

DR. PADMASINI VENUGOPAL

DATA ANALYST PORTFOLIO



PROJECTS



- [GAMECO](#)
- [PREPARING FOR THE NEXT INFLUENZA SEASON 2018 IN THE USA](#)
- [ROCKBUSTER STEALTH](#)
- [INSTACART](#)
- [PIG E. BANK](#)
- [DAIRY PRODUCTS CONSUMPTION IN INDIA \(2019-2022\)](#)

GAMECO VIDEO GAMES SALES



PROJECT 1: GAMECO BUDGET PLANNING

OBJECTIVE

- To develop new games with the data.
- To better understand the games in the market.

KEY QUESTIONS

- Are any specific games more popular than others?
- Which publishers are the main competitors?
- Have any games decreased or increased in popularity over time?
- How have their sales varied between geographic regions over time?

DATA AND PROJECT

- Data set that covers historical sales of video games
DATA: [SOURCE](#)
LINK: [SOURCE](#)
PROJECT BRIEF: [SOURCE](#)

TECHNIQUES APPLIED

- Data sorting
- Data filtering
- Grouping and summarising the data
- Deriving new variables
- Joining the data with VLOOKUP
- Visualizing in Excel
- Presenting results and recommendations

LIMITATIONS IN DATA

- It tracks the total number of units of games sold (not financial figures) from 1980 to 2016.
- The numbers represent units sold in millions. When you see the number “1.2,” for instance, this represents a total of 1.2 million units sold.



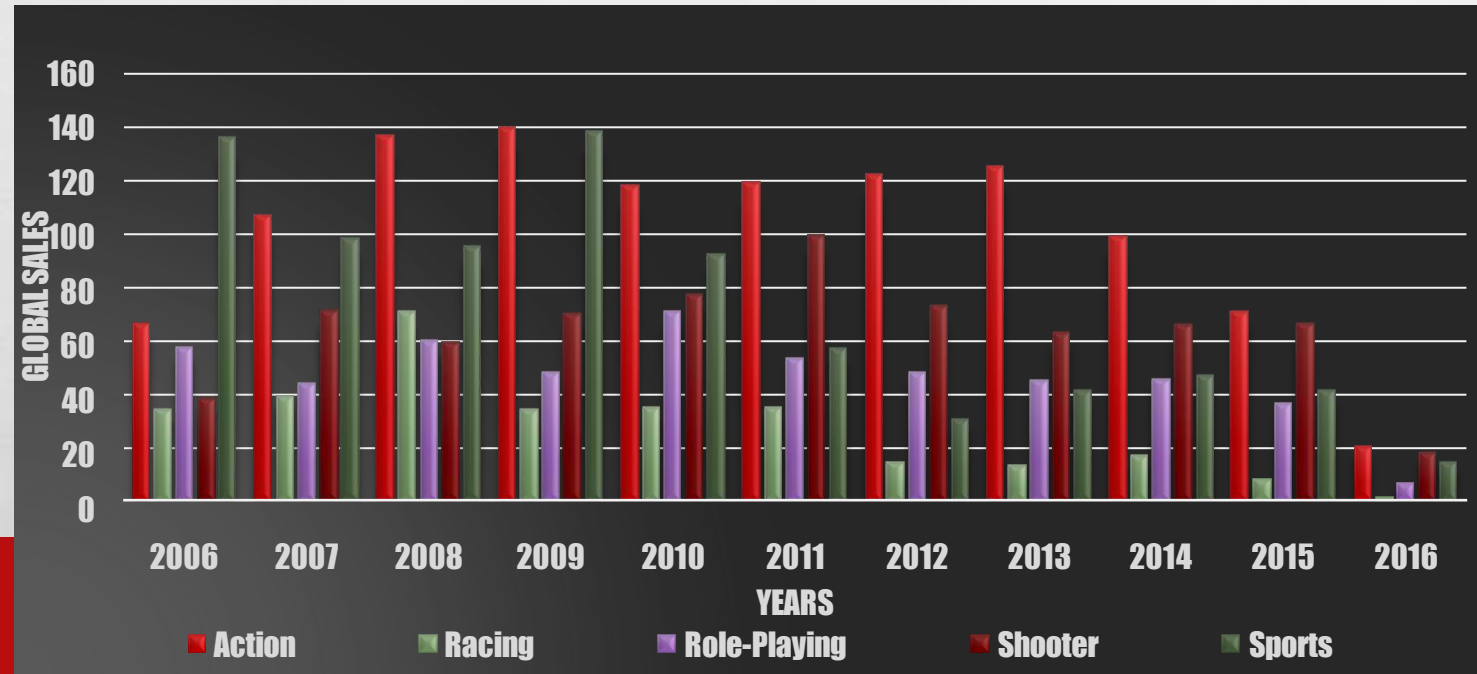
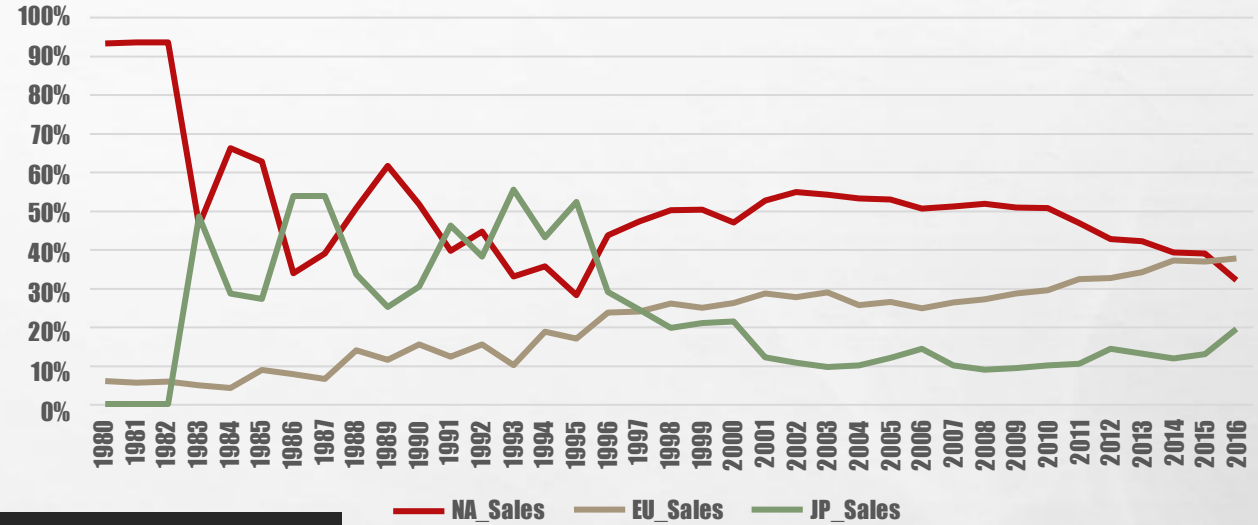
TOOLS USED:



ANALYSIS

- The NA has the largest sales globally for shooter games.
- Eu sales have slowly peaked since 1994 and in the last 2 years, it has crossed the NA American sales globally.

PERCENTAGE OF SALES GLOBALLY



- Since the take 10 years the top revenue-generating game genres are action, racing, role-playing, shooter, and sports.
- After 2010, there seems to be a drop in all the top-selling games. But still, the percentage of global sales has been secured by the increased sales of other games.

DELIVERABLES AND RECOMMENDATIONS

RESULTS/DELIVERABLES

- The project insights and analysis have been presented to the stakeholders.

Link: [source](#)

RECOMMENDATIONS

- More focus should be given to why the high-selling genre “action” has reduced sales now and concentrate on the other high-selling genres.
- Focus on the recent 6% hike in sales in Japan last year may help us to find which games have started to boom.
- Create new games based on the regions and the newer trends.
- Marketing campaigns and promotions can be done to bring back interest in youngsters towards the video games will gradually help in improvising sales.



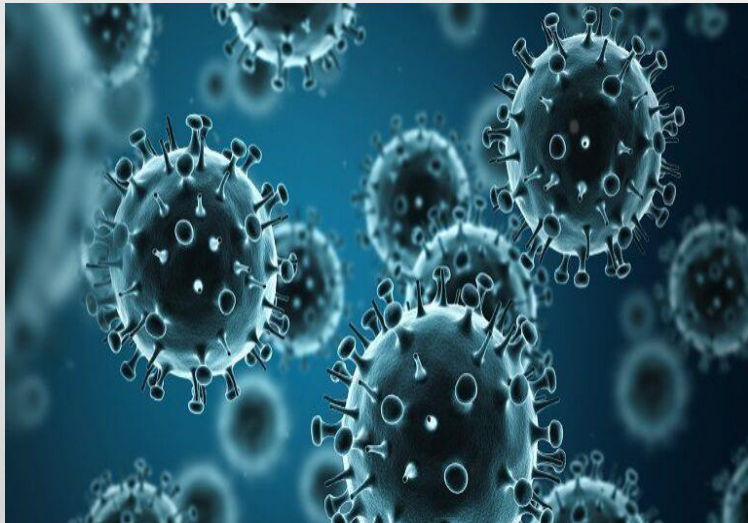
**FLU
SEASON
AHEAD**

**PREPARING FOR
THE UPCOMING
INFLUENZA SEASON
2018 IN THE USA**

PROJECT 2: PREPARING FOR THE NEXT INFLUENZA SEASON 2018 IN THE USA

OBJECTIVE

- To analyze influenza trends in the US in order to support a medical staffing agency for the deployment of temporary healthcare personnel for the upcoming influenza season.



