DATA ANALYTICS PORTFOLIO

Peter Maciulis

ABOUT ME

I am an experienced research analyst in the financial services industry focusing on the field of corporate governance and ESG-related topics. My skillset includes analyzing annual and financial reports, as well as proxy analysis of DAX40, ATX20, and SMI20 companies. Further skills include data analysis using Excel, SQL, and Python as highlighted within this portfolio.

PROJECTS

GAMESCO

Analyzing global video game sales by geographic regions

FLU SEASON

Determining medical staffing needs across the US during influenza season

ROCKBUSTER

Online video rental analysis

INSTACART

Analyzing customer behavior and designing a marketing strategy for an online grocery business

PIG E. BANK

Anti-money laundering analysis

AIRBNB - BERLIN

Analyzing which factors may impact the price of accommodations.

GAMESCO BACKGROUND

OBJECTIVE

Using historical data to make informed analysis of development of new games

ASSUMPTIONS

Sales will remain constant for each geographic region over time

SKILLS

Grouping/summarizing data
Descriptive analysis
Creating visualizations
Presenting results
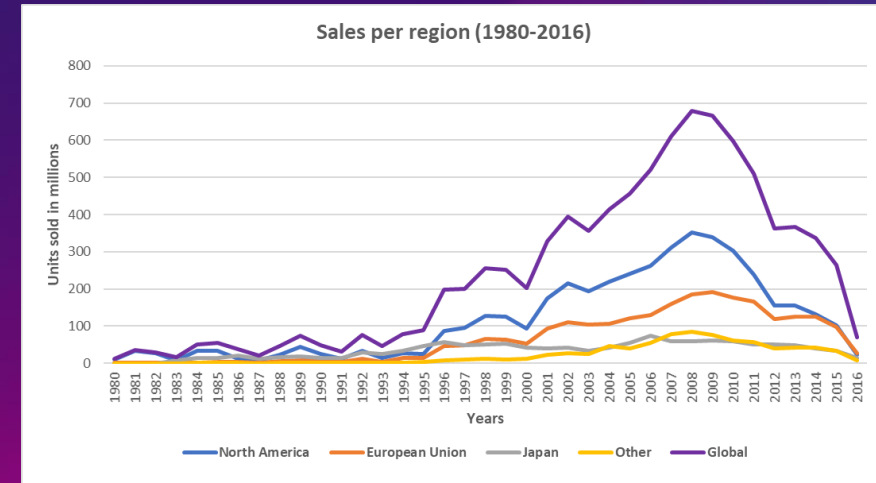
TOOLS

Excel
PowerPoint
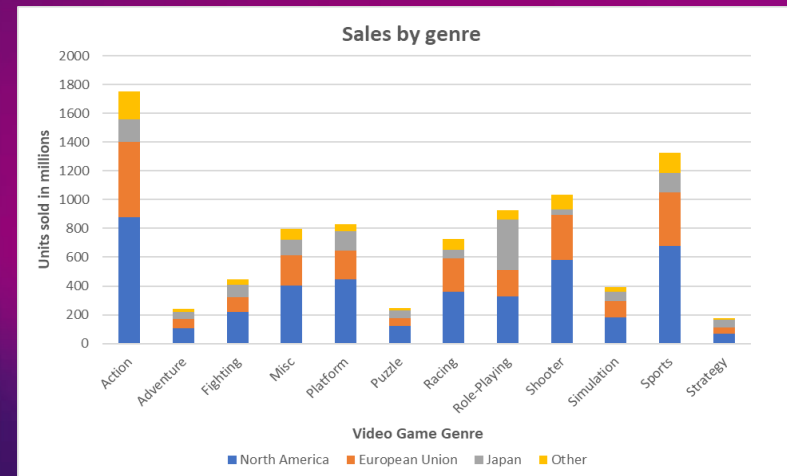
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GAMESCO ANALYSIS

