

What affects home prices?

By: Daniel Kim

What affects sale price?

According to Dave Ramsey...

1. The region
2. Age of house
3. Size of house in general (# of bathrooms, lot size, etc.)

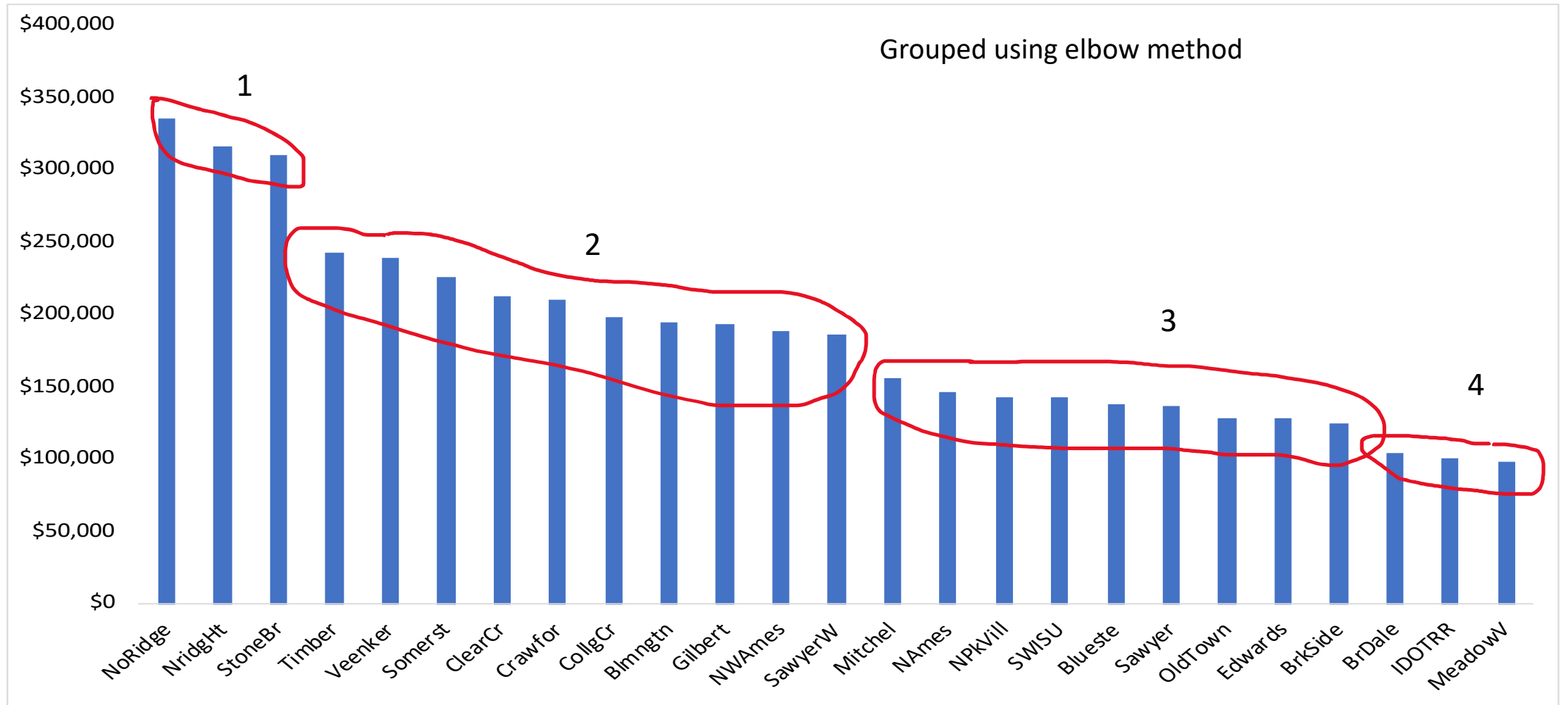
Examine data from Kaggle

- 1460 observations
- 89 features
- USA, State of Iowa
- Contains Neighborhood, year built, and other attributes

