

# AMAZON CHALLENGE

Michael Du



USB to HDMI cable, Yeworth 0.5m USB 2.0 Male to HDMI Male Charger Cable Splitter Adapter  
by Yeworth  
**\$9.98** prime  
Get it by **Sunday, Feb 4**  
More Buying Choices  
**\$9.98 (2 new offers)**

★★★★☆ **10**  
Product Features  
... charging from  
Premium Yewo



AmazonBasics DisplayPort to HDMI Adapter  
by AmazonBasics  
**\$9.99** ~~\$11.99~~ prime | FREE One-Day  
Get it by **Tomorrow, Feb 3**  
FREE One-Day Shipping on qualifying orders over \$35  
More Buying Choices  
**\$6.93 (1 used offer)**

★★★★☆ **147**  
Product Features  
... or to an HD monitor or projector—HDMI cable  
required (not included) ...

Amazon's Choice



Cable Matters Gold Plated DisplayPort to HDTV Cable 6 Feet  
by Cable Matters  
**\$10.99** ~~\$24.99~~ prime | FREE One-Day  
Get it by **Tomorrow, Feb 3**  
FREE One-Day Shipping on qualifying orders over \$35  
More Buying Choices  
**\$9.99 (7 used & new offers)**

★★★★☆ **2,1**  
Product Features  
... Convenient  
projector with



Wpeng USB to HDMI Converter Cable, 2FT USB 2.0 Male to HDMI Male Charger Cable Cord (HDMI/USB)  
by Wpeng  
**\$6.99** prime | FREE One-Day  
Get it by **Tomorrow, Feb 3**  
FREE One-Day Shipping on qualifying orders over \$35  
More Buying Choices  
**\$5.94 (1 used offer)**

★★★★☆ **7**  
Product Features  
... Male Charger Cable Gold Plated  
Connectors: USB Male to HDMI Male, Not ...



AmazonBasics DisplayPort to HDMI Cable - 6 Feet  
by AmazonBasics  
**\$10.99** ~~\$11.99~~ prime | FREE One-Day  
Get it by **Tomorrow, Feb 3**  
FREE One-Day Shipping on qualifying orders over \$35

★★★★☆ **29**  
Product Features  
... DisplayPort  
computer to ar



Importer520(TM) 6.5 feet MHL Micro USB to HDMI 1080P HDTV Adapter Cable for Samsung Galaxy S3, Galaxy S4, S5 i9600, Galaxy Note 2, Galaxy Note 3 MEGA Tab 3 8.0 10.1.  
by Importer520  
**\$3.98** ~~\$5.74~~  
FREE Shipping on eligible orders  
More Buying Choices  
**\$3.98 (9 used & new offers)**

★★★★☆ **576**  
Product Features  
Brand New Product. 3 IN 1 Function-Micro  
USB/HDMI/HML Adapter



USB TYPE C to HDMI Cable 6.6FT (2M) USB 3.1 Type C 4K 30HZ Macebook 2015/6/7 pro Matebook, Lenovo Yoga 5 pro, HP Pavilion X2, Dell Xps 13  
by LANGTUDZ  
**\$15.99** prime  
Get it by **Sunday, Feb 4**

★★★★☆ **10**  
Product Features  
... Function: US  
Charging Cable



USB 3.0 to HDMI, HD 1080P Video Cable Adapter with Audio Output For Laptop HDTV TV PC with Windows XP / 10 / 8.1 / 7 / 8 / 7 [ NO MAC & VISTA ]  
by WOPOW  
**\$17.99** prime  
Get it by **Sunday, Feb 4**

★★★★☆ **41**  
20% off 1 items of every 1 purchased [See Details](#)  
Product Features  
... [ USB to HDMI ] This USB to HDMI adapter  
can connect a computer via ...



