CHAPTER TWO
EXISTING CONDITIONS

This chapter provides the context for recommendations in the remainder of the plan. The existing conditions described here include basic demographic and transportation network information, citizen experiences and perspectives about walking in Raleigh, and the pedestrian demand and needs analysis completed as part of the study. A concise list of pedestrian system needs is drawn from existing conditions, especially with respect to citizen input.

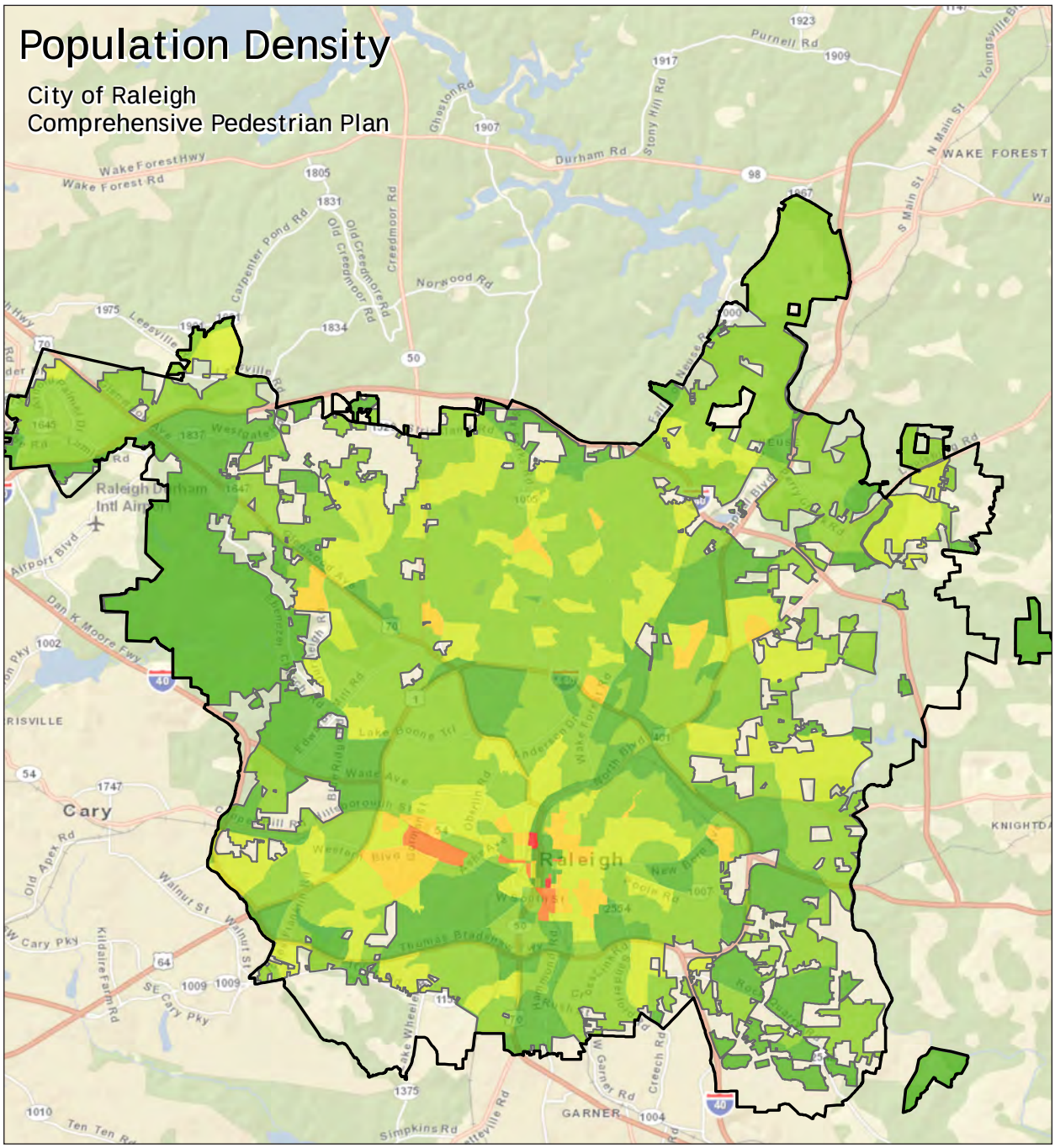
The plan context is also informed by recent studies and completed projects that positively affect the pedestrian network. Voter affirmation of transportation funding needs also influences the information in this chapter. Complete Streets and safety policies included in the Comprehensive Plan (and referenced in Chapter 1 of this plan) are reflected in several recent projects. Summaries of several of these studies and projects are included in this chapter.

Demographics and Existing Transportation Network

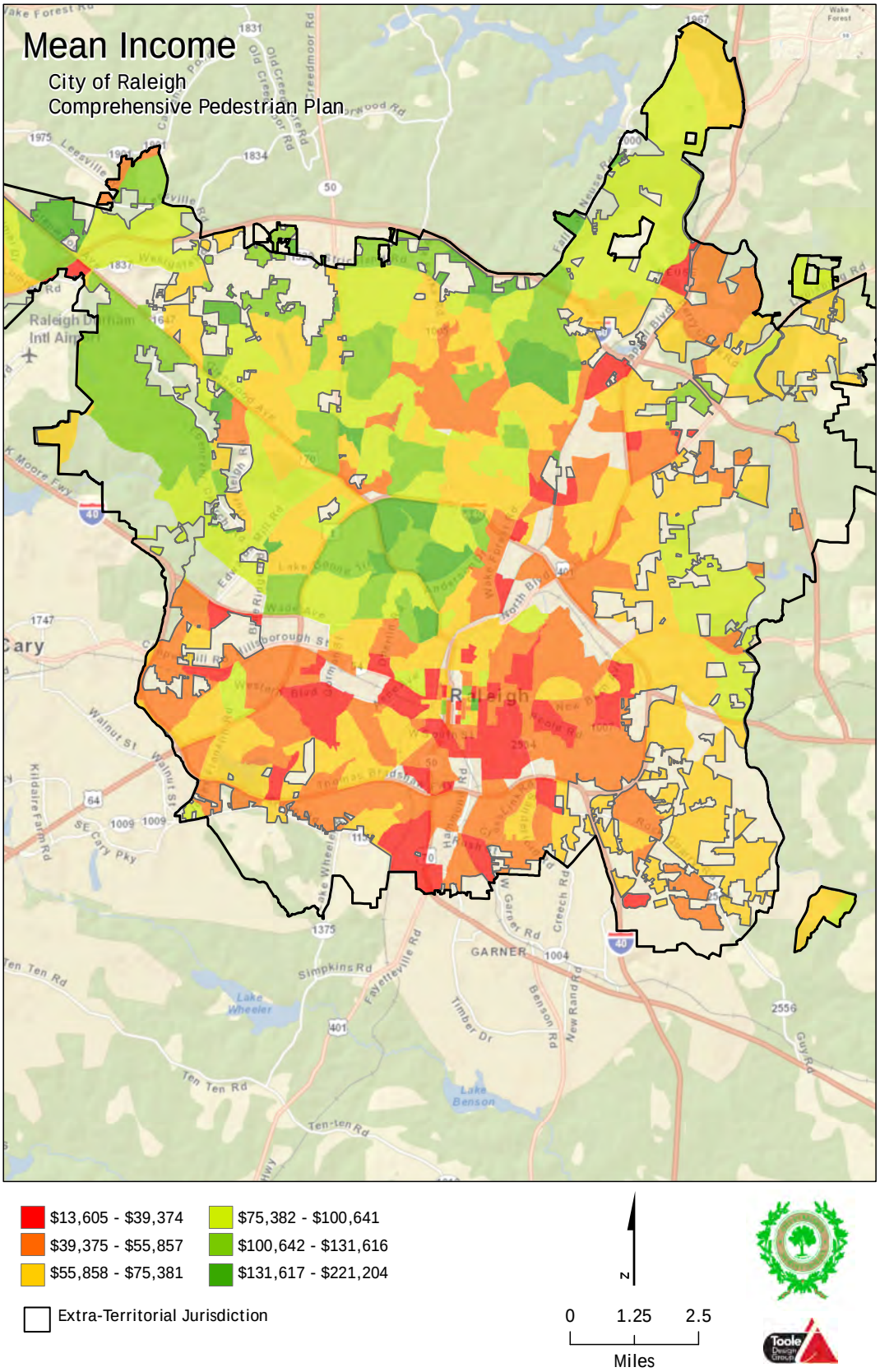
The City's population is 403,892, almost half of Wake County's population of 900,993.[1] The City's corporate limits encompass nearly 144 square miles and its planning jurisdiction extends to 184 square miles. As Map 1 shows, development in Raleigh has resulted in relatively few densely populated areas – downtown Raleigh is one of the few notable exceptions. Average household income is more varied throughout the City, with the lowest averages in the southwest, southeast, and eastern neighborhoods, as shown in Map 2.

[1] All census information is from the 2010 Census.

Map 1. Raleigh Population Density



Map 2. Raleigh Average Household Income



The transportation system serving the City includes 1,761 miles of roads 1,190 miles of sidewalk, four miles of bike lanes and 78 miles of bikeable greenway trails.[2] The City of Raleigh maintains approximately 1,017 miles of these roads and all of the sidewalks, bikeways and trails. People living and working in Raleigh make over 6.4 million trips each year on bus service provided by the City-operated Capital Area Transit (CAT) and regional bus service operated by Triangle Transit (TTA). On the CAT system, forty-two bus routes carry transit riders to and from their destinations, boarding and alighting at hundreds of bus stops. TTA provides 13 regional or express bus service to those working and living in Raleigh.

Streets in Raleigh are classified as one of four types: Arterials (principal and secondary), thoroughfares (major and minor), collectors, and local. The characteristics of the first three types are informed by motor vehicle travel and do not include a reference to sidewalk widths and placement.[3]

For example, the Typical Section for a Major Thoroughfare could include the following: Minimum of five foot sidewalk with three foot planted buffer. The City's Comprehensive Plan includes a description of the roadway designs for street types as providing ". . . little flexibility, particularly when evaluating the surrounding land uses and potential users of the corridor." This assessment of current roadway street standards provided the impetus for the inclusion of a complete streets policy in the 2030 Comprehensive Plan. This typology is proposed for revision in the City's pending Unified Development Ordinance (UDO), which will modify the street classifications based on Avenues, Boulevards, and Parkways. The 2030

Classification	Typical Two-Way Volumes	Typical Section	Examples
Principal Arterial	40,000 Vehicles per Day (VPD) and above	At least three lanes in each direction, with medians and above limitations or restrictions on driveway access	I-40, I-440, US 1 (Capital Blvd.), US 70 (Glenwood Ave.), US 401 (Louisburg Rd.)
Secondary Arterial	25,000 -45,000 VPD	Three lanes in each direction, with medians or a center turn lane and limitations on driveway access	NC 50 (Creedmoor Rd.), Wake Forest Rd., Falls of Neuse Rd., Hammond Rd., Brier Creek Pkwy.
Major Thoroughfare	15,000 -35,000 VPD	Two lanes in each direction, with medians or a center turn lane and limitations on driveway access	Millbrook Rd., Lynn Rd., Hillsborough St., Blue Ridge Rd., Leesville Rd., Martin Luther King Jr. Blvd.
Minor Thoroughfare	8,000-20,000 VPD	At least one lane in each direction, with medians or a center tum lane	Clark Avenue, Ray Rd., Newton Rd., Lassiter Mill Rd., St. Marys St., Tarboro Rd.
Collector Street	2,000 -8,000 VPD	One lane in each direction	Method Rd., Athens Dr., Marvino Ln., Harps Mill Rd., Falls River Ave., Old Poole Rd.

[2] From the Transportation element of the 2030 Comprehensive Plan, Element 8, page 62.

[3] Comprehensive Plan, Transportation Element, page 68.

Comprehensive Plan's Transportation Elements described four types of corridors and applies them to all existing and proposed streets in Raleigh classified as minor thoroughfare or higher.[4] These corridor types are:

Highways. These limited-access, gradeseparated roadways provide little to nodirect access to adjacent land uses.

Multi-modal Streets. Transit andnon-motorized modes are anticipated toprovide a significant share of the total capacityof these streets.

Urban Street. These are like multi-modalstreets but are not anticipated to have the samelevel of transit service. As such, they can be narrower, include on-street parking and enhancedpedestrian facilities.

Parkways. These streets are suburban in natureand more likely to be framed by landscapingrather than buildings, with landscaped medians.

Some recently completed projects have improved the walkability along and across corridors such as Hillsborough Street. Such projects are evidence that the City is transitioning to its stated goal of a stronger transportation-land use connection (see "Looking Forward" later in this Chapter). These projects include a number of best practices for new sidewalks where pedestrian travel is evidenced by worn paths, access management (to limit the number of driveways crossing the sidewalk), and pedestrian median refuges (to shorten pedestrian crossing distances with two-stage crossings). More information on these types of infrastructure features that benefit pedestrians is included in Chapter 3, "Best Practices."

