

HOUSING FORECLOSURE & MEDIAN INCOME IN LA

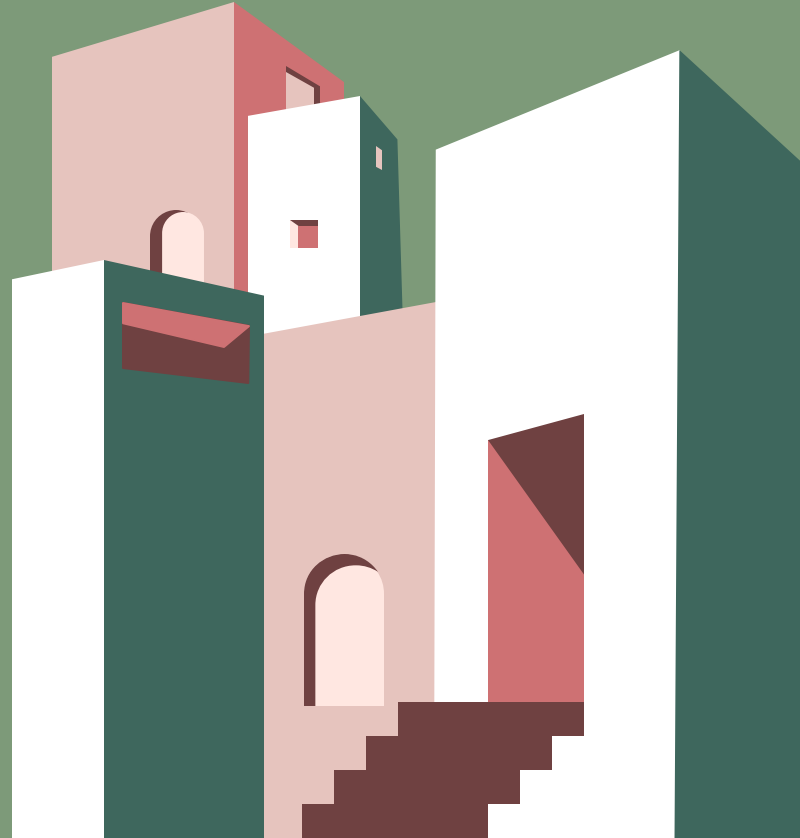


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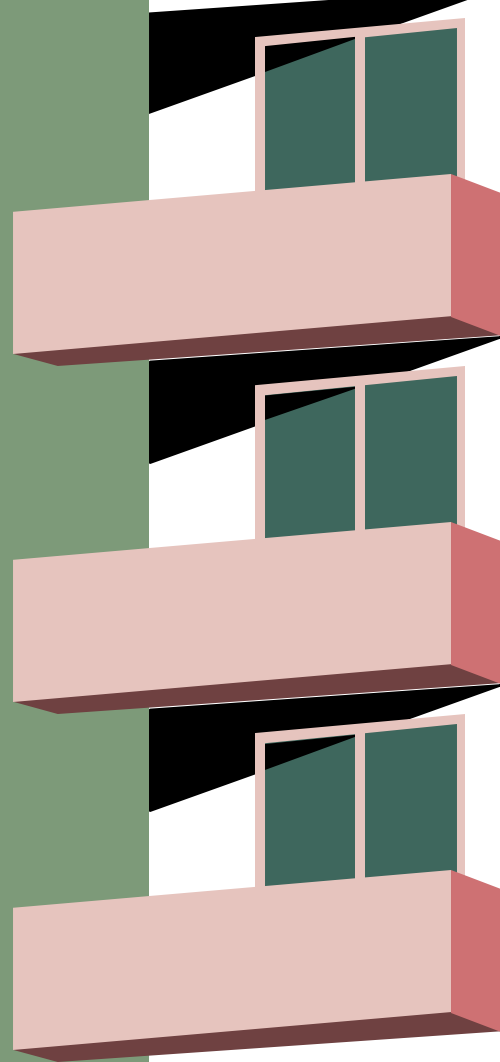
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01

