Analysing Trends and Predicting Prices in the Australian Rental Housing Market

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Abstract:
The Australian rental market has been facing a shortage of available properties, leading to escalating rent prices and increasing demand. This upward demand trend threatens to disrupt the balance in the Australian rental market. Several factors influence rental prices, including the vacancy rate, CPI, and time. Consequently, the Australian rental market remains vulnerable to the repercussions of this imbalance because of the recovery of COVID 19. Australia is facing an undersupply of property, with the vacancy rate at 0.8% in April (Domain, 2023). To gain a deeper understanding of these dynamics, our analysis examines data from the past two decades to ascertain the extent to which the rental market affects rental prices, and my analysis concludes that there is a significant difference in rent prices among these cities and that the property types significantly impact rent prices. This report combines quantitative analysis with statistical tests and time-series forecasting to explain the Australian rental housing market.

Introduction:
In the wake of the post-COVID-19 recovery, the Australian housing market has witnessed a significant surge in property prices. Property prices exhibited a robust 0.8% increase in August, marking a staggering six consecutive months of growth, according to CoreLogic's Home Value Index (Ainsworth, 2023). Buying a property as a means of self-living has increased to another level compared to the past. especially for someone who, just in society, didn't have much economic basis among younger adults. Therefore, the proportion of people renting houses in Australia will be higher than in the past.

This report explores several factors to the deteriorating rental market. With the following hypothesis being discussed:

Hypothesis 1: Do the average rent prices vary significantly between major Australian cities?
Hypothesis 2: Does the type of property type have a significant impact on rent prices?

The Australian rental market has been grappling with a shortage of available properties, which leads to an unhealthily high price and increasing demand. The continual rise in demand threatens to create an imbalance within the Australian rental market. Rental prices are influenced by factors such as population trends, overseas in-comers, and rental affordability, among others. Consequently, the Australian rental market is vulnerable to the repercussions of this imbalance. There are also multiple factors for rental applicants to note before renting a house, such as budget, accommodation types, and regulations regarding their employment. To gain a deeper understanding of the rental market, my analysis will primarily examine the data from the past 20 years to determine the extent to which the rental market has affected rental prices, which leads to the increasing difficulty of renting a house. Conducting an in-depth analysis of the Australian rental market, the analysis project offers invaluable insights to prospective migrants, investors, and international students seeking accommodation in Australia.

Background:

Rental Price Trends Over Times

Source: Australian Bureau of Statistics
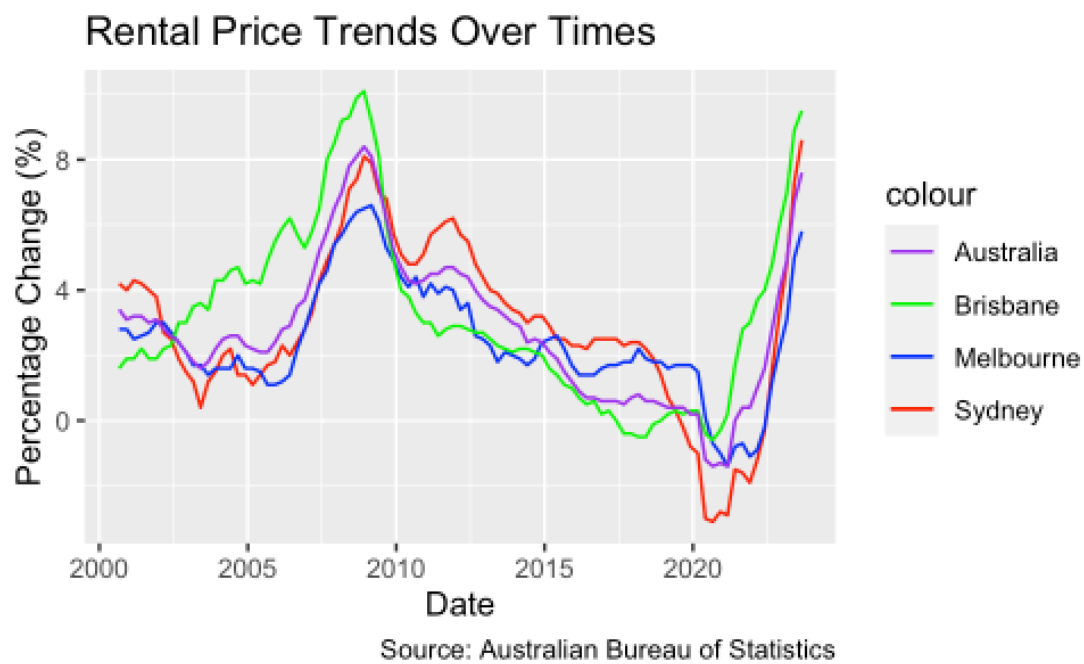
Figure 1: Rental Price Trends Over Time (Australian Bureau of Statistics, 2023)

The horizontal axis represents the date monthly from September 2000 to September 2023 for 23 years. The vertical axis represents the change in rent by percentage. The line represents the trend in rental price change over time. Generally, it peaked in December of 2008 (10.1% in Brisbane), hit the valley in June 2020 (-3% in Sydney), and started to decline until March 2021. And then start to have a boost increase till now.

From 2000 -2005, there is a general decreasing trend in rental price for 3 of the cities except Brisbane, which has an increased percentage of around 4%. After 2005, the period before 2010 has a great amount of increase in rental price reaching a peak in 2008 with all states resulted in at least 6% of percentage increase, and had rapidly declined after 2008 mostly due to the global financial crisis. The search results suggest that lower consumer spending was associated with one-third of the 6.6 million job decrease in 2009, as well as that declining government-related employment at the federal, state, and local levels, as well as weak investment-related employment growth, were the primary causes of low employment (Barello, 2014).

