
Enterprise Fraud, Waste and Abuse Prevention and Detection:

Annual Report to the New York State Legislature

State Finance Law Section 8-c



OFFICE OF THE NEW YORK STATE COMPTROLLER
Thomas P. DiNapoli, State Comptroller

SEPTEMBER 1, 2021



Contents

- I. Progress, Status and Results 1**
- Analytics Enable More Thorough and Efficient Audits 2
 - Responding to the COVID-19 Pandemic with Innovations in Audit Planning..... 3
 - Identifying \$175 Million in Improper Unemployment Insurance Claims 3
 - Expanding Tax Audit Tools for Potential Millions in State Savings..... 4
 - Managing Risk through Continuous Monitoring of State Purchases and Expenses 5
 - Identifying Potential Fraud, Waste and Savings Opportunities: Additional Audit Examples..... 6
- Analytics Help Assess the Impact of the COVID-19 Pandemic.....10
 - Identifying Troubling Increases in Identity Theft During the Pandemic.....10
 - Assessing the Impact of the Pandemic and Federal Relief Programs on New York City.....10
 - Bi-Weekly Monitoring and Reporting on the Economic and Fiscal Impacts of the Pandemic .11
 - Quantifying Budget Adjustments Due to COVID-19 at State Public Authorities.....13
 - Understanding the Impact of COVID-19 on Local Governments14
- Poor Data Undermines Accountability.....14
 - Identifying Anomalies in Local Government Financial Reporting14
 - Flagging Faulty Data to Support Accountability14
- II. Optimizing Data Analytics Capabilities 16**
- Transparency and Public Access Engage Stakeholders and Provide Accountability17
 - Ensuring Compliance with Open Data Mandates.....17
 - Highlighting the Use of Overtime by State Agencies.....18
 - Strengthening Impact through Data Visualization18
- Keeping Up with Innovations in Analytics Is Essential.....25
 - Advancing Data Analytics through Virtual Events25
 - Supplementing Formal Staff Development through Communities of Practice25
- Conclusion26

I. Progress, Status and Results

The New York State Legislature amended the State Finance Law in 2015 by adding a new Section 8-c, which provides for the establishment of a statewide electronic system to help detect and prevent fraud, waste and abuse in government spending and to help avoid improper payment of public funds. Section 8-c 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 Office of the State Comptroller (OSC) continues to make progress towards applying data analytics to enhance its efforts to identify and prevent fraud, waste and abuse. By evaluating innovative methods and technologies, and adopting those that prove effective, OSC constantly refines and improves its systems for protecting the public's money.

Over the past year, the COVID-19 pandemic resulted in new government programs, including significant levels of spending, aimed at mitigating the pandemic's economic impact on businesses, individuals, households and State and local governments. Agencies had to implement these programs quickly, underscoring the need to redouble efforts to ensure that funds were used appropriately.

During this COVID-impacted year, OSC continues to advance its efforts to use data analytics in cost-effective ways to streamline and improve its auditing and oversight capabilities. Data analytics remains a key component to effectively managing the risks of improper and wasteful spending.

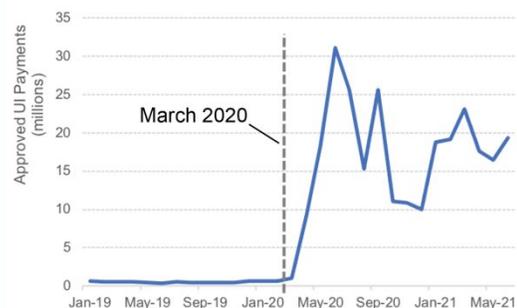
Analytics Enable More Thorough and Efficient Audits

Audits are an essential tool in preventing fraud, waste and abuse in government. Examining financial management practices and operations can uncover internal control weaknesses, wasteful procurement practices and other shortcomings that cost the public money. OSC has increased audit efficiency and expanded the types of inquiries it pursues by making data analytics central to its audit work. The results of this work are substantial. For 2020, OSC's Division of State Government Accountability's data analytic work had a fiscal impact of \$1.6 billion.

Vigilance Powered by Analytics

Data Analytics Are Critical for Scalable Risk Management, Which Enabled OSC to Respond Quickly to Increased Use of Safety Net Programs

The Number of Approved Unemployment Insurance Payments Grew by Tens of Millions per Month as the COVID-19 Pandemic Shut Down Portions of the State's Economy



OSC Data Analytics Fiscal Impact for 2020

\$1.95 billion

Fiscal impact of OSC's Identified Cost Savings. Includes actual cost savings, potential cost savings, non-recoverable overpayments, fraud and class action settlements.

Responding to the COVID-19 Pandemic with Innovations in Audit Planning

The COVID-19 pandemic drove OSC to move forward creatively and identify new ways to tap into and analyze data. Auditors and examiners pursued increased data analysis and used a wider variety of data sources in audit planning and risk assessment, including the Statewide Financial System, First New York data warehouse, New York Benefits Eligibility and Accounting System, CVS Health, National Highway Traffic Safety Administration, and the U.S. Department of Labor's Employment and Training Administration, as well as internal State agency data.

OSC developed a group of in-house data consultants to support audit teams in planning audits and during the audit process by identifying data from multiple sources. Data consultants reinforce OSC's data-driven culture by sharing their knowledge and experience with numerous data sets. Examples of suggested data sets from 21 consultations included data for: property tax parcels, federal grants, COVID tracking, radioactive material uses, census and various other audit areas. Additionally, OSC data consultants responded to 56 other requests to obtain information and data from various sources.

