



Rocky Road

A Brief Examination of Travel Conditions for African American Workers in South Carolina

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Abstract

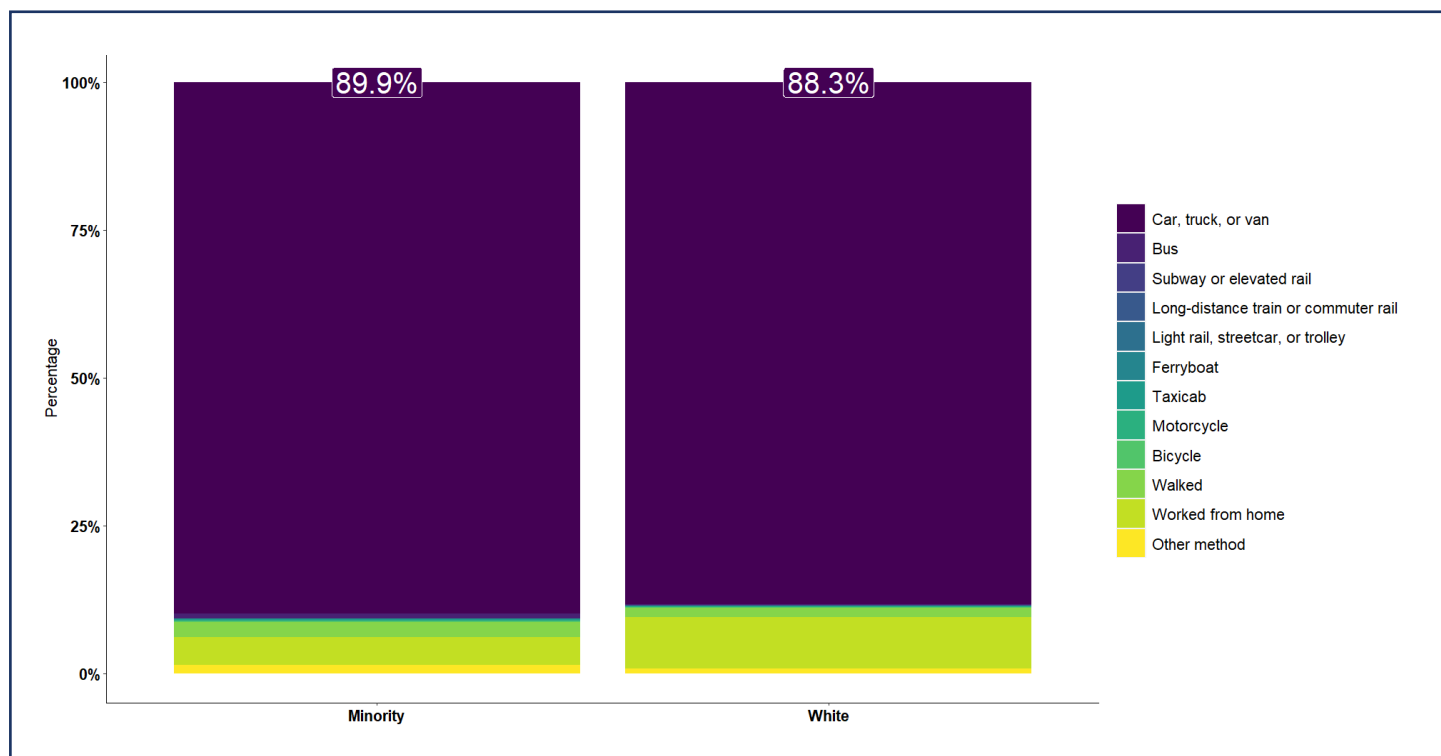
In South Carolina, most travel is done on the road. Evaluating travel conditions is an important step for the Commission for Minority Affairs in an effort to describe the socio-economic status for minority communities. In this brief, we explore the conditions of traveling for work for African Americans. We examine data provided by American Community Survey 5-Year Estimates (2022) and the South Carolina Department of Transportation. Data suggests that African Americans are the group that commute via vehicles the most, however, in places where there are significant proportions of African American residents, primary roads are sparse and in poor conditions but with few maintenance projects.



Transportation is a major facet in our daily activities, and its availability is an important indicator of socio-economic opportunities for minority communities. In South Carolina, most traveling is done in vehicles on the road. If we limit our scope to means of transportation to work, we can see that over 87% of travel was done via cars, trucks, vans, or buses (see Figure 1). On the other hand, travel for the purposes of work is not essential for some people, which raises questions about the unequal access to transportation resources. In Figure 1, for example, we can see that the White population has almost twice as much the share of people working from home as the Minority population.



Figure 1. Means of Transportation to Work



On average, African American and White workers spend about the same amount of time travelling to work. Median travel time for both groups is 20 minutes. The differences lie in the time they depart for work. If we plot the percentage of people leaving for work against time, we can see that the White population has a much tighter distribution, with a peak between 6 a.m. and 9 a.m. Although African American workers overlap with Whites, their distribution spreads further towards the afternoon hours. For the workers who depart for work in the afternoon hours, not only would they find it difficult to spend time with family members who work during regular daytime hours, but they would also leave work at nighttime, which increases the risk of accident when traveling on poorly lit and maintained roads.

