



Data Analytics Portfolio

Semone Noel

PROJECTS

PREPARING FOR INFLUENZA SEASON

Preparing for flu season in the U.S.

GAME CO

Analysing global video game sales.

ROCKBUSTER STEALTH LLC

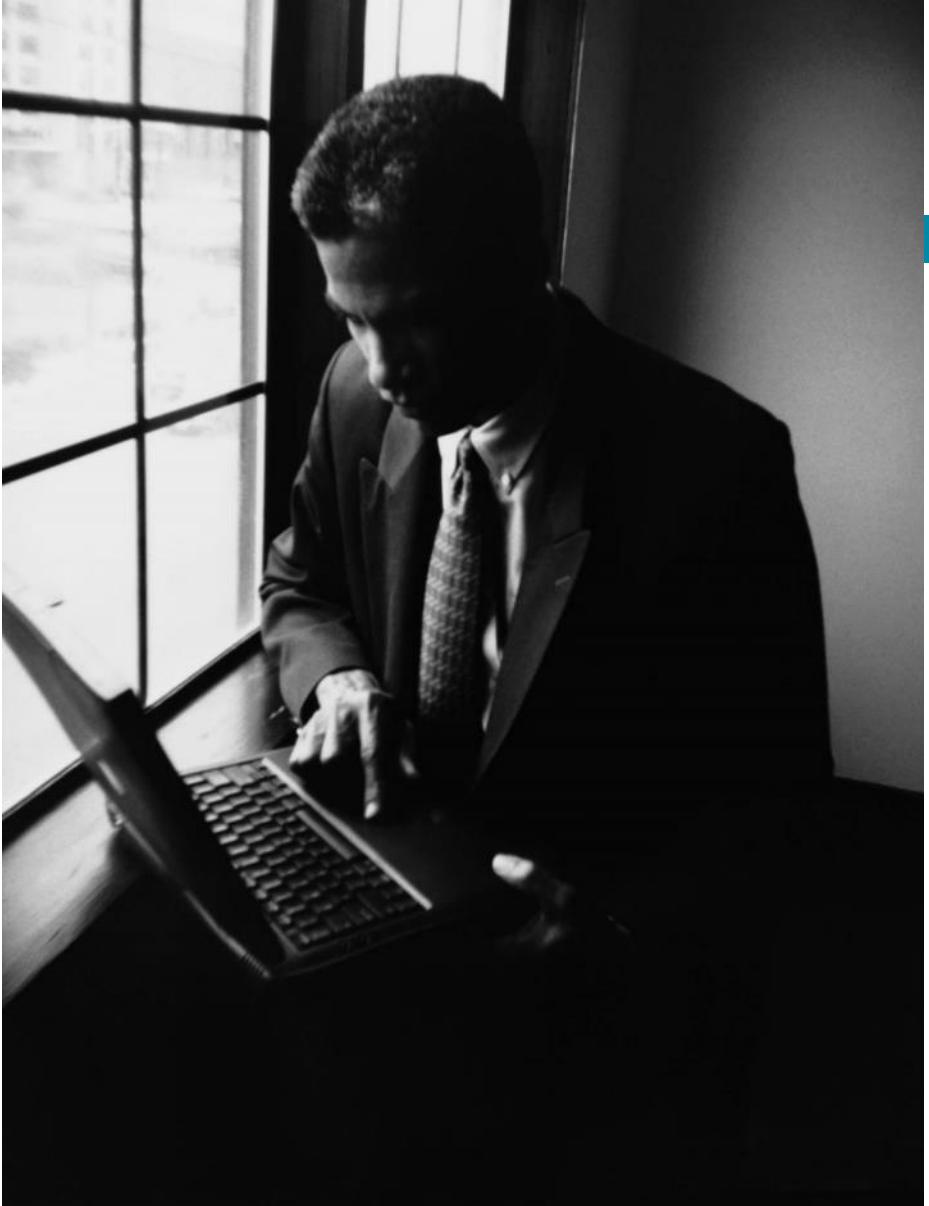
Answering business questions for an online video rental company

INSTACART GROCERY BASKET ANALYSIS

Marketing strategy for an online grocery store

GLOBAL LAYOFFS 2023

Analyzing global layoffs to determine if recent mass layoffs are a market correction in response to increasing inflation.



ADDITIONAL TOPICS

BIG DATA

Anti-money laundering projects at a global bank

FOCUS

- Data ethics
- Data mining
- Predictive analysis
- Time series analysis and forecasting



GAME CO



+12,00.50

GAME CO OVERVIEW

WHAT

The goal of this analysis is to develop an understanding of the video gaming market, thus aiding GameCo in strategizing its plans for market growth and development.

HOW

Global trends

WHERE

GameCo's top three markets:
North America
European Union
Japan

METHODOLOGY

DATA

Global retail video game sales from 1980 to 2020.

Data provider [VGCHARTZ](#)

[Dataset](#)

TECHNIQUE

Data integrity, quality & accuracy checks

Data Cleaning

Data Grouping & Summarizing (Pivot Tables)

Descriptive Statistics

Data Visualization (Excel)

