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# How to Help Craigs List their Instruments

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J. Garrecht Metzger

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# What's our big question?

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**What features help predict  
advertised prices on Craigslist?**

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**“It’s shredimentary,  
my dear Rockson.”**

-Me (just now)

# Tools

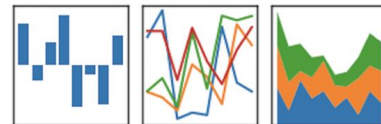


BeautifulSoup



*NumPy*

pandas  
 $y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$



# craigslist

create a posting

my account

search craigslist

## event calendar

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craigslist app new

help, faq, abuse, legal

avoid scams & fraud

personal safety tips

terms of use

privacy policy new

system status

about craigslist

craigslist open source

craigslist blog

best-of-craigslist

"craigslist joe"

craig newmark  
philanthropies

progressive directory

weather quake tide

SF bay area

sfc

sby

eby

pen

nby

scz

## community

activities	lost+found
artists	missed
childcare	connections
classes	musicians
events	pets
general	politics
groups	rants & raves
local news	rideshare
	volunteers

## services

automotive	labor/move
beauty	legal
cell/mobile	lessons
computer	marine
creative	pet
cycle	real estate
event	skilled trade
farm+garden	sm biz ads
financial	travel/vac
household	write/ed/tran

## discussion forums

android	frugal	pets
apple	gaming	philos
arts	garden	photo
atheist	haiku	politics
autos	help	psych
beauty	history	recover
bikes	housing	religion
celebs	jobs	rofo
comp	jokes	science
cosmos	legal	spirit
diet	linux	sports
divorce	manners	super

## housing

apts / housing  
housing swap  
housing wanted  
office / commercial  
parking / storage  
real estate for sale  
rooms / shared  
rooms wanted  
sublets / temporary  
vacation rentals

## for sale

antiques  
appliances  
arts+crafts  
atv/utv/sno  
auto parts  
aviation  
baby+kid  
barter  
beauty+hlth  
bike parts  
bikes  
boat parts  
boats  
books  
business  
cars+trucks  
cds/dvd/vhs  
cell phones  
clothes+acc  
collectibles  
computer parts  
computers  
electronics  
farm+garden  
free  
furniture  
garage sale  
general  
heavy equip  
household  
jewelry  
materials  
motorcycle parts  
motorcycles  
music instr  
photo+video  
rvs+camp  
sporting  
tickets  
tools  
toys+games  
trailers  
video gaming  
wanted  
wheels+tires

## jobs

accounting+finance  
admin / office  
arch / engineering  
art / media / design  
biotech / science  
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customer service  
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etc / misc  
food / bev / hosp  
general labor  
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legal / paralegal  
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medical / health  
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retail / wholesale  
sales / biz dev  
salon / spa / fitness  
security  
skilled trade / craft  
software / qa / dba  
systems / network  
technical support  
transport  
tv / film / video  
web / info design  
writing / editing

## gigs

computer  
creative  
event  
labor

english

## nearby cl

bakersfield  
chico  
fresno  
gold country  
hanford  
humboldt  
inland empire  
klamath falls  
las vegas  
los angeles  
medford  
mendocino co  
merced  
modesto  
monterey  
orange co  
palm springs  
redding  
reno  
roseburg  
sacramento  
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santa barbara  
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## musical instruments

&lt;&lt; search musical instruments

save  
search

all owner dealer

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

MILES FROM ZIP

miles from zip

PRICE

min max

MAKE AND MODEL

make / model

- ☐ cryptocurrency ok  
☐ delivery available

▶ language of posting  
▶ condition

reset

update search

- safety tips
- prohibited items
- product recalls
- avoiding scams

gallery

&lt;&lt; &lt; prev

1 - 120 / 3000

next &gt;

newest

\$4,750



★ Jan 22 **Yamaha Alto Flute** \$4,750 (fremont / union city / newark)

\$6,900



★ Jan 22 **Williams (DCW) 14K White Gold Flute Headjoint with Platinum Riser** \$6,900 (fremont / union city / newark)

\$1,250



★ Jan 22 **Beautifully Designed Handcrafted Classical Acoustic Guitar For Sale...** \$1,250 (vallejo / benicia)

\$1,900



★ Jan 22 **MEZZABARBA SKILL 30 W** \$1,900 (fremont / union city / newark)

