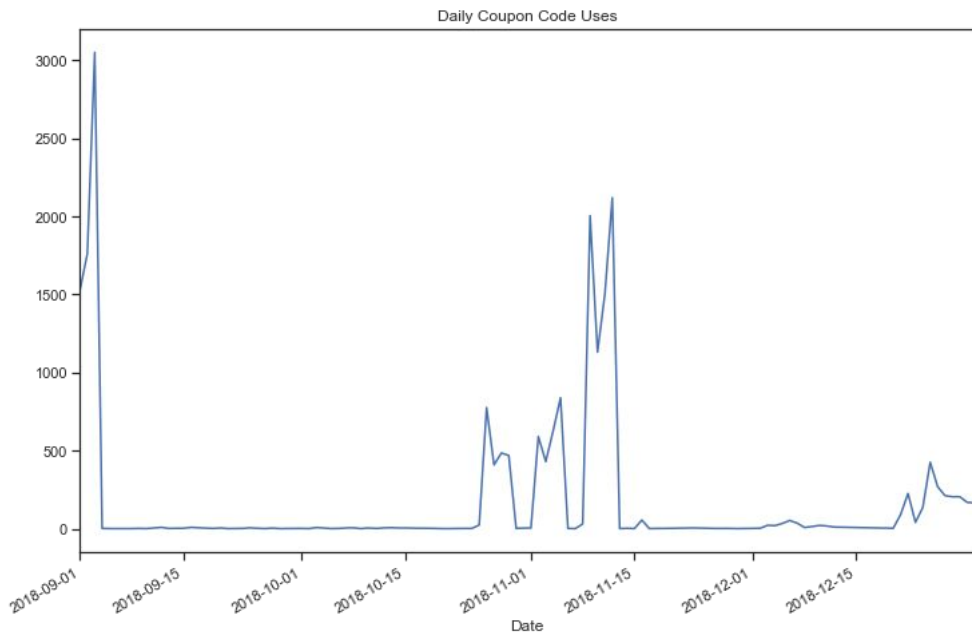# Data Analysis: Find Savings with Sephora

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Data Analyst 2020 Intern Challenge

Data Exploration - Initial Concerns


Sept: 99% uses between 1-3rd
Oct: 96% uses between 27-29th

Total uses by month:

| Month	
9	6404
10	2236
11	9362
12	2390

- Number of total monthly coupon uses seem normal
- Uneven distribution on daily level, non-peak days reaching near zero
- Suspicion: incorrectly tracking daily data, randomly pushing records into wrong days of the month
- Prevents accurate analysis on a weekly or daily level