Visual Analysis

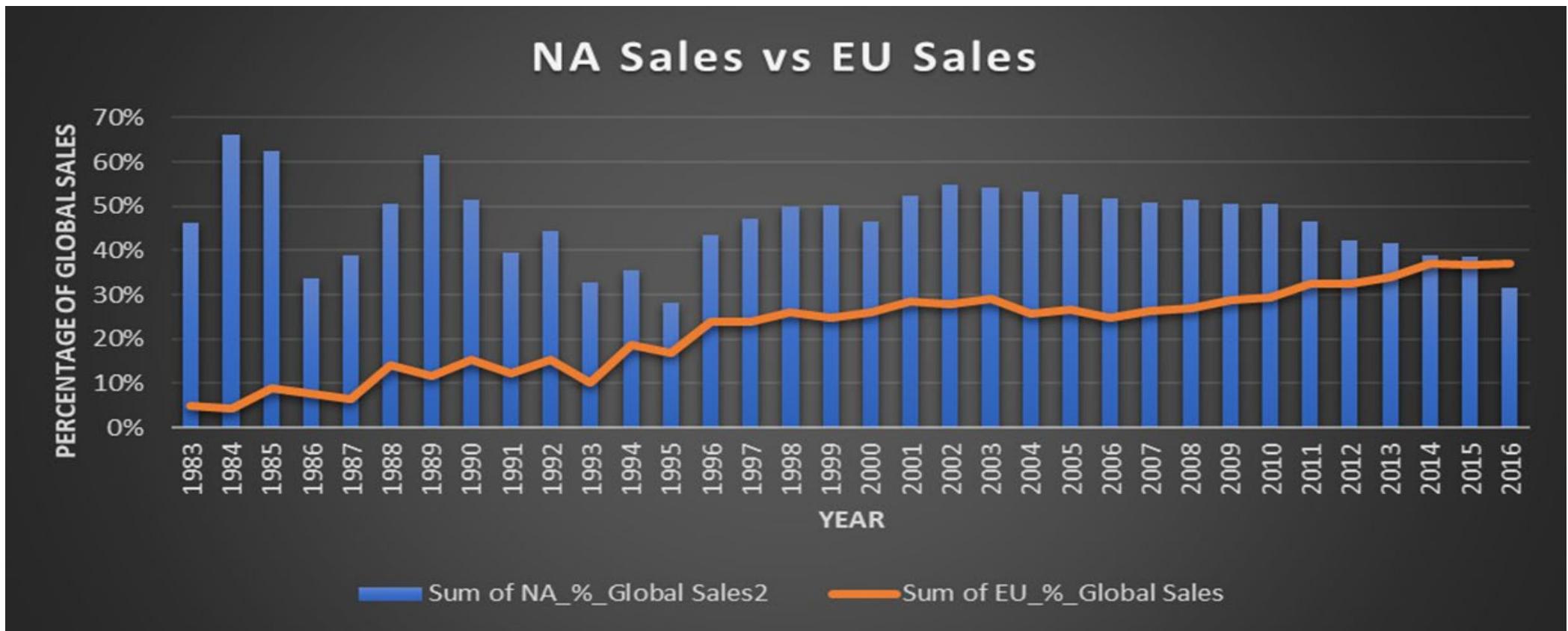
TOOL



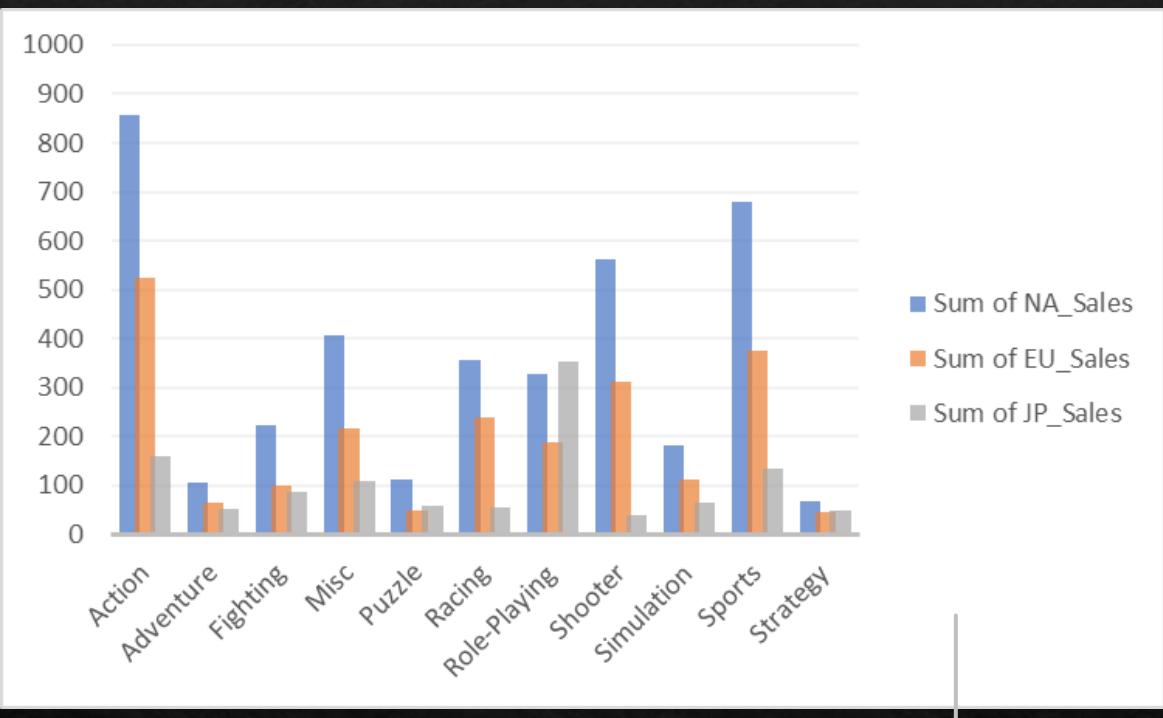
Excel

ANALYSIS OF GLOBAL SALES

Analysis of historical retail sales data for different sales regions. Identification of trends and patterns in the data. Recognizing data limitations: Data only shows retail sales