In terms of means of transportation, African American workers account for the highest percentage of workers commuting by cars, trucks, or vans (91%), while also accounting for the lowest percentage of remote workers (4%). African American workers also have a high percentage of workers commuting by means of public transport compared to other groups, ranking second behind Asian American and Pacific Islanders. In terms of vehicle availability, nearly half of White households have two vehicles available, whereas most African Americans households are about evenly split between having one and two vehicles available. Generally, the median earnings for workers who take private transportation are higher than those who take public transportation. However, the earning gap between White workers and African American workers are bigger for those who use private modes of transportation over those who take public transportation.



Figure 2. Departure Time for Work

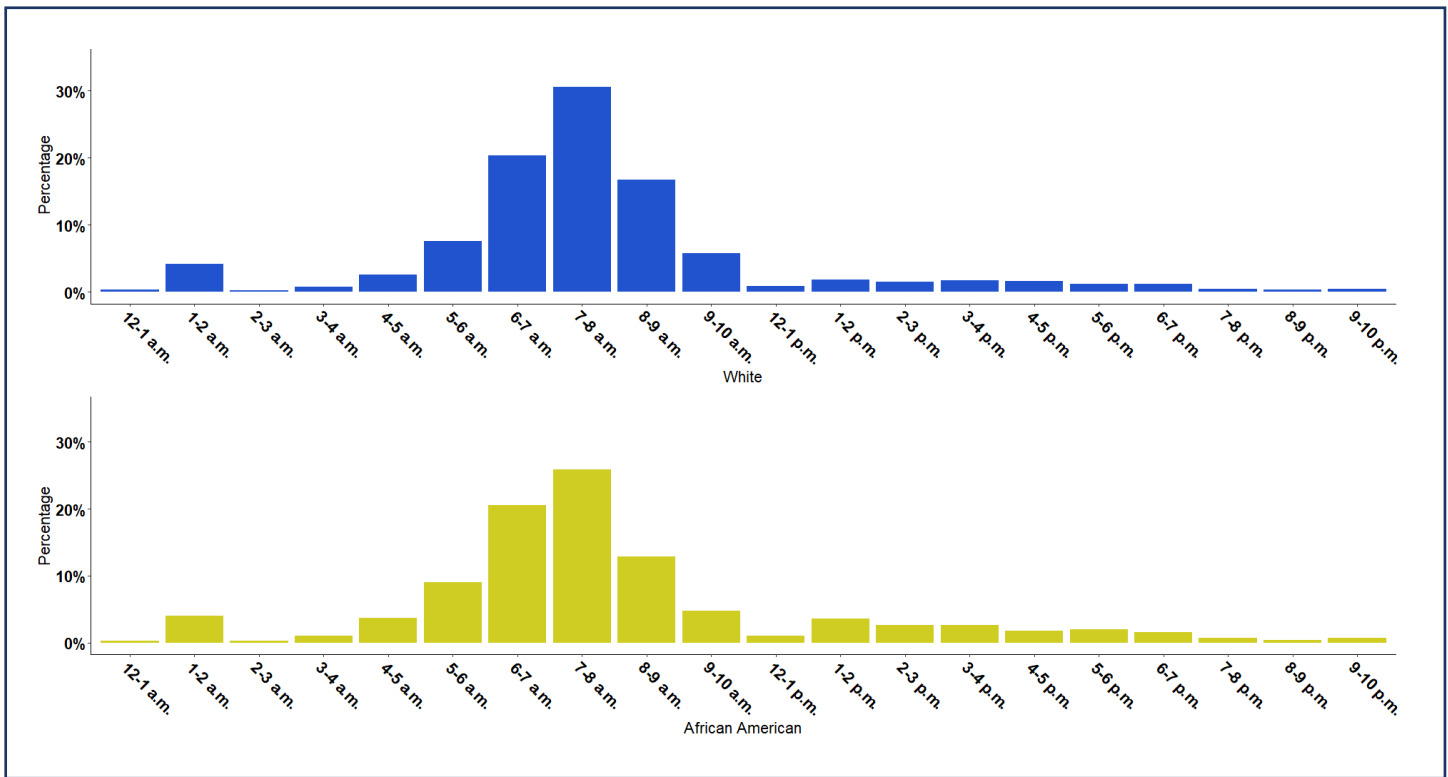
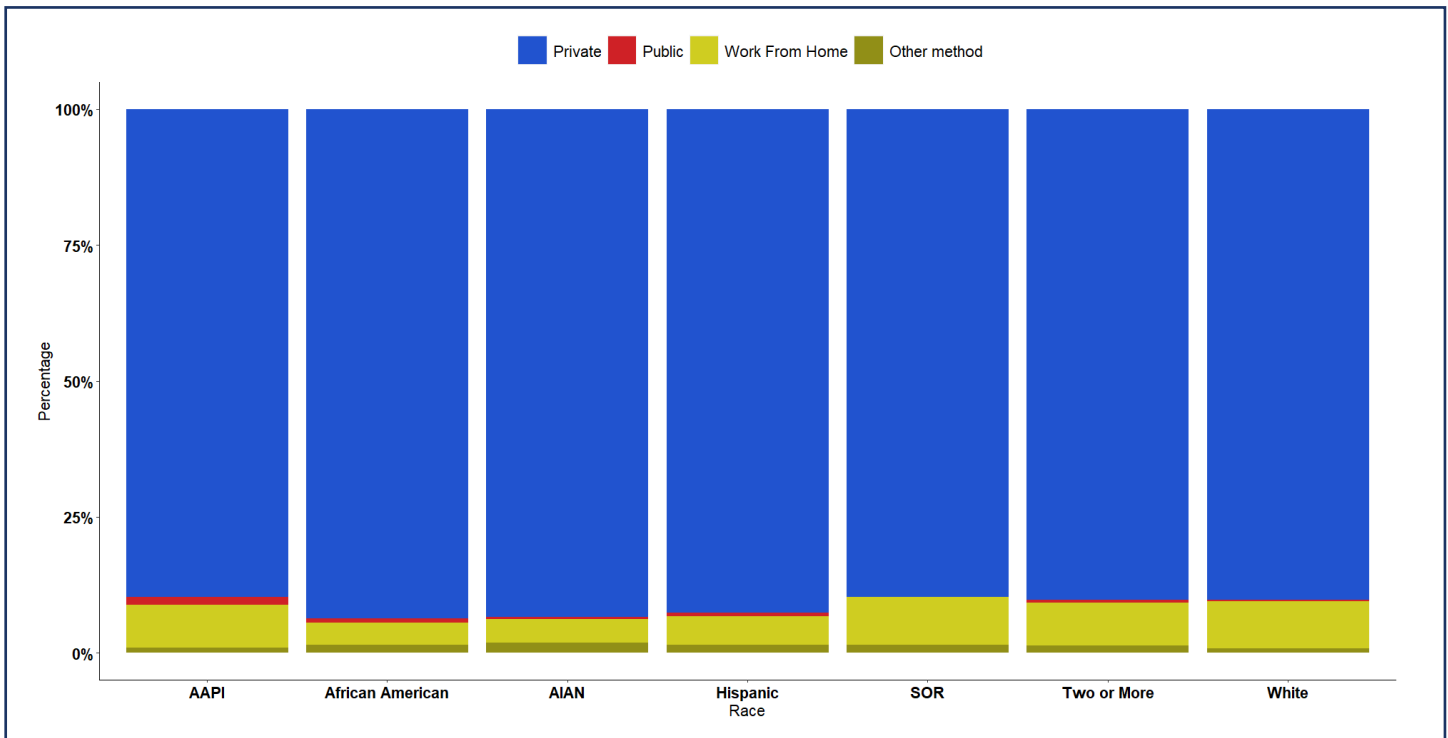