BACKGROUND AND PREVIOUS STUDIES



BACKGROUND

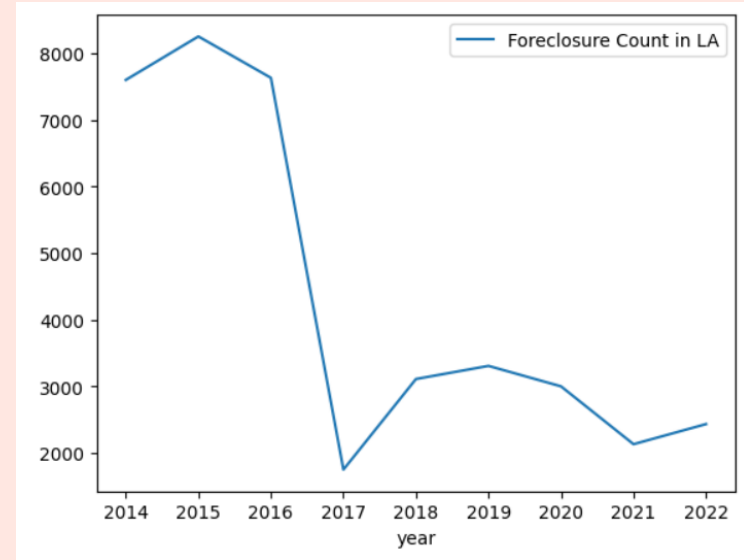
Housing Foreclosure

Foreclosure is a **legal process** in which a lender attempts to **recover the balance** of a loan from a borrower who has stopped making payments to the lender by **forcing the sale of the asset** used as the **collateral** for the loan.

Top Reasons for Residential Foreclosure:

- Income Loss
- Medical Bill
- Family Breakdown
- Adjustable-Rate Mortgage Resets (ARMs)
- Negative Equity

PREVIOUS STUDIES AND TREND



Similarly, those earning less than half of the median income (AMI) are more than twice as likely to be in foreclosure as those earning more than 120% of AMI.

Source from *National Low Income Housing Coalition* (2008)

141% HIGHER

LA Housing Price Compare to National Average

10% HIGHER

LA Median Income Compare to National Average

92% HIGHER

LA Housing Foreclosure Rate Compare to Nation
Average

02

TOPIC AND HYPOTHESIS



TOPIC AND HYPOTHESIS

"WITHIN LA COUNTY, DOES A AREA WITH LOWER MEDIAN INCOME HAS MORE FORECLOSURES?"

X - Average Income by Zip Code

Y - Average Count of Foreclosures from 2014 to 2022 by Zip Code

Z – House Price, Population, Unemployment Rate, Poverty Rate

H0: Area with lower median income has equal or smaller number of foreclosures as compared to average and high median income.

Ha: Area with lower median income households has more foreclosures as compared to average and high median income.



IDEAL EXPERIMENT

Randomly assigned to different Zip Code in Los Angeles



POPULATION



UNEMPLOYMENT
RTAE



HOUSE PRICE



POVERTY RATE

Force different Zip Code to have **different incomes** and see how the foreclosure rate **differs**.



