



Debby Rofiko Malik

Data Analysis Portfolio

2025



Tahun
2021 - 2025

Education

Biomedical Eng. - Bachelor Degree
Universitas Indonesia



Tahun
2023 - 2024

Work Experience

3D Design Engineer
Covent Indonesia

Tools



Hard Skills

Math and Statistics Data Cleaning
Data Visualization Machine Learning

Soft Skills

Critical Thinking Problem Solving
Communication Teamwork Adaptability
Leadership Time Management Creativity

Past Projects

- ★ Hotel Booking Analysis
- ★ Vendor Performance Analysis

Certifications

- ★ Data Science & Data Analysis (MySkill)
- ★ Microsoft Excel, Word, and PowerPoint (MySkill)

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Data Visualization in Looker Data Studio: Credit Card Dashboard

</> [Access Code Here](#)



Introduction

Project Explanation

This project involves creating a comprehensive dashboard using **data from a U.S.-based credit card company**, providing **insights into customer behavior, transaction activity, revenue generation, and risk exposure**. The dashboard is built from scratch using **Google Looker Studio**, with data stored in Google Sheets, demonstrating the full workflow from data connection to visualization.

Key Performance Indicators (KPIs)

At the top of the dashboard, scorecards highlight the following main KPIs:

- **Number of Customers**: total number of cardholders.
- **Total Transaction Volume**: total number of transactions conducted by customers.
- **Total Transaction Amount**: total monetary value of all transactions.
- **Total Delinquent Accounts**: number of accounts overdue by more than 30 days.
- **Interest Earned**: total interest revenue collected by the bank.
- **Average Customer Satisfaction**: overall satisfaction level of customers.
- **Average Utilization Ratio**: average ratio of credit usage, reflecting how extensively customers leverage their credit.

These metrics are essential in the banking context: **transaction volume and amounts reflect revenue** generated from customer activity, **delinquent accounts indicate credit risk**, **interest earned measures profitability**, and **utilization ratio demonstrates the potential for revenue growth**.



Dashboard Sections



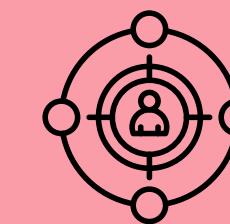
Customer Demographics

Visualizes the distribution and characteristics of the customer base.



Customer Revenue Profile

Identifies the most profitable customer segments.



Customer Risk Profile

Highlights potential credit and operational risks associated with different customer segments.

Customer Demography

Membuka <https://lookerstudio.google.com>

The screenshot shows the Looker Studio dashboard with a navigation bar at the top labeled 'Recent', 'Reports', 'Data sources', and 'Explorer'. Below this is a section titled 'Start with a Template' featuring several pre-made report cards: 'Blank Report Looker Studio', 'GA4 Report Google Analytics', 'Acme Marketing Google Analytics', 'Search Console Report Search Console', 'Google Ads Overview Google Ads', and 'YouTube Channel Report YouTube Analytics'. To the right is a 'Template Gallery' with cards for 'YouTube Sample Use of Report Function', 'Twitter', 'Facebook', 'LinkedIn', and 'Instagram'.

Blank Report → Connect Google Sheets

This screenshot shows the 'CC-Dataset - credit_card_1' configuration screen. It displays a table of columns with their current data types (e.g., Text, Number) and aggregation settings (e.g., Sum, None). A dropdown menu on the right side of the table allows selecting more granular levels of hierarchy like 'Country' or 'City'. At the bottom, there's a 'Record Count' summary showing 1,225 records.

Ensure that each column in the dataset has the correct data type.

Select the uploaded CSV and Worksheet in Google Sheets.



