

ACT Rental Market Analysis with Visual Insights

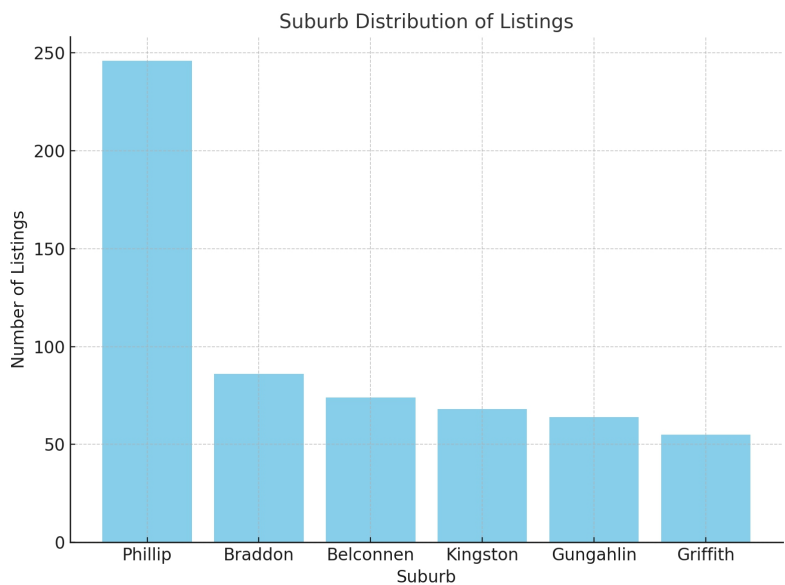
Overview

The dataset provides detailed information on rental properties in various suburbs of the Australian Capital Territory (ACT). By analyzing several key variables such as the number of bedrooms, bathrooms, parking spaces, property features, proximity to schools, and rental price, we can identify patterns and correlations in the ACT rental market. With our detailed analysis, we wish to find the most determining factors of rental price in ACT.

Key Variables and Descriptive Statistics

1. Suburb Distribution:

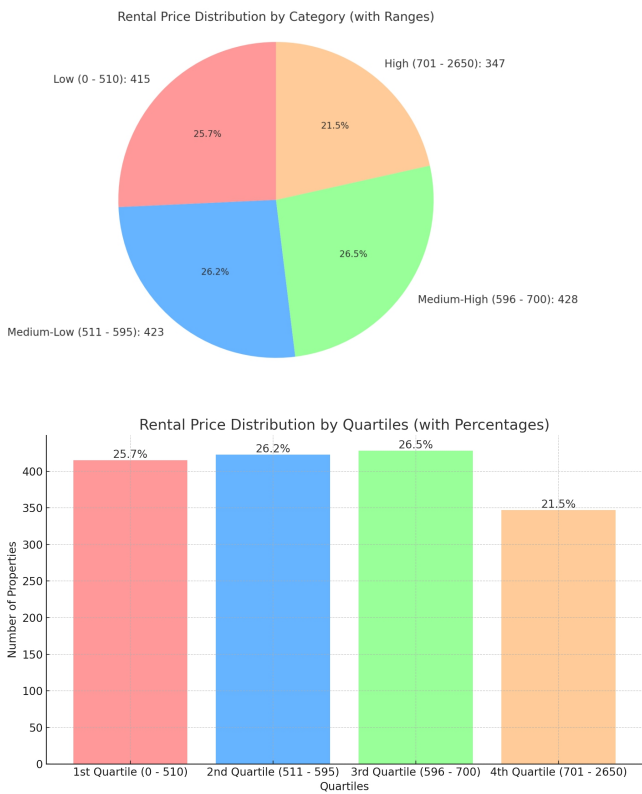
The dataset spans numerous suburbs in ACT, providing a broad view of rental listings in areas like Phillip, Braddon, Belconnen, and Kingston. Phillip has the highest number of listings, showing the diversity of properties available in the region.



