Financial Activity Dashboard

This presentation outlines a financial activity dashboard built using Python and the Streamlit library. The dashboard leverages powerful data processing, anomaly detection, and visualization tools to provide valuable insights from bank transaction data.

Introduction to the Dashboard

This dashboard serves as a comprehensive tool for analyzing financial activity, helping users identify trends, anomalies, and key metrics. It combines data processing, visualization, and reporting capabilities to deliver actionable insights.

1 User-Friendly Interface

The dashboard is designed with an intuitive interface for easy navigation and data exploration.

2 Interactive Visualizations

Users can interact with charts and graphs to delve deeper into the data and uncover hidden patterns.


Deploy
Upload and Analyze
Upload Bank Transaction CSV File
Drag and drop file here
Limit 200MB per file • CSV
Browse files
bank.csv
345.0KB
Dataset Uploaded and Columns Mapped Successfully!
Generate Report
Financial Activity Dashboard
Key Metrics
Total Transactions (Rows)
2512
Total Features (Columns)
19
Total Missing Values
0
Average Transaction Amount
$297.59
Anomalies Detected
126
Dataset Preview
Select an option to view the dataset:
Top 5 Rows
Last 5 Rows
Full Dataset
Custom
TransactionID AccountID TransactionAmount TransactionDate TransactionType Location
0 TX000001 AC00128 14.09 2023-04-11 16:29:14 Debit San Diego
1 TX000002 AC00455 376.24 2023-06-27 16:44:19 Debit Houston

Data Processing: Mapping Columns, Handling Missing Values

The dashboard begins by processing raw bank transaction data. This step involves mapping columns to meaningful labels and handling missing values using appropriate imputation techniques.

Column	Description
Transaction ID	Unique identifier for each transaction
Date	Date of the transaction
Amount	Value of the transaction

Calculating Key Metrics: Total Transactions, Average Amounts

The dashboard calculates crucial metrics, such as the total number of transactions and the average transaction amount, providing a comprehensive understanding of the financial activity.

Total Transactions

The dashboard calculates the total number of transactions within a specified time period.

Average Amounts

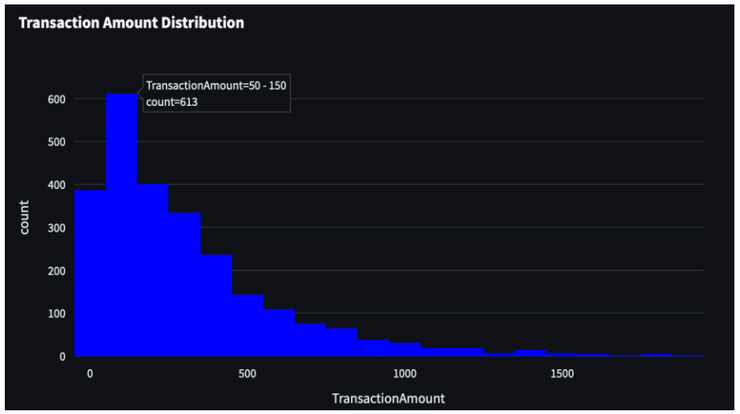
The dashboard calculates the average amount of transactions, providing a measure of typical spending patterns.

Anomaly Scores

The dashboard assigns anomaly scores to each transaction, indicating the likelihood of it being an outlier.

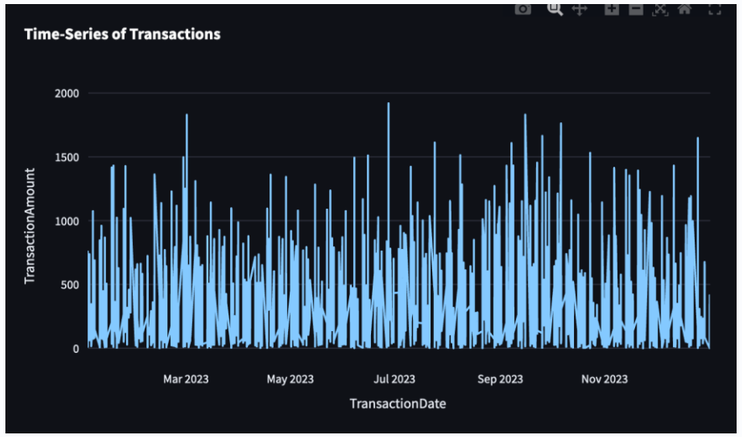
Visualizations: Histograms, Time-Series, Heatmaps

The dashboard leverages various visualization techniques, including histograms, time-series plots, and heatmaps, to visually represent the financial activity and highlight key patterns and trends.



