The Impact of Remote Work on Real Estate

TEAM 7

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Abstract

The objective of this project was to analyze the impact of remote work on the real estate market for Washington and Minnesota metropolitan areas, using data sets obtained from Redfin Real Estate brokerage, Bureau of Labor Statistics, United States Census Bureau, the Washington State Department of Transportation (WSDOT), and Minnesota State Department of Transportation (MNDOT). We analyzed the data to identify trends in the years 2018-2022 to determine whether there were correlations between work, transportation, rental vacancies, and real estate market patterns. The Covid-19 pandemic impacted the lives of nearly everyone in the world. In the United States, an unprecedented number of people were introduced to remote or hybrid work schedules with little to no warning. Others found themselves unemployed virtually overnight. The real estate market boomed and prices for homes in the suburbs of major metropolitan areas skyrocketed in a way that had never been seen before. Our team set out to uncover patterns between these events and to identify correlations between remote work and real estate. We wanted to know whether our findings for the major metropolitan areas of Seattle and Minneapolis supported earlier research that has been done on the economic impacts of Covid-19. Using various methods analyzing the data over time to geospatial analysis of Washington and Minnesota metro areas the analysis was conclusive. The results demonstrate that outside factors such as Covid-19 impacted the real estate market, unemployment rates, vacancy rates, and rent prices. Traffic data tied these together by showing the rapid decline in rush hour traffic in and out of major metropolitan areas that preceded the changes in the areas listed above. Work from home orders increased the need for remote work, which resulted in unprecedented changes in the real estate market once people began to realize that remote work was not going to be short term. Our conclusion is that remote work, because of the Covid-19 pandemic, influenced real estate markets in the Seattle and Minneapolis regions by increasing demand, particularly for single family homes, and raising median home sale prices.

Table of Contents

Introduction

This project was taken on to analyze the impact of remote work on the real estate market over the years 2018 to 2022. The primary objective was to determine the relationship between real estate markets in Washington and Minnesota counties with regards to unemployment and vacancy rates, and the amount of travel in and out of the metro areas during peak rush hours. Our team found that there were indeed fluctuations in all areas once the pandemic began in early 2020. The COVID-19 pandemic has influenced almost every aspect of our lives, and the housing market is no exception. We used four data sets to examine how remote work has impacted the real estate markets in the Twin Cities and Seattle metro areas. Four key indicators—data on housing sales, rental vacancy rates, unemployment rates, and commuter transportation—are the focus of our analysis. Our findings will offer insight into the impacts of the pandemic on the real estate market and help guide future decision-making in this sector. We aim to answer the following question by analyzing these data sets and identifying correlations between them: How has remote work affected the real estate market in the Seattle and Minneapolis metro areas?

Background

The Covid-19 pandemic brought with it global economic disruptions that had never been seen before. The impact of these disruptions included numerous job losses, company closures, and a sharp decline in consumer confidence. As homebuyers, sellers, property owners, and tenants navigated an uncertain landscape, the real estate market turned into one of the most affected industries. Like other metro areas, the real estate markets in the Twin Cities and Seattle have both undergone significant changes since the pandemic's outbreak. There is novel evidence that also conveys these effects and their connections (D'Lima et al, 2021).

Real Estate

Recent literature has devoted a great deal of study to the effects of Covid-19 on the real estate market. Some studies have found that the pandemic has decreased housing demand, while others have found that it has increased demand specifically for larger, more spacious homes. In addition, the pandemic has changed people's priorities and housing preferences, with many now placing a high value on outdoor space, home offices, and other conveniences that allow for remote work.

Rental Rates

In some areas, especially in urban centers, the pandemic resulted in rising vacancies and falling rents as tenants searched for more affordable and less crowded living options. As people continued to look for rental housing as an alternative to homeownership, the demand for rentals in some areas remained stable or even increased.

Employment Rates

Due to business closures and economic downturns, the pandemic also significantly impacted employment rates, with many people losing their jobs or having their hours reduced. Initially, the real estate market was negatively impacted by this because the uncertainty of the pandemic meant prospective homebuyers were putting their house searching on hold. The sudden lack in job security lowered peoples' confidence in their ability to afford a home.

Commuter Traffic

Many people whose jobs remained secure began working remotely, which meant far less commuter

traffic during rush hour. This was all over the news in the early spring of 2020 due to the vast reduction in congestion on freeways in notoriously traffic heavy places such as Los Angeles. The reduction in the volume of rush hour vehicle traffic correlates to the time when remote work began. As people began to realize that remote and hybrid work were not going to be going away any time soon, there were changes in what people wanted out of their place of living.

Tying It All Together

Our background research led us to hypothesize that the new need for home office spaces for parents (as well as children of all ages who had begun virtual schooling), and the desire for outdoor spaces such as backyards and parks, was directly correlated to the increase in home sales and home prices. To test this hypothesis, we examined data sets on home sales, rental vacancy rates, unemployment rates, and commuter transportation. This led us to a better understanding of the effects of COVID-19 on the real estate markets of the Twin Cities and Seattle metro areas. Our research sought to shed light on the pandemic's effects on the real estate market and how it might change going forward by analyzing these datasets and finding correlations between them.

Data and Methodology

Our data pertains to the rental markets, real estate markets, employment markets, and commuter traffic for two specific areas of interest: Seattle, WA and Minneapolis, MN.

Rental Data Sets

The rental data set analyzed in this study was obtained from the United States Census Bureau's website (Census, 2022), and it includes vacancy rates for 75 metropolitan areas in the United States. Missing values represented as ‘(z)’ were addressed by replacing them with 0. To facilitate further analysis, a 'region' column, and a row with the median vacancy rate for each quarter were manually added to the data set. Additional rental data from Zillow was used to evaluate the median rental prices in five counting representing two major metro areas. King, Pierce, and Snohomish counties were used for Washington, and Hennepin and Ramsey counties were used for Minnesota.