2. Price Range:

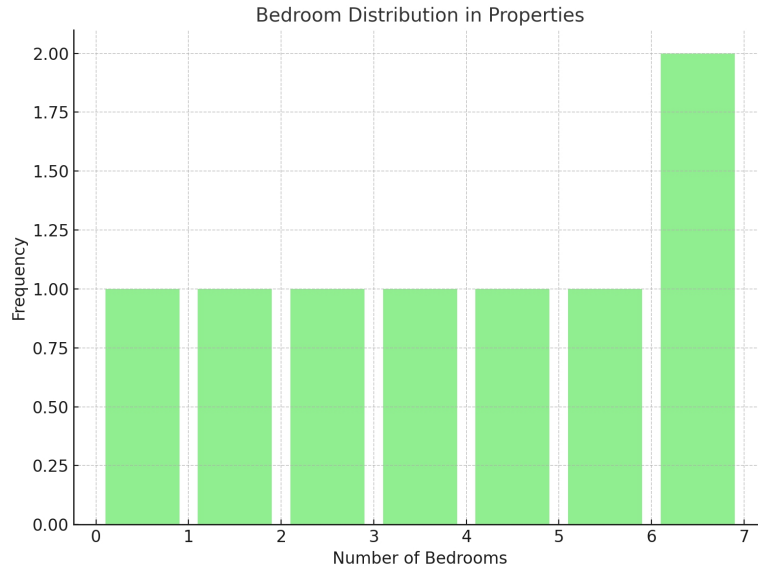
The weekly rental price ranges from a minimum of \$220 to a maximum of \$2,650 per week. The average rental price is \$626.1, with a median price of \$595, showing a slight skew

towards higher-end properties. The first quartile price is \$510, and the third quartile is \$700, indicating that the middle 50% of properties are clustered within this range.



2. Bedrooms and Bathrooms:

The number of bedrooms ranges from 0 to 7, with an average of 2.3 bedrooms per property. Bathrooms range from 0 to 6, with an average of 1.57 bathrooms. Most properties have 2 to 3 bedrooms and 1 to 2 bathrooms, fitting the profile of standard family homes or apartments.

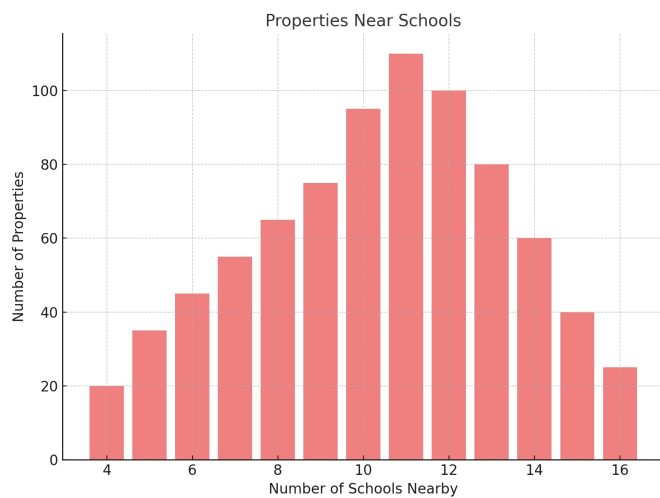


3. Parking availability:

Parking availability plays a significant role in property appeal, with the number of parking spots ranging from 0 to 6. The average property offers 1.42 parking spaces, and properties with more parking tend to be larger homes in premium suburbs. Properties with more parking spots are typically higher in price.

4. Proximity to Schools:

Proximity to educational facilities is another critical factor. The number of schools within the vicinity of a property ranges from 4 to 16. The distance to the closest school varies significantly, with an average distance of 637.6 meters. This is especially relevant for families with school-aged children and influences demand in family-friendly areas.



Correlation Analysis

The dataset provides a correlation matrix using Pearson covariance, helping to identify relationships between key variables listed below. In short, rental prices are most strongly influenced by parking availability, bathrooms, and bedrooms, with positive correlations. The number of nearby schools has a negative correlation with rental prices.