Transaction Amount Distribution

Histograms provide insights into the distribution of transaction amounts.

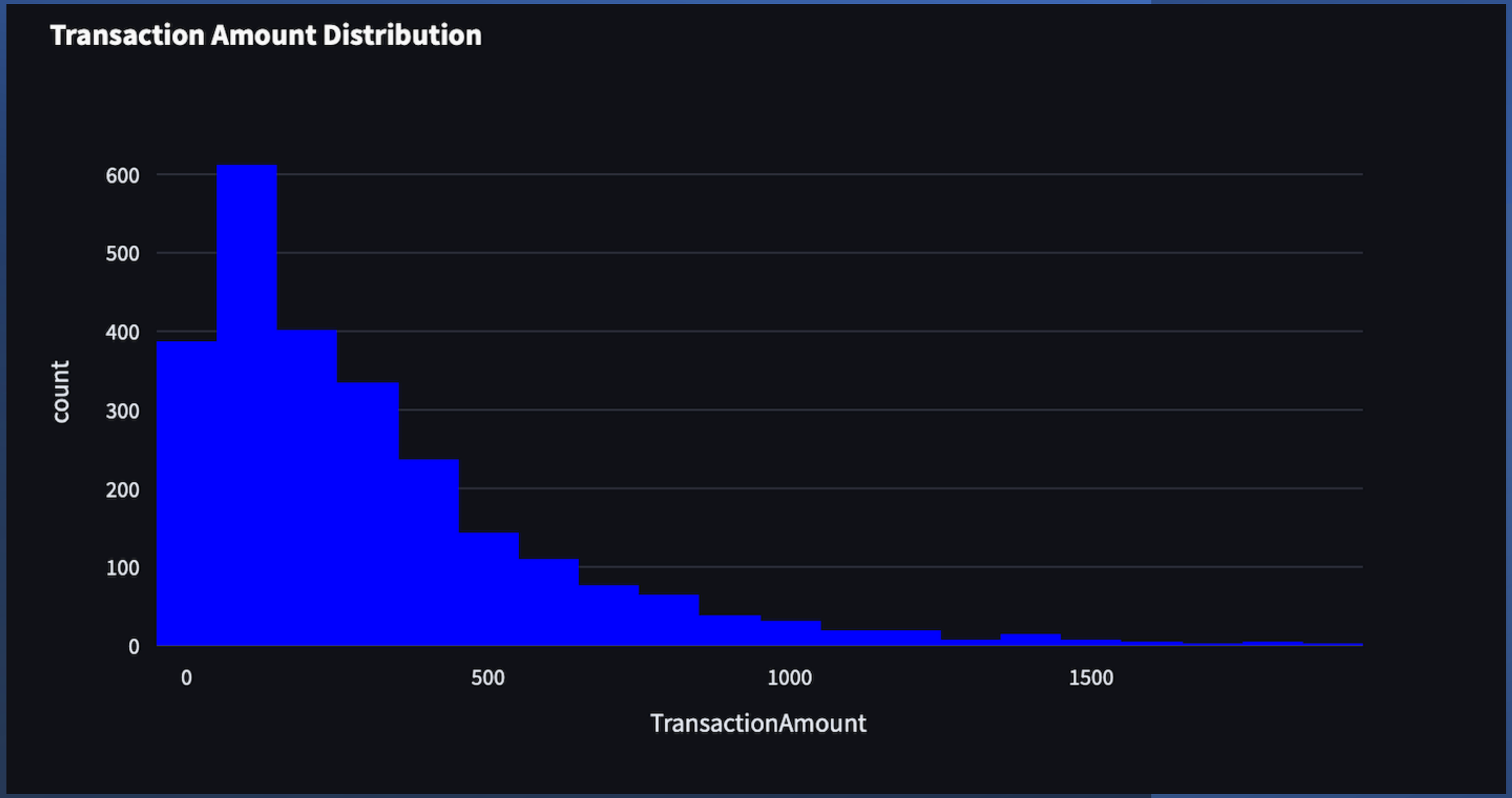


