

# Seattle, WA Real Estate Market – Trends & Analysis

## Executive Summary

The real estate market is heating up after Covid 19 pandemic. Everybody is looking for a house where has a bigger place condo or apartment to live, play and work from home. So, the demand for houses has risen. I would like to do the research to get some new things about the housing market which I have never thought about before.

Through this dataset, I would like to discover:

- The relation between house sold and the number of bedrooms (bathroom), ...
- Average price with specific postal code
- The highest and the lowest price of the houses were sold in 2012, 2013 and 2014
- The median house values in 2012, 2013 and 2014
- The difference between sold price and list price
- Trending and forecast

## Data Collection and Description

- Name of data set: House Pricing in Seattle, which was sourced from Kaggle.
- This full dataset consists of 6,373 observations of houses and related information which were sold between 2012 and 2014. It contains 28 columns for ID, location (latitude and longitude), Price, Postal code, Property address, Number of Bedrooms, Number of Bathrooms, Square feet area, Lot area, and so on.

## Data Dictionary

1.	ID	Sold home ID
----	----	--------------

2.	Lat	Latitude
3.	Long	Longitude
4.	Bath	Number of bathrooms
5.	Bed	Number of bedrooms
6.	Price	Price of each house sold
7.	Postal	Zip code area
8.	Crime	Number of Crimes in area
9.	MedIncome	Median Income
10.	School	Number of schools in area
11.	Sqft_Area	Square footage of living space
12.	Lot_Area	Square footage of lot area
13.	SchoolDis	Distribution of school in the area
14.	Property_Address	Home address
15.	Zestimate	Listing price on Zillow
16.	Date_Sold	The Date the house was sold
17.	Locality	City that the house belongs
18.	Region	State that the house belongs
19.	Built_Year	Year that the house was built
20.	Price_Sqft	Price per square footage
21.	Envi	Environment, (rate from 1 to 22)
22.	Age	Age of the house
23.	SchoolType	Type of school (from 1 to. 9)
24.	SchoolRating	Ranking of school
25.	MedAge	Median age of owner

26.	Population	Population of city
27.	College.Graduates	Percentage of graduation from college
28.	Rank	Ranking by zip code