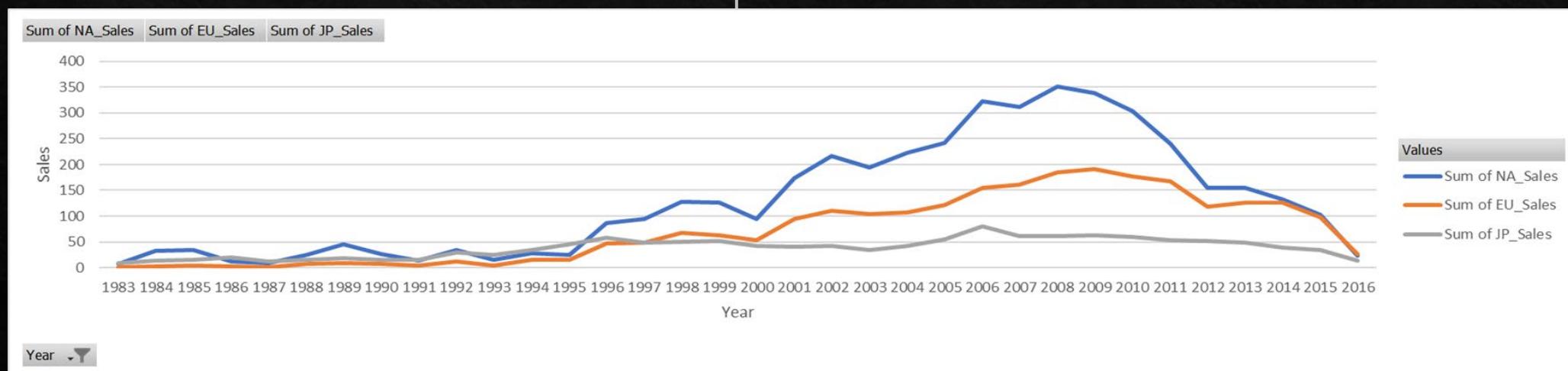
Market Analysis



Identifying successful genres

Analysis of historical retail sales data

Identifying future opportunities and under-exploited potential



Findings

The EU is a growing market that has overtaken Japan as Game Co second highest earning market but is trending down downwards.

The Japanese market continues to decline at a rate that indicates that Game Co may be looking a 'top two' high-performing markets instead of 'top three' high-performing markets shortly. The 'Misc' genre needs further exploration.

North American sales, despite drops and rebounds, continue to be a top-performing market for GameCo, but the overall decline will continue without intervention.

Recommendations

The platform-based gaming market has shrunk from its peak in the mid-1980s. North America could recover further with target investments.

The EU shows potential for further growth. More investments are needed in high-performing genres such as 'Action' and 'Sports'. Also, to be considered dropping low performing genres such as 'Strategy' games.

More attention needs to be given to the online gaming market which is continuing to increase year over year.

All market indicators point to a robust gaming market that is continuing to grow.



PREPARING FOR INFLUENZA SEASON



NOTE: keep in mind that these numbers are estimates, hence the sum of the numbers from the different age groups may not sum up to the total in the first columns, but that's totally okay.

MOTIVATION

The United States has an influenza season where more people than usual suffer from the flu.

DATASET(S)

Influenza deaths by geography, time, age, and gender source: [CDC Download Data Set](#)

Population data by geography
Source: US Census Bureau
[Download Data Set](#)

