Banking Exploratory Data Analysis

Transforming raw banking data into actionable insights through exploratory data analysis and interactive Power BI dashboards. This project combines Python-based analysis with sophisticated visualization to enable data-driven decision-making.

Dataset Overview

3,900

Total Rows

Customer records analyzed

18

Data Columns

Key features tracked

25

Total Features

Including demographics and financials

0

Missing Values

Complete dataset integrity

The dataset encompasses customer demographics, purchase details, shopping behavior, and comprehensive banking information including deposits, loans, and account types.

Data Analysis Approach

Data Loading

Imported dataset using pandas and conducted initial exploration with df.info() and .describe()

Quality Analysis

Verified complete non-null values across all columns with no missing data detected

Standardization

Renamed columns to snake_case format for consistency and maintainability

Integration

Connected Python to MySQL and loaded cleaned DataFrame for SQL analysis

2,940

$4.38bn

Total Deposit

$3.77bn
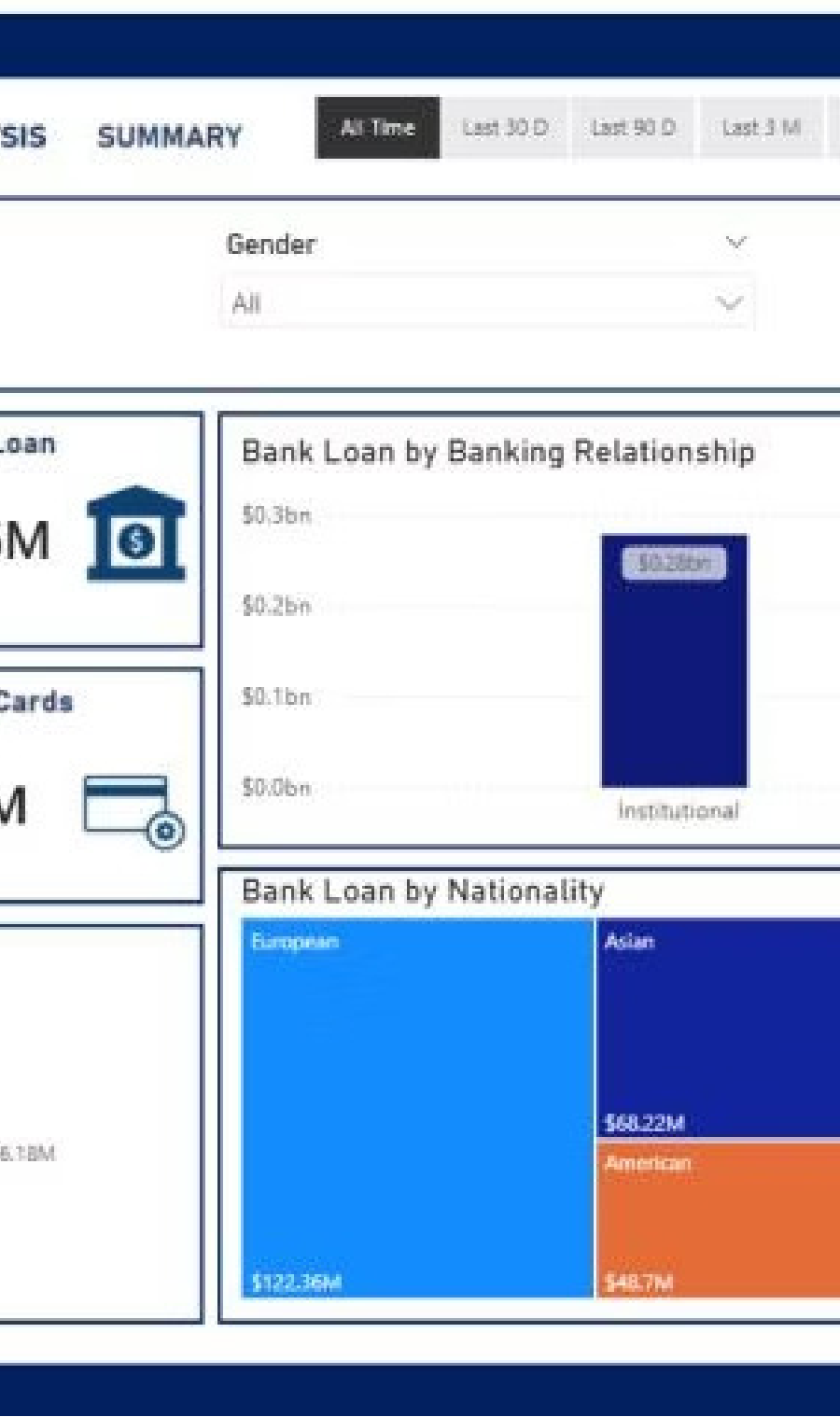
Total Fees

$158.19M

Banking Analytics Dashboard

High-Level Overview

Summary dashboard provides quick performance monitoring across key banking metrics including clients, loans, deposits, and fees.

Key Metrics

- Total Clients: 2,940
- Total Loan: $4.38 Bn
- Total Deposit: $3.77 Bn
- Total Fees: $158.19 M

Gender

All

Bank Loan by Banking Relationship

$0.3bn

$0.2bn

$0.1bn

$0.0bn

$0.28bn

Institutional

Bank Loan by Nationality

European

Asian

$68.22M

American

$122.36M

$48.7M

Loan Analysis Insights

Total Loan Portfolio

$712.59M across all lending products

Bank Loans

$278.6M in traditional banking loans

Business Lending

$432.38M supporting commercial clients

Credit Cards

$1.61M in credit card balances

Dashboard reveals loan distribution across banking relationships, income bands, nationalities, and customer age groups, identifying high-value segments and potential risk areas.
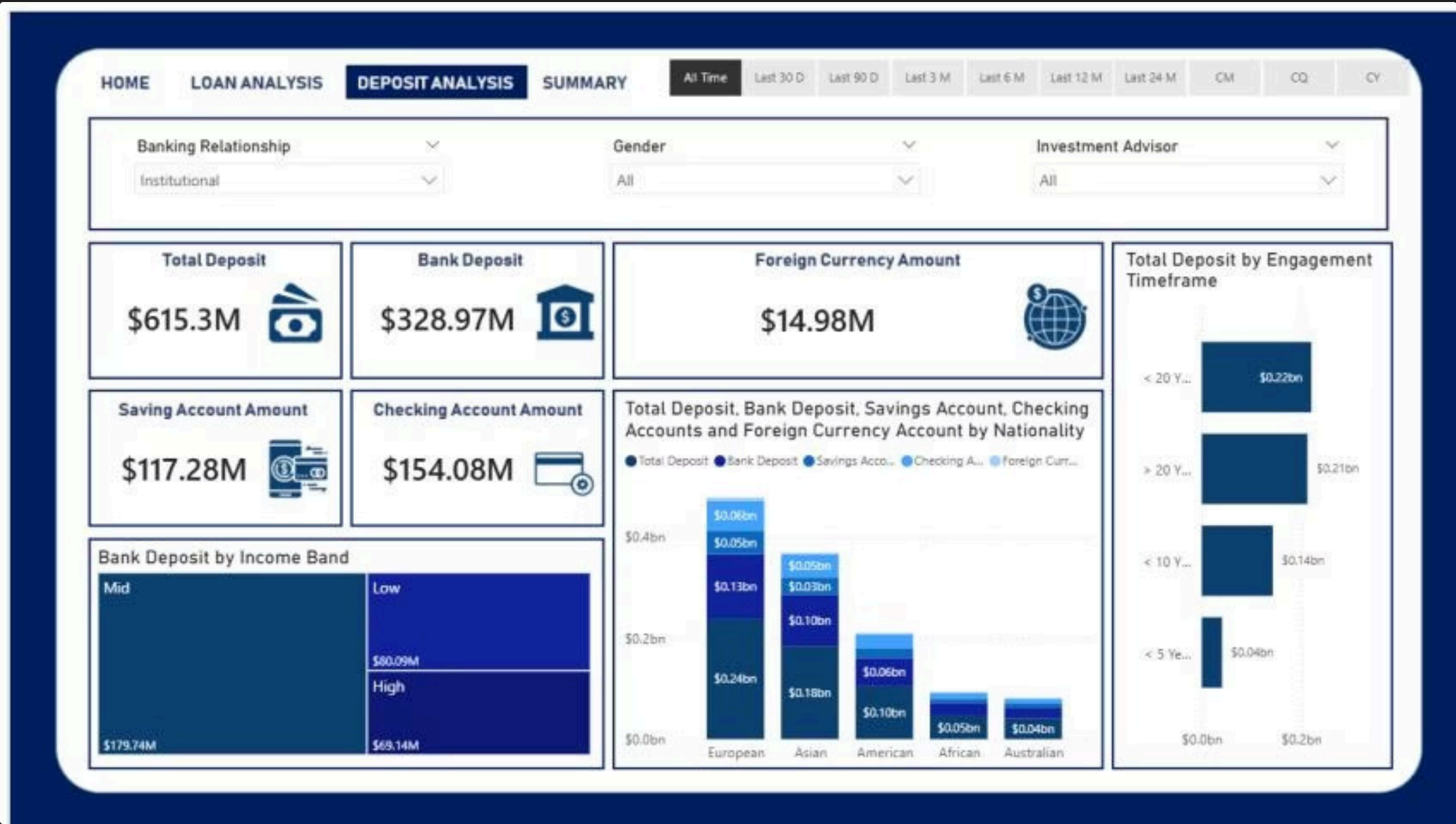
Loan Distribution Patterns