The trend had been steadily decreasing throughout 2010 to 2020 where the percentage decrease hits roughly 9% with Sydney having the largest decrease with -1.5% in rental price. This rock-bottom was due to the COVID-19 happened between late 2019 to 2022. The COVID-19 pandemic has caused a decline, particularly in cities like Sydney and Melbourne. This has led to a decrease in advertised rents as landlords compete for tenants (Evans, Rosewall, and Wong, 2020). Leading to another global financial crisis, plummeting the market to a new low in 2 decades.

However, the world recovered rapidly with travel and business resumes, the trend after 2021 has drastically increased by around 8% among the cities, with Brisbane at the highest, reaching almost 9% of increase in rental price. This trend increase was also due to the opening of boarder after 2022, resulting in large amount of overseas students and workers coming to Australia again, increasing the demand in properties, while the supplies was not increasing at the same time. Hence, it resulted in a drastic increase in rental price.

Back to now, the rental market in Australia is keeping increasing, indicating that Australia's rental market is undersupplied, and this shortage of supply in the rental pool is causing rents to rise very rapidly (Briggs, 2023). Since the recovery after COVID-19 and the border-free period led to a boost in the population, the vacancy rate of Australian properties has decreased to 1.2% (Yardney, 2023). Therefore, Australia is facing a shortage of property, which leads to the rent price keeping increasing.
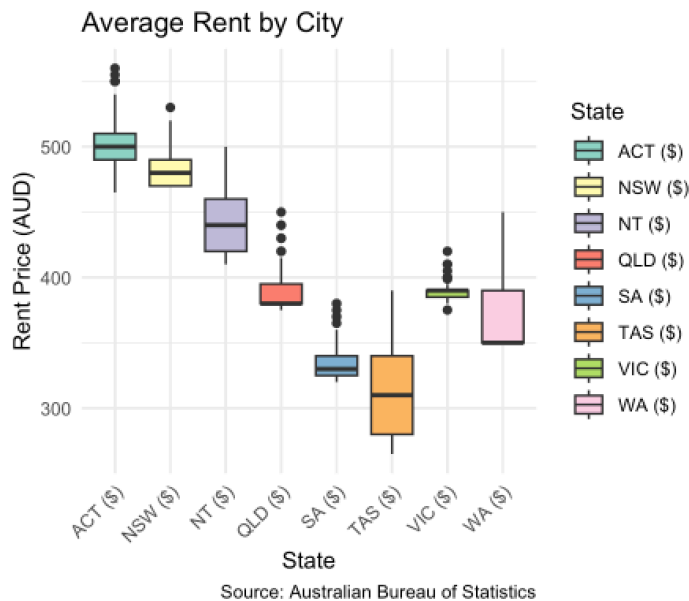
Figure 2: Average Rent by City in Australia (Australian Bureau of Statistics, 2023)

Comparing the distribution of average rent in different states, we observed a wide variation. Tasmania shows the broadest range, spanning from $270 per week to $390 per week. In contrast, Victoria showcases the narrowest distribution, with rent prices ranging from $375 to $420 per week. These disparities in rent distribution may be particularly relevant in the context of the COVID-19 pandemic and the policies related to border closures in Victoria.

When examining the median rent values, it becomes apparent that the median rent serves as a key indicator of the typical rent price in each state. In Figure 2, ACT shows the highest median of $500 per week. Following by NSW with $480 per week. Beside of TAS, other states' median scattered between $350 to $450 per week. With TAS having the lowest median of $310 per week. These figures illuminate regional disparities in housing costs.

The higher median rent in the ACT suggests a relatively higher cost of living and housing in the nation's capital, possibly influenced by its status as the seat of government and a vibrant urban center. Conversely, the lower median rent in South Australia indicates a more affordable housing market, making it an attractive option for those seeking cost-effective living arrangements.

In summary, the distribution and median rent values for each state provide valuable insights into the variations in housing costs across Australia. These differences are likely influenced by a variety of factors, including regional economic conditions, population density, and the impact of government policies, such as COVID-19-related border closures.
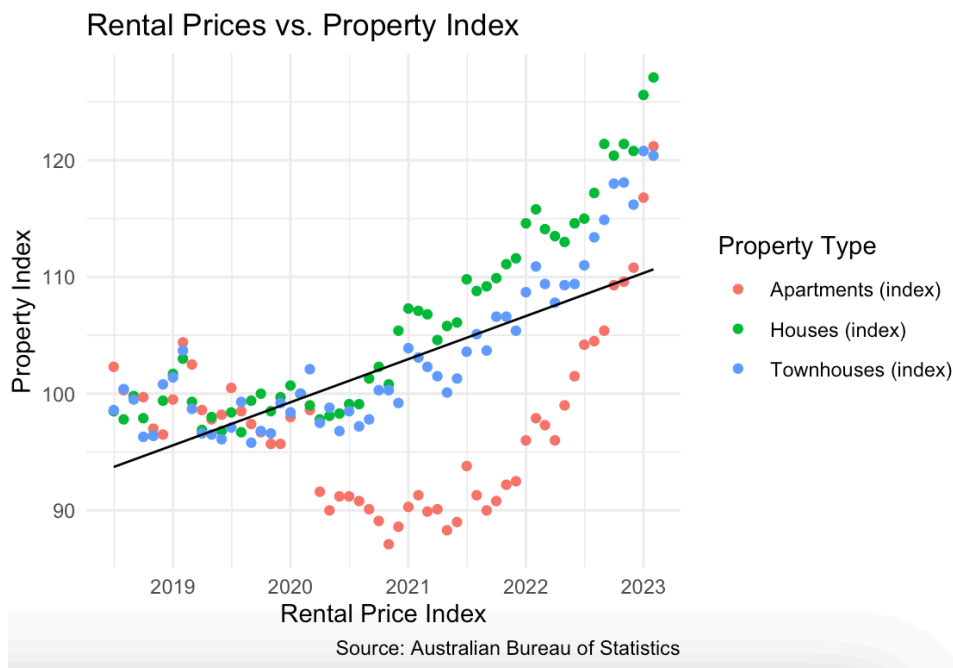
Figure 3: Rental Prices vs. Property Index by State in Australia (Australian Bureau of Statistics, 2023)

