



Used Guitar Value Estimator

Based on Over 2900 Guitars Across More Than 100 Brand Names

Overview

Used Instrument Market

- Used instruments are the lifeblood of small music retailers
- Even big names take advantage of the market
- Lots of time spent on research

Data Source

- 2900 unique guitar models
- 100 brand names
- 140,000 recorded sales
- Less than \$100 to more than \$300,000
- Scraped from Reverb.com

Data Source

Reverb.com

- Reverb.com is the biggest online marketplace for used music gear
- Created by the Chicago Music Exchange
- “Ebay for musicians”



Fender®

GRETSCH

Squier™
by Fender®

140th Anniversary
Epiphone®
1873 • 2013



KAY
established
1890

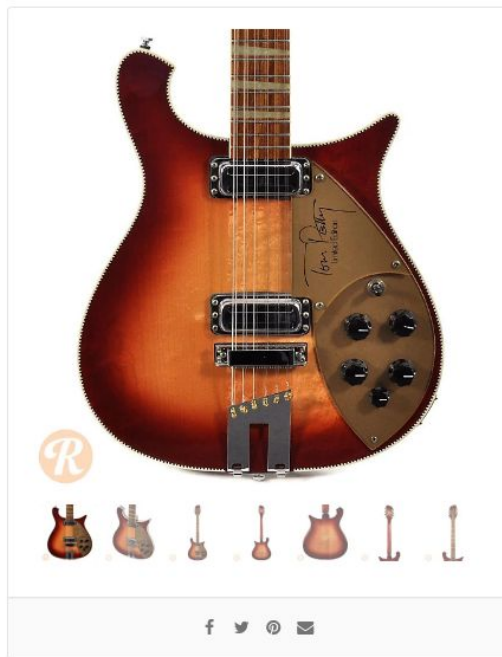
Ibanez

Rickenbacker®

Gibson®

Sale Records Collected

- Make, Model, Year, Color
- Some instruments have dozens, others have none
- Sale date used to calculate age of instrument



