USAA x Data Mine

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Introduction

About USAA:

Established in 1922, USAA is a leading provider of insurance, banking, and financial services to over 13 million United States military members, veterans, and their families. Their mission is to empower their members to achieve financial security through highly competitive products, exceptional service and trusted advice. They seek to be the #1 choice for the military community and their families.
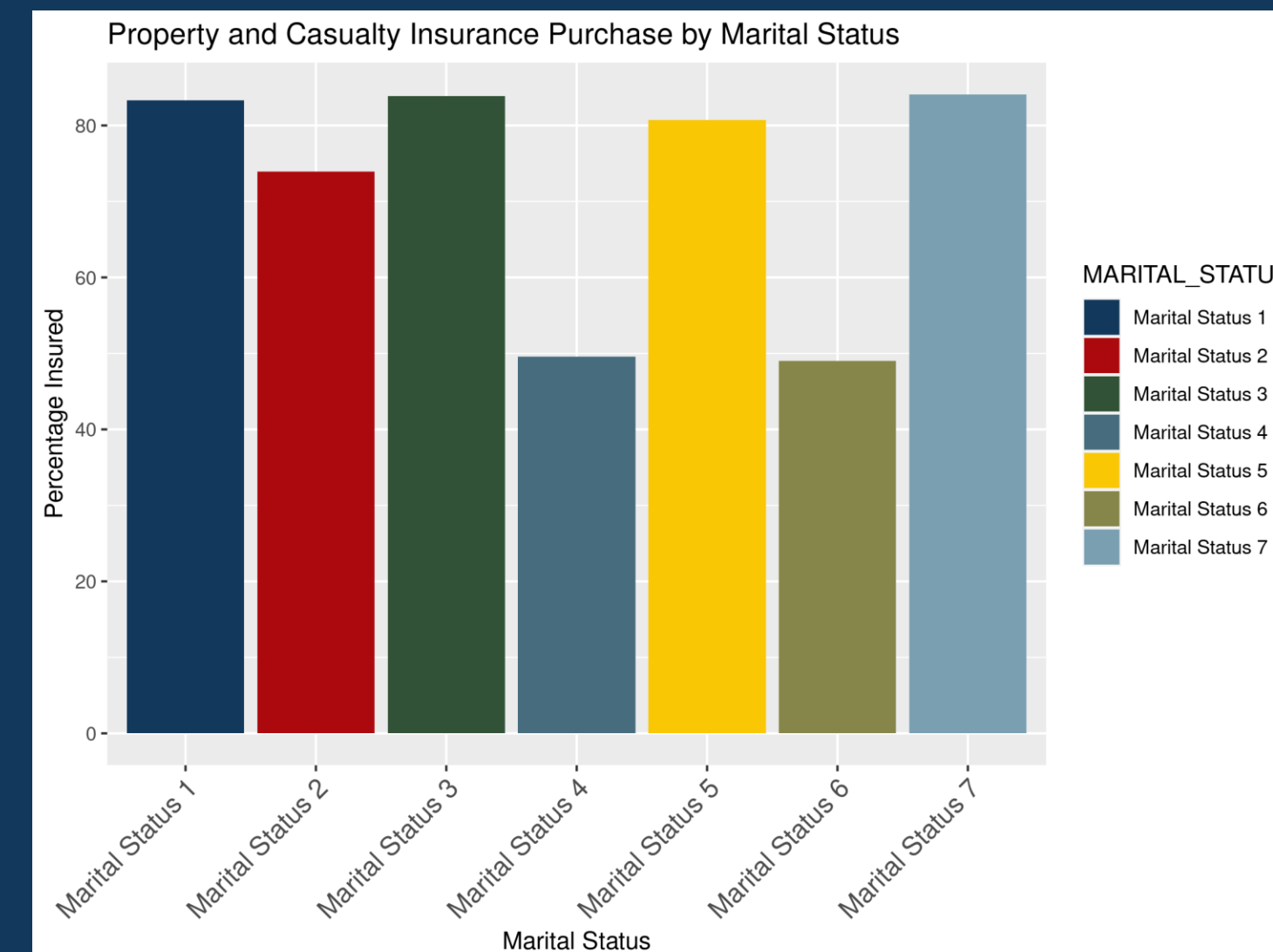
Goals:

