

# Downtown Raleigh Alliance Pedestrian Count Study

May 2011



Prepared for:



# Acknowledgements

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## Project Consultants

Alta Planning + Design  
Greene Transportation Solutions



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# 1. Executive Summary

## 1.1 Purpose

The Downtown Raleigh Alliance (DRA) commissioned this study of pedestrian activity in key downtown corridors as a means of furthering the downtown's economic development goals. The three target areas of the study are: the Fayetteville District, Glenwood South District, and Warehouse District. Through use of the pedestrian count methodology described below, this report establishes a baseline of current pedestrian activity in Raleigh's downtown core and late night/entertainment districts.

The analysis of current pedestrian activity provided in this report allows both the DRA and the City to better understand pedestrian preferences, evaluate pedestrian infrastructure, and anticipate the future needs, as well as contributions of downtown pedestrians. Economically, the count data will support local efforts to attract new and expanded retail, restaurants, and commercial occupants, each of which bears a unique relationship to pedestrian activity in terms of peak periods of activity, location, and visibility.

This pedestrian count also contributes to the broader vision of promoting downtown Raleigh as a regional center of commerce, tourism, and livability. Walkable streetscapes are a cornerstone of a thriving downtown and a growing urban economy. With the findings of this report and continued focus on the nature of pedestrian activity in priority areas, downtown Raleigh can offer compelling evidence of the strength and appeal of its urban core.

## 1.2 Methodology

This study employs a nationally-vetted pedestrian count methodology created by the National Bicycle and Pedestrian Documentation project (NBPD). The forms, metrics, and implementation strategies are derived from this proven national system of recording bike and pedestrian activity.

Within the three priority districts of downtown, the Downtown Raleigh Alliance identified 74 count locations. Each of the 74 locations specifies a specific side of the selected street within a specific block. Counts were taken at a mid-block point, using the "screenline" approach, which essentially ensures that each "body on the sidewalk" that passes through an imaginary straight-line screen is counted. As determined by the national methodologies, this approach provides consistency and reliability.

Over the course of four weeks during springtime weather, counts were taken on eight weekdays and one Saturday. The counts also varied by specific time of day to capture pedestrian activity throughout a "typical" day in downtown Raleigh. In particular, recognizing tendencies of downtown commercial activity, this report focused on a morning timeframe, the lunchtime period, the afternoon peak, and also late-night activity.





Counters used electronic "count boxes" to record data.



A variety of uses are seen throughout downtown Raleigh's sidewalks.

Trained individuals acting as "counters" used electronic counting devices or standardized forms and captured pedestrian activity within 15-minute increments. All collected data was then aggregated within a spreadsheet for analysis.

## 1.3 Findings

Raleigh is an economic hub within the region with a vibrant downtown and expansive suburban ring. The analysis of this report reveals that even with substantial suburban growth, a large population is using and navigating the downtown area. The study found that the lunch period attracts that largest amount of pedestrian activity, as employees, visitors, and residents, presumably, dine out in downtown restaurants and cafes. The top five locations with the highest levels of activity included:

- *The west side of Fayetteville Street between Hargett Street and Martin Street*
- *The west side of Fayetteville Street between Martin Street and Davie Street*
- *The east side of Fayetteville Street between Hargett Street and Martin Street*
- *The west side of Fayetteville Street between Morgan Street and Hargett Street*
- *The east side of Fayetteville Street between Martin Street and Davie Street*

As the specific location data might suggest, the city block location with the highest average of pedestrians per hour over the 11-hour count period was the Fayetteville Street block between Hargett and Martin Streets. Additionally, the Fayetteville Street block between Hargett and Martin Streets held the highest counts for the morning and lunch periods. However, during the late night count, the block of Glenwood Avenue between Tucker and North Streets evidenced the highest level of pedestrian activity.

Analysis of the total volume of pedestrians in downtown Raleigh parallel to other cities evidenced the strength of activity on downtown Raleigh's sidewalks. The volume of traffic in the Raleigh study area tends to exceed the volume of small and even larger cities.

The findings and conclusion of the DRA pedestrian count study show a clear link between the downtown's booming pedestrian environment and opportunities for commerce in downtown. With this data, the DRA and the City have a solid basis for promoting future public and private investments in the walkability, livability, and economic prosperity of downtown Raleigh.

## 1.4 Structure

This report consists of the following sections:

- *Introduction*
- *Methodology*
- *Study Results*
- *Comparison with Other Downtown Areas*
- *Appendices*



*Pavement changes in crosswalks and pedestrian signals increase safety along Fayetteville Street.*



## 2. Introduction

In support of the Downtown Raleigh Alliance's (DRA) economic development efforts, this study was initiated to measure pedestrian activity on sidewalks in the downtown districts of Fayetteville Street, Glenwood South, and the Warehouse District. The study establishes a baseline of current pedestrian activity in the downtown core and late night/entertainment districts. By examining the frequency of use by pedestrians, the DRA and the City will gain a better understanding of potential needs for pedestrian improvements. Economically, the count data will support initiatives by the DRA to illustrate to potential retail, restaurant, and commercial occupants that Raleigh possesses significant pedestrian traffic during the work week, work evenings, and late night time periods.

This pedestrian count aims to provide data and support to the DRA's retail recruitment strategy, as well as other economic sustainability initiatives currently in place to promote the downtown area as a regional center of commerce, tourism, and livability. As part of the DRA's vision to be recognized as the leader and champion for a vibrant and dynamic downtown, this study, and any other pedestrian studies conducted in the future, will provide a foundation for growth models and a baseline to measure the effectiveness of future public and private investments in infrastructure, amenities, and programs to make downtown Raleigh a more walkable and livable place.

### 2.1 Context

The economic sustainability of any downtown area requires an appropriate balance of people and services. Situated within the sixth fastest growth state of North Carolina<sup>1</sup>, Raleigh, through efforts of the DRA, the City of Raleigh, and other organizations including the Chamber of Commerce and Urban Design Center, is poised for successful, healthy growth. Accolades including #1 on Kiplinger's "10 Greatest Cities for Raising Families," #3 on Gallup-Healthways Well Being Index<sup>®</sup> for "Metro Areas for Overall Well-Being," and #8 on Milken Institute's "Best-Performing Cities" provide evidence that this medium-sized American city is on track to provide opportunities for people to live, work, and play within the core urban area supporting a current population of 403,892<sup>2</sup> citizens.

As part of an overall sustainability commitment, and in an effort to attain the triple bottom line – economic strength, environmental stewardship, and social equity – the City defines sustainability as a thriving community; one that provides opportunity for all residents, cares for the environment, and has long-term vision for a prosperous future<sup>3</sup>. The DRA recognizes pedestrians as a key component of the sustainable downtown economy and prosperous future. Therefore, urban design components should address and enhance pedestrian safety, comfort, and accessibility. In an era of Smart Growth, Complete Streets, and a myriad of other best practices for urban development and re-development, Raleigh

<sup>1</sup> (Partnership for Sustainable Communities, 2011)

<sup>2</sup> (United States Census Bureau, 2010)

<sup>3</sup> (The City of Raleigh, 2009)



continues to adopt plans and policies to improve mobility options and access for those who live and work in the downtown area. *The Raleigh 2030 Plan*, adopted in 2009, positions 60-70% of all new growth in designated centers<sup>4</sup>, including the downtown area. With 15,000 residents within one mile of the State Capitol (at the head of Fayetteville Street), 40,000 downtown employees, and 41,000 students attending five local universities<sup>5</sup> (a population largely relying on walking, public transportation, and bicycles), downtown Raleigh is ripe with potential pedestrian activity.

The City's development history – \$9.9 million projects complete in 2010, and a planned \$433 million projects underway<sup>6</sup> – sets the pace for a wave of new inhabitants, including residential, office, and retail. Efforts to increase desired use of the urban core include programmatic elements: First Friday, Raleigh Downtown Farmers Market, Winterfest, Raleigh Wide Open, and other seasonal events. Design improvements, including the 2005-2006 restoration of Fayetteville Street from a pedestrian mall to a vehicular thoroughfare, increase exposure of storefronts to those

inhabiting the downtown streets. Cultural attractions provided by the Raleigh Amphitheater, Marbles Kids Museum, North Carolina Museum of Natural Sciences, Lincoln Theater, City Plaza and others, also provide a draw. Sidewalks and public transportation provide connections between these attractions, events, restaurants, retail establishments, and offices. Current improvements to pedestrian experience, as well as service by the R-LINE, rickshaws, and Capital Area Transit (CAT) busses can encourage people to leave their cars parked and navigate the city in more sustainable ways.



*Street trees and vegetation provide comfort and safety for pedestrians.*

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<sup>4</sup> (*The City of Raleigh, 2009*)

<sup>5</sup> (*Downtown Raleigh Alliance, 2010*)

<sup>6</sup> (*Downtown Raleigh Alliance, 2010*)

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# 3. Methodology

## 3.1 Summary of Methodology

The methodology for the Raleigh Pedestrian Count was derived from the National Bicycle and Pedestrian Documentation project (NBPD) standardized procedures. Count forms and incremental recordings mirror NBPD models for tracking pedestrian activity.

The NBPD is a joint national effort by the Institute of Transportation Engineers (ITE) Pedestrian & Bicycle Council, and Alta Planning + Design. The NBPD identifies a consistent count and survey methodology and count dates, collects count and survey data nationwide, and analyzes the data to identify walking and bicycling trends and patterns.

Data regarding where bicyclists and pedestrians live, trip purpose, trip length, travel frequency, alternate modes, factors for route choice, seasonal behavior, desires for improvements, and demographic data, can help identify correlations and causations within travel behavior, leading to more informed modeling, along with facilities and programs that properly respond to community needs and conditions.

This study does not follow standardized procedures for selecting count locations, as the Downtown Raleigh Alliance (DRA) selected this study's locations for specific reasons related to economic development. However, the information collected will be added to the NBPD's database, contributing to the national data collection effort and serving as a reference for other count studies. In the future, additional studies conducted in Raleigh including surveying methods established by the NBPD, will enable an in-depth analysis of travel patterns in the downtown area.

## 3.2 Count Locations

Count locations were established by the DRA. The method for selecting each location was determined by interest in pedestrian volume during specific times of day. For the purpose of this study, pedestrian activity (further defined as "bodies on the sidewalk") was counted in the Core Business District (Fayetteville Street District), as well as two late night/entertainment districts: the Warehouse District and Glenwood South.



### **3.2.1 Count Location Makeup**

The following count location descriptions are provided by the DRA<sup>7</sup>:

#### ***Fayetteville Street District***

Considered by many as the Central Business District of Downtown Raleigh, the Fayetteville Street district is characterized by its skyscrapers, the density of its built environment, and the proliferation of people on the go. Loosely bounded by Morgan Street on the North and Martin Luther King Avenue on the South, the district's backbone is the City's grand boulevard, Fayetteville Street. Also known as North Carolina's main street, Fayetteville Street underwent a major transformation. In 2006, the first phase of its a renaissance was completed when the pedestrian mall was turned back into a traditional street adorned with public art, outdoor cafes, 28-foot wide sidewalks, and its inspiring vista between the Progress Energy Center for the Performing Arts and the North Carolina State Capital.

#### ***Glenwood South District***

No district in Downtown Raleigh does hip and trendy like the Glenwood South District. Progressive restaurant concepts line the venerable Glenwood Avenue and create the place to see and be seen on warm evenings in Downtown Raleigh. What was once a quiet row of warehouses and art supply stores has transformed over the past five years into a thriving restaurant and retail environment. The district's nightlife will soon welcome a significant residential boom, as more than 900 new condos and apartments will help to sustain the district's vitality for the coming years.

#### ***Warehouse District***

Characterized by its red brick warehouses, the Warehouse Districts is slowly transforming into an intriguing mix of restaurants, specialty shops, and antique stores. Its slower pace and quiet environment are a stark contrast to the neighboring Fayetteville Street District, but the district's confines come alive after dark as the restaurants and clubs open their doors to patrons and entertainment seekers. With the recent opening of the Contemporary Art Museum and one of downtown's proposed commuter rail stations, the district will continue to add new colors to its attraction palette in the coming years. Also notable in the Warehouse District are its handful of establishments that cater to alternative lifestyles. The Warehouse district is bordered to the west by the Historic neighborhood, Boylan Heights.

Counts were recorded on each side of the selected street with a screenline at mid-block. Screenlines are imaginary lines drawn across the right-of-way. Counters were instructed to count each "body on the

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<sup>7</sup><http://www.godowntownraleigh.com/>

sidewalk” within 50 feet of the screenline. Those counted were: people walking, people in wheel chairs, children in strollers, people on segways, and those riding bikes on the sidewalk. The purpose of employing the 50 foot buffer on both sides of the screenline is to capture all pedestrian activity entering and exiting buildings, as well as loading or off-loading public transportation that may not cross the screenline but should be included in the study.

Total count locations equal 74 individual locations with 60 in the Fayetteville District, four in the Warehouse District and ten in the Glenwood South District (See Appendix A for detailed maps). For tracking purposes, each location was assigned a number corresponding to the geographic location of the screenline. These numbers were created using the street grid. Each street was numbered; north/south streets from 1-10 and east/west streets from 11 -23 (see Figure 3-1). The sequence of the geo-referenced codes is as follows:

- On which street/ between which two streets/on the north/south/ east/west side of the street. (See Map A-1 in Appendix A for coding details).
- Each location code retains an individual set of data. Combining two location codes provides total counts for the block.

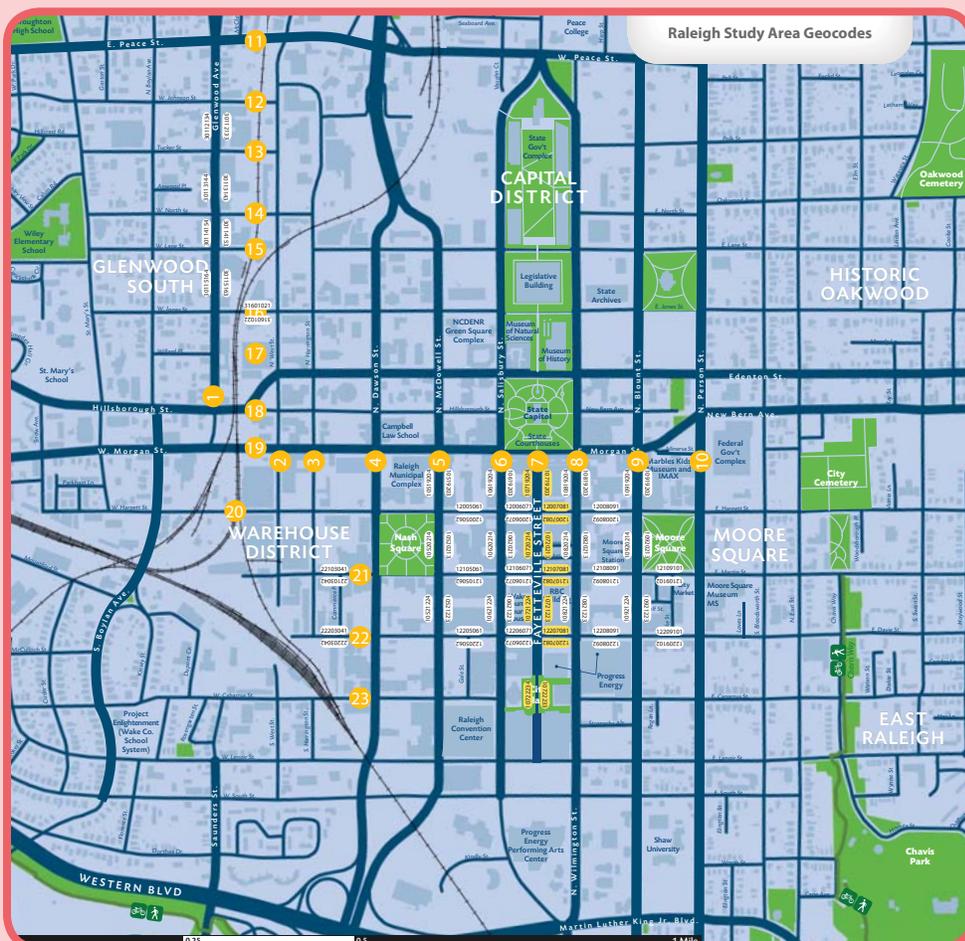


Figure 3-1: Study Area with reference numbers and geocodes.

(Maps adapted from previous Greenways Inc. project)

### 3.3 Count Dates and Times



*March and April provided pleasant weather for recording pedestrian activity.*

Count dates for the Raleigh Downtown Pedestrian Study were selected to acquire a representative sampling of activity for a “typical day”. Mondays and Fridays were avoided as travel and activity trends on these days tend to be atypical. The count team researched local special events (both recurring and seasonal) to avoid unrepresentative peaks in traffic. During the study window (March 29, 2011 to April 28, 2011), Saturday, April 9th was removed from potential count days to avoid skewed counts from the World Beer Festival held in Moore Square. The monthly First Friday event was also removed from the count schedule.

Weather played a key role in date selection as well. The count month was selected to avoid cold winter months when pedestrian activity is likely to be reduced.

The following dates provided pleasant weather as well as no perceived spike or decline in representative sidewalk use due to special events:

- *Tuesday, March 29th*
- *Saturday, April 2nd (Late Night Counts)*
- *Wednesday, April 6th*
- *Thursday, April 7th*
- *Tuesday, April 12th*
- *Wednesday, April 13th*
- *Thursday, April 14th*
- *Thursday, April 21st*
- *Wednesday, April 27th*

Selected times of day, recorded in 15-minute increments, were determined by interest from the DRA and by recommendations from Alta Planning + Design based on typical peak pedestrian periods. Three categories of timing were selected: 11-Hour Counts from 7:00 a.m. – 6:00 p.m. for the downtown core around Fayetteville Street; peak hours of 7:30 a.m. – 9:30 a.m. and 11:30 a.m. – 1:30 p.m. for other areas surrounding Fayetteville Street; and evening hours from 8:00 p.m. – 2:00 a.m. for the entertainment districts. Full count locations were limited to the Fayetteville District and are indicated in yellow on Map A-2 in Appendix A. Both Glenwood South and the Warehouse Districts were only monitored as evening hour counts.

### 3.4 Count Methodology/Materials

All counts were conducted by trained counters using either an electronic count box or standardized count form. Each count box digitally recorded pedestrian activity crossing or within 50-feet of the screenline by pushing a button assigned to a specific geo-referenced location. Data from each count box was then downloaded and recorded digitally. The use of count boxes decreases the percentage of human error by reducing simultaneous tasks, i.e., watching time and counting. In the event that a count box was unavailable, manual count forms were provided and also provided as backup for count boxes. Each count form was preformatted to suit the timeframe and location for each counter (see Forms B-1 through B-4 in Appendix B).

All count data was condensed into a spreadsheet and recorded in 15 increments for each of the geocode locations (See Appendix C for full count matrices).



*All counters were provided badges to indicate their involvement in the study. Hand-held electronic counting devices improve accuracy of the data.*

Count Results/Analysis

# 4. Count Results/Analysis

Count results for all 74 locations are shown in Tables C-1 through C-4 in Appendix C. The volume of pedestrian activity on downtown Raleigh's streets can be analyzed by:

- Overall trend analysis
- Total volume analysis
- Average pedestrians per hour
- Location specific analysis

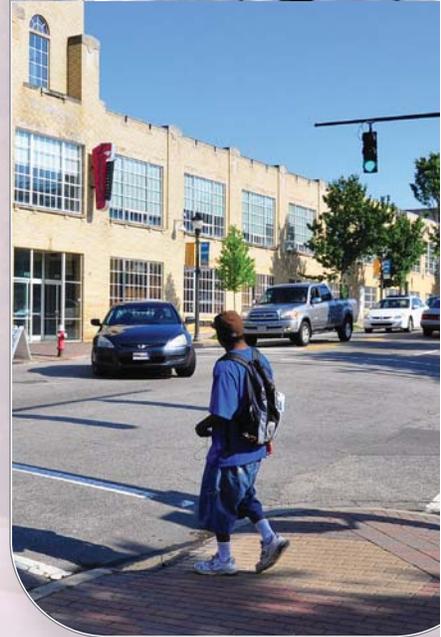
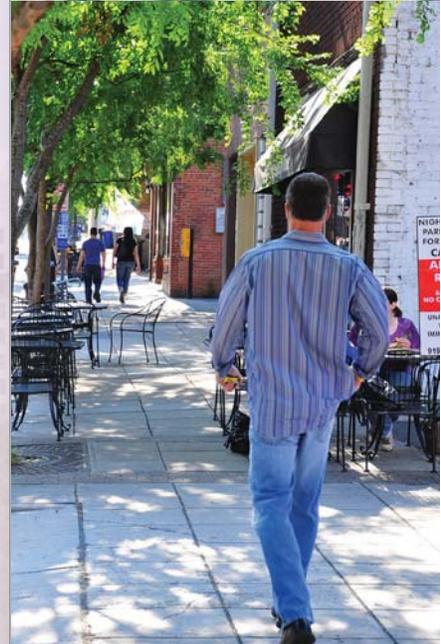
## 4.1 Fayetteville District 11-Hour Counts

The Fayetteville District has a variety of street types. With the renovation of Fayetteville Street, the core of this district is designed with sidewalk widths exceeding 20 feet. These widths can accommodate various combinations of furniture, trees, planters, newspaper and information stands, wayfinding elements, and other pedestrian amenities. Experience and scale of this street is quite different than other streets in the downtown area, however, it is important to note the “passable” space on Fayetteville Street is typically eight-foot-wide. This space is the measurement between building facades and other sidewalk amenities. Available passable space influences travelers selected paths and can cause pedestrians to choose alternate routes or cross to opposite sides of the street.