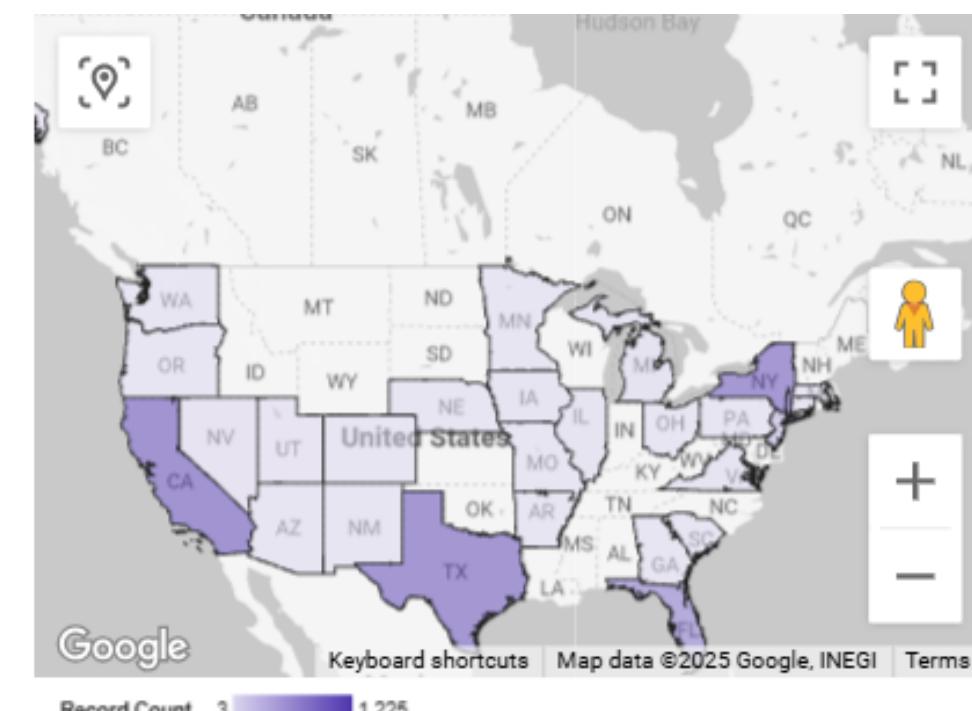
Check dataset column with Resource > Manage Added Data Source

Geographic Map

Google Map



Set up the data fields with the column `state_id` and use the column `client_num` as the colour metric



The customer distribution map reveals that **the highest concentrations of credit card holders are located in states such as California, Texas, and New York**, with the number of customers (Record Count) ranging from a low of 3 to a high of 1,225 per state.

To implement promotional campaigns aimed at increasing customer retention, efforts should be focused on these three dominant states.

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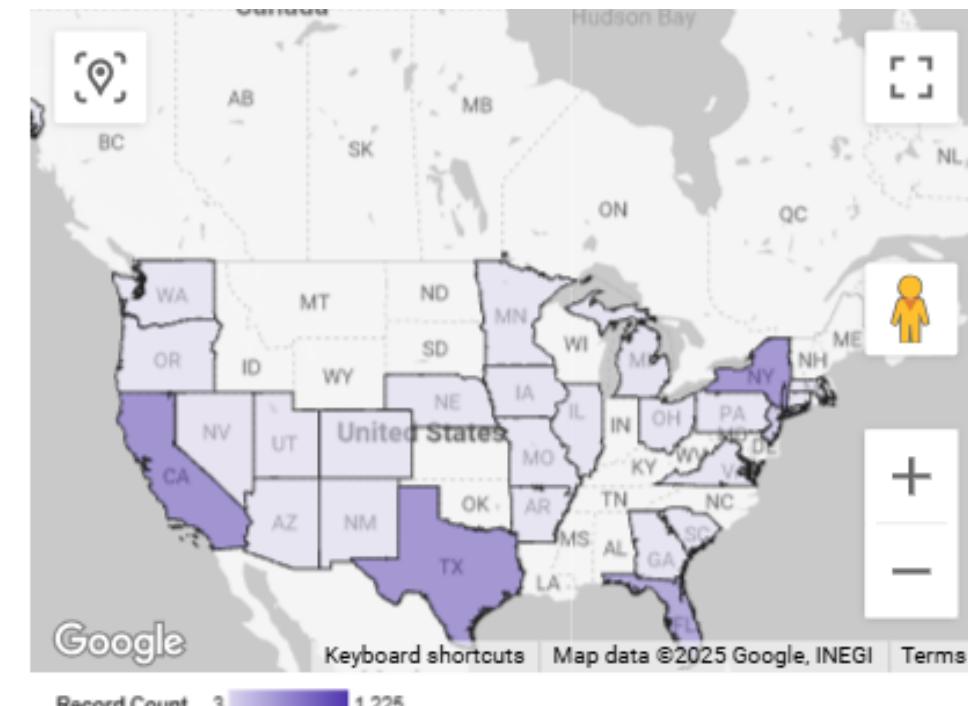
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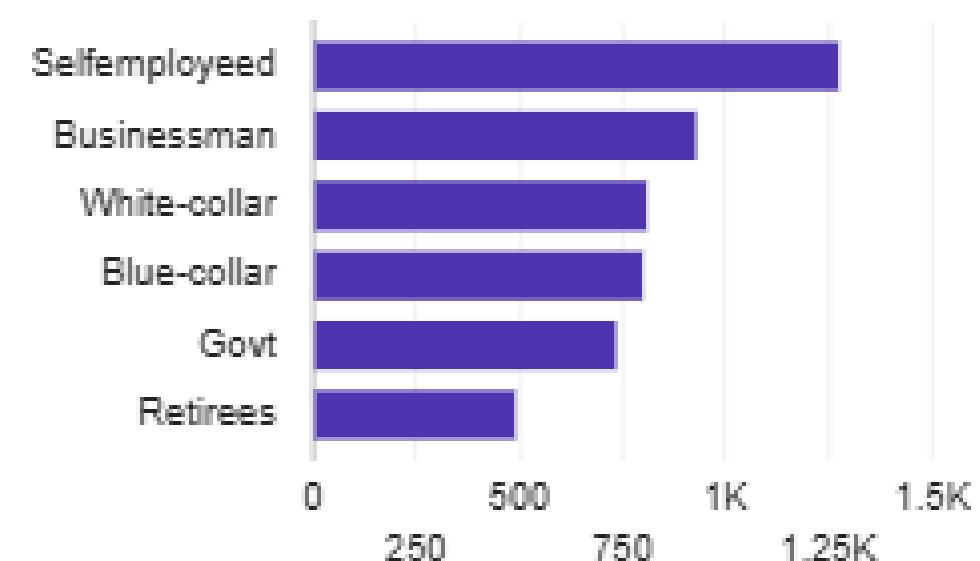
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Customers' Occupations

