

Vending Machine Sales Report

Introduction

This dataset represents vending machine sales data from various locations in Central New Jersey. The locations include a library, a mall, an office location and a manufacturing location.

The locations and machine data are as follows:

1. Guttien Plans—Frozen dough specialist company that operates 24/5 . Vending machine assigned is GuttienPlans x1367
2. EB Public Library—Public library that has high foot traffic 5–6 days a week. Vending machine : EB Public Library x1380
3. Brunswick Sq Mall—Mall with average foot traffic 7 days a week. Vending machine(s) : BSQ Mall x1364—Zales & BSQ Mall x1366—ATT
4. Earle Asphalt—A construction engineering firm that operates 5 days a week. Vending machine : Earle Asphalt x1371

This file has the following attributes:

Status : Represents if the machine data is successfully processed.

Device ID : Unique electronic identifier (also called as ePort) for the vending machine. A machine is allocated a unique ePort * device

Location : Indicates location of the vending machine

Machine : User-friendly machine name

Product : Product vended from the machine

Category : Carbonated / Food / Non-carbonated / Water

Transaction : Unique identifier for every transaction

TransDate : The Date & time of transaction

Type : Type of transaction (Cash / Credit)

RCoil : Coil # used to vend the product

RPrice : Price of the Product

RQty : Quantity sold. This is usually one but machines can be configured to sell more items in a single transaction

MCoil : Mapped coil # used to vend the product (from toucan) *MPrice* : Mapped price of the Product

MQty : Mapped quantity sold. This is usually one but machines can be configured to sell more items in a single transaction

LineTotal : Total sale per transaction

TransTotal : Represents total of all transactions that will show up on the Credit Card. A user could vend a drink for 3 and as nack for 1.5 making a total of \$4.50

Prctd Date : Date when the transaction was processed by SeedLive (an entity that is used to aggregate all transactions electronically).

Data Cleaning

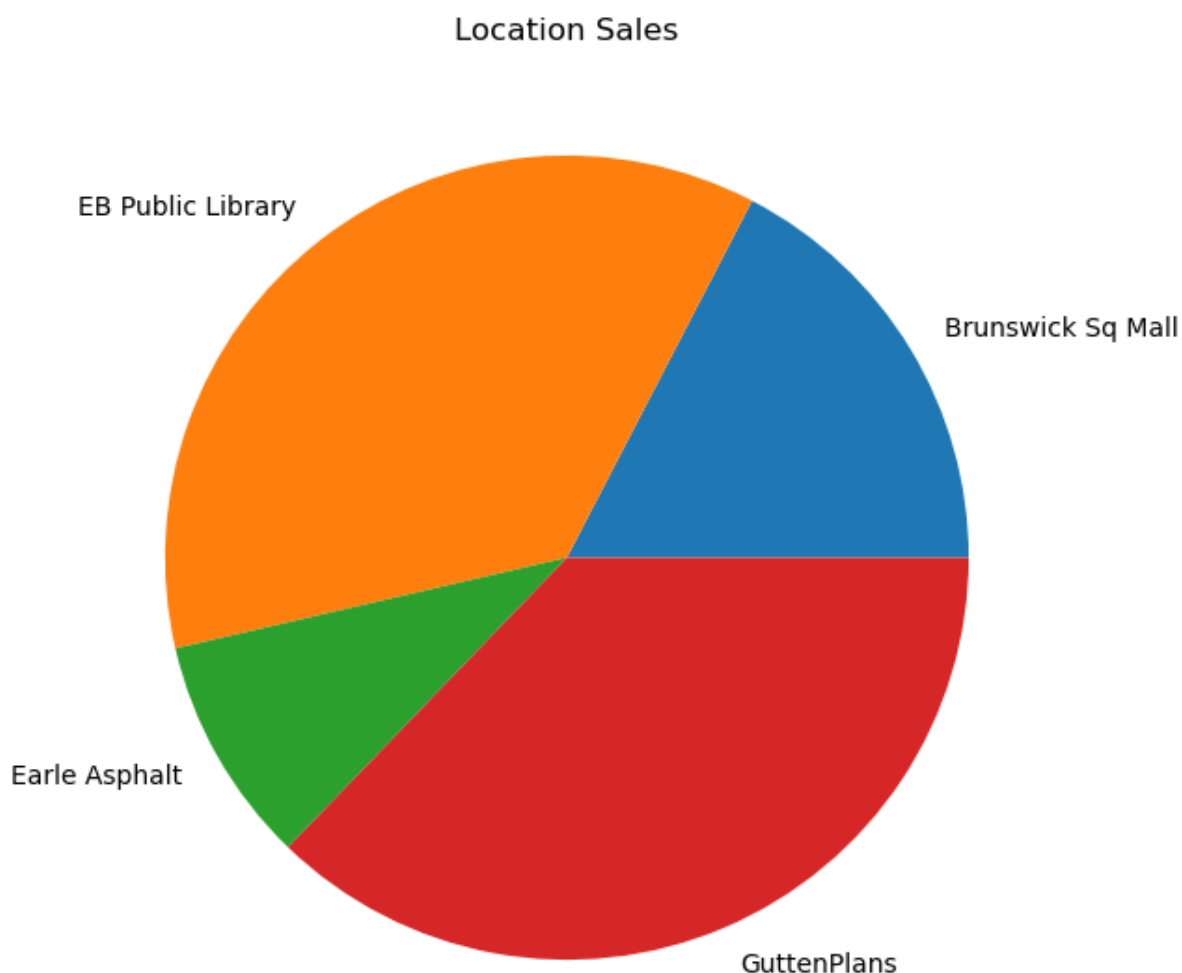
There were 276 missing values. Product 'Category' had 267 missing values, 6 under 'Products' and 3 in 'MPrice'. I checked through the machine, products and category columns and found some filled product categories relatable to the missing ones.