Real Estate Data Sets

Real estate data was obtained from Redfin (Redfin, 2023), a large real estate brokerage company in the United States and Canada. The filtered data set included 1500 rows and 58 columns focusing on the same five counties as the rental data. The data set was filtered to remove duplicates, and missing values were replaced with the median value. Outliers were kept, and no additional special coding for numerical data was required. The "period_begin" and "period_end" columns were converted to Date, and new columns "Year" and "Month" were added. Federal Information Processing Standard (FIPS) codes, which uniquely identify counties in the U.S., were added to the data set for potential mapping, such as a heatmap.

Unemployment Data Sets

The Labor Force data we used was collected by the Bureau of Labor Statistics (BLS, 2023). It focused on cities in Washington and Minnesota, specifically in and around King and Hennepin counties. The data sets covered multiple cities including Seattle, Bellevue, Tacoma, Minneapolis, St. Paul, and Bloomington. The data was organized into six columns, which covered the three cities for each data set. Although the

data sets were not separated by individual cities, they provided monthly labor force population data from 2012 to 2022 for the combined cities. The data included information on employment, unemployment, and the unemployment rate.

Traffic Data Sets

The transportation department websites of Washington and Minnesota were the sources of data used to obtain hourly, daily, and monthly traffic volume for roads classified as urban interstates (WSDOT 2023). While the MN data set was complete with no missing values, the WA data set had NA values in certain rows and columns (MNDOT, 2023). This was due to the conversion of an excel workbook to a single sheet, then to a .csv file, and finally to RStudio. Blank rows and columns were removed as they did not indicate missing data. After removing the empty columns (15:28), the NA rows were also eliminated, resulting in a final dataset of 608 x 14. The Minnesota data was reshaped to match the schema of the Washington data which allowed us to perform the same calculations on both sets of data. There were numerous traffic recorders in the Washington counties that only contained partial data for certain months, so those were excluded. The resulting data set included two traffic recorders along I-5 each from Pierce and Snohomish Counties, as well as one traffic recorder each from I-5, I-90, and I-405 in King County.

Methodology

The aim of this study was to investigate the influence of remote work on the real estate market and determine whether any correlations existed between remote work, rental vacancy rates, employment rates, and commuter traffic volume. To accomplish this objective, we performed an analysis of real estate market activities at various levels for a five-year period, 2018-2022. We decided on a five-year scope to include time both prior to and following the emergence of the COVID-19 pandemic.

For this project our methods pertained to finding results for our statistical questions. Using our found data from a range of open-source places we applied a variety of methodologies to reach our goal.

Using Geospatial analysis, we examined changes in real estate trends between specific geographic locations. This included the creation of heat maps to visualize home sales in different counties. This allowed us to determine which specific counties were most affected by the pandemic. We were able to compare the difference in median sales price by counties for years during and after the pandemic.

A Time-Series Analysis was used to examine differences over time in all our areas of interest so we could see any noticeable pattern changes that had occurred since the onset of the pandemic. This included the creation of many bar graphs, line charts, and scatter plots for visualizations. Examining the data over time allowed us to see fluctuations in the data that affected the real estate market, which is still seeing great volatility.

For an exploratory data analysis several visualizations were created. We looked over each data set in depth to identify any developing patterns and significant changes. This overall analysis provided justification for our decision that it was necessary to keep outliers in the data sets, because the outlier data was specific to the year 2020 and showed variation in results. We grouped data by year and month which allowed us to look for significant fluctuations in the data over time, as well as their durations.

The traffic data was used to tie together trends in the housing market, rental prices and vacancy rates, and unemployment rates, to the work from home phenomenon. Since our concentration was on the impact of remote work, we wanted to specifically look at commuter traffic. We removed traffic volume

data collected on Saturdays and Sundays, and limited the hours to AM rush hour (7:00AM to 9:00AM) and PM rush hour (4:00PM to 6PM). We calculated the median traffic volume by year, year and month, and time of day to see what changes occurred at various levels.

To analyze and visualize the trends in the Seattle and Minneapolis housing markets, we calculated the median values for homes sold and new listings by year and created a line chart to visualize the changes in demand and inventory over time. Additionally, we calculated the homes sold/inventory ratio to provide insight into the state of the markets.

We also analyzed the real estate market in Seattle, WA and Minneapolis, MN by examining the buyer's preference of the property type and identifying any changes before and after the pandemic. To accomplish this, we started by filtering the data to only include the Minneapolis, MN area and sorting the properties based on their property type. Next, we calculated the median values by year for homes sold and homes listed using the aggregate() function and created a line chart using ggplot2 to visualize the trends in properties sold above the listing price over time. We also aggregated the data by year and property type to calculate the average percentage of homes sold above the listing price. Our goal was to provide a comprehensive understanding of the real estate market and how it has been impacted by the pandemic.

The "average sale to listing price" metric is a useful measure to evaluate the competitiveness of a real estate market. It compares the amount buyers paid to the original asking price and indicates the level of demand and supply. A high ratio signifies strong demand and a competitive market, while a low ratio suggests less competition, requiring sellers to adjust their pricing strategy. Using R, we analyzed the data on average sale price to listing price, calculated median and mean values by year for homes sold and new listings using aggregate, and visualized the data using ggplot with confidence intervals.