Other streets within the Fayetteville District are the standard five feet in width. While not typically seen as a feasible space for sidewalk dining, locations such as Remedy Diner populate the narrow sidewalk with outdoor seating. As observed in this study, pedestrians do not seem to select alternate paths to avoid tight spaces accommodating sidewalk dining patrons.

### 4.1.1 Overall Trend Analysis - 11-Hour Counts

An overall comparison of all 11-Hour Count locations depicts a clear increase in pedestrian traffic during the typical lunch hours of 11:30 a.m. – 2:00 p.m. (See Figure 4-1 for trend graph) with a total of 17,912 pedestrians recorded in this time period. Lunch hour traffic accounts for 41% of the total 11-Hour Count volume. Peak total traffic in the Fayetteville District 11-Hour Count locations occurs between 12:46 p.m. and 1:00 p.m. with 2,069 pedestrians.



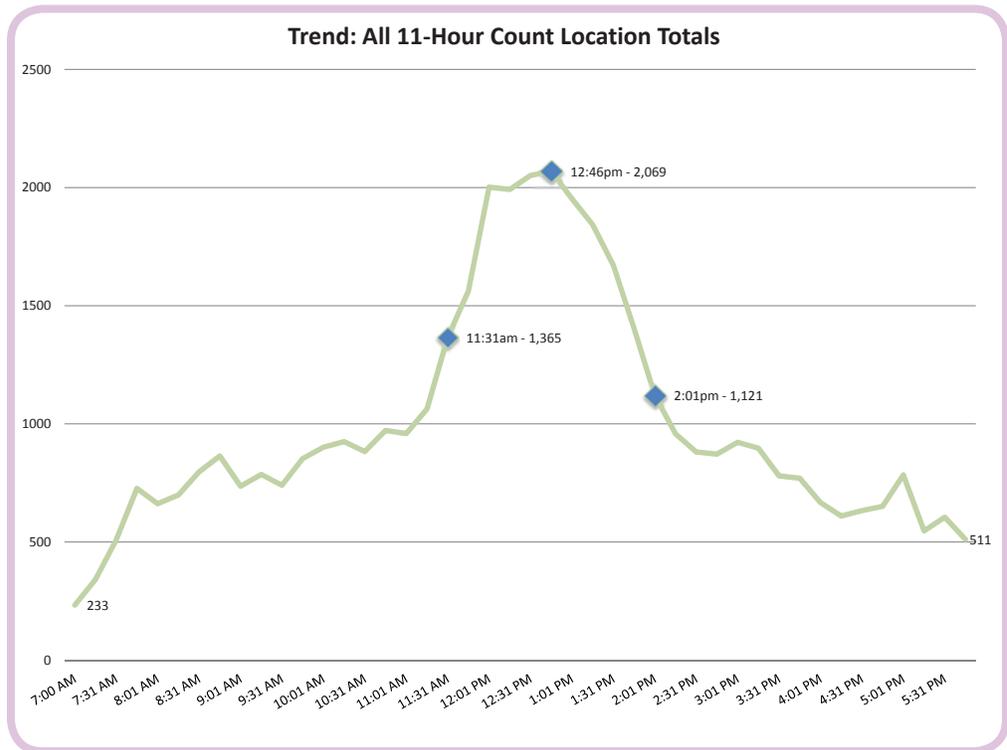


Figure 4-1: Trend of all 11-Hour Count location totals depicting lunch period spike.

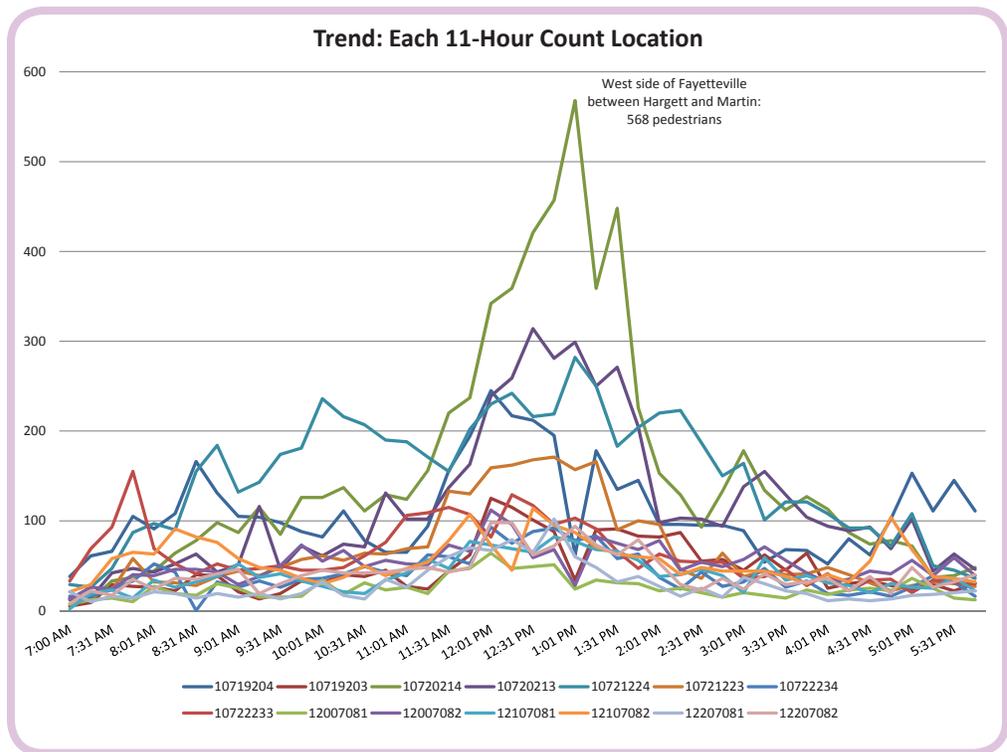


Figure 4-2: Trend of each 11-Hour Count location showing peaks in pedestrian traffic.

Analyzing the trend for each count location separately, it is clear the west side of Fayetteville Street between Hargett and Martin Streets experiences the highest peak traffic, which occurs during the lunch period of 1:01 p.m. – 1:15 p.m. (See Figure 4-2) with 568 pedestrians counted. All top seven counts appear in this location.

Top 11-Hour count activity occurs on Fayetteville Street between Hargett and Martin Streets at the time periods of:

- 1:01 p.m. – 1:15 p.m.: 568 pedestrians
- 12:46 p.m. – 1:00 p.m.: 457 pedestrians
- 1:31 p.m. – 1:45 p.m.: 448 pedestrians
- 12:31 p.m. – 12:45 p.m.: 421 pedestrians
- 1:16 p.m. – 1:30 p.m.: 359 pedestrians
- 12:16 p.m. – 12:30 p.m.: 359 pedestrians
- 12:01 p.m. – 12:15 p.m.: 342 pedestrians

### 4.1.2 Total Volume Analysis

Total volumes can be analyzed per location as well as per block. Locations indicate specific sides of the street, while blocks add total volume for both sides to understand the overall volume experienced between two intersections. Several variables can affect “side of street” preference. Pedestrians initiate their travel from work, a parking space or other location in downtown traveling on a specific street side. Choice of path is influenced by destination, sun/shade, perceived comfort, perceived safety, etc. These preferences are outside the scope of this project, but could be explored in further studies accompanied by indication of direction, pedestrian surveys, and cognitive mapping.

Total block counts, shown in Table D-1 in Appendix D, illustrate the volume leader as Fayetteville Street between Hargett and Martin Streets (see Figure 4-3) experiencing 11,903 pedestrians. The total volume of pedestrian use over the 11-Hour Count period for all blocks was 43,772. Of this sampling, the least activity was seen on Davie Street between Fayetteville and Wilmington Streets. Figure 4-4 shows this hierarchy on the study map.

Higher volumes of use may be attributed to either departure and destination points and/or convenient links. Although beyond the scope of this study, future pedestrian surveys can indicate whether use of a particular block is attributed to high frequencies of block use (departure and destinations), if the block serves as a key link between two points, or if the block possesses certain characteristics (i.e., shade, safety, comfort) that induces path choice.

It is important to note for all total counts: this does not indicate unique individuals, as it is assumed the same person may be counted walking to work; to lunch; back to their office after lunch; and back to their home, vehicle or public transportation source. However, in further studies, this total volume can be compared year to year to glean an indication of a change in overall use.

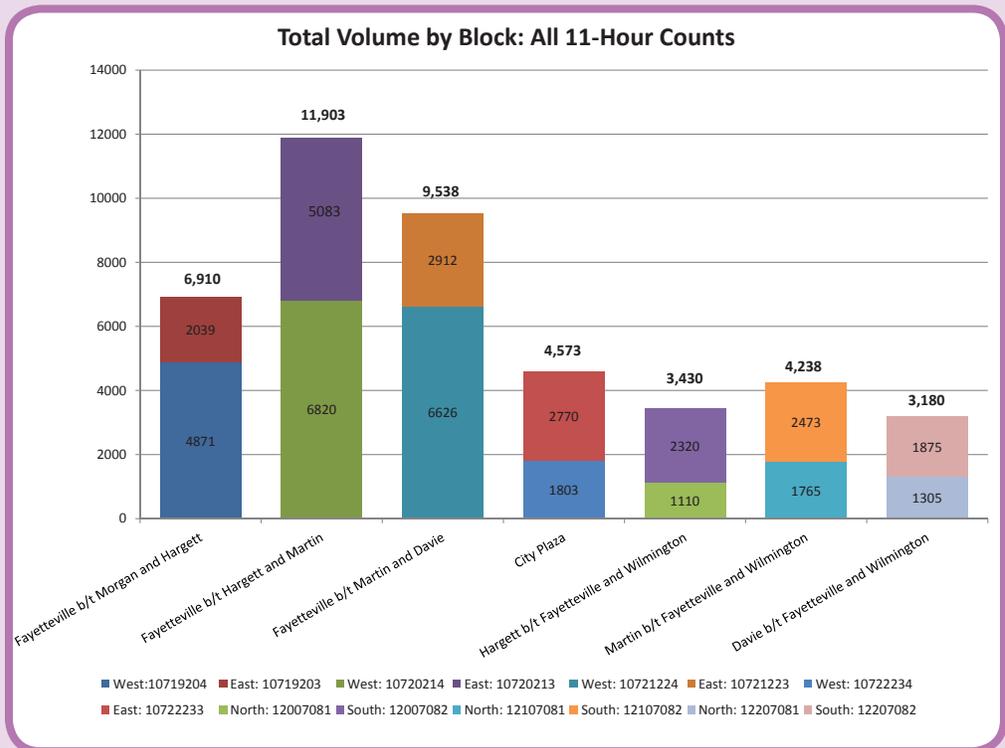


Figure 4-3: Total volumes for each block in the 11-Hour Count study.

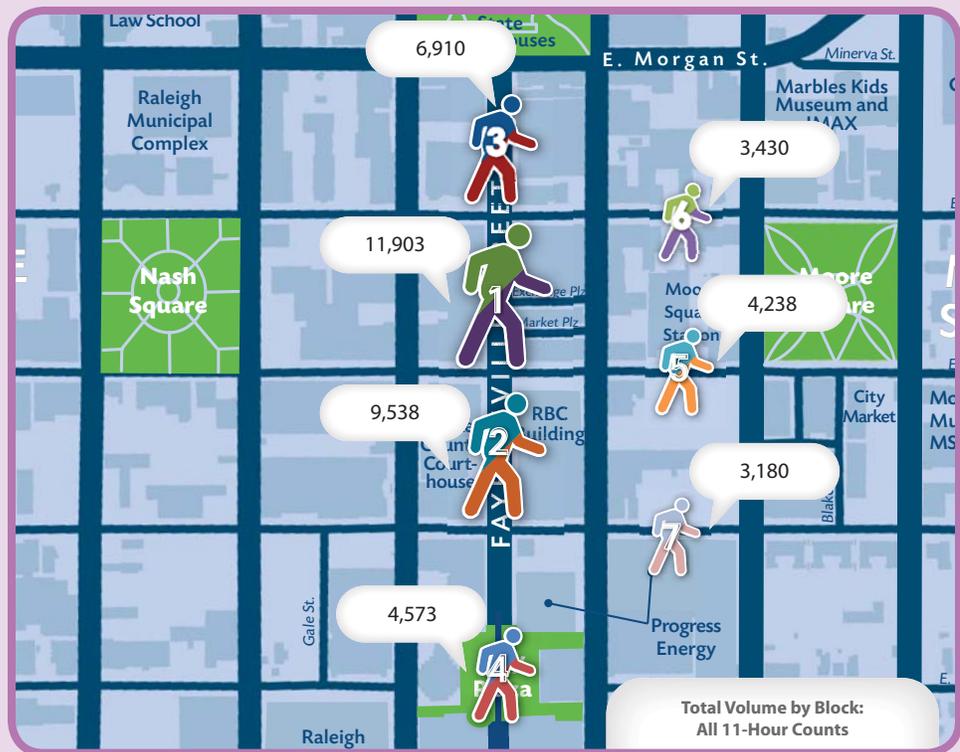


Figure 4-4: Volume by block for all 11-Hour Counts.

### 4.1.3 Location specific Analysis

Selecting an east or west, north or south side of a street can be influenced by many factors. Weather can alter this decision as seen in William Whyte’s studies (*The Social Life of Small Urban Spaces*, 1980) where pedestrians choose sunny sides of the street in cooler weather and take refuge in the shadows of buildings in hot summer months. Extreme temperatures did not overly skew results in this study, as most counts were recorded on pleasant days ranging from the low 60s to high 70s (degrees Fahrenheit). Speculation and prior knowledge of human behavior suggest that people tend to choose the shortest route but other preferences could be discovered with future studies.

This study indicates use from highest to lowest as follows (see Table D-2 in Appendix D and Figure 4-5):

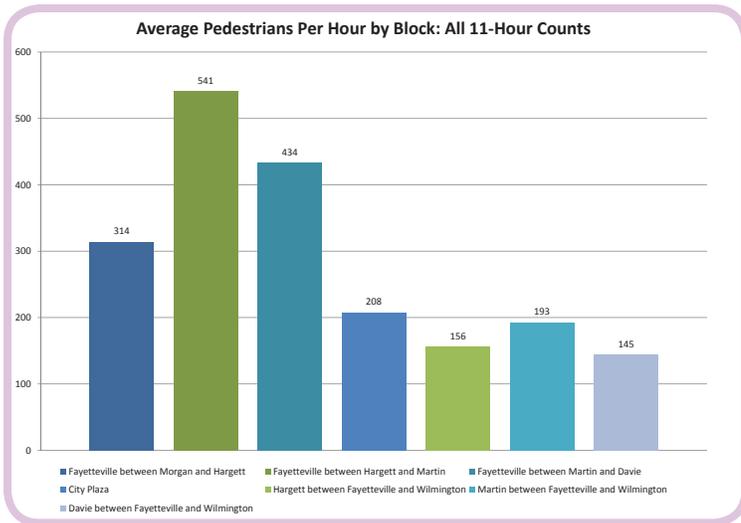
1. The west side of Fayetteville Street between Hargett Street and Martin Street: 6,820
2. The west side of Fayetteville Street between Martin Street and Davie Street: 6,626
3. The east side of Fayetteville Street between Hargett Street and Martin Street: 5,083
4. The west side of Fayetteville Street between Morgan Street and Hargett Street: 4,871
5. The east side of Fayetteville Street between Martin Street and Davie Street: 2,912
6. The east side of City Plaza: 2,770
7. The south side of Martin Street between Fayetteville Street and Wilmington Street: 2,473
8. The south side of Hargett Street between Fayetteville Street and Wilmington Street: 2,320
9. The east side of Fayetteville Street between Morgan Street and Hargett Street: 2,039
10. The south side of Davie Street between Fayetteville Street and Wilmington Street: 1,875
11. The west side of City Plaza: 1803
12. The north side of Martin Street between Fayetteville Street and Wilmington Street: 1,765
13. The north side of Davie Street between Fayetteville Street and Wilmington Street: 1,305
14. The north side of Hargett Street between Fayetteville Street and Wilmington Street: 1,110



Figure 4-5: Hierarchy of all 11-Hour Count Locations.

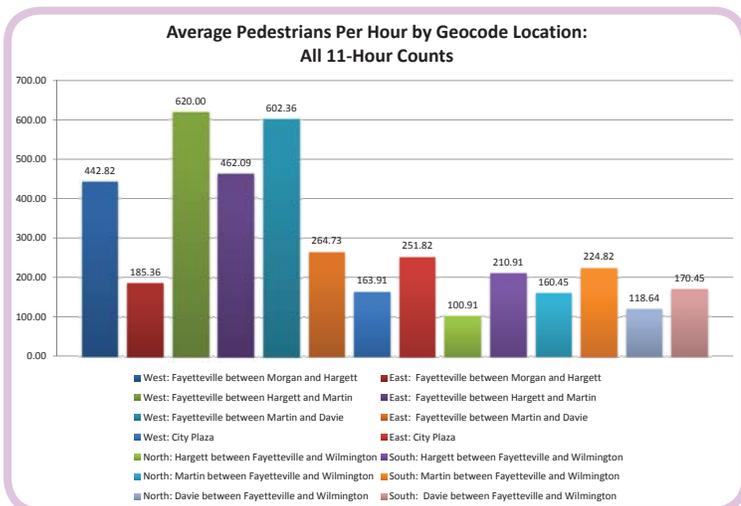
### 4.1.4 Average Pedestrians Per Hour

Over the entire day period of 7:00 a.m. – 6:00 p.m., averages can be taken for each block to measure pedestrian activity per hour. These averages reveal the top five blocks for average pedestrians per hour as (see Figure 4-6 and Table D-3 in Appendix D):



1. Fayetteville Street between Hargett Street and Martin Street: 541 pedestrians per hour
2. Fayetteville Street between Martin Street and Davie Street: 434 pedestrians per hour
3. Fayetteville Street between Morgan Street and Hargett Street: 314 pedestrians per hour
4. City Plaza: 208 pedestrians per hour
5. Martin Street between Fayetteville Street and Wilmington Street: 193 pedestrians per hour

Figure 4-6: Average pedestrians per hour by block in 11-Hour Count study.



Averages can also be taken for each location to measure pedestrian activity per hour. These averages reveal the top five locations for average pedestrians per hour as (see Figure 4-7 and Table D-4 in Appendix D):

1. The west side of Fayetteville Street between Hargett Street and Martin Street: 620 pedestrians per hour
2. The west side of Fayetteville Street between Martin Street and Davie Street: 602 pedestrians per hour
3. The east side of Fayetteville Street between Hargett Street and Martin Street: 462 pedestrians per hour
4. The west side of Fayetteville Street between Morgan Street and Hargett Street: 442 pedestrians per hour
5. The east side of Fayetteville Street between Martin Street and Davie Street: 264 pedestrians per hour

Figure 4-7: Average pedestrians per hour by geocode location in 11-Hour Count study.

## 4.2 Fayetteville District Peak Hour Counts

### 4.2.1 Overall Trend Analysis - Peak Use Counts

Results of the Peak Use Counts will be added to the 11-Hour Counts to present a more complete picture of pedestrian activity in the Fayetteville District. Two-hour windows were selected to capture a snapshot of activity in the morning (7:30 a.m. – 9:30 a.m.) and during the lunch period (11:30 a.m. – 1:30 p.m.).

Analyzing a complete count from both the 11-Hour Counts and the Peak Use Counts, the highest instance of pedestrian activity in the morning occurs between 8:46 a.m. and 9:00 a.m. with a total count of 2,556 (see Figure 4-8 and Table D-5 in Appendix D). The total volume experienced in the morning window for all locations was 16,308.

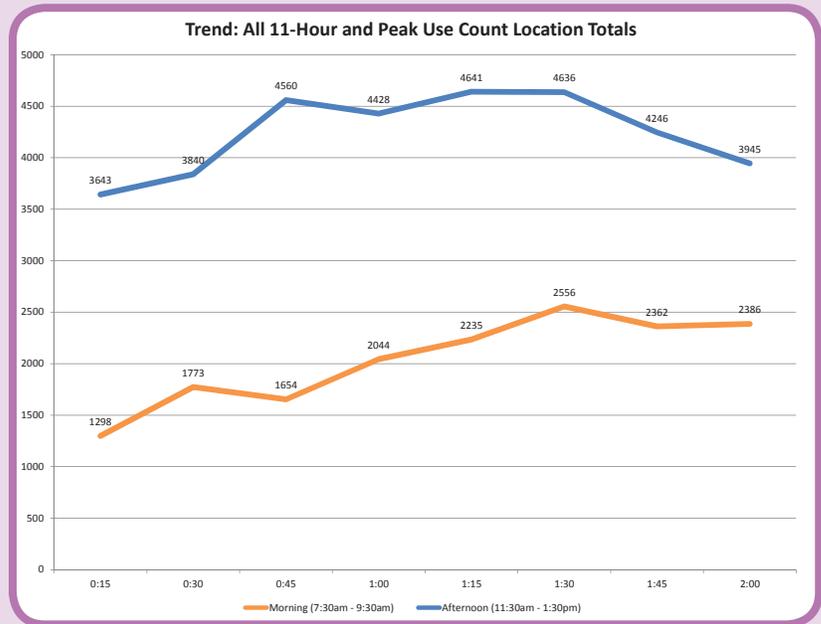


Figure 4-8: Trends during Peak Use for morning and afternoon time periods.

The afternoon peak period total volume experiences the highest amount of pedestrians between 12:46 p.m. and 1:00 p.m. with 4,641 pedestrians recorded (see Figure 4.8 and Table D-5 in Appendix D). The total volume of pedestrians counted in the Fayetteville District during the lunch period was 33,939.