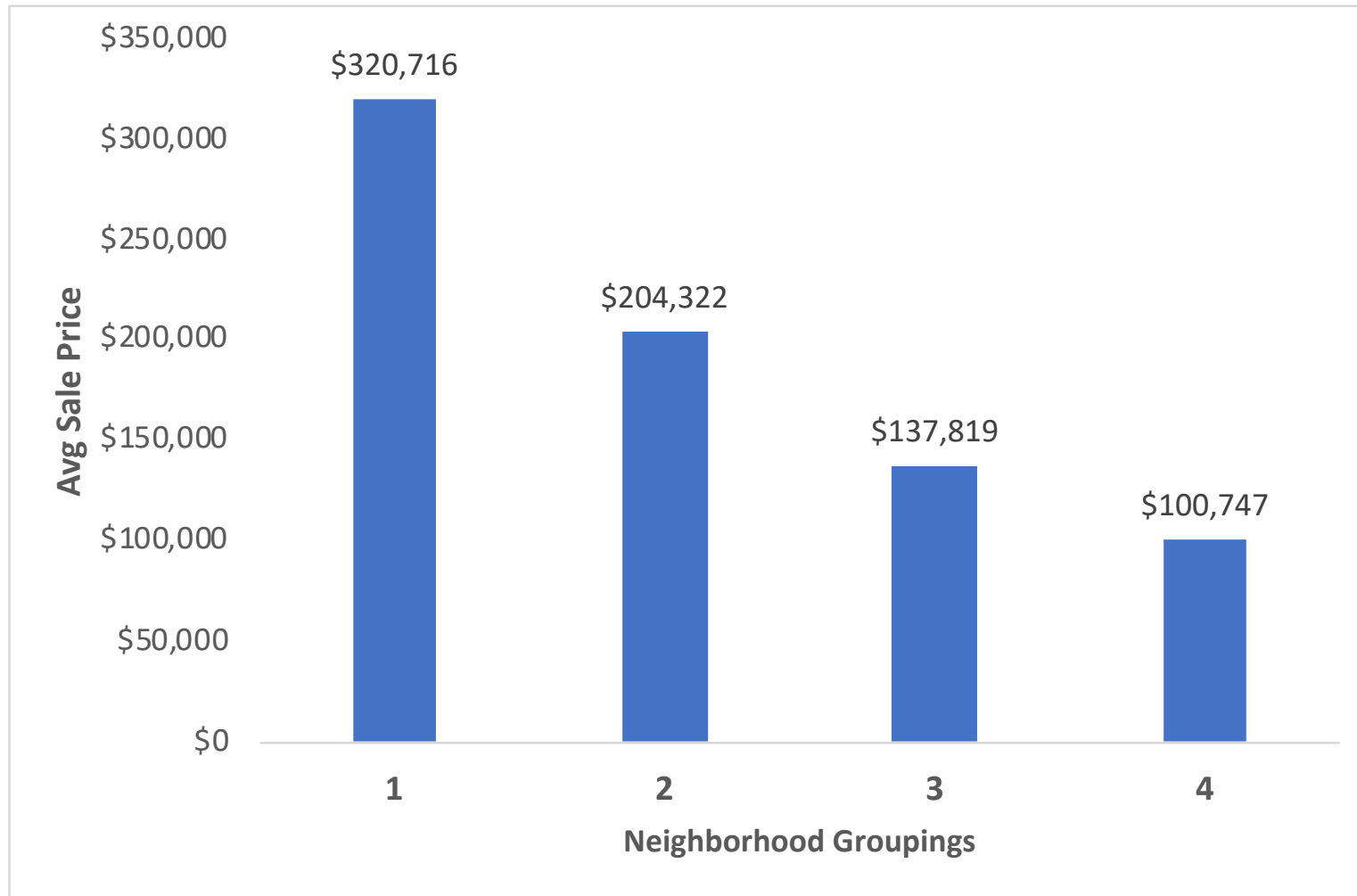
Road map

1. Relationship between Neighborhood and sale price
2. What features affects sale price?
3. Conclusion
4. Next steps

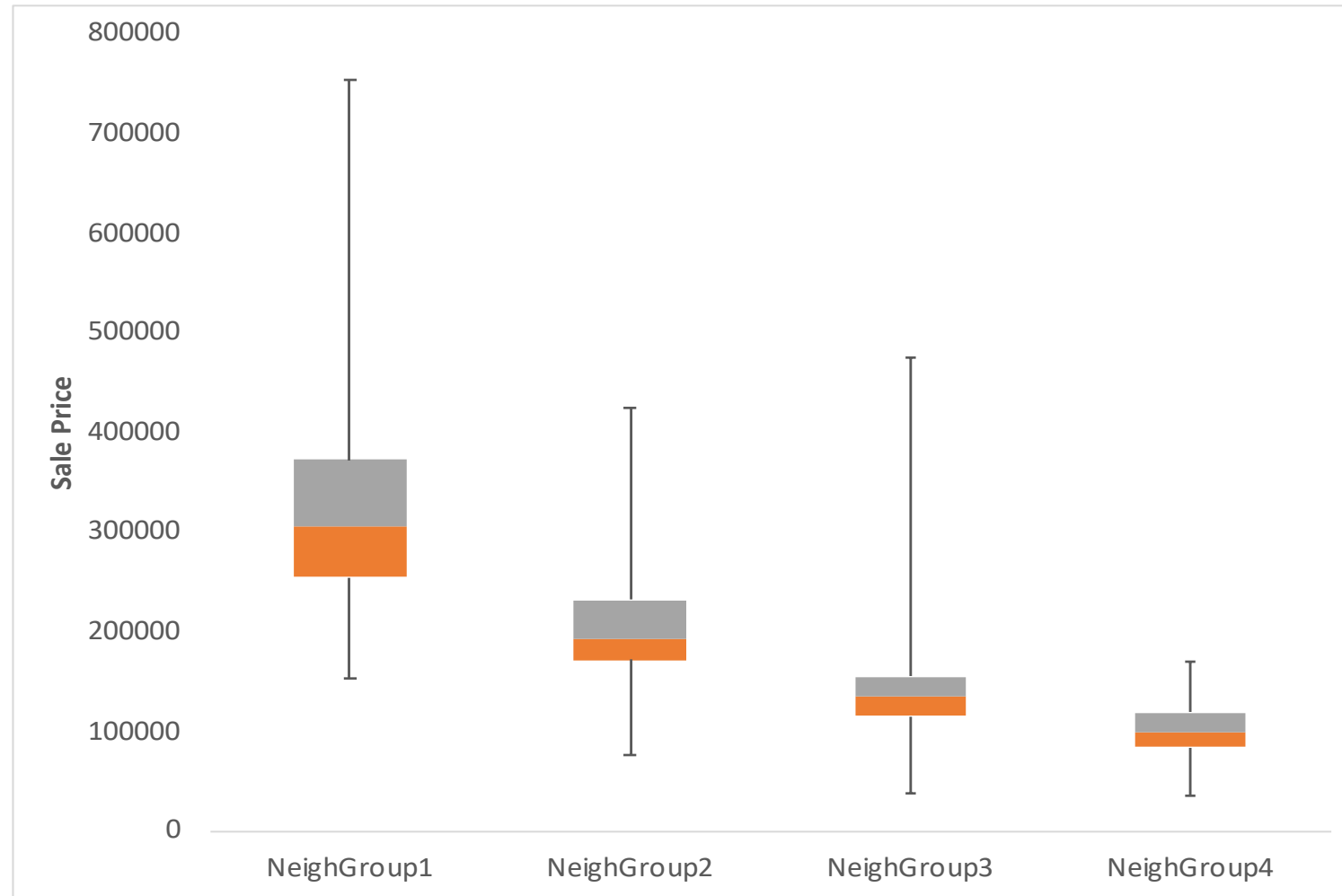
Avg Sale price by Neighborhood



Avg Sale price by Neighborhood groups



Avg Sale price by Neighborhood groups(cont.)



What affects sale price?