Another way to evaluate the real estate market is by measuring how long properties stay listed for sale. A lower number of days on the market suggests a faster rate of sales and increased competition among buyers. To analyze the Minneapolis real estate market, median days on market data for properties listed for sale and new listings were collected and cleaned. Median days on market values for each year were calculated and plotted on a bar chart using ggplot. Mean of median days on market by year was also calculated to gain insights into trends and patterns in the market.

Results

The National median rental vacancy rate for the year 2020 was 5.75%. When looking at vacancy rates for the Washington Seattle metro area and Minnesota Twin Cities metro areas, we found that over the years inspected these areas were consistently lower than the national median. Until quarter three is shown in *Figure 1* that Twin cities had a sharp increase in rental vacancies.

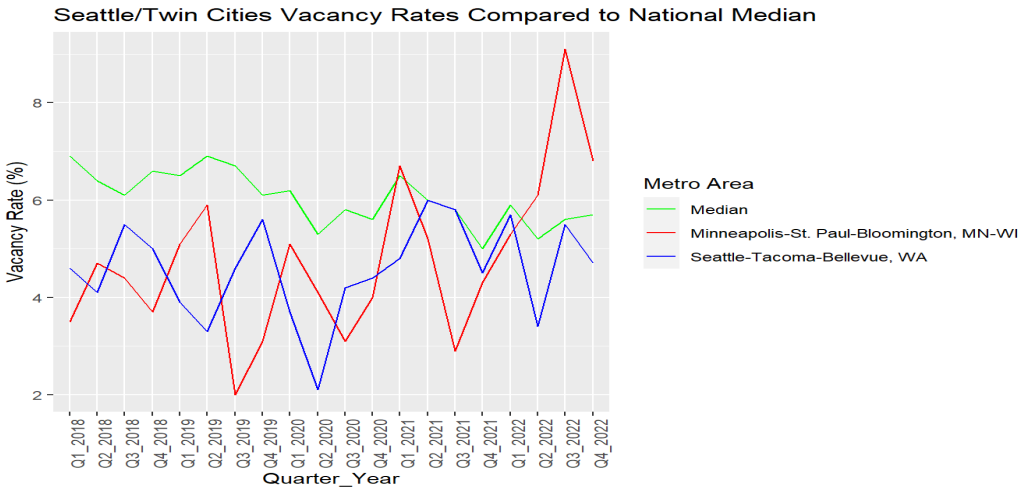

Figure 1: Minnesota and Washington State metro area rental vacancy rates compared to the national median.

The initial historical decrease until the increase in rental vacancies when the pandemic began for twin cities correlates to the increase in homes sold in Minnesota during that same period (Spader, 2023). This suggests renters could have been vacating their more temporary accommodations in pursuit of homeownership. This concept becomes even more probable when mortgage rates, which plummeted to historic lows during this same period, are considered (Groover, 2022). Fewer people renting was a trend for both Washington and Minnesota, which could indicate that people were moving out of the metropolitan areas and to other counties. This lines up with home sales data since areas outside of main city centers have more opportunities for single-family homeownership. *Figure 2* displays this connection for Washington counties. During the same period, nationwide vacancy rates initially increased and then began to trend downward in 2021, indicating a change in demand for rental options. This could be explained by rising home prices and mortgage interest rates (which affect the overall affordability of homeownership) and occurred during this time (Groover, 2022).

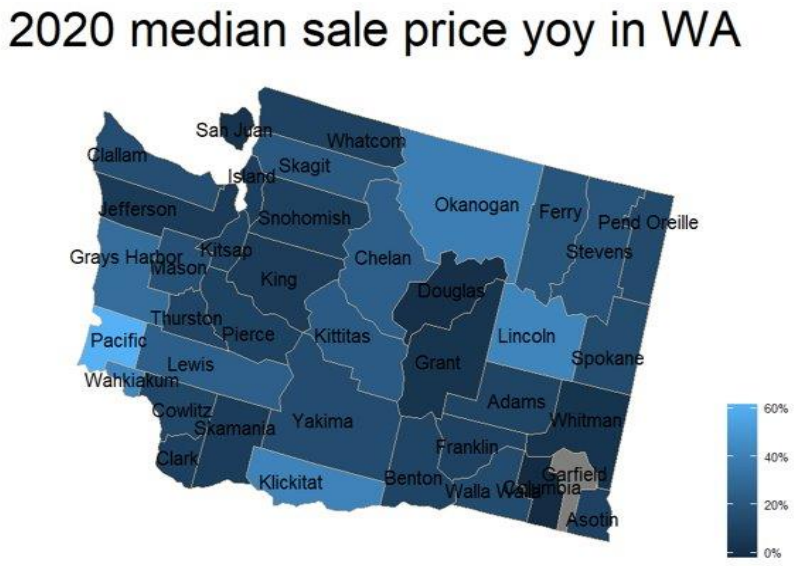

Figure 2: Median Sales price for homes in Washington State in 2020 displayed by county. The lighter blue areas show a greater increase in sales price for a county. King, Snohomish, and Pierce counties show a lower median increase in sales price compared to surrounding counties.

Figure 2 shows a large year-over-year increase in median sale prices of homes in Washington located outside the Seattle metro area. This increase in median sales prices suggests increased demand for permanent housing in suburban and rural areas, and less demand in King, Pierce, and Snohomish counties. This demonstrates a correlation between home sales and rental vacancy rates.

