

Examining the Impact of Crime & Demographics on Housing Affordability in Los Angeles

IST 718
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Introduction

- City of Los Angeles is developing a tool to help migrants with their move
- The project focuses on the relationship between crime and housing affordability
- Examines how demographics and education can impact pay and affordability
- Identify drivers for price of homes



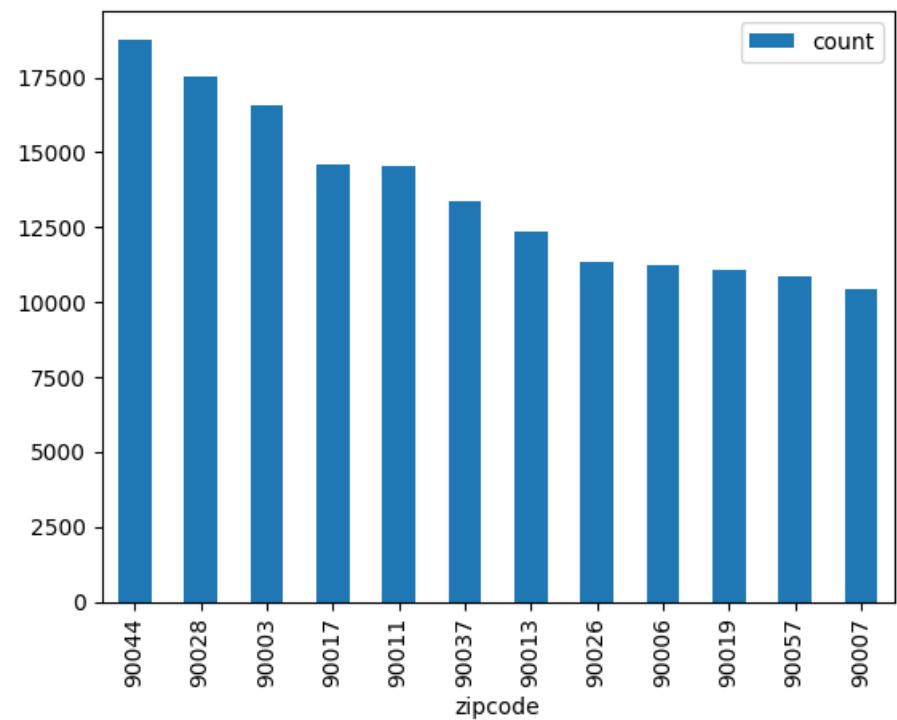
Specification

- Identify the relationship between crime and housing costs
- Identify neighborhoods are both safe and affordable
- Determine how a person's profession, gender, and education level impart their salary
- Predict zip codes where people can live based on their demographic data
- Predict 2023 house prices based on available data