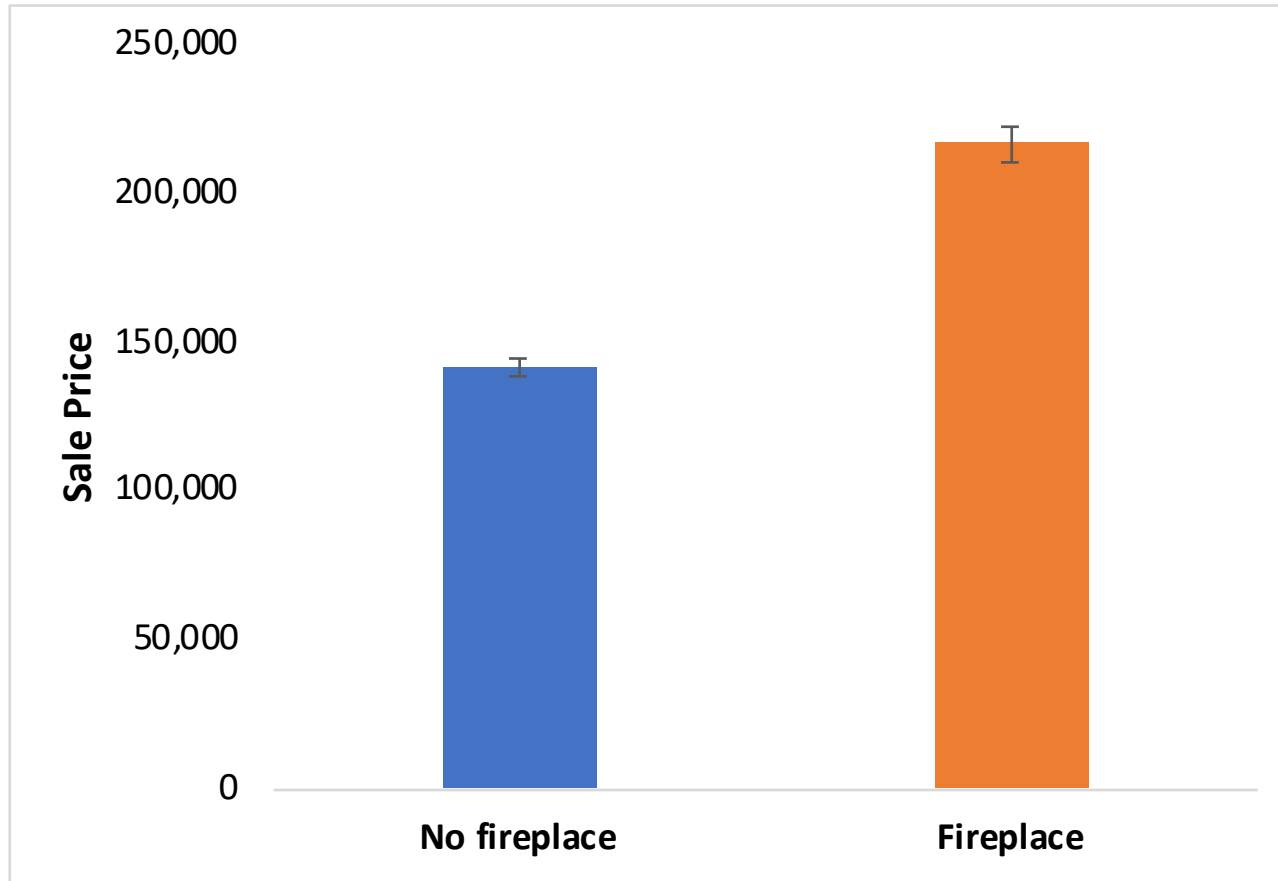
Sale price affected by...

1. Fireplace
2. Shape of lot
3. # of story's
4. year constructed
5. Total sqft of basement

Method

- **Pivot table/chart**
 - Narrowed down features by comparing with avg. sale price
- **A/B testing**
- **Scatter plot**
 - Linear regression

Houses' with fireplaces?



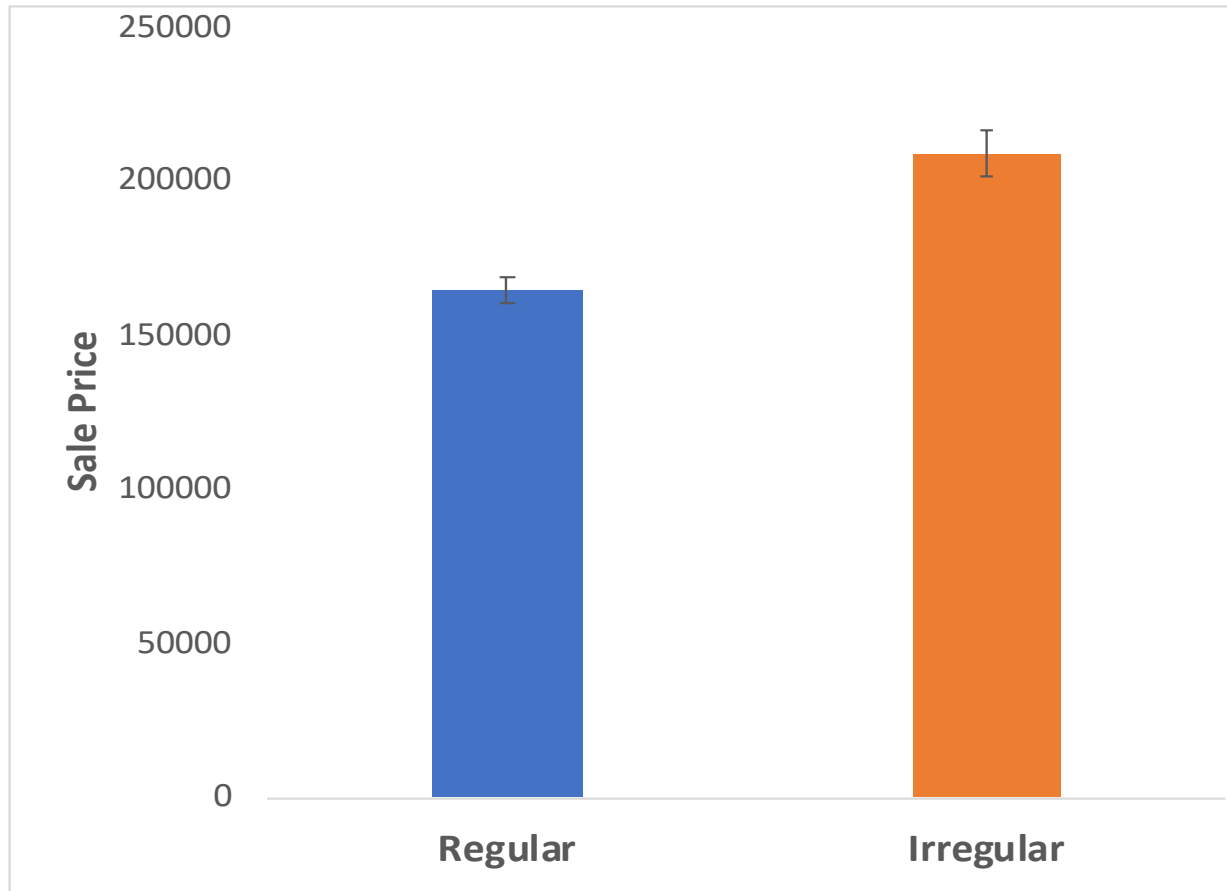
Ho: *Sale prices not affected by fireplace.*