# Target

Click to go forward, hold to see history

F bay area >

for sale >

music instr

post

account

musical instruments

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all owner dealer

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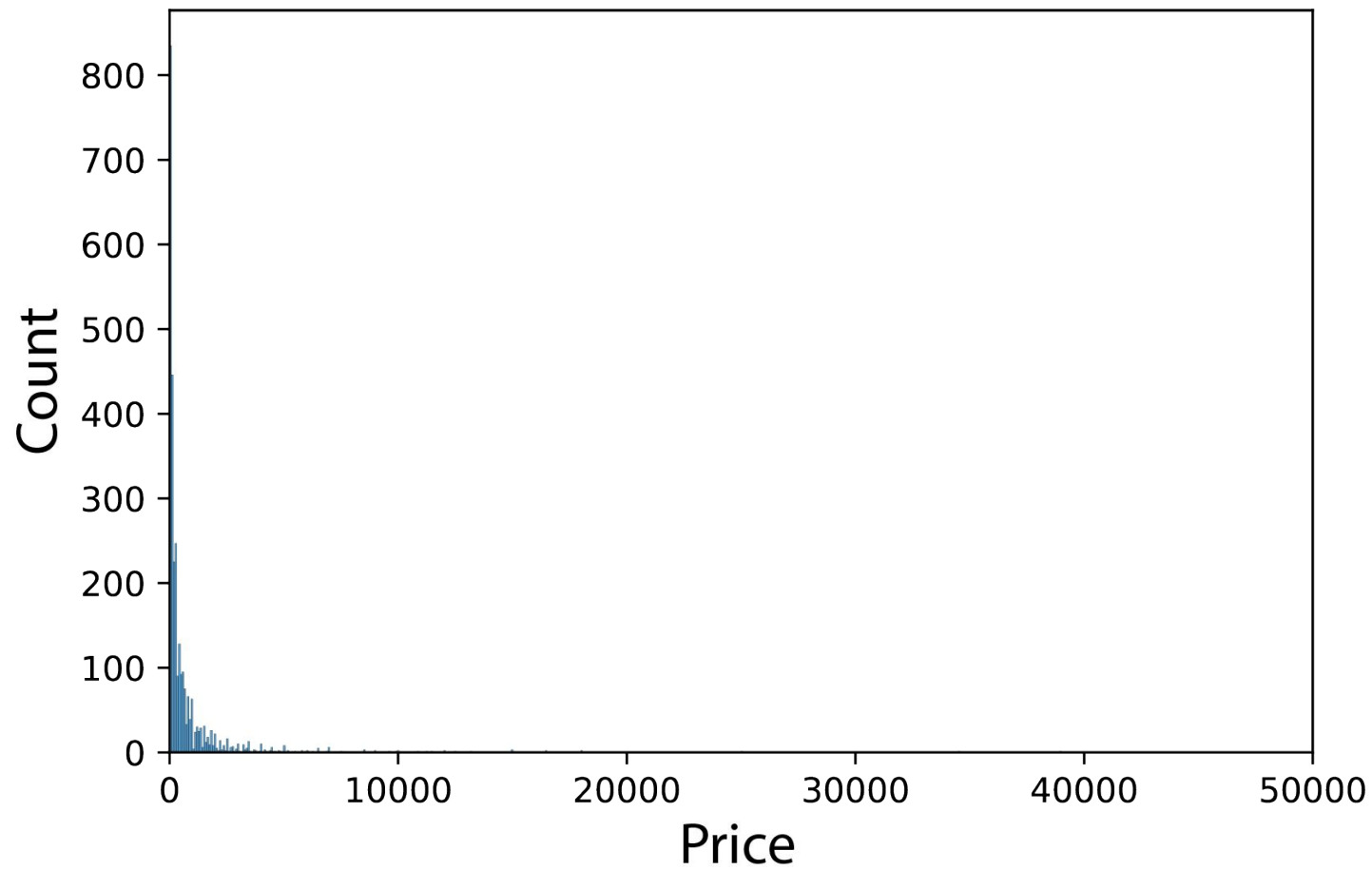
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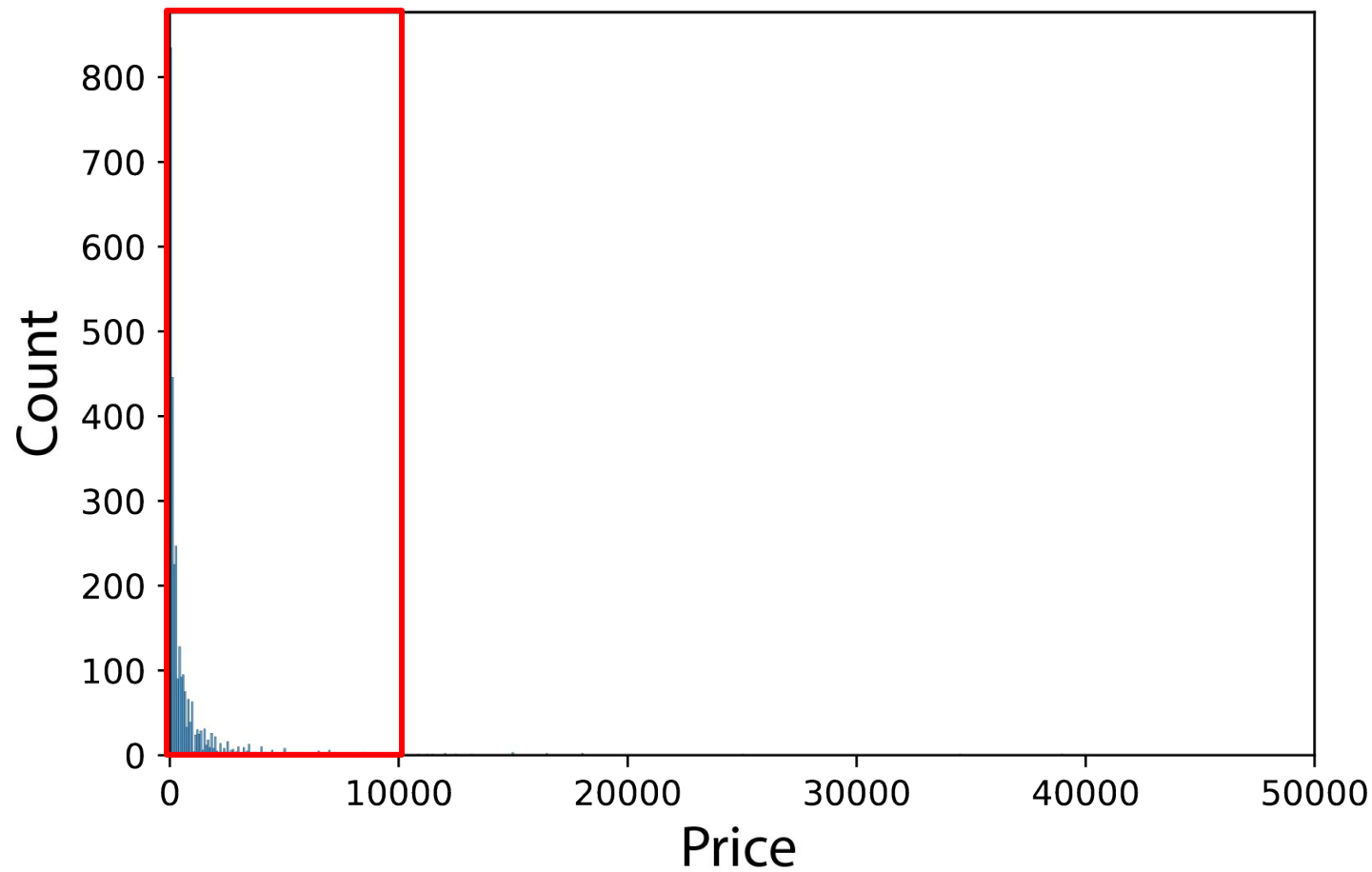