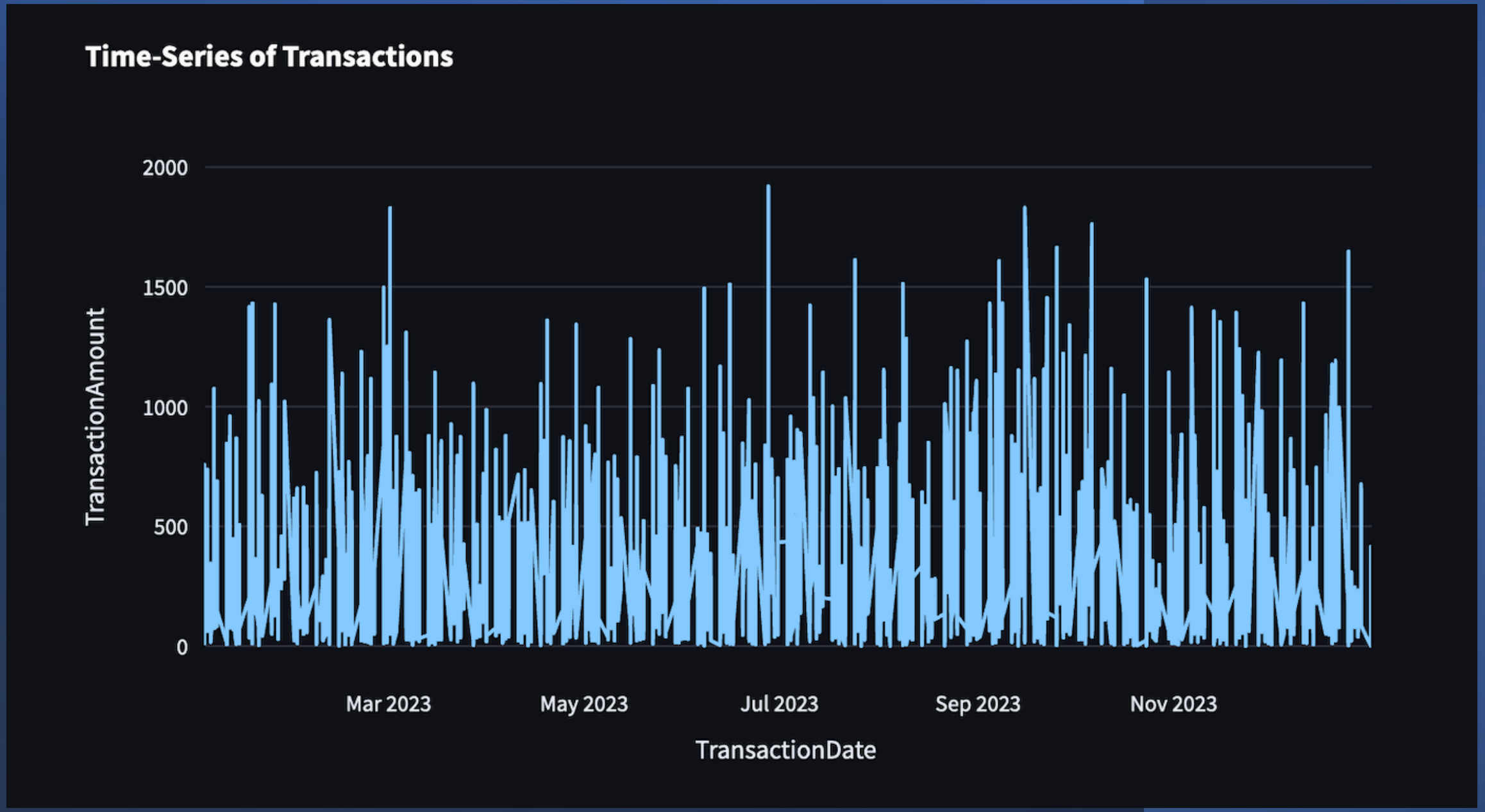
Transaction Volume Trend

Time-series plots track transaction volume over time, revealing trends and seasonal patterns.