SALES FINDINGS

- Videogame popularity varies greatly by region
- Game sales peaked in 2008 at nearly 700 million units sold
- North America had the highest number of units sold from 1996 to 2015, with Europe, thereafter, following by Japan and Other

SALES OVERVIEW

Sales per region (1980-2016)

SALES BY GENRE

Sales by genre

GENRE FINDINGS

- Action, sports, and shooters sell the most
- North America and European Union prefer shooters and sports games
- Japan prefers RPGs

CONCLUSION AND RECOMMENDATIONS

- Maximize return on investment
  - Invest in largest markets to increase ongoing sales
  - Invest in the most popular genres: action and sports video games
  - Match your markets needs:
    - NA and EU = shooters
    - Japan = RPGs
  - Increase market research to understand the age, gender, or more specific regional differences of your potential and current customers.

INFLUENZA SEASON BACKGROUND

OBJECTIVE

Examining influenza trends in USA and determining staffing needs for different regions by seasons to assist staff needs and protect most vulnerable populations

HYPOTHESIS

If a state has a large portion of vulnerable populations, then influenza cases will be higher and they will need additional staffing.

SKILLS

Data cleaning, integration and transformation
Statistical hypothesis testing
Visual analysis and forecasting
Storytelling in Tableau

TOOLS

Excel
Tableau

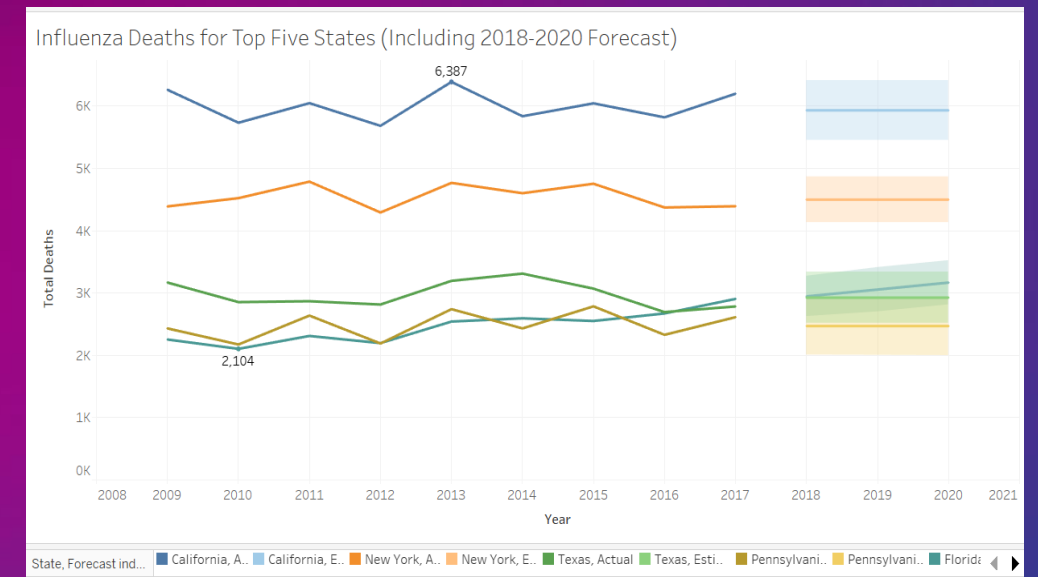[CENTER FOR DISEASE CONTROL DATASET]
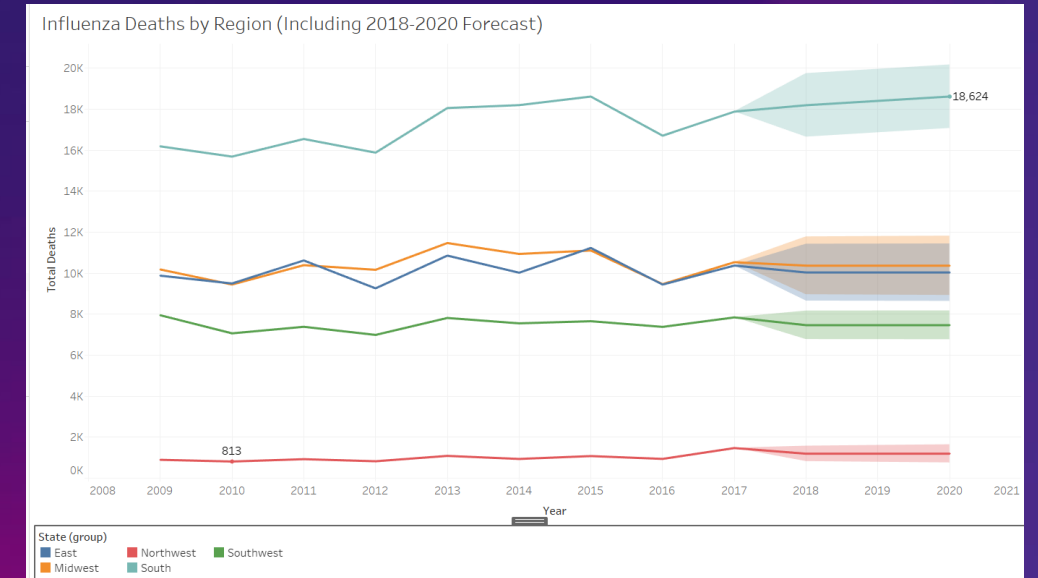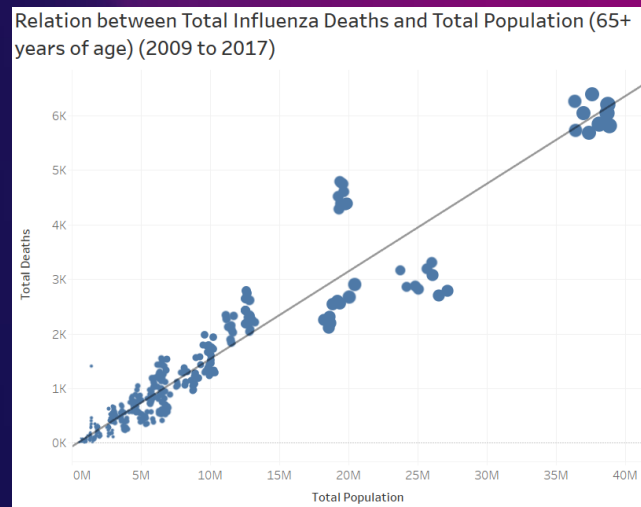
[US CENSUS BUREAU DATASET]