Shop 8 Listings

Sell one like this

Reverb Estimated Used Price Range
\$4,125 — \$6,260

Transaction History

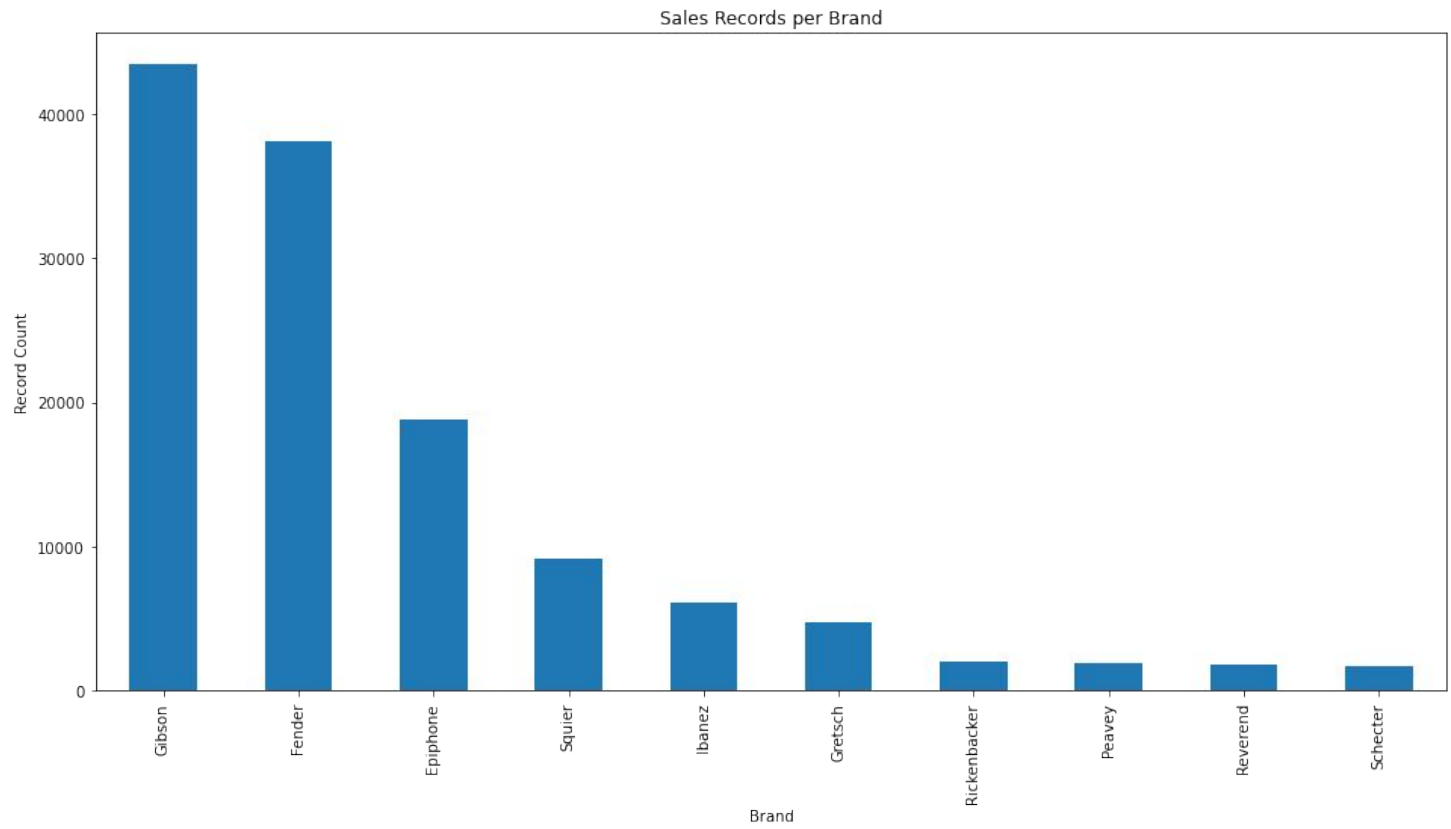
Used New

Date	Condition	Sold Price
3/28/2021	Very Good	\$6,595
2/23/2021	Excellent	\$6,495
12/7/2020	Excellent	\$4,325
