

Audit Committee



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Audit Analytics Team

2021 Semi-Annual Audit Analytics Update February 2022

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Background

Continuous auditing is a method to identify and analyze risks through automated, scheduled analysis of the city's financial and process data.

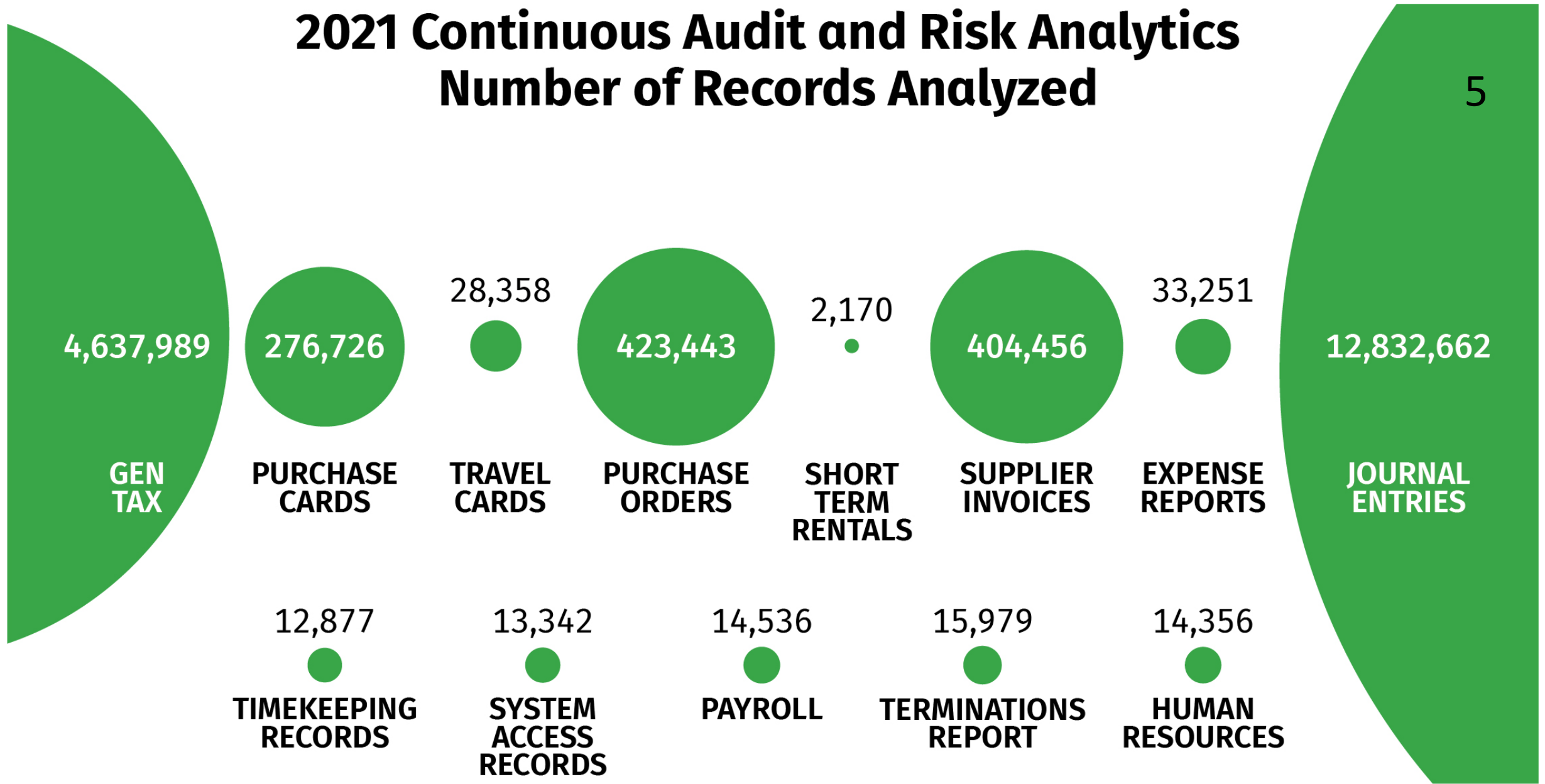
- Connect to and analyze information.
- Report results through an internal dashboard and memos.



Agenda

- Continuous audit and risk analytics update.
- Risk-finding analytics and benchmarking.
- Audit support.
- Outreach to the audit community and internal training.