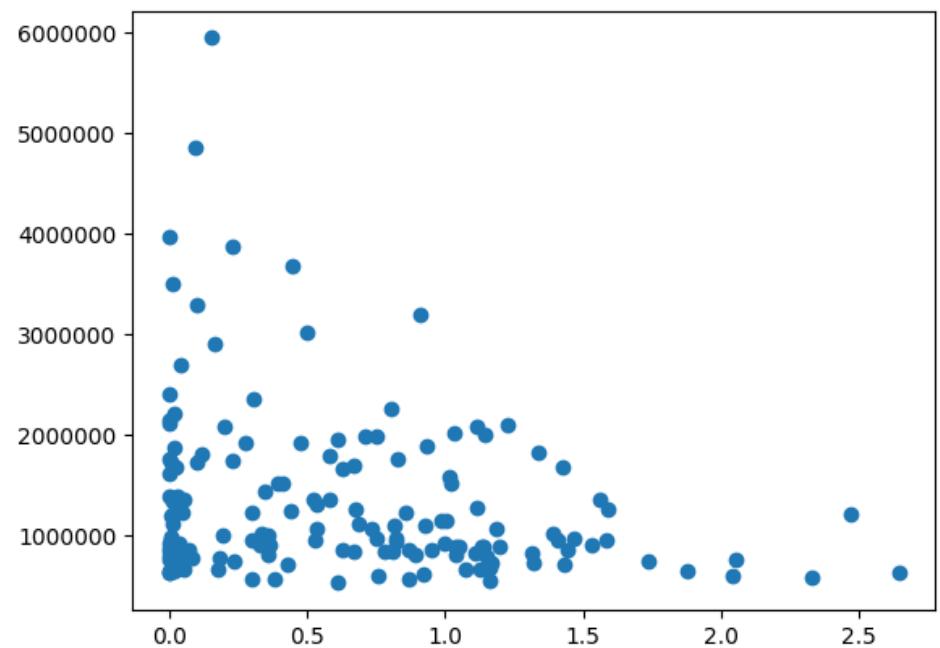
Top ten zip codes for crime

- These zip codes had the most crime committed since 2021
- Range varies widely

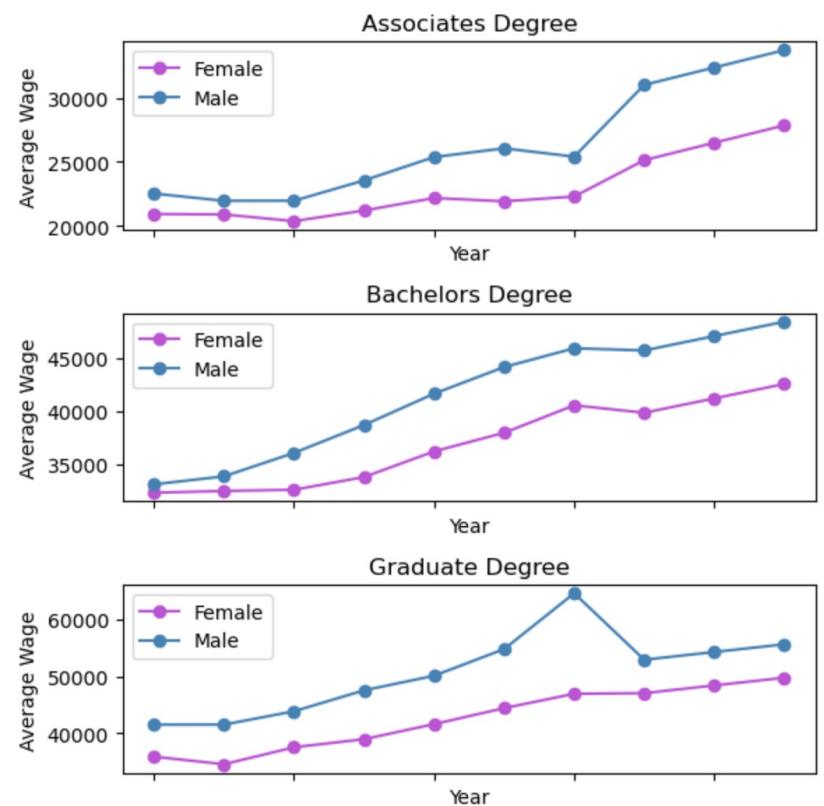
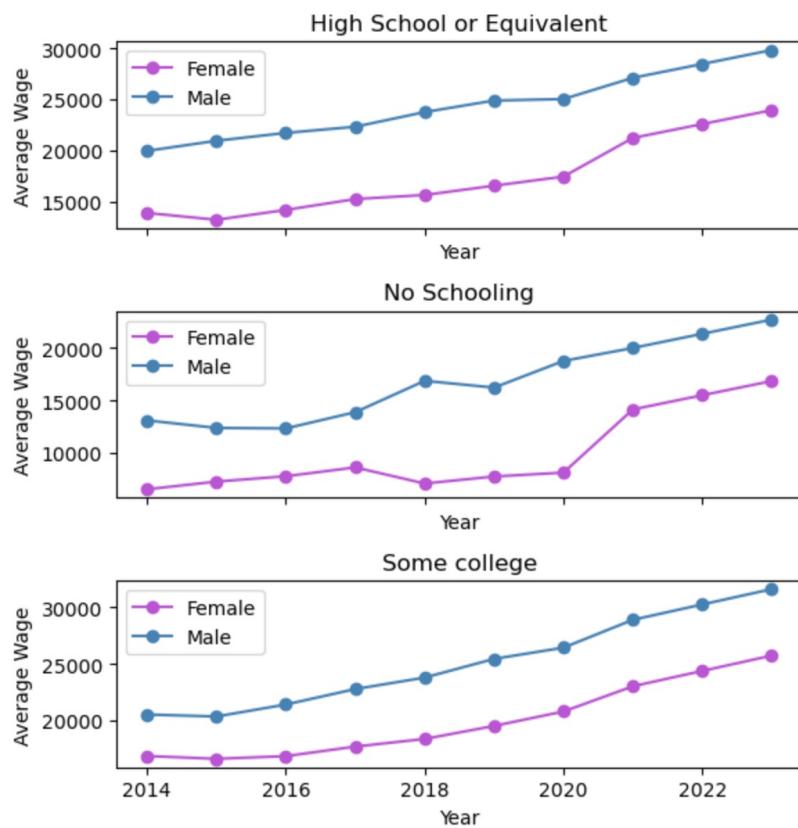