Figure 3. Modes of Transportation by Race



*SOR = Some Other Race



Figure 4. Number of Vehicles in Household

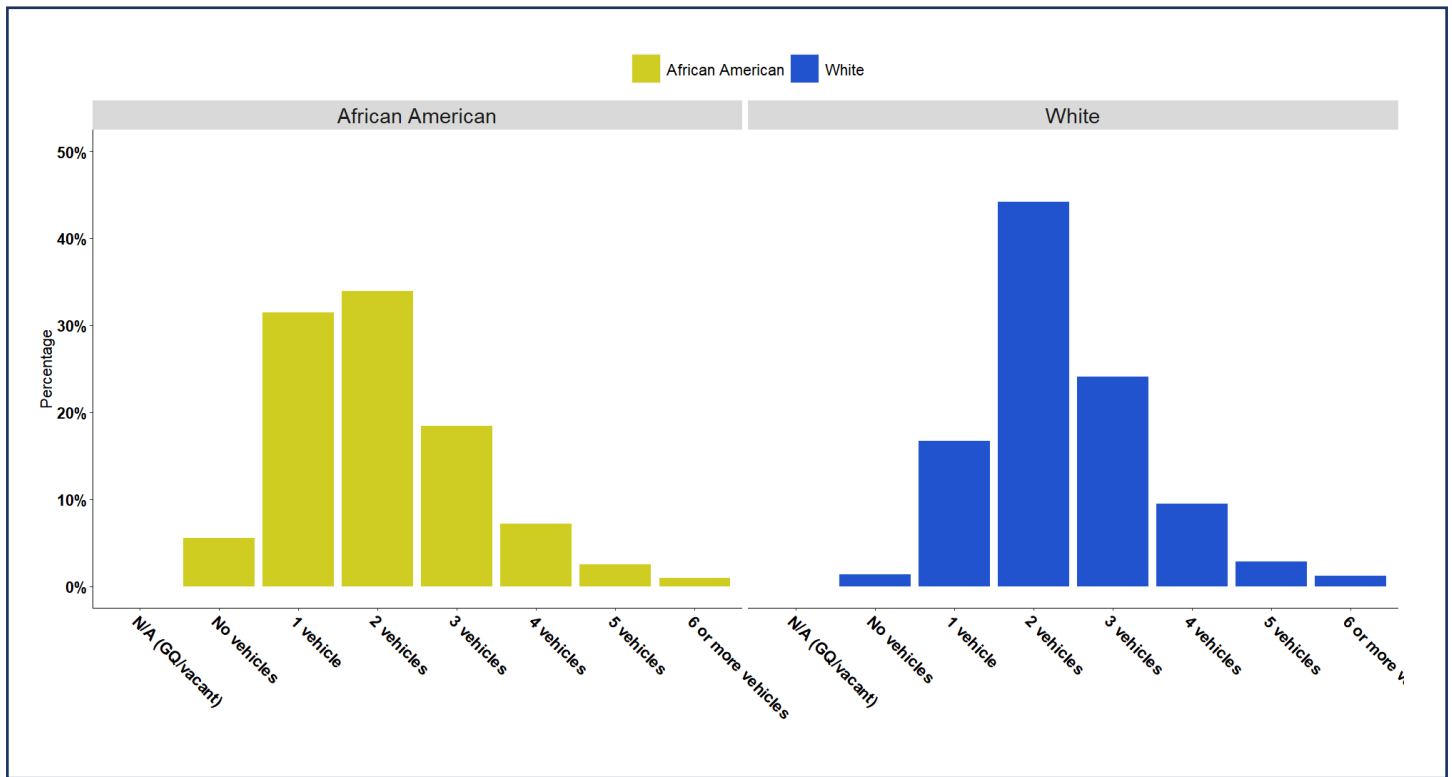
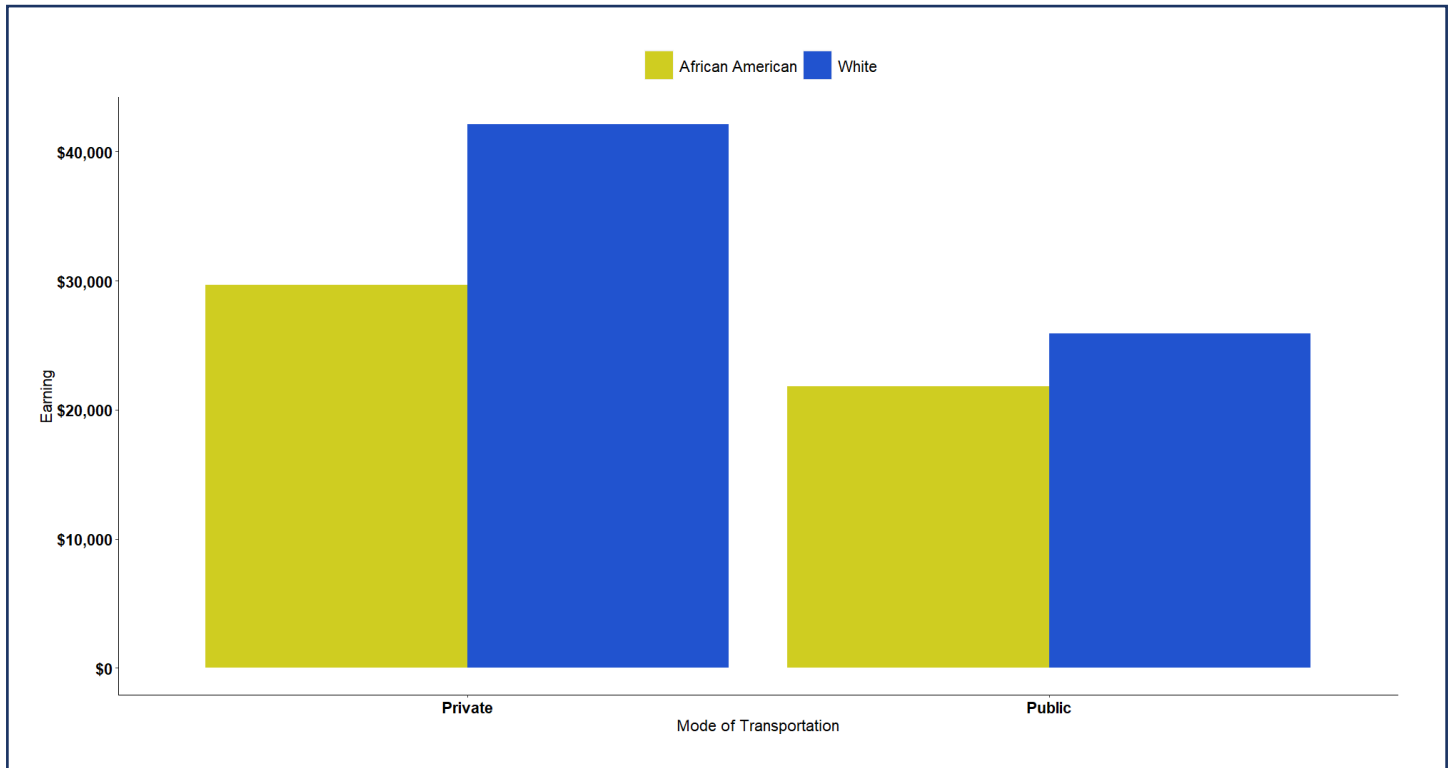


