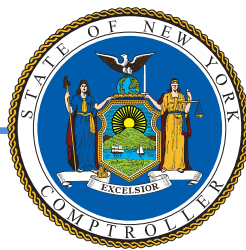

Enterprise Fraud, Waste and Abuse Prevention and Detection:

Annual Report to the
New York State Legislature



OFFICE OF THE NEW YORK STATE COMPTROLLER
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Introduction

The Enterprise Fraud, Waste and Abuse Prevention and Detection Act (Act) of 2015 (State Finance Law Section 8-c) called for the establishment of a statewide electronic system in New York to help detect and prevent fraud, waste, and abuse in government spending and avoid improper payment of public moneys. The Act affirms the State Comptroller's role in protecting the public's money, and requires cooperation by State agencies and State public authorities in this effort.

The techniques and tools utilized to detect fraud, waste and abuse in both public-sector and private-sector organizations are continually evolving. Aided by new technology, executives, managers and staff can have key metrics and other data extracted and delivered to them in a ready-to-review format on a real time basis. Analyses that might previously have taken days or weeks to produce are now available, via technology, more quickly and in more useful formats.

Organizations employing data analytics systems typically follow a multi-stage development process that can take a number of years to fully mature. However, effective techniques may be employed at any of the stages. Initially, use of descriptive statistics such as the average size or value of contracts and payments helps summarize information, and data is then analyzed over time to understand what is 'normal' and what may not be. Following this, analysts can begin to develop models based on the information that help identify or predict issues such as whether fraud or waste may be involved in transactions. Statistics and other analytic tools thereby enhance the auditing process. The system becomes especially useful when it is employed on a continuous basis to more effectively focus audit and other resources to areas of greatest risk.

The Act directs State agencies, State public authorities and other State entities to provide the Comptroller with access to requested data in accordance with applicable State and federal law, to be integrated into the analytic efforts deemed necessary by the Comptroller. The Comptroller may acquire technology to enhance automatic detection and alerting, continuously monitor program transactions and activity to detect fraud and improper payments, including those issued to ineligible individuals.

The Act also recognizes the importance of protecting private information and maintaining secure access. All data received is classified, maintained and stored according to Office of the State Comptroller (OSC) Information Security Office policies and standards. These security protocols are consistent with State and federal cybersecurity standards and are made available to data-sharing entities.

This is the third report submitted to the Legislature pursuant to the Act. Since this initiative began, OSC has integrated multiple analytics into its system and has been increasingly analyzing information from a variety of data sets on a continuous basis. The system isolates indicators of fraud, waste and abuse and presents the results to staff through visualization tools. This report details the progress, status and results of the system being developed.

Progress, Status and Results

The Office of the State Comptroller has made progress in several areas towards identifying and applying data analytics to enhance efforts to identify and prevent fraud, waste and abuse. Examples from the past year follow:

System Development

The development of a dedicated data warehouse and associated analytics within OSC continues. Data sets from the Statewide Financial System, including voucher payments, voucher accounting information, procurement, travel, and fuel credit card data, as well as contract and other data sets, have facilitated OSC efforts to enhance audit activities.

As envisioned by the Act, OSC continues to collaborate with agencies to obtain data and to share analytic approaches and potential indications of fraud, waste and abuse. An important component of this work is the opportunity to improve data quality statewide. To that end, OSC is updating its information and classification program which classifies all data owned, used and stored by OSC based on the level of safeguards needed to protect it. Routine review of these classifications helps OSC ensure that appropriate data controls and protections are in place.