Raleigh's pedestrian network is comprised of sidewalks, roadway crossings, and a trail system – all with accompanying streetscape elements that contribute to safe and comfortable travel on foot. Sidewalks are the backbone of the pedestrian network, as this is where most pedestrian travel occurs. Thus, the sidewalk is the space where pedestrians should be able to move freely and comfortably. Many Raleigh streets include a sidewalk on at least one side; however, sidewalks are missing on some streets and in many cases gaps limit the connectivity of the sidewalk network. The presence of sidewalks along streets is not necessarily correlated with adjacent land use. For example, commercial areas

Photo 3. Mordecai Drive.

Photo 4. Hillsborough Street.

[4] Comprehensive Plan, Transportation Element, page 76.

such as Hillsborough Street and neighborhoods such as along Mordecai Drive include sidewalks.

Many streets along which pedestrians regularly travel lack sidewalks, such as Clark Street near Cameron Village (Photo 5) and along New Bern Road (Photo 7). The worn path in both photos is visible evidence of pedestrian travel in these areas. Bus stops along these roads often lack sidewalk access; and commercial establishments may lack sidewalk connections between them (lower photos). Missing sidewalks identified in FY 2011 are shown in Map 3.

Intersections and mid-block crossings are a

Photo 5. Clark Street.

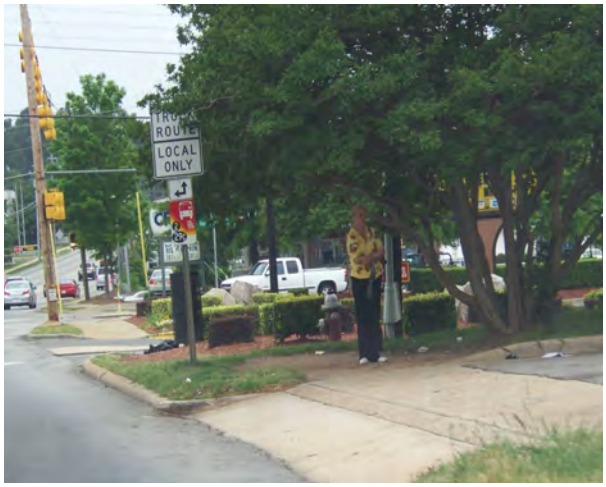


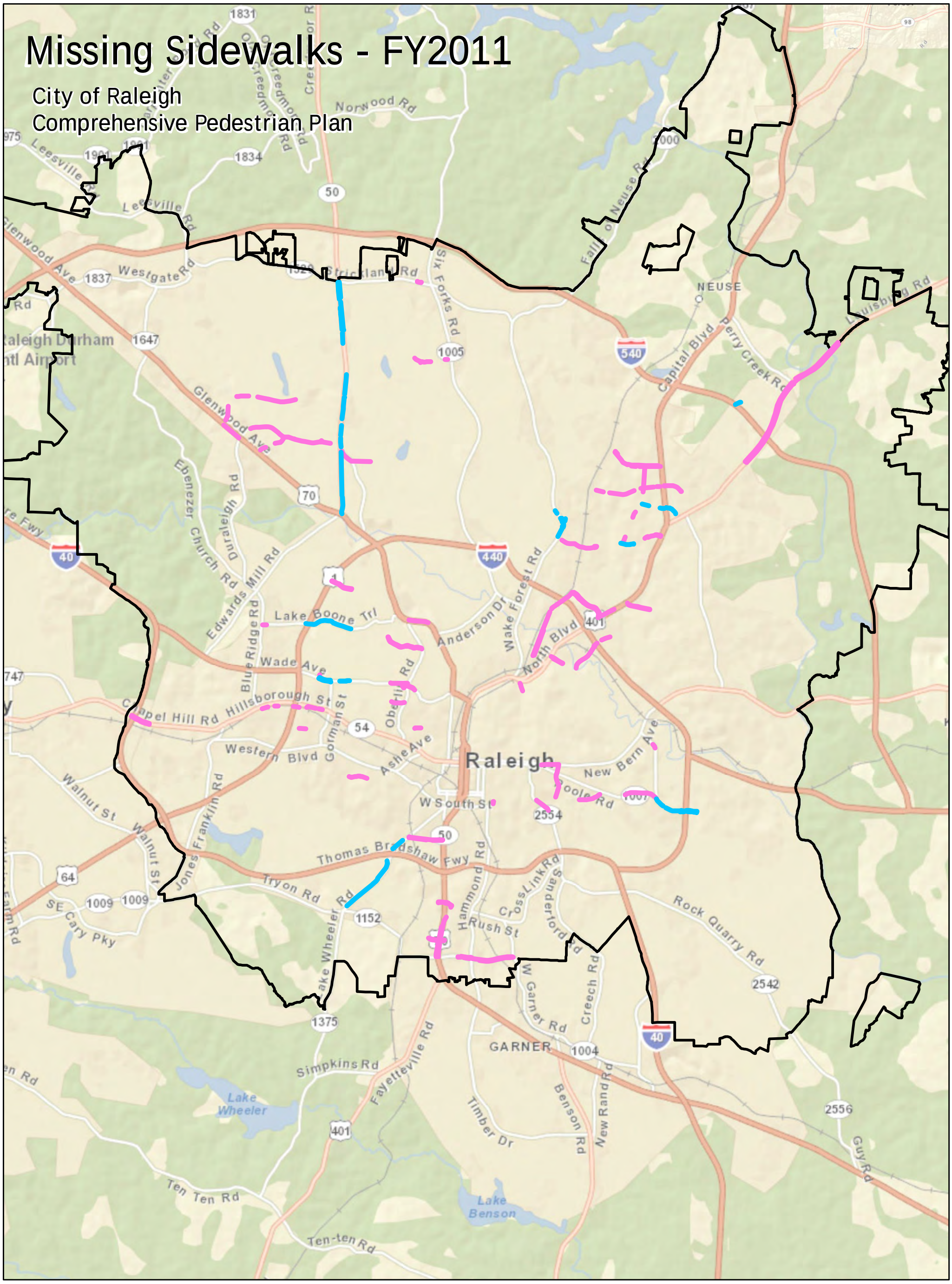
Photo 6. Wake Forest Road at Hardimont Road

Photo 7. New Berm Avenue.

Photo 8. New Bern Avenue.

Missing Sidewalks - FY2011

City of Raleigh
Comprehensive Pedestrian Plan



Extra-Territorial Jurisdiction

Missing, Funding committed (10.8 miles)

Missing, Funding to be identified (37.6 miles)

N

0 1.5 3

Miles

key part of the pedestrian network. Features of well-designed crossings typically include the time and space for pedestrians to cross safely and comfortably with the presence of pedestrian signals, striped crosswalks, and media refuge islands. While many intersections in Raleigh include these features (Photo 10), other intersections do not (Photo 9).

Raleigh's greenway system serves both recreational and transportation purposes, connecting sidewalks along roadways and at key locations away from roadways. While this project did not focus on the trail system, elements such as greenway crossings of roadways were investigated. Many of these crossings occur at intersections; some occur at mid-block locations (away from intersections) and require special consideration.

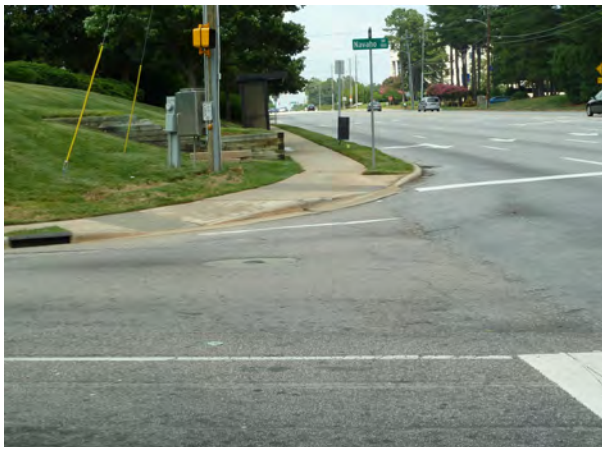


Photo 9. Navaho Drive and Wake Forest Road.

Photo 10. Varsity Drive and Avent Ferry Road.

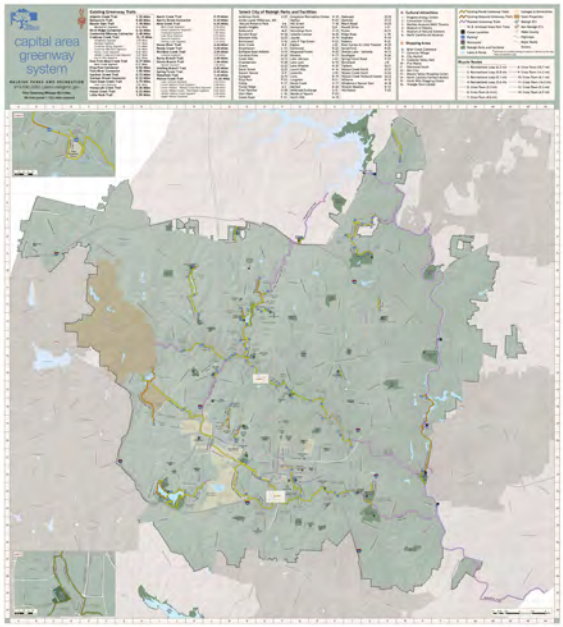


Photo 11. Trail head

Raleigh's Walk Score

Raleigh is ranked 36th nationally for walkability by the organization Walk Score. Walk Score measures how easy it is to travel within a community with less dependence on a motor vehicle. The Walk Score is calculated by mapping out the walking distance to amenities such as schools, grocery stores and employment centers and weighting their pedestrian friendliness, such as having long blocks or low intersection density. Scores ranging between zero and 100 are divided into five categories:[5]

WALKERS PARADISE (Daily errands do not require a car)	90-100
VERY WALKABLE (Most errands can be accomplished on foot)	70-89
SOMEWHAT WALKABLE (Some amenities within walking distance)	50-69
CAR-DEPENDENT (Few amenities within walking distance)	25-49
CAR-DEPENDENT (Almost all errands require a car)	0-24

According to Walk Score, walkability varies by area in Raleigh, with scores ranging from 37 (car-dependent) at Anderson Drive and Royster Street to 78 (very walkable) at Shaw University. The 2011 Walk Score rankings, with respect to six factors, are shown below:

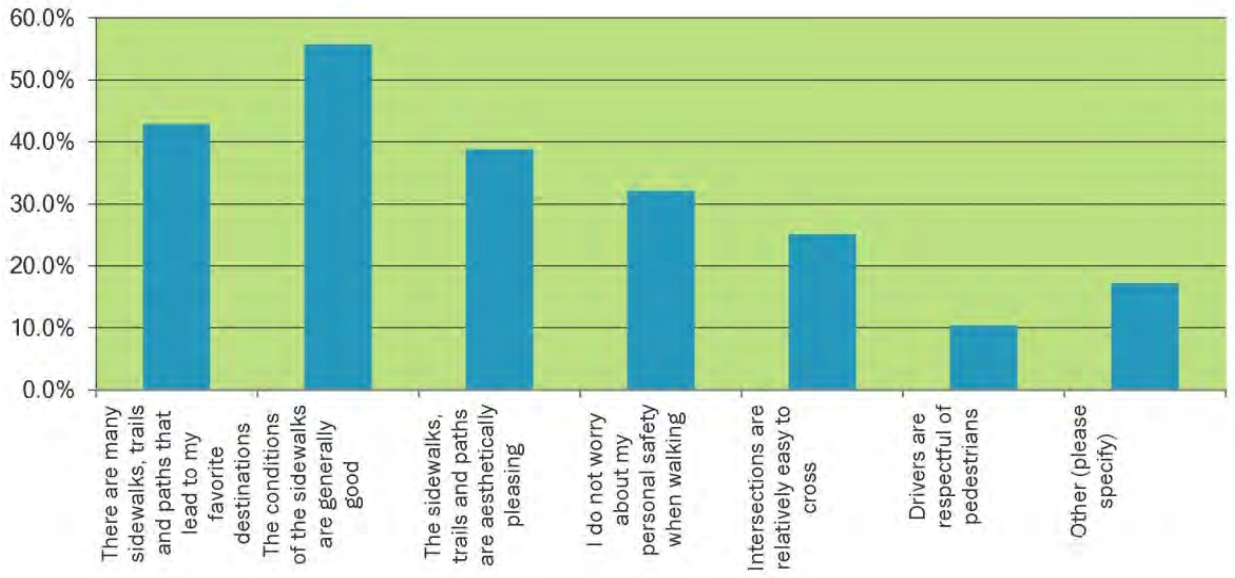
Factor	Raleigh's relative place
Mode Share (percentage of people walking)	Middle one-third
Safety	Middle one-third
Funding	Top one-third
Staffing	Bottom one-third
Pedestrian and bicycle policies	Middle one-third
Advocacy Capacity	Bottom one-third