Business Impact Analysis - Monthly

Average Commission Per Month


Number of Coupons Used by Month
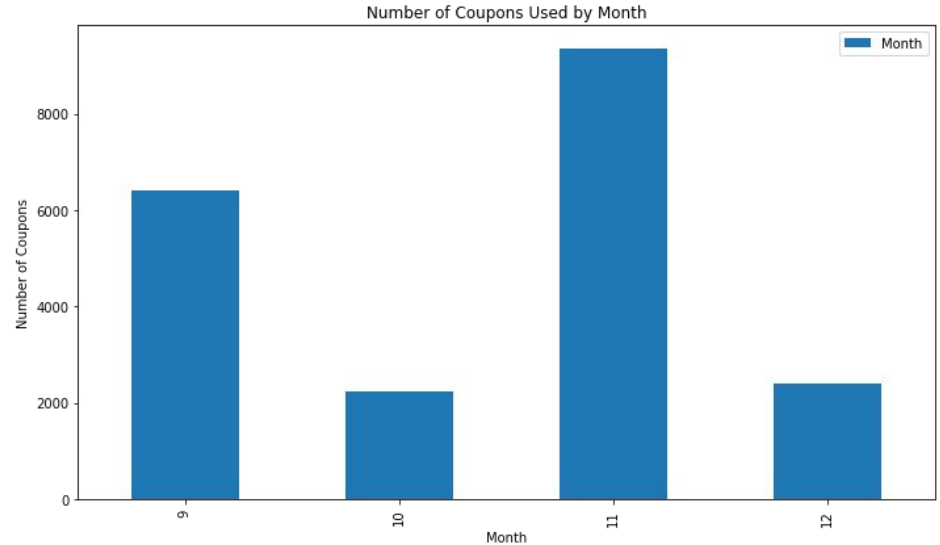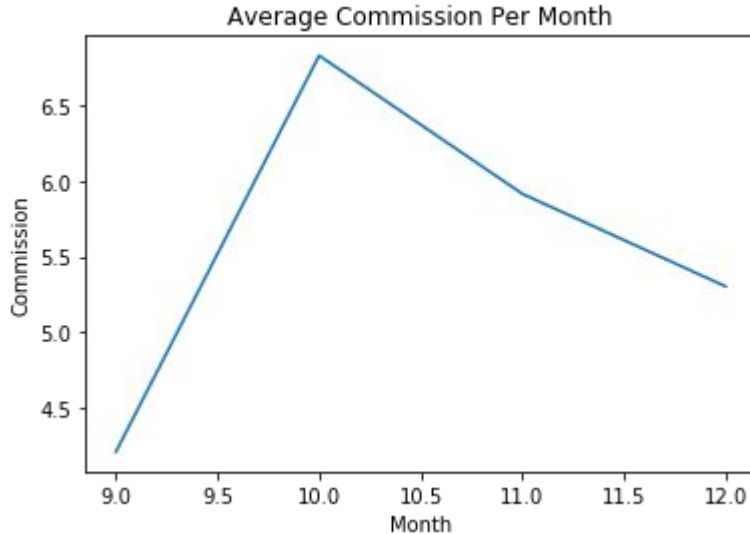
- Codes were most used in November, but October yielded highest profits
- November had the highest code frequencies due to peak holiday shopping

Commission Monthly

Number of Commissioned & Non Commissioned Codes By Month

Total Commission Per Month
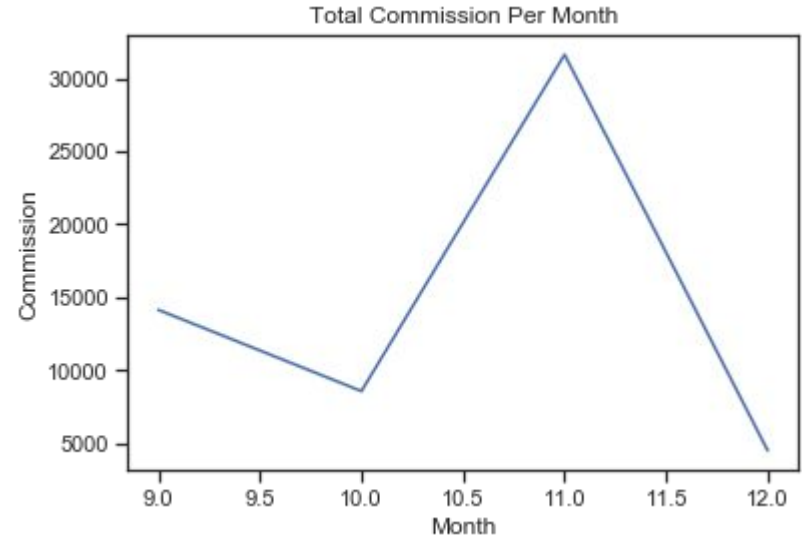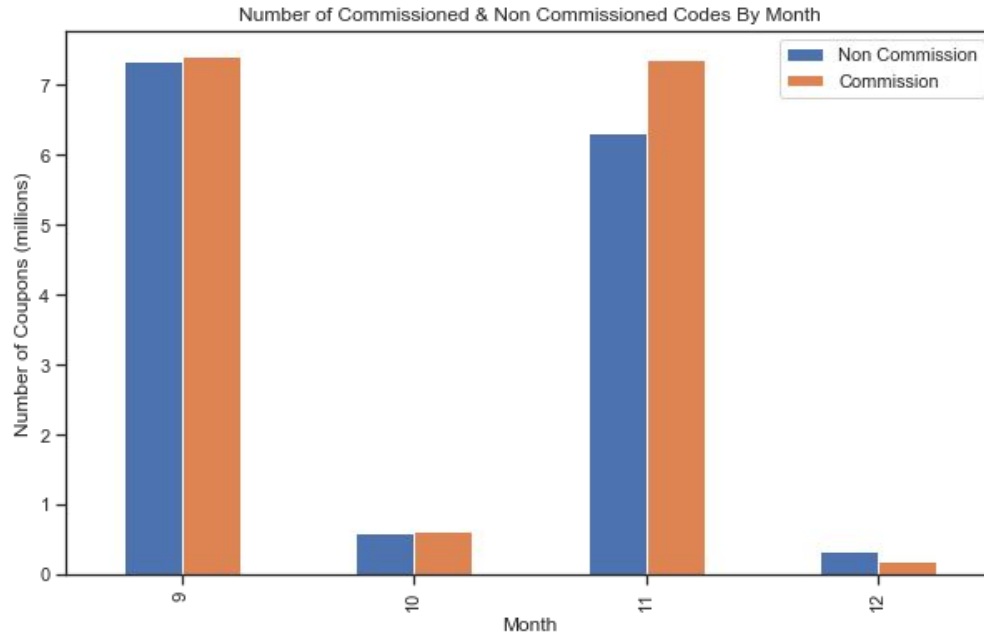
- November: more commissioned than non-commissioned codes implying seasonality. Holidays -> more partnerships -> more coupon codes
- Retailers make more partnerships for attractive sales during holiday shopping