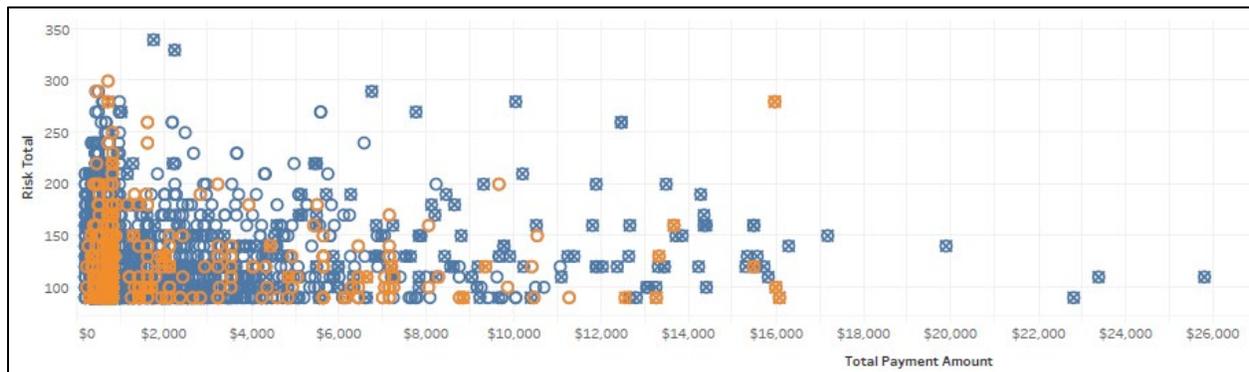
Audit teams also engaged external information technology consultants on 11 occasions to obtain data on information technology security and general and application controls. Other audit impacts include improvements to New York State's Open Data website, improved data reliability and integrity for managing information and programs, and more robust information technology systems.

Identifying \$175 Million in Improper Unemployment Insurance Claims

In response to the COVID-19 pandemic, the federal government expanded the Unemployment Insurance (UI) program, causing a significant increase in the volume and amount of UI payments being processed by the State Department of Labor (DOL) and authorized for payment by OSC. From April 1, 2020 through March 31, 2021, OSC authorized more than 218.2 million UI payments totaling over \$76.3 billion, an increase of nearly 3,140 percent over the amount of payments authorized in the prior fiscal year.

To audit the increased UI payments, OSC developed a new data analytics visualization—a graphic representation of data (see Figure 1). Using known risk factors and the results of past audit work, this visualization assigns risk scores to pending UI payments included in files received from DOL. With data analytics, OSC identified more than 360,000 improper UI benefit payments totaling nearly \$175 million for State fiscal year 2020-21.

FIGURE 1: Pending UI Payments by Amount and Risk Score



The pending UI payments are grouped by claimants and risk score. The points at the top of the chart represent the claimants considered to have the highest risk. An orange O indicates that the claimant is receiving the maximum weekly State Unemployment Insurance benefit amount. An O with an X inside it indicates the transaction was under audit at the time the visualization was accessed.

Expanding Tax Audit Tools for Potential Millions in State Savings

Over the last several years OSC leveraged data analytic tools such as SQL Server and Tableau to improve its capability to carry out tax audits. OSC uses these tools to refine its risk-based approach and identify transactions with the greatest potential for fraud, waste or impropriety.

By effectively using data, OSC returned \$83.6 million in personal income tax refunds to the Department of Taxation and Finance (Tax and Finance) for follow-up evaluation and appropriate action between July 1, 2020 and June 30, 2021. This is an increase of 5.7 percent from the same time period in the prior year.

OSC worked with Tax and Finance and the Office of Information Technology Services to create a new data file of Real Property Tax Credit information built to the OSC tax audit team's specifications. The new file allowed OSC to expand its audit of those credits. As a result, OSC identified 10,142 levy year 2018 credits totaling \$4.1 million where Tax and Finance potentially paid more than one credit to the same individual on multiple properties, or paid credits to multiple individuals on the same property where only one credit was due. OSC provided the results of the analytics to Tax and Finance for follow-up review and appropriate action.

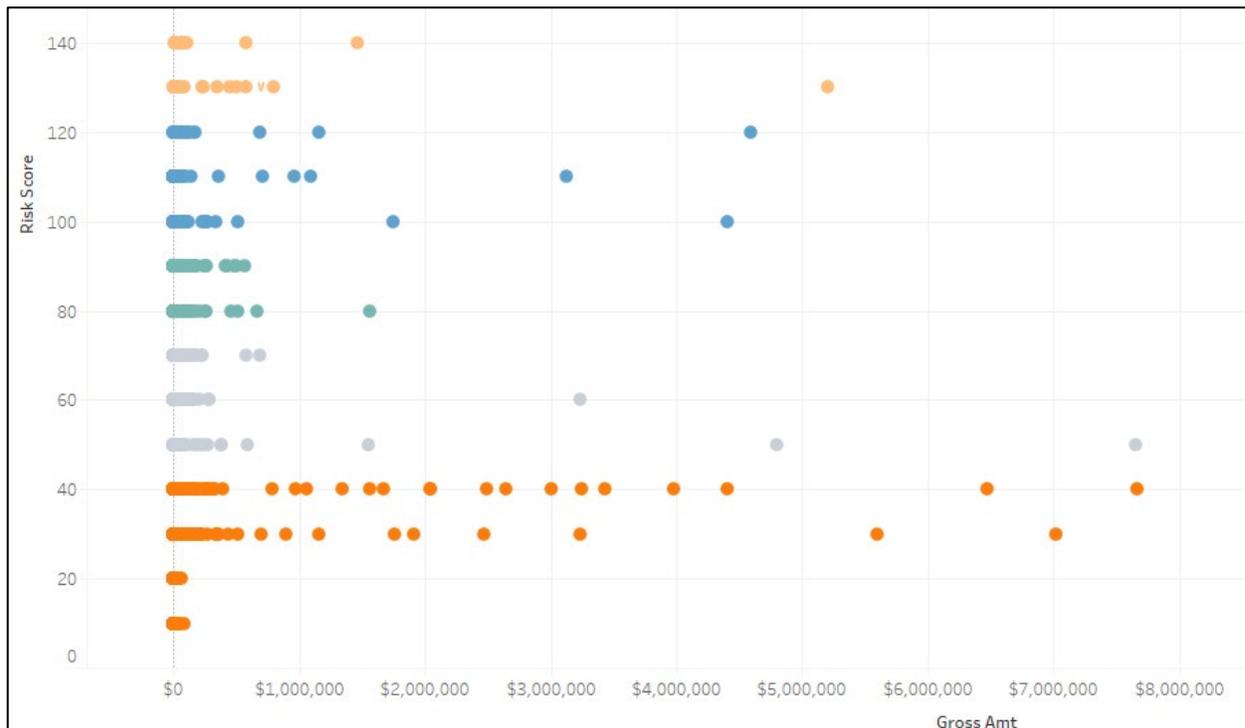
Additionally, OSC auditors developed a new database environment to audit property tax credits, beginning with levy year 2021. The new environment allows OSC to perform more sophisticated data analytics by applying additional methodologies and risk indicators to existing audit procedures. OSC auditors can also use these tools to leverage historical audit data to improve decision making within each specific audit area.

