

A wide-angle photograph of the Philadelphia skyline at sunset. The sky transitions from a deep blue at the top to a bright orange near the horizon. Several prominent skyscrapers are visible, including the Comcast Center (formerly PNC Tower) on the left, the Comcast Center (formerly PNC Tower) in the center, and the Comcast Center (formerly PNC Tower) on the right. The Benjamin Franklin Parkway is visible in the foreground, with the Franklin Institute building on the left and the University of Pennsylvania's Old Chapel on the right. The text "Philadelphia Housing Analysis" is overlaid in the center in a large, white, serif font. A thin white line is visible in the upper left corner, and a thin white line is visible in the lower right corner.

Philadelphia Housing Analysis

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Research Question

- What are the key drivers of home prices and sales in Philadelphia?
- How have they evolved over the past 5 years?



Datasources

- [Philadelphia office of property assessment](#)
 - Properties (CSV)
- [Philadelphia zip codes](#)
 - Zip Codes (Polygon) GeoJSON
- [Philadelphia zoning codes](#)
- [30 year mortgage rates](#)



Data Cleanup for Analysis

- Removing rows out of scope
 - Only included properties zoned as residential and with a category of 'Single Family', 'Multi Family', or 'Mixed Use'
 - Filtered out 'Unfinished' properties
 - Filtered out records with sale prices < \$1000
 - Filtered out records with number of rooms = 0
- Removing columns out of scope
 - Identifier columns
 - Mailing addresses
 - Owner
- Column re-formatting
 - Date re-formatting
 - Zip codes read in as floats, converted to integer/string

Points of Analysis

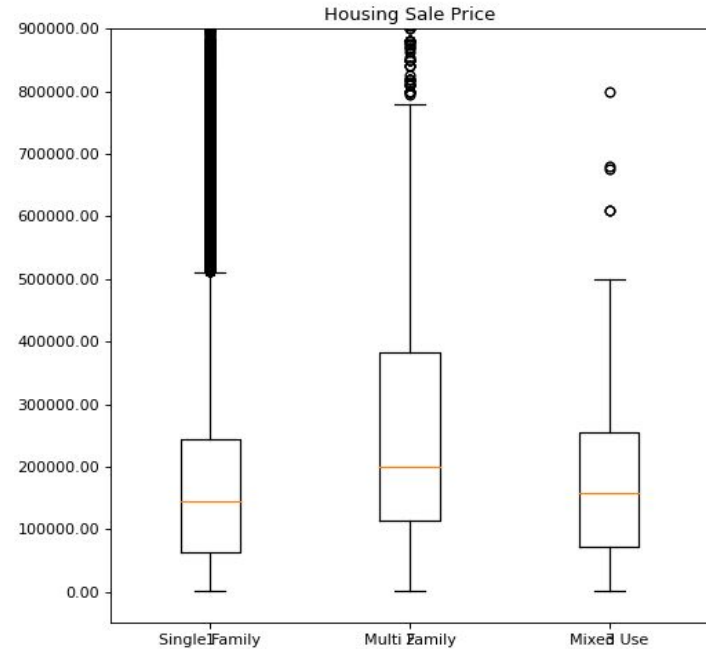
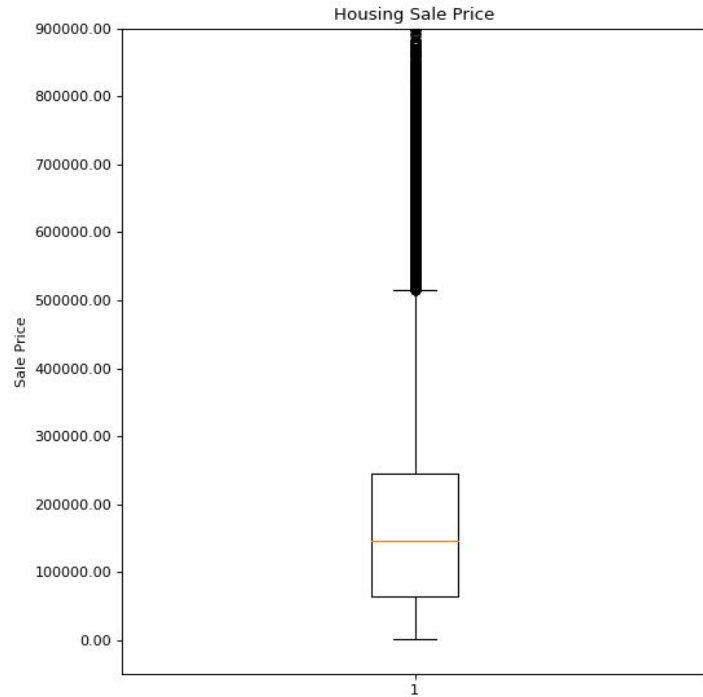
- Summary analysis/outlier detection
- Analysis questions
 - How have home sales in philadelphia evolved over the past 5 years?
 - How does location (zip code) affect pricing and number of sales?
 - How has age of home affected pricing and number of sales?
 - How does size of home affect pricing and number of sales?

