

# Electronics Sales Data Analysis Of a Retail Corporation Using Python Pandas

Jesmeen Fatema

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# Business Problem

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- Analyze and Explore 12 months (2019) worth of sales data of an Electronic Retail Corporation using Python Pandas to gain knowledge on customers' purchasing behavior.
- Recommend strategic options on how to enhance the revenue growth of the corporation, such as:
  - What specific time of the day to run advertisements to maximize the likelihood of customer's placing order
  - Identify which products are most often sold together so that the corporation could run a promotion thru a recommender system to increase the sales revenue

# Data Description

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- The data contains hundreds of thousands of electronics store purchases broken down by month, product type, cost, purchase address, etc. all across USA.
- Sources of Data
  - Internet

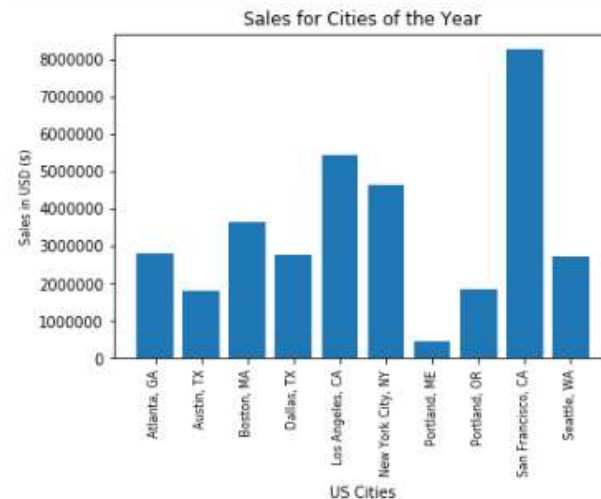
# Data Analysis / Data Cleaning

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- Downloaded (12 csv files) the data from internet.
- Imported relevant libraries that would be used throughout the program.
- Analyzed the data.
- There are 186,850 rows and 6 data points on each item
- All 6 columns and 545 rows contain NaN / empty values that will be dropped.
- Realized there are some duplications when converting some of the data from strings to numerical values that were deleted

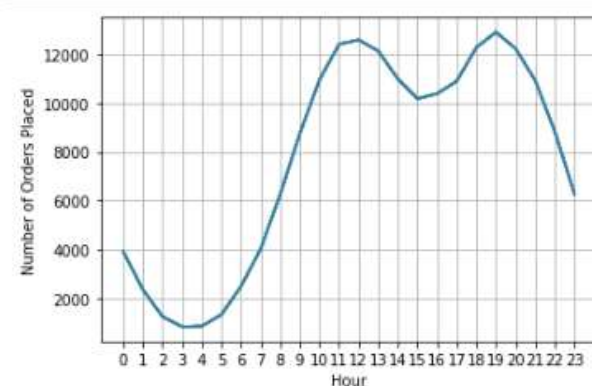
# Data Analysis / Exploration

- As expected December is the best month of the year for sales as primarily because of the Holiday Seasons.
- San Francisco, CA has the highest electronics sales. This could be due to presence of IT firms, need more electronics. There also could be better advertisements of the products.
- Portland, ME has the lowest sales due to a smaller population, less advertisements.



# Data Analysis / Exploration (Contd.)

- The customers placed most orders around 11:00 AM and 7:00 PM.



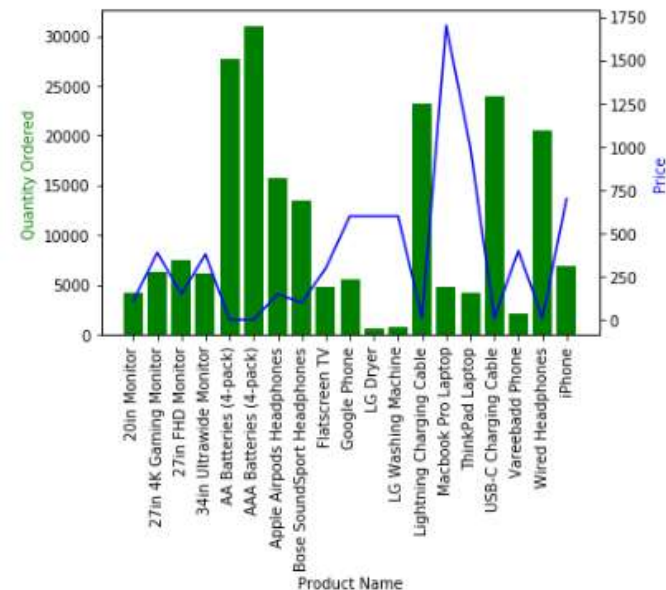
- Top 10 common 2 products sold together as follows:

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('iPhone', 'Lightning Charging Cable') 1005
('Google Phone', 'USB-C Charging Cable') 987
('iPhone', 'Wired Headphones') 447
('Google Phone', 'Wired Headphones') 414
('Vareebadd Phone', 'USB-C Charging Cable') 361
('iPhone', 'Apple AirPods Headphones') 360
('Google Phone', 'Bose SoundSport Headphones') 220
('USB-C Charging Cable', 'Wired Headphones') 160
('Vareebadd Phone', 'Wired Headphones') 143
('Lightning Charging Cable', 'Wired Headphones') 92
```

# Data Analysis / Exploration (Contd.)

- Top 10 common 3 products sold together as follows:
- From the chart it shows that the cheaper product sold the most - AAA Batteries (4-pack)
- The product sold the least is LG Dryer, which not necessarily the most expensive
- MacbookPro Labtop sold more than the washing machine even though the labtops are more expensive because of the more users (students, corporations, etc.)

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( 'Google Phone', 'USB-C Charging Cable', 'Wired Headphones' ) 87
( 'iPhone', 'Lightning Charging Cable', 'Wired Headphones' ) 62
( 'iPhone', 'Lightning Charging Cable', 'Apple Airpods Headphones' ) 47
( 'Google Phone', 'USB-C Charging Cable', 'Bose SoundSport Headphones' ) 35
( 'Vareebadd Phone', 'USB-C Charging Cable', 'Wired Headphones' ) 33
( 'iPhone', 'Apple Airpods Headphones', 'Wired Headphones' ) 27
( 'Google Phone', 'Bose SoundSport Headphones', 'Wired Headphones' ) 24
( 'Vareebadd Phone', 'USB-C Charging Cable', 'Bose SoundSport Headphones' ) 16
( 'USB-C Charging Cable', 'Bose SoundSport Headphones', 'Wired Headphones' ) 5
( 'Vareebadd Phone', 'Bose SoundSport Headphones', 'Wired Headphones' ) 5
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# Conclusions and Recommendations

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- As a promotion as a smart deal, the business could group the Lightning Charging Cable with the iPhones to maximize the revenue, and the same with the other pairs. The corporation could develop a recommender system for the online customers.
- The corporation could make sure the advertisement to appear before and around 11 am and 7 pm to increase sales.