Figure 5. Earnings by Modes of Transportation to Work by Race

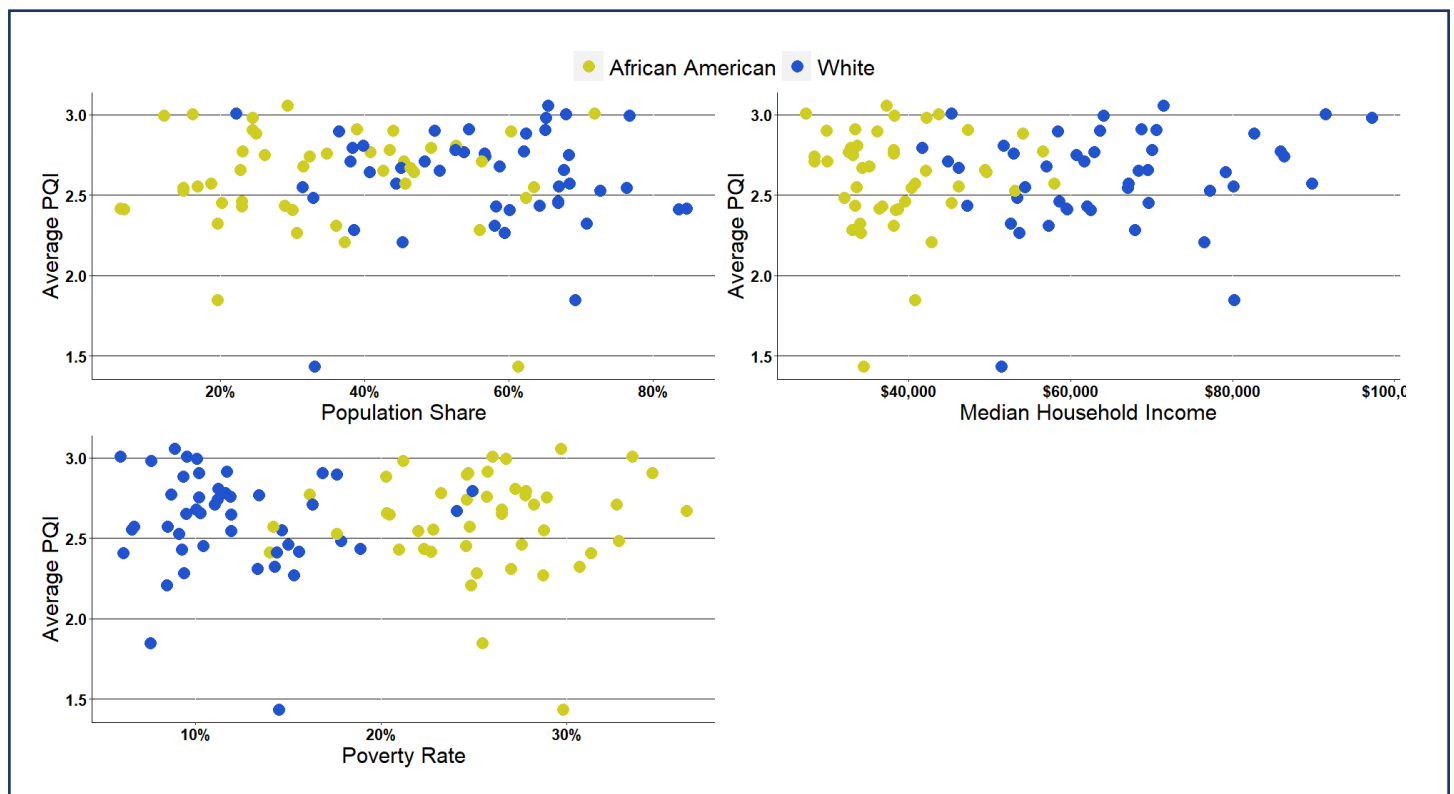




To support communities that rely heavily on automobile transportation, the roads connecting their homes to their places of work must be properly maintained. Hence it is important to consider the infrastructure side of transportation. The South Carolina Department of Transportation (SCDOT) provides data so that the public can stay informed about the transportation system in the state. One of the many useful datapoints they provide is Pavement Quality Index (PQI). This index is based on a 5-point scale, 0 being the worst condition and 5 being the best. With this index, SCDOT evaluates the conditions of the roads across the state to assess the needs for interventions and maintenance projects.

With this data, we can calculate the average PQI weighted by the length of the roads. We can then plot the average PQI against our typical demographic data points obtained from the American Community Survey (ACS) and try to capture a pattern. Here we plot average PQI against each racial group's share among population, their poverty rates, and their median household income. [Figure 6, Figure 7, Figure 8: scatterplots of Avg PQI vs. African American population share, poverty, and median household income] Using this data and these methods, we were unable to observe any statistically significant correlations between average PQI and these variables at the state level. However, we can leverage spatial data for this inquiry as both ACS and SCDOT offer geospatial data.

Figure 6-8. Average PQI vs Population Shares, Median Household Income, and Poverty Rates



¹ South Carolina Department of Transportation, "Federal-Aid Secondary Pavement Improvement Project Prioritization Process" (Columbia: South Carolina Department of Transportation, July 25, 2019).