### 4.2.2 Peak Use Count Total Volume Analysis: Morning

Of the 16,308 pedestrians counted from 7:30 a.m. – 9:30 a.m., the block of Salisbury Street between Martin Street and Davie Street experienced the highest volume with 1,788 total pedestrians (see Figure 4-9 and 4-10). The top five total use blocks in the morning were:

1. Salisbury Street between Martin Street and Davie Street: 1,788 pedestrians
2. Fayetteville Street between Martin Street and Davie Street: 1,228 pedestrians
3. Fayetteville Street between Morgan Street and Hargett Street: 1,093 pedestrians
4. Davie Street between Wilmington Street and Blount Street: 1,065 pedestrians
5. Fayetteville Street between Hargett Street and Martin Street: 1,013 pedestrians

Block use from highest to lowest is displayed in Table D-6 in Appendix D.

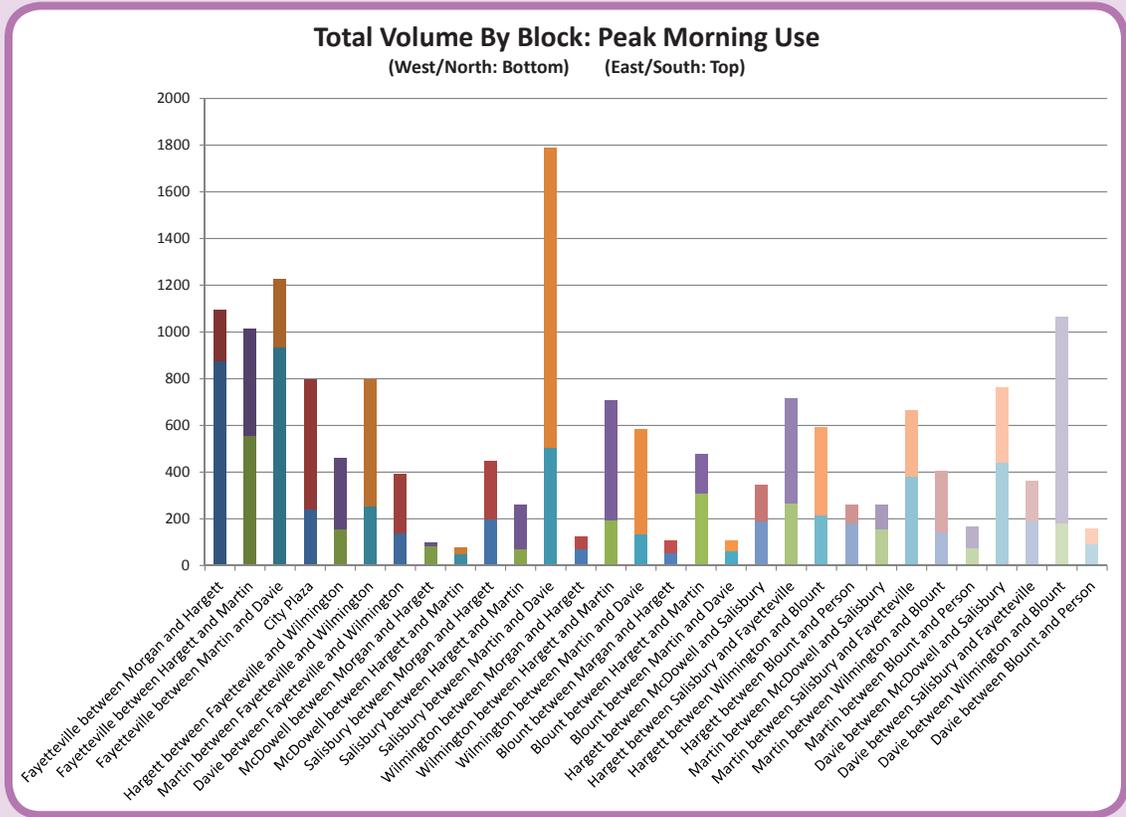


Figure 4-9: Total volumes for each block for the Peak Morning Use counts.

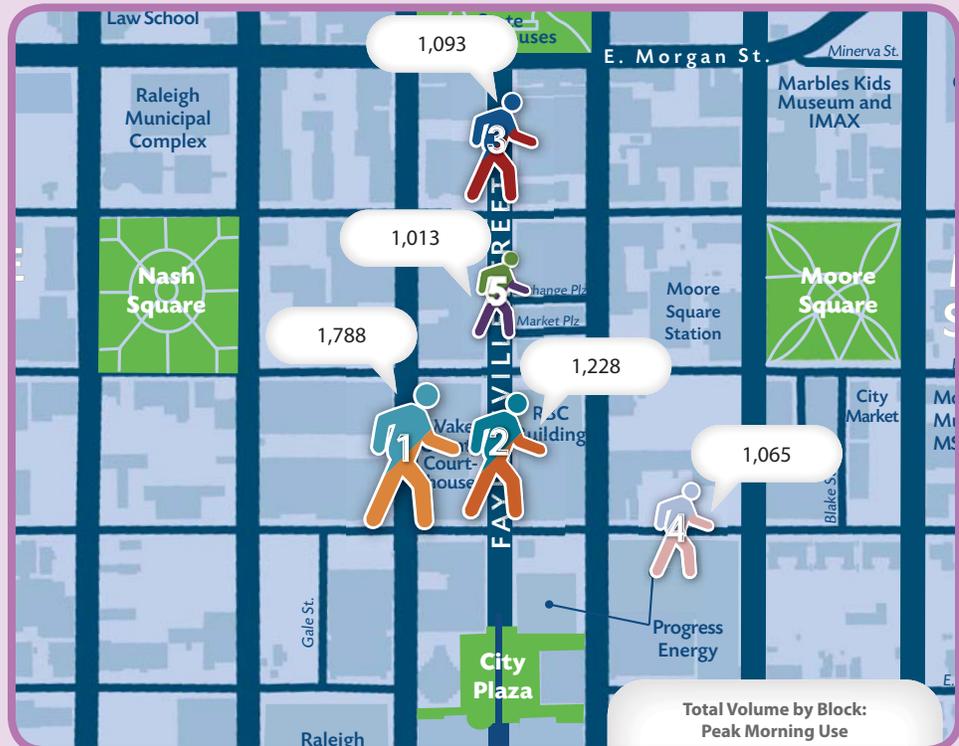


Figure 4-10: Top five total volumes in Peak Morning Use Counts.

### 4.2.3 Peak Hour Count Location Specific Analysis:

#### Morning

Analysis of each location reveals the top 10 locations as (see Figure 4-11):

1. The east side of Salisbury Street between Martin Street and Davie Street: 1,285 pedestrians
2. The west side of Fayetteville Street between Martin Street and Davie Street: 935 pedestrians
3. The south side of Davie Street between Wilmington Street and Blount Street: 885 pedestrians
4. The west side of Fayetteville Street between Morgan Street and Hargett Street: 876 pedestrians
5. The west side of Fayetteville Street between Hargett Street and Martin Street: 556 pedestrians
6. The east side of City Plaza: 554 pedestrians
7. The south side of Martin Street between Fayetteville Street and Wilmington Street: 541 pedestrians
8. The east side of Wilmington Street between Hargett Street and Martin Street: 515 pedestrians
9. The west side of Salisbury Street between Martin Street and Davie Street: 503 pedestrians
10. The east side of Fayetteville Street between Hargett Street and Martin Street: 457 pedestrians



Figure 4-11: Top ten volume locations during Peak Morning Use.

(See Table D-7A and D-7B in Appendix D for all locations from highest volume to lowest volume).

### 4.2.4 Peak Hour Count Total Volume Analysis: Lunch Period

During the lunch period of 11:30 a.m. – 1:30 p.m., 33,939 pedestrians were counted in 60 locations of the Fayetteville District (11-Hour Counts combined with Peak Hour Counts). Overall, most counts were higher than the morning peak hour.

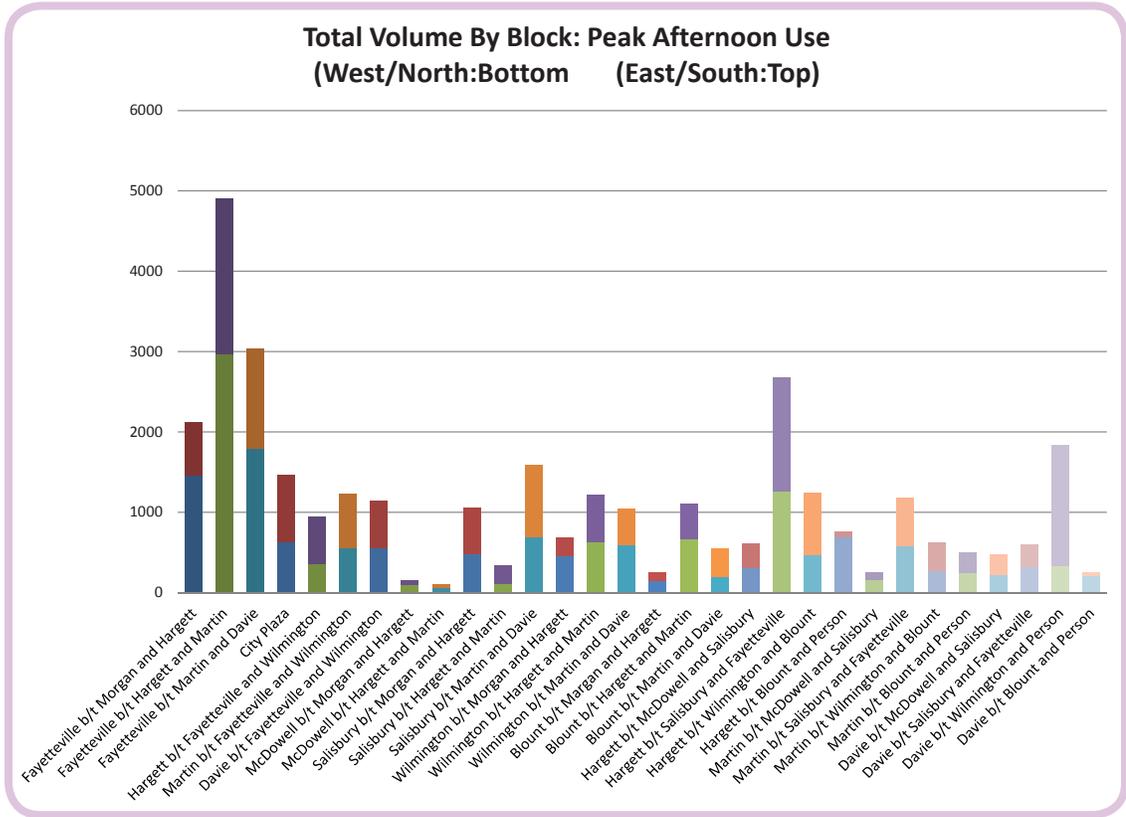


Figure 4-12: Total volumes for each block for the Peak Afternoon Use counts.

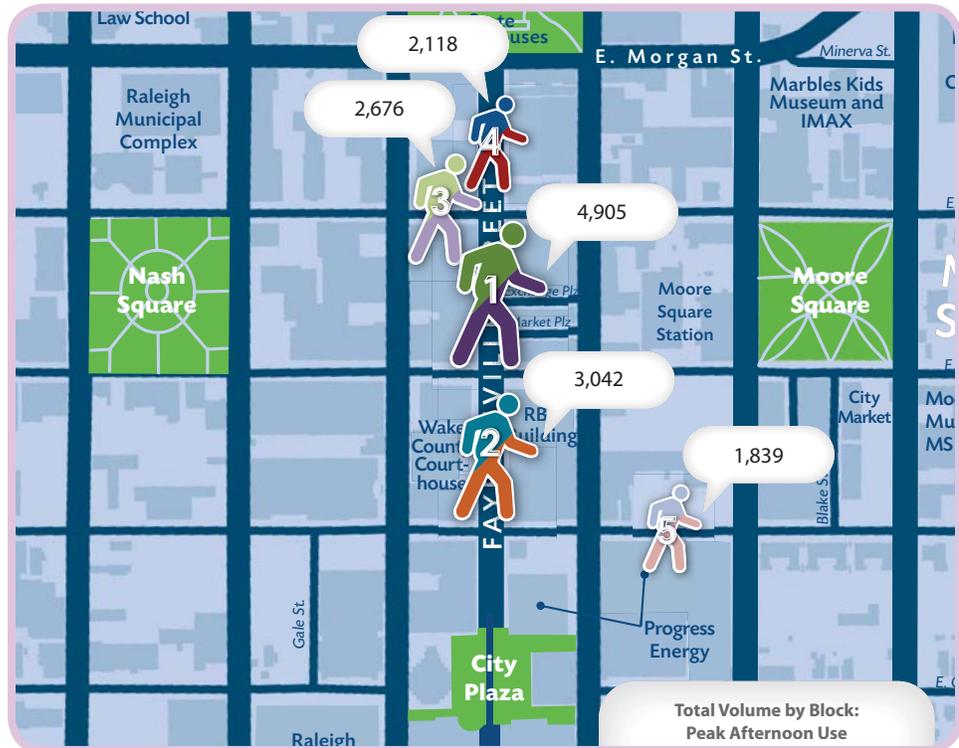


Figure 4-13: Top five total volumes in Peak Afternoon Use Counts.

The top five highest instances of pedestrian use by block were (see Figure 4-12 and 4-13):

1. Fayetteville Street between Hargett Street and Martin Street: 4,905
2. Fayetteville Street between Martin Street and Davie Street: 3,042
3. Hargett Street between Salisbury Street and Fayetteville Street: 2,676
4. Fayetteville Street between Morgan Street and Hargett Street: 2,118
5. Davie Street between Wilmington Street and Blount Street: 1,839

Block use from highest to lowest is displayed in Table D-8 in Appendix D.

#### 4.2.5 Peak Hour Count Location Specific Analysis: Lunch Period

Examining each location separately, eight geocodes climbed above 1,000 pedestrians. The top ten locations are (see Figure 4-14):

1. The west side of Fayetteville Street between Hargett Street and Martin Street: 2,963 pedestrians
2. The east side of Fayetteville Street between Hargett Street and Martin Street: 1,942 pedestrians
3. The west side of Fayetteville Street between Martin Street and Davie Street: 1,796 pedestrians
4. The south side of Davie Street between Wilmington Street and Blount Street: 1,503 pedestrians
5. The west side of Fayetteville Street between Morgan Street and Hargett Street: 1,459 pedestrians
6. The south side of Hargett Street between Salisbury Street and Fayetteville Street: 1,419 pedestrians
7. The north side of Hargett Street between Salisbury Street and Fayetteville Street: 1,257 pedestrians
8. The east side of Fayetteville Street between Martin Street and Davie Street: 1,246 pedestrians
9. The east side of Salisbury Street between Martin Street and Davie Street: 899 pedestrians
10. The east side of City Plaza: 840 pedestrians



Figure 4-14: Top ten volume locations during Peak Morning Use.

(See Table D-9A and D-9B in Appendix D for all locations from highest volume to lowest volume).

### 4.2.6 Peak Hour Average Pedestrians Per Hour

Combining both 11-Hour Counts and Peak Hour Counts, average pedestrians per hour illustrate a more complete picture of downtown Raleigh activity.

By block, the top five peak morning occurrences are (see Figure 4-15):

1. *Salisbury Street between Martin Street and Davie Street: 447 pedestrians per hour*
2. *Fayetteville Street between Martin Street and Davie Street: 307 pedestrians per hour*
3. *Fayetteville Street between Morgan Street and Hargett Street: 273.25 pedestrians per hour*
4. *Davie Street between Wilmington Street and Blount Street: 266.25 pedestrians per hour*
5. *Fayetteville Street between Hargett Street and Martin Street: 253 pedestrians per hour*

(See Table D-10 in Appendix D for pedestrians per hour ranked highest to lowest.)

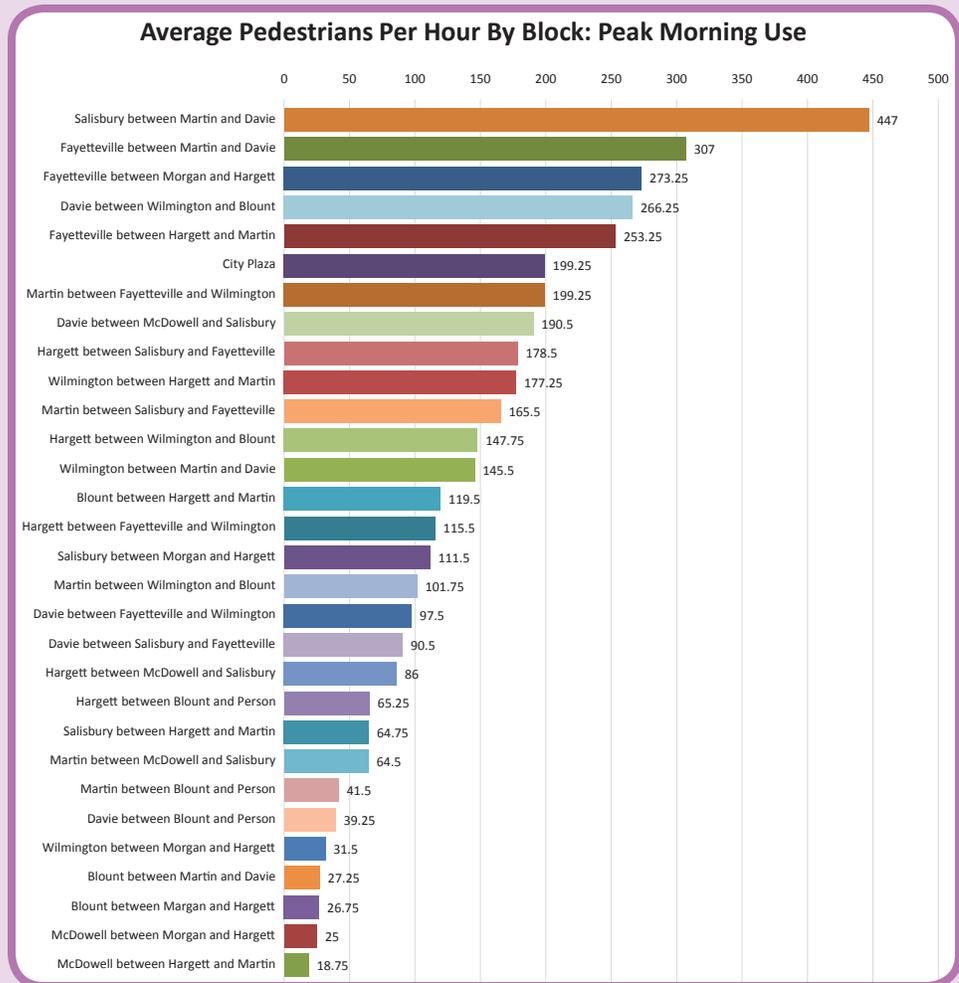


Figure 4-15: Average pedestrians per hour by block during Peak Morning Use.

The top five blocks during the afternoon peak are (see Figure 4-16):

1. *Fayetteville Street between Hargett Street and Martin Street: 1,226 pedestrians per hour*
2. *Fayetteville Street between Martin Street and Davie Street: 760 pedestrians per hour*
3. *Hargett Street between Salisbury Street and Fayetteville Street: 669 pedestrians per hour*
4. *Fayetteville Street between Morgan Street and Hargett Street: 529 pedestrians per hour*
5. *Davie Street between Wilmington Street and Blount Street: 459 pedestrians per hour*

Morning top locations differ from lunch period top location as seen in the two graphs presented in Figure 4-15 and Figure 4-16.

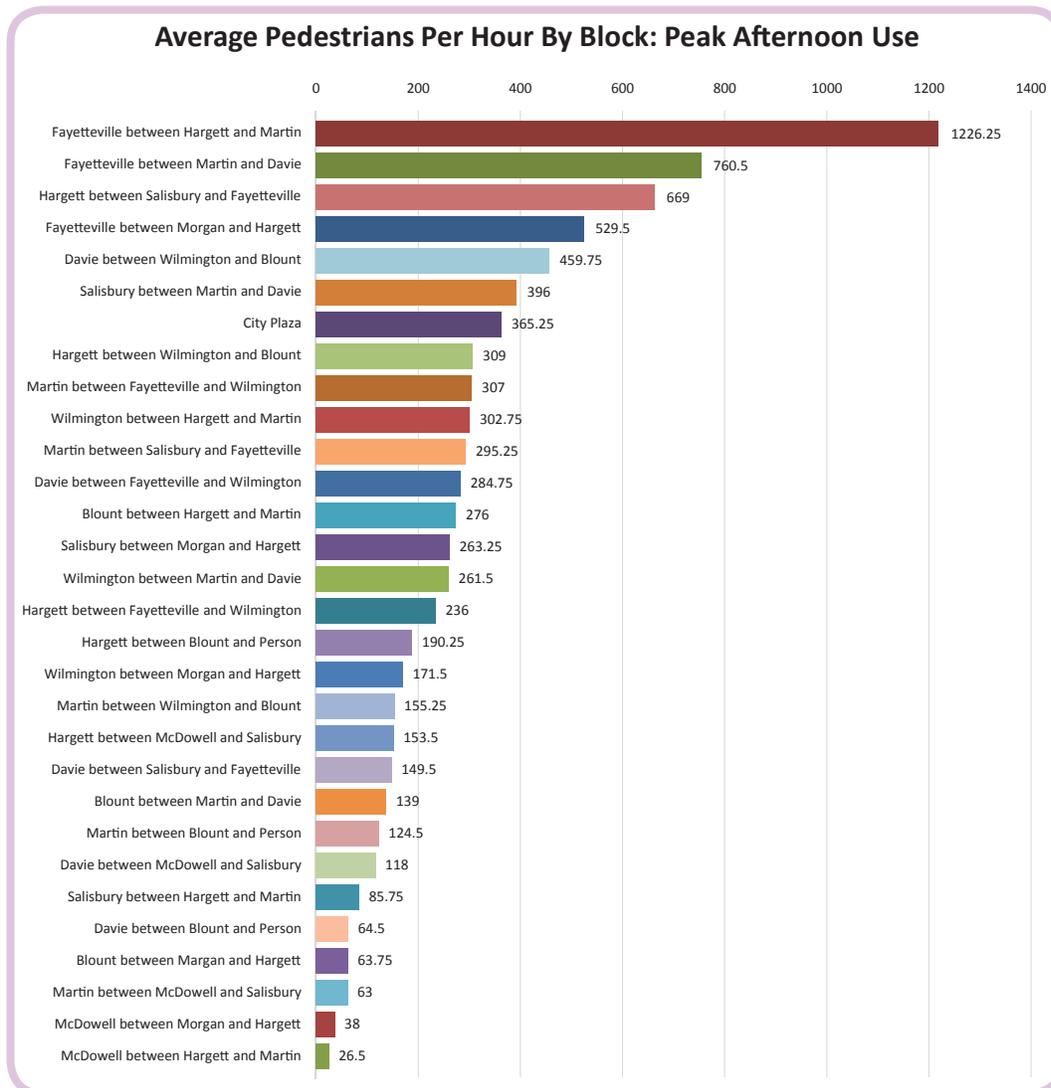


Figure 4-16: Average pedestrians per hour by block during Peak Afternoon Use.