The Public's Experience with Raleigh's Pedestrian Network

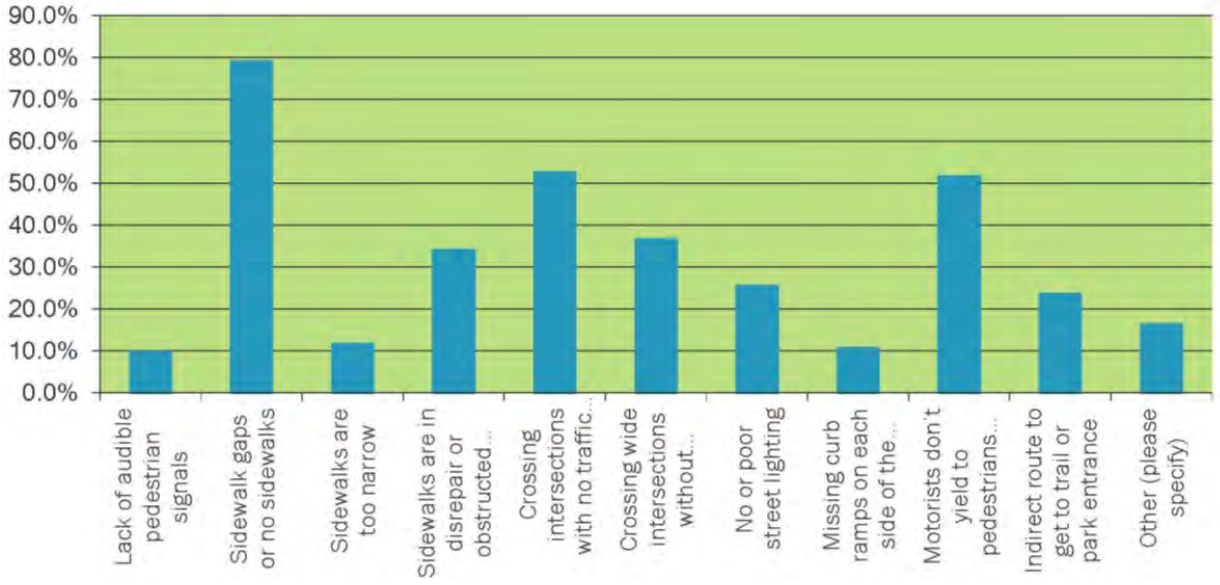
Raleigh's citizens were key contributors during the planning process. Their input was solicited in a number of different ways, including public meetings and on-line methods. A picture of Raleigh's pedestrian network emerges from public input through an on-line survey and an interactive mapping website. Key questions answered by the survey's 872 respondents illuminate what is working with the pedestrian system and what does not work, and what is important to change.

[5] More information is available at: http://www.walkscore.com/methodology.shtml Walk Score. *Walk Score Methodology*. Seattle, WA. 2011

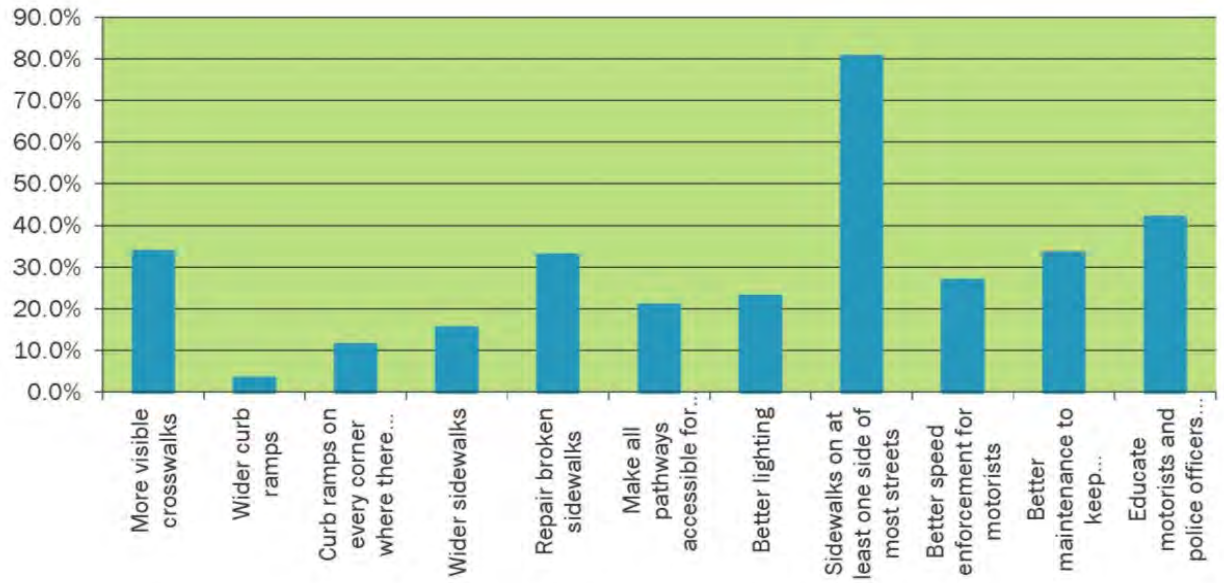
How the pedestrian network benefits walking in Raleigh. In answer to the question, "What do you like best about walking in Raleigh?" respondents answered favorably about the connectivity provided by sidewalks, trails and paths (55.5 percent); their overall physical condition (42.7 percent) and the pleasant environment these facilities offer (38.6 percent).



How the pedestrian network makes walking in Raleigh difficult. In answer to the question, "What makes walking difficult in Raleigh?" respondents most often identified sidewalks gaps (78.9 percent). Crossing intersections with a high number of motor vehicles (52.5 percent) and motorists' behavior towards pedestrians (51.6 percent) were the next two reasons.



Changes that are needed to improve walking conditions. In answer to the question, "What would improve walking in Raleigh?" Respondents' top choice is sidewalks on at least one side of most streets (80.6 percent), followed by better educated motorists and police officers about pedestrian safety (41.9 percent), then more visible crosswalks (33.8 percent) and repaired sidewalks (33.5 percent). (Bottom graph).

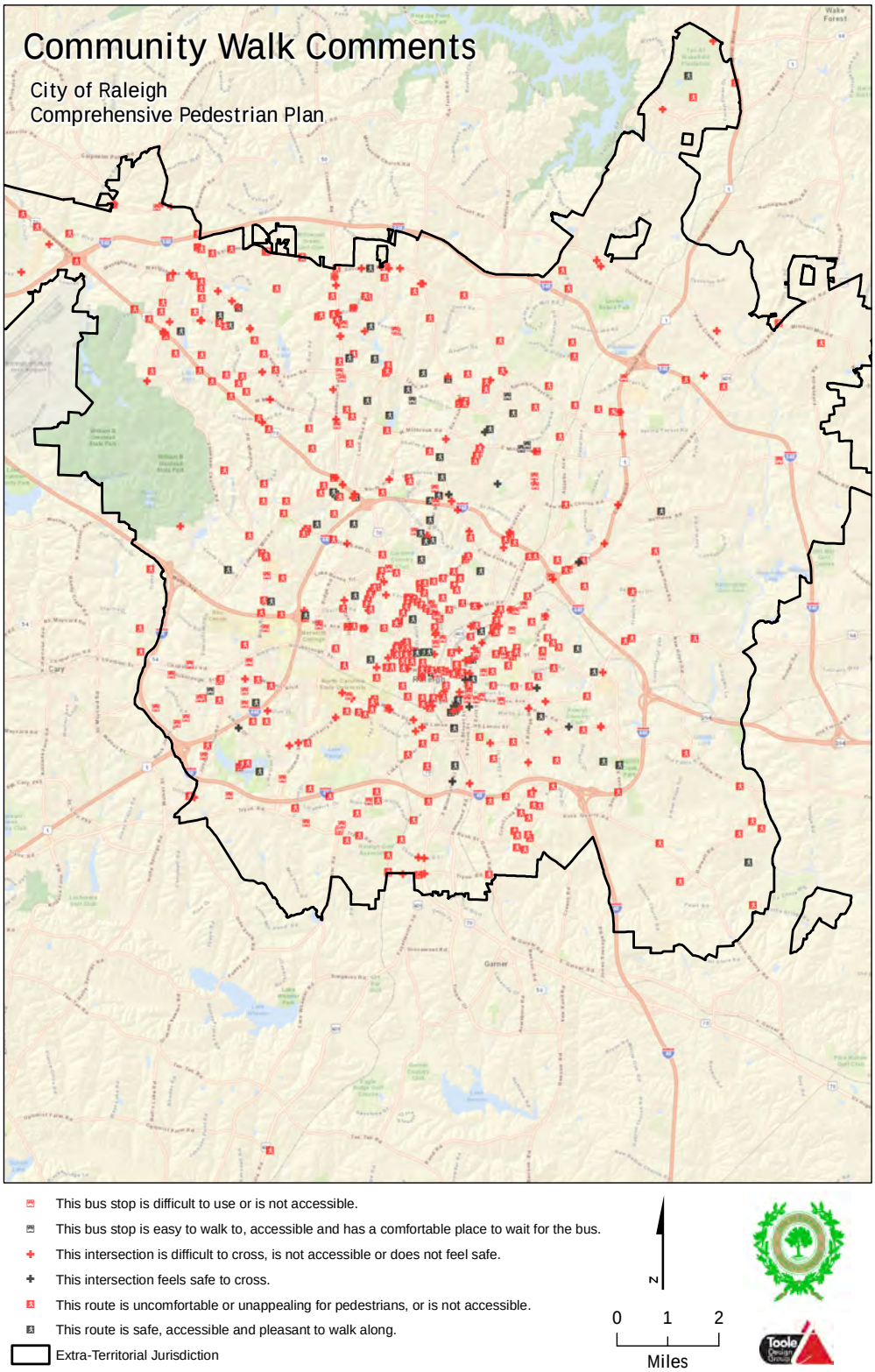


CommunityWalk, the interactive on-line mapping exercise in which Raleigh citizens participated during the spring of 2011, provides information on 670 locations where the pedestrian network works well or needs improvements. The locations are categorized into one of three types: walking routes, intersections, and bus stops. Respondents provided a general conditions statement for each location type, indicating whether or not the location works well for pedestrians. A summary of the location conditions for each of these types is below. All comments can be viewed on the CommunityWalk site. Example comments are provided in Appendix C, Summary of Public Involvement.

61 points This **route** is safe, accessible and pleasant to walk along.	13 points This **intersection** feels safe to cross.	6 points This **bus stop** is easy to walk to, accessible and has a comfortable place to wait for the bus.
347 points This **route** is uncomfortable or unappealing for pedestrians, or is not accessible.	170 points This **intersection** is difficult to cross, is not accessible or does not feel safe.	73 points This **bus stop** is difficult to use or is not accessible.

Map 4 shows the location of these points. Comments are included in nearly all areas of the City.

Map 4. Locations identified by Community Walk respondents.



Demand and Needs Analysis

Pedestrian demand and needs analysis was conducted in order to help identify areas in Raleigh's pedestrian network where there is relatively high demand for pedestrian travel. Investments at these locations could improve pedestrian safety and comfort, potentially increasing the number of people walking. The approach creates an objective, analysis-based picture of demand and needs by using computerized geographic information systems (GIS) to map and analyze many factors, such as, population density and household income as presented at the beginning of this chapter. Other factors included reflect the City's goal of creating a stronger connection between transportation and land use. Note that an area may have a relatively high demand score, but not have large numbers of pedestrians currently walking due to poor walking infrastructure. Finally, the needs analysis reflects conditions described in the CommunityWalk mapping exercise.

Demand and Needs factors used for the analysis are shown below.

Once the areas of high pedestrian demand and need are mapped, the two are combined to create a picture of where the investment of improvement funds may have the best impact, shown in Map 5. Map of Combined Demand and Needs in Raleigh.. This analysis was used to identify areas for recommended pedestrian

Demand
Where do we expect to find pedestrians walking?
Pedestrian generators such as: » Multi-family housing » Schools » Employment centers » Park and trail entrances » Civic buildings » Shopping and entertainment venues » Bus stops

Needs
Where is pedestrian infrastructure needed because of existing conditions?
Long crossing distances: » Missing crosswalk, pedestrian signals » High traffic volume and speeds » Significant distance between traffic signals and stop signs » High number of crashes involving pedestrians » Large proportion of seniors and school-age children » Average household income

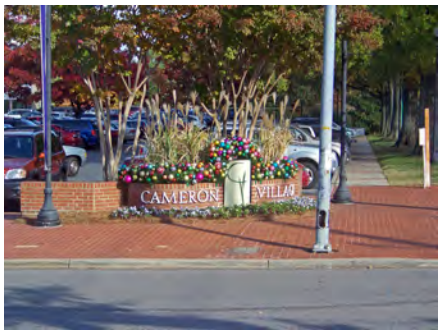


Photo 12. Demand: Shopping and Entertainment.

