



Price History Analysis

XinLing Bai, Saikiran Komatineni, Derek Lam, Chang Zhou
ECE 143 Group 13

Motivation



- How do you identify an actual sale?
- When is the best time to buy a product?
- Which product category has the best sales?

Data Overview



Python API for the
Keepa.com Amazon
Price Tracker

Access to price histories,
rating, and number of
reviews for **over 900
million** products



Apple AirPods Pro
★★★★☆ ~ 419
\$234⁹⁹ ~~\$249.00~~
✓prime
FREE Shipping by Amazon
Temporarily out of stock.
More Buying Choices
\$223.24 (3 used & new offers)

Methodology

Gather Data from Keepa API

800 total products for four categories:
Office, Software, Electronics, and Toys

Clean up Data

Object Oriented Approach
Formatted into Pandas DataFrame

Data Analysis

Sale defined as **more than 10% off** of
a product's average price

Standardized prices refer to a
product's z-score

$$Z = \frac{X - \mu}{\sigma}$$

Categories

Office



Software



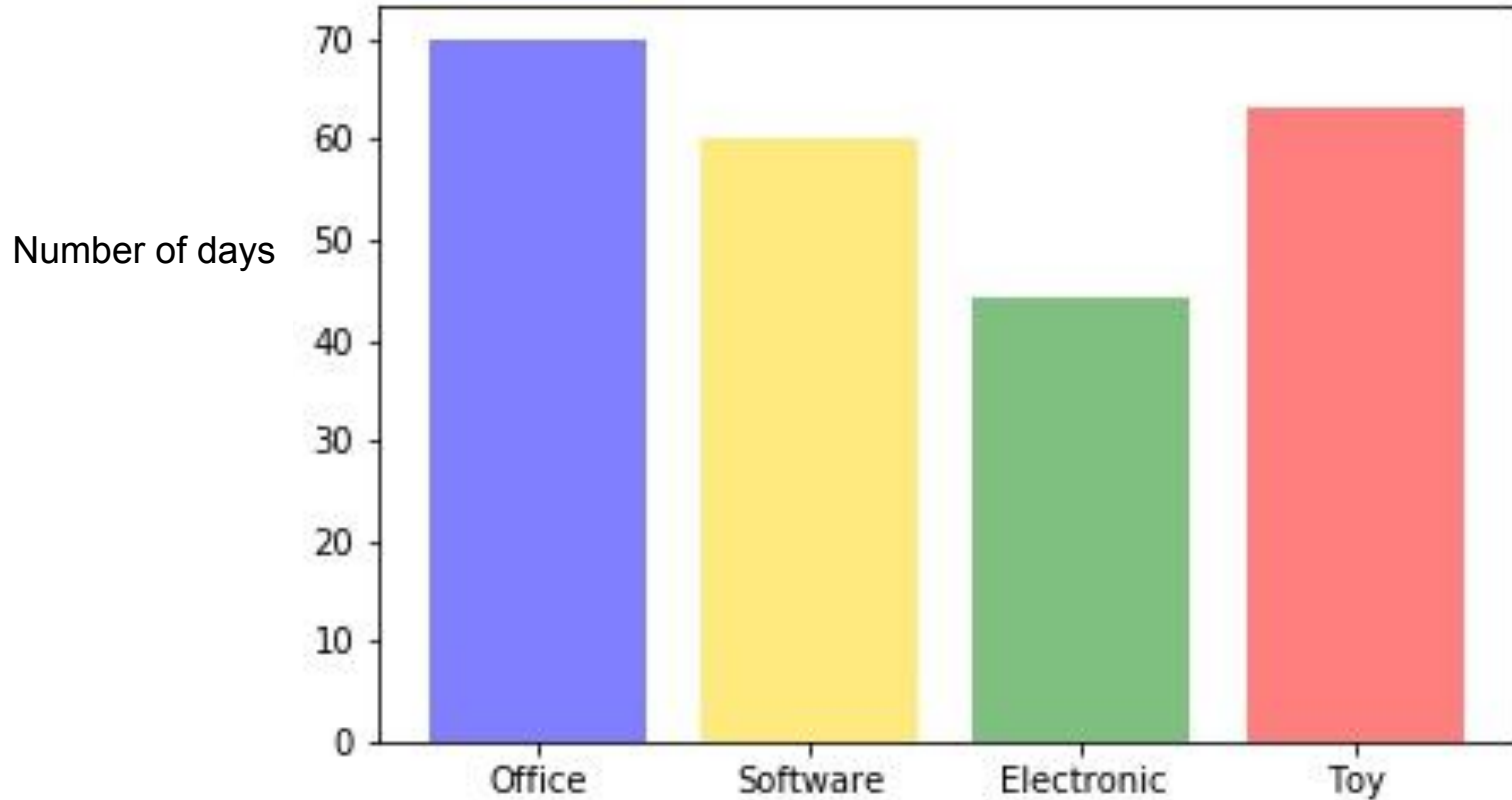
Electronic



