



# **Analytics Suite**

## **Travel & Entertainment Expense Module**

Prepared for: City of Tulsa  
Prepared by: 9b  
May 18, 2020

### **About 9b**

9b is a Tulsa-based benefit corporation that provides data analysis and visualization services to help organizations discover value, make decisions, and reach their goals. Learn more: [9bcorp.com](http://9bcorp.com).

# Overview

Per Sec. 807 of the City of Tulsa’s travel policies: “The City will cover reasonable and necessary travel expenses incurred for authorized City business...with approval of their department head or designee...Employees shall submit travel expense claims that comply with this policy and the Finance Travel Policies & Procedures.”

In order to help define “reasonable” and “necessary” not only for the City’s travel expenses but also for entertainment-related expenses and sensitive payments, **Internal Audit partnered with 9b to automate Munis data and establish a framework for analysis.** Key stakeholders can now monitor the process for preparing and reporting expense claims as well as the transactions themselves on a continuing basis as a result of the Travel & Entertainment Expense (T&E) Module.

## Problem: T&E Fraud Costs Time, Money

During the development of this project, the Association of Certified Fraud Examiners (ACFE) published its *2020 Report to the Nations*. According to the biennial report, **expense reimbursement schemes made up 14% of all cases** (17% within government and public administration) and typically **lasted two years before being uncovered**. These schemes resulted in a **median loss of \$33,000**.

ACFE defines an expense reimbursement scheme as when “an employee makes a claim for reimbursement of fictitious or inflated business expenses (e.g., employee files fraudulent expense report, claiming personal travel, nonexistent meals).” It is considered largely an internal fraud type, meaning it is perpetrated by employees at all levels.

## Solution: Data Analysis, Visualization

To better limit and manage fraud, the ACFE says: “Collection and analysis of data — including data from reporting mechanisms and instances of detected fraud — is a must in the monitoring of fraud trends and in the identification of potential control deficiencies.”

Using Munis data, **9b developed a continuous monitoring dashboard with 50+ analytics** that identify and detail transactions as they move through the City’s travel and expense (T&E) process and accumulate risks. This dashboard and additional KPIs were built in Tableau,

### T&E Module Products

- **50+ analytics** review Munis data, flagging transactions as they move through workflow.
- **Process dashboard** surfaces updated analytic results by process step.
- **Risk scorecards** curate and detail results by transaction, employee, and more.
- **Expense type KPI** shows the most common expenses by type and amount in a selected period.
- **Monthly training report** indicates specific areas for process improvement.

empowering auditors and stakeholders to access regularly and make data-driven decisions.

## Analytics and Sample Results

### Examples of Completed Analytics

**Duplicate Expense Claims:** *Flags if an expense claim matches another claim on Approved Estimate Amount and Employee Number, and if the matching claims are within 30 days of each other.* Searching for duplicates is an important test for potential fraud and overpayment.

**Expenses Not Submitted Timely:** *Flags if the submission date of an expense claim falls more than 14 days after the end date of travel.* Expenses must be submitted within two weeks after an employee returns from a trip, according to City travel policy.

**Keyword Analysis:** *Flags if a specified keyword is found in the comments field of an expense claim.* Keywords like “upgrade,” “entertain,” and “donation” could indicate sensitive payments that the public would consider questionable.

### Sample of Actual Results Using FY19 Data

The following analytic results are from Fiscal Year 2019. Dashboard users will be able to select the date range they choose to monitor. Transactions flagged on the dashboard indicate a risk of inappropriate or incorrect transactions.

#### Approval Analytics

The current T&E process relies on approvals by designated employees to validate expense claims. 9b created analytics to monitor these approvals. Here are 3 examples with FY19 data:

• **Invalid Approver** flagged 24 instances where a claim was approved by the employee’s direct report.

• **Employee = Approver** flagged 26 instances where an employee approved his/her own claim.

• **Quick Approval** flagged 461 instances where an approver approved a claim within 45 seconds of his/her previous approval, indicating insufficient review.

**Airfare Outliers** flagged 102 instances where airfare was two standard deviations above the average; six over \$2,000. Identifying such accommodations could lower risk and reduce waste.

**Cash Advance > Per Diem** flagged 74 instances where cash advances were greater than the requested per diem. Per City policy: “Per Diem is the only expense that may be advanced to the traveler.”

**Actuals Paid Not Per Diem** flagged 1,078 instances where employees were reimbursed but not for per diem.

**Per Diem No Travel** flagged 144 instances where an employee received per diem but did not report any travel-related charges.