House prices and crime percentage

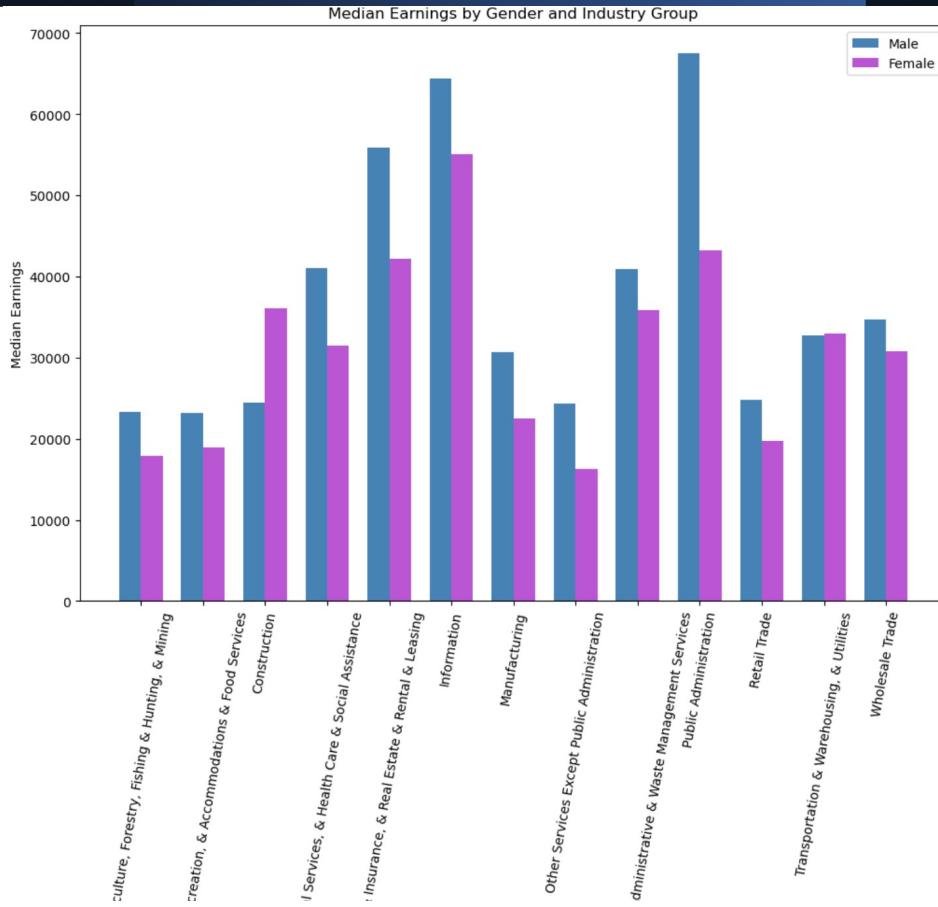
- Non linear relationship
- High crime tend to have lower house prices
- Lower crime vary widely