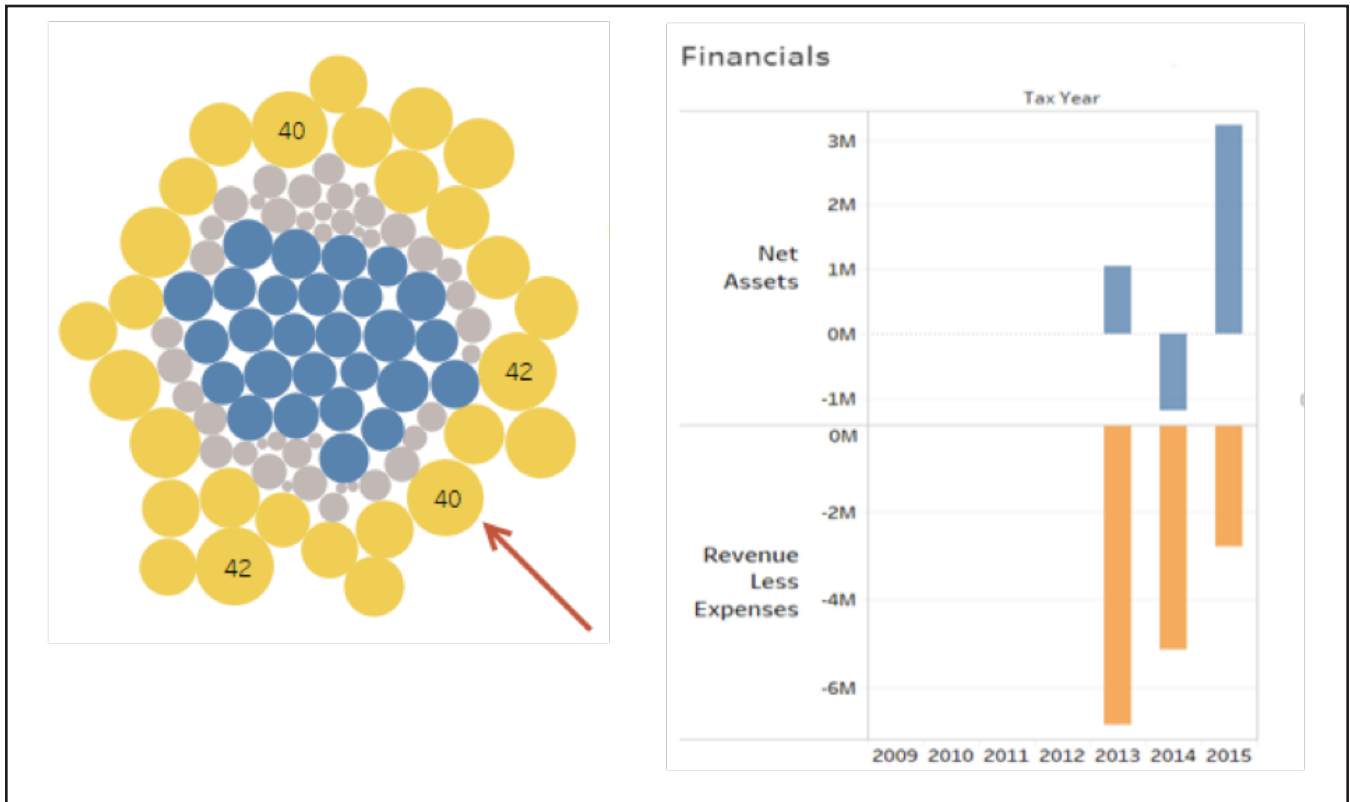
Use of data visualization, business intelligence, statistical analysis and other foundational work is steadily expanding. These tools enable more efficient auditing of larger data sets and enhance productivity of daily audit work. OSC has developed extensive training to support its auditors in the use of these tools. This training seeks to capitalize on our auditors' expertise in fraud, waste and abuse detection while enhancing it with more extensive and intensive use of statistics and data visualization tools.

Contract and Procurement Review

OSC reviews and approves most contracts for State agencies, as well as certain contracts for State public authorities. Increasingly data analytics is helping to improve the efficiency of contract review. For example, vendor responsibility reviews of not-for-profit organizations (NFPs) with State contracts historically required staff to search manually for each of the NFP's IRS 990 tax filings. Using data analytics, staff can instantly view multiple years of financial data in a visualization format. In addition, OSC has created models using information about NFP's that have historically proven to be high-risk to develop predictive indicators that can help identify other vendors with similar risk factors.

Diagram 1 is a visualization that represents all incoming contracts with NFP entities and compares them to identified risks, based on data from IRS 990 tax filings. Entities whose data is identified with traditional, weighted or statistically significant risks are shown as "bubbles" with the size and color of the bubble correlated to the amount of data found to indicate potential risk. The numbers in the yellow bubbles indicate the number of concerns found in the data. Users can easily select a bubble to explore additional data. A sample of additional financial information is shown to the right of the bubbles. In a matter of minutes, auditors can review multiple entities using information at their fingertips, rather than having to inspect various sources of information in both electronic and traditional paper formats.

Diagram 1: Visualization of Risks Related to Contracts Subject to Review



Identifying Contract Savings:

OSC contract review teams have worked with State agencies to identify contract savings based on analyses of vendor submissions.