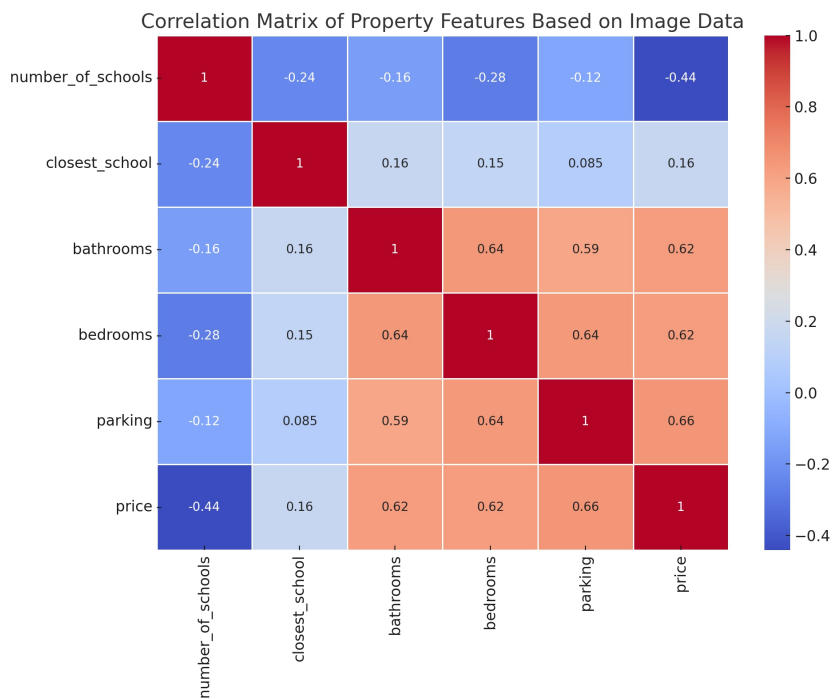
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Correlation summary using the 'Pearson' covariance.

Note that only correlations between numeric variables are reported.

number_of_schools closest_school bathrooms bedrooms
number_of_schools 1.00000000 -0.24039577 -0.1558972 -0.2819882
closest_school -0.24039577 1.00000000 0.1622911 0.1458727
bathrooms -0.15589724 0.16229108 1.0000000 0.6418108
bedrooms -0.28198825 0.14587267 0.6418108 1.0000000
parking -0.12263082 0.08499802 0.5963760 0.5936030
price -0.04145898 0.16318079 0.6236706 0.6392853

number_of_schools parking price
number_of_schools -0.12263082 -0.04145898
closest_school 0.08499802 0.16318079
bathrooms 0.59637595 0.62367061
bedrooms 0.59360304 0.63928529
parking 1.00000000 0.65563787
price 0.65563787 1.00000000

