Home Prices Near a Pollution Source

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Research Question

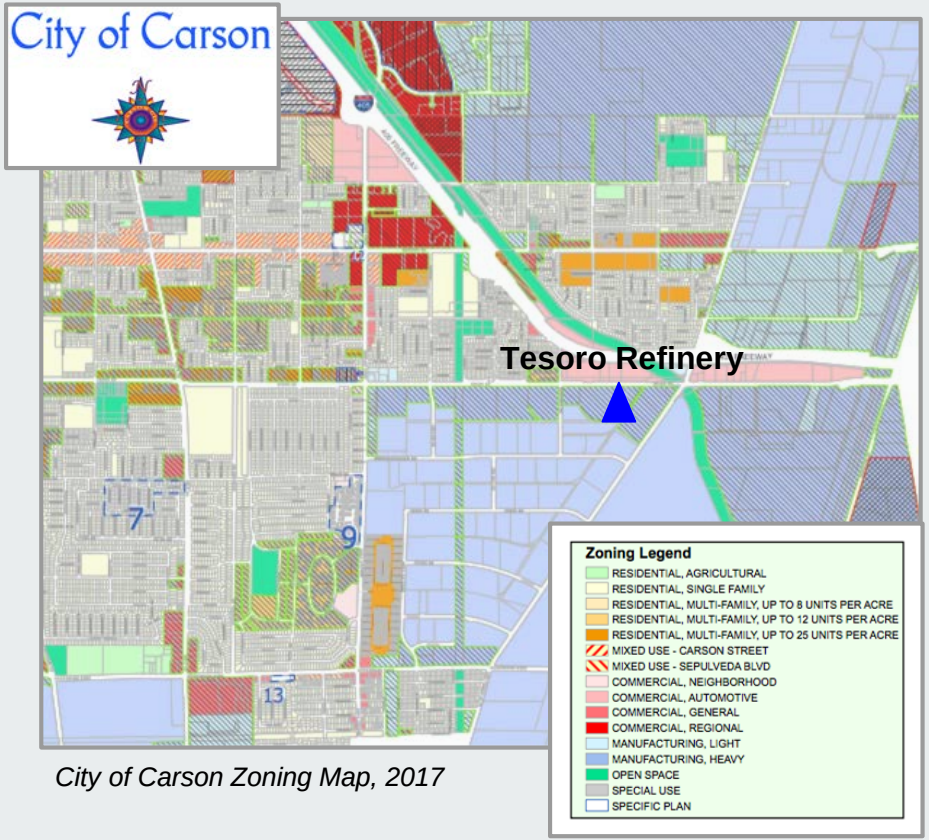
Does the distance from a refinery affect home prices?

Background/ Economic Theory

Based on Hedonic house pricing and zoning regulations, individuals living near a pollution source are typically compensated with lower housing prices and those that are less exposed to the pollution have a willingness to pay higher housing prices.

Prediction

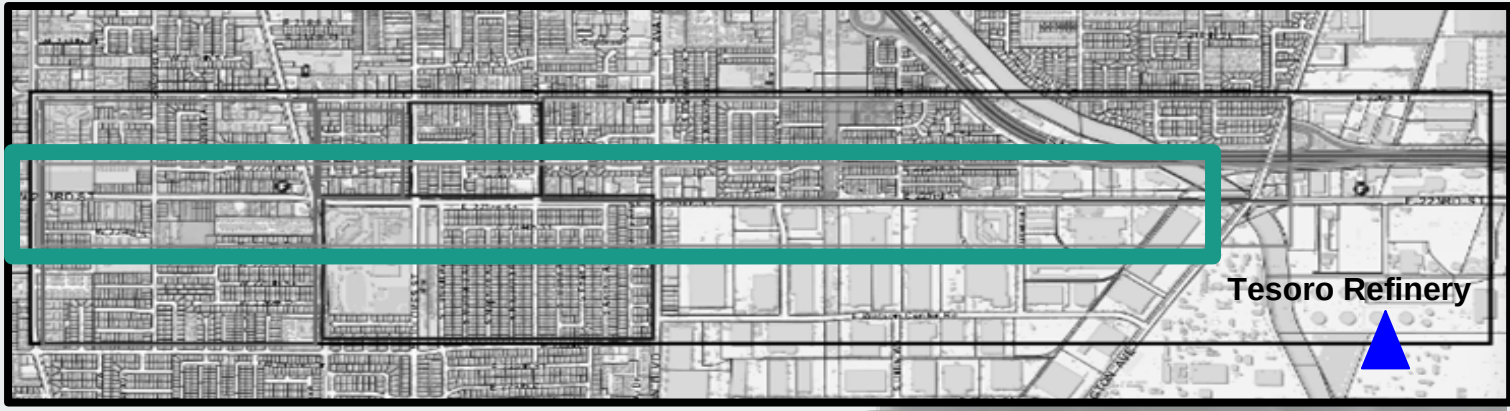
We predict that the further the distance from the refinery, the higher the home price.