Covid-19 impacted many people, cities, and states that accelerated companies to move to remote work (Mitchell, 2022). These same trends of impact for the year 2020 and after are also shown in Unemployment data *Figure 3*. Extremely high unemployment rates in 2020 contributed to a recession. The comparison of Washington and Minnesota counties show a general trend that occurred throughout the country where many people found themselves unemployed at the start of the pandemic, as well as the slow correction that took place throughout late 2020 and 2021. Because people were not able to be in close contact with one another throughout the pandemic, unemployed workers from the metro areas had to find new, possibly remote, jobs. When the unemployment rates started going down around to the previous year's normal in October it was around the same time that people had started buying more single-family homes outside the metro areas, which also correlates to the increase in rental vacancy rates. Throughout 2020 and 2021 people became much more innovative as far as figuring out how to operate in a socially distanced world. Remote work was sorted out and grew in popularity, and many fields of work that had previously operated in person, such as the medical and mental health provider community, found ways to operate virtually. Even people whose jobs had not been eliminated by the pandemic sought out new opportunities that would allow them to work from the safety of their own private residences. As stated throughout this paper, those working remotely now had the desire for a more functional work/life living situation, and houses provided better opportunities than rentals (particularly apartments) for these new needs.

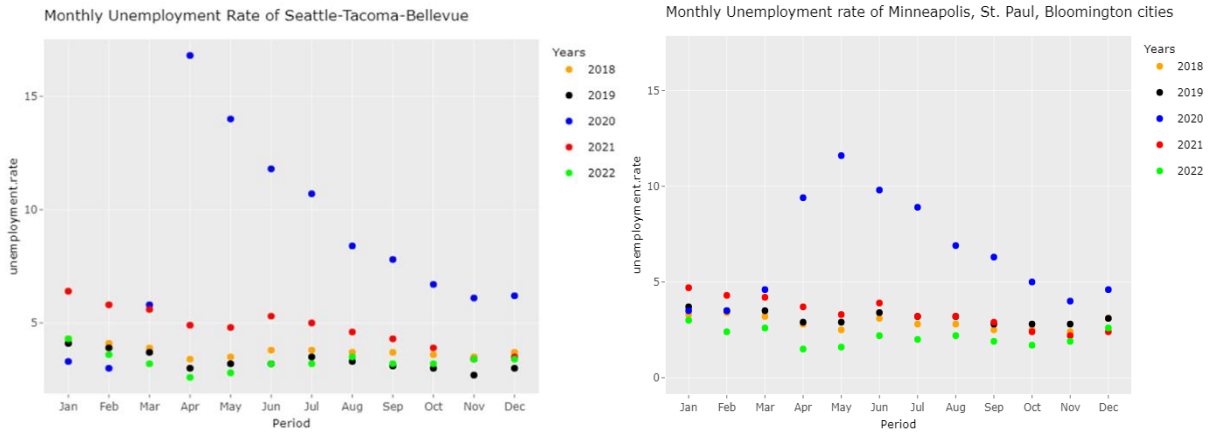

Figure 3: Unemployment rate by monthly periods for Washington (left) and Minnesota (right) cities. The large Increase shown for the year 2020 represents when the pandemic began.

In both Washington and Minnesota, the majority of tech and corporate companies are located within the two counties we have been focusing on. The tech industry has a high percentage of workers who can work remotely and are highly paid. Seattle is a technology hub with a huge corporate presence including Microsoft and Amazon, which could explain why there was so much competition in the surrounding areas during the pandemic home buying spree. There were a lot of people who were able to relocate from the city to a more desirable suburban location and pay top dollars to do it.

The volume of cars traveling into the major cities during weekday rush hours ties directly into the areas we have discussed: rental markets, real estate markets, and unemployment rates. The results of the traffic data analysis show that commuters stopped traveling on interstates and highways during weekday rush hour to and from the major metropolitan centers abruptly at the end of March 2020. During the second quarter of 2020, traffic remained at historic lows. This correlates to the spike in rental vacancy rates as people began to vacate city center apartments. Historically, rental rates are more sensitive to market changes and are a more immediate indication of where the market is headed, with real estate prices following at a slower and somewhat steadier pace (Nieuwerburgh, 2022). The real estate boom of 2021, which can be seen in our visual analysis, exemplifies this delay and could possibly indicate that people were starting to commit to the ”new normal” of remote work.

As the pandemic wore on through 2021 and 2022, offices started requiring employees to return onsite at least part time. Previous research done on this topic discovered that on Tuesdays and Wednesdays, onsite work was most prevalent (Lindblom, 2023). Thursdays were slightly less popular for onsite work, and Mondays and Fridays were the days when more people continued to work remotely. *Figure 4* (below) shows the median rush hour traffic volume, grouped by day of the week and color coded by year. These numbers reflect the research done by Commute Seattle and University of Washington’s Mobility Innovation Center which also found that public transportation usage has declined and not returned to pre-pandemic levels.

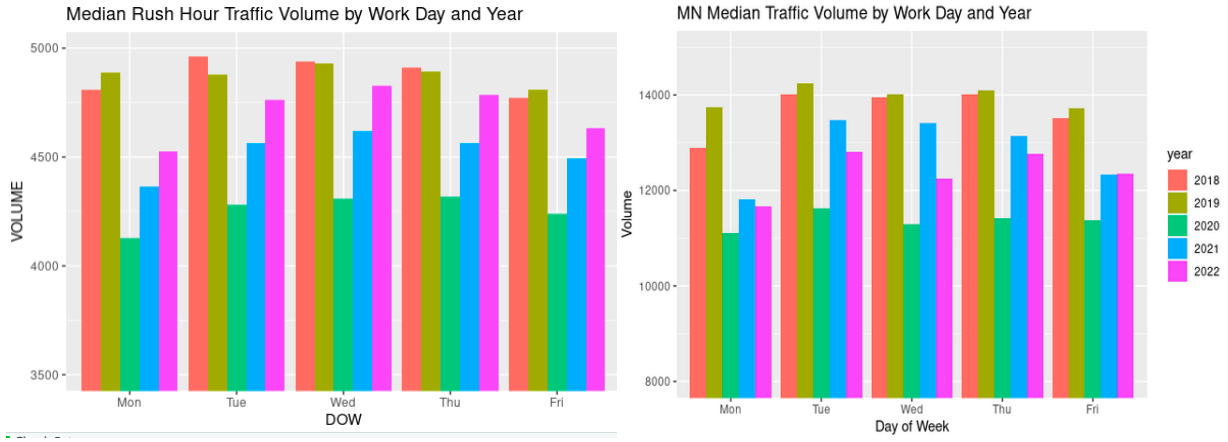

Figure 4: The median volume of traffic by day of the week is compared over the years 2018-2022 for Washington (Left) and Minnesota (Right).