Ha: *Sale prices greater with fireplace.*

Results: *Reject null with p-value at 4.6×10^{-84} .*

In other words, 53% greater in sale price.

Houses' with irregular lot shapes?



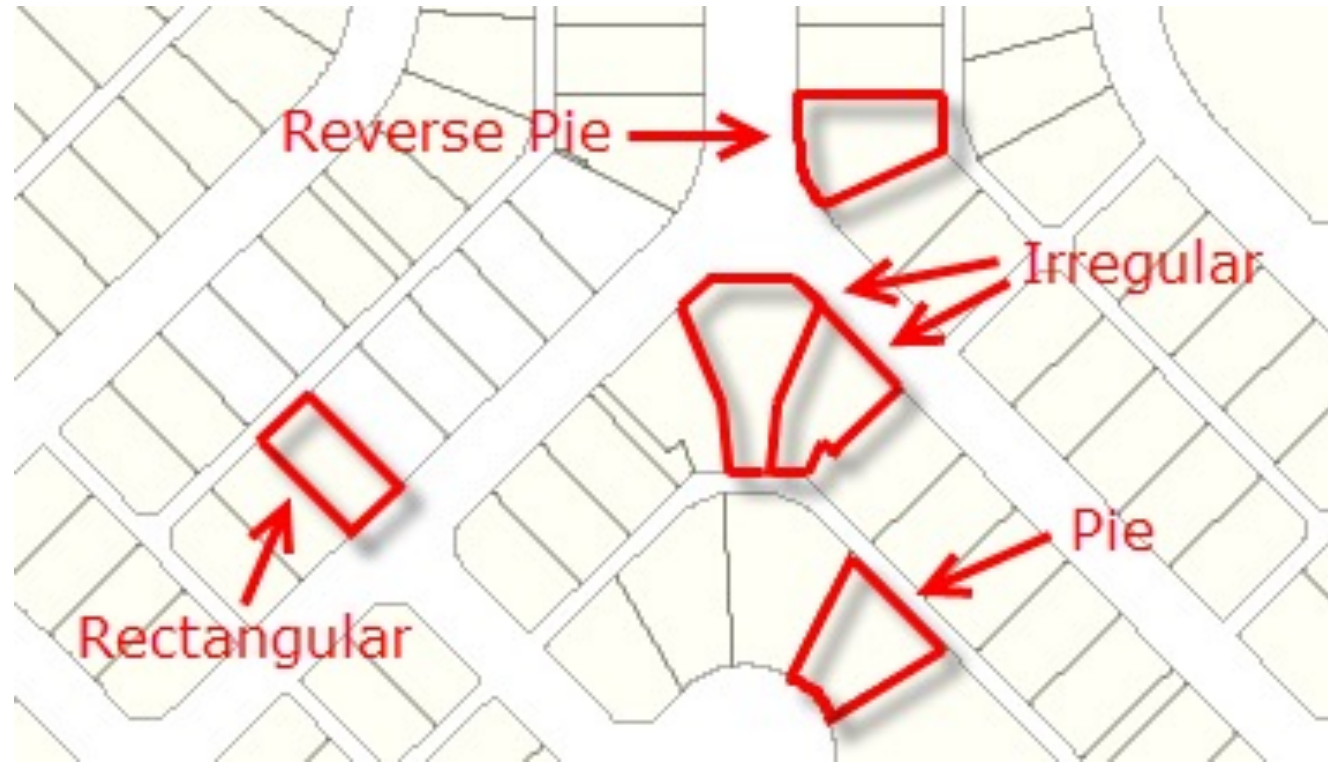
Ho: *Sale prices not affected by lot shape.*

