

apartments /
housing for rent

- ☐ search titles only
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- ☐ posted today
- ☐ bundle duplicates
- ☐ include nearby areas

MILES FROM ZIP

miles from zip

PRICE

min max

BEDROOMS

min max

BATHROOMS

min max

FT²

min max

AVAILABILITY

all dates

- ☐ cats ok
- ☐ dogs ok
- ☐ furnished
- ☐ no smoking
- ☐ wheelchair access
- ☐ EV charging
- ☐ no application fee
- ☐ no broker fee

- housing type
- laundry
- parking

OPEN HOUSE DATE

all dates

reset

update search

« search apartments / housing for rent 🔍 save search

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★ Oct 8 8 WEEKS FREE RENT Studio loft, Balcony, Direct Entrance, Little House \$3,273 1br - 659ft² - (SOMA / south beach) pic 🗒

★ Oct 8 Artistic and Spacious One Bedroom with Balcony - A T L A S - \$3,710 1br - 725ft² - (oakland downtown) pic 🗒

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★ Oct 8 Short Term Lease, Ceiling Fan, Large Closets \$1,940 2br - 760ft² - (fairfield / vacaville) pic 🗒

★ Oct 8 Beautiful Corner Unit with Wrap Around Balcony! \$3,970 2br - 1047ft² - (oakland downtown) pic 🗒

★ Oct 8 Beautiful 2BR/2Bath with fully equipped kitchen and in-unit laundry! \$2,350 2br - 1014ft² - (danville / san ramon) pic 🗒

★ Oct 8 Stop By Today & Save Big With This 2 Bedroom! Special Ends Soon! #835 \$2,547 2br - 1014ft² - (danville / san ramon) pic 🗒

★ Oct 8 2x2 Beautiful Home available now in Los Gatos! \$3,581 2br - 1123ft² - (los gatos) pic 🗒

★ Oct 8 Amazing View from this Bay and Ark Apartment! \$3,500 3br - 1872ft² - (tiburón / belvedere) pic 🗒

★ Oct 8 Incredible Bay and City Views from this Spacious Home \$7,650 3br - 1872ft² - (tiburón / belvedere) pic 🗒

★ Oct 8 Beautiful Remodeled 2BR/1Bath \$2,520 2br - 1014ft² - (campbell) pic 🗒

★ Oct 8 This Upstairs apartment is conveniently located with easy access to Hi \$1,700 2br - (napa county) pic 🗒

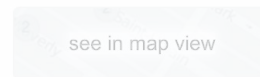
★ Oct 8 Incredible Private Cottage Retreat in Rural Angwin \$4,500 3br - (napa county) pic 🗒

★ Oct 8 1 Bed - 1 Bath, Ceiling Fan, Small Community Charm \$2,095 1br - 665ft² - (campbell) pic 🗒

★ Oct 8 These Prices Could Change Come Tomorrow! 🗒 Lock it in Now! 🗒 \$3,094 2br - 941ft² - (san mateo) pic 🗒

★ Oct 8 Best Property In Pittsburg! \$1,795 1br - (pittsburg / antioch) pic 🗒

★ Oct 8 WANTED - A MODERN HOME THAT'S CLEAN AND KEPT UP \$1,000 3br - (pittsburg / antioch) pic 🗒



Apartment Hunting on Craigslist

Using linear regression to predict rental prices in San Francisco

What makes an apartment great?

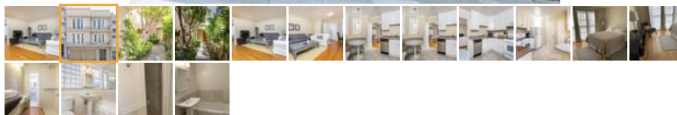
\$3,795 / 2br - 950ft² - Spacious 2BR,1BA PacHeights, washer dryer, Lafayette pk (pacific heights)

image 2 of 16

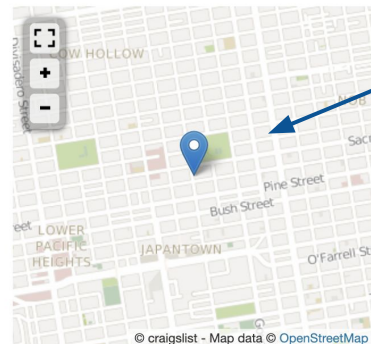


Price

Photos are usually
a good sign



Available now, nice, spacious, immaculate, FURNISHED flat (will consider unfurnishing) in best location. Ideal home for families, travel nurses, vacationers, corporate stays; two large bedrooms, bathroom with separate bathtub and shower, living Room, dining area, eat-in Kitchen, granite counters, breakfast nook, dishwasher, microwave, gas stove, office area, two large walk-in closets. Washer - dryer in this apt unit.



