

WEST SIDE OF CHARLESTON:
DEMOGRAPHIC, HOUSEHOLD,
NEIGHBORHOOD, TRANSPORTATION,
EDUCATION, AND INCOME DATA

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Introduction

The West Side of Charleston, or simply the West Side, consists of approximately 15 square miles of land north of the Kanawha River and west of the Elk River. This includes portions of Census Tracts 1, 2, 3, 5, 6, 7, and 8 (Figure 1). Based on U.S. Census Bureau's 2014 American Community Survey 5-year Estimates, Tracts 1, 2, 3, 5, 6, 7, and 8 includes 16,549 residents, or approximately 33 percent of the total population for the city of Charleston.

Among Charleston residents, this area can be further subdivided into various neighborhoods or communities, the exact boundaries of which are contested among residents, city officials, and revitalization organizations. For example, as part of their Neighborhood Branding Initiative, Charleston's West Side Main Streets organization recognizes 16 distinct Safe Neighborhood Canvassing Zones some of which align with traditional historic West Side neighborhoods (Figure 2). In contrast, Pastor Matthew Watts of HOPE CDC discusses the West Side more broadly and suggests that it roughly consists of five neighborhoods: North Charleston (Census Tracts 1 and 2), Edgewood (Census Tract 2), West Side Hills (Census Tract 6), Garrison Avenue Area (Census Tract 5), and the West Side Flats (Census Tracts 7 and 8) (Figure 3).

Of this broader area, Census Tracts 1, 7, and 8 represent the geographical, and cultural, center of the West Side and is the focus of various revitalization and safety initiatives spearheaded by organizations such as HOPE CDC, Keep Your Faith Corporation, West Side Main Street, West Side Neighborhood Association, and the Charleston Urban Renewal Authority (CURA), among others. For the purpose of this project, the term 'West Side' is restricted to communities within the seven Block Groups nested within Census Tracts 1, 7, and 8 (Figure 4). This includes parcels bordered by Washington St. to the north, the Kanawha River to the south, Keller Dr. to the west, and the Elk River to the east. By this definition, the West Side includes what HOPE CDC refers to as portions of the North Charleston and West Side Flats neighborhoods and corresponds to West Side Main Street's Safe Neighborhood Canvassing Zones 5, 6, 7, 8, 9, 13, 14, 15, and 16.

Various sources were used to generate demographic, household, economic, neighborhood, educational, and city infrastructure data for the West Side, the City of Charleston as a whole, and the State of West Virginia. Much of the initial compilation of data and early mapping for this project was conducted by the Federal Reserve Bank of Richmond's Community Development Department¹. Unless otherwise noted, all data presented in this documented, including mapped

¹ All data provided by the Federal Reserve was from publically assessable sources. Any views expressed by West Virginia University in the report are not those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

data, has derived from the U.S. Census Bureau’s 2014 American Community Survey 5-year Estimates. As discussed below, the emergent profile of the West Side illustrates its unique character and points of departure from the remaining Charleston neighborhoods, as well as the state of West Virginia.

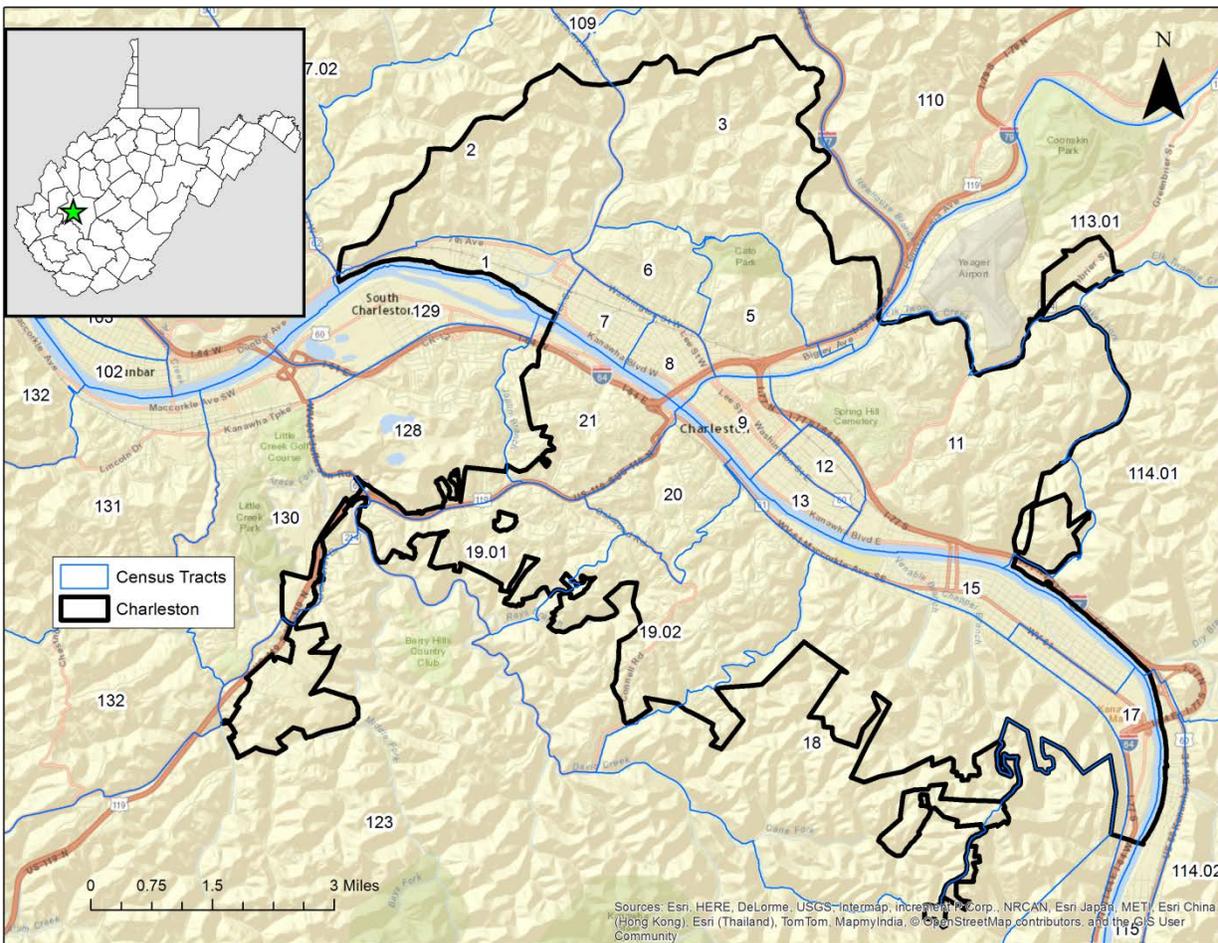


Figure 1. General view of Charleston showing Census Tract boundaries

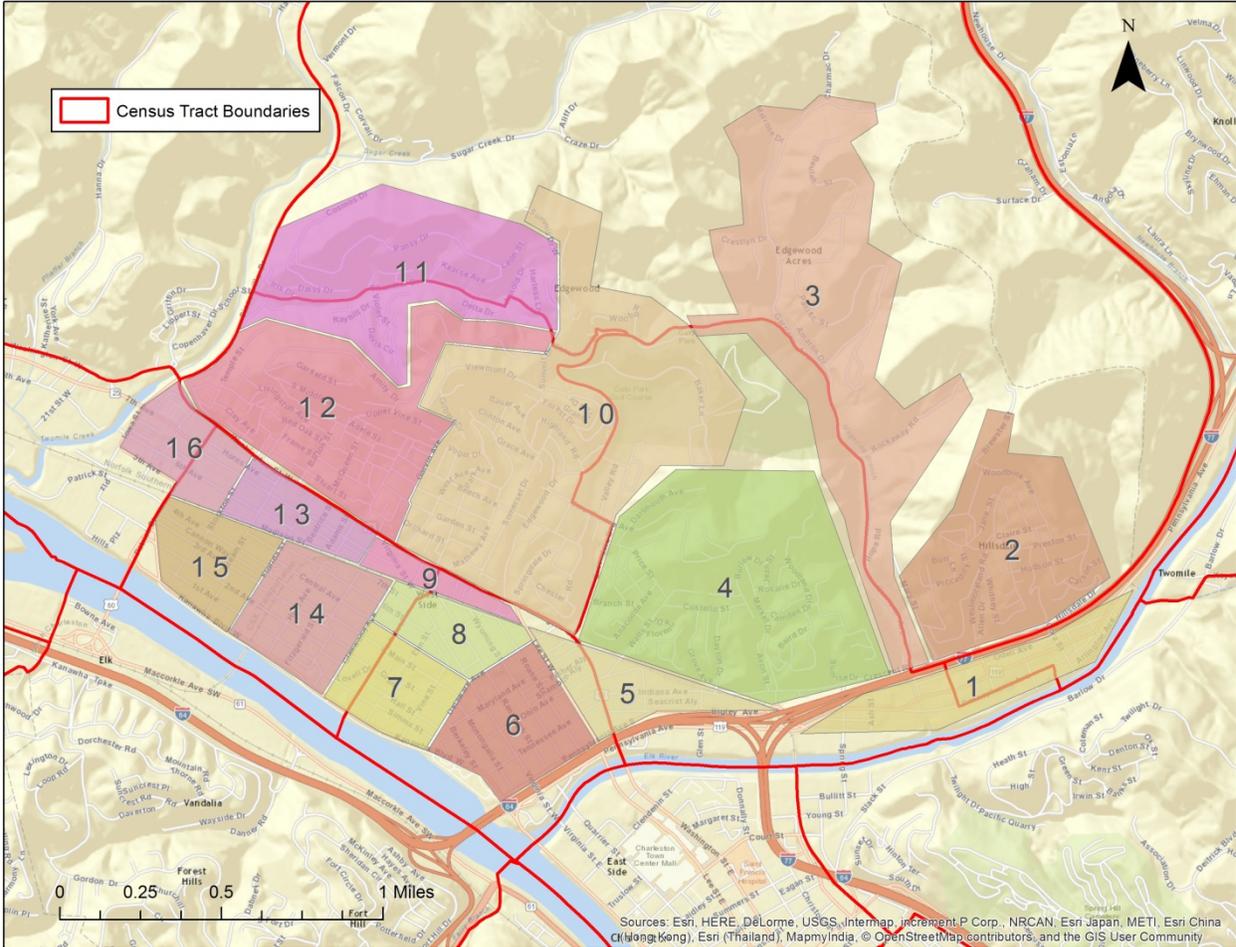


Figure 2. Shaded, numbered, areas represent *safe neighborhood canvassing zones* as designated by the Charleston Main Streets organization

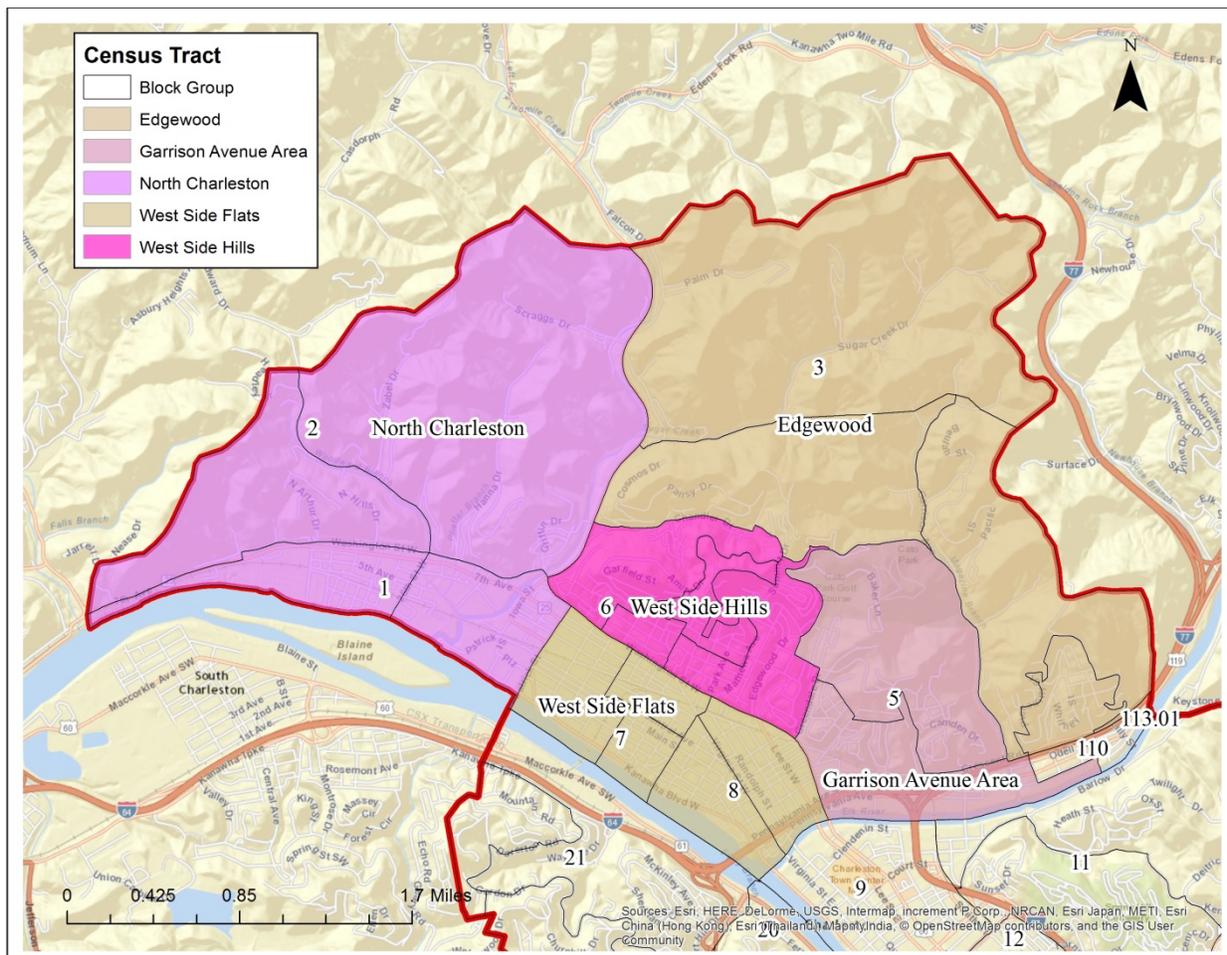


Figure 3. West Side of Charleston neighborhood boundaries as defined by HOPE CDC.

Demographic Trends

Of Charleston's 50,911 residents, 4779, or 9%, live in West Side communities (Figure 5). Demographic data for West Side indicates a population consisting of a substantial African-American and mixed-race population (27.4% and 18%, respectively), a slightly higher ratio of females to males (53% to 47%, respectively), and a roughly uniform age profile with the possible exception of the 'children under 5 years of age' category which is slightly over-represented in West Side (Figure 6). A second view of the Charleston age profile is presented geographically in Figures 7 through 10. These figures display Charleston residents grouped into four age brackets (0-21; 21-44; 45-64; and 65+). One interesting trend can be seen in Block Group 3 of Census Tract 7 where a low population base is characterized by a comparatively high proportion of elderly citizens (19% of the block population). This area represents one of the largest geographic concentrations of elderly citizens, as measured in block units, found anywhere in the city.

As mentioned, the West Side appears more racially diverse than other parts of the city or regions of the state. Although Charleston is predominately white (81%), the West Side has a substantial African-American population that accounts for 25% of the population in Census Tracts 1, 7, and 8 (Figure 11). The West Side also contains a relatively high percentage (19.3%) of people that self-identified as 'mixed race' (two or more races) (Figure 12). The mixed-race proportion for the West Side especially is notable given the low percentages reported for the city as a whole (6.6%) and the state of West Virginia (2%).

To statistically test this apparent pattern, a *two proportion Z-test* was calculated comparing the relative proportions of African-American, white, and mixed race percentages between the West Side and Charleston². Test results were significant (*Pearson* $\chi^2 = 4604.261$, *df* = 2, *p* < 0.001) which indicates that the West Side has a statistically significant clustering of African-American and mixed-race populations when compared to the remainder of the city.

² In cases of statistical tests calculated as part of this research, "West Side" was defined as Census Blocks 1, 7, and 8; whereas "Charleston" was defined as all city areas excluding Census Blocks 1, 7, 8 (e.g., Charleston excluding the West Side). This approach differs from other sections of this report where discussion of "Charleston" typically includes all Census Blocks within city limits.

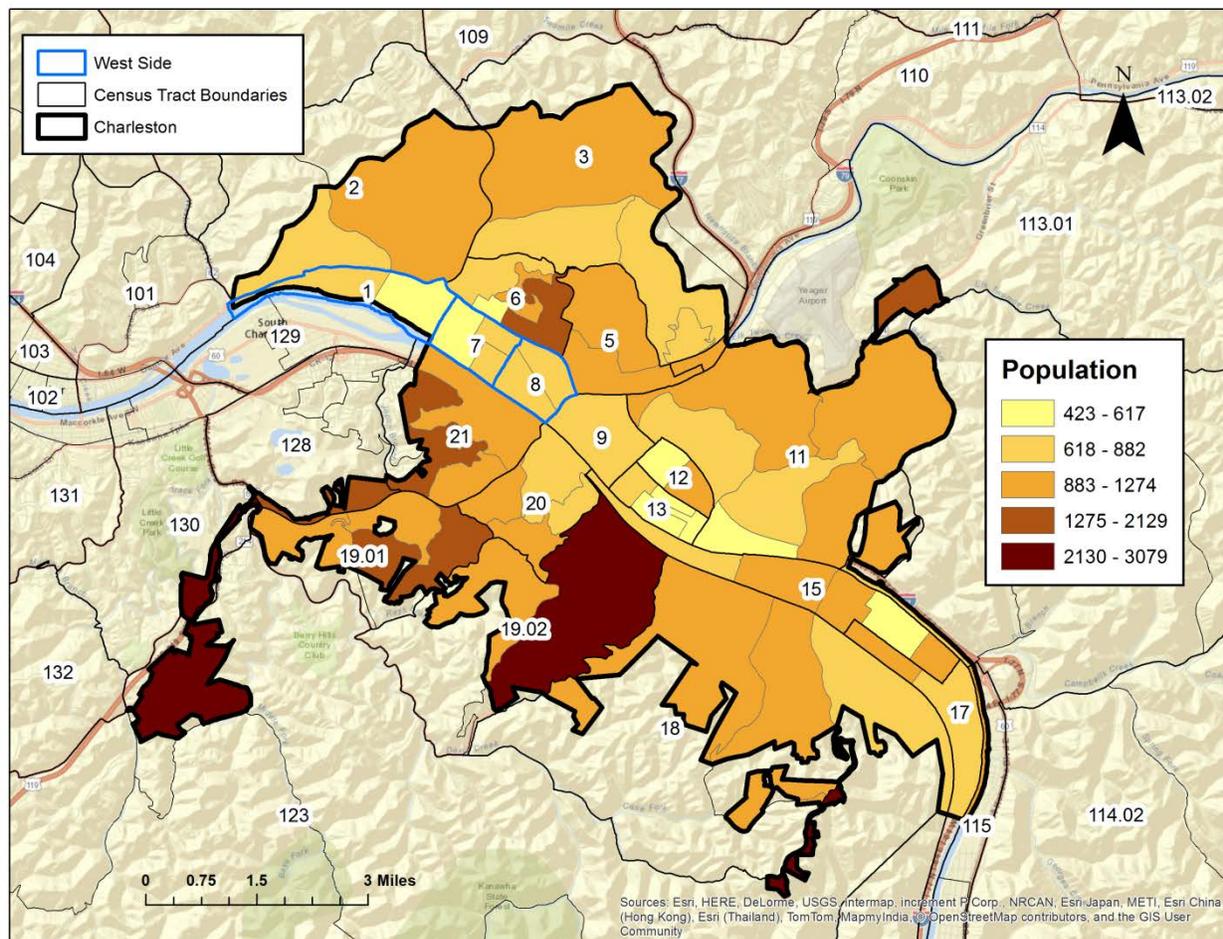


Figure 5. Total population density of the City of Charleston, by Block Group

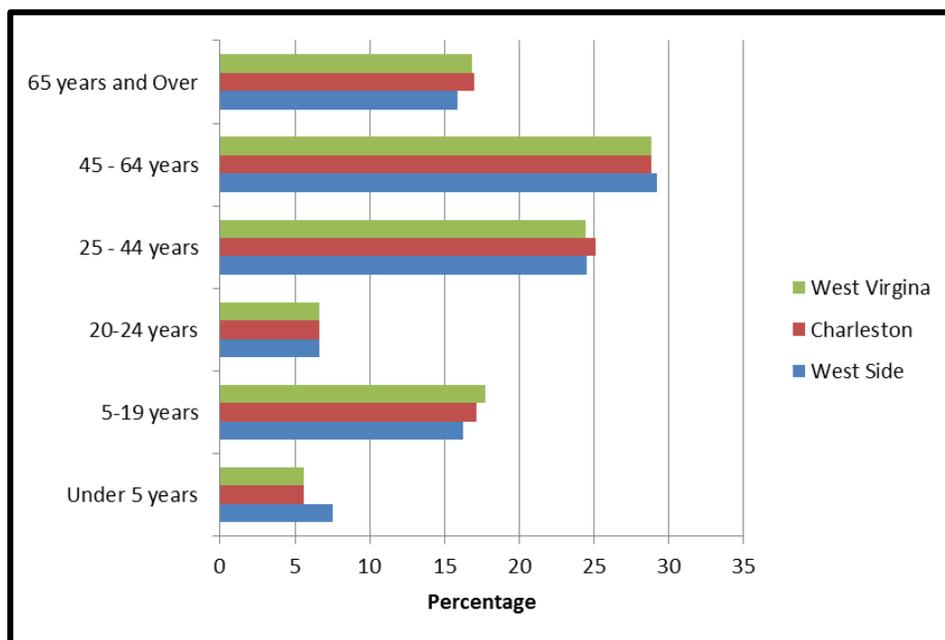


Figure 6. Age profile comparison for West Virginia, Charleston, and West Side

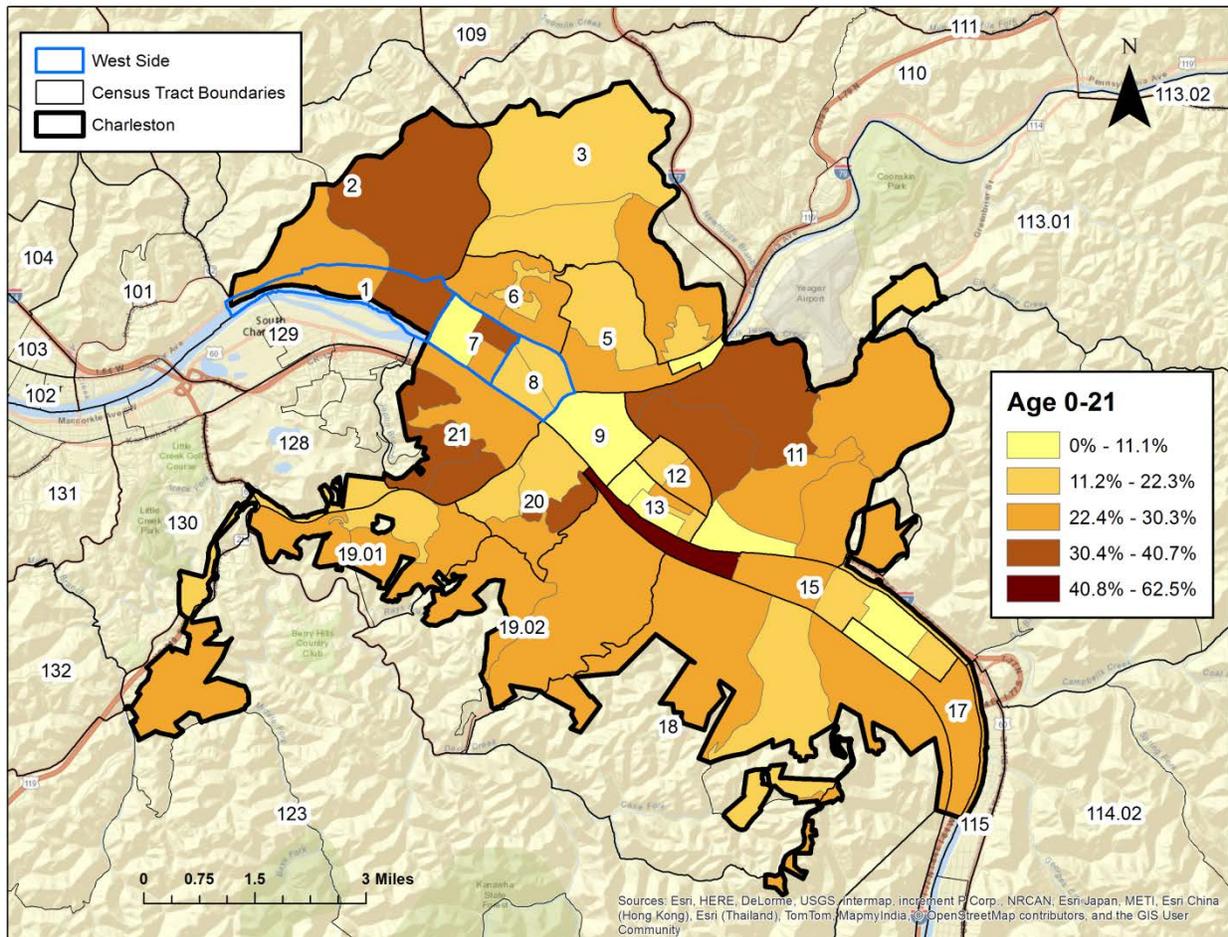


Figure 7. Population density and distribution of Charleston residents between the ages of birth and 21, by Block Group.

