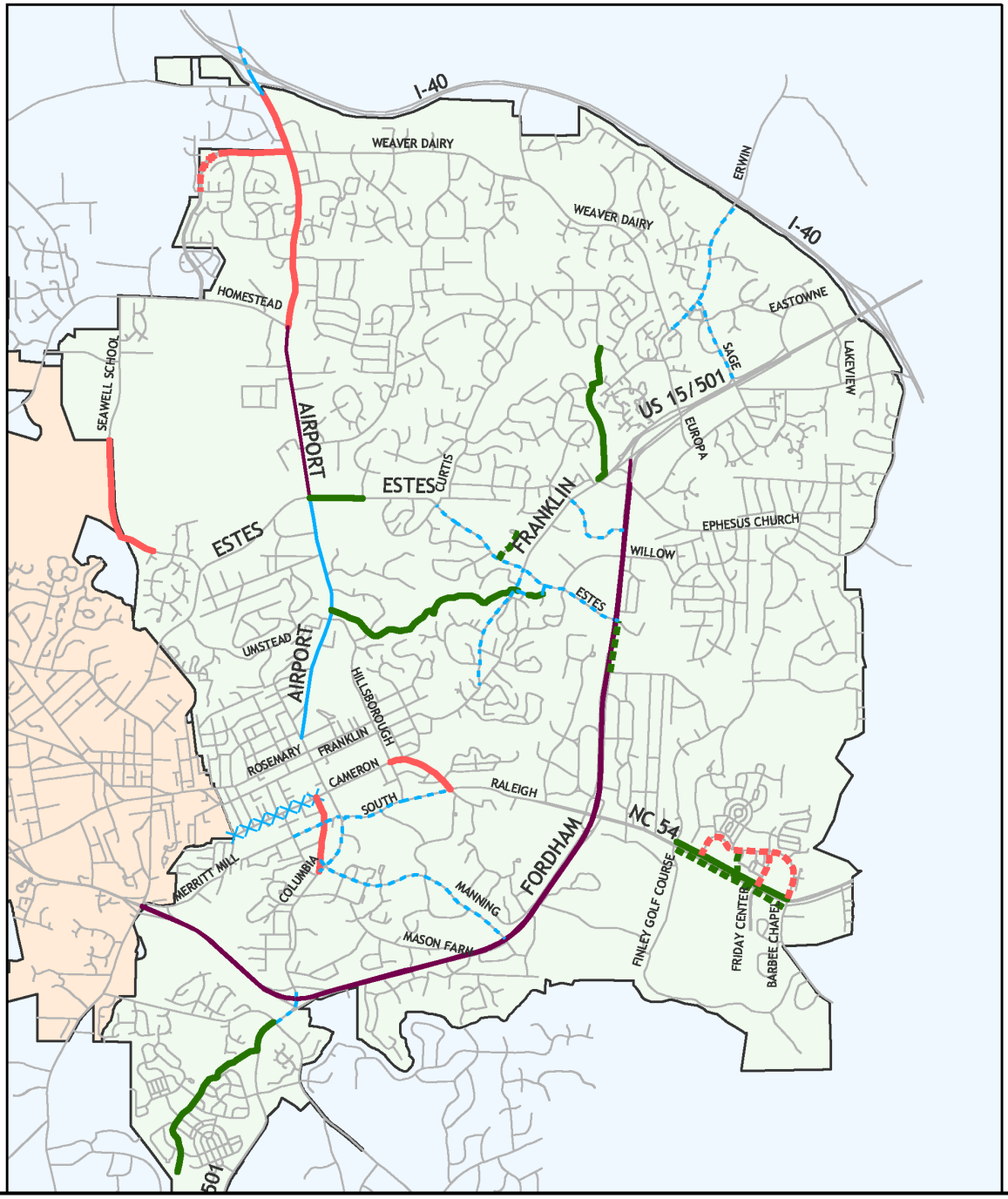
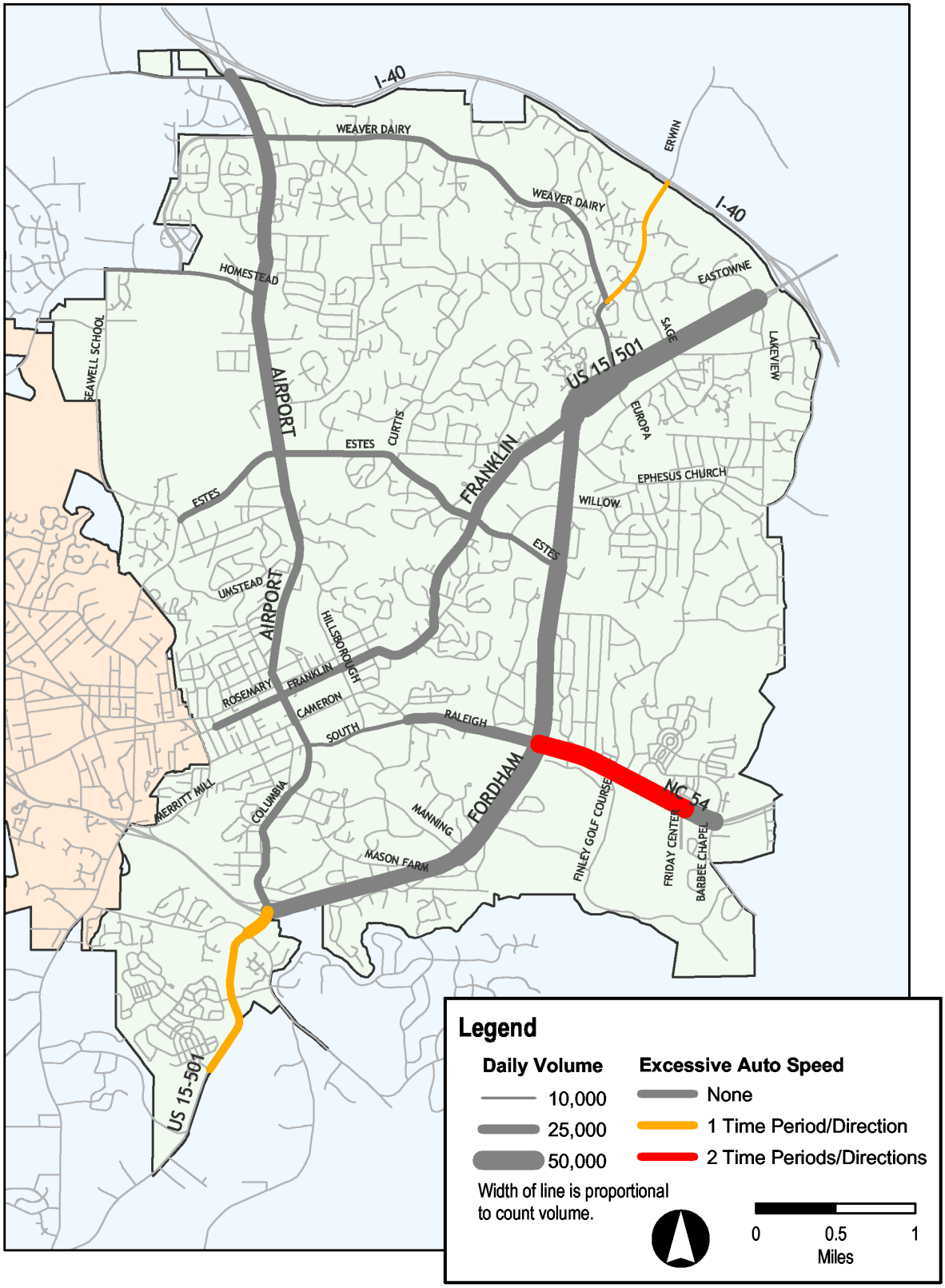


Figure 37 – Auto Traffic Volume and Excessive Speed



Indicator:

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 80 locations, with 11 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 38.

2000 Chapel Hill Comprehensive Plan Action Item

- Develop and adopt a procedure for evaluating bicycle activity.

The original Mobility Report Card developed a system for collecting bicycle activity data. This update continues that procedure and enhances it through additional locations as well as Saturday counts at certain locations to better understand recreational activity.

Results

The observed counts are presented graphically in Figure 39. This map shows the 2003 bicycle count and the relative change from 2001. The size of the circle is proportional to the 12-hour count volume. Note that due to the very high count volumes in the downtown and campus areas, the inset area uses a different circle scale. The color indicates relative change from 2001. Locations with a greater than 10% increase over 2001 counts are shown in green. Locations with 2003 counts within 10% of 2001 are shown in yellow, and locations with more than 10% decrease from 2001 to 2003 are shown in red. Both the 2001 and 2003 bicycle counts are also presented in tabular form in Table I and in chart form in Figure 40. 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 on-street lanes or off-street paths.

The highest bicycle volumes were observed on campus locations. Cameron Avenue and Roberson was the busiest intersection for bicyclists, with 811. Cameron Avenue and Pittsboro Street had 655, Merritt Mill Road and Crest Street had 549, and Pittsboro Street and Vance Street had 488.

Bicycle travel for campus locations was high during the morning and afternoon peak. Over one-fourth of all bicycles counted by UNC occurred during the morning or afternoon peak. Each peak accounted for approximately 13% of all bicyclists. When looking at counts for the entire town, 12% of the bicycle activity occurred in the afternoon peak hour (5:00 PM to 6:00 PM) and 9% occurred in the morning peak hour (8:00 AM to 9:00 AM). However, the afternoon peak was relatively long in duration, with over 30% of all bicycle activity occurring between 3:00 PM and 6:00 PM.

Daily volume ranges along key bicycle travel corridors include these:

2003 Bicycle Count Range

- Columbia Street– 48 to 416
- Franklin Street – 56 to 417
- Airport Road – 21 to 130
- Cameron Avenue – 655 to 811
- South Road – 165 to 390

2001 Bicycle Count Range

- Columbia Street – 60 to 440
- Franklin Street – 60 to 620
- Airport Road – 70 to 360
- Cameron Avenue– 900 to 1,100
- South Road – 125 to 860