This scatterplot visually represents the relationship between rental prices and property type, with different property types indicated by distinct colours. The x-axis represents the Year, while the y-axis represents the Rental Price Index.

The trend of apartments before 2020 was steady, with the index in rental price average around 98 for all 3 types of property. After 2020, the trend for townhouse and houses had a slight decrease but still maintaining index above 95. Bust the index of apartment has decreased immensely to 90, Reaching the lowest of 89 in 2021.

After that, while the index for houses and townhouses steadily increased from 2021 to 2023, with an index average of 125, the index for apartment had also risen and increased significantly from 90 to 116 in 2023. This suggests that higher-value properties tend to command higher rents, which is consistent with typical real estate market dynamics.

From the red dots and dark yellow dots represented by the apartments, rents for apartments with new tenants have shown a higher degree of volatility compared to houses and townhouses. This volatility corresponds with trends in the broader rental market.
During the pandemic, apartment rents for new tenants experienced a sharp decline and remained below pre-pandemic levels until early 2022. This is evident in the data points for apartments, which appear to dip and then gradually recover Evans, Rosewall, and Wong, 2020).
In contrast, rent inflation for houses and townhouses with new tenants has generally been positive since the onset of the pandemic with Steady Growth in House and Townhouse Rents. Data points for houses and townhouses display a more consistent upward trend, reflecting the resilience and growth in demand for these types of properties.
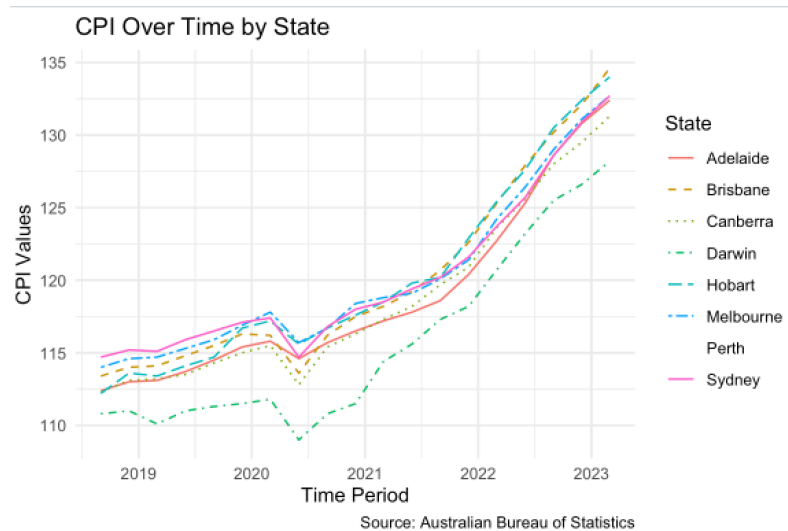
Figure 4: CPI Over Time by State in Australia (Australian Bureau of Statistics, 2023)
This line graph provides a comprehensive view of the Consumer Price Index (CPI) trends over time across different states and regions in Australia. The CPI, a vital economic indicator, measures changes in the cost of a fixed basket of goods and services. It plays a crucial role in assessing inflation, which signifies a general increase in the prices of goods and services, ultimately affecting consumers' purchasing power.

From before 2019 to mid-2020, the CPI has been constantly increasing in all states, with Melbourne and Darwin having the highest and lowest value. Since COVID-19 widespread in 2020, the CPI across all states had dropped sharply for a short period, this was due to the restriction of social distancing causing most people staying at home, lowering the ability of consume goods but acquiring daily needs only. The CPI was then steeply increased from mid-2020 to 2023 across all states, with Brisbane having the highest value in CPI while Darwin has the lowest.

Policymakers utilize CPI data to make decisions related to economic policies, which can have repercussions on the rental market. As the figure 1 interpret, the government spending has significantly decrease due to the recovery of 2008 global financial crisis (Barello, 2014). Following this decline, the CPI trends resumed an upward trajectory, with the increases becoming more consistent and pronounced. Brisbane consistently maintains one of the highest CPI index, while Darwin consistently records the lowest.
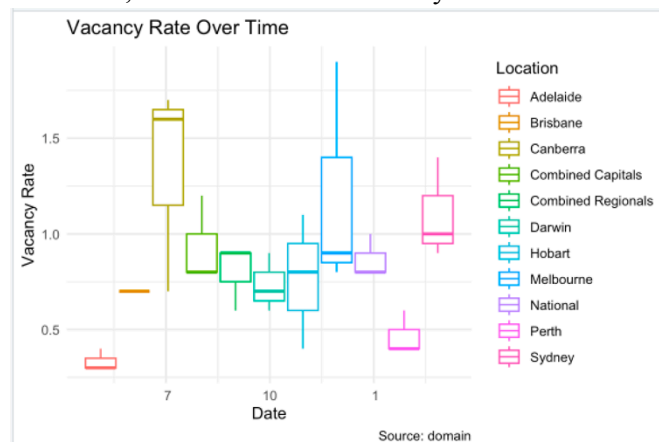

Figure 5: Vacancy Rate by State in Australia Over Time (Domain, 2023)
This boxplot provides a visual representation of the distribution and variability of vacancy rates in different states or regions of Australia. Each box within the plot corresponds to the vacancy rate distribution for a specific location, showcasing essential statistical measures such

as the median and quartiles. This boxplot does not feature any outliers, indicating that vacancy rates across states are consistently within expected bounds.