In *Figure 4*, you can see that in 2018 and 2019, traffic volume was similar and on Fridays there tended to be fewer commuters. 2020 shows a drastic reduction in commuter traffic, with Mondays being the lowest commute day. In 2021 rush hour traffic picked up but was still significantly lower than pre-pandemic years. In 2022 traffic picked up even more but remained noticeably lower than pre-pandemic years. Mondays and Fridays have proved to be the days with the lowest commutes, with Tuesdays, Wednesdays, and Thursdays being more comparable. The greatest difference between 2018/2019 and 2022 traffic is on Mondays. All other days of the week are relatively similar in their differences. Further research could be done to determine the impact that holidays have on the median volume of traffic on Mondays.

Figure 5: Median volume of traffic over time showing a distinct drop at the start of the pandemic, disrupting an otherwise cyclical pattern of traffic data. WA metro counties (top) and MN metro area counties (bottom).

Figure 5 shows the change in the median volume of traffic over time. There is a very prominent decline in traffic around March and April 2020 which corresponds to the beginning of stay-at-home orders, followed by a cyclical pattern of traffic. One hypothesis that could help explain this cyclical pattern relates to the holiday season at the end of each year. Because our data focuses on weekdays, it could be sensitive to the increased number of days people take off work this time of year. We believe remote work plays a big part in this. Traffic levels were at their lowest when most people were working remotely. Now that hybrid schedules are more prominent, traffic has increased but not returned to pre-pandemic levels. One interesting discovery with the Washington traffic data was that the volume of cars during rush hour was so much higher than that of King County. We assumed King County would have a higher volume of cars since rush hour traffic from Snohomish County feeds into Seattle. One explanation for this could be the differences in access to public transportation. Future research could investigate this more, but our conclusion is that this difference could be due to there being many more transportation options in King County, particularly in the areas where these traffic recorders are located. King County has more frequent buses and trains coming into Seattle, as well as the light rail, and the ability for some people to commute via biking or walking.

With the additional change of information on traffic data for Washington and Minnesota Counties it allows to open the research to further be looked at for what was happening to the real estate market while all the transportation, vacancy rates, and unemployment rates were having similar upward and downward trends during the same period. *Figure 6* is next, when looking for those continues trends within the data it can also be seen that demand for homes was increasing while inventory was the lowest for both Seattle and Minneapolis during the same period.

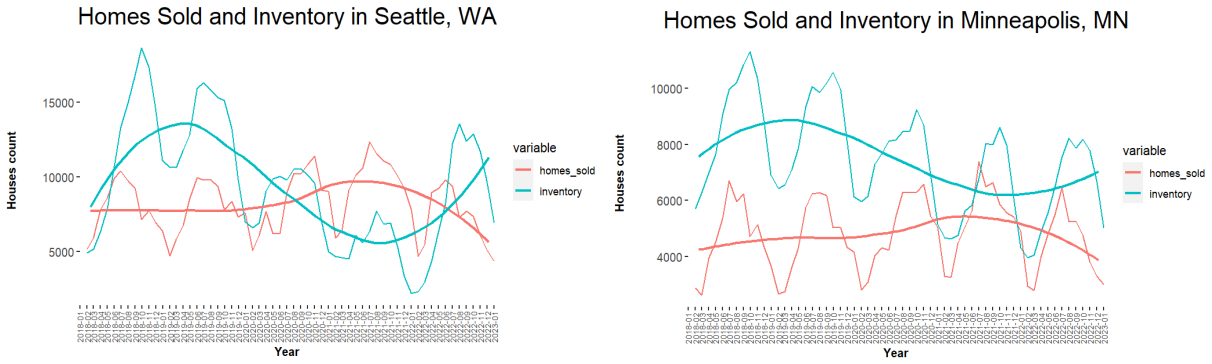

Figure 6: Inventory of homes in Seattle, WA (left) and Minneapolis, Mn (right) compared to homes sold from 2018 Month 1 to 2023 Month 1. Showing a large shift in lines beginning 2020 Month 8 lasting into 2022 with a slowdown into the end of the year.

The *Figure 6* demand and supply charts clearly demonstrate a substantial reduction in inventory and an increase in demand for housing, both prior to and following the pandemic, persisting for about two years.