Photo 16. Demand: Schools.

Photo 13. Demand: Public Buildings.

Photo 17. Need: Missing crosswalks.

Photo 14. Need: Few safe places to cross.

Photo 18. Need: High percentage of seniors and children.

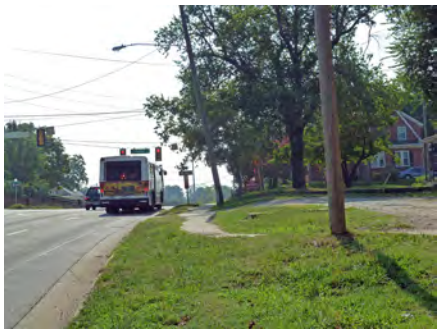
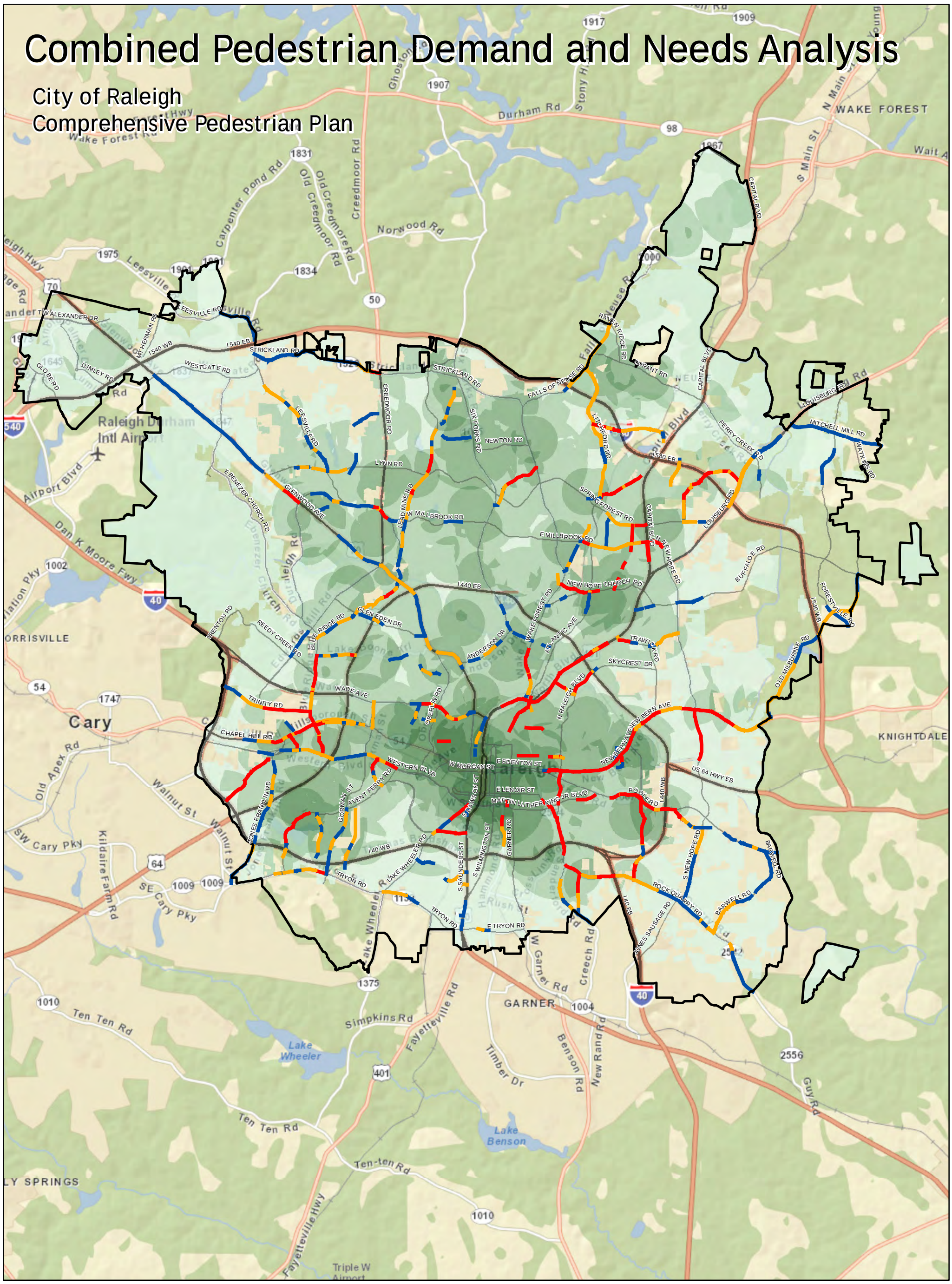


Photo 15. Demand: Bus stops.

Photo 19. Need: Long crossing distances.

Combined Pedestrian Demand and Needs Analysis

City of Raleigh
Comprehensive Pedestrian Plan



Demand

Low

High

Level of Need

Low

High

Extra-Territorial Jurisdiction

N

0 1.25 2.5

Miles

December, 2012

infrastructure improvements and "Program Initiatives for Walkable Raleigh".

More information on the demand and needs analysis, as well as details on pedestrian-related crashes is below.

Pedestrian Demand. The pedestrian demand analysis assessed the relative amounts of pedestrian activity that are anticipated in different parts of the City. Evaluating potential pedestrian demand allows the City to focus investments in locations that will benefit the greatest number of people. This information can inform the selection and prioritization of a range of pedestrian improvements such as sidewalks, curb ramps, and crosswalks.

Pedestrian demand is determined by scoring and weighting population density and pedestrian generators. Scores are assigned such that lower scores suggest fewer people are likely to be walking. Areas or locations with higher scores suggest that more people are likely to be walking.

Population densities are the first element used in the pedestrian demand analysis. Densities from the 2010 Census were scored as a general proxy for all home-based trips. It is reasonable to assume that areas with higher population densities will have higher potential for pedestrian activity. The following density intervals and weightings were used:

Population per Square Mile	Score +
0 to 1,596	0
1,597 to 4,059	2
4,060 to 7,931	4
7,932 to 16,315	6
16,316 to 31,800	8
31,801 to 56,845	10

Pedestrian generators are the second element used in the demand analysis. Pedestrian generators are specific destinations to and from which people are expected to walk. Pedestrian generators used for Raleigh's demand analysis included colleges and universities, tourist attractions, schools, transit facilities, retail corridors, community services, and parks. These pedestrian generators were scored in two separate ways:

- Their potential for generating pedestrian activity, designated as high, medium and low (see the high, medium, and low generates listed in the chart below); and
- The importance of a safe and comfortable pedestrian network within specific distances from the generator.

The chart on the next page shows pedestrian generators grouped into high, medium and low categories. This grouping reflects the assumption that different types of destinations generate different levels of activity. For example, CAT and TTA bus stops are likely to generate more pedestrian traffic than low-density residential areas.

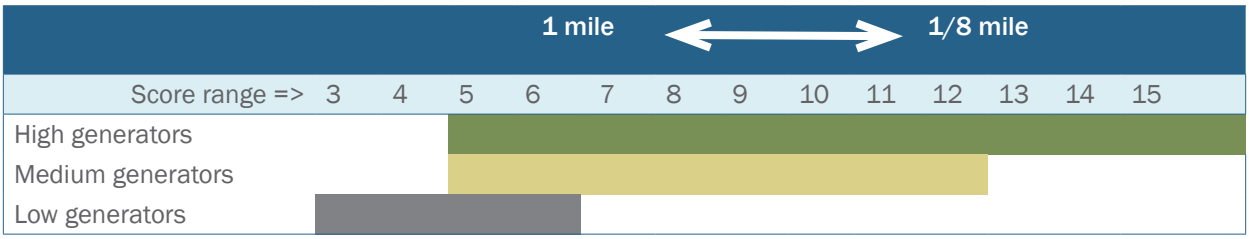
High generators
Universities or Colleges
Medium-demand places
High-demand places
Bus stops
Schools, K-12
High-density residential
Libraries, recreation centers, government centers
Growth Framework Plan

Medium generators
Future light-rail stops
Medium-density residential
Major parks or trail heads

Low Generator
Low-demand places
Low-density residential

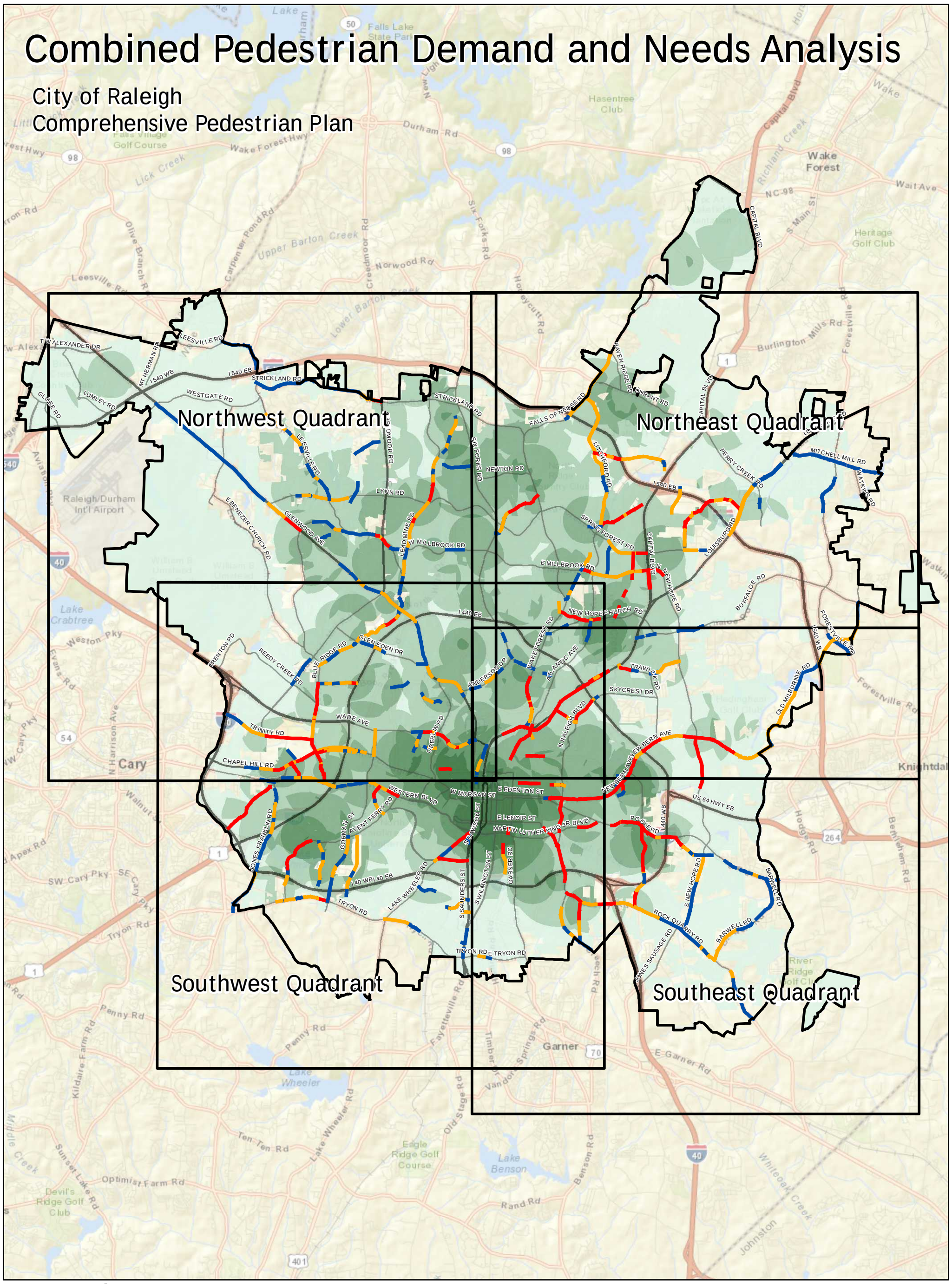
The analysis also accounts for the distance people are willing to walk to and from different types of destinations. It recognizes that these distances are not the same for all pedestrian generators. For example, people may be more likely to walk farther to a park or trail than to the dry cleaners. The analysis used distances of 1/8-mile, ¼-mile, ½-mile, and 1 mile generally scoring high, medium and low generators within set ranges. The chart below shows the range of scores assigned to pedestrian generator in the high, medium and low categories.

Map 6 shows the results of the pedestrian demand analysis. Areas with higher scores, i.e., greater pedestrian demand, are shown in red. These "hot spots" are places where there are currently more pedestrians or where there is the potential for more travel on foot. The presence of complete, safe and comfortable pedestrian infrastructure is not a factor in determining pedestrian demand. Locations that the City wants to encourage more pedestrians to travel to and from include public facilities such as libraries and recreation centers, as well as areas that are designated in the Comprehensive Plan's Growth Framework Plan.



