

BNY: COMPLIANCE & RISK ANALYTICS

Identifying Money Laundering, KYC Gaps, and Liquidity Risks through Analytical Intelligence

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INTRODUCTION

Objective:

BNY aims to strengthen its compliance and risk intelligence framework using data analytics

Key Focus Areas:

- Anti-Money Laundering (AML) — Detect money laundering patterns through transaction pattern analysis.
- KYC Data Integrity — Identify incomplete or outdated customer information.
- Cash Flow & Liquidity Risk — Monitor domestic liquidity movements and customer-level cash flow health.

PROBLEM : IDENTIFYING SUSPICIOUS TRANSACTION PATTERNS



Context:

Even without large-value transactions, smurfing allows funds to evade AML thresholds. BNY must identify clusters of small transactions (\$1000 – \$10,000) within short time windows.

Key Insights:

- 22 customers flagged for laundering behavior.
- Small Business and Large Enterprise clients dominate high-risk activity.
- Weekly transaction granularity revealed patterned transfers previously invisible to daily systems.



PROBLEM : KYC DATA INTEGRITY ANALYSIS



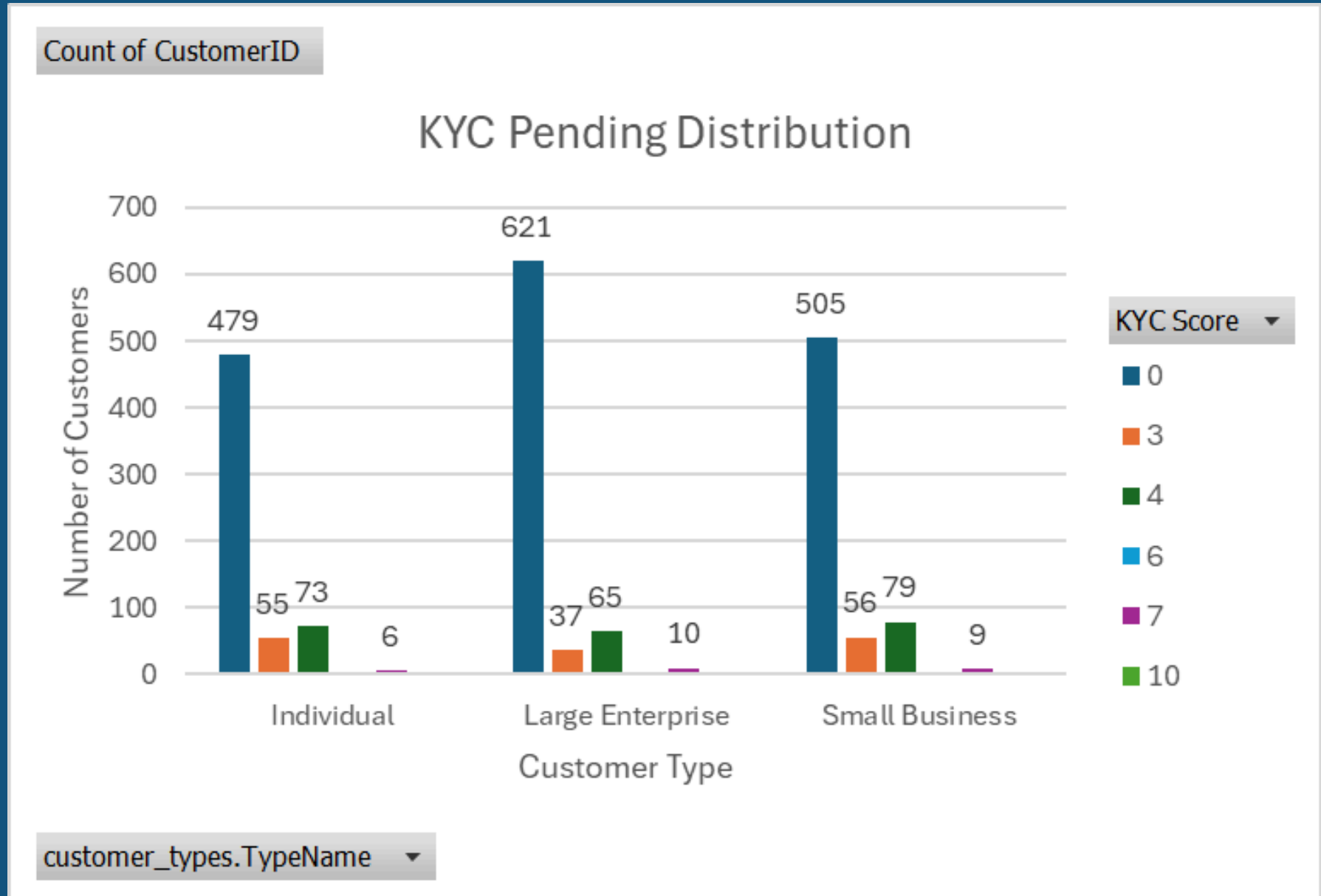
Context:

BNY must maintain complete customer records to comply with FinCEN and OCC regulations.

Missing name, address, or account linkages reduce AML effectiveness and increase audit risk.