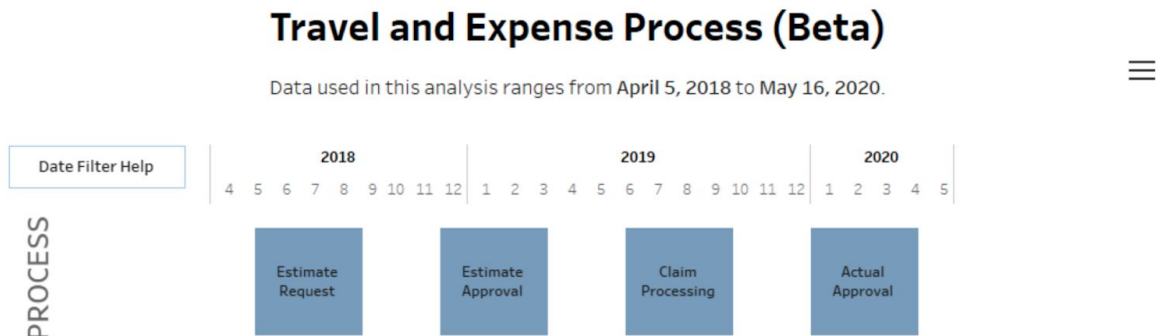
**Round Amounts** flagged 385 instances where a claim amount rounded to the 10s level. Receipts rarely end in

round amounts; therefore, it is important to confirm whether these transactions were valid.

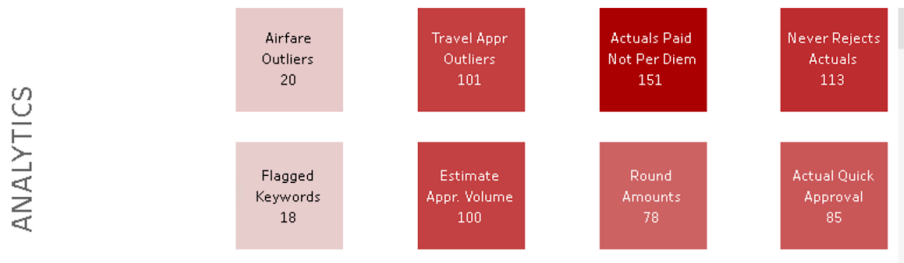
## Exhibit: Process Dashboard

The T&E process dashboard in Tableau visualizes the process in three interactive sheets.

- The **Process Sheet** breaks down by step. The **new date filter** created in this module allows the user to view analytic results according to their preferred time period. Access instructions in the collapsible menu in the right-hand corner of the visualization.



- The **Analytics Sheet** shows each analytic directly below its related process step. Shading indicates the risk score (the assigned weight multiplied by the number of exceptions).



- The **Details Sheet** provides transaction details, which allow the user to understand what conditions triggered the analytic. Details are hidden until an analytic is selected.

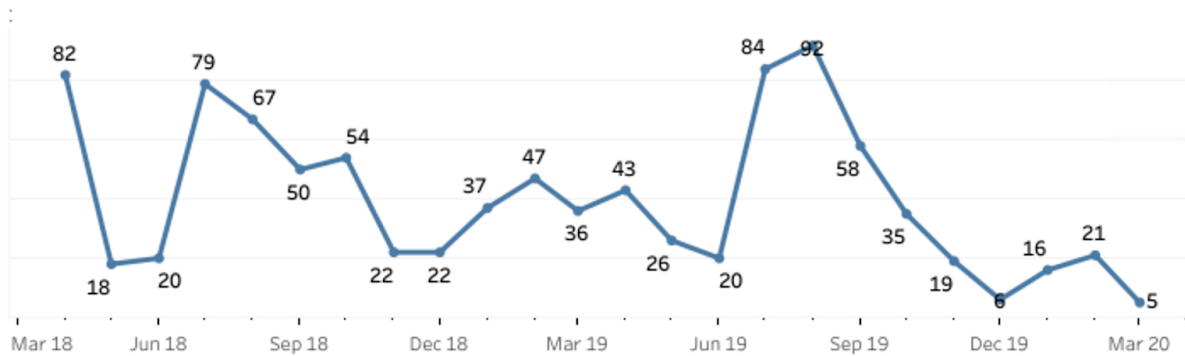
DETAILS

Date	Employee Name	Analytic Name	Expense Report Detail	Employee Department	Further Information
7/2/2018	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
7/2/2018	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

### Additional View: Trend Tooltip

When a user hovers over an analytic box, a tooltip displays a trend line graph that shows the monthly total of occurrences that particular analytic has flagged.

