

## **Executive Summary**

My project is titled Finding Rentability in Washington, DC: Identifying Neighborhoods with Strong Rental Profitability and Stability. I am selecting the Quantitative Social Science Research (QSSR) track because my question is rooted in understanding human behavior, social dynamics, and policy-relevant housing outcomes rather than building a predictive pipeline. The problem I want to explore is: where in Washington, DC are small-scale landlords most likely to achieve sustainable and profitable rental outcomes? This matters because housing affordability and neighborhood stability are pressing concerns in DC, while at the same time young investors like myself are exploring “house hacking” strategies that depend on reliable rental demand and positive cash flow. Policymakers, tenants, and landlords alike care about this question because it connects directly to issues of affordability, stability, and economic opportunity.

## **Background and Motivation**

The question of where to invest in DC rental properties is pressing because the city faces strong demand pressures, affordability challenges, and uneven growth across neighborhoods. Some neighborhoods experience long renter tenures and stable occupancy, while others face higher turnover, vacancy, or crime risks. These differences matter both for tenants, who want affordable and safe housing, and for landlords, who want consistent income and long-term tenants.

From my own experience following housing markets and from local news coverage, I know that rental prices in DC have increased unevenly since the pandemic, with some areas recovering more quickly than others. Scientific literature and policy research also highlight that housing outcomes are influenced by factors such as transit accessibility, unit size, and neighborhood-level crime. For example, research has shown that households are more stable when housing is affordable relative to income, and that vacancy patterns often correlate with access to jobs and transportation. By systematically studying this with data, I can move beyond anecdote and create a framework that shows which parts of DC are most promising for sustainable rental investment. This approach also provides a lens into broader questions of affordability, stability, and urban inequality.

## **Data Sources and Availability**

I will rely on at least two primary sources, but in practice I expect to merge several. First, I will use Zillow Research's Observed Rent Index (ZORI) to obtain rental price levels and trends for DC ZIP codes. This dataset is publicly available, updated regularly, and has been successfully accessed. Second, I will use Redfin's Data Center, which publishes median home sale prices by ZIP code, to approximate the purchase side of the rent-to-price yield calculation. This dataset is also free and downloadable.

To measure occupancy, vacancy, tenure stability, and housing characteristics, I will use American Community Survey (ACS) tables from the Census Bureau. These include measures such as median gross rent, year householder moved into unit (to proxy turnover), tenure by bedrooms, and vacancy status. These tables are publicly accessible through [census.gov](https://census.gov) and can be downloaded immediately. I will also incorporate contextual data such as WMATA transit station locations, which are available in GTFS format from the WMATA developer portal, and crime incident reports from Open Data DC, which provide neighborhood-level measures of risk. All of these datasets are already publicly accessible, require no payment or special credentials, and I have confirmed their availability.

### **Approach Overview**

My specific questions are: which neighborhoods in DC offer the strongest rent-to-price yields, which neighborhoods have the lowest turnover and vacancy, and how do contextual factors such as transit access and crime affect these outcomes? My expectation is that neighborhoods with stronger transit access and a housing stock aligned with renter household sizes will show both higher yields and greater stability. Conversely, I expect that areas with higher crime rates will show weaker rental outcomes even if prices are lower.

To explore this, I will compute a gross yield measure that compares annual rent to median purchase price by ZIP code. I will then compare turnover rates and vacancy levels across neighborhoods using ACS data. Transit access will be measured by proximity to Metro stations and bus routes, and crime will be incorporated as an additional control. By combining these factors, I will develop a "rentability score" that grades neighborhoods on profitability and stability.

The evidence that would support my expectations would be statistically significant associations between transit access and higher yields, and between housing stock alignment

(such as a higher share of one- and two-bedroom units) and longer renter tenure. Evidence against my expectations would be if these associations disappear once controlling for other factors, or if yield and stability do not align geographically.

I also recognize risks and contingencies. If Zillow's rent data has gaps at the ZIP level, I will substitute HUD's Fair Market Rent benchmarks, which are available by bedroom size for the DC metro area. If Redfin's data proves too noisy for small geographies, I will use the DC Office of Tax and Revenue's sales dataset instead. If ACS estimates are too uncertain at the tract level, I will aggregate to the ZIP level to reduce error. In the event that one dataset becomes unavailable, I will pivot to alternatives such as HUD's Small Area Fair Market Rents or publicly available Kaggle datasets on DC housing.

## **GitHub**

[CamerenSpicher/414\\_capstone](#)