Summary Analysis

	Total Number of Sales	Mean Sale Price	Median Sale Price	Standard Deviation of Sale Price
Year				
2016	14,060	\$177,132	\$125,000	\$240,260
2017	15,619	\$219,403	\$140,000	\$408,161
2018	16,283	\$206,449	\$155,000	\$272,475
2019	15,787	\$221,614	\$153,000	\$433,686
2020	6,736	\$257,225	\$170,000	\$429,846

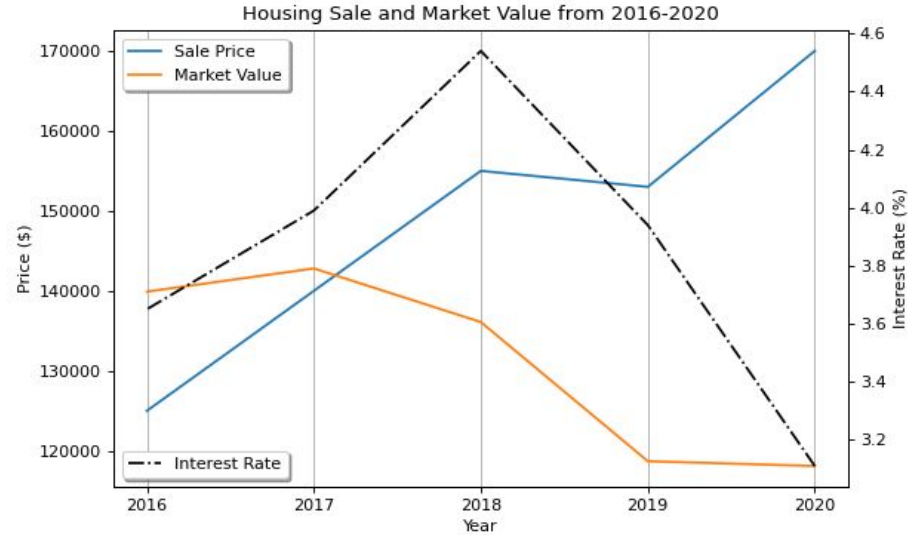
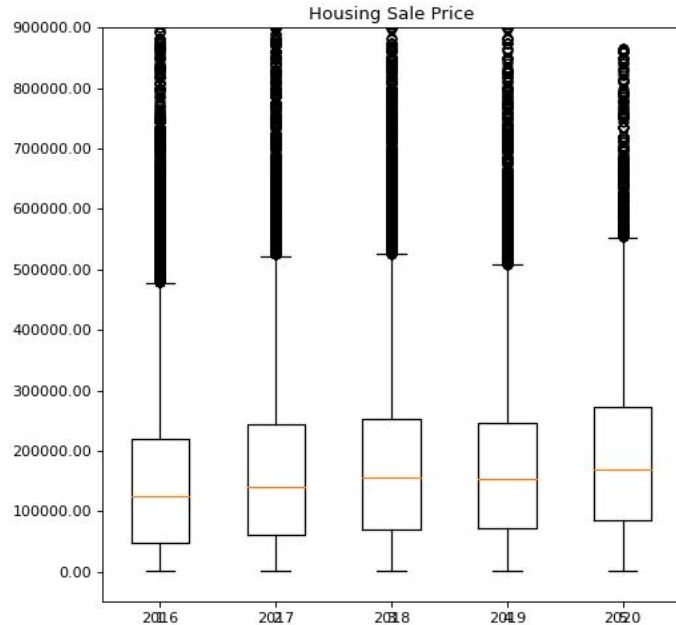
Key Takeaway: The mean housing price is much larger than the median housing price.