USB 3.0 to HDMI, HD 1080P Video Graphics Cable Adapter Converter for HDTV TV Audi 7/8/10 PC (Not Support Mac/VISTA)  
by WOPOW  
**\$17.99** prime  
Get it by **Tomorrow, Feb 3**  
More Buying Choices  
**\$15.99 (2 new offers)**

★★★★☆ **45**  
Product Features  
... USB 3.0 inte  
high-definition



AmazonBasics DisplayPort to HDMI Adapter  
by AmazonBasics  
**\$9.99** ~~\$11.99~~ prime | FREE One-Day  
Get it by **Tomorrow, Feb 3**  
FREE One-Day Shipping on qualifying orders over \$35

★★★★☆ **14**  
Product Features



USB HDMI Mount Cable - 1 Meter 3ft USB and HDMI Extension Flush, Dash, Panel Mount Cable, for Car, Boat, Motorcycle  
by ICESPRING  
**\$10.90** prime  
Get it by **Tomorrow, Feb 3**

★★★★☆ **14**  
Product Features  
... HDMI and USB2.0 extension cable with USB  
Input for vehicle, marine, bike ...



1-16 of over 50,000 results for "hdmi usb cable"

☐ prime | FREE One-Day

Get  
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# PAGE PLACEMENT MATTERS

## Computers & Accessories

- Computer Cables & Interconnects
- DVI-HDMI Adapters
- USB Cables
- Thunderbolt Cables
- USB-to-VGA Adapters
- KVM Switches
- Computer Cable Adapters

## Electronics

HDMI Cables



Sponsored ⓘ

USB-C to HDMI, CableCreation  
Thunderbolt 3 compatible, DP /  
by CableCreation

\$11<sup>99</sup> prime

Get it by **Saturday, Feb 3**

## DIGITAL

## Why It's So Hard for Brands to Get Noticed on Amazon

Brands have a love-hate relationship with Amazon. But exclusive new research

During September, 75 million consumers searched for something at the online retailer, but only 30 percent clicked past the first page of search results.

That's at least more than the 20 percent of shoppers who said they would consider looking at the second page of search results. Only 12.6 percent of shoppers said that they would look at the third page of results, and less than 10

results. They're likely to click on what they see, and if they don't see your brand

★★★★☆ ▾ 103 customer reviews  
3.1 out of 5 stars

#10 in [Electronics > Accessories & Supplies > Audio & Video Accessories > Connectors & Adapters](#)

3.6 out of 5 stars

#74 in [Computers & Accessories > Computer Accessories > Computer Cable Adapters > USB-to-VGA Adapters](#)

#2,306 in [Computers & Accessories > Computer Accessories > Cables & Interconnects](#)

#3,479 in [Electronics > Accessories & Supplies > Cables](#)

#1,350 in [Computers & Accessories > Computer Accessories > Computer Cable Adapters > DVI-HDMI Adapters](#)

#30,522 in [Industrial & Scientific > Industrial Electrical > Wiring & Connecting > Cables & Interconnects](#)

#48,492 in [Electronics > Accessories & Supplies > Cables](#)

5 out of 5 stars

\$13.46 (1 used offer)



USB-C to HDMI CableCreation Type C(Thunderbolt 3 Compatible)to HDMI 4K Hub Adapter (DP Alt Mode), Male to Female, for Macbook(Pro)/Chromebook Pixel/Dell XPS 13/Yoqa 910/Samsung S8/S8+, White by CableCreation

\$999 prime | FREE Same-Day

Get it by **TODAY, Feb 2**

FREE Same-Day Delivery on qualifying orders over \$35

★★★★☆ · 406

**Product Features**

... This USB-C to HDMI adapter compatible with: (iMac 2017) / (MacBook Pro ...



USB C Hub, Type C Hub to HDMI, 4 in 1 Combo with 2USB3.0 and PD, Multi-function USB C to HDMI Adapter for Notebook & Tablet PC & Phone --- MacBook Pro, Chromebook 2016, DELL XP etc. by RayCue

\$3099

prime

More options available:

\$30.99 **Other Sellers**

★★★★★ · 34

**Save \$2.00** with coupon

**Product Features**

... Function: USB C HUB- USB-C / M Hub to HDMI / F + 2 x USB3.0A / F ...



Cable Matters USB-C to HDMI Cable Supporting 4K 60Hz in Black 6 Feet (Thunderbolt 3 Port Compatible) For 2016/2017 Macbook Pro, Dell XPS 13/15, Lenovo Yoqa 910, Surface Book 2 and More by Cable Matters

\$1599 prime | FREE Same-Day

Get it by **TODAY, Feb 2**

FREE Same-Day Delivery on qualifying orders over \$35

★★★★★ · 34

**Product Features**

... RESOLUTION SUPPORT with this USB C to HDMI cable and compatible ...