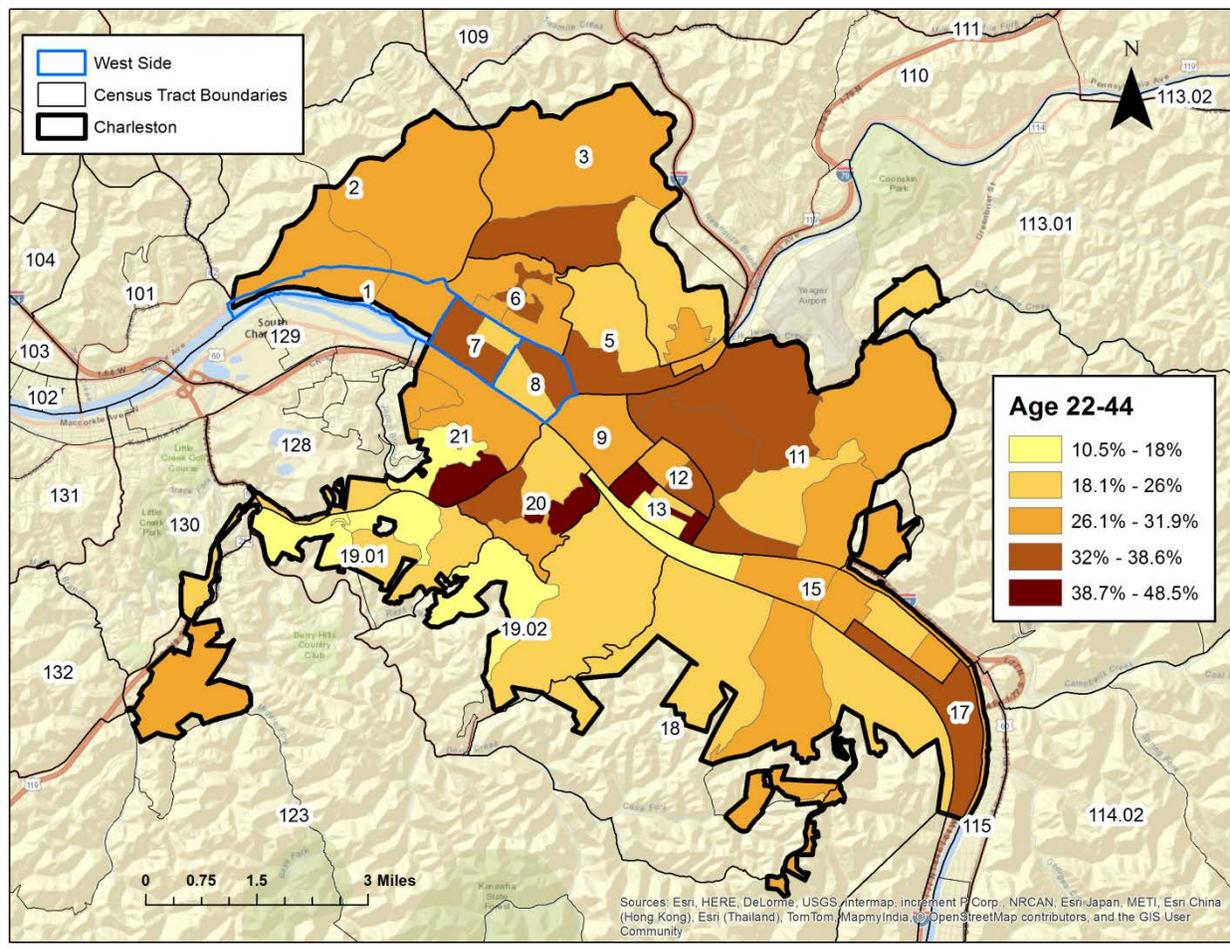


Figure 8. Population density and distribution of Charleston residents between the ages of 22 and 44, by Block Group

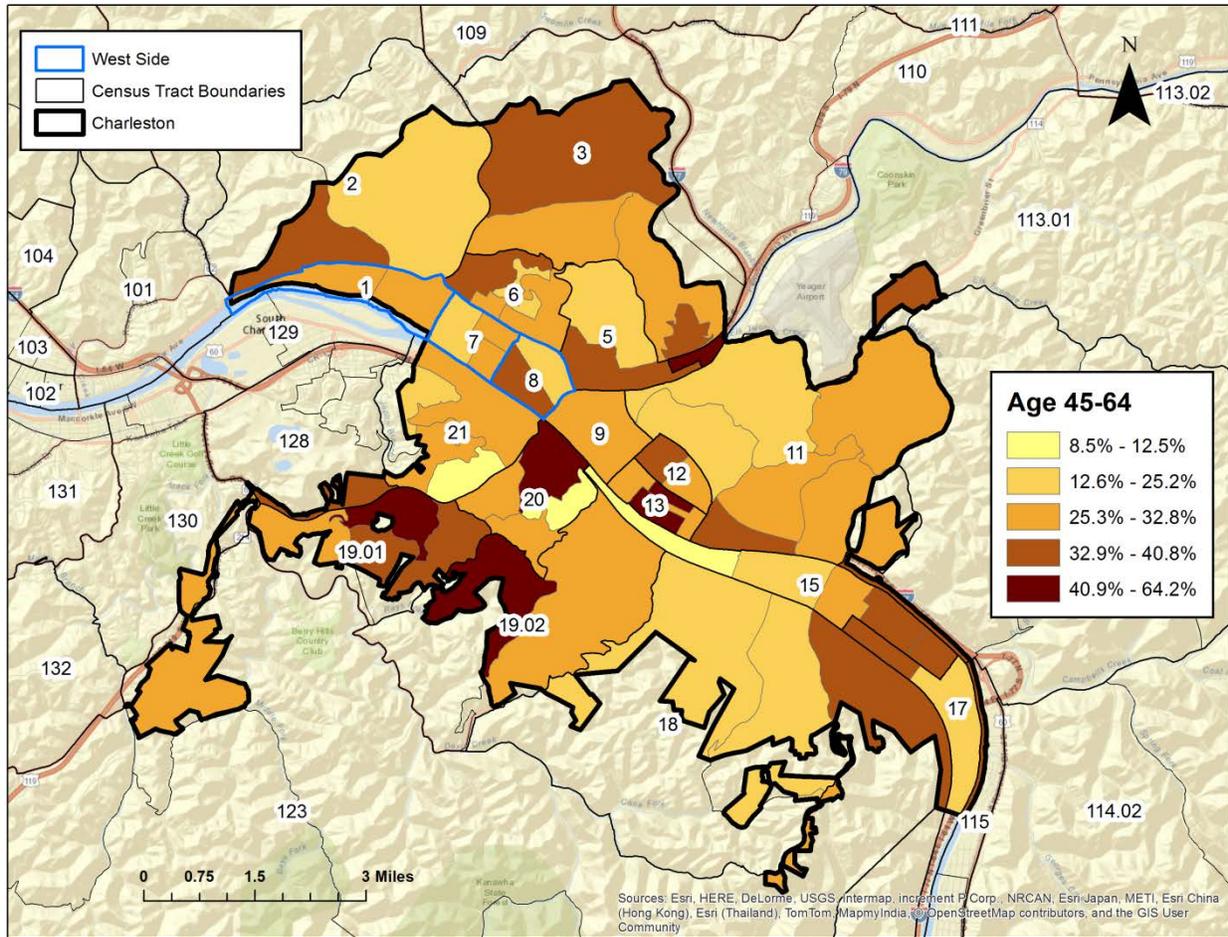


Figure 9. Population density and distribution of Charleston residents between the ages of 45 and 64, by Block Group

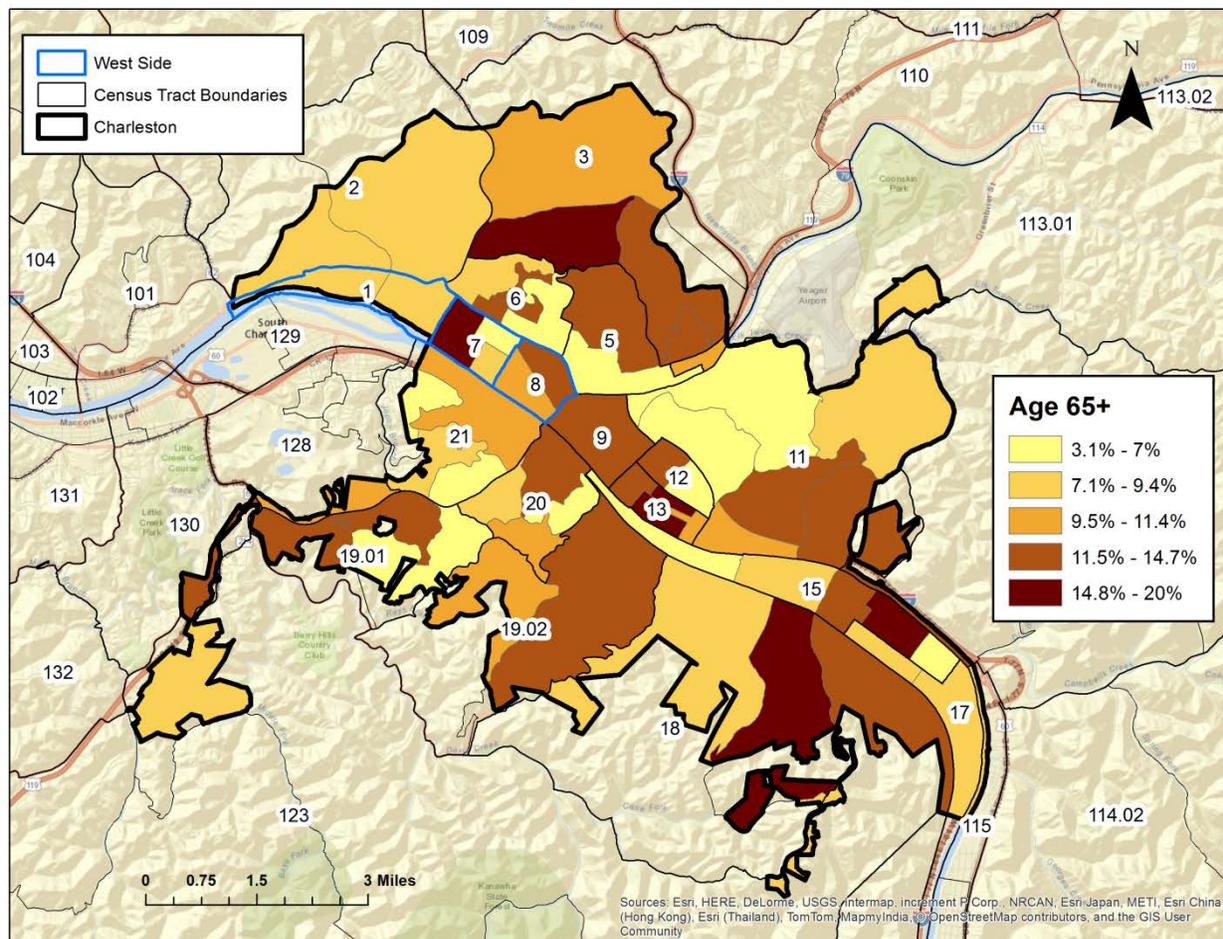


Figure 10. Population density and distribution of Charleston residents above the age of 65, by Block Group

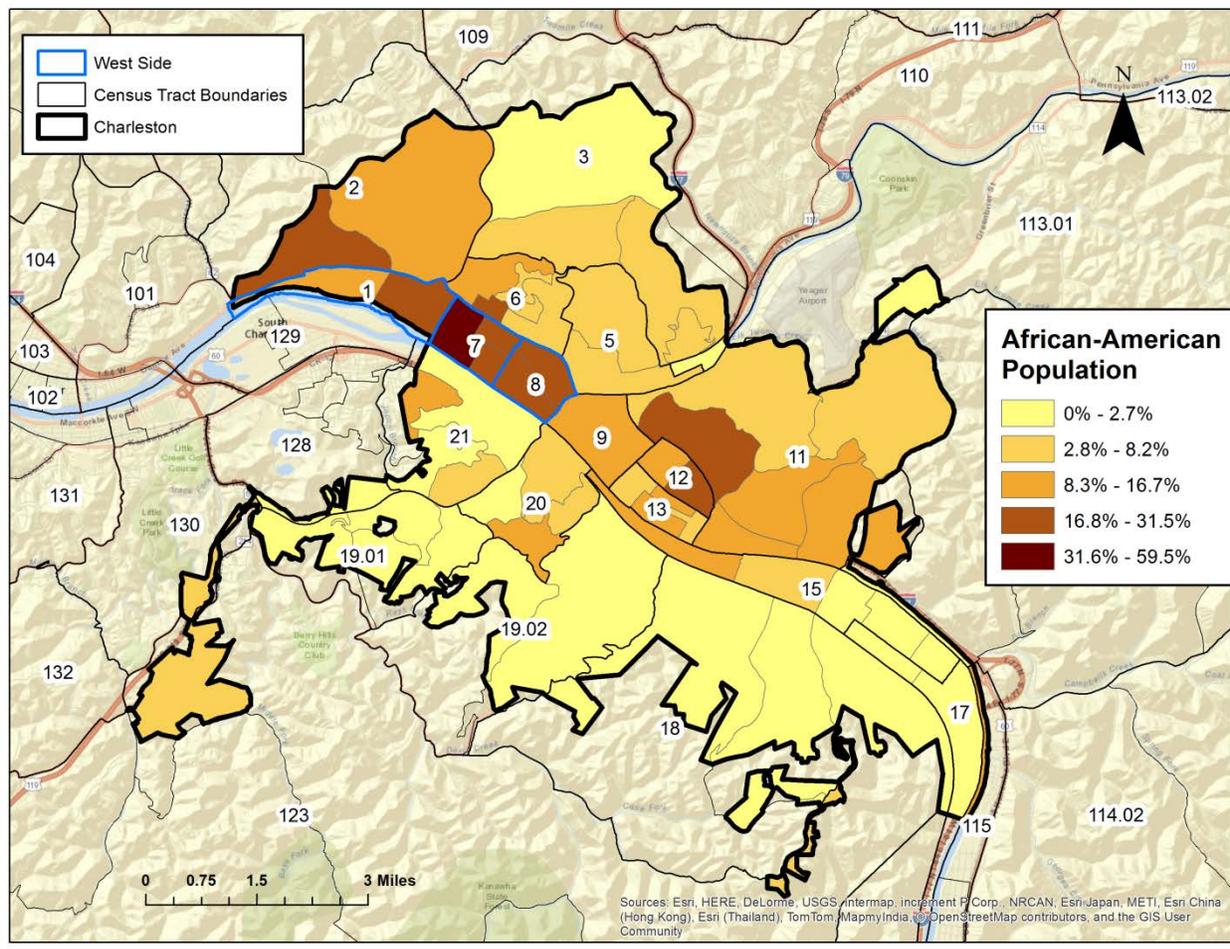


Figure 11. Distribution of Charleston residents self-identified as “African-American”, by Block Group

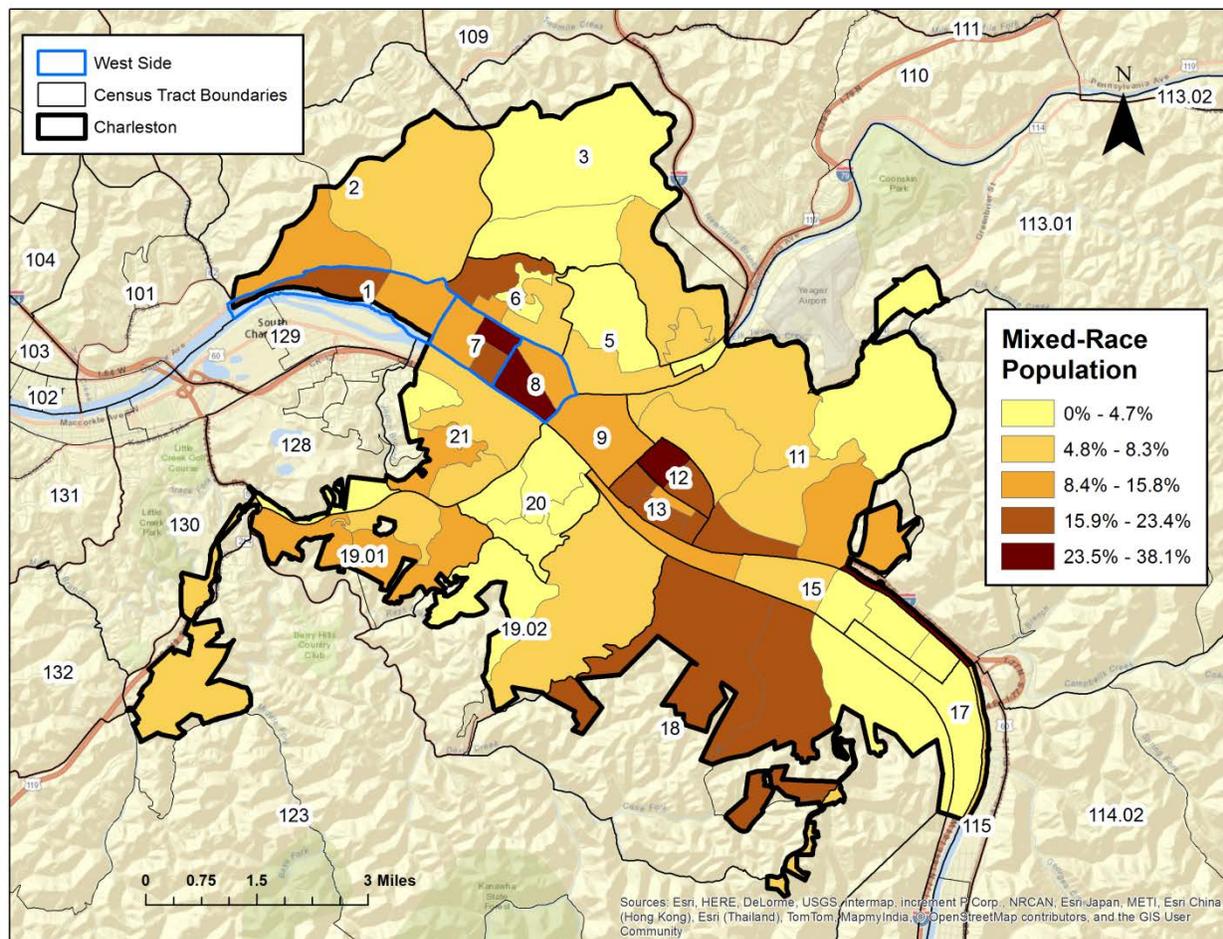


Figure 12. Distribution of Charleston residents self-identified as “Mixed-Race”, by Block Group

Education Trends

To characterize various trends in education achievement, data was collected on middle and high school proficiency scores, high school diploma obtainment rates and geographic distribution patterns, and undergraduate college diploma obtainment rates. Figure 13 shows the location of middle and high schools in the Kanawha County school district. The results of reading and math proficiency scores for both middle and high school attendance zones in the Kanawha County school district are shown in Figures 14 and 15. West Side students attend Stonewall Jackson Middle School and Capital High School. Regarding the 2012-13 middle school proficiency rates, Stonewall Jackson students ranked low in both reading (43.0%) and math (38.3%) proficiency rates when compared to the combined middle and high school proficiency rates for the entire Kanawha County school district (reading, 51.0%; math, 46.1%), as well as state-level rates (reading, 47.2%; math, 42.0%).