INFLUENZA SEASON ANALYSIS

- Cleaning, wrangling, transforming, merging data
- Hypothesis testing through statistical analysis
- Forecasting and correlation tests

RESULTS

- Null hypothesis was confirmed: "States and regions with higher vulnerable populations have higher influenza-related deaths."
- Correlation between influenza deaths and vulnerable population is very strong

Influenza Deaths by Region (Including 2018-2020 Forecast)

Relation between Total Influenza Deaths and Total Population (65+ years of age) (2009 to 2017)

Influenza Deaths for Top Five States (Including 2018-2020 Forecast)

CONCLUSION

- Specific states and certain regional parts of the United States have a higher vulnerable population.

- Influenza deaths are most prevalent in the south of the United States.

- Vulnerable populations: 65 years and above should get vaccinated to avoid possible hospitalization and death.

- Further, due to certain regions having higher vulnerable populations as well as higher numbers of influenza related deaths, the southern US states as well as the top five states will require additional staffing in the upcoming influenza seasons.

- Click on Icons below to see presentations:

ROCKBUSTER BACKGROUND

OBJECTIVE

Rockbuster is a movie rental company that used to have stores all around the world and is planning to remain competitive by launching an online video rental service

KEY QUESTIONS

Which movies contribute the most or least to revenue?
What was the average rental duration for all videos?
Where are our customers based?
Sales differences amongst regions?