10/20/2020	Excellent	\$7,995
9/28/2020	Excellent	\$5,495
7/16/2020	Excellent	\$4,000
5/26/2020	Excellent	\$5,800
5/11/2020	Excellent	\$3,950
4/20/2020	Mint	\$4,750
3/1/2020	Excellent	\$5,350

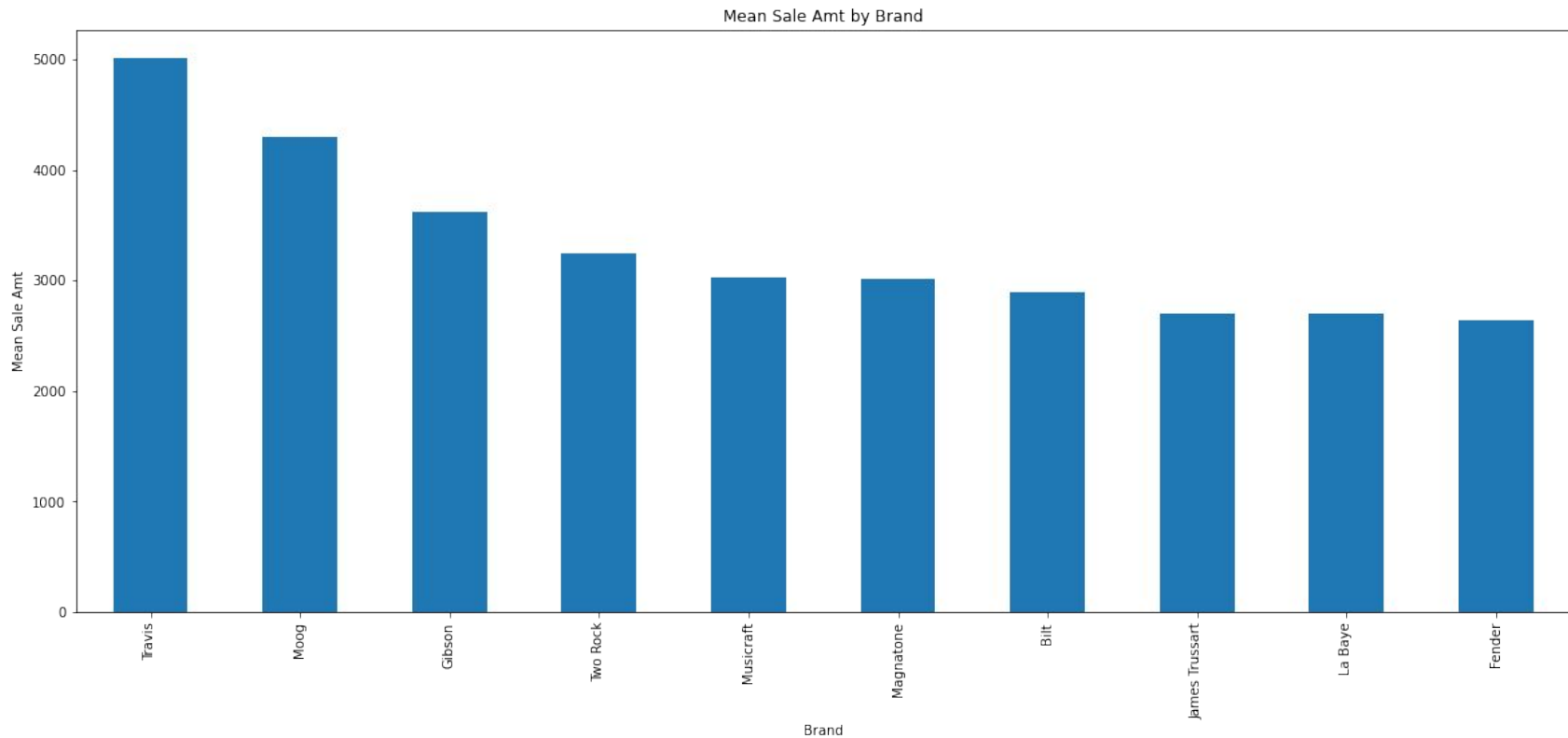
Prices exclude shipping and tax/VAT/GST.