TOOLS

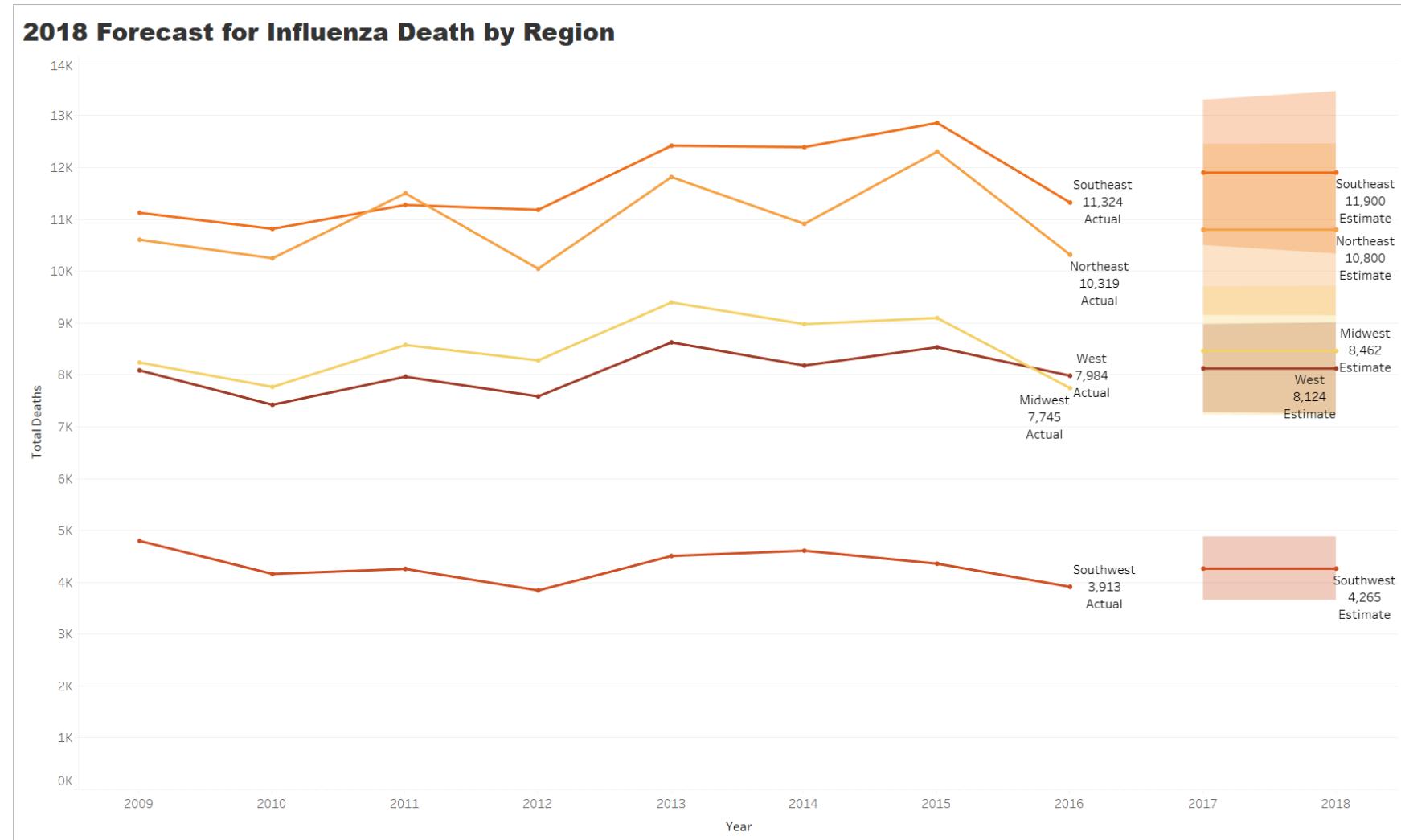


TECHNIQUES

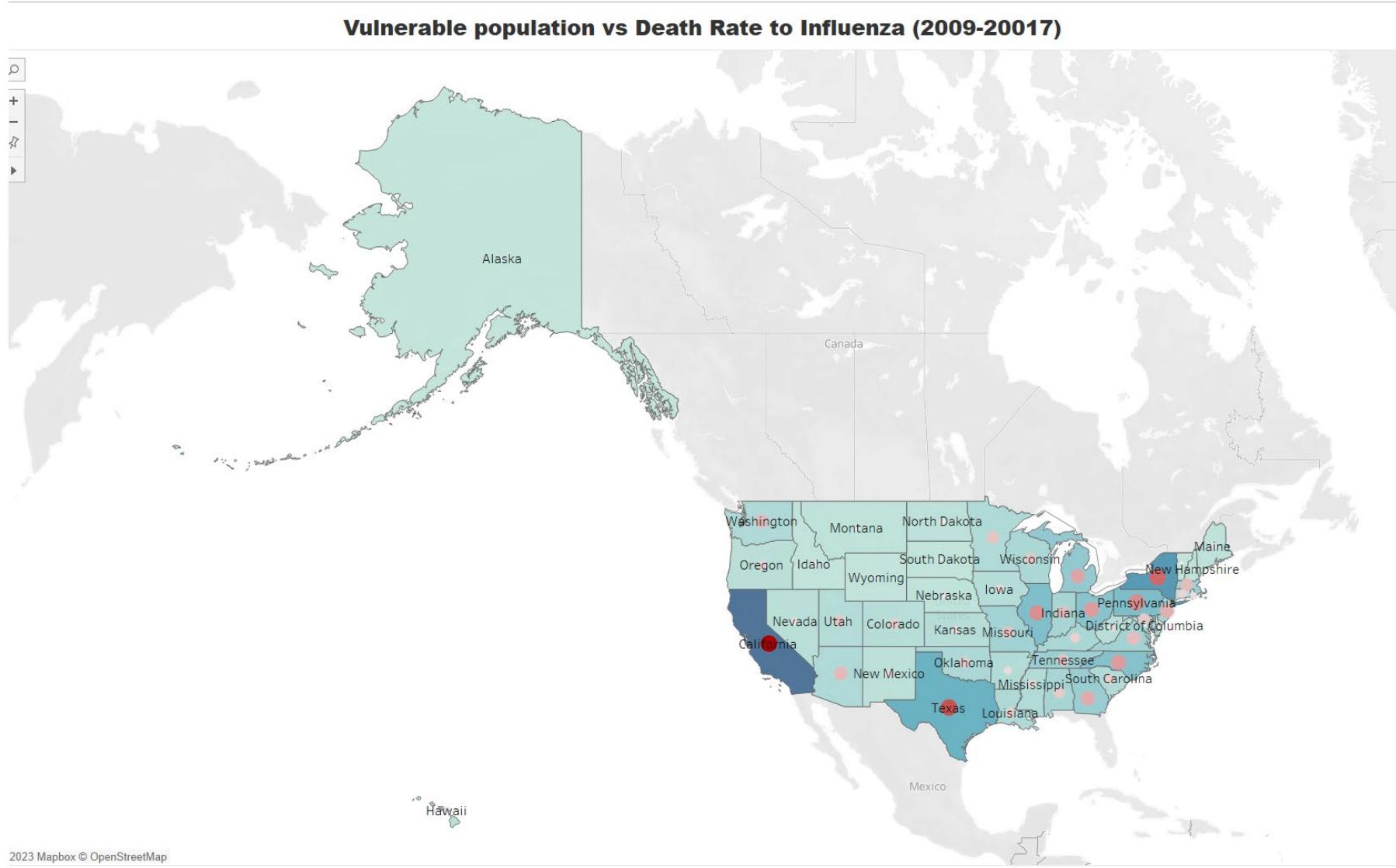
- Business Understanding
- Designing Data Research
- Project Data Profiling & Integrity Checks
- Data Quality Measures (Cleaning)
- Data Integration & Transformation Statistical Analysis
- Statistical Hypothesis Testing
- Data Visualization & Storytelling (Tableau)

SEASONAL ANALYSIS & HYPOTHESIS TESTING

- Seasonal analysis to identify the time for the most staffing needs
- Hypothesis testing to identify to most vulnerable population groups:
 - The P-value was $<\alpha=.05$, so the null hypothesis at this point is rejected.



