

Vending Machine Analysis

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To start our analysis I would like to consider two questions, “What is the best locations to put a next vending machine?” and “Which products performend better in these machines?”. After loading the data lets have a fist look on its format.

##	variable	q_zeros	p_zeros	q_na	p_na	q_inf	p_inf	type	unique
## 1	Status	0	0	0	0.00	0	0	character	2
## 2	Device.ID	0	0	0	0.00	0	0	character	5
## 3	Location	0	0	0	0.00	0	0	character	4
## 4	Machine	0	0	0	0.00	0	0	character	5
## 5	Product	0	0	0	0.00	0	0	character	171
## 6	Category	0	0	0	0.00	0	0	character	5
## 7	Transaction	0	0	0	0.00	0	0	numeric	6110
## 8	TransDate	0	0	0	0.00	0	0	character	242
## 9	Type	0	0	0	0.00	0	0	character	2
## 10	RCoil	0	0	0	0.00	0	0	integer	45
## 11	RPrice	0	0	0	0.00	0	0	numeric	14
## 12	RQty	0	0	0	0.00	0	0	integer	3
## 13	MCoil	0	0	0	0.00	0	0	integer	45
## 14	MPrice	0	0	1	0.02	0	0	numeric	14
## 15	MQty	0	0	0	0.00	0	0	integer	3
## 16	LineTotal	0	0	0	0.00	0	0	numeric	18
## 17	TransTotal	0	0	0	0.00	0	0	numeric	25
## 18	Prcd.Date	0	0	0	0.00	0	0	character	241

At a first look on the dataset and based on kaggle’s definition of each category we can drop some columns to have a better understanding of the problem.

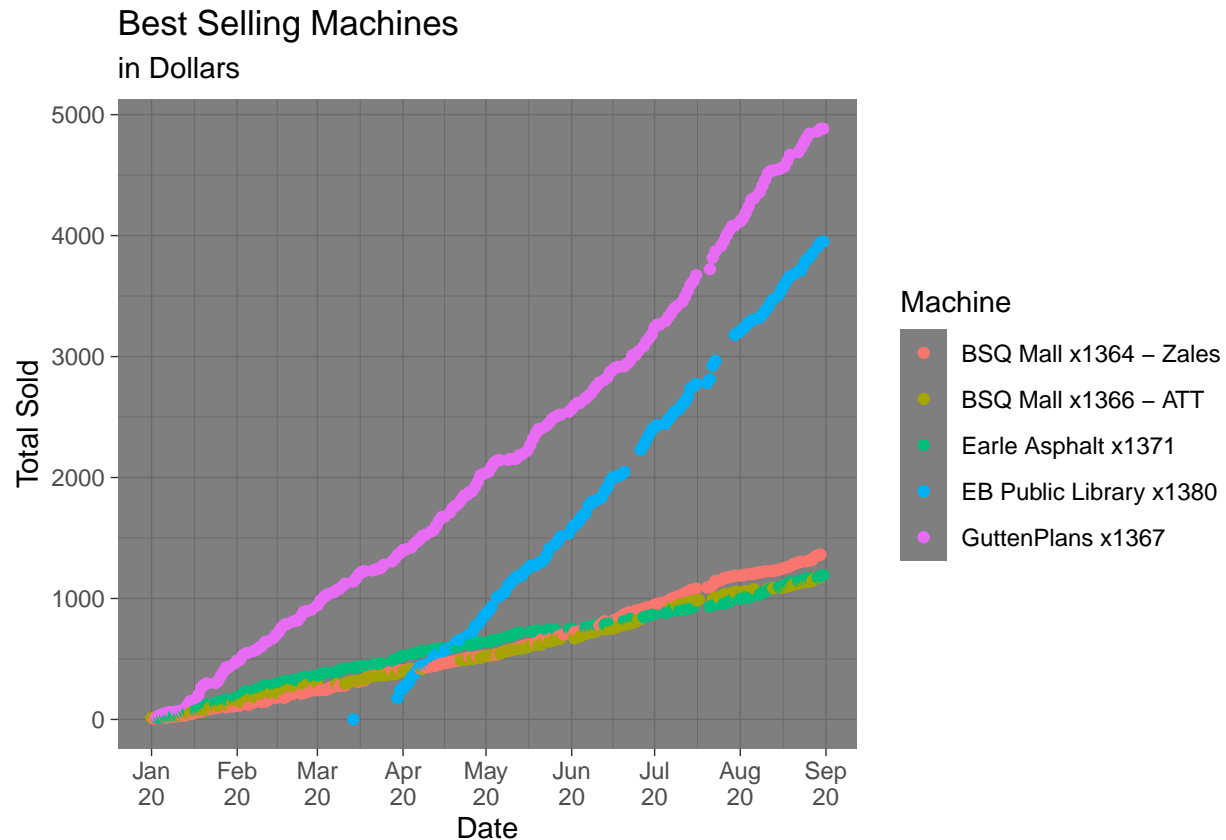
First I would like to calculate how those machines performed under some assumptions such ass