Figure 38 – Bicycle Count Locations

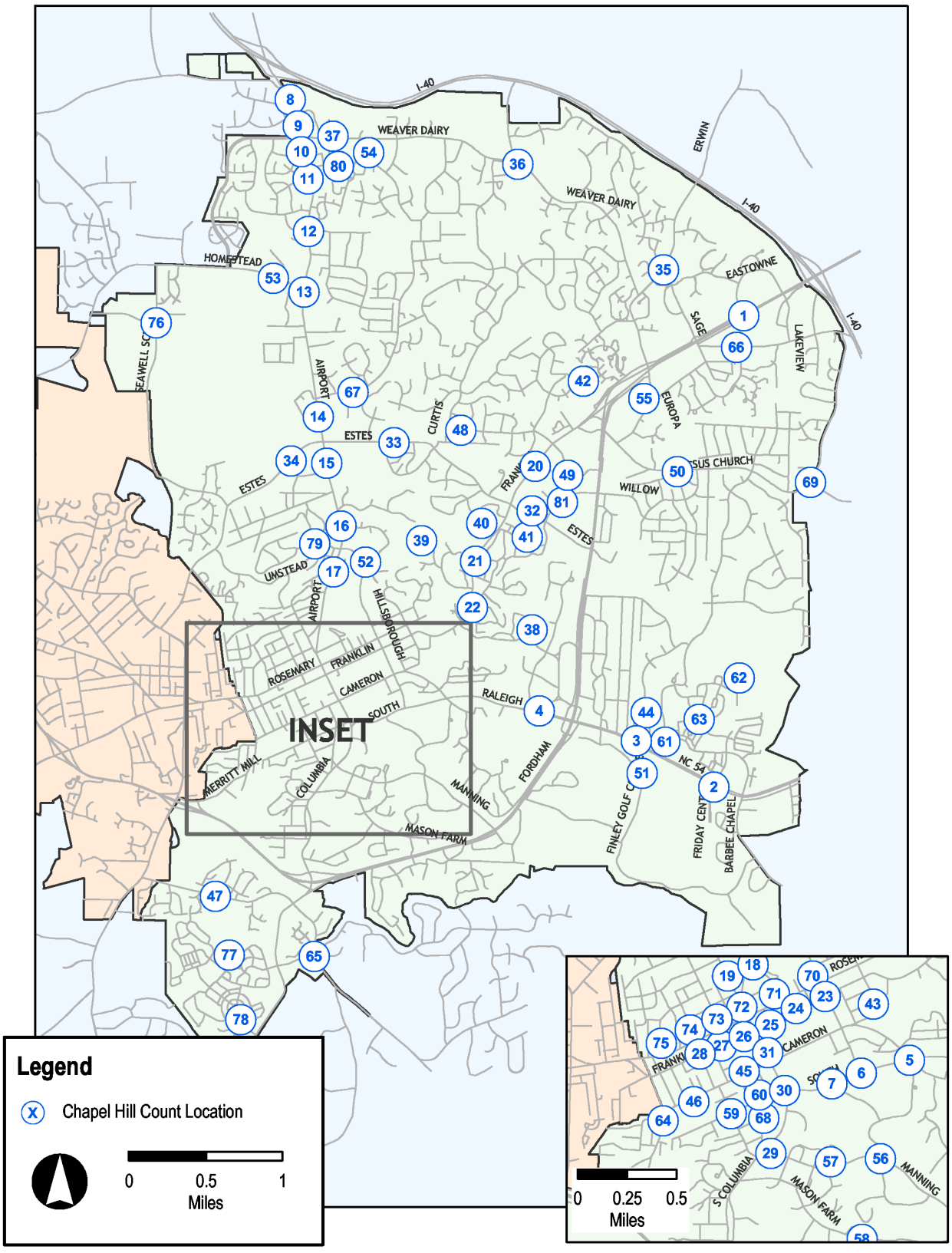


Figure 39 – Bicycle Volumes

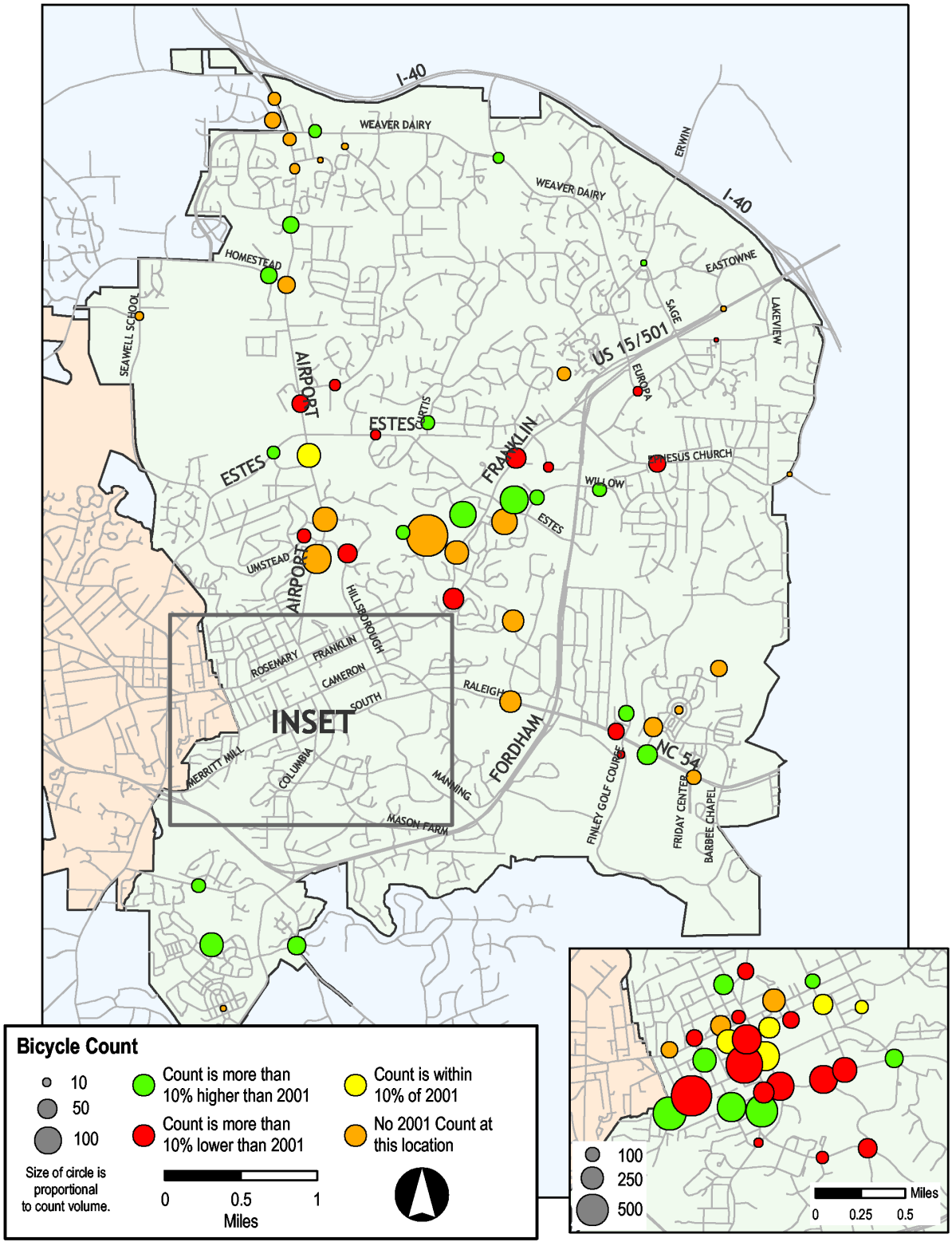


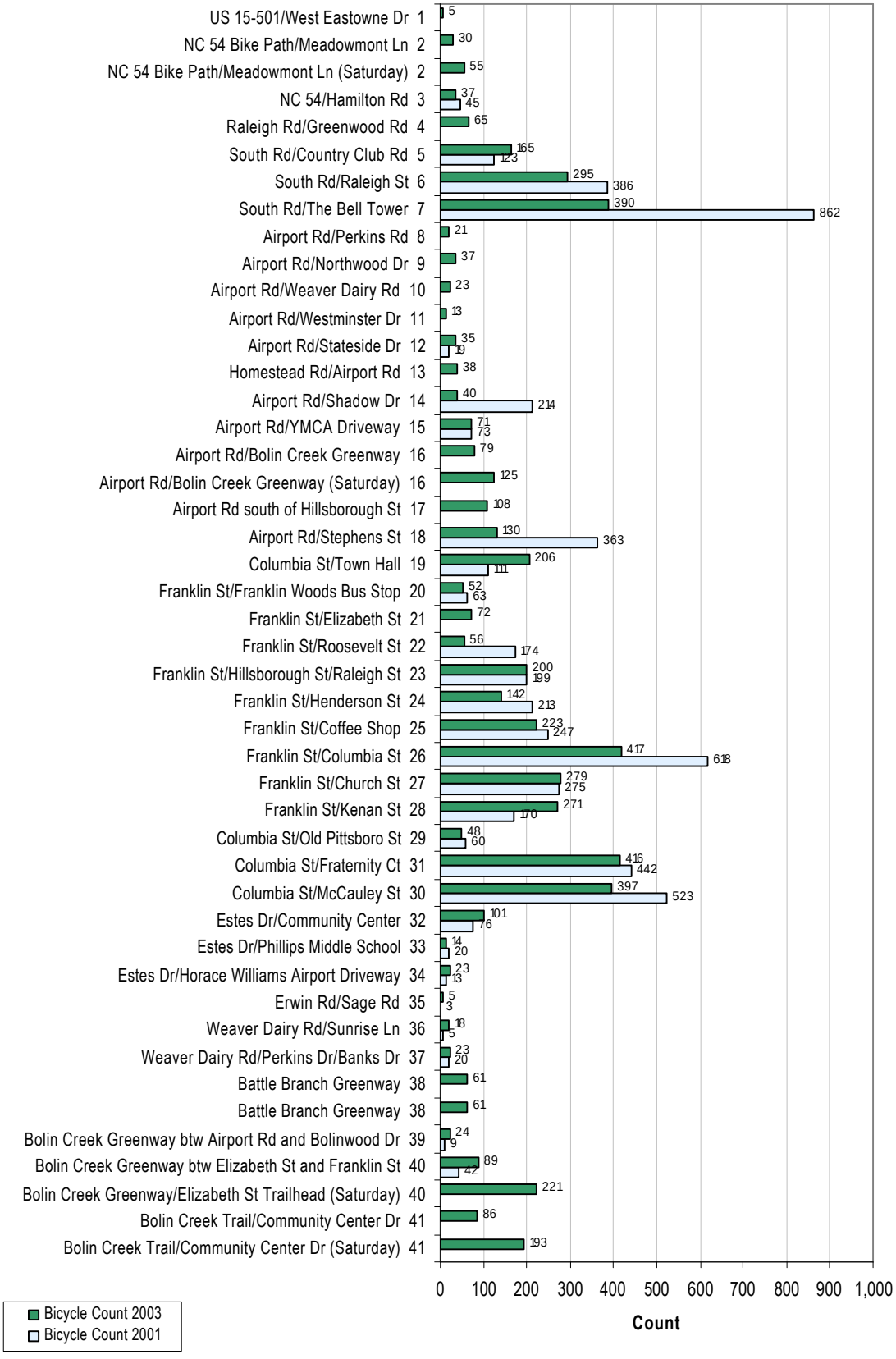
Table I – 12-Hour Bicycle Counts

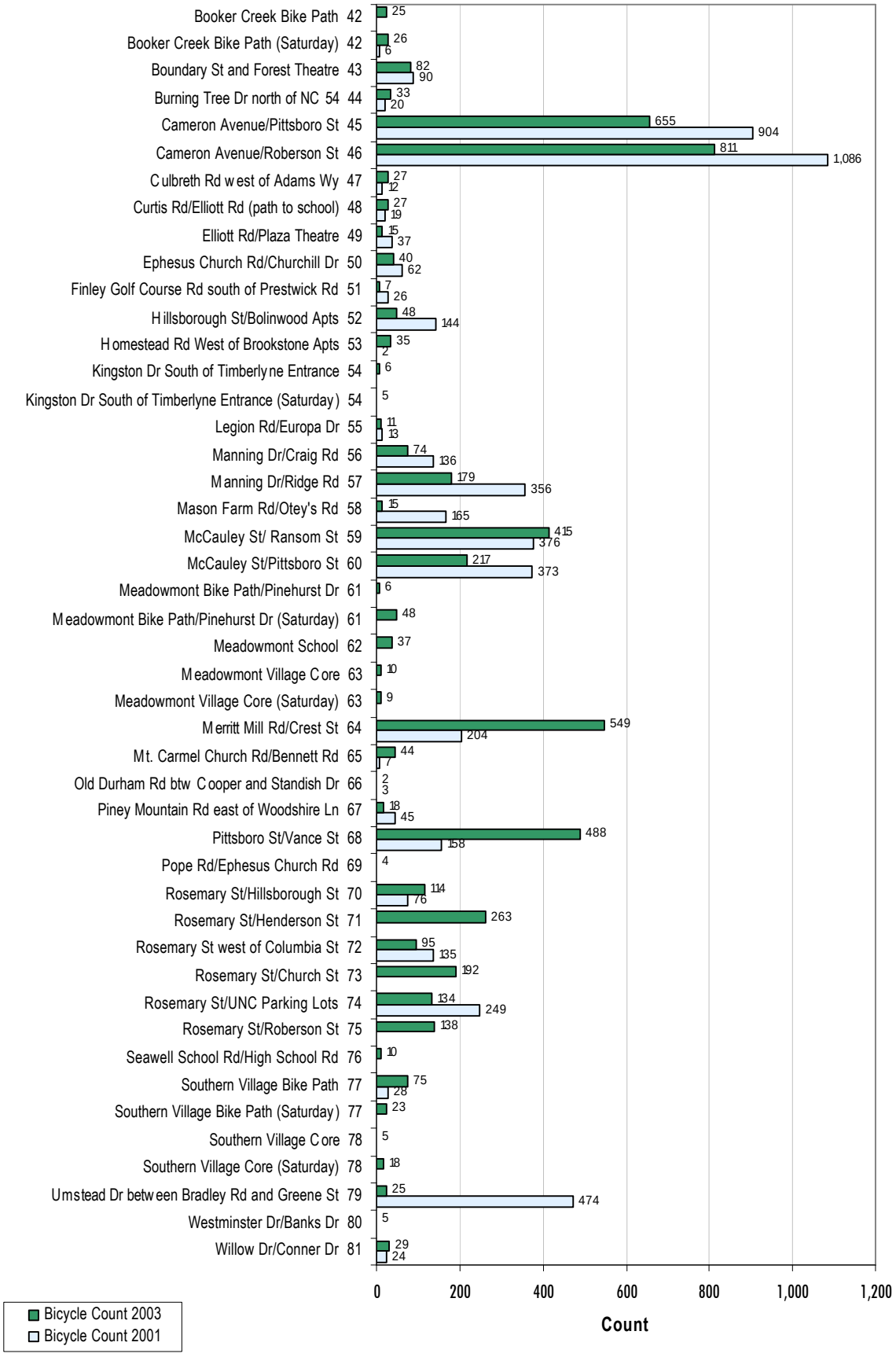
		Count Location	2001	2003
US 15/501	1	US 15-501/West Eastowne Dr	n/a	5
NC 54/Raleigh Rd/ South Rd	2	NC 54 Bike Path/Meadowmont Ln	n/a	30
	2	NC 54 Bike Path/Meadowmont Ln (Saturday)	n/a	55
	3	NC 54/Hamilton Rd	45	37
	4	Raleigh Rd/Greenwood Rd	n/a	65
	5	South Rd/Country Club Rd	123	165
	6	South Rd/Raleigh St	386	295
	7	South Rd/The Bell Tower	862	390
Airport Rd/Columbia St	8	Airport Rd/Perkins Rd	n/a	21
	9	Airport Rd/Northwood Dr	n/a	37
	10	Airport Rd/Weaver Dairy Rd	n/a	23
	11	Airport Rd/Westminster Dr	n/a	13
	12	Airport Rd/Stateside Dr	19	35
	13	Homestead Rd/Airport Rd	n/a	38
	14	Airport Rd/Shadow Dr	214	40
	15	Airport Rd/YMCA Driveway	73	71
	16	Airport Rd/Bolin Creek Greenway	n/a	79
	16	Airport Rd/Bolin Creek Greenway (Saturday)	n/a	125
	17	Airport Rd south of Hillsborough St	n/a	108
	18	Airport Rd/Stephens St	363	130
	19	Columbia St/Town Hall	111	206
Franklin St	20	Franklin St/Franklin Woods Bus Stop	63	52
	21	Franklin St/Elizabeth St	n/a	72
	22	Franklin St/Roosevelt St	174	56
	23	Franklin St/Hillsborough St/Raleigh St	199	200
	24	Franklin St/Henderson St	213	142
	25	Franklin St/Coffee Shop	247	223
	26	Franklin St/Columbia St	618	417
	27	Franklin St/Church St	275	279
	28	Franklin St/Kenan St	170	271
South Columbia St	29	Columbia St/Old Pittsboro St	60	48
	30	Columbia St/McCauley St	442	416
	31	Columbia St/Fraternity Ct	523	397
Estes Dr	32	Estes Dr/Community Center	76	101
	33	Estes Dr/Phillips Middle School	20	14
	34	Estes Dr/Horace Williams Airport Driveway	13	23
Erwin Rd/ Weaver Dairy Rd	35	Erwin Rd/Sage Rd	3	5
	36	Weaver Dairy Rd/Sunrise Ln	5	18
	37	Weaver Dairy Rd/Perkins Dr/Banks Dr	20	23
Other Locations	38	Battle Branch Greenway	n/a	61
	38	Battle Branch Greenway (Saturday)	n/a	61
	39	Bolin Creek Greenway btw Airport Rd and Bolinwood Dr	9	24
	40	Bolin Creek Greenway btw Elizabeth St and Franklin St	42	89

		Count Location	2001	2003
Other Locations	40	Bolin Creek Greenway/Elizabeth St Trailhead (Saturday)	n/a	221
	41	Bolin Creek Trail/Community Center Dr	n/a	86
	41	Bolin Creek Trail/Community Center Dr (Saturday)	n/a	193
	42	Booker Creek Bike Path	n/a	25
	42	Booker Creek Bike Path (Saturday)	6	26
	43	Boundary St and Forest Theatre	90	82
	44	Burning Tree Dr north of NC 54	20	33
	45	Cameron Avenue/Pittsboro St	904	655
	46	Cameron Avenue/Roberson St	1,086	811
	47	Culbreth Rd west of Adams Wy	12	27
	48	Curtis Rd/Elliott Rd (path to school)	19	27
	49	Elliott Rd/Plaza Theatre	37	15
	50	Ephesus Church Rd/Churchill Dr	62	40
	51	Finley Golf Course Rd south of Prestwick Rd	26	7
	52	Hillsborough St/Bolinwood Apts	144	48
	53	Homestead Rd West of Brookstone Apts	2	35
	54	Kingston Dr South of Timberlyne Entrance	n/a	6
	54	Kingston Dr South of Timberlyne Entrance (Saturday)	n/a	5
	55	Legion Rd/Europa Dr	13	11
	56	Manning Dr/Craig Rd	136	74
	57	Manning Dr/Ridge Rd	356	179
	58	Mason Farm Rd/Otey's Rd	165	15
	59	McCauley St/ Ransom St	376	415
	60	McCauley St/Pittsboro St	373	217
	61	Meadowmont Bike Path/Pinehurst Dr	n/a	6
	61	Meadowmont Bike Path/Pinehurst Dr (Saturday)	n/a	48
	62	Meadowmont School	n/a	37
	63	Meadowmont Village Core	n/a	10
	63	Meadowmont Village Core (Saturday)	n/a	9
	64	Merritt Mill Rd/Crest St	204	549
	65	Mt. Carmel Church Rd/Bennett Rd	7	44
	66	Old Durham Rd btw Cooper and Standish Dr	3	2
	67	Piney Mountain Rd east of Woodshire Ln	45	18
	68	Pittsboro St/Vance St	158	488
	69	Pope Rd/Ephesus Church Rd	n/a	4
	70	Rosemary St/Hillsborough St	76	114
	71	Rosemary St/Henderson St	n/a	263
	72	Rosemary St west of Columbia St	135	95
	73	Rosemary St/Church St	n/a	192