Given a set data, we want to analyze phone & digital channel member activity, using various methods, to increase customer efficiency, identify trends, and explore external factors.
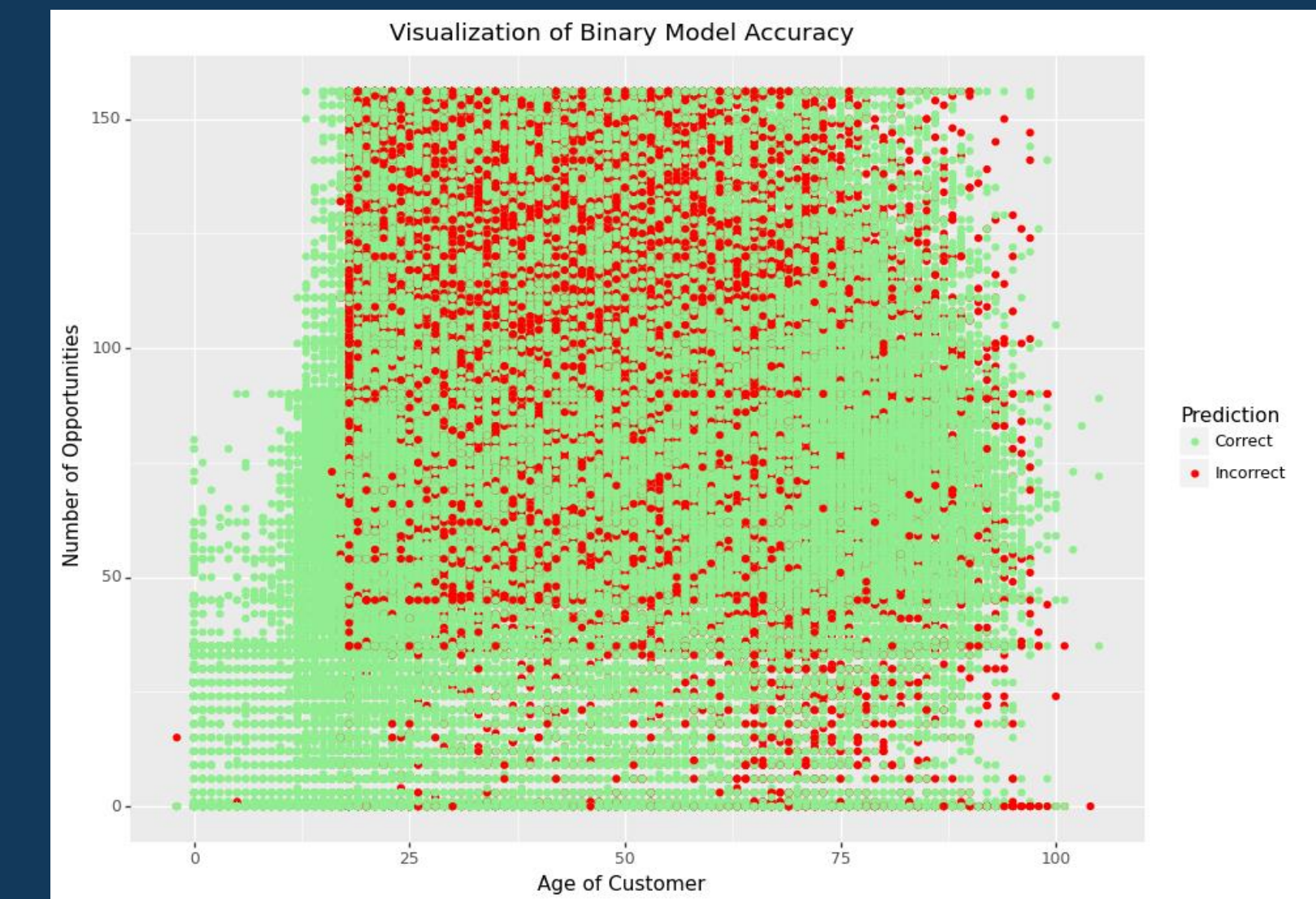
In doing so, we develop greater accuracy to explore hypotheses and focus on investigation of statistical methods, regression, and factor analysis.
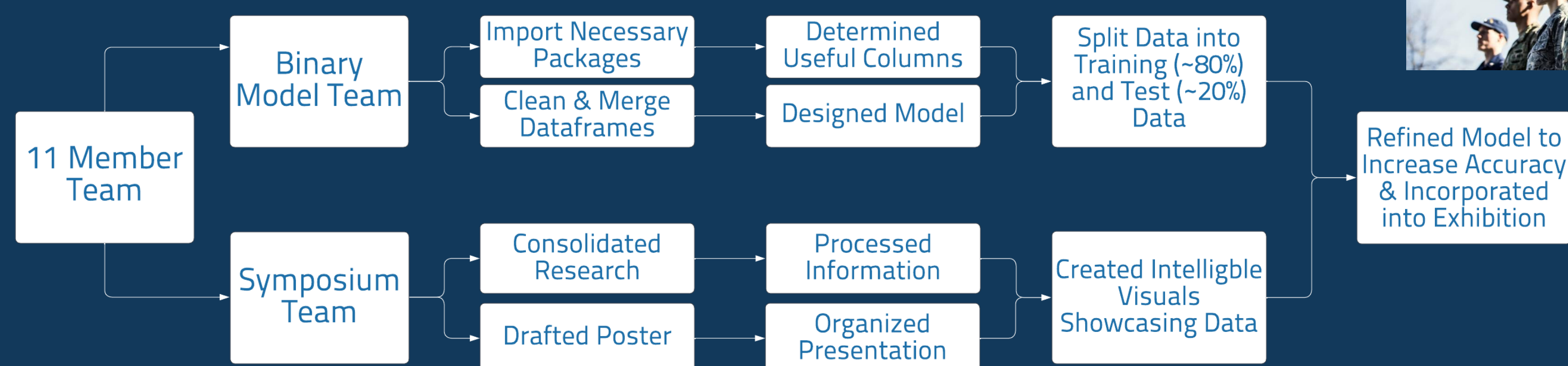
Research Methodology & Work