2021 Continuous Audit and Risk Analytics Number of Records Analyzed

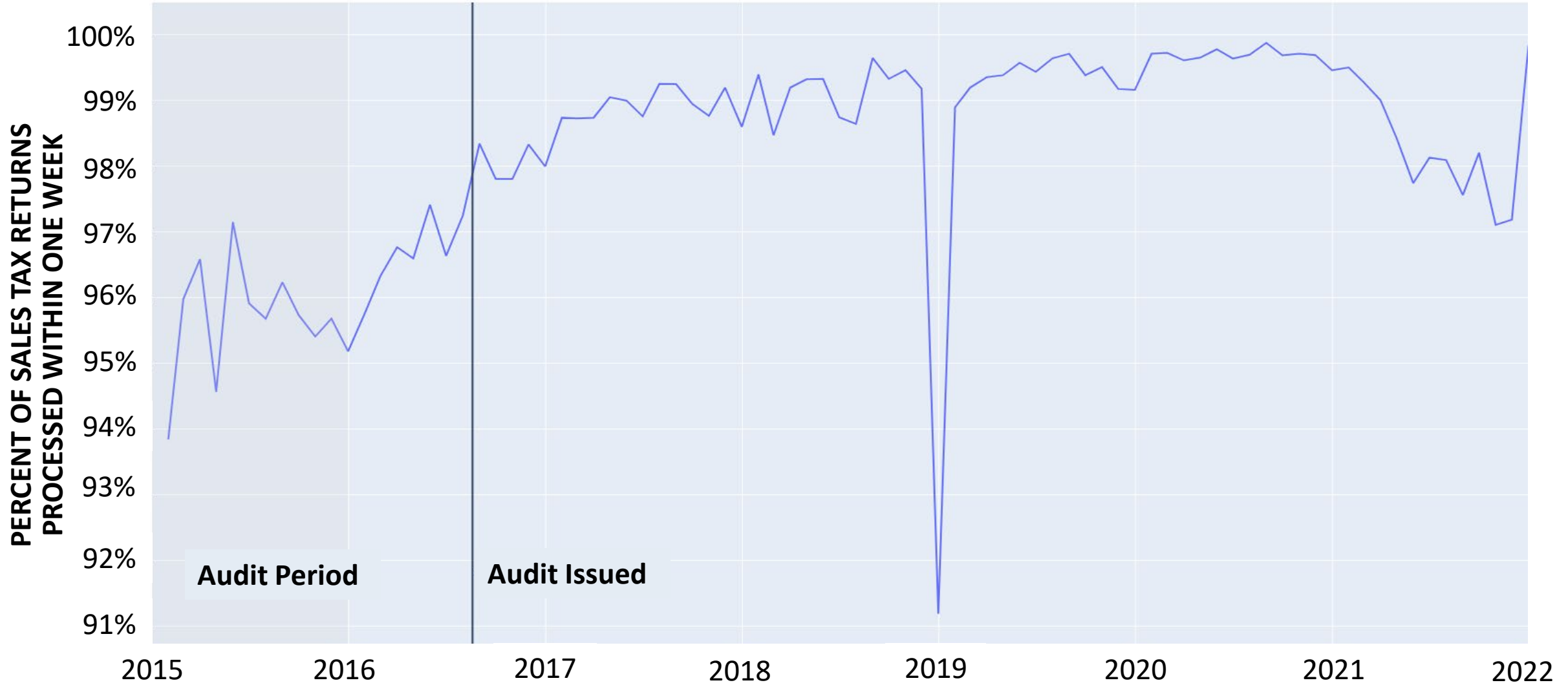




Continuous Audit: GenTax

- **Timeliness of accepting tax returns.** About 97% of tax returns are accepted within seven days.
- **Write-offs.** No new anomalies found, showing separation of duties controls are working as intended.

Continuous Audit: GenTax, Returns Processed within Seven Days



Source: Auditor's Office analysis of GenTax records.

Continuous Audit: GenTax, Write-offs



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- No new write-offs with matching names.
 - At the mid-year update we identified 10,665 write-offs with matching names of “batch.”
 - Department of Finance suggested to the Treasury Division to clear low-value penalty and interest balances.