Bar Chart

- Set the Dimension to the column customer_job and the Metric to client_num.

Customer by Occupation



Self-employed is the largest segment by a significant margin, with over 1.250 customers. This suggests a customer base dominated by business owners, freelancers, and independent contractors, whose incomes may be variable but who generally **have higher spending potential**.

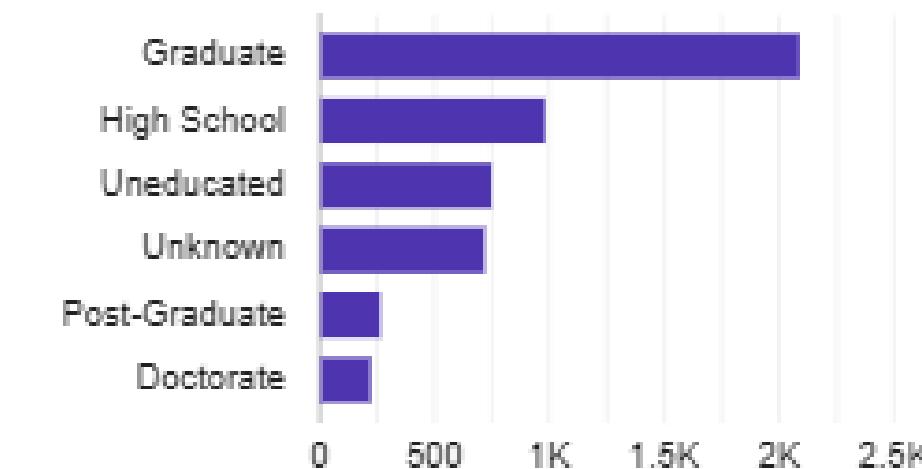
Self-employed individuals typically have less stable and predictable incomes compared to salaried employees which making them inherently higher credit risks.

Customers' Education Level

Bar Chart

- Set the Dimension to the column education_level and the Metric to client_num.

Customer by Education



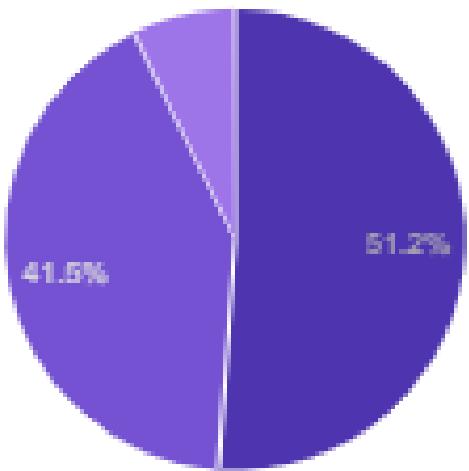
The dominance of **graduate** customers suggests a **financially aware and sophisticated user base**. **Targeted educational campaigns could focus on advanced card benefits, rewards optimization, and effective credit management** to further enhance engagement and card usage.