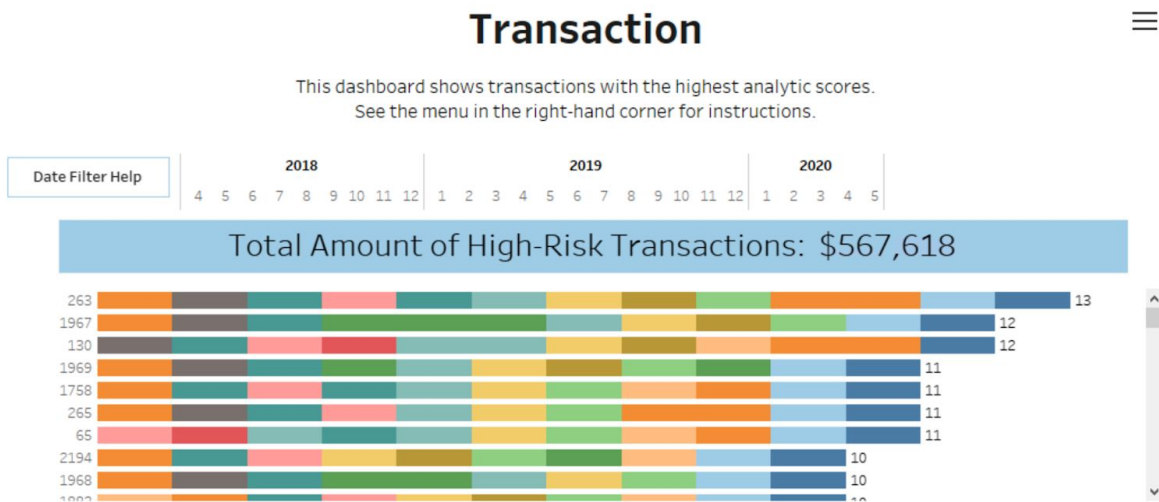
Process Step: Estimate Approval  
Analytic Name: Never Rejects Estimates  
Analytic Description: Flags if an expense claim is approved by someone who has never made a rejection up to the date of the approval.



## Exhibit: KPIs

### Risk Scores

A set of KPIs shows accumulated risk scores **by transaction, employee, approver** and **department**. *Below: The user can quickly see which transactions have the highest risk, which accumulates as they move through the process. Results change according to selected time period.*

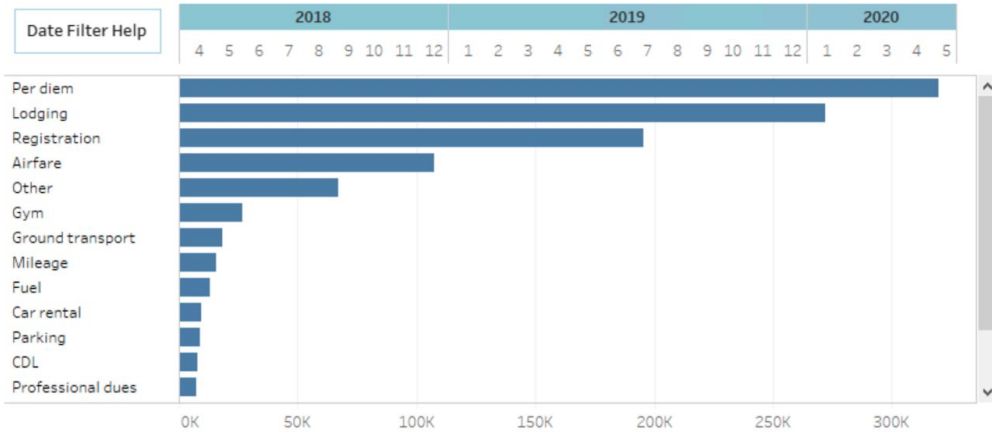


### Expenses by Type

This KPI provides a quick view of the type of expenses charged at the City. When hovering over the bar graph, the user can see how much money was charged to those expense types in a selected time period.

# Expenses by Type

Data used in this analysis ranges from April 5, 2018 to May 16, 2020.

