

# Report on Sale Prices: Influencing Factors and Their Effects

## I. Data Description:

### Data Source:

This data is acquired from [Google Sheet Link](#) and converted to data.csv file. This dataset contains the following columns:

1. Id: To count the records.
2. MSSubClass: Identifies the type of dwelling involved in the sale.
3. MSZoning: Identifies the general zoning classification of the sale.
4. LotArea: Lot size in square feet.
5. LotConfig: Configuration of the lot
6. BldgType: Type of dwelling
7. OverallCond: Rates the overall condition of the house
8. YearBuilt: Original construction year
9. YearRemodAdd: Remodel date (same as construction date if no remodeling or additions).
10. BsmtFinSF2: Type 2 finished square feet.
11. TotalBsmtSF: Total square feet of basement area
12. SalePrice: To be predicted

### Data Question:

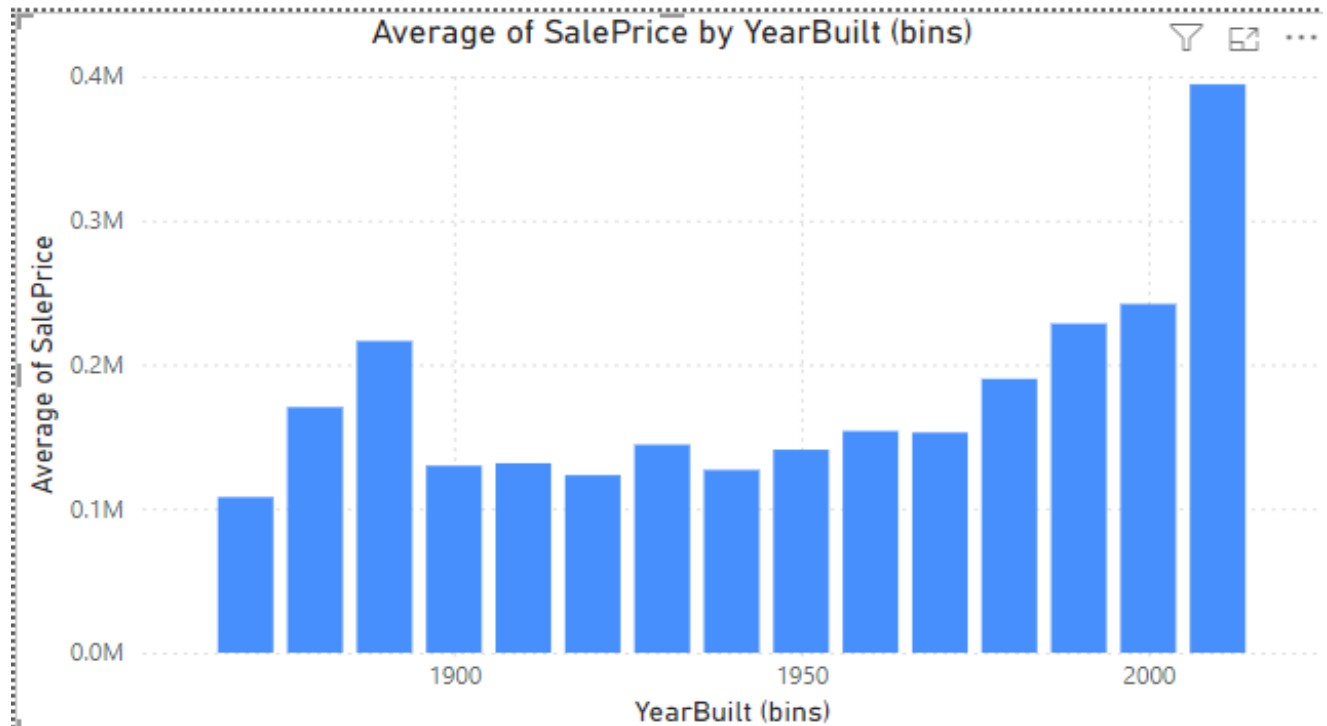
How is SalePrice influenced by these factors?