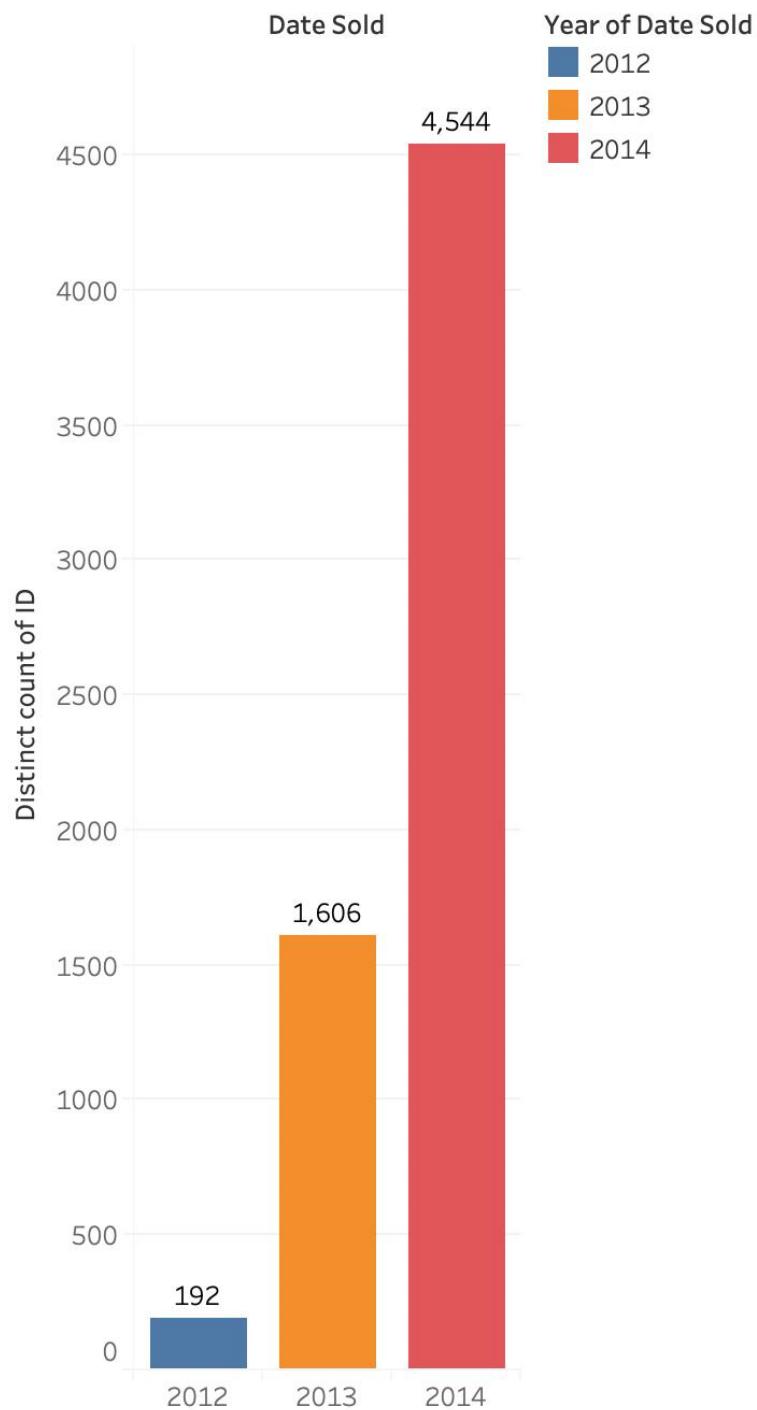
## Exploratory Data Analysis

### 1. Number of houses were sold in 2012, 2013 and 2014

The total number of houses were sold in 2012 is 192. However, its number is 4,544 in 2014.

The housing market was boom since then.

## Total Sold House in 2012, 2013 and 2014



Distinct count of ID for each Date Sold  
Year. Color shows details about Date Sold  
Year. The marks are labeled by distinct  
count of ID.

## 2. Median price by location

The median price in “98164” is the highest. It means the house quality, environment, neighbors, school rating, ... are goods. So, the house prices are higher than others.

Median Price by Zip code



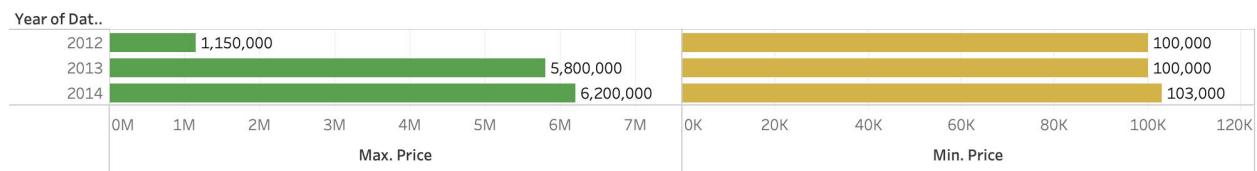
Postal and median of Price. Color shows median of Price. Size shows median of Price. The marks are labeled by Postal and median of Price.