Combined Pedestrian Demand and Needs Analysis

City of Raleigh
Comprehensive Pedestrian Plan



Demand

Low

High

Level of Need

Low

High

Extra-Territorial Jurisdiction

N

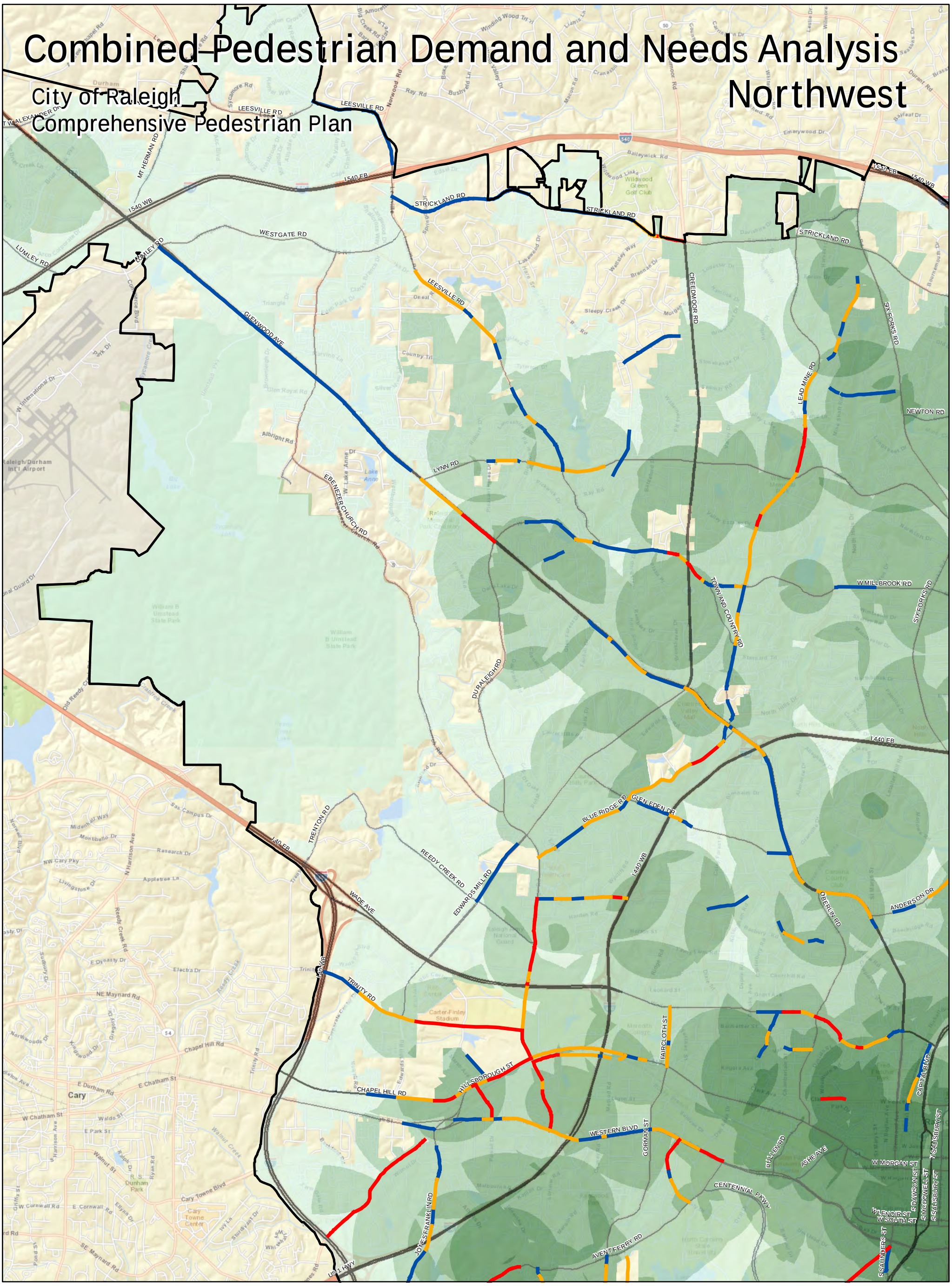
0 1.25 2.5

Miles

December, 2012

Combined Pedestrian Demand and Needs Analysis
Northwest

City of Raleigh
Comprehensive Pedestrian Plan



Demand

Low

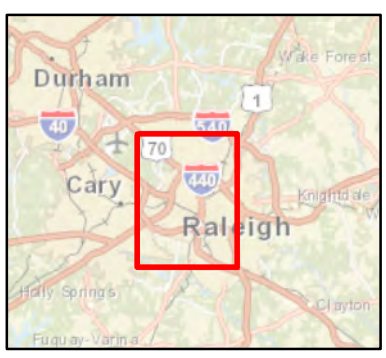
High

Level of Need

Low

High

Extra-Territorial Jurisdiction



N

0 0.5 1

Miles

December, 2012

Combined Pedestrian Demand and Needs Analysis
Northeast

City of Raleigh
Comprehensive Pedestrian Plan

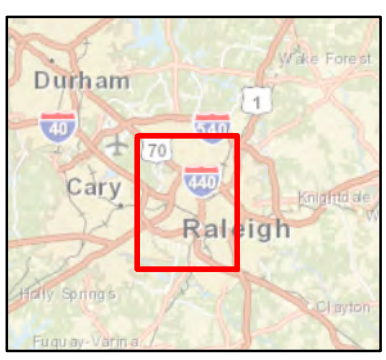
Demand

Low
High

Level of Need

Low
High

Extra-Territorial Jurisdiction



N

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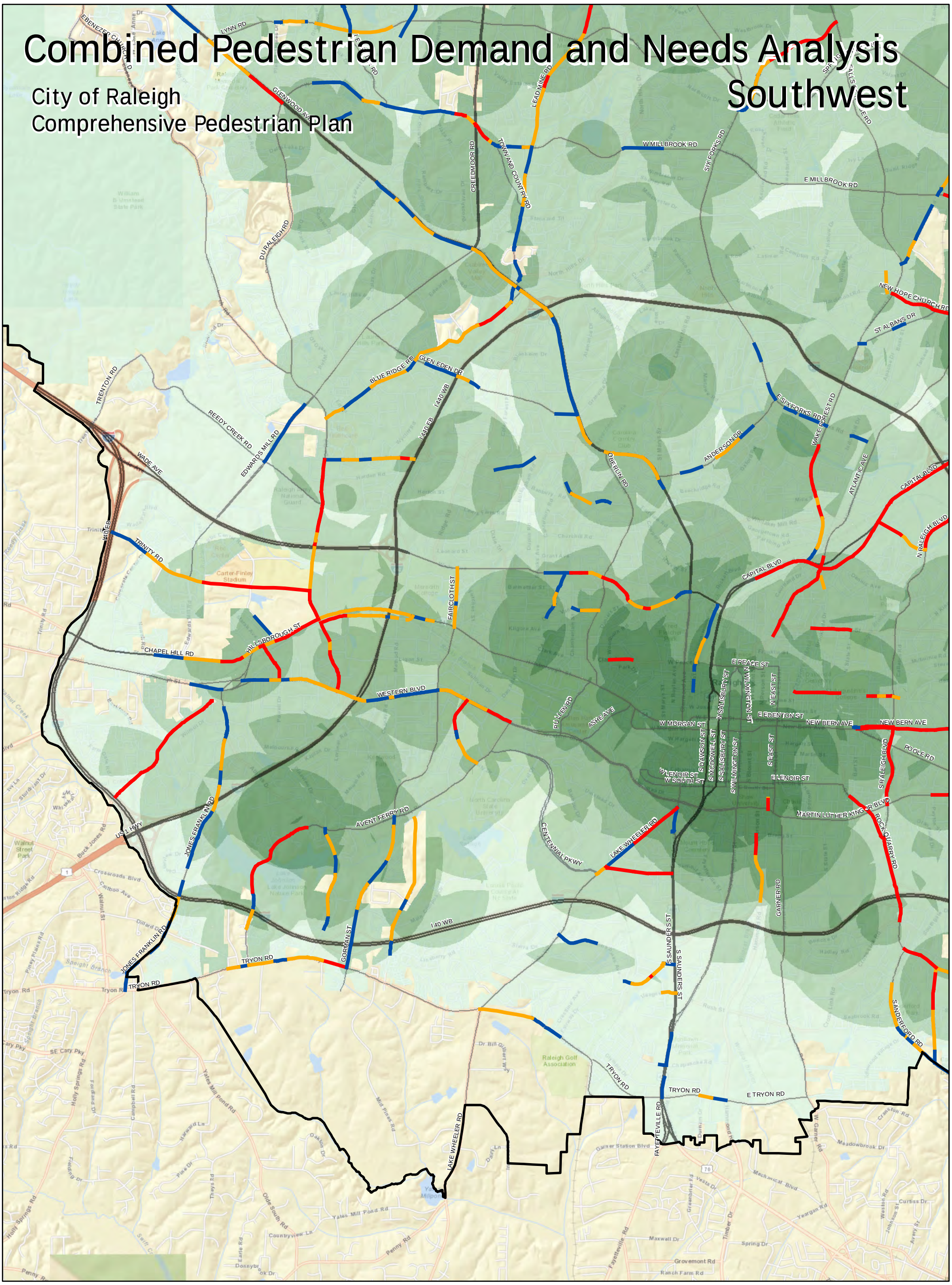
Miles