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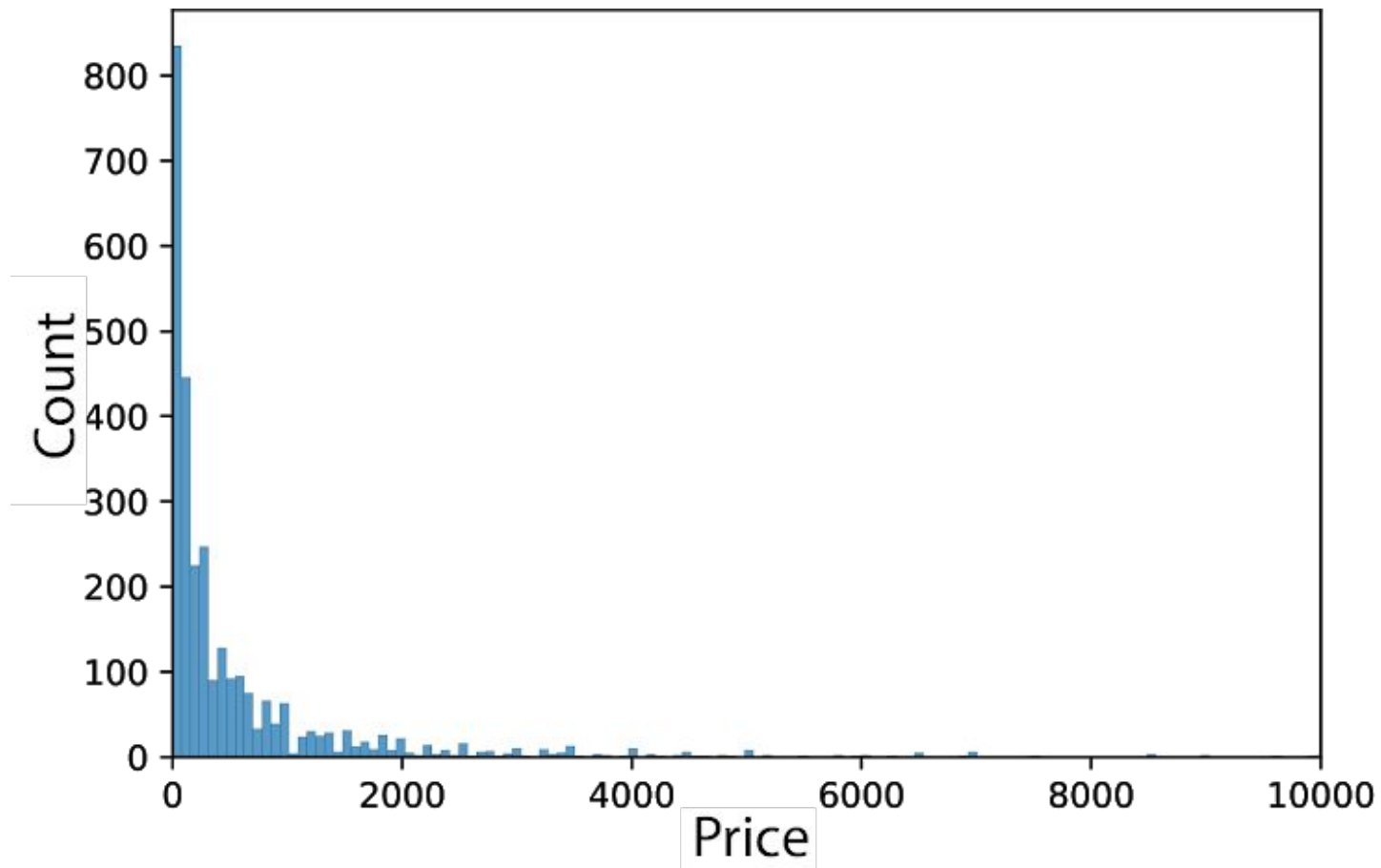
# Data Frame Results/Treatment

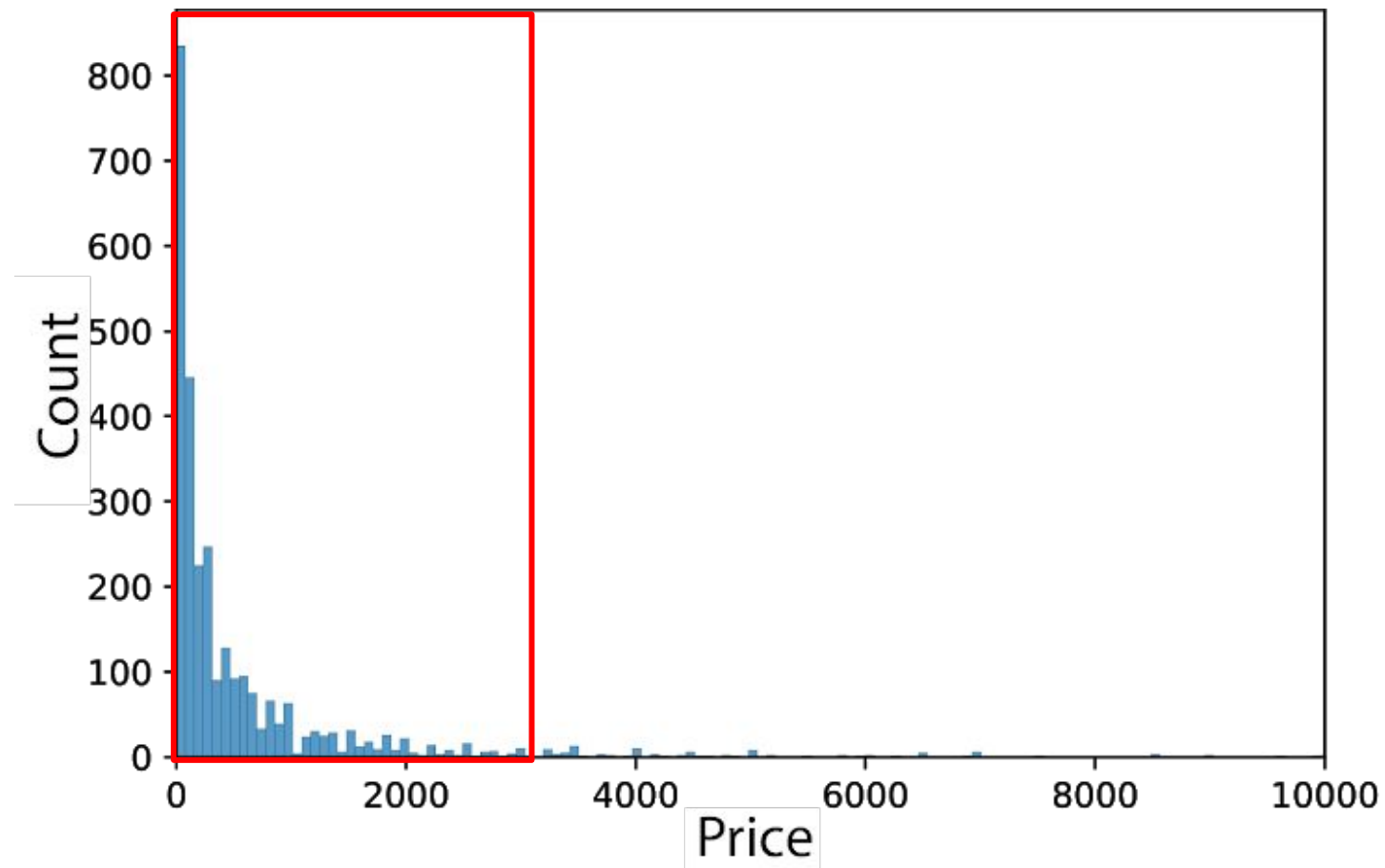
- Maximum amount scraped: 2,880 posts
- 6 San Francisco Bay Area regions grouped together
- 3 days
- 2 'price' outliers (crashed Seaborn)