Location

Laguna St., # 2012 near Sacramento

([google map](#))

2BR / 1Ba 950ft² available now

Size

cats are OK - purrr

dogs are OK - woof

furnished

apartment

w/d in unit

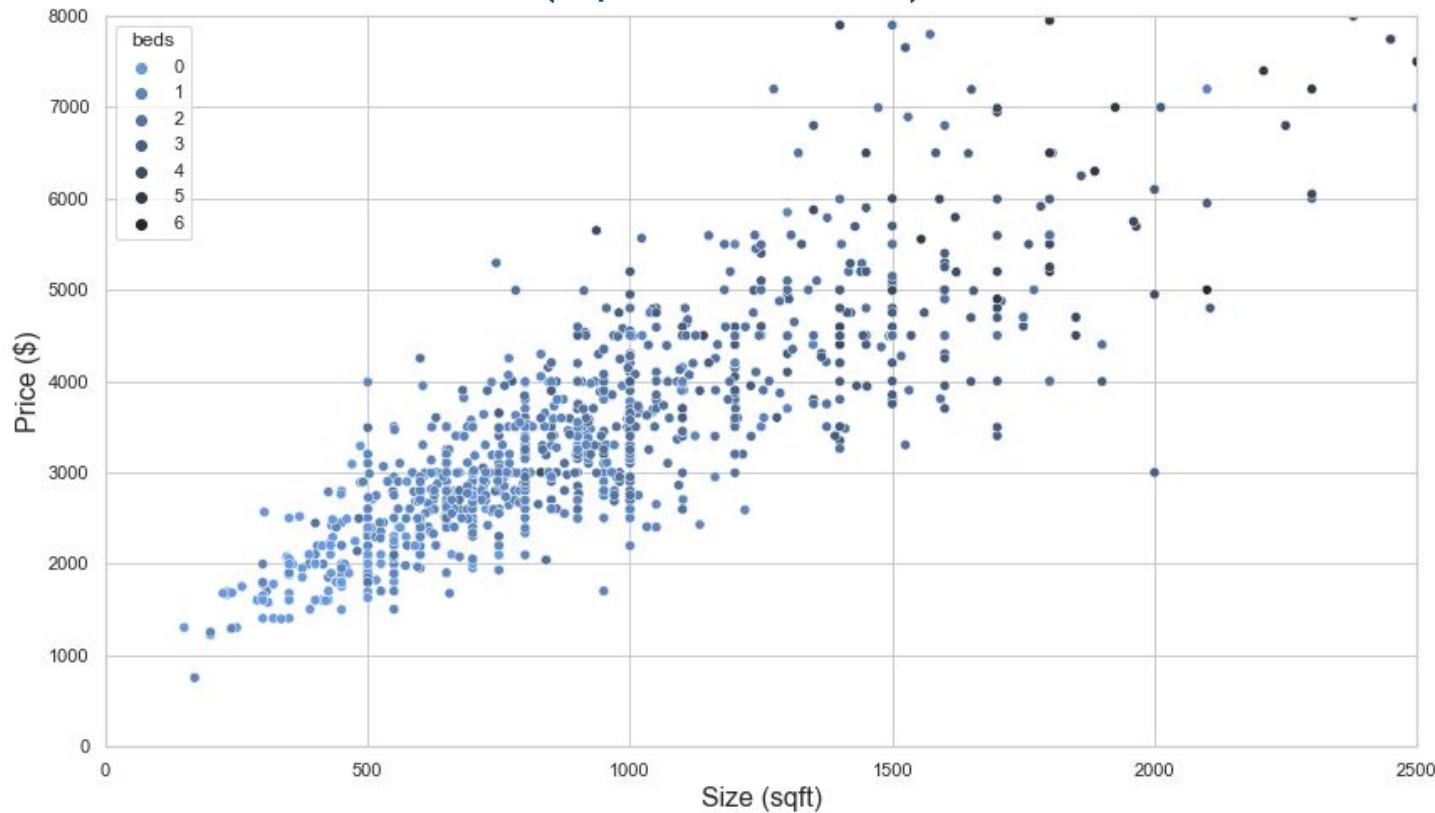
no smoking

attached garage

Amenities

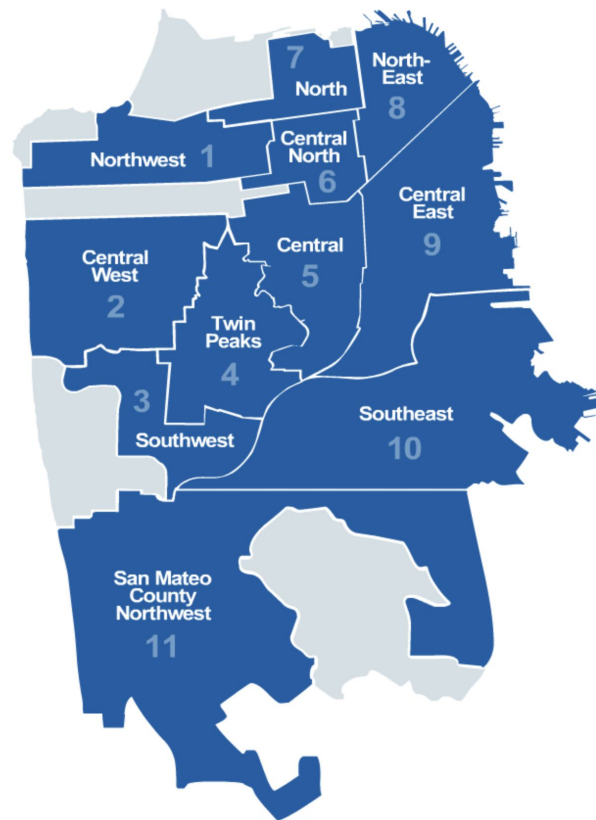
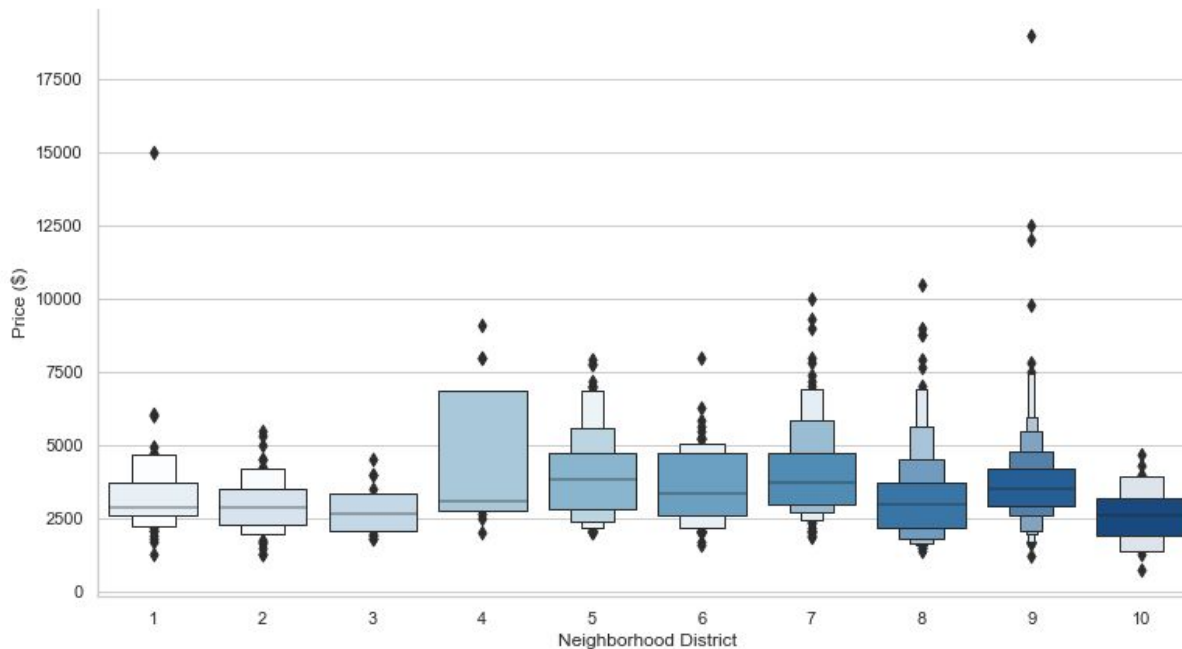
Strong relationship between unit size and price