Education & Salary by Gender



Salary by Gender



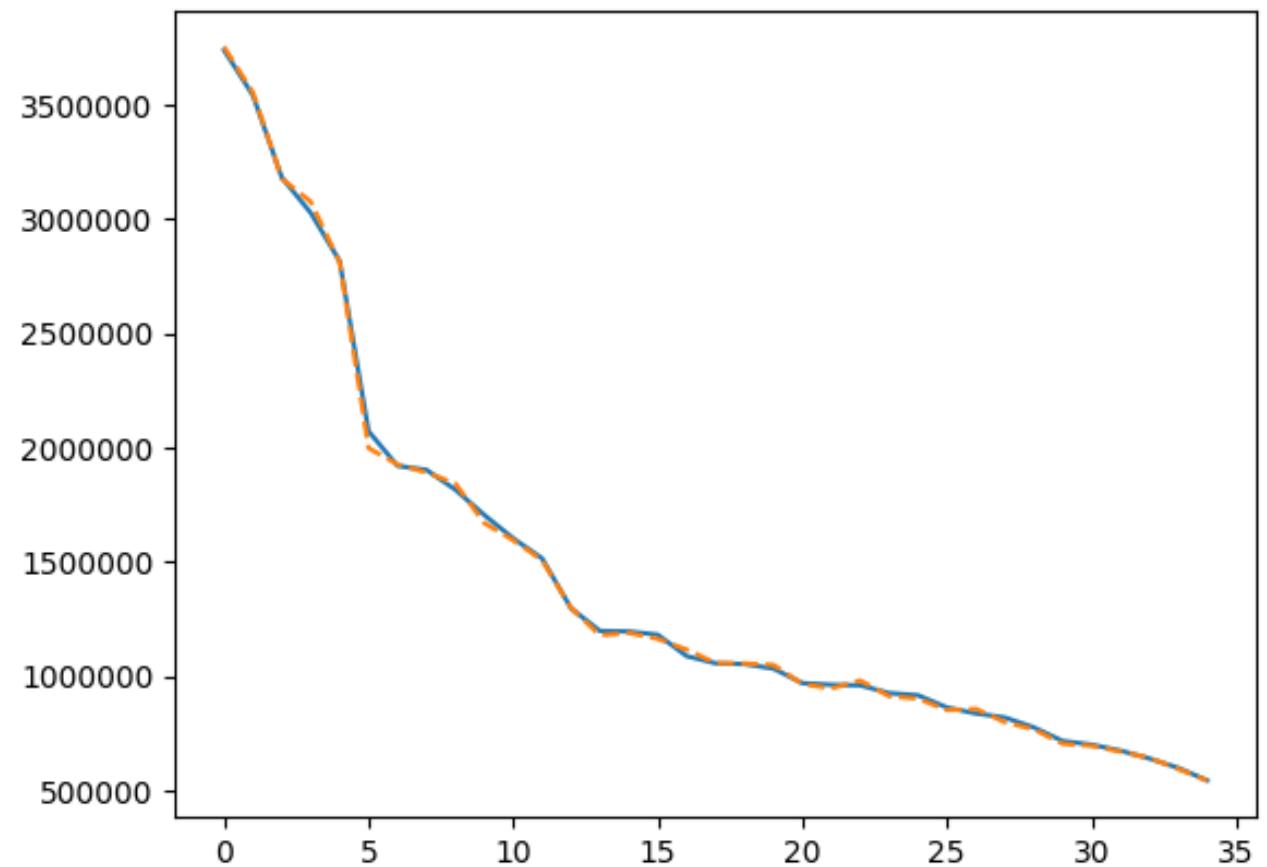
Linear regression for 2023 house prices

- These variables account for 99% of the variability
- Crime has a negative affect
- According to the model African Americans has the greatest positive impact on price

