Data Analytics Capstone
Bank Personal Loan Modelling

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Problem Statement

Thera Bank aims to increase its personal loan customer base by converting existing customers. Encouraged by a successful campaign last year that converted 9% of liability customers into loan customers, the bank's marketing department is developing new strategies to improve conversion rates while minimizing costs.

Dataset

The data presented here was sourced from the Personal Loan Modeling dataset available on Kaggle. It encompasses 5,000 customer profiles with 14 associated variables, including:

- ID
- Age
- Experience
- Income
- Zip Code
- Family
- CCAvg

- Education
- Mortgage
- Personal Loan
- Securities Account
- CD Account
- Online
- Credit Card

Tableau Storyboard Contents

Following the receipt of the CSV file, I will initiate a comprehensive validation process of column headers. A subsequent step will involve constructing a data model with calculated measures and dimensions to enable detailed segmentation analysis. The final stage will be the upload of the data into Tableau for visualization and exploration. The outcomes of this analysis will be presented in Tableau for visualization and exploration.

Datapoint Column (Kaggle) Explanations

Attribute	Definitions	Attibute	Definitions
ID →	Customer ID	Education →	Education Level. 1: Undergrad; 2: Graduate; 3: Advanced/Professional
Age →	Customer's age in completed year	Mortgage →	Value of house mortgage if any. ($000)
Experience →	Number of years of professional experience	Personal Loan →	Did this customer accept the personal loan offered in the last campaign?
Income →	Annual income of the customer ($000)	Securities Account →	Does the customer have a securities account with the bank?
Zip Code →	Home Address ZIP code	CD Account→	Does the customer have a certificate of deposit (CD) account with the bank?
Family →	Family size of the customer	Online →	Does the customer use internet banking facilities?
CCAvg →	Avg. spending on credit cards per month ($000)	Credit Card →	Does the customer use a credit card issued by this Bank?

Tableau Storyboard Contents

Below are the contents for each storyboard in Tableau.

- Product Summary

- Personal Loan and Mortgage Trends by Age, Income, and Family

- Personal Loan vs Credit Card & Online Internet Banking

- Ranking of Top 100 ID Records

Storyboard – Product Summary (Findings)

The Chart illustrates the distribution of products usage and education level across different experience levels.

- Online and Credit Card are the most applied products across all experience levels

- Individuals with undergraduate degrees have a higher usage of Online and Credit Card compared to those with other degrees.