Commission: Savings & Spendings

Median Cart Prices of Commissioned & Non Commissioned Codes
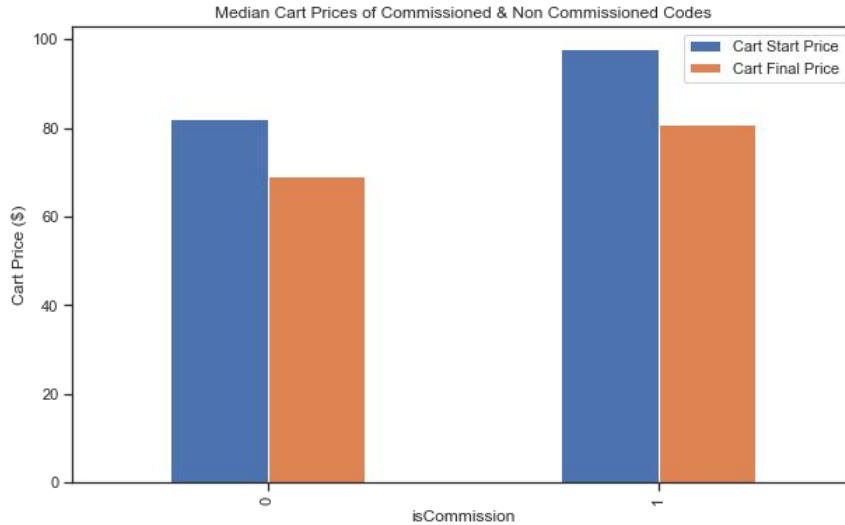
Commissioned coupons:
Cart Start Price = **$16 more**
Cart Final Price = **$11.55 more**

- Median cart start price & cart final price are higher for commissioned codes vs. non-commissioned codes
- Sephora makes a median of $11.55 **MORE net profit** with commissioned codes
- Partnership coupon codes make customers spend more while bringing in more profit for Honey & Sephora