USB-C to HDMI Hub Adapter, ARKTEK 3-in-1 USB Type C to HDMI 4K USB 3.0 Converter Charging Adapter for New MacBook with USB-C Port Chromebook Pixel Samsung Note 8 and more (Aluminum Case, Silver) by ARKTEK

\$1899 prime

Get it by **Tomorrow, Feb 3**

More Buying Choices

\$18.99 (2 new offers)

★★★★☆ · 103

**Product Features**

... Supports USB-C to HDMI converting, up to 4K UHD resolution (3840x2160 ...



USB C to HDMI Cable, RayCue USB 3.1 Type C Male (Thunderbolt 3 Compatible) to HDMI Male Cable for 2016 MacBook Pro, 2015 MacBook, ChromeBook Pixel, Samsung Galaxy S8 / S8 Plus, Iq q5 etc by RayCue

\$799 prime

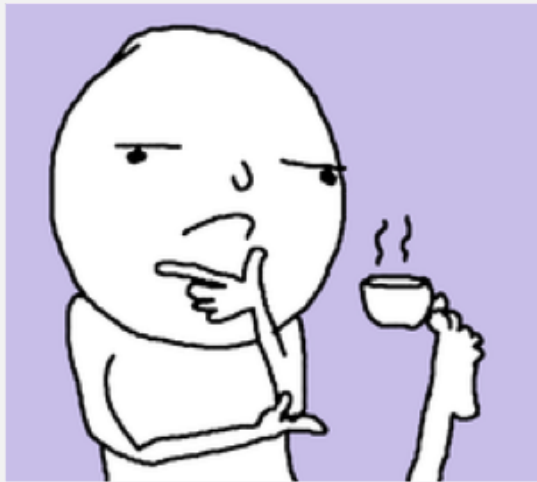
Get it by **Tomorrow, Feb 3**

★★★★☆ · 54

**Product Features**

In the box: 1\* USB C to HDMI Cable( Size: 6.6ft/2.0m)

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USB C to HDMI Adapter,MOKIN USB C(Type C) To HDMI Adapter Cable For Macbook,Chromebook Pixel,Dell XPS 12/13/15 And More With Gold-Plated HDMI Port,Support 4K UHD  
by MOKIN

\$1399 ✓prime  
Get it by **Sunday, Feb 4**

★★★★☆ · 144

**Product Features**

... 3.USB C To *HDMI Cable* allows you to mirror video/image from your ...



IOGEAR 2-Port HDMI Cable KVM Switch with Cables and Audio, GCS62HU  
by IOGEAR

\$5999 ~~\$65.69~~ ✓prime  
Get it by **Tomorrow, Feb 3**

★★★★☆ · 3,038

**Product Features**

... Share a display with *HDMI* connection, a *USB* keyboard and mouse, with 2 ...



Sponsored ⓘ

iPhone Lightning to HDMI Adapter Lightning Digital AV HDTV Projector Cable 1080P Aluminum Alloy shell Plug and Play for iPad iPod iPhone BEJOINY (GOLD)  
by BEJOINY