Purchasing and Accounts Payable: COVID-19 Impact on Business Process



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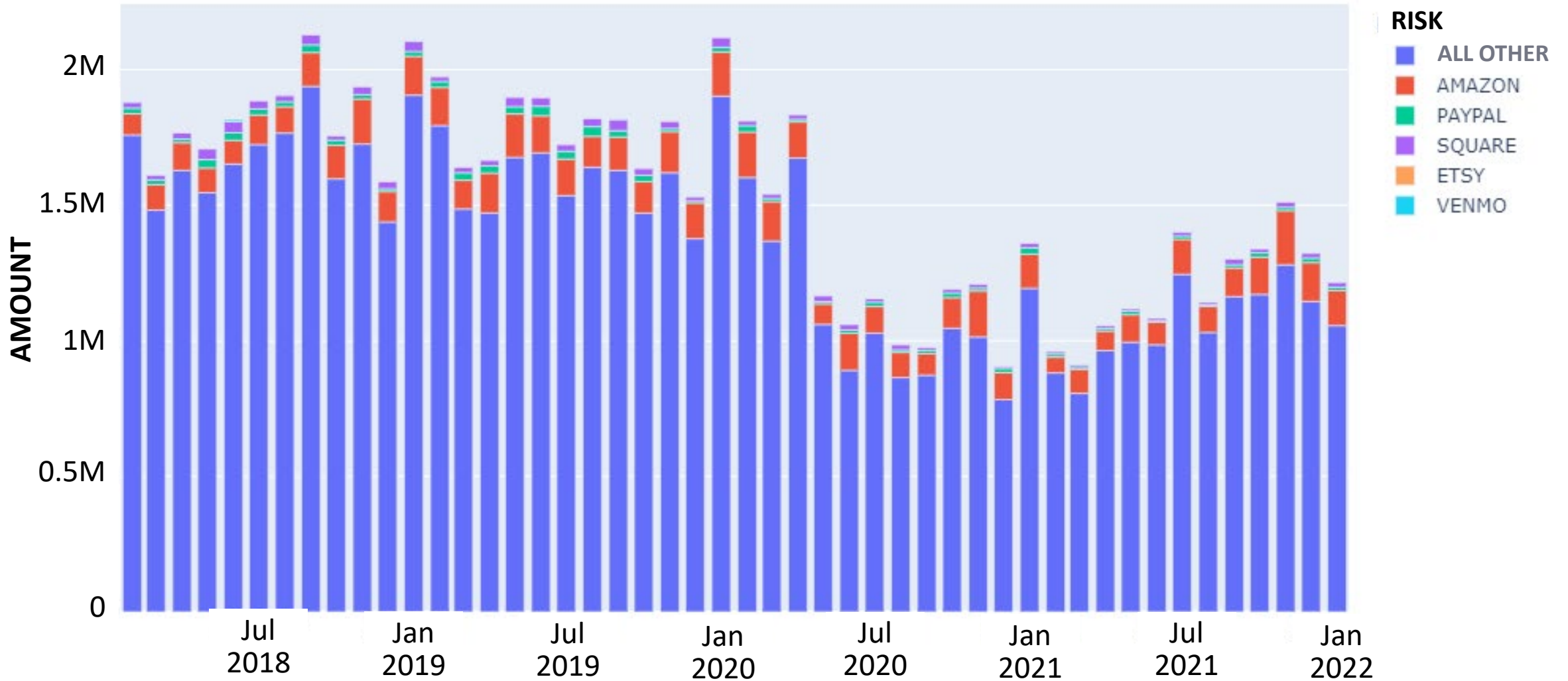
- Gauging the impact of the pandemic two years later.
- Spending continues to be impacted although agencies are starting to rebound.



Continuous Audit: Purchase Cards

- Split transactions continued to decrease through 2021.
- Pass-through vendor spending decreased about 5% in 2021. However, proportionally Amazon spending is similar to pre-pandemic spending.