Ha: *Sale prices greater with irregular lot shape.*

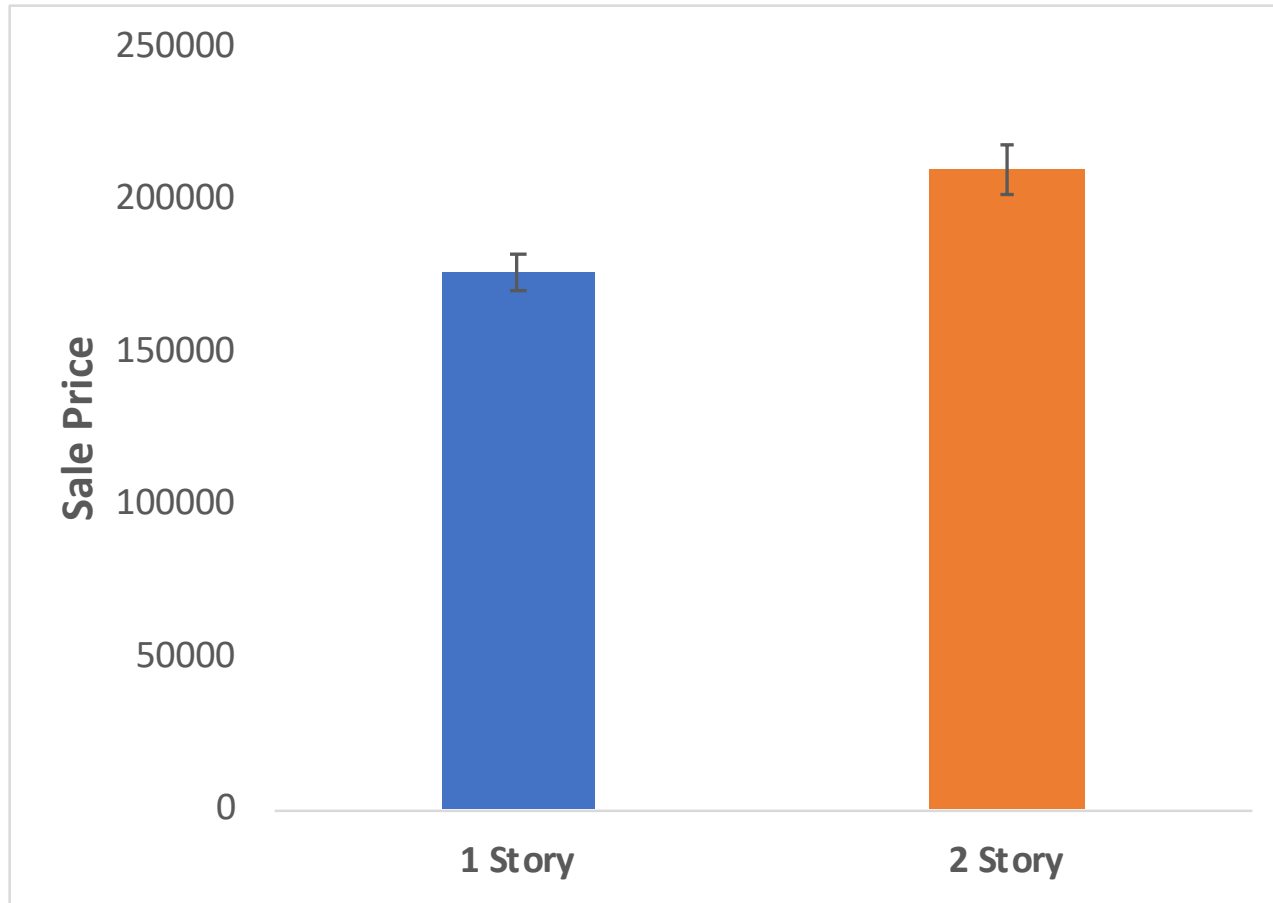
Results: *Reject null with p-value at 2×10^{-22} .*

In other words, 27% greater in sale price.

Why would irregular lot shapes cost more?



of story's affect house price?



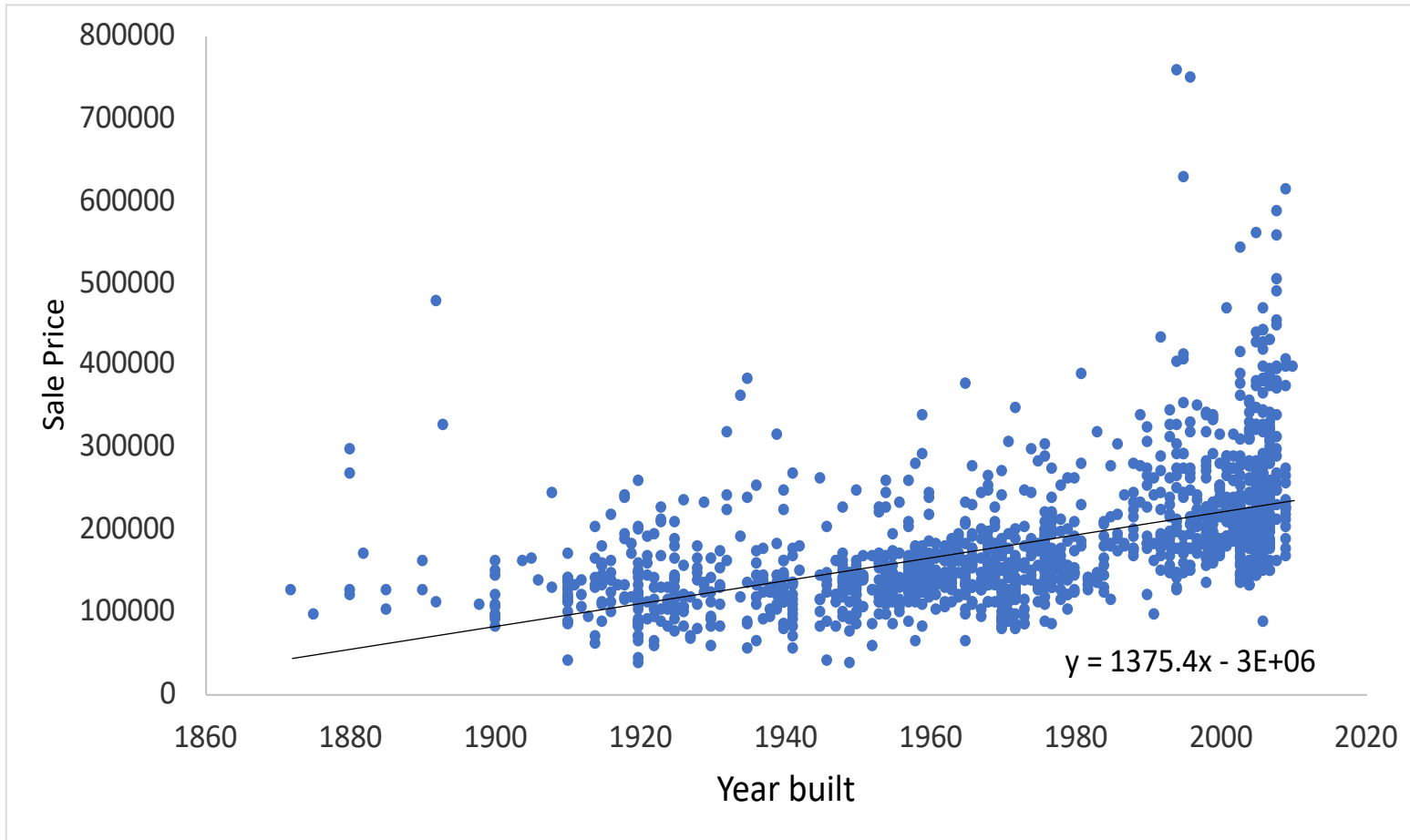
Ho: *Sale prices not affected by # of story's.*

Ha: *Sale prices greater with 2 story's.*

Results: *Reject null with p-value at 2.4×10^{-11} .*

In other words, 19% greater in sale price.