The average median was more or less stable between states, but with Canberra having the highest vacancy rate of an average of more then 1.5%. Adelaide, having the smallest vacancy rate of 0.2%, showing the extremely high demand for property at all times. Melbourne was also significant to mention due to its wide box, between 0.85% to 1.4%, this indicates the diversity of vacancy rate in this region.

The national vacancy rate stands at a historical low, persisting at 0.8%. This shows the issue of property undersupply across all states. This metric holds significance for both landlords and tenants, indicating the high demand for property across all states. A low vacancy rate signals a landlord's market, empowering property owners to set rental prices to their advantage. Adelaide stands out with the lowest vacancy rate of all the states. This low vacancy rate in Adelaide shows the huge demand for rental properties, resulting in increased fluctuations in rental prices. Landlords in such regions can command higher rents due to the high demand for available rental properties.

Linear Regression of rental price in Australia:
$$Price\ per\ room = \beta 0 + \beta 1 \times Median\ rent$$

In this equation:
$\beta 0$ is the intercept, which is the estimated price when all predictor variables are zero.

$\beta 1$ is the coefficients for the price per room. This is the estimated change in the dependent variable (Price per room) for a one-unit increase in the independent variable (Apartments). The results:

```
> summary(model)

Call:
lm(formula = PricePerRoom ~ Apartments, data = cleaned_data)

Residuals:
    Min      1Q  Median      3Q     Max
-16.878 -11.429  -1.949   7.327  20.816

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -72.14286   30.88201  -2.336   0.0521 .
Apartments    0.62755    0.07541   8.321 7.08e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 14.51 on 7 degrees of freedom
  (1 observation deleted due to missingness)
Multiple R-squared:  0.9082,    Adjusted R-squared:  0.8951
F-statistic: 69.25 on 1 and 7 DF,  p-value: 7.082e-05
```

Linear regression results
Based on the results, it represents the estimated value of the dependent variable (price per room) when the independent variable (apartments) is zero, which is not practical in this context, yielding a value of -72.14. This doesn't align with reality since you can't have a median rent of zero for apartments.

The residuals, which reflect the differences between observed values and model predictions, should ideally exhibit randomness and centre around zero. In our analysis, we observed a minimum residual of -16.878, a maximum of 20.816, and others falling in between, suggesting that our predictions generally fall within a reasonable range. The residual standard error, at approximately 14.51, gives us a sense of how dispersed our predicted prices are from actual prices. On average, our predictions deviate by about 14.51 in terms of price per room.

Regarding the relationship between the median rent for apartments and the price per room, our analysis indicates that for every additional unit increase in the median rent for apartments, we estimate a corresponding increase of approximately 0.63 in the price per room.

The significance of our model is underscored by the tiny p-value associated with the Apartments coefficient (7.08 e-05). In simpler terms, this implies that the median rent for apartments significantly influences the prediction of the price per room. The smaller the p-value, the more confident we can be in this relationship.

The R-squared value, a measure of how effectively our model explains the variability in room prices, is 90.82%. The closer this value is to 100%, the better our model is at explaining the prices. In addition, the F-statistic, with a value of 69.25 and a low p-value, affirms that our model as a whole is effective in explaining the relationship between median rent for apartments and price per room.

To conclude, as median rent for apartments increases, we can forecast a corresponding increase in the price per room, supported by the r-squared value.

Hypothesis 1: Rent Price Variation by City

Null Hypothesis (H0): There is no significant difference in average rent prices among major Australian cities.
Alternative Hypothesis (H1): Average rent prices vary significantly between major Australian cities.
From this hypothesis, I chose the dataset of average rent prices for various cities in Australia from ABS. Each column represents the rent price for each city. To test this hypothesis, I decided to perform an ANOVA test, testing whether there is a difference in rent prices among the cities. The Analysis of Variance (ANOVA) is a statistical method that separates observed variance data into different components to use for additional tests (Kenton, 2021). There are the results below:

```
> summary(anova_result)
            Df  Sum Sq Mean Sq F value Pr(>F)
City         7 1803894  257699   454.4 <2e-16 ***
Residuals  448  254054     567
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
16 observations deleted due to missingness
```

The Analysis of Variance (ANOVA) results in hypothesis 1
The results indicate that there is a significant difference in rent prices among the major Australian cities. I compared the rent prices in 8 different major Australian cities, while the 448 degrees of freedom for the residuals account for unexplained variations within each city.

The sum of squares is a way to measure how much the rent prices among the cities differ from each other. The "City" factor explains a total variation of 1,803,894, which means that the differences in rent prices between cities have contributed significantly to the overall variation. The remaining 254,054 represents the unexplained or random variation within each city, which could be due to factors other than the cities themselves.