December, 2012

Combined Pedestrian Demand and Needs Analysis
Southwest

City of Raleigh
Comprehensive Pedestrian Plan



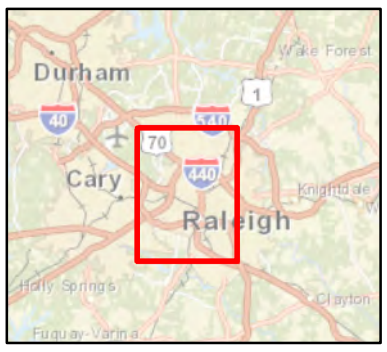
Demand

Low
High

Level of Need

Low
High

Extra-Territorial Jurisdiction



N

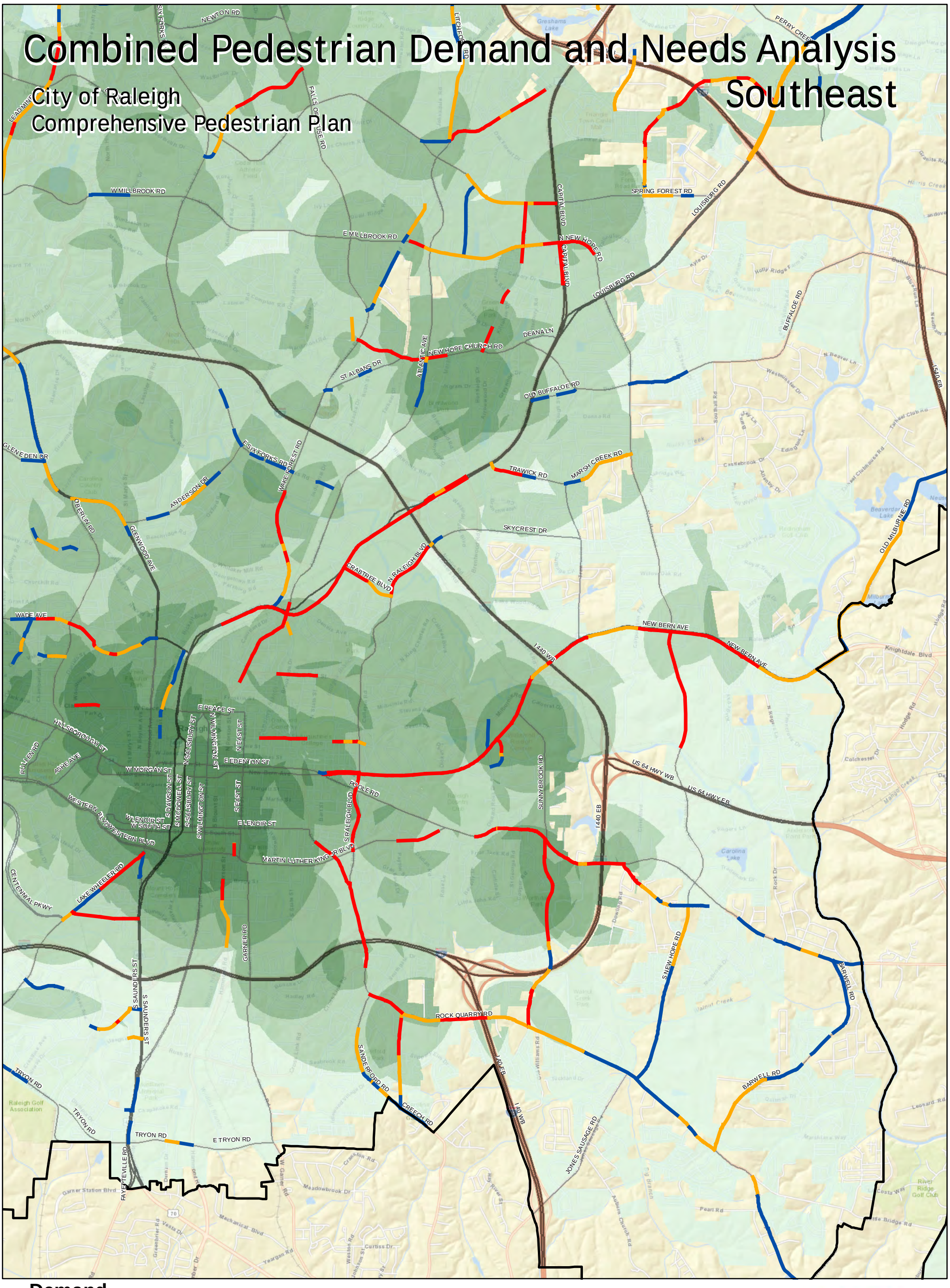
0 0.5 1
Miles

December, 2012

Combined Pedestrian Demand and Needs Analysis

City of Raleigh
Comprehensive Pedestrian Plan

Southeast



Demand

Low

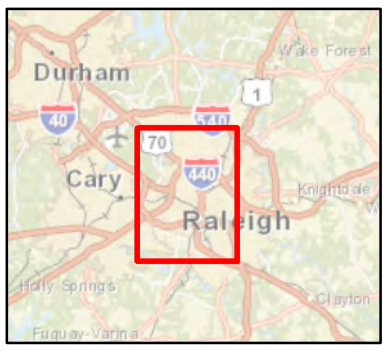
High

Level of Need

Low

High

Extra-Territorial Jurisdiction



N

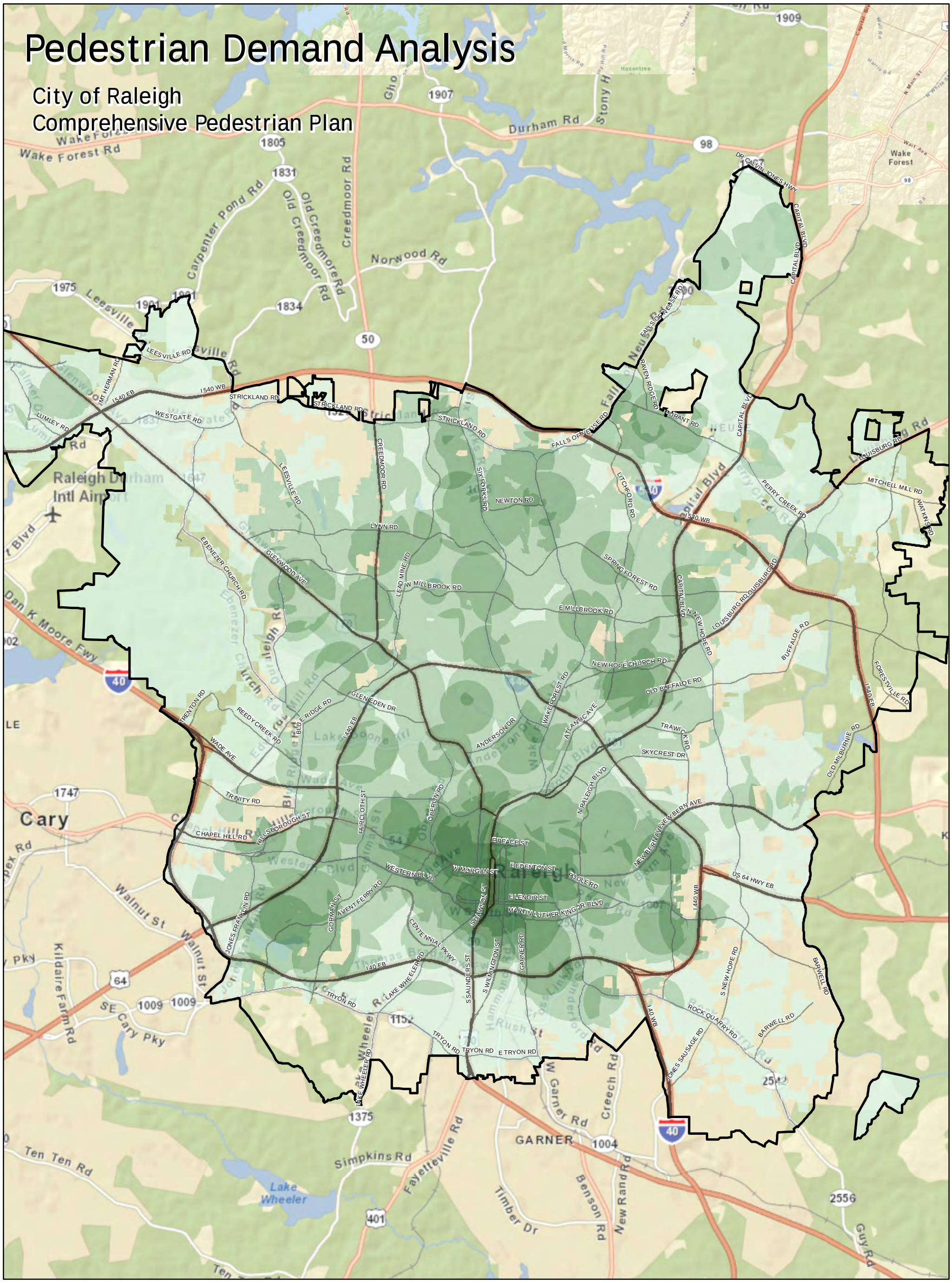
0 0.5 1

Miles

December, 2012

Pedestrian Demand Analysis

City of Raleigh
Comprehensive Pedestrian Plan



Demand

Low

High

Extra-Territorial Jurisdiction

N

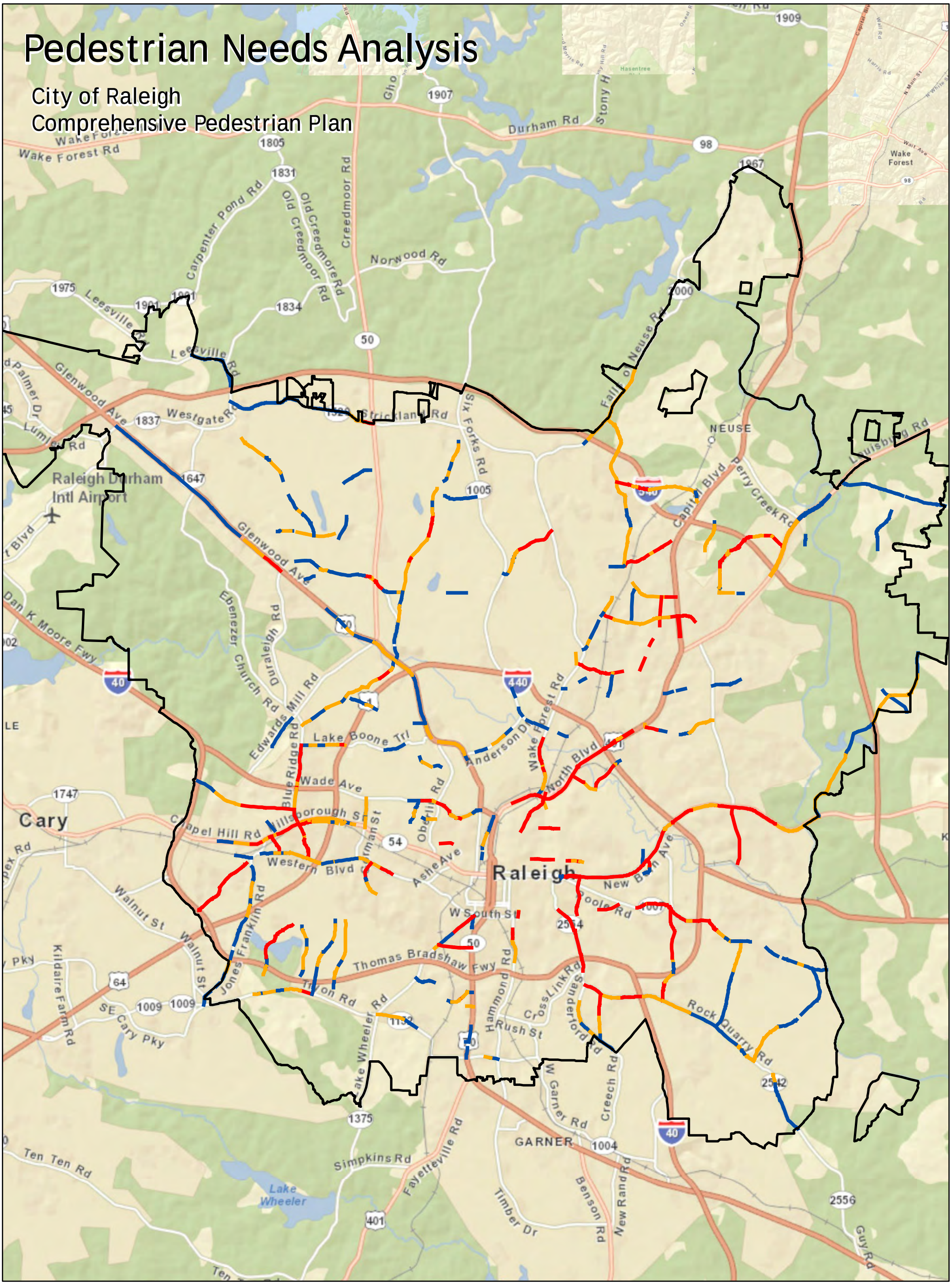
0 1 2

Miles

December, 2012

Pedestrian Needs Analysis

City of Raleigh
Comprehensive Pedestrian Plan



Level of Need

- Low
- High
- Extra-Territorial Jurisdiction

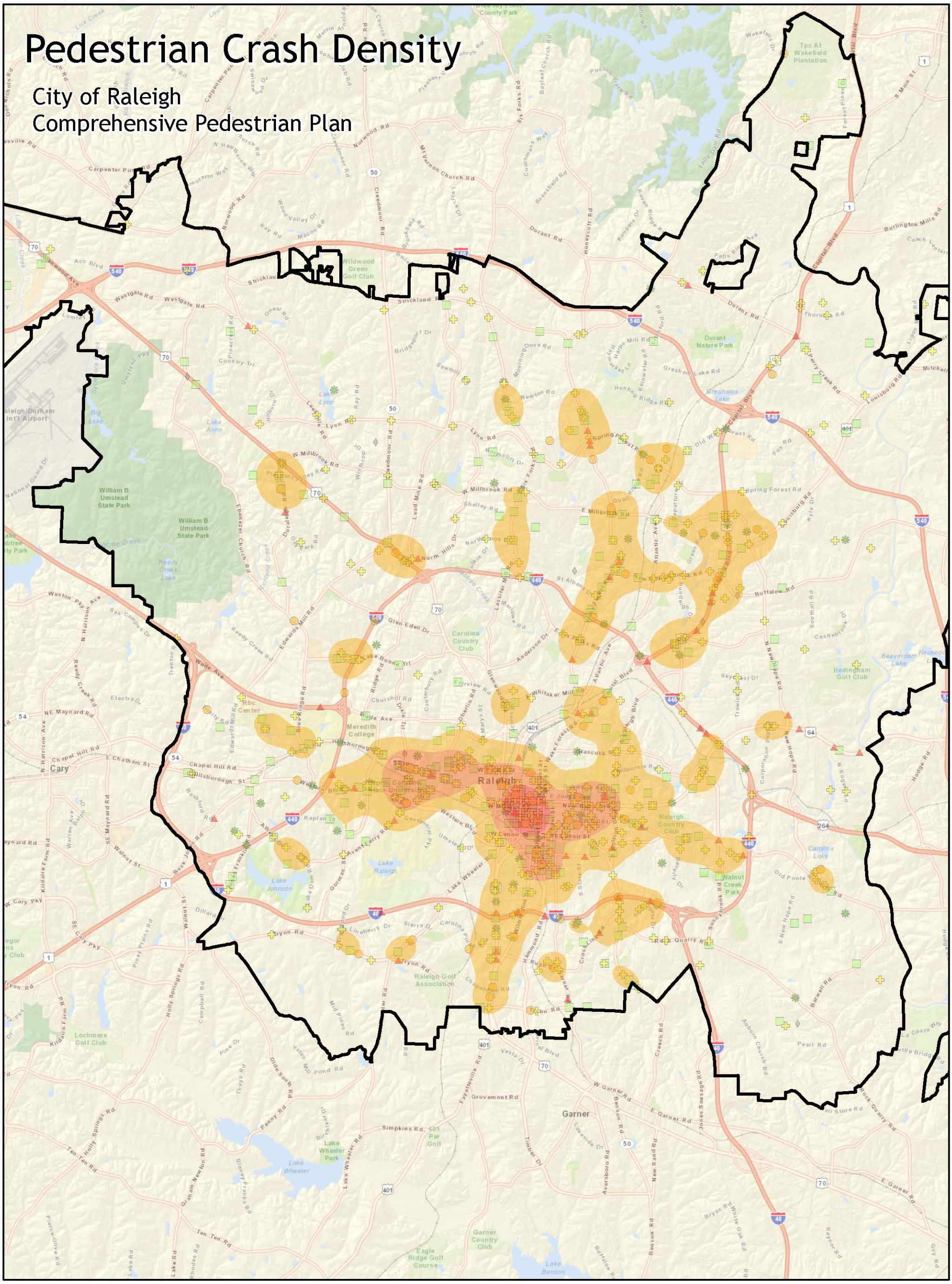
N

0 1 2
Miles

December, 2012

Pedestrian Crash Density

City of Raleigh
Comprehensive Pedestrian Plan



Crash Severity

- Fatality
- Disabling Injury
- Evident Injury
- Possible Injury
- No Injury
- Unknown
- Extra-Territorial Jurisdiction