## 3. The highest and the lowest price of the houses were sold in 2012, 2013 and 2014

The highest price in 2012, 2013 and 2014 are 6.2M, 5.8M and 1.15M

The lowest price in 2012, 2013 and 2015 are 103K, 100K and 100K

The Highest and Lowest Price by Year



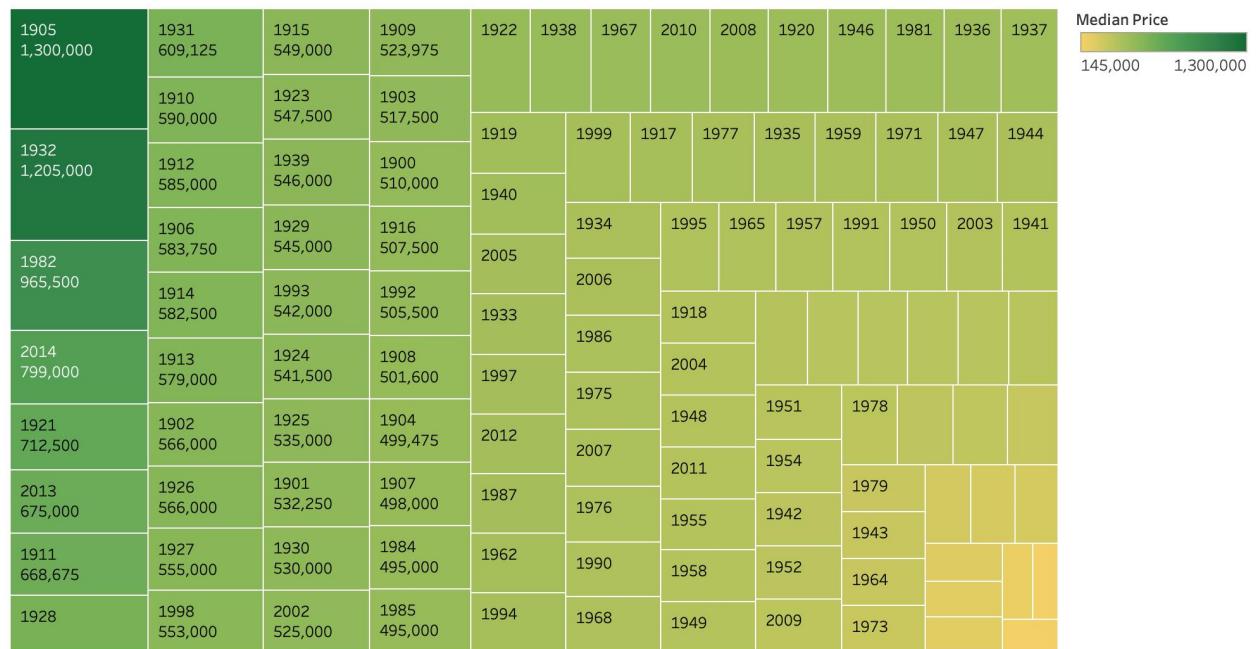
Maximum of Price and minimum of Price for each Date Sold Year.

## 4. The median price by year built

- At 1905, the median price is 1.3M
- At 2014, the median price is 799K

That means the oldest houses compete with the newest houses for the highest prices.

