THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Preventing Child Pedestrian Injuries and Fatalities in Wake County

Crash Data Assessment

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Contents

Introduction

Funded by the John Rex Endowment, this project seeks to provide training and technical assistance and to assist in capacity building with regard to preventing child pedestrian injuries and fatalities in Wake County, NC. The Highway Safety Research Center (HSRC) is tasked with working closely with a range of local partners to analyze the problem using Geographic Information Systems (GIS) spatial analysis, identify opportunities to address child safety issues, facilitate workshops, and prioritize policy improvements across the county.

This document provides a baseline assessment of child pedestrian crashes in Wake County. Specifically, this report reviews the types of crashes, identify locations with high numbers of child pedestrian crashes (i.e. crash hotspots), and investigate related factors such as who is involved in child pedestrian crashes, how nearby land uses affect crash locations, crash severity, and other demographic and locational factors. Using this report as a guide, policy-makers in Wake County will be able to determine where to prioritize improvements for child pedestrians as well as understand which groups of child pedestrians are most at risk.

Data Sources and Methods

The pedestrian-motor vehicle crash data used in these analyses was initially obtained by the HSRC as ORACLE data from the North Carolina Department of Transportation. HSRC researchers queried the data for crashes involving pedestrians and then accessed the crash reports (DMV-349 files) for these crashes. Using only the crash reports for crashes between 2007 and 2010, the pedestrian crashes were geo-coded in Google Earth, exported as KML files, formatted using Microsoft Excel, and then joined with Pedestrian and Bicycle Crash Analysis Tool (PBCAT) and Crash Variable data.

One important caveat to understand in relation to these data is that although occasionally more than one pedestrian is involved in the same crash, the database on which these analyses are based counts each crash one time to avoid over-representing crashes at locations or in other factors. Thus, in tables and data summarizing pedestrian-related factors, only the first pedestrian struck in the crash – the one used to type the crash – is accounted for. Thus, this analysis may under-represent the total people affected by crashes though it accurately reports the total number of pedestrian crashes reported to the police. Note also that past studies have estimated that police-reported crashes represent only about 56 percent of pedestrian incidents that occur.

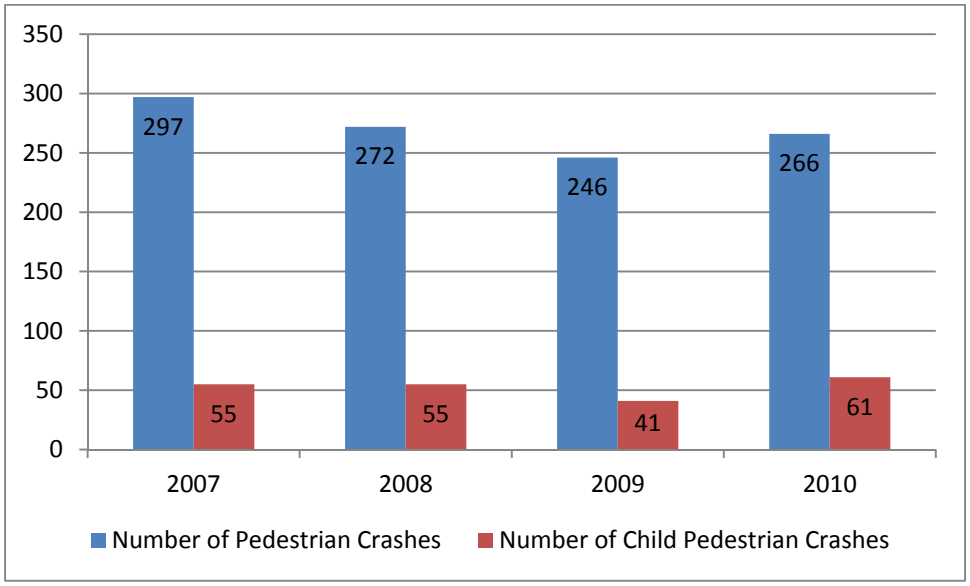
Following the data preparation, the “Display XY Data” tool in the ArcGIS 10 Toolbox was employed to create a spatial data file (shapefile) for use in ArcGIS 10 from the Excel spreadsheet. Lastly, a subset of the pedestrian crash data was selected in ArcGIS 10 using the “Select by Attribute” tool, which included only pedestrian-motor vehicle crashes that involved pedestrians under the age of 18. Crash analyses were performed on both the complete pedestrian crash shapefile as well as the shapefile of the subset of pedestrian crashes involving people under the age of 18. Of the 1,081 pedestrian-motor vehicle crashes occurring in Wake County, 212 involved pedestrians under the age of 18. Table 1 provides more detail. Both of these pedestrian crash data files are the basis for the analyses in this report. Public Vehicular Area (PVA) crashes, including crashes in parking lots, were included in these crash datasets.

In order to prepare these analyses within the given timeframe, some of the crash data used in this report had not yet been modified from its preliminary format. HSRC researchers will amend the analyses

if any substantive changes to the data are made during the Quality Control / Quality Assurance process. At this juncture, however, it is unlikely that any data corrections will have any serious implications on the conclusions drawn from these analyses.

The feature shapefiles used in these analyses were obtained from the Wake County GIS website, from the Capital Area Metropolitan Planning Organization, the United States Census TIGER/Line Shapefiles website, and, in only a few cases, from the City of Raleigh. The University of North Carolina at Chapel Hill's GIS Data Library also provided important shapefile data.

Table 1: Pedestrian Crashes in Wake County, NC 2007-2010



HSRC performed a number of spatial analyses on these pedestrian crashes, using both datasets. Spatial data from the Census was used throughout this analysis.

In particular, Figure 1 and Figure 2, located below, used **United States Census TIGER/Line files**. Using spatial data from the Census allowed HSRC researchers to map various specific population measures, including unemployment rate, household income, household density, vehicle ownership rate, and walking mode share to the Census Tract geography. By comparing these measures and pedestrian crash density, conclusions can be drawn regarding the relationship between these measures and the propensity for high crashes in different areas in the county.

One important analytical tool offered in ArcGIS is **kernel density** analysis. Kernel density analysis is useful in examining broad areas where crashes may be more concentrated as opposed to other areas of the county, as it is not limited by artificial geographic boundaries; only by the edges of the map and or where crashes occurred. Kernel density also has some limitations as it searches in planar space for nearby crashes as opposed to along the street network, where roadway crashes, at least, should be concentrated. Although crash concentrations along a roadway network can be identified using a network based analysis, we have found in other studies that kernel density analysis, and other types of general spatial analyses readily available in the ArcGIS software, provide similar results to some more intensive procedures and are useful for identifying general areas or neighborhoods of crash concentration.

Various types of density analyses including by population and by area were also performed. In addition, **graduated dots** were used to display pedestrian crash numbers around fixed locations, such as schools or libraries. By exploring the spatial distribution and characteristics of pedestrian crashes, specific zones where large numbers of crashes have occurred or specific types of factors are concentrated can be identified. These analyses can help suggest areas where policy measures could have the most positive impact.

Other Analyses

This analysis uses methods pioneered by other literature, most notably this report on pedestrian crashes in Chicago. In addition, a similar comprehensive analysis of pedestrian crashes was conducted for the City of Raleigh as part of a National Highway Traffic Safety Administration project focused on providing assistance to communities to enhance their education and enforcement efforts around pedestrian safety. This report can be accessed at this link and is also available through the Raleigh pedestrian coordinator.

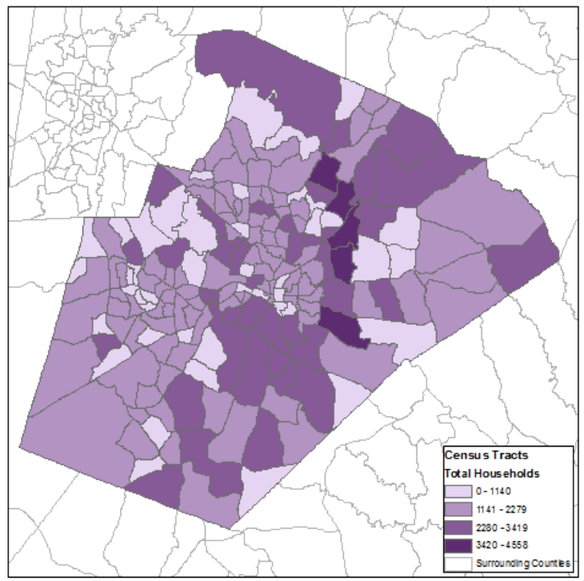
Basic Figures, Tables, and Analysis

The next section provides demographic information about Wake County by Census Tract and also provides an overview of pedestrian crashes for all pedestrians in the county and for child pedestrians. A general discussion of both all pedestrian and child pedestrian crashes follows this section, while the last section refines the analysis by examining child pedestrian crashes in relation child pedestrian crash severity.

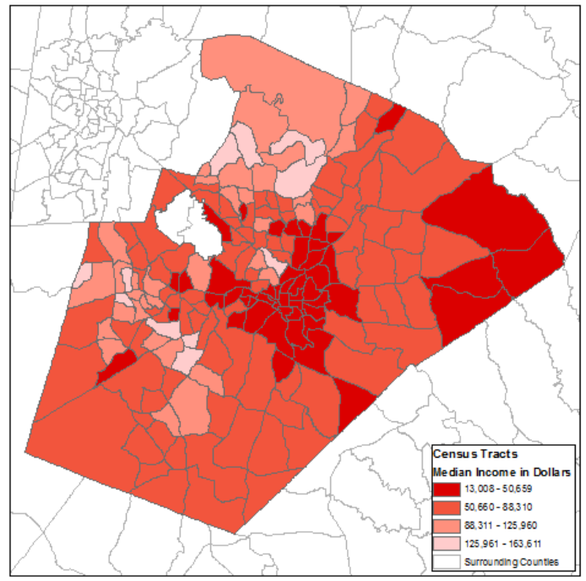
Wake County Demographic Trends

While Figure 1 and Figure 2 provide insight into various population measures using US Census data, Figure 3 illustrates the pedestrian crash locations in the cities and towns located in Wake County. These maps are overlaid with the kernel density of pedestrian crashes, which is helpful in determining where the pedestrian crash hotspots are. Judging from Figure 3, most pedestrian crashes occur in the City of Raleigh, though significant crash hotspots have been identified in Cary, Fuquay-Varina, and Garner.

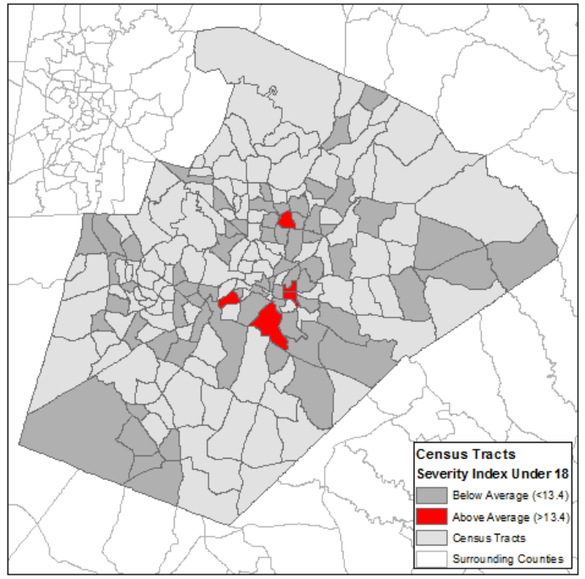
Figure 1: Demographic and Transportation Changes by Census Tract



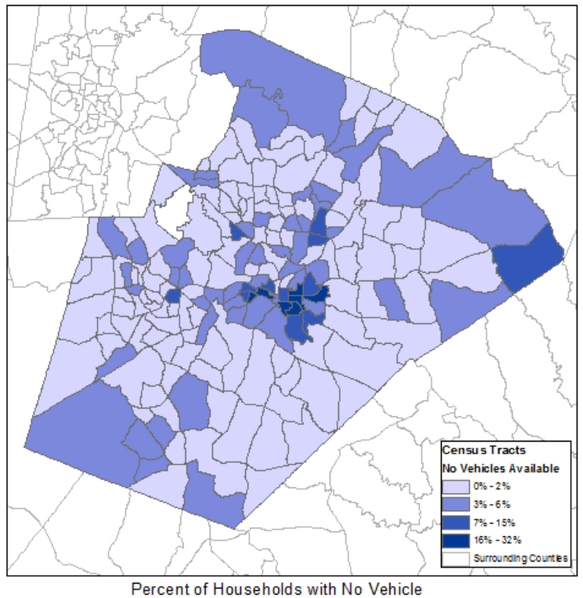
Household Density



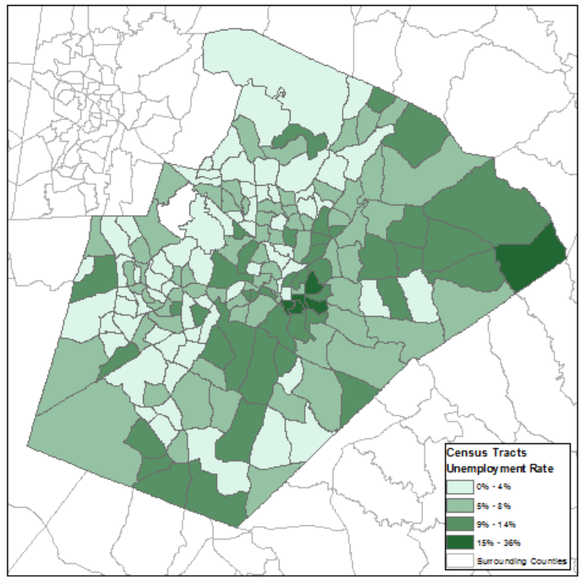
Median Household Income



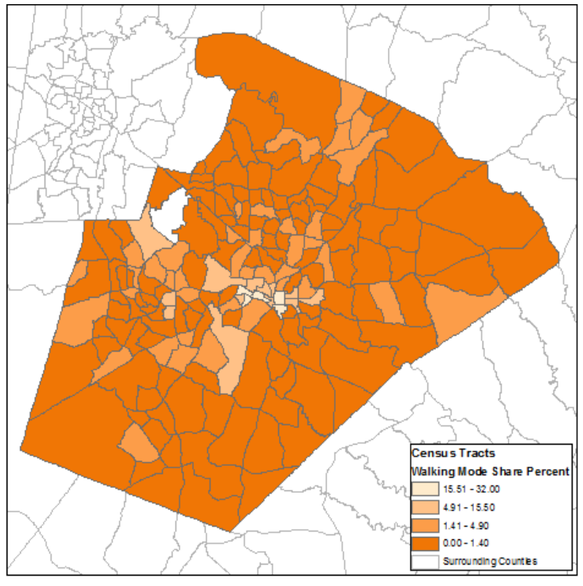
Pedestrian Severity by Census Tract



Percent of Households with No Vehicle
By Census Tract

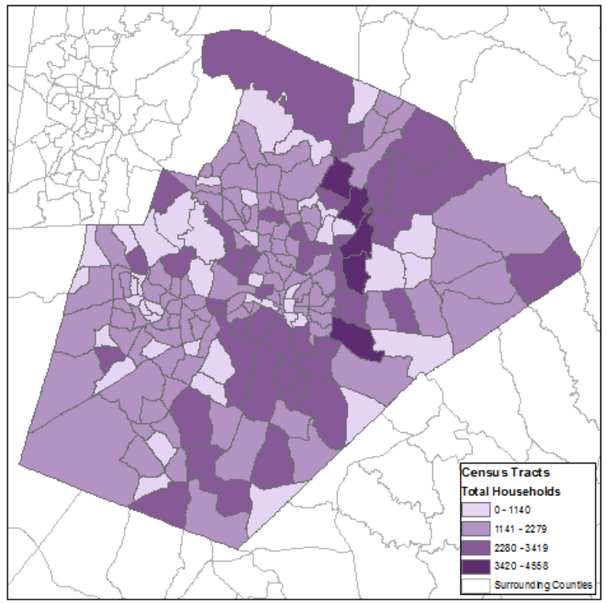


Unemployment Rate by Census Tract

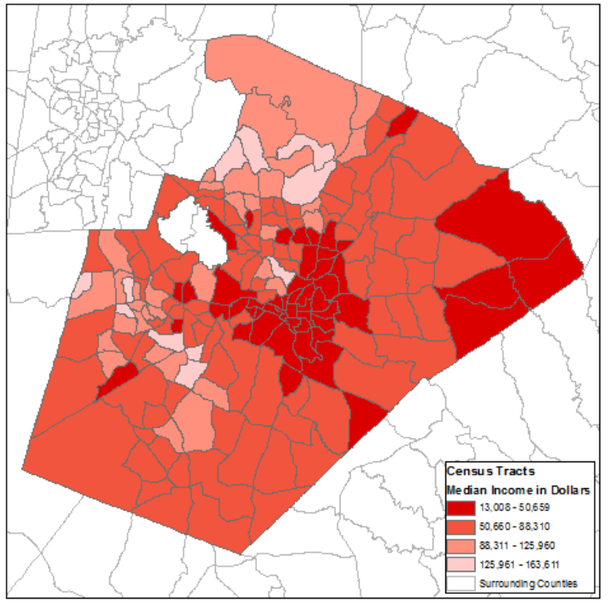


Walking Mode Share Percent by Census Tract

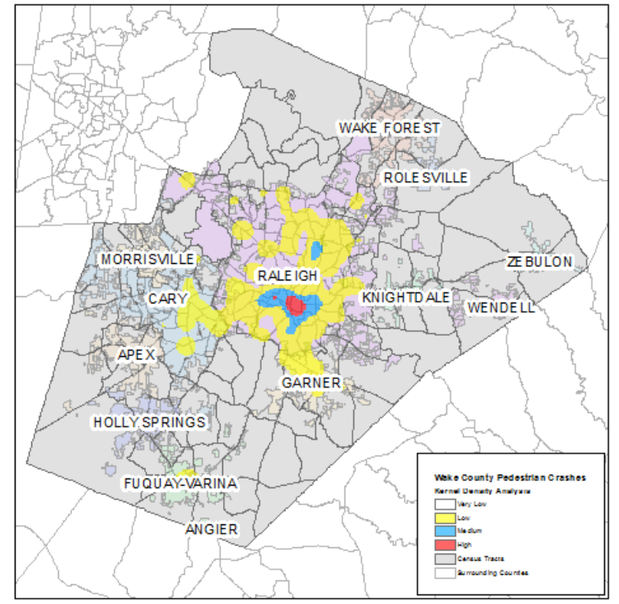
Figure 2: Demographic and Transportation Changes by Census Tract with Pedestrian Kernel Density Analysis



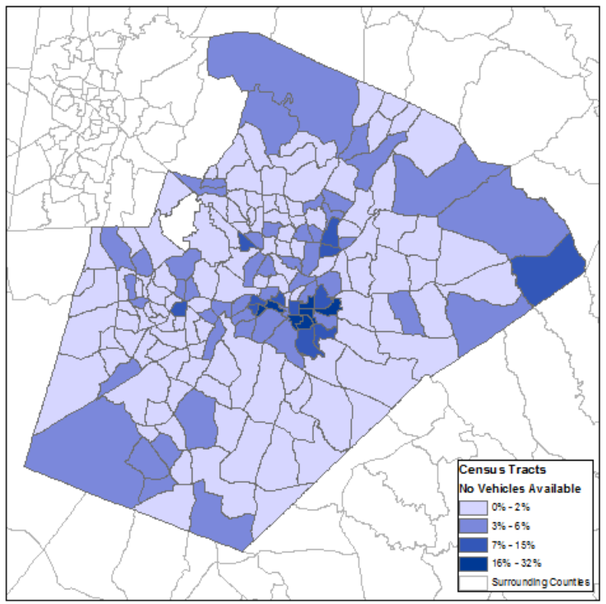
Household Density



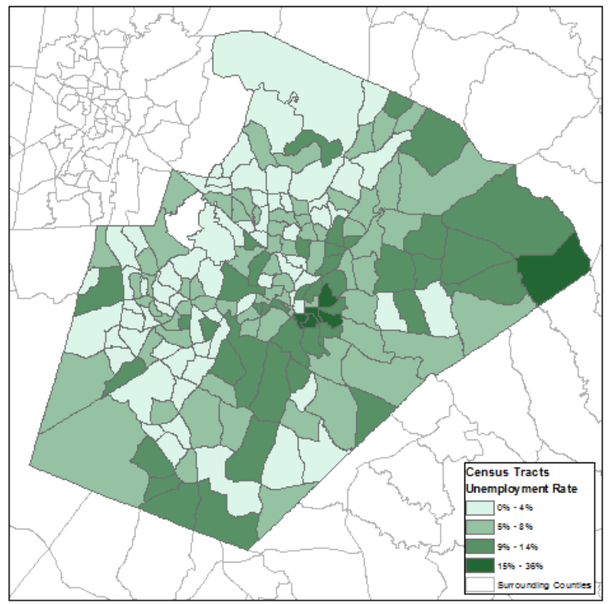
Median Household Income



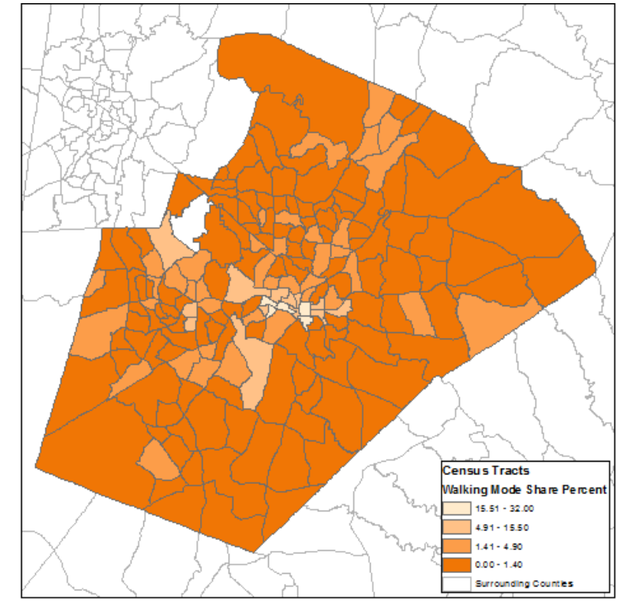
Pedestrian Crash Density



Percent of Households with No Vehicle
By Census Tract



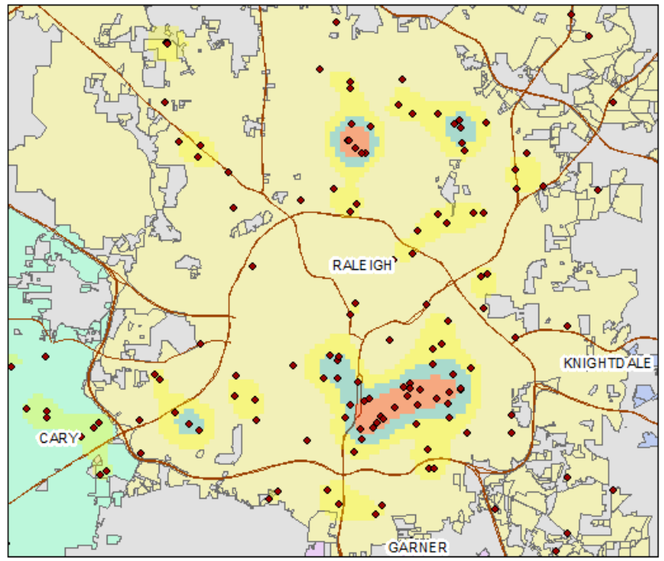
Unemployment Rate by Census Tract



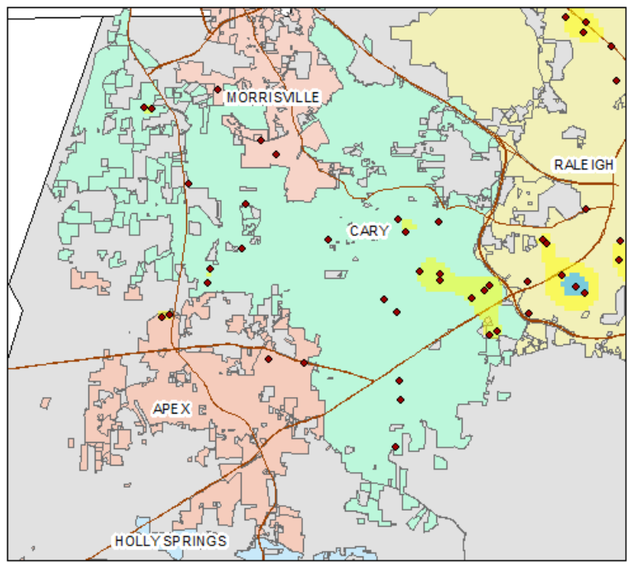
Walking Mode Share Percent by Census Tract