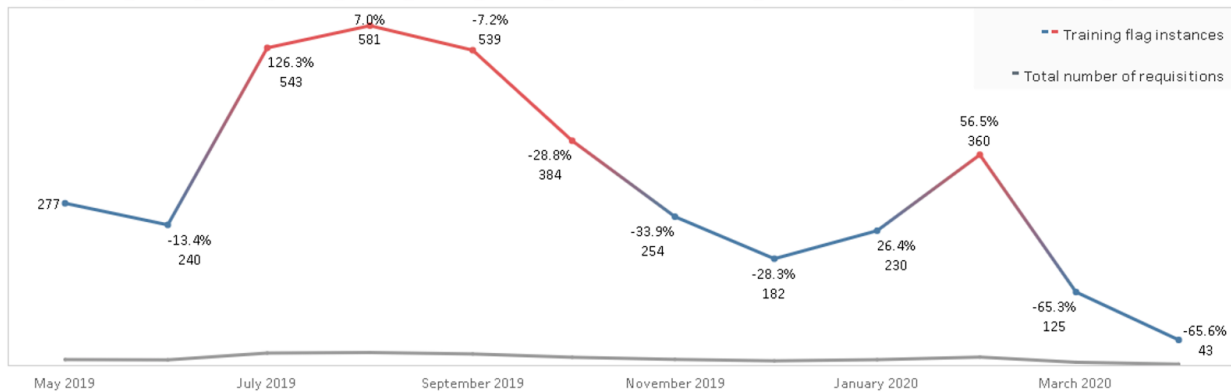


## Exhibit: Monthly Training Report

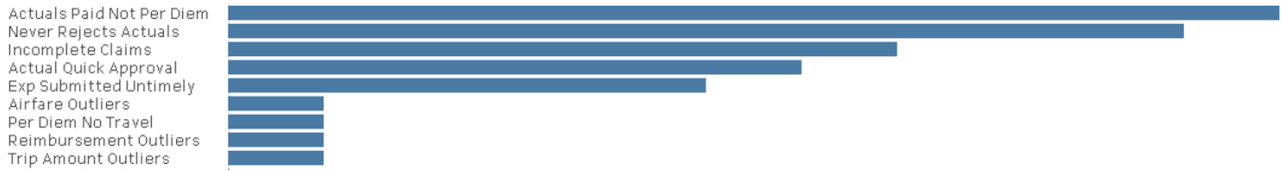
The monthly training report, developed in an earlier module for the City Finance Director, highlights training opportunities based on the results of select analytics.

In April 2020, our analytics flagged **43 instances** of potential risk in the travel and expense process that could be addressed with training. As shown in the chart below, this was a **66% decrease** from the previous month.

The goal is to decrease the instances of process risk with targeted training in order to improve the efficiency of the travel and expense process and reduce costs.

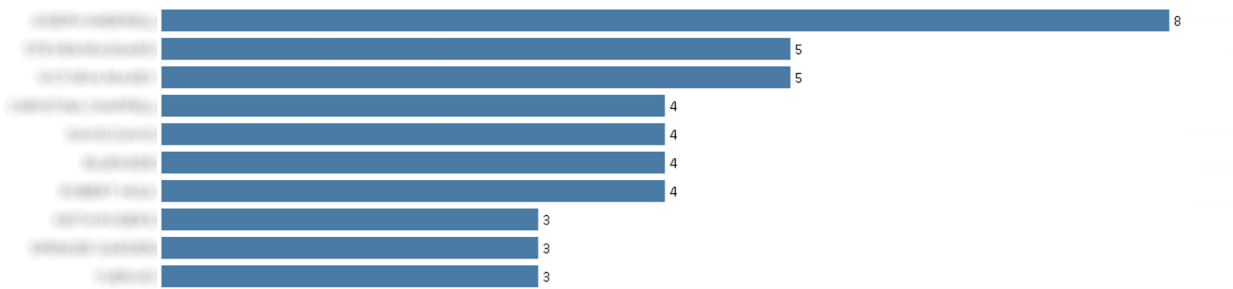


The analytics in the bar chart below make up the **43 instances** of process risk. The bars are **blue** if the number of instances **decreased** from the previous month and **red** if the number **increased**.



The employees associated with the instances flagged are shown below. The bars are **blue** if the number of instances **decreased** from the previous month and **red** if the number **increased**.

Select an analytic shown in the chart above to see which employees need training in that area.



## Exhibit: Analytics Suite

T&E is the seventh module in the financial process monitoring solution being developed by 9b for the City of Tulsa. Segregation of Duties is slated as the next module.



