

Report 1: City of Madison Single-Family Home Sales Time Series

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Executive Summary

This report analyzes 31 years of single-family home sales data in Madison, Wisconsin (1994-2024), revealing several key market dynamics:

Key Findings: - **Market Composition:** 3-bedroom homes consistently represent the largest market segment (45%+ of sales) - **Price Appreciation:** Median home prices increased from ~\$100K in 1994 to over \$400K by 2024 - **Market Volatility:** Sales volumes show significant year-to-year variation, with recent declines primarily driven by reduced 3-bedroom activity - **Size Inflation:** Median home size increased from ~1,400 sq ft to over 1,800 sq ft during the study period - **Price Intensity:** Price per square foot more than tripled, indicating market tightening beyond simple inflation

Introduction

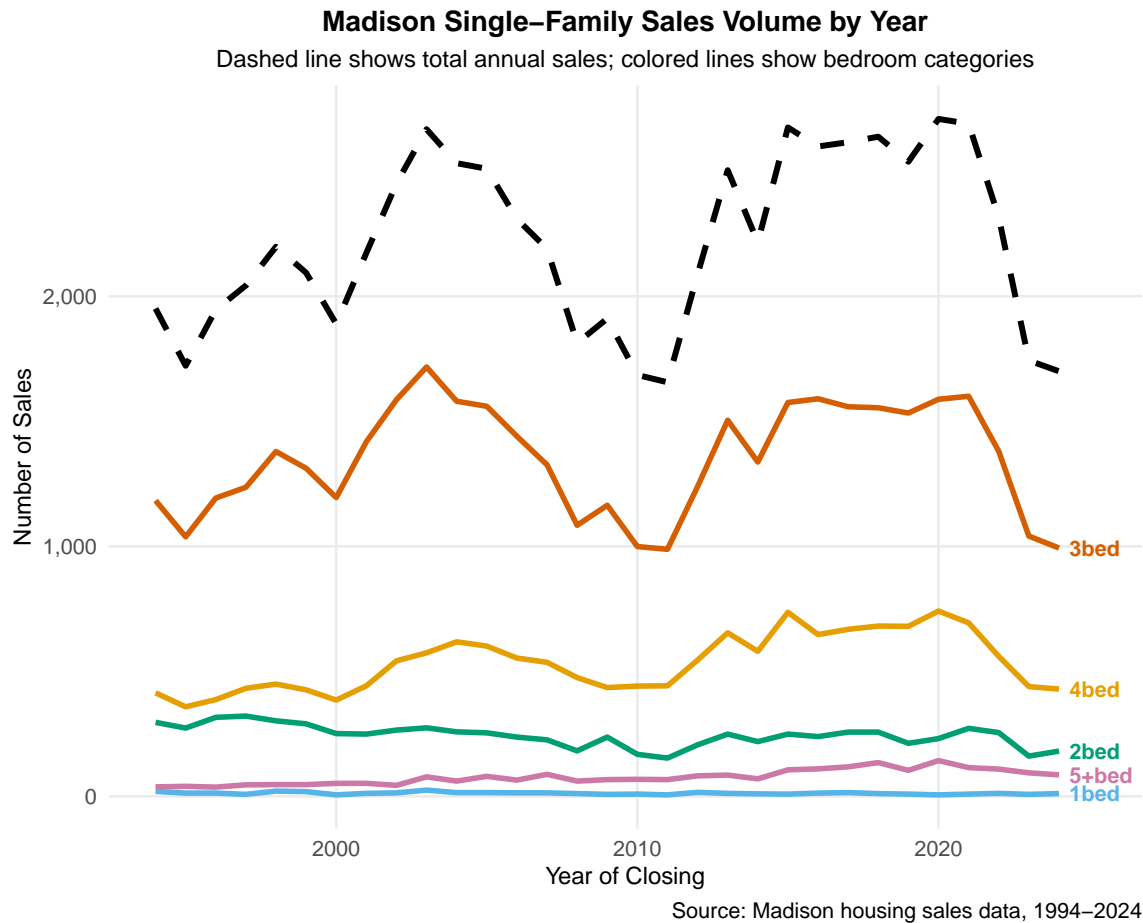
This is the first in a multi-part series analyzing single-family home sales in Madison, Wisconsin and surrounding areas. This report establishes baseline trends for the City of Madison from 1994-2024, with subsequent reports expanding to suburban markets and exploring additional market factors.

Methodology Notes: - Data includes all recorded single-family home sales within Madison city limits - Obvious data errors (prices <\$10K or >\$5M, sizes <200 or >10K sq ft) have been filtered - Analysis focuses on closed sales, not listings or pending transactions

Market Volume Analysis

Sales Activity by Year and Property Type

The Madison single-family market exhibits considerable volatility, with sales volumes ranging from fewer than 800 to over 1,400 annual transactions. The data reveals that 3-bedroom homes drive overall market activity, representing nearly half of all sales throughout the study period.



Key Observation: The recent decline in sales activity (2022-2024) is primarily attributable to reduced 3-bedroom home transactions, which historically account for 45-50% of market volume.

Recent Market Activity Summary

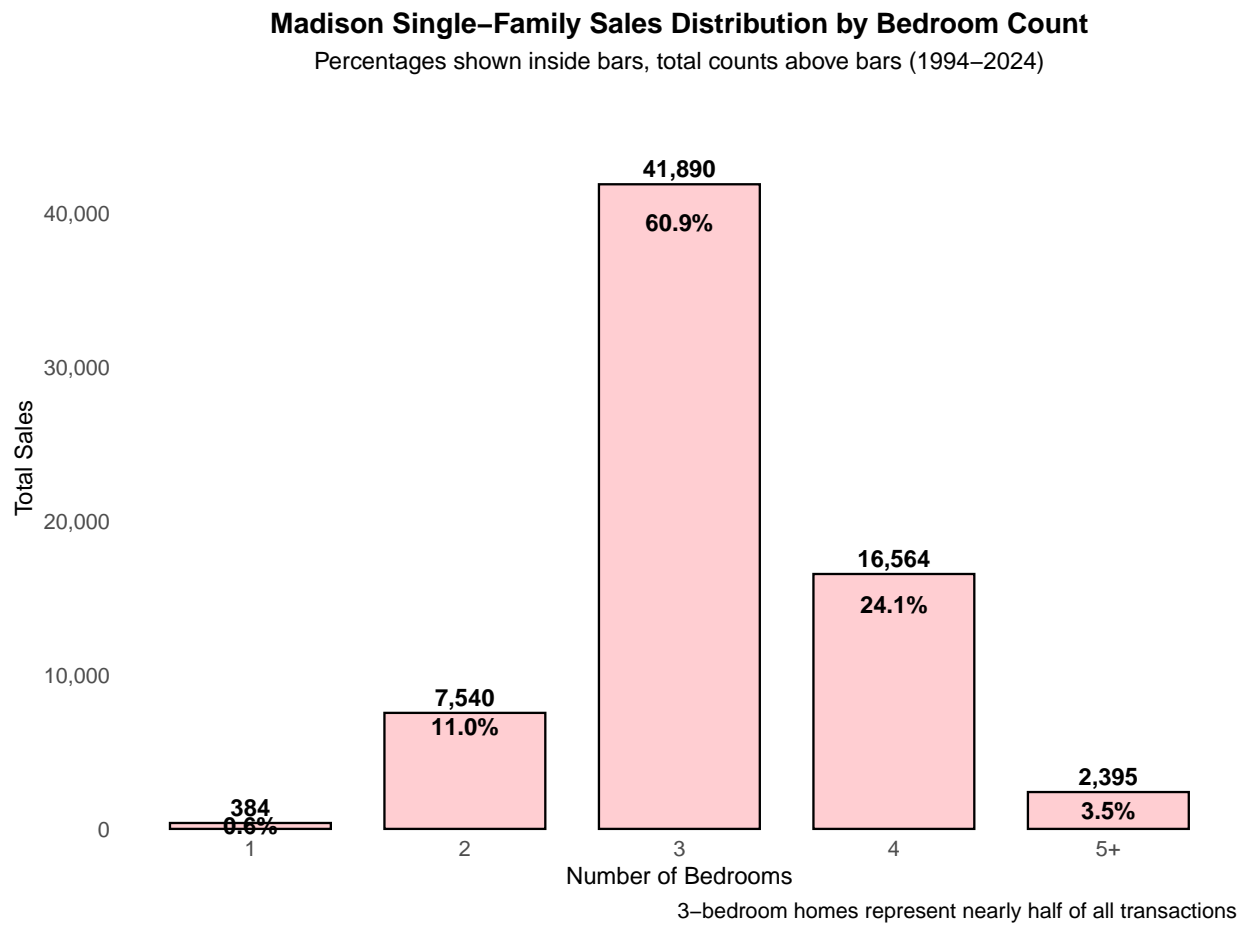
Table 1: Madison Single-Family Sales by Bedroom Count (2022-2024)