To determine or reject the hypothesis, the F value, a measure of the ratio of the variance between the cities to the variance within the cities will be a good index to overview. The F-statistic of 454.4 is much higher than what would be expected by chance, and the very low p-value was observed to be virtually zero (<2e-16), signifying a highly significant result.

```
> print(tukey_result)
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Rent_Price ~ City, data = average_rent_by_city_long)

$City
                         diff        lwr         upr     p adj
NSW ($)-ACT ($)   -19.8649123  -33.44911   -6.280717 0.0002846
NT ($)-ACT ($)    -58.9842105  -72.56841  -45.400015 0.0000000
QLD ($)-ACT ($)  -112.4087719 -125.99297  -98.824577 0.0000000
SA ($)-ACT ($)   -166.8649123 -180.44911 -153.280717 0.0000000
TAS ($)-ACT ($)  -187.9350877 -201.51928 -174.350893 0.0000000
VIC ($)-ACT ($)  -113.3719298 -126.95612  -99.787735 0.0000000
WA ($)-ACT ($)   -131.8824561 -145.46665 -118.298261 0.0000000
NT ($)-NSW ($)    -39.1192982  -52.70349  -25.535103 0.0000000
QLD ($)-NSW ($)   -92.5438596 -106.12805  -78.959665 0.0000000
SA ($)-NSW ($)   -147.0000000 -160.58420 -133.415805 0.0000000
TAS ($)-NSW ($)  -168.0701754 -181.65437 -154.485980 0.0000000
VIC ($)-NSW ($)   -93.5070175 -107.09121  -79.922822 0.0000000
WA ($)-NSW ($)   -112.0175439 -125.60174  -98.433349 0.0000000
QLD ($)-NT ($)    -53.4245614  -67.00876  -39.840366 0.0000000
SA ($)-NT ($)    -107.8807018 -121.46490  -94.296507 0.0000000
TAS ($)-NT ($)   -128.9508772 -142.53507 -115.366682 0.0000000
VIC ($)-NT ($)    -54.3877193  -67.97191  -40.803524 0.0000000
WA ($)-NT ($)     -72.8982456  -86.48244  -59.314051 0.0000000
SA ($)-QLD ($)    -54.4561404  -68.04034  -40.871945 0.0000000
TAS ($)-QLD ($)   -75.5263158  -89.11051  -61.942121 0.0000000
VIC ($)-QLD ($)    -0.9631579  -14.54735   12.621037 0.9999989
WA ($)-QLD ($)    -19.4736842  -33.05788   -5.889489 0.0004167
TAS ($)-SA ($)    -21.0701754  -34.65437   -7.485980 0.0000841
VIC ($)-SA ($)     53.4929825   39.90879   67.077178 0.0000000
WA ($)-SA ($)      34.9824561   21.39826   48.566651 0.0000000
VIC ($)-TAS ($)    74.5631579   60.97896   88.147353 0.0000000
WA ($)-TAS ($)     56.0526316   42.46844   69.636827 0.0000000
WA ($)-VIC ($)    -18.5105263  -32.09472   -4.926331 0.0010323
```

Tukey's Honestly Significant Difference results in hypothesis 1

I further employed Tukey's Honestly Significant Difference (HSD) test, which is a post hoc test commonly used to assess the significance of differences between pairs of group means (Biostats, n.d.), to discern the specific city pairs exhibiting substantial disparities in rent prices. The results show which city pairs exhibit significant differences in their average rent prices. The Tukey HSD test is conducted with a 95% family-wise confidence level, ensuring that the overall risk of making a Type I error is controlled. For example,In the comparison between South Australia (SA) and the Australian Capital Territory (ACT), the result indicates that rent prices in South Australia are lower than those in the Australian Capital Territory. The estimated difference is approximately $166.86, which means that on average, residents can expect to pay about $166.86 less in rent per month in South Australia compared to the Australian Capital Territory, which turns out that South Australia appears to be the more budget-friendly choice in this analysis. Besides, the comparison between Tasmania (TAS) and ACT reveals the biggest difference in rent prices, with an estimated difference of approximately $187.94.

Therefore, these findings support the rejection the null hypothesis 1 that there exists a significant difference in rent prices among these cities, especially Tasmania (TAS) and Australian Capital Territory (ACT).

Hypothesis 2: Impact of Property Type on Rent Prices

Null Hypothesis (H0): Property type does not significantly impact rent prices.
Alternative Hypothesis (H1): The type of property (apartment, house, sharehouse, etc.) has a significant impact on rent prices.

```
> summary(anova_result)
                     Df Sum Sq Mean Sq F value   Pr(>F)
`Houses (index)`      1  783.3   783.3   32.49 5.41e-07 ***
`Townhouses (index)`  1  750.7   750.7   31.14 8.35e-07 ***
Residuals            53 1277.7    24.1
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
2 observations deleted due to missingness
```

*The Analysis of Variance (ANOVA) results in hypothesis 2*

For this hypothesis, I used the dataset of average rent prices for different property types. Each row represents the rental price for each type. By using the ANOVA test, I was able to determine the difference in prices for different property types. The result shows the Df (degrees of freedom) of both properties are 1, showing they are each contributing one source of variation to the model. There are also 53 degrees of freedom unexplained for each type of property.

The sum of squares measured for houses was 783.3, and for townhouses, it was 750.7. It measured the variation in rental prices explained by each property type. The remaining 1277.2 represents the total unexplained variations within the model.

The F value in this hypothesis measures the ratio of variance explained by the property type to the unexplained variance within each property type, with houses having 32.49 and townhouses having 31.14. Both houses and townhouses had a very low p-value of 5.41 e-07 and 8.35 e-07, respectively, showing that the property types significantly impact rent prices.