Managing Risk through Continuous Monitoring of State Purchases and Expenses

Over the past three years, OSC has developed multiple tools to conduct a more rapid, systematic analysis of: (i) payment vouchers (see Figure 2), (ii) employee expense payments (see Figure 3), and (iii) employee Procurement Card (P-card) purchases (see Figure 4). Using known risk indicators—such as contracts let without OSC pre-audit oversight, employees not complying with the *OSC Travel Manual* and agencies not following procurement guidelines—these tools create visualizations that help auditors more easily identify transactions with the highest risks for fraud, waste or impropriety.

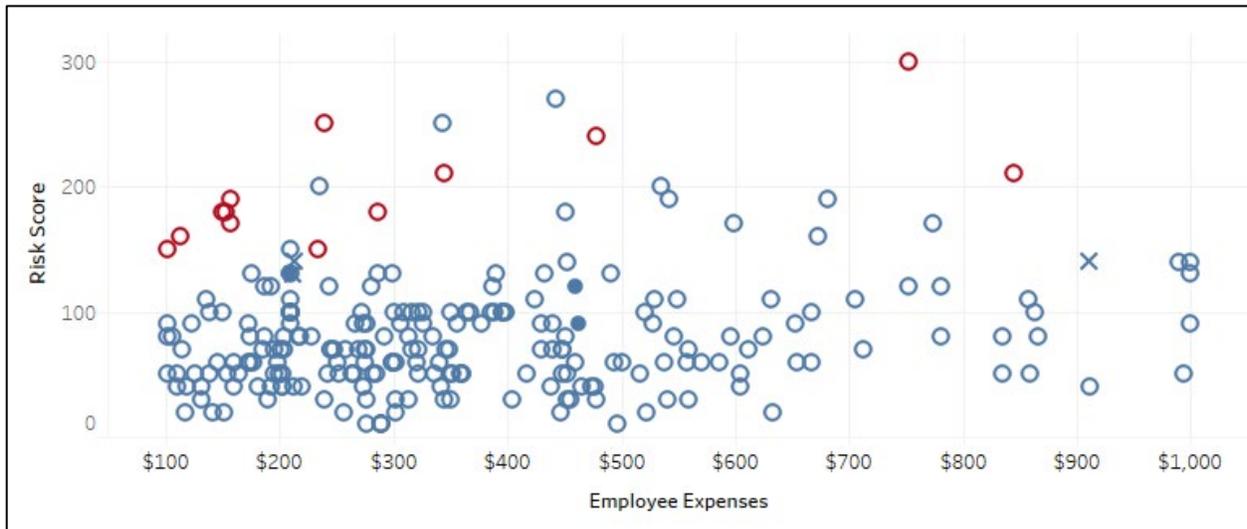
During the period of July 1, 2020 through June 30, 2021, auditors using these tools have identified more than \$4.9 million in audit findings that prevented inappropriate funds from being disbursed or identified compliance issues. These findings include duplicate payments, vendors not complying with contract terms, vendors calculating invoice amounts incorrectly, employees exceeding federal meal and lodging per diem rates and inappropriate P-card purchases. Additionally, OSC recently enhanced these tools to streamline the review of lapsing payments. These enhancements resulted in nearly \$8 million in lapsing-related audit findings in July 2021.

FIGURE 2: Pending Vouchers by Gross Amount and Risk Score



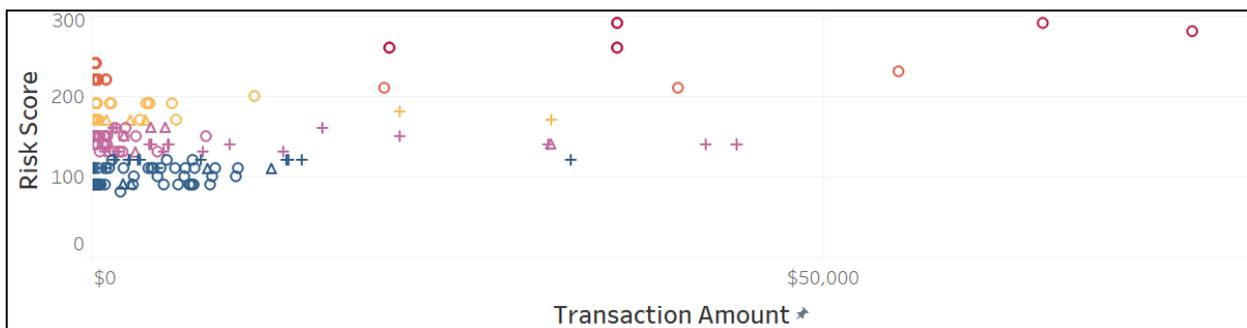
The pending vouchers are grouped by dollar amount and risk score. The points at the top of the chart represent the vouchers considered to have the highest risk.