Year	1-Bed	2-Bed	3-Bed	4-Bed	5+Bed	Total
2,024	11	181	993	429	86	1,700
2,023	8	161	1,041	439	94	1,743
2,022	12	255	1,380	560	109	2,316

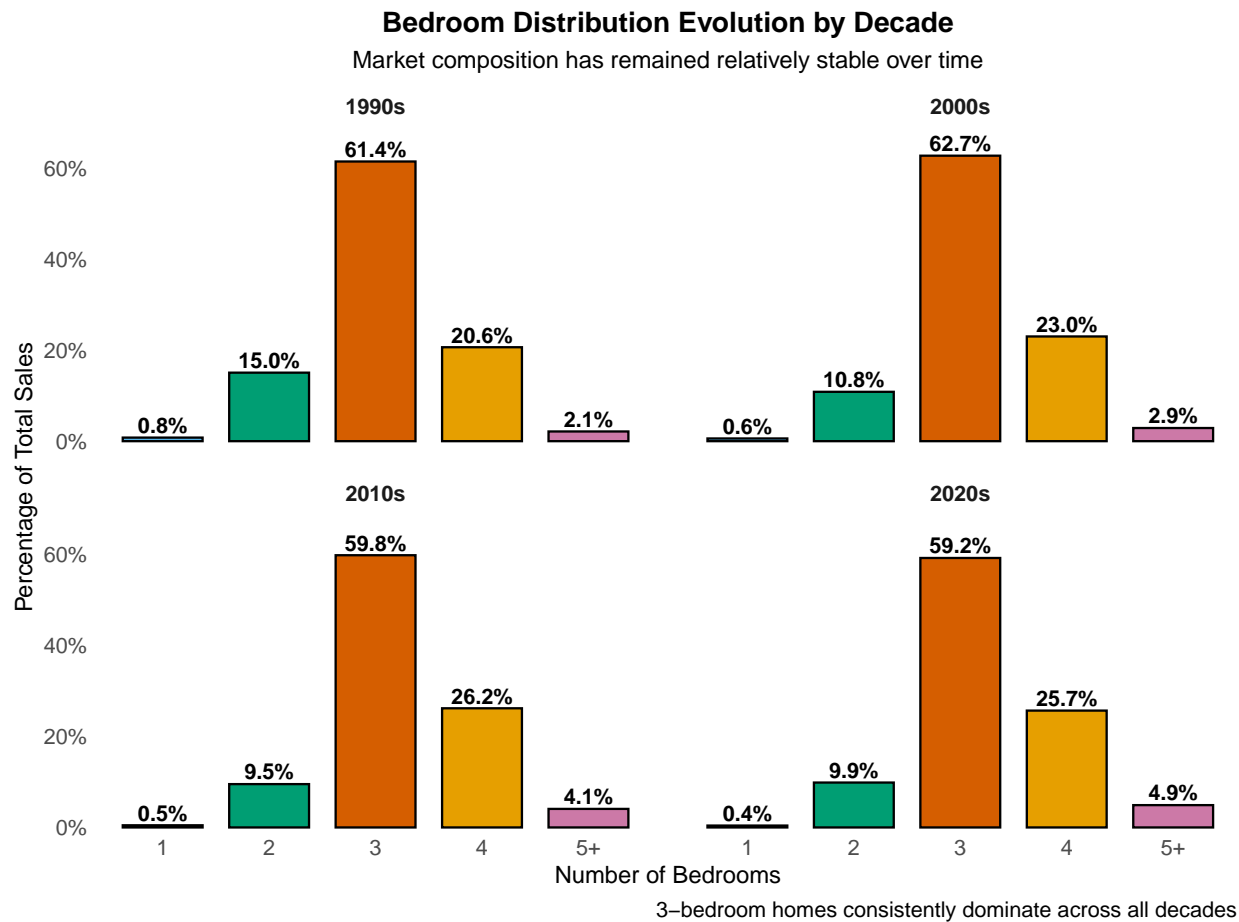
The table above confirms the dominance of 3-bedroom properties and shows the recent market softening across most segments.

Market Composition Analysis

Overall Bedroom Distribution (1994-2024)