The response variable: SalePrice

The possible factors: MSSubClass, MSZoning, LotArea, LotConfig, BldgType, OverallCond, YearBuilt, YearRemodAdd, BsmtFinSF2, TotalBsmtSF

## II. Data Analysis

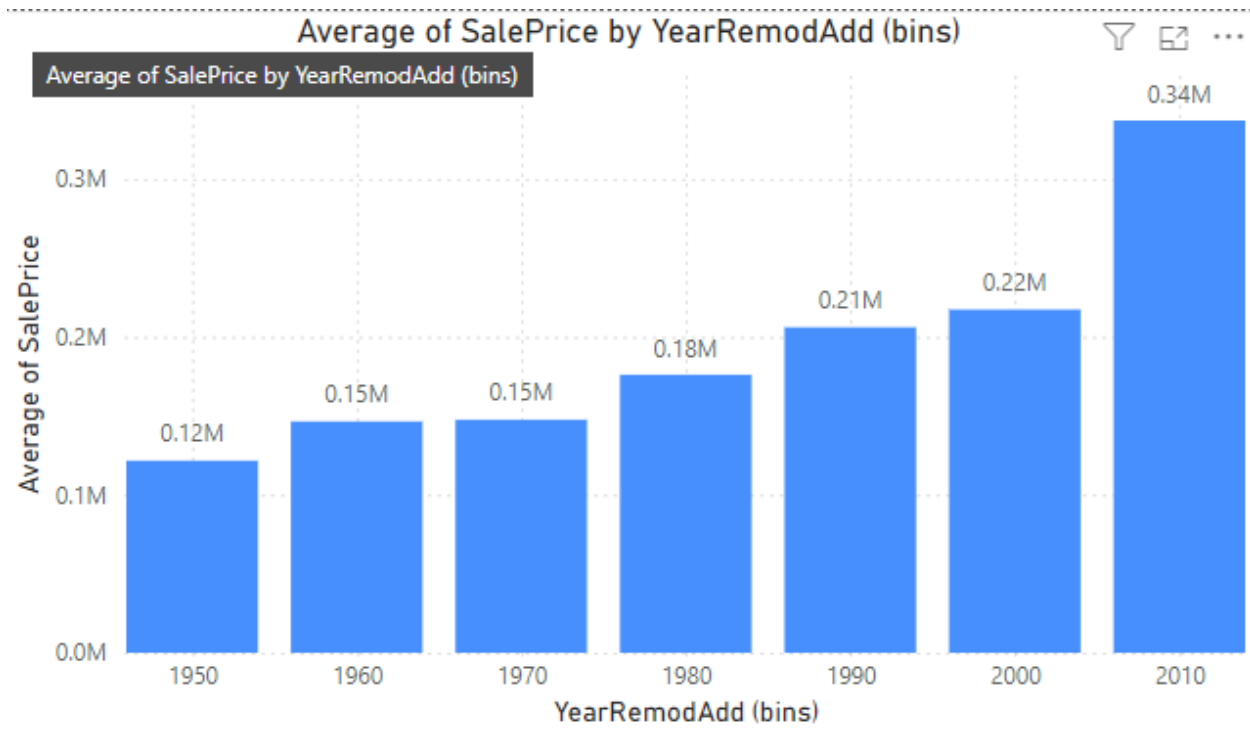
### 1. Influence of Construction and Remodeling Year



- **Year Built:**

- **Effect on Sale Price:** The age of a property significantly influences its market value. Homes built more recently, especially around the year 2000, show higher average sale prices (~\$0.4 million). This increase in value can be attributed to the fact that newer homes typically offer modern designs, contemporary layouts, and up-to-date building materials, which are highly sought after by buyers.
- **Reasoning:** Buyers often associate newer homes with lower maintenance costs, better energy efficiency, and compliance with current building codes. These factors reduce the likelihood of expensive repairs and renovations, which in turn increases the property's appeal and justifies a higher price. Additionally, newer homes often incorporate more desirable features such as open floor plans, larger kitchens, and more modern amenities.
- **Inference:** Sellers with older homes may need to adjust their expectations or invest in significant updates to compete with newer constructions. Buyers looking for long-term investments may prioritize newer homes to avoid the costs associated with older properties.