Key Insights

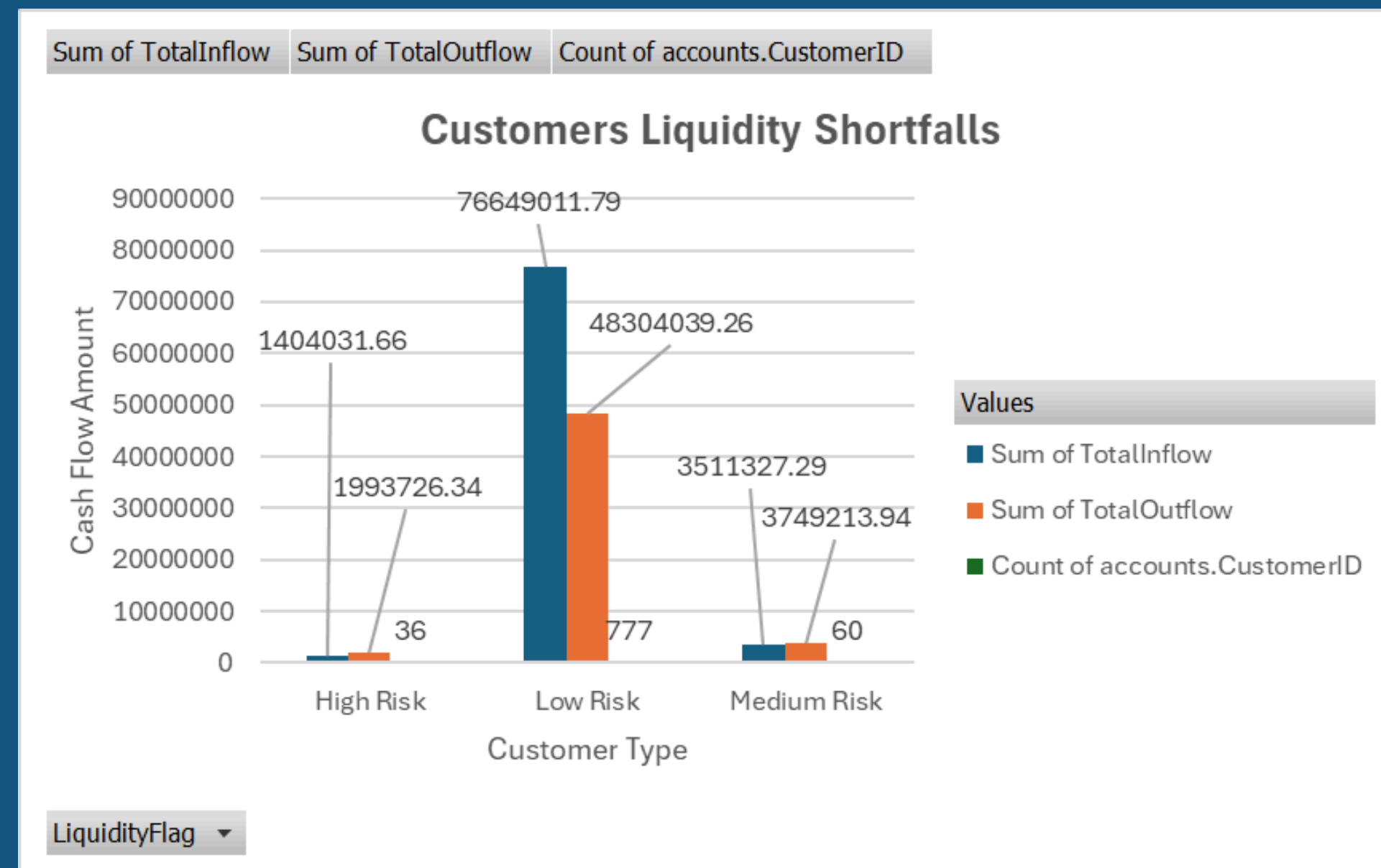
- 31 high-risk customers (KYC Score ≥ 7), multiple missing data points.
- Large Enterprises had the highest incomplete data rate (621 clients).
- Missing fields are mostly concentrated in the address and account linkage



PROBLEM : UNDERSTANDING CASHFLOW & LIQUIDITY GAPS



Context: Custodian banks must manage client liquidity to prevent settlement failures and monitor funding adequacy.



Key Insights

- Total inflow: \$81.5M | Outflow: \$54.0M
- 36 customers flagged as “High Risk” in the ability to maintain sufficient cash flow
- Small Businesses had the most negative net positions → liquidity stress.



BUSINESS RISKS

➤ AML

- Increased fund movement through frequent payments between business or payroll accounts
- The current AML focus on transactions alone overlooks risk links across deposits, payments, and loans

➤ KYC

- Multiple customers linked to one address suggest related-party or nominee structures
- Mismatched or missing linkages between loan and account data imply false identity or product misuse

➤ CashFlow & Liquidity

- A small group of clients drives most outflows, increasing dependency and liquidity stress risk
- Internal transfers between a client's own accounts overstate inflow strength, masking funding gaps

RECOMMENDATION

➤ AML

- Continuously monitor B2B transactions, payments, and transfers
- Combine AML insights from deposits, loans, and payments to monitor fund flow

➤ KYC

- Group customers by address to detect clusters for enhanced due diligence
- Enforce KYC consistency across accounts, loans, and customer records

➤ Cashflow & Liquidity

- Track top outflow contributors and set segment-specific exposure limits
- Exclude self-transfers to calculate true external liquidity and inform Treasury's stress tests

THANK YOU

You can find the detailed project, dataset & its analysis here:
https://github.com/shalg5/custodian_bank_compliance_risk_analytics