DATA VISUALIZATION & FORECASTING



Using tableau to analyze and visualize results

Identifying high-risk states based on results (higher medical staffing demands)

Forecasting of data

Summary

FINDINGS

Based on the client's goals, minimal instances of understaffing and overstaffing across states.

Following the forecasting numbers should provide a reasonable guideline for managing staff to patient ratio.

Recommendations

Based on the initial analysis, the recommendation is that there should be an awareness and Flu shot campaign targeting Southeast and Northeast regions of the US. There should be additional staffing in the Midwest and West regions of the US. The Southwest region of the US should staff as needed; no extra intervention is necessary.

ROCKBUSTER STEALTH

OVERVIEW

Data analysis of inventory, customer, and sales data to help with the launch strategy for Rockbuster's new online video service.

TECHNIQUES

Relational Databases
Database Querying
Database Filtering
Database Cleaning
Joining Database Tables
Subqueries & Common Table Expressions
Data Visualization
Data Dictionary Creation

TOOLS



DATASET(S)

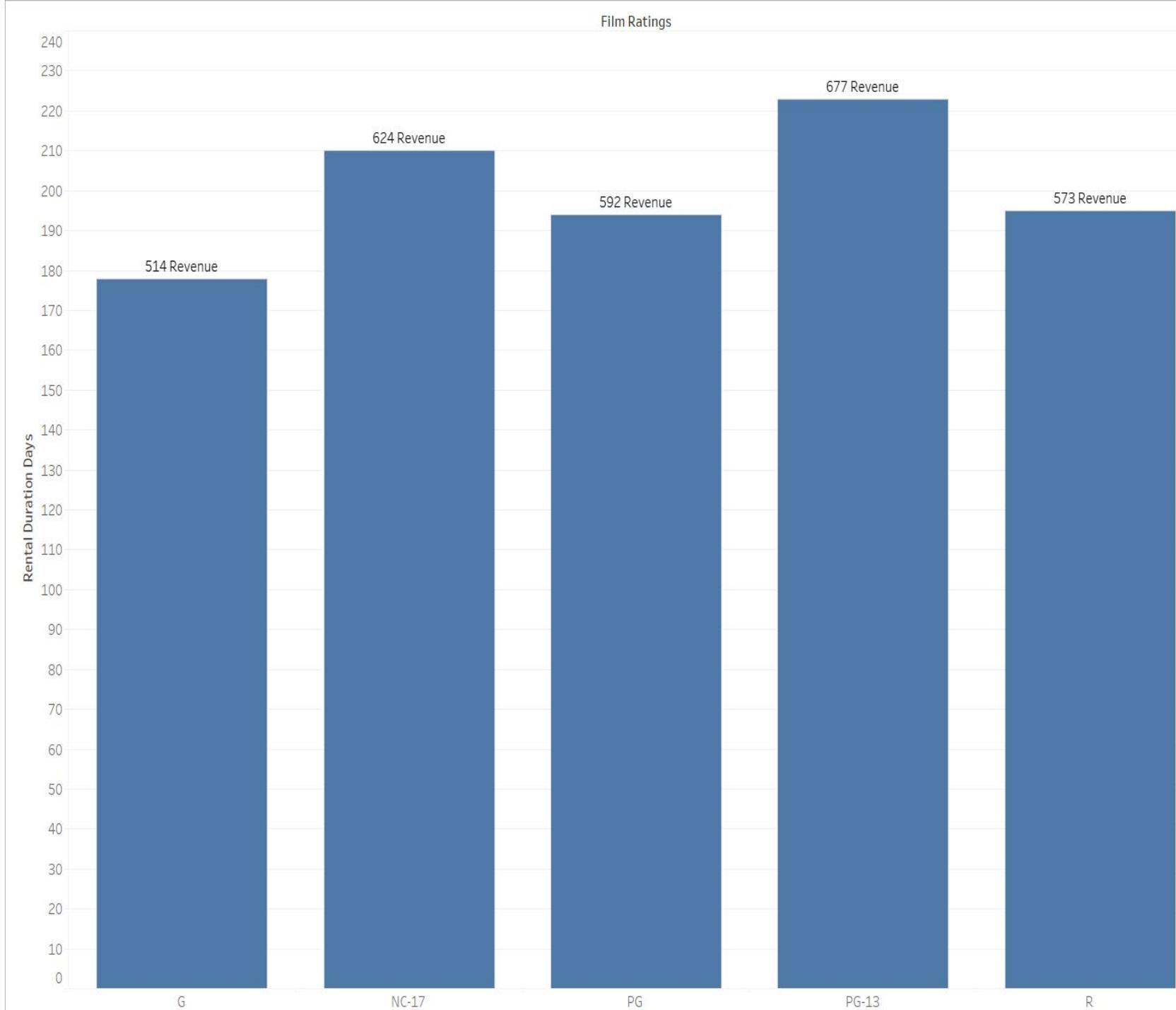
[Rockbuster data](#)