Year built vs Sale Price

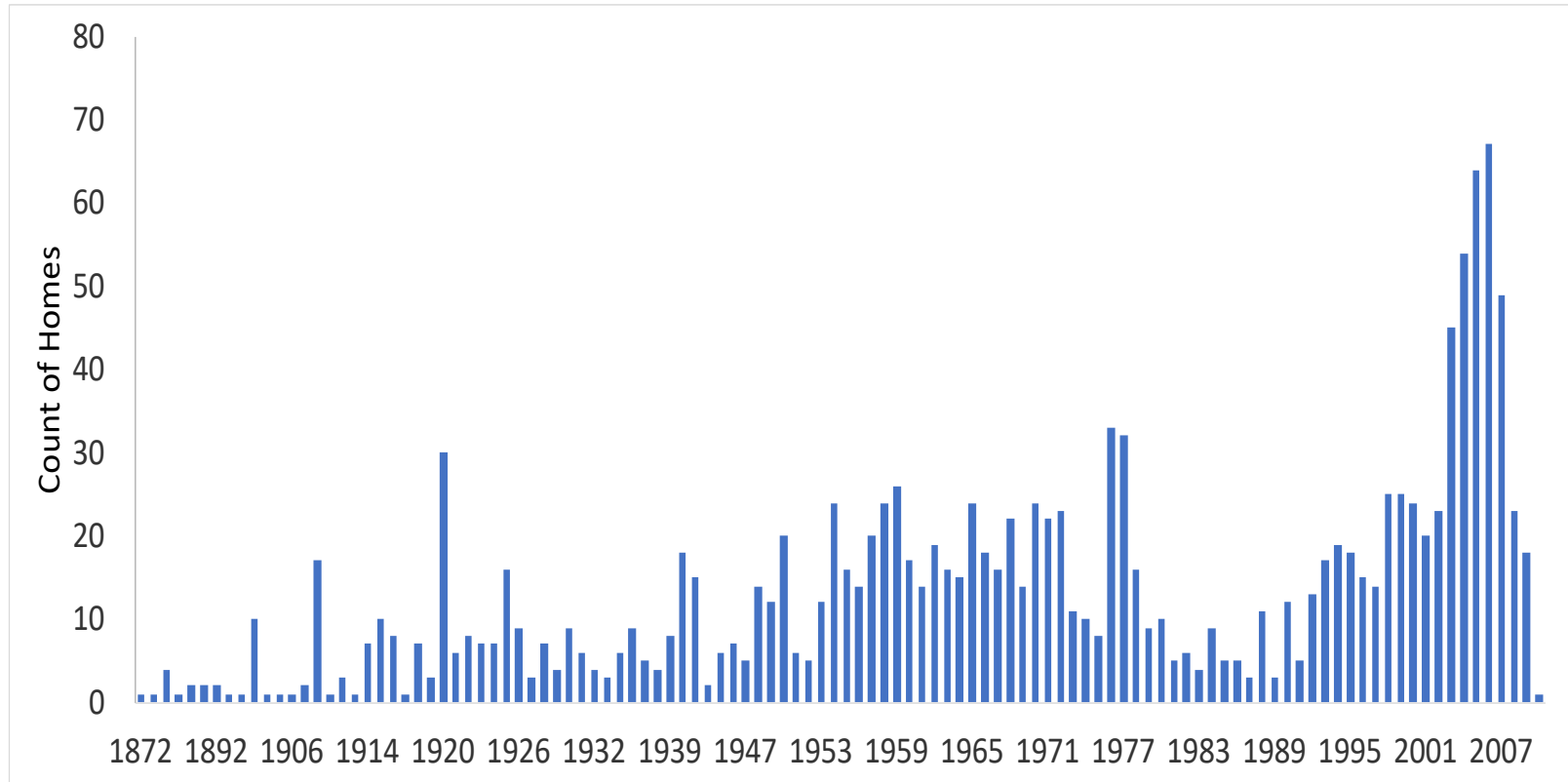


Positive relationship between year built and sale price.

Houses built each year appreciates by \$1,375.40.

Is there a sudden surge of houses after 2000?

Year built vs Sale Price (cont.)