I [replaced](#) the 'Category' null values with 'Food' where the 'Product' is 'Doritos Dinamita Chile Lemon', 'Doritos Spicy Nacho', 'Mini Chips Ahoy—Go Paks', 'Oreo Mini—Go Paks', 'Teddy Grahams—Go Paks'. The null values under 'Category' where the 'Product' is 'Starbucks Doubleshot Energy—Coffee' were [filled](#) with 'Non Carbonated'. I [replaced](#) the 'Category' null values with 'Carbonated' where the 'Product' is 'Canada Dry—Ginger Ale & Lemonde' and 'Canada Dry—Ginger Ale'.

After filling up the null values up to this point, I was left with 6 rows under the Product, Category and MPrice columns. They are all under 'EB Public Library x1380' Machines. Since there were few numbers of rows left, I [dropped](#) them. I also checked for [duplicates](#), there were none. I tried checking for outliers using z-scores but I decided not to remove any rows as they were all relevant to the data. The dates columns were also [optimized](#).

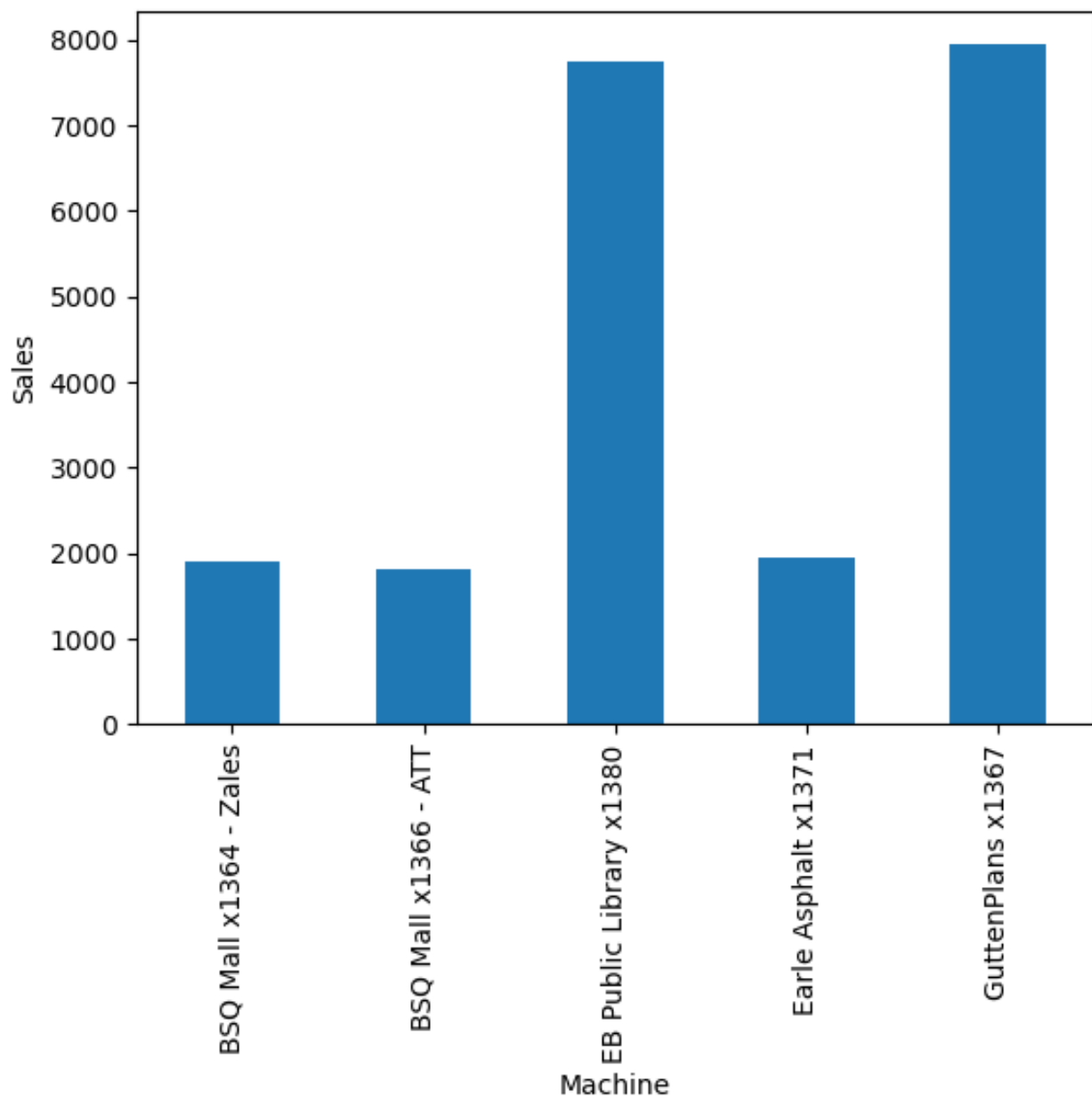
Drawing Insights

Sales based on location



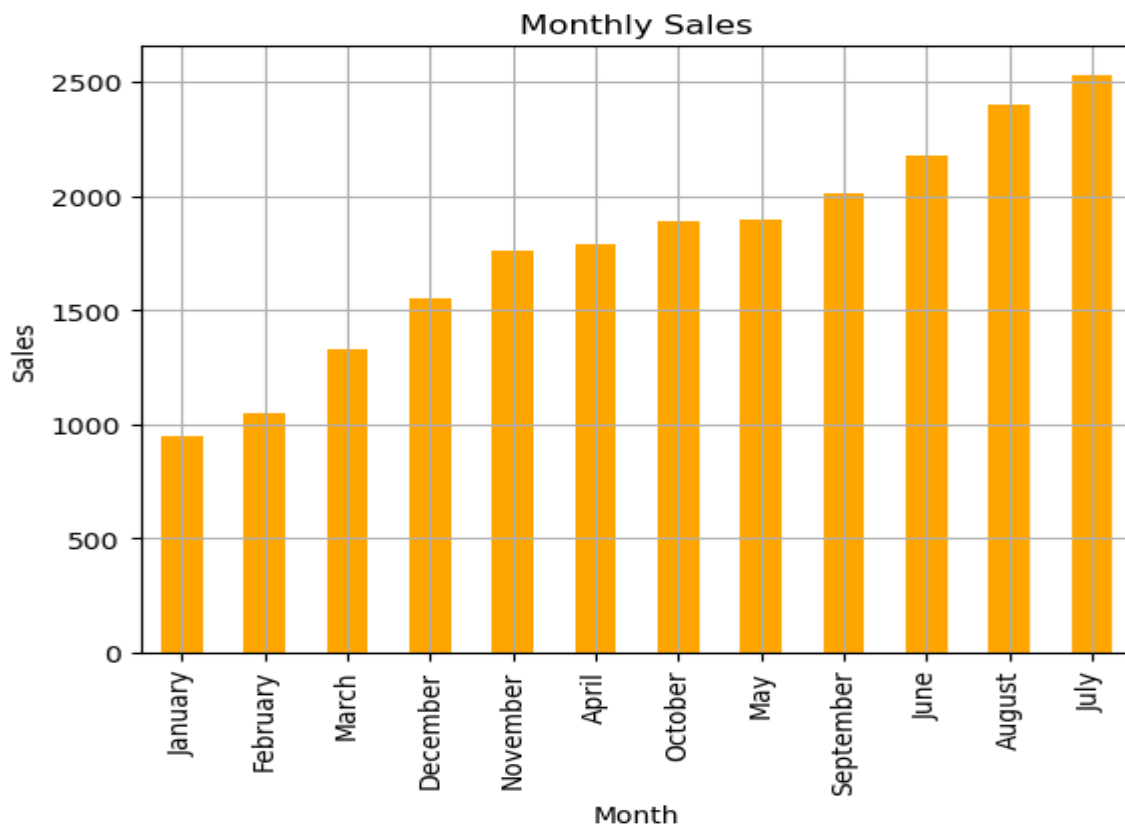
- GuttenPlans and EB Public Library have the highest sales while Earle Asphalt has the lowest.

Machine Sales



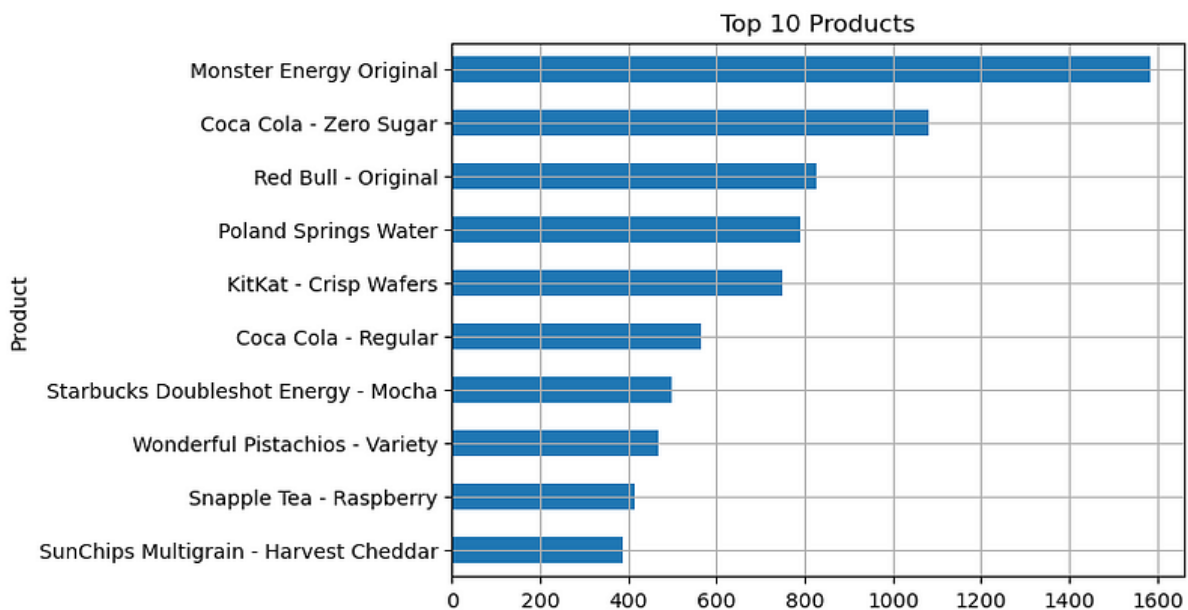
- Investors should be more interested in the top locations and machines —GuttenPlans and EB Public Library.
- Promo and Discount sales could be considered to improve sales at Brunswick Square Mall and Earle Asphalt.