\$1898 ✓prime  
Get it by **Sunday, Feb 4**

★★★★☆ · 41

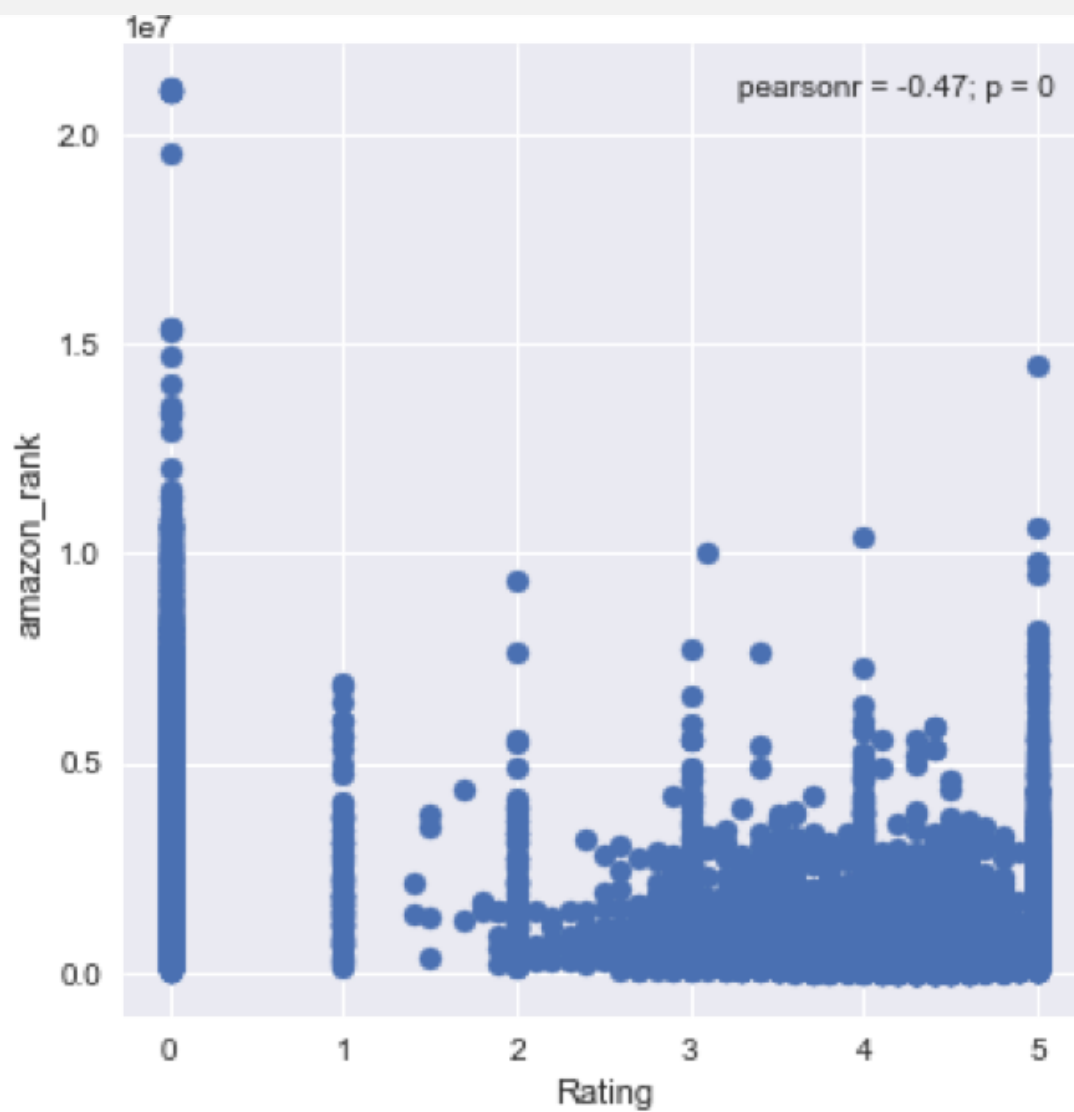


Sponsored ⓘ

Video Projector, Houzetek 1800 Lumens HD Multimedia Home Theater Video Projector Support 1080p HDMI USB SD Card VGA AV for Home Cinema TV  
by Houzetek

\$14399 ✓prime | FREE One-Day  
Get it by **Tomorrow, Feb 3**

★★★★☆ · 18





## FEATURES OBSERVED

- Rating
- Price
- Review Count
- 1- 5 Star Counts (individually)
- Number of variations
- Days Since Launch
- Weight (in ounces)
- Volume
- **Amazon Rank** (label)

## PROCESS OF ELIMINATION

- 13038 Rows
- 12590 with ranking
- 11029 in 'Clothing Shoes & Jewelry' category

**Amazon Best Sellers Rank:** #4,652 in Clothing, Shoes & Jewelry ([See Top 100](#)  
#10 in [Clothing, Shoes & Jewelry](#) > [Luggage & Travel Gear](#) > **Travel Duffels**)