## ***4.3 Warehouse and Glenwood South Entertainment District Counts***

Both the Warehouse District and Glenwood South are populated with five foot sidewalks. The exceptions to this standard are wider areas of Glenwood South with extended widths that accommodate outdoor seating for bars and restaurants. This use of the sidewalk decreases passable space to about five feet. Street trees also inhabit sidewalk space with tree grates and tree lawns of five feet. Pedestrians traveling through this district experience tight pinches of passable space. The west side of Glenwood Avenue housing near Hibernian Pub allows only two feet of passable space due to their outdoor fenced dining area. While this poses no problem for pedestrians, it can cause issues for those passing with strollers or in wheelchairs.

### ***4.3.1 Late Night Counts Trend Analysis***

The Warehouse District and Glenwood South are two distinct entertainment/nightlife districts in downtown Raleigh catering to a late night crowd. Both locations offer restaurants, bars, clubs, and other late night activities. Further studies including surveys of users would present additional scientific and empirical evidence to clarify the demographic differences between each option for late night pedestrians. One clear distinction between the two districts is the edge effect in the Warehouse District. Train tracks and residential neighborhoods border the west side of this district decreasing the possibility of pedestrian 'pass-through' traffic. Although some may argue Glenwood South is also an isolated district and more of a destination than a 'pass-through' the proximity to other active late night areas increases the potential for 'pass-through' traffic. There are also some residential land uses within Glenwood South that contribute to sidewalk volumes as people depart from and return to their homes on the shoulders of 8:00 p.m. and 2:00 a.m..

Both areas were examined over a period of six hours, resulting in total traffic counts of 2,654 pedestrians in two locations of the Warehouse District and 17,414 pedestrians in ten locations recorded on Glenwood South. Further comparisons in rate of pedestrians per time period reveal use patterns.

Overall trends for the Warehouse District and Glenwood South cannot be matched evenly for analysis of the number of count locations was not the same. However, when comparing each trend, it is clear that the Warehouse District experienced an overall decline in traffic from 8:00 p.m. – 2:00 a.m., whereas Glenwood South experienced a spike in pedestrians from 11:30 p.m. – 1:45 a.m. (see Figures 4-17 and 4-18).

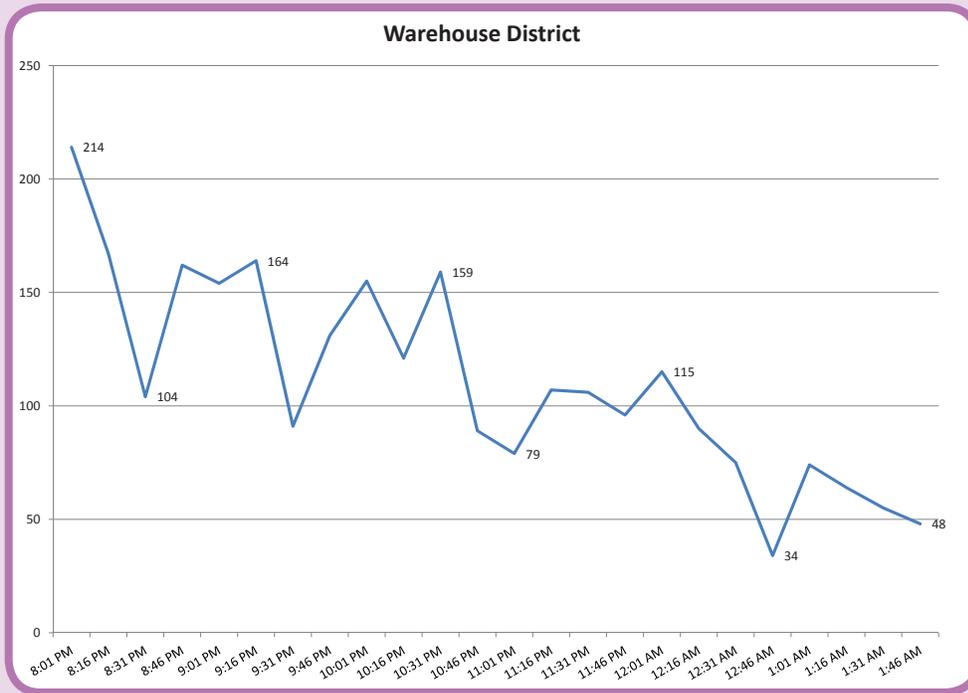


Figure 4-17: Overall trend in total counts in the Warehouse District.

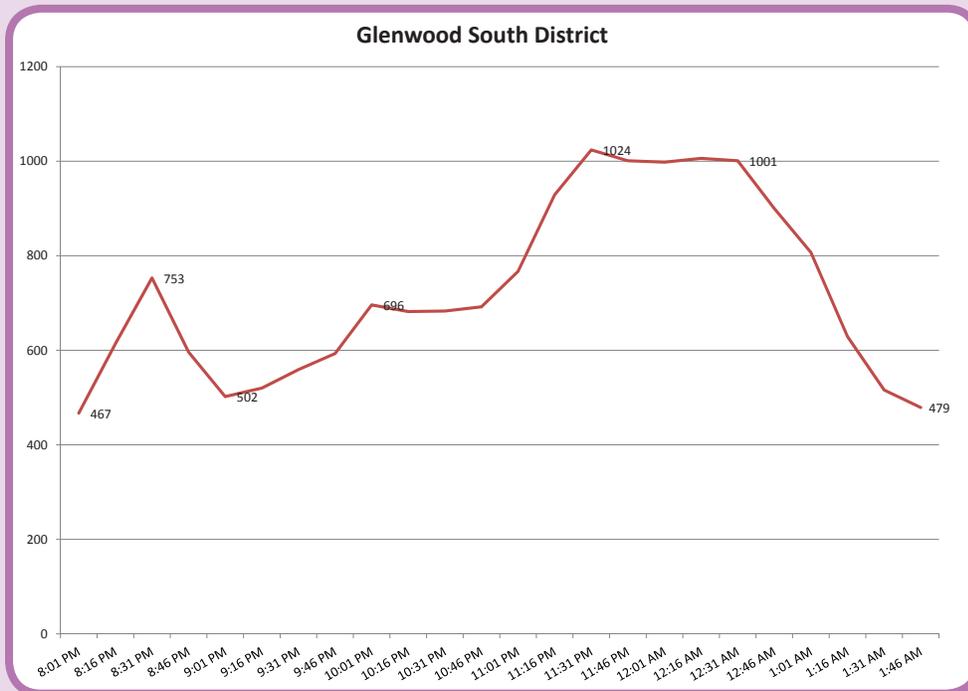
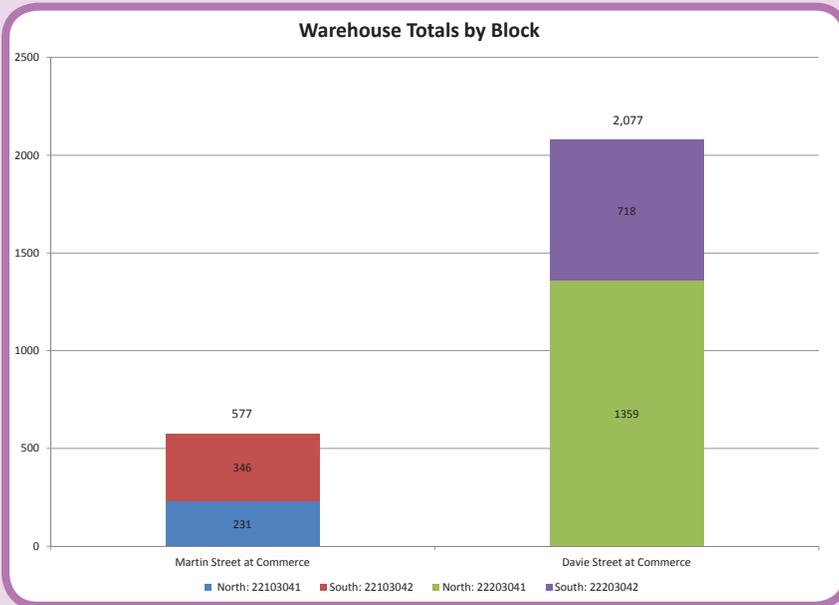


Figure 4-18: Overall trend of total counts in the Glenwood South District.

### 4.3.2 Late Night Total Volume Analysis

In the Warehouse District, Davie Street experienced more traffic than Martin Street, totaling 2,077 and 577, respectively. All four locations experienced a total volume of 2,654 pedestrians. With a total count of 1359, the North side of Davie contained the most traffic in this District (see Figure 4-19 and Table D-14 in Appendix D).



Total pedestrian traffic recorded on Glenwood South equals 17,414 persons. Top performing blocks were Glenwood Avenue between Tucker Street and North Street (4,858) and Glenwood between Lane and Jones (4,547), with the east side of Glenwood between Lane and Jones leading as the most traveled with 3,169 pedestrians (see Figure 4-20 and Table D-15 in Appendix D).

Figure 4-19: Total block counts for the Warehouse District.

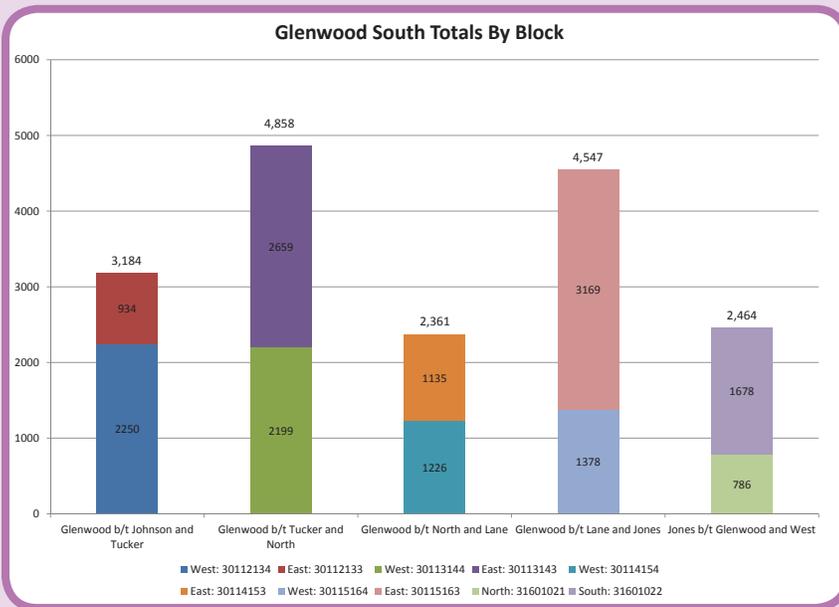


Figure 4-20: Total block counts for the Glenwood South District.

### 4.3.3 Late Night Count Location Specific Analysis

Martin Street, in the Warehouse District, shows dips and peaks across time for both the north and south sides of the street (see Figure 4-21). Davie Street's north and south comparison is quite different, with the north side experiencing higher loads of pedestrian traffic from 8:00 p.m. - 11:00 p.m. before producing more even results across both sides (see Figure 4.22). The north side peaks as the counts begin at 8:00 p.m. with 165 pedestrians, while the south side only peaks at 44, which is experienced at 10:16 p.m., 10:46 p.m., and 12:31 a.m.

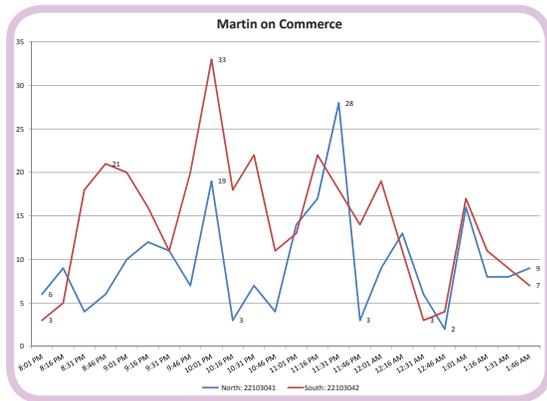


Figure 4-21: Martin on Commerce north/south comparison.

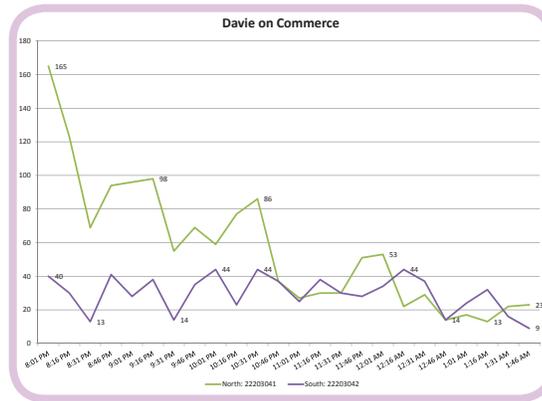


Figure 4-22: Davie on Commerce north/south comparison.

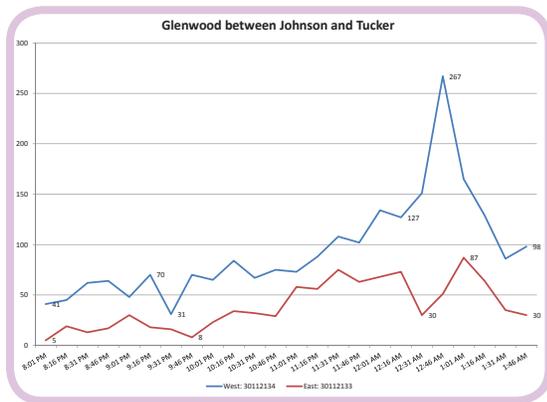


Figure 4-23: Glenwood between Johnson and Tucker east/west comparison.

The east and west sides of Glenwood Avenue between Johnson Street and Tucker Street seem to follow the same trend with the east side lagging slightly behind until after 12:00 a.m. when a large spike in traffic is experienced on the west side between 12:46 a.m. and 1:00 a.m. (see Figure 4-23).

On Glenwood Avenue, between Tucker Street and North Street (see Figure 4-24), both sides of the street similarly trend with the majority of dissimilar peaks and dips between 11:16 p.m. and 1:16 a.m.. The east side of the street peaks at 190 (11:46 p.m.), while the west side peaks lower at 154 (12:01 a.m.).

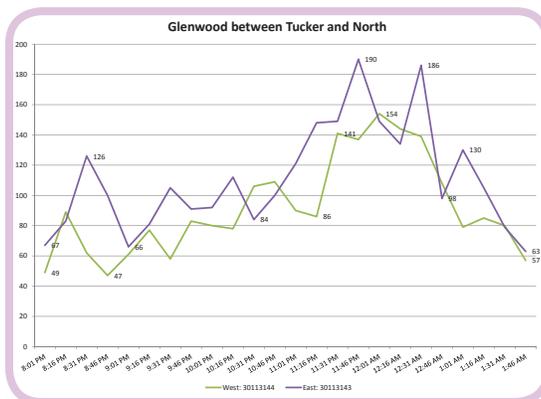


Figure 4-24: Glenwood between Tucker and North east/west comparison.

Between North Street and Lane Street on Glenwood Avenue, the trending is erratic with opposite peaks and dips on the west and east sides of the street between 8:31 p.m. and 10:30 p.m., switching extremes from 10:30 p.m. to 12:00 a.m. (see Figure 4-25).

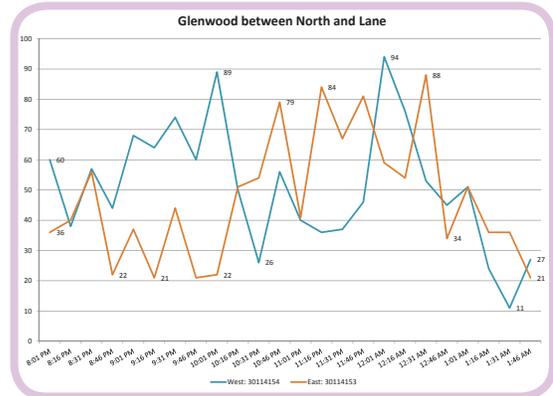


Figure 4-25: Glenwood between North and Lane east/west comparison.

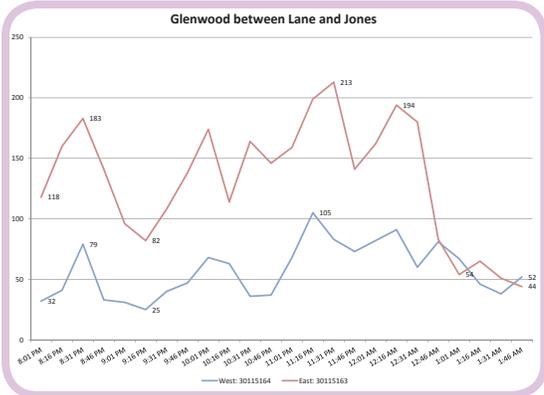


Figure 4-26: Glenwood between Lane and Jones east/west comparison.

Glenwood Avenue between Lane Street and Jones Street (see Figure 4-26) shows the west side overall with less pedestrian traffic than the east side. In fact, the highest instance of traffic on the west side (105) is still almost half of the count for the east side (199).

Between Glenwood Avenue and West Street on Jones Street (see Figure 4-27), the north side of the street mostly trends less than the south side. Each side of the street seems to experience opposite moments of dips and peaks. The highest peak on the south side (111) is almost double that of the peak on the north side (69).

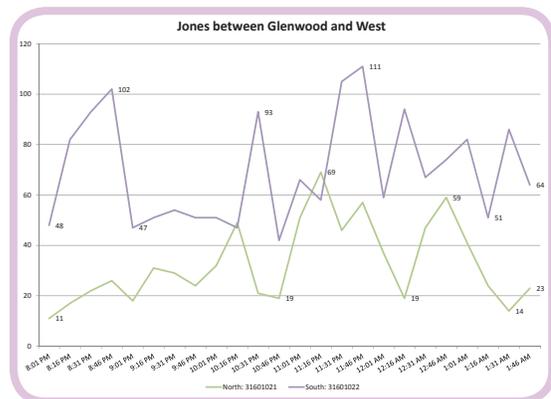


Figure 4-27: Jones between Glenwood and West north/south comparison.

### 4.3.4 Pedestrians Per Hour

By calculating the average number of pedestrians per hour, although not founded in the same sampling size, both the Warehouse District and Glenwood South can be compared. Each block's average appears in Table D-16 in Appendix D. The chart in Figure 4-28 shows the top five blocks as:

1. *Glenwood Avenue between Tucker Street and North Street: 404 pedestrians per hour*
2. *Glenwood Avenue between Lane Street and Jones Street: 378 pedestrians per hour*
3. *Glenwood Avenue between Johnson Street and Tucker Street: 265 pedestrians per hour*
4. *Jones Street between Glenwood Avenue and West Street: 205 pedestrians per hour*
5. *Glenwood Avenue between North Street and Lane Street: 196 pedestrians per hour*

It is possible to compare each Late Night Count location by analyzing the number of pedestrians per hour recorded (see Figure 4-29). For the 8:00 p.m. – 2:00 a.m. period, the top five locations for average pedestrians per hour are:

1. *The east side of Glenwood Avenue between Lane Street and Jones Street: 528 pedestrians per hour*
2. *The east side of Glenwood Avenue between Tucker Street and North Street: 443 pedestrians per hour*
3. *The west side of Glenwood Avenue between Johnson Street and Tucker Street: 375 pedestrians per hour*
4. *The west side of Glenwood Avenue between Tucker Street and North Street: 366 pedestrians per hour*
5. *The south side of Jones Street between Glenwood Avenue and West Street: 279 pedestrians per hour*

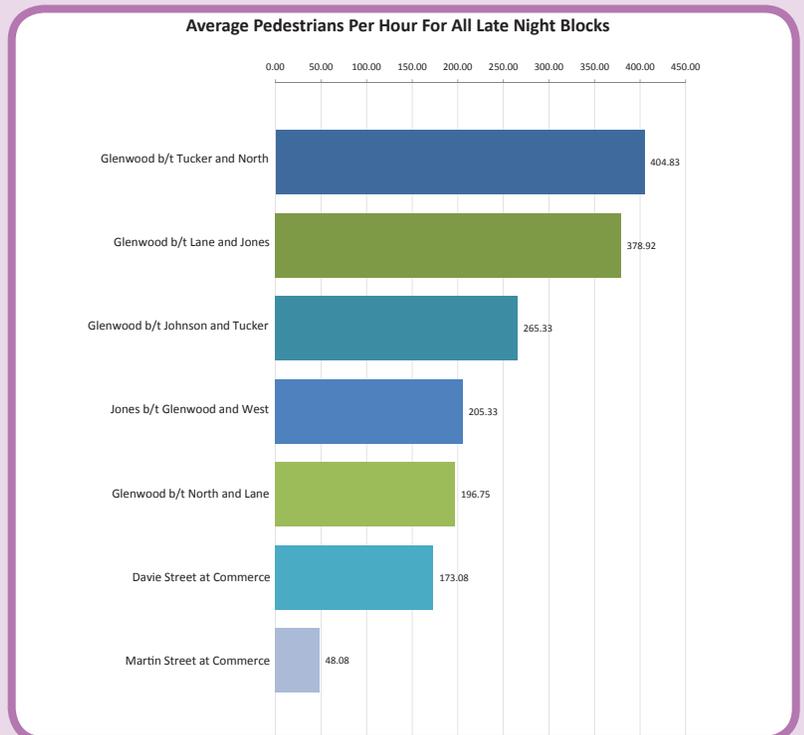


Figure 4-28: Average pedestrians per hour for all late night blocks.