Crash Density per Sq Mi

- 0 - 8.5
- 8.6 - 38.0
- 38.1 - 97.8
- 97.9 - 183.6

N

0 1 2
Miles

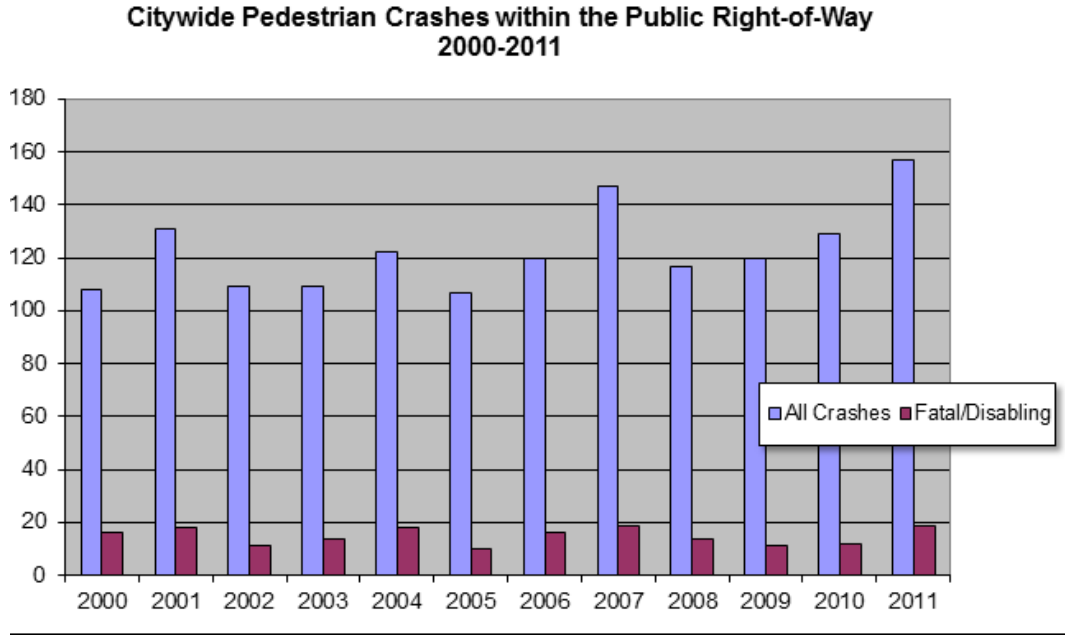
Pedestrian Need. The pedestrian needs analysis included factors which affect the safety and comfort of walking (such as crossing distances and distance between signalized intersections), the presence of school-age and older residents (whose interaction with the pedestrian network may place them at greater risk), and pedestrian-involved crash rates. The needs analysis serves as an additional way to evaluate pedestrian conditions throughout the City and informed the selection of pedestrian priority areas and other recommendations in this Plan. Factors used to determine pedestrian need were assigned a value, depending on the range for that factor. The factors are listed below:

Pedestrian Crashes. Pedestrian crashes are included in the needs analysis; however, it is helpful to view them apart from this analysis in order to better understand areas where pedestrian safety needs may be greatest.

Total crashes, regardless of location. The City of Raleigh tracks the number of severity of crashes within the public right-of-way. The table below shows an upward trend in these crashes between 2000 and 2011.

The UNC Highway Safety Research Council's recent study of pedestrian safety (described in a later section of this chapter) includes data on all reported crashes – in the public right-of-way and

Socio-Economic	Safety and Comfort	Connectivity
Average Household Income Higher than City average population ages >65 Higher than City average population ages <18	Crashes Street Classification Posted Speed Limit Intersection Controls Street Trees* Street Lights*	Distance between traffic signals and stop signs Striped crosswalk* ADA curb ramp*
* *These factors may receive a negative value, indicating the absence of a "need."*		



on private property – between 1997 and 2009. A comparison of total crashes from the Research Council's study and the City's public right-of-way crash data from the same years shows an average of 68% of reported crashes occurring in the public-right-of-way.

Location of crashes. Crashes involving pedestrians in the public right-of-way between 2004 and 2010 are shown in Map 8.[6] The map shows the location of each crash and the effect on the pedestrian. Map 8 shows the density of crashes within an area and helps to identify areas where pedestrian infrastructure improvements may be needed.

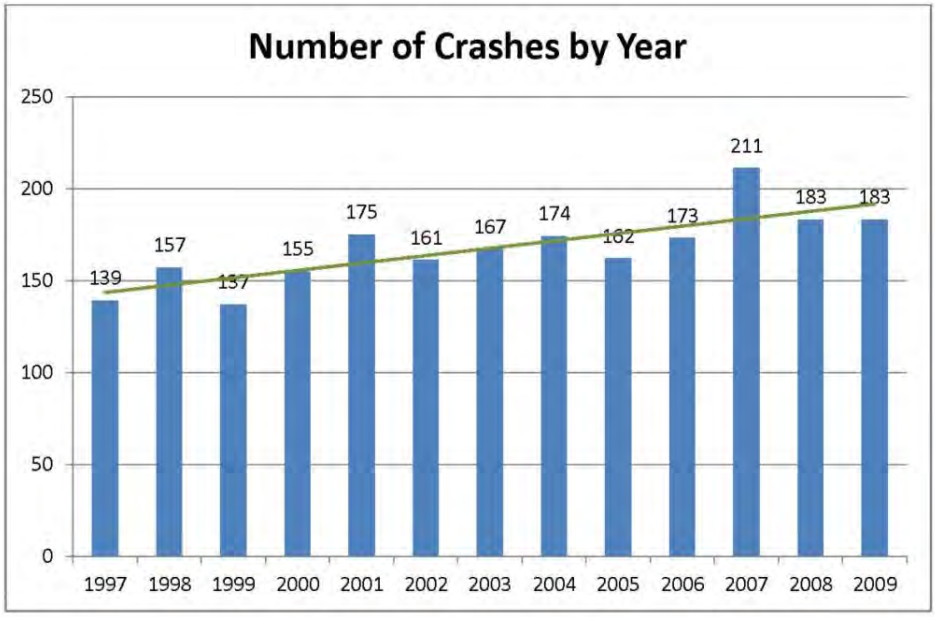
Raleigh Pedestrian Safety Demonstration Project.

The University of North Carolina Highway Safety Research Center analyzed pedestrian crashes between 2004 and 2010 as part of a demonstration project aimed at identifying, prioritizing and implementing enforcement and educational strategies to help reduce pedestrian crashes in the State of North Carolina. [7] The study noted an overall increase in pedestrian-related crashes during the period (see Figure 1. Pedestrian Crash Trends in Raleigh, 1997 - 2009). A summary of crash trends by four areas – demographics, time of day/day of week, crash location, and human behavior is provided below.

Demographics

- Fatalities occurred with greater frequency for those pedestrians aged 70 or older, though the age group between 30 and 59 also accounted for 13.9 percent of fatalities. Children under the age of 16 accounted for 12.2 percent of the total fatalities.
- Persons of black or African American heritage accounted for slightly less than half (46 percent) of the Raleigh area pedestrian collisions, though they only account for 29 percent of Raleigh's overall population. Persons identifying as Hispanic accounted for about 11 percent, with whites accounting for roughly 39 percent and Asian and other groups accounting for two percent.
- Males of all ages accounted for about 59 percent of pedestrians involved.

Figure 2. Pedestrian Crash Trends in Raleigh, 1997 - 2009.



[6] The crash data was provided by NCDOT's Pedestrian and Bicycle Division, and was geocoded for use in this Plan by a Steering Committee member.
[7] Raleigh Pedestrian Safety Demonstration Project: Pedestrian Crash Analysis and Needs Assessment November 2011.

Time of day/Day of week

- 59 percent occurred during daylight hours.
- Of the 41 percent occurring during dark or low light hours, 74 percent occurred at night on roadways lacking street lights.
- Weekday crashes account for 76 percent of all crashes.

Location of crash

- Portions of corridors such as Falls of Neuse Road, Capital Boulevard, South Saunders Street, and Wilmington Street, have clear concentrations of fatal and crashes that cost $250,000 per crash (categorized as A-type crashes).
- The highest pedestrian crash rate per mile of roadway is on Tarboro Road, Salisbury Street, Hillsborough Street, and Blount Street.
- Crashes overall are fairly evenly divided by location type (midblock or intersection).
- Non-intersection locations have a greater percentage of collisions resulting in fatalities than other collisions at intersections. Only 47 percent of collisions occurred at non-intersection locations, but 75 percent of fatalities occurred at these locations.
- Fatalities are also over-represented on higher speed limit roadways of 50+ mph (63 percent of fatalities).
- Specific roadways with high numbers of pedestrian midblock collisions were identified.
- Transit stops with pedestrian crashes occurring nearby were also identified. Both mid-block and transit areas could represent segments with inadequate infrastructure and access, operational issues.
- In general, pedestrian crashes have tended to cluster around transit stops.
- Hunter Elementary School, Mary Phillips Elementary School, Washington Elementary School, Stough Elementary School, Green Elementary School, and Poe Elementary School all had two or more crashes within ¼ mile of the school itself.
- The density of crash locations changes with the density of development. For example, crashes are especially clustered along arterial roads and transit corridors outside of the downtown core. Inside the downtown core, however, crashes are more prevalent on other roads. Suggesting that there are more pedestrians in the downtown core.

Human behavior

- Motorists making turns without yielding to pedestrians at intersections are a frequent crash type that may affect where pedestrians choose to cross.
- Motorists often fail to yield to pedestrians when turning in and out at driveways and pedestrians often fail to yield or choose a safe gap when crossing at midblock locations.
- A majority of fatalities occurring in collisions where the pedestrian was crossing a roadway and was struck by a through vehicle (16 fatalities) or dashed or darted into the roadway (seven fatalities).
- Other fatalities occurred under more obscured conditions where the pedestrian was in the roadway but other factors are unknown, or under unusual circumstances (such as prior crashes).
- Alcohol use was also over-represented among fatal crashes with 19 fatalities recorded.
- Transit stops with pedestrian crashes occurring nearby may be the result of behavioral issues such as speeding, failure to yield, or lack of conspicuity at night.

This detailed crash analysis will be used to inform the pedestrian safety messaging and enforcement activities to be carried out in conjunction with the “Watch For Me NC” pedestrian safety campaign for the Triangle region, to run from August to October, 2012. This program is further described in Chapter 5, Programs and Initiatives for a Walkable Raleigh.

Summary of findings

Public input revealed four general areas of need regarding the usability of Raleigh's pedestrian network, as shown below. The demand and needs analysis helps to identify the locations where improvements are likely to have the greatest impact:

- Install sidewalks where missing.
- Maintain sidewalks where they exist.
- Make it easier for pedestrians to cross the street.
- Change motorists' behavior with respect to pedestrians.

Install sidewalks where missing, whether it is a gap or a longer length of sidewalk.

Pedestrians often travel along roads without sidewalks or where there are sidewalk gaps to get to bus stops and other destinations. Continuous walking along the roadway often creates a narrow dirt trail, (sometimes called a "social trail"). Social trails are generally the clearest indication of the need for a sidewalk. There are a number of roadways in Raleigh with social trails, such as along New Bern Avenue, Photo 18. Social trail location on New Bern Avenue, and Wake Forest Road, Photo 19. Social trail location Wake Forest Road, in the photos to the right. The presence of a social trail is used as evidence of need in the new sidewalk prioritization system included in Chapter 3, Best Practices, Design Standards and Raleigh's Sidewalk Program.

Maintain sidewalks where they exist.
Sidewalks are part of the transportation network and should be maintained according to a regular schedule to ensure they are safe to use, meet accessibility standards, reduce the City's liability and are part of the City's overall asset management strategy. Safety, access and

Photo 20. Social trail location on New Bern Avenue.

Photo 21. Social trail location Wake Forest Road.

Photo 22. Sidewalk along Martin Luther King Jr. Boulevard.