SKILLS

Relational databases
SQL
Filtering and querying databases
Cleaning and summarizing
Common Table Expressions

TOOLS

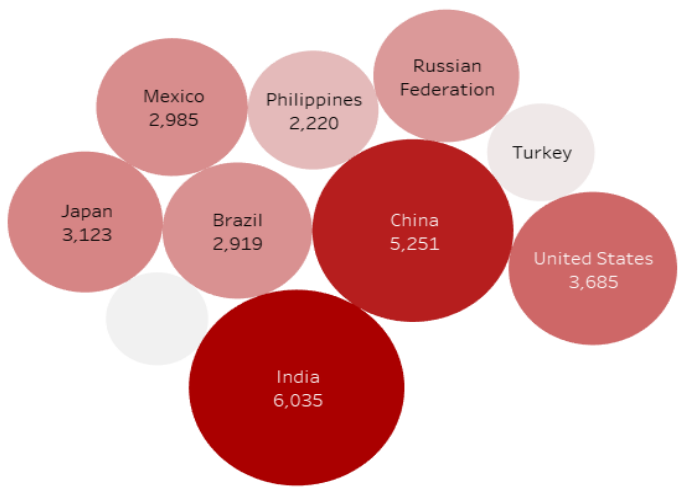PostgresSQL
Tableau
PowerPoint

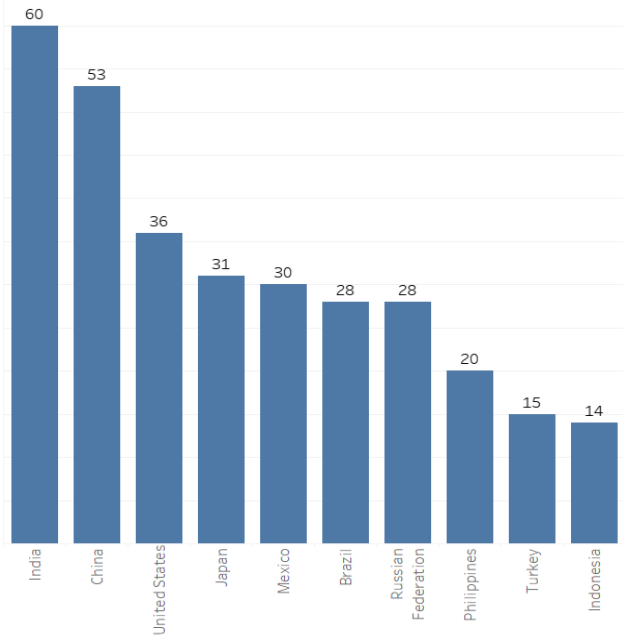Data source

ROCKBUSTER ANALYSIS

MARKET INSIGHTS

- Top markets in terms of revenue and customers are India, China, United States and Japan
- Average rental duration was 5 days, at a rental rate of $2.98.
- The film "Telegraph Voyage" brought in the most revenue.

TOP 10 COUNTRIES IN TERMS OF REVENUE

Mexico 2,985
Philippines 2,220
Russian Federation
Turkey
Japan 3,123
Brazil 2,919
China 5,251
United States 3,685
India 6,035

Top 10 Countries By Customers

Country	Customers
India	60
China	53
United States	36
Japan	31
Mexico	30
Brazil	28
Russian Federation	28
Philippines	20
Turkey	15
Indonesia	14

TOP 10 GROSSING FILMS

TITLE	REVENUE ($)
Telegraph Voyage	215.75
Zorro Ark	199.72
Wife Turn	198.73
Innocent Usual	191.74
Hustler Party	190.78
Saturday Lambs	190.74
Titans Jerk	186.73
Harry Idaho	177.73
Torque Bound	169.76
Dogma Family	168.72

	Rental Duration	Rental Rate	Movie Length	Replace Cost
MIN	3 days	$ 0.99	46 min	$ 9.99
MAX	7 days	$ 4.99	185 min	$ 29.99
AVG	5 days	$ 2.98	115 min	$ 19.98

OPPORTUNITIES

- ## Increase Selection of Films
  - Current inventory *only* includes 1,000 English films from 2006. Increase volume and scope to remain competitive.