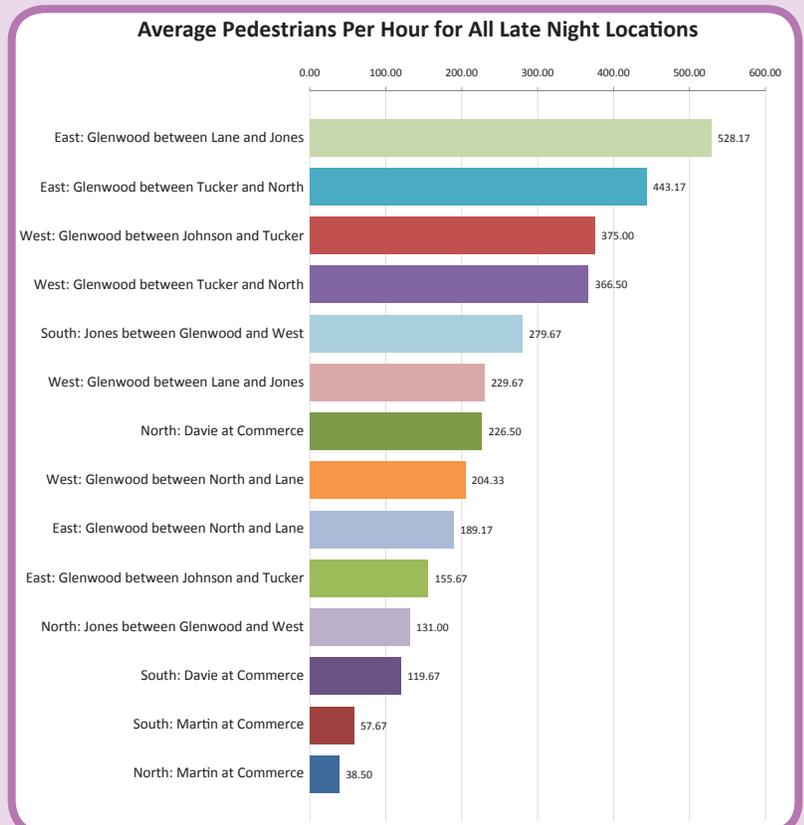


Figure 4-29: Average pedestrians per hour for all late night locations.



# 5. City Comparisons

The methods and procedures for the Downtown Raleigh Pedestrian Count are unique to those of the National Bike and Pedestrian Documentation Program. Key differences include the addition of data counts for each side of the street; an analysis of the late night window from 8:00 p.m. – 2:00 a.m.; and incremental final recording. The following comparisons extract information from the Raleigh Count to match existing data from the NBPDP database. Two similar environments, Knoxville, TN, and Greensboro, NC, were selected based on the nature of the count locations: downtown/urban/retail/restaurant; the window of time for each recording; and the weather conditions during data collection. A third urban area comparison is included to glean an understanding of Raleigh’s alignment with a larger city. Although quite different in climate, population and area, San Diego stands as a city with some well-established cultural areas (East Village, Gaslamp Quarter, etc.) but is initiating an urban revitalization. *Note: Sidewalk widths are not available for each location.*

## 5.1 Knoxville, Tennessee

The five-year study for Knoxville began in 2005 with recorded pedestrian and bicycle counts in the spring and fall of each year. The most recent count data referenced is from April 2009. Weather conditions were slightly cooler than the Raleigh count days, but overall the weather was in the 40s and 50s (degrees Fahrenheit) with no rain reported.

Counts for the Knoxville study were recorded by lump volume in windows from 7:00 a.m. – 9:00 a.m. and 4:00 p.m. - 6:00 p.m.. This equates to a time period in the Raleigh study of 7:00 a.m. – 9:00 a.m. and 4:00 p.m. – 6:00 p.m. using the 11-Hour Count data.

Three locations from the Knoxville study can be used in comparison with Raleigh’s 14 locations in the Fayetteville District 11-Hour Counts.

1. *Summit Hill and Gay: This intersection in Knoxville is a gateway to the downtown district with shopping, retail, restaurants, and offices. This location is somewhat similar to the intersection of Fayetteville and Morgan, in that it is a centrally-located northern entrance to this downtown area.*
2. *Gay and Hill: This intersection enters the downtown area from the south. Although not as programmed as the City Plaza block in Raleigh, the entrance effect is similar.*
3. *Clinch and Henley: This route runs east-west between downtown and the University of Tennessee. This particular location is adjacent to the convention center. No clear comparison can be made with any Raleigh locations, but the characteristics of a nearby University as well as a convention center establish this location as compatible for the analysis.*

Figure 5.1 illustrates the total count comparison of Knoxville’s three locations with the total count volume from the Raleigh Study.



All of Raleigh 11-Hour Count locations exceed the Knoxville north and south downtown gateways. The east-west connector between downtown Knoxville and the University of Tennessee carries more than twice the volume of the gateways. Potential causes for this increase could be students and faculty commuting to class and work, but this is only speculation. Even with this potential higher level of use as a “commuter’ street,” overall Raleigh experiences higher levels of pedestrian travel during this timeframe.

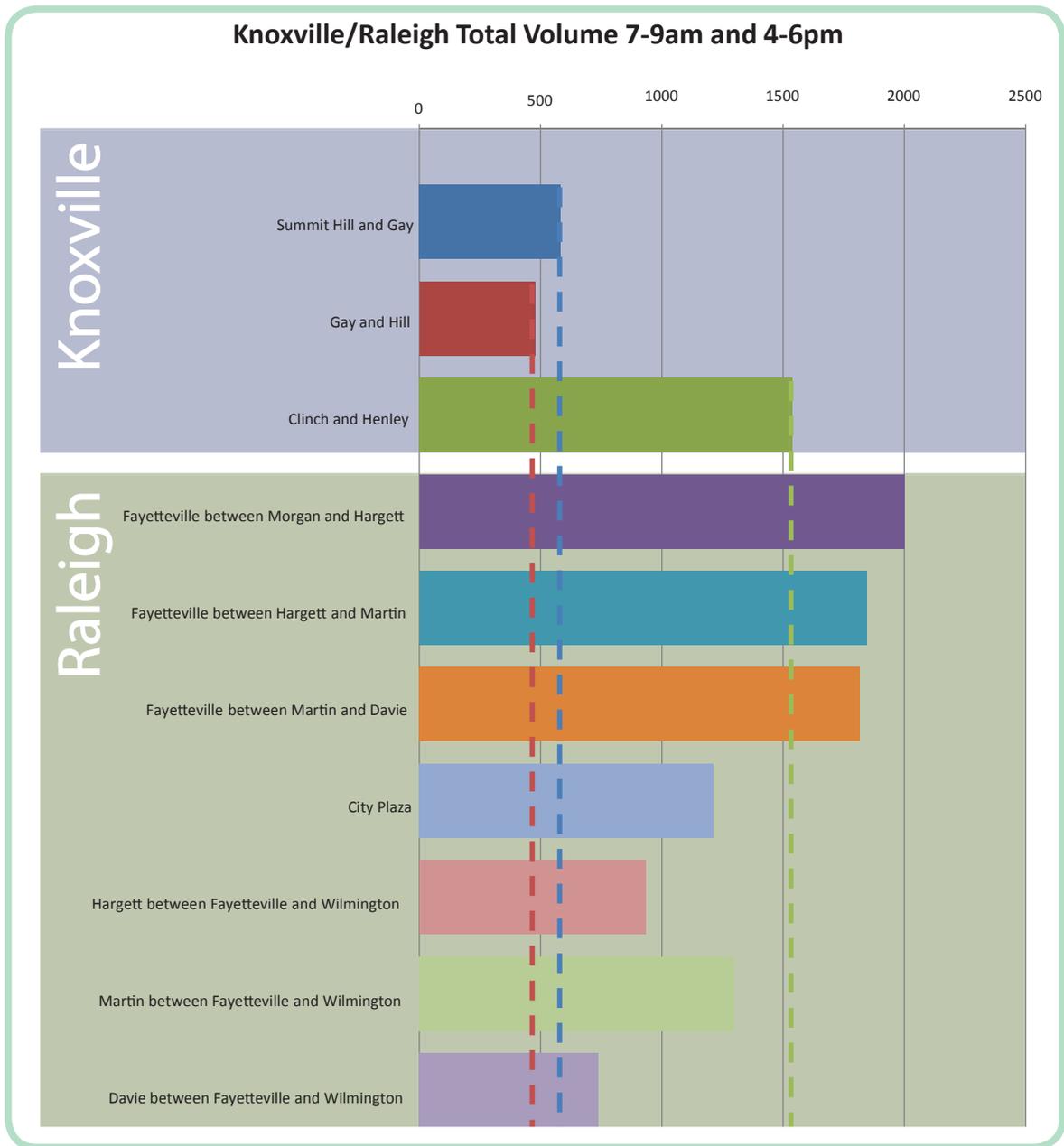


Figure 5-1: Knoxville and Raleigh comparison of total volume from 7:00-9:00 a.m. and 4:00-6:00 p.m.

## 5.2 Greensboro, North Carolina

The Greensboro study count locations of the intersection of Washington and Davie and the intersection of Market and Elm are both located in the downtown area near retail, restaurants, office, and government facilities, including City Hall. The area also includes the International Civil Rights Museum and Carolina Theatre. Washington and Davie counts were conducted on a clear pleasant day in early September. The Market and Elm data was also collected in early September, however the weather was slightly less sunny.

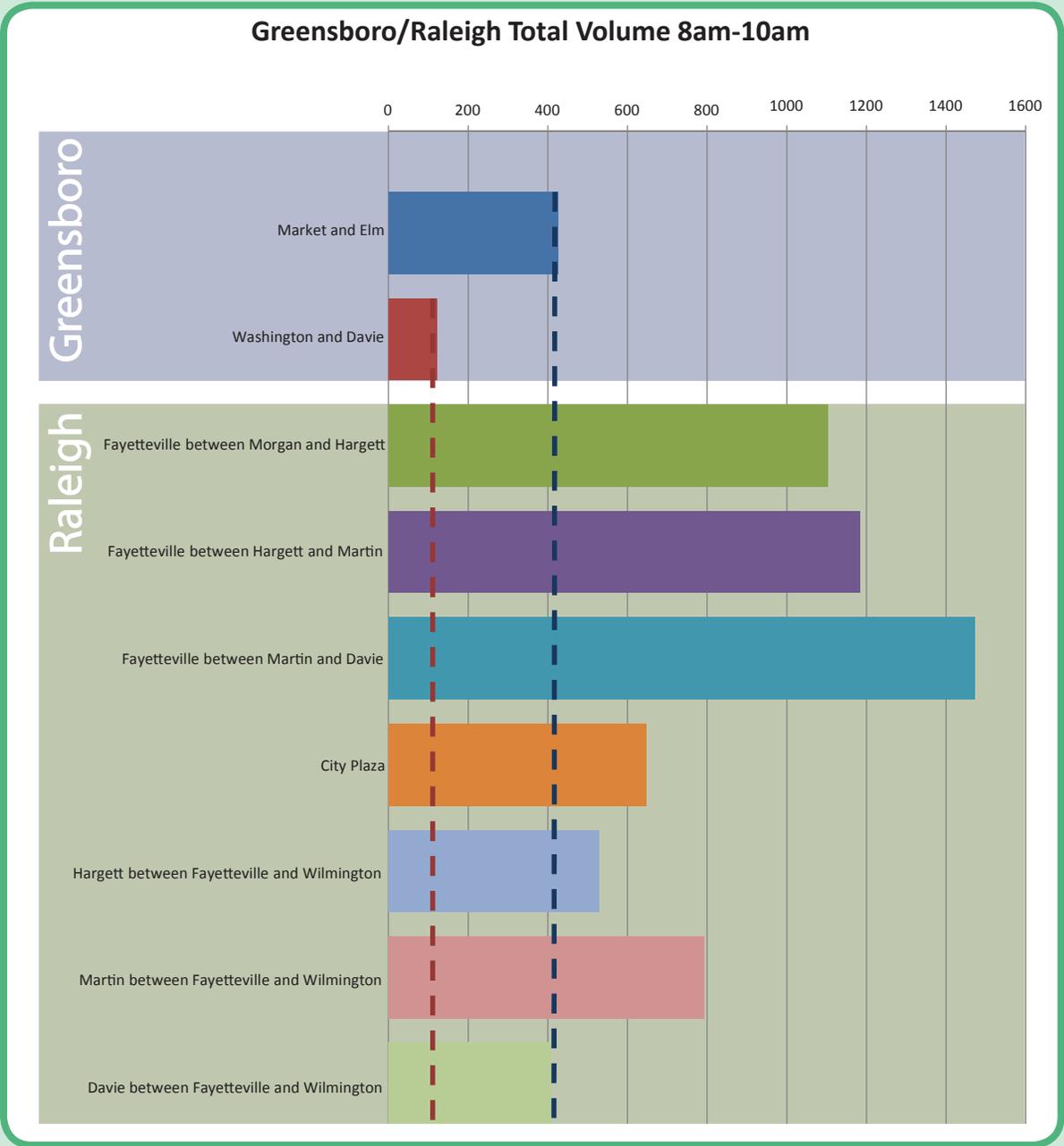


Figure 5-2: Greensboro's total volumes fall below most of Raleigh's volumes from 8:00 a.m. - 10:00 a.m.

- 
1. *Market and Elm: This location is in the heart of the downtown Greensboro area. Elm is akin to Fayetteville in its north/south orientation lined with a dense population of restaurants.*
  2. *Washington and Davie is situated south east of the Market and Elm location. This intersection is one block off the Elm Street thoroughfare, acting as more of a gateway than a destination.*

Weekday total block counts from 8:00 a.m. – 10:00 a.m. and 2:00 p.m. – 4:00 p.m. are compared with Raleigh’s 11-Hour count totals. It is clear from Figure 5.2, Raleigh’s morning traffic exceeds that of Greensboro’s in six out of seven blocks.

Once again, weekday afternoon hours of 2:00 p.m. – 4:00 p.m. indicate higher total pedestrian counts in downtown Raleigh with the exception of one location, Davie between Fayetteville and Wilmington (see Figure 5.3).

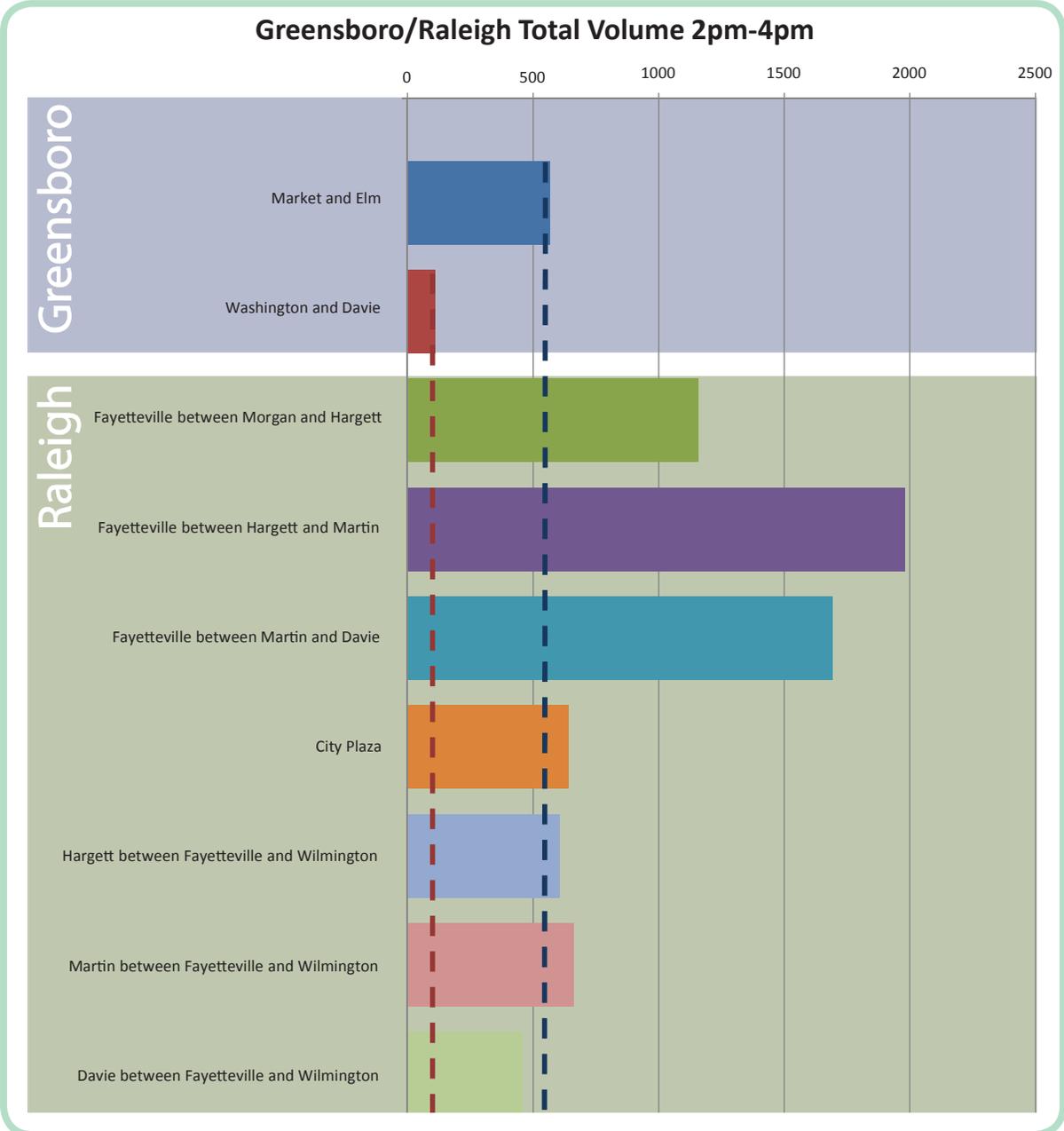


Figure 5-3: Greensboro's total volumes fall below most of Raleigh's volumes from 2:00 p.m. - 4:00 p.m.