FIGURE 3: Pending Travel and Expense Reports by Amount and Risk Score



Red indicates a higher risk of overpayment. An X indicates a transaction is currently under audit. A solid point indicates the transaction was previously audited and is being resubmitted.

FIGURE 4: Procurement Card Transactions by Amount and Risk Score



The procurement card transactions are grouped by dollar amount and risk score. The points at the top of the chart represent the procurement card transactions considered to have the highest risk. A plus sign represents a transaction made by a bulkload agency; a triangle represents an unreconciled transaction and a circle represents a reconciled transaction.

Identifying Potential Fraud, Waste and Savings Opportunities: Additional Audit Examples

Medicaid Overpayments: \$765 Million

Data analysis conducted as part of OSC audits revealed over \$765 million in Medicaid cost savings, including \$605 million in unnecessary drug costs to the Medicaid program; \$48 million in improper Medicaid payments made on behalf of recipients with multiple client identification numbers; and \$29 million in improper payments for drugs that were dispensed after their termination date. Other overpayments included millions paid for managed care premiums, and

services for inpatient, hospice, clinic, practitioner, pharmacy, durable medical equipment, dental, psychiatric and newborn birth claims that did not comply with Medicaid policies.

Cost Savings for the New York State Health Insurance Program: \$46.9 Million

OSC leveraged data analysis focusing on eligibility, invoices and rebate programs in three audits at the Department of Civil Service. Using data from internal and external sources such as the New York Benefits Eligibility and Accounting System for dual family coverage, the Empire Plan for ineligible members, and CVS Health for drug rebates, these audits identified \$46.9 million in cost savings.

Improper Payments in Other State Programs: \$1.17 Million

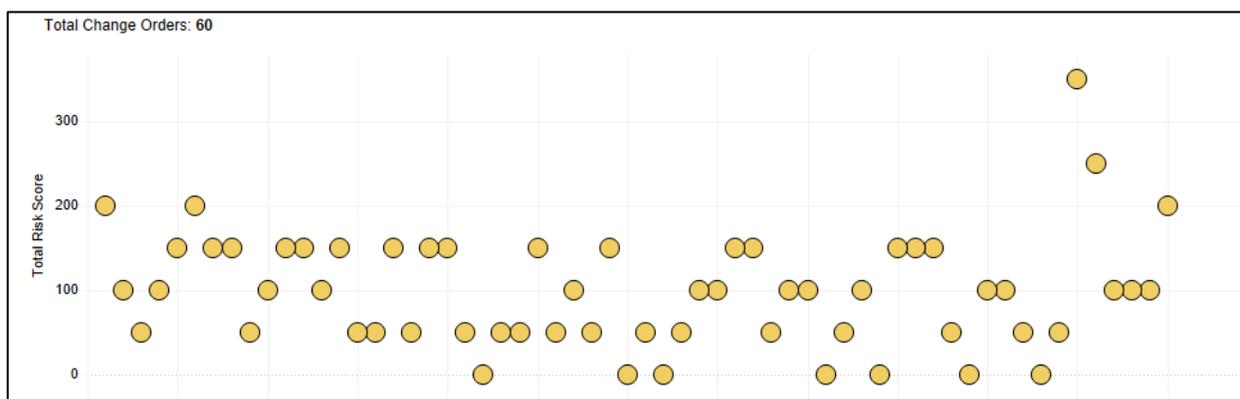
In an audit of the Department of Agriculture and Markets' Farm-to-School Program, using State Financial System data, auditors found that about \$1.17 million (68 percent) in expenses for 17 contracts either lacked sufficient documentation to support that expenses were paid or the expenses were not authorized under the contract.

Potential Waste or Abuse in Contracting

OSC provides oversight of construction change orders to prevent wasteful spending. A construction change order is an amendment to an existing contract, outside the competitive bidding process, that modifies the contractor's scope of work and may increase the cost and/or time to complete the project. The State authorizes thousands of construction change orders annually, many of which are required to be sent to OSC for review and approval. In calendar year 2020, OSC reviewed over 2,900 change orders. Change orders can indicate weak oversight of the project, increasing the potential for fraud, waste or abuse to occur. Additionally, change orders can be an indication that the agency's original project specifications were inaccurate, ambiguous or did not fully consider the site conditions or the desired final project design.

OSC utilizes a data visualization to identify construction projects where significant changes in scope have been authorized relative to the original project (see Figure 5). Considering ten key risk factors based on prior audit experience, the graphic assigns an overall risk score to change orders submitted to OSC for approval. Change orders with a high overall risk score will receive additional scrutiny by OSC. In certain instances, OSC has met with agencies to discuss the expectations for the proper use of change orders. OSC has stressed that agencies should competitively bid new and distinct scopes of work to provide a fair and transparent opportunity for all potential bidders and to ensure that the State is receiving the best possible pricing.

FIGURE 5: Construction Change Order Risk Matrix



The dots represent individual change orders that have been submitted by agencies and require OSC review. The higher the dot is on the y-axis, the greater the assigned overall risk score.

Cost Savings from Deactivating Unused Mobile Devices

OSC analyzed wireless billing and usage data for mobile devices procured by the State to determine if the devices paid for each month were in use. OSC identified nearly 3,800 devices that went unused for seven consecutive months, at a total cost of more than \$514,000. OSC worked with agency and Office of Information Technology Services personnel to identify 2,382 unused devices that were deactivated. By doing so, OSC saved the State an estimated \$47,000 per month.