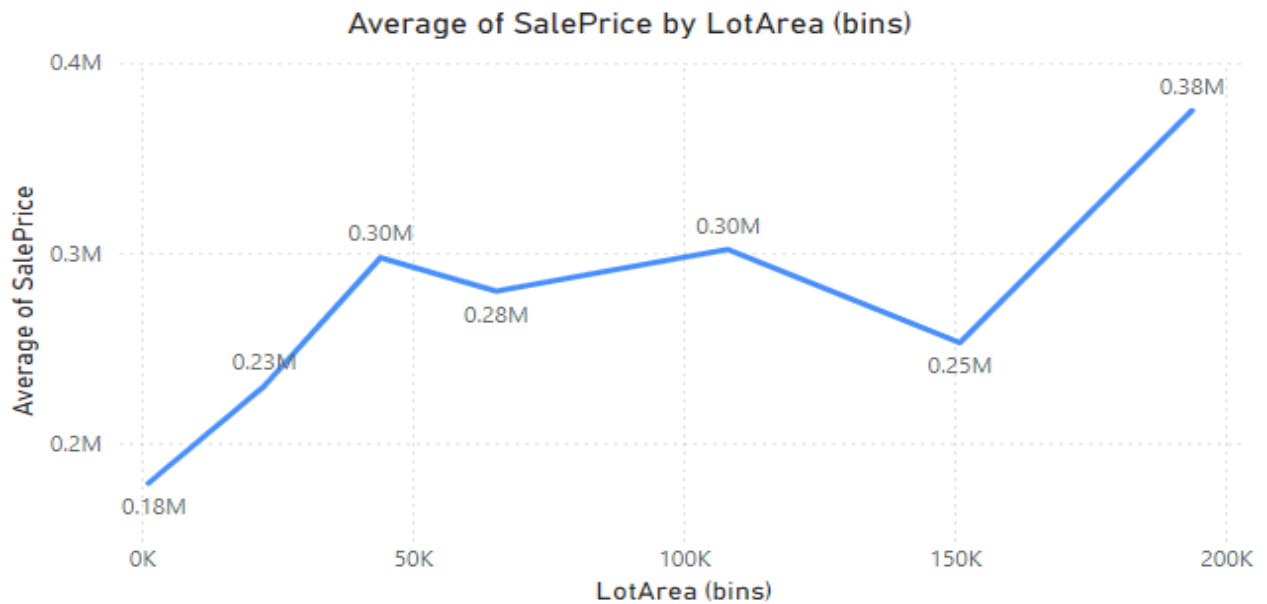
- **Year Remodeled:**



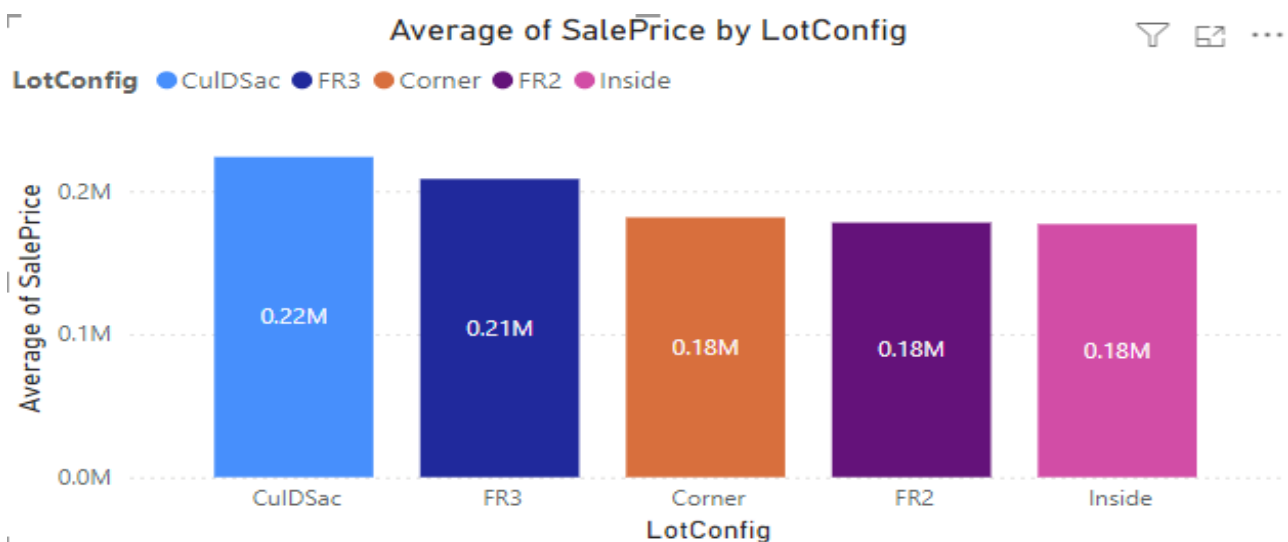
- **Effect on Sale Price:** Homes that have undergone recent renovations, particularly around the year 2000, tend to have higher average sale prices (~\$0.34 million). This highlights the value that buyers place on modernized homes.
- **Reasoning:** Renovations, especially those targeting key areas such as kitchens, bathrooms, and living spaces, can bring an older home up to modern standards. Updated homes not only look more appealing but also often function better, with improved plumbing, electrical systems, and energy efficiency. Buyers are willing to pay more for homes that require little to no immediate work, reflecting the value of convenience and reduced future expenses.
- **Inference:** For sellers, investing in strategic renovations can significantly increase their property's market value. Buyers should consider the quality and extent of renovations when evaluating a home's price, as well-done upgrades can add substantial value.