KEY QUESTIONS

- Determine the timing and spatial distribution of medical personnel
- Determine whether influenza occurs seasonally or throughout the entire year
- Prioritize states with large Vulnerable populations

DATA AND PROJECT

- The influenza death data is collected from the CDC
LINK: [SOURCE](#)
THE US CENSUS DATA FROM THE US CENSUS BUREAU LINK: [SOURCE](#)
PROJECT BRIEF LINK: [SOURCE](#)

TECHNIQUES APPLIED

- Data cleaning
- Data quality and integrity checks.
- Data integration & transformation
- Data grouping and summarizing
- Statistical analysis
- Hypothesis testing
- Forecasting
- Visualizations using tableau

LIMITATIONS

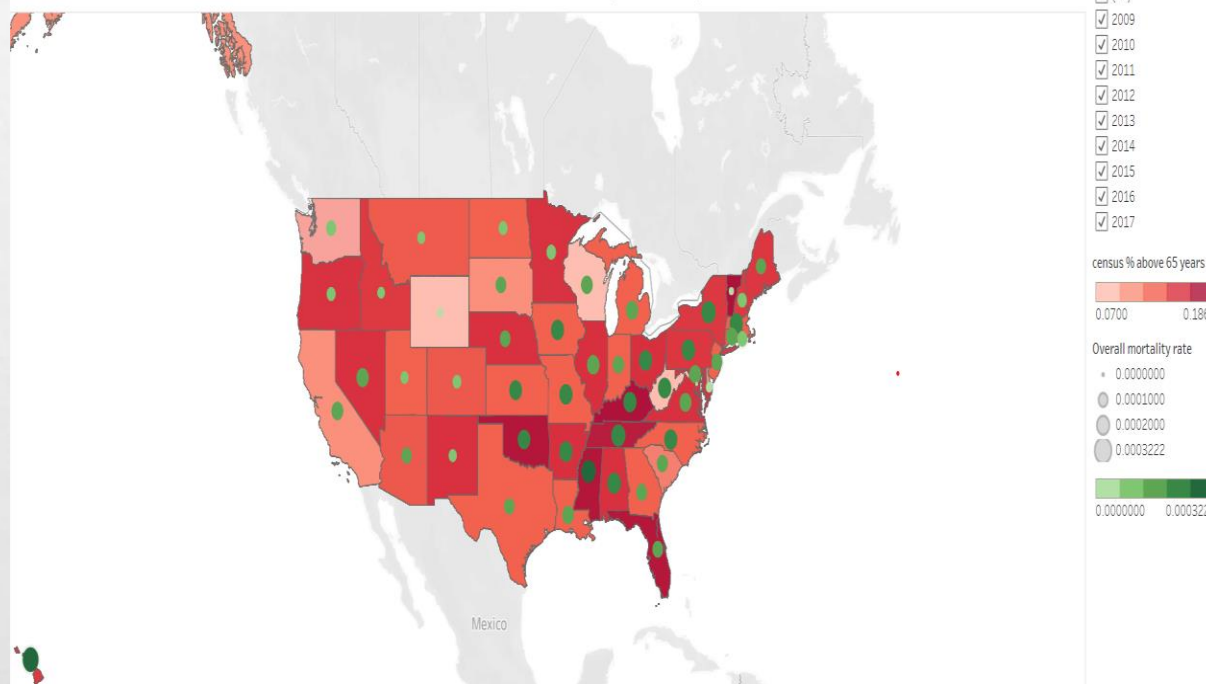
- 82% of influenza mortality data entries were suppressed.
- It is manually collected data that may have typographical errors on it.
- If I had details about the yearly flu vaccination shots that would have helped me to analyze whether the vaccination shots helped in decreasing death rates.

TOOLS USED :



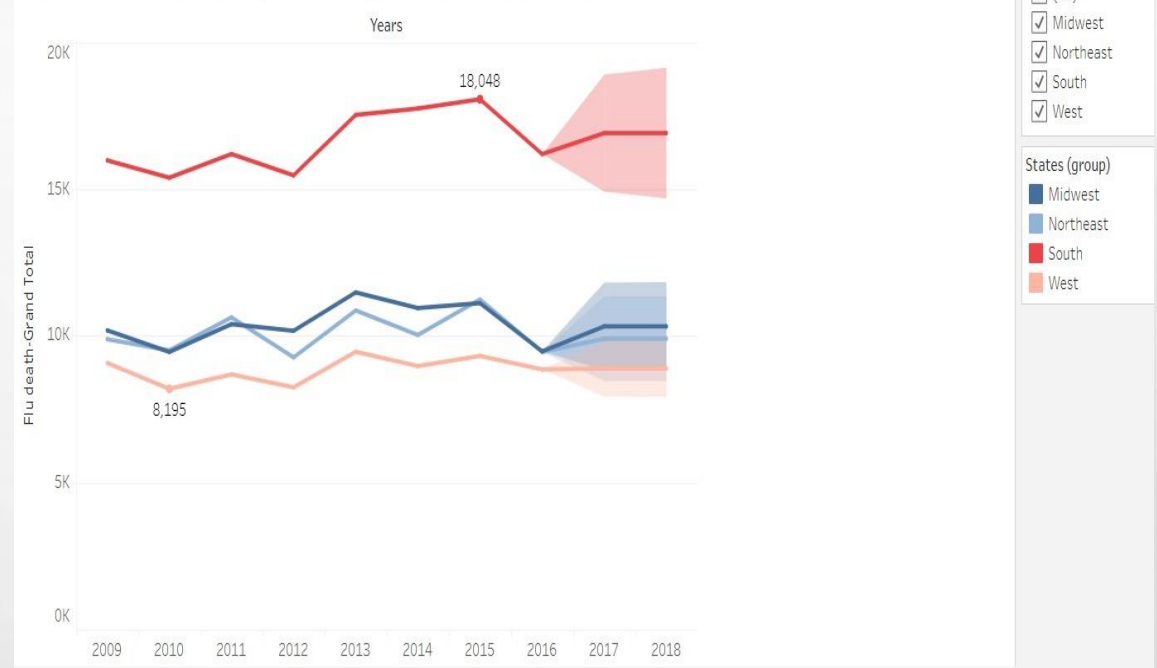
ANALYSIS

Relationship between % of Census data over 65 years and Total Mortality Rate(2009-2017)



Hawaii state has the highest mortality rate followed by it is New York, Tennessee, and Mississippi this shows that the state with a more vulnerable population has the most death rates.

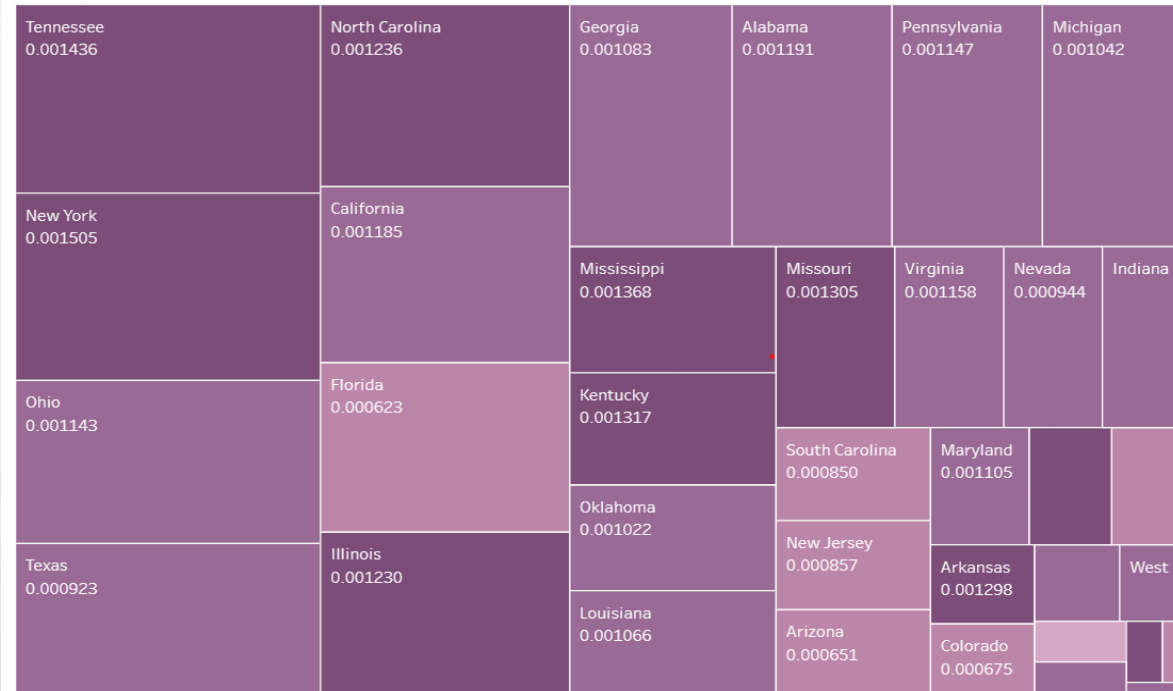
TOTAL FLU DEATH RATES(2009-2017) & FORECASTING FOR 2018



States from the southern region are going to have high flu deaths next year so it's best to send the faculties there in advance Next is the West (California) will have a high death rate.