Unit Size (sqft & bedrooms) and Price



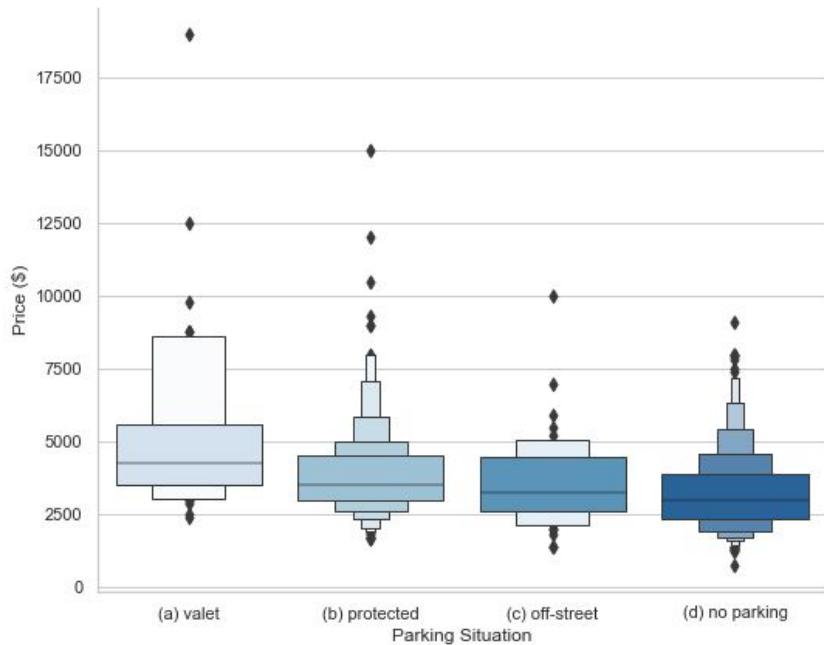
Location can affect high-end of price range

Price by Neighborhood District

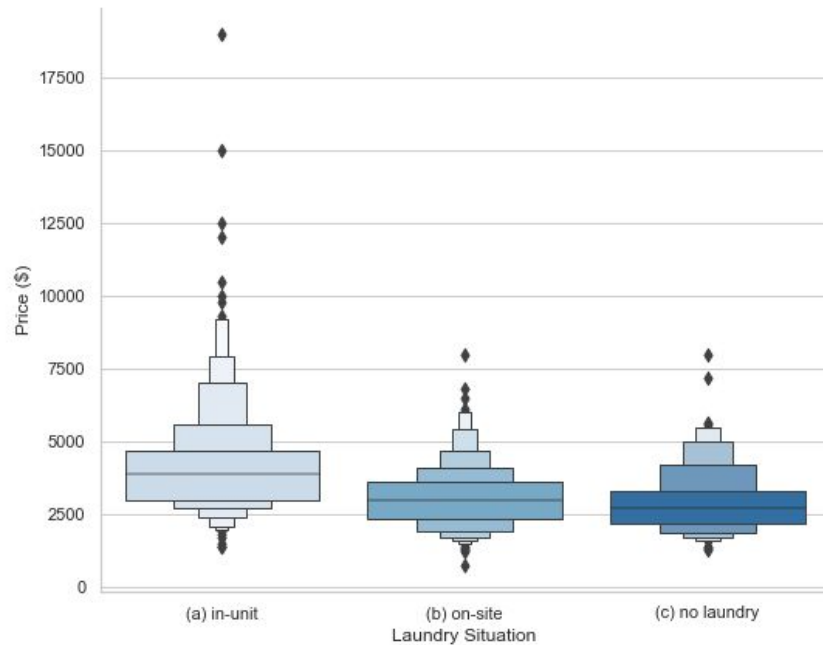


Some amenities command a premium

Price by Parking Situation



Price by Laundry Facilities



Model construction and selection

Feature Selection

Continuous Variables

→ Unit size (sqft)