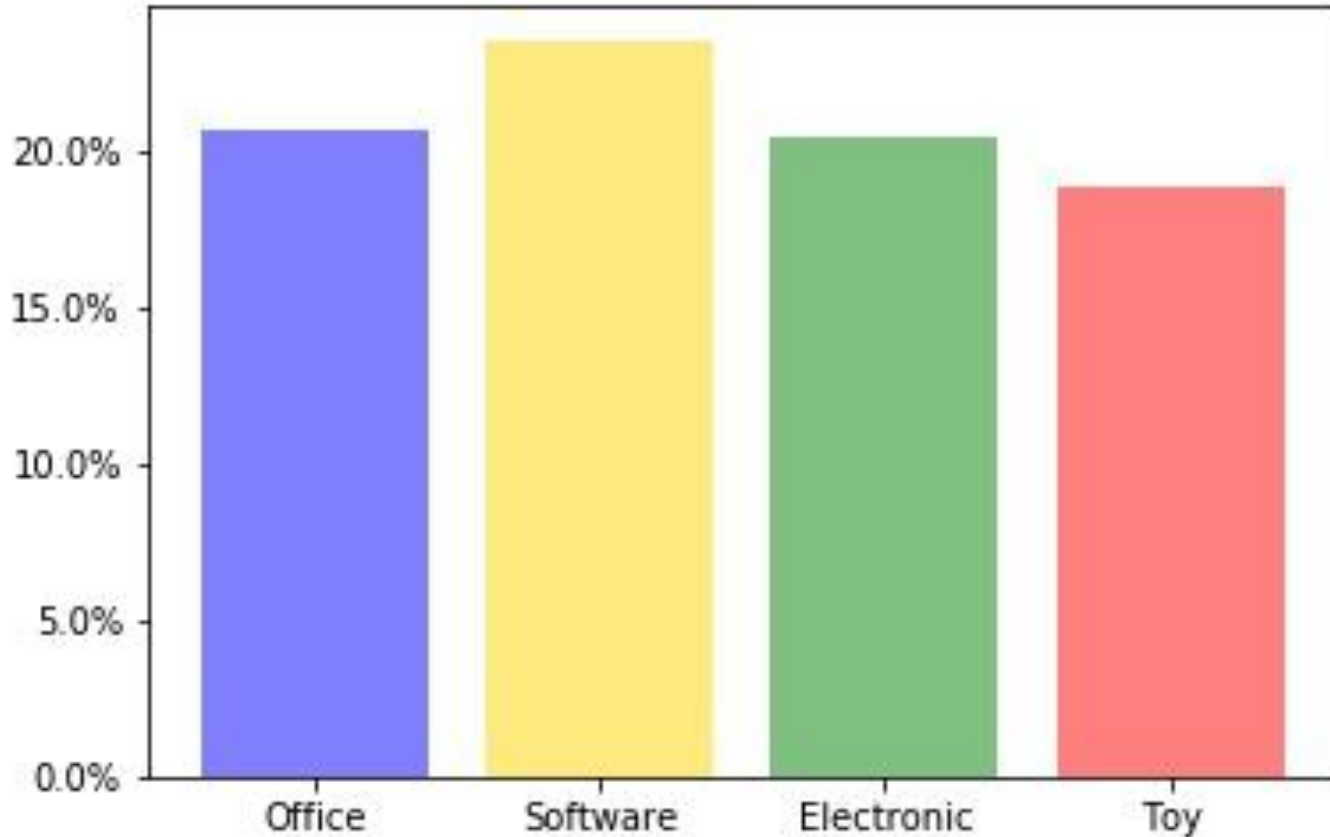
Toy



Average Number of Days on Sale

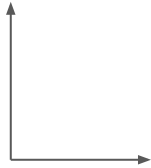


Average Sale Percentage

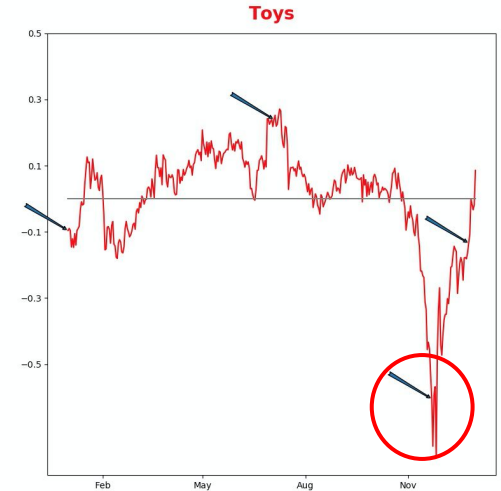
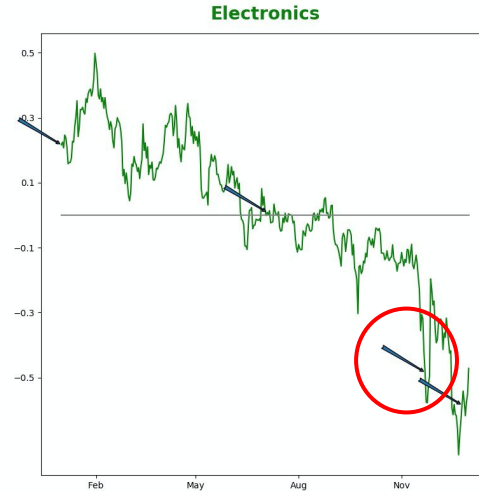
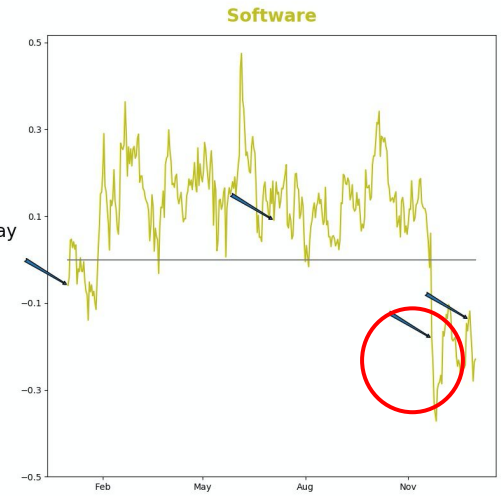


Variation in Price

Standardized
Price

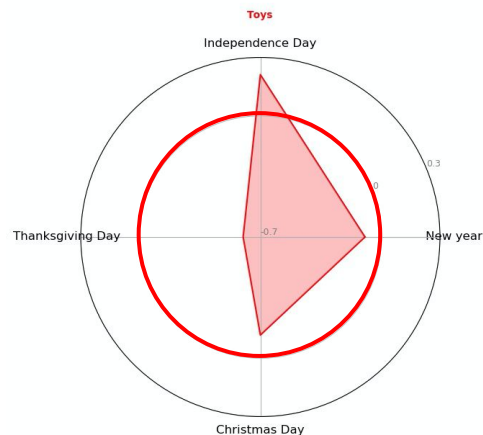
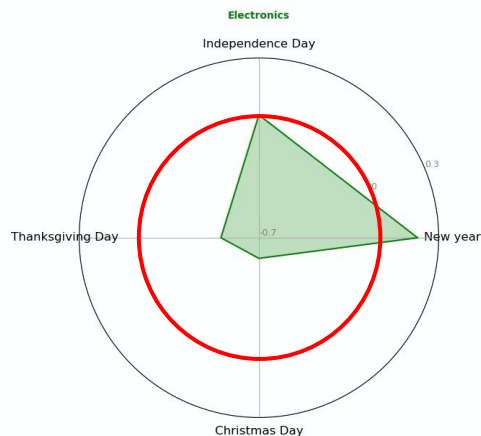
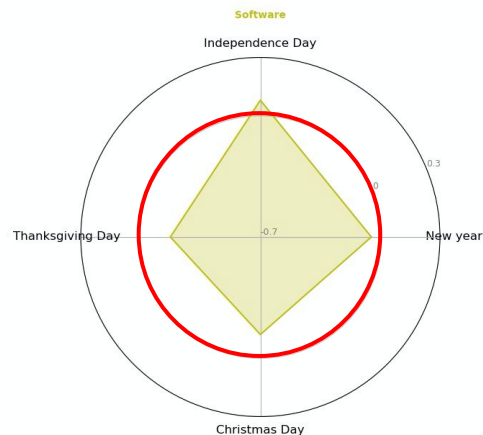
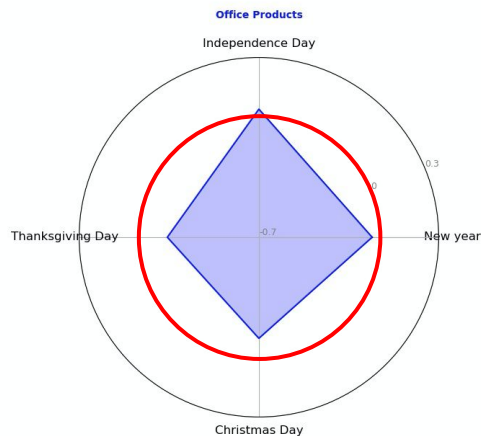
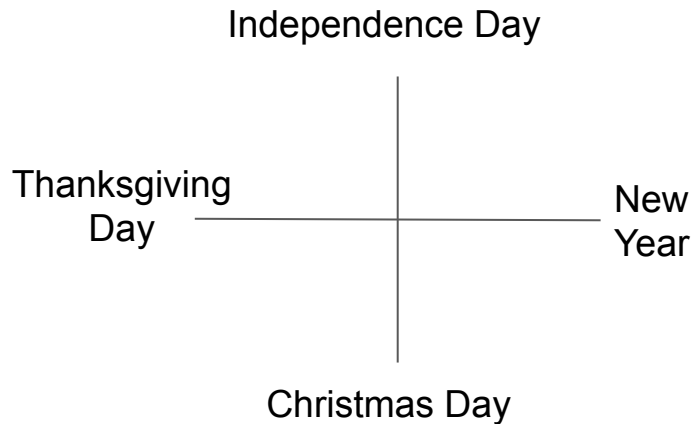