Forecasting for success

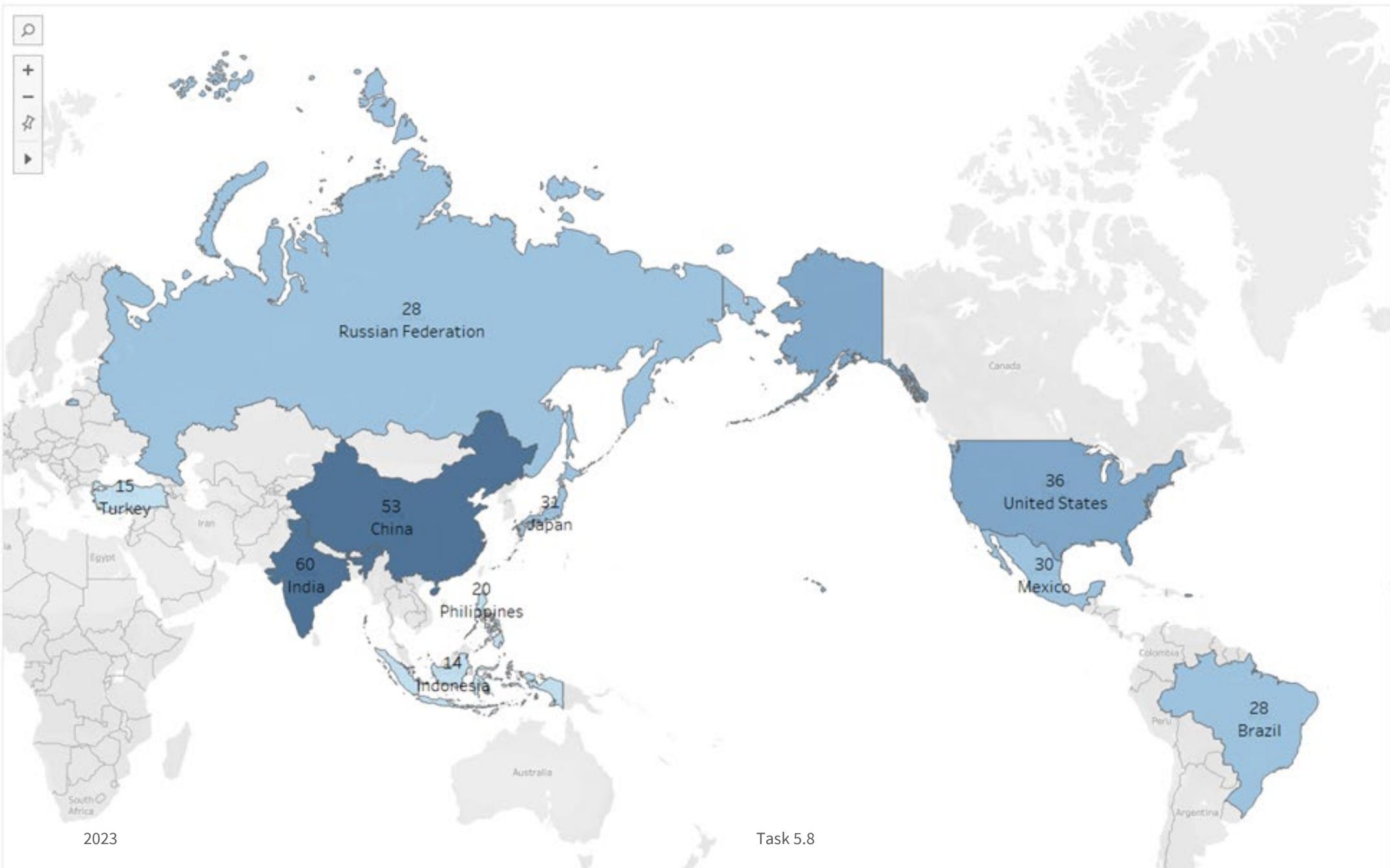
Creating data visualizations in Tableau to communicate insights to stakeholders.

Utilizing subqueries and CTE as well as descriptive analytics to inquire about the average revenue rental by movie genre



Top 10 Countries

SPATIAL ANALYSIS: CUSTOMERS & REGIONAL SALES



Using Postgre SQL to identify countries with the highest revenue and highest number of customers

Calculating average revenue per customer in tableau

Communicate insights to stakeholders

Summary



RECOMMENDATIONS

Build a film acquisition strategy that focuses on NC-17, PG-13, and PG films.

Expand the recognition program of the top ten countries' top five customers.

Broadening market share in the countries where Rockbuster is currently doing business

OBSERVATIONS

Rockbuster Stealth LLC is positioned to start an online streaming service by leveraging its global position to create a soft entrance to the streaming market.

If Rockbuster enters the streaming market as a niche provider of family-friendly films. Rockbuster Stealth LLC should focus on its core strengths, such as its top ten films and rental duration length; it can create a stable, strong point for entering the streaming market.

INSTACART GROCERY BASKET ANALYSIS



MOTIVATION

Instacart already has very good sales, but they want to uncover more information about their sales patterns.

DATASET(S)

[Customer dataset](#)

[Data Dictionary](#)