## 2. Impact of Lot Area and Configuration on Sale Prices

- **Lot Area:**



- **Effect on Sale Price:** There is a strong positive correlation between the size of the lot and the sale price. Larger lots (around 150K square feet) are associated with higher sale prices (\$0.38 million), while smaller lots (around 50K square feet) see lower prices (\$0.18 million).
  - **Reasoning:** Larger lots provide more space for outdoor activities, gardens, or potential expansions, which are highly valued by many buyers, especially those with families or who desire privacy. Additionally, larger lots in urban areas may offer significant development potential, further increasing their value.
  - **Inference:** Buyers who prioritize space and potential for future development should be prepared to pay a premium for larger lots. Sellers with large properties in desirable areas can capitalize on this by emphasizing the space and potential in their listings.
- **Lot Configuration:**



- **Effect on Sale Price:** The configuration of a lot, such as being located in a cul-de-sac, affects its desirability and, consequently, its sale price. Cul-de-sac properties command higher prices (\$0.22 million) compared to corner or inside lots (\$0.18 million).
- **Reasoning:** Cul-de-sacs are often preferred by families and those seeking a quieter, safer environment with reduced traffic. These lots also tend to offer more privacy and a greater sense of community, which enhances their appeal and value.
- **Inference:** Sellers with cul-de-sac properties should highlight these attributes in their marketing efforts. Buyers looking for a family-friendly or quiet living environment should consider the added value of cul-de-sac properties, even if they come at a slightly higher cost.