	74	Rosemary St/UNC Parking Lots	249	134
	75	Rosemary St/Roberson St	n/a	138
	76	Seawell School Rd/High School Rd	n/a	10
	77	Southern Village Bike Path	28	75
	77	Southern Village Bike Path (Saturday)	n/a	23
	78	Southern Village Core	n/a	5
	78	Southern Village Core (Saturday)	n/a	18
	79	Umstead Dr between Bradley Rd and Greene St	474	25
	80	Westminster Dr/Banks Dr	n/a	5
	81	Willow Dr/Conner Dr	24	29

Figure 40 – 12-Hour Bicycle Activity

Part 1




Booker Creek Bike Path 42
Booker Creek Bike Path (Saturday) 42
Boundary St and Forest Theatre 43
Burning Tree Dr north of NC 54 44
Cameron Avenue/Pittsboro St 45
Cameron Avenue/Roberson St 46
Culbreth Rd west of Adams Wy 47
Curtis Rd/Elliott Rd (path to school) 48
Elliott Rd/Plaza Theatre 49
Ephesus Church Rd/Churchill Dr 50
Finley Golf Course Rd south of Prestwick Rd 51
Hillsborough St/Bolinwood Apts 52
Homestead Rd West of Brookstone Apts 53
Kingston Dr South of Timberlyne Entrance 54
Kingston Dr South of Timberlyne Entrance (Saturday) 54
Legion Rd/Europa Dr 55
Manning Dr/Craig Rd 56
Manning Dr/Ridge Rd 57
Mason Farm Rd/Otey's Rd 58
McCauley St/ Ransom St 59
McCauley St/Pittsboro St 60
Meadowmont Bike Path/Pinehurst Dr 61
Meadowmont Bike Path/Pinehurst Dr (Saturday) 61
Meadowmont School 62
Meadowmont Village Core 63
Meadowmont Village Core (Saturday) 63
Merritt Mill Rd/Crest St 64
Mt. Carmel Church Rd/Bennett Rd 65
Old Durham Rd btw Cooper and Standish Dr 66
Piney Mountain Rd east of Woodshire Ln 67
Pittsboro St/Vance St 68
Pope Rd/Ephesus Church Rd 69
Rosemary St/Hillsborough St 70
Rosemary St/Henderson St 71
Rosemary St west of Columbia St 72
Rosemary St/Church St 73
Rosemary St/UNC Parking Lots 74
Rosemary St/Roberson St 75
Seawell School Rd/High School Rd 76
Southern Village Bike Path 77
Southern Village Bike Path (Saturday) 77
Southern Village Core 78
Southern Village Core (Saturday) 78
Umstead Dr between Bradley Rd and Greene St 79
Westminster Dr/Banks Dr 80
Willow Dr/Conner Dr 81
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82
90
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800
1,000
1,200
Count
Bicycle Count 2003
Bicycle Count 2001

Findings and Conclusions

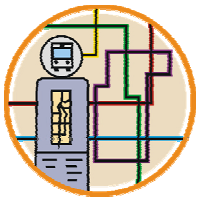
The highest bicycle activity in the Town of Chapel Hill remains within the University of North Carolina campus. Outside of the UNC campus, the Bolin Creek Greenway and areas around the greenway had the highest bicycle counts. Bicycle activity in other areas of the town is relatively low.

Between 2001 and 2003, overall bicycle activity declined substantially. The total bicycles counted for all locations that were surveyed in 2001 fell by 20%, from 10,623 to 8,508. Almost half (28) of the 58 locations surveyed in both 2001 and 2003 decreased by more than 10%. Six locations stayed about the same (with 10%) and 24 locations increased by more than 10%.

The largest increases in bicycle activity between 2001 and 2003 occurred on or near the UNC campus. Merritt Mill Road and Crest Street experienced the largest increase (204 to 549) followed by Pittsboro Street and Vance Street (158 to 488). However, several of the locations with the largest decreases were also on or near campus. These locations include South Road and Bell Tower (862 to 390), Umstead Drive between Bradley Road and Greene Street (474 to 25), and Cameron Avenue at Pittsboro Street (904 to 655) and Roberson Street (1,086 to 811). The large decreases seen on Cameron Avenue are in the exact area in which bicycle facilities were removed in 2002. The removal of those facilities made that area less attractive to bicyclists and was likely directly related to the drop in bicycle activity.

Even with significant improvements to the bicycle system, actual 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.