Customers' Marital Status

Pie Chart

- Set the Dimension to the column `marital_status` and the Metric to `client_num`.

Customer by Marital Status



The Customer by Marital Status donut chart shows a near-even split with **51.2% of customers are likely Married** (represented by the slightly larger purple segment) and 48.8% are likely Single or in another non-married status.

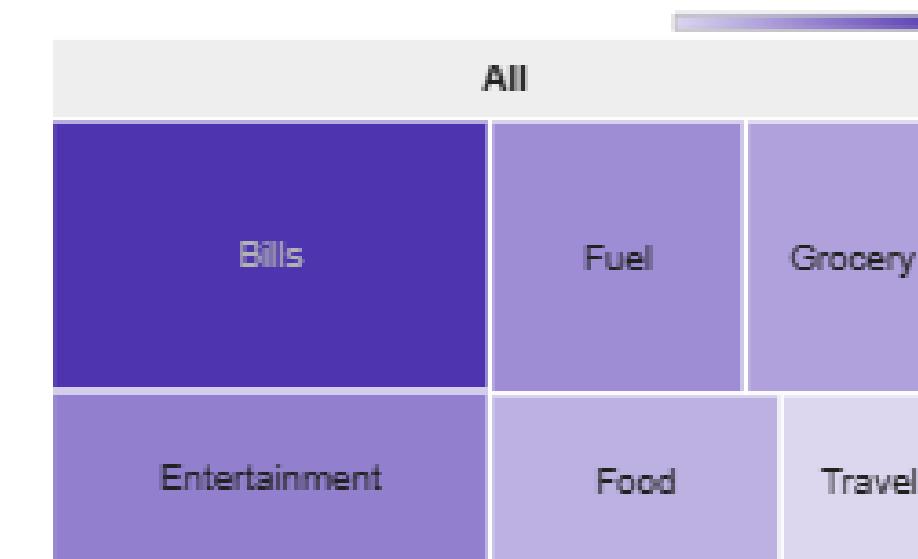
Given the balance, promotions could be tailored to customer segments: **for married customers, offers like weekend getaway packages or family-oriented travel deals** could be attractive, while for **single customers, rewards could focus on entertainment, dining, or lifestyle experiences that appeal to individuals**.

Types of Credit Card

Bar Chart with Treemap Style

- Set the dimension to the column `exp_type` and the Metric to `client_num`

Customer by Expenses



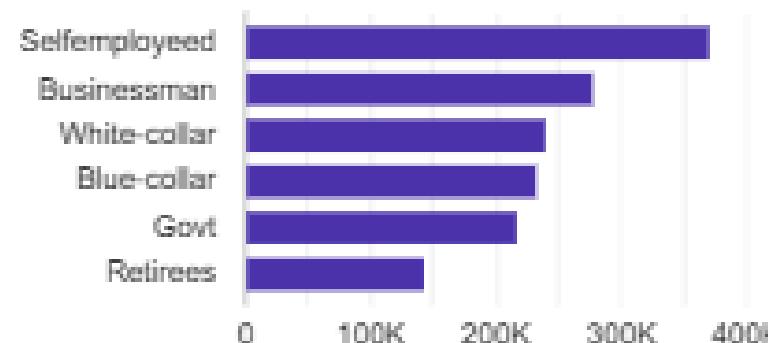
The treemap shows that **customers spend most on bills**, followed by fuel and groceries, reflecting essential, non-discretionary expenses, while entertainment, food, and travel make up smaller discretionary spending.

The company can partner with utility providers, subscription services, rent platforms, and other recurring service providers to offer targeted rewards and promotions for bill payments.