Median Price by Year Built

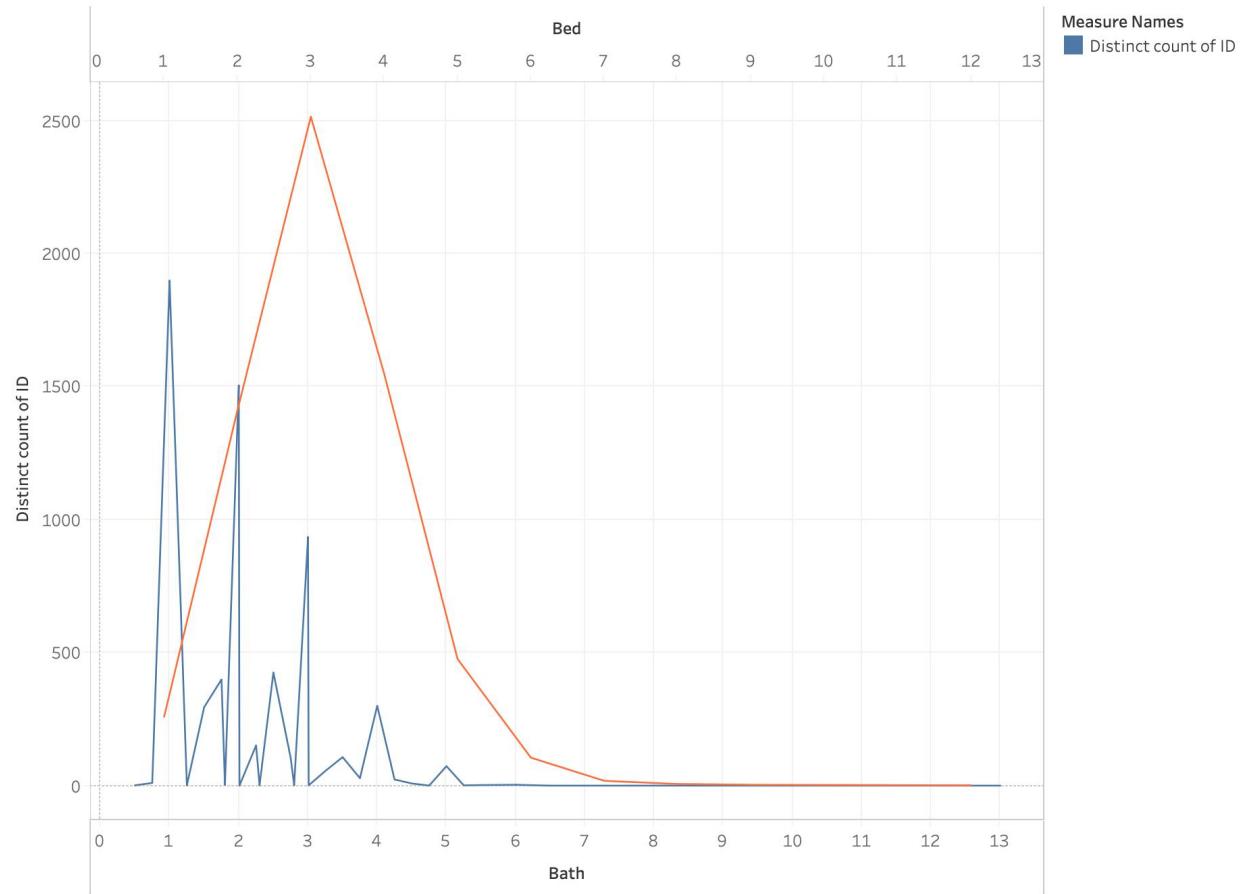


Built Year and median of Price. Color shows median of Price. Size shows median of Price. The marks are labeled by Built Year and median of Price.

## 5. The relation between House sold and number of bedroom/bathrooms

- The houses with 3 bedrooms were sold the most.
- The number of houses with 1 bathroom was sold more than the others