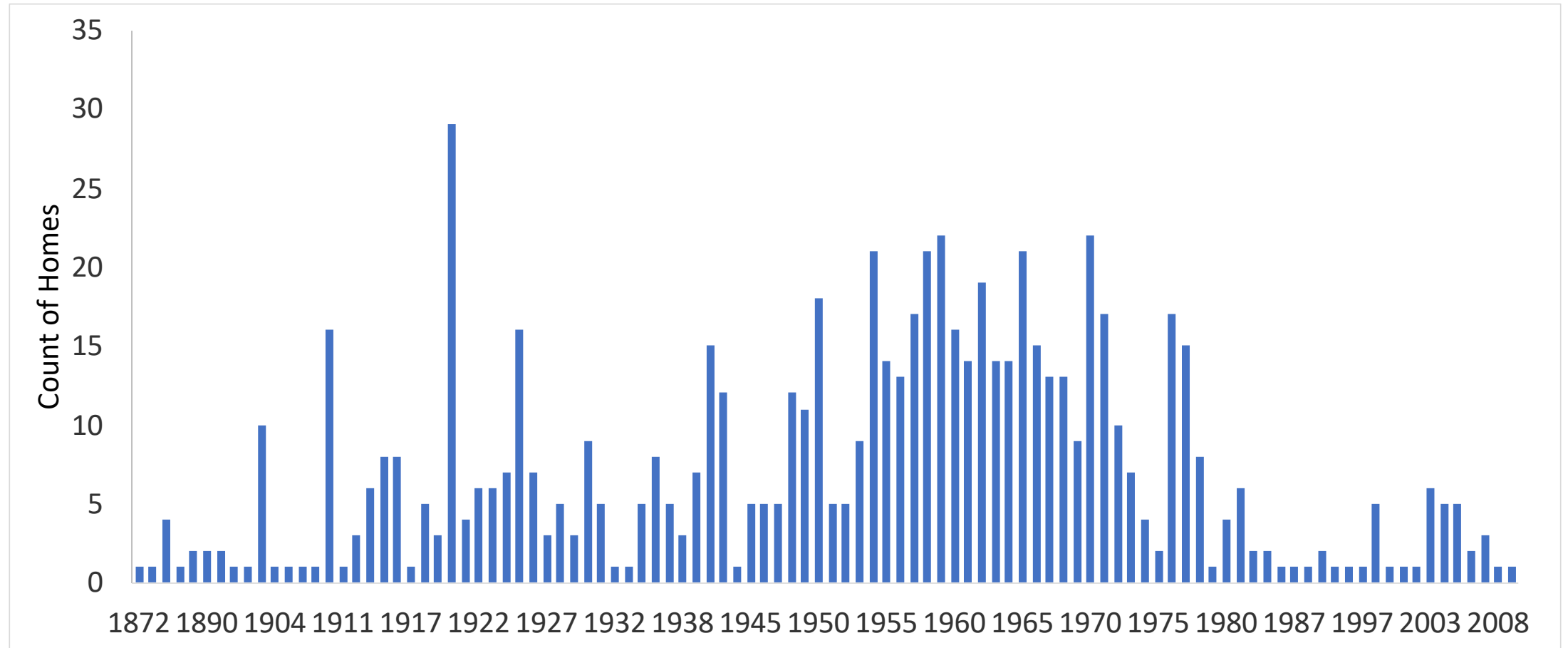


Houses built more recently
between 2001 and 2009.

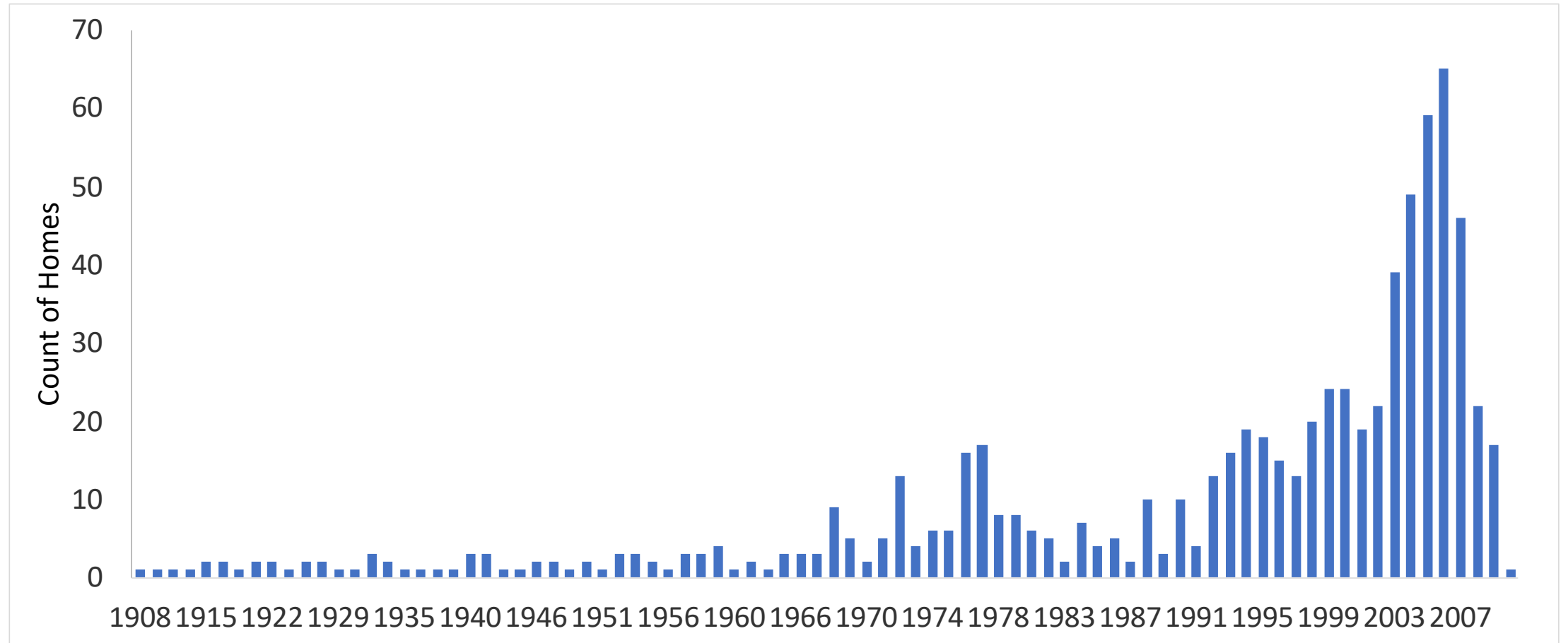
Price is greater even though
many more houses were built.

What relationship does this have
to neighborhood?

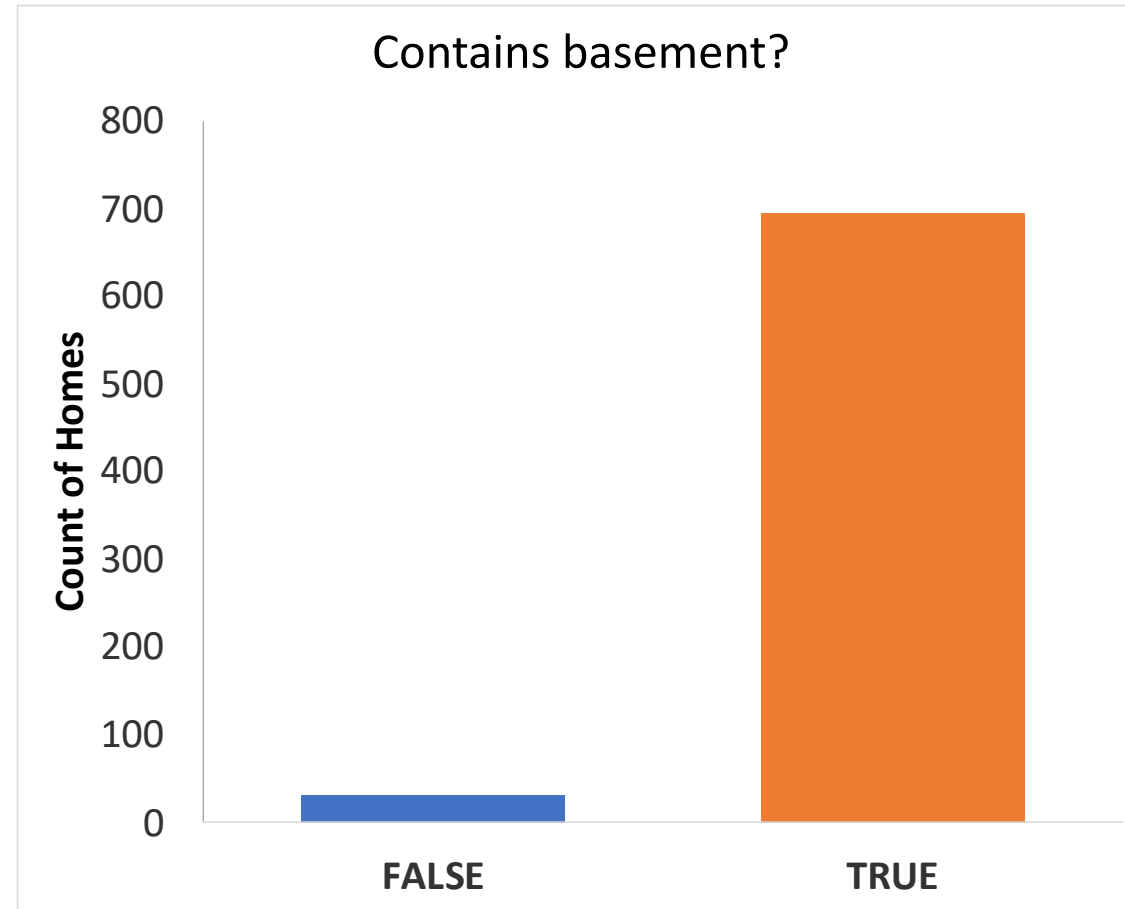
Count of houses in neighborhood group 3&4