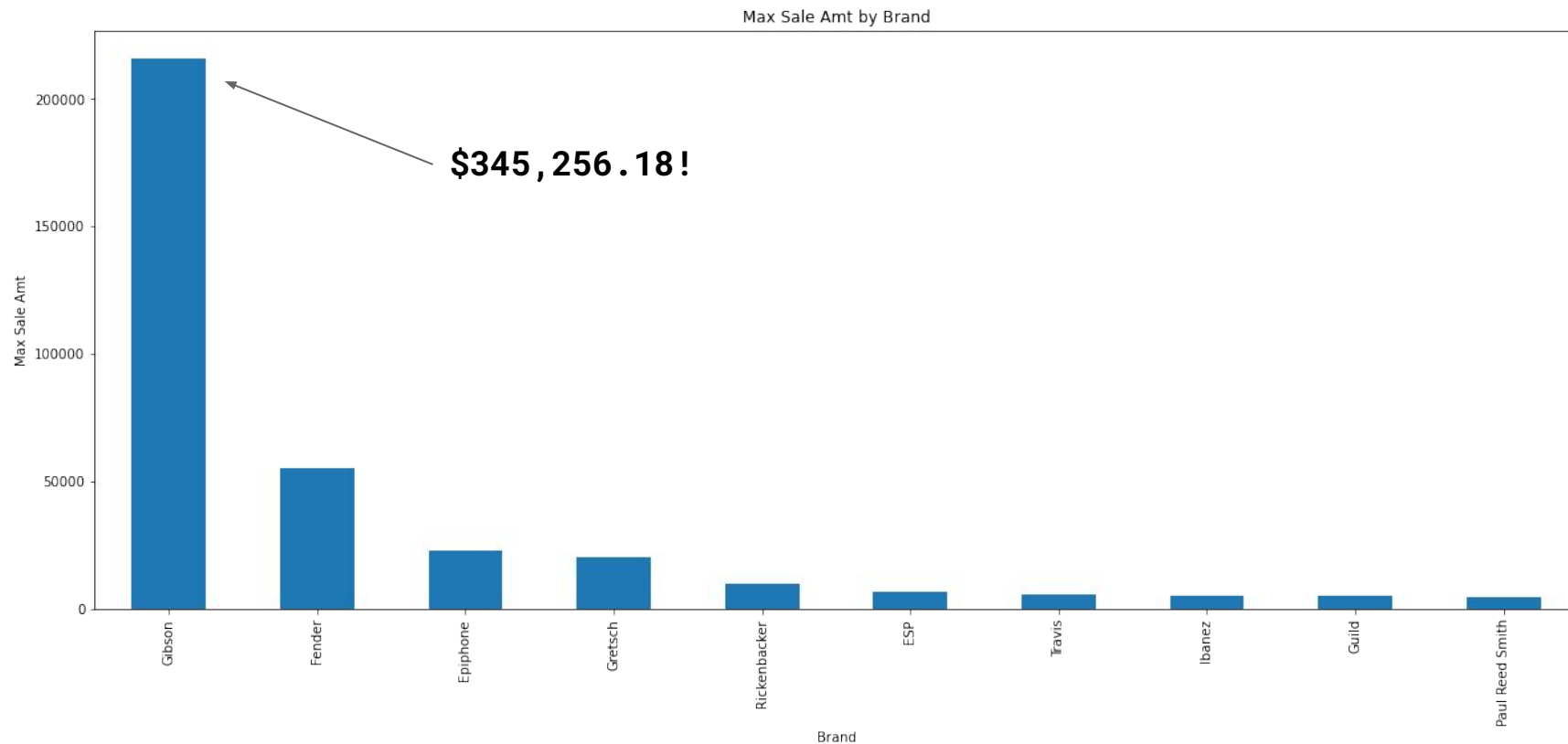
Sold Guitars by Brand



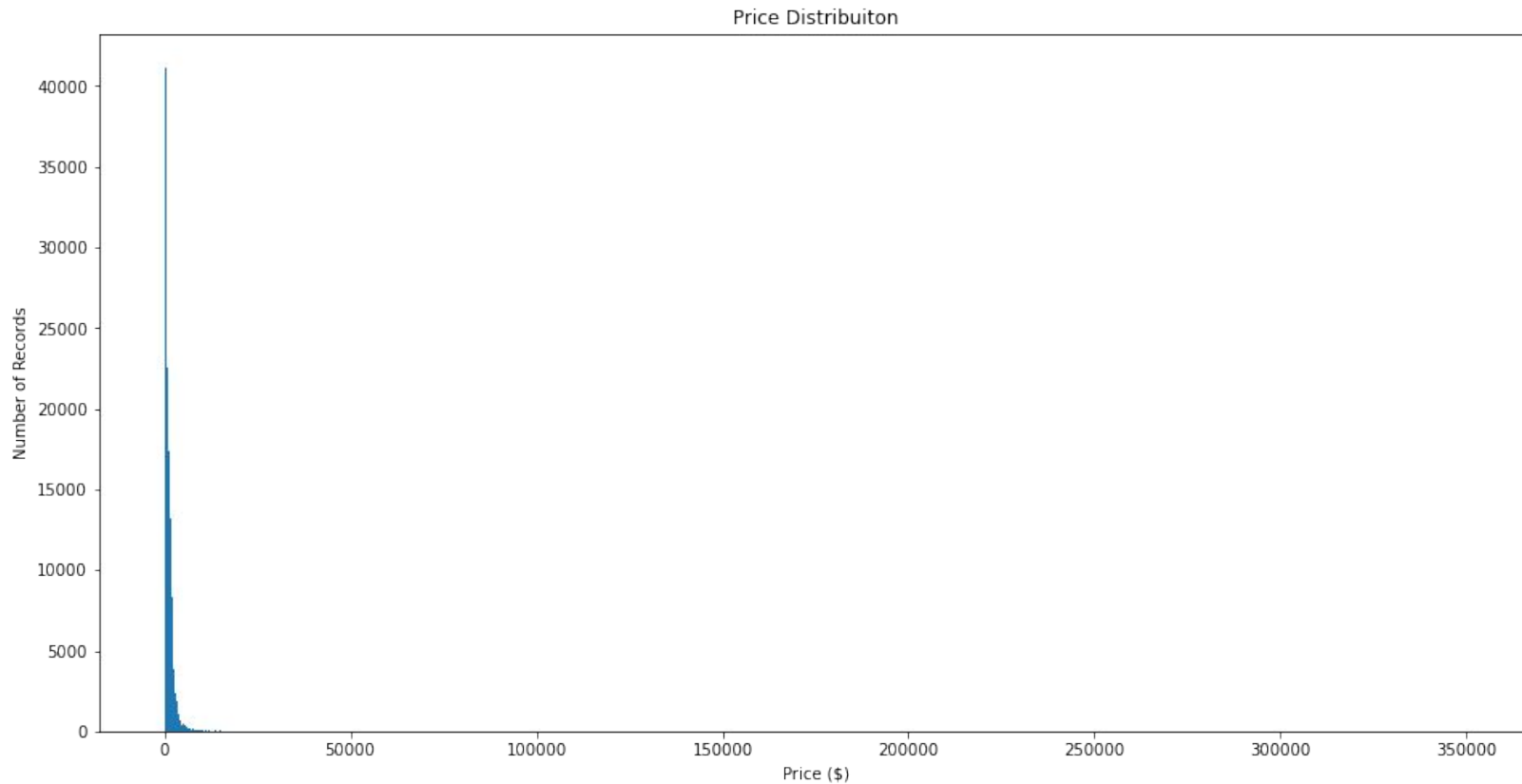
Mean Sale Price by Brand



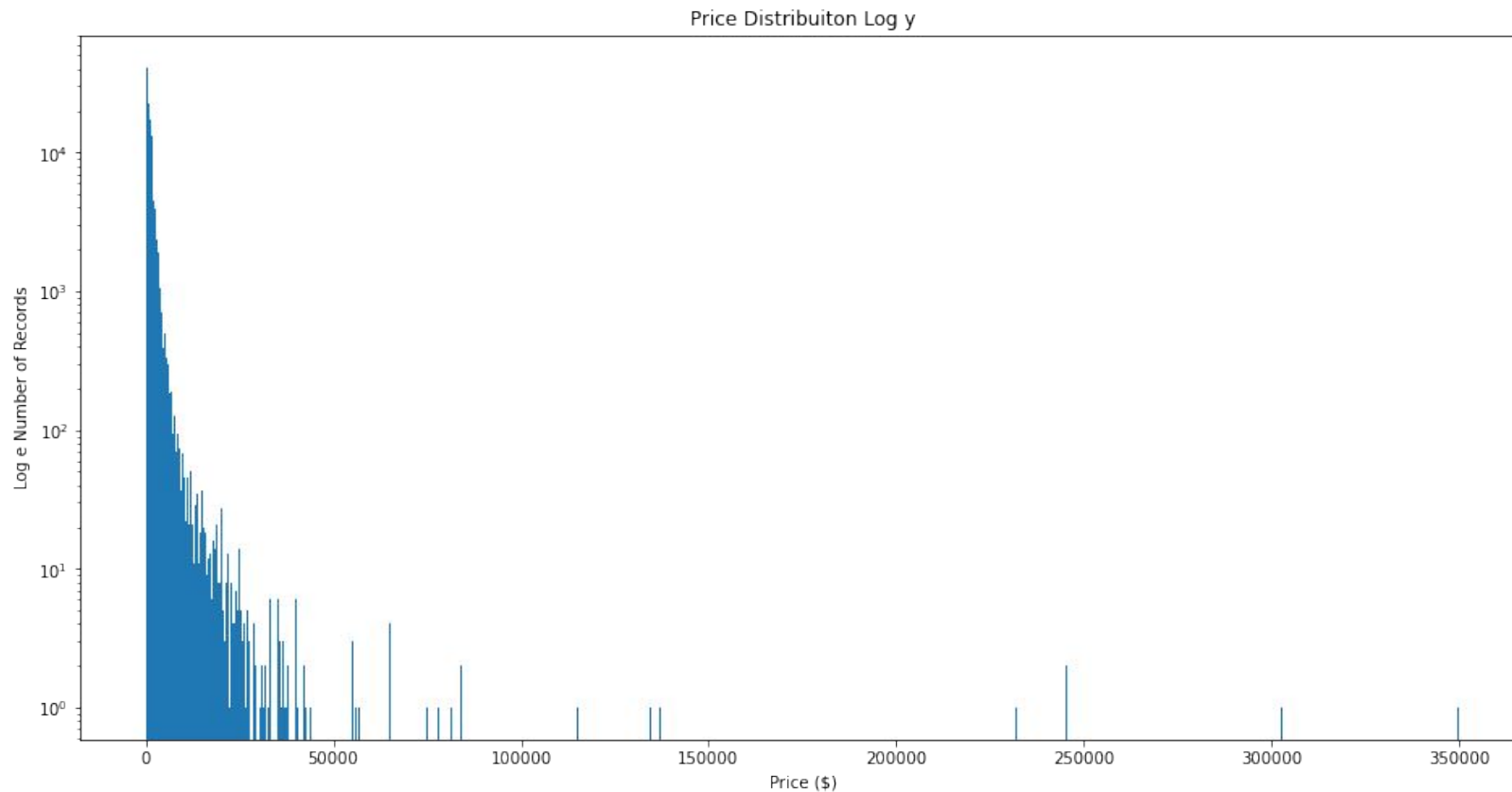
Max Sale Price by Brand



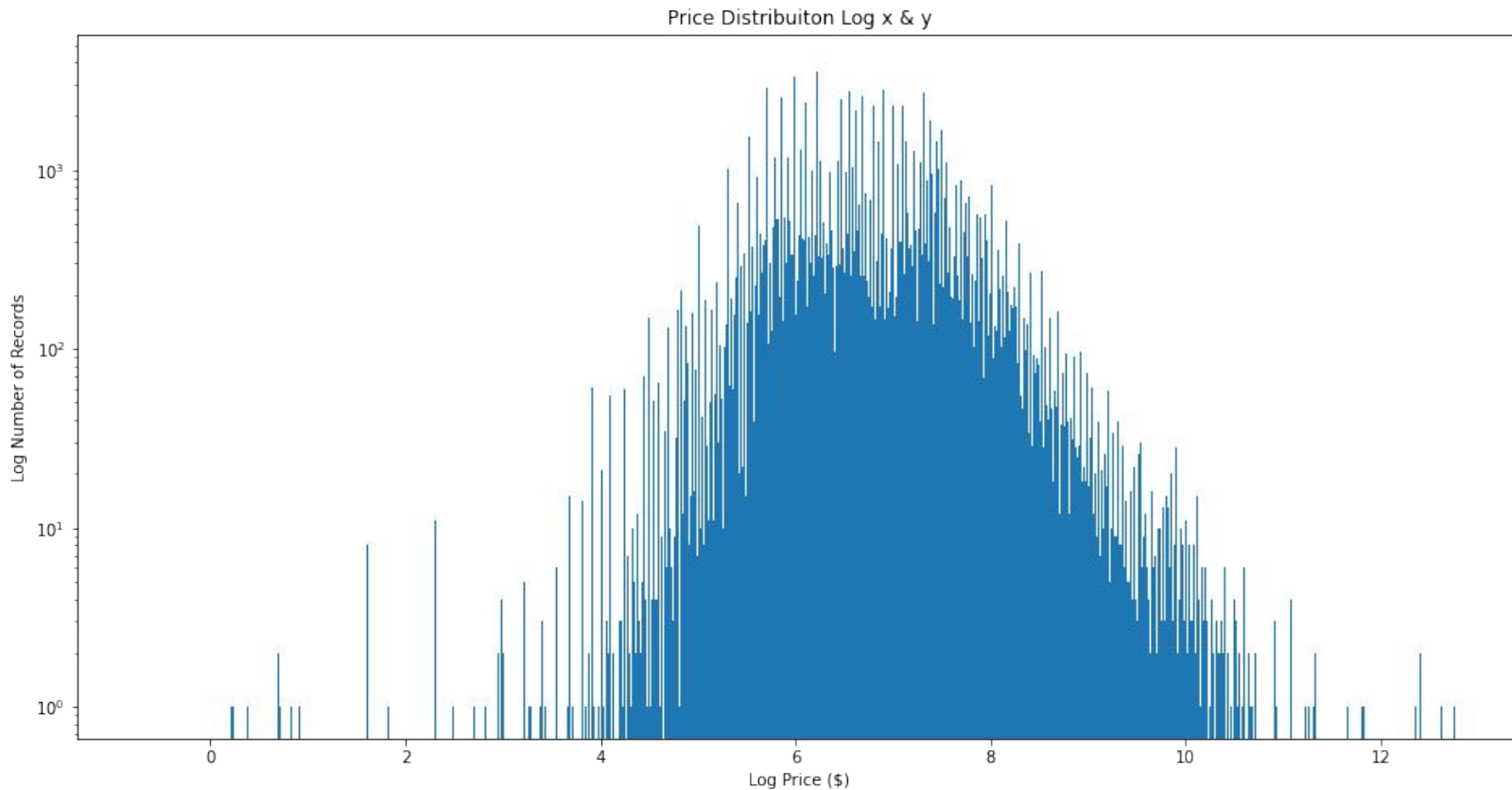
Price Distribution



Price Distribution [$\log(y)$]