### House Sold by Number of Bathrooms and Bedrooms

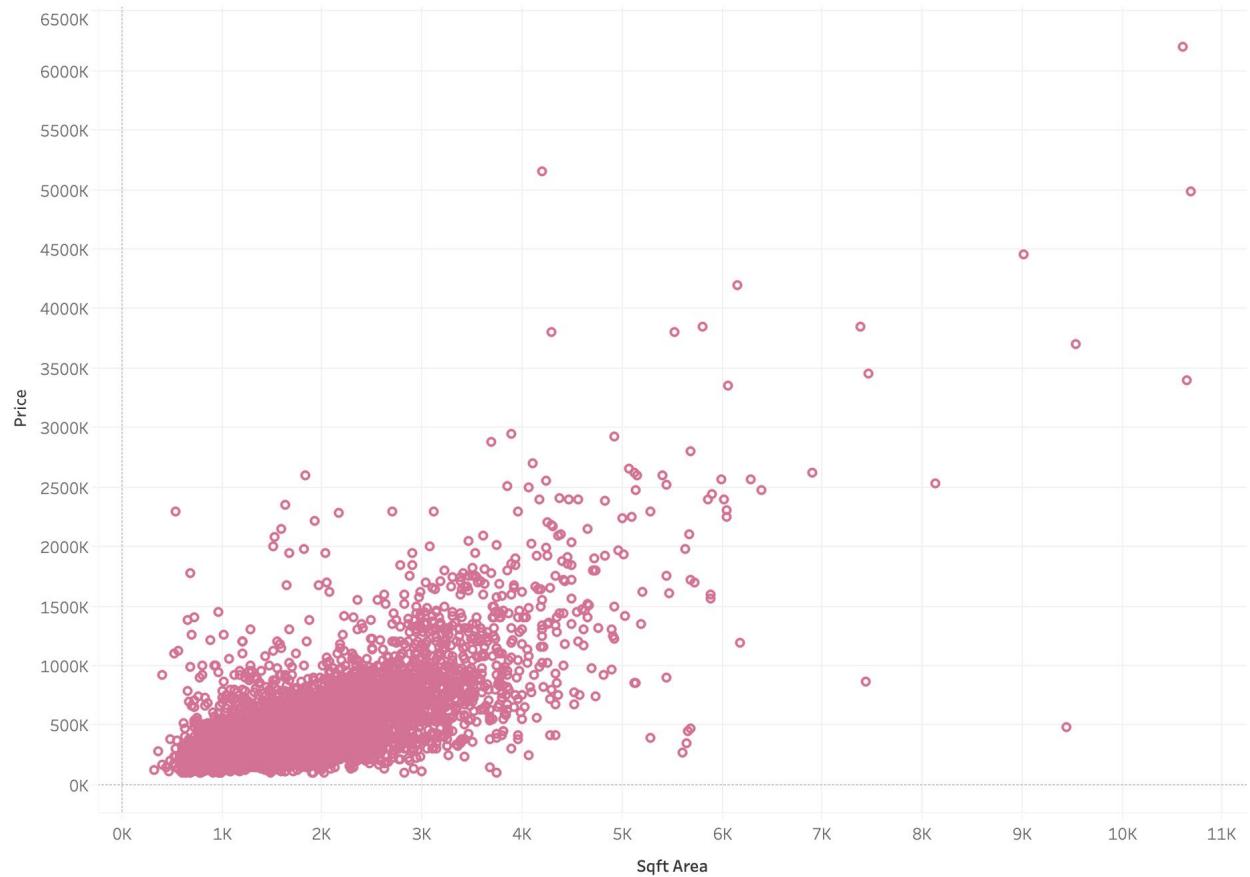


The trends of distinct count of ID for Bath and Bed. For pane Bath: Color shows details about distinct count of ID.

## 6. House price by Living Area

The house price will change when the living area changes.