Much of the decrease in bicycle activity may be due to the success of the fare-free transit system implementation. According to the *Town of Chapel Hill Fall 2003 On-Board Rider Profile Survey*, UNC accounts for the most transit trip destinations (42% of all destinations) and is second only to "home" in transit trip origins (34% of all origins). The largest decreases in bicycle activity occurred on or near campus, with outlying areas having stable, or even increased, bicycle activity. So, it is conceivable that there was a mode shift from bicycle to transit for many of the campus trips. Another possible factor for decreased bicycle activity is the overall increase in traffic speeds from 2001 to 2003. With increased automobile speeds in many areas, residents may be reluctant to utilize on-street bicycle facilities due to the speed of traffic and resultant decrease in safety. Future Mobility Report Cards will be able to further investigate and address these possibilities.



Indicator:

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.

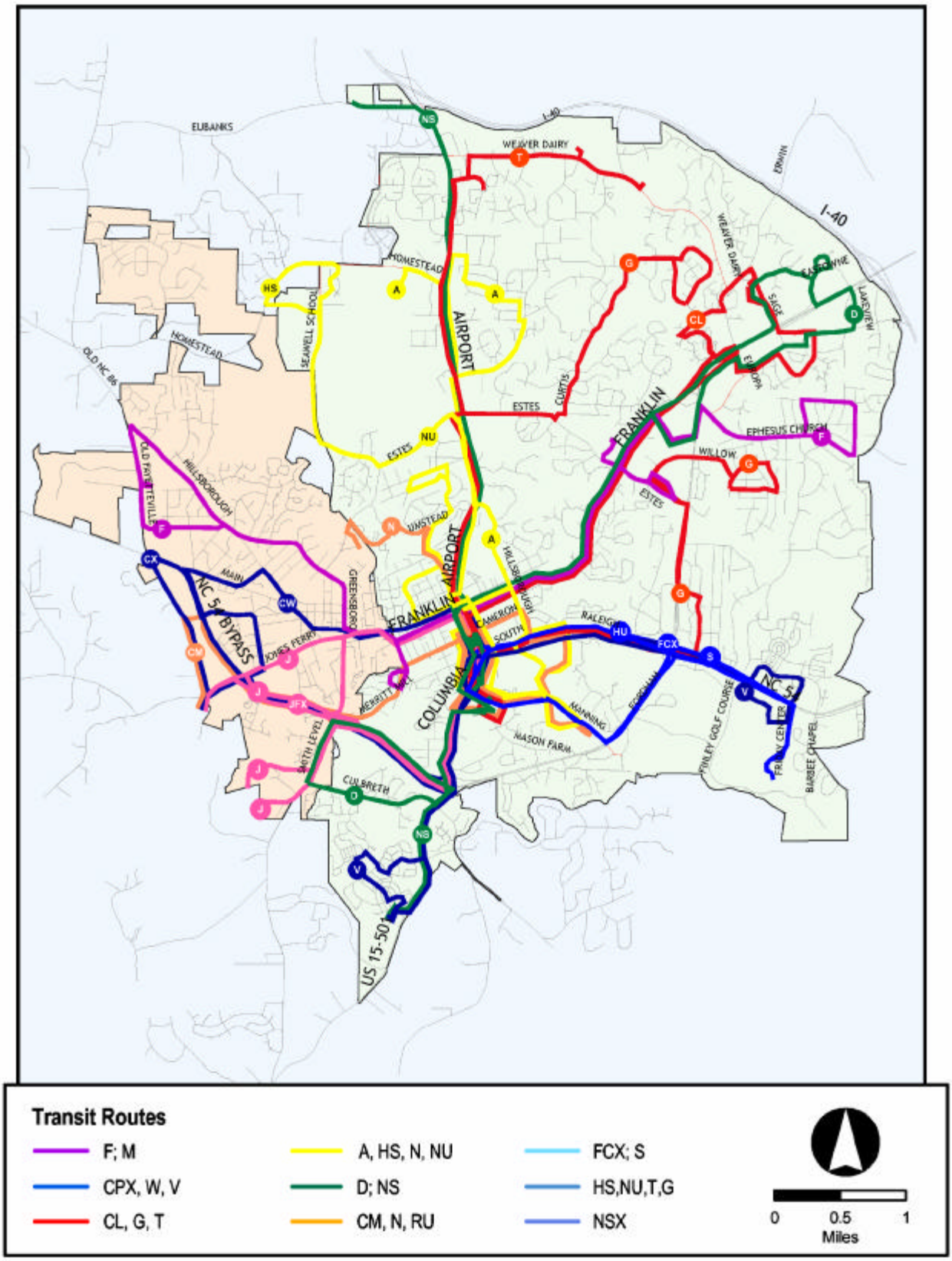
It should be noted that the transit service data is for the July 1, 2002 to June 30, 2003 service year. The route maps, however, depict transit service for March 2004. It should further be noted that the Town of Chapel Hill converted to free service effective January 2002.

March 2004 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 41.

Fixed-route hours of operation are generally from 6:30 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. Two 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 41 – Weekday Transit Service



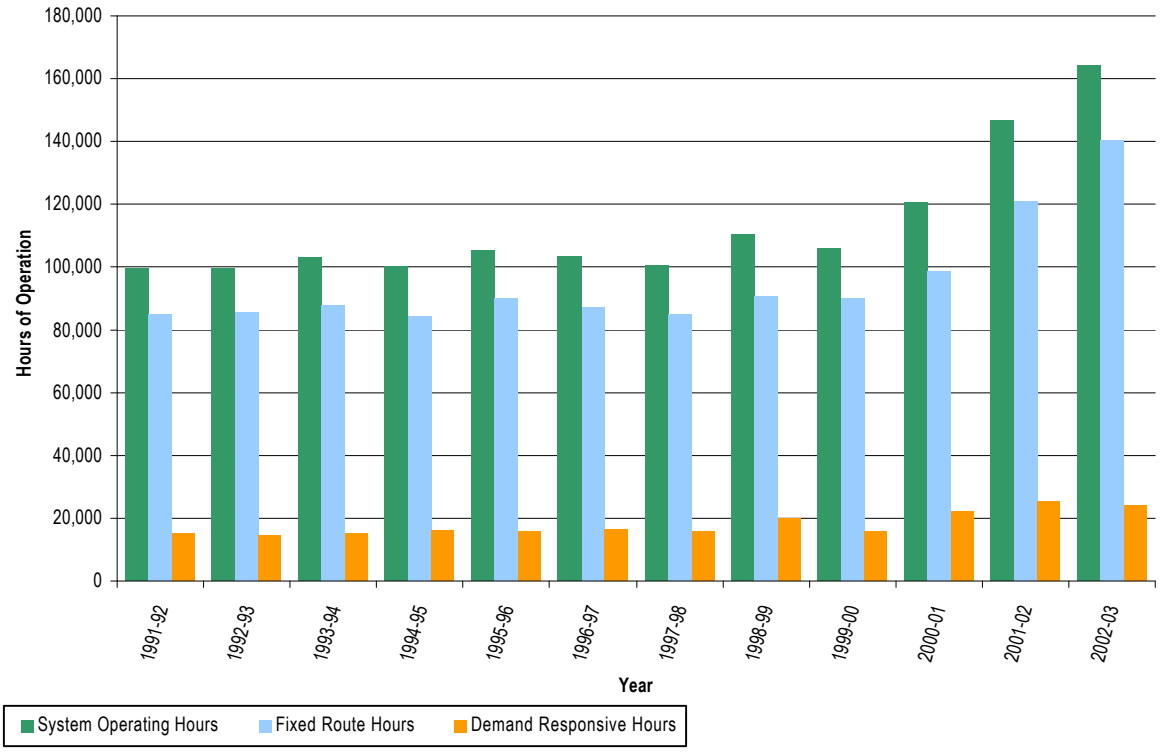
The EZ Rider service is available to Chapel Hill and Carrboro residents who are mobility impaired and are certified to use the service by a medical doctor. The service operates from 6:15 AM to 6:15 PM on weekdays and from 8:30 AM to 7:00 PM on Saturdays. This service is also free.

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, much of this accessibility is without sidewalks, which has a direct effect on choice riders.

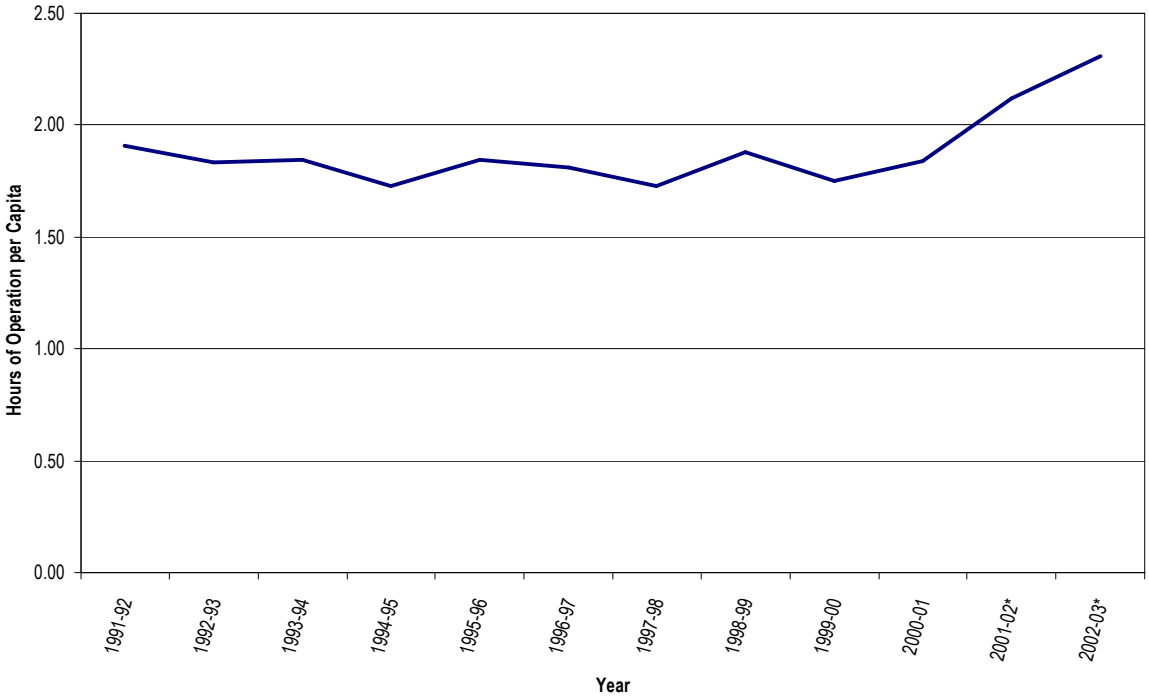
As can be seen in Figure 42, the Town of Chapel Hill increased transit service hours by approximately 16% between 1991 and 2001. However, in the two years between 2001 and 2003, fixed route transit service hours increased by over 42% and total system operating hours increased by 36%. Much of this increase 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.

Figure 42 – 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 2001-2002 and 2002-2003, most likely due to the fare-free conversion and resultant increase in operating hours. As can be seen in Figure 43, 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 continued through the 2002-2003 year.

Figure 43 – Transit Operating Hours per Capita



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

Indicator:

TRANSIT RIDERSHIP

Measurement: Transit Boardings and Exits
Data: Transit Boardings and Exits

Why and How

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.

This 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 Tables J and Figure 44. Table K shows average daily ridership and service hours for a typical month for both 2001 and 2003. As can be seen in the figure, 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 J, 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.