11 Member Team

Binary Model Team → Import Necessary Packages / Clean & Merge Dataframes → Determined Useful Columns / Designed Model → Split Data into Training (~80%) and Test (~20%) Data → Refined Model to Increase Accuracy & Incorporated into Exhibition

Symposium Team → Consolidated Research / Drafted Poster → Processed Information / Organized Presentation → Created Intelligble Visuals Showcasing Data

Conclusions & Future Goals

- Identified trends that are applicable to members of USAA
- Explored methods to increase efficiency in customer support
- Considered how external factors affect members relationship with USAA
- Investigated differences in channel usage (mobile app, phone, internet) and how these can be leveraged to increase customer activity & make USAA more financially efficient

During our Project, We:

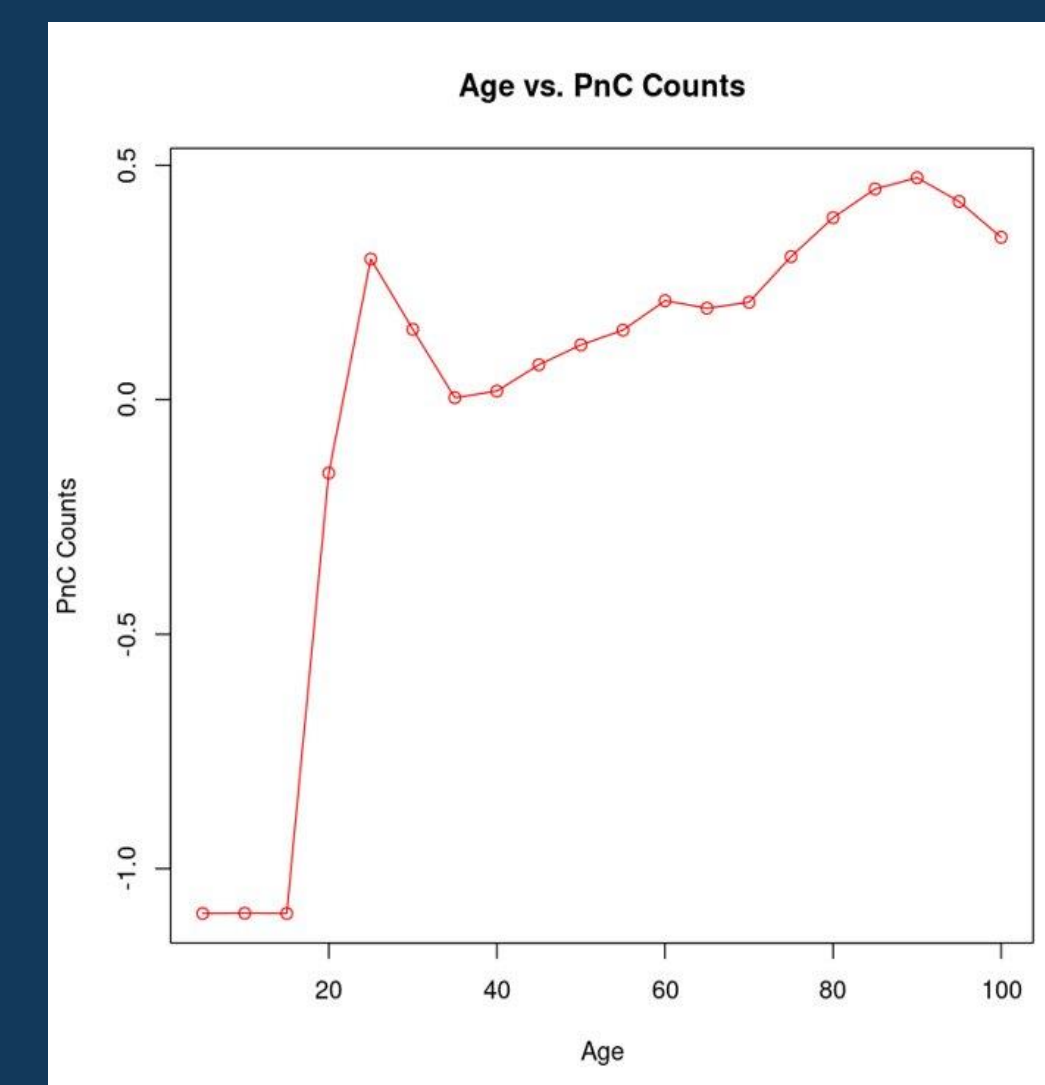MANAGE AND DETERMINE TRENDS FROM DATASETS