Figure 9. Primary Road PQI in South Carolina

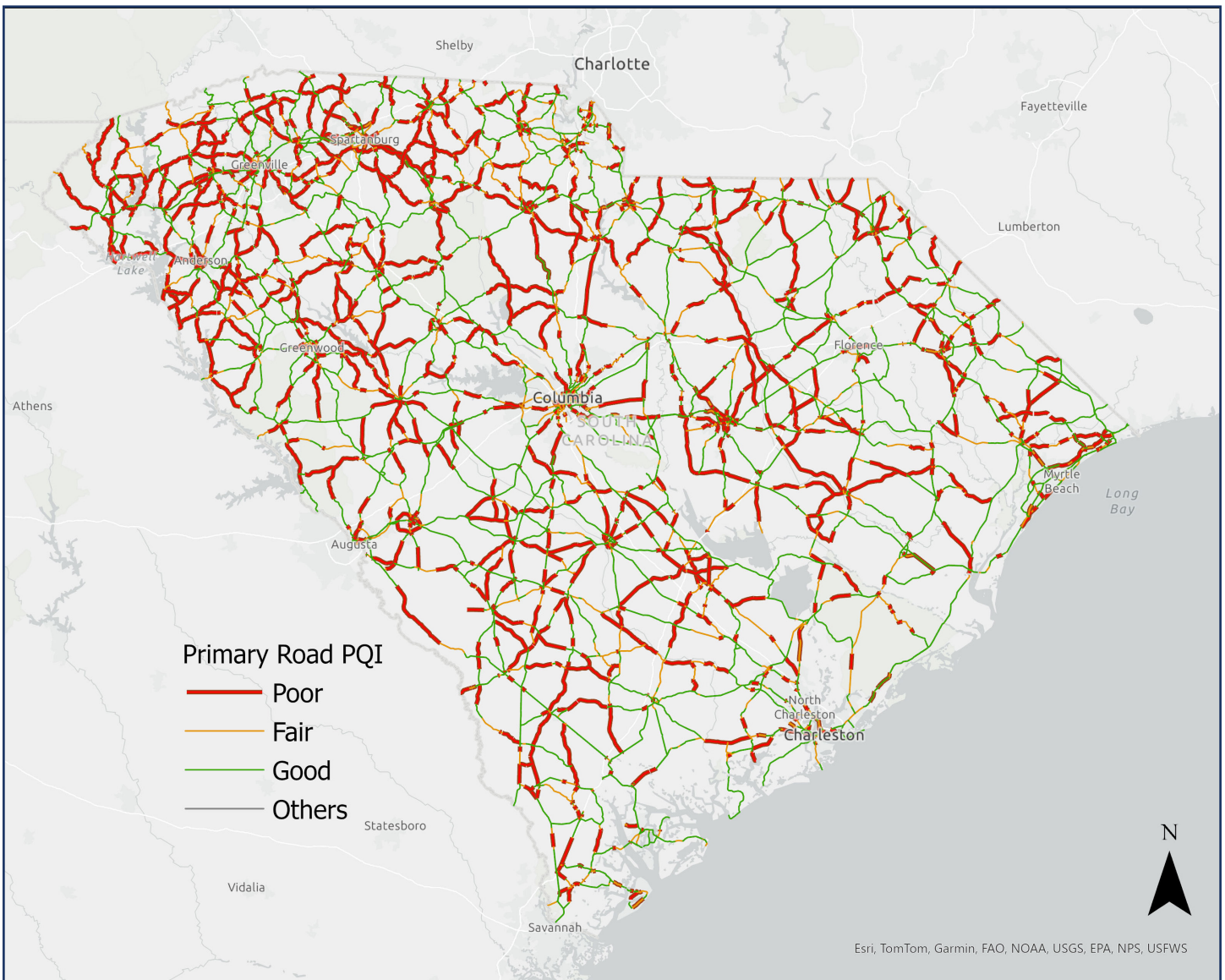


Figure 9 shows the primary roads in the state and the conditions, red being poor and blue being fair or good condition. We find that the area with the most concentrated primary roads in “poor” condition is in the upstate, in Pickens, Oconee, and in the areas surrounding Greenville and Spartanburg. We can also observe a cluster of poor condition primary roads in the area around Sumter, east of Columbia. Primary roads are sparser in the northern Midlands counties, southern Pee Dee and Lowcountry areas. The poor condition roads in these areas are lengthier than those in the Upstate. Moreover, these areas account for higher shares of population with commute time twice as much as the state median of 20 minutes. Thus, roads in “poor” condition might pose safety concerns, increased vehicle maintenance costs, and extended travel times for residents in these areas and/or barriers for further economic investment and development.