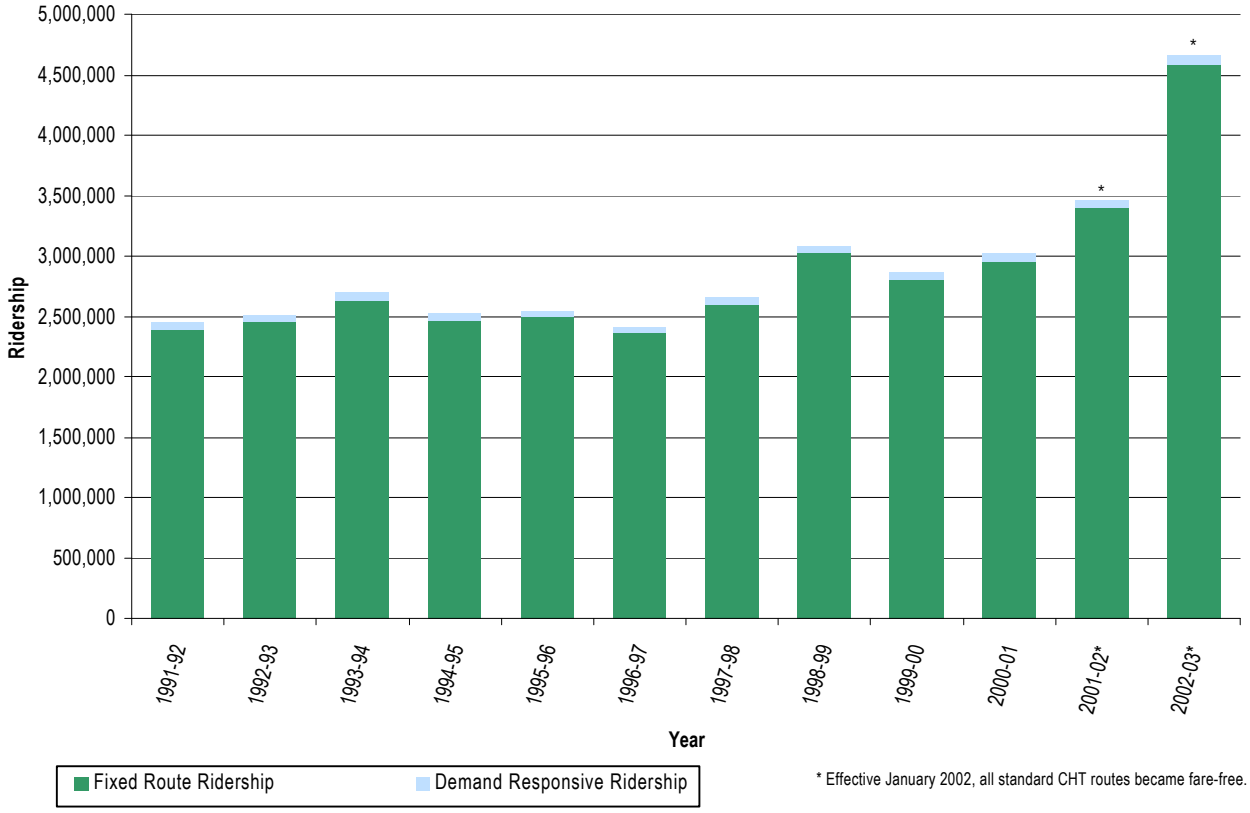
Table J – Transit Ridership Statistics

	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002*	2002-2003*
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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

Sources: Chapel Hill Data Book, U.S. Census

Figure 44 – Transit Ridership



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

Table K – October Transit Statistics

	October 2001	October 2003	Percent Increase
Average Daily Weekday	14,273	23,001	61.2%
Average Daily Weekend	535	828	54.8%
Daily Service Hours Weekday	428.4	540.1	26.1%
Daily Service Hours Weekend	62.0	82.2	32.5%

Findings and Conclusions

For the 2002–2003 service year, annual service hours totaled over 164,000 hours (140,000 fixed route hours and 22,000 demand response hours). Annual ridership reached over 4.6 million passengers (almost 4.6 million fixed route passengers and 72,000 demand response passengers). This equates to over 28 passengers per service hour.

2001 Mobility Report Card

2000 – 2001 Service Year

- Over 120,000 annual service hours
- Over 3.0 million passengers
- 25 passengers per total service hour

For the example month of October, average daily weekday ridership increased by 61% from 2001 to 2003 (14,273 to 23,001). This increase is much higher than the 26% 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. While both weekend average daily ridership and service hours increased also, the difference was not as great. Average daily weekend ridership increased by 55%, with average daily weekend service hours increasing by 33%.

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.

It is important to note that many of the trips being made are choice trips: 57% of passengers had a vehicle available to them to use. However, parking concerns (39%) were the primary reason for riding the bus, implying that parking supply on the UNC campus is driving a large portion of the CHT ridership. Over 60% of riders that lived in Chapel Hill or were UNC students before 2002 used the system before it became fare-free.

It also appears that since the last on-board survey done in 1997, CHT is enhancing its service to the transportation disadvantaged population. Significantly fewer people in 2003 had a vehicle available to make their trip and the number of passengers with zero vehicles and the number of passengers with a valid driver's license were significantly lower in 2003 than in 1997. CHT is increasing ridership among the higher income group, with

significantly more passengers in 2003 than 1997 with a household income of $75,000 or more. It also appears that CHT is broadening its ability to address more than just the home to work trip. From 1997 to 2003, there are significantly lower percentage of work trip destinations and origins and higher eat-a-meal trip origins and destinations.

Chapel Hill Transit's conversion to almost an entirely free system has had a dramatic effect on the transit system. Between 2001 and 2003,

- System-wide ridership increased by 55% (3.0 to 4.7 million)
- System-wide riders per capita increased by 45% (46.1 to 66.6)
- System-wide riders per hour increased by 13% (25.0 to 28.4)

2001 Mobility Report Card

Between 1991 and 2001
- System wide ridership increased 18%
- Riders per capita and riders per hour of service have remained relatively constant.

Fixed route ridership saw similar increases to the system-wide performance. Between 2001 and 2003:

- Fixed-route ridership increased by 55% (3.0 to 4.6 million)
- Fixed-route riders per capita increased by 45% (45.2 to 65.5)
- Fixed-route riders per hour increased by 9% (30.0 to 32.7)

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 2003 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 reporting year.

The ridership increases seen between 2001 and 2003 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 increase ridership by 55% between 2001 and 2003 and still maintain productivity (as evidenced by a 9% increase in route riders per hour).

Indicator:

MULTIMODAL MOBILITY

Measurement: Accessibility, Vitality, and Attractiveness of Various Modes
Data: Mobility indicators for Auto, Transit, Bicycle and Pedestrian Modes

Why and How

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 who 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.

2000 Chapel Hill Comprehensive Plan Objectives

- Develop and maintain a comprehensive network of streets and highways that support safe automobile, transit, bicycle, and pedestrian mobility within Town.
- 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 Report marks the first time that a multimodal indicator has been included. This will serve as a starting point from which to evaluate multimodal mobility in the Town in the future.

Key indicators for each transportation mode were examined for each corridor segment of the major arterials in the Town of Chapel Hill. These indicators include both the 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 for each mode were then summarized and combined into one composite multimodal mobility index for each of the major roadway segments. The indicators include:

- Automobile Mobility
  - Roadway congestion
  - Auto travel time
- Transit Mobility
  - Number of buses per hour
- Bicycle Mobility
  - Presence of bicycle facilities
  - General bicycle activity
  - Percent bicycles and pedestrians to automobiles
  - Safety indicator based on auto travel speed
  - Design features (landscaping, building setbacks, driveway access points, sidewalk buffer, etc)
- Pedestrian Mobility
  - Presence of pedestrian facilities
  - General pedestrian activity

- Percent bicycles and pedestrians to automobiles
- Safety indicator based on auto travel speed
- Design features

For each roadway segment, a high, medium or low value was assigned to each of the indicators. The indicators for each segment for each mode were then averaged to create a mobility score for each mode. Each of those scores was then averaged to create a single multimodal mobility index.

Results

Maps showing the general mobility of each of the transportation modes are presented in Figures 45, 46, 47, and 48. The composite multimodal mobility index is shown in Figure 49. For each map, corridors in green indicate a high level of mobility, yellow is a medium level of mobility, and red is a low level of mobility.

Findings and Conclusions

Consistent with earlier findings, most corridors were in the medium category when only automobile mobility was considered. Since the auto mobility index is based on congestion and travel time, it would make sense that the corridors on the periphery would score better, on the whole, than ones closer to the Town core. Weaver Dairy Road and parts of Airport Road, NC 54, and NC 54 Bypass scored high in auto mobility. Sections of US 15/501, Estes Drive, and South Columbia Street had low auto mobility.

Where transit existed, the results were spread evenly between the categories. As expected, the areas close to downtown and the university campus have outstanding transit service and a high number of buses per hour (which equate to short headways). Areas in the north and northeast of downtown have considerably lower transit mobility where transit service is available.

Based on the bicycle mobility indicators discussed previously in this section, bicycle mobility is highest on the South Road/Raleigh Road corridor. Other than that corridor segment, bicycle mobility was in the medium category in most areas downtown and on campus. Bicycle mobility is generally poor in the outlying areas of the Town. Much of the low score is due to the lack of dedicated "high level" (ie bicycle lanes and bicycle paths) bicycle facilities around the Town. The lone exception is found on campus, the South Road/Raleigh Road corridor which has some bicycle facilities, high bicycle activity, and a high bicycle and pedestrian counts to automobiles ratio.

Pedestrian mobility was highest on and near campus, as is to be expected. Franklin Street in the downtown area, and South Road/Raleigh Road segments scored in the high category while most other corridors were in the medium category. As expected, high auto traffic volume corridors such as US 15/501 and NC 54 scored in the low category.

When looking at all modes together, most corridors scored in the medium category. This indicates that the town is doing fairly well taking into account all modes of travel. The areas around campus scored highest in the composite multimodal mobility index with Franklin Street in the downtown area, South Road/Raleigh Road, and the southern portion of Airport Road/North Columbia Street all scoring in the high category. It is important to realize that it is not necessary that all corridors in the Town rank high for multimodal

mobility. Some corridors, such as US 15/501/Fordham Boulevard are not well suited for multimodal travel. The Town should concentrate its efforts on enhancing multimodal mobility on corridors that have a high potential for multimodal mobility, such as the Airport Road, South Road/Raleigh Road, and Franklin Street corridors.