Student proficiency rates at Capital High School are more mixed concerning achievement levels when compared to district-level and state-level trends (Figure 15). Reading rates at Capital (50.9%) are identical to district-wide rates (51%) and actually slightly exceed state-level rates (47.2%). Math rates at Capital (40.2%), however, are lower than both district-level (46.1%) or state-level (42.0%) trends.

Figure 16 displays the proportion of residents over the age of 25 that obtained a high school diploma or GED equivalent. The proportion of West Side residents with high school diplomas (72.6%) is only slightly lower than the city-wide percentage (Charleston, 74.9%), but is significantly lower than state-wide levels (West Virginia, 84.4%). Although the percentage difference between the West Side and Charleston as a whole is slight, calculation of a *two proportion Z-test* comparing the West Side and Charleston indicate a significant difference (*Pearson* $\chi^2 = 6.244$, $df = 1$, $p = 0.013$). This result suggests that West Side residents, on average, obtain their diploma at a slightly lower rate than neighboring Charleston residents.

Geographic trends are quite variable across Charleston when the proportions of diploma obtainment are measured against population density. One interesting aspect of these data is the high proportion of West Side residents that have obtained a high school diploma in Block Group 3 of Census Tract 7 (>90%). It is suggested here that this high proportion reflects the fact that this neighborhood is characterized by a substantial elderly population (65+ years of age, see Figure 10) who likely placed a premium on obtaining at least a high school education.

A second way to visualize this data is presented in Figure 17. Here, diploma obtainment was analyzed in ArcMap 10.1 using the Getis-Ord G_i^* statistic to determine if geographical

clustering of high (hot) or low (cold) diploma obtainment rates could be identified. In other words, the Getis-Ord G_i^* statistic helped identify areas within Charleston that have an unusually high, or low, geographic concentration of people with a high school education. As seen in Figure 17, the West Side shows no significant clustering which can be interpreted to mean that no strong geographic trend in the concentration of people with a high school diploma is present in this part of Charleston. A central grouping of Census Tracts (12, 13, 20), however, is characterized by “cold spots” which indicates a lower-than-expected concentration of people with high school diplomas. These Census Tracts also contain high African-American and mixed-race population centers (Figures 11 and 12). Finally, portions of Census Tracts 123 and 130 were identified as having higher-than-expected concentration of people with high school diplomas. These “hot spot” results, which border the city edge, are difficult to fully evaluate due to the potential that the Getis-Ord G_i^* statistic may have been biased due to a lack of neighbors from which the statistic is calculated (Sullivan and Unwin 2010:221).

Figure 18 illustrates the percentage of Charleston citizens that obtained an undergraduate college degree, either a 2-year associates or 4-year bachelors. The proportion of West Side residents that have obtained an undergraduate degree (12.5%) is substantially lower than both the city-wide percentage (Charleston, 24%) and, less so, the state-wide percentage (West Virginia, 19%). Only Block Group 2 of Census Tract 8 is characterized by a relatively high proportion of residents (29%) with an undergraduate degree. In general, this perceived relationship was confirmed as being significant through a *two proportion Z-test* comparing the West Side and Charleston degree rates (*Pearson* $\chi^2 = 302.511$, $df = 1$, $p < 0.001$).

Unlike the geographically non-clustered, or non-patterned, distribution of residents with high school diplomas, Charleston is characterized by strong spatial patterning of residents with undergraduate degrees (Figure 18). Areas south of the Kanawha River, especially Census Tracts 18, 19.01, 19.02, 20, and 21, have high proportions of college educated residents, whereas the opposite holds true for residents in areas north of the Kanawha River and west of Elk River. As discussed below, high rates of college diploma obtainment, when mapped by Block Group, positively correlates to areas of high median income levels.

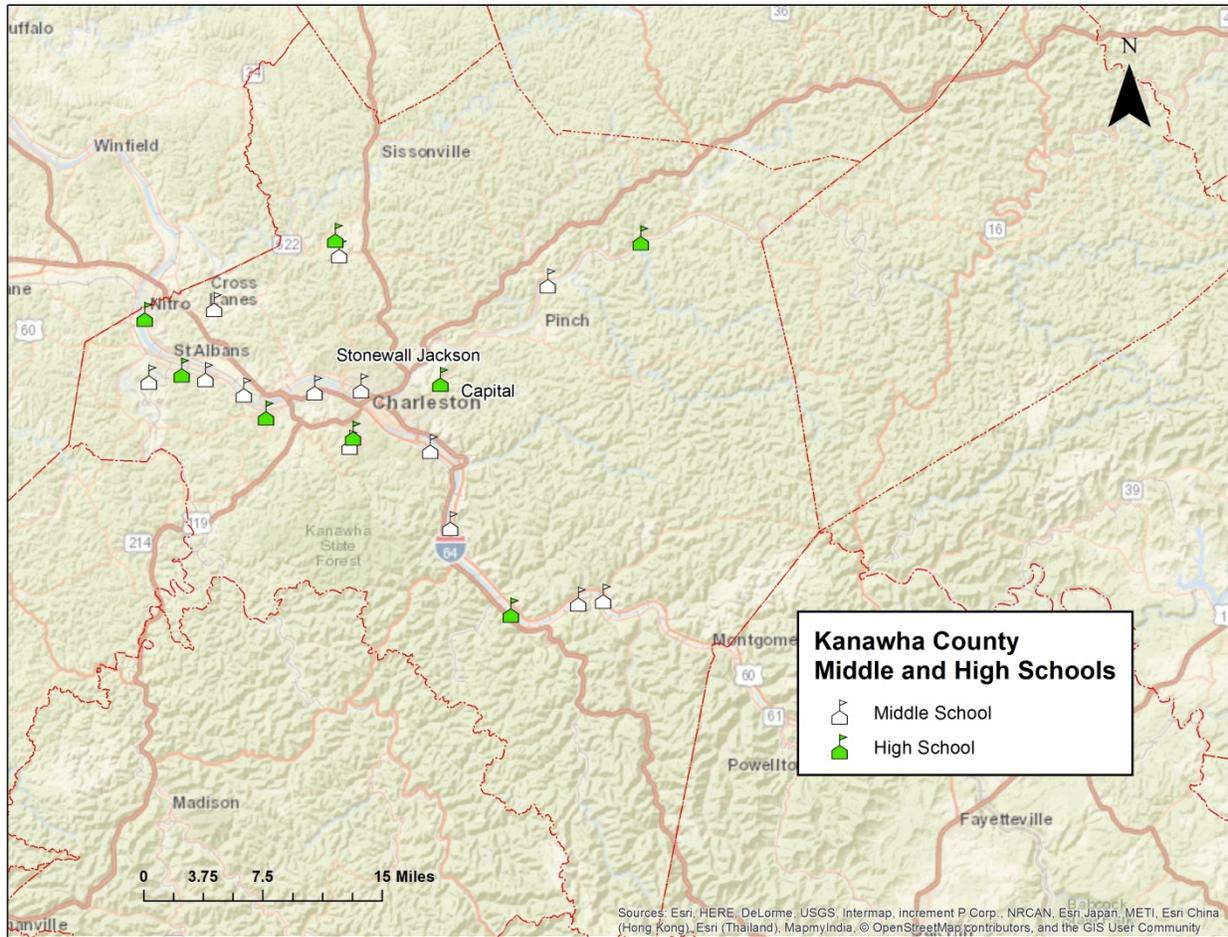


Figure 13. Location of middle and high schools within the Kanawha County school district. Stonewall Jackson Middle School and Capital High School are labeled and discussed in text.

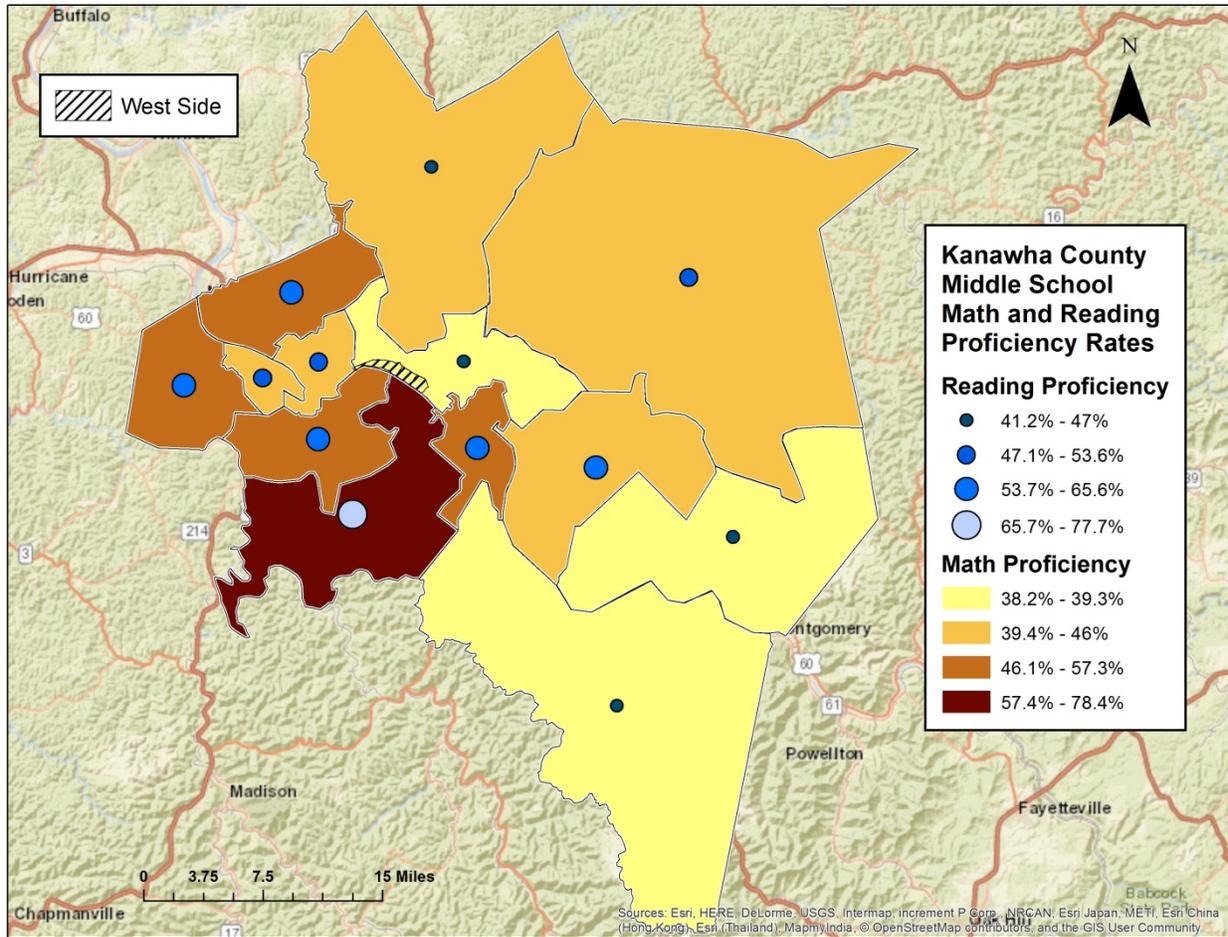


Figure 14. 2012-13 middle school math and reading proficiency rates per school attendance zone in Kanawha County, West Virginia. Percentages represent proportion of students that scored at, or above, mastery in reading and math. Attendance zone boundaries derived from the Department of Education’s National Center for Education Statistics (NCES), School Attendance Boundary Survey (SABS) 2013-2014. School performance data derived from the West Virginia Department of Education website (<https://wvde.state.wv.us/boe/>) for the 2012-13 academic year.

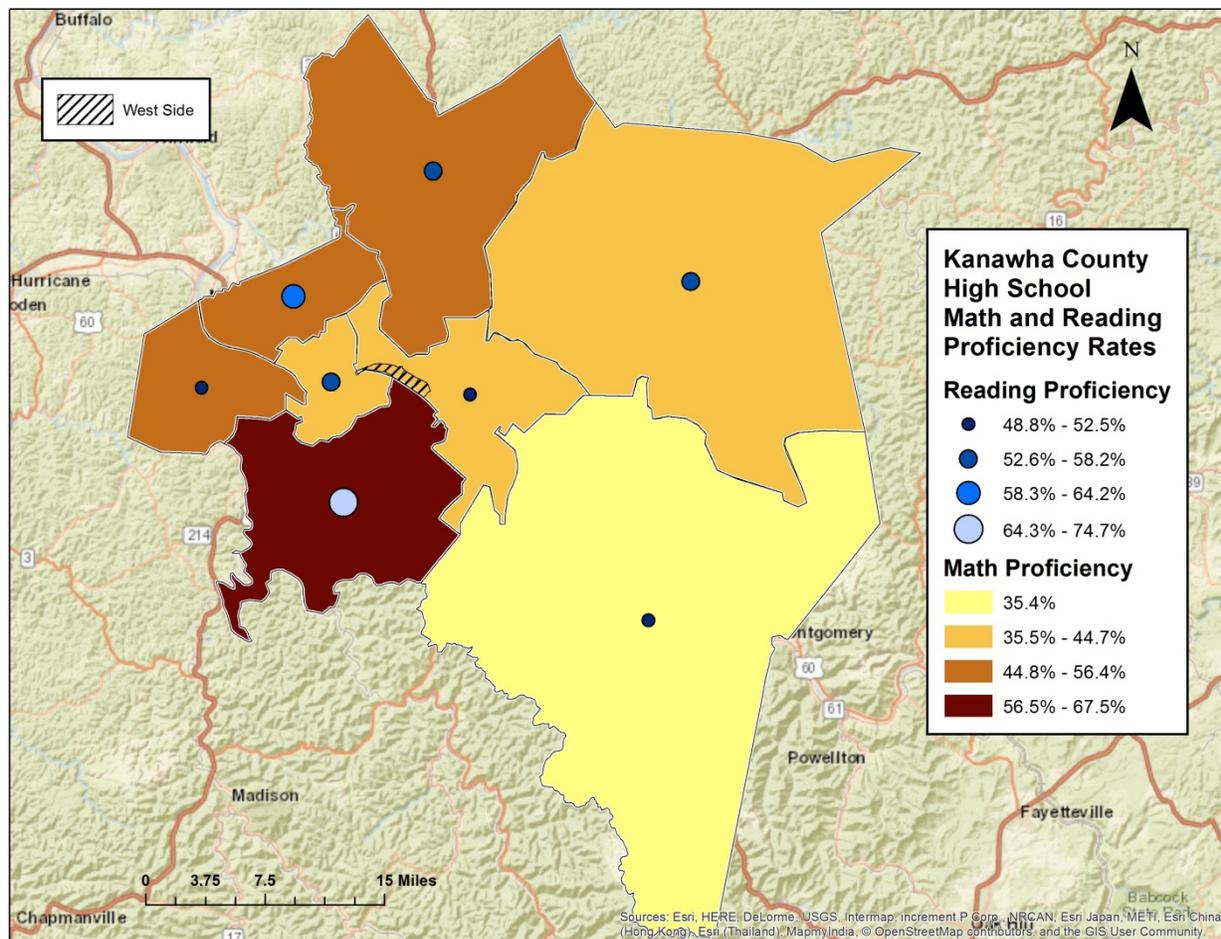


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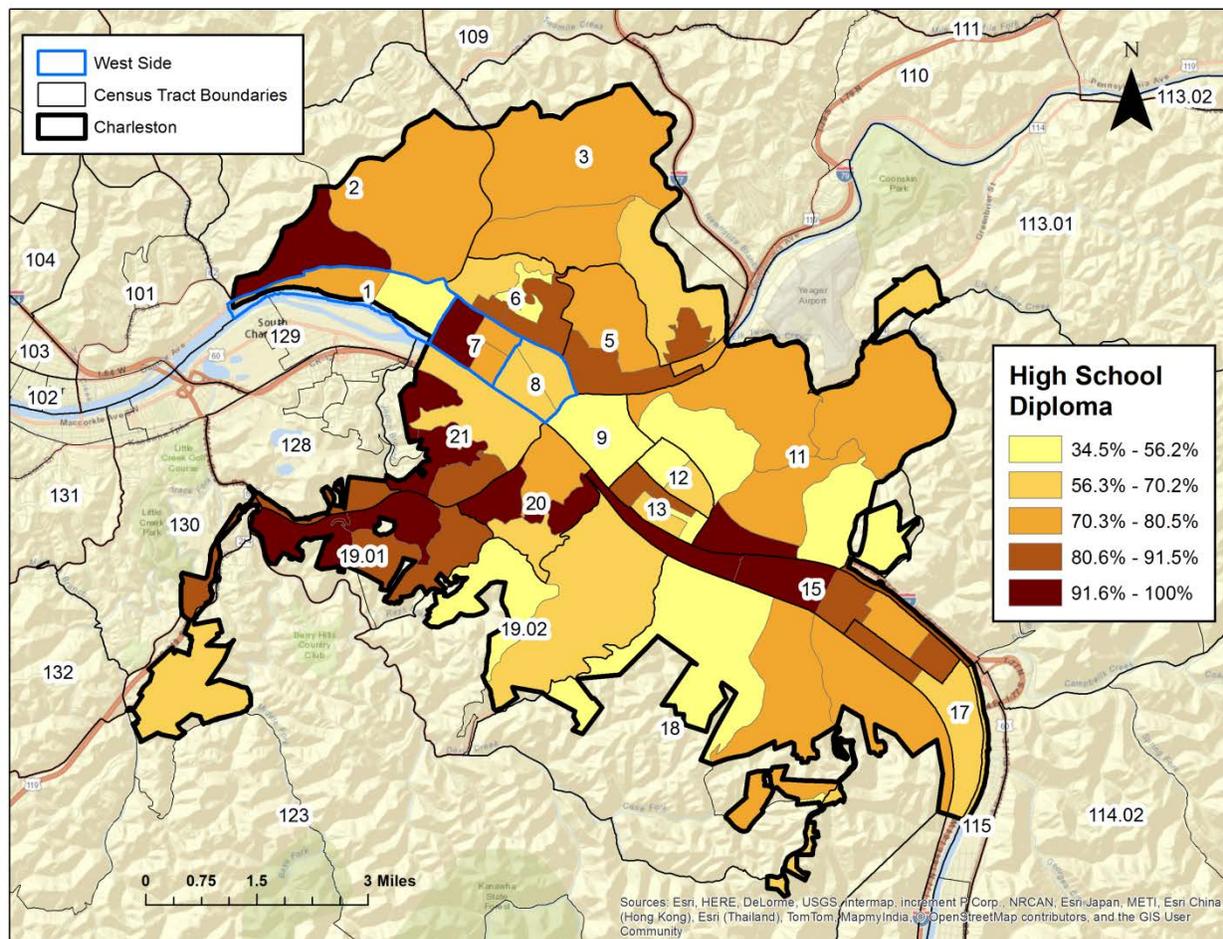


Figure 16. Distribution of residents above the age of 25 who obtained a high school diploma, or GED equivalent, by Block Group.

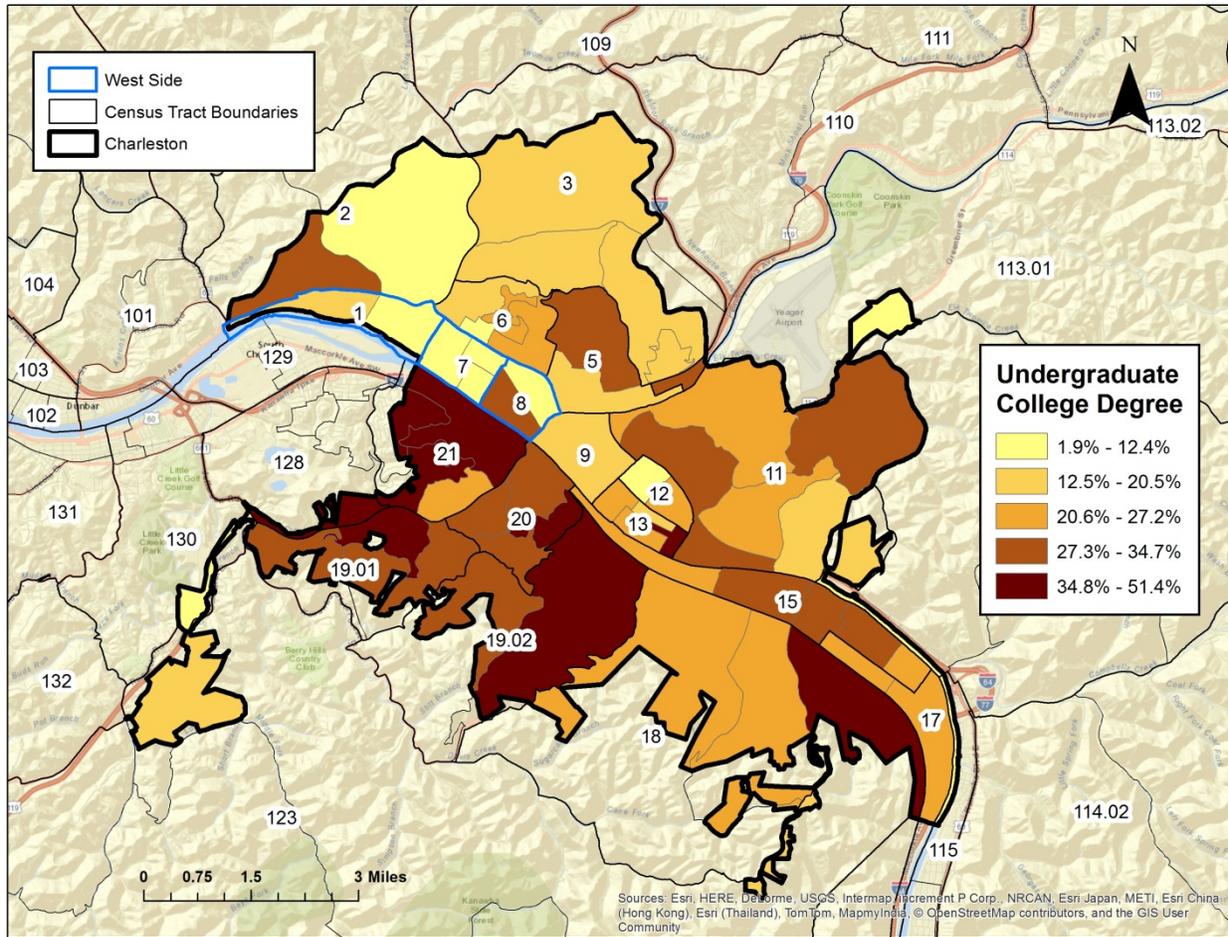


Figure 18. Distribution of Charleston residents with either a 2-year, or 4-year, college degree, by Block Group.