Monthly Sales



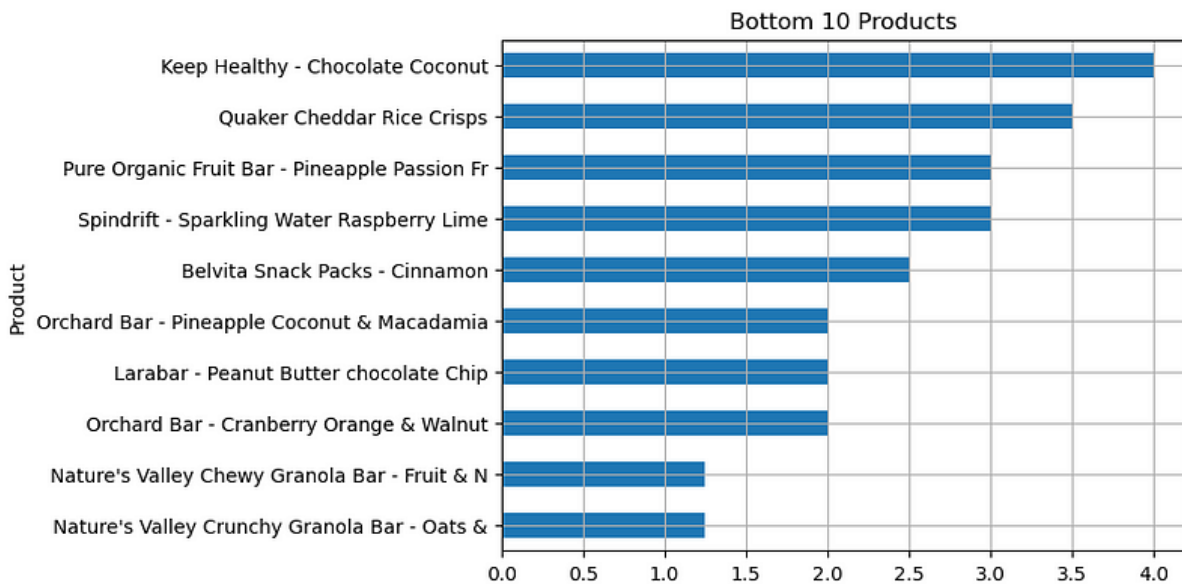
- The highest sales were recorded in the summer, of which the peak is July.
- This shows that business thrive best in Summer.
- The lowest monthly sales were recorder in winter.
- The seasonal fluctuation should inform proper planning and allocation of resources as well as the need to focus marketing efforts more on the boom season.