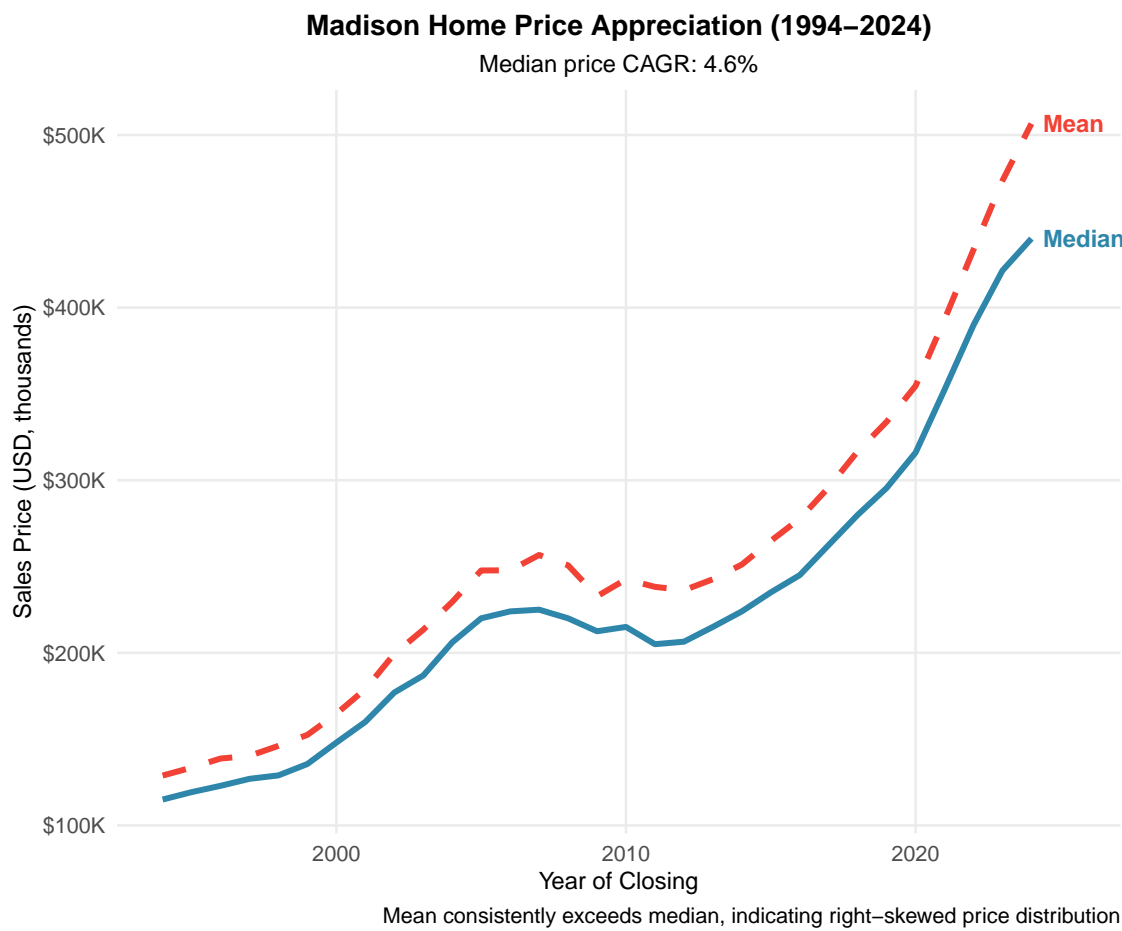
Bedroom Distribution Trends by Decade



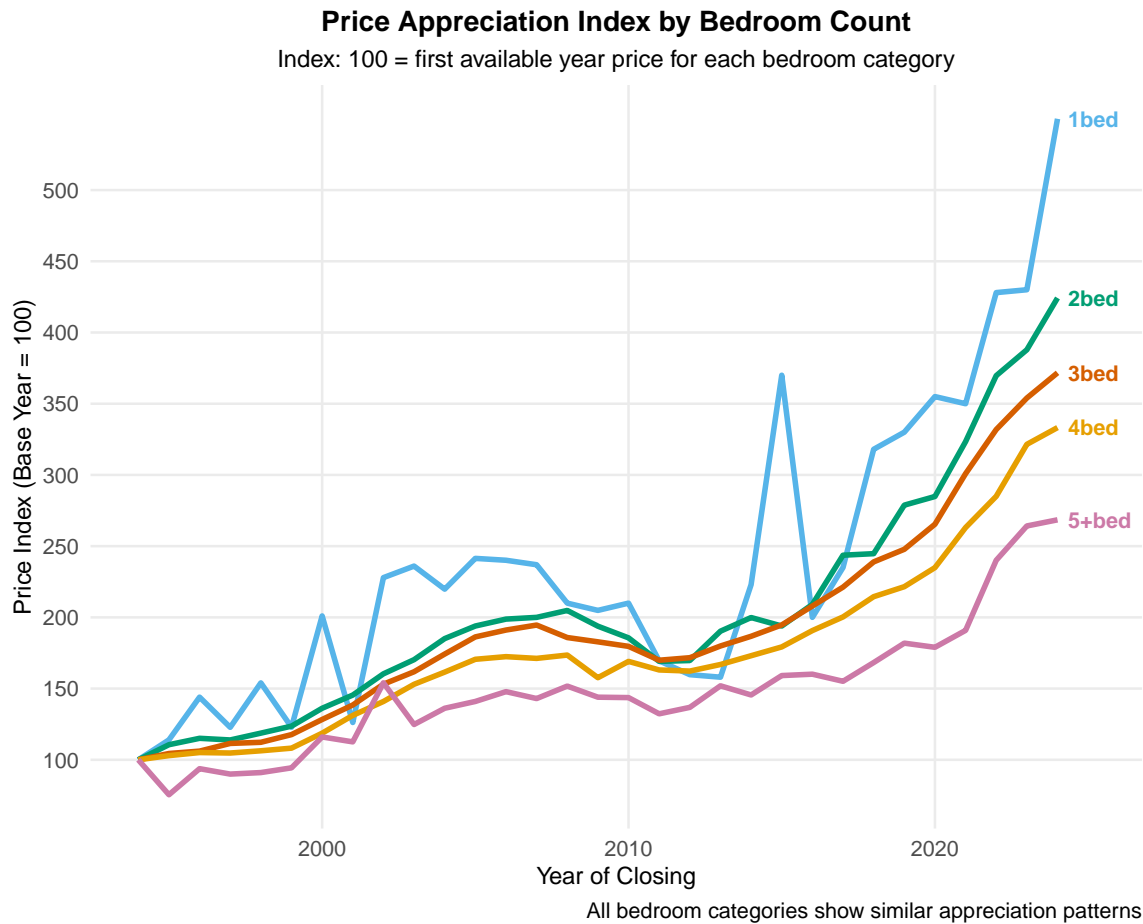
Market Insight: The relative stability of bedroom distribution across decades suggests consistent housing demand patterns, with 3-bedroom homes maintaining their dominant market position.