- ## Focus on Key Markets
  - Strong market foothold in India, China, and USA – focus on continued growth potential

- ## Implement Loyalty Program
  - Bonus points for "loyal customers" – offer reward program that includes discounts on rentals, shipping of snacks, company merchandise, etc.

GITHUB REPOSITORY →

GitHub

INSTACART BACKGROUND

OBJECTIVE

Instacart is an online grocery store that is requesting deeper insights of its customer's behavior and suggestions for strategies to improve its business

KEY QUESTIONS

What differences can be observed among ordering habits of customers?
Who are the key target groups?

SKILLS

Data Wrangling
Data Consistency Checks
Deriving Variables
Grouping and Aggregating Data
Creating Flags
Descriptive Statistics
Visualization in Python

TOOLS

Python
Juptyer Notebooks
Excel

INSTACART ANALYSIS

KEY FINDINGS

- Customers are largely primarily married
- Baby Boomers account for the largest portion of customers; Boomers, Gen X, and Millenials account for over 75% of business!
- Middle income, upper income, and wealthy income customers make up the majority of customers. Top ten percent only 1% and not as relevant for continued business strategies going forward.
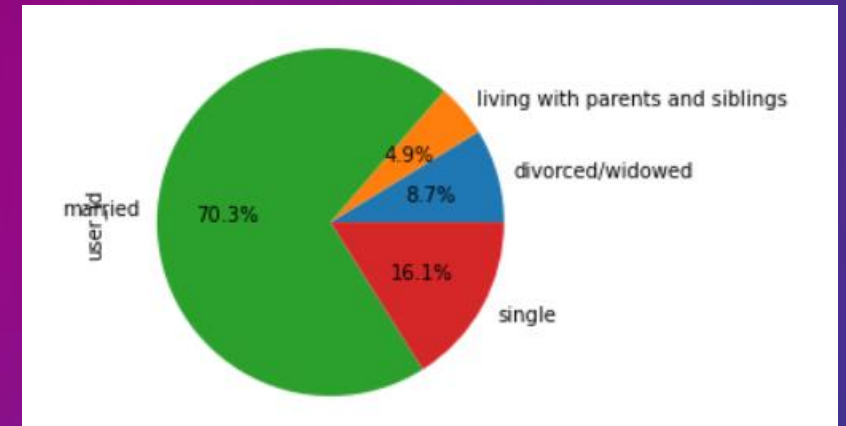
INCOME BRACKET
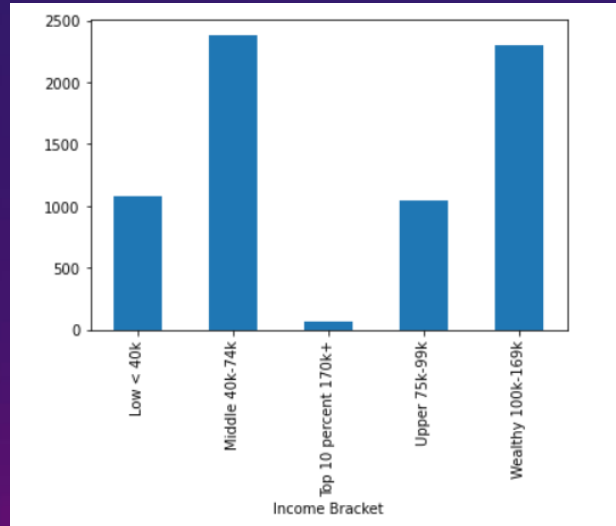
Most customers are in the middle (40k-70k) and wealthy (100k-169k) income brackets. The top ten percent of earners (170k+) account for only 1% of business.