### 3. Exterior Material and Building Type as Price Determinants

- **Exterior Material:**

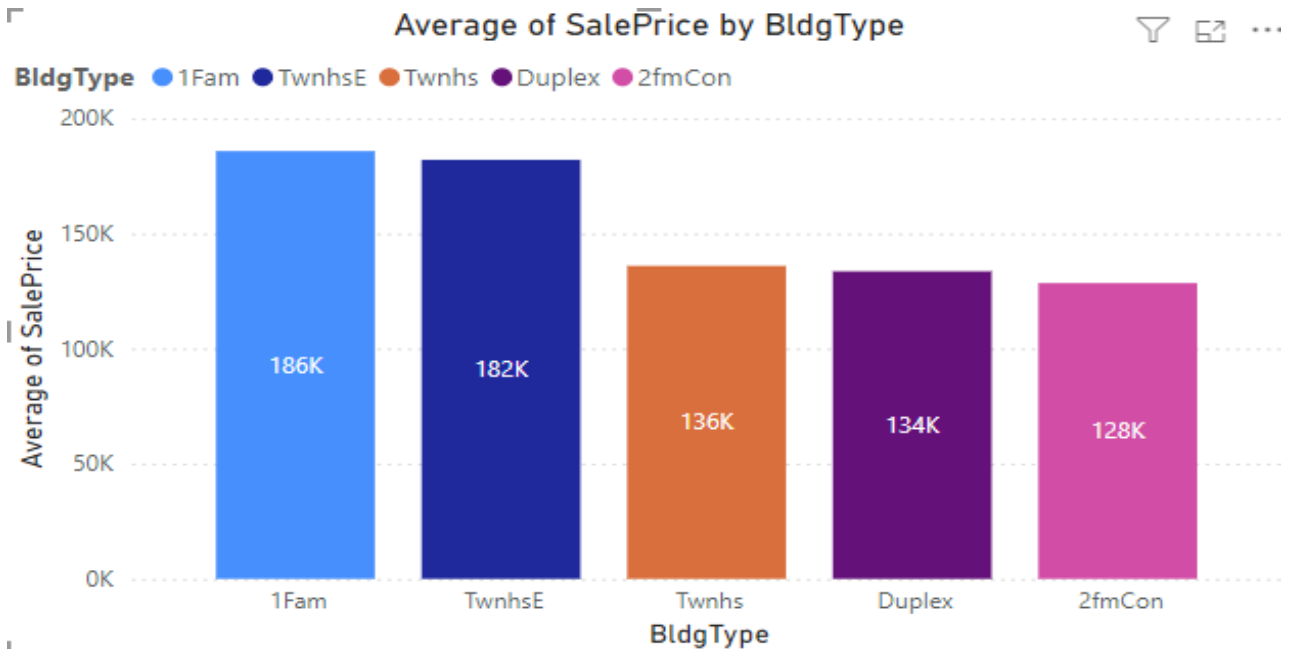


- **Effect on Sale Price:** The material used for a home's exterior has a significant impact on its market value. Homes with high-end materials like "ImStucc" (Improved Stucco) and "Stone" command higher prices (\$0.3 million), while those with less expensive materials like "AsphShn" (Asphalt Shingles) or "CBlock" (Concrete Block) have lower prices (\$0.1 million).
- **Reasoning:** High-quality exterior materials are often associated with better durability, weather resistance, and aesthetic appeal. They may also require less maintenance over time, which is a key consideration for buyers. In contrast, materials like asphalt shingles

or concrete blocks, though functional, may be perceived as less attractive or indicative of lower-quality construction.

- **Inference:** Sellers should consider upgrading their home's exterior materials if possible, as this can significantly increase its market value. Buyers may want to weigh the long-term benefits of higher-quality materials against the initial purchase price, as they could lead to lower maintenance costs and higher resale value.