Figure 3: Wake County, NC Municipalities

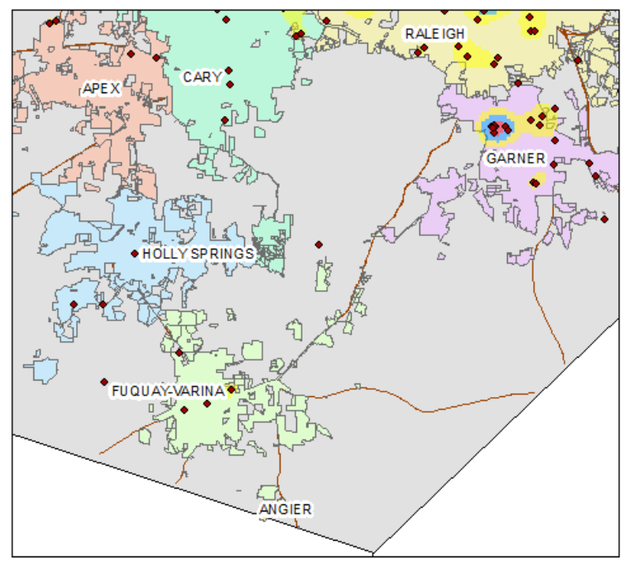
Child Pedestrian Crash Density by Wake County Municipality



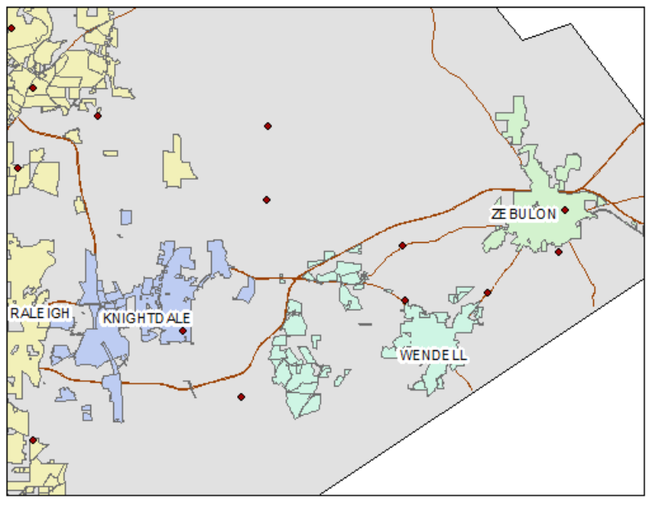
Raleigh



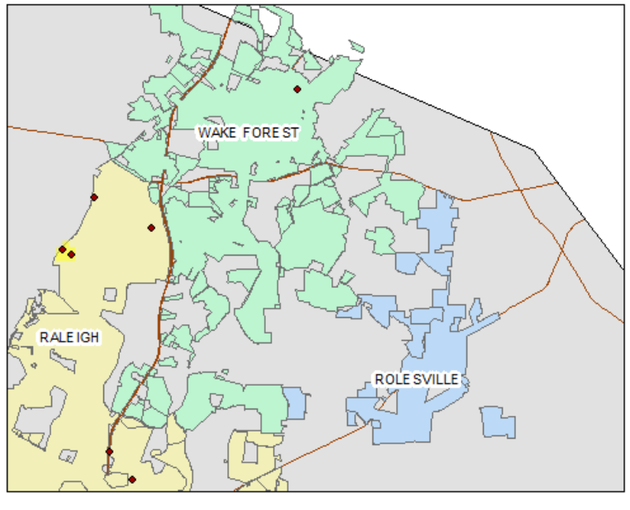
Apex, Cary, Morrisville



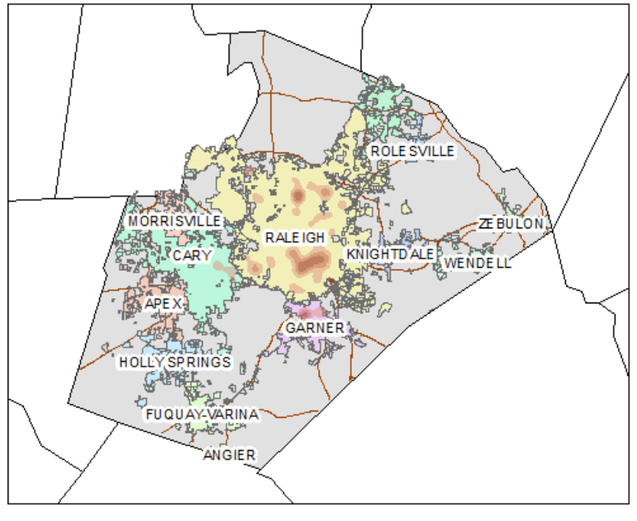
Holly Springs, Fuquay Varina, Garner



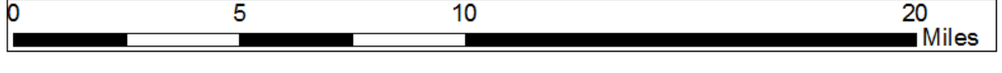
Knightdale, Wendell, Zebulon



Wake Forest, Rolesville



Wake County Overall

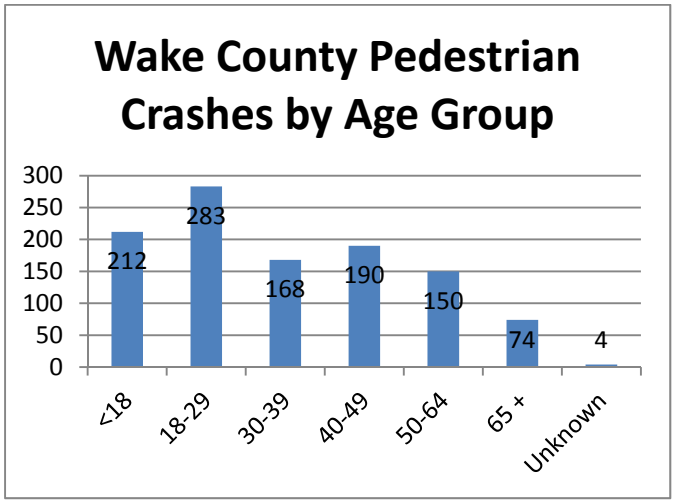


Child pedestrian crashes account for approximately one fifth of all pedestrian crashes in Wake County, while crashes occurring with pedestrians aged 18 to 29 account for slightly more than one quarter of all crashes in the county. As evidenced in Table 2 and in Figure 4, pedestrian crashes are skewed toward younger people.

Table 2: Pedestrian Crashes by Age Group

Age Group	Number	Percentage
<18	212	19.6%
18-29	283	26.2%
30-39	168	15.5%
40-49	190	17.6%
50-64	150	13.9%
65 +	74	6.8%
Unknown	4	0.4%
Total	1081	100.0%

Figure 4: Pedestrian Crashes by Age Group

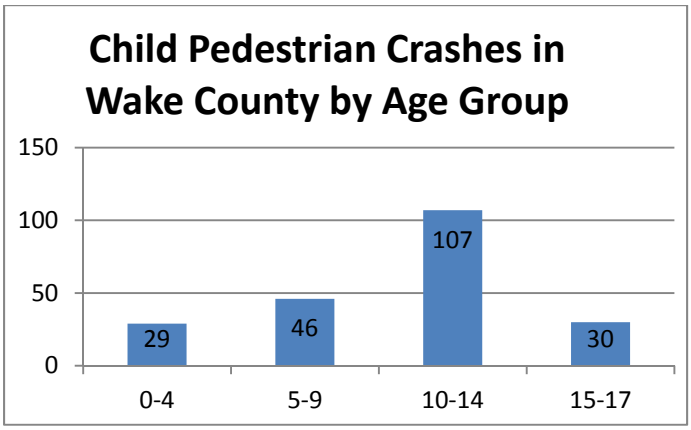


Among young people, pedestrian crashes are not equally distributed. As evidenced in Table 3 and Figure 5, children aged 10 to 14 accounted for more than 50 percent of all crashes. This trend could be related to parents' willingness to allow adolescent children to walk, when younger children might not be allowed to and young adults aged 15-17 are beginning to drive.

Table 3: Child Pedestrian Crashes by Age Group

Age Group	Count	Percentage
0-4	29	13.7%
5-9	46	21.7%
10-14	107	50.5%
15-17	30	14.2%
Total	212	100.0%

Figure 5: Child Pedestrian Crashes by Age Group



Kernel Density Analysis

The following figure (Figure 6) displays the kernel density analysis for all of Wake County. The City of Raleigh has, as the largest city in the county and the city with the highest rates of walking in the downtown, a large proportion of the pedestrian crashes countywide, though other areas also have concentrations of pedestrian crashes. In particular, areas of Fuquay-Varina, Garner, and Holly Springs have significant pedestrian crash clusters, while Cary also has areas of high pedestrian crash frequencies.

For child pedestrian crashes, crash hotspots are dispersed across the county to a lesser degree and occur mostly within the city limits of Raleigh. However, there are significant clusters in Cary and, perhaps surprisingly, in Garner and Fuquay-Varina. With the exception of the smaller communities in Wake County such as Angier and Rolesville, a child pedestrian crash occurred in every municipality in the county. Figure 7 provides more detail.

Figure 8 presents the same information as Figure 7, but displays child pedestrian crashes in Wake County by three age groups, elementary-school children aged 0 to 9, middle-school children aged 10 to 14, and High School-children aged 15 to 17. While no clear spatial pattern is immediately apparent, downtown Raleigh does seem to have a large cluster of crashes involving elementary school-aged children.

Figure 6: Kernel Density Analysis of All Pedestrian Crashes in Wake County

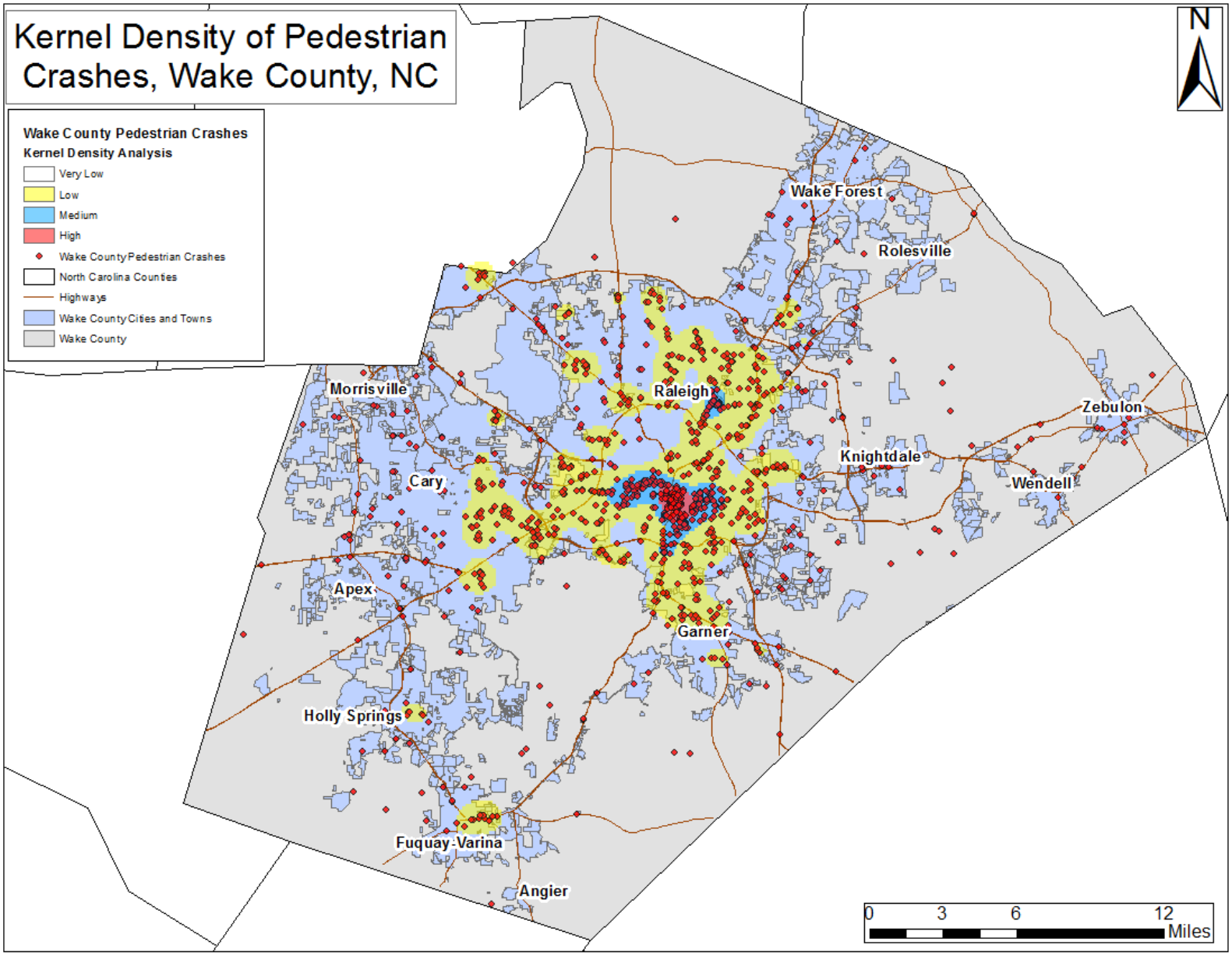


Figure 7: Kernel Density of Child Pedestrian Crashes in Wake County, NC

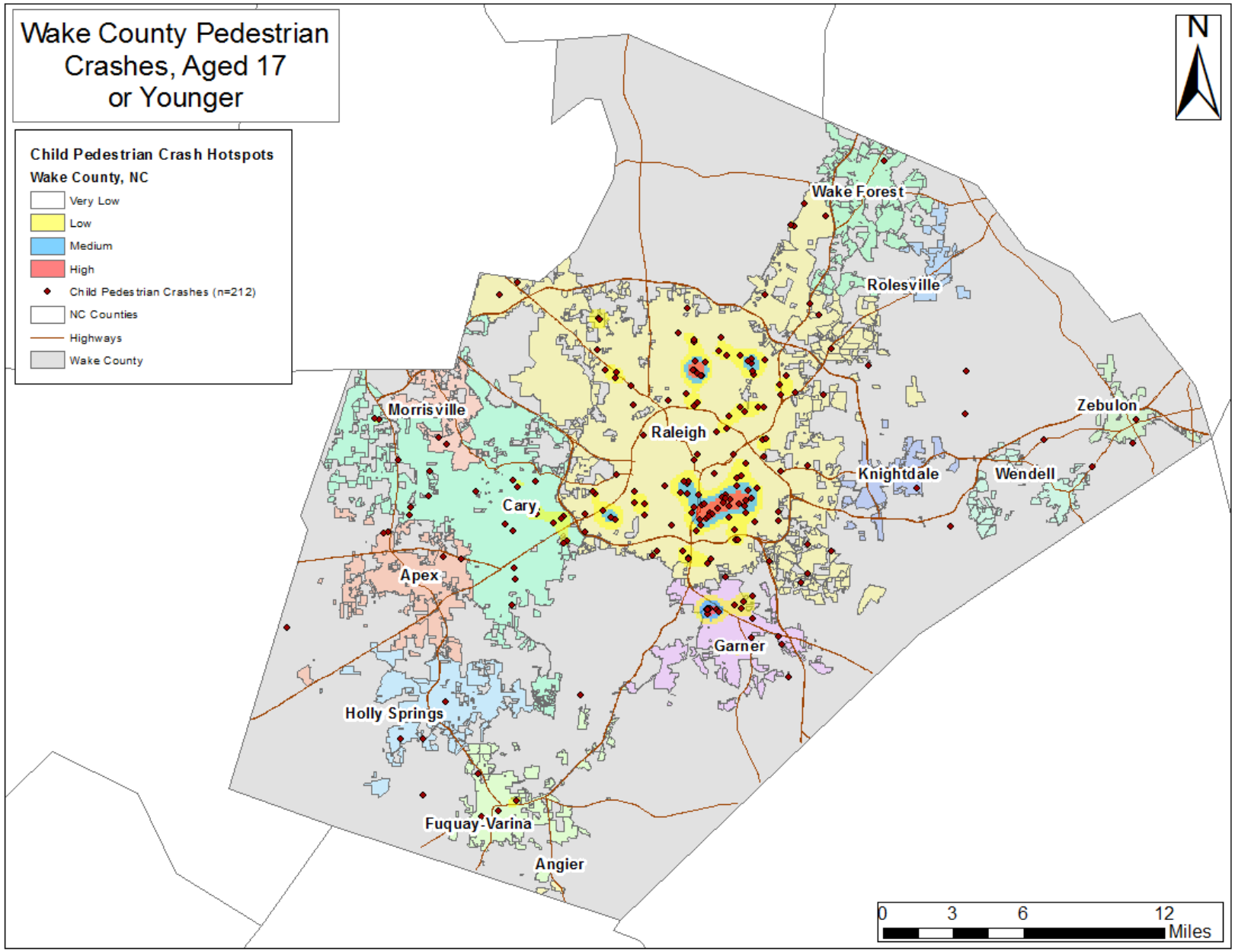
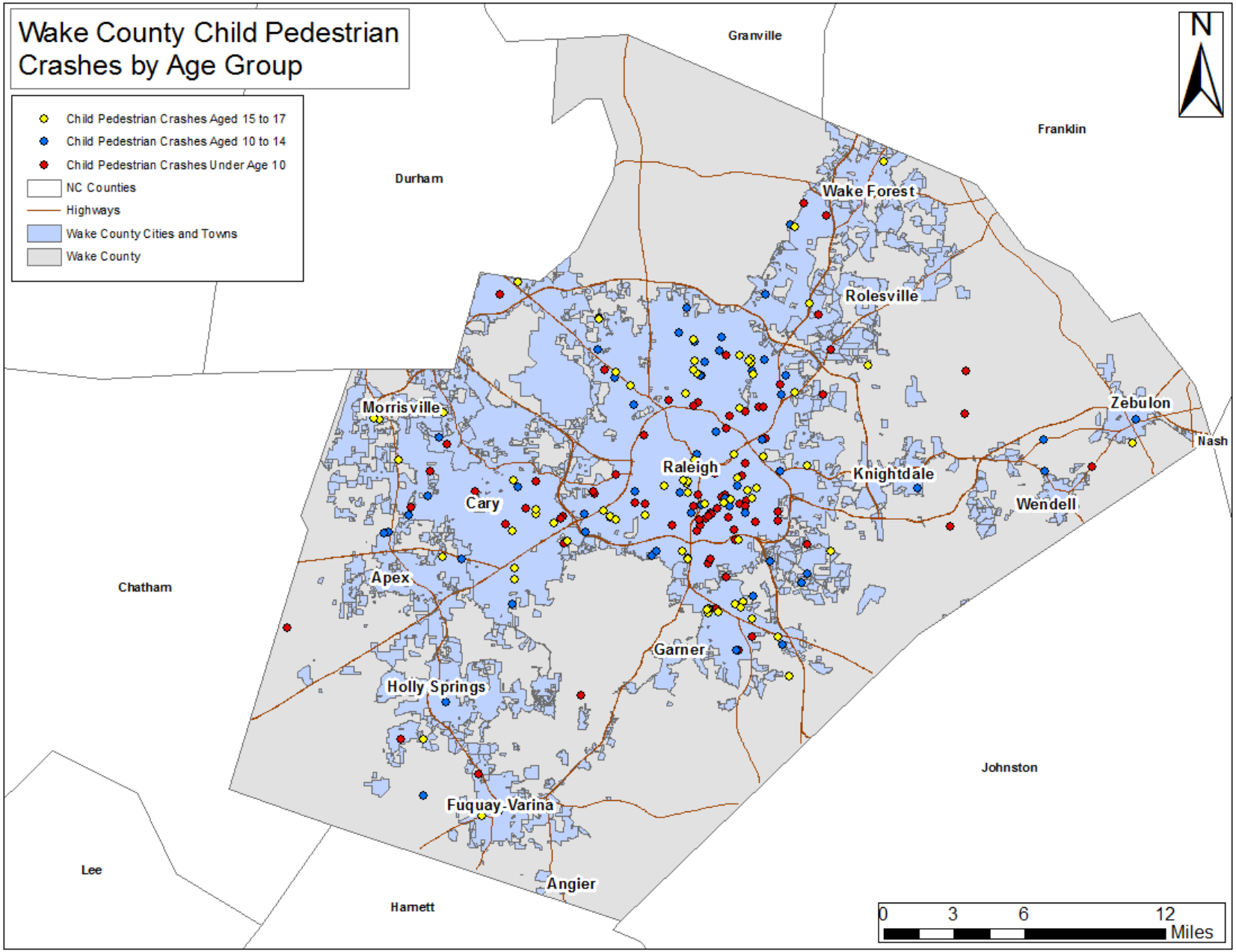


Figure 8: Child Pedestrian Crashes by Age Group



Census Tract Analysis

Child pedestrian crashes were also compared with all pedestrian crashes using the Census Tract geography. By examining pedestrian crashes using this finer level of detail, those areas with severe problems can be easily identified. Figure 9 and Figure 11 indicate that both all and child pedestrian crashes are happening in similar areas, though certain areas such as Garner have a higher rate of child pedestrian crashes as opposed to crashes for all pedestrians.