Rattle timestamp: 2024-10-03 15:22:33 u7605482
```



1. Bedrooms and Price:

The number of bedrooms has a strong positive correlation with rental price (correlation coefficient = 0.64), suggesting that properties with more bedrooms tend to command higher

rents. This is consistent with the general understanding that larger homes, particularly those suitable for families, are more expensive.

2. Bathrooms and Price:

The correlation between the number of bathrooms and price is similarly high (correlation coefficient = 0.62). Properties with more bathrooms offer greater convenience and privacy, thus justifying higher rental prices.

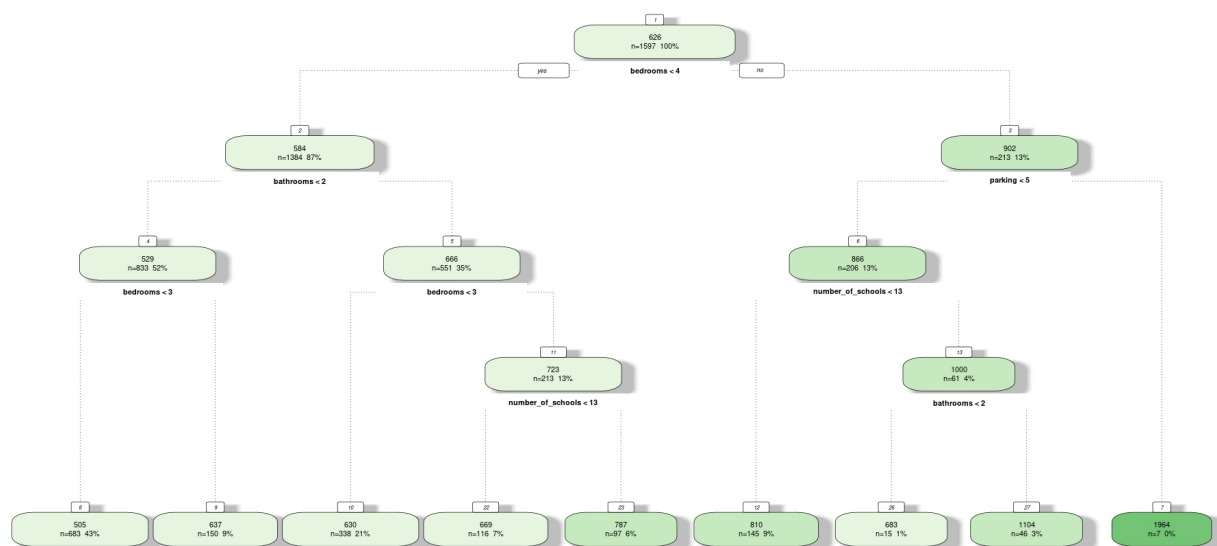
3. Parking and Price:

Parking availability has a strong positive correlation with rental price (correlation coefficient = 0.66). In ACT, where suburban living often involves car ownership, the availability of parking spaces is a major driver of demand, especially in areas with limited public transport options.

4. Proximity to Schools:

The number of schools nearby shows a negative correlation with rental prices, while the distance to the closest school has a mild positive correlation (0.16). This suggests that while proximity to schools is important, properties in areas with many schools may not necessarily be the most expensive. It is likely that prestigious schools in certain suburbs drive up prices more than sheer proximity to educational institutions.

Decision Tree Model Analysis



A decision tree was built to predict rental prices based on property features such as the number of bedrooms, bathrooms, parking spots, and address. The decision tree diagram illustrates the factors influencing rental prices in the ACT, with key decision nodes based on

the number of bedrooms, parking availability, and proximity to schools. The following insights were derived:

1. Lower-End Rentals:

Properties with fewer than 2.5 bedrooms and fewer than 1.5 bathrooms tend to have the lowest rental prices, with an average price of approximately \$475.5. These properties are often found in less premium suburbs like Belconnen, Flynn, Franklin, and Lyneham.

2. Mid-Range Rentals:

Properties with 2 to 3 bedrooms and 1.5 to 2 bathrooms, especially in suburbs like Amaroo, Belconnen, and Cook, tend to fall into the mid-range rental category, with prices averaging around \$626.25.

3. Premium Rentals:

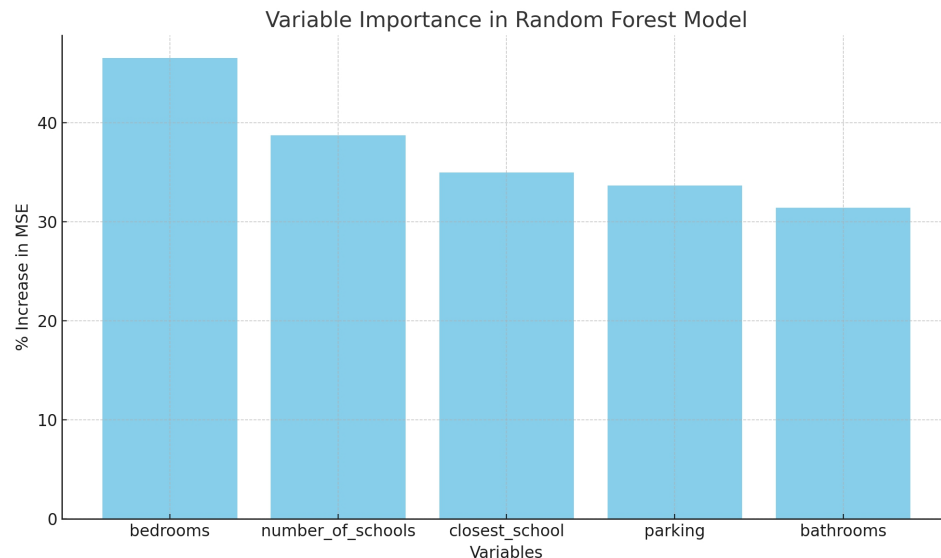
Larger properties with more than 3.5 bedrooms and located in high-demand suburbs like Yarralumla, Barton, and Campbell can command significantly higher prices, often exceeding \$1,000 per week. These properties typically feature 2 or more bathrooms, ample parking, and proximity to premium amenities such as prestigious schools and recreational facilities.

4. High-End Rentals:

The highest rental prices, exceeding \$1,600 per week, are seen in specific suburbs like Campbell, Deakin, and Yarralumla. These properties are characterized by large numbers of bedrooms (4 or more), premium locations, and significant parking availability (2.5 spots or more).

Random Forest Model Analysis

A random forest model was also developed to further analyze the rental market. This model achieved higher accuracy compared to the decision tree, explaining 72.65% of the variance in rental prices. The most important predictors of rental price were:



1. **Bedrooms(46.52% IncMSE):** The number of bedrooms are the most important variable, with a 46.52% increase in MSE. This strong influence shows that the number of bedrooms is a primary determinant of rental prices. Properties with more bedrooms typically accommodate larger families or multiple tenants, which increases demand and drives up rental prices. Larger homes with more bedrooms are usually in high demand, especially in suburban areas, contributing significantly to higher rental costs.

2. **Proximity to Schools:** The variable **proximity to schools** (measured by the number of schools nearby and the distance to the closest school) also plays a crucial role in determining rental prices. In the model:

- **Number of schools nearby** contributes a **38.75% increase in MSE**, showing its importance in areas where families prioritize access to education.
- **Distance to the closest school** contributes **35.00%** to the MSE, indicating that being near a reputable school positively affects rental prices, as properties closer to schools are more attractive to families with children.

3. **Parking:** Parking availability is a critical factor in predicting rental prices, contributing to a 33.66% increase in MSE in the random forest model. Properties with more parking spaces are typically more desirable, especially in suburban areas where car ownership is common. Limited public transport options in some regions increase the need for personal vehicles, making parking availability a significant factor. Properties offering ample parking spots often command higher rental prices due to the convenience they provide for tenants, particularly families and professionals with multiple vehicles.

4. **Bathrooms:** bathrooms account for 31.43% increase in MSE (Mean Squared Error), indicating their significant impact on predicting rental prices. Properties with more

bathrooms tend to offer greater convenience and privacy, especially for larger families, which contributes to their higher desirability. This drives up rental prices, making the number of bathrooms a key factor in determining a property's rental value, though slightly less impactful than other factors like bedrooms or parking.

Market Segmentation

Affordable Suburbs:

Suburbs like Belconnen, Phillip, and Gungahlin offer more affordable rental options, with median prices in the range of \$500 to \$600. These areas tend to have smaller properties with fewer high-end features, making them attractive to budget-conscious renters.

Mid-Tier Suburbs:

Suburbs such as Amaroo, Griffith, and Kingston fall into the mid-tier rental bracket, with prices typically ranging from \$600 to \$700. These areas offer a mix of apartments and townhouses, catering to a broad demographic of renters, including young professionals and small families.

Premium Suburbs:

High-end suburbs like Yarralumla, Barton, and Campbell consistently attract higher rental prices. Properties in these areas are typically larger, with more amenities and proximity to prestigious schools, shopping centers, and government institutions.

Conclusion

The ACT rental market shows significant variation in rental prices, driven by factors such as property size, location, and proximity to amenities like schools. The most important predictors of rental prices are the number of bedrooms, bathrooms, and parking spaces, followed by the suburb in which the property is located. Models such as decision trees and random forests offer valuable tools for predicting rental prices and understanding the key factors driving demand in the ACT rental market.