Purchase Card Pass-Through Vendors*



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

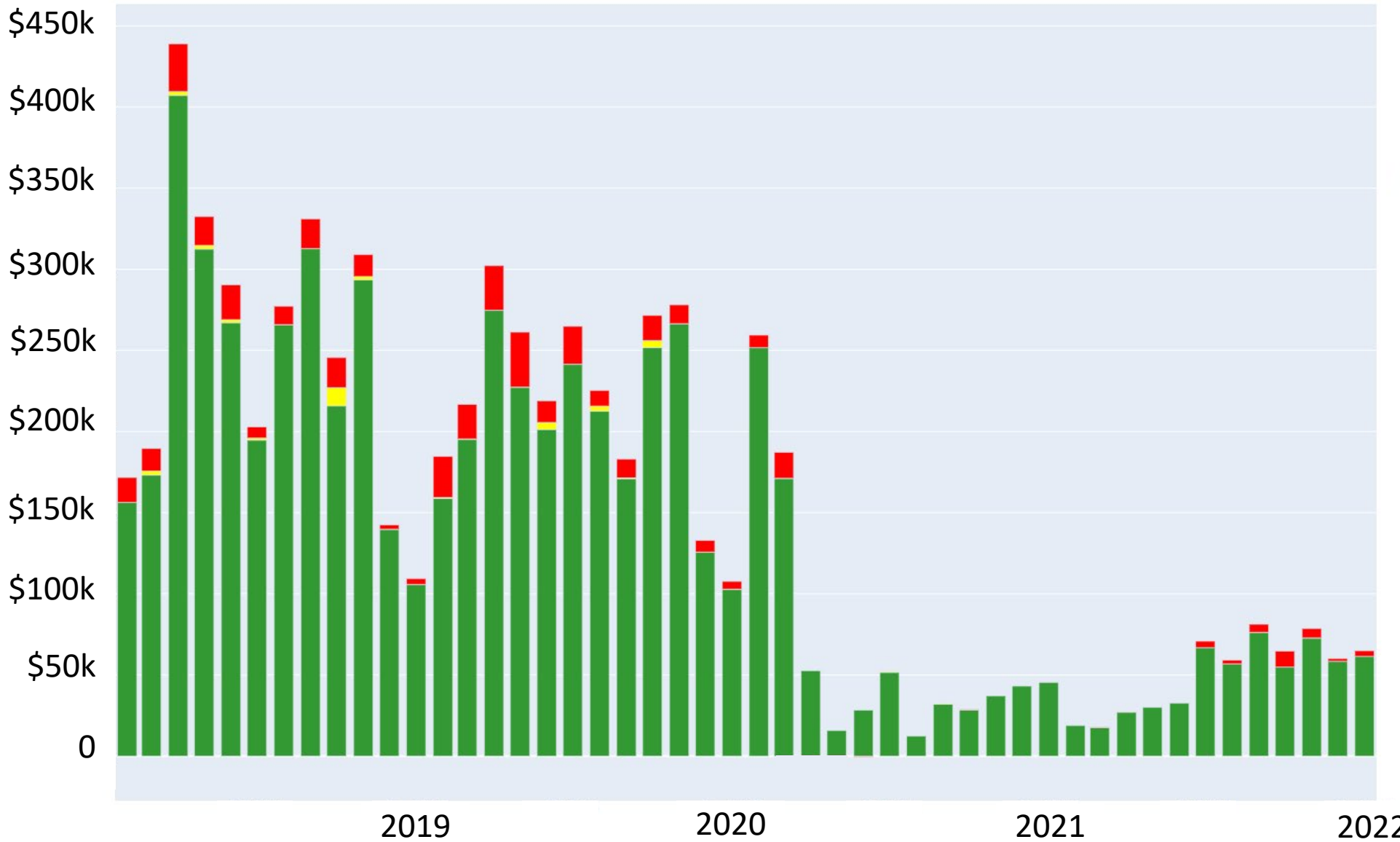
*These metrics are used only for risk assessment purposes and may require additional audit work to validate.



Continuous Audit: Travel Cards

- Travel card spending declined by over 50%.
- 97% of travel card spending categorized as low-risk.

Travel Card Purchases Over Time*



RISK LEVEL
Low
Medium
High

*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.