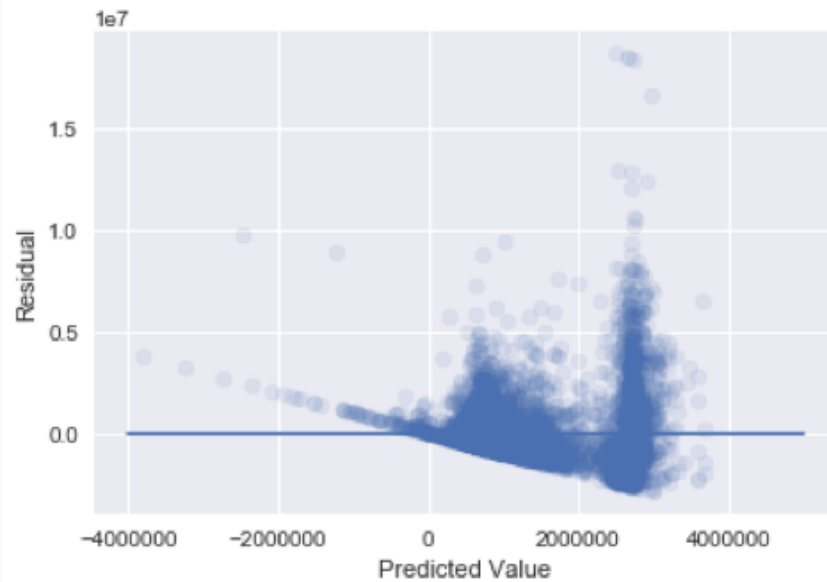
**Amazon Best Sellers Rank:** #845 in Sports & Outdoors ([See Top 100 in Sports & Outd](#)  
#2 in [Clothing, Shoes & Jewelry](#) > [Luggage & Travel Gear](#) > **Travel Duffels**)

Rating	0
review_count	0
1Star	0
2Star	0
3Star	0
4Star	0
5Star	0
style_count	0
days_since_launch	2
weight_ounces	1331
volume	3983
min_price	570
amazon_rank	0

## WITH VOLUME FEATURE

- 6719 Rows

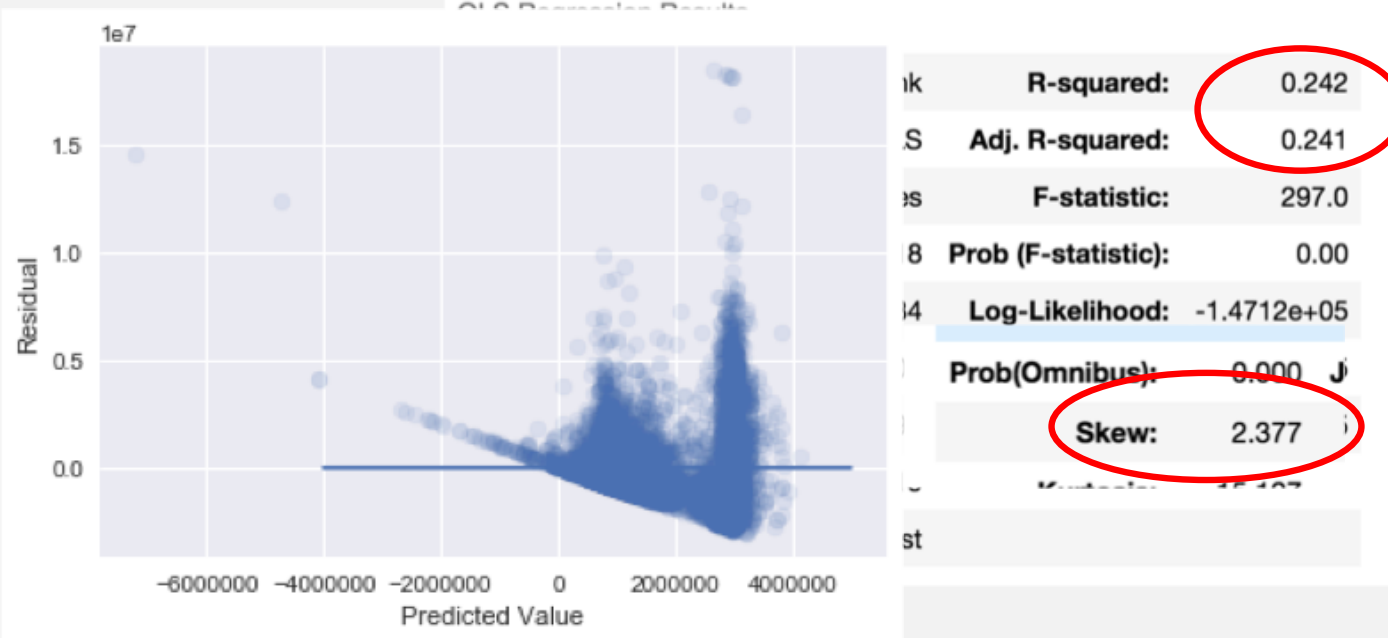
OLS Regression Results



k	R-squared:	0.230
S	Adj. R-squared:	0.229
s	F-statistic:	182.5
8	Prob (F-statistic):	0.00
3	Log-Likelihood:	-1.0572e+05
9	AIC:	2.115e+05
7	Prob(Omnibus):	0.000
1	Skew:	2.877
st	Kurtosis:	19.926