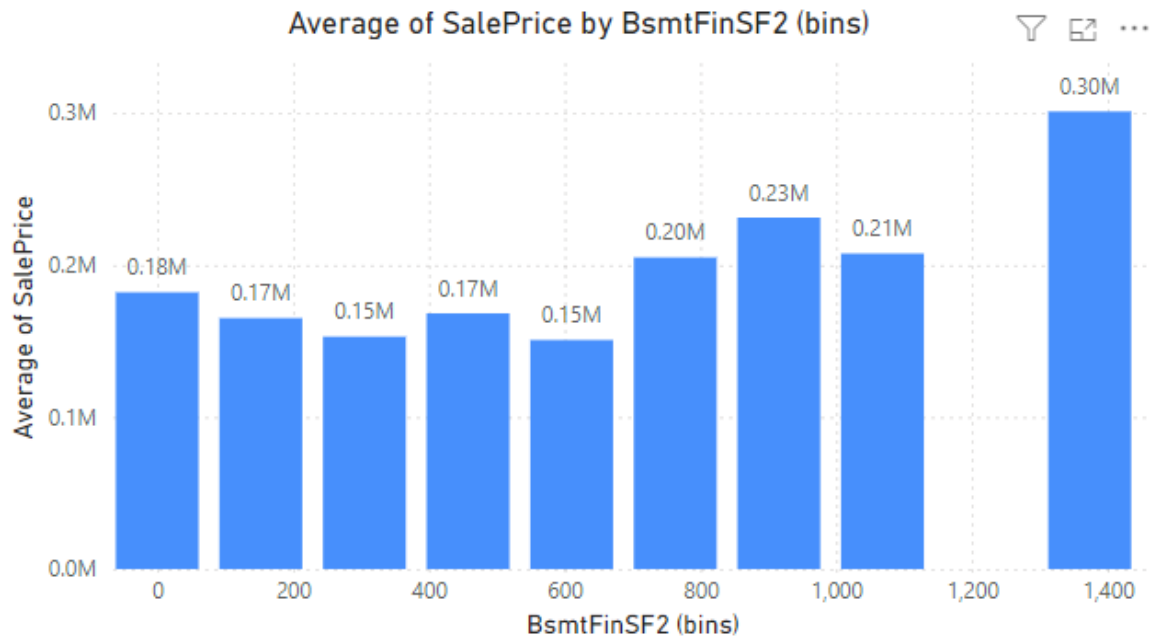
- **Building Type:**



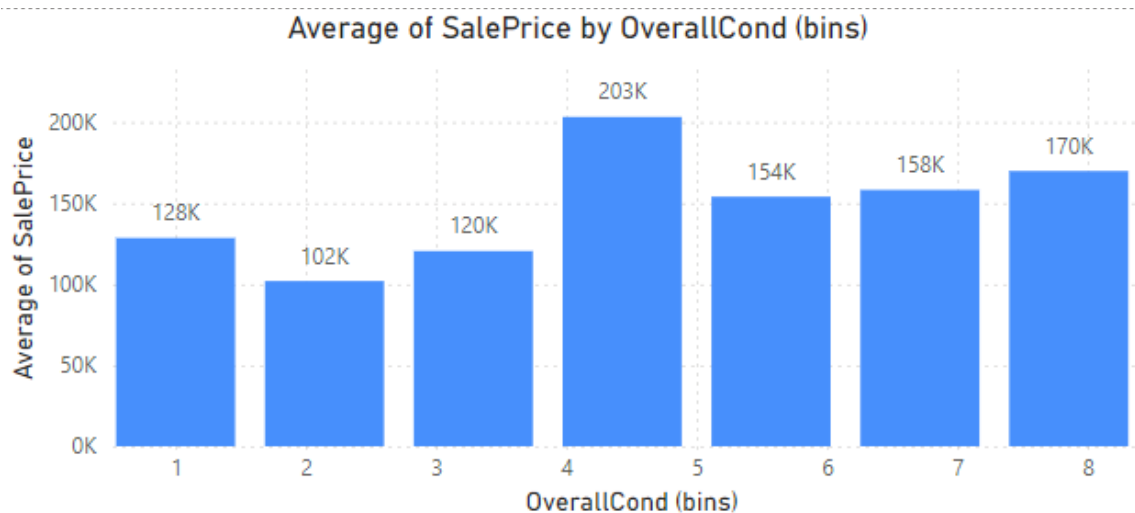
- **Effect on Sale Price:** Single-family homes (1Fam) are the most valuable, with average prices around \$186K, followed by townhouses (TwnhsE and Twnhs). Duplexes and two-family conversions (2fmCon) are priced lower, around \$128K.
- **Reasoning:** Single-family homes offer more privacy and space, making them more desirable for families and individuals seeking a standalone residence. Townhouses, while generally more affordable, offer less privacy but still appeal to those looking for a compromise between a single-family home and an apartment. Duplexes and two-family homes often attract investors or buyers looking for rental income, which can limit their market to a more niche audience.
- **Inference:** Sellers of single-family homes can leverage the high demand for privacy and space in their pricing strategies. Buyers should consider their long-term needs and whether a single-family home's higher price justifies the benefits it offers compared to other building types.