Employment

Annual median income values in 2014 inflation-adjusted dollars indicate that West Side citizens have an average median income of \$23,197.14 (Figure 19). This income level is \$31,993.16 lower than city-wide median income (Charleston, \$55,190.30) and \$3,824.86 less than state-wide median income (West Virginia, \$27,022) (Figure 20). Based on the Census Bureau's Poverty threshold for 2014, the West Side median income levels are just above, or bordering upon, the poverty line for families containing between two and three individuals, regardless of number of related children within the household (<https://www.census.gov/hhes/www/poverty/data/threshld/>; Figure 21).

A visual inspection of Figures 19 and 21 suggests that income disparity has strong geographic trends throughout the city as Census Tract 1, 7, 8, 9, 12, and 13 all are characterized by low median incomes and high percentages of people living below the poverty line. The West Side specifically is characterized by especially low median incomes in Census Tract 1, Block Group 1; Census Tract 7, Block Group 1; and Census Tract 8, Block Group 1 (see Figure 19). Moreover, the West Side has over twice as many individuals living below the poverty line (36.6%) than Charleston (18.7%) or West Virginia (18.0%).

To determine if the suggested income disparities were statistically significant for the West Side when compared to the remainder of the city, an *independent t-test* was calculated on group means (Charleston, \$55,190.30; West Side, \$23,197.14). Test results were significant ($t=3.245$, $df = 61$, $p=0.002$) and demonstrate that, on average, West Side residents earn a substantially lower income than neighboring citizens in other sections of Charleston.

Interesting, when male and female median incomes for the West Side are considered separately, females actually earn a slightly higher median annual income (\$16,743) than their male counterparts (\$16,398). This trend is opposite of city-wide and state-wide trends where female workers typically earn between 29 and 37 percent less than male citizens (respectively).

Unemployment rates were mapped in Figure 22 for all individuals over the age of 16 that are participating within the civil labor force. According to the U.S. Census Bureau, an "employed" person is defined as:

"Employed includes all civilians 16 years old and over who were either (1) "at work" -- those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a

family business; or (2) were "with a job but not at work" -- those who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons. Excluded from the employed are people whose only activity consisted of work around the house or unpaid volunteer work for religious, charitable, and similar organizations; also excluded are people on active duty in the United States Armed Forces. The reference week is the calendar week preceding the date on which the respondents completed their questionnaires or were interviewed. This week may not be the same for all respondents." (<https://www.census.gov/glossary/>)

Census Tracts 1, 3, 6, 7, 8, 9, 11, 12, and 13 have particularly high rates of unemployment, especially when compared to city-wide (Charleston, 7.3%) and state-wide (West Virginia, 8.2%) trends. The West Side specifically has a combined unemployment rate of 10.3 percent with Census Tract 1, Block Group 1, being characterized by an extremely high rate of 21.1 percent. As with median income, the significantly higher unemployment of the West Side, when compared to the remainder of Charleston, was revealed through a *two proportion Z-test* (Pearson $\chi^2 = 37.627$, $df = 1$, $p < 0.001$). Figure 23 shows the breakdown of unemployment status by age group and demonstrates an especially elevated unemployment rate for citizens between the ages of 16 and 24 in Charleston.

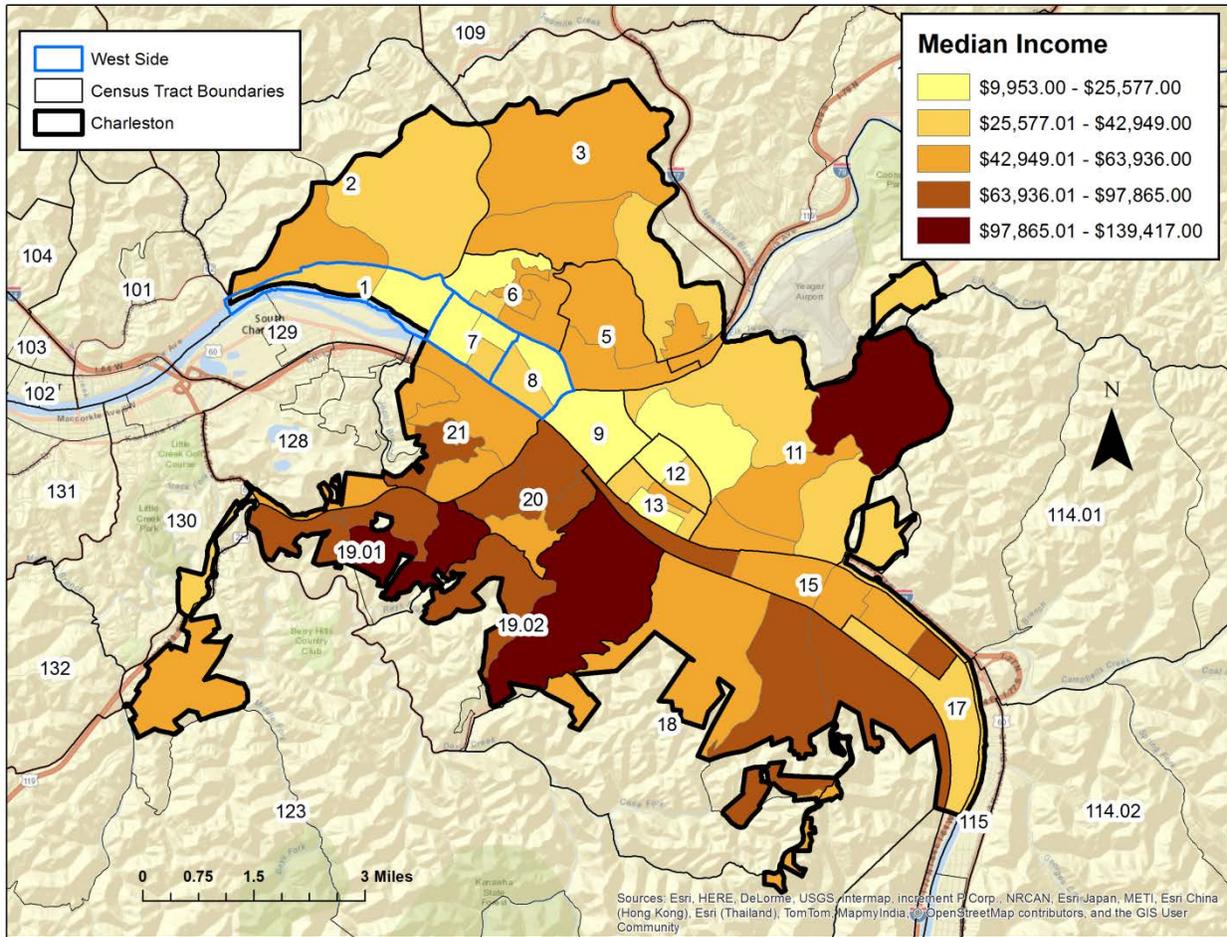


Figure 19. Medium annual income of Charleston residents, by Block Group

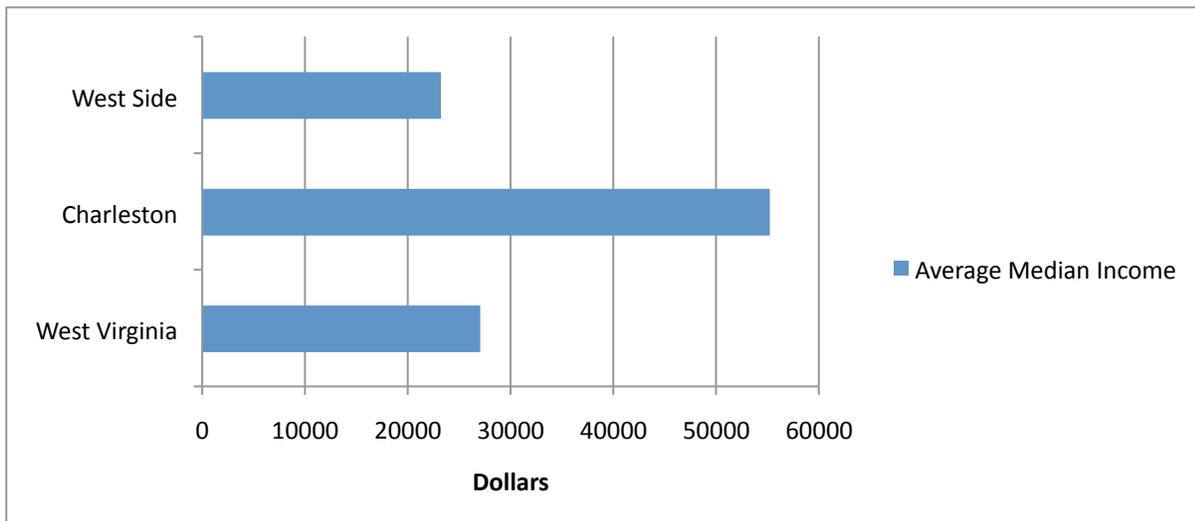


Figure 20. Average median income comparison for West Virginia, Charleston, and West Side

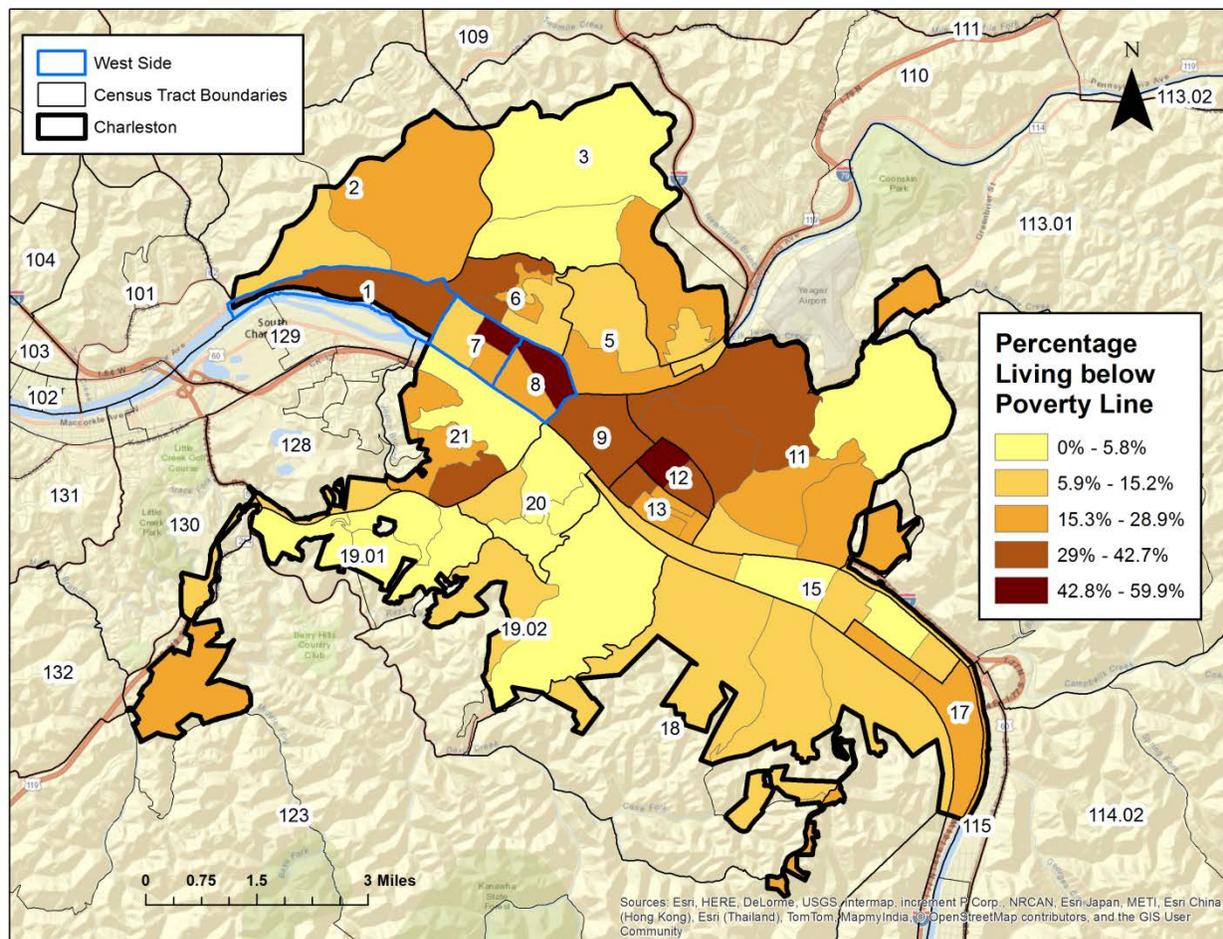


Figure 21. Percentage of Charleston residents between the ages of 20 and 64 living below the poverty line, by Block Group

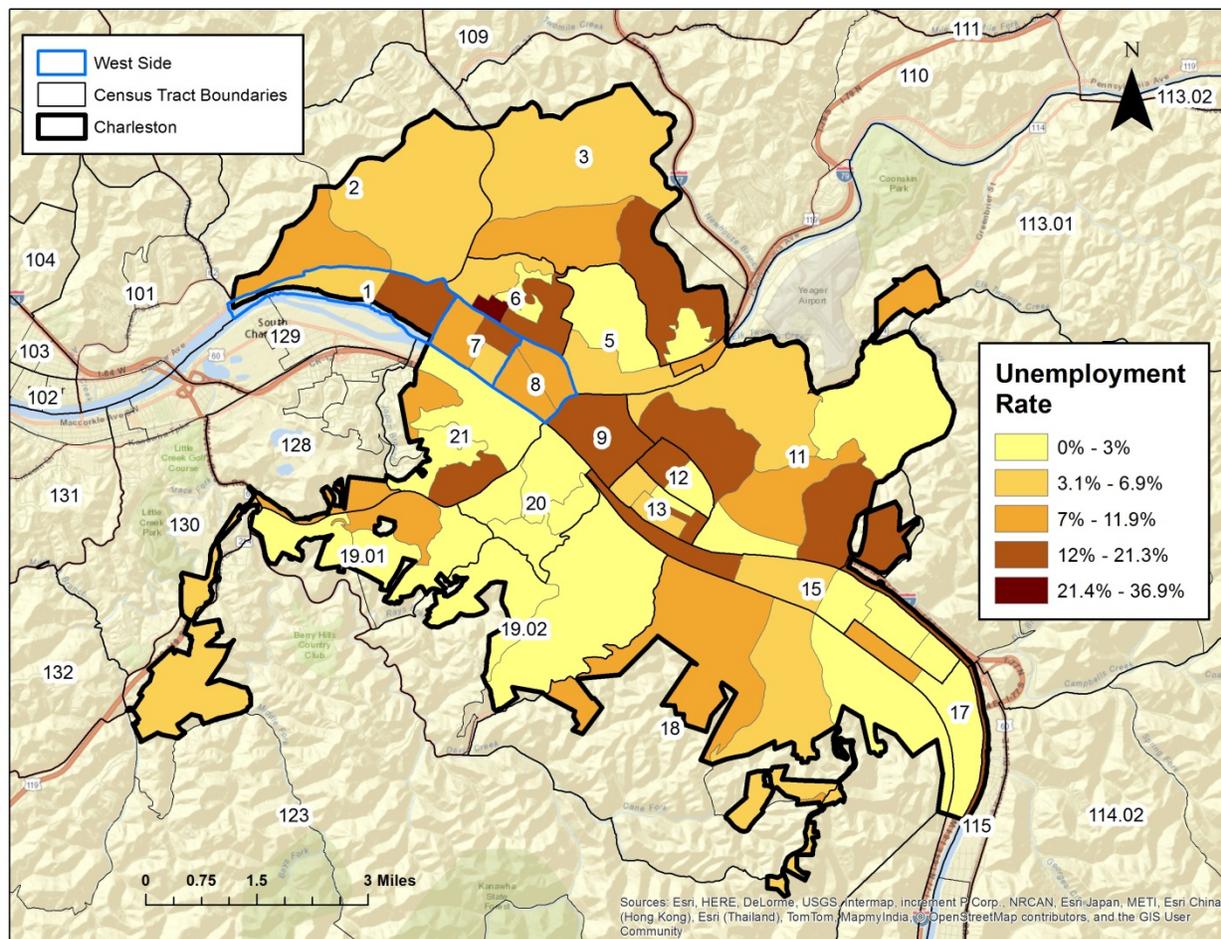


Figure 22. Unemployment rate for Charleston residents above the age of 16 and participating within the civilian labor force, by Block Group

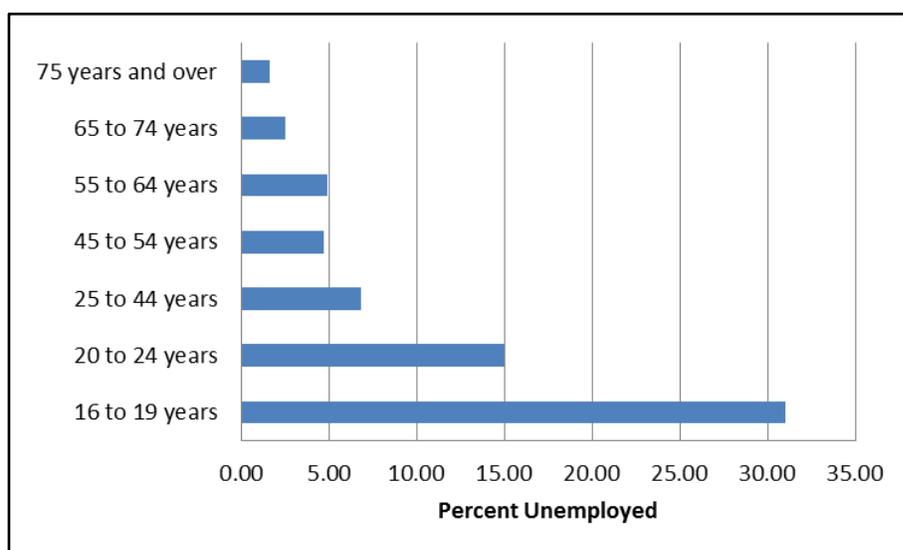


Figure 23. Civil work force unemployment rate by age group for Charleston

Travel Time to Work

Travel time to work can be used as a proxy to measure the accessibility of jobs for people living throughout different communities. Figures 24 through 26 illustrate the distance that Charleston residents travel to work, regardless of mode of transportation (see following section for this variable). Visual inspection of these figures appears to suggest little variation in travel times between West Side residents (<30 minutes, 83%; 30 – 59 minutes, 14%; >60 minutes, 3%) and Charleston residents (<30 minutes, 87%; 30 – 59 minutes, 10%; >60 minutes, 3%). To better test this visually based assumption, a *two proportion Z-test* was calculated for all three time-period variables (*Pearson* $\chi^2 = 52.553$, *df* = 2, *p* < 0.001). Although a high, thus significant, statistic value was obtained overall, review of standardized residual test scores indicate that only two of the three time-period variables are contributing to this result. These results can be summarized as follows:

- A standardized residual score of +6.7 for the ‘30-59 minute’ variable indicates that a larger-than-expected proportion of West Side workers, as compared to Charleston workers, travel between 30 and 59 minutes to arrive at work.
- A standardized residual score of -2.2 for the ‘<30 minute’ variable indicates that a smaller-than-expected proportion of West Side workers, as compared to Charleston workers, travel less than 30 minutes on their way to work.
- The same proportion of West Side and Charleston workers travel more than one hour to work.

Given that West Side residents significantly rely on public transportation and walking as their primary mode of transportation to work (see below), these data can be interpreted to mean that West Side residents, on average, must select jobs that are closer to their residence than Charleston citizens. This especially appears true in Census Tracts 7, 8, and 9, where walking as the primary mode of transportation to work is markedly high.