When you are driving, always yield right of way to pedestrians:

- At intersections without traffic signals, pedestrians have the right of way if they are in marked crosswalks or in unmarked crosswalks formed by imaginary lines extending from the sidewalks across the streets;
- At intersections controlled by ordinary traffic signals, pedestrians must obey the same signals as drivers traveling in the same direction. Pedestrians should not start to cross during a red or yellow signal;
- When crossing with a green signal, pedestrians have the right of way over all vehicles, including those turning across the paths of the pedestrians; and
- If a traffic signal changes to yellow or red while any pedestrian remains in the street, drivers must allow the pedestrian to complete the crossing safely.
- At some intersections, special signals instruct pedestrians either to "Walk" or
- "Don't Walk". When these signals are operating, pedestrians must obey them rather than regular traffic signals.
- Pedestrians crossing with special pedestrian signals have the right of way just as they do while crossing with a green light.
- If you are moving through an intersection with a green signal and a pedestrian starts to cross in your path against the red signal, give a warning with your horn.

The law requires drivers to use the horn whenever a pedestrian may be affected by a turn, stop or start from a parked position. If the pedestrian does not stop, the driver must. Saving a pedestrian's life is always worth the driver's lost right of way. The safe driver yields right of way to a pedestrian whether the pedestrian is entitled to it or not.

Photo 23. Trawick Road and New Bern Avenue.

Photo 24. Martin Luther King Jr. boulevard at Blount Street.

liability standards are addressed by quality of the sidewalks' pavement, amount of debris and overgrowth, and as well as adequate horizontal clearance. Sidewalks become less navigable when large vertical or horizontal cracks and divots interrupt the surface. These issues create ADA-compliance issues. Trees, bushes, grasses and other planted vegetation can constrict the available space for a pedestrian. For example, a standard five foot sidewalk can be reduced to less than two feet if not kept clear of grass and other overgrowth. Untrimmed bushes can also constrict the space for people to walk, can restrict travel by someone in a wheel chair, or make it difficult for a person with a vision disability. Tree canopies can also affect the comfort and safety of walking along a sidewalk by blocking natural, street or building light (which must be balanced with the

positive benefit of providing shade on sunny days). Good asset management supports and protects the City's investment in pedestrian facilities. By good management, the useful life of pedestrian facilities can be maximized.

Make it easier for pedestrians to cross the street. A high quality pedestrian transportation network includes safe and comfortable street crossings at locations where pedestrians are likely to cross the street. The most common location is at intersections, regardless of whether a traffic light or pedestrian signal is present. Typical challenges that make it difficult for pedestrians to comfortably and safely cross the street include long crossing distances, insufficient time to cross at intersections without pedestrian signals due to traffic signal timing or lack of gaps in motor vehicle traffic, missing curb ramps or sidewalks on opposite sides of the street, and the lack of striped crosswalks. Addressing pedestrian crossing needs is important and is accomplished through a combination of policies, standard designs and guidelines, and appropriate funding.

Change motorists' behavior with respect to pedestrians, especially at intersections. Pedestrians, motorists and bicyclists share portions of the public right of way, such as intersections. North Carolina law states the rights and responsibilities for pedestrians and motorists when traveling in the public right of-way. While these laws are clearly listed in the North Carolina 2012 Driver's Handbook, as shown in the text box, additional education and enforcement is often needed to ensure compliance.[8] The last two sentences are at the core of all the laws: Saving a pedestrian's life is always worth the driver's lost right of way. The safe driver yields right of way to a pedestrian whether the pedestrian is entitled to it or not.

Photo 25. Sign at Glenwood Avenue and Pleasant Valley Road.

Photo 26. Glenwood at Pleasant Valley.

Looking forward

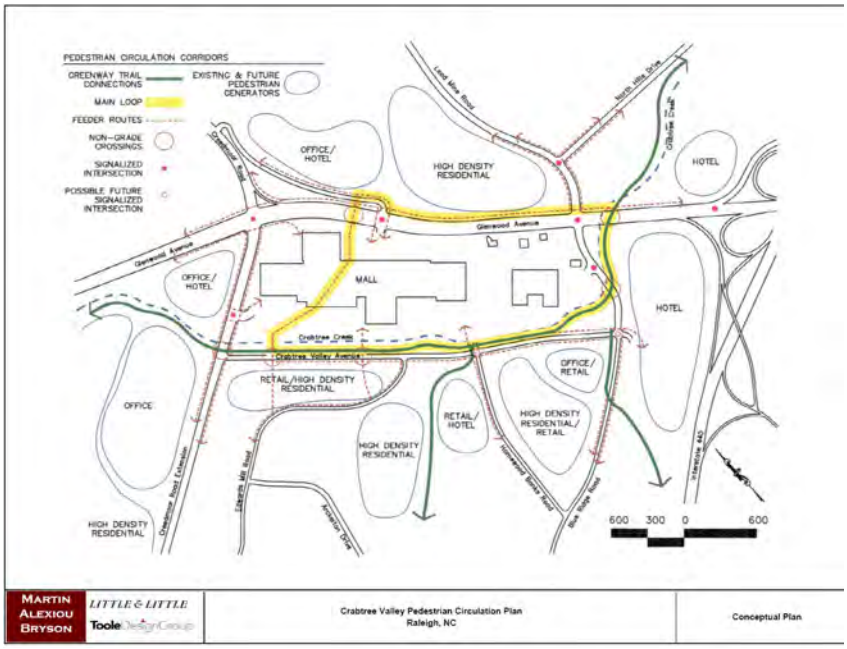
Raleigh is actively working to improve its pedestrian network. On October 11, 2011, voters approved a referendum to provide $40 million in transportation improvement bonds and pedestrian infrastructure improvements are a key component of this initiative (The Bond included $4.75 million for new City-initiated sidewalk projects, $3 million for petition sidewalk projects, and $4 million for sidewalk repairs). This affirmation by Raleigh citizens will allow a number of transportation projects to move forward, including the installation of new sidewalks, transit stop and station improvements, and some street programs that include pedestrian transportation features. Recommended sidewalk

[8] *Excerpted from NCDOT 2012 Driver Handbook, http://www.ncdot.org/download/dmv/handbooks_ncdl_english.pdf*

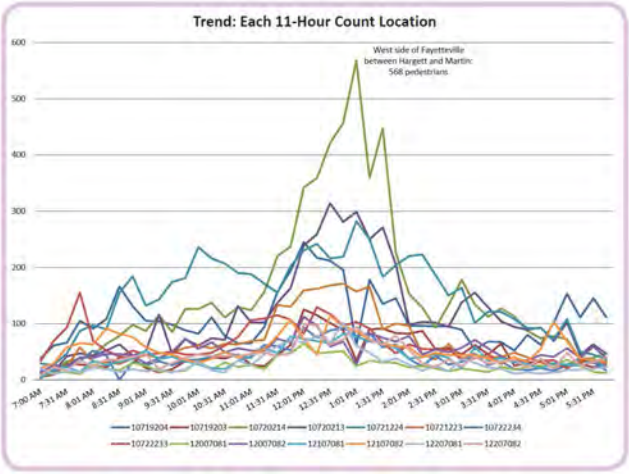
projects included in this Plan will be considered for funding from the bonds.

Policies and actions included in the City's 2030 Comprehensive Master Plan are coming to fruition through recently completed corridor studies and projects. A summary of several of these projects is provided below organized into three categories: Recent Small Area Plans, Current Corridor Studies, and Streetscape Projects.

Recent Small Area Plans. The City has completed several small area plans in different types of neighborhoods, all aimed at establishing a blueprint for important land use and transportation changes. By their nature, small area plans are include considerable detail specific to a defined geographic area. These plans often achieve greater participation by property owners, residents, and business owners. Once adopted, the plan represents official policy direction of Raleigh City Council and will guide future growth and development for a specific area of the county.

Plan	Description
Crabtree Valley Pedestrian Circulation Study *August 2003*	The Crabtree Valley Pedestrian Circulation Plan builds on the work of the Crabtree Small Area Plan by analyzing pedestrian and bicycling needs, identifying transportation and streetscape improvements and prioritizing their implementation. The Plan takes into account existing and future land uses. » Specific Small Area Plan concepts addressed in this plan include: » Pedestrian connections among hotels, the Crabtree Valley Mall, restaurants and other destinations, and the Capital Area Greenway » Safe and convenient pedestrian movement across major streets » Streetscaping, particularly along Crabtree Valley Avenue » Location of transit hub to serve the Mall » Safe and convenient pedestrian connections to bus stops » ADA-related access deficiencies in the existing pedestrian system 

Plan	Description
NC State Bicycle and Pedestrian Mater Plan *October 2011*	The Campus Bicycle and Pedestrian Master Plan was developed to achieve the university's goal of safe and convenient movement on a pedestrian-oriented (and bicycle-friendly) campus. The Plan prioritizes a variety of facility improvements and program development recommendations, and helps NC State meet it's long term transportation needs. Plan recommendations are guided by the following vision: » Promote a sustainable campus » Improve safety and quality of life, and promote the health and well-being of the campus population. » Continue improvement of the campus green space environment. » Ensure compliance with the Americans with disabilities Act (ADA) for campus paths and street facilities. » Improve mobility choices for on and off-campus transportation. » Improve regional connectivity with support transit services.

Plan	Description
Downtown Raleigh Alliance Pedestrian Count Study *May 2011*	The study of pedestrian activity in key downtown corridors was conducted as a means of furthering the downtown's economic development goals in three target areas: the Fayetteville District, Glenwood South District, and Warehouse District. A systematic approach to completing pedestrian counts established a baseline of current pedestrian activity in Raleigh's downtown core and late night/entertainment districts. It also shows a clear link between the downtown's booming pedestrian environment and opportunities for commerce in downtown, providing the DRA and the City a strong foundation for promoting future public and private investments in the walkability, livability, and economic prosperity of downtown Raleigh. Locations with the highest pedestrian counts for specific activity periods were: » Fayetteville Street block between Hargett and Martin Streets held the highest counts for the morning and lunch periods. » During the late night count, the block of Glenwood Avenue between Tucker and North Streets evidenced the highest level of pedestrian activity. 

Plan	Description
Jones Franklin/ Western/Hillsborough Small Area Study *October 2011*	The Jones Franklin Area Study includes recommendations that affect the pedestrian network respect to Land Use, Transportation Infrastructure, and Aesthetics+Form, and Crime Prevention Through Environmental Design (CPTED). Specific recommendations include facing new structures to the street, resolving a sidewalk gap under the rail bridge on Hillsborough Street, and developing a NCDOT roadway improvement project to increase walkway connectivity.
West Morgan Small Area Plan *June 2011*	The West Morgan Street Small Area Study recommends that the West Morgan District continue to be a mixed-use district, permitting both residential and non-residential uses provided that they are pedestrian-oriented. This includes the adoption of a Pedestrian Business Overly District for a portion of the district and a pedestrian-oriented streetscape plan for West Morgan Street. Specific transportation infrastructure elements include new, improved or relocated transit stops, intersection redesign, and complete streets oriented roadway redesign.

Current Corridor Studies. The City of Raleigh conducts corridor studies for significant transportation projects, such as major highway or transit improvements. These studies seek to identify the mix of transportation improvements that would be most effective in moving people and goods in specific travel corridors and balancing those improvements with available funding and neighborhood and community concerns. These improvements are of substantial cost and have a significant impact on mobility in a transportation corridor.

Project Name	Description
Blount/Person Corridor Study *Anticipated to begin Summer 2012*	This study will examine the means of transforming two north/south thoroughfares that provide access to downtown Raleigh into complete street multi-modal corridors. Study elements include: » An analysis of existing transportation conditions » Analysis of complete street transportation options and impacts » Urban design and place-making strategies » Cost estimating » Implementation strategies » Substantive community and stakeholder engagement
Project Name	**Description**
Blue Ridge Road District Study *Currently underway* Edwards Mill Road to Western Boulevard, including adjacent properties and open space beyond the corridor	The study is developing a blueprint for improving vehicular and pedestrian connectivity and leverage state and local policies and investments to support smart growth and guide development along the Blue Ridge Road Corridor. This effort will establish a vision and strategy for sustainable revitalization, redevelopment, and renewal along the Corridor.

New Bern Corridor Study	A study of the right-of-way and property frontage along New Bern Avenue corridor from Swain Street to Wake Medical Center identified ways to renew the corridor. New Bern Avenue is an historic gateway that is a heavily used transportation corridor. The project goals are to identify ways to improve the appearance of the corridor; to support pedestrian, bicycle and transit uses along the corridor; and to stimulate economic development initiatives and revitalization in the area. One key outcome is a recommendation to define corridor frontage typologies and development standards for the space between the public right-of-way and building façades in order to create a safe, convenient and transit supportive pedestrian environment.
Capital Blvd Corridor Study	This project is a multi-facetted, multi-year effort aimed at creating a vision and strategy for the revitalization, redevelopment, and renewal of Capital Boulevard from Downtown to I-440. The vision includes land use and transportation elements that provide meaningful pedestrian transportation options that are compatible with housing, economic development, and environmental stewardship goals.