Discrete Variables

→ Bedrooms

→ Bathrooms

Ordinal Variables

→ Parking

→ Laundry

Categorical Variables

→ Pets

→ Neighborhood

Engineering

Polynomial Features

→ Degree = 2

Regularization methods tried

→ **Ridge** ($\alpha = \sim 8$)

→ Lasso ($\alpha = \sim 6$)

Model Selection

Ridge scored most consistent between training and validation testing

→ R^2

→ RMSE

→ MAE

Lasso performed consistently on R^2 , but **showed greater variance between training and validation scoring** on RMSE and MAE

Model results

R^2 Score

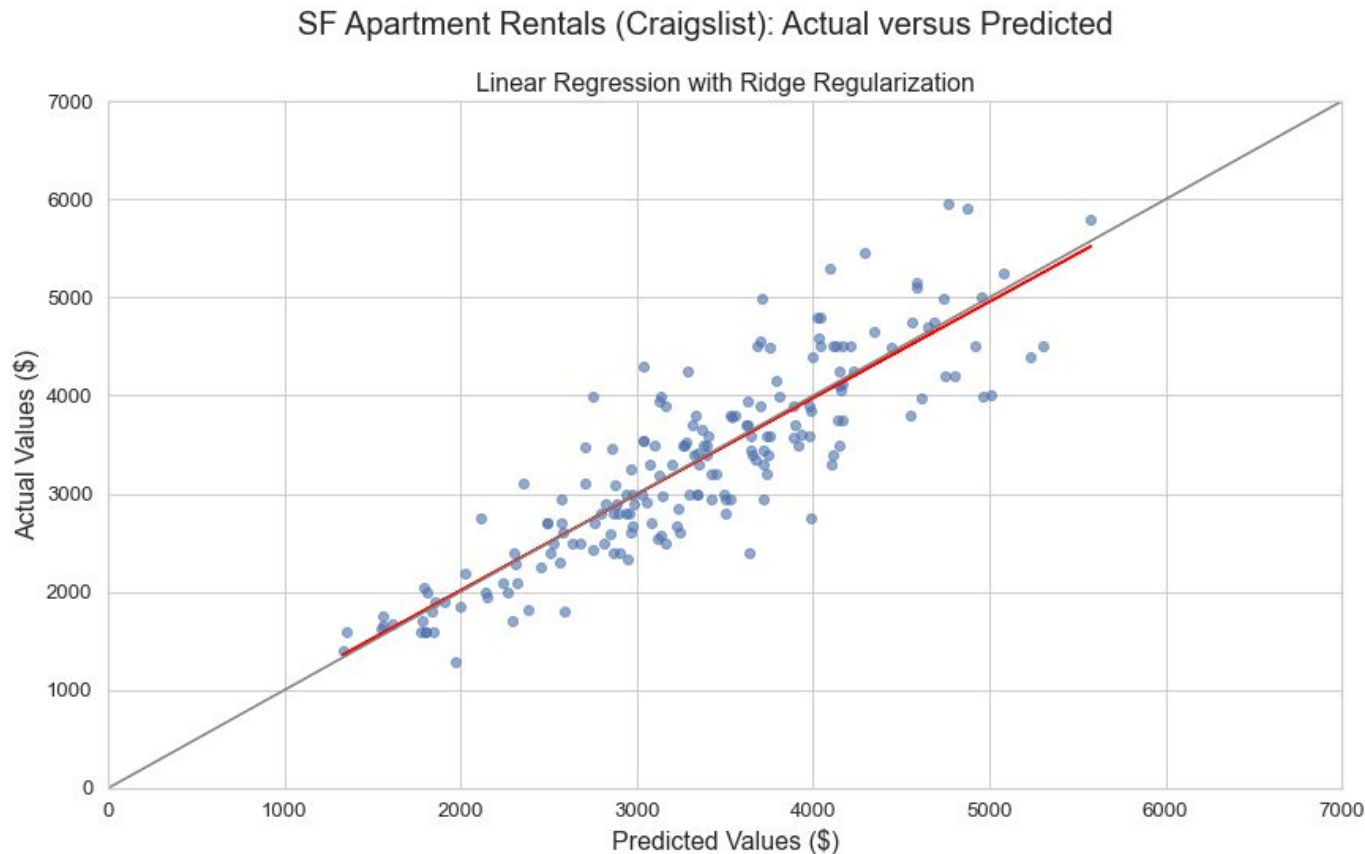
- Train: 81%
- Test: 77%

RMSE

- Train: \$451
- Test: \$477
- +5.7%

MAE

- Train: \$341
- Test: \$366
- +7.3%



Model evaluation

Tolerance of price variation is ***relative to apartment price*** and ***subjective to budget***