OLS Regression Results						
Dep. Variable:	year_2023	R-squared:	0.999			
Model:	OLS	Adj. R-squared:	0.999			
Method:	Least Squares	F-statistic:	8134.			
Date:	Tue, 06 Jun 2023	Prob (F-statistic):	8.26e-87			
Time:	21:27:25	Log-Likelihood:	-787.05			
No. Observations:	69	AIC:	1598.			
Df Residuals:	57	BIC:	1625.			
Df Model:	11					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
Intercept	-2.709e+05	3.6e+05	-0.753	0.454	-9.91e+05	4.49e+05
Total_Population	-0.1484	0.240	-0.617	0.539	-0.629	0.333
American_Indian_Alaska_Native	3.494e+04	4.85e+05	0.072	0.943	-9.35e+05	1.01e+06
Asian	1.98e+05	3.78e+05	0.525	0.602	-5.58e+05	9.54e+05
Black_African_American	2.866e+05	3.72e+05	0.770	0.445	-4.59e+05	1.03e+06
Native_Hawaiian_Other_Pacific_Islander	2.449e+05	1.58e+06	0.155	0.877	-2.92e+06	3.41e+06
White_Not_Hispanic	2.529e+05	3.79e+05	0.668	0.507	-5.06e+05	1.01e+06
Some_Other_Race	5.148e+04	6.09e+04	0.845	0.482	-7.06e+04	1.74e+05
Two_More_Races	1.133e+05	1.81e+05	0.625	0.535	-2.5e+05	4.77e+05
year_2022	0.9763	0.005	215.242	0.000	0.967	0.985
Hispanic_Latino	2.389e+05	3.44e+05	0.695	0.490	-4.49e+05	9.27e+05
crime_percentage	-3699.1490	7640.391	-0.484	0.630	-1.9e+04	1.16e+04
Omnibus:	46.792	Durbin-Watson:	1.839			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	613.356			
Skew:	-1.385	Prob(JB):	6.48e-134			
Kurtosis:	17.341	Cond. No.	8.77e+08			

