

# US Rental Market Analysis

## US Rental Market Analysis and Visualization Dashboard

### Abstract:

The project analyzes an apartment rental dataset in the US, which includes around 100,000 listings provided by UCI. The idea of this work is to analyze the impact of factors that were used to drive rent prices, including property features, location, and amenities, on this market. It goes further to visualize trends to decipher interactions between different factors at play. It would be concluded with the construction of an interactive dashboard, allowing the facilitation of ease of use in exploring trends of rentals across the United States.

**Project Type:** Application-based (Both Exploratory and Explanatory)

### Dataset

1. **Source:** University of California, Irvine (UCI)
2. **Size:** ~100,000 listings with 24 attributes, including but not limited to price, bedrooms, bathrooms, square footage, location, and amenities.
3. **Dependent Variable:** price\_display (Rental price)
4. **Independent Variables:** Features to include but are not limited to the number of bedrooms, bathrooms, square footage, amenities, and location.

This data is publicly available and in good shape to carry out this project, hence feature engineering can be applied to such a dataset to derive insights such as price per square foot, segmentation of listings into luxury versus budget categories. Preprocessing of the dataset requires very little work to be done such as handling of missing values and detection of outliers.

### Tools and Technologies:

- Python: Data preprocessing, feature engineering, and analysis.
- Tableau: Building the interactive dashboard for visualizations.
- Tableau Public: Hosting the dashboard for scalability.

### Visualization Process:

The project will start with cleaning the data and feature engineering to better prepare the data for analysis. Our visualization process includes the following:

#### 1. Static Visualizations:

1. Heatmaps of price distributions across various regions.
2. Correlation matrices showing relationships between property features and rental price.
3. Histograms and box plots studying distribution of rental prices and property size.

## **2. Interactive Dashboard:**

1. Maps: Rental listings by geographical location.
2. Price-to-Space Analysis: The study of how the square footage is factored into the rental prices.
3. State-wise Filtering: Ability for the user to filter properties based on state, price range, and amenities.
4. Time-Series Analysis: A study of how rental prices have changed over time. The users will have intuitive controls, and changes can be reflected in real time on the dashboard.

## **Expected Deliverables:**

1. Interactive Dashboard: An insightful dashboard on rental trends.
2. Report: A detailed analysis summarizing findings on rental pricing trends, property features, and geographical influences.
3. Future Enhancements: This can further be integrated with the predictive model that recommends rental prices considering the historical data.