Month in 2018



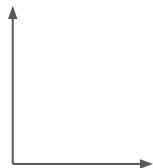
Thanksgiving

has the best
deals for each
category!



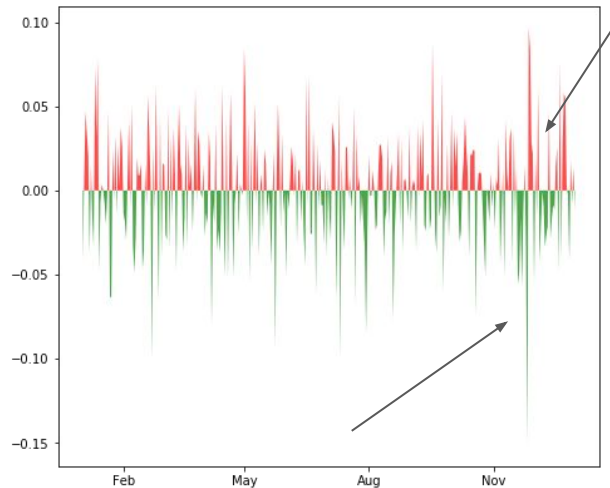
Derivative of price for each category

Standardized Derivative

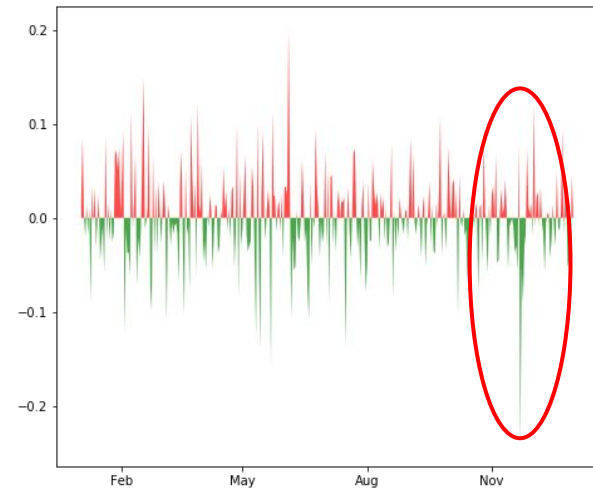


Months of 2018

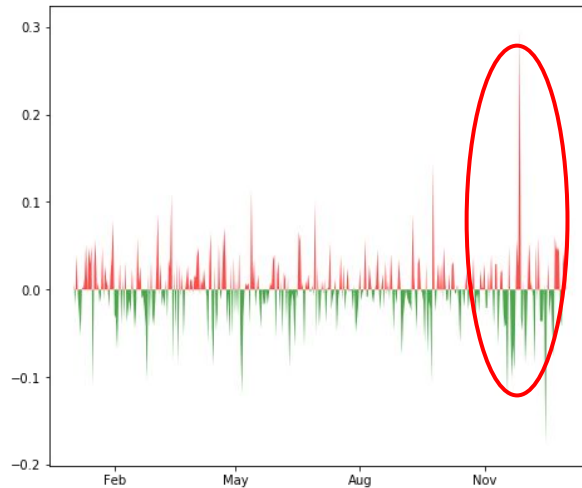
Office Products



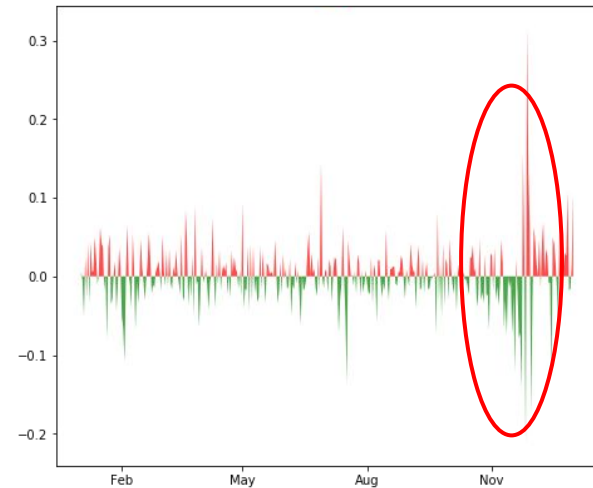
Software



Electronics



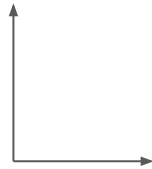
Toys



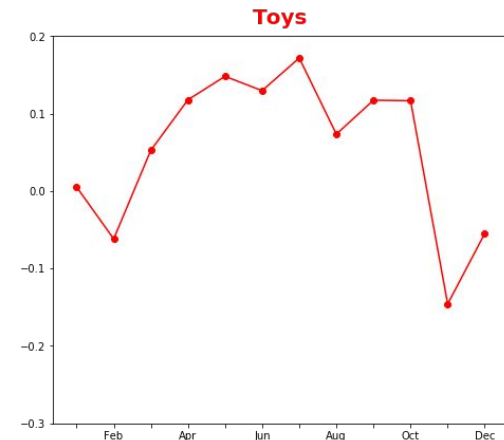
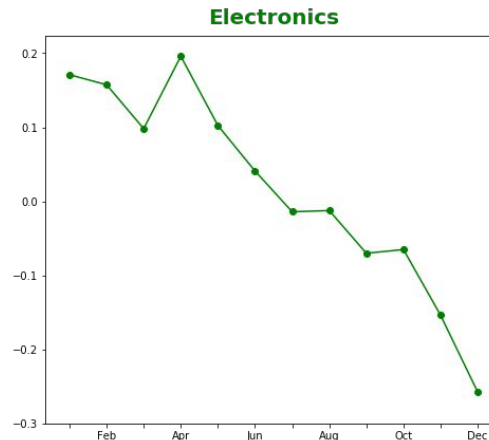
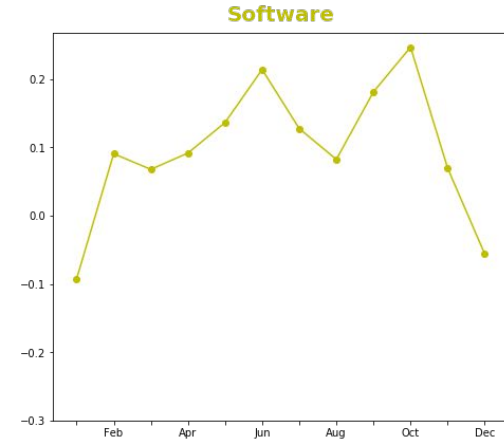
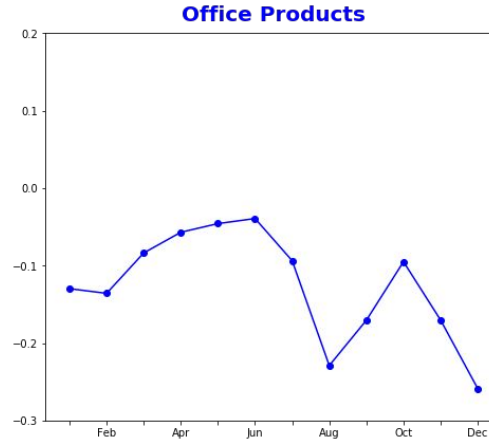
Average price per month (2011-2018)

	Max	Min
Office	Jun	Dec
Software	Oct	Jan
Electronics	Apr	Dec
Toys	Jul	Nov

Average Standardized
Price



Months (2011 - 2018)