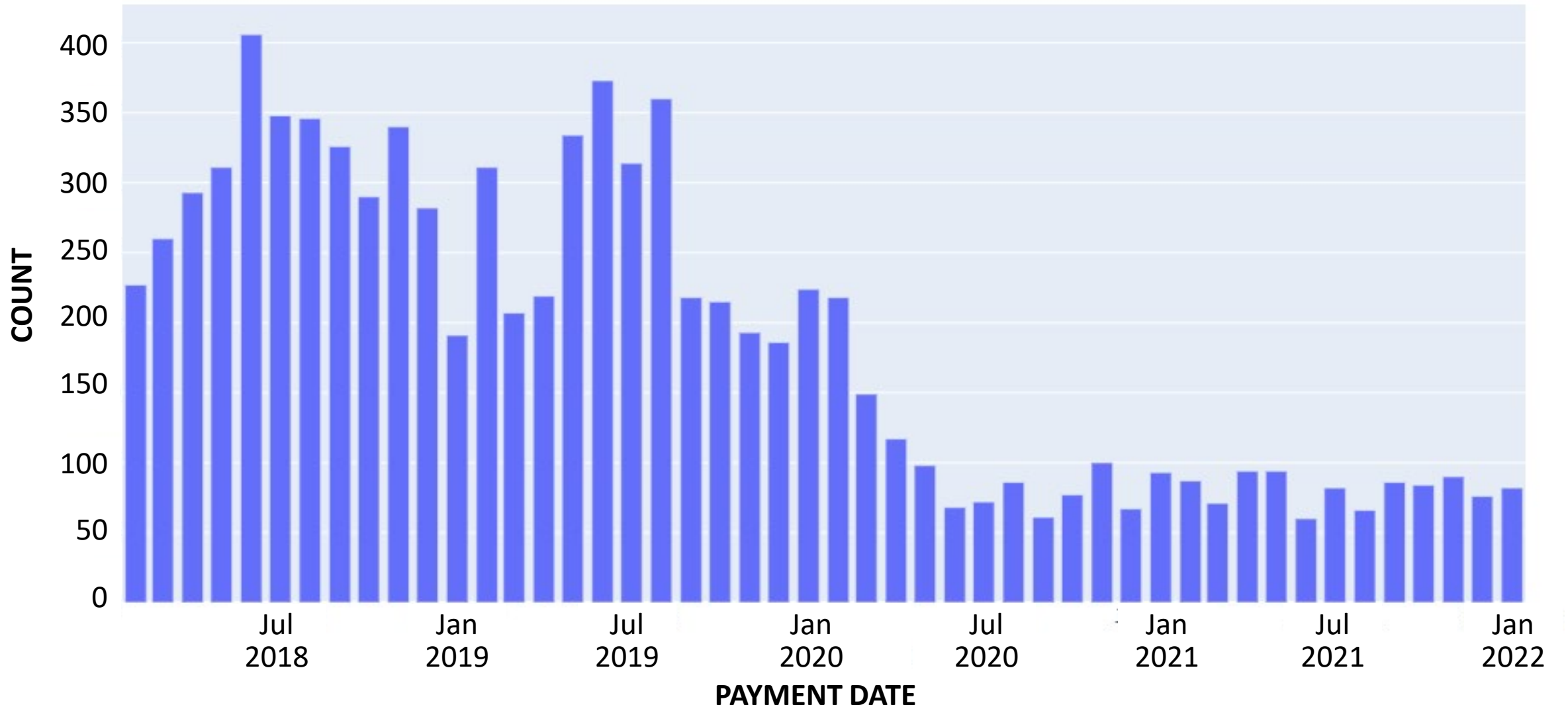


Continuous Audit: Supplier Invoices

Physical checks held for pickup:

- Number for checks held for pickup remains low.
- Three checks held for pickup exceeded \$1,000,000.

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.

