# Housing Market EDA: Chart Insights & Takeaways

This analysis used our merged dataset of housing, income, and school data to generate exploratory visuals. The goal was to highlight key patterns and relationships across Texas metro areas that could support decision-making and further analysis. Below is a breakdown of each chart and the main takeaways.

## Chart 1 – Median Sale Price Over Time (Top Cities)

This chart tracks median sale prices from 2012–2024 for Dallas–Fort Worth, Houston, San Antonio, and Austin.

Insights:

* - All metros followed a general upward trend, with a sharper spike around 2020–2022, likely reflecting pandemic-era housing pressures.
* - Austin stands out with the steepest rise and highest peak, pushing well above $600K before softening in 2023–2024.
* - Dallas and Houston grew steadily but at lower absolute price levels, while San Antonio consistently remained the most affordable of the group.

Takeaway: Austin’s housing market is far more volatile and “boom-and-bust” in nature, while San Antonio offers more stability and affordability.

## Chart 2 – Top 10 ZIP Codes by Avg Median Sale Price

This bar chart highlights the ZIP codes with the highest average sale prices.

Insights:

* - Dallas (75205) leads, with average median sale prices approaching $1M.
* - Houston’s 77005 also ranks at the top, consistent with high-income enclaves.
* - Other Austin ZIPs (like 78746 and 78731) show strong representation in the upper tiers.

Takeaway: High-value housing clusters around wealthier ZIPs in Dallas, Houston, and Austin. These represent concentrated “premium” submarkets that skew overall metro averages and attract high-income buyers.

## Chart 3 – Per Capita Income vs. Median Home Value

This scatterplot compares income with home values.

Insights:

* - A clear positive correlation exists (Pearson’s r ≈ 0.91).
* - Higher-income areas almost always have higher home values, with relatively few outliers.
* - The tightness of the cluster reinforces that housing affordability strongly follows income levels.

Takeaway: Local income is a major driver of housing values. Price growth in expensive areas isn’t random—it’s supported by resident income capacity.

## Chart 4 – Median Sale Price by School Enrollment Tier

This boxplot compares median sale prices for small, medium, and large school enrollment tiers.

Insights:

* - Distributions overlap heavily across tiers, but smaller schools show slightly higher median prices and upper whiskers.
* - Larger schools (800+) are more associated with broader, mixed markets and don’t consistently drive premium pricing.

Takeaway: School size isn’t a strong standalone predictor of housing values. Smaller schools might correlate with more exclusive or wealthier neighborhoods, but the effect isn’t dominant.

## Chart 5 – Unemployed Population vs. Median Sale Price

This scatterplot shows the relationship between unemployment counts and home values.

Insights:

* - Negative correlation (Pearson’s r ≈ –0.35).
* - Neighborhoods with higher unemployment tend to have lower median home prices.
* - The relationship isn’t perfectly tight, but the downward trend is consistent.

Takeaway: Higher unemployment undermines housing demand and values. While not the strongest predictor, unemployment levels clearly weigh against pricing power in local markets.

## Overall Takeaways

* - Price Growth & Volatility: All metros have grown, but Austin surged and corrected sharply, while San Antonio has remained steadier.
* - Premium Submarkets: Specific ZIP codes drive extreme pricing and create “hot spots” investors should track.
* - Income Link: Strong correlation between income and housing values reinforces the importance of demographics.
* - Other Factors: School size is not a major driver, but unemployment exerts downward pressure.

## Final Bottom Line

Texas housing markets are not one-size-fits-all. Austin behaves like a high-risk, high-reward play: it saw the fastest appreciation during the boom years but also corrected hardest after 2022. Investors looking for growth may target Austin selectively, but must account for volatility. On the other hand, San Antonio is much steadier and more affordable, making it more attractive for defensive strategies or long-term holds.

Within cities, metro averages can be misleading. A few luxury ZIP codes in Dallas, Houston, and Austin skew overall values upward. Segmenting submarkets—luxury vs. workforce housing—is essential for realistic pricing, rental expectations, or ROI calculations.

Income explains most of the value differences across markets. This suggests affordability will remain a central issue: areas with rising incomes will continue to pull away from lower-income areas. Investors who understand these gaps can better position themselves for demand in either high-end or affordable segments.

Unemployment shows a weaker but consistent effect: higher unemployment aligns with lower home prices. It is not the primary driver, but it’s a useful screen to avoid weaker submarkets or spot early signs of market stress.

Overall, the data suggests investors should balance exposure: combine volatile, high-upside markets like Austin with steadier markets like San Antonio, track income trends closely as the strongest signal of value growth, and segment ZIP codes rather than relying on citywide averages. For risk management, layering in unemployment and school context provides additional filters to guide decisions.