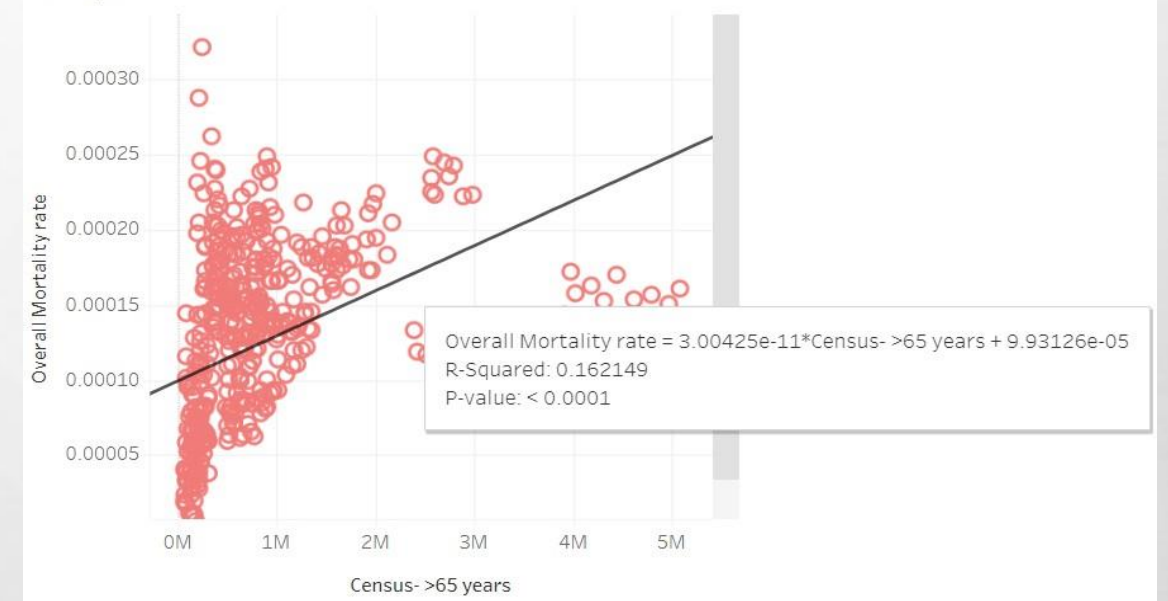
ANALYSIS

% OF FLU DEATH RATE 65+ BY STATES



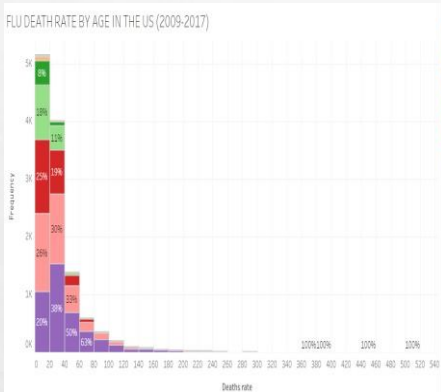
Despite California and Texas having the highest 65+ population count the states that have the highest flu mortality rate are New York, Tennessee, and Hawaii.

Relationship between the Census above 65 years and the overall mortality rate(2009-2017)

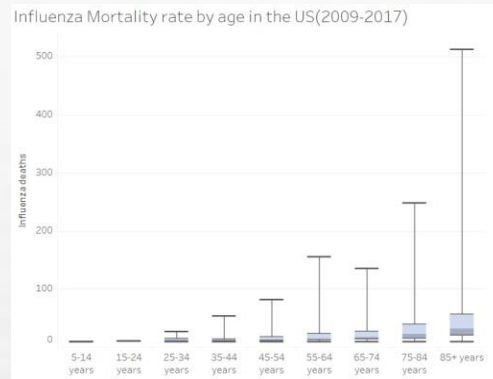


The scatter plot is moderately bound to the trend line and shows a positive correlation this shows that the above 65 years pop. has the highest influenza mortality rate and they are a vulnerable population.

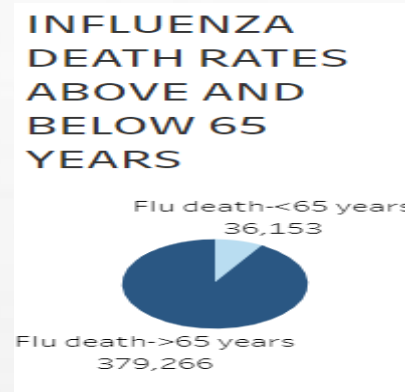
VISUALIZATIONS PERFORMED WITH TABLEAU



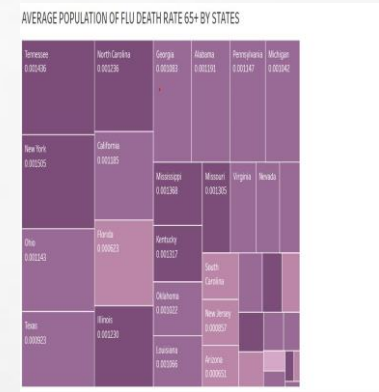
STACKED BAR CHART



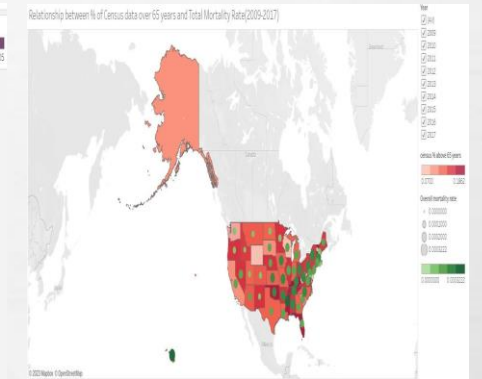
BOX PLOT



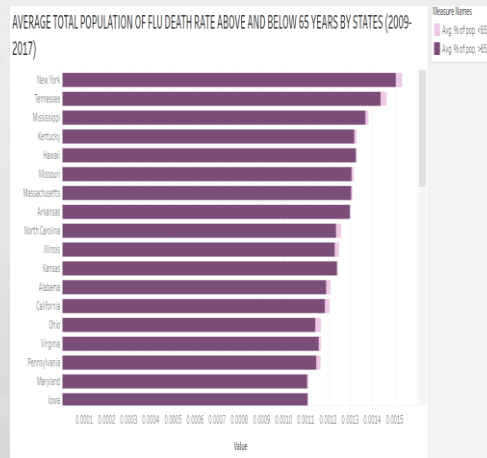
PIE CHART



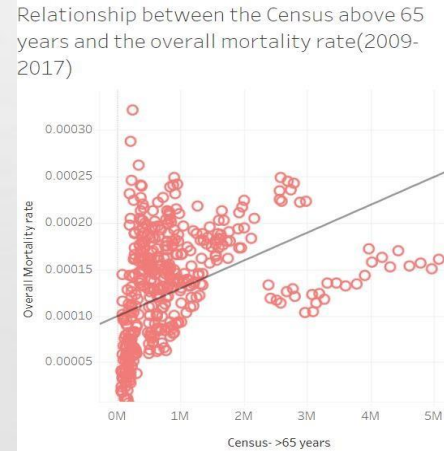
TREE MAPS



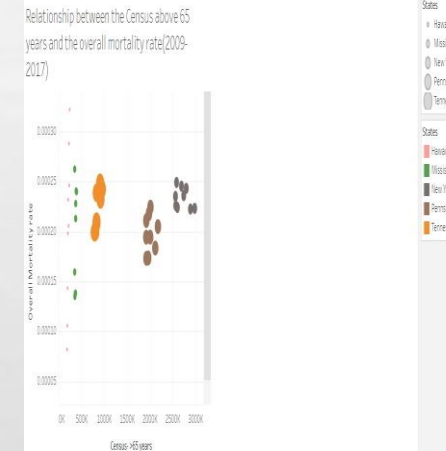
MAPS



HORIZONTAL BAR CHART



SCATTERPLOT



BUBBLE CHART

DELIVERABLES AND RECOMMENDATION

RESULTS/DELIVERABLES

The presentation is done in Tableau through a [Tableau dashboard](#)

RECOMMENDATIONS

- To deploy more staff to the highest mortality states to prevent more flu deaths.
- Should prepare prior to the season- so sending adequate staff in late November to all the states(especially to those 5 states) will help us to be prepared for the season.
- To create health awareness by publishing more about flu spread and its prevention in newspapers and social media platforms.



ROCKBUSTER STEALTH

PROJECT 3: ROCKBUSTER STEALTH

BACKGROUND & OBJECTIVE

- Rockbuster Stealth is a movie rental company
- The management board expect data-driven answers that they can use for their 2020 company strategy.

KEY QUESTIONS

- Which movies contributed the most/least to revenue gain?
- What was the average rental duration for all videos?
- Which countries are Rockbuster customers based in?
- Where are customers with a high lifetime value based?
- Do sales figures vary between geographic regions?