Price Analysis

Overall Price Trends

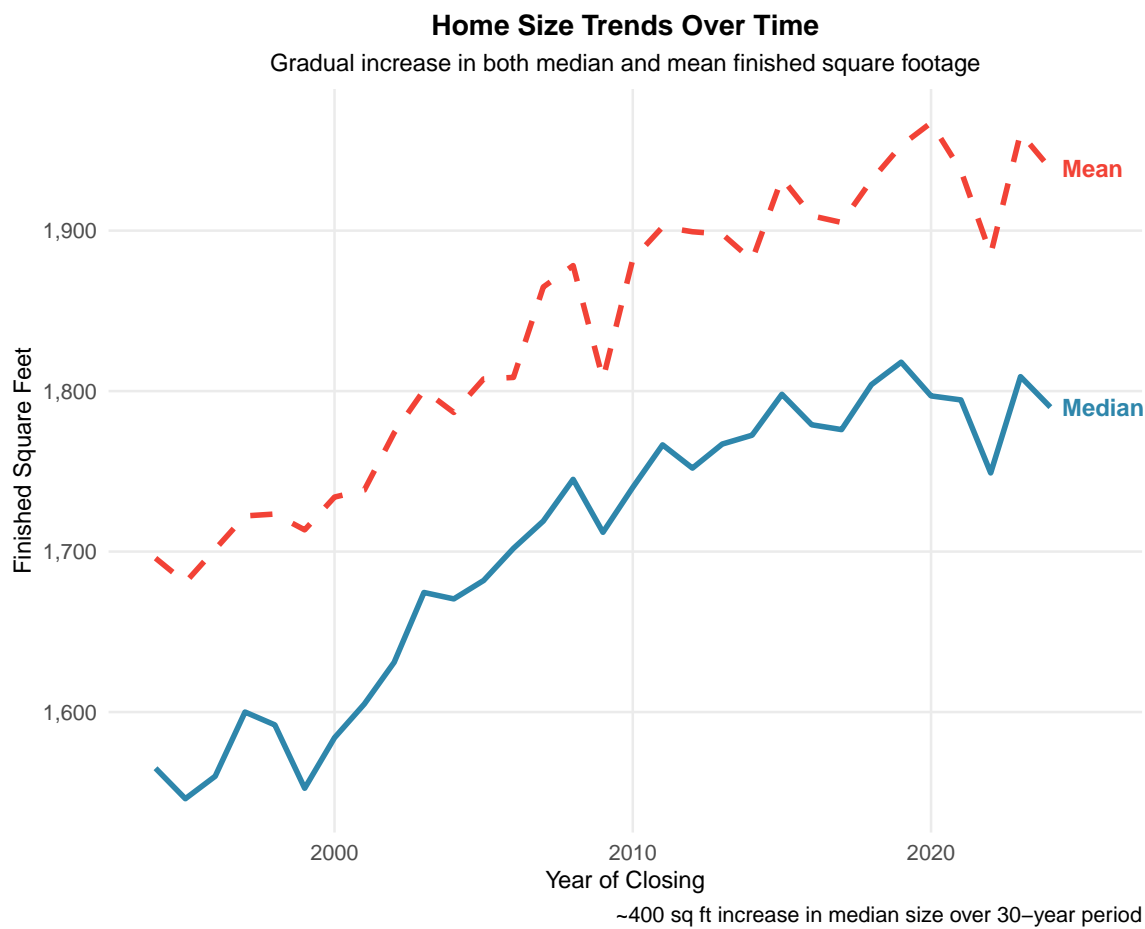


Price Trends by Property Size

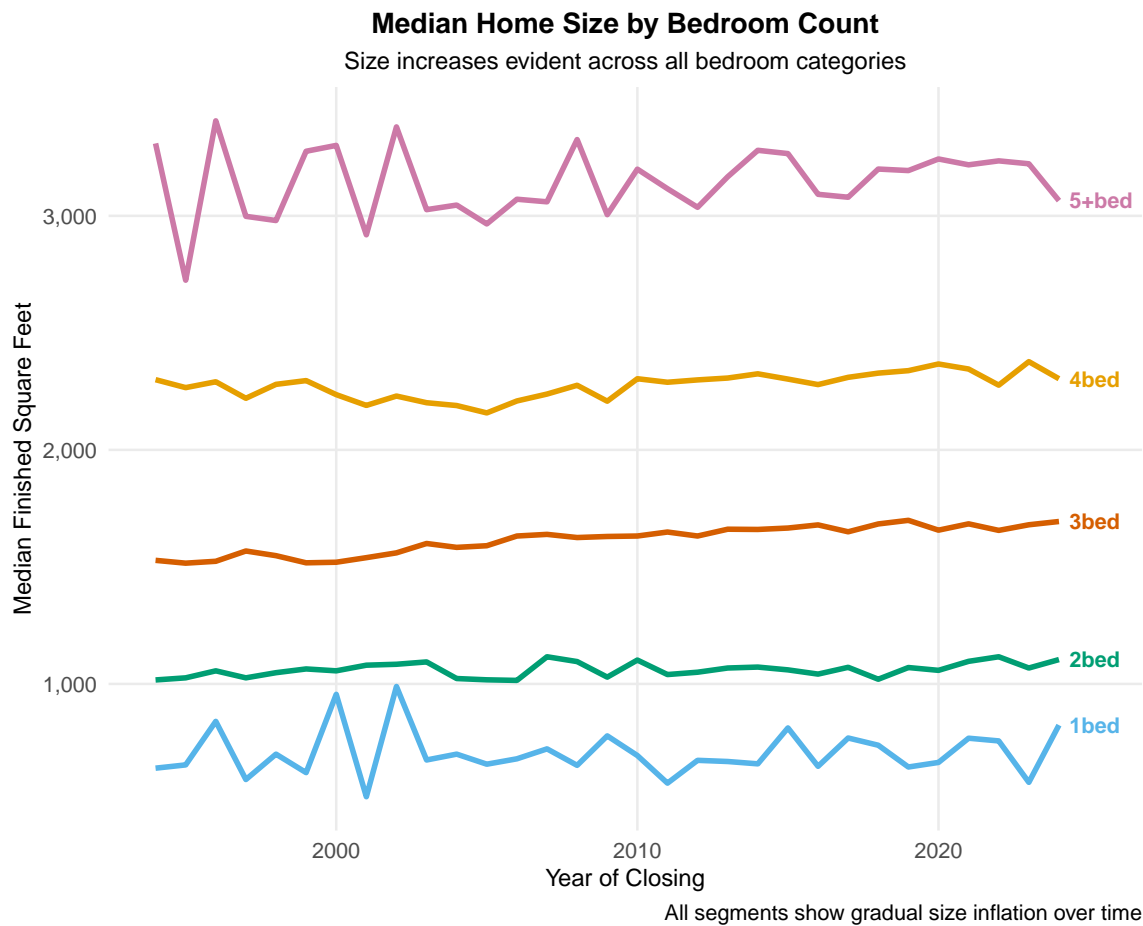


Home Size Analysis

Square Footage Evolution

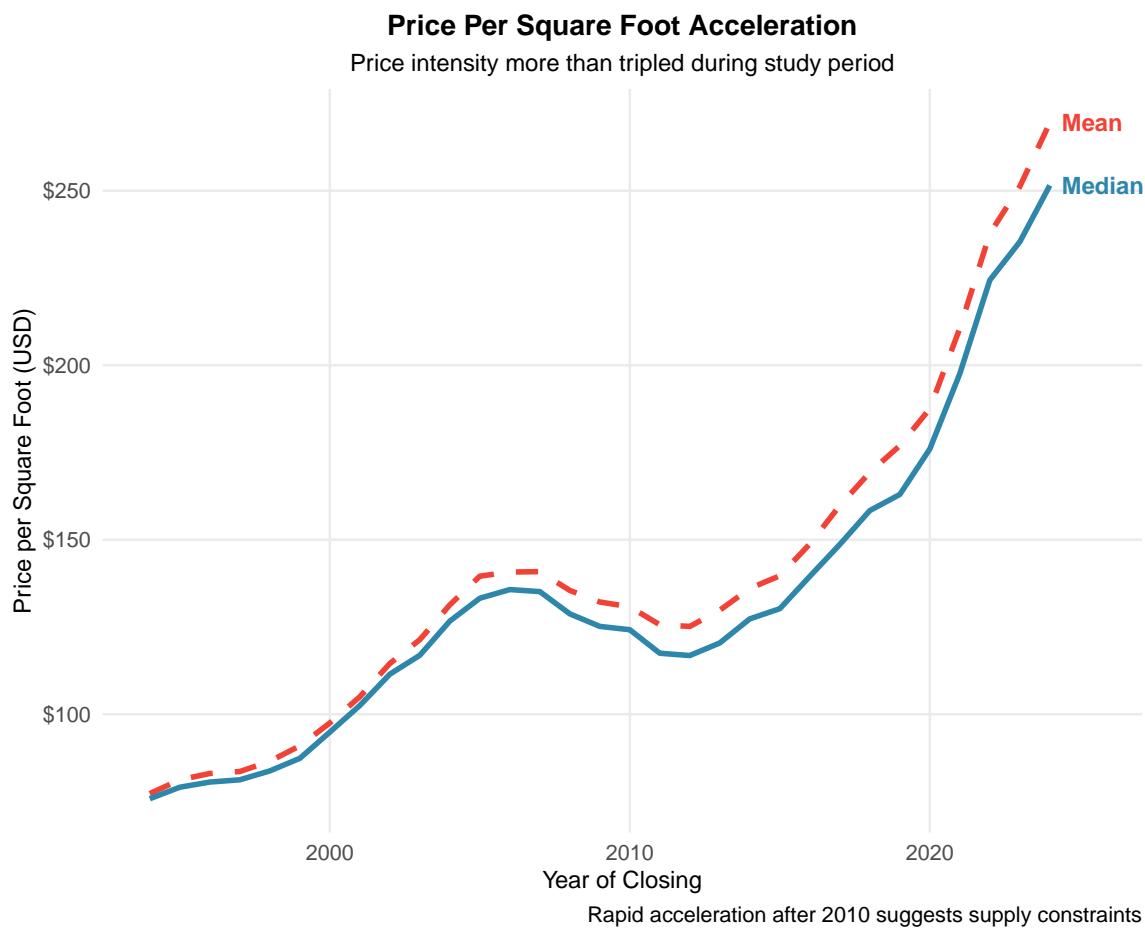


Square Footage by Property Type

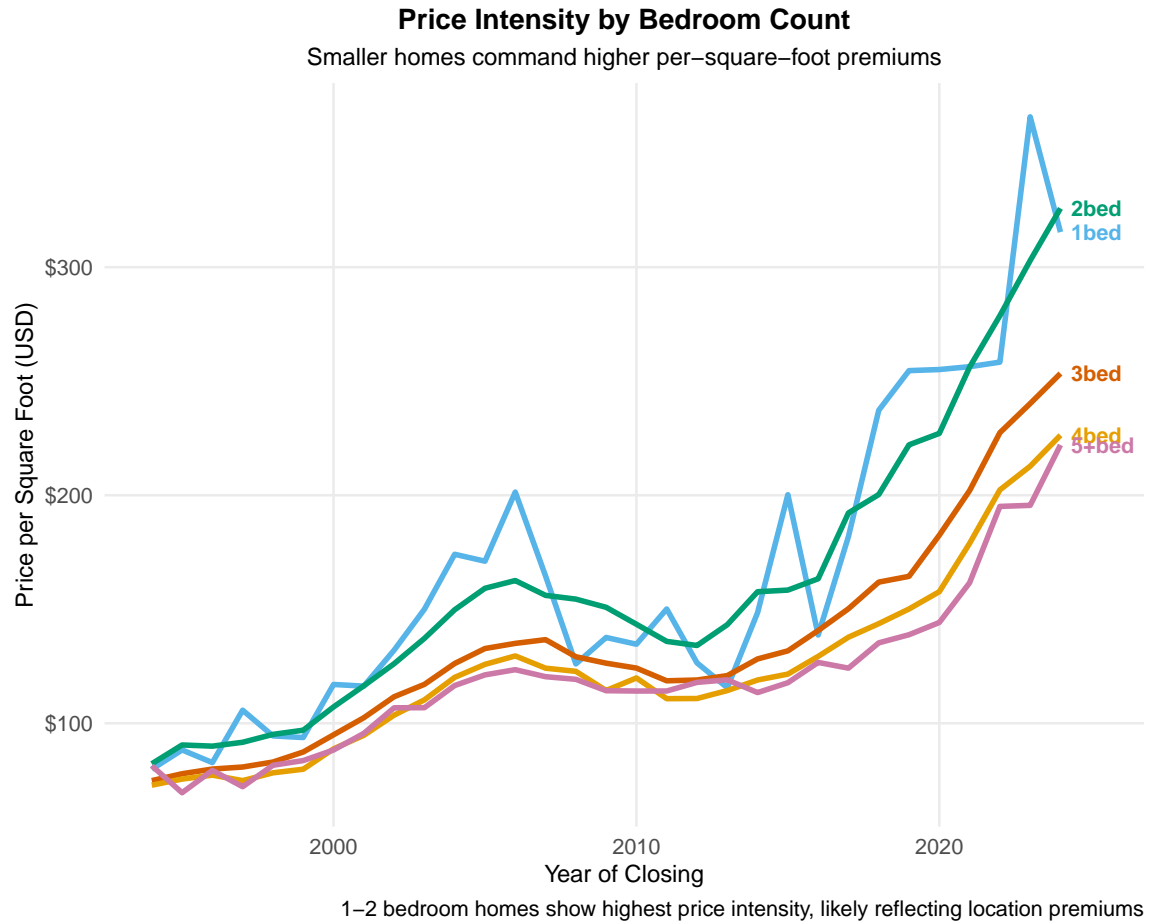


Price Intensity Analysis

Price Per Square Foot Trends

