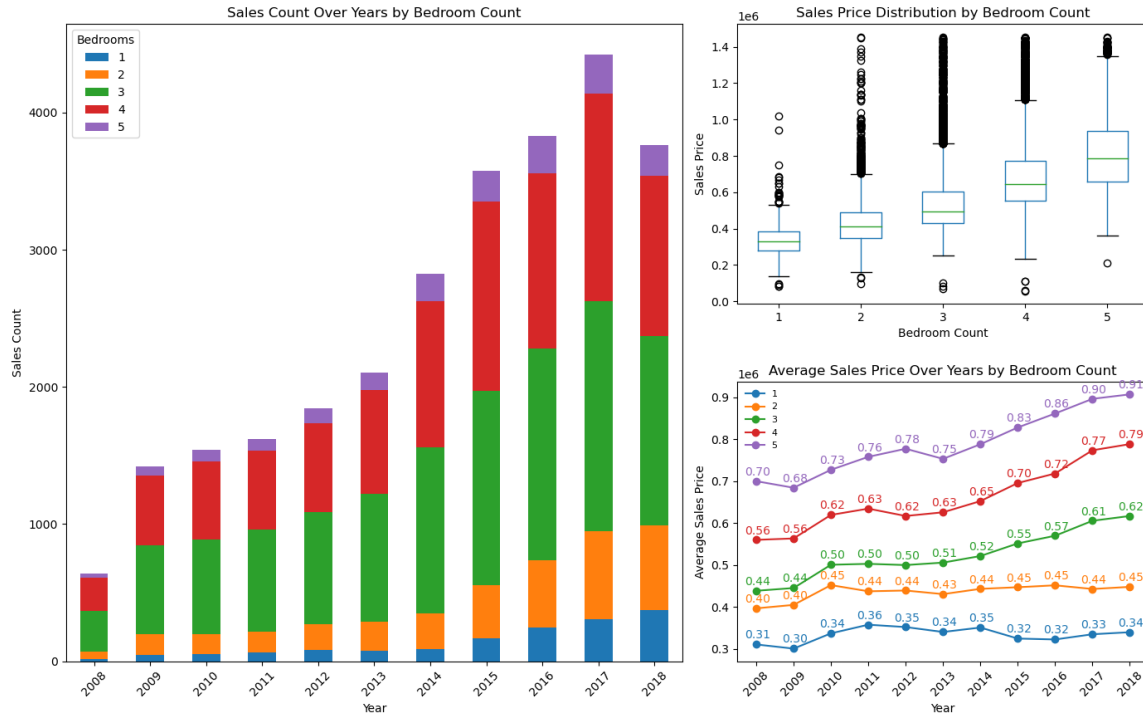# INFSCI 2310 Final Report

Real Estate Sales Analysis: Trends in Property Sales and Pricing by Bedroom Counts

Main Figure

Analysis of Property Sales Based on Bedroom Counts

Figure 1: Sales Count Distribution Over Years by Bedroom Count (Bar Plot)

- Bar plot illustrates the count of property sales categorized by the number of bedrooms for each year.
- Each color represents a different number of bedrooms (1 bedroom, 2 bedrooms, etc.). The color coding is as follows:
    - Blue: 1 Bedroom
    - Orange: 2 Bedrooms
    - Green: 3 Bedrooms
    - Red: 4 Bedrooms
    - Purple: 5 Bedrooms

Figure 2: Sales Price Distribution by Bedroom Count (Boxplot)

- Boxplot represents the distribution of sales price based on the number of bedrooms.
- It provides insights into the median, quartiles, and outliers for each bedroom count category.

**Figure 3: Average Sales Price Over Years by Bedroom Count (Line Plot)**

- Line plot depicts the trend of average sales price for different bedroom counts over the years.
- Each colored line represents a distinct bedroom count (1 bedroom, 2 bedrooms, etc.). The color coding is as follows:
    - Blue: 1 Bedroom
    - Orange: 2 Bedrooms
    - Green: 3 Bedrooms
    - Red: 4 Bedrooms
    - Purple: 5 Bedrooms

Findings

- Properties with 3 and 4 bedrooms exhibit consistently high sales counts across the years, indicating sustained market demand.
- Sales counts decline with fewer transactions for properties with 5 bedrooms.
- Higher average sales price is observed for properties with a greater number of bedrooms, indicating a correlation between property size and pricing.
- Properties with a higher number of bedrooms display wider variability in sales price, indicating diverse pricing within these categories.
- An overall upward trajectory in average sales price across various bedroom counts is observed from 2008 to 2018, with higher growth rates for properties with more bedrooms.

Data Description

- The House Property Sales Time Series dataset includes 29,500+ recorded property sales from 2008 to 2018 in a specific region of Australia.
- It provides detailed insights into property sales price for both houses and units, ranging from 1 to 5 bedrooms and categorized by postcode.
- The scatter plot illustrates the raw data of these properties:
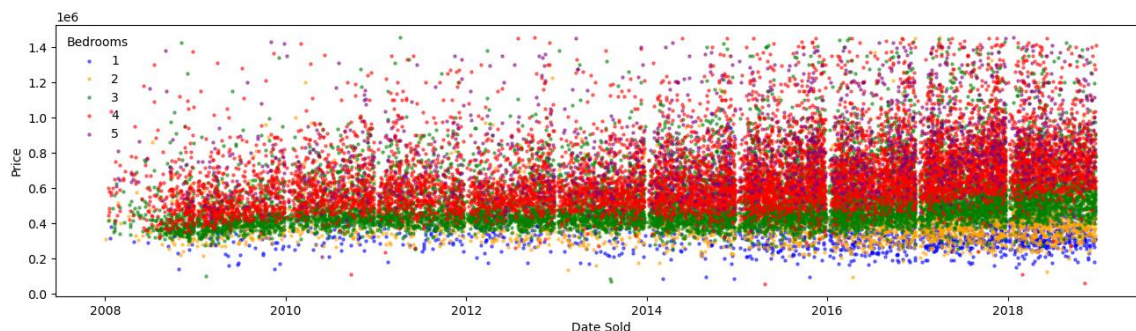
Methodology

- Python's Pandas and Matplotlib libraries are utilized for data analysis and visualization.
- Z-scores, with a threshold of <3, have been applied to filter outliers in the analysis, ensuring data integrity and accuracy.

Significance Statement

Understanding the dynamics of real estate markets holds paramount significance in guiding various stakeholders, including buyers, sellers, and real estate professionals, in their decision-making processes.

Analyzing trends in property sales and pricing by bedroom counts unveils valuable details regarding property value variations. It sheds light on the price differentials among properties with varying bedroom counts, helping buyers to align their preferences with their budget constraints and enabling sellers to accurately price their properties in line with market standards.

Furthermore, these insights extend beyond individual transactions, offering a broader perspective on regional market trends. Understanding how bedroom count influences sales price and sales count over time facilitates the evaluation of market stability and potential growth areas within specific regions. These insights aid real estate professionals in making strategic decisions related to property investments, development projects, and market expansions, contributing to the overall growth and sustainability of the real estate industry.