Top 10 Performing Products



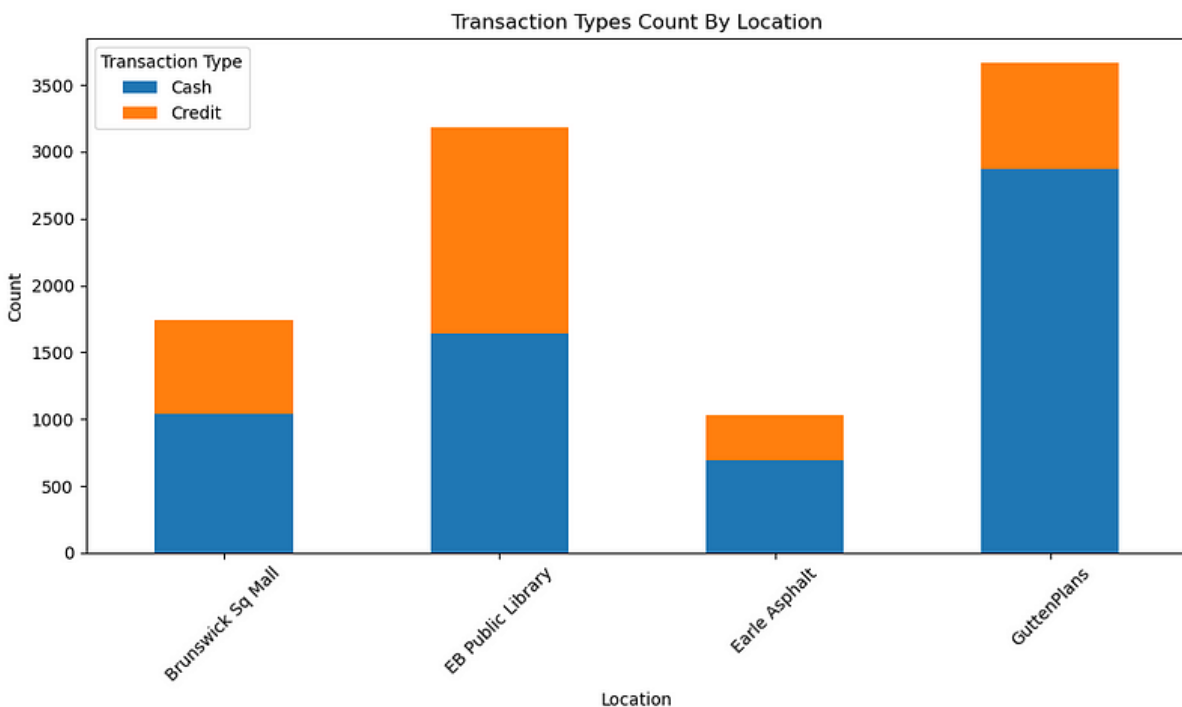
- Monster Energy Original is the most preferred product, followed by Coca Cola—Zero Sugar.
- This offers insight into consumer preference, market trends, and potential areas for growth.

Bottom 10 Products



- Nature's Valley Crunchy Granola Bar appeared to be the product with the lowest sales.
- It is important to gain insight into areas needing improvement, potential reason for underperformance, and opportunity for optimization.
- This will inform decisions on product redesign, marketing efforts, or even discontinuation to allocate resources more effectively and enhance overall business performance.

Transaction Types Count By Location



- In Brunswick Sq Mall, there were 1036 cash transactions and 703 credit. *People paying with cash are relatively more than those with credit.
 - EB Public Library had 1538 credit transactions and 1639 cash. *There is no major difference between the two transaction types.
 - 693 cash transactions were recorded as against 341 credit transactions in Earle Asphalt. *Most customers prefer cash payments over credit transactions.
 - GutterPlans had 2871 cash and 790 credit transactions. *A significant number of people preferred cash transaction.
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- Overall, customers may prefer cash payments over credit transactions, as evidenced by the higher number of cash transactions
 - There is a need for further analysis to explore the demographics of the customers in each location to understand why cash transactions are more prevalent.
 - The various locations (especially, GutterPlans) may need to ensure they have adequate cash-handling procedures in place to manage the high volume of cash transactions effectively. Additionally, they could evaluate their credit payment options to encourage more customers to use credit, potentially increasing sales or reducing the need for cash handling.
 - Marketing strategies could be tailored to promote credit payment options or introduce incentives for customers to use credit, such as discount or loyalty rewards.

This analysis provides valuable insights that can inform various aspects of the business from operations and marketing to financial management and customer service.