To further refine this analysis, both all pedestrian and child pedestrian crashes were normalized by the Census Tract population. Unsurprisingly, Raleigh, particularly downtown Raleigh, accounted for the largest rate of all pedestrian crashes by Census Tract population. For child pedestrians, other areas, such as areas of North Raleigh, Garner, and Morrisville, had large rates of child pedestrian crashes to population. Figure 10 and Figure 12 provide more detail. Table 4 provides more information those Census Tracts with the highest number of child pedestrian crashes by population.

Table 4: Census Tracts with Highest Number of Child Pedestrian Crashes

GEOID	Geography	Population Estimate	Child Pedestrian Crash Number	Crash Rate by Population
37183050900	Census Tract 509, Wake County, North Carolina	3486	7	0.002008032
37183053716	Census Tract 537.16, Wake County, North Carolina	4218	7	0.001659554
37183054018	Census Tract 540.18, Wake County, North Carolina	1813	3	0.001654716
37183051900	Census Tract 519, Wake County, North Carolina	4660	7	0.001502146
37183050100	Census Tract 501, Wake County, North Carolina	2326	3	0.001289768
37183050700	Census Tract 507, Wake County, North Carolina	3128	4	0.001278772
37183052802	Census Tract 528.02, Wake County, North Carolina	5908	7	0.001184834
37183052404	Census Tract 524.04, Wake County, North Carolina	4260	5	0.001173709
37183054012	Census Tract 540.12, Wake County, North Carolina	3429	4	0.001166521
37183050600	Census Tract 506, Wake County, North Carolina	3602	4	0.001110494
37183052701	Census Tract 527.01, Wake County, North Carolina	5047	5	0.000990688
37183052601	Census Tract 526.01, Wake County, North Carolina	3065	3	0.000978793
37183054006	Census Tract 540.06, Wake County, North Carolina	3120	3	0.000961538
37183052001	Census Tract 520.01, Wake County, North Carolina	3366	3	0.000891266
37183053516	Census Tract 535.16, Wake County, North Carolina	3385	3	0.000886263
37183050300	Census Tract 503, Wake County, North Carolina	2333	2	0.000857265
37183052706	Census Tract 527.06, Wake County, North Carolina	4775	4	0.000837696
37183054500	Census Tract 545, Wake County, North Carolina	7292	6	0.00082282
37183053725	Census Tract 537.25, Wake County, North Carolina	4887	4	0.000818498
37183052101	Census Tract 521.01, Wake County, North Carolina	7336	6	0.000817884
37183053723	Census Tract 537.23, Wake County, North Carolina	2542	2	0.000786782
37183053601	Census Tract 536.01, Wake County, North Carolina	2700	2	0.000740741
37183051200	Census Tract 512, Wake County, North Carolina	4092	3	0.000733138
37183052507	Census Tract 525.07, Wake County, North Carolina	2742	2	0.000729395
37183052808	Census Tract 528.08, Wake County, North Carolina	8262	6	0.000726216
37183052408	Census Tract 524.08, Wake County, North Carolina	2766	2	0.000723066
37183053506	Census Tract 535.06, Wake County, North Carolina	5647	4	0.000708341
37183052803	Census Tract 528.03, Wake County, North Carolina	9028	6	0.000664599
37183052002	Census Tract 520.02, Wake County, North Carolina	4705	3	0.00063762
37183053415	Census Tract 534.15, Wake County, North Carolina	3139	2	0.000637146

Further analysis of child pedestrian crashes will be presented in the Specific Figures, Tables, and Analysis section below.

Figure 9: Pedestrian Crashes by Census Tract

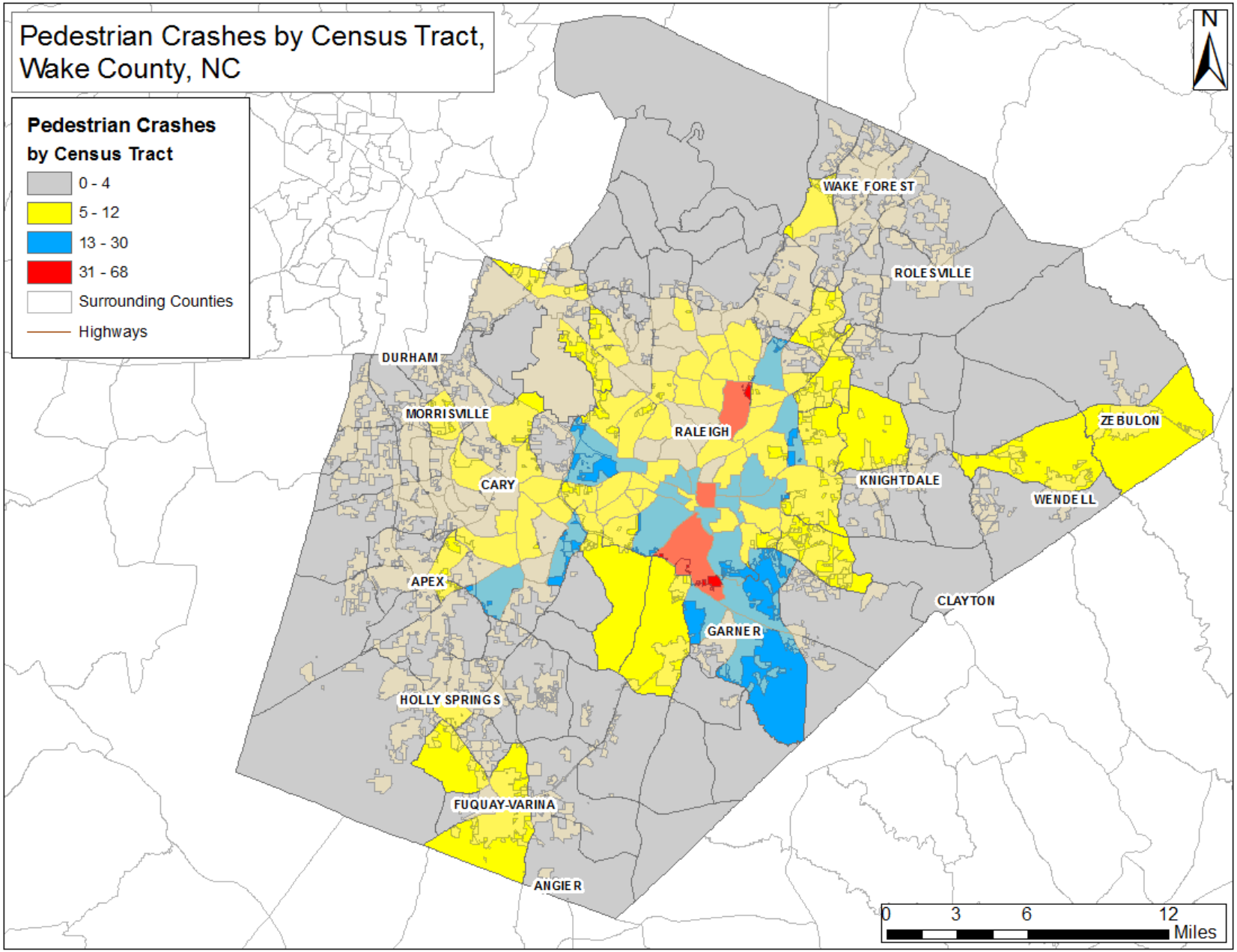


Figure 10: Pedestrian Crashes by Census Tract by Population

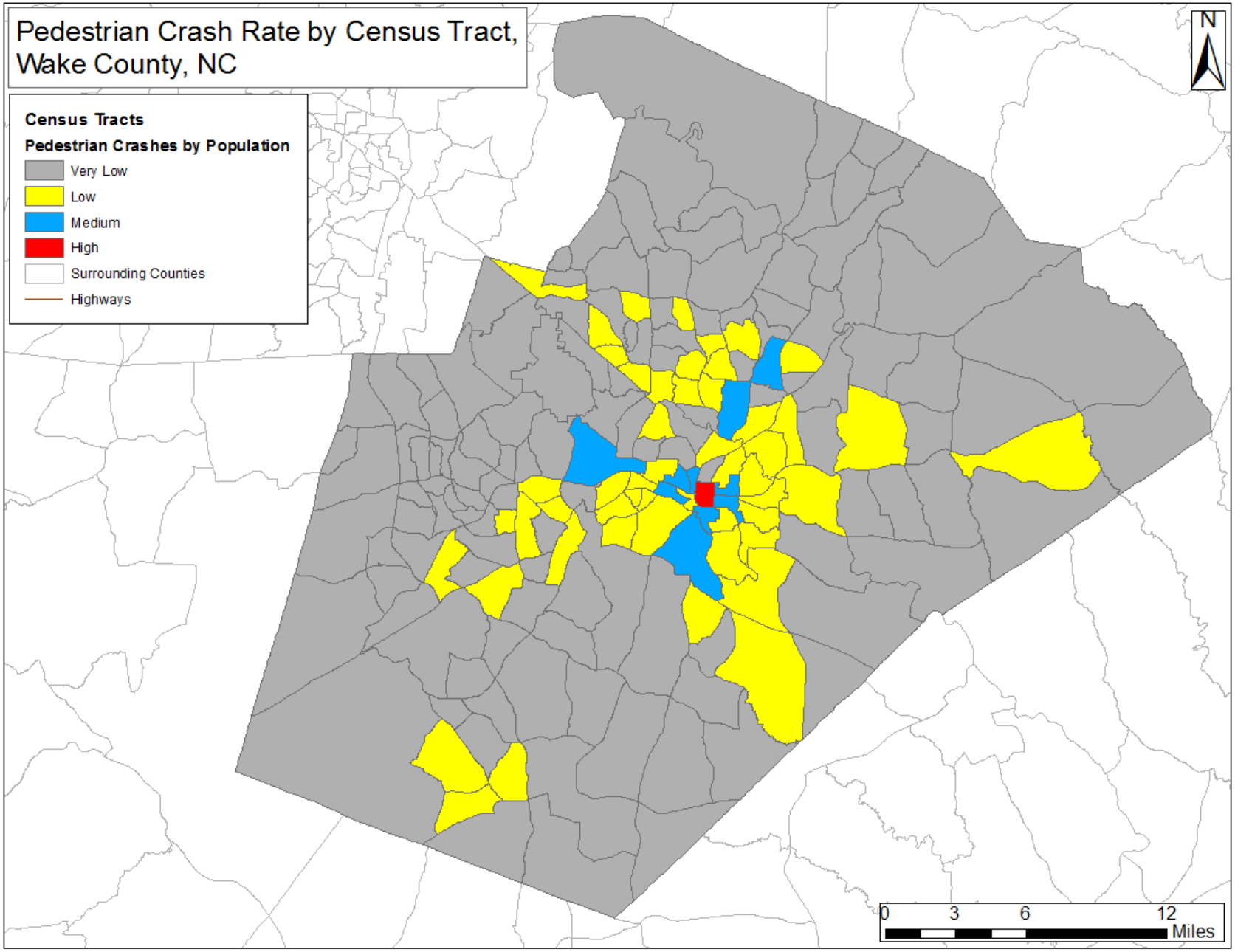


Figure 11: Child Pedestrian Crashes by Census Tract

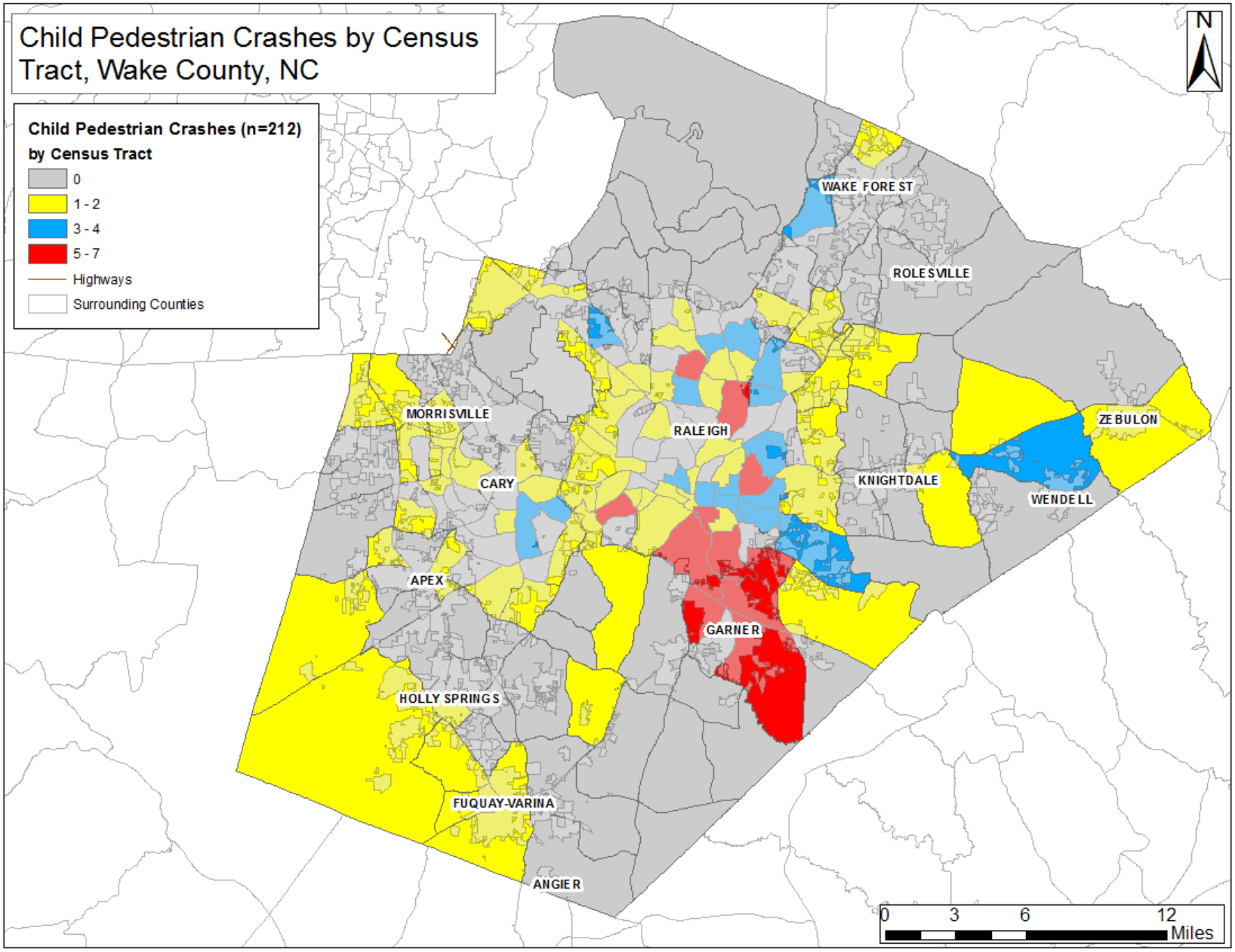
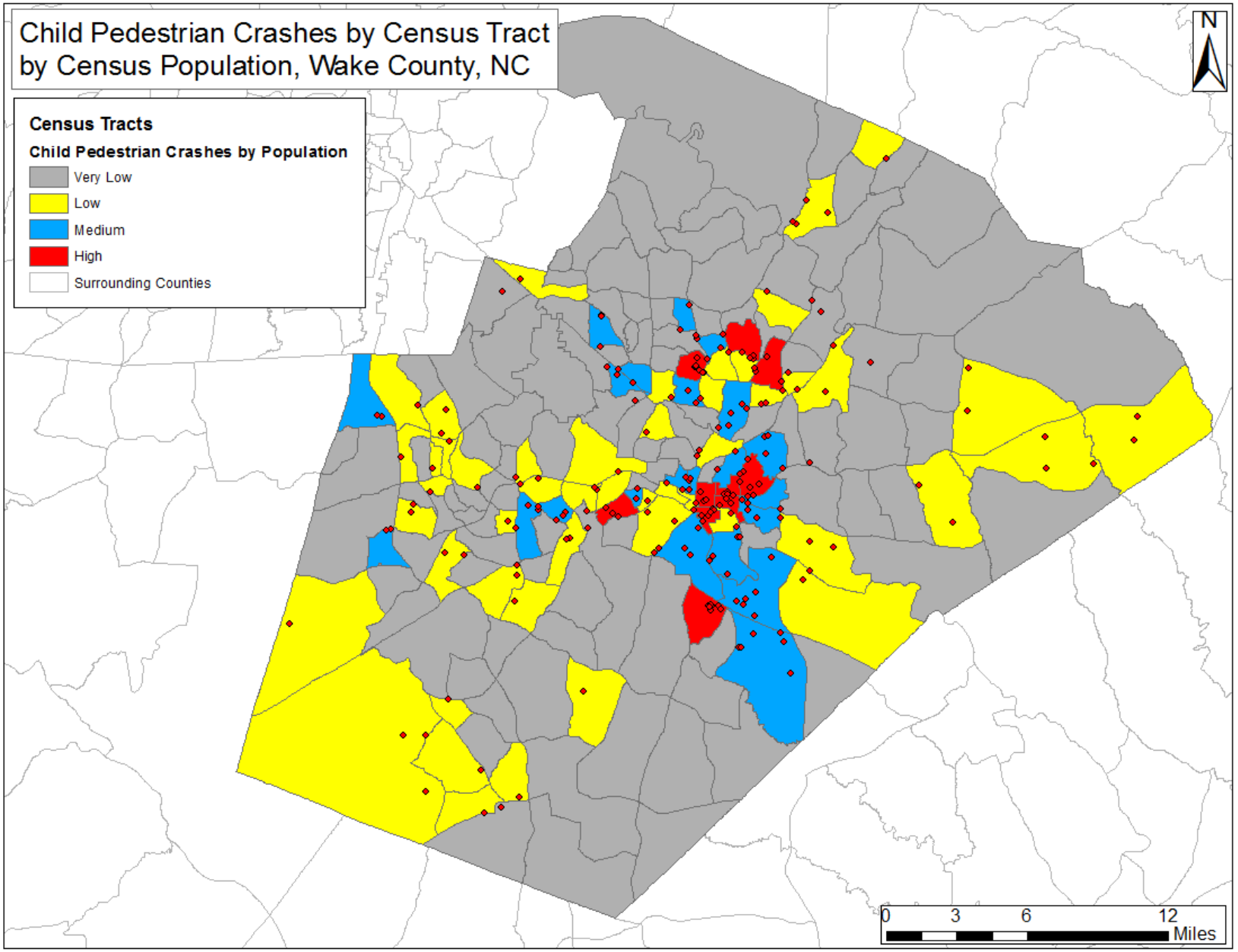


Figure 12: Child Pedestrian Crashes by Census Tract by Population



Traffic Analysis Zones Analysis

To further refine the analysis, the Traffic Analysis Zone (TAZ) geography was also used to examine areas with high crash frequencies in greater detail. Figure 13 and Figure 14 represent those TAZs with the highest frequencies of all pedestrian crashes and child pedestrian crashes, respectively, while Table 5 provides this information for child pedestrians in tabular format.

