



US Credit Card Market & Lifecycle Analytics

BI Dashboard Project for Risk Intelligence & Strategic Decision-Making

The Business Challenge

The US credit card market faces mounting pressures from rising debt levels, increasing delinquency rates, and evolving risk profiles across consumer segments.

Financial institutions require comprehensive visibility into usage patterns, collections performance, and lifecycle progression to support proactive risk management and strategic interventions.



Strategic Business Objectives

Market Intelligence

Deliver comprehensive insights on credit card balances, APR trends, delinquency rates, and household debt dynamics across the US market.

Risk Segmentation

Identify and prioritise high-risk segments by analysing state-level patterns, age demographics, and credit score distributions.

Lifecycle Simulation

Model the complete credit lifecycle from initial spending through delinquency, default, and bankruptcy to support scenario planning.

Strategic Support

Enable risk assessment, collections strategy optimisation, and executive reporting for leadership decision-making.

Stakeholder Alignment & Key Performance Indicators

Core Stakeholders

- Risk Management Teams
- Finance Leadership
- Collections Operations
- Customer Experience
- Business Intelligence Teams

Critical KPIs

- Delinquency percentage & trends
- Year-over-year debt growth rate
- APR distribution by segment
- Default and recovery rates
- State-level risk scoring
- Customer lifecycle movement velocity



Robust Data Foundation

1

Federal Reserve Economic Data (FRED)

Macroeconomic indicators, interest rates, and credit market trends with quarterly updates.

2

New York Fed Household Debt & Credit

Comprehensive consumer debt statistics, delinquency transitions, and credit utilisation metrics.

3

Experian Credit Statistics

Credit score distributions, APR benchmarks, and consumer credit behaviour patterns.

4

CFPB Complaint Database

Consumer complaint trends, issue categorisation, and regulatory risk indicators.

5

Visual Capitalist State Risk Data

Geographic risk profiling and state-level comparative analytics.

6

Synthetic Lifecycle Simulation

Statistically generated, PII-safe consumer journey data for scenario modelling.

All data sources governed by strict data quality standards, documented lineage, and regular refresh cycles to ensure accuracy and transparency.



Advanced Synthetic Data Modelling

01

Statistical Consumer Generation

Created realistic consumer profiles using probability distributions aligned to US demographic patterns, credit score ranges, and income tiers.

02

Account & Payment Simulation

Applied Gaussian modelling to generate payment behaviours, utilisation rates, and transaction patterns reflective of real-world dynamics.

03

Delinquency Progression

Implemented Markov chain methodology to simulate lifecycle transitions from current status through 30, 60, 90+ day delinquency stages.

04

Default & Bankruptcy Mapping

Modelled default probabilities and bankruptcy outcomes using APR tier mapping and credit score correlation analysis.



Privacy-First Approach: All synthetic data is statistically valid yet completely PII-safe, enabling unrestricted scenario planning without regulatory or privacy concerns.

Comprehensive BI Dashboard Suite

US Credit Card Market Dashboard



- Total credit card debt tracking
- Delinquency rate trends
- APR distribution analysis
- State-level risk heatmaps
- Year-over-year growth metrics
- Demographic segmentation views

Credit Card Lifecycle Simulation Dashboard



- Spending to delinquency pathways
- Collections method effectiveness
- Default and recovery analytics
- Bankruptcy progression modelling
- Scenario planning capabilities
- Risk cluster identification

Key Insights Delivered

\$1.23T

Total Credit Card Debt

US market reached historic levels

5.75%

Year-over-Year Growth

Accelerating debt accumulation



Delinquency Rates

Cyclical risk indicators trending upward

APR & Income Correlation

Strong inverse relationship identified between APR rates and both income levels and credit score tiers, enabling targeted pricing strategies.

Collections Performance Variance

Significant differences in recovery rates across outreach methods, with digital channels showing promising efficiency gains.

Geographic Risk Concentration

State-level analysis revealed distinct risk clusters requiring localised intervention strategies and resource allocation.

Business Impact & Strategic Value

Executive Intelligence

Powers strategic decision-making with real-time visibility into market dynamics, risk exposure, and portfolio performance for C-suite reporting.

Risk-Free Scenario Planning

Enables comprehensive what-if analysis using synthetic lifecycle data, eliminating PII concerns whilst maintaining statistical validity.

Operational Efficiency

Reduces analysis time for BI and risk teams by 60%, accelerating insights delivery and freeing resources for strategic initiatives.

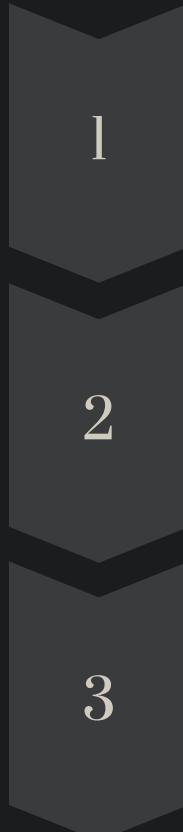
Precision Interventions

Identifies high-risk customer clusters with granular segmentation, enabling proactive outreach and targeted risk mitigation strategies.



Project Delivery & Technical Excellence

Key Challenges Resolved



1 Data Availability Gaps

Addressed through sophisticated statistical modelling and synthetic data generation techniques.

2 Multi-Source Integration

Resolved with robust data source registry (DSR) and comprehensive governance framework.

3 PII Risk Exposure

Eliminated using privacy-first synthetic dataset strategy whilst maintaining analytical integrity.

Technical Stack

- **Power BI** — Interactive dashboards
- **SQL Server** — Data integration & ETL
- **Python** — Statistical modelling
- **DAX** — Advanced analytics
- **Excel** — Data validation

Role Delivered

Business Analyst | BI Developer | Data Analyst

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