#### 4. Basement Size and Overall Condition as Value Indicators

- **Basement Size:**



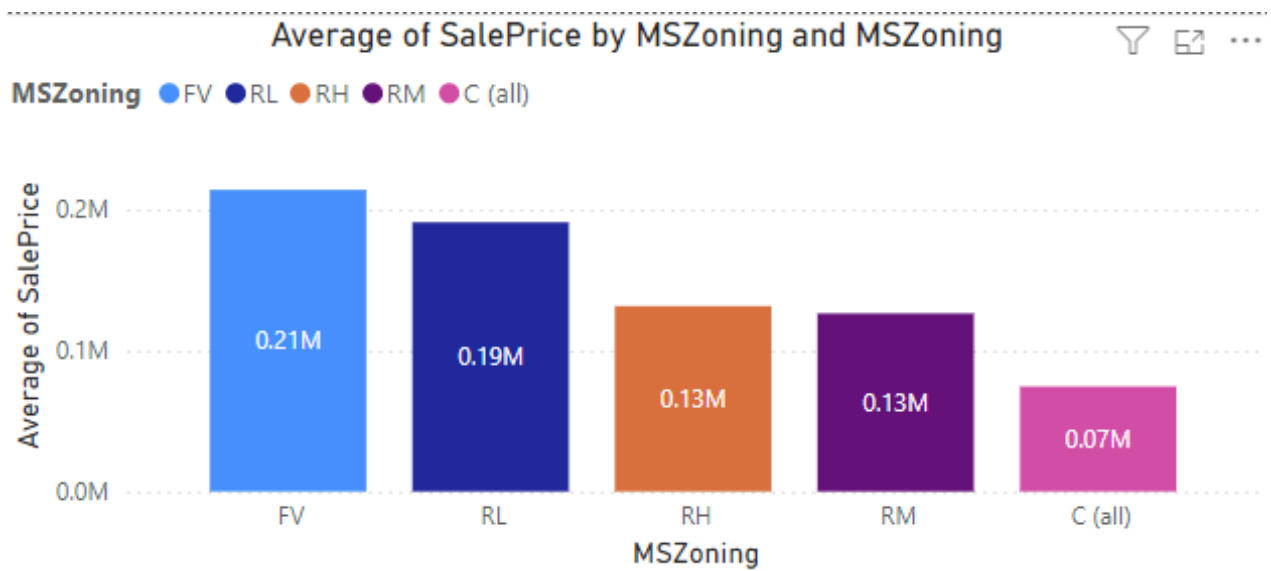
- **Effect on Sale Price:** Larger basements (around 1,200 square feet) correlate with significantly higher sale prices (\$0.5 million), while smaller basements (around 200 square feet) are linked to much lower prices (\$0.18 million).
  - **Reasoning:** A larger basement offers additional living space, which can be used for a variety of purposes, such as a recreation room, guest suite, or storage. Finished basements, in particular, are highly valued as they effectively increase the usable square footage of the home, providing more room without the need for an extension.
  - **Inference:** Sellers should consider finishing or expanding their basements to increase their home's value. Buyers looking for flexible living spaces should prioritize homes with larger, finished basements, as they provide more options for customization and expansion.
- **Overall Condition:**



- **Effect on Sale Price:** Homes in better overall condition (rated 7 or above) have significantly higher sale prices (\$203K), while those in poorer condition (rated 3 or below) are valued much lower (\$102K).
- **Reasoning:** Homes in good condition require less immediate investment from buyers, who may be unwilling to deal with the inconvenience and cost of repairs. A well-maintained home also suggests that it has been cared for over time, reducing the risk of hidden issues. Conversely, homes in poor condition are often seen as "fixer-uppers," which appeal to a smaller segment of buyers looking for investment opportunities or those willing to take on renovations.
- **Inference:** Sellers should invest in maintaining their homes to keep them in top condition, as this will attract a broader range of buyers and justify higher prices. Buyers on a budget might find opportunities in homes that need work, but they should be prepared for the time and cost involved in renovations.