**House Price by Living area**

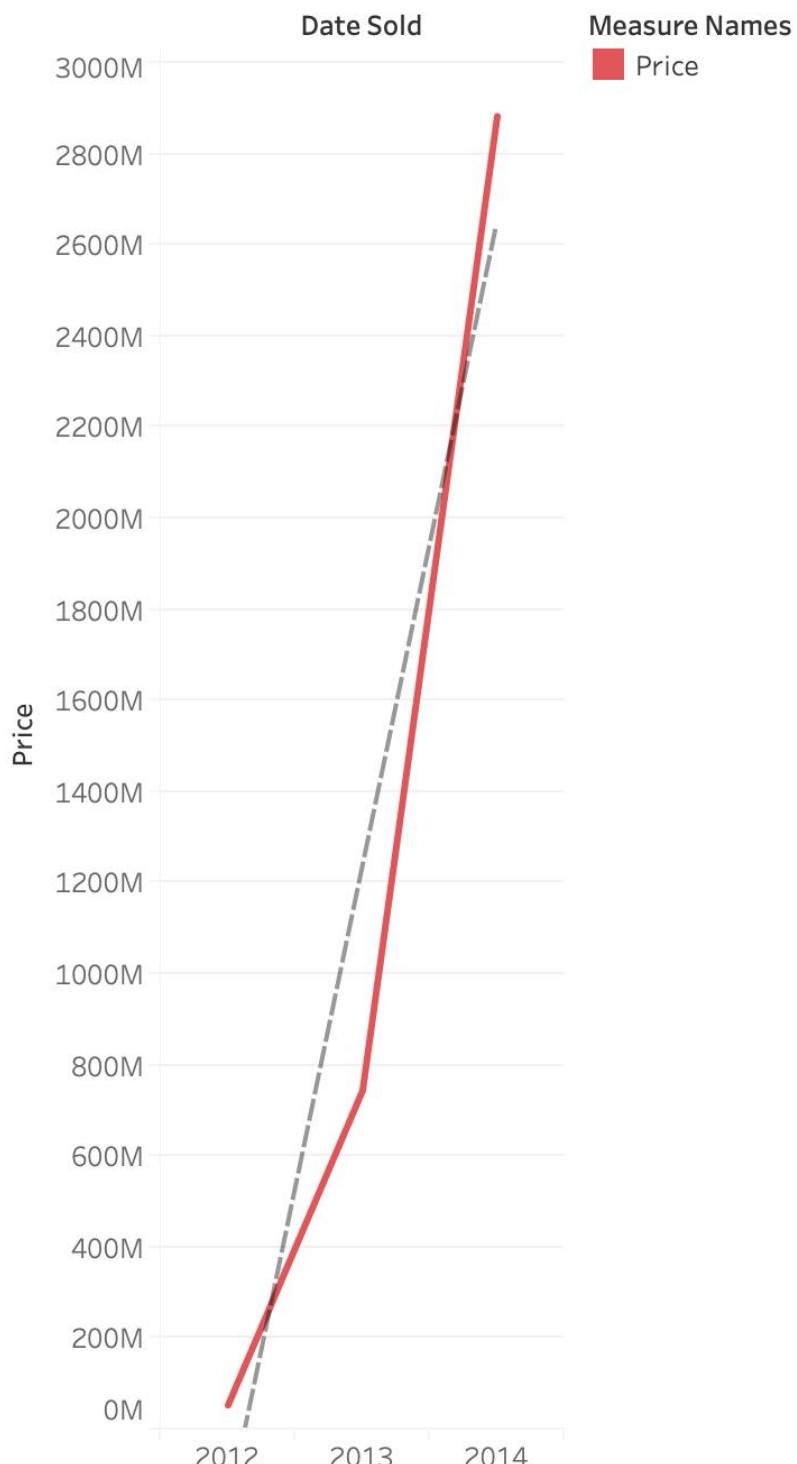


Sqft Area vs. Price.

