# Analytics Suite
## Utility Billing Module

**Why we did this project:**
Utility billing impacts over 145,000 customers. These customers expect to receive timely and accurate billings.  Data analytics will help ensure the City meets customer expectations.

**How we did this project:**
Utility Billing is the 12th module in an audit analytics suite.  Similar to previous modules, the project team began with a discovery phase, which included researching common billing system risks and controls, exploring and mapping the City's Munis environment, and interviewing Utility Billing staff to document processes and priorities for analysis. The discovery phase provided our contractor, 9b, the necessary framework for writing data analytics.

**Project Deliverables**

Sixteen data analytics seamlessly integrate with Munis and run continuously to monitor and pinpoint risks, inefficiencies, and training opportunities in the Utility Billing processes.

The City's business intelligence platform recently changed from Tableau to Microsoft Power BI.  Currently, audit staff and select City of Tulsa employees are Beta testing the new dashboards.

This project was done in partnership with our contractor 9b, a data analytics and information technology consulting company based in Tulsa, OK since 2018.  9b helps purpose-driven organizations with any and all aspects of their data. Their wheelhouse includes data analytics, architecture, engineering, programming, science, storytelling, and visualization. 9b is a Certified B Corporation.

# Example Analytics

The table below shows eight examples of the sixteen Utility Billing analytics. Data analytics track transactions in Munis as they move through workflow.  Each analytic is testing a transaction. If the transaction meets the criteria, the analytic will flag the transaction.
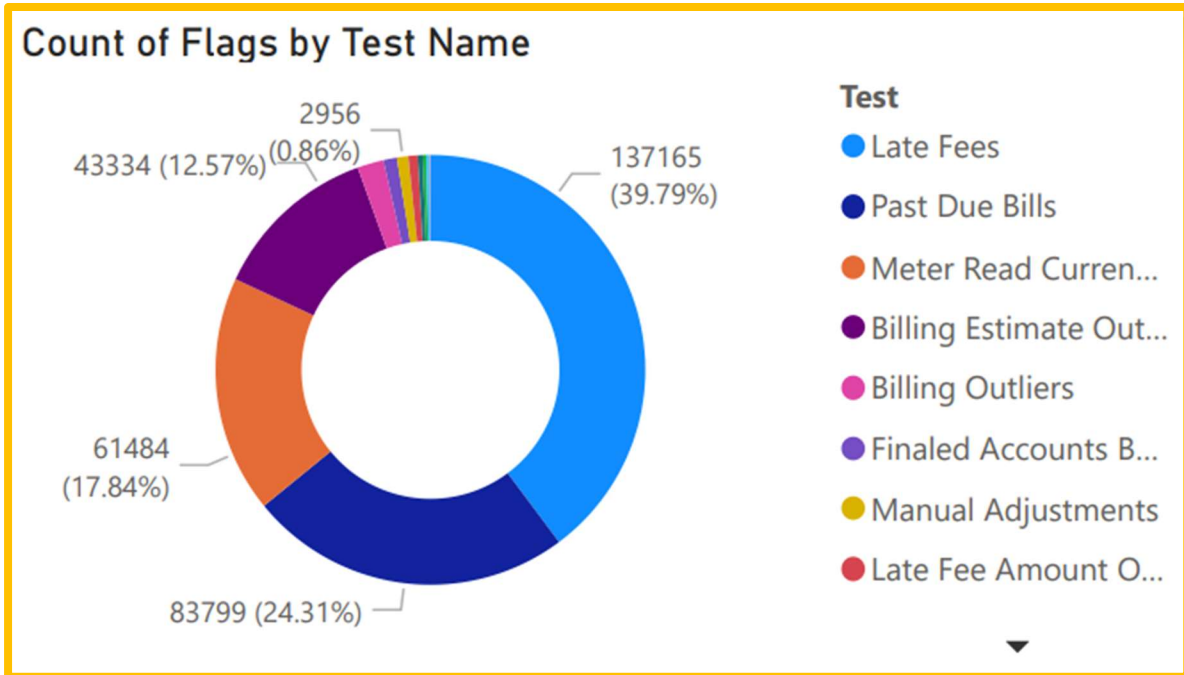
| Analytic | Description |
|---|---|
| Manual Adjustments | Flags if a bill was adjusted manually. |
| Final Bill Write Offs | Flags a bill if it is a final bill and has been written off. |
| Billing Estimate Outliers | Flags a bill if the batch of bills contains more than 2 times the average of estimated meter reads. |
| Meter Read Current Equals Pre | Flags a bill if the meter reading matched the previous meter reading. |
| Past Due Bills | Flags a bill if the payment date is greater than the pay by date. |
| Billing Outliers | Flags a bill if the percent change of the amount from the previous month is 2 times greater than the average percent change. |
| Consumption Over 30k | Flags a bill if the total consumption was over 30k. |
| Late Fee Amount Outliers | Flags a bill if the total late fee amount is greater than 2 times the average. |