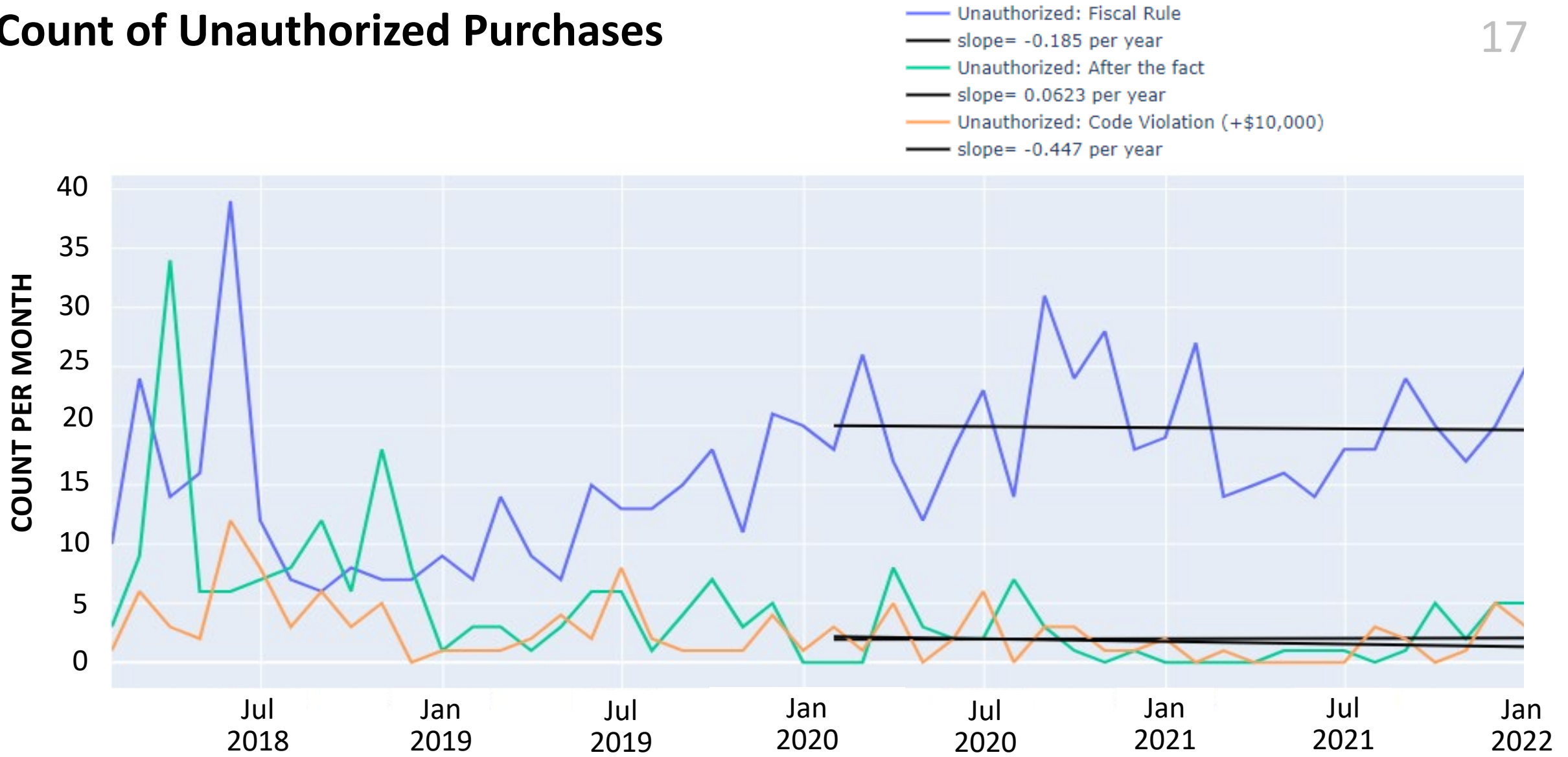


Continuous Audit: Purchase Orders

Unauthorized Purchases:

- After-the-fact and code violations have decreased from their relative high point in April and June of 2018.
- Fiscal rule violations have decreased in total number for the year but continue to be the most frequent violation.

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



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- Duplicates with purchase cards and travel cards.