By Nationality

- European loans: $122.30M
- Asian loans: $68.22M
- American loans: $46.7M
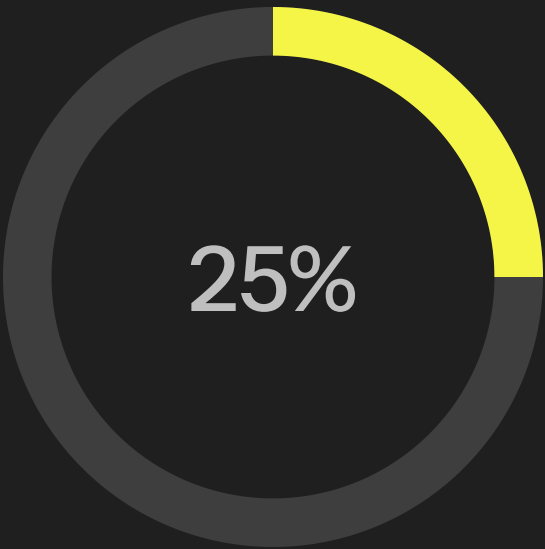- Australian loans: $22.61M
- African loans: $16.7M

By Income Band

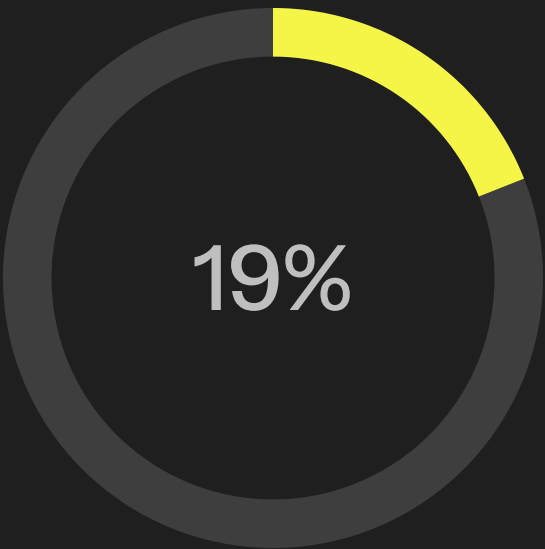- Mid income: $146.18M
- Low income: $73.98M
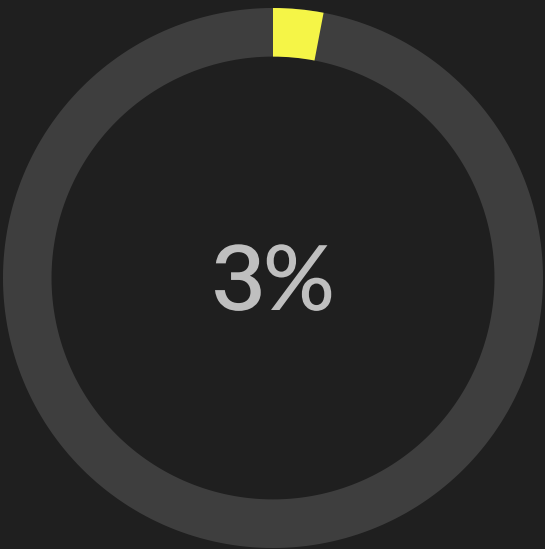- High income: $58.44M

Deposit Analysis Overview
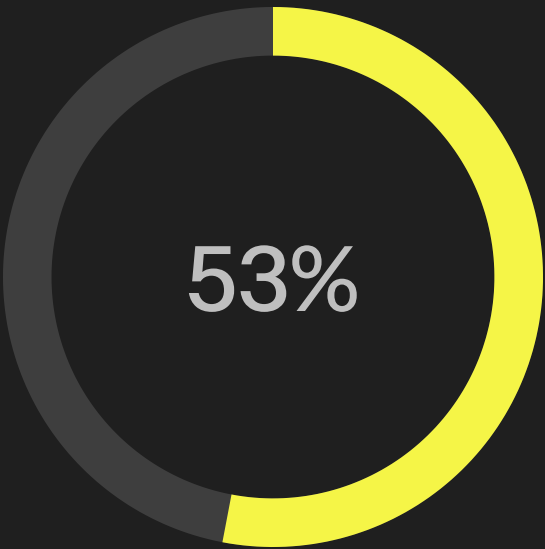
53%
Bank Deposits
$328.97M of total deposits

25%
Checking Accounts
$154.08M in checking balances

19%
Savings Accounts
$117.28M in savings

3%
Foreign Currency
$14.98M in foreign accounts

493	$712.59M	$278.6M	$432.38M

Total Deposit	Total Fees	Bank Deposit	Checking Account Amount
$615.3M	$25.12M	$328.97M	$154.08M

Comprehensive Summary Dashboard

A consolidated snapshot of customer activity, lending exposure, and deposit distribution across all banking products. Enables quick assessment of overall bank performance and key product metrics.

01

Customer Base

493 total institutional clients tracked

02

Lending Portfolio

$712.59M total loan exposure

03

Deposit Holdings

$615.3M across all account types

04

Revenue Generation

$25.12M in total fees collected

Drill-Through Customer Analysis

Detailed Customer View

Drill-through analysis provides granular customer-level breakdown of fees, engagement duration, and credit card balances.

Enables deeper investigation behind high-level insights with filtering by loyalty classification and nationality.

Key Insights

- Total fees tracked: $979,348

- Credit card balances: $401,863

- Jade loyalty highest fees: $3.16M

- European customers lead: $2.64M

Project Impact & Conclusion

Enhanced Transparency

Clear visibility into customer behavior, lending exposure, and deposit patterns across all banking products

Improved Monitoring

Interactive filtering and drill-through analysis enable real-time financial performance tracking

Data-Driven Decisions

Actionable insights support informed decision-making for banking stakeholders and strategic planning

This comprehensive analytics solution combines Python, SQL, and Power BI to deliver clear, actionable insights that enhance transparency and enable informed decision-making across the banking organization.

Made with GAMMA

Thank you!