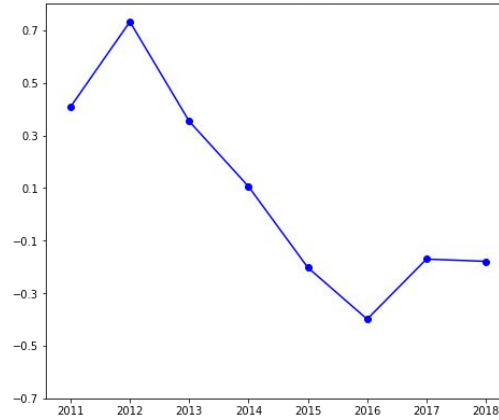
Non software products have decreased in price from 2011 - 2018

Average Standardized Price on Christmas

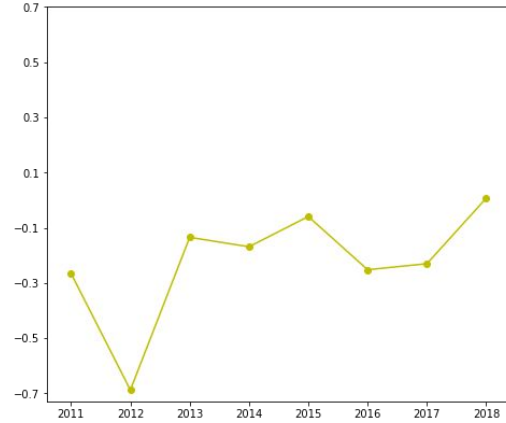


Year (2011 - 2018)