Table 5: TAZs with Highest Number of Child Pedestrian Crashes

Target FID	ID	Area	County	Centroid	Final TAZ	Tract	Block Group	Municipality	Child Crash Number
449	759	0.32	WAKE	759	212053	37183053716	371830537161	RALEIGH	5
687	614	0.50	WAKE	614	210121	37183052404	371830524041	RALEIGH	5
539	804	0.51	WAKE	804	213049	37183054003	371830540031	RALEIGH	4
1194	933	0.37	WAKE	933	215098	37183052802	371830528023	GARNER	4
280	583	0.09	WAKE	583	210085	37183050600	371830506002	RALEIGH	3
293	594	0.06	WAKE	594	210099	37183050900	371830509001	RALEIGH	3
378	1582	0.40	WAKE	1582	289015	37183053710	371830537101	RALEIGH	3
973	904	1.25	WAKE	904	215062	37183052805	371830528051	GARNER	3
40	1179	1.31	WAKE	1179	222015	37183054201	371830542015	RALEIGH	2
47	1845	2.25	WAKE	1845	299005	37183053403	371830534032	CARY	2
55	1591	1.24	WAKE	1591	289210	37183053402	371830534022	CARY	2
65	1492	0.66	WAKE	1492	279209	37183053403	371830534034	APEX	2
253	816	1.94	WAKE	816	213067	37183054009	371830540092	RALEIGH	2
275	685	0.11	WAKE	685	210202	37183052001	371830520011	RALEIGH	2
282	681	0.32	WAKE	681	210197	37183051900	371830519002	RALEIGH	2
283	684	0.42	WAKE	684	210201	37183052001	371830520011	RALEIGH	2
284	689	1.31	WAKE	689	210206	37183052002	371830520022	RALEIGH	2
310	680	0.50	WAKE	680	210196	37183051900	371830519003	RALEIGH	2
369	621	0.41	WAKE	621	210128	37183052405	371830524051	RALEIGH	2
382	679	0.86	WAKE	679	210195	37183051900	371830519001	RALEIGH	2
388	892	1.40	WAKE	892	215037	37183052804	371830528043	RALEIGH	2
448	758	0.26	WAKE	758	212052	37183053716	371830537161	RALEIGH	2
486	827	0.48	WAKE	827	214009	37183052703	371830527032	RALEIGH	2
526	756	0.30	WAKE	756	212050	37183054006	371830540061	RALEIGH	2
557	1679	0.27	WAKE	1679	293012	37183052704	371830527041	RALEIGH	2
588	633	0.28	WAKE	633	210141	37183050300	371830503001	RALEIGH	2
681	961	0.45	WAKE	961	216020	37183052202	371830522022	RALEIGH	2
704	1811	0.31	WAKE	1811	297076	37183053501	371830535015	CARY	2
737	948	0.56	WAKE	948	216003	37183053001	371830530012	CARY	2
937	1390	1.01	WAKE	1390	226049	37183053101	371830531011	FUQUAY VARINA	2
1036	1463	0.49	WAKE	1463	229054	37183053405	371830534051	CARY	2
1108	1290	3.73	WAKE	1290	224000	37183054401	371830544011		2
1200	941	0.31	WAKE	941	215107	37183052802	371830528022	GARNER	2
1220	600	0.06	WAKE	600	210105	37183050900	371830509003	RALEIGH	2
1247	864	0.21	WAKE	864	215005	37183052101	371830521012	RALEIGH	2
1283	966	0.18	WAKE	966	216025	37183052202	371830522023	RALEIGH	2
1321	1030	0.10	WAKE	1030	217063	37183053506	371830535062	CARY	2

Figure 13: Pedestrian Crashes by TAZ

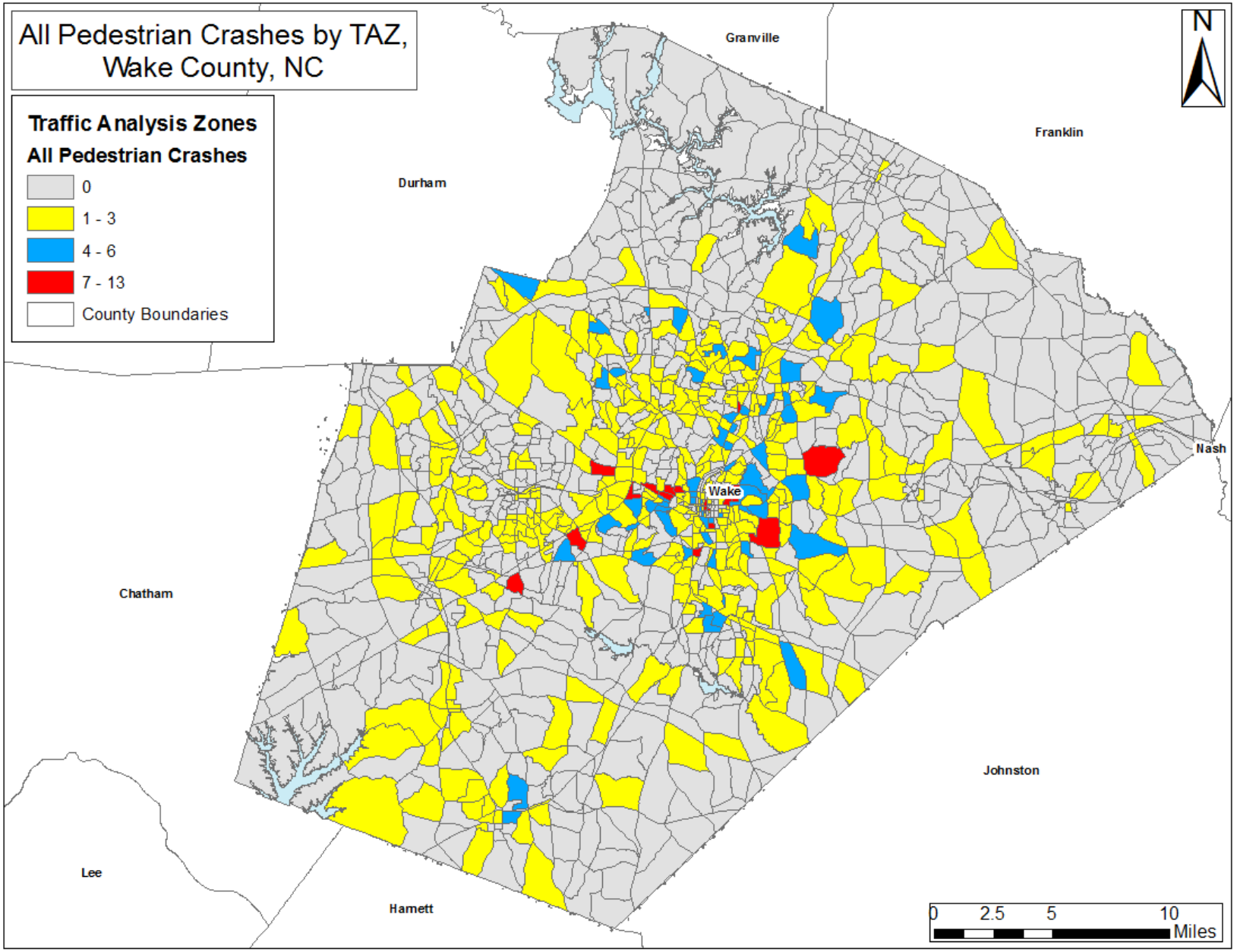
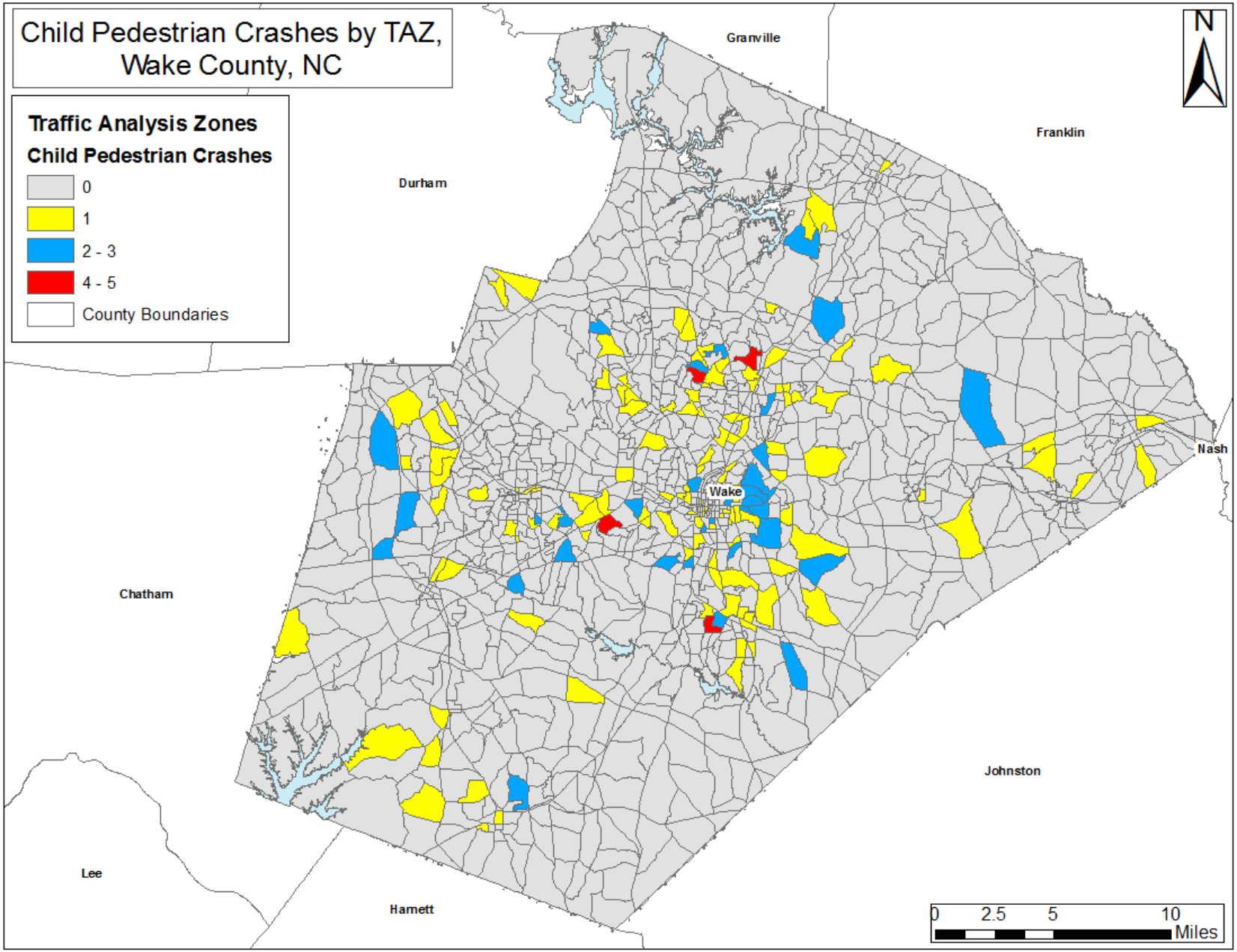


Figure 14: Child Pedestrian Crashes by TAZ



City Boundary Crash Analysis

Building on the last analysis, both all and child pedestrian crashes were mapped to the boundaries of all cities and towns in Wake County. As expected, those cities with the largest areas, such as Raleigh and Cary, accounted for the most pedestrian crashes within the city limits for all pedestrian crashes. For child pedestrian crashes, however, Garner also had substantial numbers of child pedestrian crashes. Figure 15 and Figure 17 display this information.

To further refine this analysis, the totals for each city and town were then normalized by population, using data from the 2010 United States Census, to achieve a rate. For all pedestrians, Raleigh and Garner had high rates of crashes, as indicated in Figure 16. Interestingly, towns such as Cary, Fuquay-Varina, Wendell, and Zebulon also had high rates of pedestrian crashes by population. In terms of child pedestrians, somewhat surprisingly, Garner has the highest rate of pedestrian crashes by population, followed by Raleigh. More information can be found in Figure 18 and Table 6.

Table 6: Child Pedestrian Crashes by Population Rate, City and Town Rankings

City Name	Ranking
Garner	1
Raleigh	2
Fuquay-Varina	3
Zebulon	4
Cary	5
Wendell	6
Morrisville	7
Apex	8
Knightdale	9
Holly Springs	10
Wake Forest	11