Commission & Customer Savings

Average % Saved For Commissioned/Non Commissioned Coupons
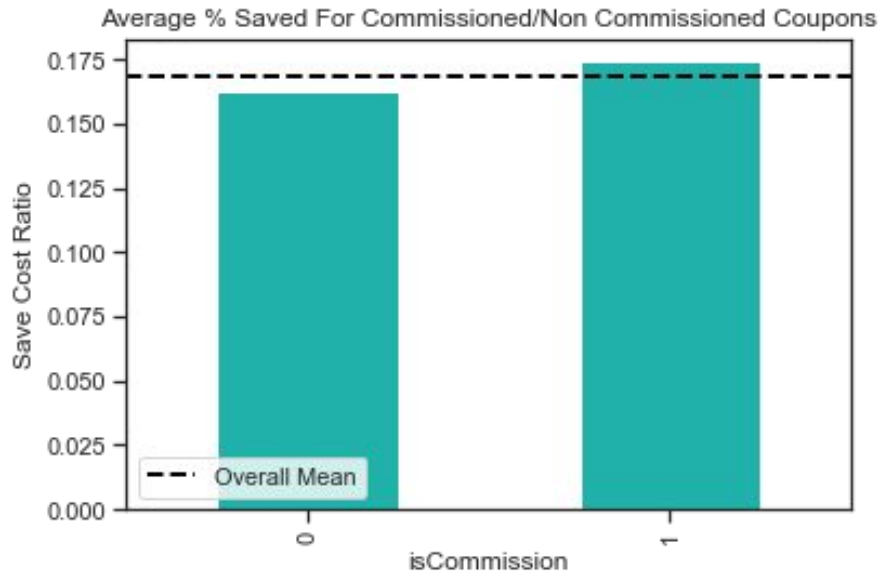
$$\% \text{ Saved} = \frac{\text{cart final \$} - \text{cart start \$}}{\text{cart start \$}}$$

% Commissioned Coupons: **0.497**
% Non Commissioned Coupons: **0.502**

- Commissioned codes statistically proven to provide better average savings percentages than non commissioned codes (avg. 1% more savings)
- Partnership coupon codes benefit customer while also bringing in more profit