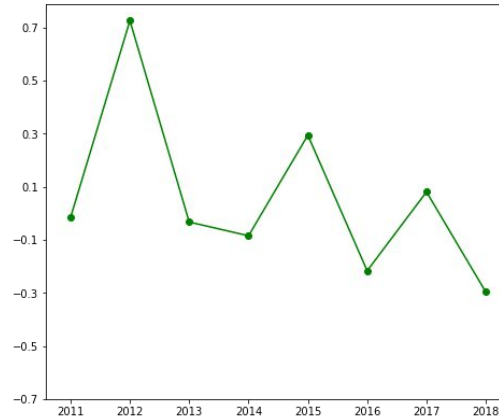
Office Products



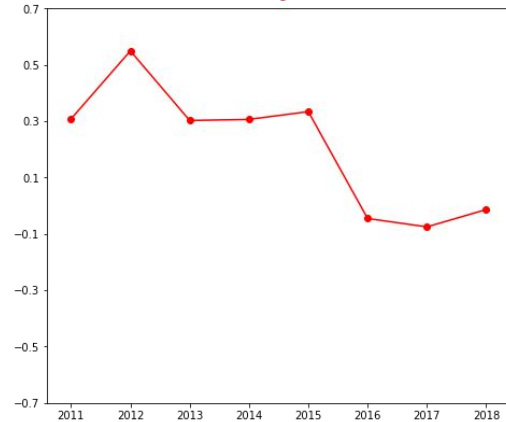
Software



Electronics

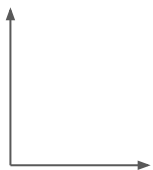


Toys

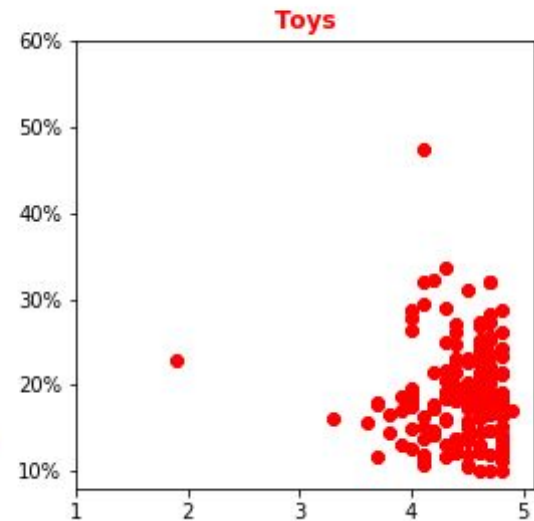
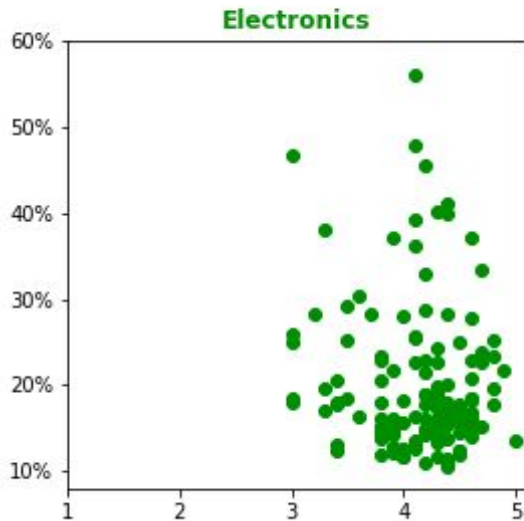
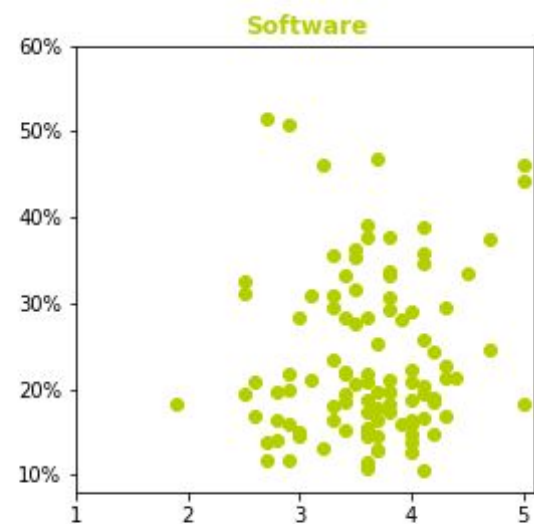
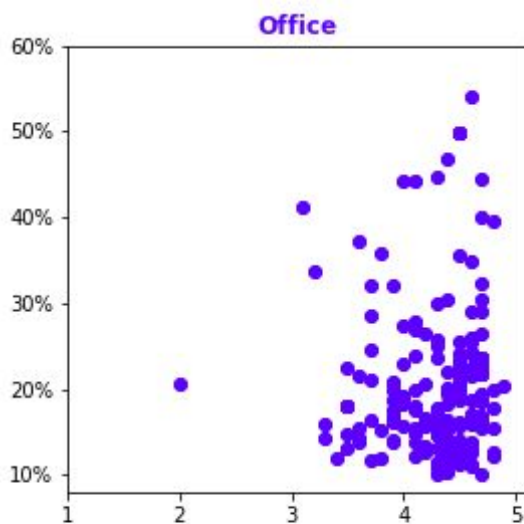