Figure 10. Share of Workers With 40-60min Commute Time

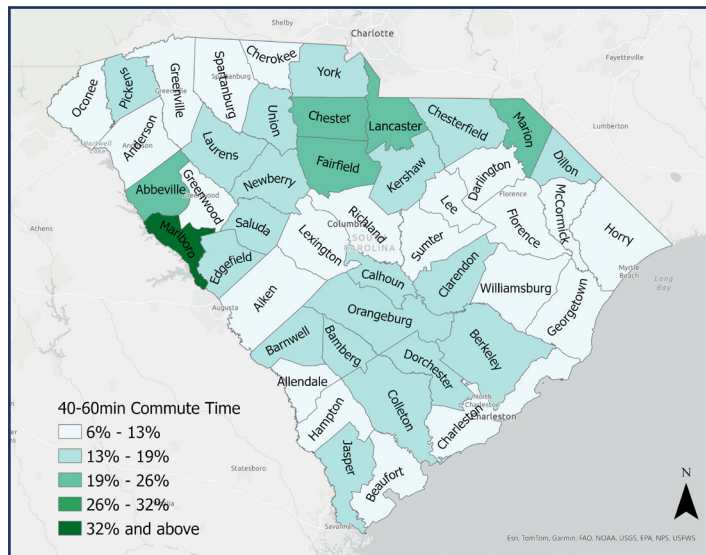
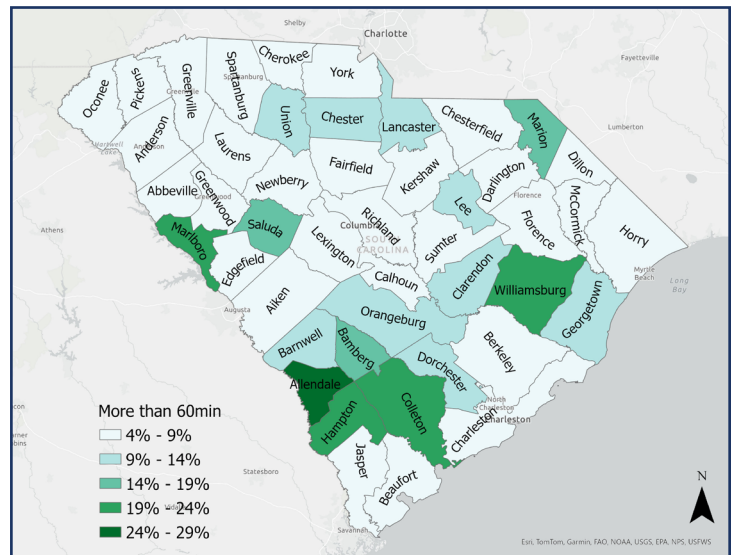
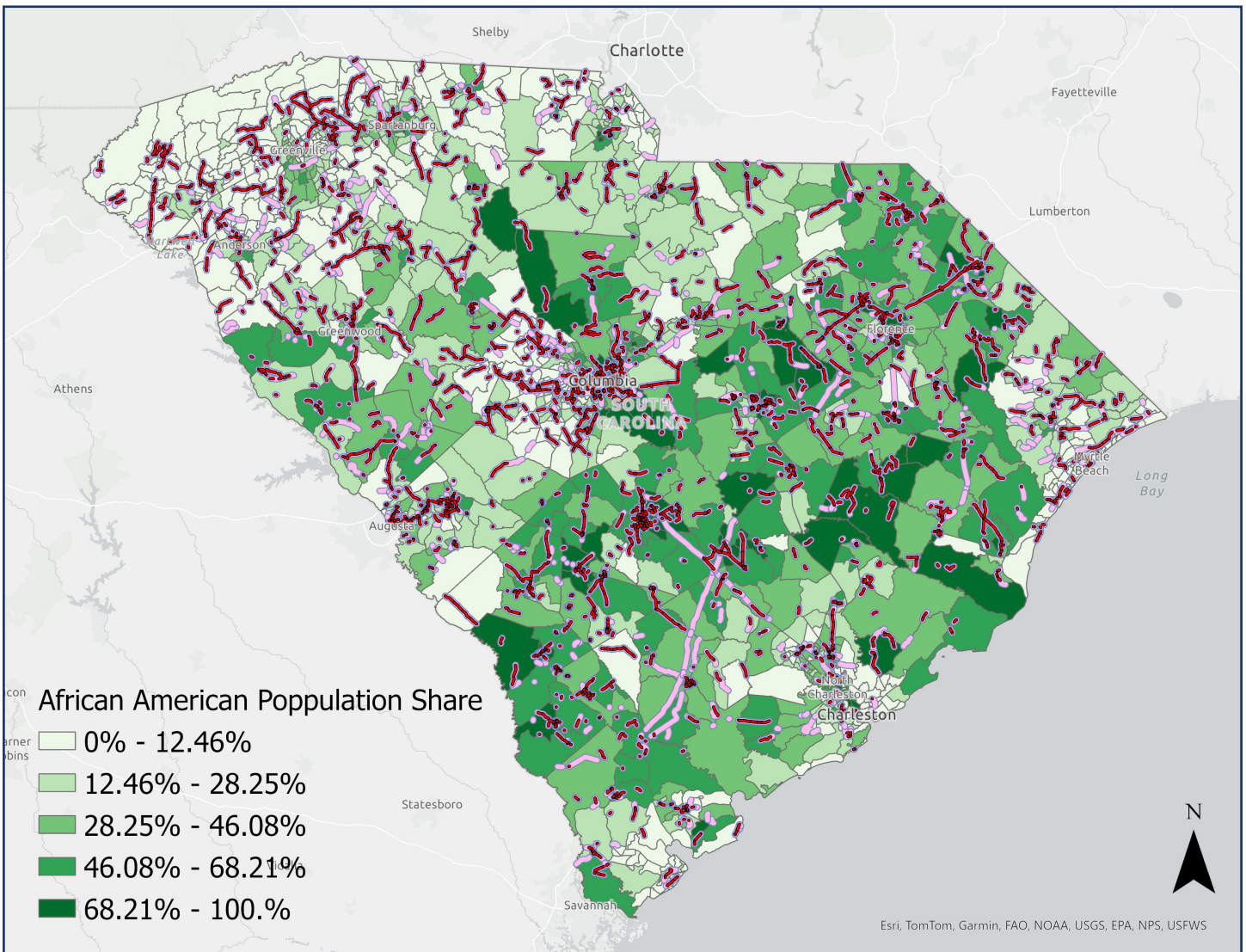


Figure 11. Share of Workers With 60+min Commute Time



Figures 10 and 11 illustrate areas where the shares of population with exceedingly long commute time are comparatively high in the state. In Chester County, Lancaster County, Fairfield County, Kershaw County, and Marion County, about 20% of the residents count on commute times between 40 and 60 minutes. In Hampton County, Colleton County, and Williamsburg County, about 20% of the residents have commute times of more than 60 minutes. At 29%, Allendale County has the highest share of residents with commute time more than 60 minutes.