Time Series Analysis:
To forecast the rent price trend for the next 12 months, I have decided to conduct a time-series forecasting model. I have chosen the dataset of trends in median weekly rent prices in various regions of Australia from the Australian Bureau of Statistics. The methodology involves the use of an auto-regressive integrated moving average (ARIMA) model, which is a statistical analysis model that uses time series data to either better understand the data set or predict future trends (Chen, 2022). For each region, it is selected automatically through the auto-Arima function in the R programming language. The model forecasts rent prices for the next 12 months, allowing for the identification of trends, seasonality, and potential patterns in the data. The plots generated show the forecasted rent prices on the Australian Capital Territory (ACT), along with prediction intervals, which indicate that the rental price keeps increasing to $575 per week. It shows that there is an increasing trend in rental prices, and it seems that if there are no big social factors, such as a global crisis, the rental price will keep increasing.

Rent Price Forecast for ACT ($)
Forecasting for the next 12 months
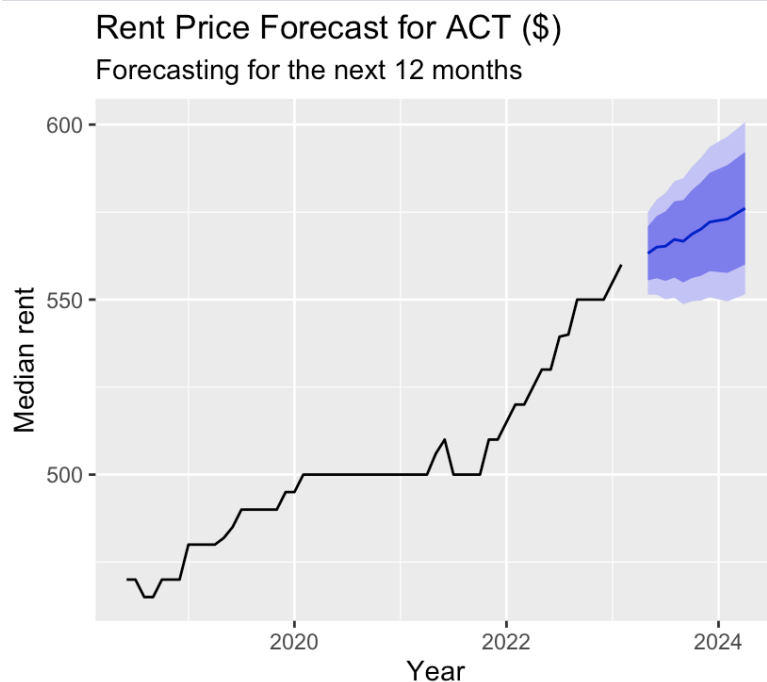
Source: Australian Bureau of Statistics

Figure 6: Rent Price Forecast for ACT, Australian Capital Territory (Australian Bureau of Statistics, 2023)

Methods:
In the data visualisation part, I performed a comprehensive analysis of various aspects of the Australian rental market and economic landscape. This commenced with the import and data cleaning process, which addressed a diverse array of data sources, including housing prices, rental trends, median prices, property size, and more. To ensure data uniformity, I standardised date formats across the datasets. I created multiple informative visualisations to convey insights. I started with line charts to illustrate rental price trends over time in major Australian cities, allowing viewers to understand market fluctuations. Next, I used box plots to compare average rent prices in different cities, highlighting cost variations across regions. I then employed scatter plots to reveal the relationship between rental prices and property sizes, offering insights into pricing patterns. Besides, I used line charts to depict the Consumer Price Index (CPI) changes over time by state, helping the audience understand inflation trends in different regions. For vacancy rates, I used box plots to visualise the distribution and variability across locations.

In the hypothesis part, I conducted a comprehensive analysis to analyse the factors influencing variations in rent prices. The first hypothesis, "Rent Price Variation by City," focused on determining whether there are significant differences in the average rent prices among major Australian cities, including Sydney, Melbourne, Brisbane, Perth, and Adelaide. We began by running a dataset addressing monthly rent prices for these cities. The data underwent pre-processing steps to ensure accuracy and consistency, including a date variable for time series analysis. Subsequently, I conducted an Analysis of Variance (ANOVA) with the "city" variable as the factor, using the R programming language to compare the means of rent prices across the cities. To focus on specific city pairs with significantly different rent prices, a post-hoc Tukey's Honestly Significant Difference (HSD) test was done. The second hypothesis, "Impact of Property Type on Rent Prices," analysed the potential influence of property types, such as apartments, houses, and share-houses, on rent prices. Data of various property types were collected and underwent a thorough review and cleaning process, with the addition of a date variable for time series analysis. I used ANOVA with the "Property Type" variable as the factor to assess differences in rent prices based on property type. If significant differences emerged from the ANOVA analysis, optional post-hoc tests like Tukey's HSD could be done to identify specific property types with significantly distinct rent prices. Throughout both hypotheses, the statistical analyses were matched with a predetermined significance level (alpha), which was set at 0.05, ensuring rigors testing and interpretation of the results.

In the linear regression part, I used linear regression analysis as my primary method to investigate the relationship between two or more variables. This approach allowed me to examine how one or more independent variables influence a dependent variable. I started by collecting relevant data, ensuring its accuracy and quality through statistics. Also, I have utilised the R Studio (LM) function to build and analyse my regression models. Each analysis involved selecting a dependent variable (the one I aimed to predict) and one or more independent variables (predictors). The linear regression models were fitted, and the results show the impact of the independent variables on the dependent variable. I considered coefficients, p-values, and R-squared values to compare the significance of these relationships.

Ethical Considerations:
In the research, I emphasised ethical considerations, particularly in the realm of data privacy and protection. Given that all our datasets originate from the Australian Bureau of Statistics and domain, this project is committed to complying with the stringent regulations set forth by the General Data Protection Regulation (GDPR). This ensures that data processing will be

based on a lawful basis, personal information will be minimised, and thorough security measures will be in place to secure the data. We will also respect data subject rights, implement clear data retention policies, and, if necessary, employ international data transfer mechanisms to maintain data privacy and security following GDPR standards. These ethical principles in our research process will protect the privacy and integrity of individuals' data.