## WITHOUT VOLUME FEATURE

9303 rows



## SET-UP

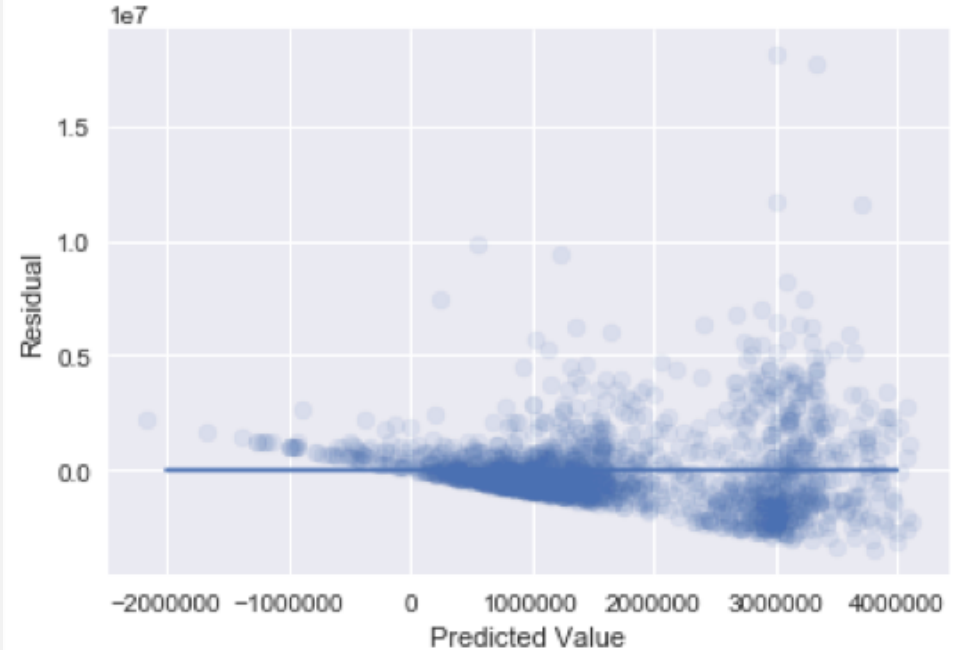
- 20% Testing
- 20% Validation
- 60% Training

## SIMPLE LINEAR REGRESSION

- OLS regression score val  $R^2$ : **0.247**
- OLS regression score val RMSE: 1777604.940
- Squared terms regression val  $R^2$ : **0.304**
- Squared terms regression score val RMSE: 1709181.702
- Chose **Squared Terms**

## SIMPLE LINEAR REGRESSION ON TEST DATA

- Trained on the 80% training data, tested on 20% test data
- Squared terms regression val  $R^2$ : 0.284
- Squared terms regression score test RMSE: 1711967.724





## SIMPLE LINEAR REGRESSION WITH POLYNOMIALS

- `PolynomialFeatures(degree=2, interaction_only=True)`
  - OLS regression with interaction terms val  **$R^2$  : 0.231**
  - OLS regression with interaction terms val RMSE: 1797072.029
- `PolynomialFeatures(degree=2, interaction_only=False)`
  - OLS regression with interaction terms val  **$R^2$  : 0.268**
  - OLS regression with interaction terms val RMSE: 1752478.091

## INCORPORATING KFOLD & RIDGE

- 5 sets, shuffled
  - Basic Linear Regression



-46.212056, 0.29036, 0.2856156,

4170, -46.23560, 0.290255, 0.285927,

Simple mean cv  $r^2$ : -9.005 +- 18.604

Ridge mean cv  $r^2$ : -9.009 +- 18.613

## REGULARIZATION WITH ALPHA TESTING

- Alphas from 0.0003 to 10000 (500 step increments)
- Standardized
- Ideal Alpha Values:
  - Lasso: 10,000.0
  - Ridge: 3,557.15020682       $R^2$ : 0.226352859425
  - ElasticNet: 1.18071284       $R^2$ : 0.221034336523