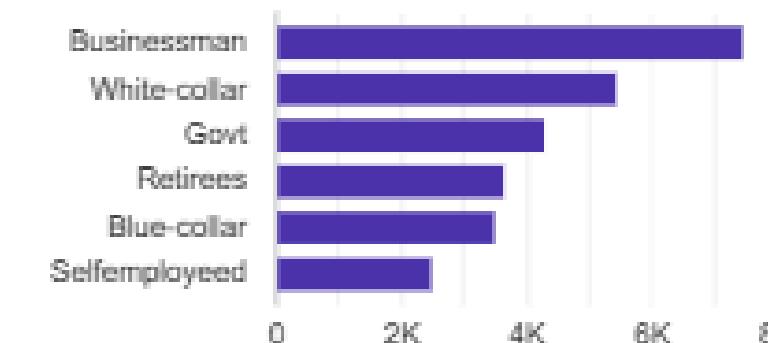
Customer Revenue Profile

Customer Revenue Profile

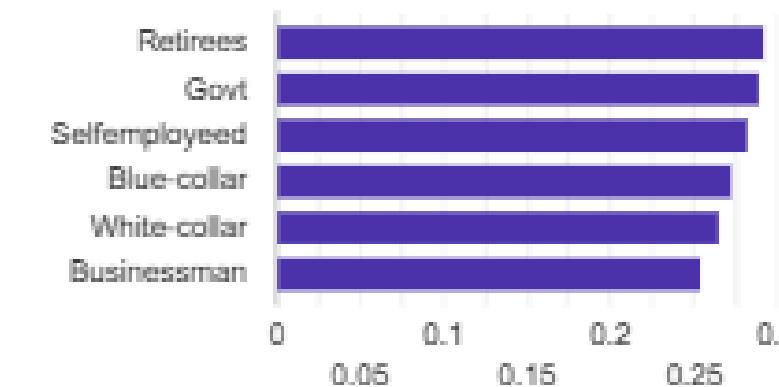
Annual Fees by Occupation



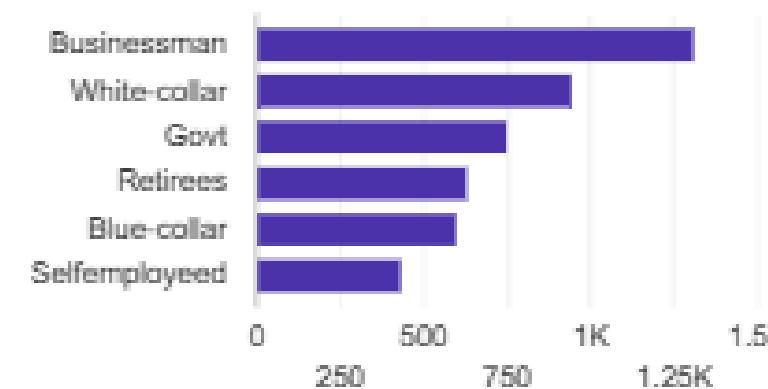
Total Transaction by Occupation



Utilization by Occupation



Interest Earned by Occupation



Revenue Generated by Segment

customer_job	education_level / total_trans_vol					
	High School	Unknown	Post-Graduate	Graduate	Uneducated	Doctorate
Businessman	80.26	83.59	76.96	79.51	81.13	79.3
White-collar	71.7	71.16	72.41	72.59	74.32	70.91
Govt	71.26	69.55	67.6	68.07	65.99	70.24
Retirees	63.55	62.31	66.36	64.95	66.14	63
Blue-collar	60.82	59.45	61.29	61.15	58.8	60.73

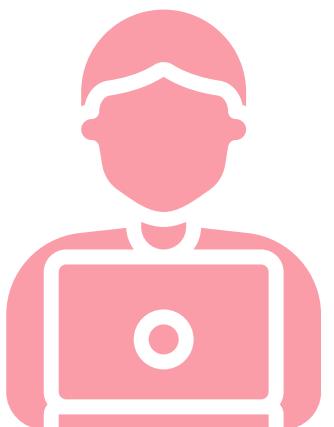
Businessman



The **Businessman segment is the company's revenue powerhouse**, contributing the highest interest income due to frequent credit use and large outstanding balances. This indicates they actively leverage credit for financing needs, creating both **strong revenue potential and elevated risk exposure**.

Business actions should **target high-limit cards and reward programs to maximize interest**, while **advanced monitoring** is crucial to manage the elevated delinquency risk from their high revolving activity.

Self-Employed



The **Self-employed segment drives stable fee income, paying the highest annual fees despite low interest and transaction volumes**. This indicates a preference for premium, high-fee cards and disciplined repayment or distributed spending patterns.

Business actions should **enhance the value of these fees through premium perks** like lounge access or travel/business insurance, strengthening retention while capitalizing on a consistent and predictable revenue stream.