## 7. Trending

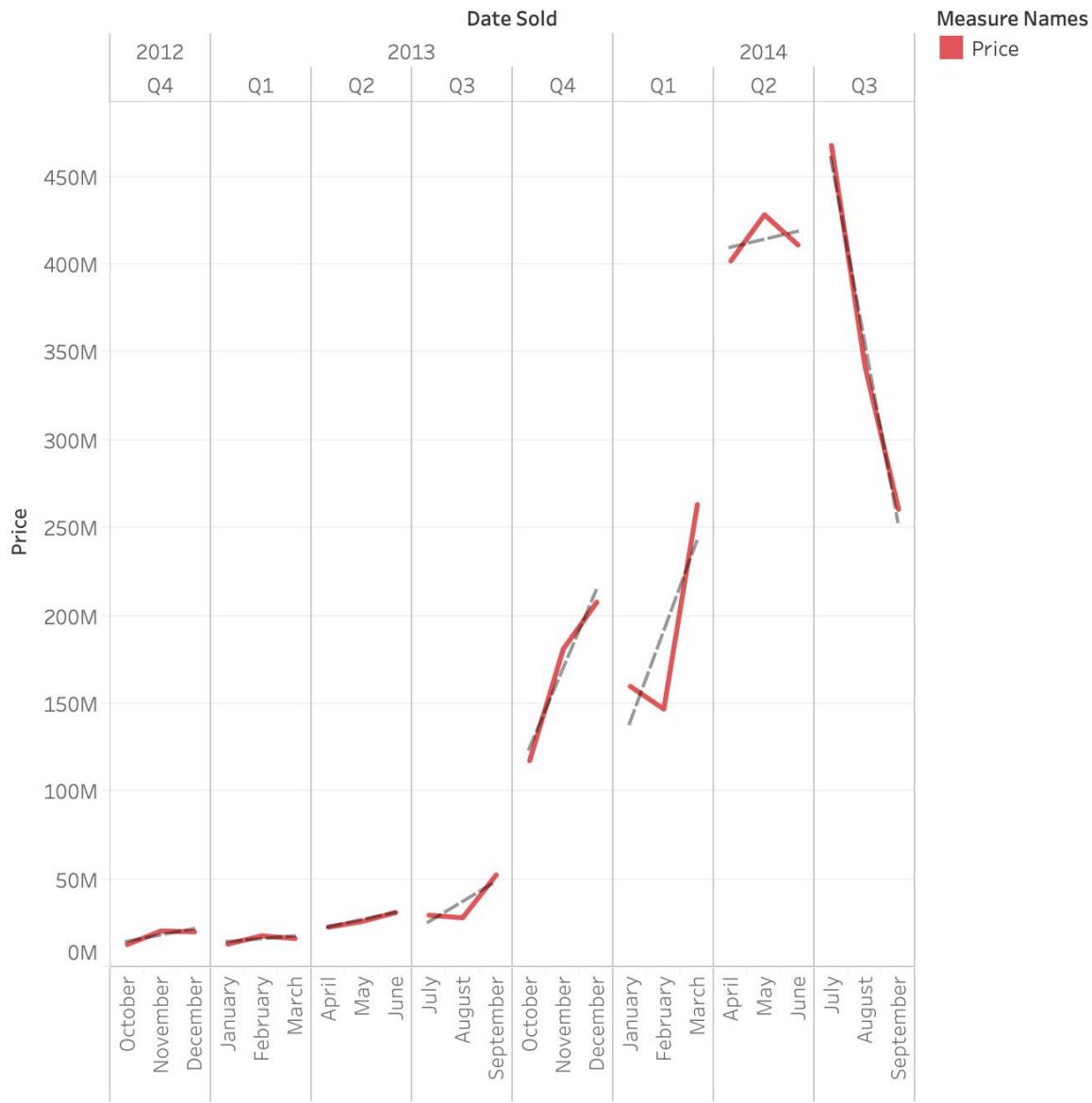
- If select only Year to do trend line analytics, the diagram shows the uptrend from 2012 to 2014.
- If doing trend line by Monthly, the diagram shows different. It's uptrend from Quarter 4 (2012) to Quarter 4 (2013). From end of 2013 to begin of 2014, the housing market still stomped on the spot or even went down.
- It went up slowly until Quarter 3, 2014. And the housing market started go down since there.

## Total House sold by Year with Trend line



The trend of Price for Date Sold Year. Color shows details about Price.