Maximizing Interest Earned on Funds in State Accounts

When agencies make early payments without an appropriate business reason, the State forgoes the interest that would have been earned had the disbursed funds remained in State bank accounts until the payment due date. OSC analyzed all payments made by State agencies in State fiscal year 2019-20 and identified opportunities to maximize interest earned on funds in State accounts by reducing and/or eliminating unnecessary early payments. Based on the results of that analysis, OSC performed outreach to the six agencies with the highest amounts of estimated lost interest earnings due to early payments. As a result of the outreach, these agencies agreed to change their business rules related to payment dates.

Agencies implementing the new business process reduced the early payment days by 42 percent from July 1, 2020 through June 30, 2021 as compared to the preceding 12-month period. This is particularly important as interest rates increase. If interest rates had remained at the same levels as the preceding 12-month period, OSC estimates the State would have benefitted from more than an \$8 million increase in interest earnings. Furthermore, OSC developed a new, continuous monitoring system that identifies vouchers with payment dates that are not the most advantageous for the State. As a result, OSC provides outreach to agencies to adjust the payment dates when appropriate and increase their awareness of maximizing interest earnings.

Health and Safety Issues

Unused, unwanted and expired pharmaceuticals present a range of potentially harmful environmental and societal consequences. Both controlled and non-controlled substances are inherently dangerous if used inappropriately, and controlled substances are at particularly high risk for diversion, misuse, abuse and addiction. More environmentally sound disposal options, such as approved drug take-back programs, are beginning to take hold at 20 contracted providers at the Office of Addiction Services and Supports. OSC's analysis showed about 70 percent of the drug doses were disposed of through take-back programs. However, analysis by drug type showed a lower rate of take-back disposal for controlled substances (44 percent) than non-controlled substances (78 percent).

Using multiple data sets from the Office for People With Developmental Disabilities (OPWDD), Department of Motor Vehicles, and the National Highway Traffic Safety Administration, auditors found several areas where OPWDD could improve accountability over transportation operations and safety. For instance, OPWDD allowed 11 employees to continue driving clients despite having multiple traffic infractions and/or accidents, including one who had eight traffic violations as well as a driving while intoxicated violation within a six-year period. Similarly, OPWDD's weak monitoring of its vehicles posed safety risks: 219 vehicles in operation had 235 unresolved recall notices, of which 201 (86 percent) had been outstanding for over nine months. Some of the recalls were of a serious nature and increase the risk of an accident and/or injury (e.g., faulty anti-lock brakes and faulty seatbelts).

Program Effectiveness

The State Education Department's Career and Technical Education (CTE) programs prepare students to succeed in future careers by introducing them to workplace competencies and providing hands-on learning in the high school setting. OSC auditors found that CTE programs and respective student enrollments generally do not align with occupations that are most in demand, fastest growing, or highest salaried in the State. By analyzing data from the U.S. Department of Labor's Employment and Training Administration, and the New York State Department of Labor, along with CTE program data, auditors found that enrollment in certain CTE programs exceeded the number of open positions in the job market. For example, approved programs for chefs and head cooks exceeded the occupational demand by 224 percent. Department officials stated they do not view high school CTE program enrollment as a direct means of fulfilling employer needs; they are focused on educational outcomes and the development of a path forward for students, not workforce development. A separate audit of the New York City Department of Education's (NYCDOE) CTE programs found that although the construction industry expected job growth along with relatively high-paying jobs, NYCDOE made no significant changes in the number of related CTE programs offered.

Analytics Help Assess the Impact of the COVID-19 Pandemic

The COVID-19 pandemic has impacted the world's economic health in ways that can be difficult to measure. Monitoring increases in potential fraud and analyzing the means used to perpetrate it can help identify opportunities to improve controls and raise awareness regarding fraud prevention. More generally, monitoring the effects of the COVID-19 pandemic on government programs, finances and economic activity will help State and local officials design policies and programs to help New York State and local governments recover. Leveraging timely data to understand where and how the pandemic has ravaged the economy can help focus attention on where the needs are greatest.

Identifying Troubling Increases in Identity Theft During the Pandemic

Using data compiled from federal and state sources, an OSC [report](#) highlighted a troubling surge in cases of identity theft. More than 67,000 complaints of identity theft were reported to the Federal Trade Commission in New York State in 2020, an increase of 85 percent from the prior year and more than four times the figure of a decade earlier. Through March 2021, more than 3,600 reports of identity theft in New York were related to COVID-19; about two-thirds of these complaints were related to information misused to apply for government benefits such as unemployment insurance or economic relief checks.

OSC estimates that financial losses to New Yorkers from identity theft total approximately \$800 million annually. In addition to financial costs, identity theft can cause disruption to daily life and affect a victim's ability to get a job, rent an apartment or obtain a loan. Unfortunately, while cases have mounted, arrests have not: State and local authorities reported far fewer arrests in State fiscal year 2019-20 than in any year during the previous decade (approximately 500 compared to between 700 and 900 in prior years). OSC's report emphasizes the need for New Yorkers to be vigilant and offers tips for safeguarding personal information and consumer protection resources, including where victims of identity theft may file complaints with federal and State agencies.

Assessing the Impact of the Pandemic and Federal Relief Programs on New York City

The federal government enacted six relief packages in response to the COVID-19 pandemic, offering support to individuals, businesses and state and local governments. One of these bills, the American Rescue Plan (ARP), allocated unrestricted funds to states and localities, and included revenue loss as a criterion for eligibility. New York City has been allocated \$6 billion of local fiscal recovery funds to be utilized through New York City's fiscal year 2024-25. The City has also been allocated an additional \$4.8 billion in elementary and secondary school emergency relief funds, also appropriated in the ARP.