CREATE GRAPHS AND RELATIONSHIPS USING R AND PYTHON

COMMUNICATE EFFECTIVELY WITH OTHERS ON A LONG-TERM PROJECT

Data Visualization & Insights

Property and Casualty Insurance Purchase by Marital Status

MARITAL_STATUS: Marital Status 1, Marital Status 2, Marital Status 3, Marital Status 4, Marital Status 5, Marital Status 6, Marital Status 7

- Percentage of people in each marital status group that have purchased Property and Casualty Insurance

- The Property and Casualty Count for age groups. A large spike can be seen around age 20, which can be because many users buy property like a home or a car at this age and need to insure it.

Age vs. PnC Counts

Binary Model:

Visualization of Binary Model Accuracy

Prediction: Correct, Incorrect

- Using XGBoost in Python, we were able to develop a binary model that used customers' age, marital status, and opportunities(number of sessions with USAA) to predict if USAA customers will purchase Property and Casualty Insurance with over a 75% success rate.

Confusion Matrix

	Positive	Negative
Positive	22.7	19.0
Negative	5.5	52.8
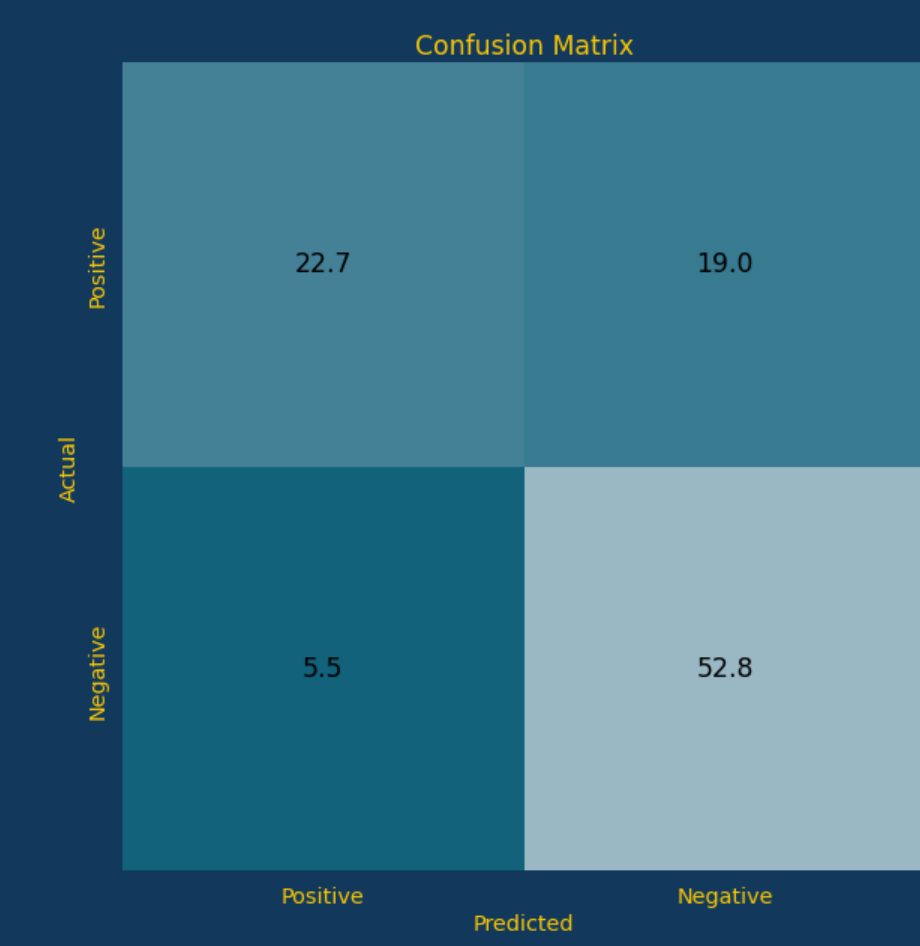
This matrix shows percentages for when the model predicted a customer purchased the product vs. whether the product was actually purchased. For example, 22.7% of all customers were predicted to buy the product, and they did purchase, whereas 5.54% of all customers were predicted to buy the product, but they did not.

References & Acknowledgements

Thank you to our mentors (Mike, Dan, Nhat, and Vic), our TA (Akshaya) and the rest of the Data Mine staff for setting up this project and helping us throughout the semester.