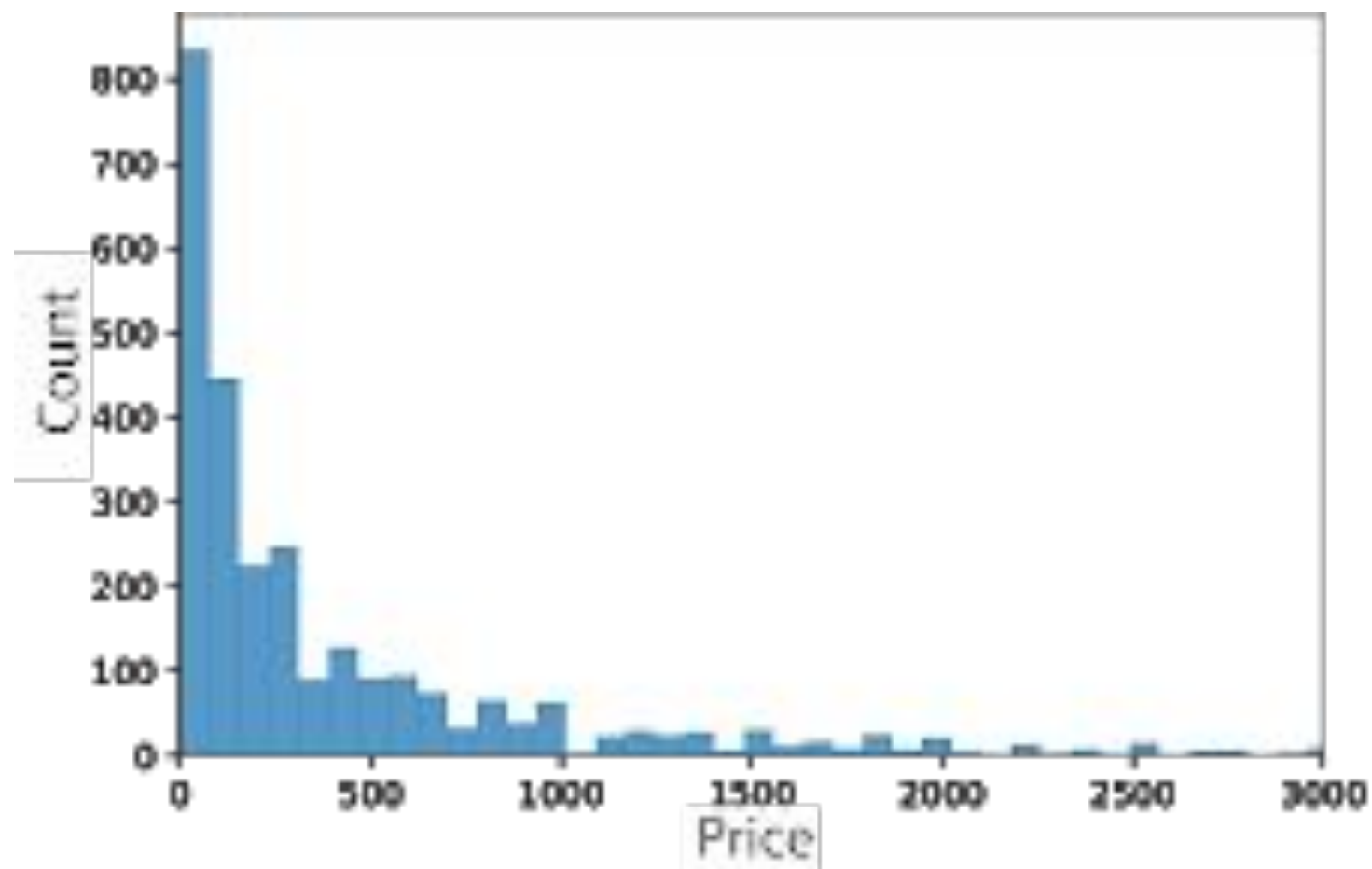


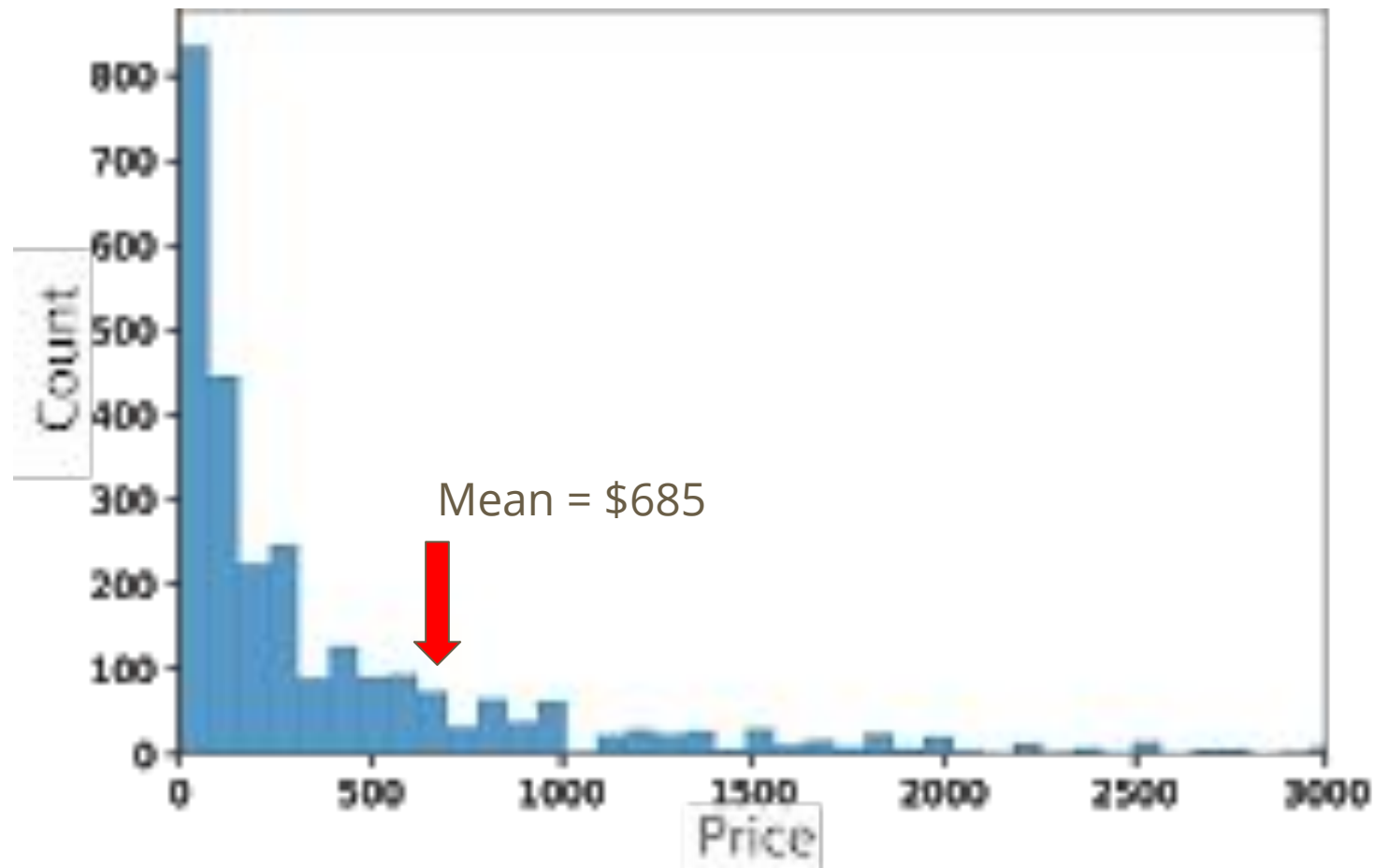


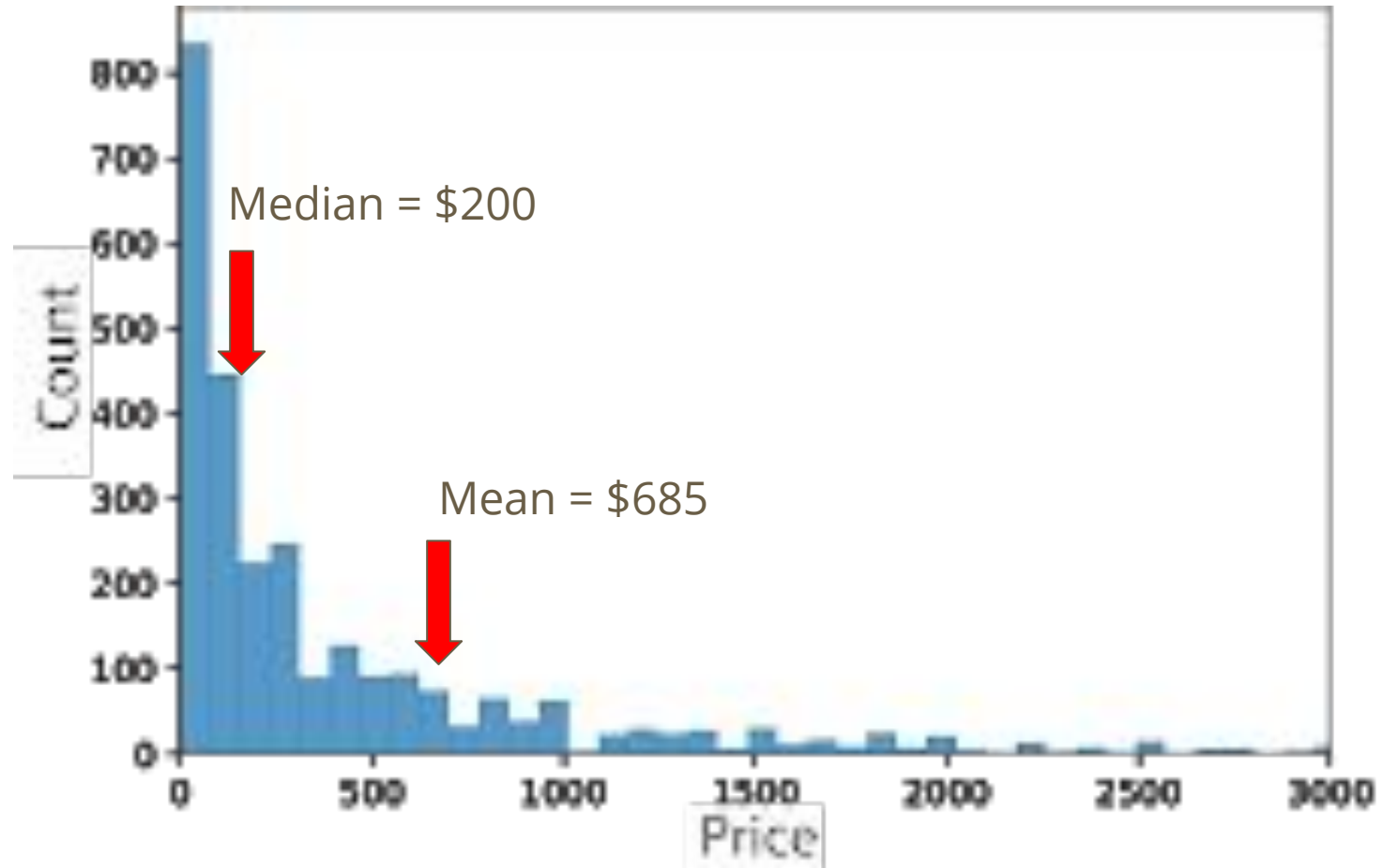




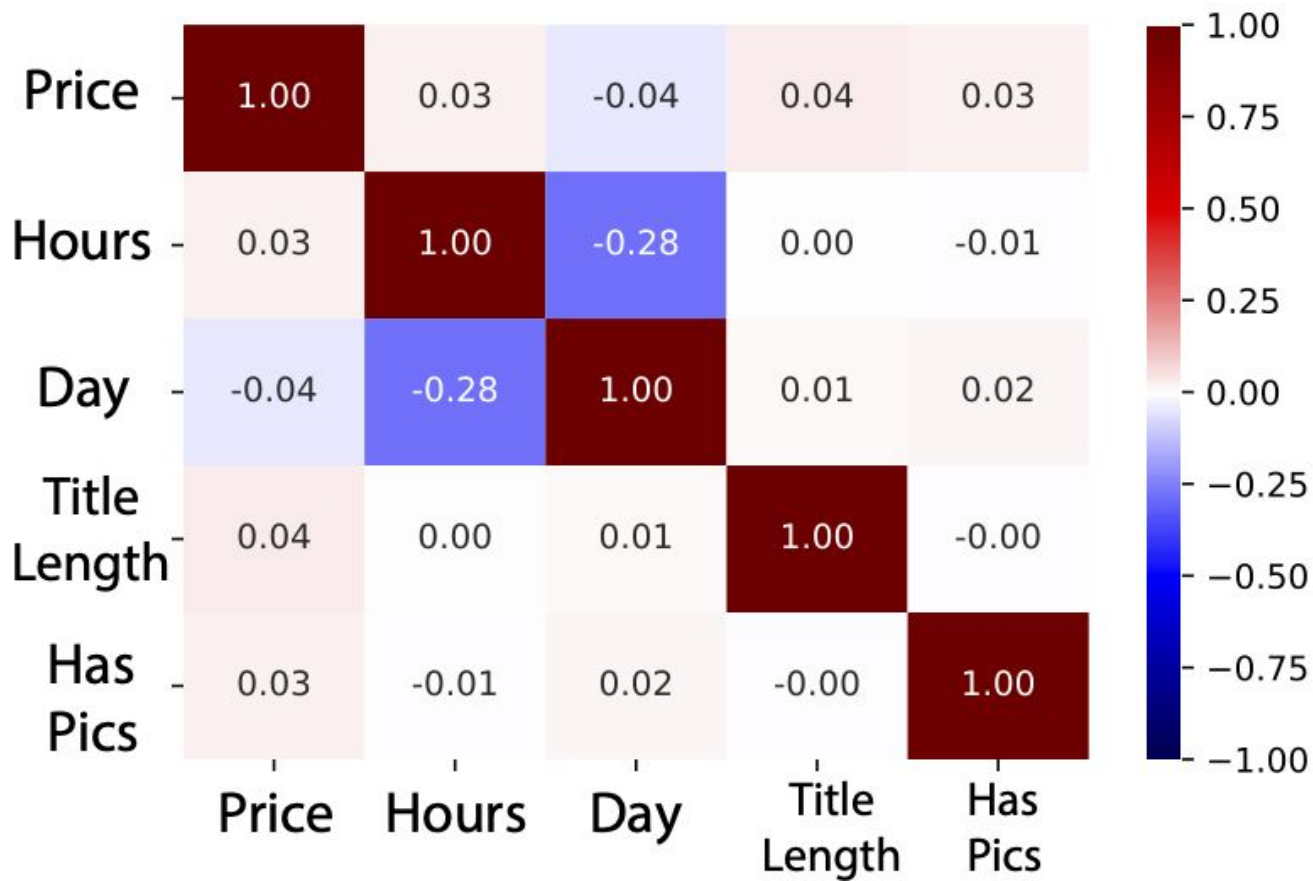




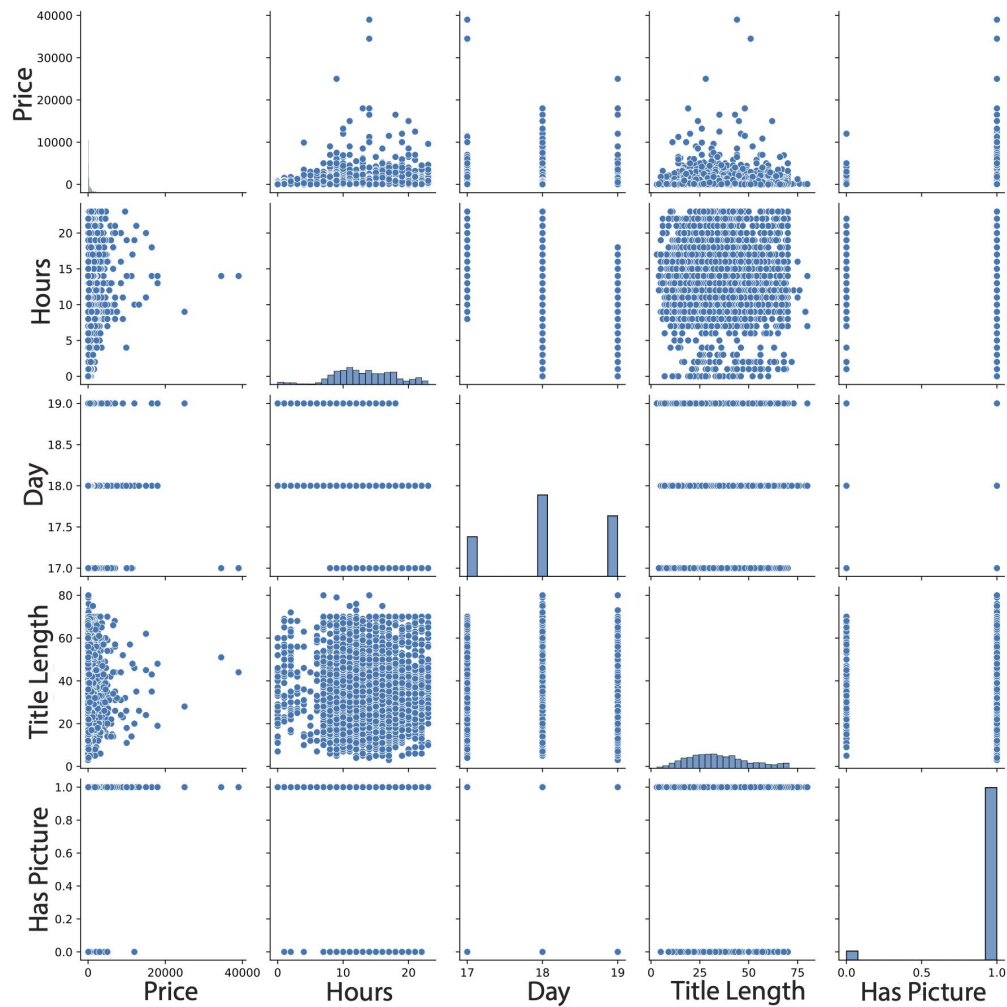