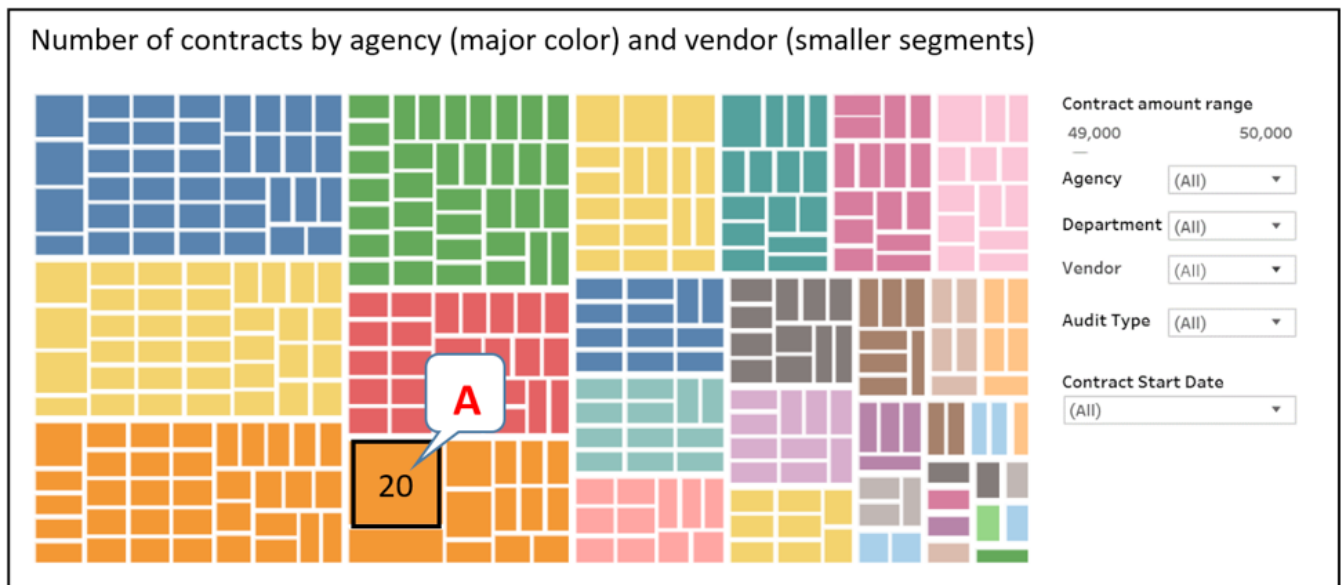
- Analysis of a procurement for bus services covering multiple regions showed that regions with fewer bidders (and therefore less competition) resulted in higher rates than rates for similar services in those same regions in the past. The differences among rates were found to be statistically significant. Further analysis was then performed to determine fair market value for the regions. As a result, the contracting agency used this information to negotiate lower rates with the vendor, resulting in a savings of \$2.9 million over the five-year term of the contract.
- Review of a paving contract showed that the vendor held contracts for similar services with the same facility. Analysis of data for the existing contracts revealed duplicate services at different rates for the new bid. The facility rebid the contract after removing the overlapping services and saved \$3.5 million.
- A proposed contract for security guard services provided rate increases of 5 percent annually for certain wages. Analysis of historic trends for those specific wages showed the proposed rate increases to be excessive. The agency used this information to cap increases at 3 percent.

Saving Time and Money through Better Procurement Practices:

OSC is developing a tool to quickly identify savings opportunities in procurement, including volume discounts from vendors and areas where statewide or joint contracts may be appropriate, as well as potential risk factors such as unfair competition among vendors. The tool will effectively consolidate and accelerate the manual review of spreadsheets containing historical contract data.

OSC increasingly uses data visualization such as the one in Diagram 2 (below), which assigns a color block to each agency, and then uses squares within each block to represent the number of contracts an agency has with a particular vendor. Larger squares indicate multiple contracts with the same vendor. The visualization allows reviewers to quickly identify potential for volume discounts by combining contracts, and to identify situations where required competitive bidding thresholds may have been circumvented. For example, auditors may focus on item A in the diagram below, which would show the agency had 20 contracts with the same vendor, each valued at amounts between \$49,000 and \$50,000. This may identify an opportunity for better pricing by combining the 20 contracts into a single contract with a value of up to \$1 million. The information included in the visualization will be automatically updated in real time, facilitating proactive review of current data.