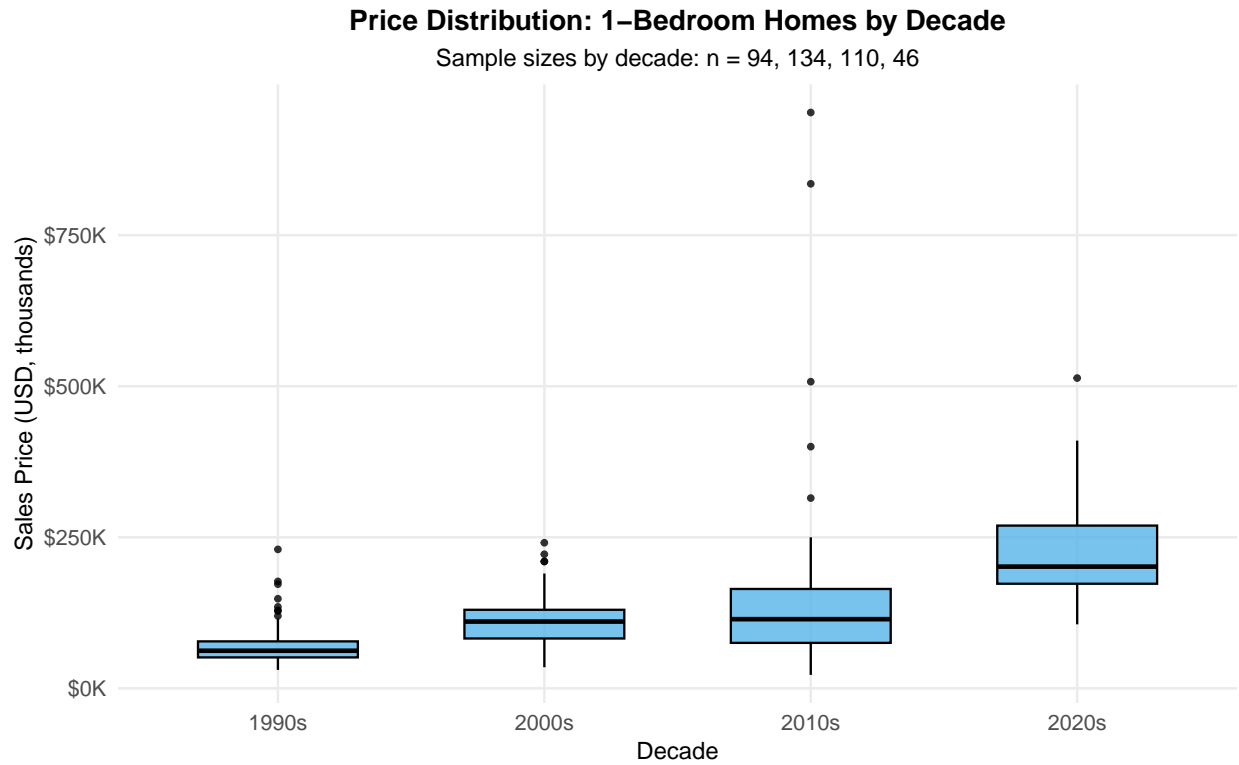


Price Intensity by Property Type



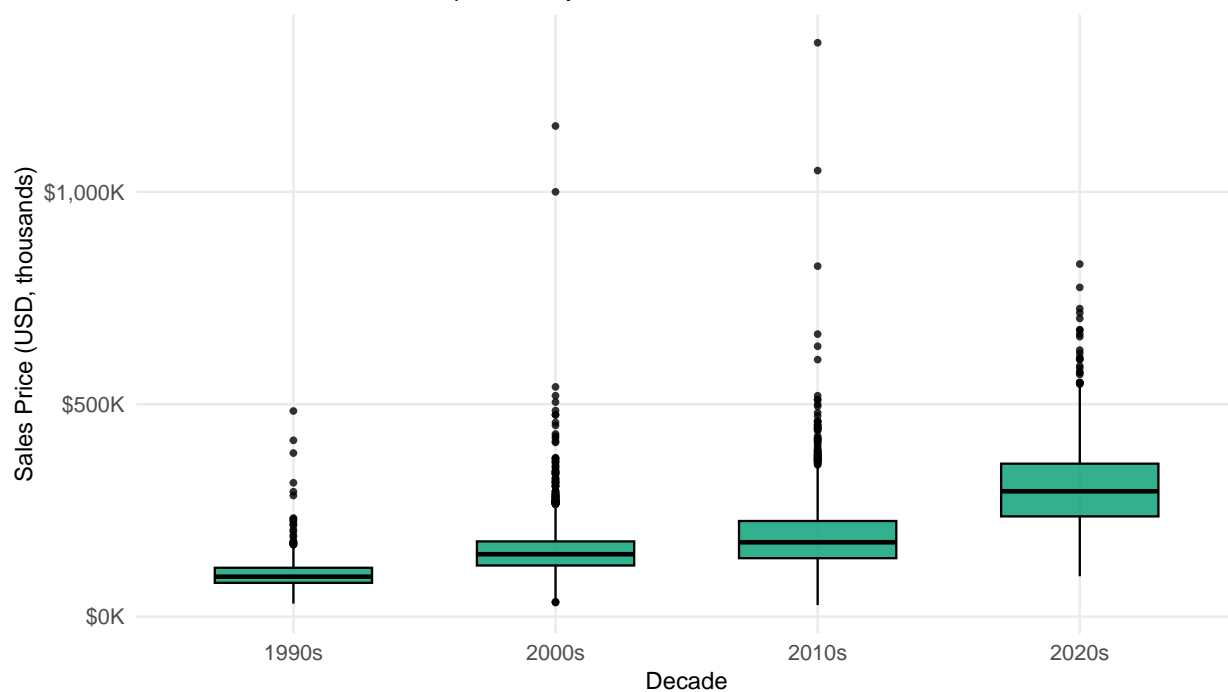
Historical Price Distribution Analysis

The following boxplot series examines price evolution by property type across decades, providing insight into market dynamics within comparable home categories.



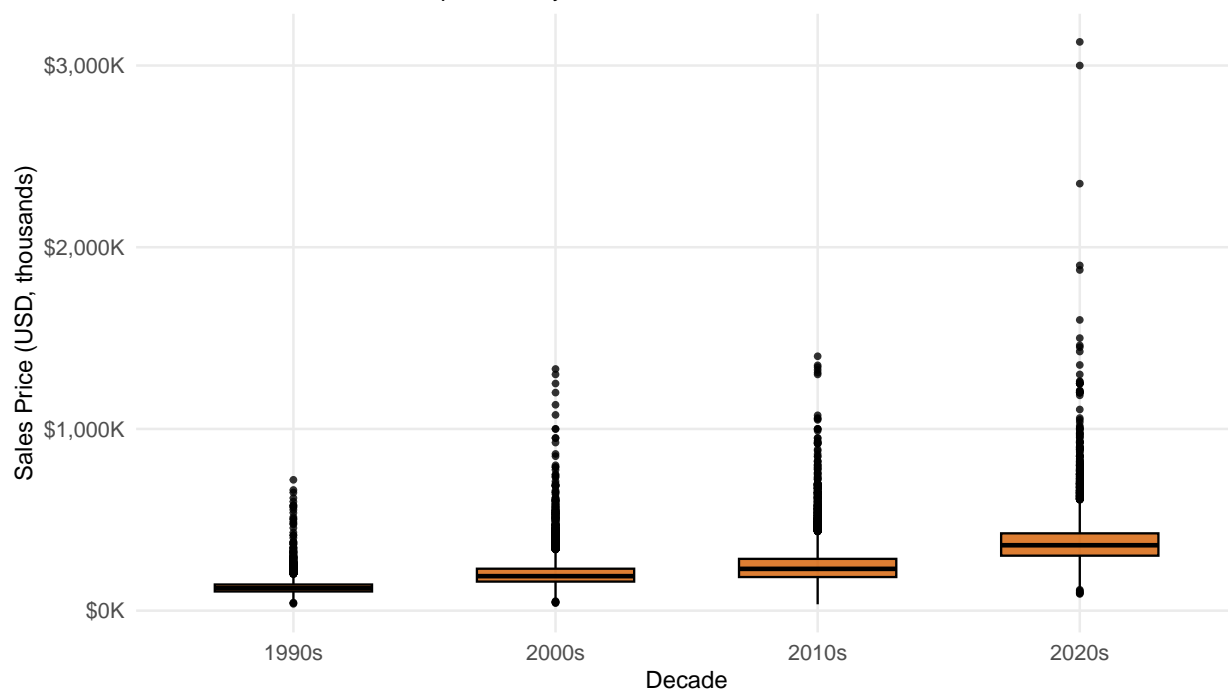
Price Distribution: 2-Bedroom Homes by Decade