Figure 45 – Automobile Mobility

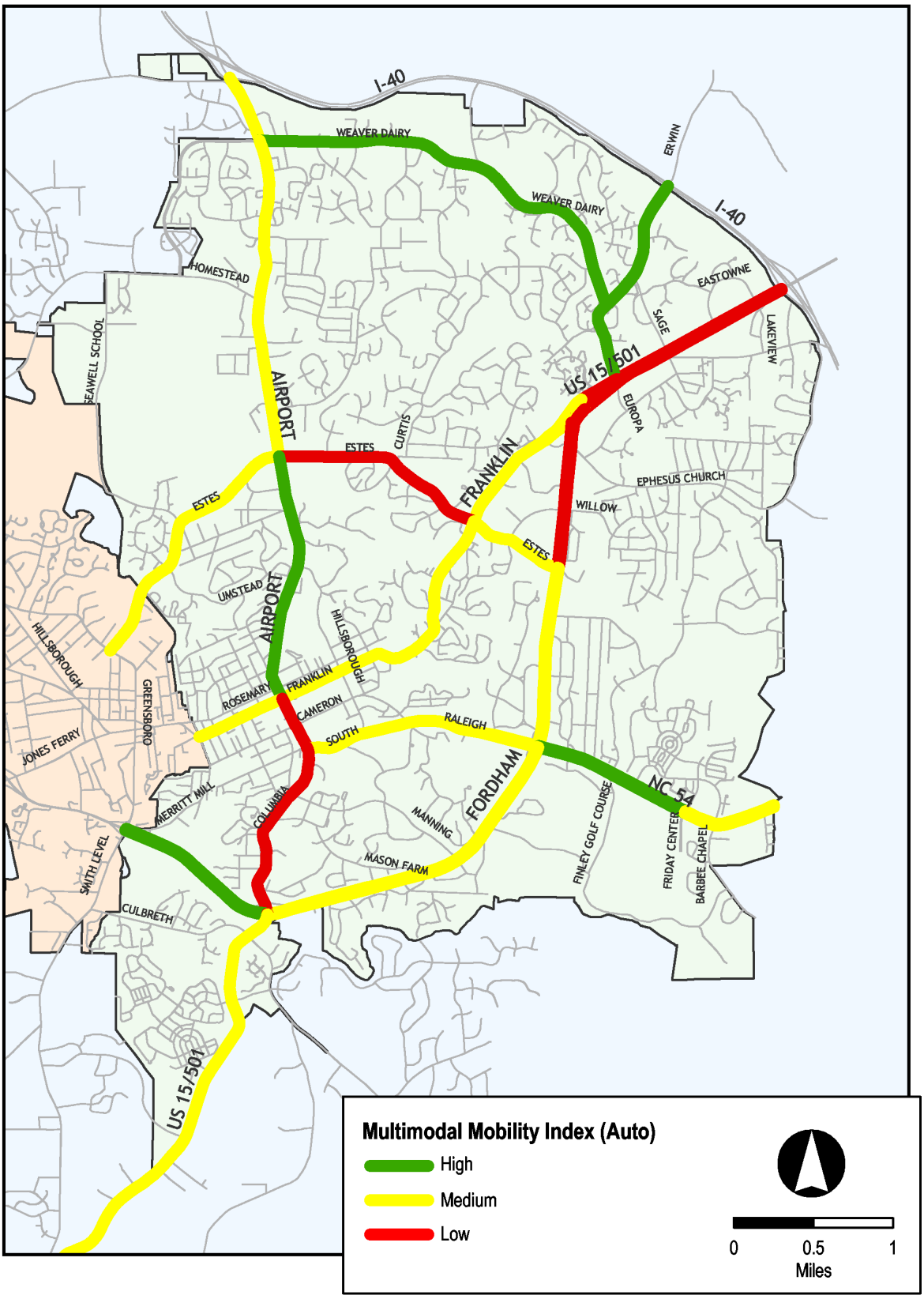


Figure 46 – Transit Mobility

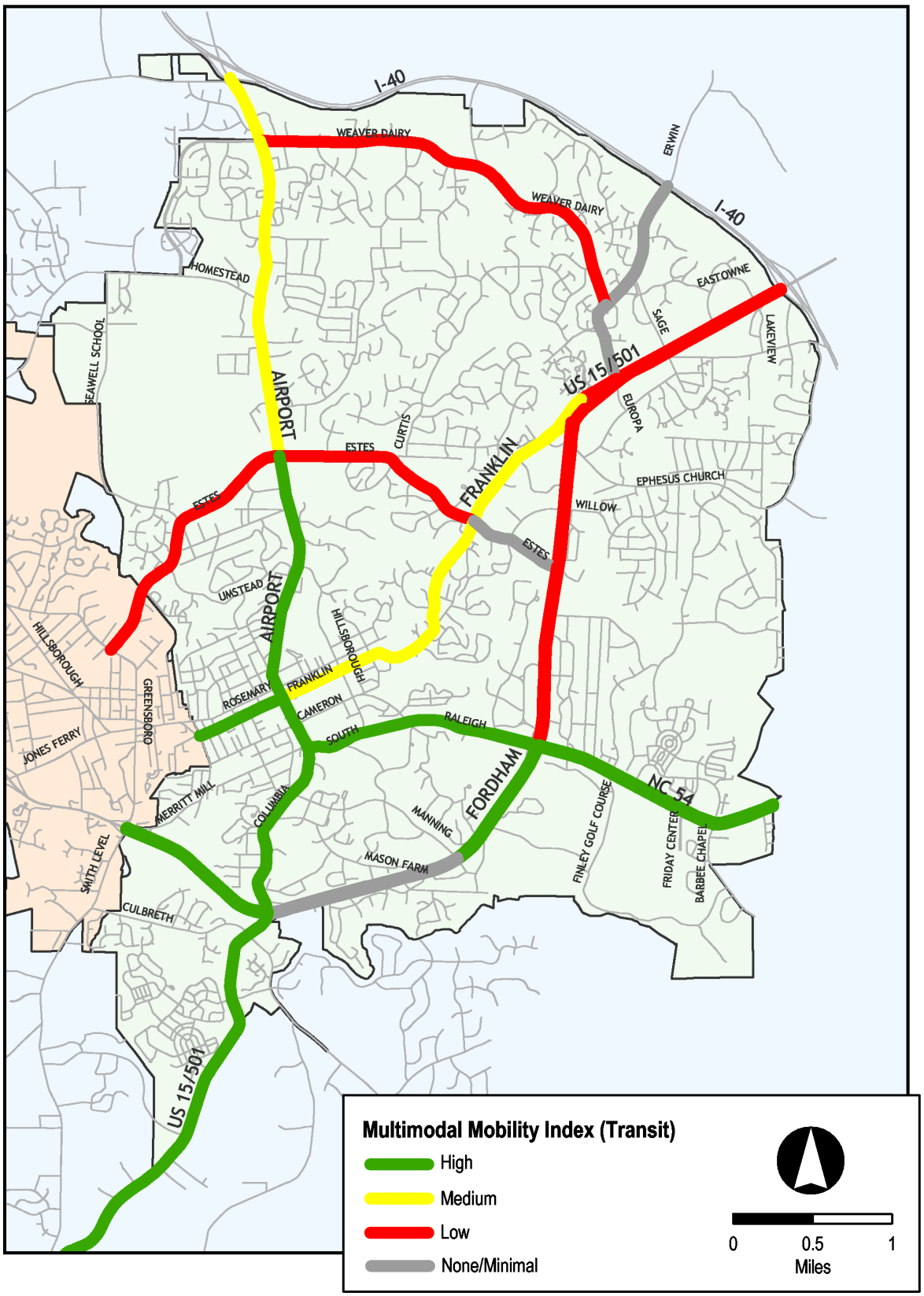


Figure 47 – Bicycle Mobility

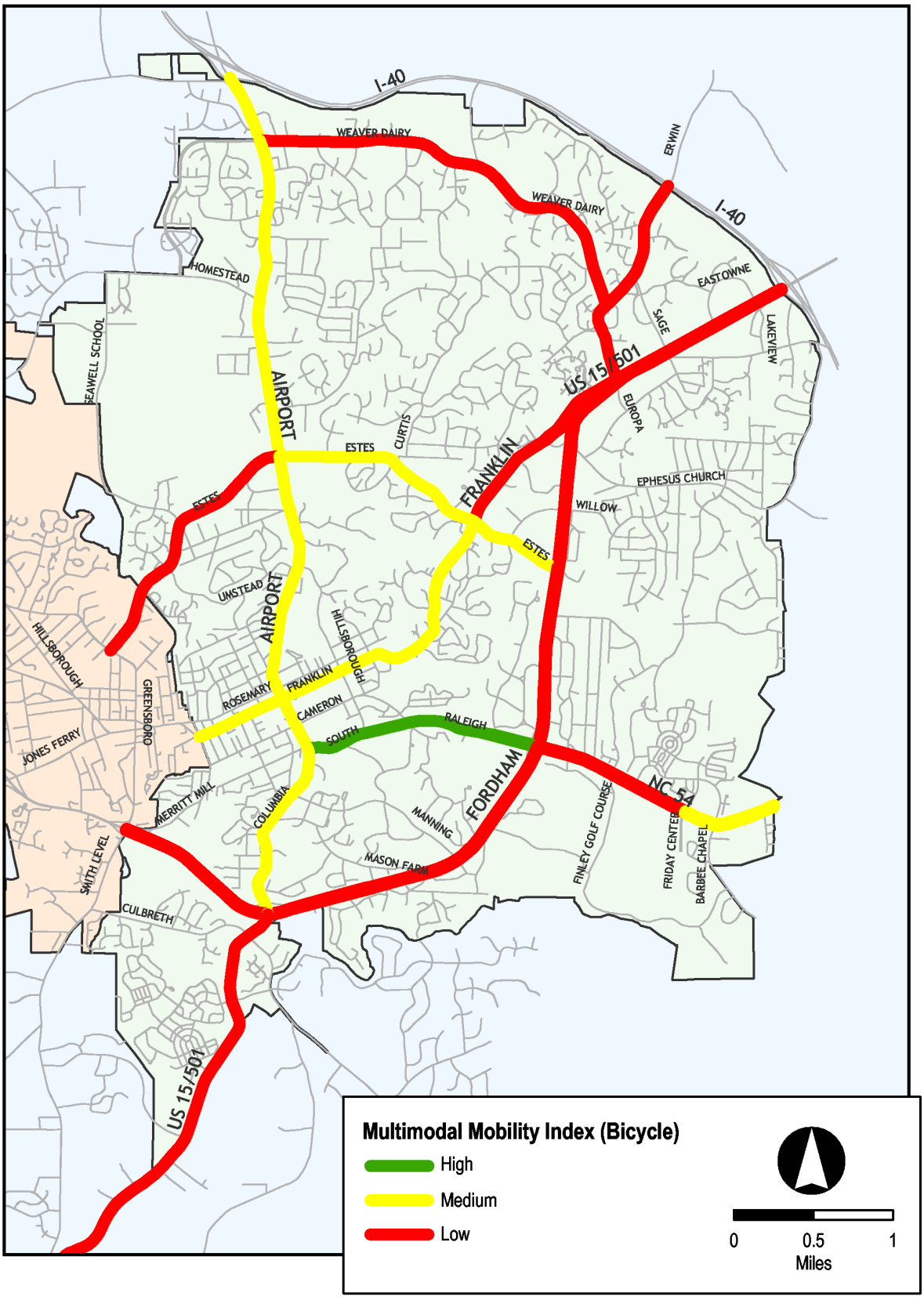


Figure 48 – Pedestrian Mobility

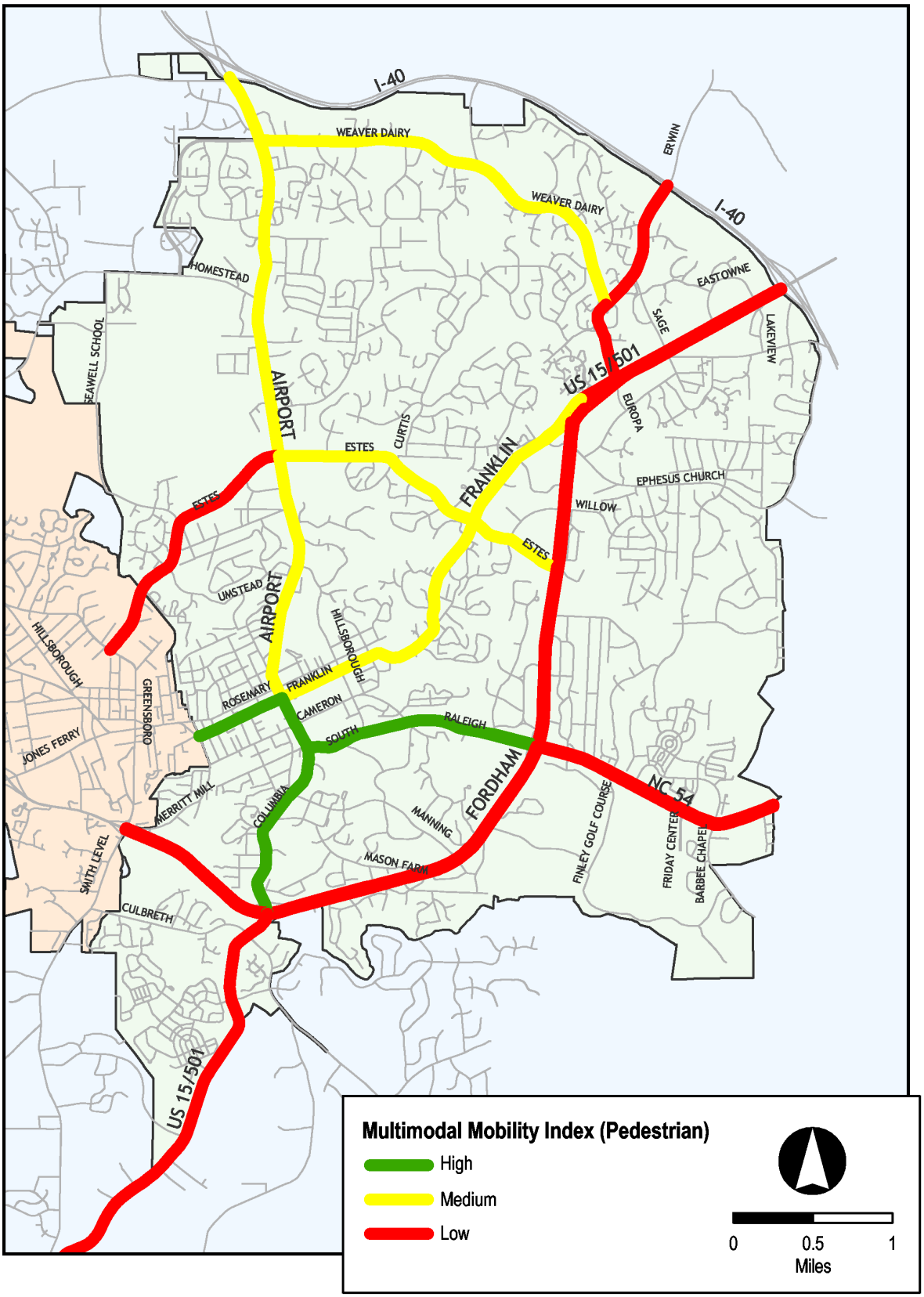
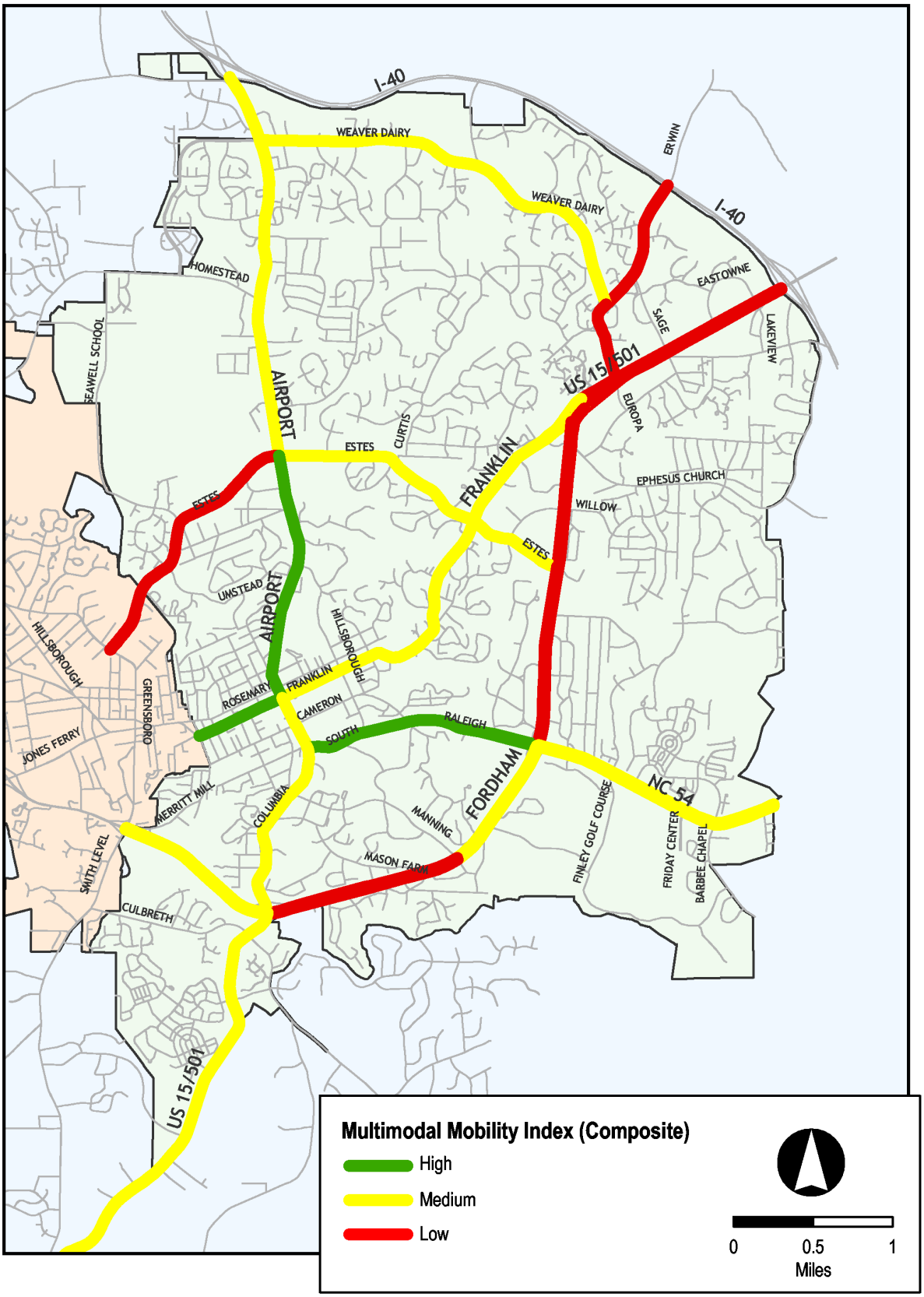


Figure 49 – Composite Multimodal Mobility



Indicator:

OFFICE PARKING

Measurement: Parking Survey
Data: Parking Lot Utilization Data at Major Employers

Why and How

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.

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.

The Chapel Hill Parking Study surveyed different land uses at various times of day throughout the Town. That study will provide an excellent basis for revising the Town's 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. Since the Town of Chapel Hill Parking Study was being performed at the same time as the office parking inventory and it included two additional office park locations, those locations are included here as supplemental locations. The two additional office locations are the Collier Cobb office building and the Eastowne office complex. The supplemental locations will not be included in future mobility report cards. These office park locations are presented in Figure 50. In addition to office parking, the Chapel Hill Parking Study also includes parking surveys at various times of day and various days of week for commercial locations, restaurants, banks, multi-family residential locations, and places of worship. Further details and information on both office parking and the additional locations can be found in that document.

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 2003. 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. The building size data may be slightly different than that found in the 2001 Report Card due to more accurate data being made available for this update. A summary of the building size, total number of spaces, and occupied spaces for 2001 and 2003 is presented in Table L.

Table L – Office Parking Utilization

Site	Building Size (sq ft)	Parking Spaces	Occupied Parking Spaces 2001 Number	2001 Percent	2003 Number	2003 Percent