OSC analyzed New York City's revenue loss during the pandemic in its [reviews of the City's financial plans](#), and used this information to assess the City's local recovery allocation. OSC also quantified the economic impact of COVID-19 in tangible terms, providing comparisons

between the pre-pandemic and pandemic periods for the [restaurant, retail, arts, entertainment, and recreation, tourism](#), and [construction](#) industries. OSC utilized data from the U.S. Census Bureau, New York State Department of Labor, IMPLAN and other industry partners to demonstrate the direct and indirect impact of the pandemic on spending and employment in New York City communities. These reports provided transparency and insight to policy makers, industry advocates, and community members.

OSC also analyzed the implementation of two earlier initiatives from the Coronavirus Aid, Relief, and Economic Security Act (CARES Act): the [Coronavirus Relief Fund](#) (CRF) and the [Paycheck Protection Program](#) (PPP). The CRF provided direct funding to state and local governments that was restricted to unbudgeted financial needs associated with the COVID-19 emergency. Resources appropriated to the CRF were allocated based on population, not need, and could not be used to offset revenue loss. OSC used U.S. Treasury data to analyze both the distribution and usage of such funds, and recommended that Congress consider allocating any additional forms of relief going forward based on demonstrated need, and to expand the allowed usage of funds.

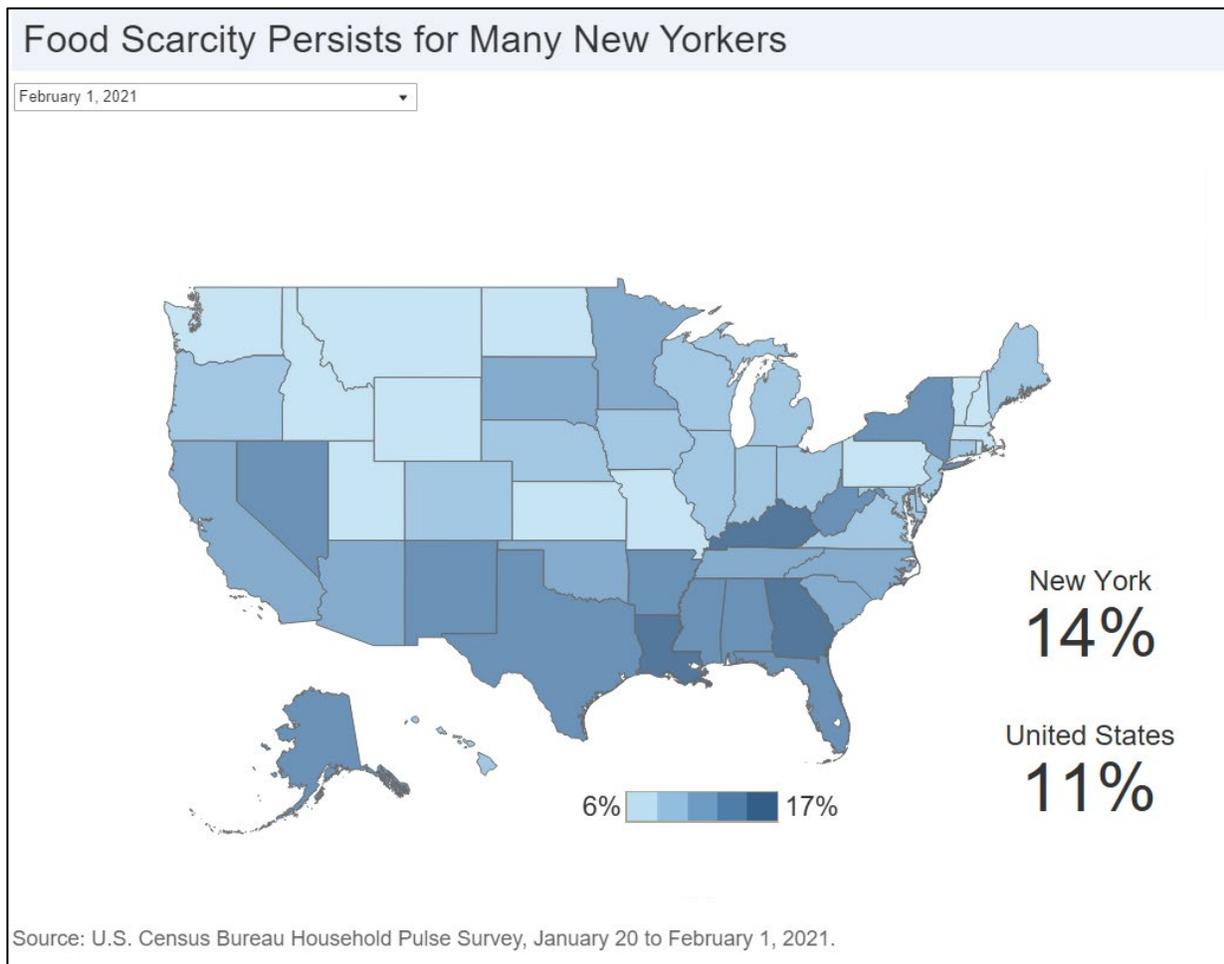
The PPP was designed mainly to help small businesses and sole proprietors meet payroll commitments during the crisis. While many businesses benefited from the program, the initial distribution of funds generated some criticism as various analyses found that many Black-owned and Latino-owned businesses were less likely to receive PPP loans because they have few employees and lack significant existing banking relationships. OSC used data from the U.S. Small Business Administration and the U.S. Census Bureau to assess the distribution of loans in New York City communities in 2020. Based on this review, OSC recommended improving outreach and technical assistance to provide better access to underserved borrowers. Measures reflecting these recommendations were incorporated into the 2021 program round.