Product Analysis - OS Systems

Median Code Run Duration Per OS Name

Number of Coupons Used by OS System
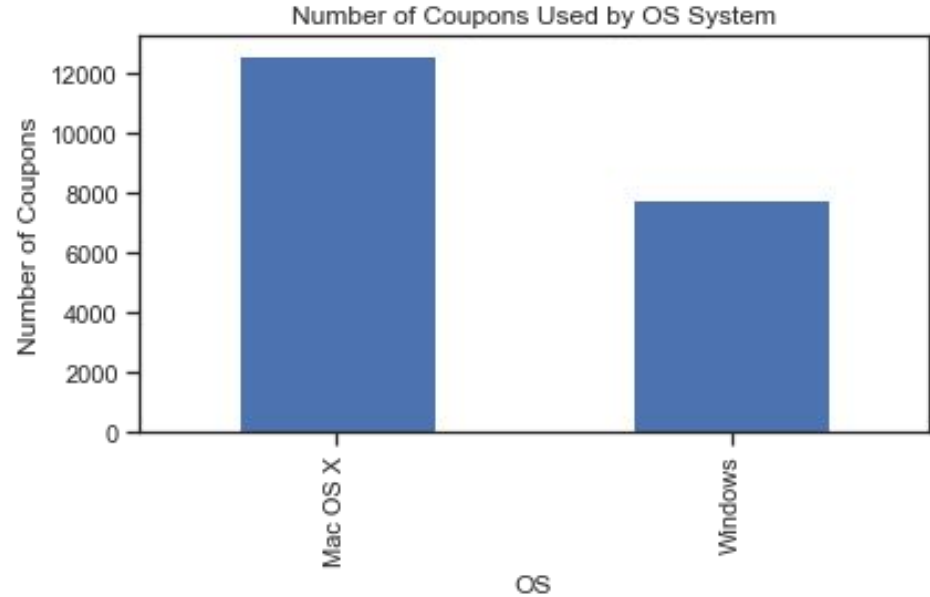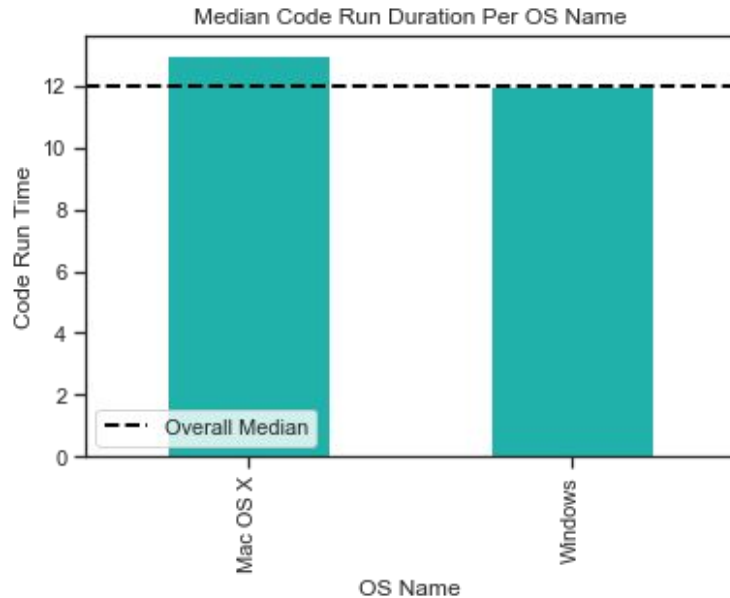
- Mac median code run duration is statistically significantly different from Windows median run time
- Mac users take up ~60% of user base
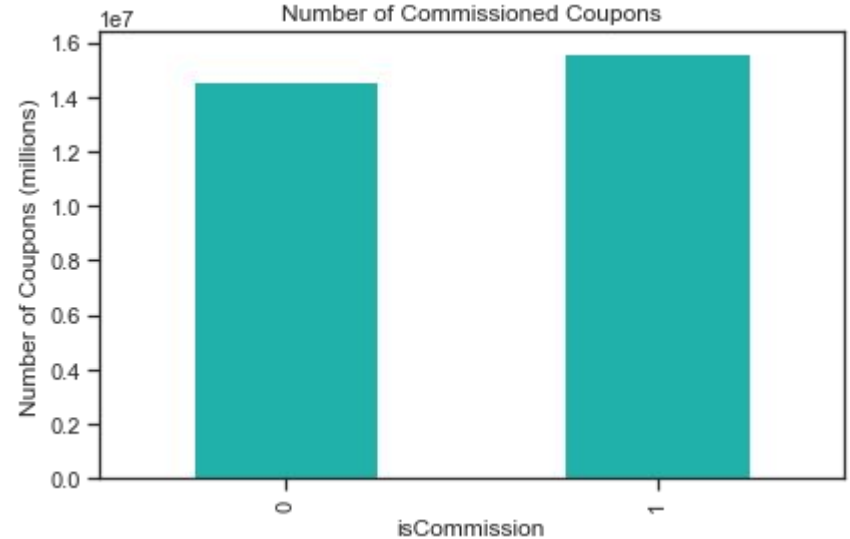- On average scale: Windows performs worse due to extreme outliers