Sample sizes by decade: n = 1798, 2433, 2209, 1100



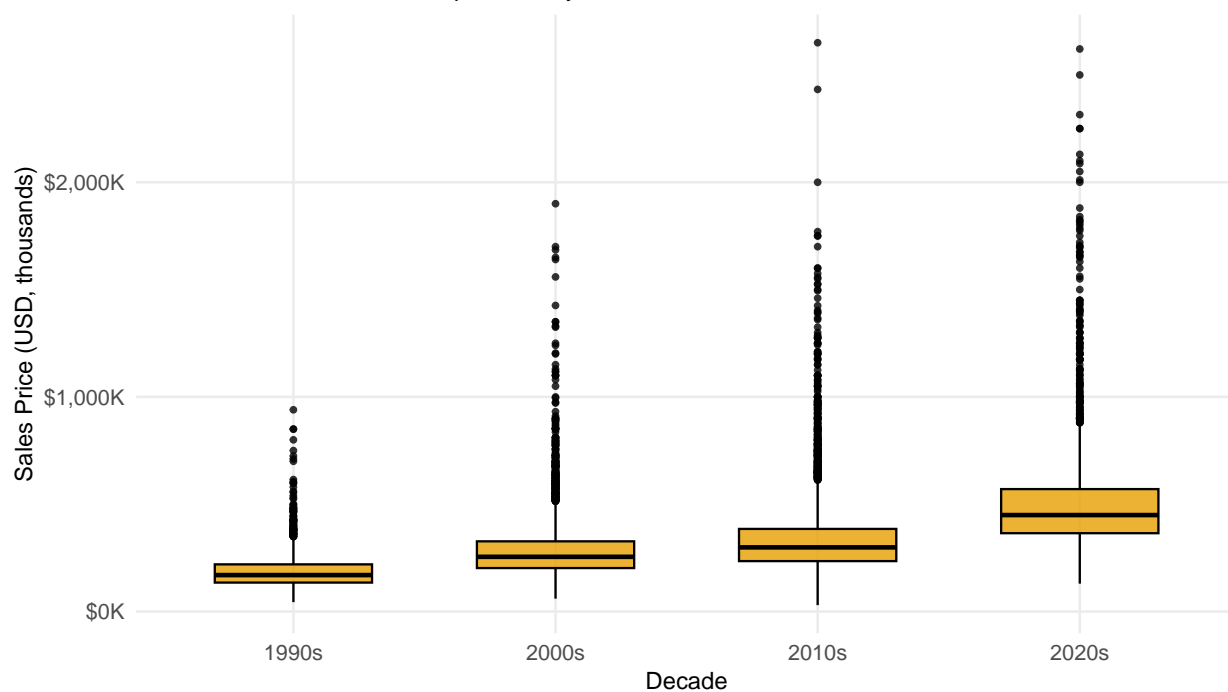
Price Distribution: 3-Bedroom Homes by Decade

Sample sizes by decade: n = 7341, 14070, 13877, 6602



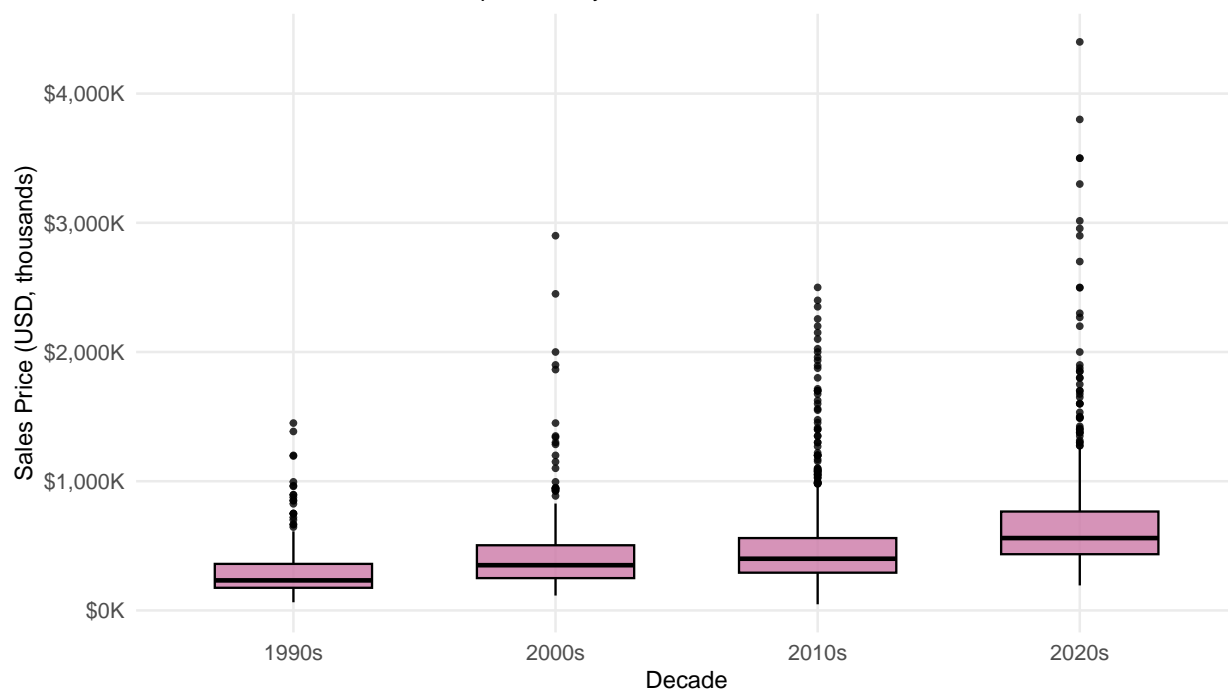
Price Distribution: 4-Bedroom Homes by Decade

Sample sizes by decade: n = 2466, 5161, 6074, 2863



Price Distribution: 5+ Bedroom Homes by Decade

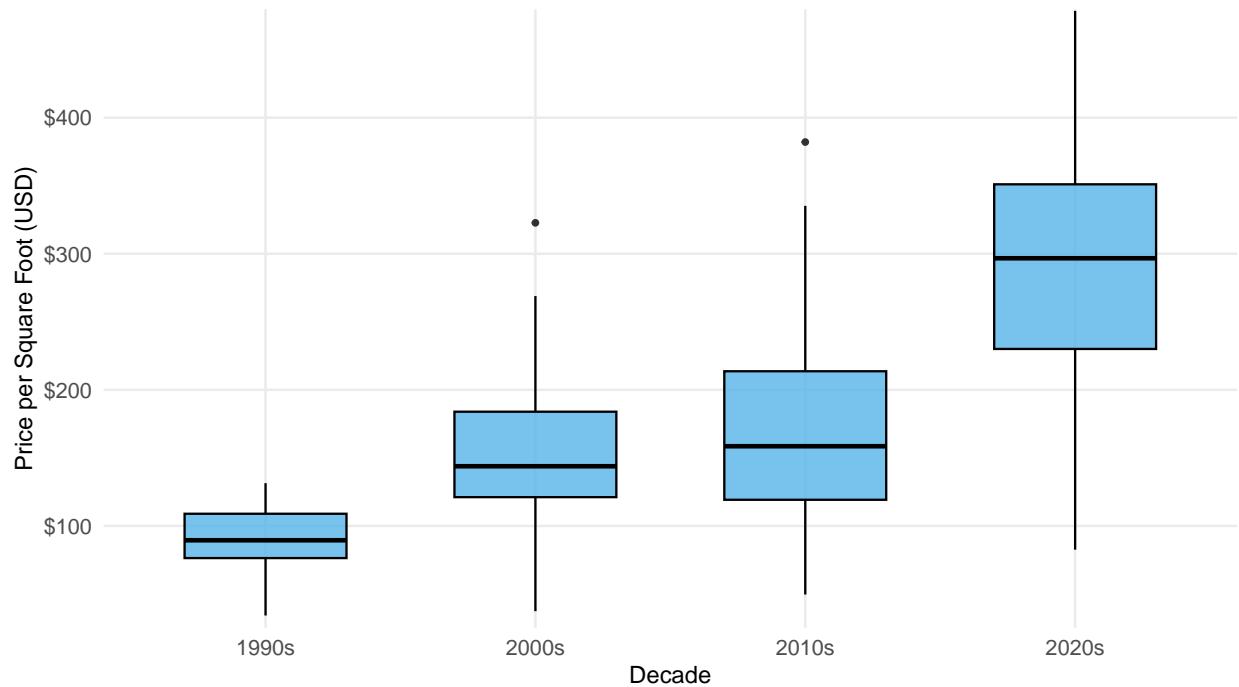
Sample sizes by decade: n = 255, 648, 945, 547