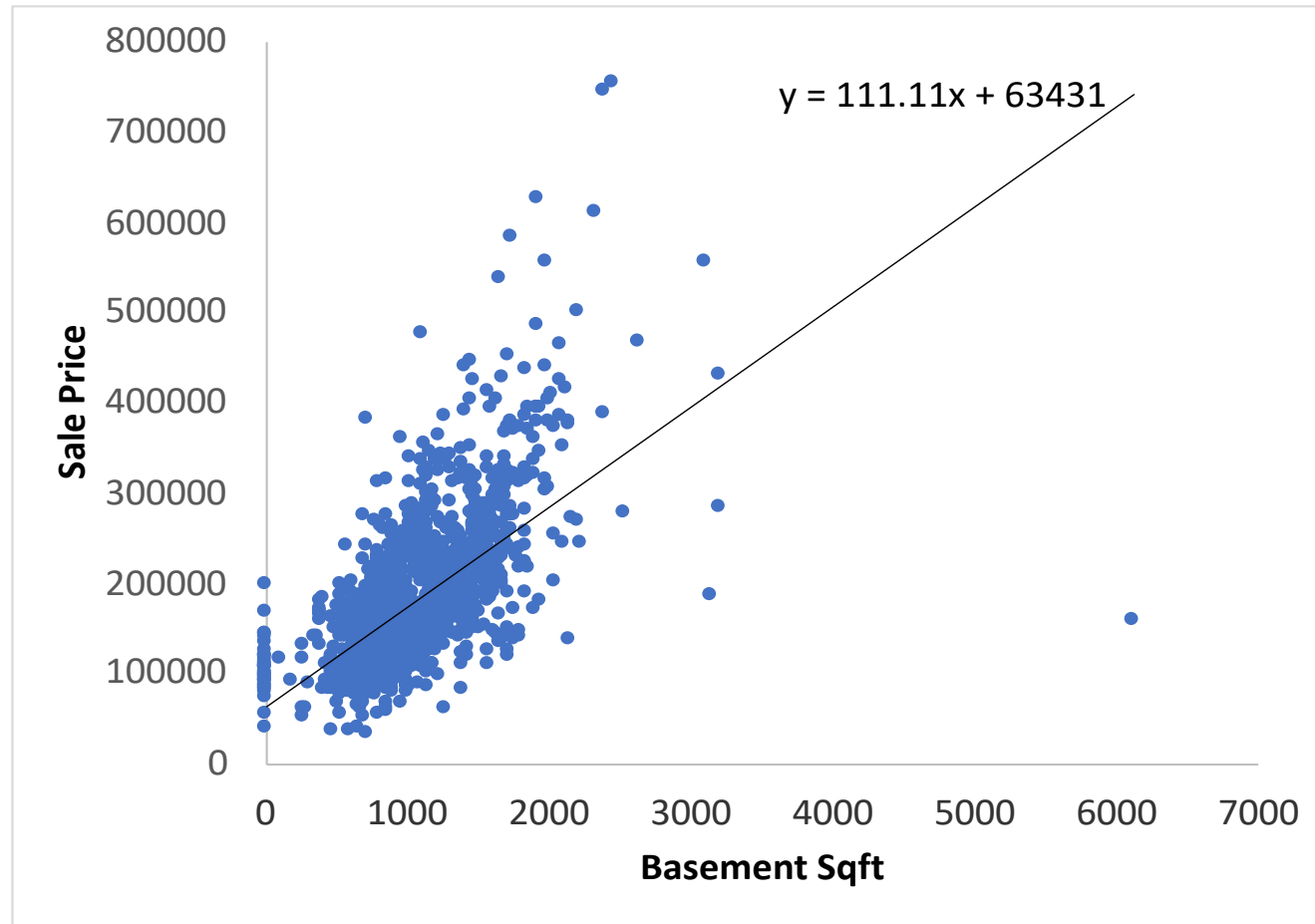
Count of houses in neighborhood group 1&2



Most houses have basements...



Basement SF vs. Sale price



Positive relationship between basement area and sale price.

Approximately \$111.11/sqft

Note: Linear regression line not affected by outlier

Outlier point is a house “made out of straws” (Clay roof, stucco exterior) and located in an older neighborhood.

Conclusion

What affects sale price? (Iowa)

- Fireplaces -> 53%
- Irregular lot shape -> 27%
- 2 story's -> 19%
- Recently built houses -> Houses built each year appreciates by \$1,375.40
- More sqft of basement -> \$111.11/sqft

Next steps

- Gather more data from different part of USA
- Explore why there was an influx of demand for homes in Neighborhood group 1 and 2