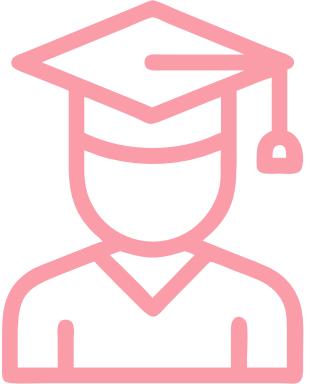
Retirees & Govt



The **Retirees & govt have the highest credit utilization ratio**. A high utilization ratio (approaching the credit limit) is **often an early indicator of financial difficulty or potential default risk**. Although Retirees generate high transaction income per education segment, their elevated credit utilization levels require close monitoring.

Business actions should **prioritize strict risk monitoring and avoid proactively increasing credit limits**. **Financial education programs** can help manage debt, aiming to reduce utilization ratios and mitigate future delinquency.

Correlation Between Education & Occupation



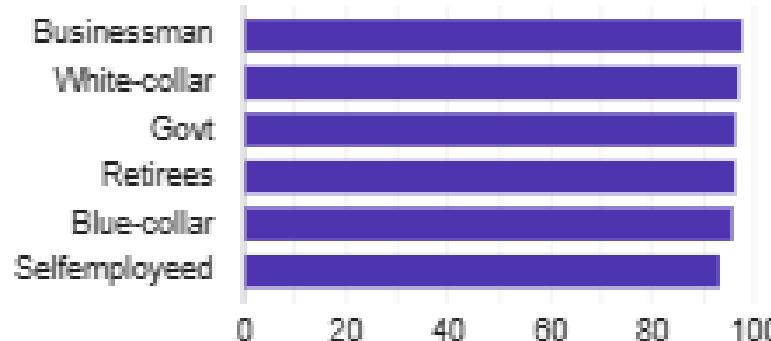
The Revenue Generated by Segment matrix shows that, **regardless of education level, the Businessman and Retirees segments remain the dominant contributors** to transaction revenue.

Business actions **should prioritize occupation as a key segmentation dimension** when targeting revenue growth, as it has a stronger influence on transaction behavior, particularly for Businessmen, **than education level alone.**

Customer Risk Profile

Cost Acquisition by Occupation

Cost Acquisition by Occupation



Acquisition costs are roughly uniform across occupations, ranging from \$90 to \$100 per customer, meaning the **company spends a similar amount** to acquire customers from different professional segments.

The company can **temporarily tighten credit approvals** in Oregon (and possibly PA) by **reducing pre-approvals or lowering initial credit limits** for new applicants, limiting risk until delinquency rates stabilize.

Delinquent Account by Segment

The company can **focus on lowering acquisition costs for high-revenue segments**, such as Businessmen and White-collar professionals. **Through A/B testing of campaigns, offers, and channels**, it can identify more cost-effective approaches while maintaining quality.

Delinquent Act by State

Delinquent Acct by State

state_cd	delinquency_rate
1... OR	0.33
2... PA	0.2
3... VA	0.16
4... MA	0.15
5... SC	0.13

Oregon (OR) shows a significantly higher delinquency rate at 0.33, well above Pennsylvania (PA) at 0.2 and Virginia (VA) at 0.16.

Delinquent Account by Segment

customer_job	education_level / delinquent_acc					
	Uneducated	Unknown	Doctorate	Post-Gra...	Graduate	High Sch...
Govt	0.14	0.08	0.11	0.05	0.08	0.07
Retirees	0.07	0.11	0.1	0	0.04	0.08
Selfemployed	0.09	0.06	0.09	0.09	0.06	0.05
White-collar	0.08	0.05	0.03	0.02	0.07	0.04

Insights by Occupation

- Highest-risk occupation:** Government employees show the highest delinquency rates across almost all segments, especially among the Uneducated (0.14).
- Lowest-risk occupations:** White-collar workers and Graduates consistently have the lowest delinquency. Retirees show elevated risk in Unknown (0.11) and Doctorate (0.1) segments.

Delinquent Account by Segment

Delinquent Account by Segment

customer_job	education_level / delinquent_acc					
	Uneducated	Unknown	Doctorate	Post-Gra...	Graduate	High Sch...
Govt	0.14	0.08	0.11	0.05	0.08	0.07
Retirees	0.07	0.11	0.1	0	0.04	0.08
Selfemployed	0.09	0.06	0.09	0.09	0.06	0.05
White-collar	0.08	0.05	0.03	0.02	0.07	0.04

Insights by Education

Highest-risk education: The Uneducated segment shows the highest delinquency across nearly all occupations.

Segmentation-Based Risk Business Actions

Govt (Uneducated)



High-risk segments such as Government employees with no formal education (delinquency 0.14) require proactive preventive measures.