Bi-Weekly Monitoring and Reporting on the Economic and Fiscal Impacts of the Pandemic

In July 2020 OSC launched a series of bi-weekly reports called *New York's Economy and Finances in the COVID-19 Era*. Based on the latest data available, the reports featured updates on employment losses and gains, unemployment benefits, administration of relief programs, and other impacts on households, businesses, and State and local government finances.

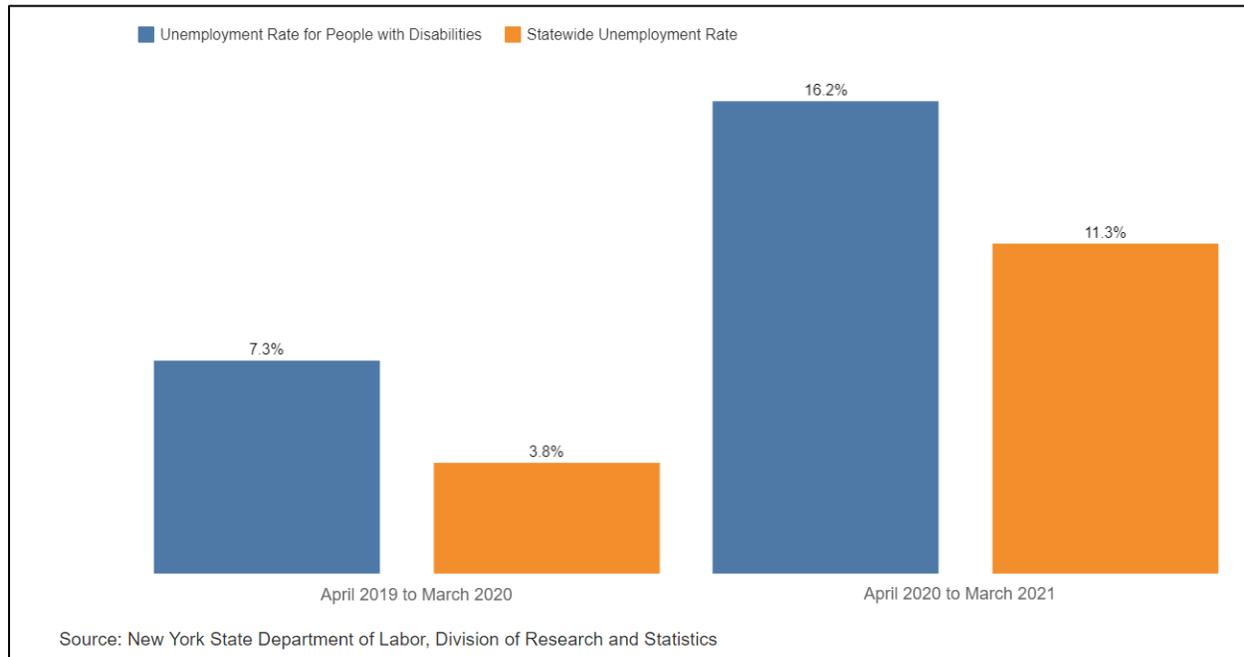
Two examples are described below. Using data from the U.S. Census Bureau, OSC [documented](#) 14 percent of adults in the State were experiencing food insecurity in January and February 2021, a higher rate than the nation (11 percent). More than 1.7 million adults lived in households that reported that they sometimes or often did not have enough to eat in the past week. The pandemic led to an increase in New Yorkers receiving benefits from the Supplemental Nutrition Assistance Program, with 2.7 million receiving benefits in December 2020.

FIGURE 6: Adults Reporting That They Sometimes or Often Did Not Have Enough to Eat



Using data from the Department of Labor, OSC reported on how pre-pandemic improvements in employment rates for people with disabilities had been derailed by the COVID-19 pandemic. Since peak unemployment in April 2020, New York’s unemployment rates slowly but steadily declined; however, for New Yorkers who face unique challenges due to a disability, unemployment rates increased more quickly and remained high, disrupting progress that had been made in employment indicators leading up to the pandemic.

FIGURE 7: New York State Unemployment Rates for People With Disabilities Compared to the Statewide Rate, April 2019 to March 2020 and April 2020 to March 2021



Quantifying Budget Adjustments Due to COVID-19 at State Public Authorities

The ongoing COVID-19 pandemic continues to pose significant financial challenges for many of the State's public authorities. Last year, OSC developed a template to help public authorities comply with Comptroller's regulation, Title 2 of the New York Codes, Rules and Regulations, Section 203.8, which requires State public authorities to inform the Comptroller in writing at any point during the fiscal year when the chief financial officer learns of the potential financial impact of any adverse development that would materially affect the budget or financial plan certified by the authority in the Public Authorities Reporting Information System (PARIS).

Collecting this information through a formal template supplies data in a format that facilitates aggregation and analysis. The pandemic has affected some authorities more than others with many reporting significant declines in certain revenue sources, as well as increases in revenue from supplemental federal aid. This data collection initiative also reminded authorities of their ongoing obligation to report such information, as required by regulation, while providing more timely insight into authority budget issues and thus enhancing oversight. As the State continues to work toward restoring the economy, seeking additional federal funding and laying the groundwork for future preparedness, this information will be important to quantify. This project also prompted an examination of how to better collect this data in the future.

Understanding the Impact of COVID-19 on Local Governments

OSC conducted several case studies of local governments during the fall of 2020 to determine what revenue impacts or expenditure increases they may have experienced as a result of COVID-19. Auditors used updated monthly financial data exports provided by the municipalities to perform these analyses. The results of these case studies point to potential reductions in revenues such as parking charges, fines and forfeitures, and even water charges (where large entities, such as universities and industrial users, may have closed temporarily and/or operated at reduced capacity). Reduced overall spending on recreational facilities, such as swimming pools, offset additional costs for overtime to allow for COVID-safe staffing of essential services.