- ~\$400 can be substantial for one person
- ***but split between two or more people may be okay***

Model does a poor job of predicting for units > \$4,000 / month

- Residuals plot¹ shows greater variance above \$4k
- **Most SF apartments in sample fall between \$2,500 and \$4,000 per month²**

¹Appendix A - Residuals plot of predicted values

²Appendix B - Distribution of rental prices in sample

Final thoughts

There could be other factors influencing rents

- Rent history, control
- Other amenities not standard in Craigslist posts (fitness facilities, common spaces, etc.)
- Other environmental or economic factors¹

Suggestions for future work

- Sample again when COVID's influence subsides
- Increase scope of scraping methods
 - ◆ Search text for key words like 'gym' or 'backyard' as additional amenities
 - ◆ Find information on security deposit and/or lease requirements
 - ◆ Implement image processing tools to evaluate apartment quality from photos
- Scam post identification

¹Appendix C - Declining SF Rents

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★ Oct 8 Amazing Views from this Coveted Ark Apartment \$2,100 3br - 1,500ft² - (pittsburg / antioch) pic

★ Oct 8 Incredible Bay and City Views from this Spacious Home! \$2,400 2br - 400ft² - (san mateo) pic

★ Oct 8 Beautiful Remodeled 2BR/1BA \$2,520 2br - (san rafael) pic

★ Oct 8 This Upstairs apartment is conveniently located with easy access to 419 and 205 (napa county) pic

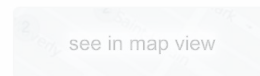
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Thank you!