Price Distribution [$\log(x \ \& \ y)$]



Feature Engineering

Creating Dummy DataFrame

Target: Sale Price (\$)

- Year & age of instrument
- Brand (Dummyized)
- Color (Dummyized)
- Condition (Dummyized)

Artificially Low Prices

Some Sales at \$1

- I suspect these are caused by users trying to avoid paying Reverb's sale fees
- Remove records < 10% the median sale price per model of guitar

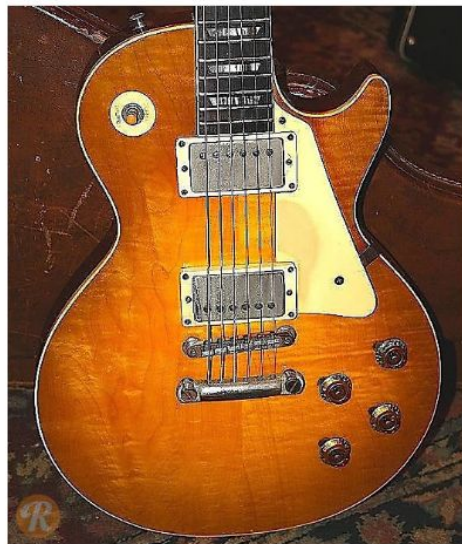
Feature Importances

Below 0.0005 Threshold

- Insignificant change in score/error
- Captures all conditions
- Forest runs MUCH faster

