*Crime Analysis Determined by Neighborhood Values*

**Background**

Motor vehicle theft in Minneapolis has been on the rise since 2020 and a slow down is not in sight; over 700 cars were stolen in Minneapolis in January 2023. Knowing where this crime occurs frequently is useful when determining if an area is safe to live in or visit.

**Data structure and breakdown**

The city of Minneapolis has datasets that are free and open to private citizens. 311 data was the initial draw to using this data source. The interest in 311 and analyzing the frequency and types of calls coming out of each neighborhood was the first proposed project. The 311 data did not have neighborhoods as part of the dataset. It did have longitude and latitude, but it was decided that it would be too time-consuming to map those to neighborhoods.

Upon further investigation, it was determined that the public safety data did include the neighborhoods, as did the city assessor data. It was decided to use these two datasets for the year of 2022.

Using the csv data files, both datasets were cleaned and merged.

The city assessor data was filtered to include only residential property types. Null values were excluded. The mean assessed property value per residential unit was then calculated using the total property value divided by the number of units. The mean of this was then calculated for each of the 83 neighborhoods in Minneapolis.

The public safety data was filtered to exclude data that was not relevant to this analysis. The neighborhoods were capitalized to match the city assessor data. Null values were excluded.

The two datasets were merged on the neighborhood name.

**Neighborhood Property Value**

For the purpose of this study, neighborhood wealth was determined by the average property values of each Minneapolis neighborhood.

The top five neighborhoods with the highest per unit value were determined to be

Kenwood ($1,028,401/unit), Lowry Hill ($686,988/unit), Lynnhurst ($665,801/unit), Downtown East ($624,698/unit), and Cedar-Isles-Dean ($619,898/unit). Kenwood, Lowry Hill and Cedar-Isles-Dean surround Lake of the Isles and/or Cedar Lake. Lynnhurst includes Lake Harriet lakeshore as well as Minnehaha Creek. Downtown East includes the US Bank Stadium and riverfront with a lot of rapid residential expansion.

The five neighborhoods with the lowest per unit value were determined to be Hawthorne ($175,038/unit), Folwell ($173,732/unit), Ventura Village ($166,534/unit), McKinley ($165,155/unit), and Phillips West ($159,740/unit). Hawthorne, Folwell and McKinley are in north Minneapolis and all border Lowry Avenue North. Ventura Village and Phillips West are just south of downtown and I-94.

**Crime in Minneapolis**

There were 56,456 reported offenses in Minneapolis in 2022. The top six reported offense types were: Motor Vehicle Theft (6,267 incidents), All Other Larceny (5,916), Destruction/Damage/Vandalism of Property (5,715), Simple Assault (4,335), Sounds of Shots Fired (4,273), and ShotSpotter Activation (4,167). The top six reported offense types made up 52% of the total reported crime. The highest crime offense in Minneapolis in 2022 was Motor Vehicle Theft, which accounted for 11.1% of the offenses in Minneapolis.

In Minneapolis, 16 neighborhoods make up 50% of all total offenses. The neighborhoods with the highest offense counts are Downtown West (~6%), Whittier (~5%), Jordan (~4%), Hawthorne (~4%) and Near North (~4%).

**Regression Analysis Among Per Unit Value an Crime Count Types**

A regression model was utilized in uncovering the type of relationship between the average per unit value (Per Unit Value) and Crime Count. The correlation coefficient value (R-Value) of -0.4 describes this relationship to be a weak, negative relationship. In other words, the increase in average unit value will lead to a slight decrease in the count of crime.

Additionally, a similar analysis was conducted among the top and bottom five neighborhoods, based on the average property value. The result yielded a stronger negative relationship: with an R-Value of -0.78. This data implies that when factoring for wealth extremities by most affluent and most impoverished neighborhoods, the crime count decreases more significantly with increased neighborhood home values (Per Unit Value).

Finally, a regression analysis was also conducted between Per Unit Value and Count of Motor Vehicle Theft. This relationship was one that was more similar to the overall crime count analysis, which shows that an increase in home value (Per unit Value) will only yield a slight decrease in Motor Vehicle crime. Hence, the relationship resulted in a weak negative relationship with a R-Value of -0.34.

**Selecting the Two Most Ideal Neighborhoods**

Motor vehicle theft count was identified as the most common crime offense. This crime type has a similar correlation to the overall crime data, therefore, motor vehicle theft was selected to compare against the mean property value to find the most ideal neighborhoods.

With a double-sorting methodology that selected for ascending order of average home per unit value and motor vehicle theft, Kenny and Page were identified as the ideal neighborhoods. In 2022, Kenny had an average neighborhood per unit value of $428,000 with eight motor vehicle thefts. Page had an average neighborhood per unit value of $482,000 with nine motor vehicle thefts.

Although these neighborhoods are not the most affordable compared to others, they are the lowest in terms of both per unit value and lowest in motor vehicle theft. Some additional crimes that were identified within these neighborhoods include: theft of motor vehicle parts, burglary, other types of larceny, vandalism, and simple assault.

**Building Type Analysis (Page and Kenny vs Total Minneapolis)**

After the group identified the lowest value neighborhoods, we wanted to look at what kinds of buildings a person can expect to find if they want to move to these neighborhoods. These two neighborhoods we identified based on sorting are Kenny and Page. To help clean up the data, I group a lot of different categories that describe a home into the category single/multi family home. This includes 2 UNIT RESIDENTIAL, 3 UNIT RESIDENTIAL, SORORITY/FRATERNITY HOUSE, RESIDENTIAL LAKE SHORE, and RESIDENTIAL. Doing this first step made the upcoming graphs a lot cleaner and less crowded.

To determine the types of residential buildings found in the Kenny and Page neighborhood, additional data cleansing was necessary. Two-unit residential, three-unit residential, sorority/fraternity house, residential lake shore, and residential categories were grouped into the single/multi-family category.

The majority (79.5%) of property types that people buy or rent in Minneapolis are single/multi-family homes. The other property types are condominiums and townhouses. In both the Kenny and Page neighborhoods, the majority of property types are single/multi-family homes (including 100% of property types in Kenny).

To determine how the property values in Kenny and Page compared to the Minneapolis average, the average cost per unit by value type was determined. The results show the property values in Kenny and Page are above the Minneapolis average. For example, a single/multi-family home unit in Page is valued roughly $130K higher than the average Minneapolis unit (~$350K vs ~$480K).