GENERATIONS
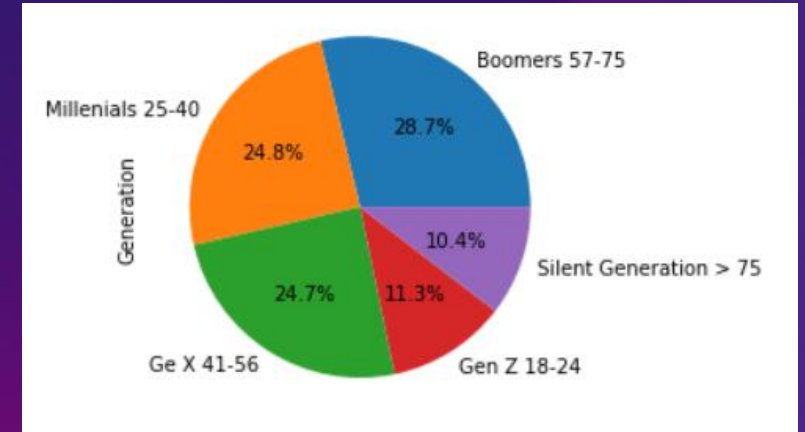
Key generations are Baby Boomers, Millenials, and Gen X; collectively more than 75% of business.

FAMILY STATUS

70% of customers are married!

BUSINESS STRATEGY

- Focus on married couples and the largest populations, which are currently Boomers, Gen X, and Millennials; these generations account for the majority of the business.

- Moreover, these age groups are between 25-60. Such age groups are more likely to be married, have a steady job, and maybe have kids, dog, cat, other expenses. As such, Instacart should continue to target these groups as they have the largest incomes, account for the majority of the market.

- Consider targeted campaign to those who belong to Gen Z but are about to turn 25+, as it's likely they will have increasing incomes, married, or have a family in the near future.

GITHUB REPOSITORY → GitHub

PIG E. BANK BACKGROUND

OBJECTIVE

As an analyst at Pig E. Bank, assistance on projects must be provided across different departments, including sales and compliance departments

KEY TASKS

Identify the risk factors that have contributed to customers leaving the bank.

Build decision tree of customer retention.

SKILLS

Data Ethics
Data Mining
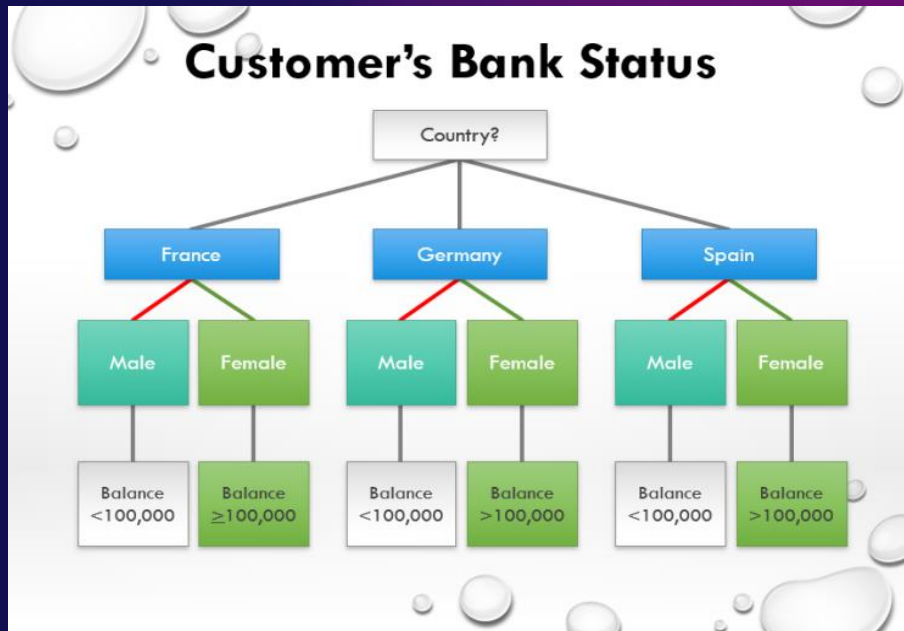Predictive Analysis
Time Series Forecasting