DATA AND PROJECT

The data set contains information about Rockbuster's film inventory, customers, and payments, among other things

DATA: [DATASET](#)

BRIEF: [SOURCE](#)

DATA DICTIONARY: [SOURCE](#)

TECHNIQUES APPLIED

- Database querying
- Data filtering
- Data cleaning
- Summarizing
- Joining tables
- Subqueries
- Common table expressions

LIMITATIONS

Data has personal details of stores, customers, payments, inventory, etc.



TOOLS USED:

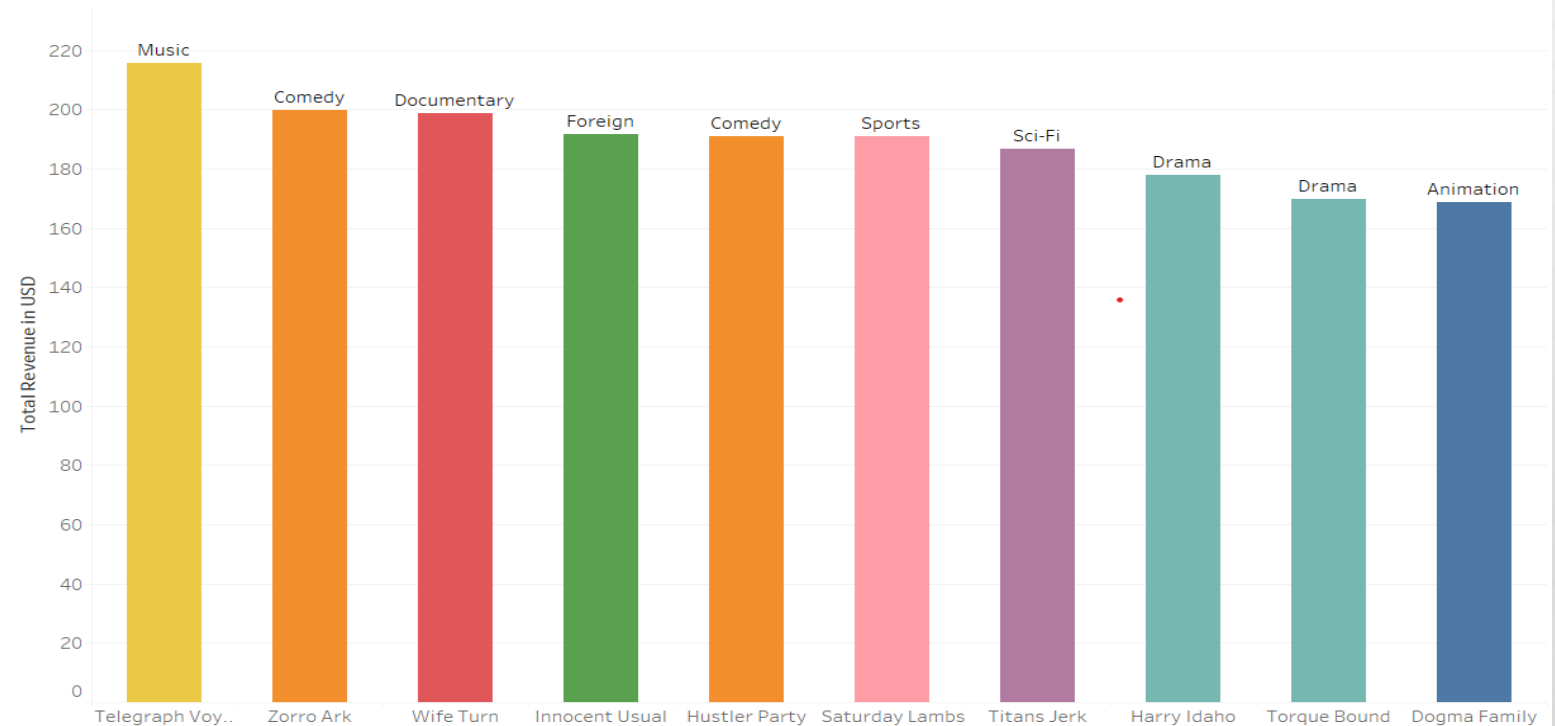


ANALYSIS

DATA OVERVIEW

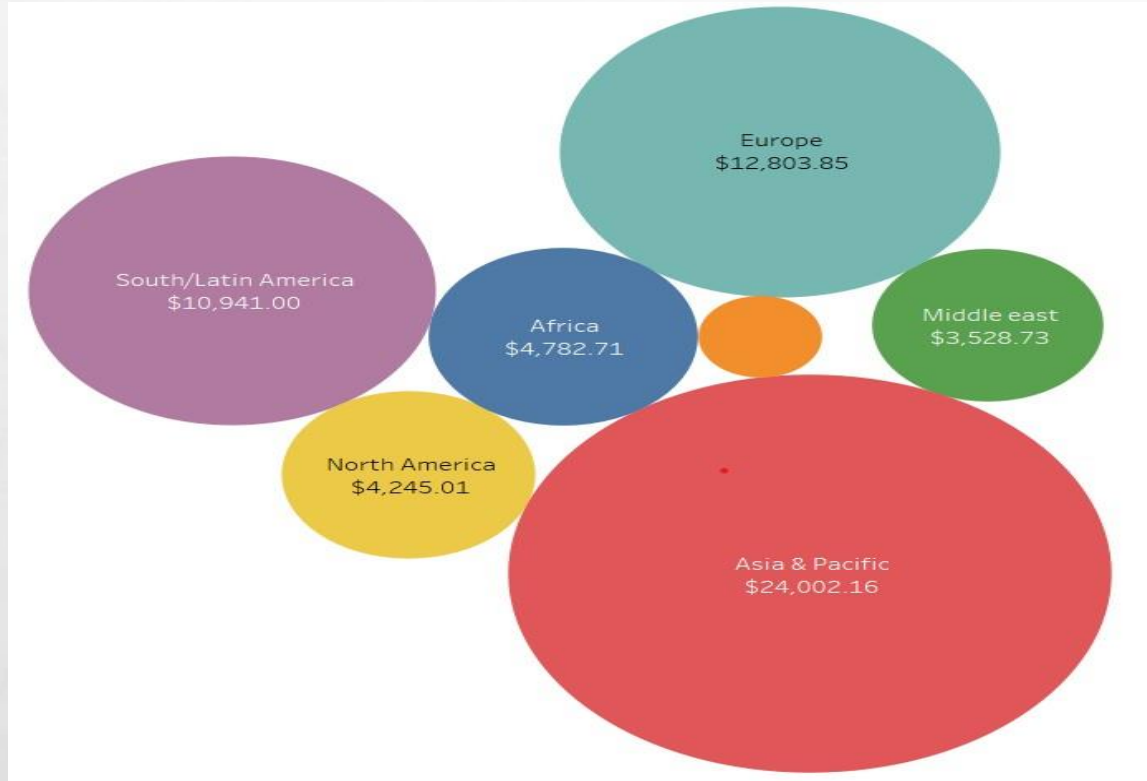
- Rental rate - \$0.99 -- \$4.99
- Total no of movies -- 1000
- No of active users -- 584
- Average film length -- 115 minutes
- Movie ratings -- g (178), pg (194), pg - (223), r (195), nc-17 (210)
- Rental duration -- 3-7 days

Top 10 movies contributing higher for revenue based on revenue



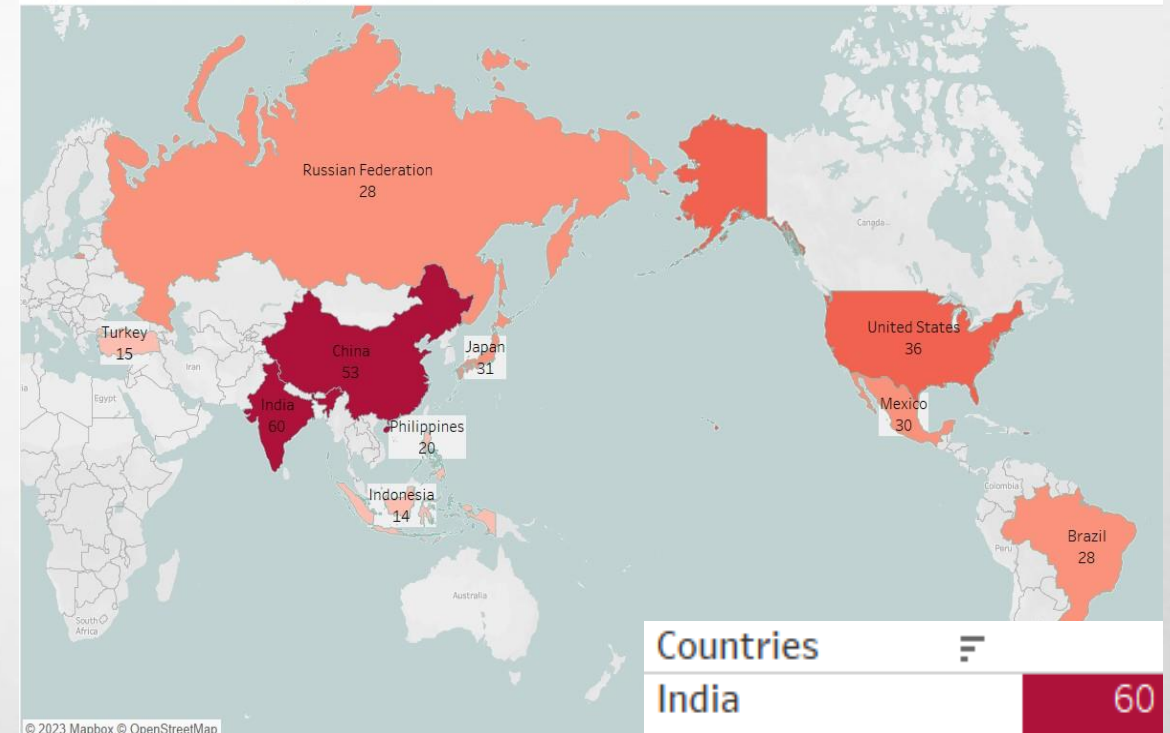
The top movies that contribute the most revenue belong to music, comedy, and documentary genres. The name of the movies is **Telegraphic Voyage, Zorro Ark, and Wife Tum.**

ANALYSIS PERFORMED



Most of Rockbuster's total revenue comes from **Asia & Pacific**, **Europe**, and **South/Latin America**.