Artificially Low Prices Dropped (~100 records)

Gibson Les Paul Standard 1959 Burst

[Shop 7 Listings](#)[Sell one like this](#)

Reverb Estimated Used Price Range
\$140,000 – \$240,000

Transaction History

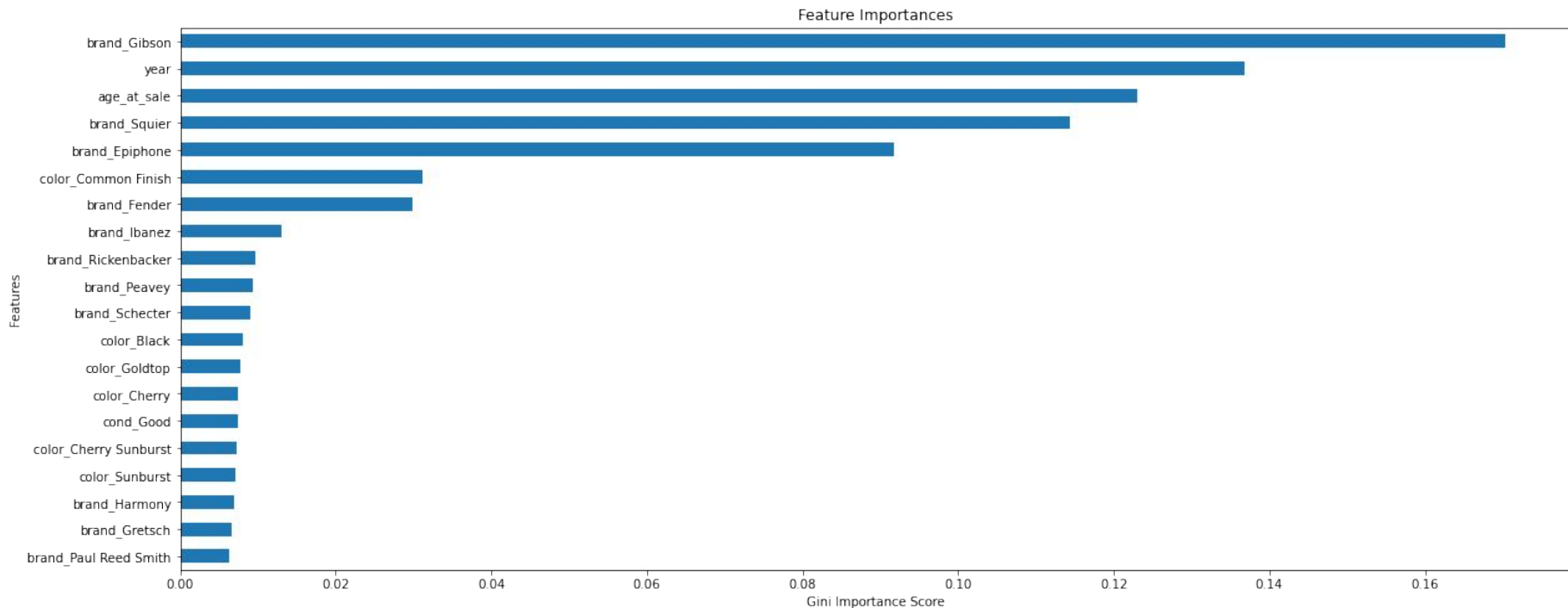
Used New

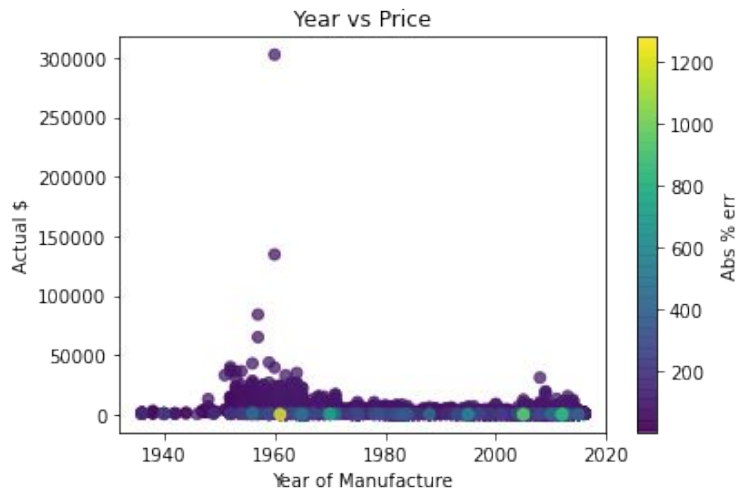
Date	Condition	Sold Price
3/16/2021	Mint	\$199
11/18/2019	Very Good	\$345,256.18

Prices exclude shipping and tax/VAT/GST.