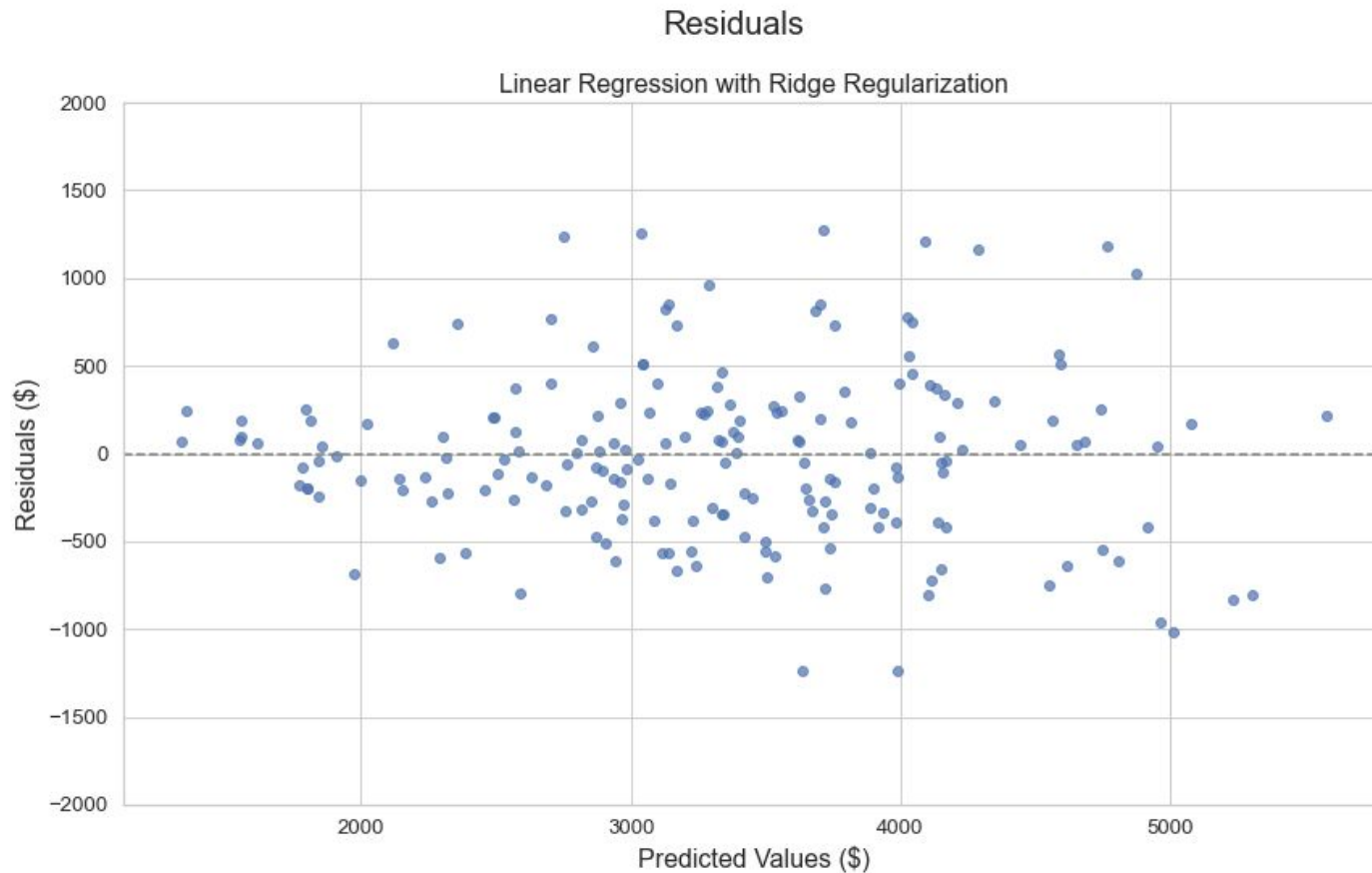
Chris Doenlen

[GitHub Repository](#)