Price Intensity Distribution Analysis

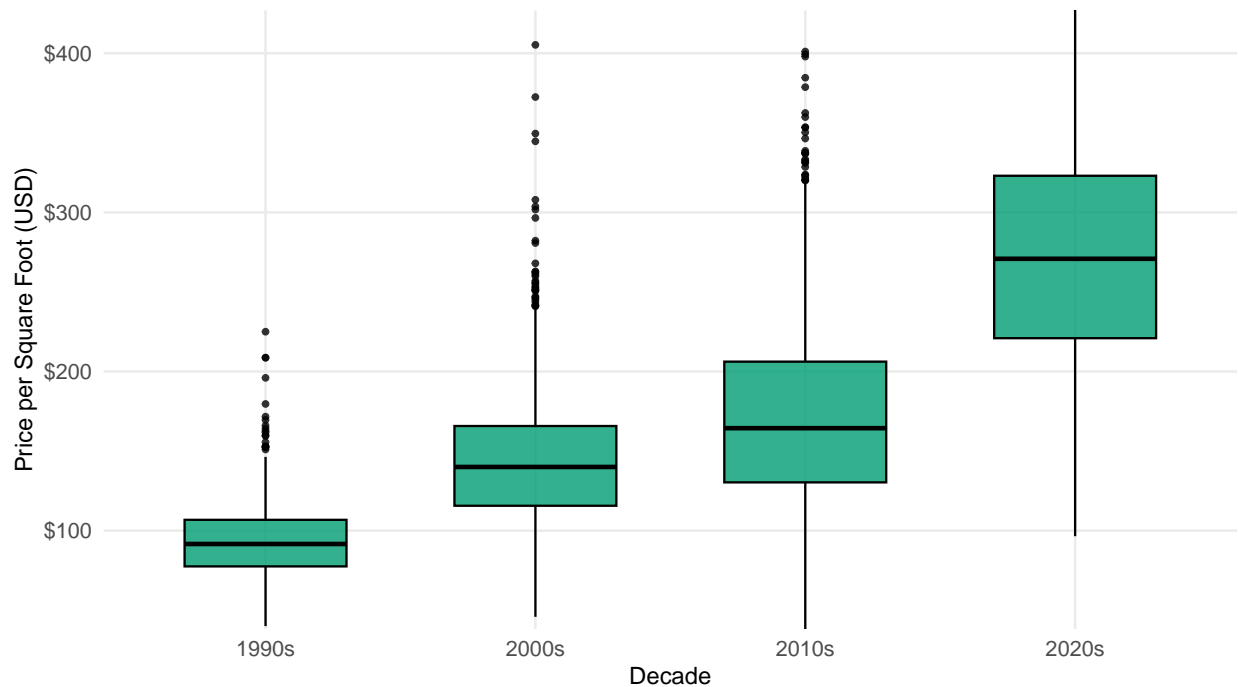
Price Intensity Distribution: 1-Bedroom Homes by Decade

Sample sizes by decade: n = 94, 134, 110, 46 (extreme outliers trimmed)



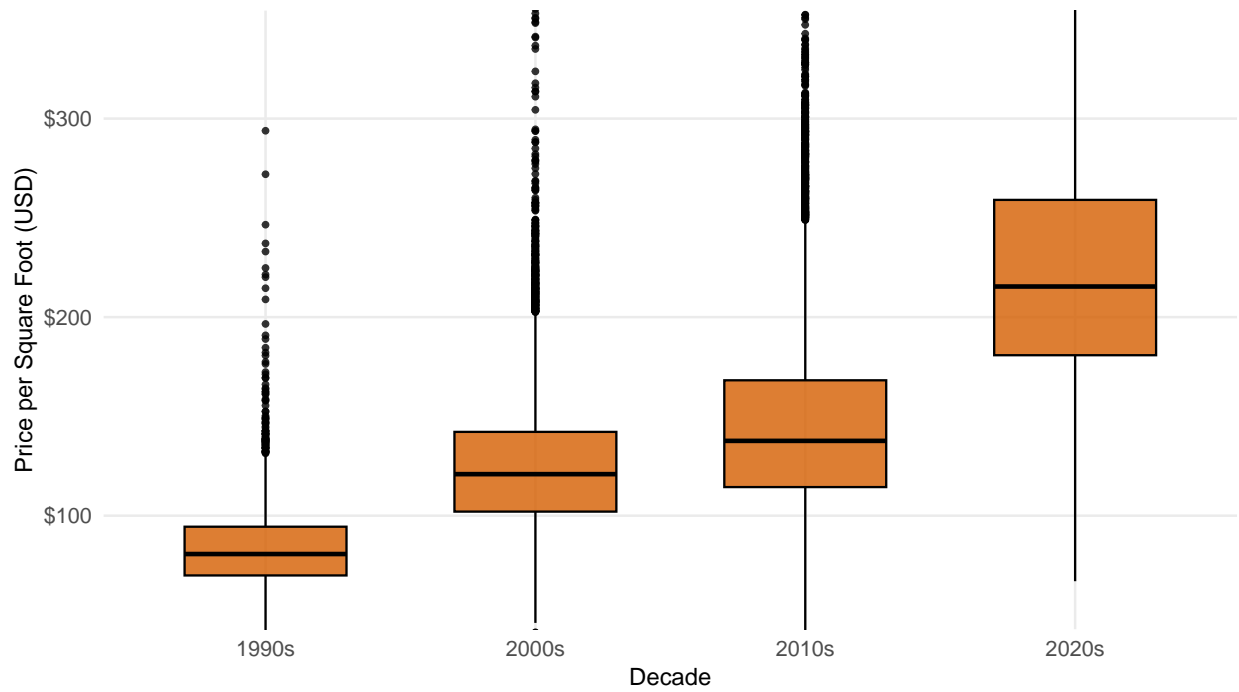
Price Intensity Distribution: 2-Bedroom Homes by Decade

Sample sizes by decade: n = 1798, 2433, 2209, 1100 (extreme outliers trimmed)



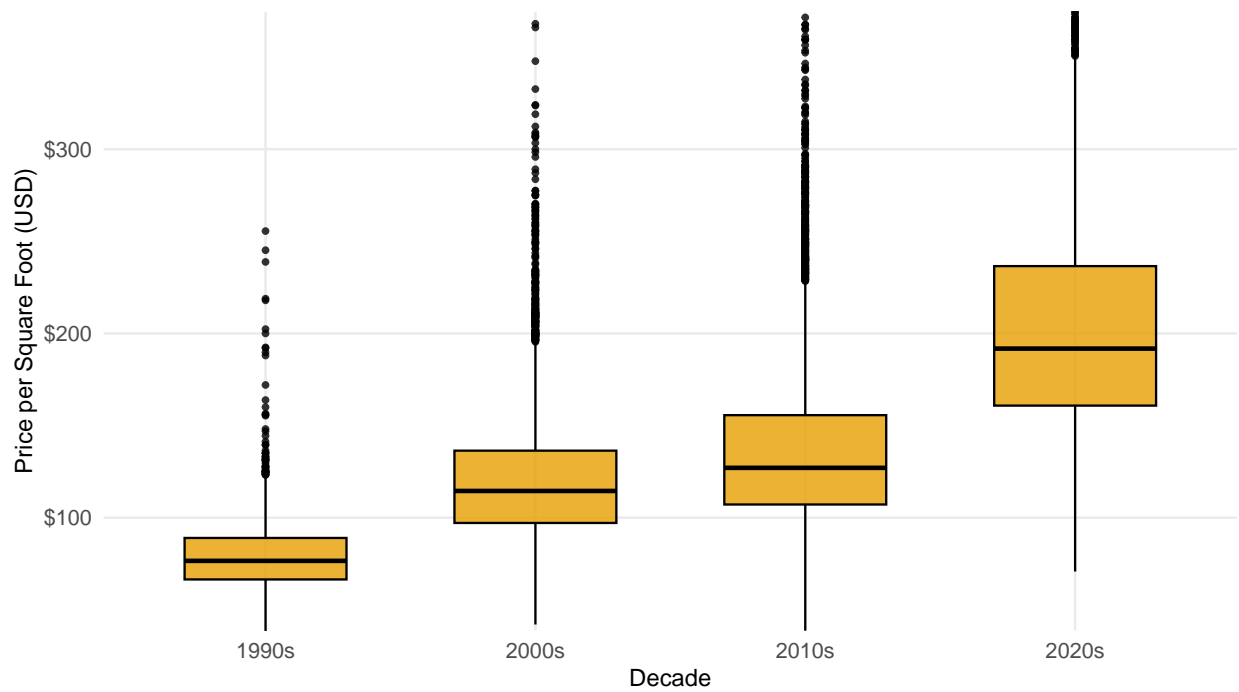
Price Intensity Distribution: 3-Bedroom Homes by Decade

Sample sizes by decade: n = 7341, 14070, 13877, 6602 (extreme outliers trimmed)