- Even dollar analysis.
- Results reported internally.

Short-Term Rentals



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- Lodger's tax ID number compliance levels have reached 99%.
- Active licenses increased from 800 licenses by June 30, 2021, to 2,170 licenses by Dec. 31, 2021.

Expense Reports

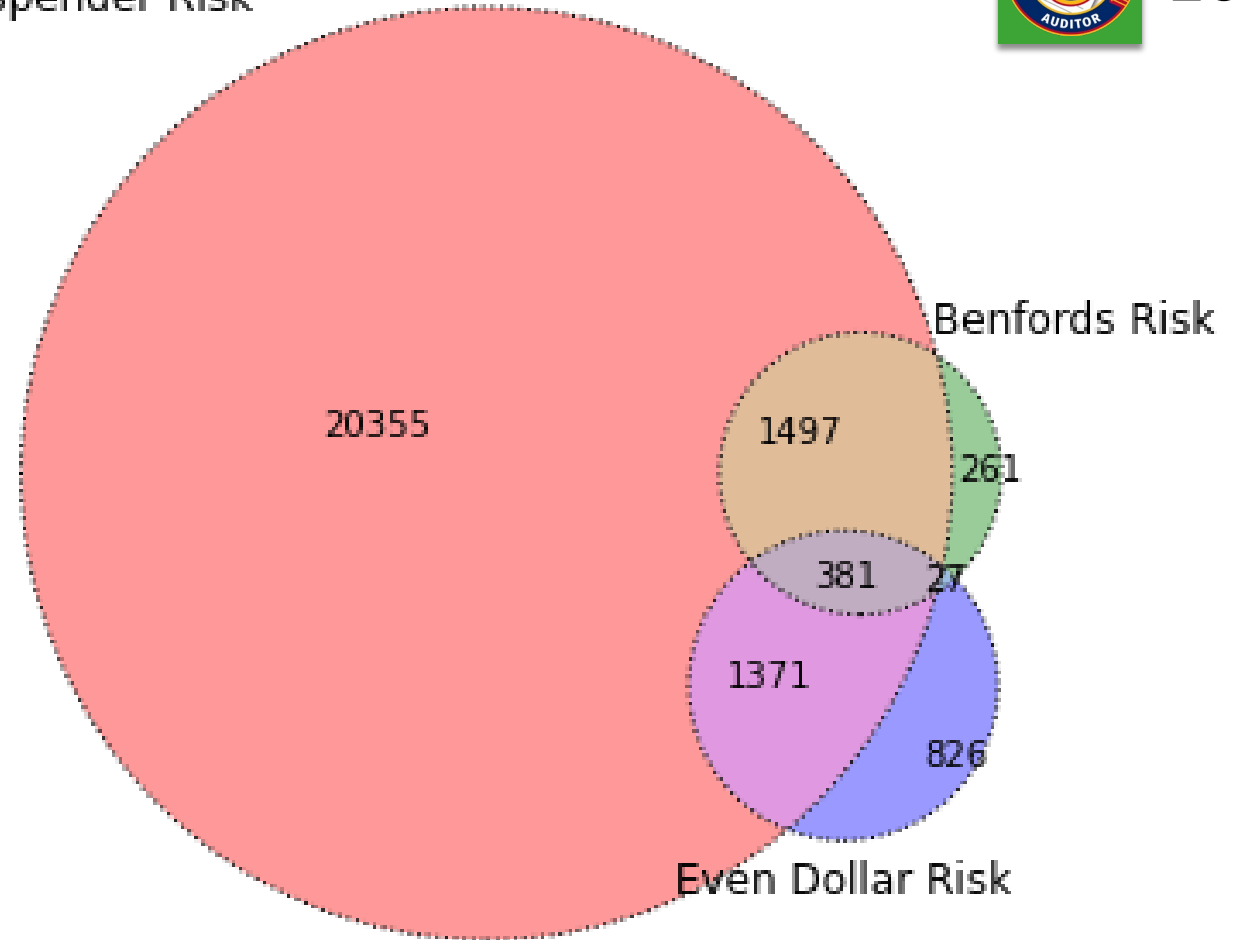
Used composite model of three risk factors.