Diagram 2: Procurement Opportunities



Expenditure Audits

Auditing Daily Payments:

OSC is responsible for meeting constitutional and statutory requirements to audit all State vouchers before payment. The audit teams use data visualizations and expanding analytical techniques to convert large data sets into graphics, from which they can more easily identify single transactions of concern and obtain more information quickly. The goal for all auditors is to focus their time and analysis on potential problems while advancing proper payments efficiently. The new system also enables auditors to track down errors that can be prevented before payment—saving time for OSC, agencies and vendors. For example, OSC auditors:

- Used a data visualization tool to identify more than 600 vouchers totaling \$7.7 million that did not reference an existing contract, which could have resulted in significant overspending for contract work. This tool also enabled OSC to help agencies create 14 new contracts totaling nearly \$50 million, which protects the State from favoritism and abuse in State contracting.
- Quickly reduced a review of 7.6 million personal income tax refunds to a group of approximately 29,000 that represented potential risks for improper payment. As a result, auditors identified 12,335 questionable refunds totaling \$43.9 million, and returned them to the Department of Taxation and Finance (Tax and Finance) for follow-up evaluation and appropriate action.
- Efficiently cross-matched data files to identify \$276,000 in potential recoveries of unemployment insurance overpayments to 162 New York State employees hired during 2017.
- Automated auditing of certain voucher data thereby enabling OSC to stop payments that had erroneously used vendors' invoice numbers as payment amounts for goods and services.
- Implemented enhanced data analytic techniques that enabled auditors to increase by nearly 10 times the number of travel expenses identified with incorrect or missing information. OSC also implemented continuous auditing which enabled auditors to efficiently isolate and stop 243 duplicate payments within a set of 588,697 claimed travel expenses.

Other automated reports are being evaluated to enhance daily auditing and develop predictive models. These models will be improved continuously, based on ongoing audit findings. The goal is to employ more advanced predictive analytics to detect and prevent improper payments.

Securing Analytics at Tax:

OSC also examines various payments processed by Tax and Finance, including personal income tax refunds, corporate tax refunds, STAR credit payments, and property tax relief payments. Due to the confidentiality and sensitivity of the data, OSC performs its work using Tax and Finance's systems and software. No data may be removed, by law, from their network. OSC is working collaboratively with the agency to implement state-of-the-art analytics software at its offices. This will facilitate the rapid analysis of much larger data sets to identify patterns, trends and associations that could indicate fraud, waste and abuse. During 2017, OSC auditors identified nearly \$44 million in such payments.

Preventing More Duplicate Unemployment Insurance Payments:

Using new data analytics techniques, OSC can match active payment requests to historical payments each day, enabling OSC to assist the Department of Labor in identifying and stopping duplicate payments before they are made. The new process has helped OSC identify an increased number of duplicate payments and eliminate false positives previously found through manual processes. In just the first six weeks of 2018, OSC prevented more duplicate payments than were identified throughout the entire 2017 calendar year.

Conclusion

Since the Act became law, OSC has created a foundation for the State's electronic enterprise data analytics system. An in-house data analytics consulting team to support the initiative has been created and there is an ongoing assessment and determination of staff and technology needs and evaluation of new business areas that hold a high potential return on investment to maximize the value of the initiative.

Creating a highly skilled workforce through training and development is one of the best investments New York can make to improve the prevention and detection of fraud, waste and abuse. OSC continues to train staff to learn how to use new tools and techniques to facilitate more efficient and effective auditing.

OSC will continue to work with State agencies and public authorities to identify business processes that could be modified to improve the detection of fraud, waste and abuse and prevent improper payments before they are made. Some of the key elements of this effort will include: working collaboratively with Executive agencies to develop data sharing and data security agreements that will provide for real-time access to information across agencies; creating models and processes that can automate and streamline data analysis; and establishing more sophisticated controls in payment systems to prevent improper payments before they are made. In addition, the Act contemplates a coordinated approach with agencies. OSC recognizes the value that agency partners bring to the table in creating an enterprise-wide anti-fraud culture, and will pursue data-sharing agreements as the program continues.

OSC is advancing its efforts to use data analytics to streamline and improve its auditing and oversight capabilities. Initial results—including development of the analytics data warehouse, investment in more sophisticated tools and methods, and staff training—have achieved efficiencies during daily payment and other audit activities, and in analyzing large amounts of data to better focus audit resources.

By enhancing the detection and prevention of fraud, waste and abuse, data analytics is reducing the cost of delivering services while creating a more level playing field for all the entities who do business with New York State. All New Yorkers stand to benefit from this effort, which is safeguarding public money and making our government more transparent, accountable and efficient.

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