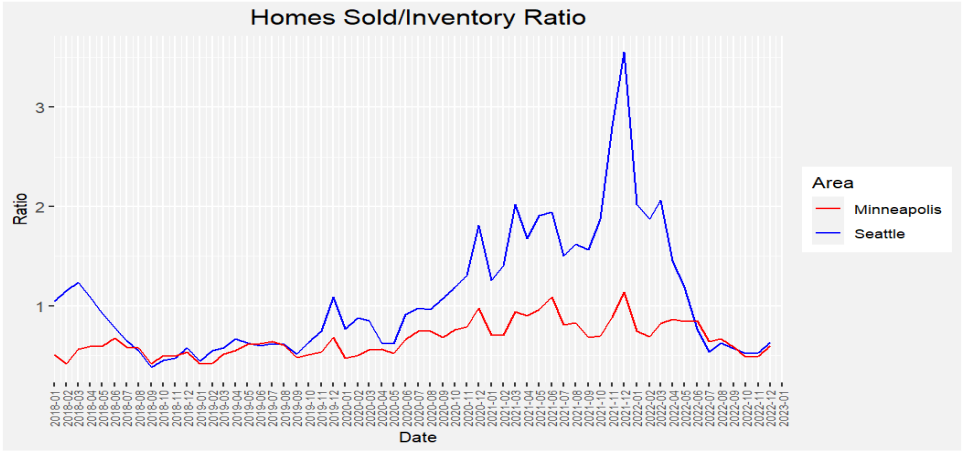

Figure 7: The comparison of Seattle to Minneapolis Ratio of Homes sold to Inventory of homes. Displays the large difference of the Seattle market having lower inventory to the greater number of homes sold in contrast to Minneapolis.

In the Seattle real estate market shown in *Figure 6 Left*, the inventory peaked at 18660 in September 2018 and hit a record low of 2192 in December 2021, while the highest number of homes sold was in June 2021 at 12358 and the lowest was in December 2022 at 4350. It is worth noting that since the pandemic began, the homes sold-to-inventory ratio (*Figure 7*) has consistently remained above 1, indicating a seller's market. In December 2021, this ratio reached its peak at 3.56, indicating that the demand for purchase was more than three and a half times higher than the available housing supply.

Similarly, in the Minneapolis real estate market (*Figure 6 Right*), the inventory peaked at 11318 in September 2018, dropping to a historic low of 3954 in January 2022. The highest number of homes sold was recorded in June 2021 at 7374, while the lowest was 2628 in February 2018. Of note, since the pandemic began, the ratio of homes sold to inventory has increased significantly, growing by more than two and a half times, from a low of 0.41 in January 2019 to a high of 1.14 in December 2021. *Figure 7* demonstrates those comparisons between cities. Seattle has that greater change than Minneapolis.

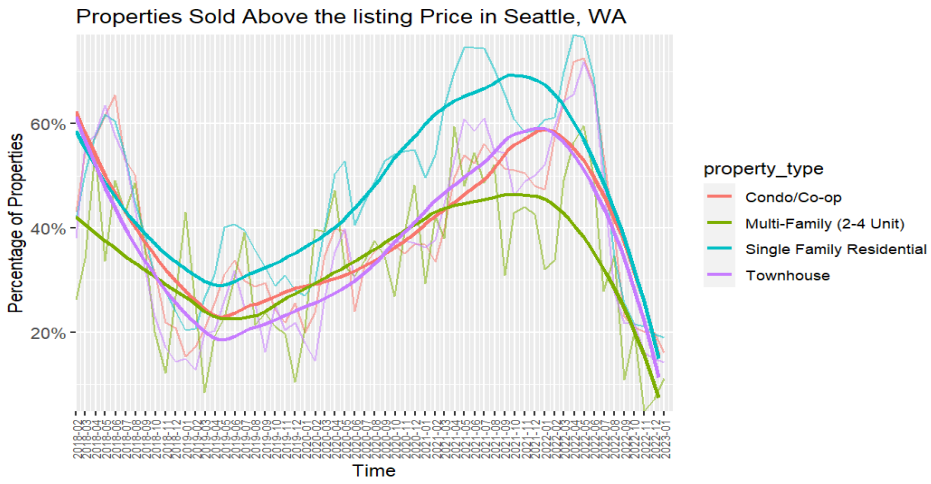

Figure 8: Percentage of property types sold above the listing price for Seattle WA from 2018 Month 1 to 2023 Month 1. The sold-to-listing price level indicates the percentage of homes that have been sold at a price higher than the asking price.

Figure 8 suggests there is a presence of a bidding war among several competitive buyers, which is typically observed in a robust seller's market. The Seattle real estate market has been a notable change in buyer's preference for diverse types of properties before and after the pandemic. Condo/Co-op properties were the most popular among buyers before the pandemic, with the percentage of purchases reaching as high as 65% in March 2018. However, there has been a notable decrease in the purchase of Condo/Co-op properties since the beginning of the pandemic, with the percentage of purchases dropping to 16% in December 2022. In contrast, Single Family Residential properties had the highest percentage of properties sold above the listing price, ranging from 37% in August 2018 to 74% in July 2021, indicating that buyers are highly interested in this type of property. The Single-Family Residential property type experienced a significant positive change in buyer preferences, with the highest percentage of properties sold above the listing price during the pandemic among all types, distinguishing itself from the other three types. In contrast, the Townhouse did not show a clear trend in buyer preferences before and after the pandemic. Meanwhile, the preference for multi-Family (2-4 Unit) properties among buyers in Seattle has been decreasing over time. This trend suggests that buyers are looking for more space and privacy and are willing to invest in larger properties that offer a better quality of life.

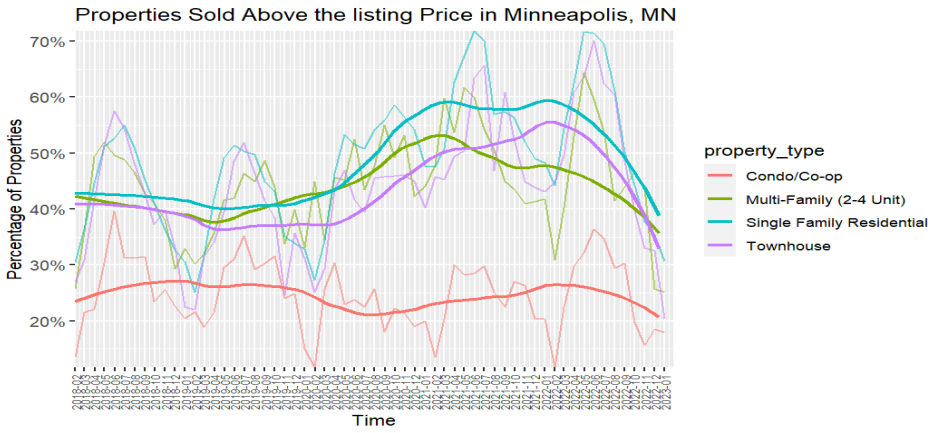

Figure 9: Percentage of property types sold above the listing price for Minneapolis, MN from 2018 Month 1 to 2023 Month 1.