A product's rating
DOES NOT correlate
to how much % it will
go on sale.

Sale Percentage

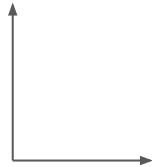


Rating out of 5

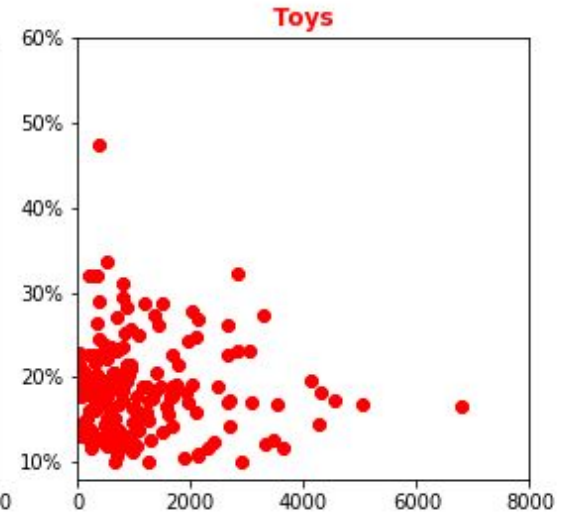
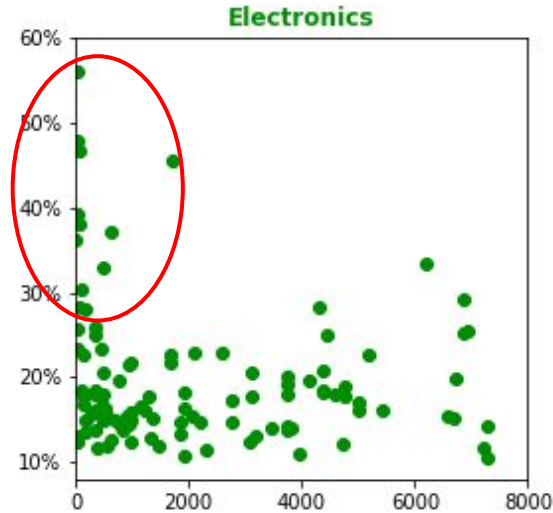
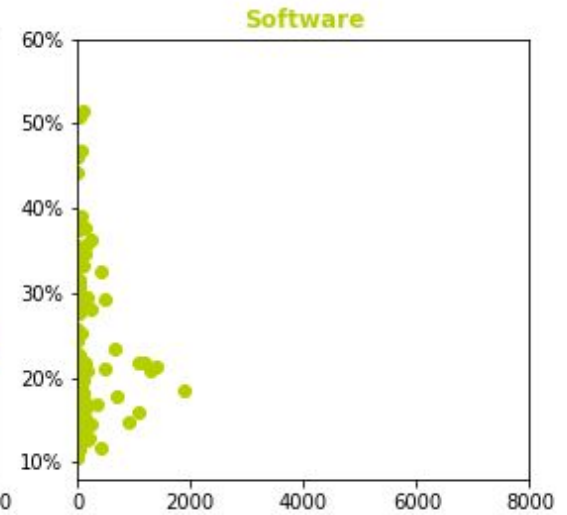
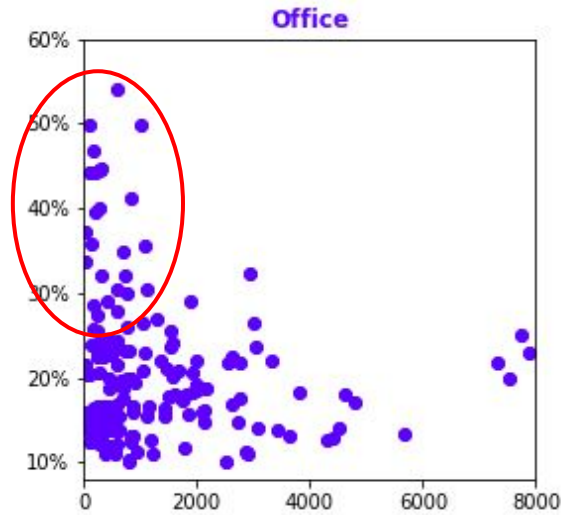