Product Analysis - Browsers
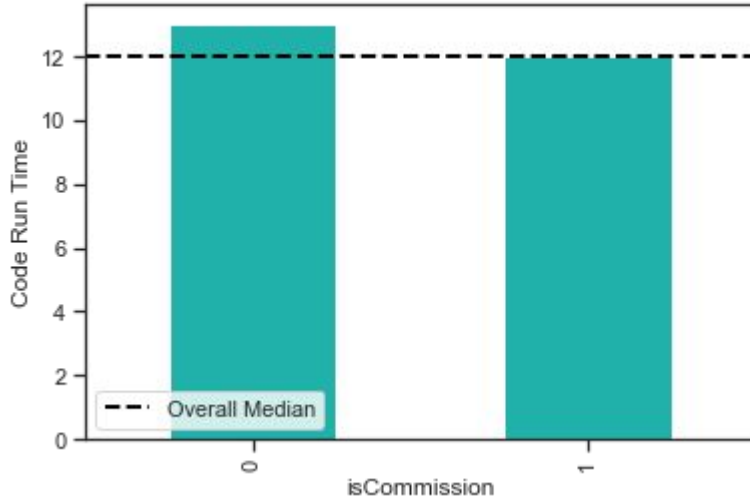

Median Code Run Duration Per Browser Name

Number of Coupons Used by Browser
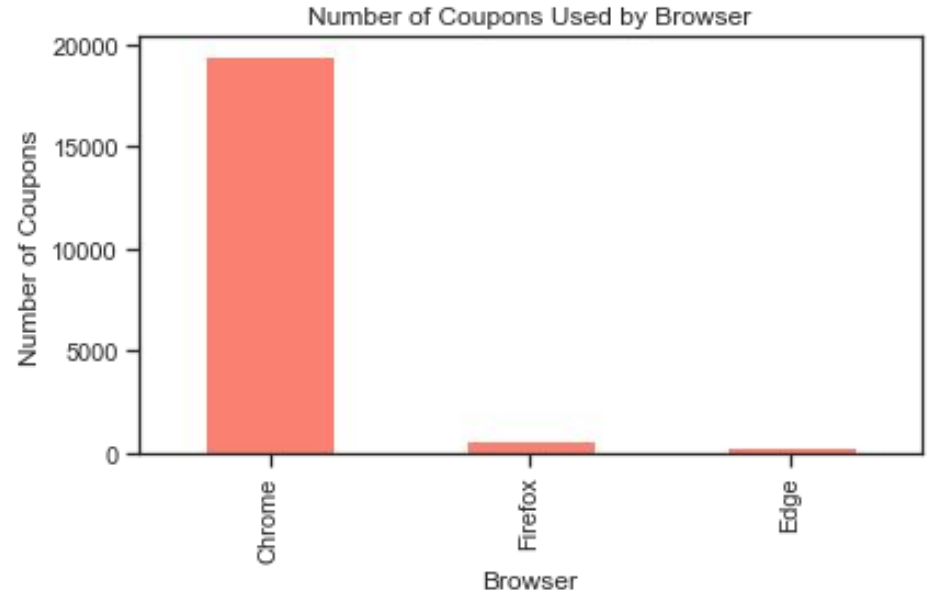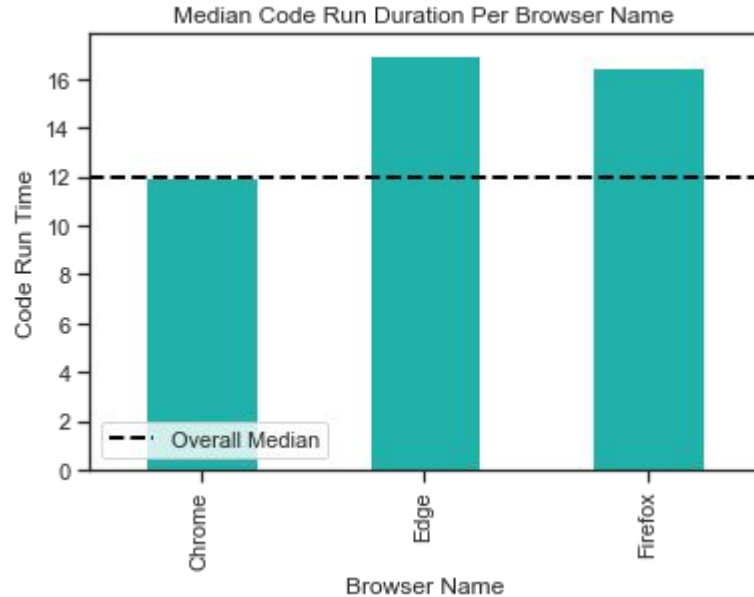
- Edge & Firefox have run times significantly different from median overall run time
- Focus efforts on improving Firefox > Edge: user base is 3x Edge users

Product Analysis - Commission Codes

- Commissioned coupons are statistically proven to have faster avg. code run durations
- Just < 50% of all coupons are commissioned; consider running commissioned codes first to improve speed

Product Recommendations

To improve product performance:

- Focus efforts on improving code run times for Mac OS systems
- Improve run times for Firefox > Edge
- Filter commissioned coupons first to cut down run time
- To benefit profits & customer savings & code run time: MORE commissioned coupon codes

Additional Questions & Explorations

- More data - ALL coupon codes attempts even if lesser or no savings :
  - figure out typical coupon lifetimes to reduce run time
  - determine times of year with more code options
    - align with Sephora product launches?
- More historical data:
  - Compare more months: follow retail cycle?