Similarly, in the Minneapolis market (*Figure 9*), it shows that the interest in Single Family Residential has increased over the years compared to the other types of properties, and this trend has further strengthened after the pandemic. The highest value for Single Family Residential properties occurred in May 2021, with 72% properties sold above the asking price. This indicates that the market for Single Family Residential properties was exceptionally strong at that time, with a high demand for this type of property. Buyers showed a strong preference for Single Family Residential compared to Condo/Co-op, Multi-Family (2-4 Unit), and Townhouse, as evident from the data. The percentage of purchases for Condo/Co-op has decreased significantly after the pandemic, while there has been a minor increase in the purchase of multi-Family (2-4 Unit) and Townhouse properties. Overall, the data suggests that the pandemic has resulted in a significant shift in the preferences of buyers towards Single Family Residential properties.

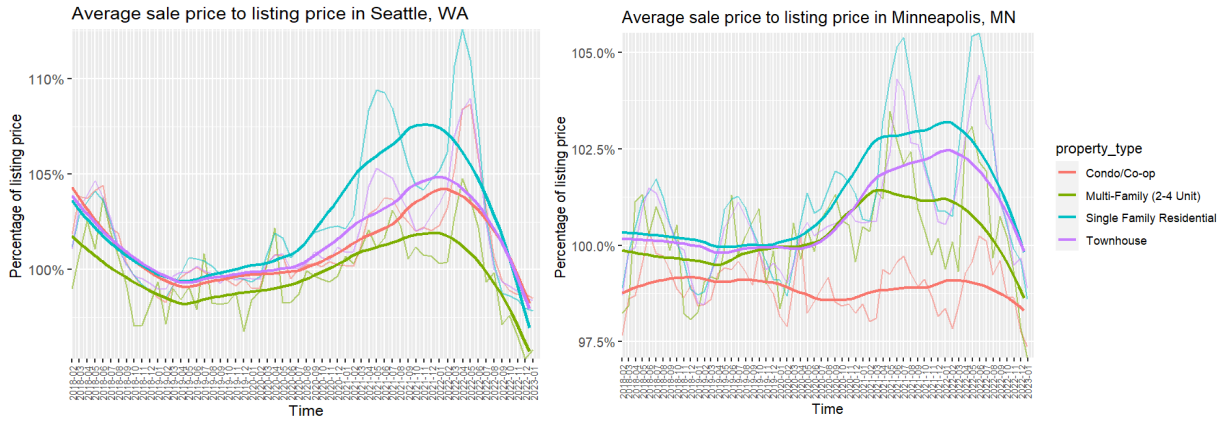

Figure 10: Average sale price to listing price by the Percentage of listings for WA (left) and MN (right) metro city. From 2018 Month 1 to 2023 Month 1. Legend by property type.

The Seattle real estate market has demonstrated a similar pattern across all four property types (*Figure 10*). The market experienced a decline in 2018, which persisted through 2019. However, from April of that year, it gradually began to recover. A substantial upswing occurred after May 2020, coinciding with the COVID-19 pandemic. As of mid-2020, the sold price to listing price ratio for Single Family Residential, Townhouse, and Condo/Co-op exceeded 1, implying that buyers had to pay at least the asking price for these properties. The market peaked in November 2021 before declining again. These findings

emphasize the considerable impact that external factors, including the pandemic and economic conditions, can have on the real estate market.

Upon closer examination of the Seattle four property types, it is apparent that multi-Family (2-4 Unit) has consistently been the least popular choice among buyers when compared to the other three options. However, prior to September 2019, the ratio of sold price to listing price for Single Family Residential, Townhouse, and Condo/Co-op was similar. It is now evident that Single Family Residential has begun to distinguish itself from Townhouse and Condo/Co-op by exhibiting a higher sold price to listing price ratio. This trend has become more prominent since May 2020 and reached its peak at 1.14 in early 2022, indicating that buyers were willing to pay 14% more than the listing price for Single Family Residential properties at that time.

For Minneapolis despite the decline of the Condo/Co-op property type, the real estate market saw growth during the pandemic, particularly in the multi-Family (2-4 Unit) property type. The market started growing at the end of 2019 and accelerated after May 2020. During this period, the sold to listing price ratio averaged above 1 for Single Family Residential, Townhouse, and Multi-Family (2-4 Unit) properties, indicating that buyers paid at least the asking price. Interestingly, Single Family Residential properties exhibited a faster growth in the sold to listing price ratio than Townhouse and Multi-Family (2-4 Unit) properties, suggesting different growth trends. By late 2021, the sold to listing price ratio for Single Family Residential properties had reached as high as 1.06, indicating that buyers paid up to 6% higher than the listing price. Additionally, there was a noticeable divergence in growth trends between multi-Family (2-4 Unit) properties and Single Family Residential and Townhouse properties. In early 2021, the sold to listing price ratio for multi-Family (2-4 Unit) properties decreased while the sold to listing price ratio for Single Family Residential and Townhouse properties continued to rise.