Detection of Outliers



Key Takeaway: There are a significant number of outliers that affect the mean sale price.

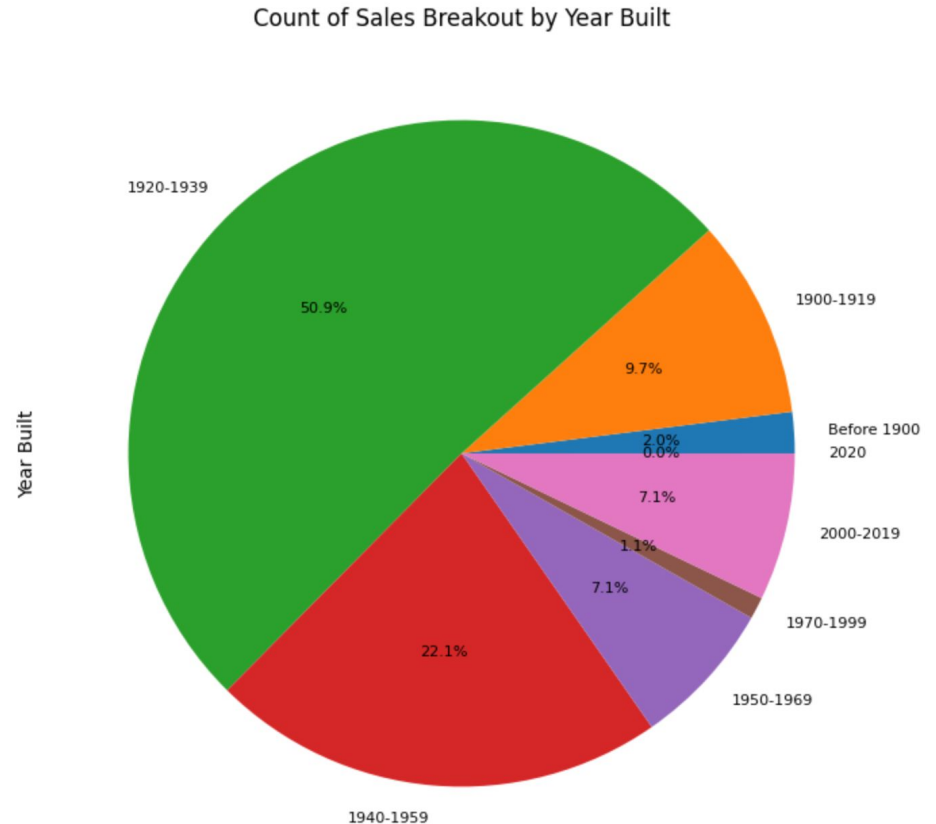
Home Sales Evolution



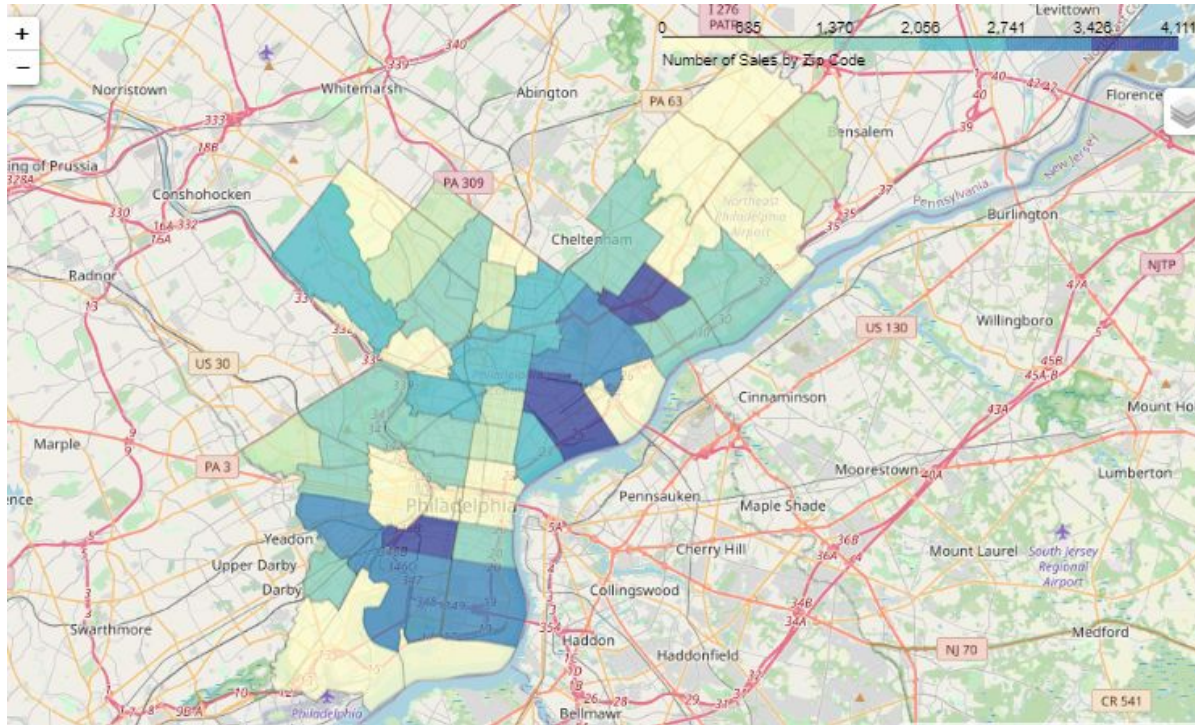
Key Takeaway: Sale prices generally increased, while market values generally decreased. Interest rates varied across years.

Pie Chart Analysis

Key Takeaway: Overwhelming majority of home sales over the past 5 years were of homes 80 - 100 years old. Newer construction home sales were low in comparison to older homes.