First we have the object totalSales, it is an overall sum of all the sales from each vending machine.

##	Machine	LineTotal
## 1	BSQ Mall x1364 - Zales	1362.25
## 2	BSQ Mall x1366 - ATT	1175.25
## 3	Earle Asphalt x1371	1193.50
## 4	EB Public Library x1380	3950.25
## 5	GuttenPlans x1367	4884.25

We can see that the unity in Gutten Plans and the one in EB Public Library performed much better than the other three. An explanation for that would be that the machines intalled in places with

other options of food performed worse because costumers had more options. We can see by the following graphic that the vending machines have a pretty linear behavior on regard of ther compound sellings.



Now lets move our attention to the other part of the problem, which products were sold the most.

```
## # A tibble: 5 x 3
## # Groups:   Machine [1]
##   Machine      Product      CumulativeSales
##   <fct>        <chr>          <dbl>
## 1 GuttenPlans x1367 Monster Energy Original      925
## 2 GuttenPlans x1367 Red Bull - Original          480.
## 3 GuttenPlans x1367 KitKat - Crisp Wafers        415
## 4 GuttenPlans x1367 Coca Cola - Zero Sugar       344
## 5 GuttenPlans x1367 Sunkist Soda - Orange        272
```

```
## # A tibble: 5 x 3
## # Groups:   Machine [1]
##   Machine      Product      CumulativeS-1
##   <fct>        <chr>          <dbl>
## 1 EB Public Library x1380 Coca Cola - Zero Sugar      268
## 2 EB Public Library x1380 Starbucks Doubleshot Energy - Mocha 256.
## 3 EB Public Library x1380 Poland Springs Water        190.
## 4 EB Public Library x1380 Oreo Mini - Go Paks          137
## 5 EB Public Library x1380 Starbucks Refresher - Real Coconut Water 135
## # ... with abbreviated variable name 1: CumulativeSales
```

