

Parking in DC

A story of millions of red tickets and revenue with unequal enforcement on communities of color

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Executive summary

Every driver dreads receiving a parking ticket on their dashboard. However, for those with ample income, this ticket is a minor inconvenience that can easily be settled. In contrast, a ticket of any amount for an individual with low-income is burdensome at minimum and may mean the choice between groceries or paying the fine. In DC, a city known for its history and present as a predominantly Black city, parking tickets are plentiful. My dashboard (accessible at https://public.tableau.com/views/parking_dc/Story1) can be used to explore how the enforcement of parking tickets intersects with issues of race and income in DC in 2019, resulting in a disproportionate burden on low-income communities of color.

Context

DC has a long history as both the nation's capital and a city in its own right, a city that [in 1957 became the first major US city to be majority Black](#). DC is also home to many immigrants and naturalized citizens. As a result of racist policies, gentrification, and the steady flow of federal government-related job holders in and out of the city, the city is geographically divided by ethnicity, race, and income.

Audience

The primary audience for this dashboard is DC government officials, activists, and residents. The goal is to demonstrate how something as seemingly mundane as parking tickets is unequally enforced and disproportionately burdensome on low-income residents and communities of color in DC, particularly Black residents.

Data Source

- **Source:** All data was publically available via government sources, including DC Government and the U.S. Census Bureau.
- **Collection Methods:** Using the [OpenDataDC platform](#), I downloaded parking violation data for January through December of 2019 as well as census shape files for DC. Using the [tidycensus](#) package, I queried the [American Community Survey 5-Year Data](#) for 2019 on race, ethnicity, income, and other demographic variables.
- **Privacy Considerations:** Although precise geographic locations were shown in the dashboard, these values contain only parking fine amounts and categories rather than any identifying factors (such as ticket number) which may be used with other information to identify an individual. All other information is aggregated to the Census Tract level.

Data Cleaning and Transformations:

- **Aggregation:** I aggregated data when relevant to the Census Tract level. I also attempted to geocode the individual ticket data to Census Tract level but this process

was time and resource intensive for the amount of data without major added benefit to the visualizations.

- **New variables:** The original data includes 220 unique descriptions for the violation, I manually coded these into 17 simpler violation types. I also created a clean date column, days of the week column, and DC quadrant column, but did not ultimately use these values in the vinyl visualization. Using Tableau, I created two new variables:
 - “Majority White” – Boolean Variable; True if ACS tract-level data was greater than or equal to 50% for percentage White residents and False if less than 50%.
 - “Cost Burden” – Boolean Variable; True if ACS tract-level data was greater than 30% for Average Rent as a Percentage of Income and False if less than or equal to 30%.
- **Descriptive statistics:** The final dashboard includes data on 1,448,823 parking tickets issued from January to December 2019. The fine amount ranged \$1 to \$1,100 with an average amount of \$56.56.
- **Biases/Sampling:** As can be seen in the dashboard, there was missing or null data for a small number of ACS census tracts. Future efforts could be made to gather this data. The conclusions described below, while relevant, are a result of visual exploratory analysis and not statistical modeling.

Platforms and Technologies:

- **RStudio:** I used RStudio to query ACS data and clean and merge all data.
- **Tableau:** I used Tableau, specifically Tableau Desktop and Tableau Public, to visualize the data and publish the dashboard (or Tableau “Story”). I also used Tableau’s “Create Calculated Field” feature to create the two variables explained above. This could also be accomplished in R, but I was already working in Tableau at the time.

Key Conclusions

DC enforces some parking ticket violations more in predominantly high [cost-burdened](#) (based on average percent of income spent on rent), non-white, and/or Black neighborhoods. As seen in the maps below, DC issued car condition tickets and tickets for abandoned or “dangerous” vehicles primarily in majority non-white neighborhoods. While some might say that these two categories make up a small proportion of tickets or that wealthier car owners are more likely to have nicer cars or be able to afford repairs, the existence of these types of ticket violations already disproportionately burden low-income individuals, and in DC, non-white and Black residents. Although the majority of fines fall within the \$30-100 range, the largest fines (\$800-1100) are disproportionately in the non-white, low-income, and/or majority Black neighborhoods. This trend reflects [research cited by the Urban Institute](#). DC parking ticket enforcement can and does disproportionately impact low-income communities of color.