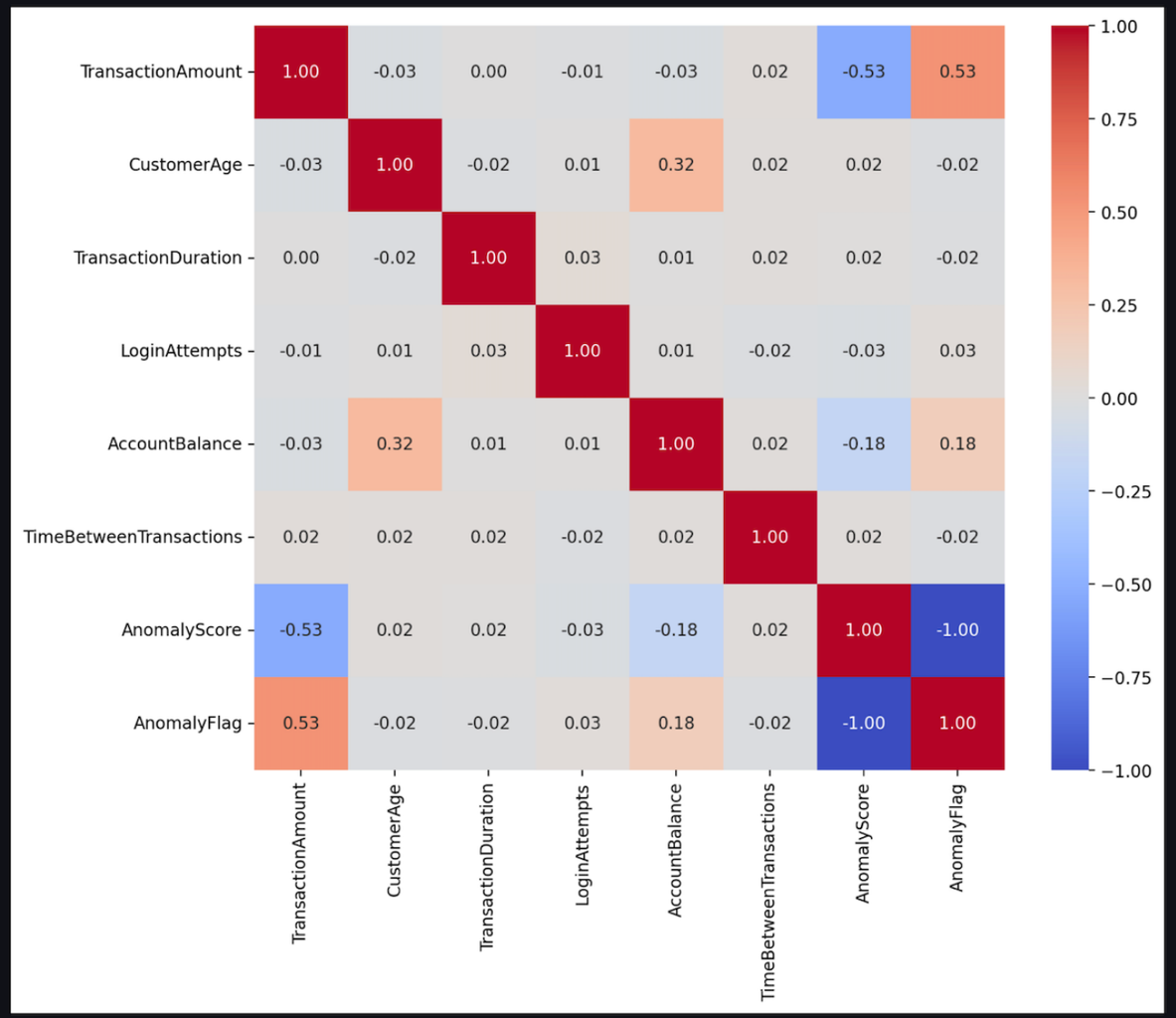
Variable Correlations

Heatmaps illustrate correlations between different financial variables, helping identify potential relationships.


Transaction Amount Distribution
600
500
400
300
200
100
0
count
0
500
1000
1500
TransactionAmount


Time-Series of Transactions
2000
1500
1000
500
0
TransactionAmount
Mar 2023
May 2023
Jul 2023
Sep 2023
Nov 2023
TransactionDate

Correlation Heatmap



Anomaly Detection with IsolationForest

The IsolationForest algorithm is employed to identify anomalies or outliers within the transaction data. The algorithm isolates anomalies by randomly partitioning the data space, effectively identifying data points that lie outside the typical distribution.

Anomaly Detection

The IsolationForest algorithm is used to detect anomalies in the transaction data.

Outlier Identification

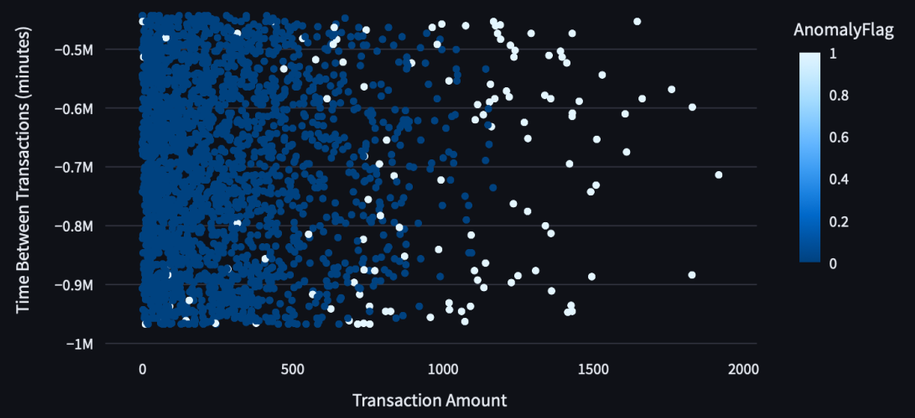
Anomalies are identified as data points that are significantly different from the rest of the data.