Figure 12. Active Rehabilitation and Resurfacing Projects and African American Population Share



At this point we can introduce the geospatial data for all current active rehab and resurfacing projects from SCDOT (Figure 12). The dark red lines in Figure 12 shows the active projects that are on poor condition roads while the pink lines show projects on fair and good condition roads. The graduate color scales represent the share of African Americans in that grid. It is true that the Upstate, Augusta, and the Columbia-Lexington Metropolitan area are more densely populated in general, and it therefore makes sense that there are higher concentrations of projects in those areas, as opposed to the Lowcountry. However, we can observe clear absences of active projects in the northern Midlands counties and the southern parts of the state. These are the areas where there are high concentrations of African American population as well as a sizeable number of roads in “poor” condition.

In Figure 13 and 14, we bring back the road condition data for said areas. As we have observed in Figure 10 and 11, these are also the areas where there are high proportions of residents with lengthy commute.

Figure 13. Active Projects and Primary Roads Zoom In (1)

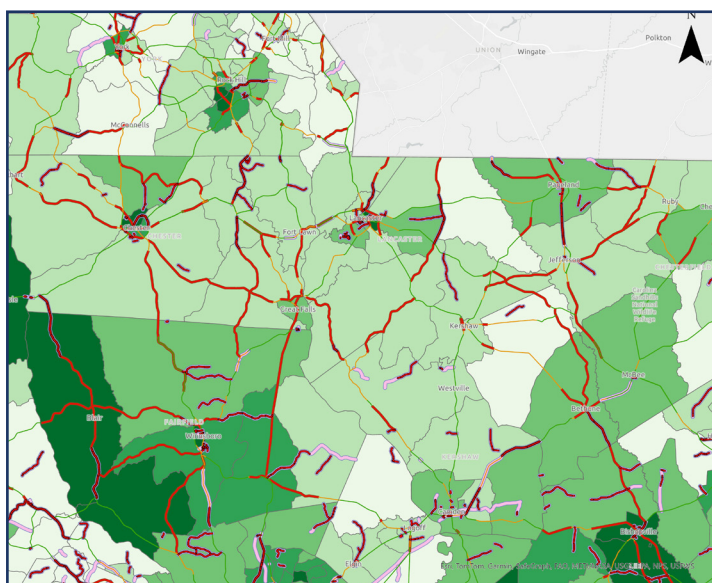
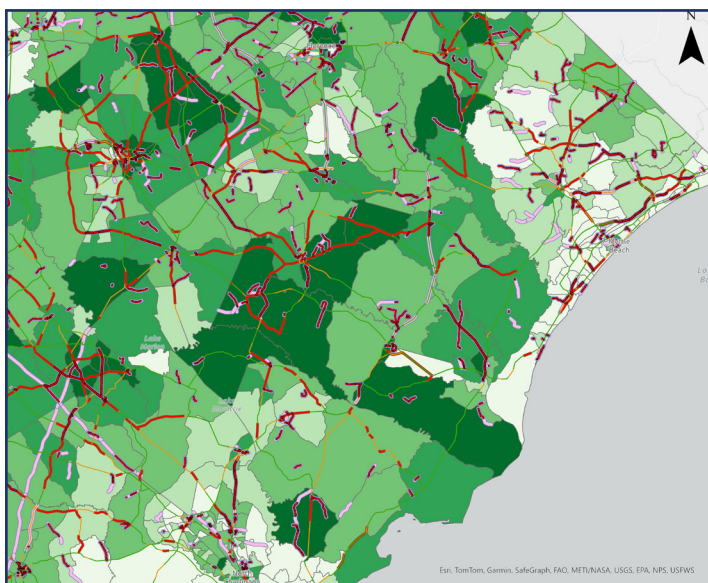


Figure 14. Active Projects and Primary Roads Zoom In (2)



Concluding Remarks

Among residents who are driving longer than 40 minutes to work, it is likely that they are using primary roads for at least a portion of their commute. The accessibility, smoothness, and safety of primary roads are thus more important for these residents. Using African Americans as an example, the areas where there are sizable percentages of such residents largely corresponds to the areas where African Americans represent a significant portion of population. While we do observe clusters of active resurfacing projects around Augusta, Orangeburg, and Florence, unlike the upstate Greenville area, many of these projects do not cover primary roads.

African American residents in the state also have a wider spread of departure time for work and less accessible vehicles in each household than White residents. While using spatial data allows us to examine where poor condition roads are and where maintenance projects are happening, the actual commute experience may not be well reflected in these data. As many of these projects date back to 2 to 3 years, depending on the time of construction, prolonged road work may be of inconvenience to not only commute but also life after work. Using field interviews to collect data from residents in the areas discussed above may provide insights for the next step of research.

Lastly, the data does indicate that there are some discrepancies with how transportation planning policies are implemented across the state, as well as how maintenance and renovation work is undertaken. Infrastructure is often theorized as a “taken for granted” or “subliminal” object rather than an ongoing and active social process. This brief, hopefully, brings to awareness how uneven this “process” of infrastructure shapes the state’s various communities—by linking, delinking, slowing, speeding up, etc.—access to economic and cultural resources. This is an area that the Commission for Minority Affairs intends to provide some data for state planners and policymakers.