Predicted vs Actual

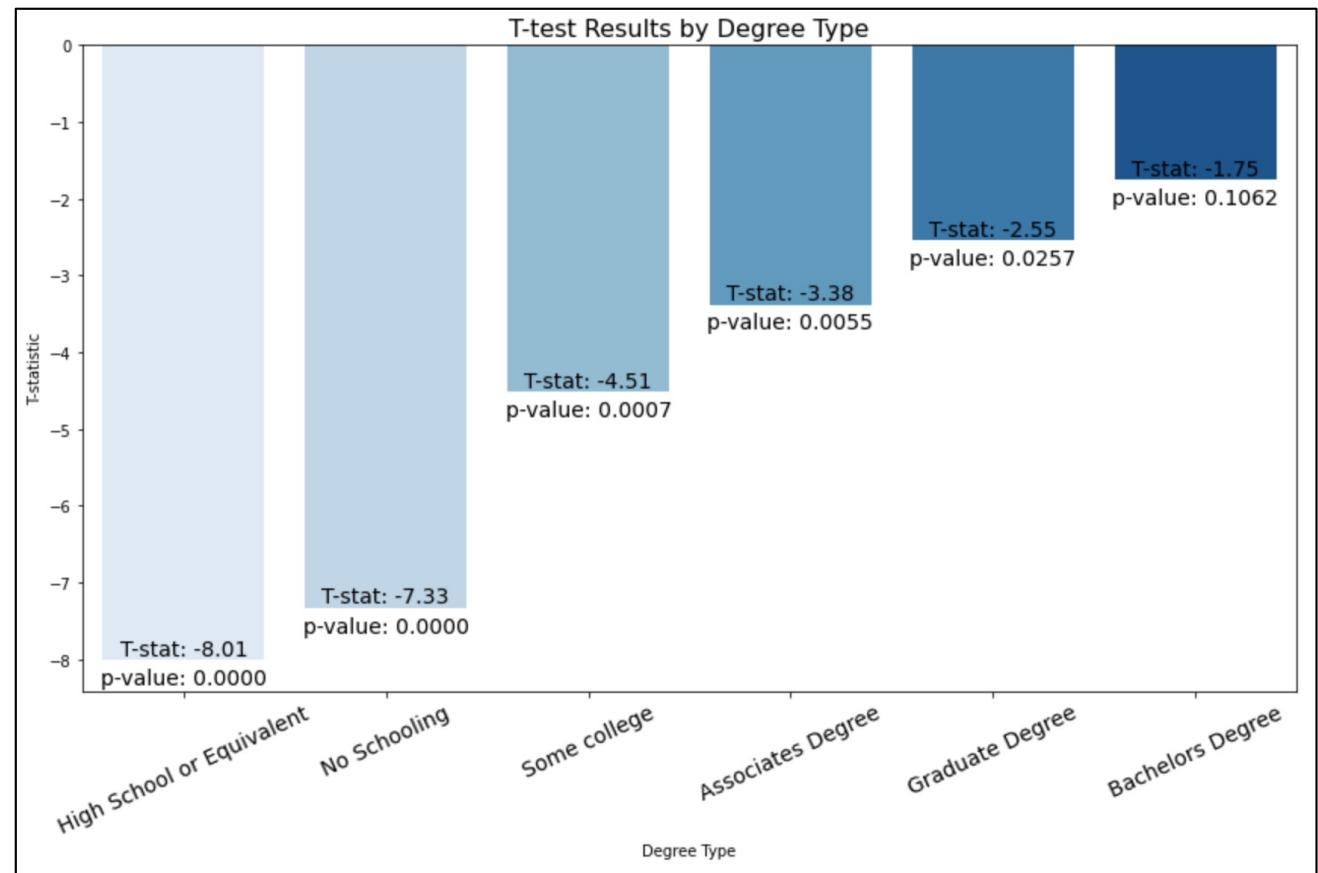
- Accuracy on the actual



Analysis – T-Test for Degree Types

T-Test: measures the difference in means of two groups.

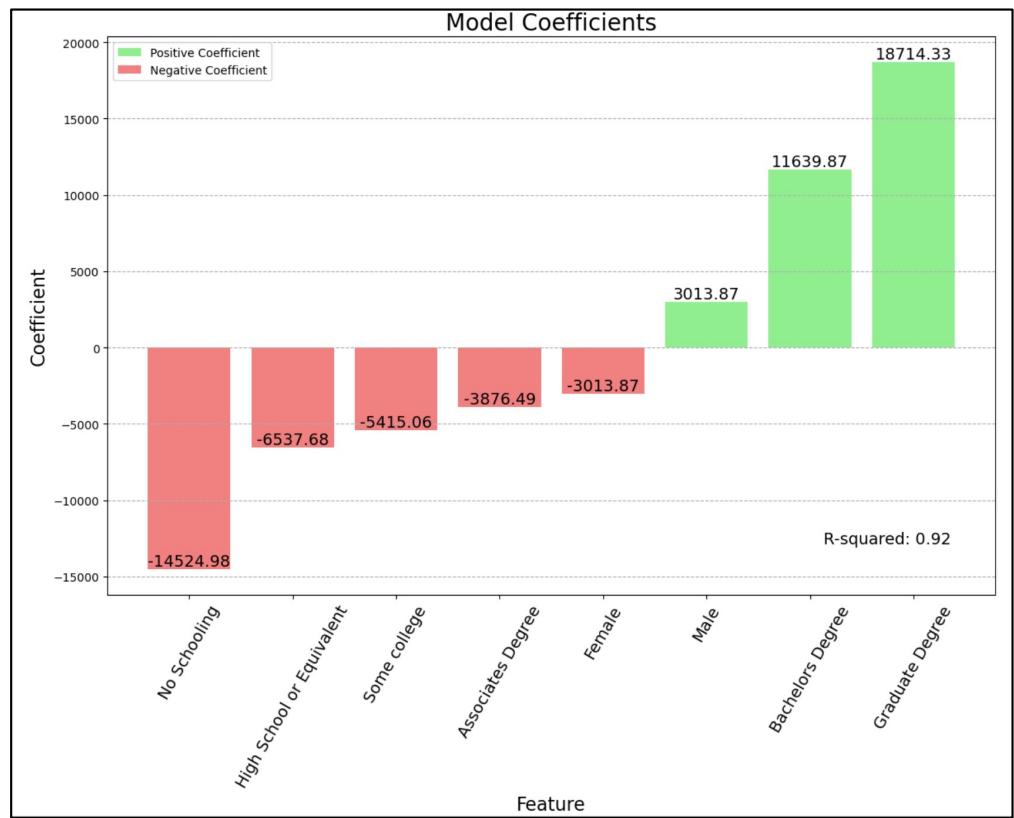
- **Hypothesis:** no difference in salary between men and women
- **Alternative hypothesis:** there is a difference!