Top 10 countries with high customers

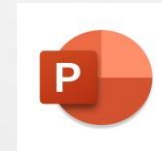


RECOMMENDATIONS

- ✓ It's better to remove a few movies which has the least revenue.
- ✓ Special offers can be introduced to people who hire the movies for more than 5 days.
- ✓ Should increase the marketing strategies to our major markets Asia & Pacific, Europe, and South/Latin America.
- ✓ The top 5 countries should be taken into account and we can introduce more movies in their preferred language which can create more interest among people and will improve our sales.
- ✓ The high-paid customers should be rewarded for their loyalty and we should also include the referral codes system which helps in increasing the customer numbers into improve South.

DELIVERABLES

(CLICK BELOW)



INSTACART BASKET ANALYSIS



PROJECT 4- INSTACART BASKET ANALYSIS

BACKGROUND AND OBJECTIVE

- Instacart, is an online grocery store that operates through an app.
- Perform an initial data and exploratory analysis of some of their data in order to derive insights and suggest strategies.

KEY QUESTIONS

- What are the busiest days of the week?
- When do people spend the most money?
- Are there certain types of products that are more popular?
- Customer's loyalty status?
- Are there differences in ordering habits based on a customer's region?
- Is there a connection between age and family status in terms of ordering habits?
- What differences can you find in the ordering habits of different customer profiles?

DATA AND PROJECT

- It's an open-source data set from Instacart.

DATA: [CUSTOMERS](#)
[DEPARTMENTS](#)
[ORDERS](#)
[PRODUCTS](#)

DATA DICTIONARY:

[SOURCE](#)

PROJECT BRIEF: [SOURCE](#)

TECHNIQUES APPLIED

- Data cleaning: wrangling and subsetting
- Data consistency check
- Combining and exporting data
- Deriving new variables
- Grouping data and aggregating variables
- Python visualization and excel report

DATA LIMITATIONS

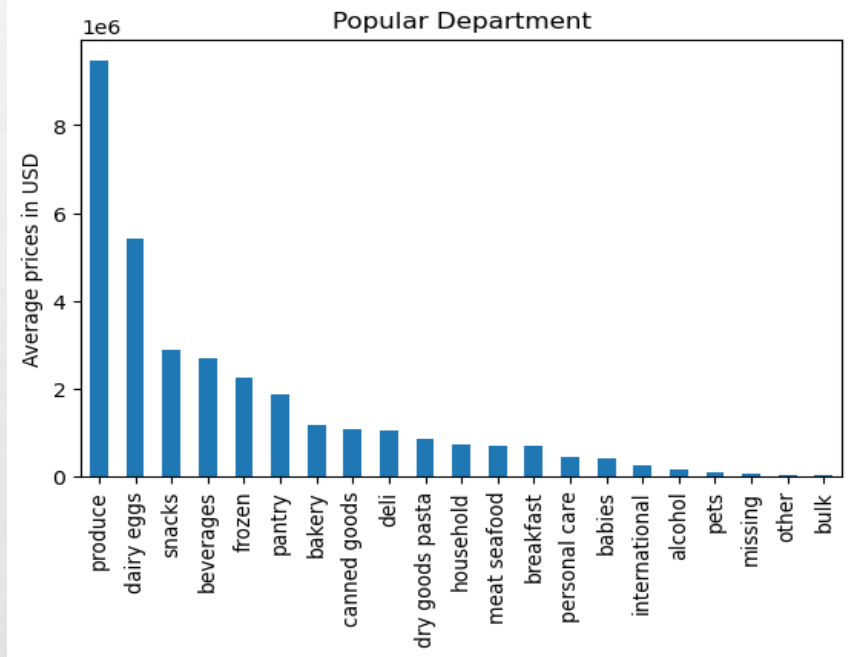
- Data only contains Records from 2017



TOOLS USED:

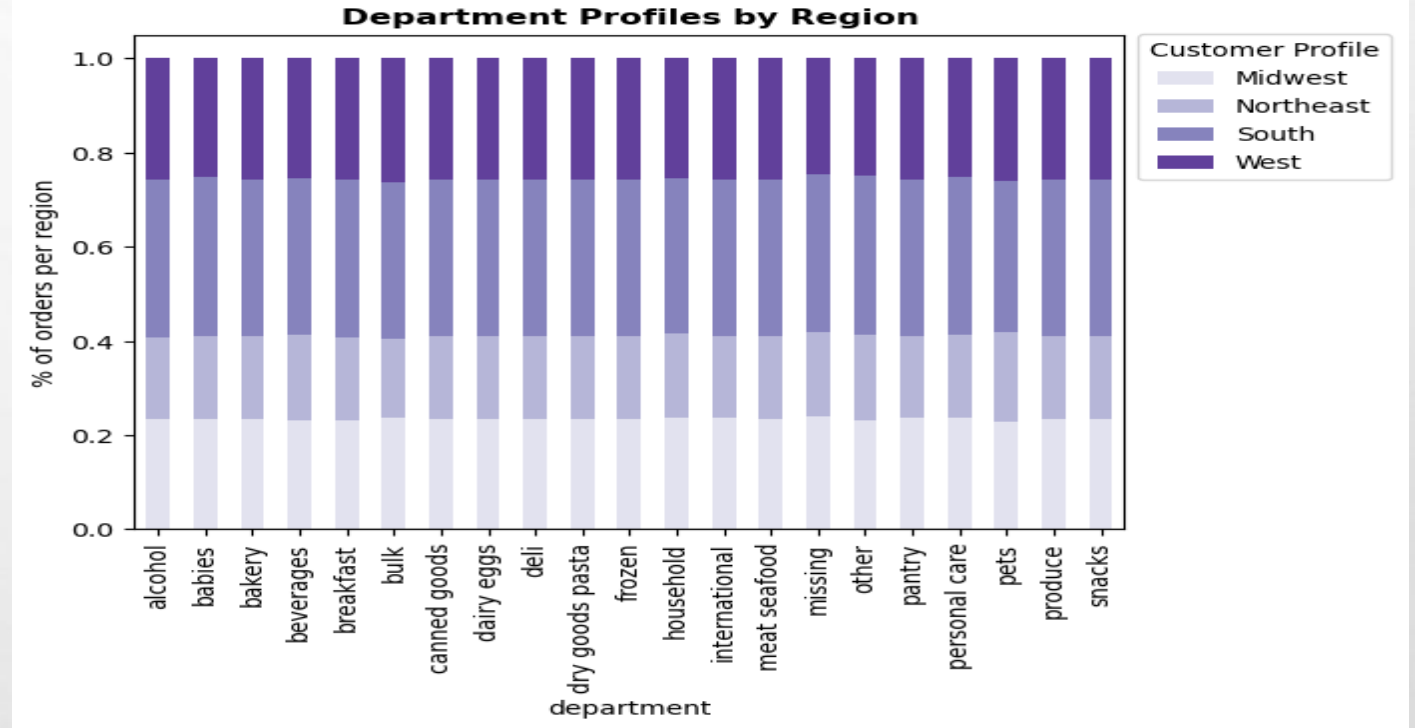


DEPARTMENT ANALYSIS



The most popular department with high purchase frequency is "produce, dairy eggs, snacks".

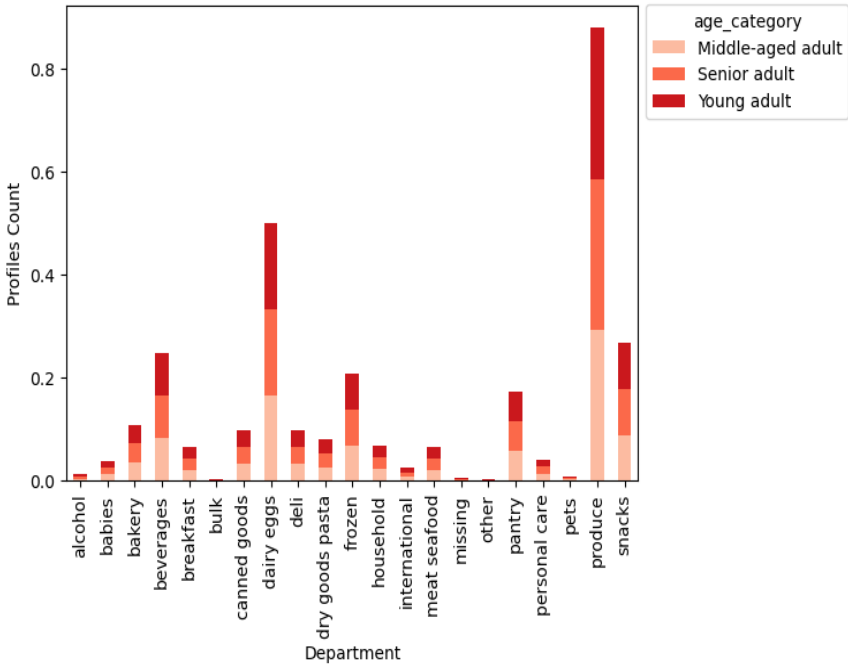
The least sold department is "Pets, other, bulk".