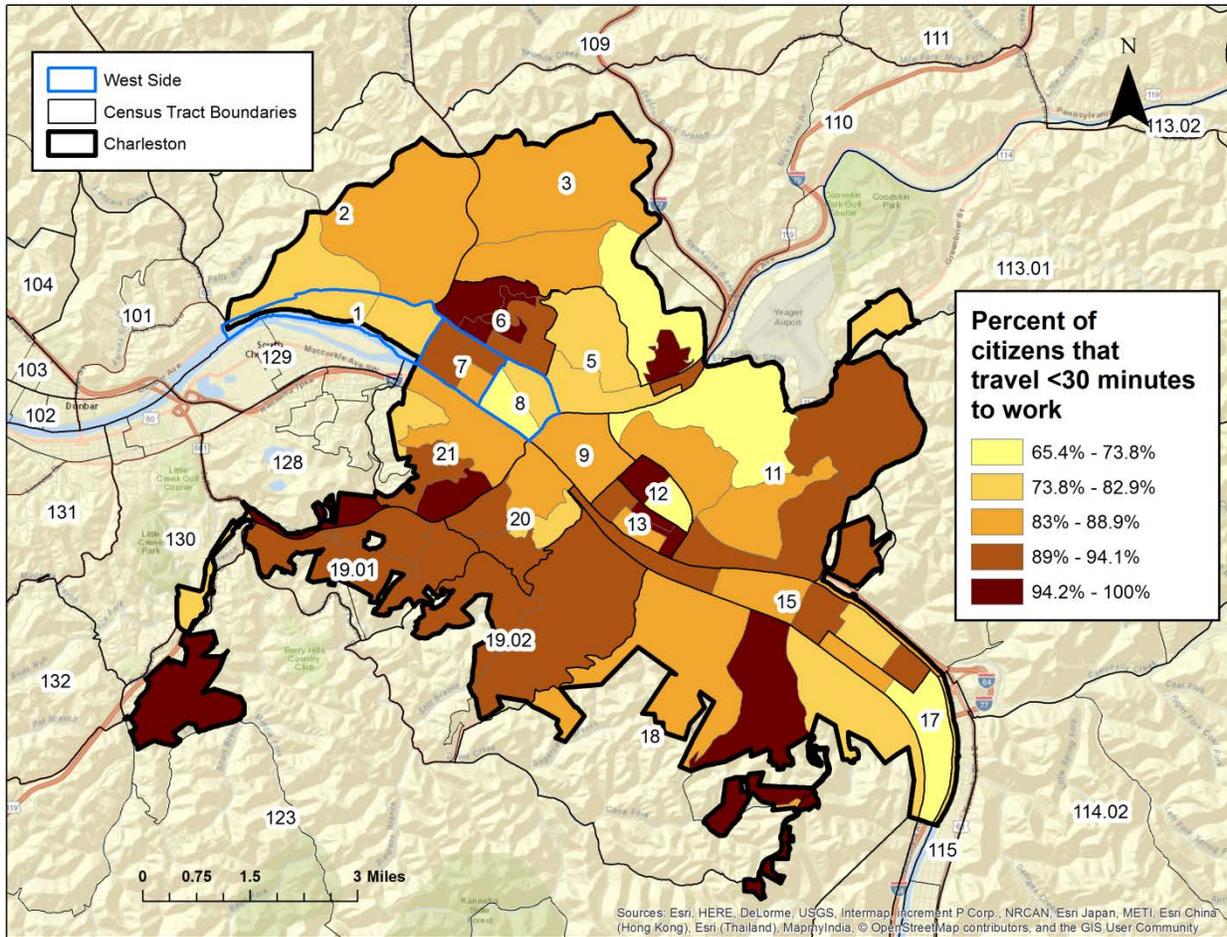


Figure 24. Map showing percent of citizens that travel less than 30 minutes to work, by Block Group

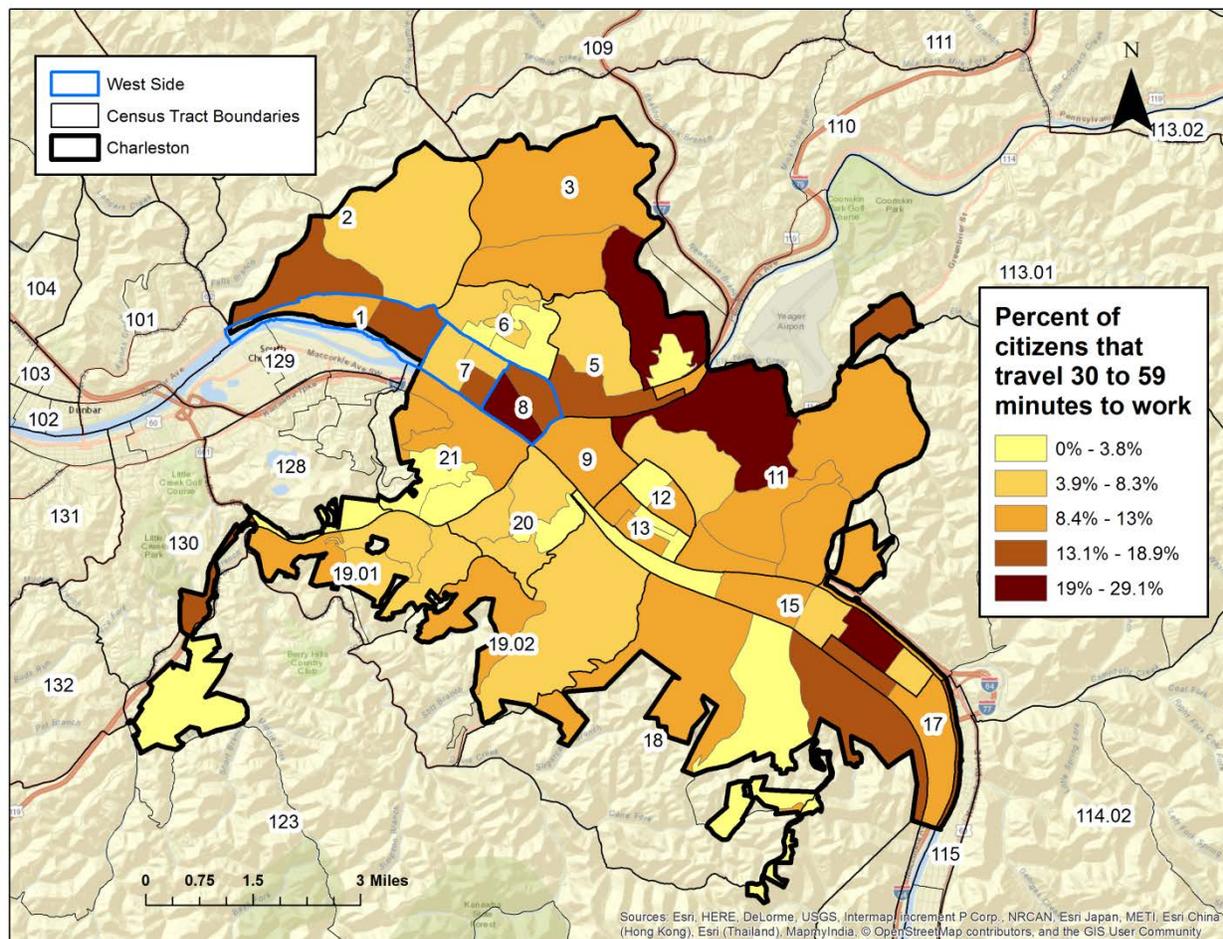


Figure 25. Map showing percent of citizens that travel between 30 and 59 minutes to work, by Block Group

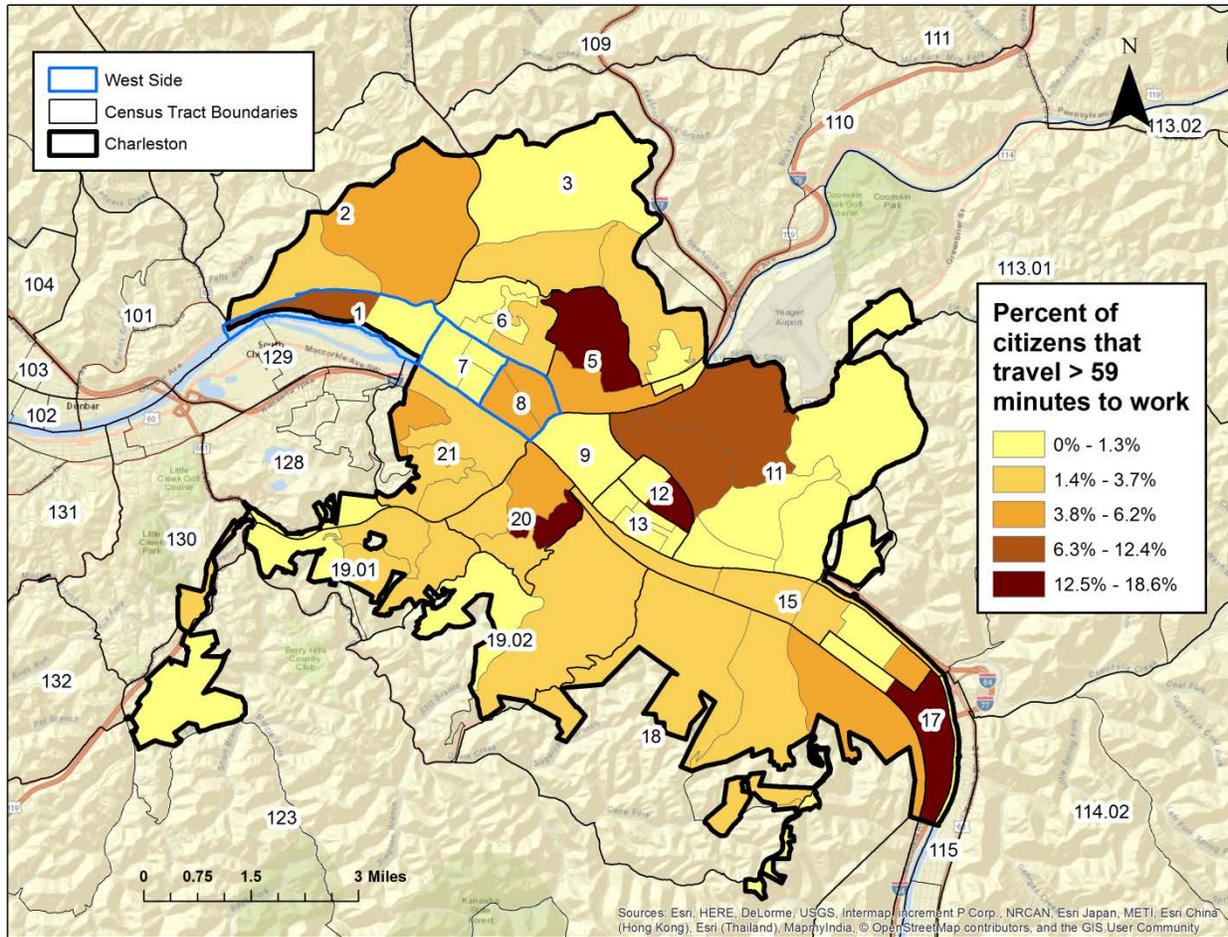


Figure 26. Map showing percent of citizens that travel greater than 59 minutes to work, by Block Group

Primary Mode of Transportation to Work

The manner in which Charleston residents travel to work is discussed in this section. Figures 27 through 29 illustrate the primary mode of transportation for Charleston citizens when traveling for work. This discussion does not include individuals that work from home. Review of the maps suggests a strong geographical patterning with regards to the use of public transportation, walking, and personal vehicle use. A basic dichotomy can be seen in these figures. West Side residents have a high reliance on walking (West Side, 16.7%; Charleston, 5.9%) and public transportation (West Side, 13.4%; Charleston, 4.2%) to get to work, whereas Charleston residents (minus the West Side) are heavily reliant on personal vehicles for transportation. Especially high reliance on walking is seen in Block Group 1 of Census Tract 8 (67%). This high proportion may reflect the fact that this Block Group is situated near the W. Washington Street business district which likely is a key job source for area residents.

To test this initial observation, a *two proportion Z-test* was calculated for all three modes of transportation: walking, public transportation, and private vehicles (*Pearson* $\chi^2 = 790.956$, $df = 2$, $p < 0.001$). As revealed through inspection of standardized residual scores, all three variables are statistically significant which indicates strongly variable transportation trends for residents living in the West Side (public transportation and walking reliant) compared to the rest of Charleston (personal vehicle reliant).

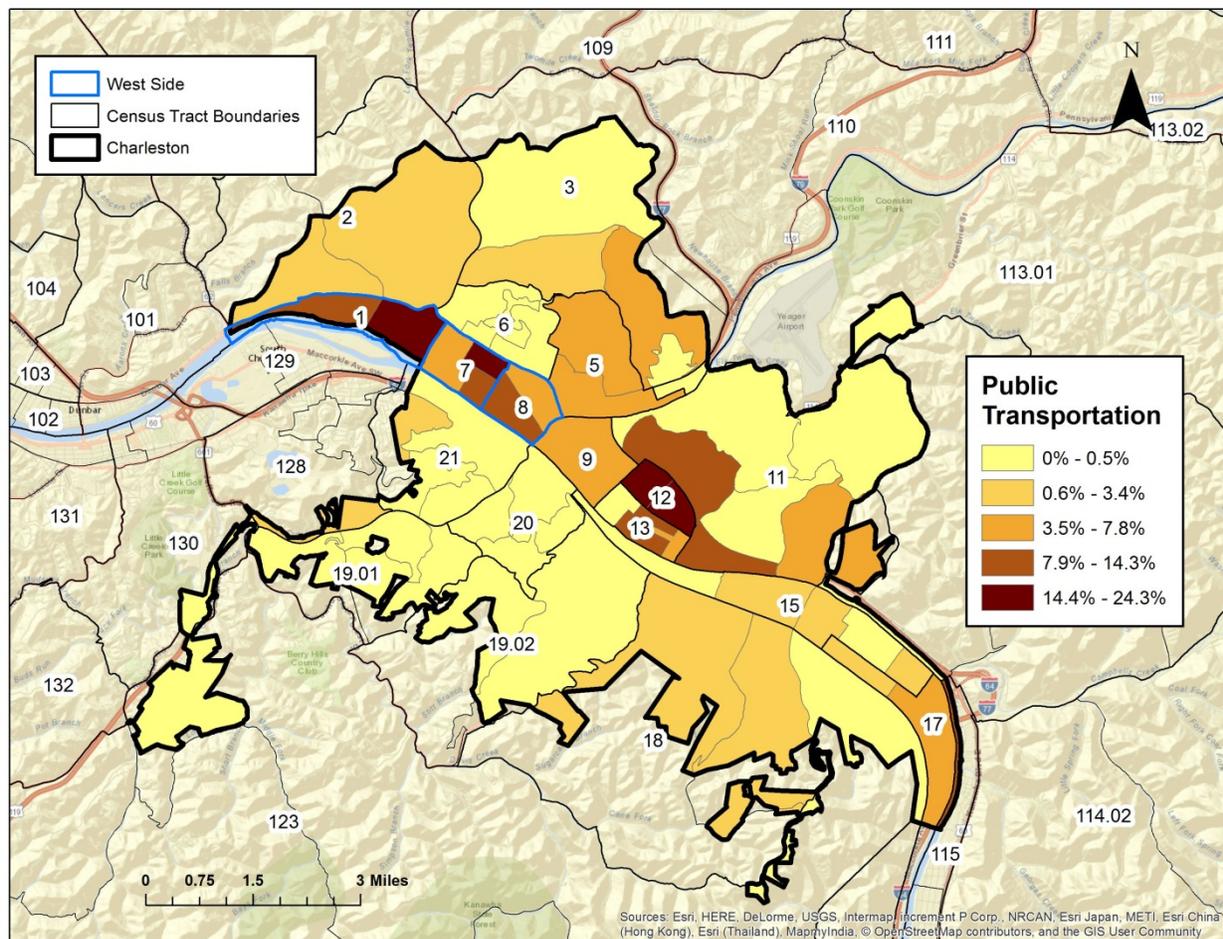


Figure 27. Percentage of citizens that rely on public transportation (excluding taxi service) as primary mode of transportation for work, by Block Group

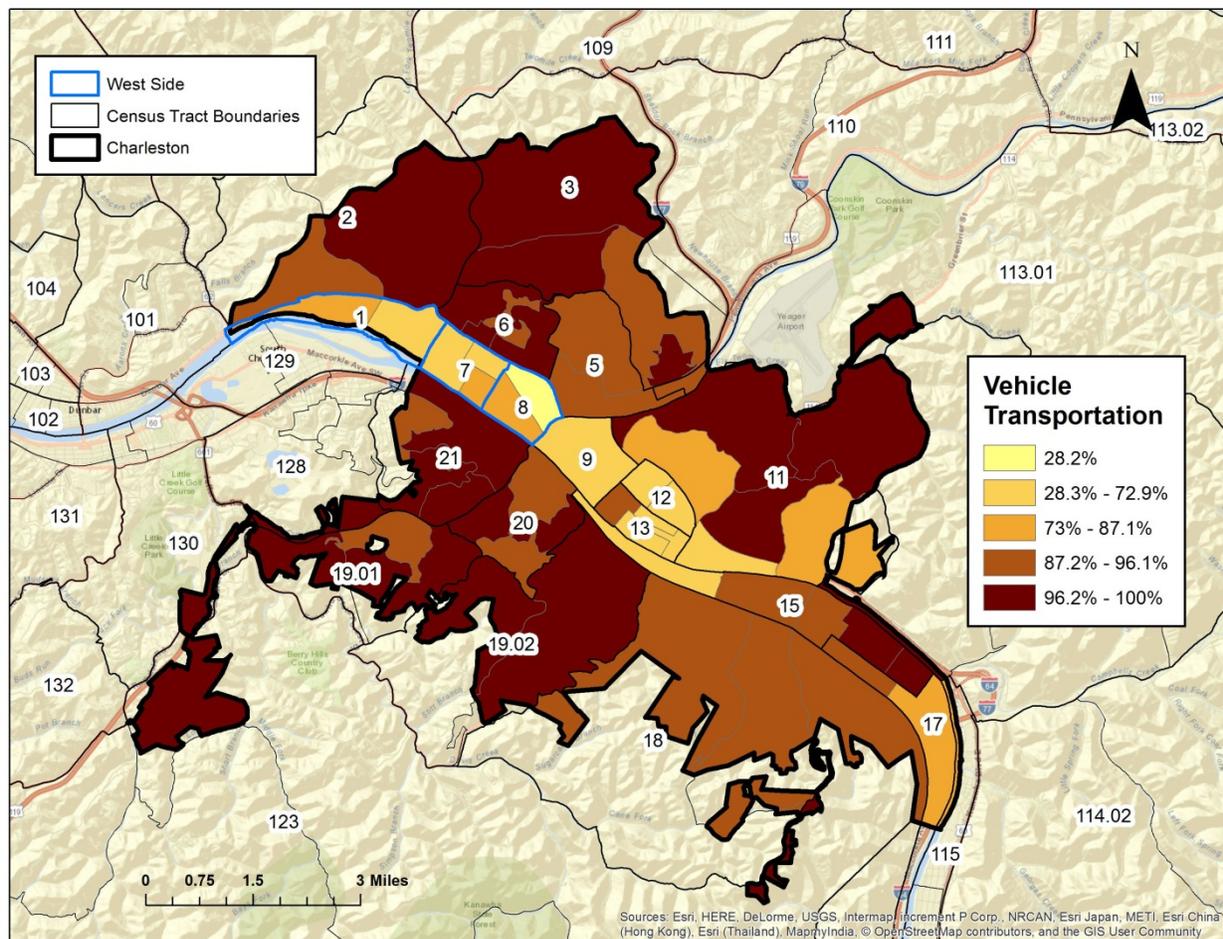


Figure 28. Percentage of citizens that rely on private motorized vehicles for primary mode of transportation for work, by Block Group

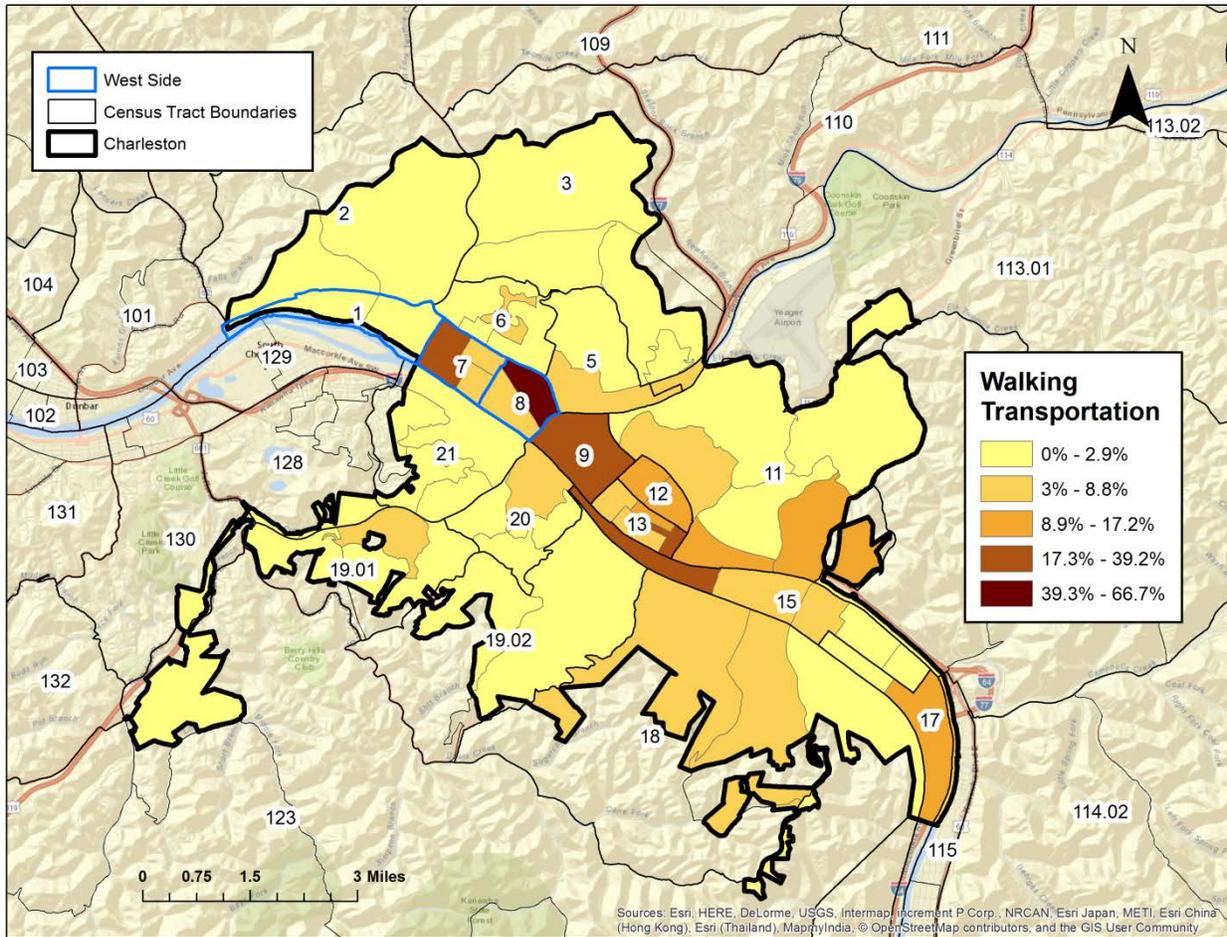


Figure 29. Percentage of citizens that rely on walking as primary mode of transportation for work, by Block Group

Crime Statistics

Crime rates by offense and geographic district are released annually by the Charleston Police Department. This section presents the rate, and distribution, of violent and non-violent crimes throughout Charleston during the 2015 calendar year (Charleston Police Department 2015) (Figure 30). Violent crimes include all instances of rape, murder, and malicious wounding. Non-violent crimes include all instances of robbery, burglary/breaking and entering, larceny, automobile/breaking and entering, and motor vehicle theft. The Charleston Police Department groups crime statistics into one of three districts. The West District includes all city land west of the Elk River and north of the Kanawha River. The East District includes all city land east of the Elk River and north of the Kanawha River. Finally, the South District includes all city land south of the Kanawha River.

As a geographic unit, the West District, which subsumes the West Side, was the location for high rates of both violent and non-violent crimes in 2015. Violent crime in the West District accounts for 52% of all violent crimes committed in Charleston and includes four instances of murder, 27 instances of rape, and 55 instances of malicious wounding. The rate of non-violent crimes also were highest in the West District with over 1000 instances of burglary/breaking and entering, larceny, automobile/breaking and entering, and automobile theft. In the South and East Districts, non-violent crimes represent the remaining 60% of the 2015 crime rates. Finally, the East District had a higher violent crime rate (32%) than the South District (16%), although not nearly as high as the West District (52%).

Calculation of a *two proportion Z-test* (Pearson $\chi^2 = 16.967$, $df = 2$, $p < 0.001$) for these three districts confirm the initial observations and show significant patterning in the proportion of violent to non-violent crime among each district. Based on inspection of standardized residual scores, significant differences between districts are accounted for in the over-representation of violent crimes in the West District (+2.4) and the concomitant under-representation of violent crimes in the South District (-3.2). No statistical differences were noted between the districts for non-violent crimes, at least with respect to the proportion of violent to non-violent crimes in this dataset.