### 5.3 San Diego, California

San Diego is a larger city than Raleigh in population, density, and area. Comparing a mid-sized city to a larger city, in pedestrian volume, provides some perspective to the total sidewalk traffic. While locations such as New York City’s Manhattan may experiences pedestrian volumes in the 5,000s, San Diego’s counts were more modest and near those of the Raleigh counts, as seen in Figures 5.4 and 5.5. Counts were compared in the morning hours of 7:00 a.m. – 9:00 a.m. as well as the lunch period of 12:00 p.m. – 2:00 p.m.. Three locations were selected for comparison, with the following makeup:

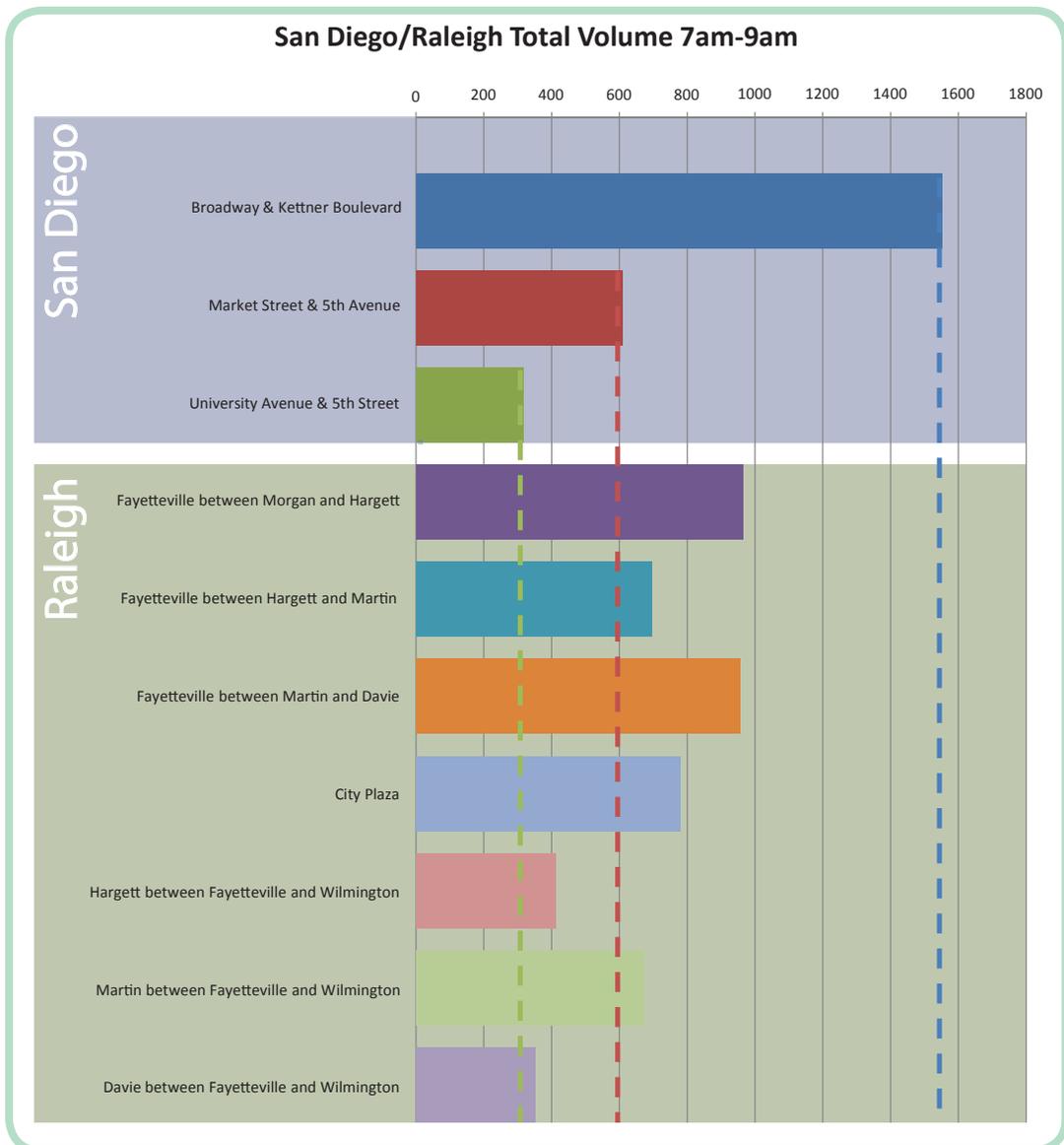


Figure 5-4: Although a larger city, Raleigh’s morning counts are in-line with two out of three comparison locations in San Diego.

1. *Broadway and Kettner Blvd: As one of the main arteries of San Diego, Broadway connects many places in the city via an east-west route. This location on the west side of town is near the Amtrak station, Starbucks, a variety of hotels and restaurants as well as shopping opportunities.*
2. *Market Street and 5th Avenue: Market, also an east-west connector, is located further south in the city. Situated in the Gaslamp Quarter, pubs, and restaurants prevail blended with daily services and retail establishments.*
3. *University Avenue and 5th Avenues: Just south of the Scripps Mercy Hospital, this location is surrounded in all other directions by restaurants, hotels, a Whole Foods market and other daily needs providers.*

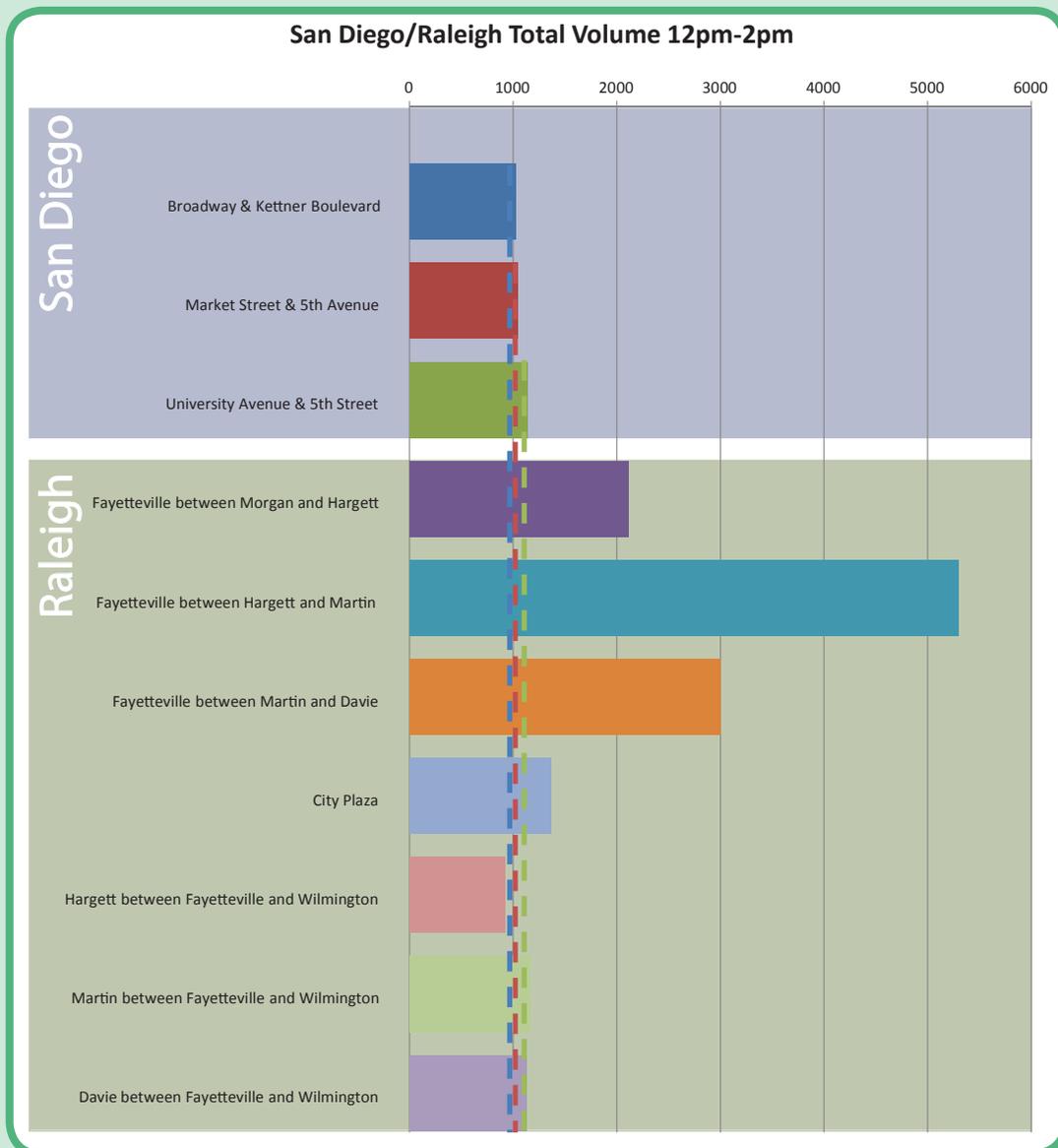


Figure 5-5: Although a larger city, most of Raleigh's afternoon counts are equal to or exceed those of the samples taken from San Diego.

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## ***5.4 Pedestrian Infrastructure Best Practices***

### ***5.4.1 Pedestrian Volume and Sidewalk Widths***

Sidewalks are the most fundamental element of the walking network, providing an area for pedestrian travel separate from vehicle traffic. Sidewalks are typically constructed of concrete and are separated from the roadway by a curb, gutter, or landscaped planting strip. Sidewalks are common in urban and suburban environments but are less common in rural areas and environments where objections to the “urban” character of sidewalks can arise.

The width of a sidewalk affects the ability of pedestrians to use the corridor and also impacts other elements of the space, such as the presence of street furniture or the orientation of doorways. Many well-documented characteristics of pedestrian travel influence sidewalk design needs. For example, pedestrians tend to distance themselves from car traffic and also generally walk about two-feet away from buildings or fences.

Width is also important for assessing pedestrian level of service (PLOS). The Highway Capacity Manual (2000) bases PLOS on pedestrian volume and sidewalk width. The pedestrian flow rate indicates the ability of pedestrians to travel freely along a walkway at sufficient speeds. The AASHTO Green Book and other guidebooks recommend wider sidewalk design widths with high pedestrian volumes. However, the type of roadway adjacent to the sidewalk, the land uses that accompany it, and other environmental factors must also inform design widths.

The 2030 Comprehensive Plan for the City of Raleigh (2010) acknowledges the relationship between pedestrian volumes and sidewalk widths. The plan identifies the need to attract pedestrian activity and to provide accommodating sidewalk space (Policy UD 4.4, Policy UD 4.5, Policy T 3.2). Additionally, the plan recommends integrating pedestrian level of service into transportation planning and design practices (Policy T 3.3 and Action T 3.4). Raleigh’s Streets, Sidewalk, and Driveway Access Handbook (SSDAH) currently requires a minimum five-foot width for sidewalks (where sidewalks are required), but allows for narrower widths in Sensitive Area Thoroughfares, as defined based on unique contextual circumstances.

The following information describes components of sidewalk space, pedestrian volumes, and recommended sidewalk widths relevant to the City of Raleigh.

### ***5.4.2 Elements of Sidewalk Space***

In discussing sidewalk space, “design width” refers to the width specification that a sidewalk is intended to meet and includes the space bounded between the curb (or planting strip) and a building or other physical demarcation. “Minimum clearance width” refers to the sidewalk’s narrowest point, with the intention that all points along the sidewalk corridor remain accessible.

The Sidewalk Corridor is typically located within the public right-of-way between the curb or roadway edge and the property line. The Sidewalk Corridor contains four distinct zones: the Curb Zone, the Furnishings Zone, the Through Pedestrian Zone, and the Frontage Zone.

### *The Curb Zone*

Curbs prevent water in the street gutters from entering the pedestrian space, discourage vehicles from driving over the pedestrian area, and make it easy to sweep the streets. In addition, the curb helps to define the pedestrian environment within the streetscape, although other designs can be effective for this purpose. At the corner, the curb is an important tactile element for pedestrians who are finding their way with the use of a cane.

### *The Furnishings/Planting Zone*

The Furnishings Zone buffers pedestrians from the adjacent roadway, and is also the area where elements such as street trees, signal poles, utility poles, street lights, controller boxes, hydrants, signs, parking meters, driveway aprons, grates, hatch covers, and street furniture are properly located. This is the area where people alight from parked cars.

### *The Through Pedestrian Zone*

The Through Pedestrian Zone is the area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects.

### *The Frontage Zone*

The Frontage Zone is the area between the Through Pedestrian Zone and the property line. This zone allows pedestrians a comfortable “shy” distance from the building fronts, in areas where buildings are at the lot line, or from elements such as fences and hedges on private property.

Medium to high-density pedestrian zones located in areas with commercial or retail activity provide excellent opportunities to develop an inviting pedestrian environment. The frontage zone in retail and commercial areas may include seating for cafés and restaurants or extensions of retail establishments. The furnishings zone may include seating, transit shelters, newspaper racks, water fountains, utility boxes, lampposts, street trees and other landscaping. The medium to high-density pedestrian zone should provide an interesting and inviting environment for walking and window shopping.

## **5.4.3 Pedestrian Volume**

Pedestrian volume equates to the number the persons walking at a given location per a specific amount of time (minute or hour). High density areas with a mix of land uses incur high pedestrian volumes. The quality and connectivity of the spatial network also influences pedestrian activity.

A 2008 study commissioned by the New York City Department of Transportation found that the maximum volume for comfortable pedestrian movement is 12 people per minute per yard of sidewalk width. Beyond this level, a sidewalk is considered overcrowded and may encounter:

- *Lost commercial potential: window shopping becomes limited when pedestrians feel that they cannot stop or linger in the sidewalk space*
- *Reduced safety: pedestrians become limited in their ability to control their own path or movements when a sidewalk is overcrowded and also have a greater tendency to walk into the roadway to skirt slow-moving clusters.*
- *Diminished accessibility: an overcrowded sidewalk reduces the amount of space available for persons in wheelchairs, parents with strollers, children, the elderly, or persons with disabilities to maneuver.*

Sidewalks that do not offer appropriate width to meet pedestrian volume requirements also leads persons to avoid walking or to find an alternate route. A study of Copenhagen’s main street, Strøget, determined that 12 people per minute per yard has consistently been the threshold volume that leads people to choose an alternate route.

Conversely, providing an effective sidewalk width (excluding obstructions and “shy” distance) that appropriately accommodates pedestrian traffic without overcrowding capitalizes on commercial opportunities, improves pedestrian safety, and increases accessibility and equity of the corridor. Additionally, an appropriate sidewalk width also contributes to the pedestrians’ choice to travel along preferred routes.

#### **5.4.4 Sidewalk Width**

Walkway width recommendations in current transportation industry guidelines generally exceed the 36-inch minimum needed for accessible travel under the Americans with Disabilities Act. The Institute of Transportation Engineers (ITE), in its 1998 recommended practice publication, “Design and Safety of Pedestrian Facilities,” recommends planning sidewalks that are a minimum of five-feet wide with a planting strip of two-feet on local streets and in residential and commercial areas.

Sidewalks should be at least five-feet wide, exclusive of the curb and other obstructions. This width:

- *Enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably*
- *Allows two pedestrians to pass a third pedestrian without leaving the sidewalk*

Sidewalk development is dependent on available street width, motor vehicle volumes, surrounding land uses, and pedestrian activity levels. For example, pedestrian traffic near a stadium requires the movement large volumes at a relatively fast pace, while a mixed-use area encourages persons to travel at a slower speed, window-shop, and engage street features. Though a minimum width is provided, it is also possible for sidewalks to be too large for their environment. Sidewalks should be designed to meet expected volumes and to interact with surrounding land-uses. Streetscape features, as described previously provide articulation and visual interest for the pedestrian realm. Standardizing

sidewalk guidelines for different areas of the City can provide a minimum level of quality for all sidewalks:

- Along higher volume arterial and collector streets sidewalks should be a minimum of six feet.
- In areas with street-fronting ground floor retail uses, such as downtown, sidewalks should be 12- to 18-feet-wide to provide room for sidewalk activities such as outdoor dining and sidewalk sales.

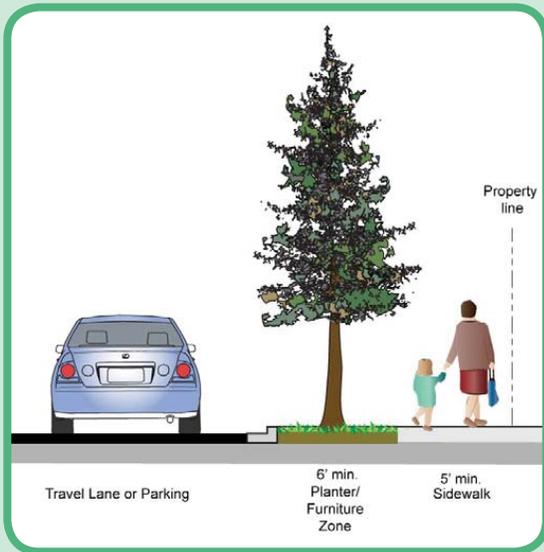


Figure 5-6: Minimum Width on Arterial/Major Collector

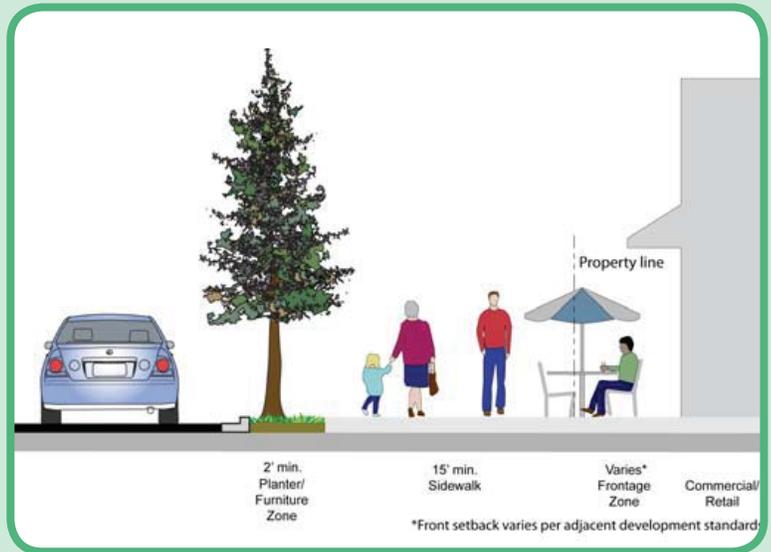


Figure 5-7: Typical Commercial Area Sidewalk

Table 5-8 provides guidance for minimum sidewalk widths by street type. In some cases, it is possible to increase the dimensions of the sidewalk corridor, either through acquisition of right-of-way or public walkway easements, or by re-allocation of the overall right-of-way (such as by narrowing roadway travel lanes or reducing the number of lanes).

Table 5-8: Minimum Sidewalk Widths

	<i>Curb</i>	<i>Planting Strip (and furnishing zone)^</i>	<i>Sidewalk Width</i>
<i>Arterial and Collector Street</i>	<i>1 ft</i>	<i>6-8 ft</i>	<i>6 ft*</i>
<i>Local Neighborhood Street</i>	<i>0-1 ft</i>	<i>6-8 ft</i>	<i>5 ft*</i>
<i>Commercial Walkway</i>	<i>1 ft</i>	<i>6-8 ft</i>	<i>6-12 ft</i>
<i>Mixed Use Center Streets</i>	<i>1 ft</i>	<i>6-8 ft</i>	<i>10-12 ft</i>

<sup>^</sup>In constrained locations, the full sidewalk width should be provided, with a reduced-width planting strip/buffer

\*Short sidewalk segments can have narrower widths in physically constrained areas.



## 5.5 Conclusion

Downtown Raleigh is certainly an up and coming gem in the southeast. Already, the city has been awarded national accolades presenting Raleigh as one of the top places to live and raise families. With the revitalization of Fayetteville Street from pedestrian mall to vehicular path with a myriad of pedestrian amenities, businesses including restaurants and retail establishments experience an increase in exposure. Events and programming in the downtown area also encourage use, as can be seen during festivals such as Raleigh Wide Open. Although Raleigh contains an extensive suburban area, this study shows a large population using and navigating the downtown area. Particularly during the lunch period, pedestrians proliferate the downtown area, presumably as they dine out, which contributes to the overall economy of the city. Increasingly restaurants are adding sidewalk seating to their dining capacity, even in tight spaces such as Remedy Diner's storefront. Coupled with further studies vetting pedestrian preference, each location's trends, total counts, and pedestrian per hour statistics can lead to an understanding of programmatic and land use recommendations for underperforming blocks. Sidewalk characteristics including width, furnishings, trees, and lighting can also affect use and could be explored further with surveys and interviews.

As seen in the comparative city studies, the volume of traffic in the Raleigh study area tends to exceed the volume of small and even larger cities. A further in-depth study of land use could compare Knoxville, Greensboro, and San Diego's retail, office and restaurant ratios to pedestrian volume. This study would provide a foundation to illustrate to potential occupants that Raleigh possesses sufficient pedestrian volume to support new businesses.

While scientific methods can assist in decision making for design and amenities for sidewalks, empirical evidence and the element of experience must not be overlooked. Great streets have been explored in literature by Jane Jacobs, William Whyte, Jan Gehl, and Allen Jacobs as well as across many disciplines including planning, design, sociology, psychology and other fields related to human behavior. Context plays a key role in pedestrian use, as seen in the Warehouse District and Glenwood South, where foot traffic does not stop due to lack of sidewalk width or the intimidation of crossing rail lines.

Overall, this study provides a snapshot of pedestrian activity in three of Raleigh's districts. Total volumes and pedestrian per hour statistics can immediately enable the DRA to present evidence to potential occupants that Raleigh has sufficient pedestrian activity to support consumer activities. Over time, it is recommended this study be repeated to identify trends; supplemented to explore pedestrian preferences; and expanded to analyze land use.