Analysis – Linear Regression

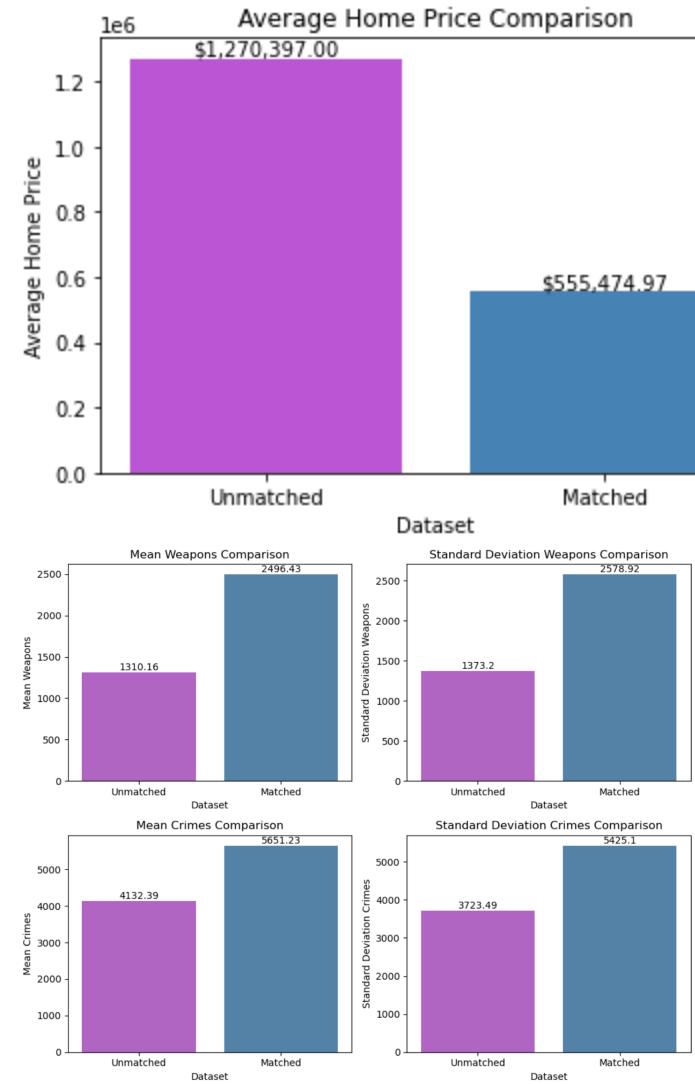
Independent variables: gender and degree type