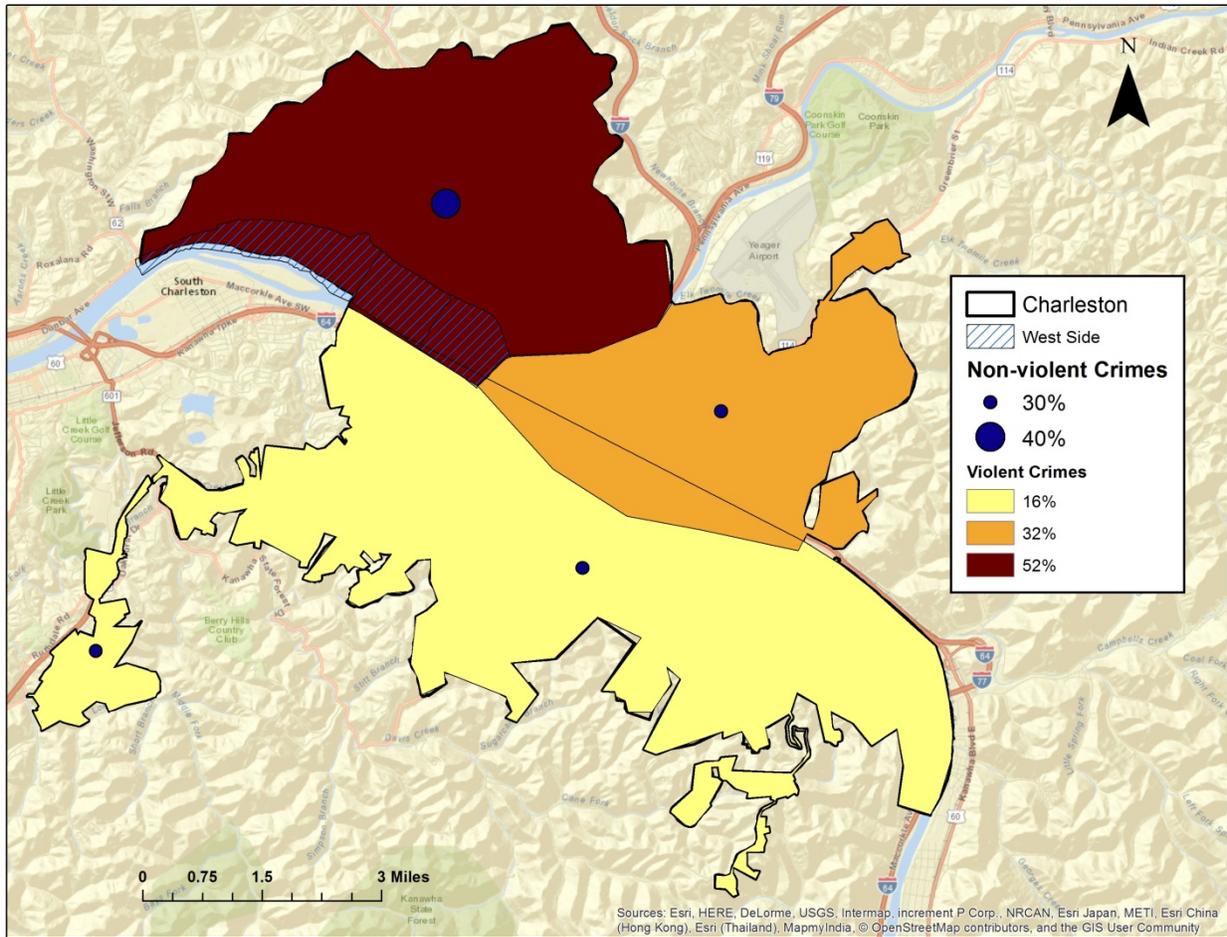


Figure 30. Distribution of 2015 violent and non-violent crimes for Charleston by crime district.

Insurance Rates

The proportion of Charleston residents under the age of 65 without health insurance is mapped in Figure 31. These data reflect the U.S. Census Bureau's 2014 American Community Survey 5-year Estimates and likely does not reflect results associated with the implementation of the 2010 Affordable Care Act. Strikingly, areas both north of the Kanawha River and west of the Elk River display high percentages of residence without insurance, including the West Side which has an uninsured rate of 21 percent. This high rate especially is evident when compared to city-wide (Charleston, 12%) and state-level (West Virginia, 10%) trends. Calculation of a *two proportion Z-test* (Pearson $\chi^2 = 404.571$, $df = 1$, $p < 0.001$) further support the suggestion that the geographic distribution of uninsured is patterned and not random.

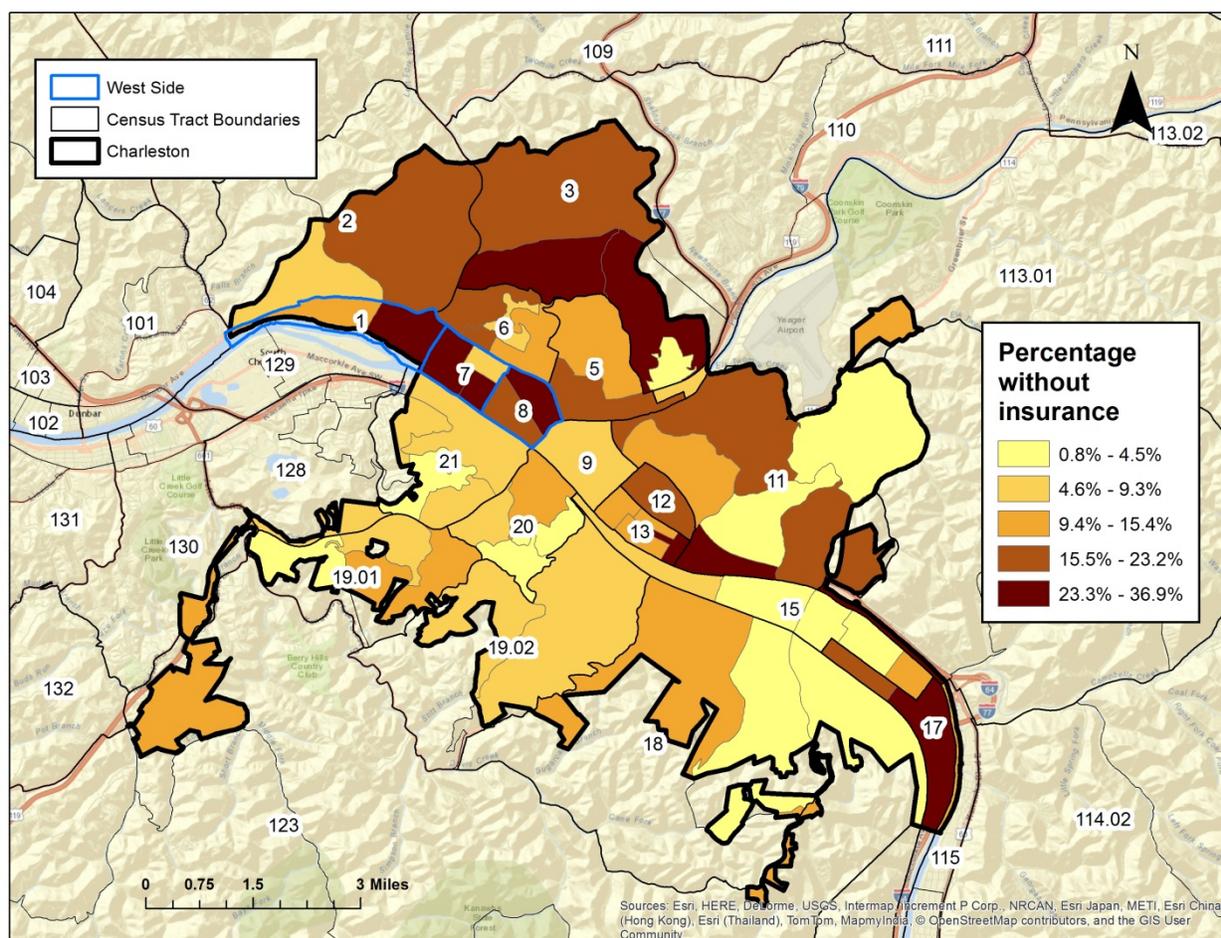


Figure 31. Percentage of Charleston residents under the age of 65 without healthcare insurance, by Block Group

Trends in Housing

Census data on occupancy types and rates illustrates that the West Side is characterized by a comparatively high proportion of vacant buildings; a low proportion of households units occupied by home owners, as opposed to renters; and a low proportion of homes occupied by single families. For this study, “household” refers to all domestic dwellings, either houses or apartment buildings. For the West Side proper (Census Tracts 1, 7, and 8), building vacancy rates are reported as 19 percent which is substantially higher than the city-wide average of 11 percent.

Building vacancy is a notable issue for communities situated within Census Tracts 6, 7 and 8 as rates for these blocks exceed 23 percent (Figure 32). In fact, data suggests that this area possesses the largest geographic concentration of vacant buildings in all of Charleston. To statistically test this apparent association, a *two proportion Z-test* was calculated comparing vacancy rates between the West Side and Charleston. Test results were significant (*Pearson* $\chi^2=428.253$, $df = 1$, $p<0.001$) and indicate that the West Side has a substantially higher rate of building vacancy than other sections of Charleston.

The percentage of household ownership in the West Side (42.0%) appears lower than city-wide (Charleston, 60.1%) or state-wide (West Virginia, 73.0%) trends (Figures 33). This fact is confirmed through calculation of a *two proportion Z-test* (*Pearson* $\chi^2=480.050$, $df = 1$, $p<0.001$) which indicates a comparatively low rate of home ownership for West Side residents. Notably high concentrations of household ownership are found in portions of Census Tracts 20 and 21, just south of the West Side and immediately across the Kanawha River. The opposite trend is observed for renter occupied households which exceeds 60 percent in portions of Census Tracts 7, 8, 9, 12, and 13 (Figure 34).

The distribution of household types – single person, single family, or multiple family - also demonstrates significant spatial patterning across the West Side and Charleston (*Pearson* $\chi^2=5685.778$, $df = 2$, $p<0.001$). Households occupied by a single individual are geographically concentrated in Census Tracts 9, 12, and 13, perhaps representing an abundance of apartment buildings in these tracts (Figure 35). Households occupied by single family units are heavily concentrated along the outer periphery of Charleston (Figure 36). The West Side has a slightly lower percent (46.4%) of households with single family units than Charleston as a whole (54.3%). Multiple family unit housing in the West Side varies little from city-wide trends however (West Side, 6.9%; Charleston, 6.5%) (Figure 37). Census Tract 8 is an exception to this trend as it has an unusually high proportion of multiple family unit housing that suggests that many neighborhood domestic buildings are occupied by two, or more, families.