Figure 15: Pedestrian Crashes in Wake County by City and Town

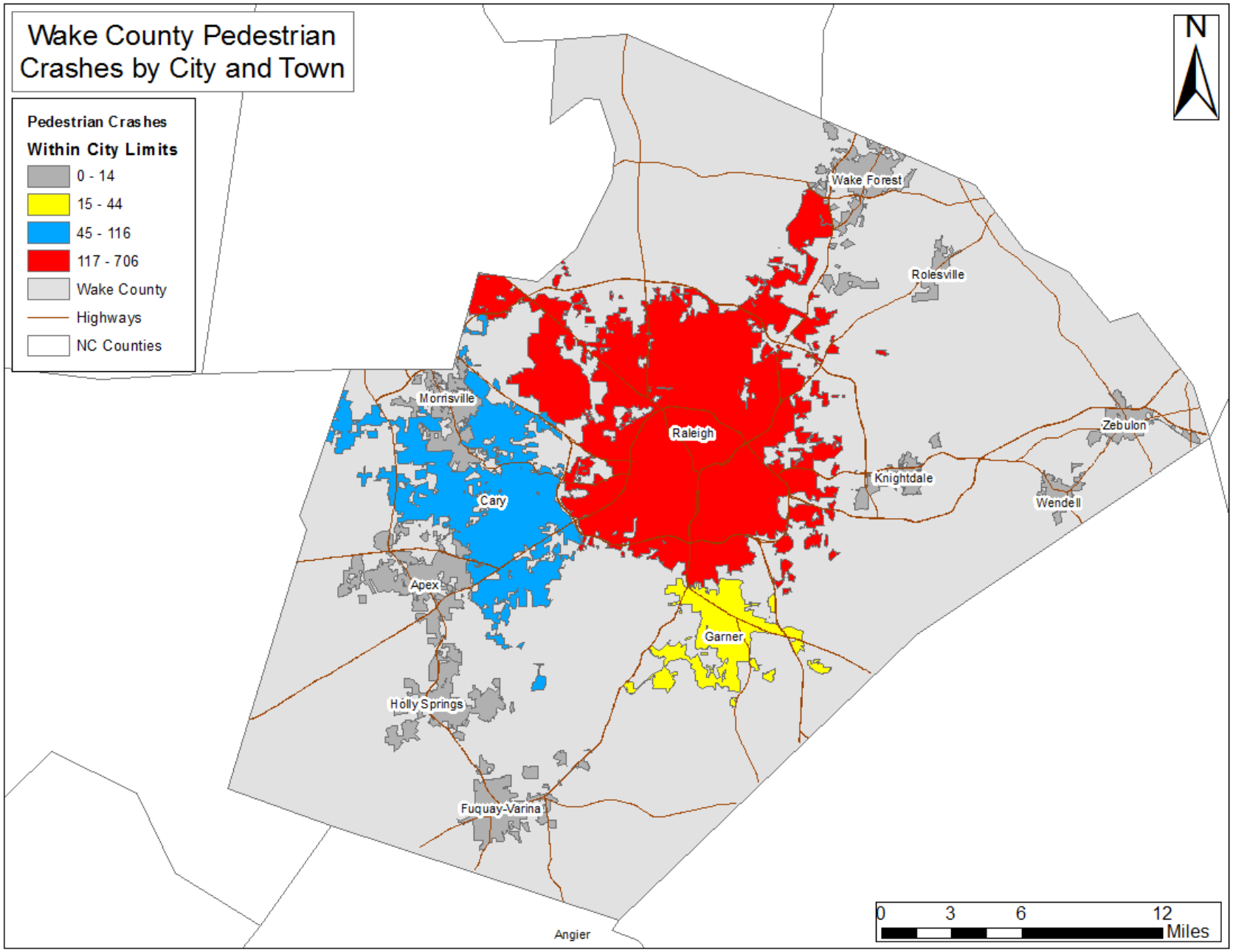


Figure 16: Pedestrian Crashes in Wake County by Population by City and Town

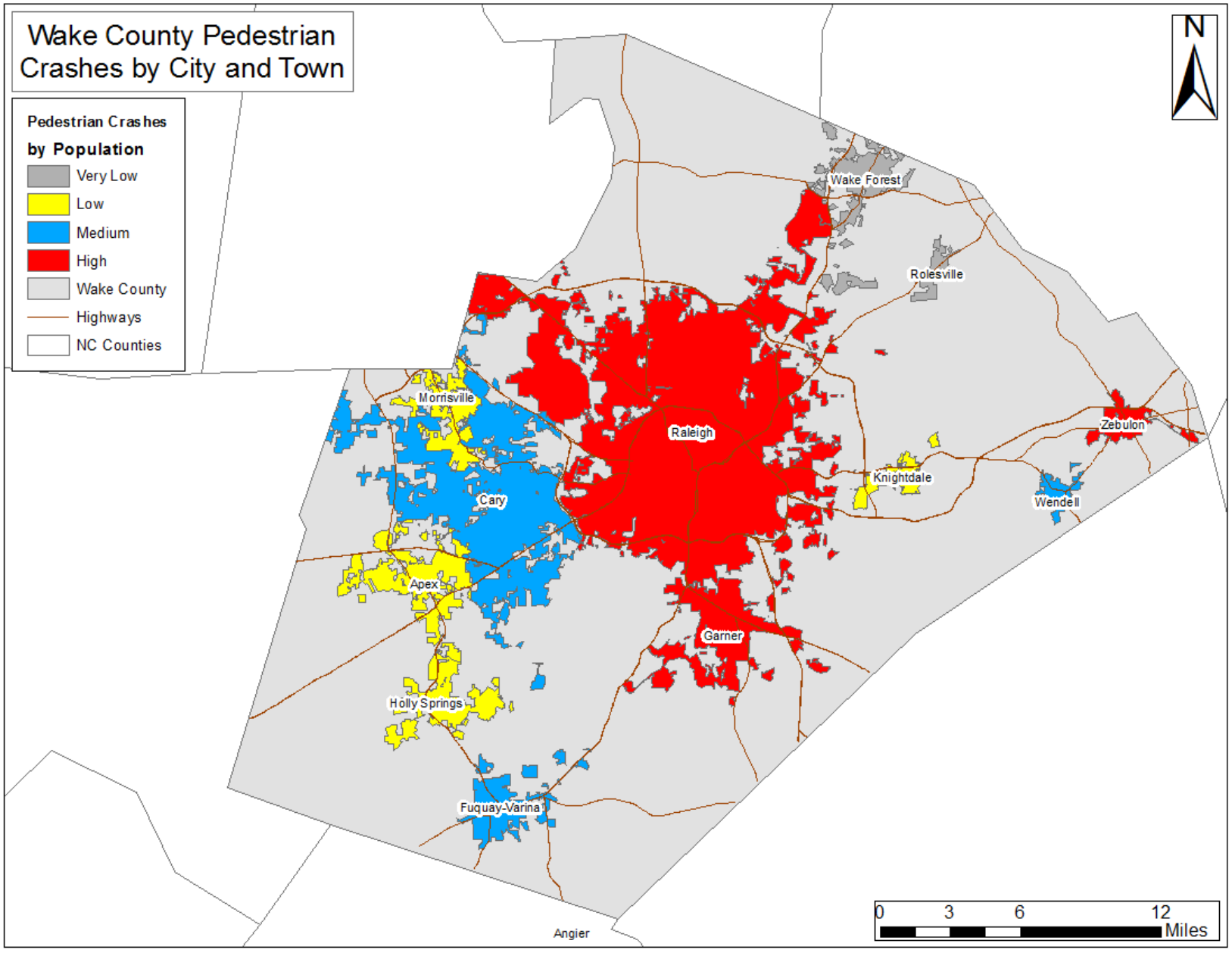


Figure 17: Child Pedestrian Crashes in Wake County by City and Town

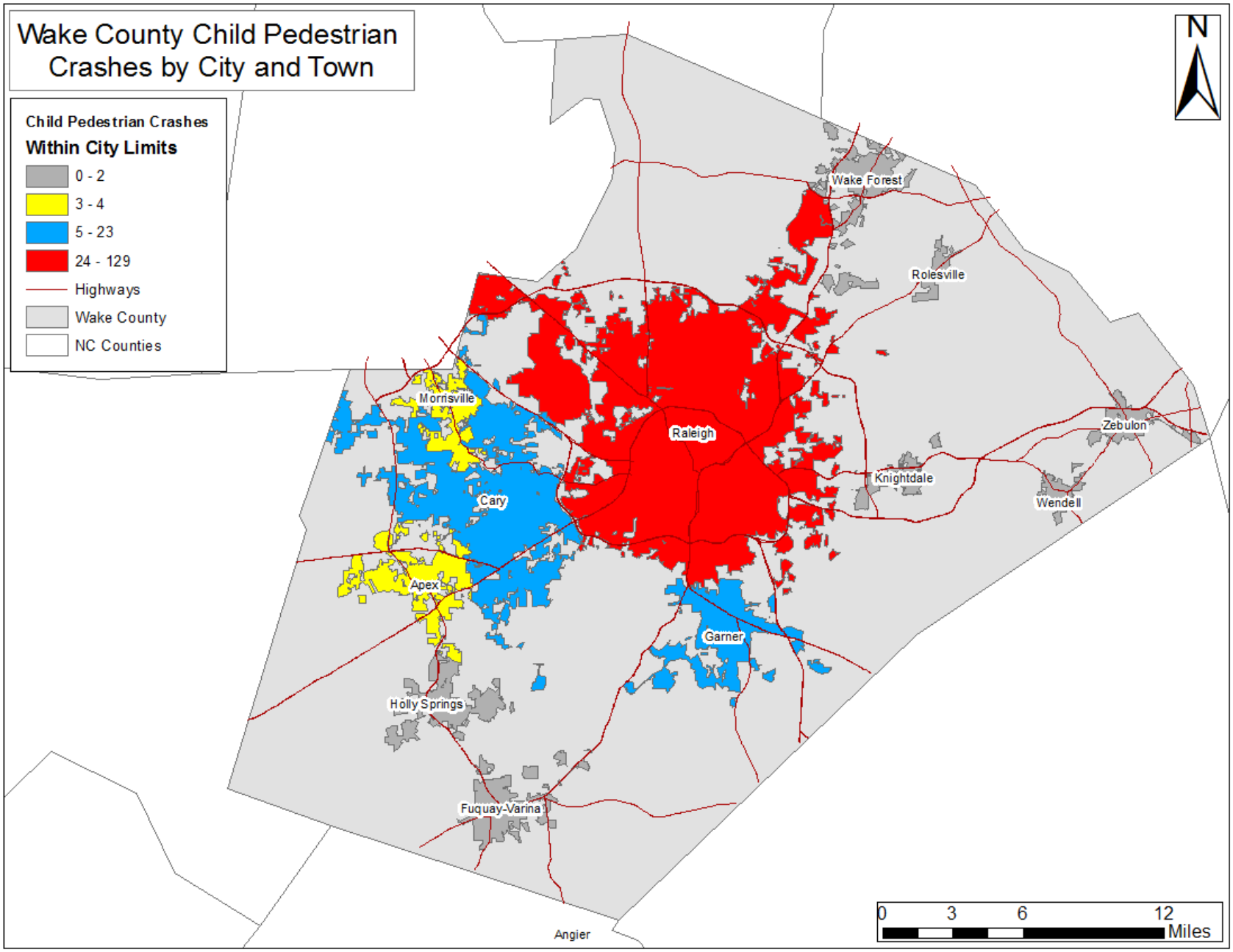
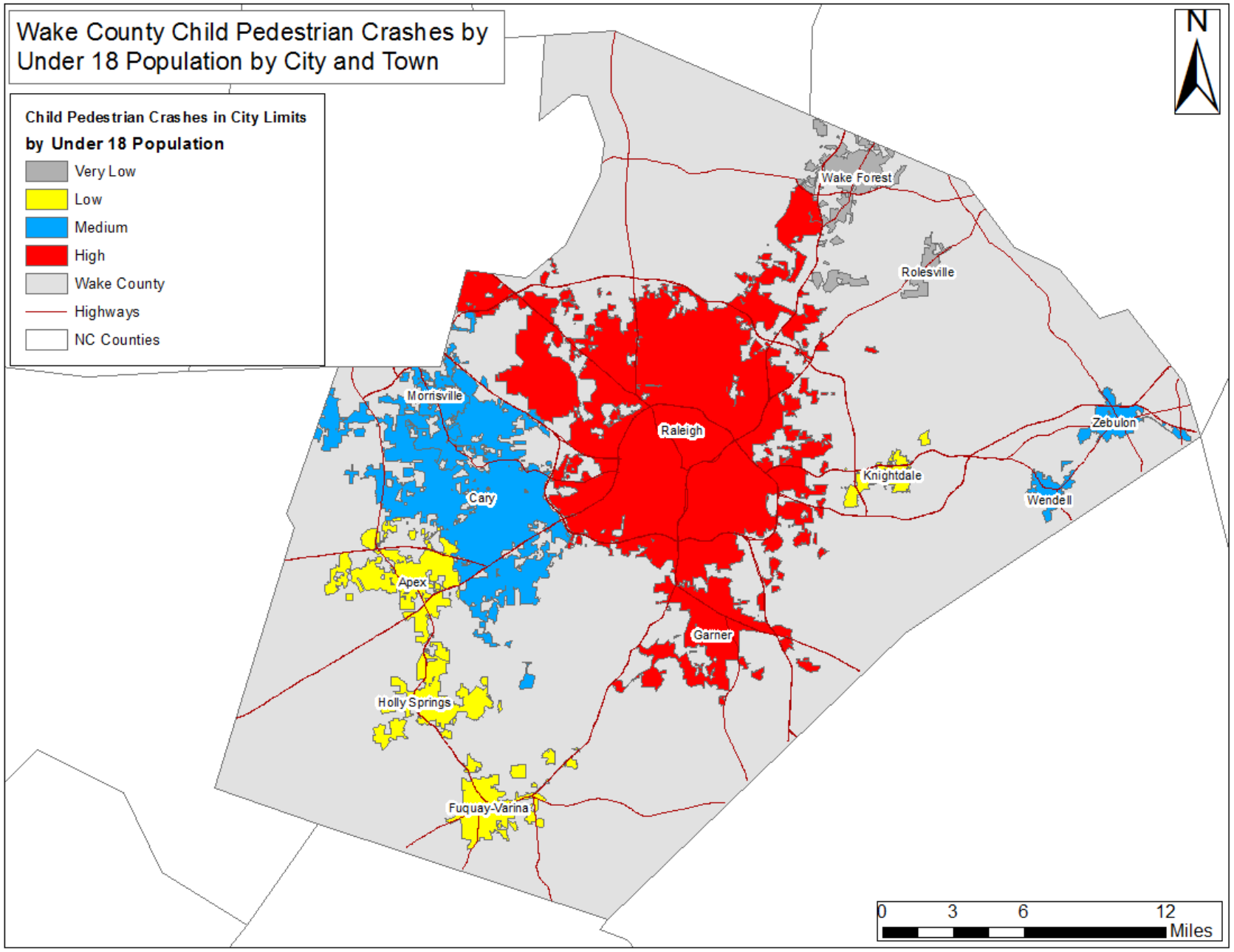


Figure 18: Child Pedestrian Crashes in Wake County by Under 18 Population by City and Town



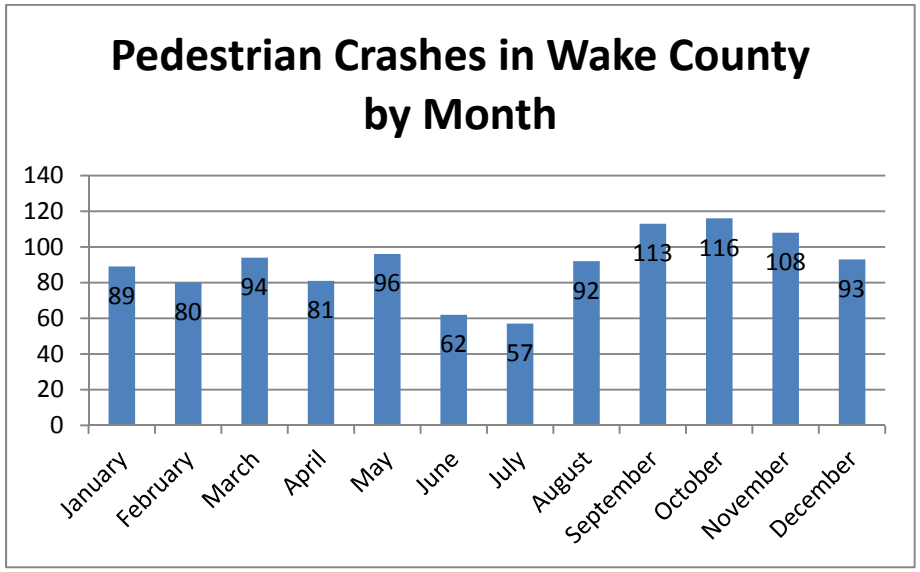
General Pedestrian Crash Analysis

In general, pedestrian crashes tend to occur during the months when people are likely to walk with the greatest frequency, which often happens during the cooler fall and spring months. North Carolina is typically very warm in the summer, which explains the relative dearth of pedestrian crashes in June and July, as fewer people are walking. October has the highest crash total at 116, while September and November also have high totals. The remaining months have a relatively constant crash rate with an average of 89 crashes per month. Table 7 and Figure 19 provide a graphic representation of this data.

Table 7: All Pedestrian Crashes by Month, Wake County, NC

Month	Number	Percentage
January	89	8.2%
February	80	7.4%
March	94	8.7%
April	81	7.5%
May	96	8.9%
June	62	5.7%
July	57	5.3%
August	92	8.5%
September	113	10.5%
October	116	10.7%
November	108	10.0%
December	93	8.6%
Total	1081	100.0%

Figure 19: All Pedestrian Crashes by Month, Wake County, NC



Pedestrian crashes in Wake County are likely to occur during the week, with Friday having the highest percentage. Sunday, conversely, accounts for the lowest percentage of crashes involving motor vehicles and pedestrians at only 8.9 percent. Table 8 and Figure 20 can provide more detail. In terms of when pedestrian crashes are occurring in Wake County, the typical commute hours (4:00 – 6:00 PM) represent the highest percentage of pedestrian crashes, while the times between 2:00 and 4:00 PM and 6:00 and 8:00 PM also comprise substantial percentages of the total crashes (see Table 9 and Figure 21).

Table 8: All Pedestrian Crashes by Day of Week, Wake County, NC

Day of Week	Crash Number	Percentage
Monday	151	14.0%
Tuesday	154	14.2%
Wednesday	166	15.4%
Thursday	164	15.2%
Friday	186	17.2%
Saturday	164	15.2%
Sunday	96	8.9%
Total	1081	100.0%

Figure 20: All Pedestrian Crashes by Day of Week, Wake County, NC

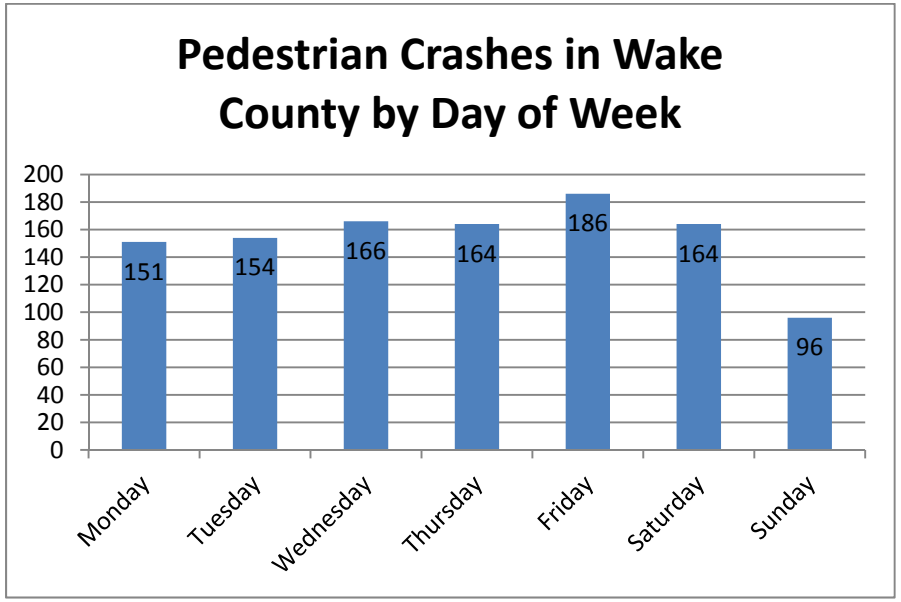
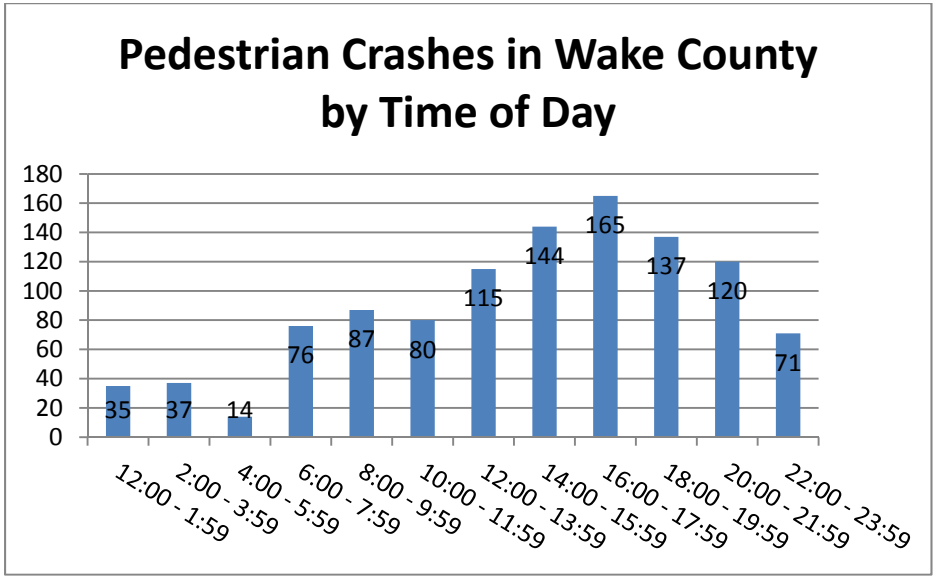


Table 9: All Pedestrian Crashes by Time of Day, Wake County, NC

Time of Day	Number	Percentage
12:00 - 1:59	35	3.2%
2:00 - 3:59	37	3.4%
4:00 - 5:59	14	1.3%
6:00 - 7:59	76	7.0%
8:00 - 9:59	87	8.0%
10:00 - 11:59	80	7.4%
12:00 - 13:59	115	10.6%
14:00 - 15:59	144	13.3%
16:00 - 17:59	165	15.3%
18:00 - 19:59	137	12.7%
20:00 - 21:59	120	11.1%
22:00 - 23:59	71	6.6%
Total	1081	100.0%

Figure 21: Pedestrian Crashes in Wake County by Time of Day



In Wake County, male pedestrians are involved in pedestrian-motor vehicle crashes at a higher rate than female pedestrians. Roughly 58 percent of all pedestrian crashes occurring between 2007 and 2010 involved male pedestrians, while only 42% involved females. Table 10 provides more detail.

Table 10: All Pedestrian Crashes by Sex, Wake County, NC

Sex	Number	Percentage
Male	623	57.6%
Female	450	41.6%
Unknown	8	0.7%
Total	1081	100.0%

In terms of the racial demographics of pedestrians as well as drivers involved in pedestrian-motor vehicle crashes in Wake County, nearly one half of either the pedestrians or drivers involved in a crash was a white person. For Black or Hispanic people, many more were involved in crashes as pedestrians than as drivers, with Black people accounting for 38 percent of all pedestrians involved in a crash and Hispanic people comprising 11 percent of all crash-involved pedestrians. As drivers involved in a pedestrian-motor vehicle crash, Black and Hispanic people made up 28 and 5 percent of all drivers. Table 11 provides more detail, while Figure 22 and Figure 23 are graphic representations of this data.

Table 11: People Involved in a Pedestrian-Motor Vehicle Crash by Race, Wake County, NC

	Pedestrian Total	Percentage	Driver Total	Percentage
White	497	46.0%	500	46.3%
Black	409	37.8%	304	28.1%
Hispanic	115	10.6%	56	5.2%
Asian	15	1.4%	21	1.9%
Native American	7	0.6%	2	0.2%
Other	25	2.3%	28	2.6%
Unknown/Missing	13	1.2%	170	15.7%
Total	1081	100.0%	1081	100.0%

Figure 22: Pedestrian Crashes by Race, Wake County, NC

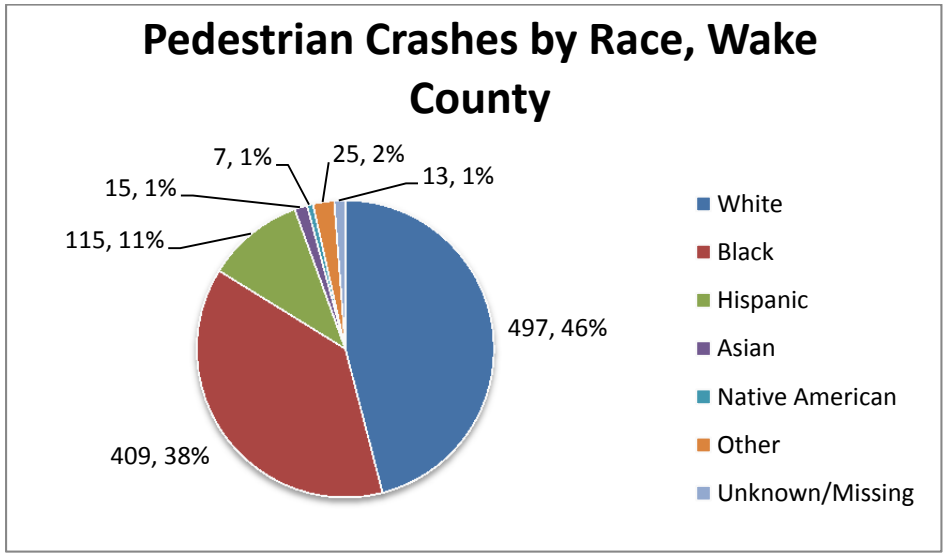
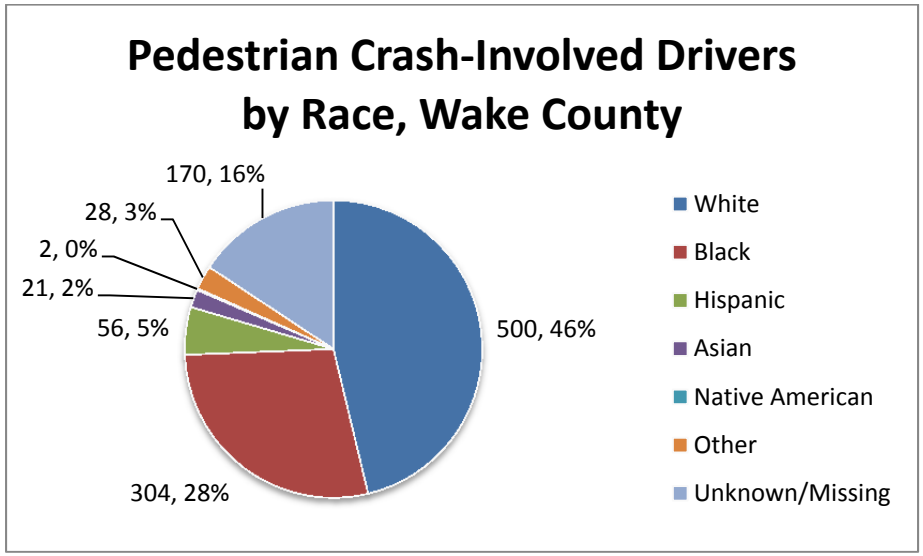


Figure 23: Pedestrian Crash-Involved Drives by Race, Wake County, NC



While crash-typing may not capture the circumstances surrounding a crash entirely, it is nonetheless still useful in terms of gaining an understanding of the common reasons why pedestrian-motor vehicle crashes occur. The following table (Table 12) provides more information. Crashes occurring in parking lots accounted for a substantial number of pedestrian crashes, while "dash" and "dart-out" type crashes were also prevalent.

Table 12: Pedestrian-Motor Vehicle Crash Types, Wake County, NC

Crash Type	Number	%
Dart/Dash/Pedestrian Fail to Yield	236	24%
Off Roadway/Parking lot/Driveway	181	18%
Other/Unusual Circumstances (dispute, disabled vehicle, play)	163	16%
Backing Vehicle	147	15%
Motorist Turning	106	11%
Motorist Going Straight/Fail to Yield	90	9%
Walking/standing/working in or along roadway	76	8%
Total	999	100%

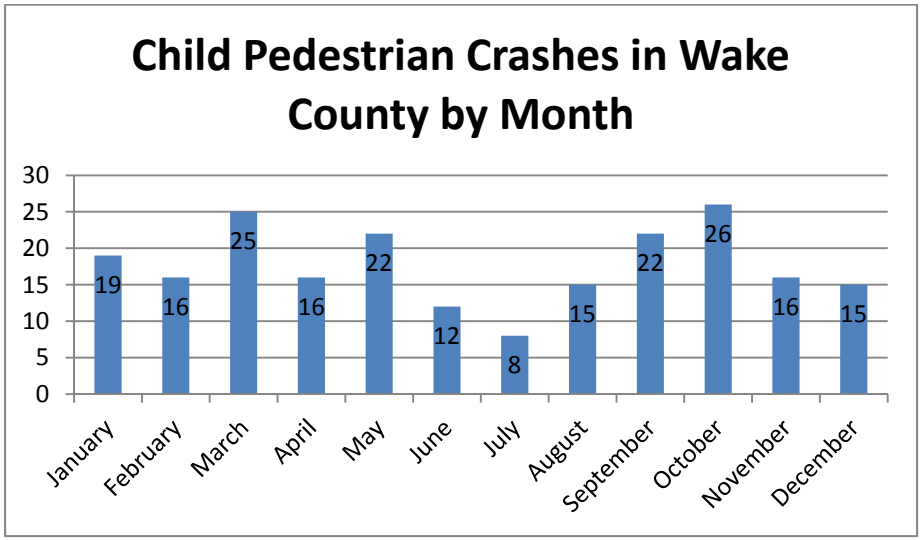
Child Pedestrian Crash Analysis

Child pedestrian crashes follow a similar trend to crashes in Wake County overall. These crashes occur most frequently during the spring and fall months, when people are more likely to walk due to the cooler weather. Child pedestrian crashes fall to the lowest point in July, possibly as a result of less walking due to both hotter weather and no schools being in session, while the winter months also have lower crash totals. Table 13 and Figure 24 provide this information.

Table 13: Child Pedestrian Crashes by Month, Wake County, NC

Month	Count	Percentage
January	19	9.0%
February	16	7.5%
March	25	11.8%
April	16	7.5%
May	22	10.4%
June	12	5.7%
July	8	3.8%
August	15	7.1%
September	22	10.4%
October	26	12.3%
November	16	7.5%
December	15	7.1%
Total	212	100.0%

Figure 24: Child Pedestrian Crashes by Month, Wake County, NC



Child pedestrian crashes in Wake County generally follow the trends for all Wake County pedestrian crashes. Crashes are more likely to occur during the week and on Saturday with Sunday having the lowest total crashes between 2007 and 2010. Thursday, however, has many fewer crashes than other days of the week, while Wednesday accounts for the highest number of child pedestrian crashes overall. Table 14 and Figure 25 can provide more detail. Child pedestrian crashes occur at roughly the same times as all crashes in Wake County, though the early commute hours (6:00 to 8:00 AM) comprise a higher proportion of crashes for children, possibly due to school opening times falling between these hours. School release times (2:00 to 4:00 PM) and the later afternoon hours (4:00 to 6:00 PM) represent the largest number of pedestrian crashes at 37 (18%) and 39 (18%), respectively. No child pedestrian crashes occurred between the hours of 2:00 AM and 6:00 AM. See Table 15 and Figure 26 for more information.