Statistical Software:
This project primarily utilises R Studio's statistical features for data analysis.

Recommendations:
There are three possible recommendations to improve rental crisis in Australia. The first recommendation is increasing affordable housing supply. One important issue that has become increasingly prevalent in recent years is the shortage of available rental properties, leading to a drastic increase in rent prices. To address this problem, the government must concentrate its efforts on expanding the supply of affordable housing. For example, public housing for low-income personnel, developing transitional rental units for new immigrants, etc. A multifaceted approach can be taken, involving strategies such as incentivizing property developers to allocate a portion of their projects to affordable housing units, offering tax incentives to encourage their participation in these initiatives, and simplifying the approval process for such developments. By taking these steps, the government can work towards ensuring that a greater number of individuals and families have access to affordable rental options.

The second recommendation is strengthening rental market regulations. To strike a balance between landlords and tenants and prevent unjustifiable rent hikes, the government should consider introducing or reinforcing rental market regulations. These regulations may introduce measures like setting limits on permissible rent increases, establishing clear guidelines for property inspections, and ensuring that both landlords and tenants have well-defined rights and responsibilities. These new rules can ensure both parties' safety and interests. By creating a fair and transparent framework, these regulations contribute to a more stable and equitable rental market.

The third recommendation is to adjust economic policies in response to CPI. Economic policies play an important role in influencing the rental market, as they can significantly impact the Consumer Price Index (CPI). Thus, policymakers must monitor CPI trends and their effects on rent prices closely. In times of high inflation, policymakers should be prepared to adjust fiscal and monetary policies to manage inflation effectively and mitigate its influence on rent costs. By doing so, they can contribute to a rental market that is more resilient to economic fluctuations.

Limitations in Data:
Since the ABS generates data analysis every quarter annually, the date will not be the same to conduct a deep analysis. The rental data used in this research only extended back to 2018, although other statistics, such as population counts, were available as far back as 2000. Due to the variability of these dates, only mutual dates could be employed in the data analysis for direct comparisons, resulting in a smaller set of accessible data points overall. Less data was available for study as a result, which might have had an impact on the report's results. If the data had also been made accessible on a much more disaggregated basis (e.g., monthly), it could have been feasible to conduct an even more comprehensive examination of the evolving dynamics surrounding migration and rental housing availability.

Conclusion:
This analysis of the Australian rental housing market has revealed a complex interplay of factors influencing rental prices. The post-COVID-19 property price surge has exacerbated the affordability challenge, with regional disparities and property types playing a significant role. The study emphasises the need for informed policy decisions, including increasing the supply of affordable housing, regulating rent prices, and promoting economic development in

lower-cost regions. The research showcases the impact of the Consumer Price Index on rental costs and underscores the undersupply issue, driving rents upward. Through statistical analysis and ethical considerations, this study provides an analysis for society to look through the Australian rental market in the past and predict the future.

Appendix:

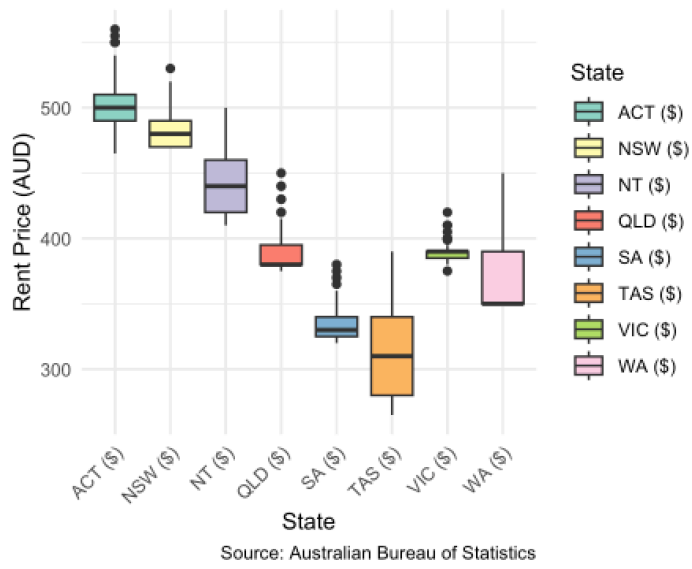*Figure 1: Rental Price Trends Over Time (Australian Bureau of Statistics, 2023)*

