**House Data Analysis**

**Summary of Findings**

Upon analysing the house data, we identified several variables that have a significant correlation with house prices. The correlation matrix helped us pinpoint these relationships, and scatter plots provided a visual representation of these correlations. The variables that showed the strongest correlation with house prices are sqft\_living, grade, sqft\_above, sqft\_living15, and bathrooms.

**Relationship Between Variables and House Prices**

1. **Sqft Living**:
   * **Correlation Coefficient**: 0.702
   * **Insight**: There is a strong positive correlation between the square footage of living space and house prices. This indicates that larger homes tend to be more expensive.
2. **Grade**:
   * **Correlation Coefficient**: 0.667
   * **Insight**: The grade, which measures the overall quality and condition of the house, shows a strong positive correlation with house prices. Higher quality homes command higher prices.
3. **Sqft Above**:
   * **Correlation Coefficient**: 0.606
   * **Insight**: The square footage of the house above ground level is also strongly correlated with house prices. Larger above-ground areas contribute to higher home values.
4. **Sqft Living 15**:
   * **Correlation Coefficient**: 0.585
   * **Insight**: The living space in the nearby 15 homes also has a positive correlation with house prices. This suggests that the neighborhood's general house size influences individual house prices.
5. **Bathrooms**:
   * **Correlation Coefficient**: 0.525
   * **Insight**: The number of bathrooms in a house has a moderate positive correlation with house prices. More bathrooms generally add value to a property.

**Suitable Variables for Estimating House Prices**

Based on the correlation analysis, the most suitable variables for estimating house prices are:

1. **Sqft Living**: Given its high correlation coefficient, the total living area of a house is a crucial factor in determining its price. It directly influences the value as larger homes offer more space and comfort.
2. **Grade**: The overall quality and condition of the house significantly impact its market value. Higher grades typically mean better materials and finishes, contributing to higher prices.
3. **Sqft Above**: This variable is important as it reflects the usable living area above ground, which is highly valued in the real estate market.
4. **Sqft Living 15**: The average living space in the surrounding homes affects the perceived value of a property. Homes in neighborhoods with larger average living spaces tend to be more expensive.
5. **Bathrooms**: The number of bathrooms is an essential aspect of a home’s functionality and convenience, making it a valuable factor in price estimation.

**Scatterplots:**