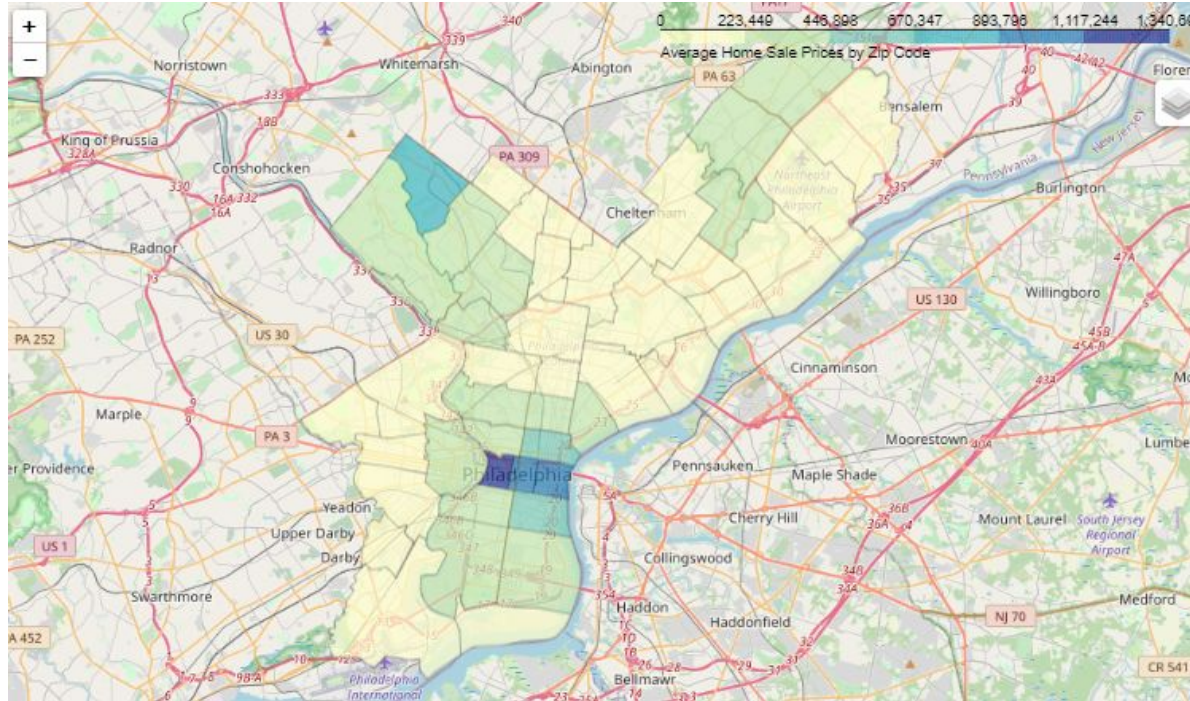


Number of Sales by Location



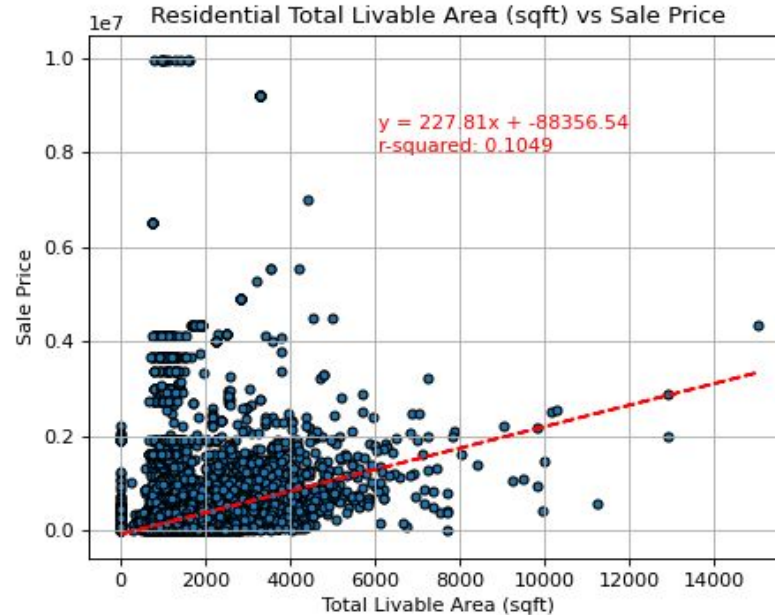
Key Takeaway: Areas with top number of sales are Oxford Circle, Port Richmond, Center City West

Average Sale Price by Location



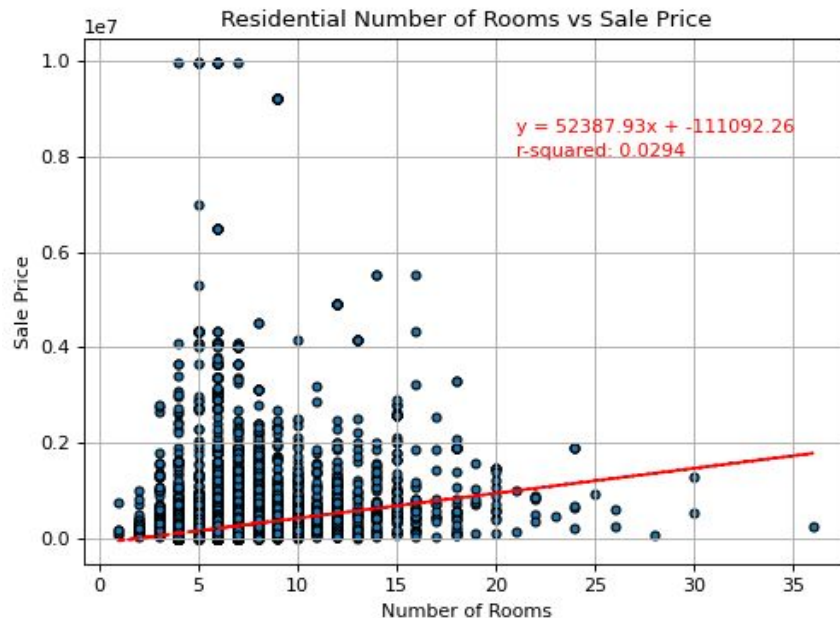
Key Takeaway: Area with highest average sale price is Center City - Logan Area

Housing Size Analysis - Livable Area



Key Takeaway: Little correlation between sale price and total livable area

Housing Size Analysis – Number of Rooms



Key Takeaway: Little correlation between sale price and number of rooms

Conclusion

- Philadelphia has an ever-changing housing market
- Future analysis: Forecasting model of the housing market