# CORRELATIONS







# Linear vs Polynomial Model

- Included 4 features in both models
  - Location was not able to be included in these two models
    - >200 locations
    - Can be subdivided into 6 regions

# Linear vs Polynomial Model

- Included 4 features in both models
  - Location was not able to be included in these two models
    - >200 locations
    - Can be subdivided into 6 regions
- “Vanilla” Linear Model
  - Validation  $R^2 = -0.008$

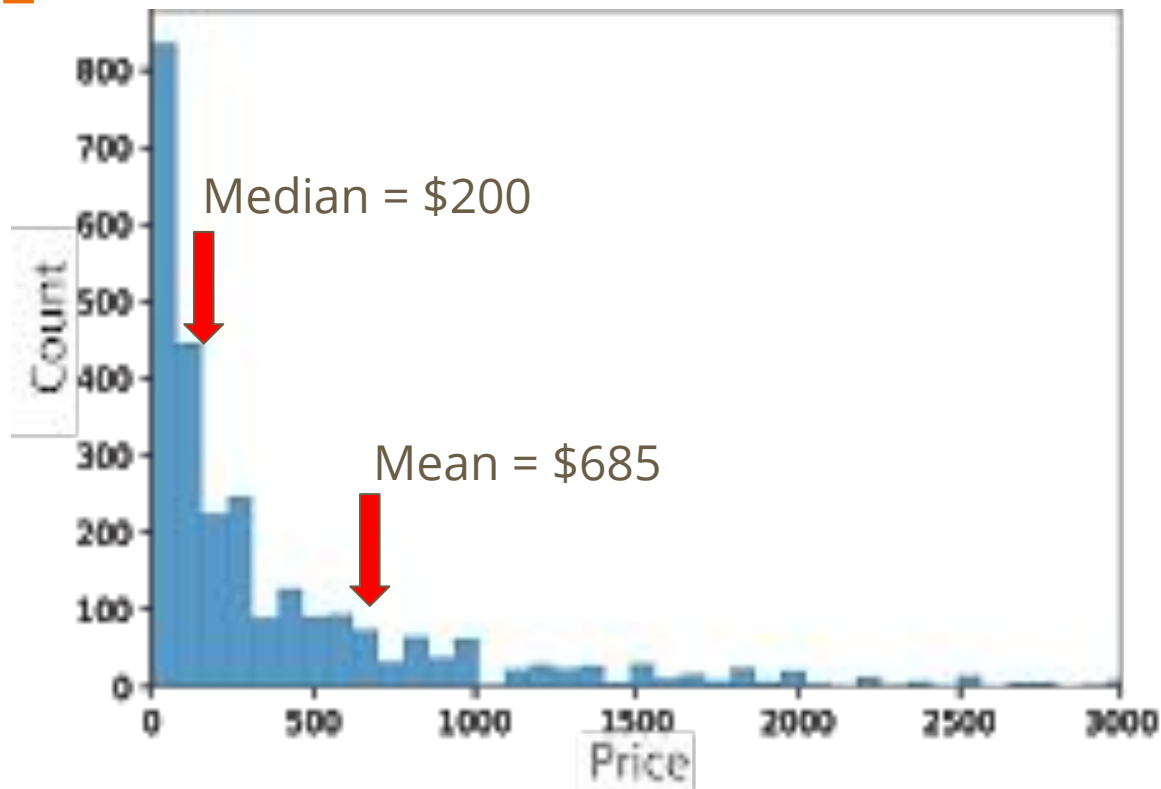
# Linear vs Polynomial Model

- Included 4 features in both models
  - Location was not able to be included in these two models
    - >200 locations
    - Can be subdivided into 6 regions
- “Vanilla” Linear Model
  - Validation  $R^2 = -0.008$
- Polynomial Model
  - Validation  $R^2 = 0.003$
  - Test  $R^2 = 0.002$