The Gibson Les Paul Standard stands as one of the most widely played and universally recognizable guitars ever. First marketed as the Les Paul model in 1952, the Les Paul evolved throughout the '50s until the design was replaced by the SG in late 1960. In 1958, the standard finish for the Les Paul was changed from gold to cherry sunburst. Sunburst or "Burst" Les Pauls from 1958 till 1960 are some of the most sought-after vintage guitars on the market. For many, they represent the absolute pinnacle of Gibson innovation in its golden age.

Less Important Features Dropped (~500)

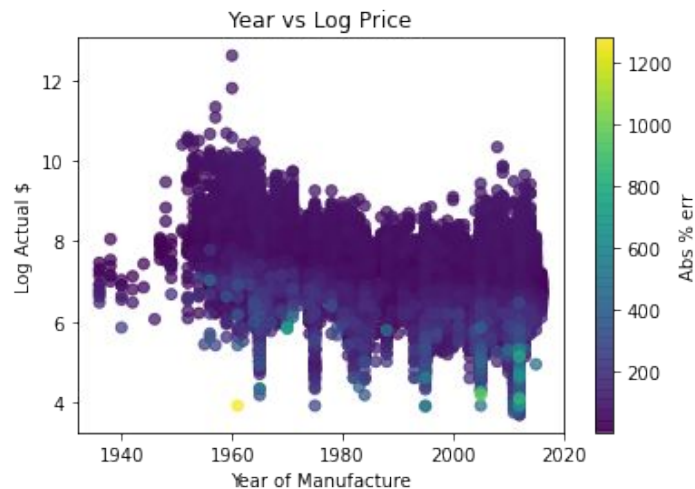




Results

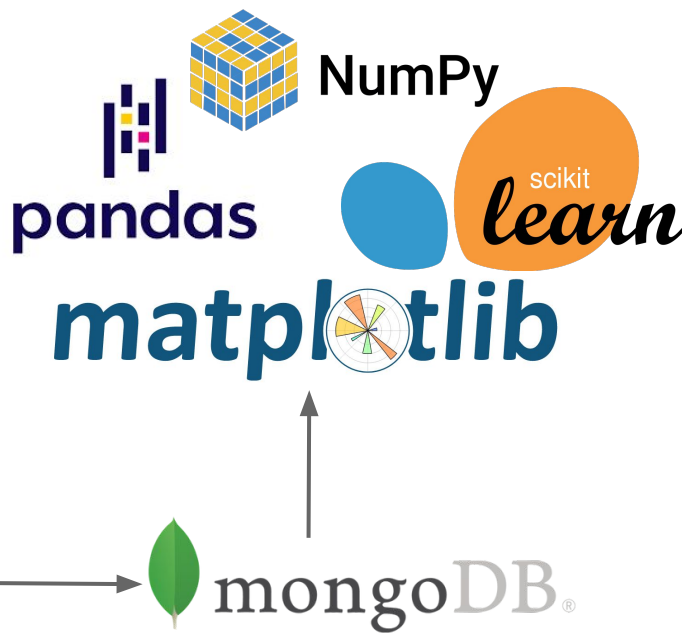
Random Forest Regressor

R^2 & OOB Scores: 0.75
Mean Absolute % Err: 34.6%





BeautifulSoup



Tech Stack

Next Steps

- More Data!!
 - ◆ More than just vintage and particularly sought after guitars
 - ◆ More cheap than expensive guitars in the wild
 - What is the Model Missing?
 - ◆ High priced guitars are predicted well
 - ◆ Worst predictions overprice cheaper instruments
 - High Priced Outliers
 - ◆ Remove them entirely?
 - ◆ Not many records
 - Guitars w/ Ranges of Years
 - ◆ “Mid 60s” vs “1965”
 - ◆ Took means of guitars from that decade
 - ◆ Remove entirely? ($\frac{1}{3}$ dataset)
 - Grid Search
 - ◆ Some say it’s still running to this day
-

Thank You!



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