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| Housing assessment: renting vs owning |
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# Overview

## Project background and description

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| Badge Tick1 with solid fill | Per the assignment, our team chose a topic that we could all personally identify with and of which we could benefit from the analysis made. As a result, we decided on the housing assessment as it relates to owning or renting. |

## Project scope

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| Badge Tick1 with solid fill | The Project Scope will include the data visualization and analysis of housing data for select cities in MN from the last 5 years (2018 – 2023). The cities in question will be Duluth, Rochester, and Minneapolis. These cities will also include the surrounding metropolis area. The assessment will consider exclusively Single-Family Homes for rentals and houses. The pricing of these homes to obtain the median range from the 35th – 65th Percentile (per the Zillow data extract), to avoid having outliers skew the data. The data obtained are ZHVI and ZORI.  ZHVI represents the “typical” home value for a region. It’s calculated as a weighted average of the middle third of homes in a given region. When we refer to the ZHVI dollar amount, it should be designated as the “typical home value for the region.” It is NOT the “median home value.”  ZORI index is dollar-denominated by computing the mean of listed rents that fall into the 35th to 65th percentile range for all homes and apartments in a given region, which is weighted to reflect the rental housing stock.  When the data was obtained, the team noted the housing data was stated by the home value, and the rental prices were the monthly cost of rent. To ensure these values align for analysis, the team used a mortgage calculator to obtain the monthly cost of the home value prices, assuming they were 30-year fixed rate mortgages with a 6% interest. |

## Analysis and Conclusion

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| Badge Tick1 with solid fill | Line Plot:  The data visualized in the graph clearly shows that Minneapolis has the highest housing prices, both in terms of rent and homeownership, while Duluth maintains the lowest prices across the board. A potential reason for this disparity lies in the size and demand for housing in these cities. Larger metro areas, like Minneapolis, typically experience higher housing costs due to the greater demand driven by population density, job opportunities, and access to amenities. In contrast, smaller cities like Duluth have fewer residents and less demand, which helps keep housing prices lower.  The trends in Rochester and Duluth show more volatility in rental prices compared to the steadier increases observed in Minneapolis. This volatility may be linked to the student population dynamics in these areas, especially since both cities are home to large universities. College towns tend to experience fluctuating demand for housing as students move in and out throughout the year, which can result in greater price variability. These cities may see prices spike during peak rental seasons when students are looking for housing, and experience decreases or stagnation during off-seasons, making their rental markets more unpredictable.  Another notable trend in the data is the steady rise in both rent and home prices across all cities from 2018 until the present. Of particular interest is the sharp increase in prices around mid-2020. This significant rise could be a direct response to the changes in housing needs brought on by the COVID-19 pandemic. With remote work becoming more prevalent and people reassessing their living situations, the demand for housing surged in certain regions. This demand likely outstripped the available supply, causing an uptick in prices. Additionally, the pandemic could have influenced a shift toward larger homes and more spacious rental properties, further contributing to price increases.  While these explanations are plausible, they are speculative and warrant further research to fully understand the underlying factors at play. The continued upward trend in both rent and home prices suggests that housing affordability may become a growing concern, particularly for those in smaller cities like Duluth, where price volatility could add another layer of uncertainty to the rental market.  Box and Whisker Plot:  The box and whiskers plot reveals that Minneapolis has the highest median prices for both rent and mortgages, with a wide distribution. This suggests a greater variation in housing costs, offering both high-end and more affordable options. Rent prices in Minneapolis are especially variable, reflecting a fluctuating rental market.  In contrast, Duluth has the lowest median prices for both rent and mortgages, with a narrow range. This indicates more affordable and stable housing costs, with less variability in both ownership and rental options. The consistency in Duluth’s housing prices suggests a less competitive market compared to larger cities.  Rochester falls in the middle, with mortgage and rent prices showing wider distributions than Duluth but narrower than Minneapolis. The variation in rental prices suggests potential seasonal or demographic influences, while the national averages for rent and mortgage payments show a broader range similar to Minneapolis, but with generally lower rent costs. |