## 5. Zoning and Subclass Influence on Market Value

- **Zoning:**

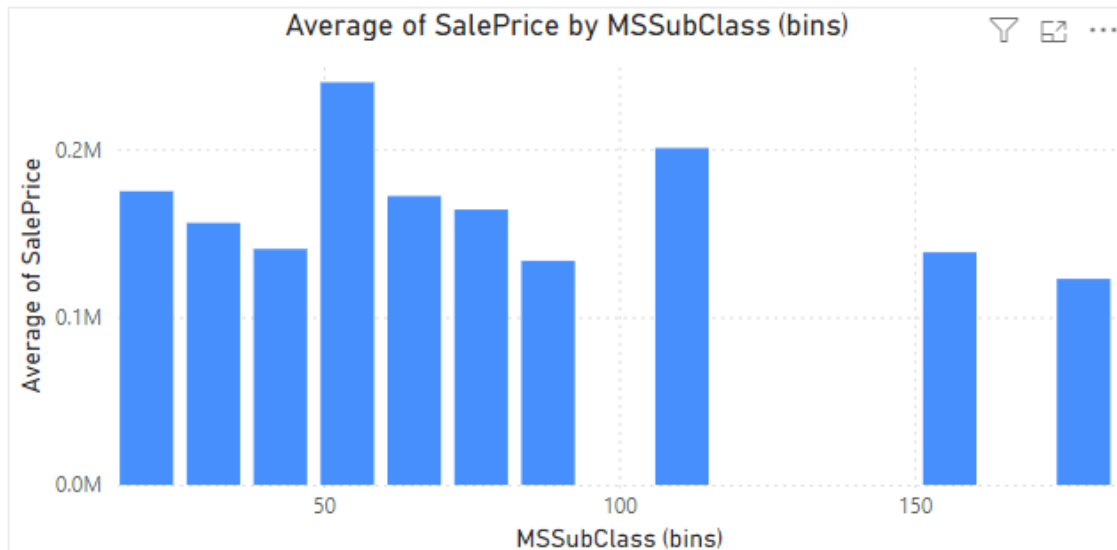


- **Effect on Sale Price:** Homes in "FV" zoning areas (Floodplain) have the highest average sale prices (\$0.21 million), while those in commercial zones ("C (all)") have the lowest (\$0.07 million).
- **Reasoning:** "FV" zoned areas may be in scenic or waterfront locations, making them highly desirable despite potential flood risks, which could be mitigated by insurance or engineering solutions. In contrast, homes in commercial zones may suffer from less residential appeal due to proximity to businesses, traffic, and noise, making them less attractive to typical homebuyers.



- **Inference:** Buyers interested in "FV" zones should weigh the aesthetic and location benefits against the potential risks and insurance costs. Sellers in commercial zones may need to target specific buyers, such as investors or those looking for mixed-use properties, and adjust their pricing accordingly.

- **Subclass:**



- **Effect on Sale Price:** Certain subclasses, like MSSubClass 150, which often include older or unique properties, tend to have lower sale prices (~\$0.1 million).
- **Reasoning:** These subclasses may represent homes that are less common, older, or located in less desirable areas. They might require significant updates or be perceived as outdated, which reduces their appeal and market value.
- **Inference:** Sellers of homes in these subclasses may need to invest in modernization or target niche markets to maximize their selling price. Buyers interested in these properties could find lower-priced opportunities but should be prepared for potential renovation costs.

### III. Comprehensive Inferences and Strategic Implications

- **Modernization and Renovation:** Investing in renovations, especially for older homes, is a proven strategy for increasing market value. Modernizing key features can bring a home in line with current buyer expectations, making it more competitive against newer constructions.
- **Lot and Location Premiums:** Larger lot sizes and favorable lot configurations, such as cul-de-sacs, offer a significant advantage in the market. These features are highly valued by buyers for their potential and privacy benefits, and sellers should highlight these aspects in their marketing.

- **Material and Design Choices:** The choice of building materials and home design plays a crucial role in determining a home's desirability and price. Premium materials and designs that offer durability, aesthetics, and functionality are more likely to attract higher bids.
- **Condition and Maintenance:** Keeping a home in excellent condition is key to maximizing its sale price. Regular maintenance and timely updates not only preserve value but can also attract a wider range of buyers willing to pay more for a well-maintained property.
- **Strategic Zoning Considerations:** Zoning can significantly impact a property's value, with certain zones offering unique opportunities or challenges. Buyers and investors should carefully consider the implications of zoning on property use, potential development, and resale value.

#### IV. Conclusion

This comprehensive analysis reveals how various factors, including construction year, lot size, exterior materials, and overall condition, influence housing sale prices. Understanding these influences allows both buyers and sellers to make more informed decisions in the housing market. Sellers can maximize their returns by focusing on key areas that drive value, while buyers can better assess the long-term potential of their investments.