1 Meadowmont	202,357	750	147	19.6%	362	48.3%
2 Franklin Park	70,886	196	94	48.0%	94	48.0%
3 Europa	198,820	615	303	49.3%	257	41.8%
4 Chapel Hill North	81,400	312	203	65.1%	187	59.9%
5 Eastowne (supplemental)	385,688	893	n/a	n/a	683	76.5%
6 Collier Cobb (supplemental)	9,248	51	n/a	n/a	22	43.1%

Findings and Conclusions

On the supply side, available parking ranged from 2.3 to 5.5 parking spaces per 1000 square feet. The existing minimum parking standard for the Town is 2.5 spaces per 1000 square feet. On the demand side, parking utilization ranged from 1.8 to 2.4 spaces per 1000 square feet and lot occupation ranged from 42% occupied to almost 77% occupied. The parking lot that was most full most often (Eastowne) had the lowest number of available spaces per 1000 square feet of building size. None of the sites exceeded the Town *minimum* standards for spaces per 1000 square feet during the survey.

Looking just at the four sites that were surveyed in 2001, the total number of occupied spaces increases from 747 to 900 spaces (40% occupied to 48% occupied), a 20% increase. However, this is somewhat misleading, as Meadowmont was not completed and had only a few tenants when the 2001 survey was performed. Without Meadowmont or the two supplemental sites, parking utilization actually decreased, dropping from 600 to 538 occupied spaces (53% occupied to 48% occupied). Franklin Park remained the same as in 2001, with Chapel Hill North and Europa dropping 8% and 15% respectively.

The pedestrian/bicycle count location at Airport Road and Northwood Drive is very close to Chapel Hill North and it did have a relatively high pedestrian count in 2003 (it was not counted in 2001) of 352 pedestrians over a 12-hour period, so this may be an indication of alternative mode use at the Chapel Hill North office site. Activity near the Europa site (Europa Drive and Legion Road) was only 87 pedestrians over a 12-hour period. However, this was much higher than the 33 counted at the same location in 2001.

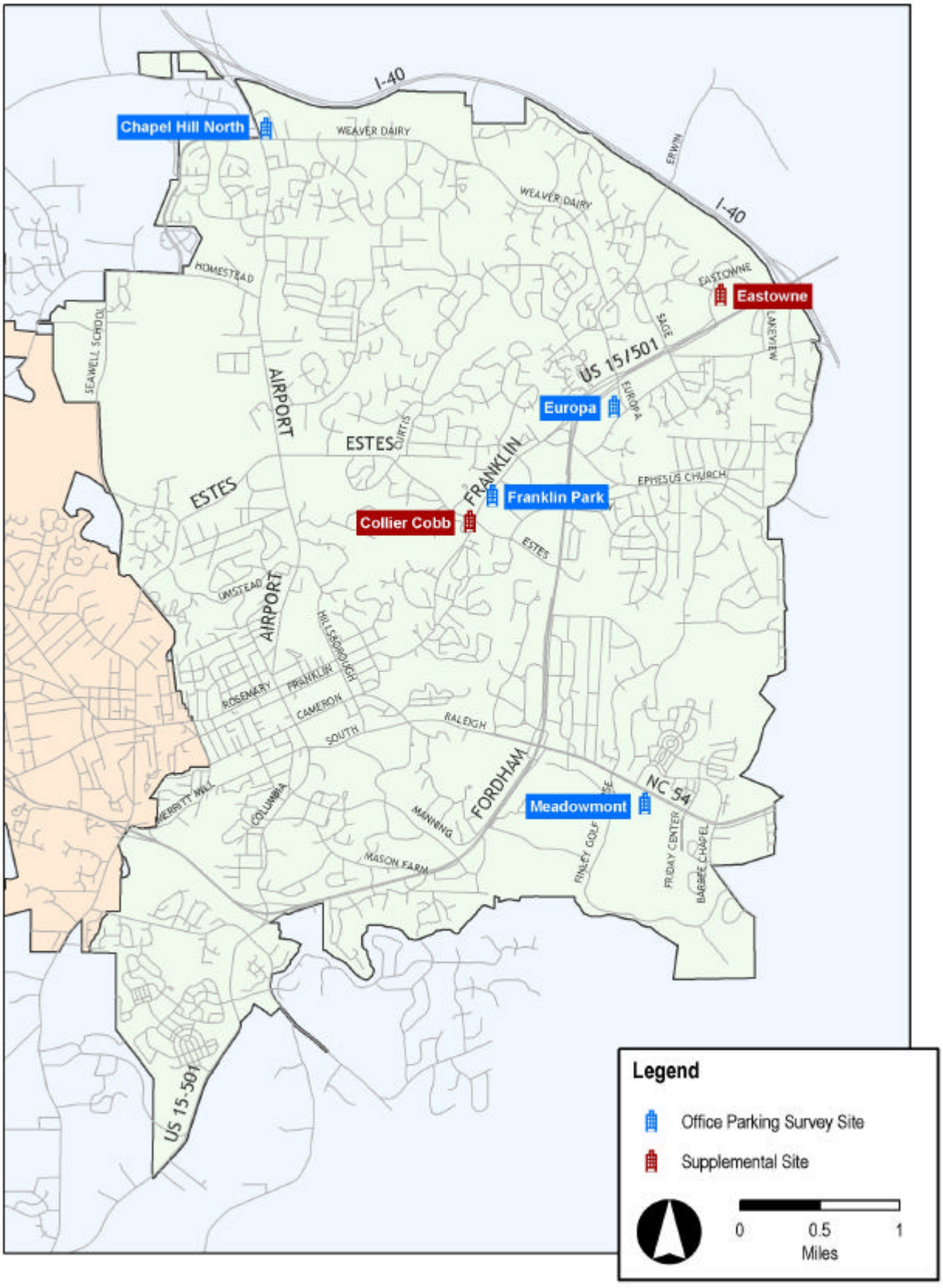
It cannot be determined whether this drop in parking is due to decreased occupancy of these office parks (reduced demand) or an increase in alternative transportation mode usage of employees and/or visitors.

