Audit Analytics Team

2020 End-Year Audit Analytics Update
February 2021

Katja Freeman, MA, MELP, Audit Director
Samuel Gallaher, PhD, Audit Analytics Supervisor
Robert Persichitte, CFE, CPA, Lead Data Analytics Auditor
William Morales, MBA, Senior Data Analytics Auditor
Chris Wilson, MPA, Senior Auditor
Continuous auditing is a method to identify and analyze risks through automated, scheduled analysis of the city’s financial and process data.

- Connect to and analyze information.
- Report results through an internal dashboard and memos.
Agenda

• Continuous audit and risk analytics update.
• Risk-finding analytics that informed 2020 audits.
• New risk assessments and improvements.
• Audit support.
• Community engagement and internal training.
2020 Continuous Audit and Risk Analytics

- **Number of records**
- **Automated scripts used**

- **PURCHASE CARDS**: 4,215,966
- **TRAVEL CARDS**: 218,119
- **PURCHASE ORDERS**: 25,925
- **SHORT TERM RENTAL**: 334,835
- **SUPPLIER INVOICES**: 1,022
- **EXPENSE REPORTS**: 315,488
- **JOURNAL ENTRIES**: 26,039
- **GENTAX**: 342,412
Continuous Audit: GenTax

• **Write-offs.** Analytics found anomalies, but segregation of duties is working as intended.

• **Timeliness of accepting tax returns.** Over 98% of tax returns are accepted within seven days.
Continuous Audit: GenTax, Write-offs

- 9,579 write-offs with matching names of “batch.”
- The values were less than $100, with an average value of $18 and a total value of $171,552.
- Department of Finance suggested to the Treasury Division to clear low-value penalty and interest balances.
Continuous Audit: GenTax, Returns Processed within Seven Days

Source: Auditor's Office analysis of GenTax records.
On March 10, 2020 the Mayor directed:

• Nonessential travel suspended.
• Large public gatherings cancelled.
• Expansion of work from home options.
Continuous Audit: Purchase Cards

- Purchase card spending declined about 34% in 2020.
- Split transactions continued to decrease through 2020.
- Pass-through vendor spending decreased with purchase card spending in 2020. However, Amazon spending is similar to prepandemic spending.
Purchase Card Pass-Through Vendors*

Source: Auditor’s Office analysis of purchase card data.

*These metrics are used only for risk assessment purposes and may require additional audit work to validate.
Continuous Audit: Travel Cards

• Travel card spending declined by over 50%.
• Remaining travel card spending categorized as low-risk.
Travel Card Purchases Over Time*

Source: Auditor’s Office analysis of purchase card data.
*These metrics are used only for risk assessment purposes and may require additional audit work to validate.
Continuous Audit: Supplier Invoices

Physical checks held for pickup

- Number for checks held for pickup remains low.
- Four checks held for pickup exceed $1,000,000 each.
Spending Using Checks Held for Pickup

Source: Auditor’s Office analysis of supplier invoice data.

*These metrics are used only for risk assessment purposes and may require additional audit work to validate.
Unauthorized Purchase Orders:

- After-the-fact and code violations have decreased from their relative high point in April and June of 2018.
- Fiscal rule violations have increased by about one every two months since January 2019.
Count of Unauthorized Purchases

Source: Auditor’s Office analysis of standard comments report.
*These metrics are used only for risk assessment purposes and may require additional audit work to validate.
Purchase Orders

• Duplicates with purchase cards and travel cards.
• Geolocation of shipping addresses.
• Results reported internally.
Short-Term Rentals

- Lodger’s tax ID number compliance levels have reached 100%.
- Active licenses decreased by 50% in the second half of 2020.
Our risk analyses informed several audits in 2020:

- **Denver Public Library** – Even-dollar purchase order analysis.
- **Travel Expenses** – Analysis of travel card and travel-related expense reports.
- **Base Salary and Merit Allocations** – Analysis of demographic factors.
- **COVID Relief** – Analysis of journal entry composition and cost classification.
• We performed an even-dollar analysis on purchase orders. Payments were being made to performers outside the purchasing process.

• We provided audit support for payroll approval and identified a 93% compliance rate for payroll approvals.
Provided High-Risk Expense Reports and Travel Cards:

- Identified 500 high risk travel card expenses out of 20,658 using merchant category codes.
- Identified 1,588 out of 20,752 expense reports using multiple risk factors.
Risk-Finding Analytics: Travel Expenses Audit

- Continued monitoring after audit
- 52 high-risk events added in the second half of 2020

Source: Auditor’s Office analysis of expense reports.
*These metrics are used only for risk assessment purposes and may require additional audit work to validate.
New Analytics and Improvements: Journal Entries

9,218,824
342,412
147,417
18,509
90

Total journal lines
Manual journal lines.
Entries without net-zero entry.
High-risk entries (one or more flags).*
Random sample for test work. Stratified across each risk analytic.

Source: Auditor’s Office analysis of journal entries.
*These metrics are used only for risk assessment purposes and may require additional audit work to validate.

denverauditor.org

Timothy M. O'Brien, CPA, Auditor
Ranks agencies on previous risks assessment analytics, based on:

- Number of high-risk transactions/purchase orders/invoices.
- Total value of those flagged items.
- Reported internally.
New Analytics and Improvements: Meta Analysis

Compared risk analytics to general populations

- Travel Cards – Found errors at a rate of 9 times greater than a random sample of the general population.
- Purchase Orders – Found errors in documentation at a rate of 5 times greater than a random sample of the general population.
- Expense reports – identified the office supplies categories as high-risk for mis categorization and planning to quantify this issue in 2021.
Feasibility studies

Tested connections between LCP Tracker, Textura, and Workday

• Identified changes to better link the systems.
• Identified data necessary to attempt a predictive model of prevailing wage violations.
Officewide Sampling Policy

Sampling guide published September 2020

- Ensures consistent use of statistical strategies throughout the office.
- Provides framework for uniformity of documentation of audit judgment when sampling.
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<th>Surveys</th>
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## 2020 Trainings and Community Engagement

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Audit Analytics Team 2020 Overview

Audit assistance

Provided support for

10 audits and

2 Follow-ups

Continuous audit/risk analytics

Ran

26 automated scripts looking at 5,479,806 records

Training/community engagement

Offered

6 training sessions and presented at

3 Conferences
Next Steps

- Quantify risks identified by the journal entry analytics.
- Develop analytics to quantify misuse of “office supplies” in expense reports, identify purchase card activity on nonworking days, and search for ghost employees.
- Identify methods to test for data quality errors in large datasets.
- Continue to cross-train auditors to expand analytics skills.
Audit Committee

Timothy M. O'Brien, CPA, Auditor