TOOLS
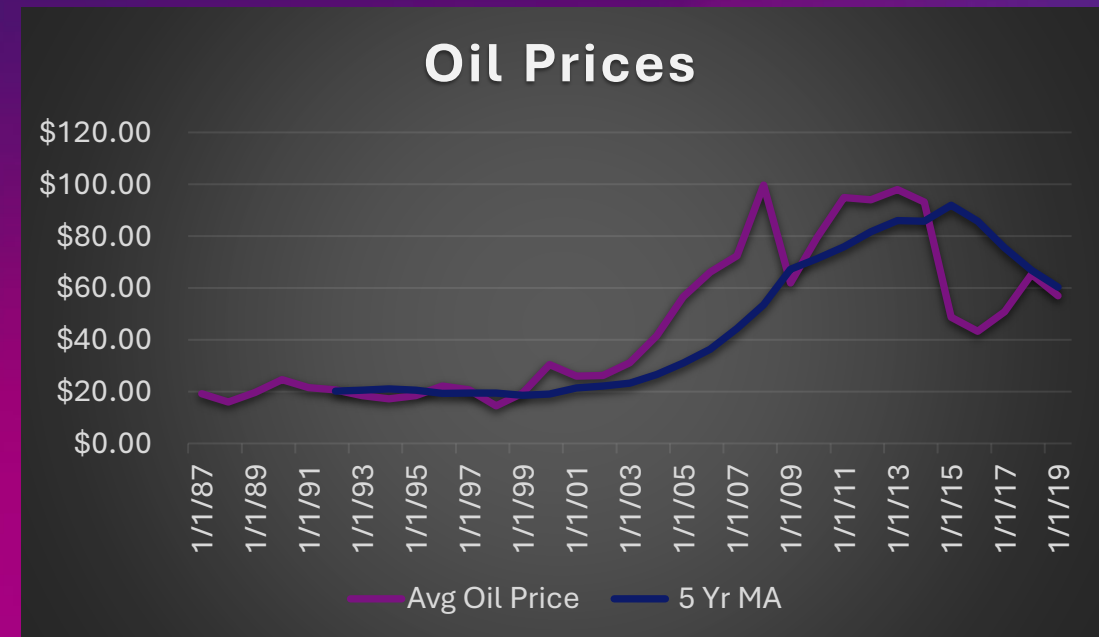
Excel

Data source

ANALYSIS & CONCLUSION

CUSTOMER RETENTION

- Female customers tend to leave banks more frequently than males
- Higher balance customers more likely to leave bank than low balance customers
- German customers most likely to leave banks than Spain or France.

DECISION TREE

OIL PRICE TREND

AIRBNB– BERLIN: BACKGROUND

OBJECTIVE

Determining what impacts the price of rentals within a neighborhood group in Berlin, which may be useful for a possible outside real estate investor

KEY TASKS

Identify which variables are impacting the prices of accommodations

Build visualizations to highlight the most expensive neighborhoods

SKILLS

Data Wrangling
Data Consistency Checks
Grouping and Aggregating Data
Descriptive Statistics
Linear and Multivariate Regressions
Visualization in Python

