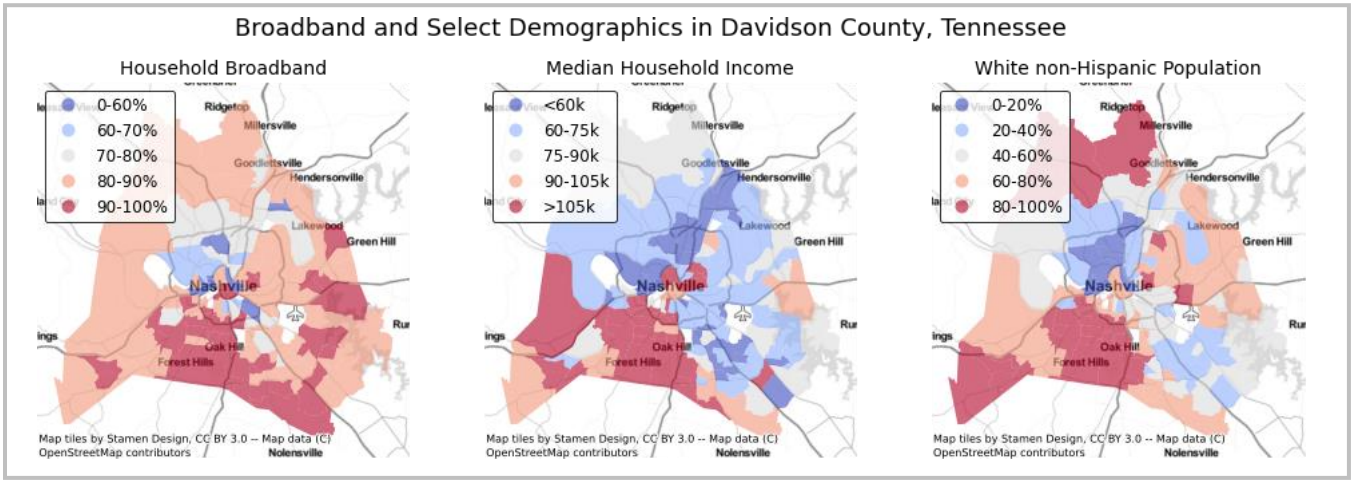
Race and Ethnicity are Significant Predictors of Broadband Internet Access in Tennessee

Garrett Tate, January 2021

Home internet access has gained increasing importance for decades, and its influence throughout our lives has never been clearer than during the COVID-19 pandemic. Although key for employment and education, access to high-speed internet varies widely. For example, you can see in the figure below that for Nashville in Davidson County, TN, broadband access is often lowest where there is low household income and a low proportion of White non-Hispanic people, mirroring national statistics[1]. If race and ethnicity affect internet access separately from economic and location effects, it would suggest deeply rooted societal problems and particularly difficult challenges to widening internet access for all.



My analysis of US Census Bureau data indicates that race and ethnicity (on top of economics and population density) are statistically significant predictors of household broadband internet access in Tennessee. An in-depth summary and the full Python modeling code can be found at github.com/Tate-G/portfolio. I first tested the ability of polynomial regression models to predict household broadband access without using racial and ethnic data, and I did find that median household income, median home value, and population density were all statistically significant predictors of broadband access. However, I also found that adding information on race and ethnicity improved regression model performance. Statistically significant racial and ethnic factors were the percent of Hispanic, Black, and American Indian people (each tending to decrease household broadband) and the percent of White non-Hispanic people (which tended to increase household broadband). Interactions between factors were also important, for example as seen below: even within lower-income census tracts, broadband access decreases with an increasing percentage of Black non-Hispanic people.

My results show that internet access is not simply an economic or logistical problem, but one with racial and ethnic biases as well. We must incorporate knowledge of these biases into any projects expanding broadband access into new communities. Additionally, our reliance on internet access during the COVID-19 pandemic is likely to have exacerbated educational and employment inequalities for some minority communities, effects that should be considered in policy decisions and social efforts going forward.