Table 14: Child Pedestrian Crashes by Day of Week, Wake County, NC

Day of Week	Count	Percentage
Monday	29	13.7%
Tuesday	34	16.0%
Wednesday	39	18.4%
Thursday	26	12.3%
Friday	34	16.0%
Saturday	35	16.5%
Sunday	15	7.1%
Total	212	100.0%

Figure 25: Child Pedestrian Crashes by Day of Week, Wake County, NC

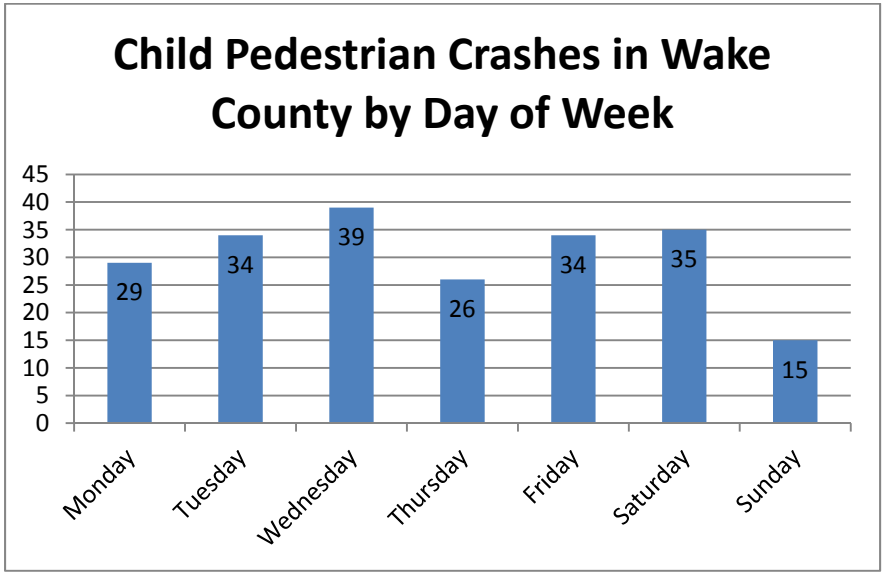
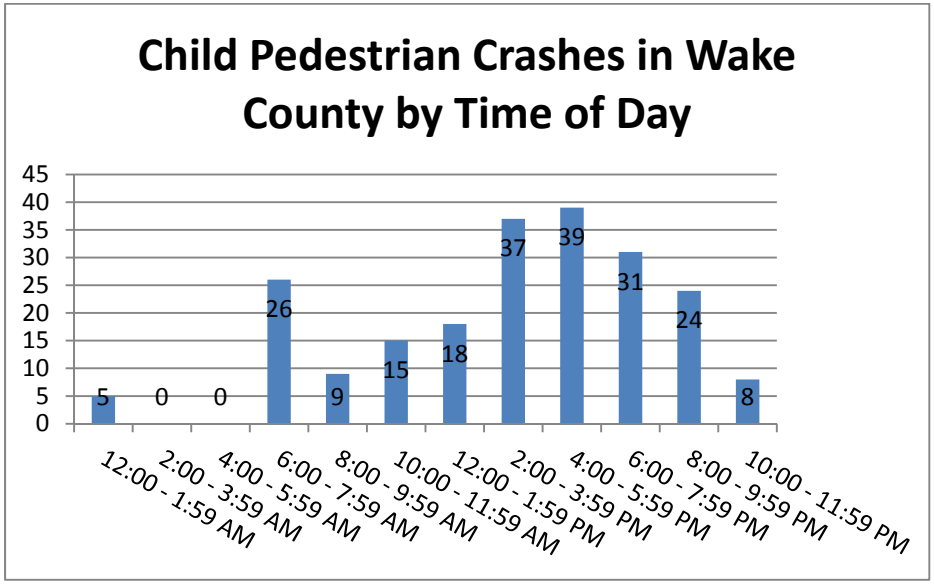


Table 15: Child Pedestrian Crashes by Time of Day, Wake County, NC

Time	Count	Percentage
12:00 - 1:59 AM	5	2.4%
2:00 - 3:59 AM	0	0.0%
4:00 - 5:59 AM	0	0.0%
6:00 - 7:59 AM	26	12.3%
8:00 - 9:59 AM	9	4.2%
10:00 - 11:59 AM	15	7.1%
12:00 - 1:59 PM	18	8.5%
2:00 - 3:59 PM	37	17.5%
4:00 - 5:59 PM	39	18.4%
6:00 - 7:59 PM	31	14.6%
8:00 - 9:59 PM	24	11.3%
10:00 - 11:59 PM	8	3.8%
Total	212	100.0%

Figure 26: Child Pedestrian Crashes by Time of Day, Wake County, NC



As expected, crash trends among children in Wake County mirror the crash trends among all pedestrians in the county. More young male pedestrians are involved in pedestrian-motor vehicle crashes than females, though by a slightly lesser margin, as indicated in Table 16.

Table 16: Child Pedestrian Crashes by Sex, Wake County, NC

Sex	Count	Percentage
Male	116	54.7%
Female	95	44.8%
Unknown	1	0.5%
Total	212	100.0%

In contrast to the racial distribution of all pedestrian crashes in Wake County, African-American children account for nearly 44 percent of all child pedestrian crashes, while white children comprise 37 percent of all child pedestrian crashes. For all pedestrian-motor vehicle crashes, African-Americans represent 38 percent of crashes, while white people comprise 46 percent. This marked difference could be related to a number of factors. Additionally, Hispanic children represent 15 percent of child pedestrian crashes, but only 11 percent of all pedestrian crashes in Wake County.

As expected, the proportion of drivers involved in a child pedestrian crash corresponds roughly to the proportion of those drivers involved in a pedestrian crash overall with respect to race. Table 17 provides this information in tabular form, while Figure 27 and Figure 28 are graphic representations of this data.

Table 17: Children Involved in a Pedestrian-Motor Vehicle Crash by Race, Wake County, NC

People Involved in a Child Pedestrian-Motor Vehicle Crash by Race				
	Child Pedestrian Total	Percentage	Driver Total	Percentage
White	78	36.8%	99	46.7%
Black	93	43.9%	68	32.1%
Hispanic	31	14.6%	15	7.1%
Asian	2	0.9%	3	1.4%
Native American	1	0.5%	0	0.0%
Other	5	2.4%	7	3.3%
Unknown/Missing	2	0.9%	20	9.4%
Total	212	100.0%	212	100.0%

Figure 27: Child Pedestrian Crashes by Race, Wake County, NC

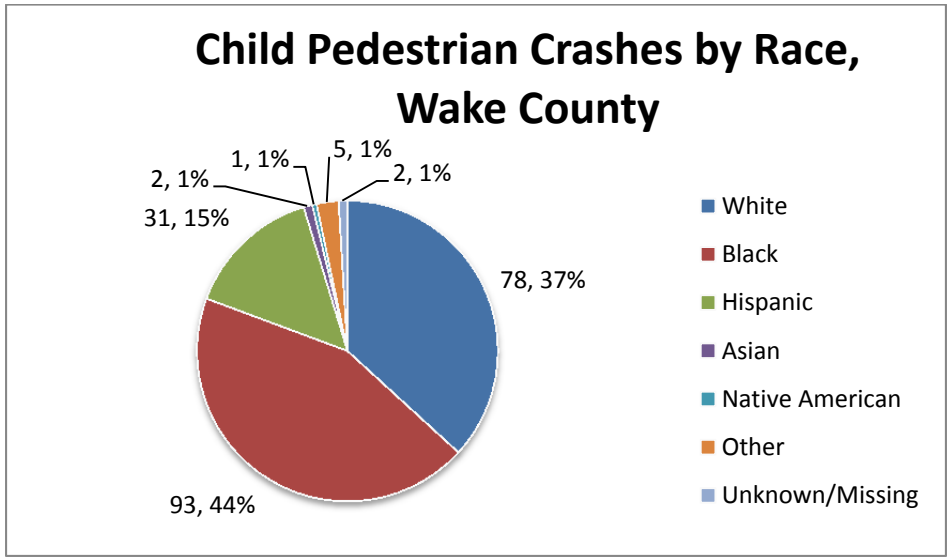
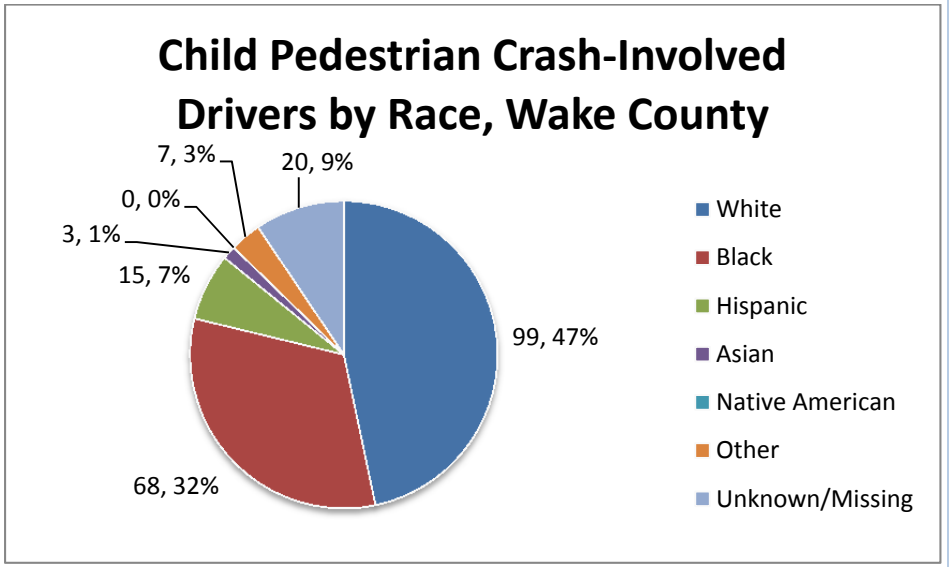
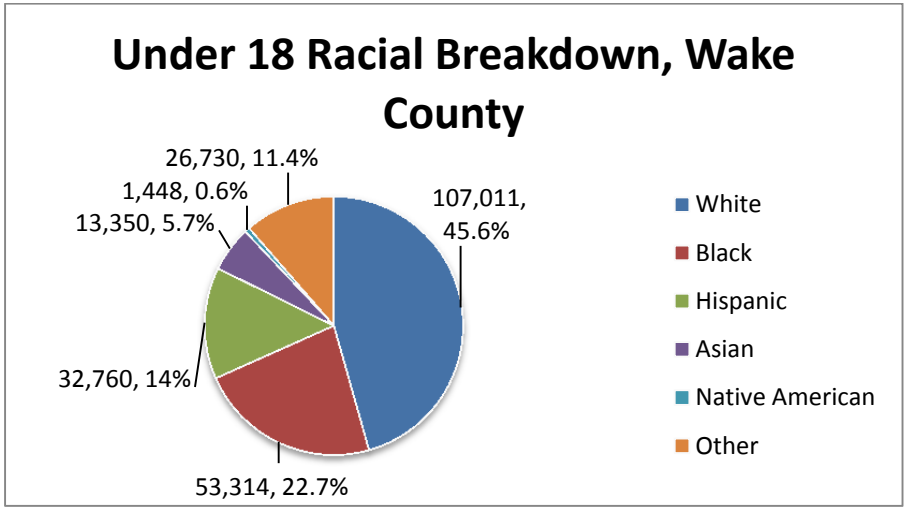


Figure 28: Child Pedestrian Crash-Involved Drivers by Race, Wake County, NC



Looking at the overall demographic picture for race for children in Wake County, presented in Figure 29, it is clear that African-American youth are more at risk of a pedestrian crash than other demographics (U.S. Census Bureau 2012).

Figure 29: Under 18 Population Breakdown by Race, Wake County, NC



As mentioned before, crash typing may not capture exactly what happened in a pedestrian crash, but it is useful in terms of gaining a general understanding of what occurred. For child pedestrians in Wake County, the “dash” crash type accounted for the highest number of pedestrian crashes, while parking lot crashes and other crashes away from the roadway also comprised a substantial percentage of crashes (see Table 18). The “dash” and “dart-out” crash types are common for child pedestrians and can be related to impulsive behavior, while parking lot crashes often occur at low speeds and are less severe.

Table 18: Crash Type Frequency

Crash Type	Count	Percentage
Dart/Dash/Fail to Yield	70	33%
Off Roadway/Parking lot/Driveway	37	18%
Backing Vehicle	22	11%
Motorist Turning	17	8%
Other/Unusual Circumstances	16	8%
Play Vehicle or Pedestrian on Vehicle	15	7%
School Bus/Commercial Bus/Vendor Truck related	12	6%
Motorist Going Straight/Fail to Yield	11	5%
Walking Along Roadway	7	3%
Playing/Lying/Walking in Roadway	5	2%
Total	212	100%

Pedestrian Crash Severity

In terms of pedestrian crash severity for all pedestrians, hotspots of fatal and serious injury (Type A) crashes are mostly found within the City of Raleigh, though most municipalities have at least one fatal or serious pedestrian crash injury within the city/town limits between 2007 and 2010. Surprisingly, even the smaller towns in Wake County, including Zebulon and Knightdale, have pedestrian crashes resulting in either a fatality or serious injury. Figure 32, located below, provides a visual representation of this data. The kernel density analysis of fatal and serious injury child pedestrian crashes is not included here, as the crashes are too dispersed across the county to yield any meaningful crash hotspot data.

Overall, fatalities and serious injuries only comprise a relatively small percentage of all pedestrian as well as child pedestrian crashes, accounting for 8.7 percent and 7.1 percent of all pedestrian crashes, respectively. Evident injuries (Type B) and possible injuries (Type C) account for the majority of crashes for children as well as all pedestrians and comprise 80.2 percent and 78.8 percent of injuries for all pedestrians and child pedestrians, respectively. While child pedestrian crashes and all pedestrian crashes are equal in terms of fatality percentages, it seems that fewer child pedestrians are experiencing disabling injuries as a result of pedestrian-motor vehicle crashes. This could be the case for a variety of reasons, though the fact that children are more likely to recover from a serious injury than older adults is a probable explanation. Table 19, Table 20, Figure 30, and Figure 31 are helpful in understanding the how child pedestrians compare to all pedestrians in terms of severity.

Table 19: All Pedestrian Crash Severity, Wake County, NC

Severity	Count	Percentage
Killed	51	4.7%
A Injury	43	4.0%
B Injury	430	39.8%
C Injury	437	40.4%
Property Damage Only	91	8.4%
Unknown	29	2.7%
Total	1081	100.0%

Table 20: Child Pedestrian Crash Severity, Wake County, NC

Severity	Count	Percentage
Killed	10	4.7%
A Injury	5	2.4%
B Injury	96	45.3%
C Injury	71	33.5%
Property Damage Only	27	12.7%
Unknown	3	1.4%
Total	212	100.0%

Figure 30: All Pedestrian Crash Severity, Wake County, NC

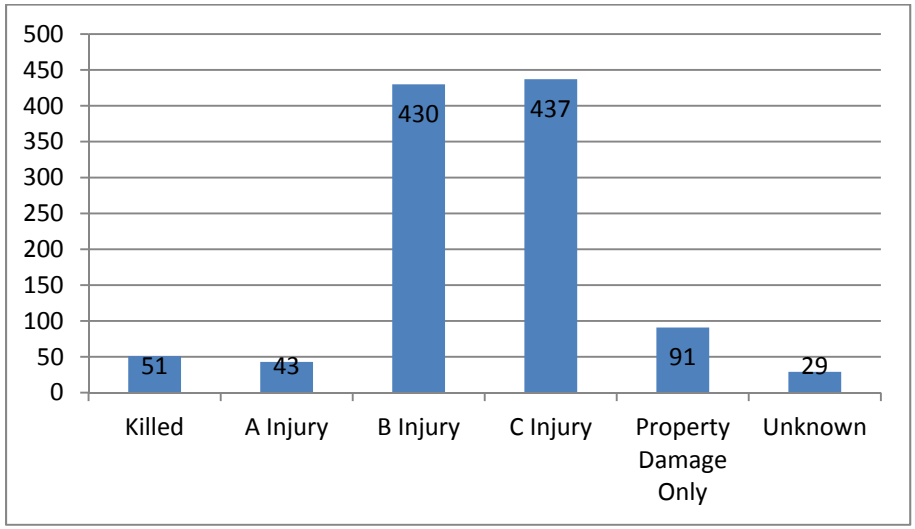
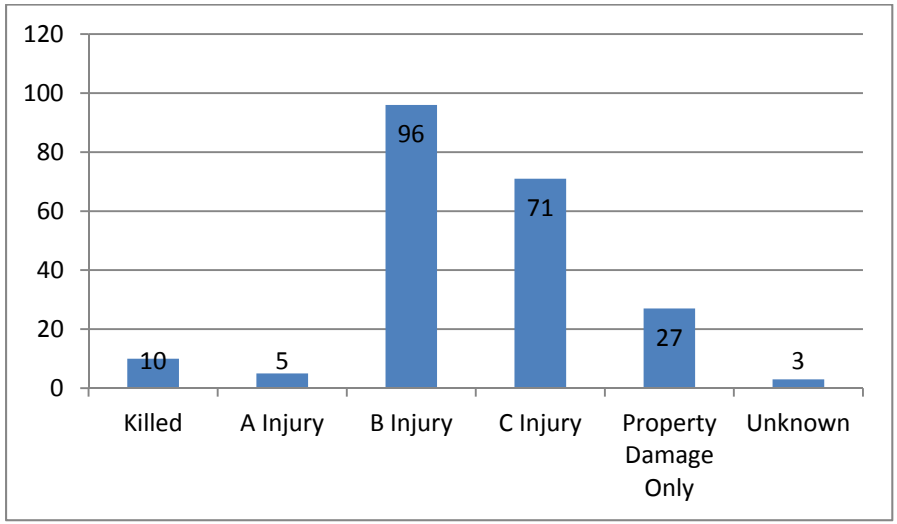


Figure 31: Child Pedestrian Crash Severity, Wake County, NC



Using a process to calculate **the severity index** for crashes taken from a North Carolina Department of Motor Vehicles training course, a severity index was created for the Census Tract geographies in Wake County. Under this process, each fatal and disabling injury pedestrian crash was weighted at 76.8, while evident injury and possible injury crashes were weighted at 8.4 and non-injury crashes were weighted at 1. The severity value for each crash was added together for each Census Tract and then divided by the number of crashes to yield the severity index. The normal severity index for pedestrians in a certain geographical area is 13.4.

Figure 33 presents the Census Tracts in Wake County with pedestrian severity indices of over 13.4. Judging from the map, rural areas tend to have fewer, more severe crashes, possibly due to pedestrians walking on high speed roads. For child pedestrians (see Figure 34), severe crashes tend to occur away from the urban centers, but still within developed areas. These areas might merit an engineering safety evaluation to ensure that pedestrian facilities are present and well-maintained.

Figure 32: Kernel Density Analysis of Killed and Disabling Injuries to All Pedestrians