Electronic and Office Products with a low number of reviews are MORE LIKELY to be over 30% on sale.

Sale Percentage

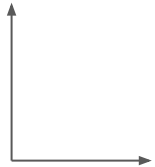


Number of Reviews

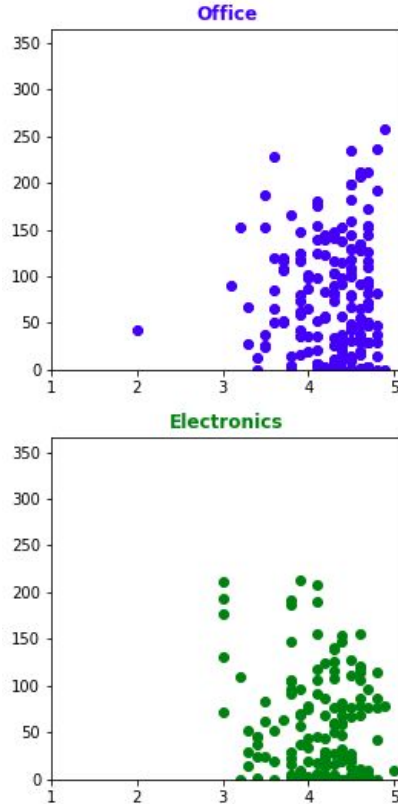


Rating and Number of Reviews DOES NOT correlate with how often products are on sale.

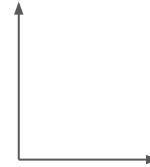
Number of Days
on Sale



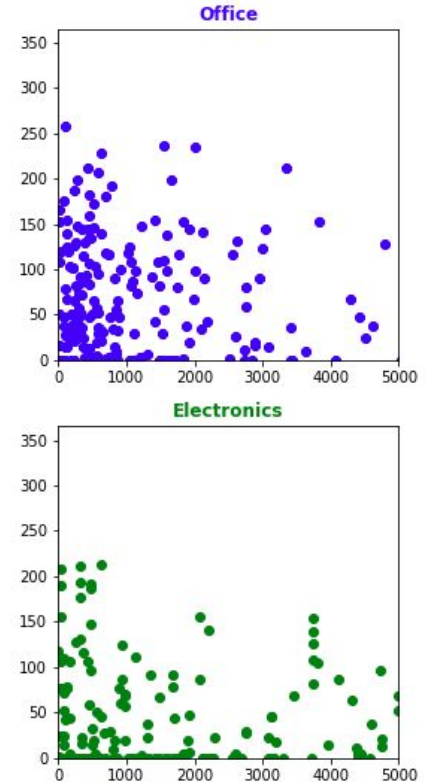
Rating



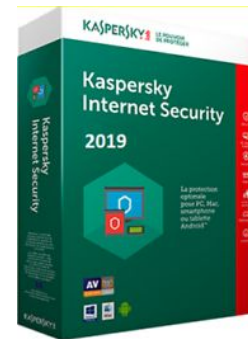
Number of Days
on Sale



Number of Reviews



Conclusion



November
December
January



Thank you!