Figure 2: Average Rent by City in Australia (Australian Bureau of Statistics, 2023)
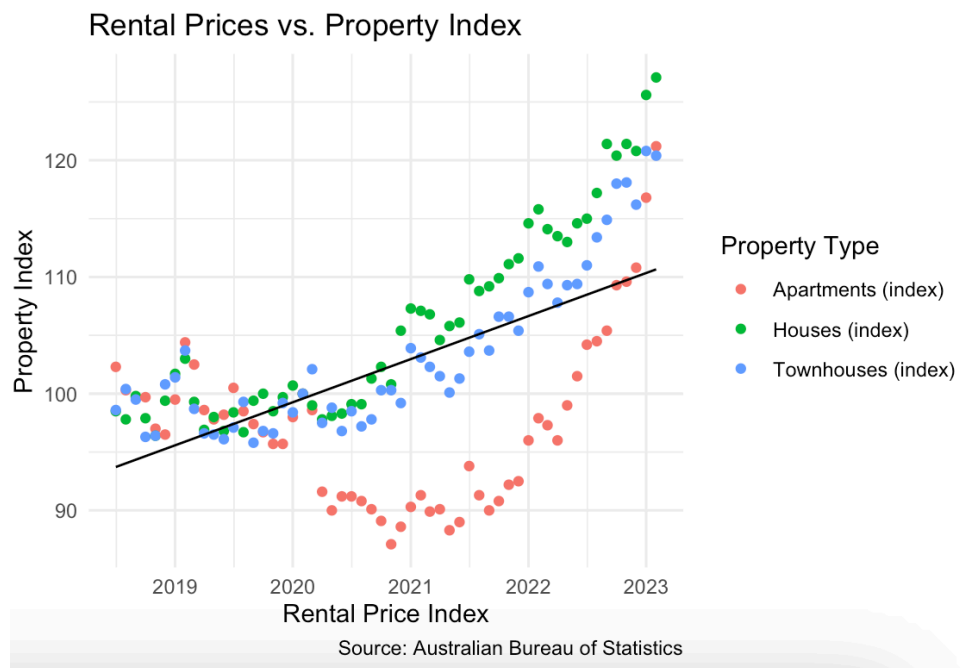
Figure 3: Rental Prices vs. Property Index by State in Australia (Australian Bureau of Statistics, 2023)
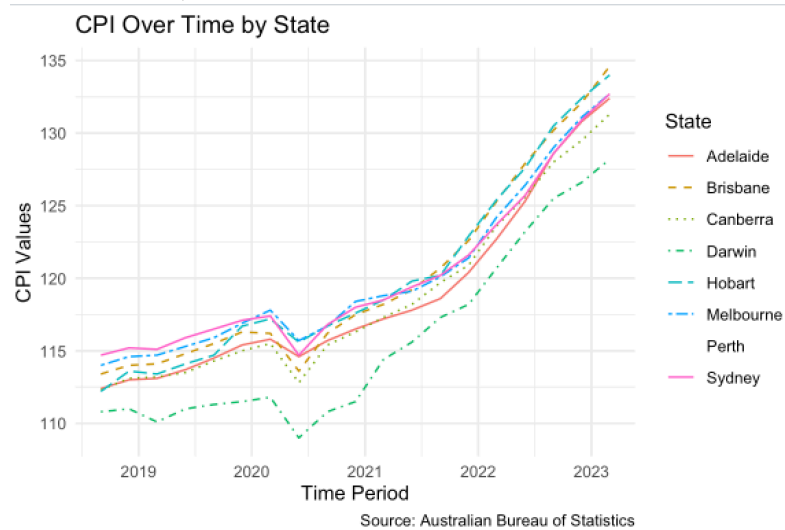

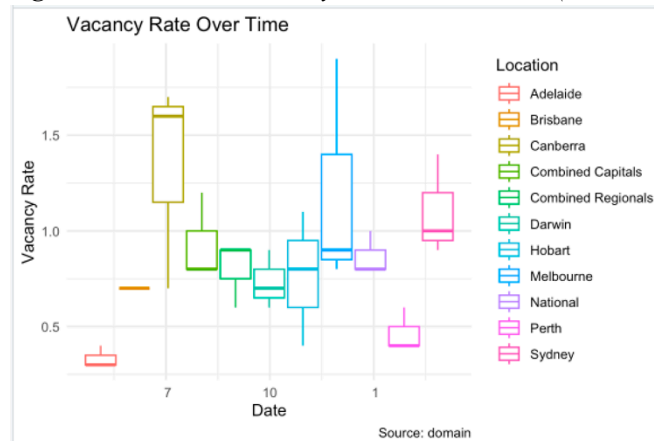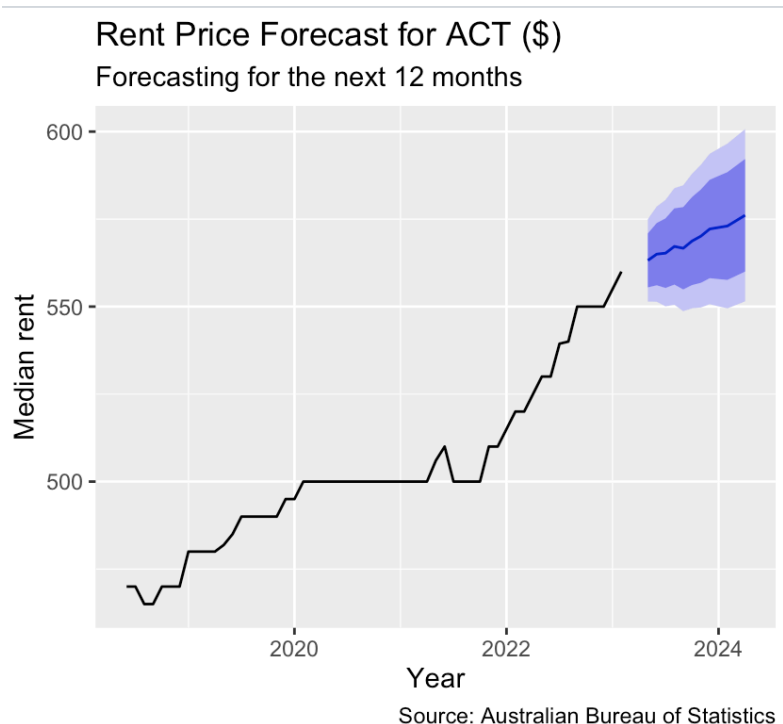*Figure 4: CPI Over Time by State in Australia (Australian Bureau of Statistics, 2023)*

Figure 5: Vacancy Rate by State in Australia Over Time (Domain, 2023)

Figure 6: Rent Price Forecast for ACT, Australian Capital Territory (Australian Bureau of Statistics, 2023)

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