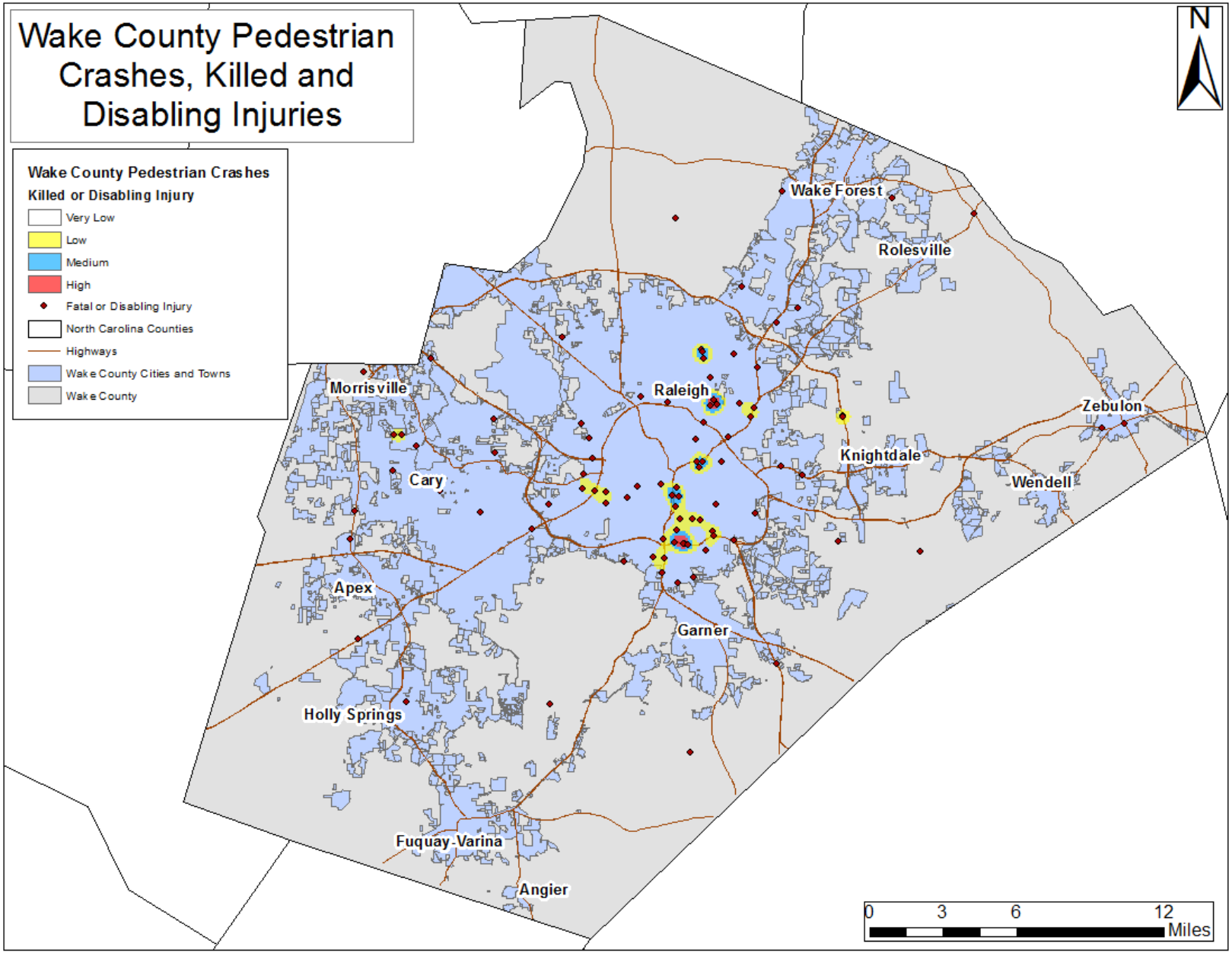


Figure 33: All Pedestrian Crash Severity by Census Tract, Wake County, NC

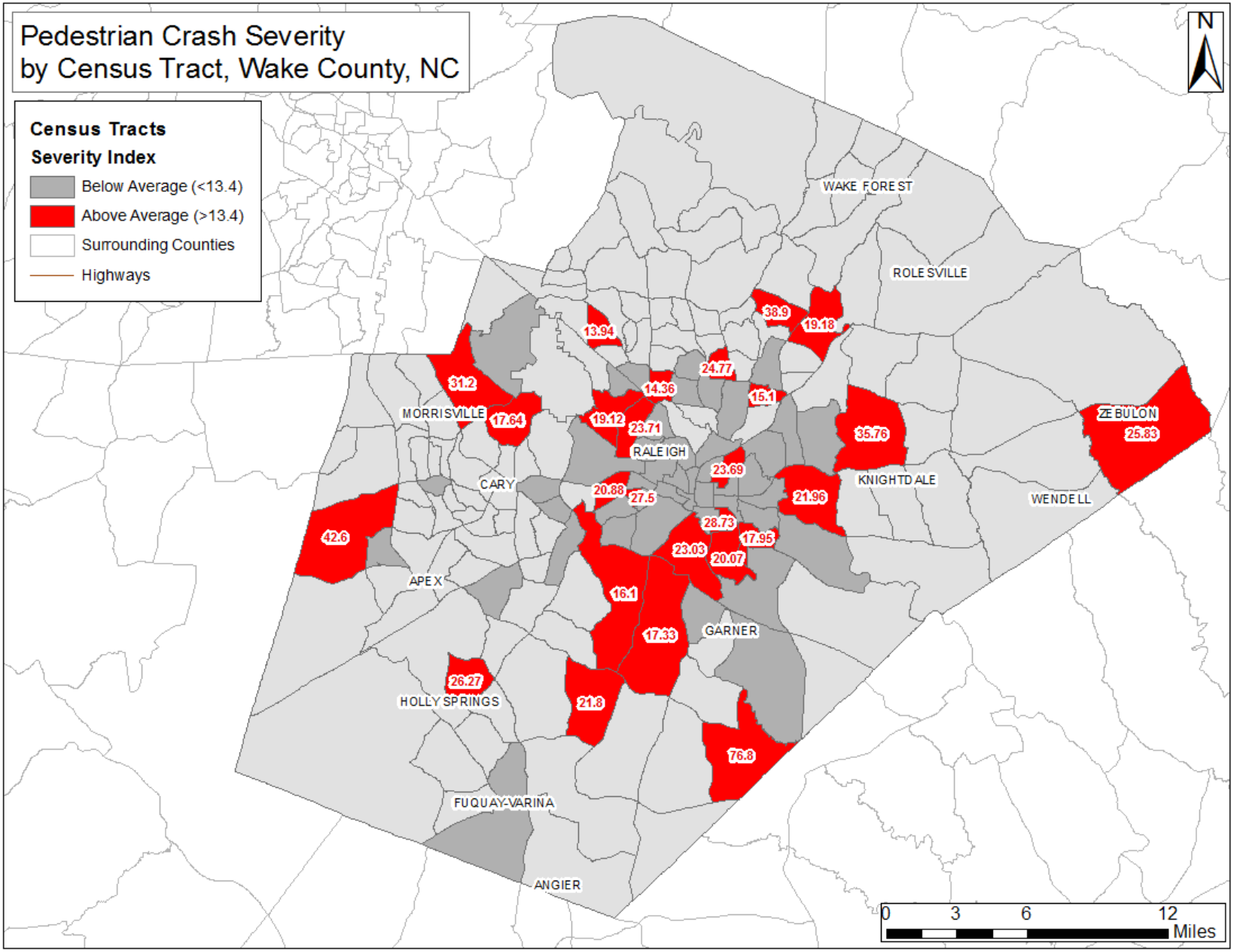
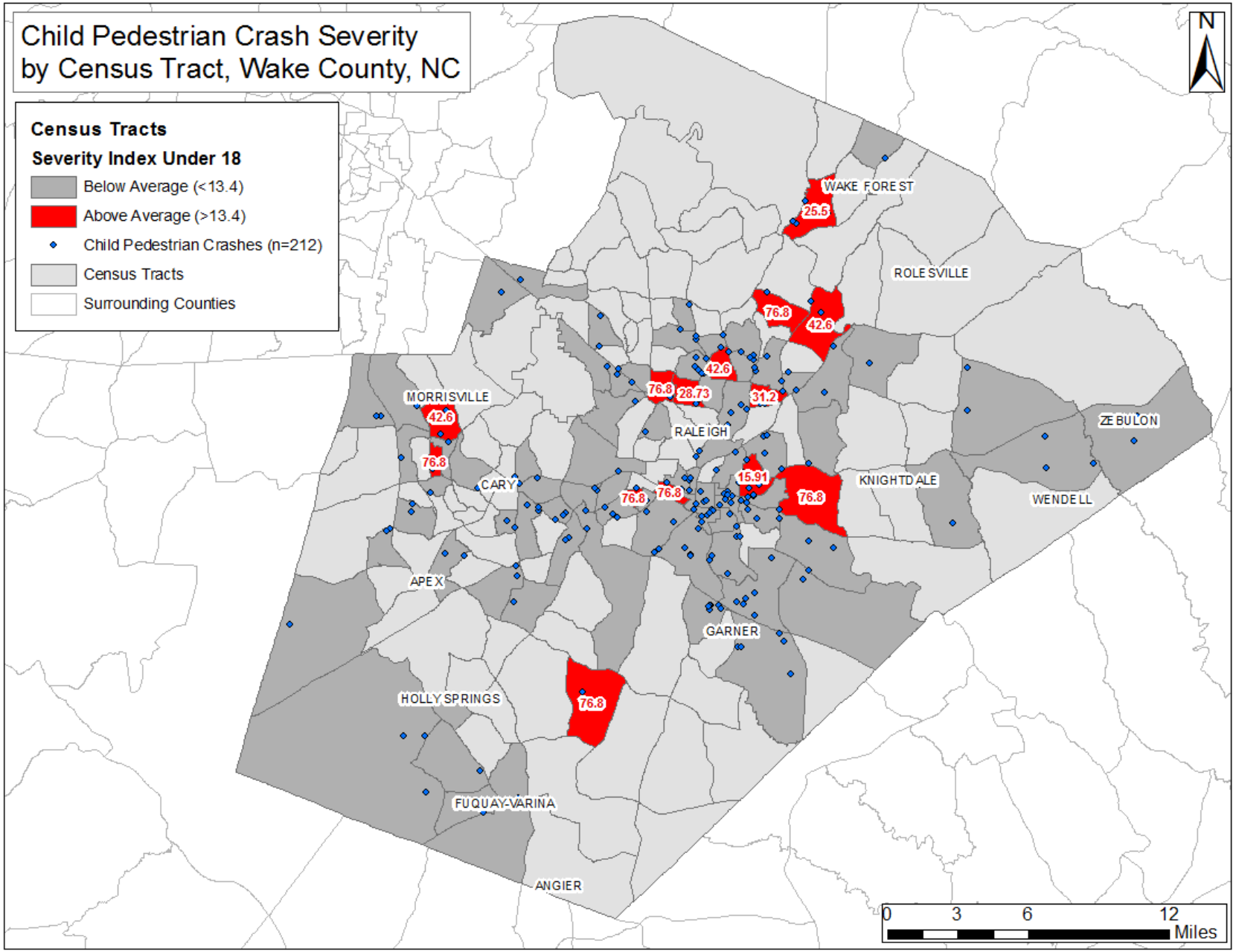


Figure 34: Child Pedestrian Crash Severity by Census Tract, Wake County, NC



Rural/Urban Analysis

As indicated in Table 20, child pedestrian crash severity is very low with only 15 children suffering disabling or fatal injuries as a result of a pedestrian-motor vehicle crash. The severity of crashes by location, i.e. whether the crash occurred with the city limits of one of the towns or cities in Wake County, is examined in Table 21. Based on this table, it is clear that city streets pose the most danger for child pedestrians. Of those crashes that occurred outside the city limits, only one crash resulted in a disabling injury, while no crashes resulted in fatalities. In contrast, within the city limits, 14 crashes resulted in either a fatality or disabling injury.

Table 21: Child Crash Severity Inside and Outside City Limits

Severity	Inside City Limits	Percent	Outside City Limits	Percent
K	10	5.5%	-	0.0%
A	4	2.2%	1	3.3%
B	84	46.2%	12	40.0%
C	58	31.9%	13	43.3%
O	24	13.2%	3	10.0%
U	2	1.1%	1	3.3%
Total	182	100.0%	30	100.0%

Specific Figures, Tables, and Analysis

This section of the report focuses entirely on child pedestrian crashes and the spatial relationship of crash instances to Wake County features, such as schools, hospitals and healthcare facilities, and libraries. Using different geographies, including school districts and police precincts, many of the following figures will identify those areas where policy solutions can be implemented and are likely to have the greatest effect. Wake County police departments and school districts can use this information to create priority areas in which pedestrian safety and particularly the safety of children should be the focus of policy interventions.

Figure 35 displays those school districts with the largest number of child pedestrian crashes with dark green having the fewest and bright red having the most. The number displayed in red font indicates the number of child pedestrian crashes in the district, while the number in the black font indicates the school district number. In this map, those school districts where lots of people are walking, mostly around Raleigh's downtown, have the highest child pedestrian crash totals, while those areas in more rural parts of the county have fewer child pedestrian crashes. Contrasting this map with Figure 36, which provides the severity index by school district, it is clear that more severe child pedestrian crashes are occurring away from downtown Raleigh in more suburban and rural areas of the county.

Figure 35: Child Pedestrian Crashes by School District

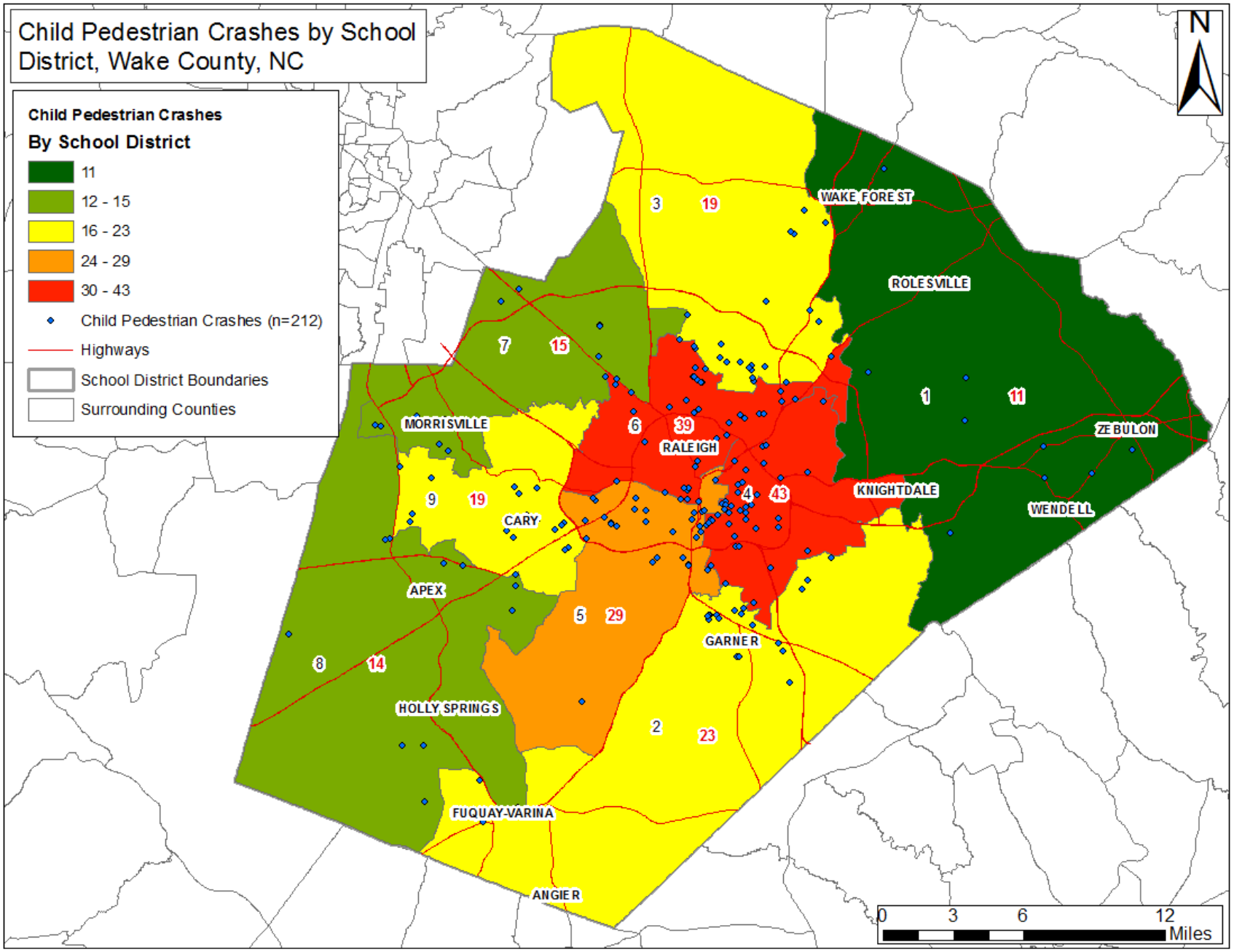
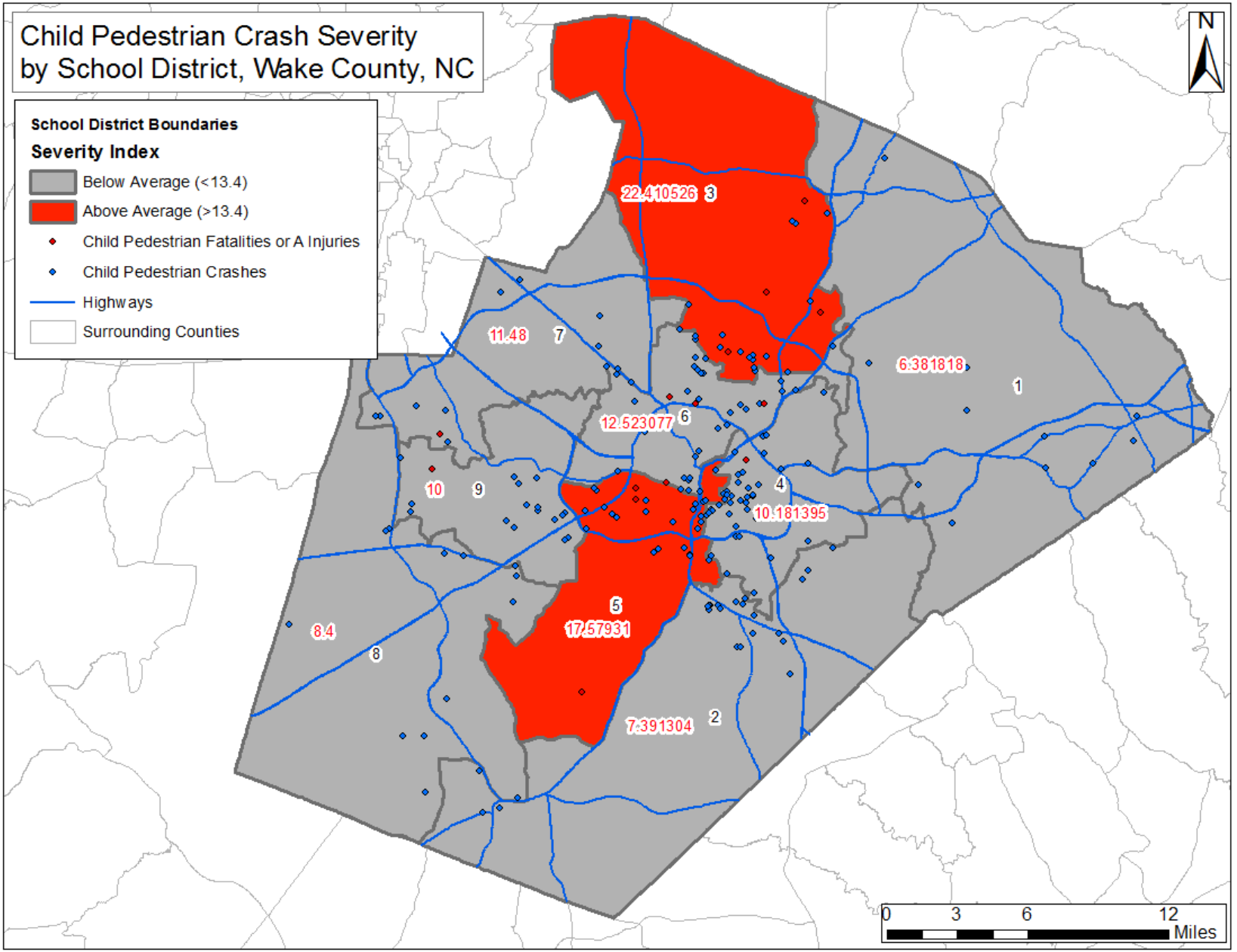


Figure 36: Child Pedestrian Crash Severity Index by School District



Schools

Child pedestrian crashes are likely to occur around areas that generate pedestrians, such as schools, libraries, and in neighborhoods and subdivisions. For Table 22 and, a buffer of 1.5 miles was used around all Wake County schools. This distance is the Walk Zone, or area in which school bus service is not provided to that specific school, as defined by the Wake County School system. Within this area, all the child pedestrian crashes were tallied. Table 22 indicates those schools with tallies of eight child pedestrian crashes or more.

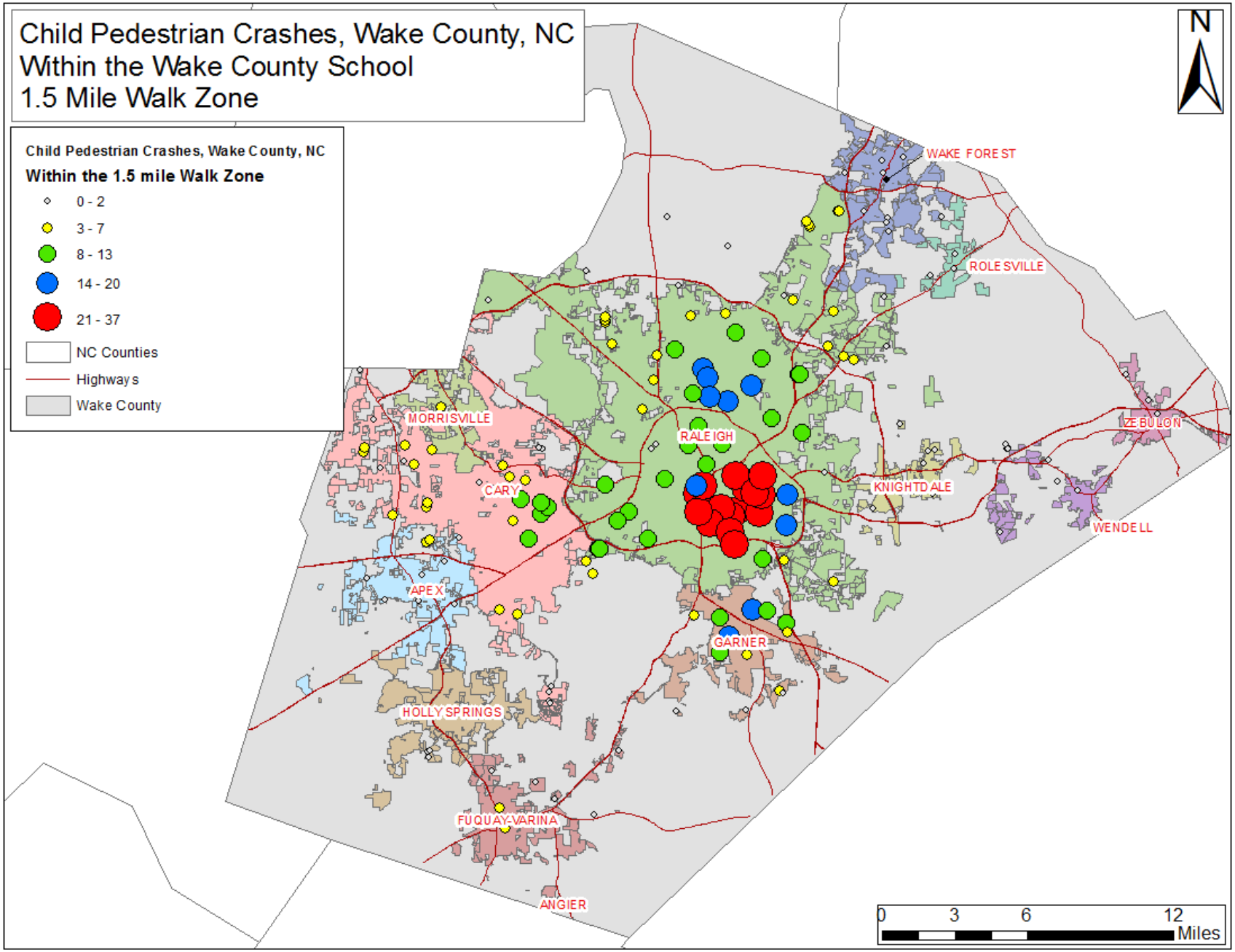
Table 22: Schools with a Child Pedestrian Crash within a 1.5 Mile Buffer, Wake County, NC

School Name	Child Pedestrian Crashes	School ID	Address Number	Street	City	Zip Code
HUNTER ES	37	448	1018	E Davie St	Raleigh	27601
LIGON MS	35	472	706	E Lenoir St	Raleigh	27601
MOORE SQ MUSEUMS MS	34	506	301	S Person St	Raleigh	27601
WASHINGTON ES	30	596	1000	Fayetteville St	Raleigh	27601
CARNAGE MS	30	356	1425	Carnage Dr	Raleigh	27610
MARY E PHILLIPS HS	28	528	1923	Milburnie Rd	Raleigh	27610
POE ES	28	532	400	Peyton St	Raleigh	27610
ENLOE HS	27	412	128	Clarendon Crescent	Raleigh	27610
CONN ES	27	380	1220	Brookside Dr	Raleigh	27604
LONGVIEW	27	324	318	N King Charles Rd	Raleigh	27610
WILEY ES	26	620	301	St Marys St	Raleigh	27605
FULLER ES	26	416	806	Calloway Dr	Raleigh	27610
PROJECT ENLIGHTENMENT	25	332	501	S Boylan Ave	Raleigh	27603
POWELL ES	24	536	1130	Marlborough Rd	Raleigh	27610
PARTNERSHIP ES	24	525	601	Devereux St	Raleigh	27605
BROUGHTON HS	20	348	723	St Marys St	Raleigh	27605
SANDERSON HS	18	552	5500	Dixon Dr	Raleigh	27609
MILLBROOK ES	17	496	1520	E Millbrook Rd	Raleigh	27609
GREEN ES	17	440	5307	Six Forks Rd	Raleigh	27609
WAKE EARLY COLLEGE OF HEALTH AND SCIENCE	17	583	2901	Holston Ln	Raleigh	27610
DOUGLAS ES	16	396	600	Ortega Rd	Raleigh	27609
CARROLL MS	15	360	4520	Six Forks Rd	Raleigh	27609
BUGG ES	14	352	825	Cooper Rd	Raleigh	27610
NORTH GARNER MS	14	512	720	Powell Dr	Garner	27529