# RMSE and MAE

Mean = 685

Median = \$200

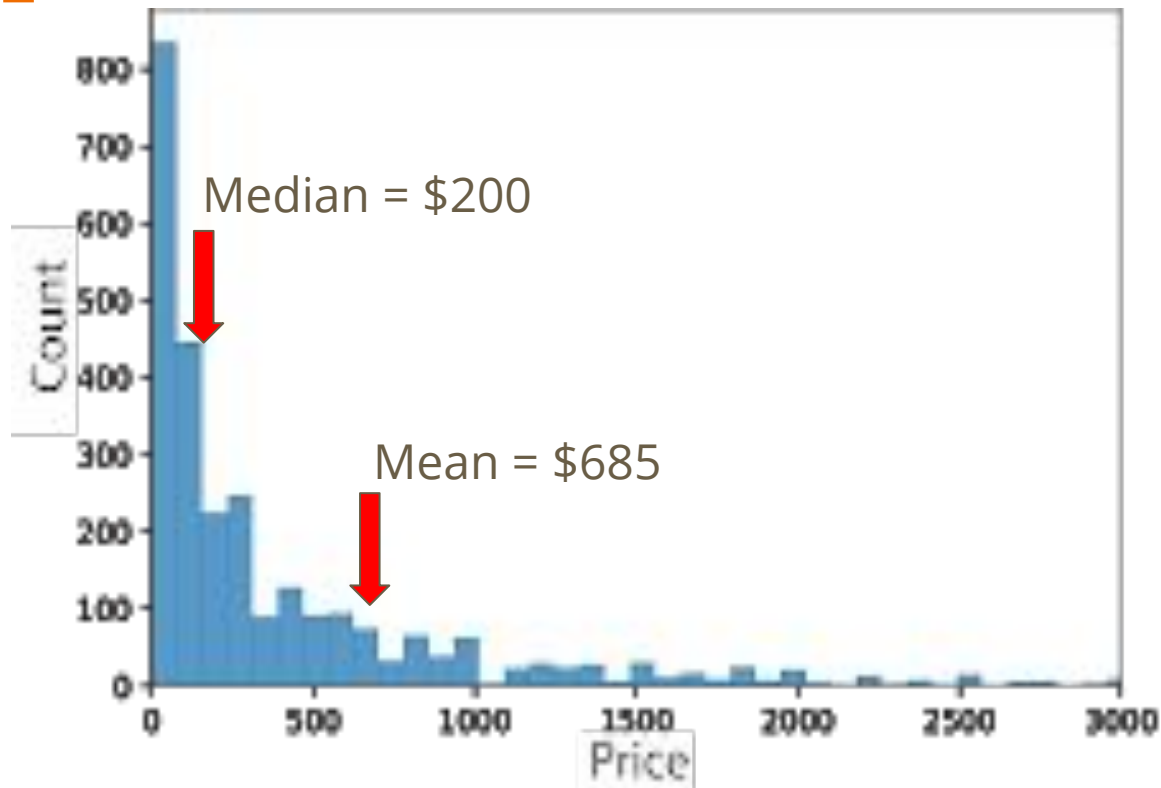


# RMSE and MAE

Mean = 685

Median = \$200

MAE = \$781





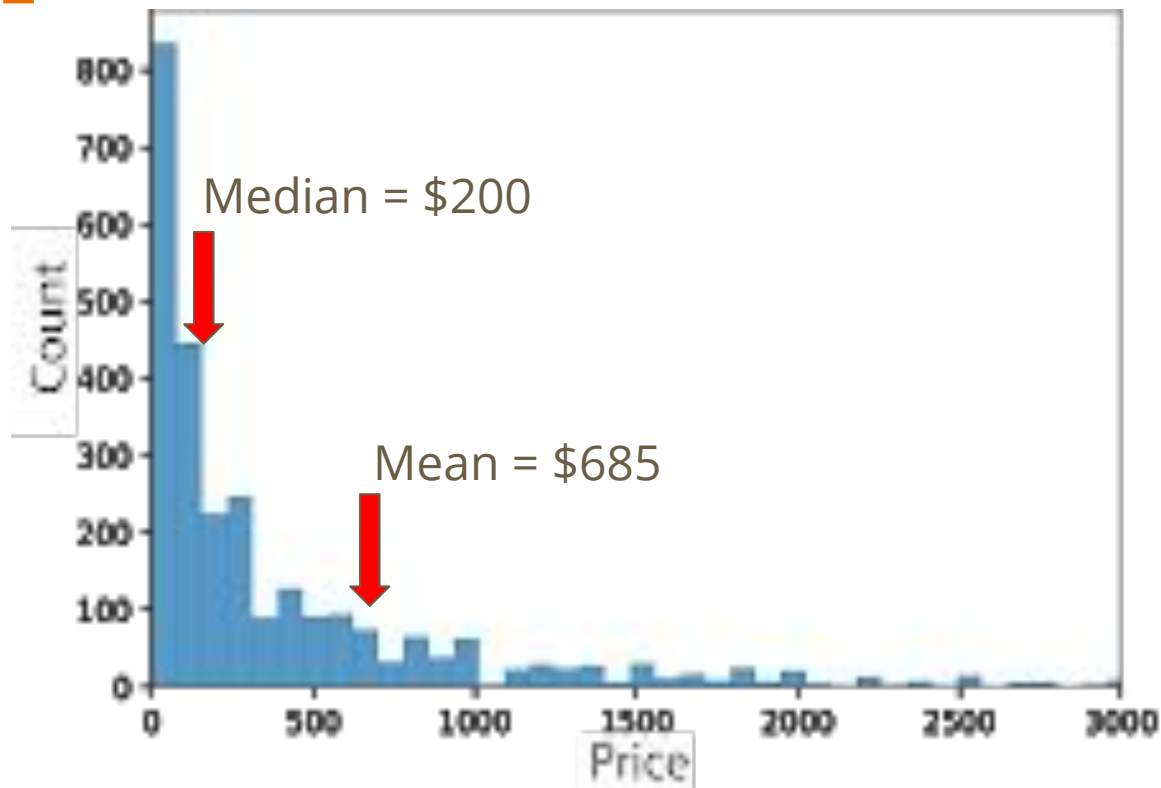
# RMSE and MAE

Mean = 685

Median = \$200

MAE = \$781

RMSE = \$2,039



# What have we learned?

# What have we learned?

- What not to worry about

# What have we learned?

- What not to worry about
  - Hour of the day

# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning

# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning
  - Day of the week



# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning
  - Day of the week
  - Length of the title

# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning
  - Day of the week
  - Length of the title

# What can we still learn?

# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning
  - Day of the week
  - Length of the title

# What can we still learn?

- Importance of location

# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning
  - Day of the week
  - Length of the title

# What can we still learn?

- Importance of location
  - 6 regions separated by Craigslist

# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning
  - Day of the week
  - Length of the title

# What can we still learn?

- Importance of location
  - 6 regions separated by Craigslist
  - Merge with Census data (2020/2021 census data coming out soon)

# What have we learned?

- What not to worry about
  - Hour of the day
    - Lowest price items late night-early morning
  - Day of the week
  - Length of the title

# What can we still learn?

- Importance of location
  - 6 regions separated by Craigslist
  - Merge with Census data (2020/2021 census data coming out soon)
- Variance in instruments



*Fin*