# Dashboard

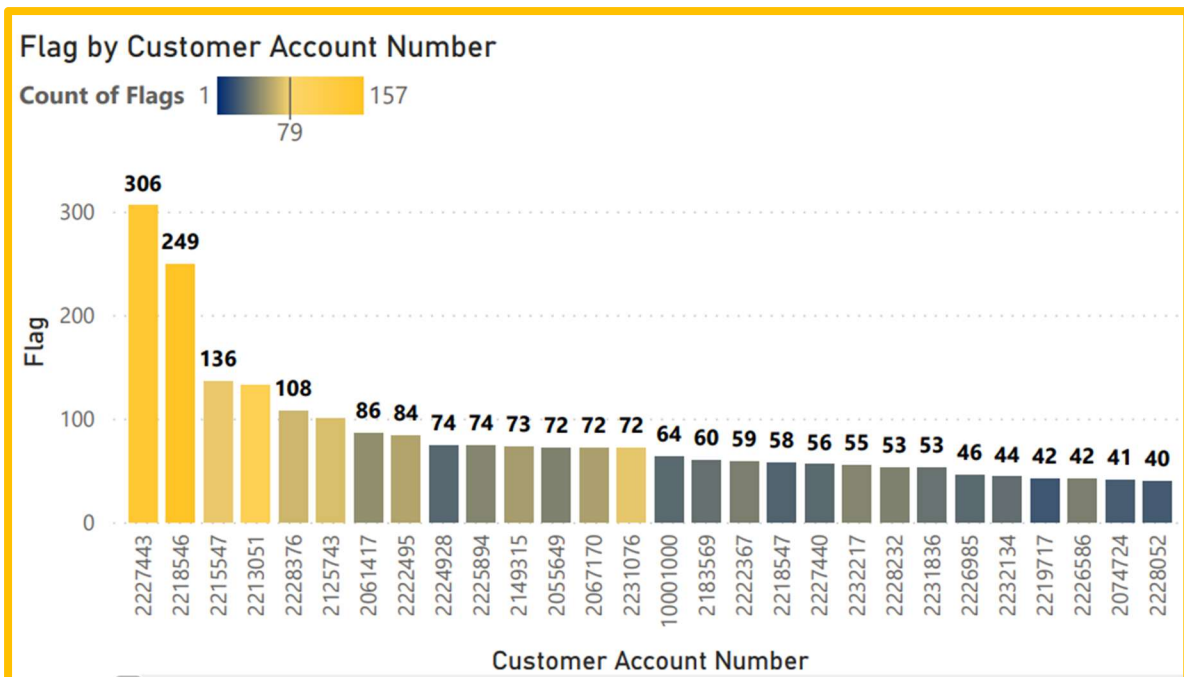The images below illustrate the utility billing dashboard.

**Count of Flags by Test Name**
This visual allows users to easily determine which data analytics have accumulated the most risk flags.
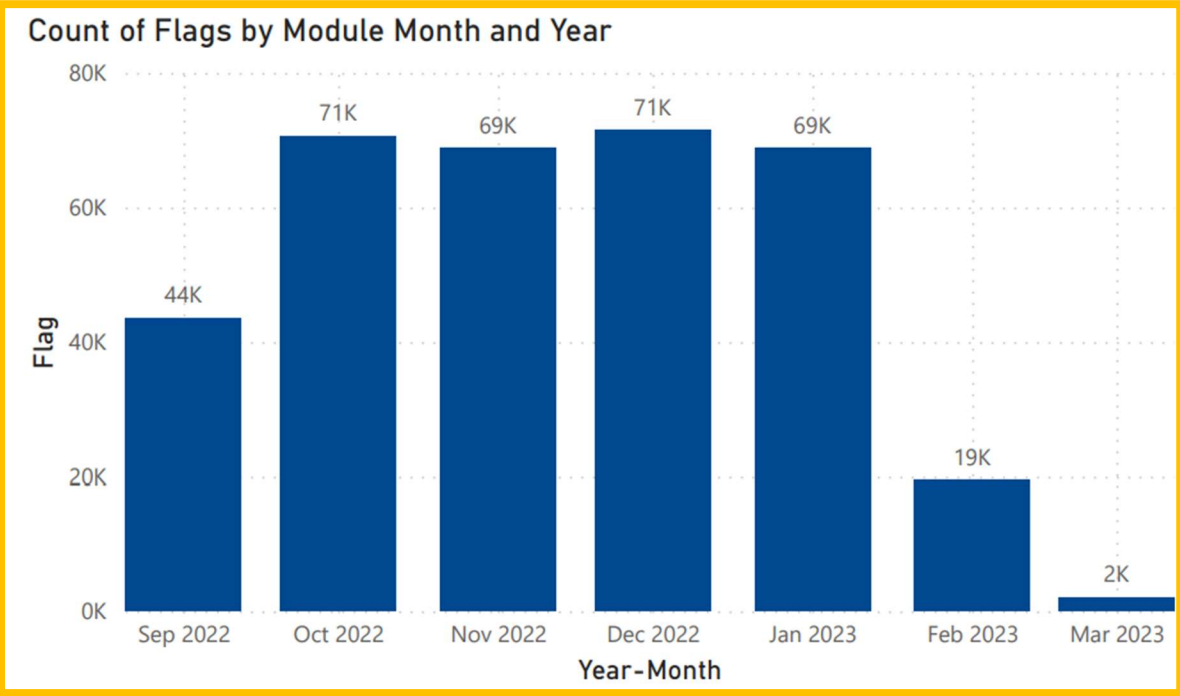


**Flag by Customer Account Number**
This visual allows users to easily determine which customer accounts have accumulated the most risk flags.

**Count of Flags by Module Month and Year**
This visual allows users to easily determine the change in utility billing flags over time.



Count of Flags by Module Month and Year

The data analytics dashboard allows users to drill down to transaction details to learn more information about risk flags.

# Analytics Suite
## As of March 31, 2023



Utility Billing
March 2023

Fixed Assets
*Pending*

Payroll
May 2019

Purchasing
Cards
June 2019

General Ledger
August 2019

Purchasing
October 2019

Accounts Payable
December 2019

Vendors
February 2020

Travel &
Expense
May 2020

Separation
of duties
July 2020

Human Resources
November 2020

Accounts Receivable
February 2021

Treasury
February 2022