

# Audit at a glance

**ABOUT** | The Auditor's Office's Audit Analytics Team provides training, methodological, and data related support throughout the year and manages the continuous audit program.

Continuous auditing is a method to identify and analyze risks through automated and scheduled analysis of the city's financial and process data. The Auditor's Office uses this method internally to help inform audits and make our work more efficient and effective.

In comparison, traditional auditing techniques might analyze a sample of a certain percentage of the entries in a data set meant to represent the whole. While these sampling methods are still valid as a representative, there is a possibility that a high-risk transaction might not be pulled into the sample and might not be included in audit work. Through automation, we save time and increase the likelihood that we are able to identify only the highest risks, which

## Data Analytics 2019 End-of-Year Update

JANUARY 2020

then better inform our audits. A risk could be an area of weakness where the city could make an error or lose money, or it could be transactions that look out of place or indicative of bad actors.

In 2019, our Audit Analytics Team analyzed nearly 1 million data points, including contracts, sales tax returns, short-term rental licenses, purchase orders, and employee salary and merit increase amounts.

Results of data analyses are used in two ways: to automate previous audit work and inform follow up reports and also to identify areas of risks for future audit work (and initiate audits, as needed).

## In the update

Some of our continued auditing and key results:

- **Contract-splitting — We analyzed data dating back to January 2014, including 13,000 contracts.**

### RISK

Agencies may be splitting contracts to avoid City Council oversight.

### RESULT

In our most recent analysis, July 2018 through April 2019, we saw potential split contracts occurring at similar levels to the original audit report period, January 2014 through May 2017.

- **Short-term rental license data — We analyzed about 3,000 licenses active as of Dec. 6, 2019.**

### RISK

Incorrect data can make it difficult for an agency to enforce requirements under the ordinance. Initial compliance with the lodger's tax ID was determined at 29%, per the "Short Term Rental Enforcement" audit issued December 2017.

### RESULT

The compliance rate has now reached 99%, as of Dec. 6, 2019.

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Timothy M. O'Brien, CPA | Denver Auditor

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# Continuous Auditing 2019 End-of-Year Update



## New monitoring begun in 2019 and our methods for analyses:

- **PASS-THROUGH VENDORS** — Pass-through vendors are on-line vendors where any individual can make a storefront, and a cardholder could potentially make purchases from themselves or a closely related party. We wanted to identify and quantify transactions with pass-through vendors.
- **TOP PURCHASE CARD SPENDER** — The individual cardholder with the most cumulative dollar transactions has the highest opportunity for misuse. Therefore, we compared year over year trends in purchase card spending for each agency.
- **DUPLICATE TRANSACTIONS** — Duplicate transactions can be an indicator of fraud risks associated with billing schemes, so we examined the travel card, purchase card, and purchase order data in Workday, the city's financial and human resources system of record.
- **NON-CITY ADDRESSES** — Purchased items shipped to an address that is not associated with the city could indicate fraud, so we matched the shipping address information in Workday to known city addresses.
- **EVEN-DOLLAR ANALYSIS** — These analyses identify human influence in natural number sets, which could indicate fraud. We built models based on rates of occurrence and manually sampled purchase orders for additional review.
- **TRAVEL CARDS** — We identified 21,241 transactions from Jan. 1, 2017, through Nov. 30, 2019, and developed scripts to examine two risks: duplicate purchases between travel and purchase cards, and non-travel-related purchases.
- **SALARY AND MERIT INCREASES** — To inform an upcoming audit, we assessed three years of salary and two years of merit increase data — including 57,800 salaries and 12,500 merit increases. Our objectives include assessing whether salary data and merit increase data show risks of failing to give like pay for like work with respect to gender or ethnicity and/or bias related to gender or ethnicity.

**NOTE:** *The results of all these analyses are preliminary and only for the use of informing possible future audits.*

## ◀ CONTINUED FROM OTHER SIDE

- **Purchase card purchases** — We assessed **118,000 transactions with approval dates between January 2018 through November 2019.**

### RISK

Recurring purchases are not allowed under purchase card rules unless the purchase is associated with a master purchase order. Purchases like this circumvent Purchasing processes which may result in overpayment for goods and services.

### RESULT

Overall, the analysis shows less spending and fewer transactions associated with recurring purchases in analysis year 2019 when compared to analysis year 2018.

### RISK

Split transactions are a risk because they could indicate a cardholder is circumventing the single transaction limit.

### RESULT

Our analysis shows the amount of spending related to splits continues to fall from its peak in December 2017.

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