Expense Report Composite Risk Model

Top Spender Risk



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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.

Project Update, 2021



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- First half of 2021.
 - GenTax collection activities analysis.
 - Journal entry risk quantification analysis.
- Second half of 2021.
 - Expense reports audit.
 - Ghost employee risk model.
 - Audit analytics benchmarking.

Expense Report Process Audit

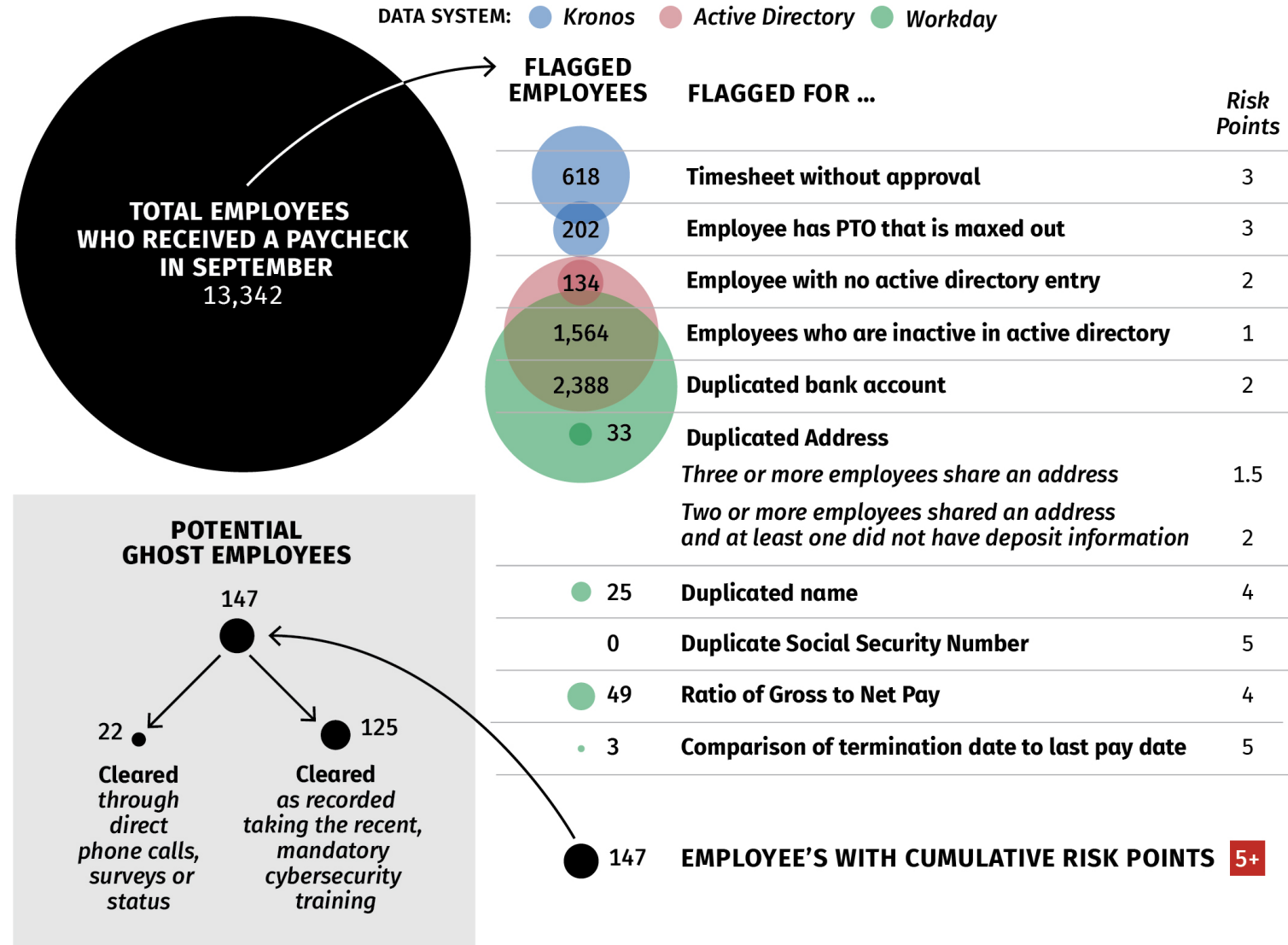


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- Our risk finding analytics identified issues with how expense reports were classified and documented.
- A full audit examined the controls and found deficiencies in the internal approval process.
- Provided seven recommendations.
- Audit report was issued November 2021.

Ghost Employee Risk Model

- Used composite model of 10 risk factors.
- Model identifies abnormal system use and uncommon employee activity.



Ghost Employee Analysis



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Our model could identify unique circumstances among the data such as:

- Employees preparing to leave city service.
- Those working for agencies or organizations who do not use city systems as frequently as a traditional employee.
- Employees who do not frequently use computers.

Analytics Benchmarking



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- Partnered with the Association of Local Government Auditors to survey other audit shops regarding their use of analytics.
- Over 100 audit shops responded.
- Few audit shops have dedicated resources for analytics.
- Those that do are more likely to apply advanced methods to identify risks and control failures on municipal systems.
- Denver is among the leaders in local government audit analytics.

2021 Audit Assistance

	Data Analysis	Sampling	Surveys	Other	Embedded Resource
CITY COUNCIL (<i>paused</i>)			×		
COVID-19 RELIEF FUNDING	×	×			×
AIRPORT ACCOUNTING FINANCE (<i>in-progress</i>)			×		
DOTI CONSTRUCTION MANAGEMENT	×				
EXPENSE REPORT APPROVAL PROCESS	×	×	×	×	×
DENVER GOLF OPERATIONS			×	×	
MENTAL HEALTH IN JAILS (<i>in-progress</i>)		×			
NEIGHBORHOOD FOOD AND ENVIRONMENT PROGRAM GRANT COMPLIANCE	×	×			
PARKS LEGACY PLAN		×		×	
PHISHING	×			×	×
DENVER PUBLIC TRUSTEE FOLLOW-UP	×			×	
RECORDS MANAGEMENT		×	×		
TRANSPARENCY		×	×		
PRESERVING AFFORDABLE HOUSING FOR DENVER RESIDENTS FOLLOW-UP				×	

2021 Trainings and Outreach to Audit Community

	Training	Conference	CPEs
ARBUTUS	✗		●●●●●●●●
EXCEL	✗		●●●●●●●●
ATTRIBUTE DEVELOPMENT	✗		●●
STATISTICAL SAMPLING	✗		●●●●
ROCKY MOUNTAIN AREA CONFERENCE		✗	●●
ROCKY MOUNTAIN INFORMATION SECURITY CONFERENCE		✗	●
ALGA QUARTERLY ARTICLE		✗	

Audit Analytics Team 2020 Overview

Audit assistance

Provided support for



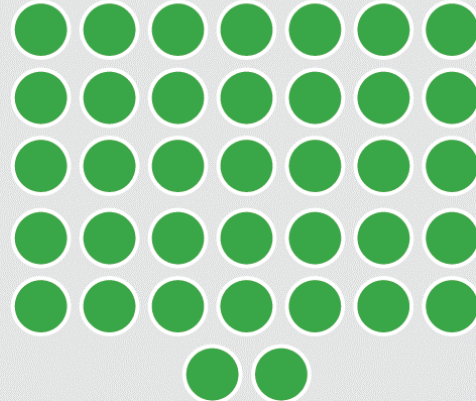
12 audits
and



2 Follow-ups

Continuous audit/ risk analytics

Ran



37 automated
scripts looking at
18,750,145 records

Training/ outreach to audit community



Offered
4 training sessions



Presented at
2 conferences



Published **1** article



Next Steps

- Complete 2022 project plan to examine high-risk areas in the city.
- Continue to cross-train auditors to expand analytics skills.

Audit Committee



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