Parking is in very short supply on the University campus. According to the UNC Parking Plan, there are 17,620 parking spaces as of the 2000/2001 academic year, with 14,200 of those being on the main campus. Approximately 8,000 spaces exist for approximately 13,000 employees, or a rate of 0.61 spaces per employee. The number of parking permits issued is 0.77 per employee. The availability of parking is much lower for students, less than 10% each for commuting and resident students. This means that most students and many employees will be utilizing alternative modes of transportation to campus. This

puts a burden on the Town to provide a large amount of the necessary facilities such as enhanced transit service, bicycle lanes and paths, and sidewalks.

The Plan identifies almost 5,500 new spaces to be added by 2010. However it also projects almost a 4,000 space loss of existing spaces, resulting in net gain of only 1,550 spaces. This gain in parking spaces is not expected to maintain the current main campus parking supply ratios for employees and students due to expected increases in employment and enrollment. The one area in which current supply rates will be maintained is in the hospital patient/visitor demand and University visitor lots. Increases in parking spaces for those areas are expected to mirror growth in demand in order to maintain current parking ratios.

Figure 50 – Office Parking Survey Areas



Location 1 – Meadowmont Office Park

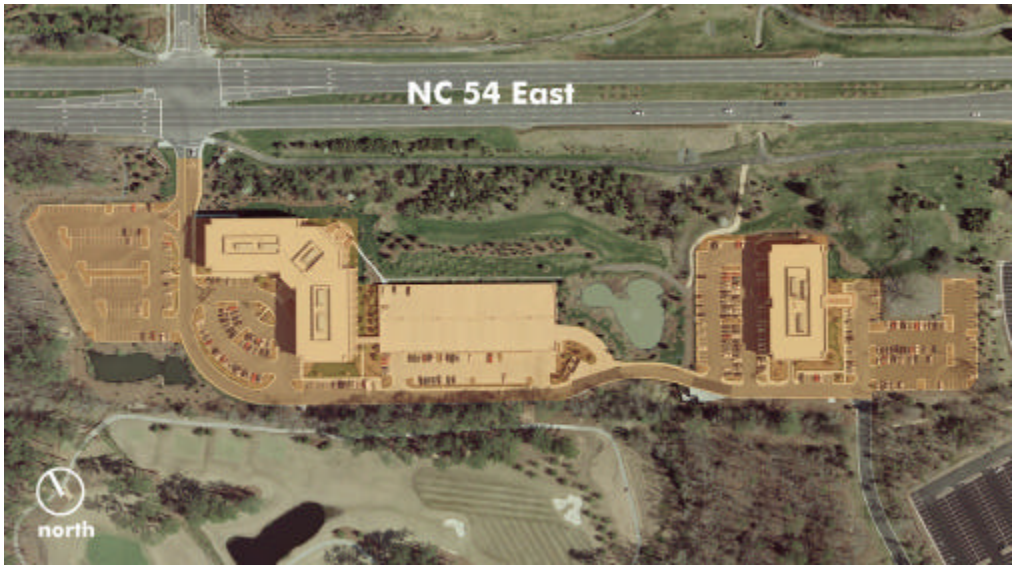
- Available Spaces – 750
- Maximum Occupied Spaces – 362
- Percent Utilized – 48.2%
- Building Square Footage – 202,357
- Parking Spaces per 1000 SF – 3.7
- Parking Utilization per 1000 SF – 1.8

Changes between 2001 and 2003

- Utilized Spaces – 147 to 362
- Percent Utilized – 19.8% to 48.2%

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 234 to 313 in the morning, 244 at lunch, and 296 to 362 in the afternoon. Overall, the parking utilization has increased substantially from 2001. This is due to the fact that the building was recently completed at the time of the last survey, and did not have many tenants at the time.

Figure 51 – Meadowmont Office Park



Location 2 – Franklin Park

- Available Spaces – 196
- Maximum Occupied Spaces – 94
- Percent Utilized – 47.9%
- Building Square Footage – 70,886
- Parking Spaces per 1000 SF – 2.8
- Parking Utilization per 1000 SF – 1.3

Changes between 2001 and 2003
- Utilized Spaces – 94 both years
- Percent Utilized – 47.9% both years

Franklin Park has three office buildings and is accessed at two locations along Franklin Street. Moderate parking turnover was observed during the utilization count. While overall utilization was only around 48 percent, the spaces serving the northern building were consistently 100-percent utilized or close to it. The office park had 80 to 89 spaces occupied in the morning, 69 during lunch, and 89 to 94 in the afternoon. The parking utilization at this site is comparable to that found in 2001.

Figure 52 – Franklin Park

Location 3 – Europa

- Available Spaces – 615
- Maximum Occupied Spaces – 257
- Percent Utilized – 41.8%
- Building Square Footage – 198,820
- Parking Spaces per 1000 SF – 3.1
- Parking Utilization per 1000 SF – 1.3

Changes between 2001 and 2003
- Utilized Spaces –303 to 257
- Percent Utilized – 49.2% to 41.8%

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 afternoon, with slightly lower utilization in the morning (235 to 245) and lunch time (226). Utilization was slightly higher on the middle level, and slightly lower on the lowest level. Utilization was down considerably from the 2001 inventory, with 15% fewer occupied spaces than in 2001.

Figure 53 – Europa

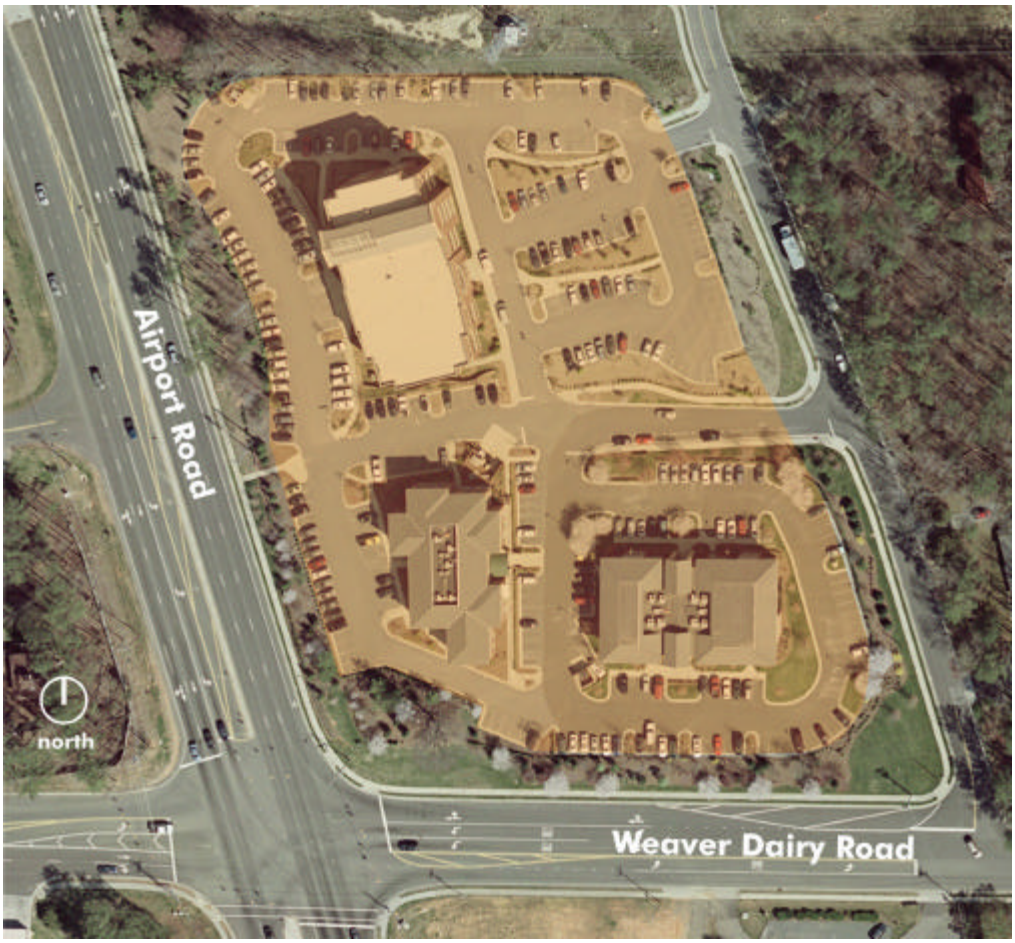
Location 4 – Chapel Hill North

- Available Spaces – 312
- Utilized Spaces – 187
- Percent Utilized – 60.0%
- Building Square Footage – 81,400
- Parking Spaces per 1000 SF – 3.8
- Parking Utilization per 1000 SF – 2.3

Changes between 2001 and 2003
- Utilized Spaces – 203 to 187
- Percent Utilized – 67.2% to 60.0%

Chapel Hill North is located at the northeast corner of Airport Road 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 a low of 146 spaces occupied during the lunch hour, 152 to 186 spaces occupied in the morning, and 162 to 187 spaces occupied in the afternoon. Utilization was down slightly from the 2001 study, dropping from 203 occupied spaces in 2001 to 187 in 2003 (8% decrease).

Figure 54 – Chapel Hill North



Location 5 (Supplemental) – Eastowne

- Available Spaces – 890
- Utilized Spaces – 683
- Percent Utilized – 76.7%
- Building Square Footage – 385,688
- Parking Spaces per 1000 SF – 2.3
- Parking Utilization per 1000 SF – 1.8

Eastowne is located on Eastowne Drive on the east side of US 15/501 just south of I-40. Eight multi-story office buildings and four parking lots make up this site. The parking lots are accessible at various locations on Eastowne Drive. Parking utilization was fairly steady throughout the day, with 659 to 683 spaces occupied in the morning, 613 occupied during lunch, and 573 to 652 sites occupied in the afternoon. This location by far had the highest percentage of occupied parking spaces of any site inventoried. This is also the oldest of the large sites.

Figure 55 – Eastowne

Location 6 (Supplemental) – Collier Cobb

- Available Spaces – 51
- Utilized Spaces – 22
- Percent Utilized – 43.1%
- Building Square Footage – 9,248
- Parking Spaces per 1000 SF – 5.5
- Parking Utilization per 1000 SF – 2.4

Collier Cobb is located on the southwest corner of Franklin Street and Estes Drive. Access is provided at two locations on Estes Drive and one on Franklin Street. Parking utilization varied throughout the day, but was never very high. The morning had between 13 and 15 occupied spaces, 18 at lunch, and 22 in the afternoon.

Figure 56 – Collier Cobb