TOOLS

Python
Juptyer Notebooks
Tableau
Excel

Data source

AIRBNB – BERLIN: ANALYSIS

KEY FINDINGS

- **Accommodations** are generally pricier closer to city center.
- Majority of rentals are also within the city center.
- **Key neighborhoods** in terms of total EUR spent are 1. Mitte, 2. Kreuzberg-Friedrichshain, and 3. Pankow.
- **Shared rooms** are the most affordable accommodation, whereas hotels are almost twice as expensive on average.
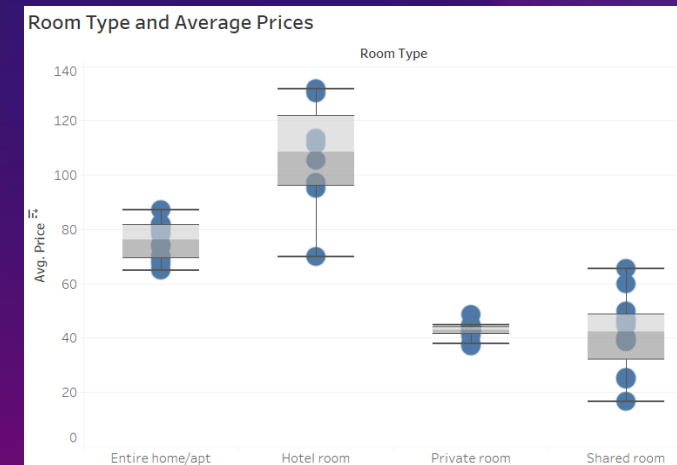
NEIGHBORHOODS

- Officially over EUR 1.3 million was spent on Airbnb Berlin on accommodation between 2012 and 2022.
- The top three neighborhoods account for approx. 49.7% of all accommodation income.

Overwhelming majority of listings are near the city center and generally have higher prices.
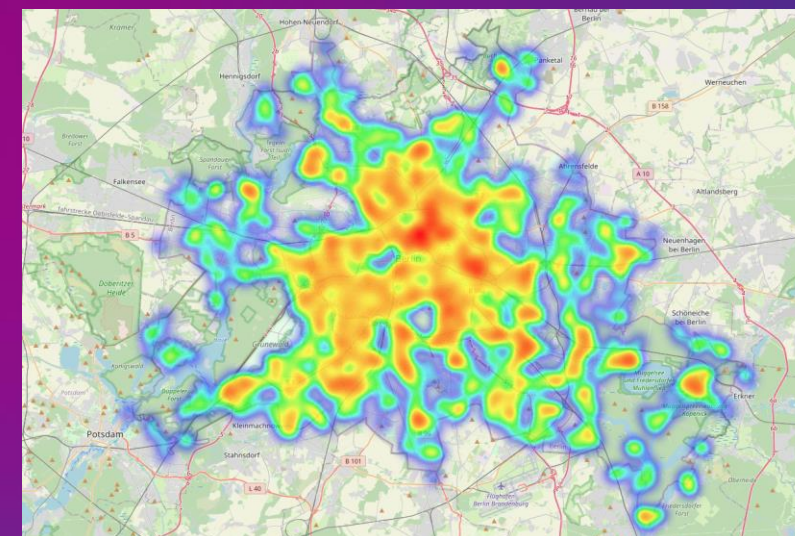
ACCOMMODATION MATTERS

Shared rooms cost on average around EUR 40 per night, whereas hotel rooms around EUR 110. While the most popular option, entire apt/home, averages around 75 EUR per night.

LOCATION MATTERS!

BUSINESS STRATEGY

- Request rental data from a local rental agency or local government institute to obtain more accurate rental statistics, which may also include more detailed information such as apartment size, balcony, built-in kitchen, etc.

- For investors: Focus on investing in real estate/housing closest to city center: Mitte, Kreuzberg-Friedrichshain, and Pankow.

- Consider the small neighborhoods (colloquially referred to as "Kiez") within the larger neighborhood groups and compare rent prices within them as well as what may other factors may impact rent prices: restaurants, schools, cafes, distance to public transportation, etc.

GITHUB
REPOSITORY → GitHub   TABLEAU PRESENTATION → +tableau

THANK YOU!

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https://github.com/petermaci