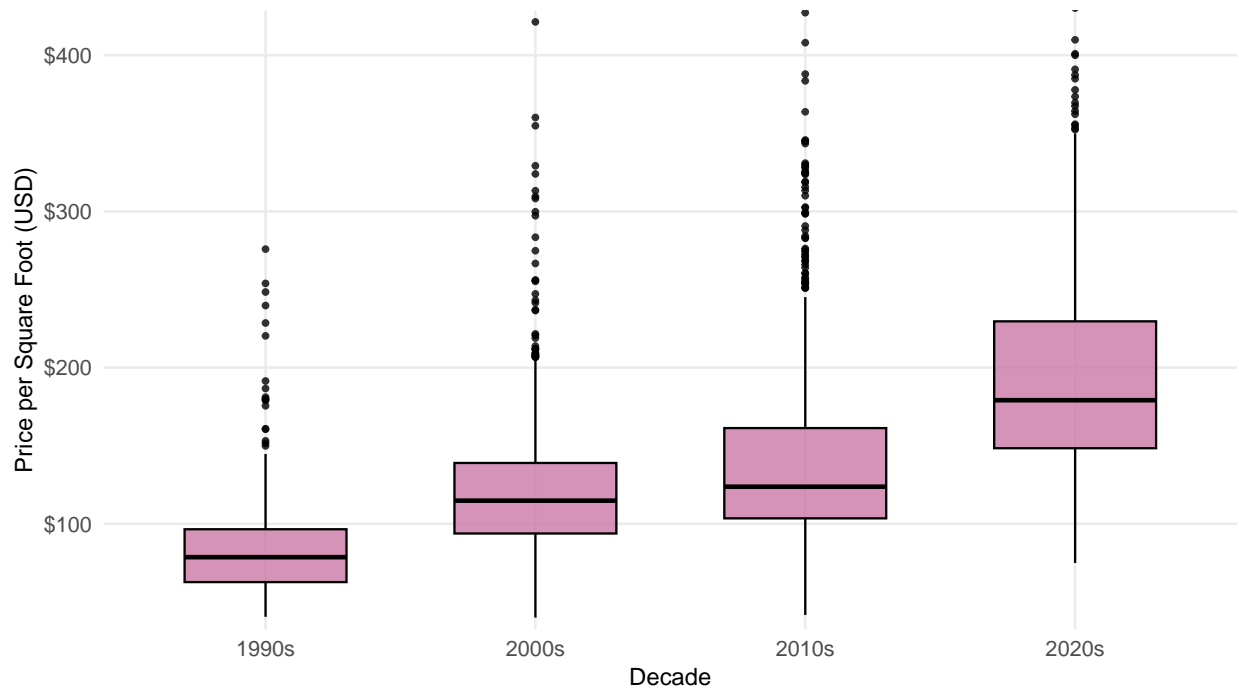
Price Intensity Distribution: 4-Bedroom Homes by Decade

Sample sizes by decade: n = 2466, 5161, 6074, 2863 (extreme outliers trimmed)



Price Intensity Distribution: 5+ Bedroom Homes by Decade

Sample sizes by decade: n = 255, 648, 945, 547 (extreme outliers trimmed)



Summary and Market Implications

Key Market Dynamics

Volume Patterns: - Total annual sales range from ~800-1,400 transactions, with significant year-to-year volatility - 3-bedroom homes consistently represent 45-50% of market activity - Recent market softening (2022-2024) primarily driven by reduced 3-bedroom activity

Price Evolution: - Median home prices increased from ~\$100K (1994) to >\$400K (2024) - Compound annual growth rate of approximately 4.6% over 30-year period - Price appreciation relatively consistent across all bedroom categories

Market Intensity: - Price per square foot more than tripled during study period - Smaller homes (1-2 bedrooms) command highest per-square-foot premiums - Acceleration in price intensity after 2010 suggests supply-demand imbalances

Property Characteristics: - Gradual increase in home sizes (~400 sq ft median growth over 30 years) - Size inflation evident across all bedroom categories - Market composition by bedroom count remains remarkably stable across decades

Market Outlook Considerations

1. **Supply Constraints:** The dramatic increase in price per square foot suggests ongoing supply limitations relative to demand
2. **Affordability Pressures:** With median prices quadrupling while home sizes increased modestly, affordability has deteriorated significantly
3. **Market Segmentation:** Different bedroom categories show similar appreciation patterns, suggesting broad-based demand across property types
4. **Recent Softening:** The 2022-2024 decline in transaction volume may indicate market adjustment to higher interest rates and affordability constraints

Methodology Notes

- Analysis includes 68,773 recorded sales transactions
- Data filtered to remove obvious errors (prices <\$10K or >\$5M, sizes <200 or >10K sq ft)
- Price per square foot calculations based on finished square footage
- Decade analysis begins with 1990s to ensure adequate sample sizes

Next Report Preview: Subsequent analysis will expand to Madison suburban markets and explore additional factors including lot sizes, property age, and geographic sub-market variations.

Personal Note

I am very pleased to say that I am an alumnus of the University of Wisconsin-Madison. I have an M.A. in mathematics and an M.S. in Business from UW-Madison.

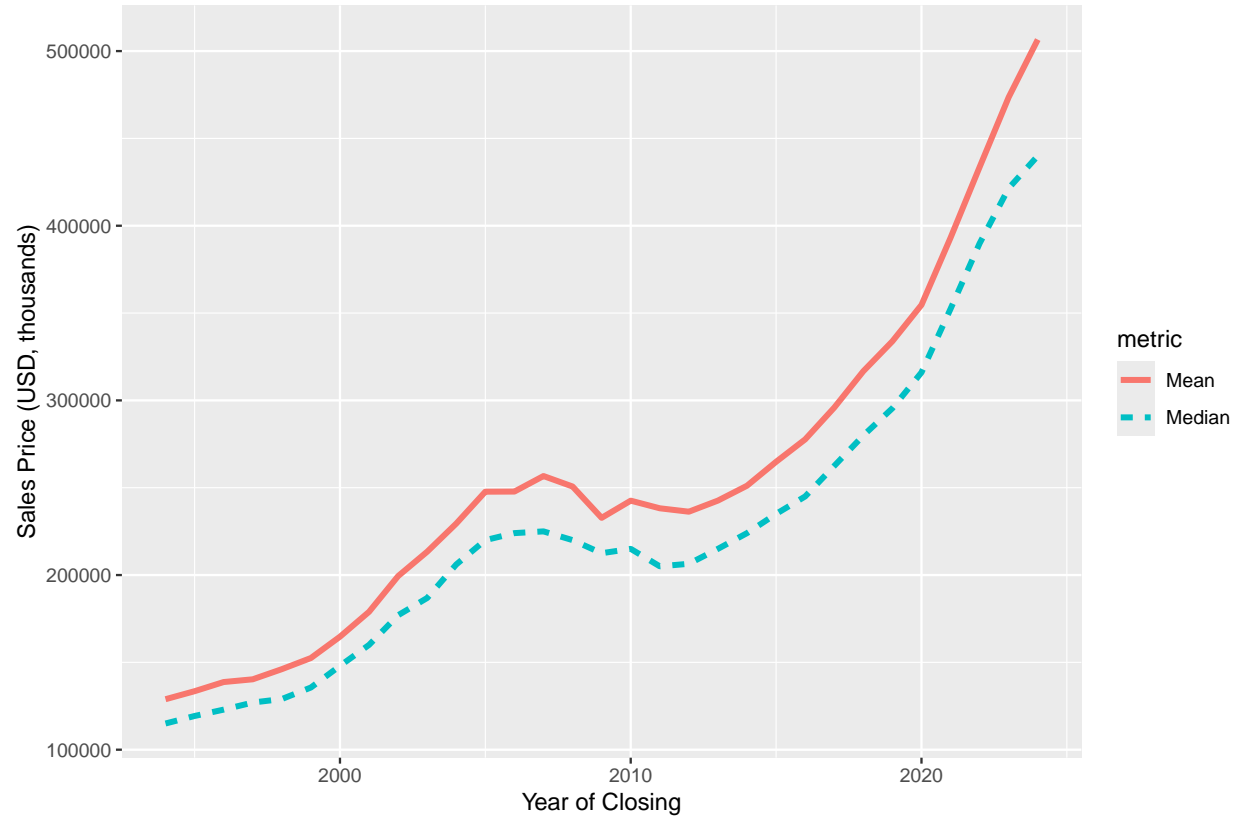
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Go Bucky!



Madison Home Price Appreciation (1994–2024)

Median price CAGR: 4.6%



Mean consistently exceeds median, indicating right-skewed price distribution