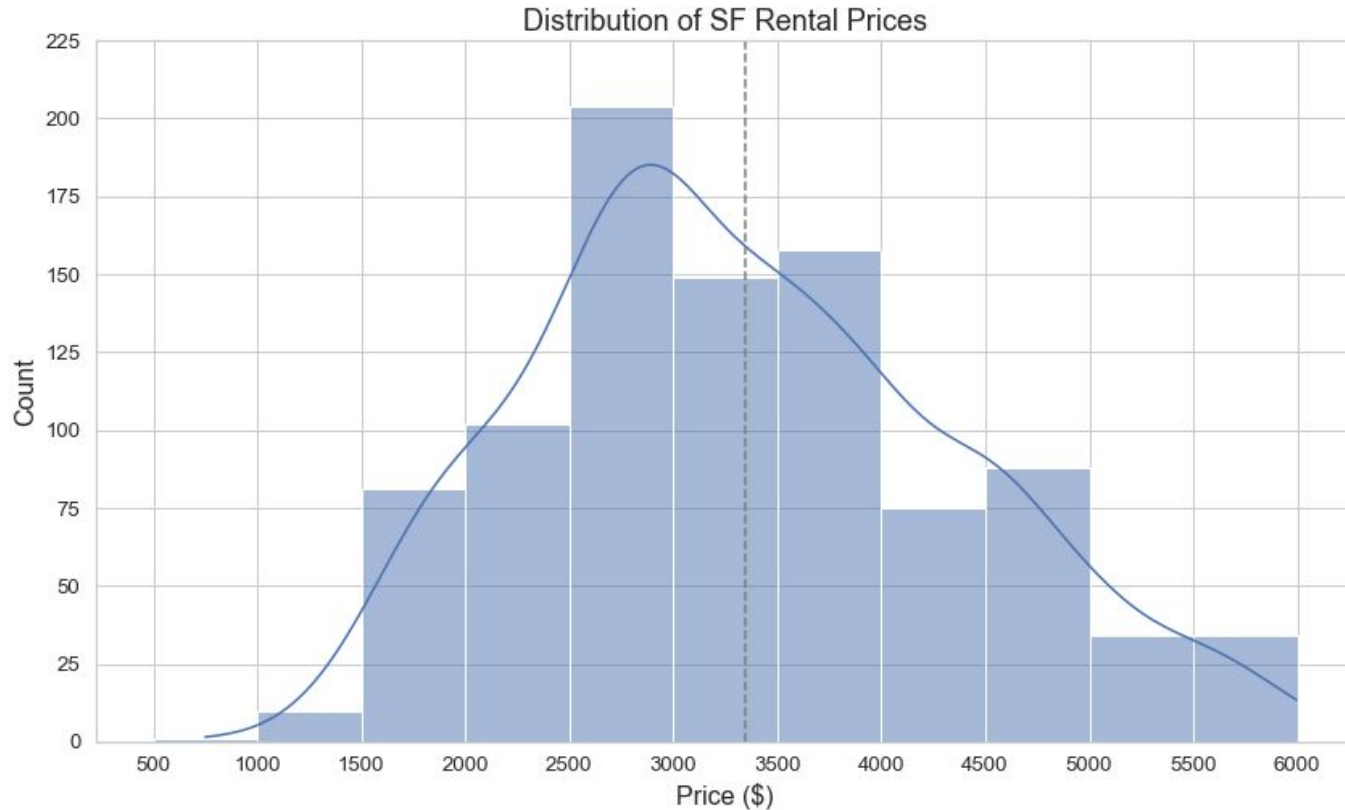
scrapfishies@gmail.com

@scrapfishies

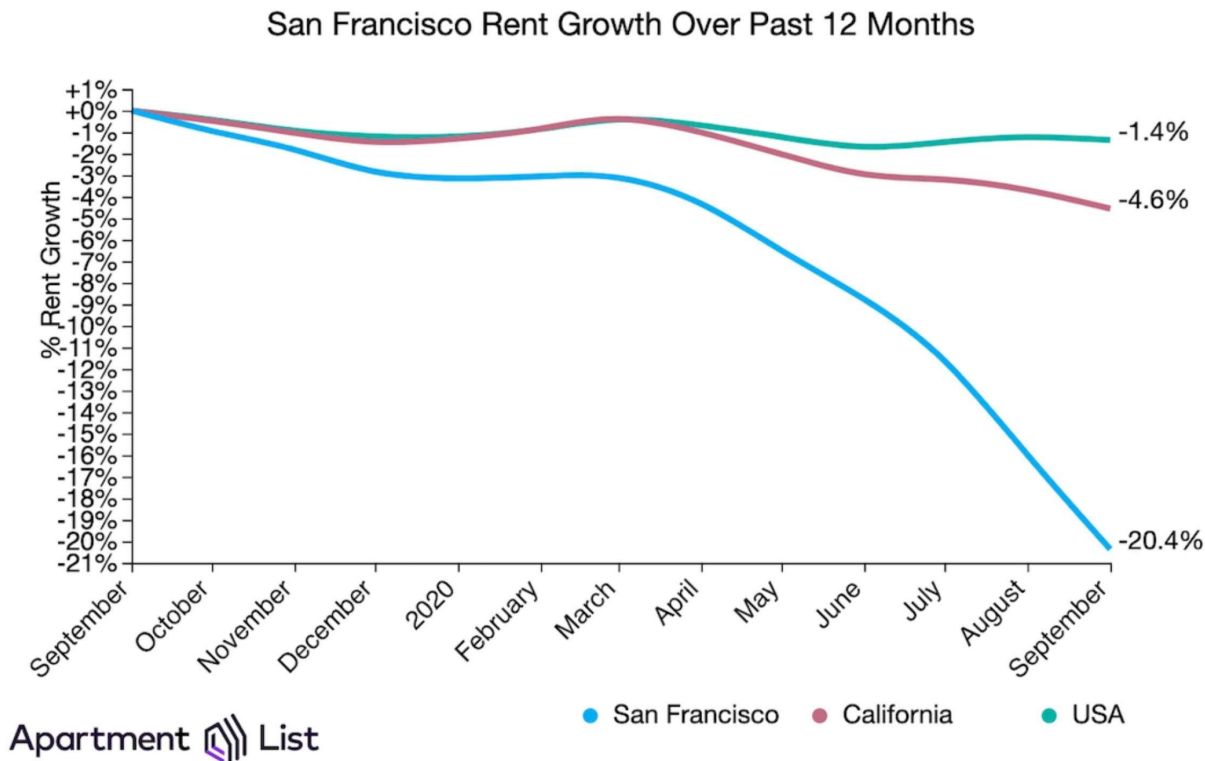
APPENDIX A - Residuals plot of predicted values



APPENDIX B - Distribution of rental prices



APPENDIX C - Declining SF Rents



[Source: SF Chronicle](#)