City of Carson Zoning Map, 2017

Data Collection

We collected our own data!



Map: LA County Assessor Website, 2018

To answer this question, we established a 3mile linear radius from the pollution source.

We collected the data of 420 single family homes, including the 2018 estimated price using Redfin to run an ordinary least squares between home prices and distance.

We also conducted a multiple regression analysis to further test our research question.

About the Data

Independent Variable

- Distance *(Miles from Tesoro Refinery)*
- Building Size *(Square Footage)*
- Number of Bedrooms
- Number of Bathrooms

Dependant Variable

- Price

Sources

- Los Angeles County Assessor Portal
- Redfin
- Google Maps

Sample Size

420 single family homes along 223rd St.

Summary Statistics

At the 95% confidence interval the below variables are statistically significant.

Variable	Mean	Std.Dev	Min	Max
Distance	2.15	0.547	1.904	3.082
Building Size	1,492	525.88	714	2,985
Bedrooms	3.30	0.807	1.00	7.00
Bathrooms	1.99	0.768	1.00	4.00

Graphical Analysis: Correlation

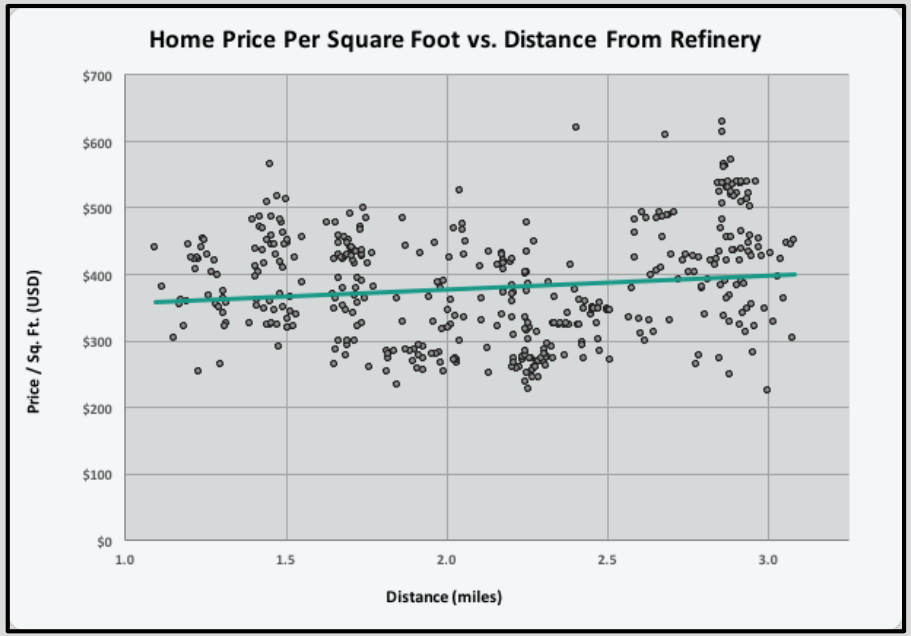
The correlation coefficient of housing price and distance to Tesoro Refinery is

0.251

which shows a positive but weak relationship between these two variables.

Graphical Analysis

A positive and strong relationship is shown between housing price and home size by a **0.879** correlation coefficient



A positive but weak relationship is shown between price per square foot and distance by a **0.139** correlation coefficient

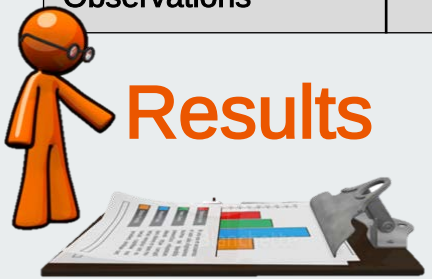
Regression Analysis

Variable	Coefficient	Standard Error	t Stat	P-value
Intercept	252776.428	10324.847	24.482	0.000
Distance to Refinery	***30573.08	3205.776	9.537	0.000
Bedrooms	2843.234	3457.422	0.822	0.411
Baths	***13887.97	3978.284	3.491	0.001
Building Sq. Ft	***117.90	6.159	19.144	0.000
R Square	0.8187			
Number of Observations	420.00			

Conclusion

All these statistics support our hypothesis that as the distance increases further away from the refinery, there are significant positive impact on the housing price.

Other factors also affect the price including nearby schools, proximity to CA-110 freeway, and neighborhood parks and should be considered for further research.



Results

As the distance increases by one mile from the refinery, holding everything else constant, the housing price increases on average by $30,573.08. At the 95% confidence level the following variables were statistically significant: distance to the refinery, number of bathrooms, and building square footage.