Dependent variables: average wage



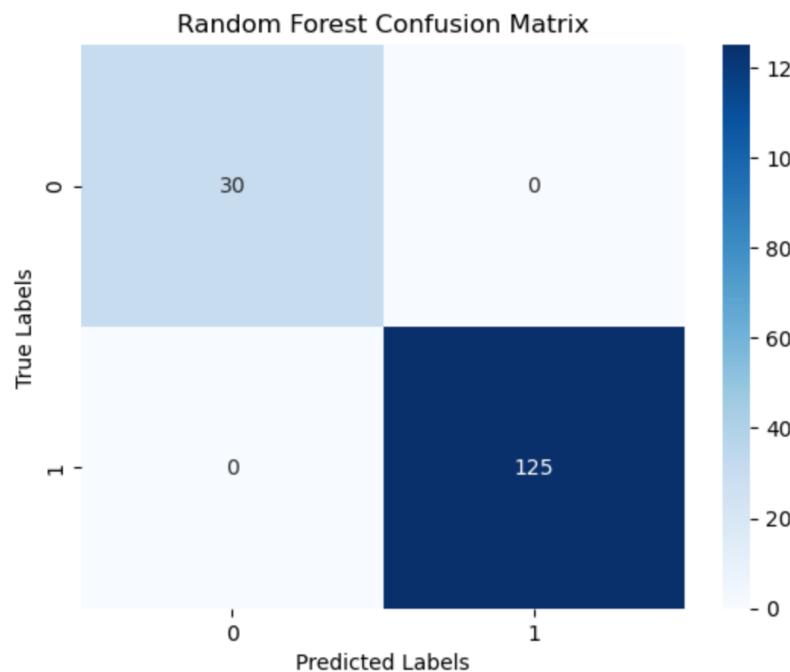
Housing Affordability and Crime

- Matched professions by affordable housing
 - We calculated affordability based on 3x a profession's salary
- Crime rate comparison:
 - Compared rates between matched and unmatched zip codes

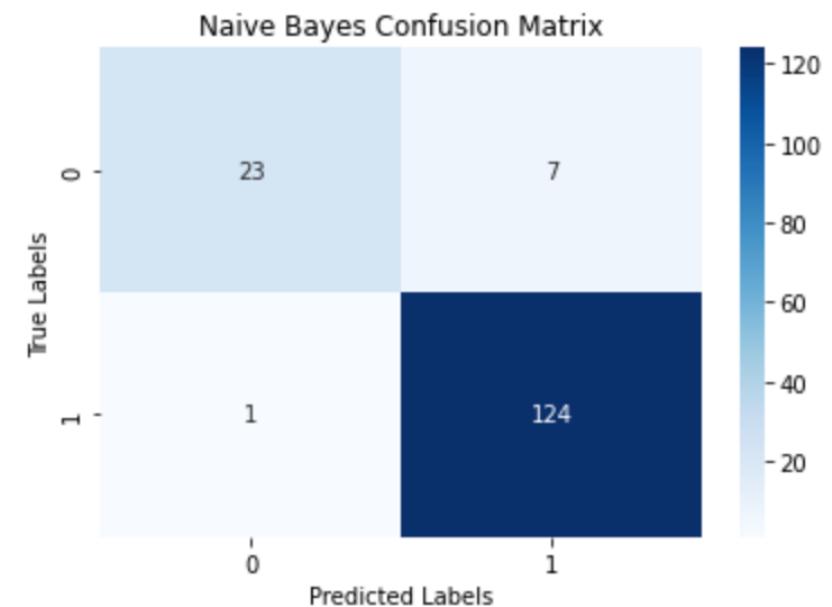


Analysis – Random Forest & Naïve Bayes

Predict classes of matched and unmatched zip codes



100% accuracy



94.84% accuracy

Results – Which professions can afford on a single salary?

Professions that can afford a home on a single salary:

Health Diagnosing & Treating Practitioners & O...

Legal

Professions that cannot afford a home on a single salary:
Construction & Extraction
Education Instruction, & Library
Management
Life, Physical, & Social Science
Food Preparation & Serving Related
Farming, Fishing, & Forestry
Fire Fighting & Prevention, & Other Protective...
Business & Financial Operations
Arts, Design, Entertainment, Sports, & Media
Computer & Mathematical
Transportation
Architecture & Engineering
Health Technologists & Technicians
Production
Office & Administrative Support
Healthcare Support
Community & Social Service
Law Enforcement Workers Including Supervisors
Sales & Related
Installation, Maintenance, & Repair
Building & Grounds Cleaning & Maintenance
Personal Care & Service

Recommendations for Potential LA Migrants

Salary Negotiation

- Be aware of potential gender disparities

Degree & Profession

- Take into consideration the reported average wages

Housing Considerations

- If safety is a top priority, then consider the option of living with roommates or purchasing a home with another person