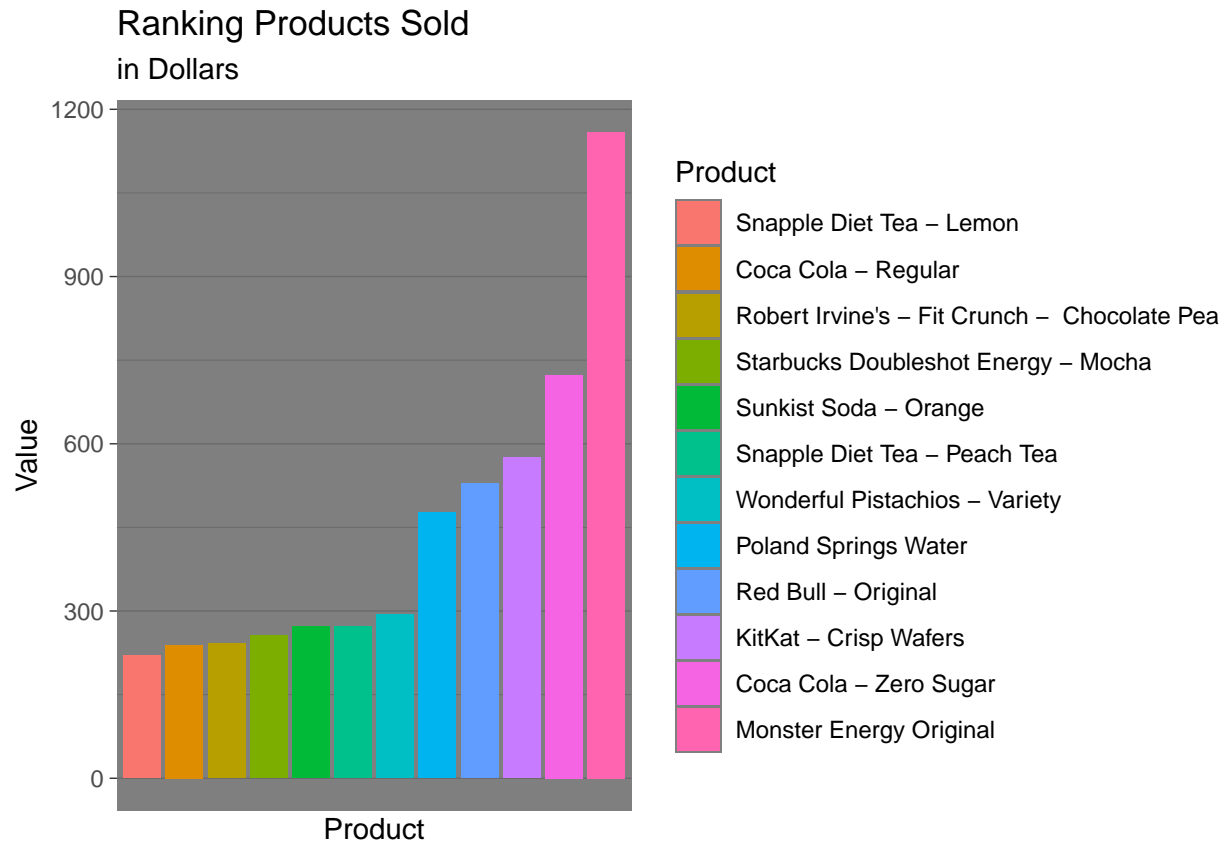
```
## # A tibble: 5 x 3
```

```
## # Groups:  Machine [1]
##   Machine          Product          CumulativeSales
##   <fct>          <chr>          <dbl>
## 1 BSQ Mall x1364 - Zales Poland Springs Water          226.
## 2 BSQ Mall x1364 - Zales Monster Energy Original        126
## 3 BSQ Mall x1364 - Zales Snapple Diet Tea - Peach Tea    100
## 4 BSQ Mall x1364 - Zales Coca Cola - Zero Sugar          96
## 5 BSQ Mall x1364 - Zales KitKat - Crisp Wafers           62

## # A tibble: 5 x 3
## # Groups:  Machine [1]
##   Machine          Product          Cumulative~1
##   <fct>          <chr>          <dbl>
## 1 Earle Asphalt x1371 Robert Irvine's - Fit Crunch - Chocolate Pea    158
## 2 Earle Asphalt x1371 Wonderful Pistachios - Variety              152
## 3 Earle Asphalt x1371 SunChips Multigrain - Harvest Cheddar           52.5
## 4 Earle Asphalt x1371 Miss Vickie's Potato Chip - Smokehouse BBQ       51
## 5 Earle Asphalt x1371 CheezIt - Original                          50
## # ... with abbreviated variable name 1: CumulativeSales

## # A tibble: 5 x 3
## # Groups:  Machine [1]
##   Machine          Product          CumulativeSales
##   <fct>          <chr>          <dbl>
## 1 BSQ Mall x1366 - ATT Monster Energy Original          108
## 2 BSQ Mall x1366 - ATT S. Pellegrino Sparkling Mineral Water      88
## 3 BSQ Mall x1366 - ATT Poland Springs Water              60
## 4 BSQ Mall x1366 - ATT Red Bull - Original               49
## 5 BSQ Mall x1366 - ATT Snapple Diet Tea - Raspberry      47.5
```

In those charts we can see the top 5 selling products of each machine. Now lets take a look on the overall top selling products, it has been filtered of only products that sold over 200 dollars.



Now we can see the top sellers over all are Monster Energy Original, Coca-Cola Zero and Kitkat, specially because of the high volume sold at Gutten Plans and at the library.

To conclude any new machine installed should be placed in a location where there aren't many options around and probably should have in its products the most sold ones.