03

DATA AND OUTCOMES

DATA SOURCES

FORECLOSURE BY ZIP CODE IN LA

Y Variable

From Los Angeles City Open Data

MEDIAN INCOME BY ZIP CODE IN LA

X Variable

From Los Angeles
Almanac

PROPERTY PRICE BY ZIP CODE IN LA

Z Variable

From Los Angeles
Almanac

POPULATION BY ZIP CODE IN LA

Z Variable

From Los Angeles
Almanac

POVERTY RATE BY ZIP CODE IN LA

Z Variable

From Zip Atlas

UNEMPLOYMENT RATE BY ZIP CODE IN LA

Z Variable

From Zip Atlas

DATA ADJUSTMENT

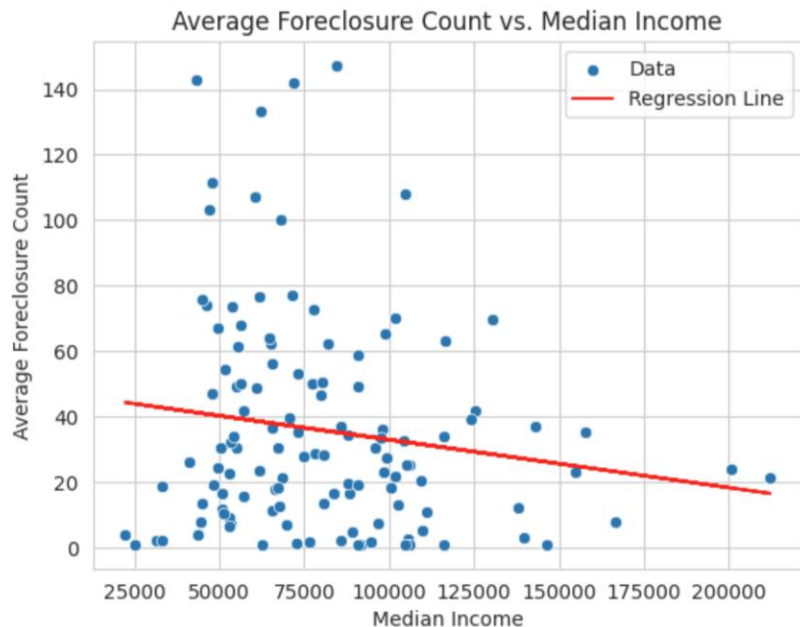
Data Cleaning

- Manually research and fill in **Missing Data** erroneous data when deem necessary
- Drop rows (on zip code level) when we are confident that it will not post systematic error
- Change area names and make it uniform throughout.

Outliers Removal

- Base on Domain Knowledge
- Check if post **significant influence** on model

VARIABLE IN MODEL



R-square=0.022	Estimate coefficient	S.E.	t	P> t
Intercept	47.6532	7.747	6.152	0
Median Income	-0.0001	8.88E-05	-1.647	0.102

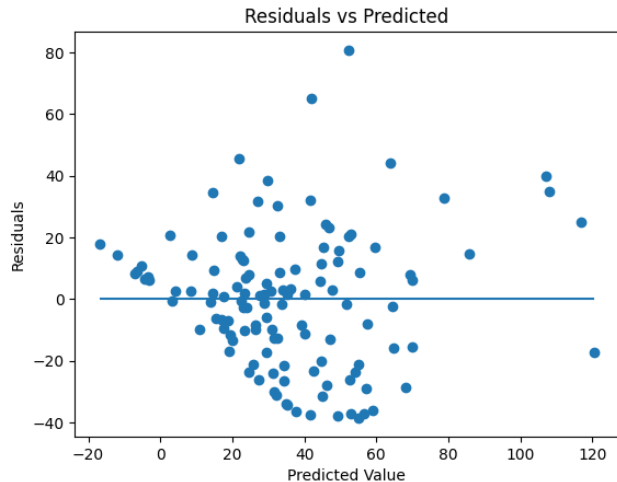


R-square=0.547	Estimate coefficient	S.E.	t	P> t
Intercept	-17.1412	17.437	-0.983	0.328
Median Income	0.0002	0	-1.647	0.17
Total Population	0.0012	0	10.832	0
Average Property Price	-5.94E-06	3.46E-06	-1.714	0.089
Unemployment Rate	45.4201	119.731	0.379	0.705
Poverty	-23.8123	41.728	-0.571	0.569