The company can **implement early-warning communication programs** tailored to this group, such as **simple payment reminders via SMS or phone 3–5 days before the due date**, while avoiding credit limit increases.

The Uneducated (All Occupations)



Occupations consistently show high delinquency and should be subject to stricter underwriting criteria. This includes **deeper credit score checks and highly conservative initial credit limits** for both Uneducated and Government applicants.

White-Collar (All Occupations)



Consistently exhibit low risk. They can be **targeted for cross-selling additional products, such as personal loans, insurance, or credit limit increases**, to maximize Customer Lifetime Value (CLV).

Retirees (Unknown/Doctorate)

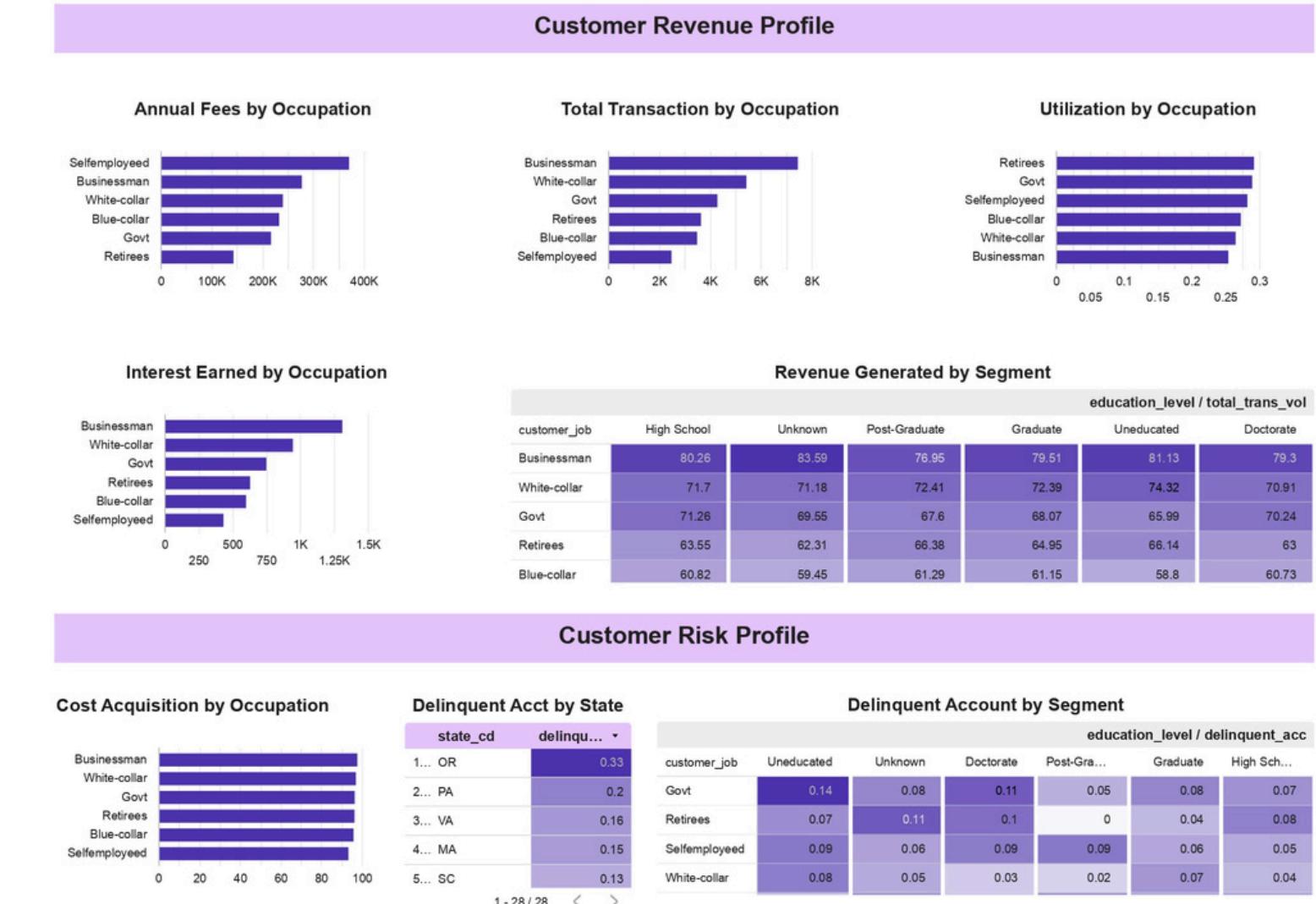
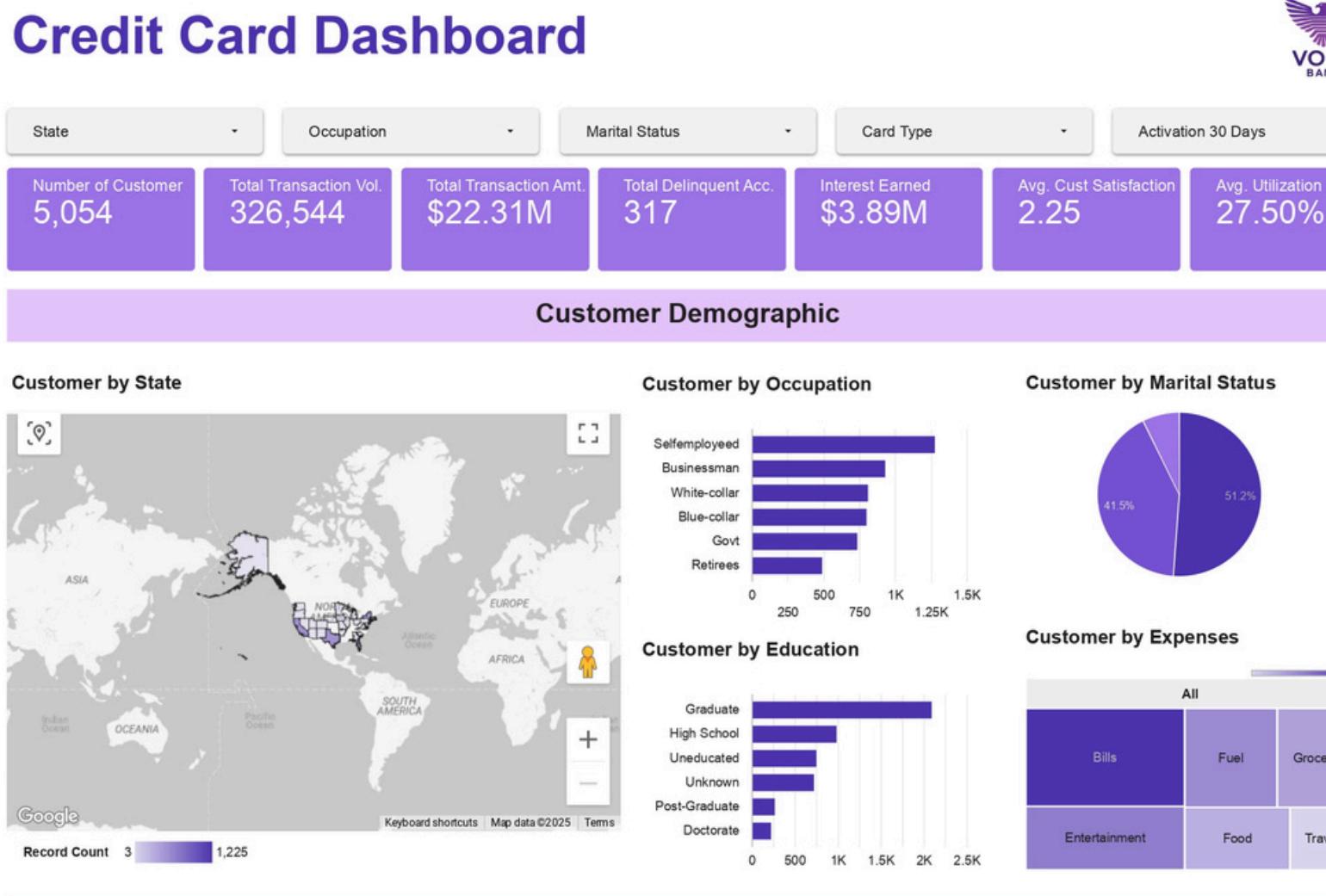


Retirees in the Unknown and Doctorate segments (delinquency 0.11 / 0.1) need careful data validation and soft collection strategies. While they may have assets, liquidity issues could arise.

The company should **verify the quality of Unknown data for Retirees and initiate human-centered, educational collection efforts** immediately after a missed payment, offering simple restructuring options.

Google Looker Studio Dashboard

Credit Card Dashboard



THANK YOU