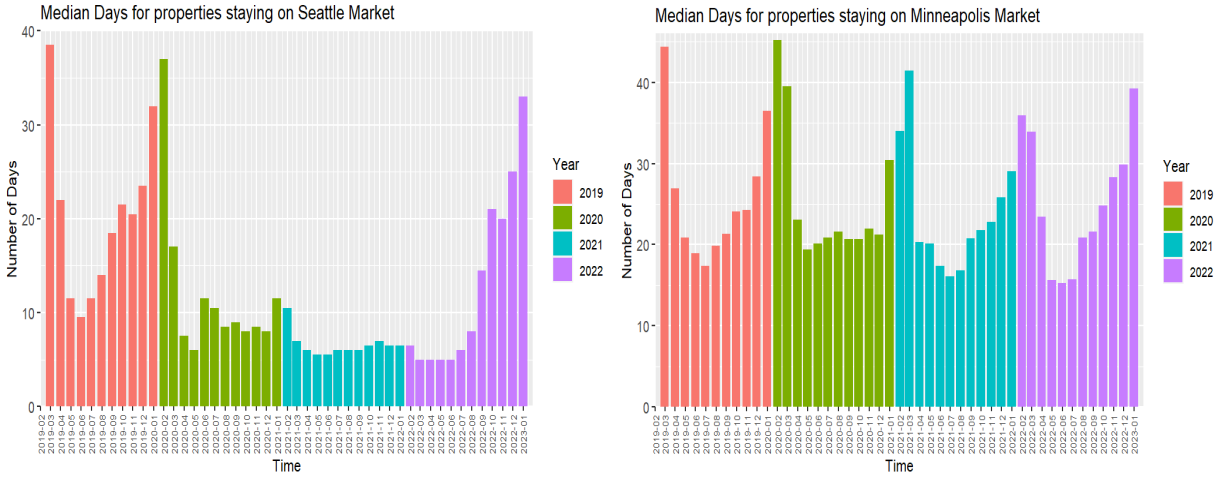

Figure 11: Seattle (left) and Minneapolis (right) Median days on the market for all property types during the last 4 years for each month. 2020 and 2021 having the most consistent lowest days on the market.

The Seattle real estate market saw a notable change in average property listing duration, with a notable decrease from 24 days in 2019 to 8 days in 2021, followed by a slight increase in 2022 (*Figure 11*). This trend indicates a surge in property sales during the pandemic years, highlighting the pandemic's impact on the industry.

In comparison, the Minneapolis real estate market also experienced a slight decrease in property listing duration during the pandemic years, from 27 days in 2019 to 23 days in 2021, followed by a return to pre-pandemic levels in 2022. These observations suggest that the pandemic had a moderate impact on the real estate industry in Minneapolis.

Discussion

The real estate markets in the Twin Cities and Seattle metro areas have been impacted by the COVID-19 pandemic in various ways. Our analysis of four key indicators—housing sales, rental vacancy rates, unemployment rates, and commuter transportation—reveals some interesting correlations and trends.

In terms of housing sales, our findings suggest that remote work has had a positive impact on the real estate market. In both metro areas, housing sales increased in 2020 and 2021, indicating that the pandemic has not decreased demand for homes. This could be due to several factors, such as people desiring more space to accommodate remote work and a shift away from urban areas towards suburban or rural areas.

The rental vacancy rates in both metro areas showed a similar trend, with rates increasing in the wake of the pandemic. However, the rental market in the Twin Cities seems to have been hit harder than that of Seattle, as vacancy rates there are significantly higher. This could be due to the increase in crime in the Twin Cities, which may have led to more people leaving the area.

The unemployment rate, a key economic indicator, has also been impacted by the pandemic. Our analysis shows that the unemployment rate in both metro areas increased significantly in 2020 but has since started to recover. This could be due to the increased availability of remote work, which has allowed some people to keep their jobs despite the pandemic.

Finally, our analysis of commuter transportation data reveals a significant decrease in travel during peak rush hours. This decrease could be due to remote work, which has allowed many people to avoid commuting altogether. This has the potential to impact on the demand for housing in various areas, as people may now be more willing to live further away from their workplace.

Conclusion

In conclusion, our analysis suggests that remote work has had a significant impact on the real estate markets in the Twin Cities and Seattle metro areas. While the pandemic has caused some disruptions in the rental market and led to a temporary increase in unemployment rates, the housing market has remained strong, with increased demand for homes.

As the pandemic continues and remote work becomes more common, it will be interesting to see how these trends develop over time. It is possible that demand for housing in suburban and rural areas will continue to increase, while demand for rental housing in urban areas may remain stable or even decrease.

Overall, our findings offer valuable insights into the impact of remote work on the real estate market and can help guide future decision-making in this sector. Policymakers, real estate developers, and investors can use this information to make more informed decisions about where to invest in the real estate market and how to respond to changing market conditions.

Executive Summary

This report analyzes the impact of remote work on the real estate market for the metropolitan areas of Washington and Minnesota. The study utilized multiple data sets, including Redfin Real Estate brokerage, Bureau of Labor Statistics, United States Census Bureau, the Washington State Department of Transportation (WSDOT), and Minnesota State Department of Transportation (MNDOT). The study explores the connection between population patterns with work, transportation, rental vacancy, and the real estate market. The results demonstrated that Covid-19 has made trends in each category pushing more for remote work and the need for more single-family homes. The report also provides insight into how the pandemic has affected the real estate market and changed people's priorities and housing preferences, with many now placing a high value on outdoor space, home offices, and other conveniences that allow for remote work. The report seeks to shed light on the pandemic's effects on the real estate market and how it might change going forward by analyzing these datasets and finding correlations between them.

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