- There is general trend of increasing product usage with higher experience levels, and gradually dropping starting from 36 years of experience onwards.
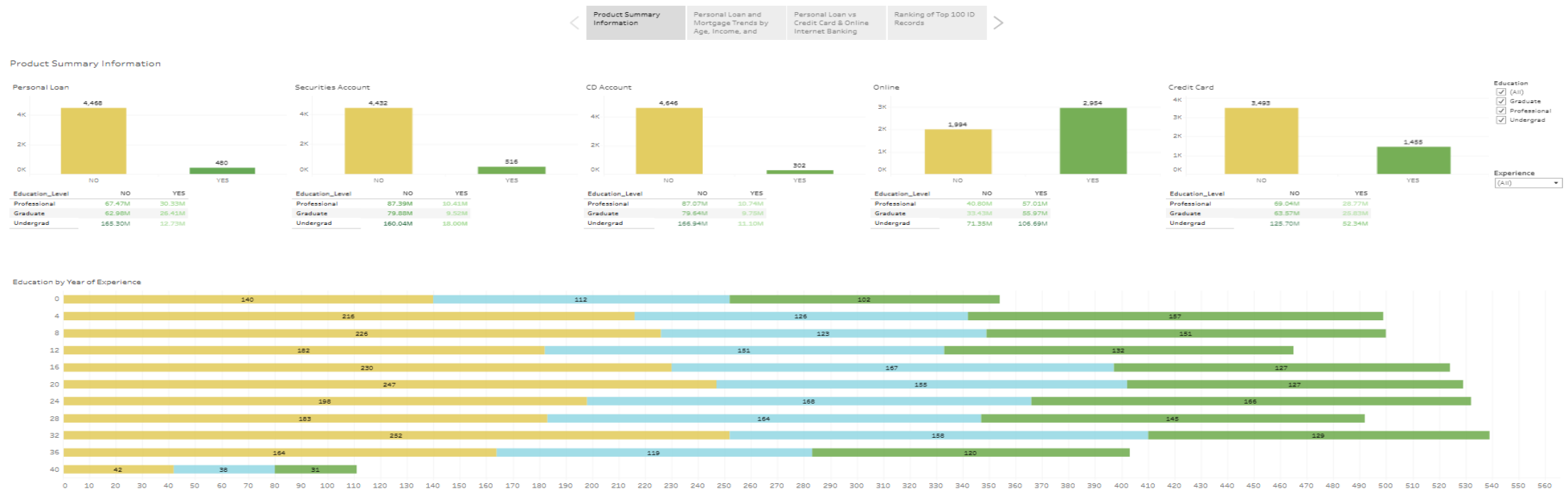
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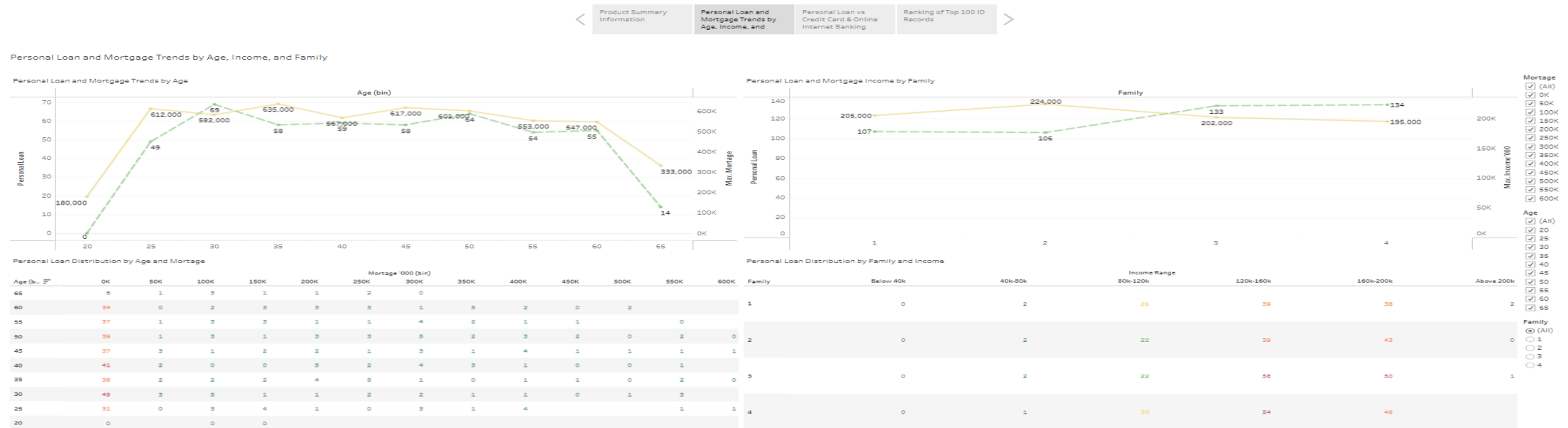
Storyboard – Product Summary (Recommendations)

Given the higher usage of Online and Credit Card among undergraduates, targeted marketing campaigns and product enhancements should focus on this demographic. Expand investigate if further segmentation based on specific fields of study such as finance, business, technology or even AI, which can reveal additional opportunities for product customization. Another strategic way that helps is to can collaborate with educational institutions to promote financial literacy and product awareness among students.

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Storyboard – Personal Loan and Mortgage by Age, Income, and Family (Findings)

The Chart illustrates on personal loan and mortgage usage across various demographics, including age, income, and family size.

- There's a general trend of higher personal loan usage among younger individuals (18-27), with a subsequent decline in older age groups. Mortgage usage, on the other hand, peaks in the 38-47 age range, likely coinciding with prime homeownership years.

- Higher income brackets tend to have higher personal loan and mortgage usage. This suggests a correlation between financial resources and borrowing capacity.

- Families with more dependents (3+) exhibit higher mortgage usage, possibly due to the need for larger living spaces.