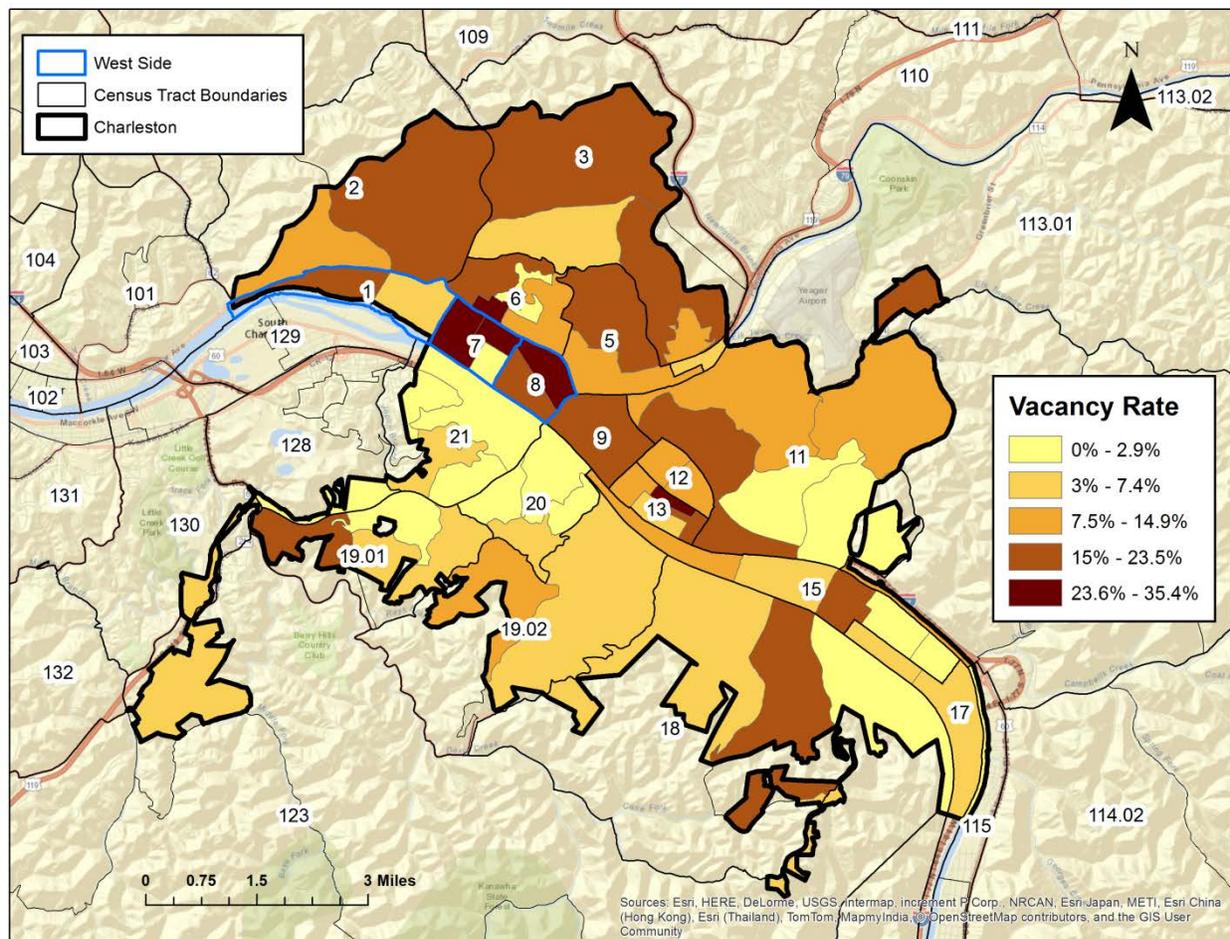


Figure 32. Percentage of vacant buildings, by Block Group

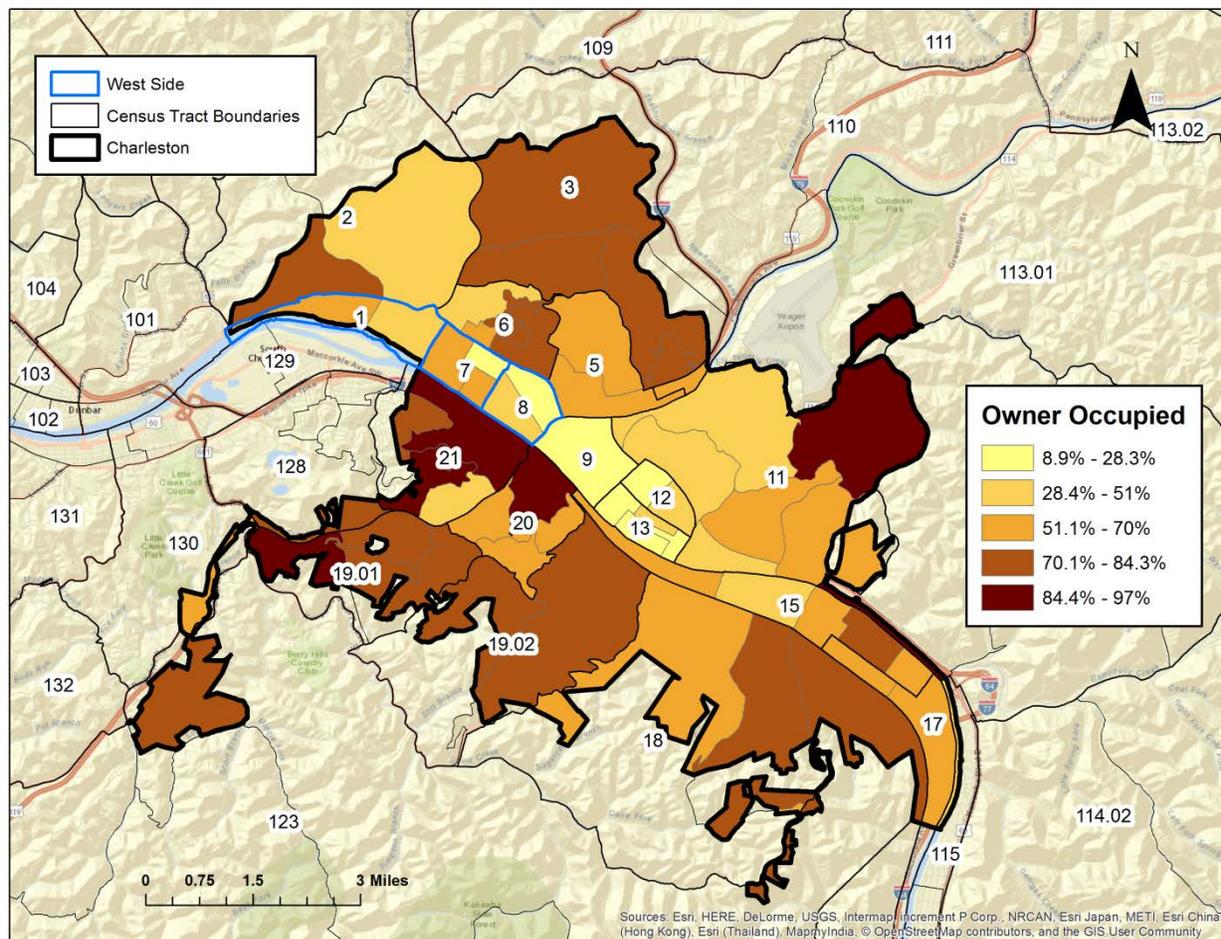


Figure 33. Percentage of households occupied by owner, by Block Group

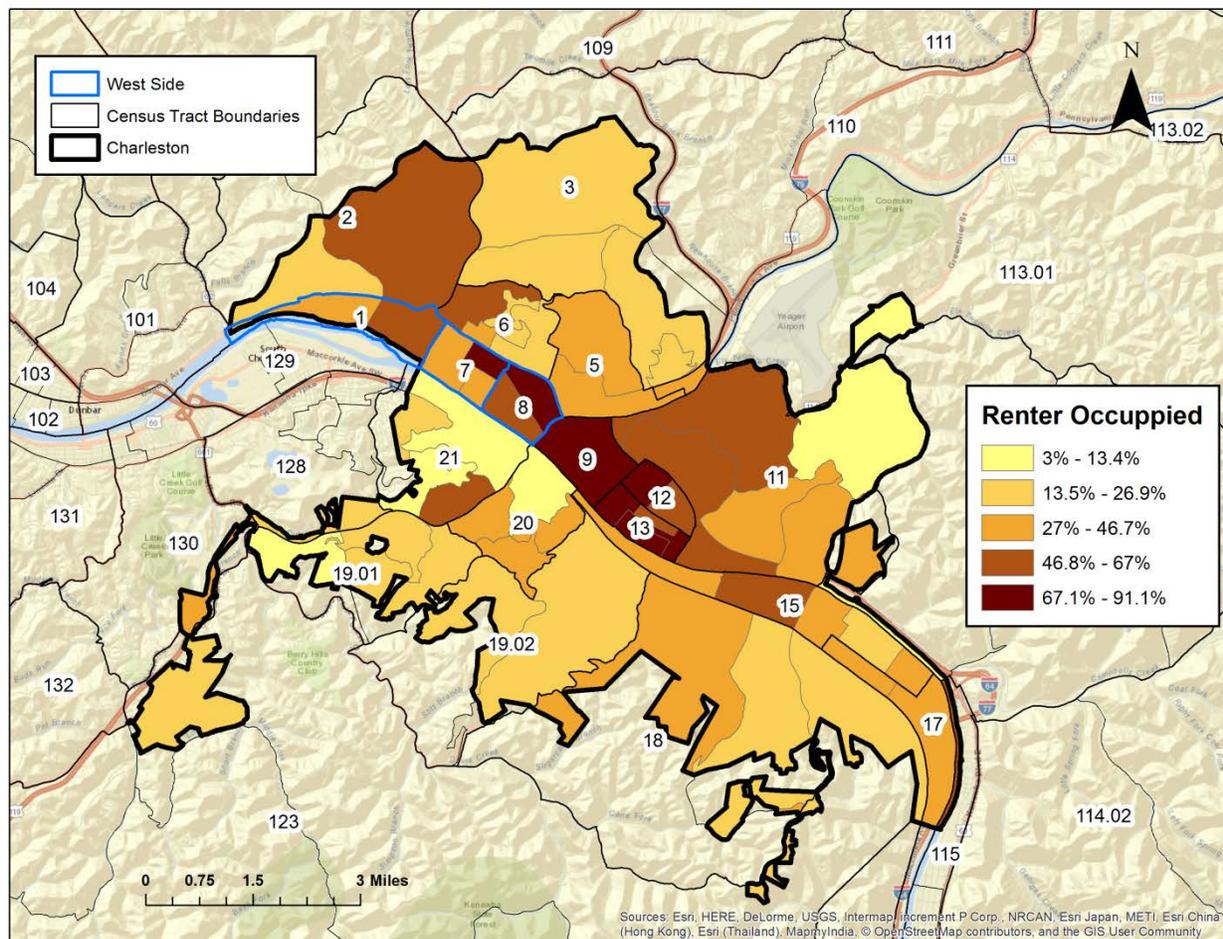


Figure 34. Percentage of households rented to non-owners, by Block Group

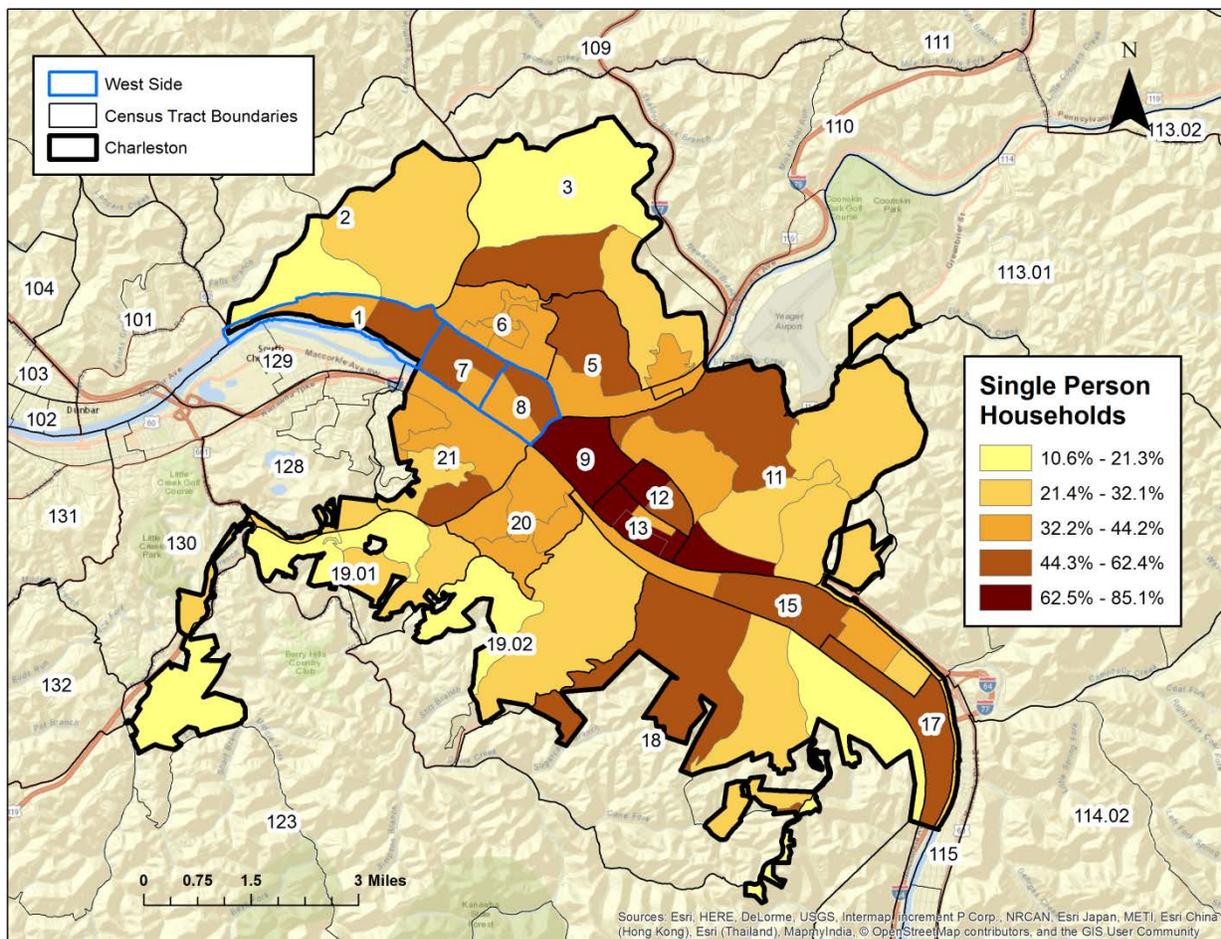


Figure 35. Percentage of households occupied by a single person, by Block Group

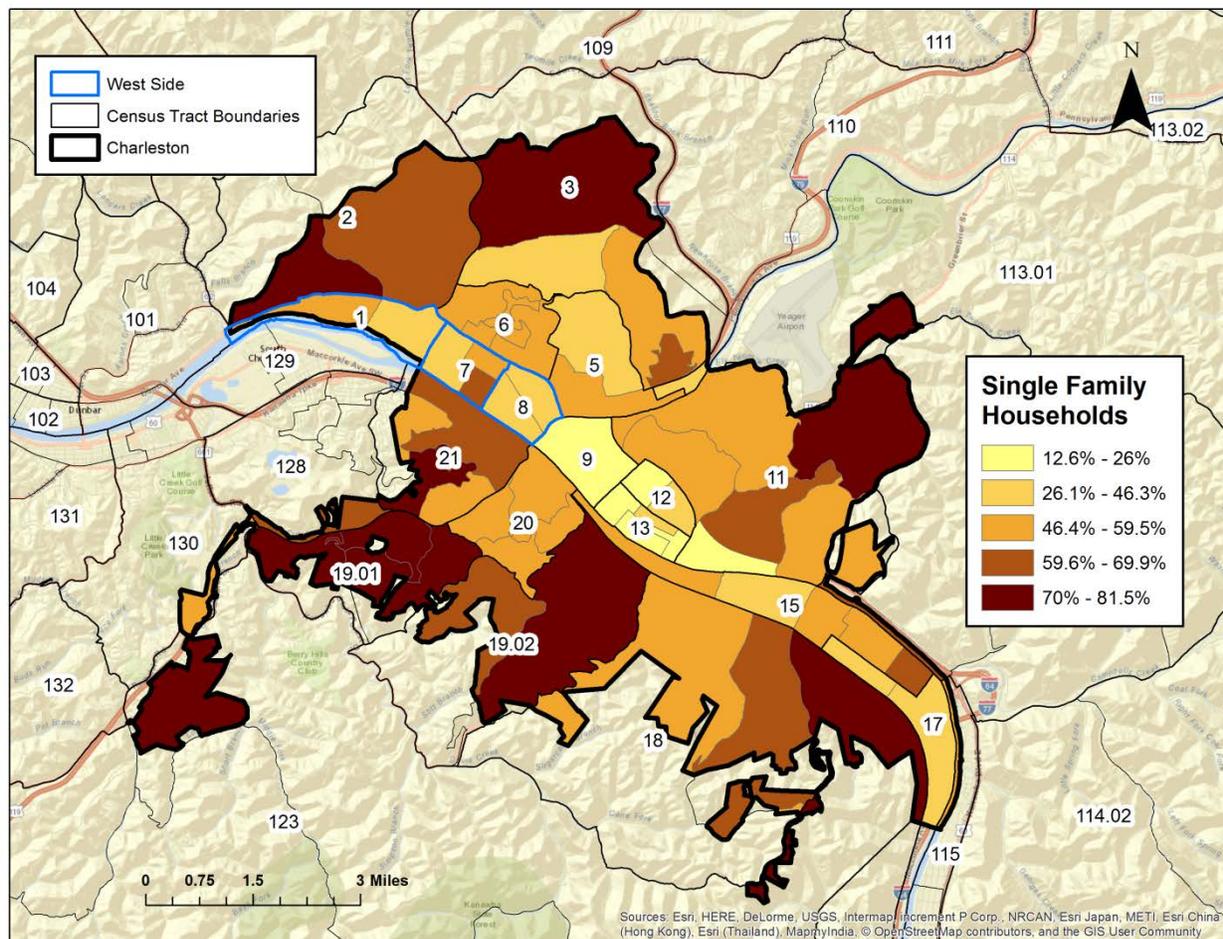


Figure 36. Percentage of households occupied by a single family unit, by Block Group

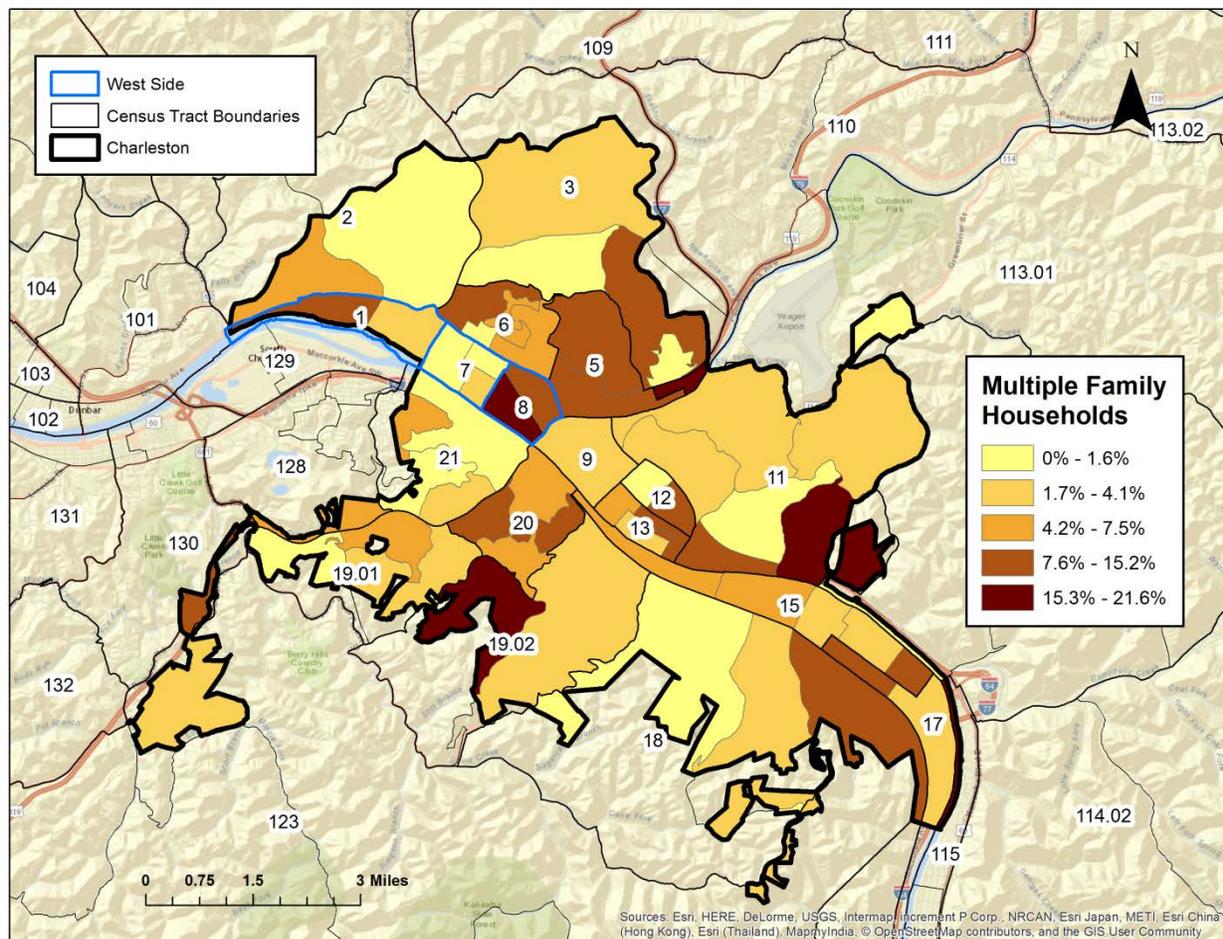


Figure 37. Percentage of households occupied by two, or more, family units, by Block Group

Neighborhood Characteristics

Two aspects of West Side neighborhoods are presented in this section as a way to characterize the living conditions of West Side residents. Specifically, this section discusses the availability of greenspace and public trash cans.

Greenspace

The accessibility of green space was mapped by Block Group in Figure 38. The availability of urban green space has been linked to numerous general health benefits including reduced stress and depression levels, especially when green space is located within a two mile radius of a person's residence (e.g., Maas et al. 2006; Ward et al., 2016). For this study, "green space" is defined as any available space containing grass, trees, or other vegetation that allows for both recreational use and aesthetic viewing by the general public. For Charleston, green space includes city-maintained parks, nature preserves, general land, walking trails, school yards and playgrounds, athletic fields, public cemeteries, community centers, and community gardens. Areas subject to dues or membership fees (e.g., YMCA) were not considered as accessible green space. Approximately 1.4 square miles of city-maintained green space is available within Charleston municipal limits.

The distribution of green space across the West Side and Charleston is statistically patterned (*Pearson* $\chi^2 = 12385.760$, *df* = 1, *p* < 0.001). The Block Groups with the highest proportion of green space tend to be situated along the outskirts of the city limits where large parks or walking trails are located including Cato Walking Park in Block Group 1, Census Tract 5; Spring Hill Cemetery in Block Group 3, Census Tract 11; and Blackwell Hiking Trails in Block Group 1, Census Tract 2. With the exception of the Kanawha Blvd Trail or several of the riverside parks, green space within the more urban, high-population, areas of Charleston are restricted to relatively small parcels of land that are not contiguous in spatial distribution. This lack of greenspace is true for the West Side especially.

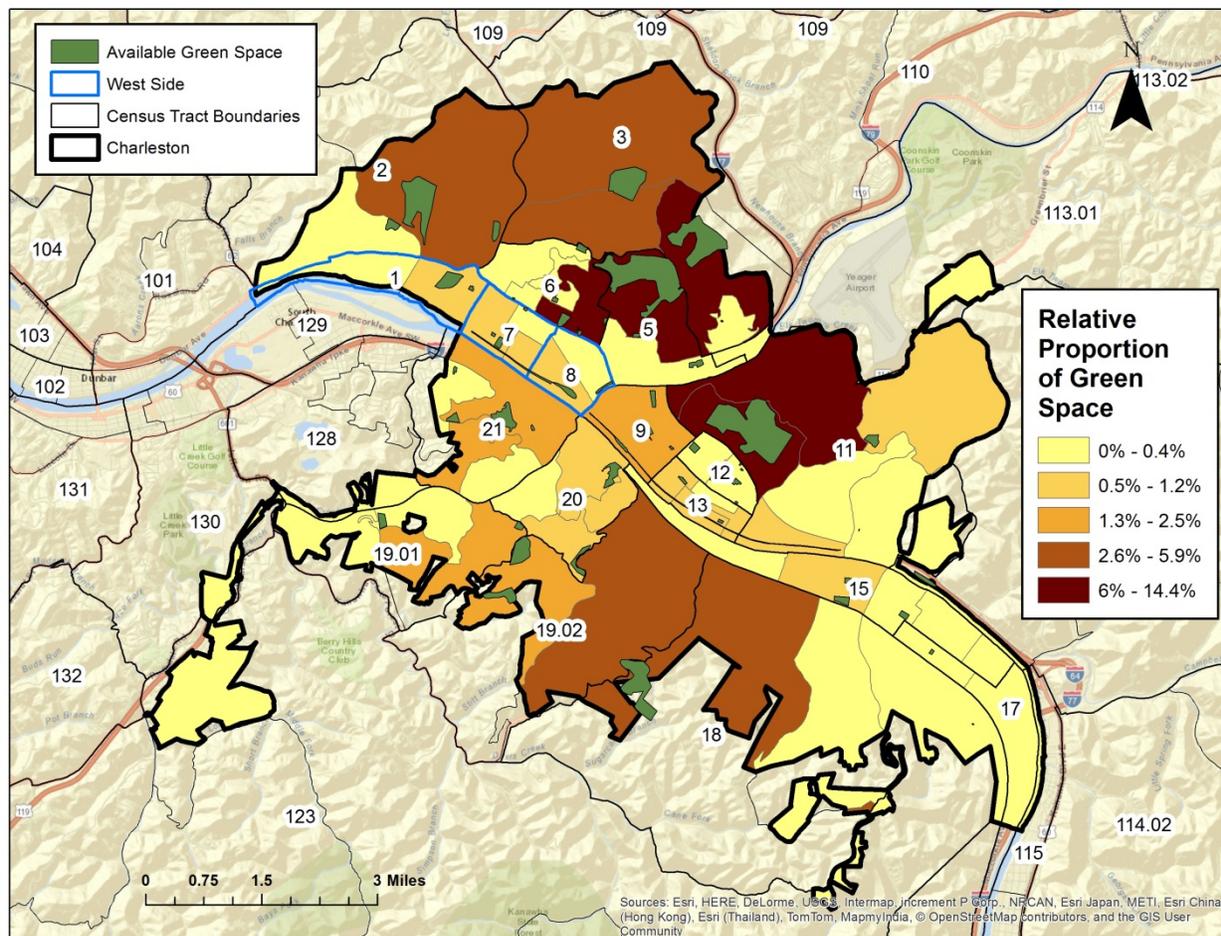


Figure 38. The location, and relative proportion, of Green Space within Charleston. Data on Green Space locations provided by City of Charleston, Planning Office.

West Side City Trash Can Locations

One neighborhood issue repeatedly mentioned when West Side citizens are interviewed is the amount of trash litter scattered about city streets, abandoned parcels, and within neglected yards. Several mention the lack of city provided trash cans as the culprit for this condition since people have few options for disposing of normal, everyday solid waste upon their daily travels. Not only is the amount of litter unsightly and potentially a health hazard, but several studies indicate that it promotes continued littering since individuals view it as a behavior without consequence and socially acceptable (e.g., Cialdini et al., 1990; Reno et al., 1993). Figure 39 maps the location of all city trash cans within the West Side. Trash cans are heavily concentrated along W. Washington Street and, to a lesser degree, along Pennsylvania Street. Importantly, city trash cans are virtually absent from other parts of the West Side where residential housing is abundant.

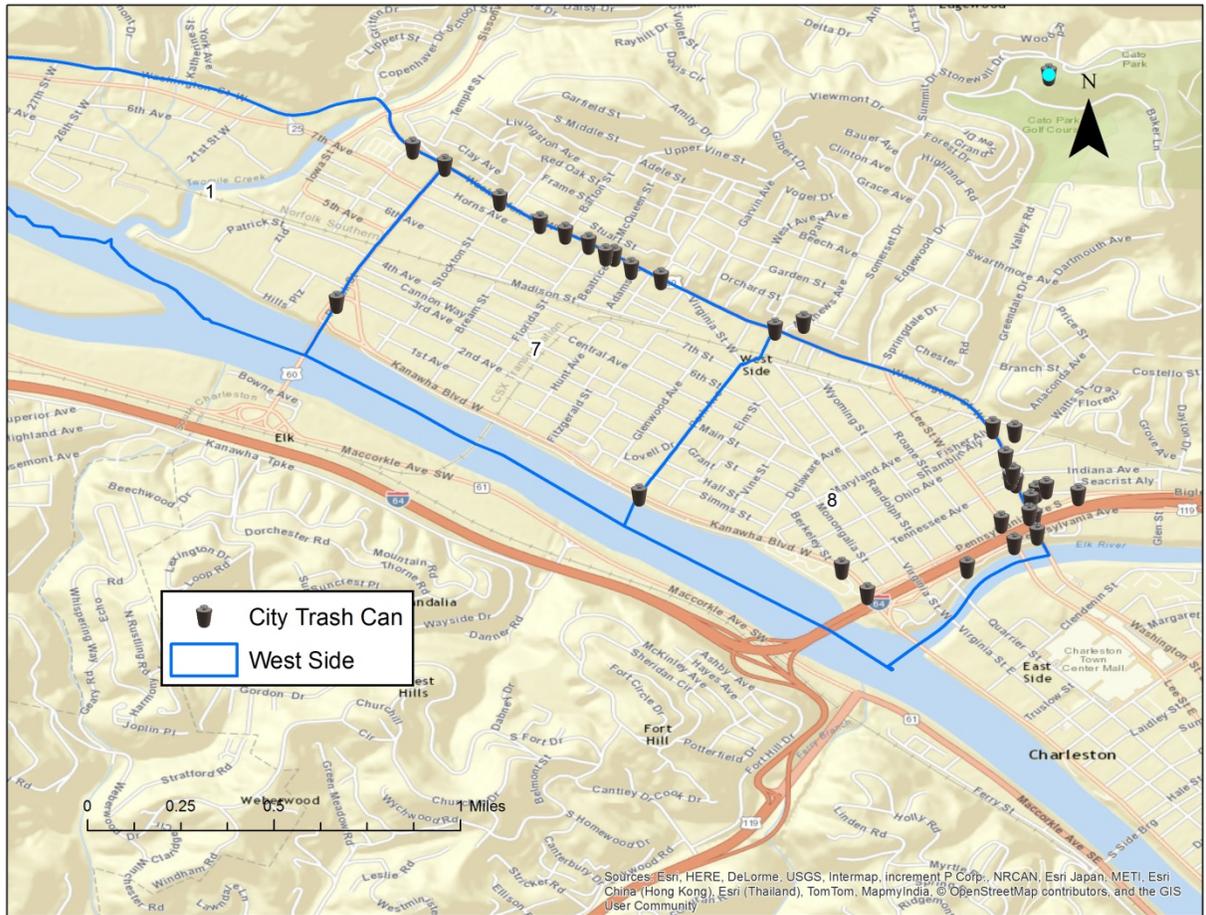


Figure 39. Distribution of city maintained trash cans within the West Side, specifically Census Tracts 7 and 8. Locational data provided by City of Charleston.

Discussion

For this research, 26 indicators of demographic makeup, educational achievement, economic status, crime, health status, green space availability, and housing trends, have been assembled, and analyzed, to characterize potential social inequalities that may exist across the City of Charleston. Specifically, this study has focused on comparing indicators from the West Side -- defined for this study as including city land within Census Tracts 1, 7, and 8 -- to the remainder of the city. This study has collected data from several sources, but most notably from the U.S. Census Bureau's 2014 American Community Survey 5-year Estimates. As such, analysis and interpretations presented here are a good indicator of current city trends.

As revealed through the geographic mapping and statistical analyses presented earlier, significant inequalities are documented between the West Side and Charleston for all assembled indicators. In general, West Side indicators of demographic, economic, social health, housing, and neighborhood characteristics significantly lag behind those for those of Charleston. The remainder of this report discusses the general trends that have been documented.

The West Side is racially diverse and contains a significantly high African-American and mixed-race population (Figure 40). The high concentration of African-Americans in the West Side has its roots in the historical development of the region extending back to pre-Civil War days. According to Dr. Billy Joe Peyton, Professor of History at West Virginia State University, the land now known as the West Side historically included five large farms owned by prominent local families in the nineteenth century. Prior to the Civil War, these farms included between 70 and 75 African-American slaves. The late nineteenth through middle twentieth centuries witnessed the development of the West Side into an industrial and transportation center for various manufacturing companies. In fact, for much of its early history, the West Side was one of the few places in Charleston where African-Americans could legally purchase property. Accordingly, the West Side developed into an early African-American enclave for the city and was home to many African-American owned businesses.

Indicators also suggest significant inequality between education attainment rates between the West Side students and the remainder of Charleston. Because middle and high school proficiency rates are collected only by attendance zones, which includes a greater geographic area than the West Side, it is impossible to isolate in these data just how well West Side students are performing in comparison to students from other neighborhoods. It can be stated, however, that math and reading proficiency scores for Stonewall Jackson Middle School, which includes students from the West Side, are noticeably lower than averages for the Kanawha County School

District. At the high school level, math and reading scores for Capital High School, which includes West Side students, are not significantly different than District-wide trends.