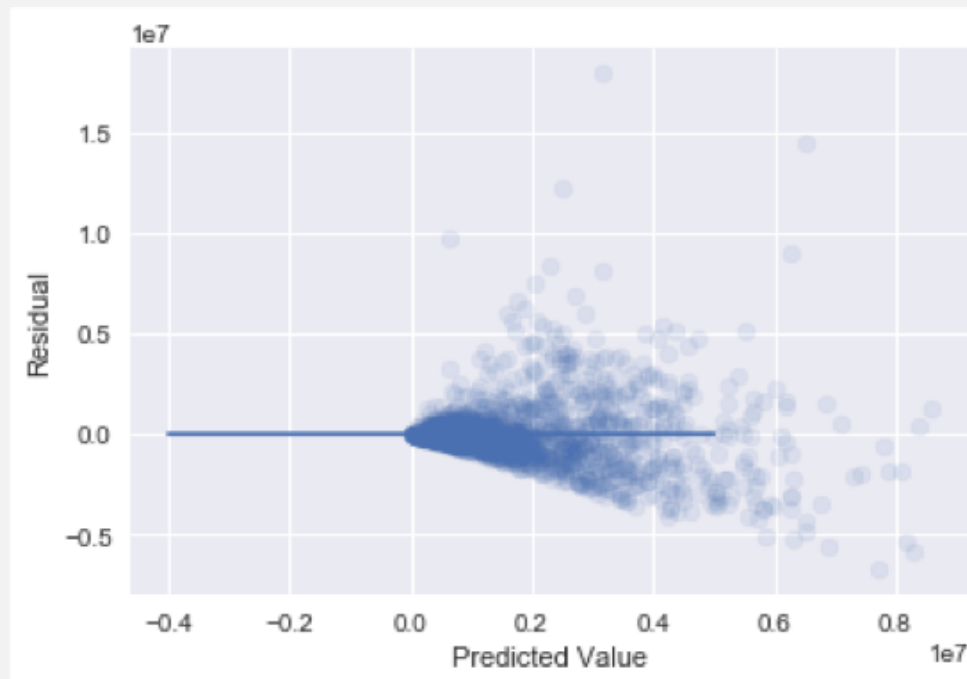
## LASSOCV

- Tested alphas between 0.003 to 100,000
- Best Alpha: 6080.2242
- $R^2$  : 0.28292

Rating	-2402178.9	Rating**2	1486880.92
review_count	0	review_count**2	0
1Star	29098.2997	1Star**2	21442.3024
2Star	0	2Star**2	0
3Star	0	3Star**2	-22090.441
4Star	0	4Star**2	0
5Star	-361469.32	5Star**2	228504.667
style_count	-314886.94	style_count**2	190000.581
days_since_launch	557210.006	days_since_launch**2	-343440.64
weight_ounces	-458083.38	weight_ounces**2	377019.578
price	41709.1034	price**2	20840.8016

## RANDOM FOREST

- $R^2: 0.417585$



## MODEL COMPARISON

OLS	OLS Squared Terms	ElasticNet
0.247	<b>0.304</b>	0.221034336523

Ridge	LassoCV	Random Forest
0.226352859425	0.28292	<b>0.417585</b>

Rating	-1,342,232.27	Rating**2	192,681.56
review_count	2,717.26	review_count**2	-1.98
1Star	5,537.49	1Star**2	20.51
2Star	5,380.01	2Star**2	61.58
3Star	-2,053.70	3Star**2	-62.15
4Star	5,263.32	4Star**2	9.47
5Star	-11,409.86	5Star**2	7.82
style_count	-83,478.22	style_count**2	1,966.42
days_since_launch	800.94	days_since_launch**2	-0.13
weight_ounces	-3,043.57	weight_ounces**2	0.37
min_price	516.71	min_price**2	0.03

## NEXT STEPS

- Set categorical variable for styles
- Identify outliers
- 8800 out of 9300 listings have less than 15 reviews