Anomaly Transactions Table

	TransactionID	AccountID	TransactionAmount	TransactionDate	TransactionType	Location
41	TX000042	AC00480	34.02	2023-01-09 16:13:21	Debit	Philadelphia
74	TX000075	AC00265	1,212.51	2023-10-04 16:36:29	Debit	Indianapolis
77	TX000078	AC00022	91.53	2023-03-13 16:32:12	Debit	Milwaukee
85	TX000086	AC00098	1,340.19	2023-09-29 17:22:10	Credit	Austin
176	TX000177	AC00363	1,362.55	2023-02-10 18:07:07	Debit	El Paso
180	TX000181	AC00036	740.25	2023-07-19 17:03:58	Debit	Philadelphia
190	TX000191	AC00396	1,422.55	2023-07-10 17:49:18	Debit	Washington
231	TX000232	AC00430	705.6	2023-02-20 18:41:43	Debit	Phoenix
233	TX000234	AC00345	91.48	2023-01-23 16:50:31	Debit	Fort Worth
234	TX000235	AC00430	5.25	2023-11-13 18:26:24	Debit	San Jose
274	TX000275	AC00454	1,176.28	2023-12-20 16:08:02	Credit	Kansas City

Anomalies Detected

Anomaly Detection



Generating Downloadable Reports

The dashboard enables users to generate detailed reports in various formats, including PDF and CSV, for further analysis and sharing. These reports provide a comprehensive overview of the financial activity, including key metrics, visualizations, and any identified anomalies.

PDF Reports

The dashboard can generate downloadable PDF reports containing visualizations and detailed analyses.

CSV Reports

CSV reports allow users to export the processed data for further analysis in other applications.

Download Anomaly Transactions CSV

Download PDF Report

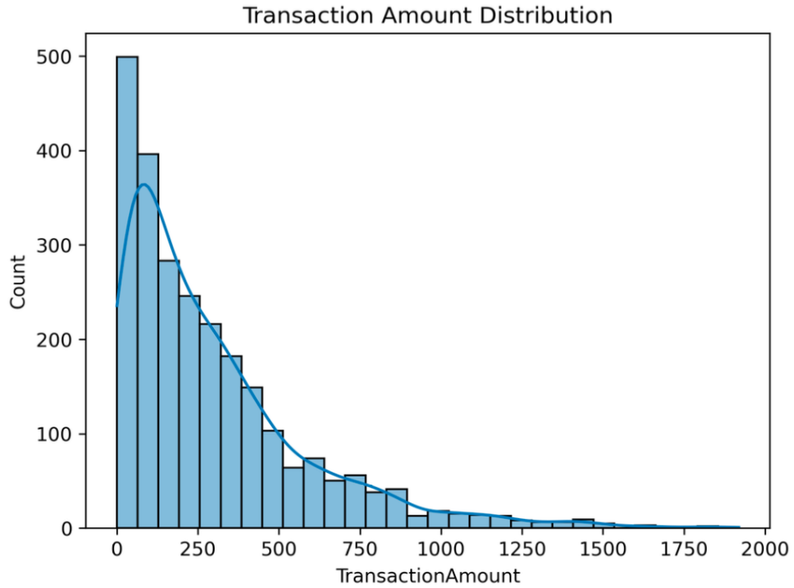
Financial Activity Analysis Report

Key Metrics:

Total Transactions	2512
Average Transaction Amount	$297.59
Anomalies Detected	126

Visualizations:

Transaction Amount Distribution



Benefits of the Dashboard

This financial activity dashboard offers numerous benefits to users, including enhanced financial insights, efficient anomaly detection, and improved decision-making capabilities.

1

Early Anomaly Detection

The dashboard's anomaly detection capabilities allow for early identification of unusual financial activities, potentially preventing fraud or financial irregularities.

2

Data-Driven Insights

The dashboard provides data-driven insights into financial trends, allowing users to make informed decisions based on real-time data.

3

Improved Efficiency

The dashboard streamlines financial analysis processes, saving time and resources.

Conclusion and Next Steps

The financial activity dashboard empowers users with comprehensive insights into their financial data, enabling better decision-making and proactive risk management.

1 Future Enhancements

Future development plans include incorporating machine learning models for more sophisticated anomaly detection and predictive analytics.

2 Integration with Other Systems

The dashboard can be integrated with other financial systems, providing a more holistic view of financial activity.

THANK YOU