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Storyboard – Personal Loan and Mortgage by Age, Income, and Family (Recommendations)

Recommend to develop tailored financial products and services for the 18-27 age group to capitalize on their higher demand for personal loans. Offer competitive mortgage products and financial advice will likely to support individuals in the 28-47 age group who are likely entering or expanding their homeownership journey. In addition, explore opportunities to bundle personal loans and mortgages with other financial products to increase customer value and loyalty.

Storyboard – Personal Loan vs Credit Card & Online Internet Banking (Findings)

The Chart illustrates on personal loan and mortgage usage across various demographics, including age, income, and family size. Base on the analyze and assumptions:

- There's a general trend of higher personal loan usage among younger individuals (18-27), with a subsequent decline in older age groups. Mortgage usage, on the other hand, peaks in the 38-47 age range, likely coinciding with prime homeownership years.

- Higher income brackets tend to have higher personal loan and mortgage usage. This suggests a correlation between financial resources and borrowing capacity.

- Families with more dependents (3+) exhibit higher mortgage usage, possibly due to the need for larger living spaces.

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Storyboard – Personal Loan vs Credit Card & Online Internet Banking (Recommendations)

It had clearly shown that both personal loan and online banking usage are higher among customers with lower credit card spending, hence invest in tailor products and marketing efforts to this demographic. Explore cross-selling opportunities between personal loans and online banking services for customers in lower spending brackets. Also gaining value-added services by offer financial education resources to help customers make informed decisions about credit card usage and personal finance will helps to attract business.

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Storyboard – Ranking of Top ID Record

Below chart displays a matrix visualization of the top 100 ID records based on several key attributes: the ranking of the top 100 Customer ID

- Annual Income

- Mortgage Balance

- Average Monthly Credit Card Expenditure

- Total Number of Product Owned
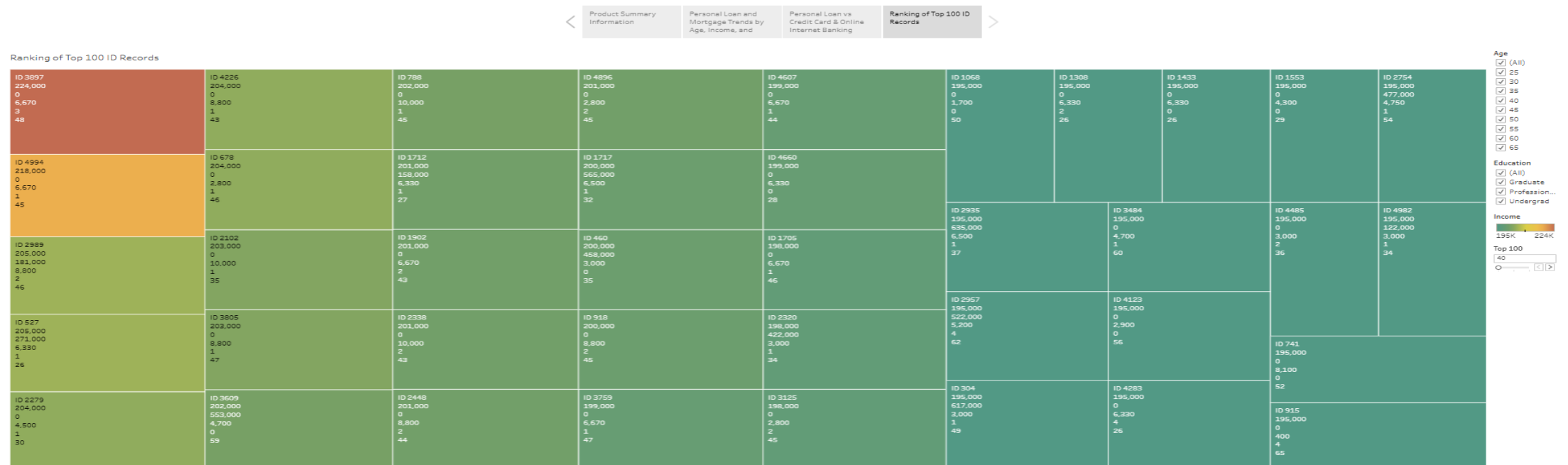
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Thank you

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