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# 6. Appendices

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D-14 Total Counts for Warehouse District By Block

D-15 Total Counts for Glenwood South District By Block

D-16 Average Pedestrians per Hour All Late Night Blocks

D-17 Average Pedestrians per Hour All Late Night Locations

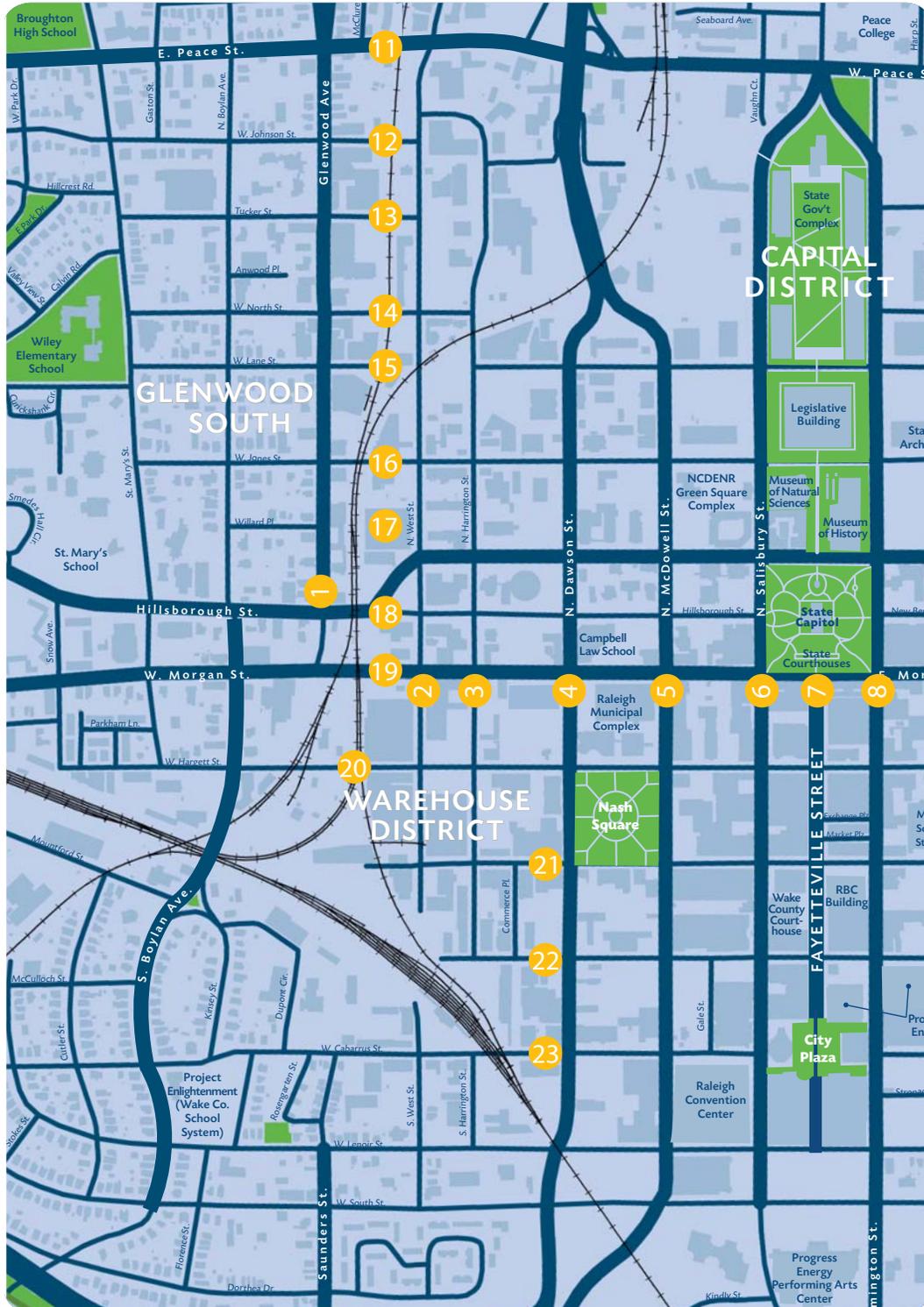


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# Appendix A: Count Location Maps

## A-1 Geocode Base

All streets are coded to create geocodes for each count location. Codes follow the logic: On which street/ between which two streets/on the north/south/east/west side of the street. North = 1 South = 2 East = 3 West = 4



# Appendix A: Count Location Maps

## A-2 Fayetteville District Map



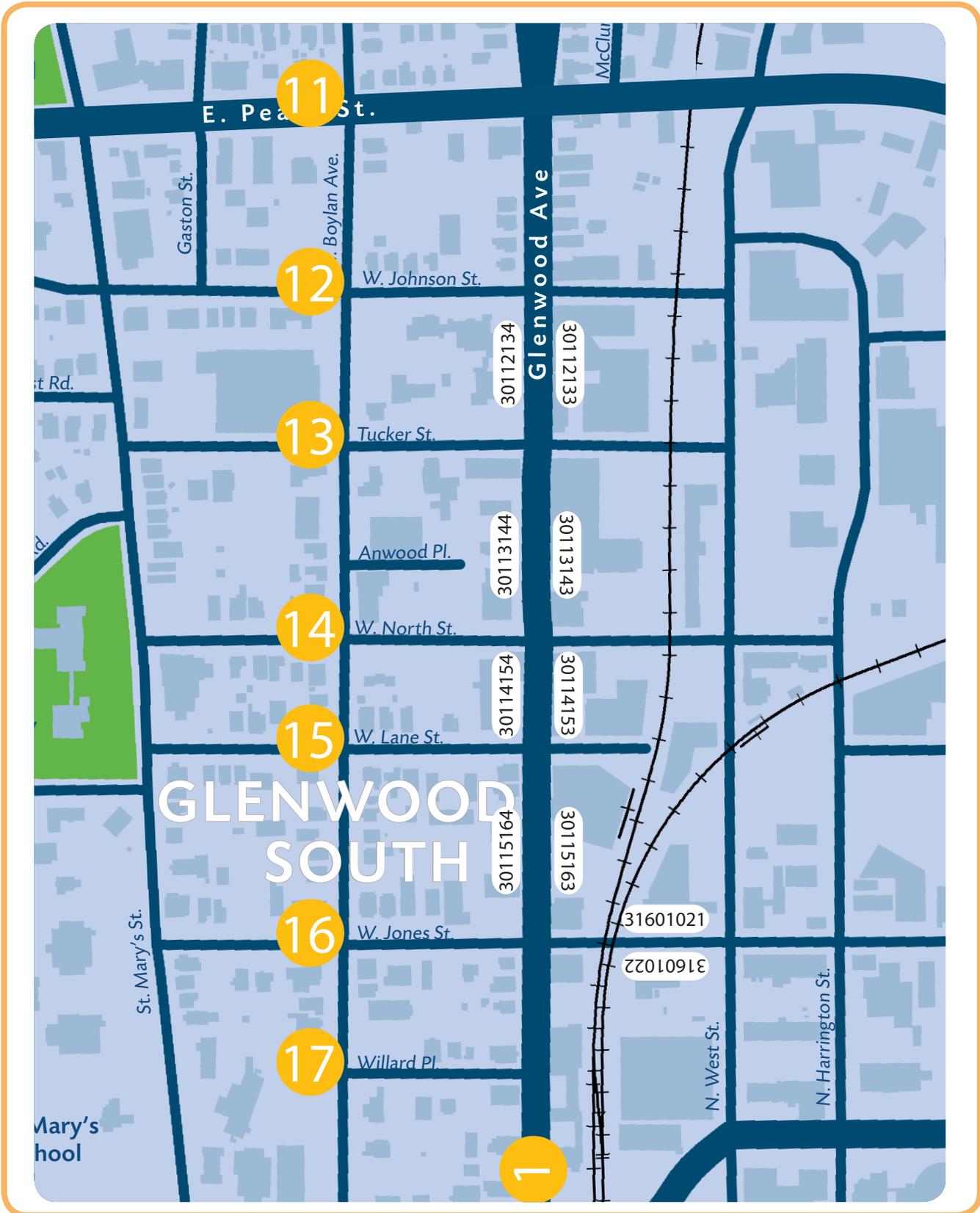
# Appendix A: Count Location Maps

## A-3 Warehouse District Map



# Appendix A: Count Location Maps

## A-4 Glenwood South District Map



# Appendix B: Count Forms

## B-1 11-Hour Count Forms, Side 1

### Downtown Raleigh Pedestrian Count

#### STANDARD SCREENLINE COUNT FORM

Name: \_\_\_\_\_ Location: \_\_\_\_\_

Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Weather: \_\_\_\_\_ **FOR SHIFT 7AM-6PM**

Please fill in your name, count location, date, time period, and weather conditions (fair, rainy, very cold). Count all pedestrians crossing your screen line under the appropriate categories.

- Count in 15 minute increments (use the appropriate time slots for the **TIME OF DAY**).
- Track counts **separately for each side of the street** (enter location code at top of column).
- Pedestrians include people in wheelchairs or others using assistive devices, children in strollers, etc.
- Also count cyclists on the sidewalk, but NOT cyclists in the street.
- Count people on segways.

	People on the Sidewalk			People on the Sidewalk			People on the Sidewalk	
Location code:			Location code:			Location code:		
7:00am-7:15am			9:01am-9:15am			11:01am-11:15am		
7:16am-7:30am			9:16am-9:30am			11:16am-11:30am		
7:31am-7:45am			9:31am-9:45am			11:31am-11:45am		
7:46am-8:00am			9:46am-10:00am			11:46am-12:00pm		
8:01am-8:15am			10:01am-10:15am			12:01pm-12:15pm		
8:16am-8:30am			10:16am-10:30am			12:16pm-12:30pm		
8:31am-8:45am			10:31am-10:45am			12:31pm-12:45pm		
8:46am-9:00am			10:46am-11:00am			12:46pm-1:00pm		



# Appendix B: Count Forms

## B-2 11-Hour Count Forms, Side 2

### Downtown Raleigh Pedestrian Count

	People on the Sidewalk	
Location code:		
1:01pm-1:15pm		
1:16pm-1:30pm		
1:31pm-1:45pm		
1:46pm-2:00pm		
2:01pm-2:15pm		
2:16pm-2:30pm		
2:31pm-2:45pm		
2:46pm-3:00pm		
3:01pm-3:15pm		
3:16pm-3:30pm		

	People on the Sidewalk	
Location code:		
3:31pm-3:45pm		
3:46pm-4:00pm		
4:01pm-4:15pm		
4:16pm-4:30pm		
4:31pm-4:45pm		
4:46pm-5:00pm		
5:01pm-5:15pm		
5:16pm-5:30pm		
5:31pm-5:45pm		
5:46pm-6:00pm		



# Appendix B: Count Forms

## B-3 Peak Hour Count Forms

### Downtown Raleigh Pedestrian Count

#### STANDARD SCREENLINE COUNT FORM

Name: \_\_\_\_\_ Location: \_\_\_\_\_

Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Weather: \_\_\_\_\_ **FOR SHIFT 7:30AM-9:30AM and 11:30AM-1:30PM**

Please fill in your name, count location, date, time period, and weather conditions (fair, rainy, very cold). Count all pedestrians crossing your screen line under the appropriate categories.

- Count in 15 minute increments (use the appropriate time slots for the **TIME OF DAY**).
- Track counts **separately for each side of the street** (enter location code at top of column).
- Pedestrians include people in wheelchairs or others using assistive devices, children in strollers, etc.
- Also count cyclists on the sidewalk, but NOT cyclists in the street.
- Count people on segways.

Location code:	People on the Sidewalk	
	10919204	10919203
7:30am-7:45am		
7:46am-8:00am		
8:01am-8:15am		
8:16am-8:30am		
8:31am-8:45am		
8:46am-9:00am		
9:01am-9:15am		
9:16am-9:30am		

Location code:	People on the Sidewalk	
	10919204	10919203
11:30am-11:45am		
11:46am-12:00pm		
12:01pm-12:15pm		
12:16pm-12:30pm		
12:31pm-12:45pm		
12:46pm-1:00pm		
1:01pm-1:15pm		
1:16pm-1:30pm		



# Appendix B: Count Forms

## B-4 Late Night Count Forms

### Downtown Raleigh Pedestrian Count

#### STANDARD SCREENLINE COUNT FORM

Name: \_\_\_\_\_ Location: \_\_\_\_\_

Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Weather: \_\_\_\_\_ **FOR SHIFT 8PM-2AM**

Please fill in your name, count location, date, time period, and weather conditions (fair, rainy, very cold). Count all pedestrians crossing your screen line under the appropriate categories.

- Count in 15 minute increments (use the appropriate time slots for the **TIME OF DAY**).
- Track counts **separately for each side of the street** (enter location code at top of column).
- Pedestrians include people in wheelchairs or others using assistive devices, children in strollers, etc.
- Also count cyclists on the sidewalk, but NOT cyclists in the street.
- Count people on segways.

	People on the Sidewalk			People on the Sidewalk			People on the Sidewalk	
Location code:			Location code:			Location code:		
8:00pm-8:15pm			10:01pm-10:15pm			12:01am-12:15am		
8:16pm-8:30pm			10:16pm-10:30pm			12:16am-12:30am		
8:31pm-8:45pm			10:31pm-10:45pm			12:31am-12:45am		
8:46pm-9:00pm			10:46pm-11:00pm			12:46am-1:00am		
9:01pm-9:15pm			11:01pm-11:15pm			1:01am-1:15am		
9:16pm-9:30pm			11:16pm-11:30pm			1:16am-1:30am		
9:31pm-9:45pm			11:31pm-11:45pm			1:31am-1:45am		
9:46pm-10:00pm			11:46pm-12:00am			1:46am-2:00am		



## *Appendix C: Count Tables*

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### *X.x 11-Hour Count Table*

*See 11x17 pages*

## *Appendix C: Count Tables*

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### *X.x Peak Hour Count Table 1*

*See 11x17 pages*

## *Appendix C: Count Tables*

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### *X.x Peak Hour Count Table 2*

*See 11x17 pages*

## *Appendix X: Count Tables*

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### *X.x Late Night Count Table*

*See 11x17 pages*

## Appendix D: Data Tables

### D-1 Total Block Counts for 11-Hour Count Locations

Total Counts for Fayetteville District 11-Hour Locations Highest Block Volume			
Street	Location Code	Total for Location	Total For Block
Fayetteville between Hargett and Martin	West: 10720214	6,820	11,903
Fayetteville between Hargett and Martin	East: 10720213	5,083	
Fayetteville between Martin and Davie	West: 10721224	6,626	9,538
Fayetteville between Martin and Davie	East: 10721223	2,912	
Fayetteville between Morgan and Hargett	West: 10719204	4,871	6,910
Fayetteville between Morgan and Hargett	East: 10719203	2,039	
City Plaza	West: 10722234	1,803	4,573
City Plaza	East: 10722233	2,770	
Martin between Fayetteville and Wilmington	North: 12107081	1,765	4,238
Martin between Fayetteville and Wilmington	South: 12107082	2,473	
Hargett between Fayetteville and Wilmington	North: 12007081	1,110	3,430
Hargett between Fayetteville and Wilmington	South: 12007082	2,320	
Davie between Fayetteville and Wilmington	North: 12207081	1,305	3,180
Davie between Fayetteville and Wilmington	South: 12207082	1,875	

**43,772**

## Appendix D: Data Tables

### D-2 Total Location Counts for 11-Hour Count Locations

<b>Total Counts for Fayetteville District 11-Hour Locations</b>		
<b>Highest Location Volume</b>		
Street	Location Code	Total for Location
Fayetteville between Hargett and Martin	West: 10720214	6,820
Fayetteville between Martin and Davie	West: 10721224	6,626
Fayetteville between Hargett and Martin	East: 10720213	5,083
Fayetteville between Morgan and Hargett	West: 10719204	4,871
Fayetteville between Martin and Davie	East: 10721223	2,912
City Plaza	East: 10722233	2,770
Martin between Fayetteville and Wilmington	South: 12107082	2,473
Hargett between Fayetteville and Wilmington	South: 12007082	2,320
Fayetteville between Morgan and Hargett	East: 10719203	2,039
Davie between Fayetteville and Wilmington	South: 12207082	1,875
City Plaza	West: 10722234	1,803
Martin between Fayetteville and Wilmington	North: 12107081	1,765
Davie between Fayetteville and Wilmington	North: 12207081	1,305
Hargett between Fayetteville and Wilmington	North: 12007081	1,110

**43,772**

## Appendix D: Data Tables

### D-3 Average Pedestrians Per Hour for 11 Hour Count Blocks

Average Pedestrians Per Hour Fayetteville District 11-Hour Blocks			
Street	Location Code	Average Ped/Hour	Average Ped/Hour For Block
Fayetteville between Hargett and Martin	West: 10720214	620.00	541
Fayetteville between Hargett and Martin	East: 10720213	462.09	
Fayetteville between Martin and Davie	West: 10721224	602.36	434
Fayetteville between Martin and Davie	East: 10721223	264.73	
Fayetteville between Morgan and Hargett	West: 10719204	442.82	314
Fayetteville between Morgan and Hargett	East: 10719203	185.36	
City Plaza	West: 10722234	163.91	208
City Plaza	East: 10722233	251.82	
Martin between Fayetteville and Wilmington	North: 12107081	160.45	193
Martin between Fayetteville and Wilmington	South: 12107082	224.82	
Hargett between Fayetteville and Wilmington	North: 12007081	100.91	156
Hargett between Fayetteville and Wilmington	South: 12007082	210.91	
Davie between Fayetteville and Wilmington	North: 12207081	118.64	145
Davie between Fayetteville and Wilmington	South: 12207082	170.45	

## Appendix D: Data Tables

### D-4 Average Pedestrians Per Hour for 11-Hour Count Locations

Average Pedestrians Per Hour Fayetteville District 11-Hour Locations		
Street	Location Code	Average Ped/Hour
Fayetteville between Hargett and Martin	West: 10720214	620.00
Fayetteville between Martin and Davie	West: 10721224	602.36
Fayetteville between Hargett and Martin	East: 10720213	462.09
Fayetteville between Morgan and Hargett	West: 10719204	442.82
Fayetteville between Martin and Davie	East: 10721223	264.73
City Plaza	East: 10722233	251.82
Martin between Fayetteville and Wilmington	South: 12107082	224.82
Hargett between Fayetteville and Wilmington	South: 12007082	210.91
Fayetteville between Morgan and Hargett	East: 10719203	185.36
Davie between Fayetteville and Wilmington	South: 12207082	170.45
City Plaza	West: 10722234	163.91
Martin between Fayetteville and Wilmington	North: 12107081	160.45
Davie between Fayetteville and Wilmington	North: 12207081	118.64
Hargett between Fayetteville and Wilmington	North: 12007081	100.91

## Appendix D: Data Tables

### D-5 Peak Morning + Afternoon Total Counts by Time Period

#### Peak Morning Hours Total Counts by Time Period

Start	End	Total Pedestrians
7:31 AM	7:45 AM	1,298
7:46 AM	8:00 AM	1,773
8:01 AM	8:15 AM	1654
8:16 AM	8:30 AM	2044
8:31 AM	8:45 AM	2235
8:46 AM	9:00 AM	2556
9:01 AM	9:15 AM	2362
9:16 AM	9:30 AM	2386
		<b>16,308</b>

#### Peak Afternoon Hours Total Counts by Time Period

Start	End	Total Pedestrians
11:31 AM	11:45 AM	3,643
11:46 AM	12:00 PM	3,840
12:01 PM	12:15 PM	4560
12:16 PM	12:30 PM	4428
12:31 PM	12:45 PM	4641
12:46 PM	1:00 PM	4636
1:01 PM	1:15 PM	4246
1:16 PM	1:30 PM	3945
		<b>33,939</b>

## Appendix D: Data Tables

### D-6 Peak Morning Hours Total by Block

Peak Morning Hours Total Counts by Block	
Street	Total
Salisbury between Martin and Davie	1788
Fayetteville between Martin and Davie	1228
Fayetteville between Morgan and Hargett	1093
Davie between Wilmington and Blount	1065
Fayetteville between Hargett and Martin	1013
City Plaza	797
Martin between Fayetteville and Wilmington	797
Davie between McDowell and Salisbury	762
Hargett between Salisbury and Fayetteville	714
Wilmington between Hargett and Martin	709
Martin between Salisbury and Fayetteville	662
Hargett between Wilmington and Blount	591
Wilmington between Martin and Davie	582
Blount between Hargett and Martin	478
Hargett between Fayetteville and Wilmington	462
Salisbury between Morgan and Hargett	446
Martin between Wilmington and Blount	407
Davie between Fayetteville and Wilmington	390
Davie between Salisbury and Fayetteville	362
Hargett between McDowell and Salisbury	344
Hargett between Blount and Person	261
Salisbury between Hargett and Martin	259
Martin between McDowell and Salisbury	258
Martin between Blount and Person	166
Davie between Blount and Person	157
Wilmington between Morgan and Hargett	126
Blount between Martin and Davie	109
Blount between Morgan and Hargett	107
McDowell between Morgan and Hargett	100
McDowell between Hargett and Martin	75

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## Appendix D: Data Tables

### D-7A Peak Morning Hours Total Counts by Location

Peak Morning Hours Total Counts by Location		
Street	Geocode	Total Pedestrians
Salisbury between Martin and Davie	East: 10621223	1285
Fayetteville between Martin and Davie	West: 10721224	935
Davie between Wilmington and Blount	South: 12208092	885
Fayetteville between Morgan and Hargett	West: 10719204	876
Fayetteville between Hargett and Martin	West: 10720214	556
City Plaza	East: 10722233	554
Martin between Fayetteville and Wilmington	South: 12107082	541
Wilmington between Hargett and Martin	East: 10820213	515
Salisbury between Martin and Davie	West: 10621224	503
Fayetteville between Hargett and Martin	East: 10720213	457
Wilmington between Martin and Davie	East: 10821223	449
Hargett between Salisbury and Fayetteville	South: 12006072	449
Davie between McDowell and Salisbury	North: 12205061	441
Martin between Salisbury and Fayetteville	North: 12106071	380
Hargett between Wilmington and Blount	South: 12008092	376
Davie between McDowell and Salisbury	South: 12205062	321
Blount between Hargett and Martin	West: 10920214	309
Hargett between Fayetteville and Wilmington	South: 12007082	305
Fayetteville between Martin and Davie	East: 10721223	293
Martin between Salisbury and Fayetteville	South: 12106072	282
Hargett between Salisbury and Fayetteville	North: 12006071	265
Martin between Wilmington and Blount	South: 12108092	263
Martin between Fayetteville and Wilmington	North: 12107081	256
Davie between Fayetteville and Wilmington	South: 12207082	253
Salisbury between Morgan and Hargett	East: 10619203	248
City Plaza	West: 10722234	243
Fayetteville between Morgan and Hargett	East: 10719203	217
Hargett between Wilmington and Blount	North: 12008091	215
Salisbury between Morgan and Hargett	West: 10619204	198
Wilmington between Hargett and Martin	West: 10820214	194
Salisbury between Hargett and Martin	East: 10620213	191
Hargett between McDowell and Salisbury	North: 12005061	188