School Name	Child Pedestrian Crashes	School ID	Address Number	Street	City	Zip Code
VANDORA SPRINGS ES	14	580	1300	Vandora Springs Rd	Garner	27529
COMBS ES	13	376	2001	Lorimer Rd	Raleigh	27606
ATHENS DRIVE HS	13	318	1420	Athens Dr	Raleigh	27606
BROOKS ES	13	344	700	Northbrook Dr	Raleigh	27609
MILLBROOK HS	12	500	2201	Spring Forest Rd	Raleigh	27615
UNDERWOOD ES	12	572	1614	Glenwood Ave	Raleigh	27608
CARY HS	11	368	638	Walnut St	Cary	27511
ADAMS ES	11	304	805	Cary Towne Blvd	Cary	27511
EAST MILLBROOK MS	11	408	3801	Spring Forest Rd	Raleigh	27616
BRENTWOOD ES	11	336	3426	Ingram Dr	Raleigh	27604
EAST CARY MS	11	402	1111	Maynard Rd	Cary	27511
NORTH RIDGE ES	11	516	7120	Harps Mill Rd	Raleigh	27615
OLDS ES	11	524	204	Dixie Trl	Raleigh	27607
DILLARD DRIVE MS	11	394	5200	Dillard Dr	Raleigh	27606
DILLARD DRIVE ES	11	393	5018	Dillard Dr	Raleigh	27606
SPRING FOREST ROAD MODULAR SITE	11	221	3851	Spring Forest Rd	Raleigh	27616
GARNER HS	11	436	2101	Spring Dr	Garner	27529
LYNN ROAD ES	10	488	1601	Lynn Rd	Raleigh	27612
CENTENNIAL MS	10	370	1900	Main Campus Dr	Raleigh	27606
CREECH ROAD ES	10	384	450	Creech Rd	Garner	27529
WILBURN ES	9	616	3707	Marsh Creek Rd	Raleigh	27604
CARY ES	9	364	400	Kildaire Farm Rd	Cary	27511
MT VERNON SCHOOL	9	508	5418	Chapel Hill Rd	Raleigh	27607
TIMBER DRIVE ES	9	570	1601	Timber Dr	Garner	27529
JOYNER ES	9	456	2300	Lowden St	Raleigh	27608
FARMINGTON WOODS ES	8	414	1413	Hampton Valley Rd	Cary	27511
DANIELS MS	8	388	2816	Oberlin Rd	Raleigh	27608
ROOT ES	8	548	3202	Northampton St	Raleigh	27609
SOUTHEAST RALEIGH HS	8	562	2600	Rock Quarry Rd	Raleigh	27610
EAST GARNER ES	8	403	5545	Jones Sausage Rd	Garner	27529

Figure 37 uses graduated dots to indicate which schools had higher totals of child pedestrian crashes within the 1.5 mile school walk zone. Large red and blue dots represent those schools with larger totals of child pedestrian crashes, while smaller yellow and green dots indicate those schools with lower totals of child pedestrian crashes. Judging from this map, it is clear that a large number of child pedestrian crashes occurred in or near downtown Raleigh. However, it is unlikely that all of these crashes are related to schools in particular.

Figure 37: Child Pedestrian Crashes within 1 Mile of Schools



Libraries

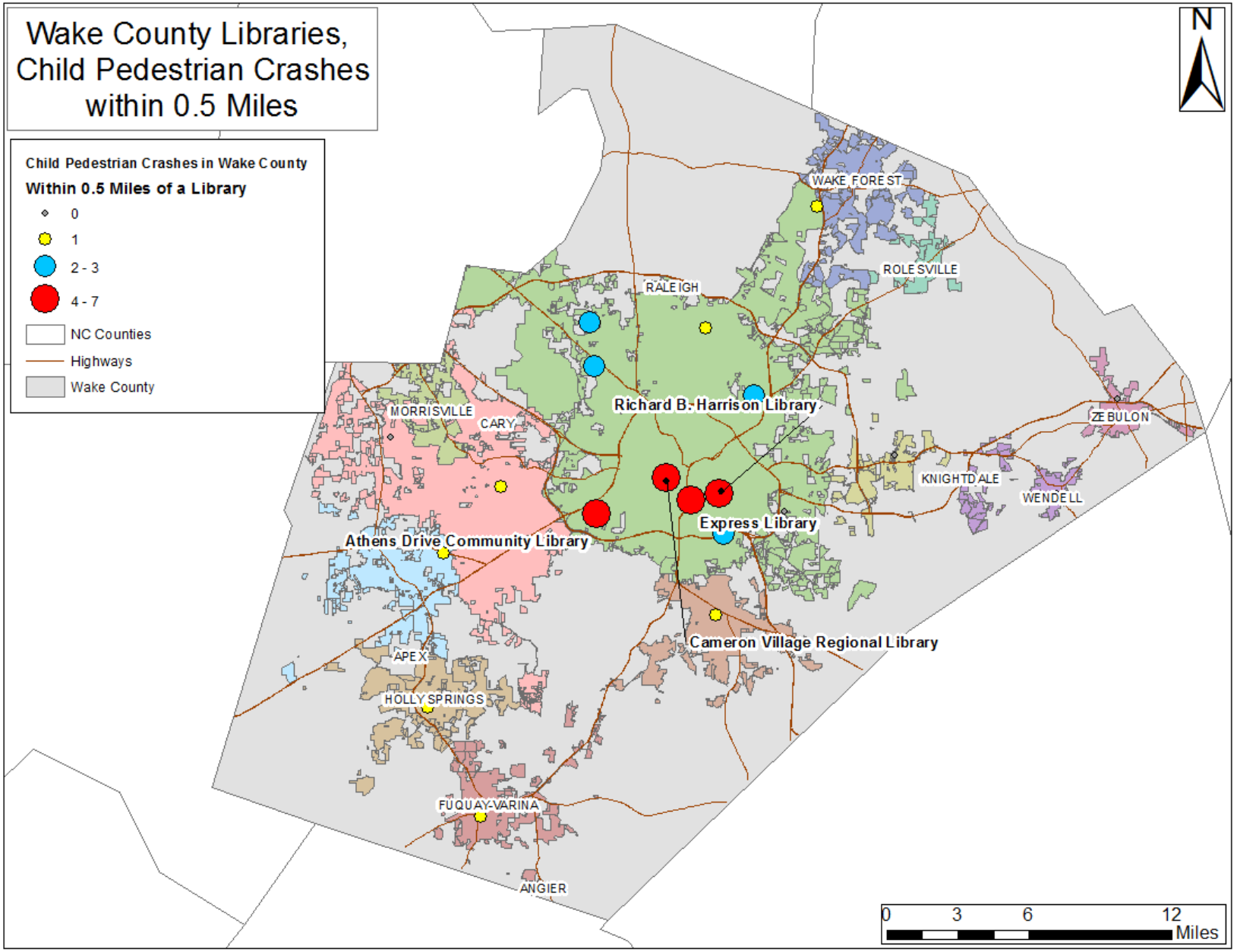
For libraries, a similar analysis was conducted to schools and hospitals, though a ½ mile buffer was used instead of a 1 mile buffer. As with schools, a large number of child pedestrian crashes occurred in areas with high crash numbers, such as downtown Raleigh, though these crashes may not necessarily be attributable to the presence of any one feature necessarily. Table 23 displays those libraries with the highest child pedestrian crash totals with a ½ mile.

Table 23: Child Pedestrian Crashes within ½ Mile of a Library

Library Name	Crash Number
Richard B. Harrison Library	7
Athens Drive Community Library	5
Express Library	5
Cameron Village Regional Library	4
Duraleigh Road Library	3
Southgate Branch Library	3
Leesville Community Library	3
Green Road Library	2
Cary Public Library	1
Eva H. Perry Library	1
South East Regional Library	1
Fuquay-Varina Library	1
Holly Springs Library and Cultural Center	1
North Regional Library	1
Northeast Regional Library	1

Figure 38 illustrates those libraries with the most child pedestrian crashes within a 0.5 mile buffer. As mentioned above, a large number of pedestrian crashes, whether involving children or otherwise, occurred in downtown Raleigh. As such, the large number of child pedestrian crashes around libraries may not be directly related to the presence of a library in the downtown area. However, for libraries away from the downtown, child pedestrian crashes occurring within a ¼ mile of the facility may be directly related.

Figure 38: Child Pedestrian Crashes within 0.5 Miles of a Library



Subdivisions

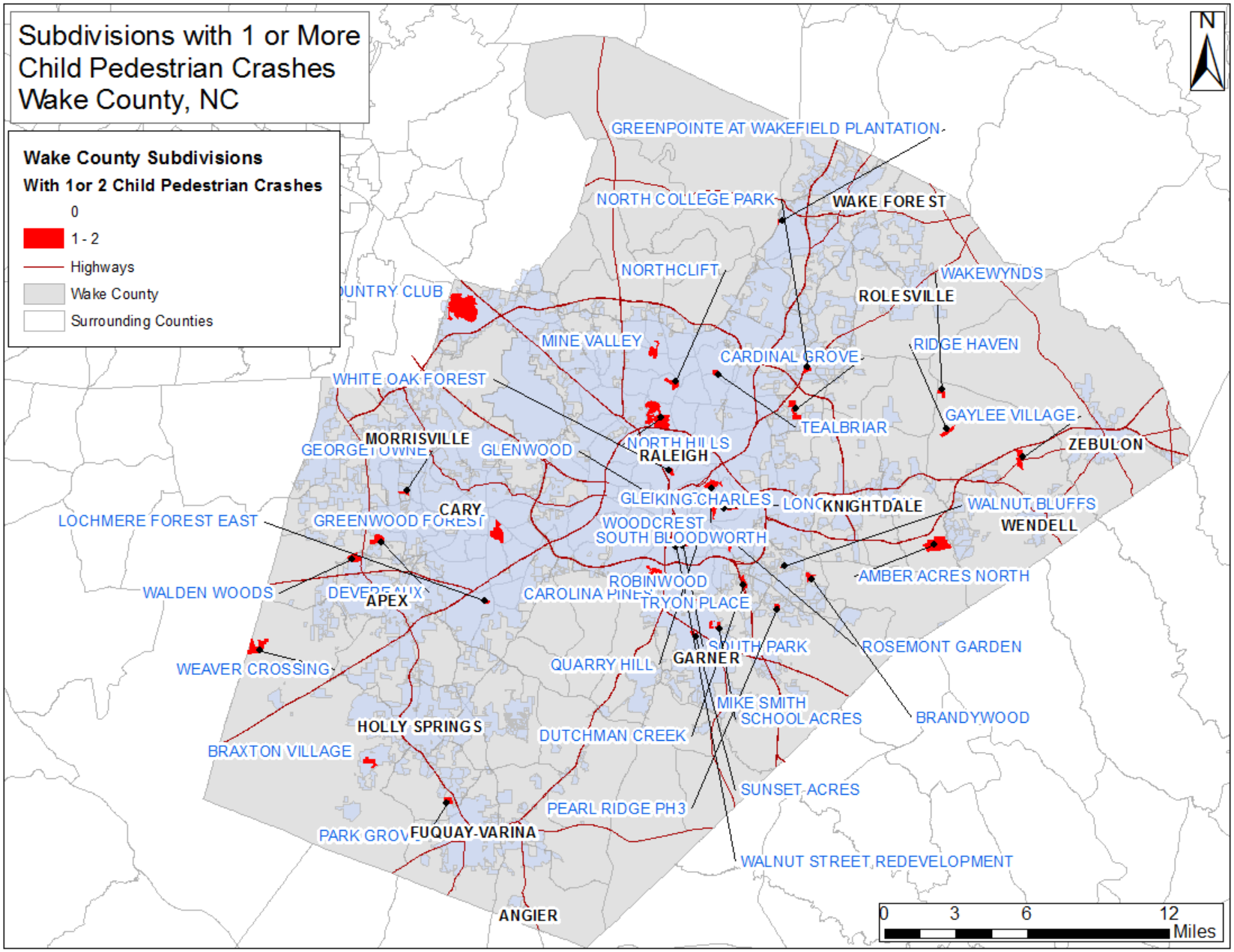
Perhaps surprisingly, child pedestrian crashes occurred relatively infrequently in subdivisions in Wake County between 2007 and 2010. During this time period, only four subdivisions experienced more than one child pedestrian crash and no subdivisions had more than 2 child pedestrian crashes in total. Table 24 provides more detail with regard to which subdivisions had child pedestrian crashes, while Figure 39 provides a graphic representation of this data.

Table 24: Subdivisions in Wake County with One or More Child Pedestrian Crashes

Subdivision Name	Crash Number
ROBINWOOD	2
SUNSET ACRES	2
SCHOOL ACRES	2
NORTH HILLS	2
GREENPOINTE AT WAKEFIELD PLANTATION	1
GAYLEE VILLAGE	1
QUARRY HILL	1
CARDINAL GROVE	1
RIDGE HAVEN	1
ROSEMONT GARDEN	1
KING CHARLES	1
DEVEREAUX	1
MIKE SMITH	1
WALNUT BLUFFS	1
WHITE OAK FOREST	1
WOODCREST	1
BRANDYWOOD	1
PEARL RIDGE PH3	1
BRAXTON VILLAGE	1
CAROLINA PINES	1

Subdivision Name	Crash Number
WAKEWYNDS	1
LOCHMERE FOREST EAST	1
NORTHCLIFT	1
GREENWOOD FOREST	1
BRIER CREEK COUNTRY CLUB	1
WEAVER CROSSING	1
NORTH COLLEGE PARK	1
GEORGETOWNE	1
AMBER ACRES NORTH	1
SOUTH BLOODWORTH	1
PARK GROVE	1
TEALBRIAR	1
TRYON PLACE	1
WALDEN WOODS	1
SOUTH PARK	1
DUTCHMAN CREEK	1
MINE VALLEY	1
GLENWOOD	1
LONGVIEW PARK	1
WALNUT STREET REDEVELOPMENT	1

Figure 39: Subdivisions in Wake County with One or More Child Pedestrian Crashes



Police Precincts

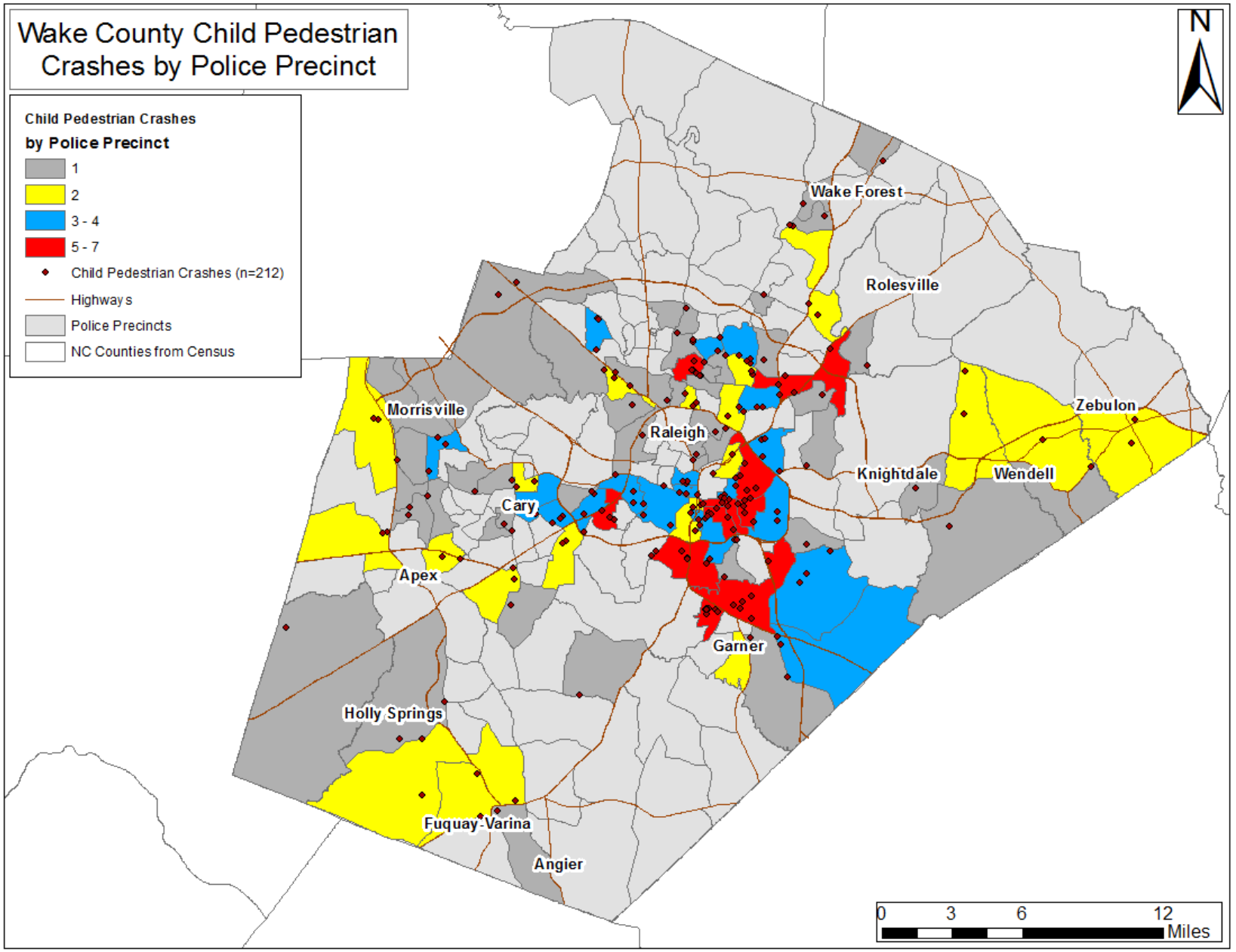
As discussed earlier, most child pedestrian crashes are concentrated in urban and suburban areas and occur infrequently in rural areas, though child pedestrian crashes in rural areas are often more severe. This same trend is clearly presented in Figure 40 with urban and suburban locations such as Raleigh, Garner, Fuquay-Varina, Wendell, and Zebulon experiencing more child pedestrian crashes. Using this analysis, police can identify specific locations in their precincts for extra enforcement and focus on child pedestrian safety as a policy priority. Table 25 provides a detailed listing of police precincts with child pedestrian crashes.

Table 25: Child Pedestrian Crashes by Police Precinct, Wake County, NC

Police Precincts	Number of Child Pedestrian Crashes
01-39	7
16-03	7
01-28	6
01-26	6
01-21	6
16-02	6
13-01	5
01-48	5
01-19	5
01-20	5
01-42	4
17-01	4
01-34	4
01-35	4
08-10	4
01-45	3
01-46	3
05-01	3
01-06	3
04-02	3
01-31	3
01-40	3
01-23	3
01-07	3
01-32	3

Police Precincts	Number of Child Pedestrian Crashes
04-03	3
01-25	3
16-08	3
16-01	3
13-09	2
01-44	2
10-01	2
07-01	2
10-02	2
01-18	2
01-17	2
09-02	2
01-13	2
04-11	2
01-27	2
20-12	2
18-08	2
20-03	2
20-05	2
06-10	2
16-04	2
12-09	2
12-08	2
19-13	2
20-13	2

Figure 40: Child Pedestrian Crashes by Police Precinct



Conclusions

This analysis has provided some data on where child pedestrian crashes occurred in Wake County, North Carolina; what time, day of week, and month the crash occurred; who was involved in child pedestrian crashes; and what relationships, if any, child pedestrian crashes have to schools, libraries, and subdivisions. Using this analysis, policy-makers as well as police departments, schools, and city/town staff can implement strategies to reduce child pedestrian crashes and create safe environments in child pedestrian crash hotspots.

Key Conclusions:

- More than 50 percent of all child pedestrian crashes are children aged 10 to 14.
- Concentrations of child pedestrian crashes occur in downtown Raleigh, North Raleigh, Cary, Garner, and Fuquay-Varina. Normalized by population, Garner has the highest rate of child pedestrian crashes.
- Child pedestrian crashes happen most frequently during the spring and fall months, with March and October having the highest totals.
- Wednesday has the highest total of child pedestrian crashes, while Sunday has the fewest. The hours between 2:00 and 8:00 PM account for the most child pedestrian crashes between 2007 and 2010. Very few pedestrian crashes occur between 10:00 PM and 6:00 AM.
- Male children account for 55 percent and females account for 45 percent of crashes.
- African-American children are overrepresented in terms of child pedestrian crashes. They account for 44 percent of child pedestrian crashes, but only 38 percent of all pedestrian crashes. White children are underrepresented, accounting for 37 percent of all child pedestrian crashes and 46 percent of all crashes.
- “Dash”, “Pedestrian Failed to Yield”, and “Off Roadway” are the most prevalent crash types for child pedestrians.
- Killed and A type injuries account for 7.1 percent of all child pedestrian crashes.
- More severe child pedestrian crashes tend to occur away from major urban centers.

Child pedestrian crashes constitute one fifth of all crashes in Wake County, a substantial percentage. More attention should be paid to creating safe and comfortable facilities and ensuring that good policy solutions are in place to secure the safety of child pedestrians. As a vulnerable population, child pedestrians warrant extra attention in terms of education and enforcement, while engineering solutions should be tailored to accommodate child pedestrians in areas with demonstrated risk or where substantial numbers of children are walking (e.g. around schools).

References

1. U.S. Census Bureau; 2010 Redistricting Data SF (PL 94-171); generated by Max Bushell; using American Factfinder; <www.factfinder2.census.gov>; (4 September 2012).