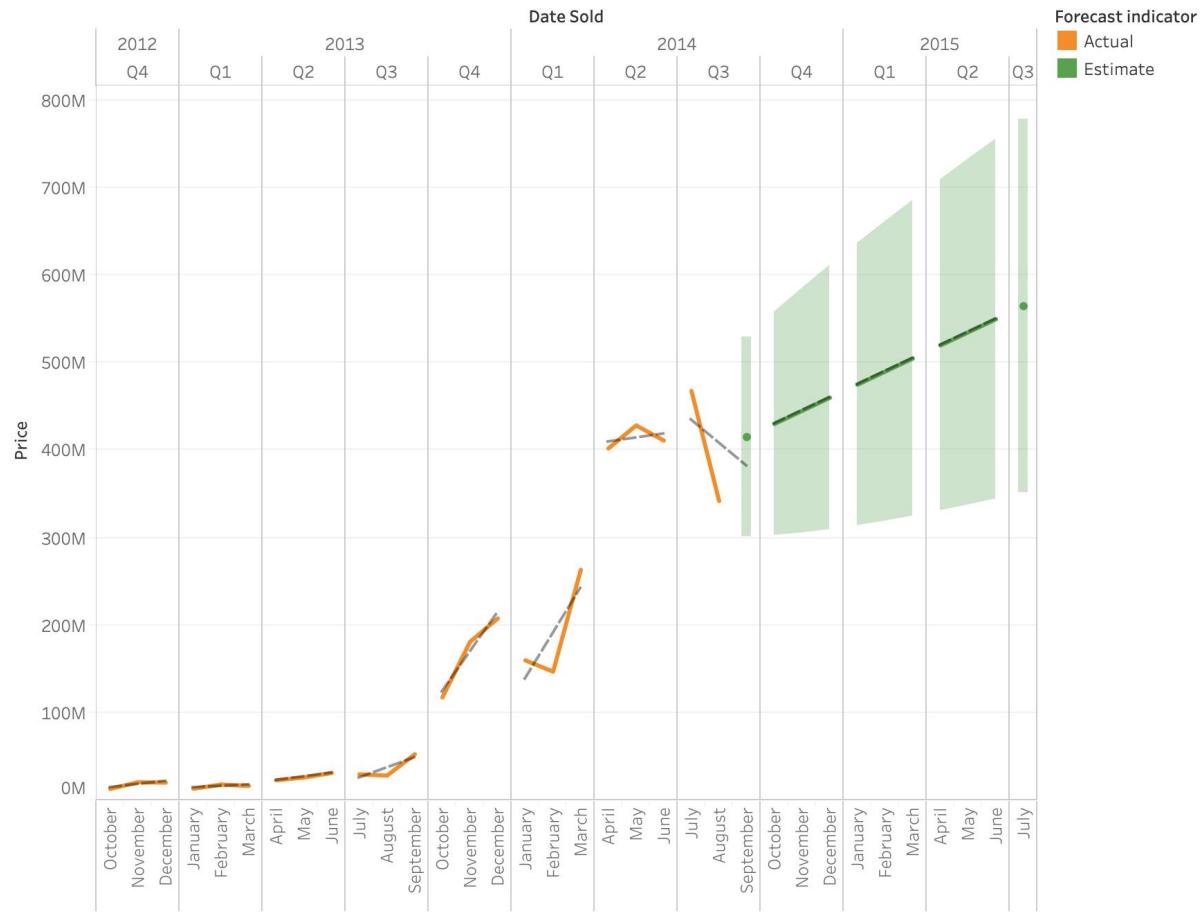
## Total House sold by Month with Trend line



## 8. Forecasting

Although the trend line by monthly diagram shows a downtrend, trend line by year overall shows an uptrend. Therefore, when I do the forecast, I got the uptrend for the result.

## Sale Forecasting for 2015



## Options Used to Create Forecasts

**Time series:** Month of Date Sold

**Measures:** Sum of Price

**Forecast forward:** 11 months (September 2014 – July 2015)

**Forecast based on:** October 2012 – August 2014

**Ignore last:** 1 month (September 2014)

**Seasonal pattern:** None (Not enough data to search for a seasonal pattern recurring every 12 Months)

**Sum of Price**

Initial	September 2014	Change From Initial  September 2014 – July 2015	Seasonal Effect		Contribution		
			High	Low	Trend	Season	Quality
415,305,571 ± 114,105,093	149,634,041	None			100.0%	0.0%	Poor