TOOLS



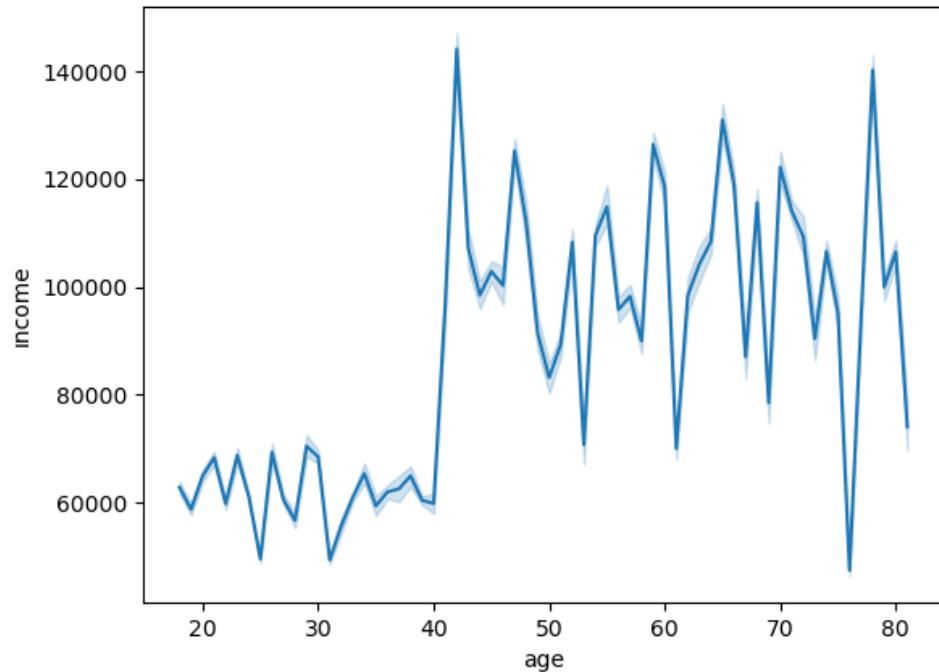
TECHNIQUES

- Business Understanding
- Designing a Data Research
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- Data Quality Measures
- (Cleaning)
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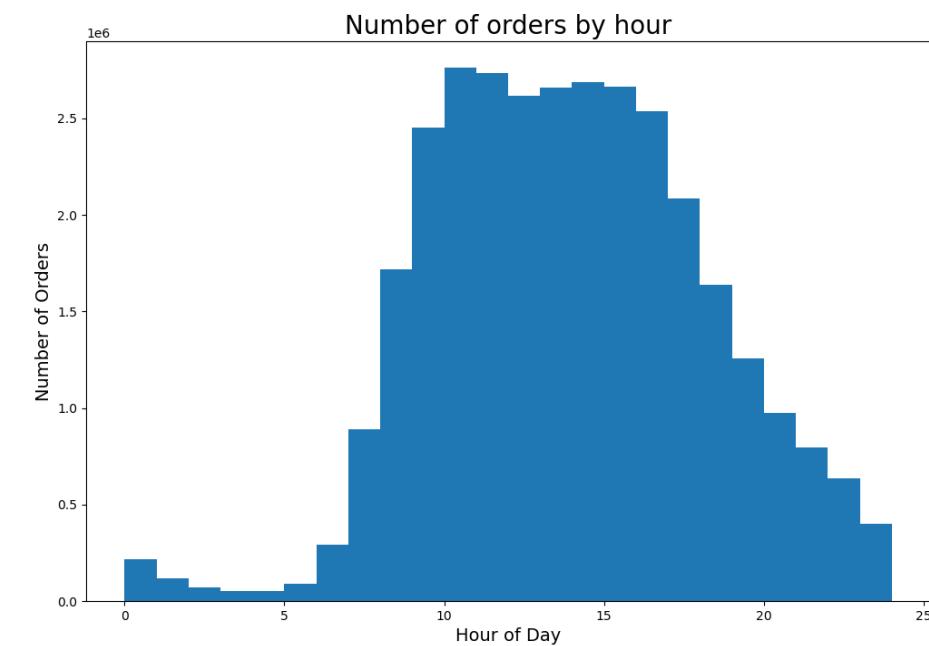
Citation : “The Instacart Online Grocery Shopping Dataset 2017”, Accessed from <https://www.instacart.com/datasets/grocery-shopping-2017> on <date>.

DATA ANALYSIS

Identifying patterns in sales data and categorizing orders by different criteria

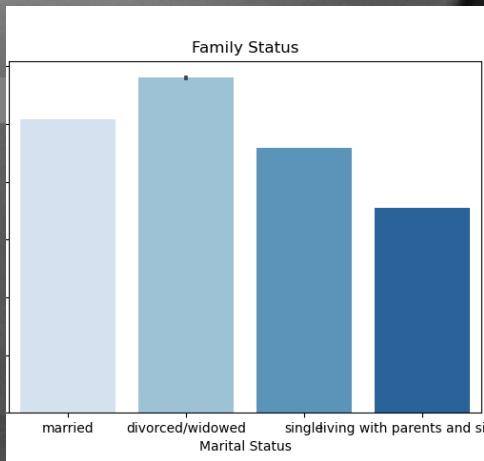


Exploratory Data Analysis using python

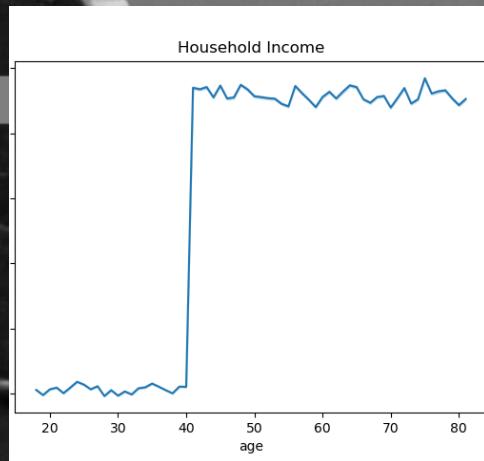


Analyzing sales data to identify times with most revenue (weekday, hour of day)

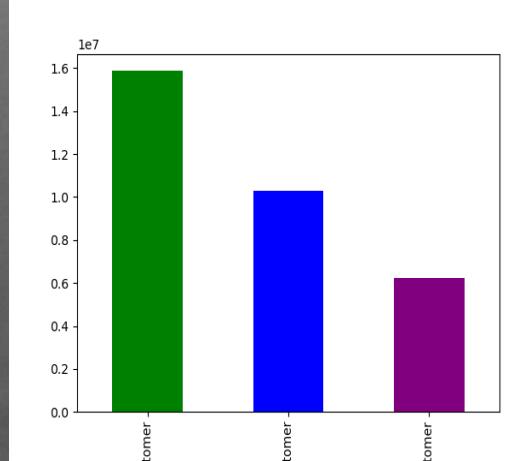
CUSTOMER PROFILING



Identifying patterns in customer order history



Categorizing data and creating new identifying variables



Customer profiling on the bases of new variables



Answering stakeholder questions

Summary

RECOMMENDATIONS

- Most orders are placed over the weekend, Saturday is the busiest day.
- Between the ages of 20-50 are high spenders.
- Most Instacart clients fit one of three categories: Married, Divorced/widowed, or Single. The highest group is Divorced/Widowed with an annual income of nearly 120K.