## Appendix D: Data Tables

### D-7B Peak Morning Hours Total Counts by Location

Peak Morning Hours Total Counts by Location (continued)		
Street	Geocode	Total Pedestrians
Davie between Salisbury and Fayetteville	North: 12206071	188
Hargett between Blount and Person	North: 12009101	181
Davie between Wilmington and Blount	North: 12208091	180
Davie between Salisbury and Fayetteville	South: 12206072	174
Blount between Hargett and Martin	East: 10920213	169
Hargett between Fayetteville and Wilmington	North: 12007081	157
Hargett between McDowell and Salisbury	South: 12005062	156
Martin between McDowell and Salisbury	North: 12105061	155
Martin between Wilmington and Blount	North: 12108091	144
Davie between Fayetteville and Wilmington	North: 12207081	137
Wilmington between Martin and Davie	West: 10821224	133
Martin between McDowell and Salisbury	South: 12105062	103
Martin between Blount and Person	South: 12109102	92
Davie between Blount and Person	North: 12209101	90
McDowell between Morgan and Hargett	West: 10519204	85
Hargett between Blount and Person	South: 12009102	80
Martin between Blount and Person	North: 12109101	74
Wilmington between Morgan and Hargett	West: 10819204	72
Salisbury between Hargett and Martin	West: 10620214	68
Davie between Blount and Person	South: 12209102	67
Blount between Martin and Davie	West: 10921224	63
Blount between Margan and Hargett	East: 10919203	55
Wilmington between Morgan and Hargett	East: 10819203	54
Blount between Margan and Hargett	West: 10919204	52
McDowell between Hargett and Martin	West: 10520214	49
Blount between Martin and Davie	East: 10921223	46
McDowell between Hargett and Martin	East: 10520213	26
McDowell between Morgan and Hargett	East: 10519203	15

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## Appendix D: Data Tables

### D-8 Peak Afternoon Hours Total Counts by Block

Peak Afternoon Hours Total Counts by Block	
Street	Total
Fayetteville between Hargett and Martin	4905
Fayetteville between Martin and Davie	3042
Hargett between Salisbury and Fayetteville	2676
Fayetteville between Morgan and Hargett	2118
Davie between Wilmington and Blount	1839
Salisbury between Martin and Davie	1584
City Plaza	1461
Hargett between Wilmington and Blount	1236
Martin between Fayetteville and Wilmington	1228
Wilmington between Hargett and Martin	1211
Martin between Salisbury and Fayetteville	1181
Davie between Fayetteville and Wilmington	1139
Blount between Hargett and Martin	1104
Salisbury between Morgan and Hargett	1053
Wilmington between Martin and Davie	1046
Hargett between Fayetteville and Wilmington	944
Hargett between Blount and Person	761
Wilmington between Morgan and Hargett	686
Martin between Wilmington and Blount	621
Hargett between McDowell and Salisbury	614
Davie between Salisbury and Fayetteville	598
Blount between Martin and Davie	556
Martin between Blount and Person	498
Davie between McDowell and Salisbury	472
Salisbury between Hargett and Martin	343
Davie between Blount and Person	258
Blount between Margan and Hargett	255
Martin between McDowell and Salisbury	252
McDowell between Morgan and Hargett	152
McDowell between Hargett and Martin	106

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## Appendix D: Data Tables

### D-9A Peak Afternoon Hours Total Counts by Location

Peak Afternoon Hours Total Counts by Location		
Street	Geocode	Total Pedestrians
Fayetteville between Hargett and Martin	West: 10720214	2963
Fayetteville between Hargett and Martin	East: 10720213	1942
Fayetteville between Martin and Davie	West: 10721224	1796
Davie between Wilmington and Blount	South: 12208092	1503
Fayetteville between Morgan and Hargett	West: 10719204	1459
Hargett between Salisbury and Fayetteville	South: 12006072	1419
Hargett between Salisbury and Fayetteville	North: 12006071	1257
Fayetteville between Martin and Davie	East: 10721223	1246
Salisbury between Martin and Davie	East: 10621223	899
City Plaza	East: 10722233	840
Hargett between Wilmington and Blount	South: 12008092	769
Hargett between Blount and Person	North: 12009101	688
Salisbury between Martin and Davie	West: 10621224	685
Martin between Fayetteville and Wilmington	South: 12107082	670
Blount between Hargett and Martin	West: 10920214	670
Fayetteville between Morgan and Hargett	East: 10719203	659
Wilmington between Hargett and Martin	West: 10820214	623
City Plaza	West: 10722234	621
Martin between Salisbury and Fayetteville	South: 12106072	595
Wilmington between Martin and Davie	West: 10821224	594
Davie between Fayetteville and Wilmington	South: 12207082	588
Wilmington between Hargett and Martin	East: 10820213	588
Martin between Salisbury and Fayetteville	North: 12106071	586
Hargett between Fayetteville and Wilmington	South: 12007082	584
Salisbury between Morgan and Hargett	East: 10619203	577
Martin between Fayetteville and Wilmington	North: 12107081	558
Davie between Fayetteville and Wilmington	North: 12207081	551
Salisbury between Morgan and Hargett	West: 10619204	476
Hargett between Wilmington and Blount	North: 12008091	467
Wilmington between Morgan and Hargett	West: 10819204	458
Wilmington between Martin and Davie	East: 10821223	452
Blount between Hargett and Martin	East: 10920213	434

## Appendix D: Data Tables

### D-9B Peak Afternoon Hours Total Counts by Location

Peak Morning Hours Total Counts by Location (continued)		
Street	Geocode	Total Pedestrians
Hargett between Fayetteville and Wilmington	North: 12007081	360
Blount between Martin and Davie	East: 10921223	356
Martin between Wilmington and Blount	South: 12108092	346
Davie between Wilmington and Blount	North: 12208091	336
Davie between Salisbury and Fayetteville	North: 12206071	313
Hargett between McDowell and Salisbury	South: 12005062	308
Hargett between McDowell and Salisbury	North: 12005061	306
Davie between Salisbury and Fayetteville	South: 12206072	285
Martin between Wilmington and Blount	North: 12108091	275
Davie between McDowell and Salisbury	South: 12205062	252
Martin between Blount and Person	North: 12109101	251
Martin between Blount and Person	South: 12109102	247
Salisbury between Hargett and Martin	East: 10620213	230
Wilmington between Morgan and Hargett	East: 10819203	228
Davie between McDowell and Salisbury	North: 12205061	220
Davie between Blount and Person	North: 12209101	209
Blount between Martin and Davie	West: 10921224	200
Martin between McDowell and Salisbury	North: 12105061	161
Blount between Margan and Hargett	West: 10919204	145
Salisbury between Hargett and Martin	West: 10620214	113
Blount between Margan and Hargett	East: 10919203	110
Martin between McDowell and Salisbury	South: 12105062	91
McDowell between Morgan and Hargett	West: 10519204	90
Hargett between Blount and Person	South: 12009102	73
McDowell between Hargett and Martin	West: 10520214	63
McDowell between Morgan and Hargett	East: 10519203	62
Davie between Blount and Person	South: 12209102	49
McDowell between Hargett and Martin	East: 10520213	43

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## Appendix D: Data Tables

### D-10 Peak Morning Counts Pedestrians Per Hour By Block

Pedestrians Per Hour By Block	
Peak Morning Counts	
Street	Pedestrians Per Hour
Salisbury between Martin and Davie	447
Fayetteville between Martin and Davie	307
Fayetteville between Morgan and Hargett	273.25
Davie between Wilmington and Blount	266.25
Fayetteville between Hargett and Martin	253.25
City Plaza	199.25
Martin between Fayetteville and Wilmington	199.25
Davie between McDowell and Salisbury	190.5
Hargett between Salisbury and Fayetteville	178.5
Wilmington between Hargett and Martin	177.25
Martin between Salisbury and Fayetteville	165.5
Hargett between Wilmington and Blount	147.75
Wilmington between Martin and Davie	145.5
Blount between Hargett and Martin	119.5
Hargett between Fayetteville and Wilmington	115.5
Salisbury between Morgan and Hargett	111.5
Martin between Wilmington and Blount	101.75
Davie between Fayetteville and Wilmington	97.5
Davie between Salisbury and Fayetteville	90.5
Hargett between McDowell and Salisbury	86
Hargett between Blount and Person	65.25
Salisbury between Hargett and Martin	64.75
Martin between McDowell and Salisbury	64.5
Martin between Blount and Person	41.5
Davie between Blount and Person	39.25
Wilmington between Morgan and Hargett	31.5
Blount between Martin and Davie	27.25
Blount between Morgan and Hargett	26.75
McDowell between Morgan and Hargett	25
McDowell between Hargett and Martin	18.75

## Appendix D: Data Tables

### D-11 Peak Afternoon Counts Pedestrians Per Hour By Block

Pedestrians Per Hour By Block Peak Afternoon Counts	
Street	Pedestrians Per Hour
Fayetteville between Hargett and Martin	1226.25
Fayetteville between Martin and Davie	760.5
Hargett between Salisbury and Fayetteville	669
Fayetteville between Morgan and Hargett	529.5
Davie between Wilmington and Blount	459.75
Salisbury between Martin and Davie	396
City Plaza	365.25
Hargett between Wilmington and Blount	309
Martin between Fayetteville and Wilmington	307
Wilmington between Hargett and Martin	302.75
Martin between Salisbury and Fayetteville	295.25
Davie between Fayetteville and Wilmington	284.75
Blount between Hargett and Martin	276
Salisbury between Morgan and Hargett	263.25
Wilmington between Martin and Davie	261.5
Hargett between Fayetteville and Wilmington	236
Hargett between Blount and Person	190.25
Wilmington between Morgan and Hargett	171.5
Martin between Wilmington and Blount	155.25
Hargett between McDowell and Salisbury	153.5
Davie between Salisbury and Fayetteville	149.5
Blount between Martin and Davie	139
Martin between Blount and Person	124.5
Davie between McDowell and Salisbury	118
Salisbury between Hargett and Martin	85.75
Davie between Blount and Person	64.5
Blount between Margan and Hargett	63.75
Martin between McDowell and Salisbury	63
McDowell between Morgan and Hargett	38
McDowell between Hargett and Martin	26.5

## Appendix D: Data Tables

### D-12A Average Pedestrians Per Hour By Location/Morning

Average Pedestrians Per Hour By Location Peak Morning Counts		
Street	Geocode	Pedestrians Per Hour
Salisbury between Martin and Davie	East: 10621223	642.5
Fayetteville between Martin and Davie	West: 10721224	467.5
Davie between Wilmington and Blount	South: 12208092	442.5
Fayetteville between Morgan and Hargett	West: 10719204	438
Fayetteville between Hargett and Martin	West: 10720214	278
City Plaza	East: 10722233	277
Martin between Fayetteville and Wilmington	South: 12107082	270.5
Wilmington between Hargett and Martin	East: 10820213	257.5
Salisbury between Martin and Davie	West: 10621224	251.5
Fayetteville between Hargett and Martin	East: 10720213	228.5
Wilmington between Martin and Davie	East: 10821223	224.5
Hargett between Salisbury and Fayetteville	South: 12006072	224.5
Davie between McDowell and Salisbury	North: 12205061	220.5
Martin between Salisbury and Fayetteville	North: 12106071	190
Hargett between Wilmington and Blount	South: 12008092	188
Davie between McDowell and Salisbury	South: 12205062	160.5
Blount between Hargett and Martin	West: 10920214	154.5
Hargett between Fayetteville and Wilmington	South: 12007082	152.5
Fayetteville between Martin and Davie	East: 10721223	146.5
Martin between Salisbury and Fayetteville	South: 12106072	141
Hargett between Salisbury and Fayetteville	North: 12006071	132.5
Martin between Wilmington and Blount	South: 12108092	131.5
Martin between Fayetteville and Wilmington	North: 12107081	128
Davie between Fayetteville and Wilmington	South: 12207082	126.5
Salisbury between Morgan and Hargett	East: 10619203	124
City Plaza	West: 10722234	121.5
Fayetteville between Morgan and Hargett	East: 10719203	108.5
Hargett between Wilmington and Blount	North: 12008091	107.5
Salisbury between Morgan and Hargett	West: 10619204	99
Wilmington between Hargett and Martin	West: 10820214	97
Salisbury between Hargett and Martin	East: 10620213	95.5
Hargett between McDowell and Salisbury	North: 12005061	94
Davie between Salisbury and Fayetteville	North: 12206071	94

## Appendix D: Data Tables

### D-12B Average Pedestrians Per Hour By Location/Morning

Average Pedestrians Per Hour By Location Peak Morning Counts		
Street	Geocode	Pedestrians Per Hour
Hargett between Blount and Person	North: 12009101	90.5
Davie between Wilmington and Blount	North: 12208091	90
Davie between Salisbury and Fayetteville	South: 12206072	87
Blount between Hargett and Martin	East: 10920213	84.5
Hargett between Fayetteville and Wilmington	North: 12007081	78.5
Hargett between McDowell and Salisbury	South: 12005062	78
Martin between McDowell and Salisbury	North: 12105061	77.5
Martin between Wilmington and Blount	North: 12108091	72
Davie between Fayetteville and Wilmington	North: 12207081	68.5
Wilmington between Martin and Davie	West: 10821224	66.5
Martin between McDowell and Salisbury	South: 12105062	51.5
Martin between Blount and Person	South: 12109102	46
Davie between Blount and Person	South: 12209102	45
McDowell between Morgan and Hargett	West: 10519204	42.5
Hargett between Blount and Person	South: 12009102	40
Martin between Blount and Person	North: 12109101	37
Wilmington between Morgan and Hargett	West: 10819204	36
Salisbury between Hargett and Martin	West: 10620214	34
Davie between Blount and Person	North: 12209101	33.5
Blount between Martin and Davie	West: 10921224	31.5
Blount between Margan and Hargett	East: 10919203	27.5
Wilmington between Morgan and Hargett	East: 10819203	27
Blount between Margan and Hargett	West: 10919204	26
McDowell between Hargett and Martin	West: 10520214	24.5
Blount between Martin and Davie	East: 10921223	23
McDowell between Hargett and Martin	East: 10520213	13
McDowell between Morgan and Hargett	East: 10519203	7.5

## Appendix D: Data Tables

### D-13A Average Pedestrians Per Hour By Location/Afternoon

Average Pedestrians Per Hour By Location		
Peak Afternoon Counts		
Street	Geocode	Pedestrians Per Hour
Fayetteville between Hargett and Martin	West: 10720214	1481.5
Fayetteville between Hargett and Martin	East: 10720213	971
Fayetteville between Martin and Davie	West: 10721224	898
Davie between Wilmington and Blount	South: 12208092	751.5
Fayetteville between Morgan and Hargett	West: 10719204	729.5
Hargett between Salisbury and Fayetteville	South: 12006072	709.5
Hargett between Salisbury and Fayetteville	North: 12006071	628.5
Fayetteville between Martin and Davie	East: 10721223	623
Salisbury between Martin and Davie	East: 10621223	449.5
City Plaza	East: 10722233	420
Hargett between Wilmington and Blount	South: 12008092	384.5
Hargett between Blount and Person	North: 12009101	344
Salisbury between Martin and Davie	West: 10621224	342.5
Martin between Fayetteville and Wilmington	South: 12107082	335
Blount between Hargett and Martin	West: 10920214	335
Fayetteville between Morgan and Hargett	East: 10719203	329.5
Wilmington between Hargett and Martin	West: 10820214	311.5
City Plaza	West: 10722234	310.5
Martin between Salisbury and Fayetteville	South: 12106072	297.5
Wilmington between Martin and Davie	West: 10821224	297
Davie between Fayetteville and Wilmington	South: 12207082	294
Wilmington between Hargett and Martin	East: 10820213	294
Martin between Salisbury and Fayetteville	North: 12106071	293
Hargett between Fayetteville and Wilmington	South: 12007082	292
Salisbury between Morgan and Hargett	East: 10619203	288.5
Martin between Fayetteville and Wilmington	North: 12107081	279
Davie between Fayetteville and Wilmington	North: 12207081	275.5
Salisbury between Morgan and Hargett	West: 10619204	238
Hargett between Wilmington and Blount	North: 12008091	233.5
Wilmington between Morgan and Hargett	West: 10819204	229
Wilmington between Martin and Davie	East: 10821223	226
Blount between Hargett and Martin	East: 10920213	217
Hargett between Fayetteville and Wilmington	North: 12007081	180

## Appendix D: Data Tables

### D-13B Average Pedestrians Per Hour By Location/Afternoon

Average Pedestrians Per Hour By Location Peak Afternoon Counts		
Street	Geocode	Pedestrians Per Hour
Blount between Martin and Davie	East: 10921223	178
Martin between Wilmington and Blount	South: 12108092	173
Davie between Wilmington and Blount	North: 12208091	168
Davie between Salisbury and Fayetteville	North: 12206071	156.5
Hargett between McDowell and Salisbury	South: 12005062	154
Hargett between McDowell and Salisbury	North: 12005061	153
Davie between Salisbury and Fayetteville	South: 12206072	142.5
Martin between Wilmington and Blount	North: 12108091	137.5
Davie between McDowell and Salisbury	South: 12205062	126
Martin between Blount and Person	North: 12109101	125.5
Martin between Blount and Person	South: 12109102	123.5
Salisbury between Hargett and Martin	East: 10620213	115
Wilmington between Morgan and Hargett	East: 10819203	114
Davie between McDowell and Salisbury	North: 12205061	110
Davie between Blount and Person	South: 12209102	104.5
Blount between Martin and Davie	West: 10921224	100
Martin between McDowell and Salisbury	North: 12105061	80.5
Blount between Margan and Hargett	West: 10919204	72.5
Salisbury between Hargett and Martin	West: 10620214	56.5
Blount between Margan and Hargett	East: 10919203	55
Martin between McDowell and Salisbury	South: 12105062	45.5
McDowell between Morgan and Hargett	West: 10519204	45
Hargett between Blount and Person	South: 12009102	36.5
McDowell between Hargett and Martin	West: 10520214	31.5
McDowell between Morgan and Hargett	East: 10519203	31
Davie between Blount and Person	North: 12209101	24.5
McDowell between Hargett and Martin	East: 10520213	21.5

## Appendix D: Data Tables

### D-14 Total Counts for Warehouse District By Block

Total Counts for Warehouse District Highest Block Volume			
Street	Location Code	Total for Location	Total For Block
Davie Street at Commerce	North: 22203041	1,359	2,077
Davie Street at Commerce	South: 22203042	718	
Martin Street at Commerce	North: 22103041	231	577
Martin Street at Commerce	South: 22103042	346	

2,654

## Appendix D: Data Tables

### D-15 Total Counts for Glenwood South District By Block

Total Counts for Glenwood South District Highest Block Volume			
Street	Location Code	Total for Location	Total For Block
Glenwood b/t Tucker and North	West: 30113144	2,199	4,858
Glenwood b/t Tucker and North	East: 30113143	2,659	
Glenwood b/t Lane and Jones	West: 30115164	1,378	4,547
Glenwood b/t Lane and Jones	East: 30115163	3,169	
Glenwood b/t Johnson and Tucker	West: 30112134	2,250	3,184
Glenwood b/t Johnson and Tucker	East: 30112133	934	
Jones b/t Glenwood and West	North: 31601021	786	2,464
Jones b/t Glenwood and West	South: 31601022	1,678	
Glenwood b/t North and Lane	West: 30114154	1,226	2,361
Glenwood b/t North and Lane	East: 30114153	1,135	

17,414

## Appendix D: Data Tables

### D-16 Average Pedestrians Per Hour All Late Night Blocks

Average Pedestrians Per Hour All Late Night Count Blocks			
Street	Location Code	Average for Location	Average for Block
Glenwood b/t Tucker and North	West: 30113144	366.50	404.83
Glenwood b/t Tucker and North	East: 30113143	443.17	
Glenwood b/t Lane and Jones	West: 30115164	229.67	378.92
Glenwood b/t Lane and Jones	East: 30115163	528.17	
Glenwood b/t Johnson and Tucker	West: 30112134	375.00	265.33
Glenwood b/t Johnson and Tucker	East: 30112133	155.67	
Jones b/t Glenwood and West	North: 31601021	131.00	205.33
Jones b/t Glenwood and West	South: 31601022	279.67	
Glenwood b/t North and Lane	West: 30114154	204.33	196.75
Glenwood b/t North and Lane	East: 30114153	189.17	
Davie Street at Commerce	North: 22203041	226.50	173.08
Davie Street at Commerce	South: 22203042	119.67	
Martin Street at Commerce	North: 22103041	38.50	48.08
Martin Street at Commerce	South: 22103042	57.67	

## Appendix D: Data Tables

### D-17 Average Pedestrians Per Hour All Late Night Locations

Average Pedestrians Per Hour All Late Night Count Locations		
Street	Location Code	Average for Location
Glenwood b/t Lane and Jones	East: 30115163	528.17
Glenwood b/t Tucker and North	East: 30113143	443.17
Glenwood b/t Johnson and Tucker	West: 30112134	375.00
Glenwood b/t Tucker and North	West: 30113144	366.50
Jones b/t Glenwood and West	South: 31601022	279.67
Glenwood b/t Lane and Jones	West: 30115164	229.67
Davie Street at Commerce	North: 22203041	226.50
Glenwood b/t North and Lane	West: 30114154	204.33
Glenwood b/t North and Lane	East: 30114153	189.17
Glenwood b/t Johnson and Tucker	East: 30112133	155.67
Jones b/t Glenwood and West	North: 31601021	131.00
Davie Street at Commerce	South: 22203042	119.67
Martin Street at Commerce	South: 22103042	57.67
Martin Street at Commerce	North: 22103041	38.50