The ordering habits across all departments remain consistent for all four regions. The south region represents the highest number of orders.

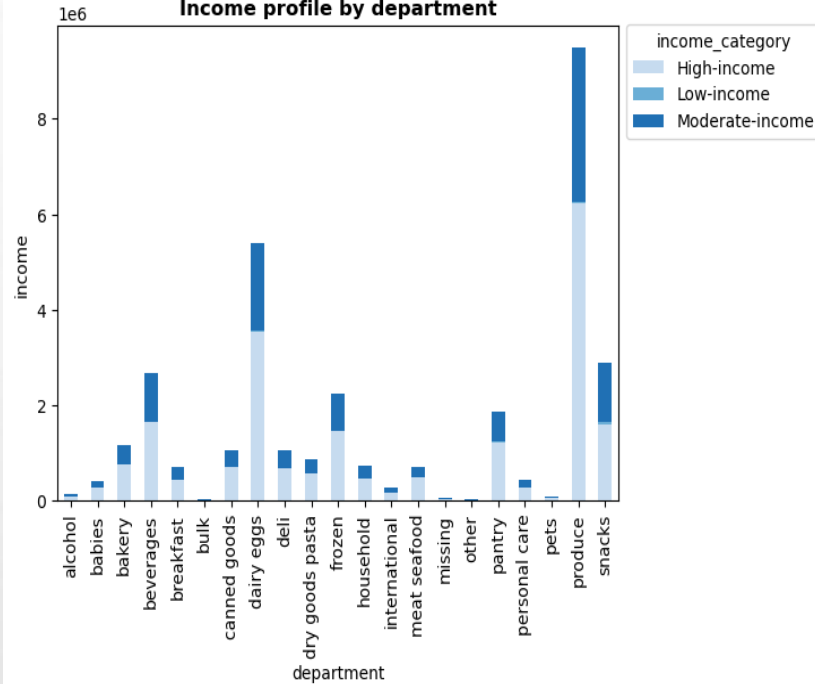
CUSTOMER BEHAVIOURAL ANALYSIS

Age Profiles by Department



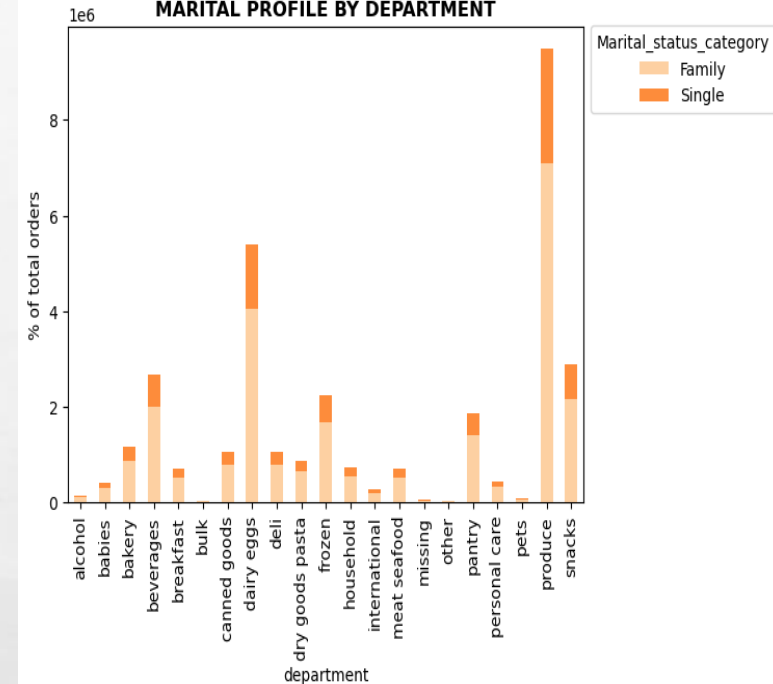
The top 5 departments based on profile counts are produce, dairy eggs, snacks, beverages, and frozen.

Income profile by department



Produce, dairy eggs, and snacks are the top three departments across all income profiles and the least three departments are pets, missing, and others.

MARITAL PROFILE BY DEPARTMENT



From the stacked bar chart, Families and singles mostly prefer Produce, dairy, and snacks department products.

RECOMMENDATIONS

- Create more marketing campaigns for young age groups by introducing trendy pay-later options.
- Instacart must enhance the marketing for the least sold products such as pets, babies, and alcohol.
- Family-oriented promotions by developing marketing campaigns that cater to the needs of families.
- For young mothers promoting the baby's products to them are advised.

DELIVERABLES

(CLICK BELOW)





BANK

PIG E. BANK

PROJECT 5 – PIG E. BANK



PROJECT OBJECTIVE

Providing analytical support to its anti-money-laundering compliance department and helping build and optimize models that assist the bank in running its compliance program more efficiently.

DATA AND PROJECT

PROJECT BRIEF – [SOURCE](#)

DATA SET - [DATA](#)

LIMITATIONS

Customers' demographic data are limited.

The data is limited to the ATMs within the 100-meter radius of the border.

TECHNIQUES APPLIED

- Data cleaning, sorting, and checking for integrity.
- Big data management
- Data ethics & data mining
- Predictive analysis
- Time series analysis and forecasting

TOOLS USED:



PREDICTIVE ANALYSIS

Descriptive Statistics Combined

ExitedFromBank	Count of ExitedFromBank?	Average of Estimated Sa	Average of I	Average of NumOfI	Average of HasCrCard?	Average of Balance	Average of Tenure
Stayed	787	98943.39	0.56	1.54	0.71	74830.87	5.16
Left	204	97155.20	0.30	1.46	0.71	90239.22	4.72
Grand Total	991	98574.54	0.51	1.52	0.71	78002.72	5.07

Descriptive Statistics - Left

ExitedFromBank	Count of ExitedFromBank?	Average of Credit Score	Average of E	Average of NumOfI	Average of HasCrCard?	Average of IsActiveMember
Left	204	636.51	90239.22	1.46	0.71	0.30
Grand Total	204	636.51	90239.22	1.46	0.71	0.30

Based on Countries

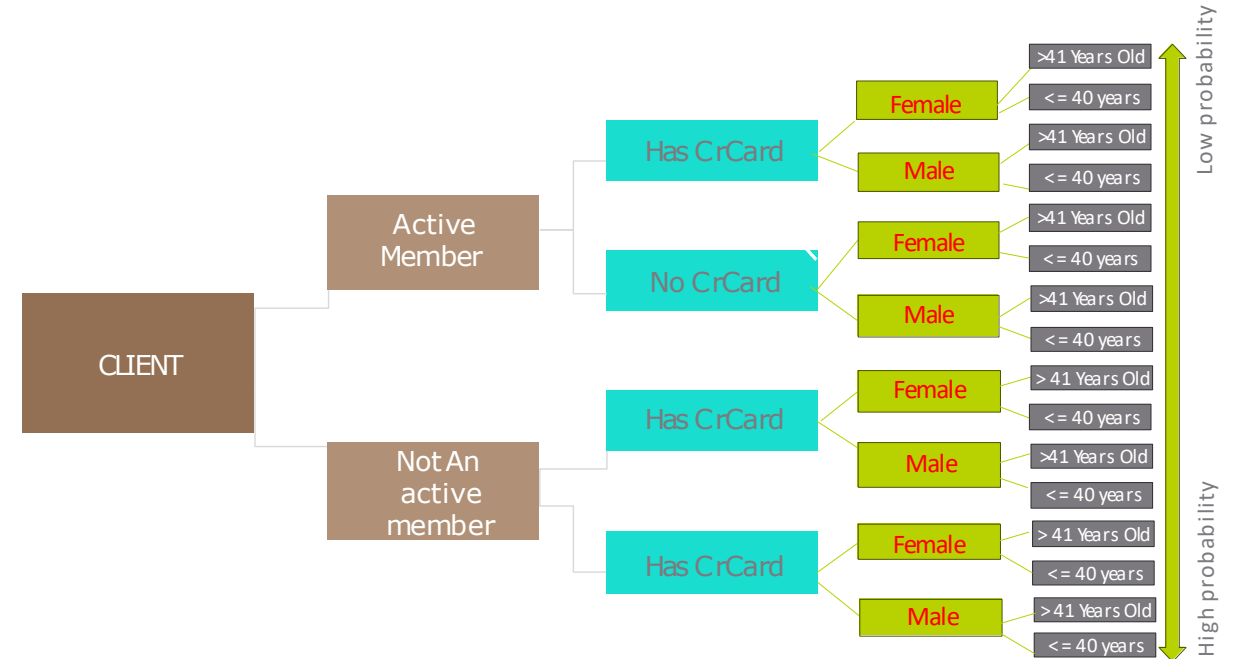
Country	Average of Age	Average of Credit Score	Average of E	Average of IsActive	Average of Estimated S	Average of NumOfProducts	Average of HasCrCard?
France	39.09	645.86	60180.81	0.50	97160.96	1.53	0.72
Germany	39.02	648.37	119206.47	0.50	102782.95	1.52	0.73
Spain	37.58	653.67	69991.51	0.53	96998.13	1.51	0.67
Grand Total	38.68	648.51	78002.72	0.51	98574.54	1.52	0.71

Based on Gender

Gender	Count of Gender	Average of Balance	Average of I	Average of Credit S	Average of Estimated S	Average of IsActiveMember
Female	462	80670.84	38.96	646.57	98623.73	0.48
Male	528	75815.84	38.48	650.50	98573.61	0.53
N/A	1	0.00	24.00	497.00	76390.01	0.00
Grand Total	991	78002.72	38.68	648.51	98574.54	0.51

The descriptive statistics were calculated for all the variables for those who stayed in the bank as well as who left.