OBSERVATIONS

According to the US Census Bureau, in 2021, the American median household income was 70,784 USD. In markets, like NY the high-end middle-class income is 176K USD, or in Washington, DC it can be 223K USD.

Sending out sales alerts to go out to customers between 7 pm to 1 am the night before could result in higher sales. Also, sending out alerts for popular items every 10-20 days would align with the order habits of the customer base.

Global Layoff 2023



MOTIVATION

Based on all the media coverage, I was concerned that the job market was experiencing a severe downward spike.

DATASET(S)

- [WARN](#)
- [Kaggle](#)

TOOLS

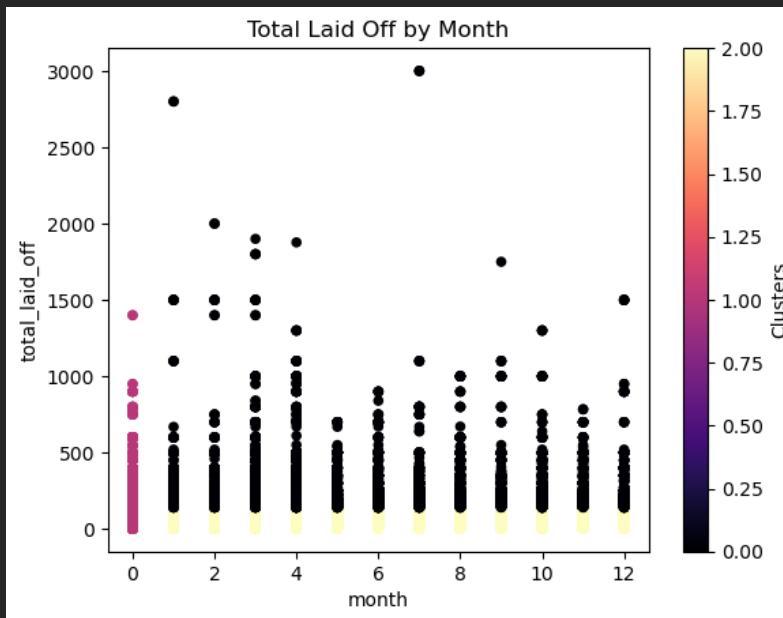


TECHNIQUES

- Data Mining
- Data Cleaning
- Regression Testing
- Visualization
- Storytelling
- Business Understanding

Data Analytics

Identifying trends from both a historical and spatial viewpoint.



Are the massive layoffs in the fourth quarter of 2022 a trend or a market correction?

What happened	Overview	Hypothesis and Questions	Clusters	Where did the clusters happen	Forecasting 2027	What do the numbers mean	Observations	Insights and Takeaways
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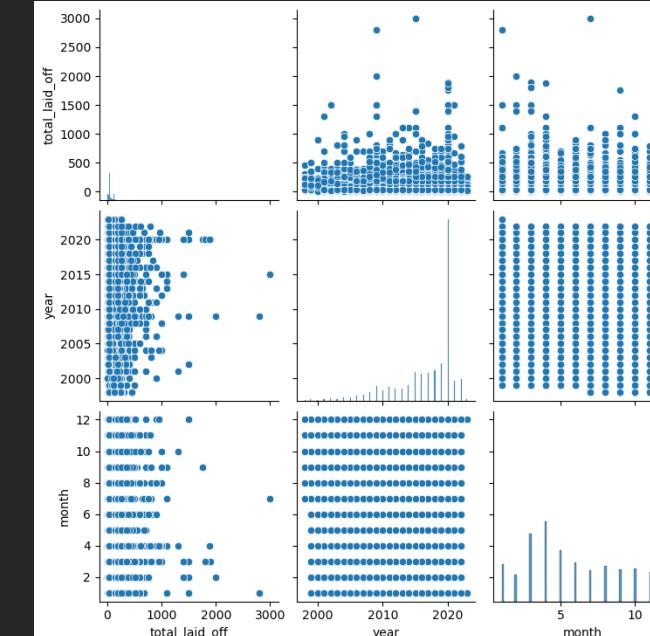
The Global Layoffs: Trend or Market Correction



Over the past 3-5 years the global [job market](#) has been robust, especially in the US tech sector. Over the past 3 months, there has been a steady succession of mass layoffs in the tech sectors from major companies such as [Alphabet](#), [Goldman Sachs](#), and [Amazon](#).

Using different techniques such as:

- Regression testing
- Clustering
- Folium mapping



Business Understanding

Understanding the rationale for the analysis. Identifying how the analysis will answer business case questions and offer insight into taking action.

Are the massive layoffs in the fourth quarter of 2022 a trend or a market correction?



Summary



TAKEAWAY

Based on the numbers and market conditions the hypothesis is that the current layoff trend is more likely a market correction due to over hiring related to the pandemic. The overall job market remains very healthy.

OBSERVATIONS

What can be said with certainty is that there will be future spikes in layoffs due to all the usual factors such as recession fears, shareholders' expectations, etc. Layoffs have long since been a go-to for companies looking to demonstrate their fiscal prudence to satisfy the demands of internal and external shareholders.



THANK YOU

Semone Noel