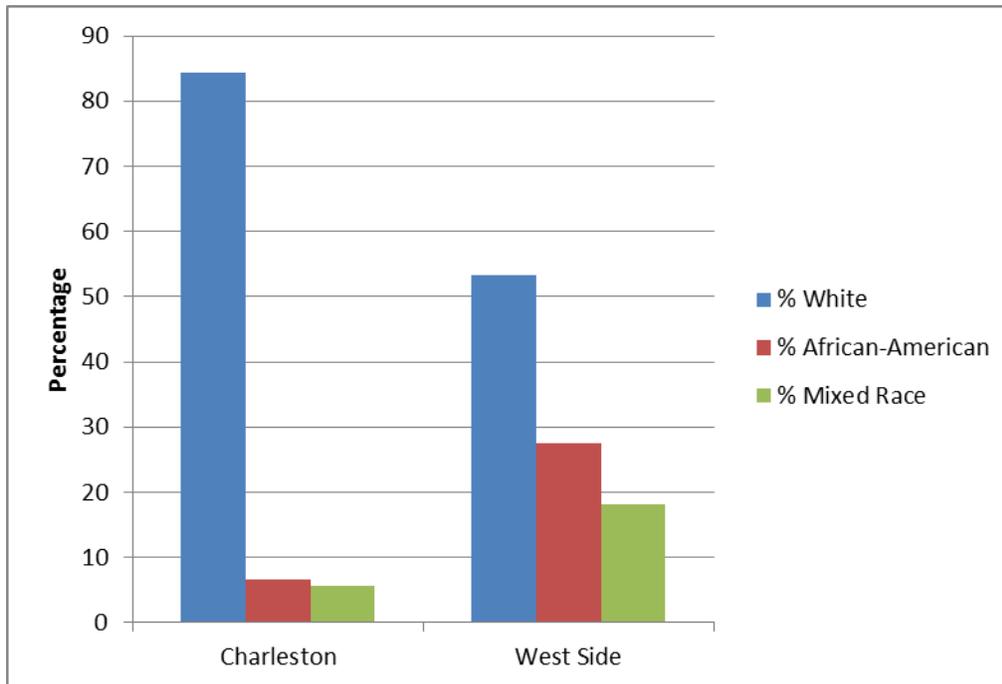


Figure 40. Comparison of Charleston and West Side racial composition

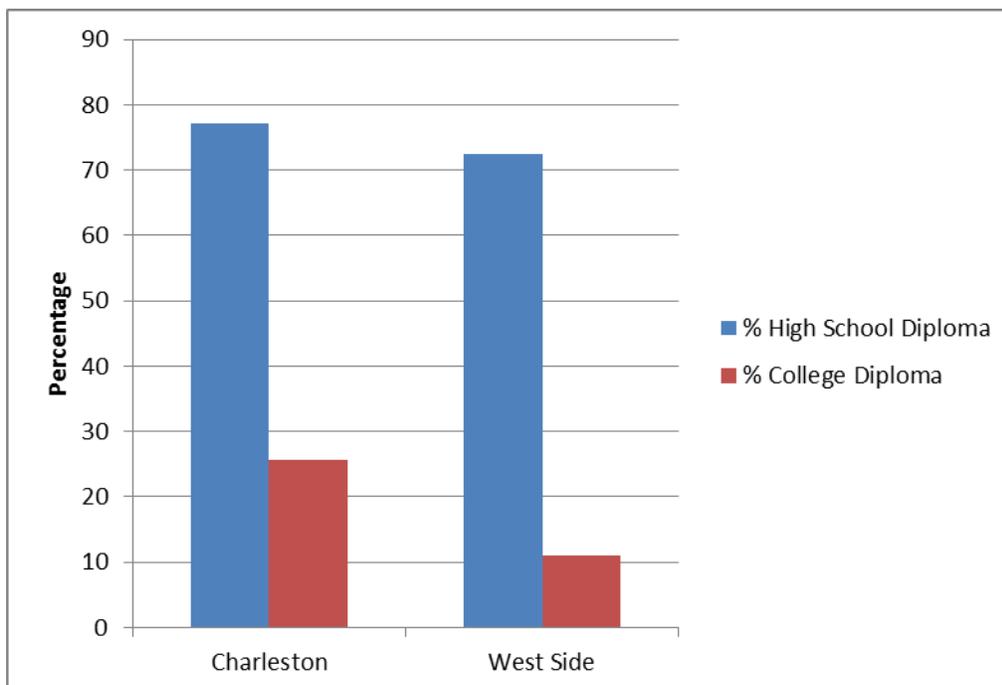


Figure 41. High school and college diploma obtainment rates for Charleston and the West Side

The rate at which West Side students obtain high school and college diplomas also is statistically patterned (Figure 41). Although high school and middle school proficiency scores could not be obtained by Block Group, the rate at which people earned a high school or college diploma is available in the U.S. Census Bureau data (see above). The rate at which West Side residents obtained a high school diploma, by age 26, is only slightly lower than the rest of Charleston. Although only slightly lower, this lag is statistically significant which indicates that, on average, West Side students obtain high school diplomas at a lower rate than other students throughout the city. The disparity between the West Side and Charleston for college degree obtainment is more pronounced and demonstrates a substantial gap in the number of West Side citizens that earn a college degree (Figure 41).

The fact that fewer West Side residents have high school diplomas and college degrees than other Charleston residents undoubtedly attributes to the fact that West Side citizens earn over \$30,000.00 less in annual income than Charleston workers (see Figure 20). Aside from education factors, accessibility to job markets also appears to account for some of this income disparity. West Side workers tend to have higher rates of unemployment, are more reliant on walking or public transportation to get to work, and are more likely to have longer commute times to their place of work, than other workers throughout Charleston (Figure 42). The high reliance on walking and public transportation places West Side residents at a competitive disadvantage in their attempts to obtain employment and significantly restricts the geographic radius in which they can effectively search for jobs.

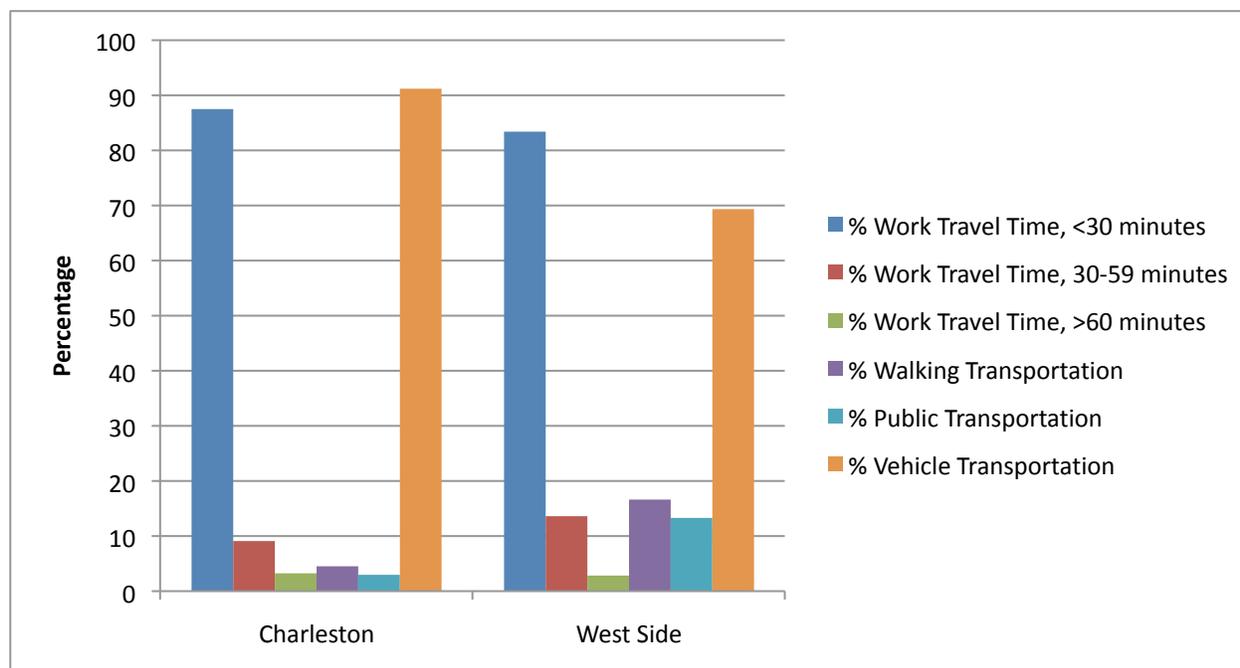


Figure 42. Comparison of Charleston and West Side factors for work travel times and means of work transportation

Several neighborhood characteristics, social health indicators, and housing trends also demonstrate noticeable disparities between the West Side and Charleston (Figures 43-47). West Side residents have significantly lower rates of health insurance than other Charleston residents (Figure 43). Moreover, a higher percentage of West Side families live below the Federal Poverty Line when compared to Charleston families. Building vacancy also is a significant problem in the West Side and this area has one of the highest concentrations of abandoned buildings for the entire city (Figure 44). Coupled with the fact that few city-owned trash cans are situated in the West Side (see Figure 39), litter is a constant issue among city streets and at abandoned properties.

When compared to Charleston, the West Side also is characterized by a significantly lower number of homes occupied by owners, a higher number of renters, a higher number of single person households, and a lower number of single family households (Figure 45). The West Side also has significantly less green space than other parts of Charleston (Figure 46). This disparity means that West Side residents have fewer locations where they can exercise, bring children to play, or simply enjoy the outdoors in a safe environment. Finally, crime data for the West Side is difficult to study since it is aggregated into three Districts by the Charleston Police Department and does not match Census Tracts boundaries. The West District includes the West Side and incorporates all areas west of Elk River and north of the Kanawha River. These data show that the West District has significantly higher rates of violent crime than both the East and South Districts combined. Non-violent crimes, in contrast, demonstrate no statistically significant disparity between districts.

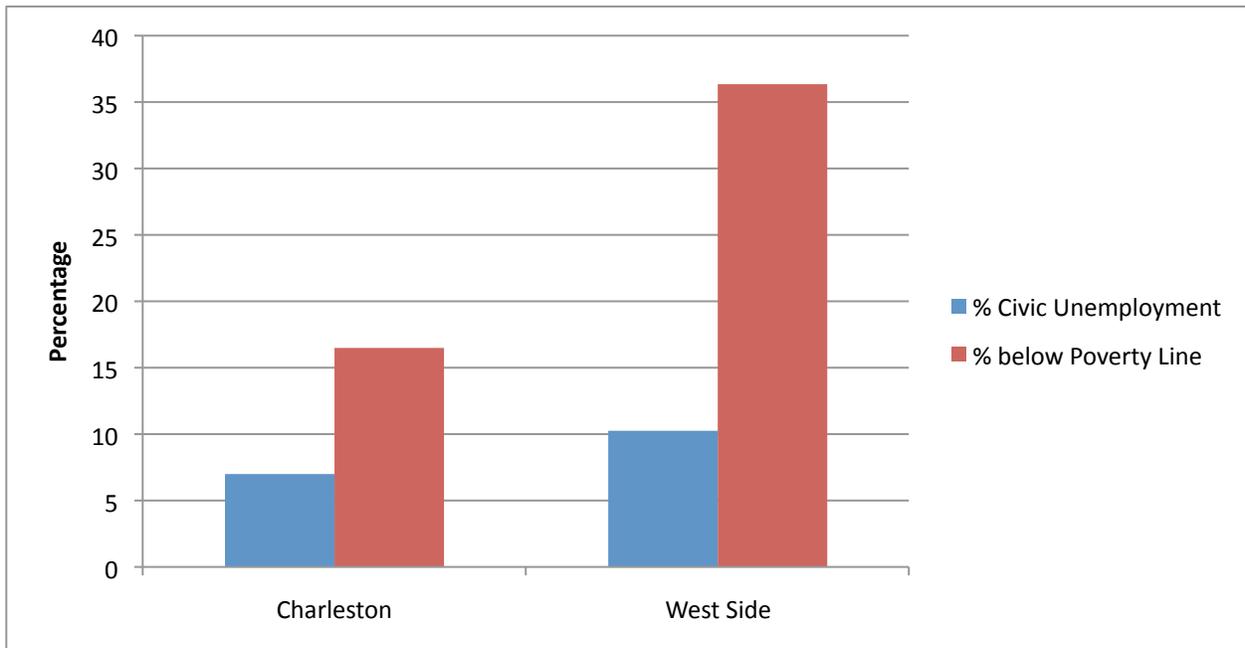


Figure 43. Comparison of unemployment rates and percentage of population below poverty line for Charleston and the West Side

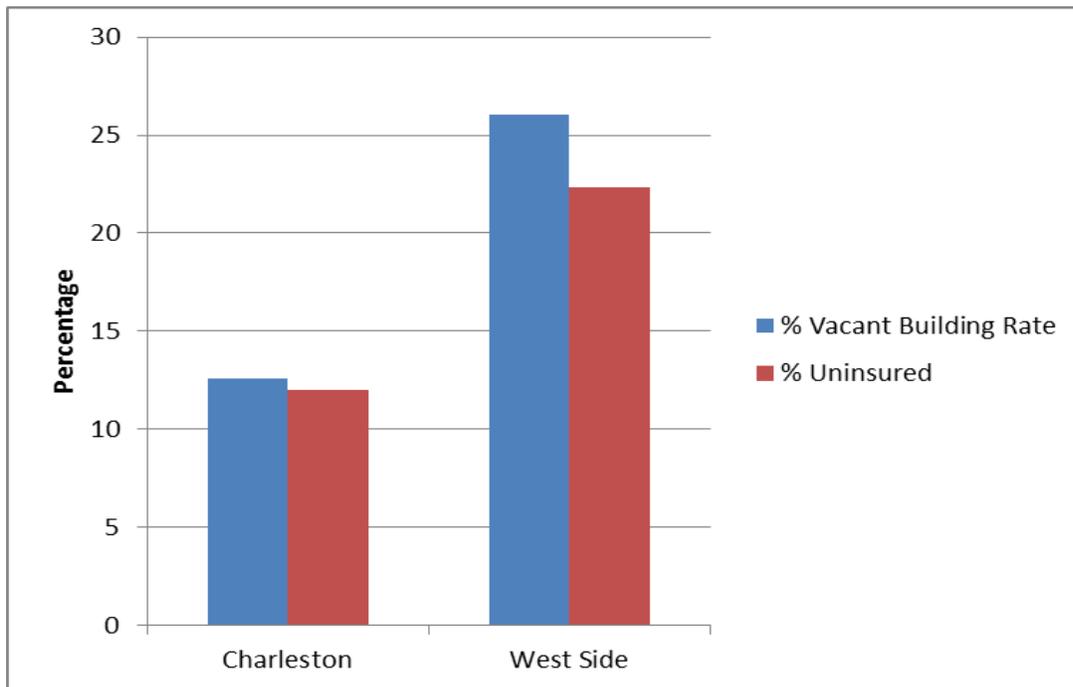


Figure 44. Comparison of building vacancy rates and percentage of people without health insurance for the West Side and Charleston

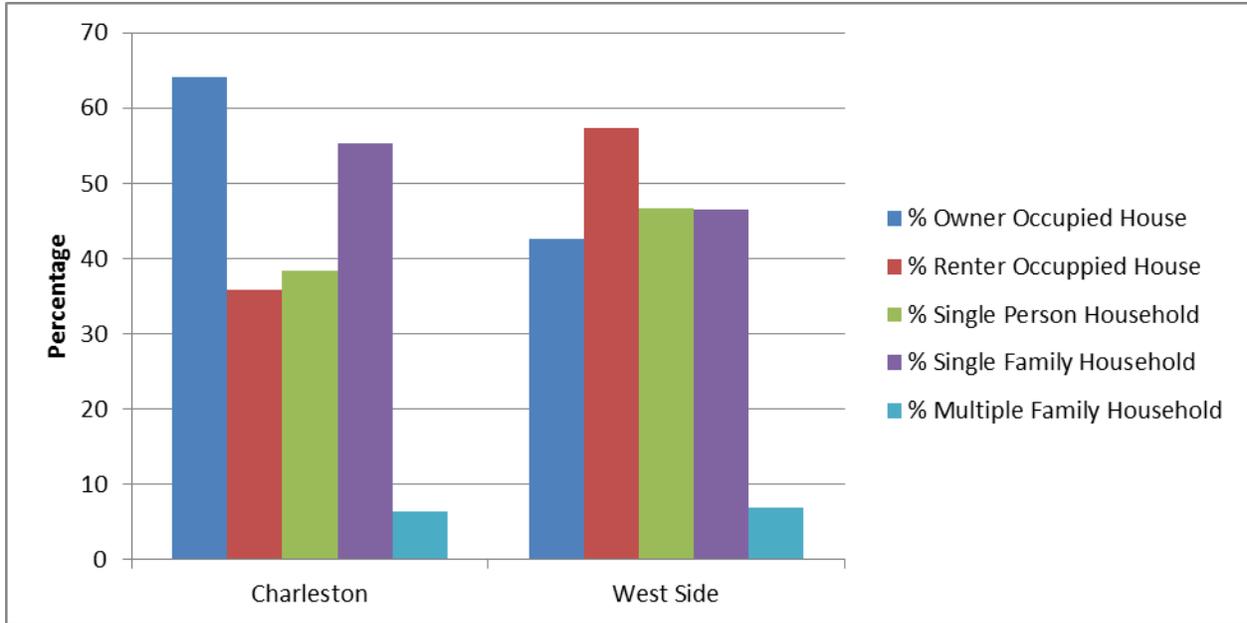


Figure 45. Comparison of housing trends between West Side and Charleston

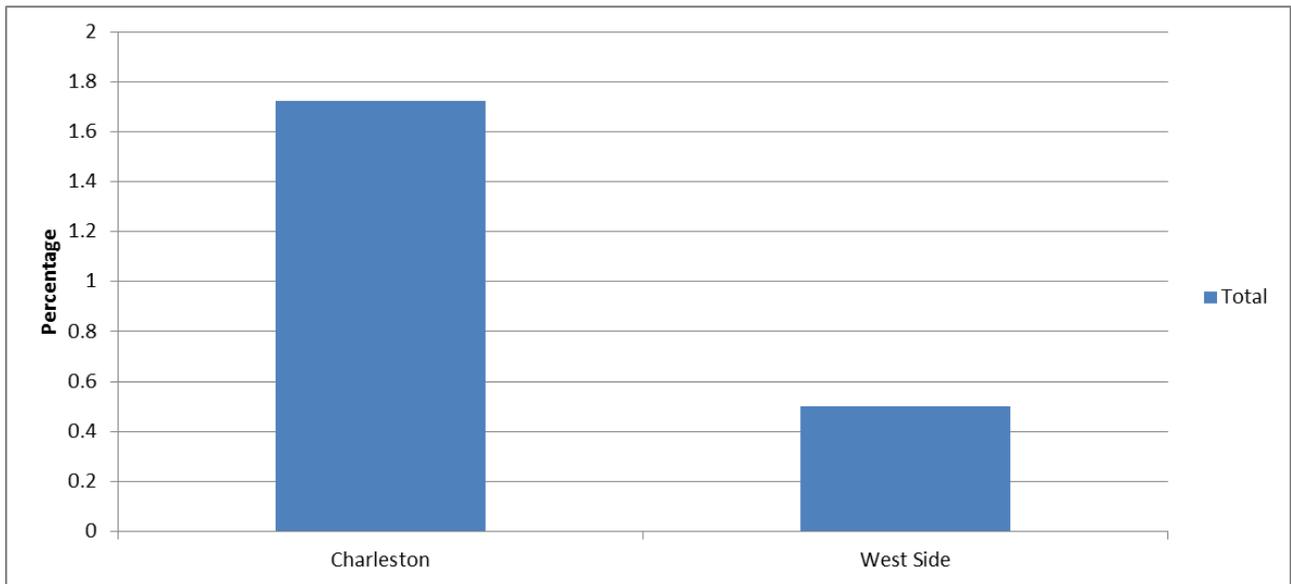


Figure 46. Comparison of relative percentage of green space by Block Group for the West Side and Charleston

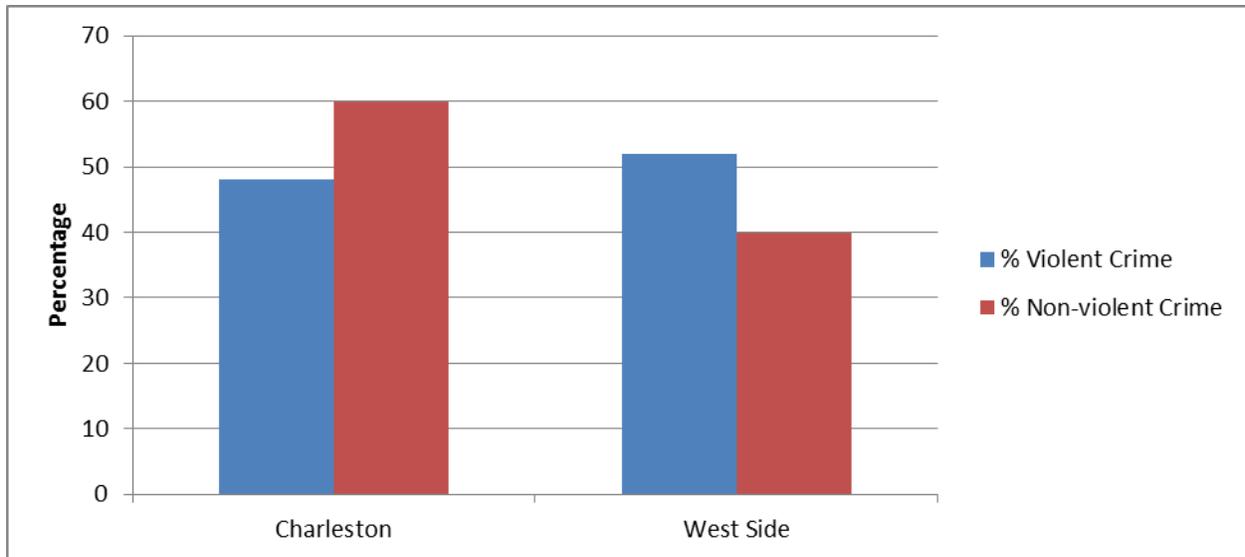


Figure 47. Comparison of crime statistics between West Side (West District) and the remainder of Charleston (South and East Districts combined)

Conclusions

In conclusion, this study has demonstrated that considerable inequality exists between the various indicators measured for residents that live in the West Side and residents that live in the remainder of Charleston. These findings can be summarized as follows:

- The West Side has a substantial African-American and mixed race population that appears to have historical roots back to the twentieth century.
- Education indicators suggest that West Side students lag behind their city counterparts in math and reading skill at the middle school level. High school proficiency is more difficult to analyze for West Side students specifically, but based on diploma obtainment rates, there also is a significant lag in the percentage of students that finish high school. College degree obtainment is notably lower for West Side citizens and likely plays a role in why West Side workers earn over 30,000 less in median income than other Charleston workers. This disparity also is at least partially responsible for why West Side residents have high unemployment rates, low insurance rates, and have a significantly higher percentage of the population living below the Federal Poverty Line.
- West Side workers consistently face obstacles in both finding adequate paying jobs and in traveling to jobs already procured. The high dependence on walking and public transportation restricts the geographic range in which West Side residents can travel for work.

- West Side neighborhoods are situated in areas characterized by high rates of violent crime and low accessibility to green space for exercise and enjoyment. Building vacancy is a serious issue for the West Side and home ownership is considerably lower than city-wide trends.

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