Decision Tree



Nonactive female customers above 41 years category have a high probability of leaving the bank.

DAIRY PRODUCTS CONSUMPTION IN INDIA (2019-2022)



PROJECT 6: DAIRY PRODUCTS CONSUMPTION IN INDIA (2019-2022)

PROJECT BACKGROUND

India is the world's largest milk producer with almost 22% of global production

- To understand the sales pattern to improvise the pricing strategies among different brands.

KEY QUESTIONS

- Which products have the highest sales?
- Sales performance among different brands based on location, land area, and cow population.
- How to manage the inventory for stocks?
- Forecasting the sales for the upcoming year 2023.
- What are the customer preference and buying behaviour?

DATA SOURCE

It's an open-source data set from Kaggle.

DATA SOURCE: [LINK](#)

DATASET: [SOURCE](#)

LIMITATIONS

- There might be some typography errors.
- As it has time data there can be some lag in the duration.
- The data set contains records from 2019- 2022. If we had more data from past years, it would be better for the analysis.

TECHNIQUES APPLIED

- Exploratory visual analysis
- Created correlation matrices and heatmaps
- Created a choropleth map in Python
- Regression analysis (supervised machine learning)
- Cluster analysis (unsupervised machine learning)
- Time series analysis

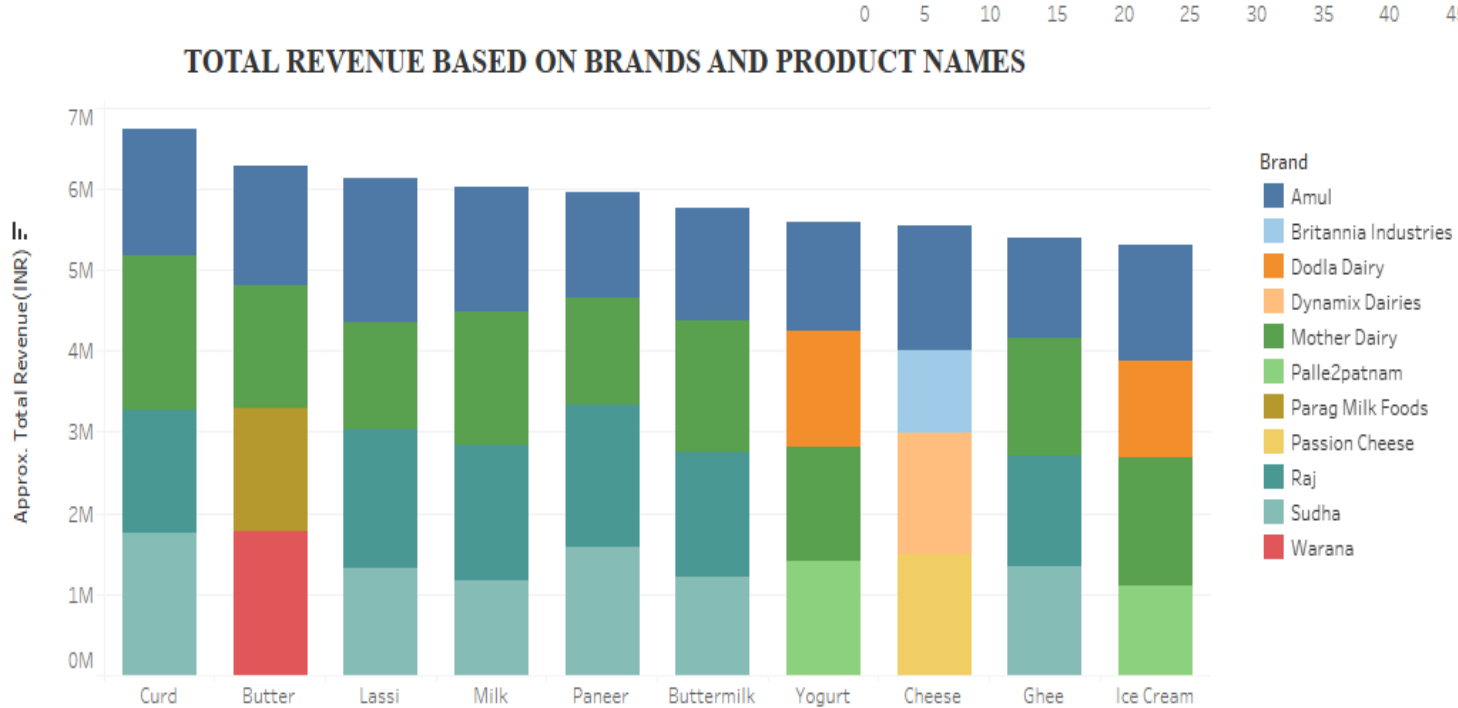


TOOLS USED:

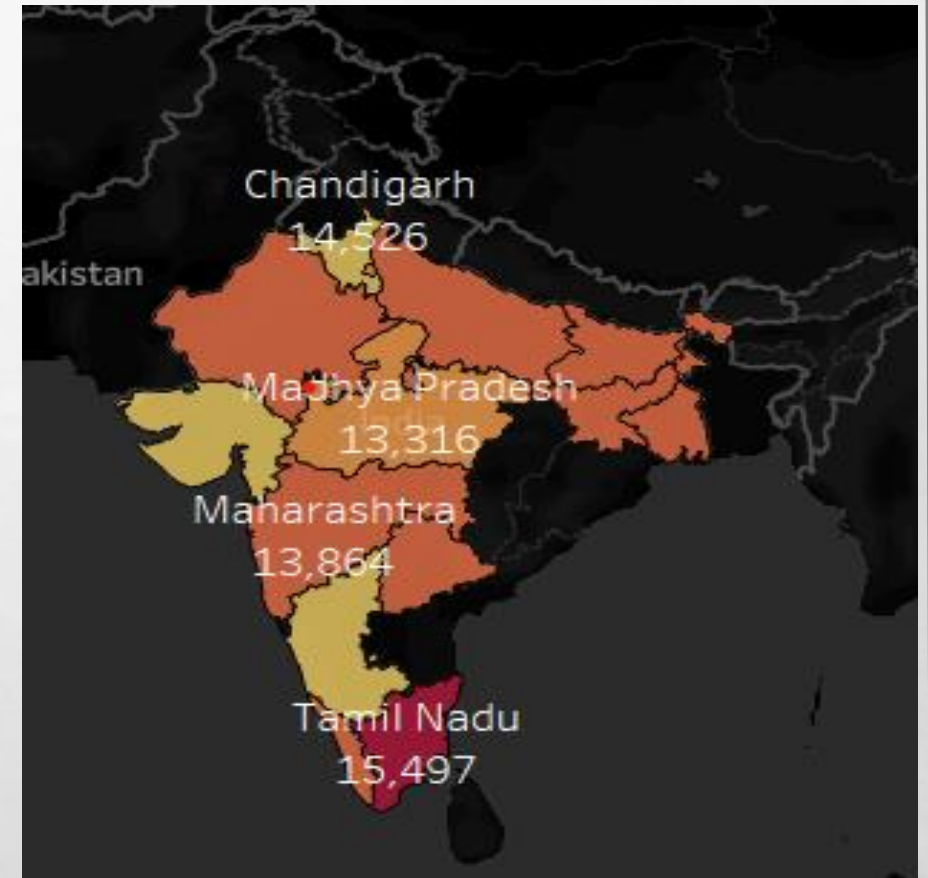


EXPLORATORY ANALYSIS

TOTAL REVENUE BASED ON BRANDS AND PRODUCT NAMES



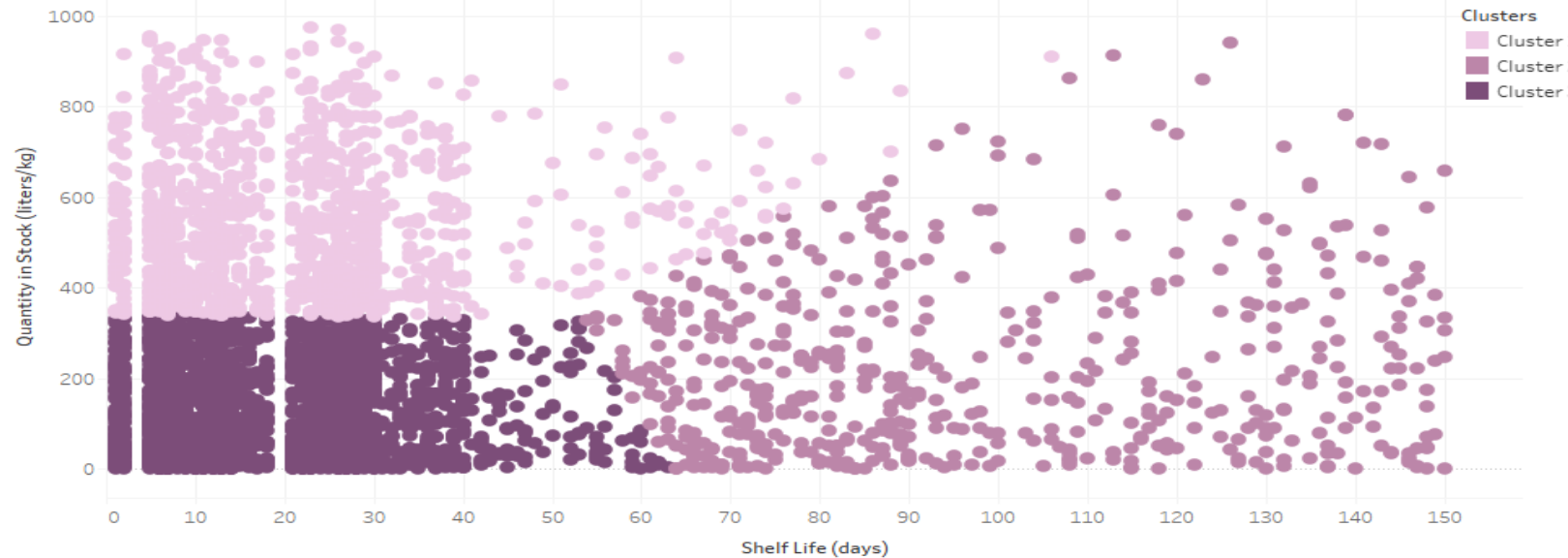
THE DAIRY PRODUCTION IN DIFFERENT STATES OF INDIA AND THEIR AVERAGE REVENUE PER DAY



- The most sold product which contributes to the highest sales revenue is **Curd** followed by it is **butter** and **lassi**.
- **Amul**, **Mother Dairy**, and **Raj** are the top three brands with the highest revenue.

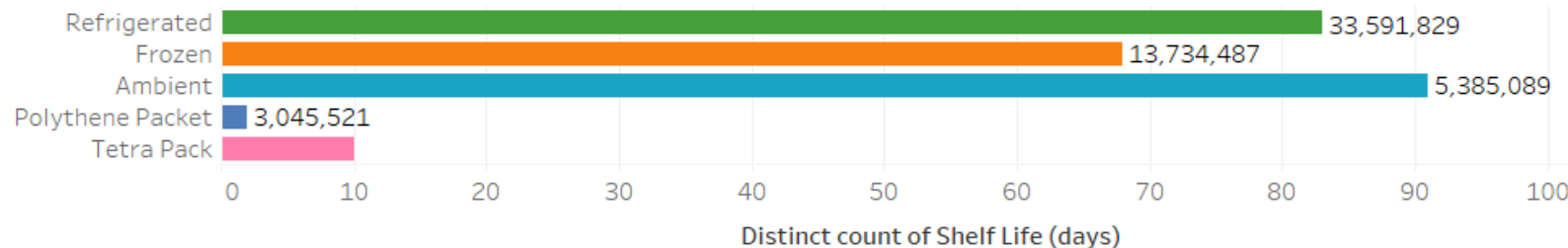
INVENTORY MANAGEMENT

DETERMINING THE SHELF LIFE OF STOCKS



The clustering plot between "shelf life" and "quantities in stock" shows the **milk products in stock have a shelf life of 0 to 40 days.**

SHELF LIFE BASED ON STORAGE CONDITION

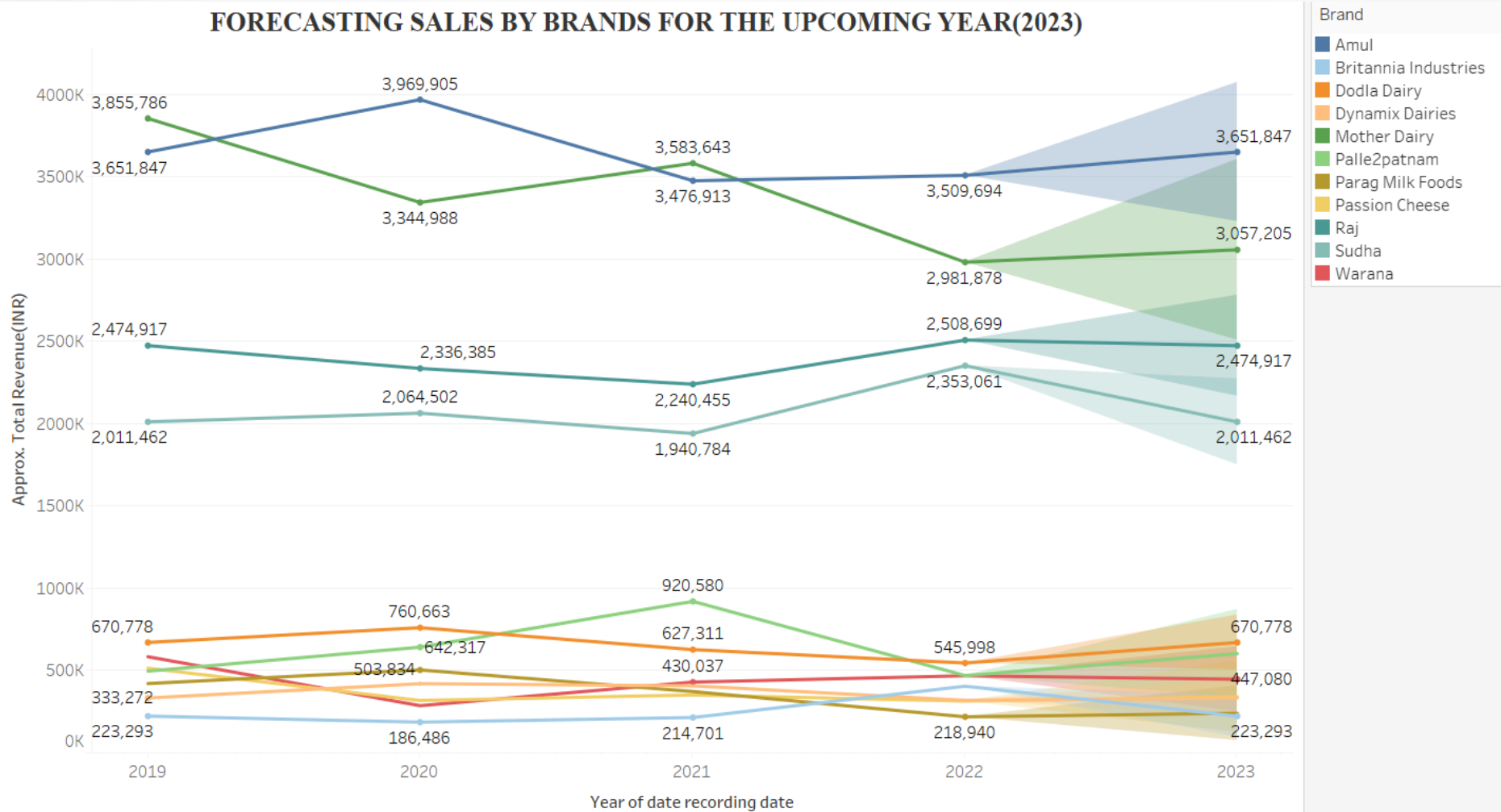


Based on shelf life, the **most durable storage method is Ambient** storage for up to 90 days.

Based on sales, the predominant sales are driven by **refrigerated**, followed by it is frozen and ambient products.

FORECAST FOR 2023

FORECASTING SALES BY BRANDS FOR THE UPCOMING YEAR(2023)



Based on the forecast predictions, there may be a **mild increase in sales** in most of the dairy brands including the top brands like Amul and Mother Dairy by 2023 in India.

RECOMMENDATIONS

- It is recommended to expand sales into other states and union territories.
- We should create more marketing campaigns for moderately performing brands in order to improve their sales revenue.
- It is important to note that customers tend to prefer moderately priced products, so we should focus on marketing high-priced products by offering promotions for a limited time, which can help boost sales.
- As we live in an online generation, it would be beneficial to promote more online methods for purchase and delivery.
- India has many regional languages, so it would be wise to advertise in the regional language of each area, which can help customers better understand the products. Lastly, it is essential to focus on the states with high sales and create more marketing campaigns in areas where sales are significantly lower.

DELIVERABLES

PYTHON SCRIPTS:



TABLEAU LINK:



FOR FURTHER QUERIES

KINDLY CONTACT

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