R-square=0.546	Estimate coefficient	S.E.	t	P> t
Intercept	-20.8803	8.172	-2.555	0.012
Median Income	0.0002	8.04E-05	2.757	0.007
Total Population	0.0012	0	11.005	0
Average Property Price	-6.30E-06	3.33E-06	-1.892	0.061

HETEROSCEDASTICITY



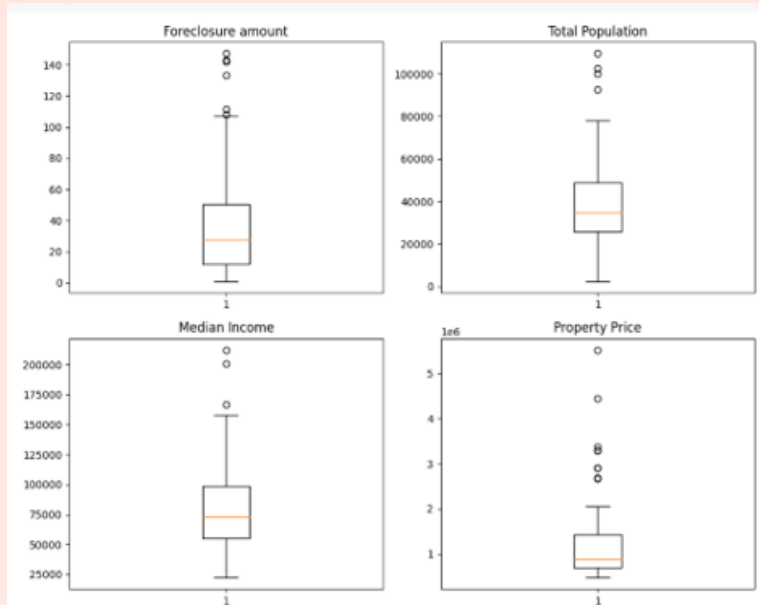
REGRESSION USING ROBUST MODEL

	Estimate coeffficient	S.E.	z	P> z
Intercept	-21.2526	8.195	-2.593	0.01
Median Income	0.0002	8.06E-05	2.868	0.004
Total Population	0.0012	0	10.553	0
Average Property Price	-6.02E-06	3.34E-06	-1.804	0.071

INTERACTION TERM REGRESSION USING ROBUST MODEL

	Estimate coefficient	S.E.	z	P> z
Intercept	-23.7621	8.093	-2.936	0.003
Median Income	0.0002	7.98E-05	2.87	0.004
Total Population	0.0012	0	7.571	0
Average Property Price	-3.19E-06	3.89E-06	-0.819	0.413
High Housing Price (above 60 percentile)	-3.5345	6.638	-0.532	0.594
High Population (above 60 percentile)	1.646	7.267	0.227	0.821
High Housing Price and High Population (Boolean)	-18.8371	9.411	-2.002	0.045

OUTLIERS



REGRESSION USING ROBUST MODEL

	Estimate coefficient	S.E.	z	P> z
Intercept	-16.3873	9.859	-1.662	0.096
Median Income	0.0002	9.28E-05	2.501	0.012
Total Population	0.0009	0	4.287	0
Average Property Price	-4.78E-06	4.82E-06	-0.874	0.382
High Housing Price (above 60 percentile)	-2.3531	7.01	-0.336	0.737
High Population (above 60 percentile)	7.6072	7.916	0.961	0.337
High Housing Price and High Population (Boolean)	-17.5158	9.353	-1.873	0.061



04

RESULT AND FURTHER STUDIES

CONCLUSION

Higher median incomes correlate with increased foreclosure rates; Fail to reject H_0

Los Angeles' has unique market challenges the national trend

- Lower-income areas prefer leasing
- higher-income areas face greater leverage and potential foreclosure

Further study:

- Interaction term between high housing prices and high population becomes insignificant after removing outliers
- If other area with higher median income also exhibit higher foreclosure rates



05

REFERENCE

You can describe the topic of the section here

REFERENCE

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THANK YOU