Poor Data Undermines Accountability

Identifying Anomalies in Local Government Financial Reporting

This past year, OSC compared specific aid payments to local governments to the revenue data these governments report in their Annual Financial Reports (AFR) to OSC. Auditors compared the actual payments made to the revenue reported for those programs and took steps to correct the data and inform local governments on proper reporting.

Flagging Faulty Data to Support Accountability

Effective decision making, as part of fiscal and program management, depends on complete, accurate and timely data. Faulty data can cause management to conclude that no errors exist, or that services are being delivered to customers when they are not. Audits require an assessment of data reliability to ensure data accuracy, which will prevent misleading conclusions and poor decisions. OSC audits routinely identified data reliability issues.

For example:

- The New York City Department of Education (NYCDOE) did not adequately monitor its compliance with the required time frame for arranging services or programs for special education students. Lacking such data, the NYCDOE had no assurance that children were receiving needed services in a timely manner.
- Sewage pollution data reported to the Department of Environmental Conservation was inaccurate and/or incomplete, and the public was misinformed about the occurrence of wastewater overflow events in the State.
- The New York City Department of Housing Preservation and Development failed to respond to hundreds—possibly thousands—of heat and hot water complaints that were inaccurately recorded as duplicate complaints.

-
- The New York City Department of Transportation's database of revocable consents (allowing individuals or organizations to maintain certain structures on, over or under New York City streets and sidewalks) was missing consents for 41 structures, accounting for an estimated \$1 million in uncollected revenue.
 - According to State Education Department records for its Career and Technical Education programs, 32,463 students graduated with a technical education endorsement in school years 2015-16 through 2018-19. However, for 40 percent of those students the data did not support whether they passed the required technical assessment needed to receive the endorsement.

II. Optimizing Data Analytics Capabilities

In addition to work on fraud, waste and abuse, OSC has worked to optimize data analytics efforts to improve other aspects of the agency's work to the benefit of a broad range of stakeholders. Innovations in data analytics help OSC transform data into actionable insights. Automated reporting can help pinpoint process pain points, enabling agencies to identify and address issues; while increased data quality leads to more precise assessments of outcomes and better decisions regarding program design and implementation. Data and data analytics are also essential for making government more transparent so that the public can participate effectively in governmental decision making. Sharing procurement data on OSC's website helps ensure fair access to contract opportunities for entities doing business with New York State. Wide dissemination of local government, public authority and school district financial data and analysis in formats accessible to a general audience supports civic engagement by helping everyday citizens monitor State and local government finances and hold officials accountable for managing government finances responsibly. This year, understanding government finances and economic conditions is even more important, as the COVID-19 pandemic continues to disrupt the status quo in ways that are difficult to anticipate. Timely data collection and analysis will be keys to effective governmental responses to the pandemic's impact on public health, social services and the economy. Analytics is an increasingly indispensable tool for focusing attention toward areas of importance to spur discussion and, ultimately, guide policy makers to develop solutions.

Transparency and Public Access Engage Stakeholders and Provide Accountability

Ensuring Compliance with Open Data Mandates

State government entities possess large amounts of information on subjects such as health, business, public safety, parks and recreation, labor and transportation. Some data must remain confidential to ensure public safety, protect personal information or comply with license agreements or other restrictions on data use. However, much data can and should be shared with the public. Executive Order 95 (EO 95) established an Open Data website (data.ny.gov) for the collection and public dissemination of publishable State data maintained by covered State entities. Open Data creates transparency across all levels of government and gives the public user-friendly access to vast quantities of State information. Making data publicly available can reduce costs, improve government efficiency and inspire collaboration with the private sector. Furthermore, Open Data encourages researchers and watchdog groups to make suggestions for improving government and the quality of life in New York. These goals are most easily achieved when covered State entities make publishable State data available in a timely manner.

OSC completed the last three of its five audits on State agency compliance with Open Data requirements. Audits at the Office of Parks, Recreation and Historic Preservation, Department of Environmental Conservation, and Olympic Regional Development Authority are now complete, in addition to previously completed audits at the Office of General Services and Department of State. Auditors provided recommendations for improvement.

Highlighting the Use of Overtime by State Agencies

State agencies use overtime to manage their workload, including responding to unanticipated events. In 2020, the COVID-19 pandemic required an unprecedented statewide response by numerous State agencies. Using State payroll data, the OSC report, [New York State Agency Use of Overtime – 2020](#), determined that total overtime hours worked increased by 3.9 percent and total overtime earnings increased by 5.5 percent in 2020 compared to 2019.

The report also detailed changes in overtime usage by individual agencies, highlighting significant year-over-year growth in certain agencies that were heavily impacted by the pandemic response. For example, overtime pay increased at the Department of Labor by 17,269 percent, at the Department of Health by 365 percent and at the Department of Taxation and Finance by 255 percent.

While overtime usage is an appropriate response to unexpected workload events, continuing or growing reliance on overtime can be cost ineffective. To demonstrate long-term trends, the OSC analysis detailed total annual overtime hours worked and annual workforce counts for State agencies from 2011 to 2020. In this period, the total agency workforce declined by 16,804 employees or 6.3 percent; however, overtime hours worked in 2020 were 39.8 percent higher than in 2011. Overtime hours worked increased in eight years and declined in only one year in this period.

Presenting this data allows affected stakeholders such as the Executive Branch, State Legislature and public employee bargaining units to make informed decisions as they consider the most cost-effective way to deliver public services.

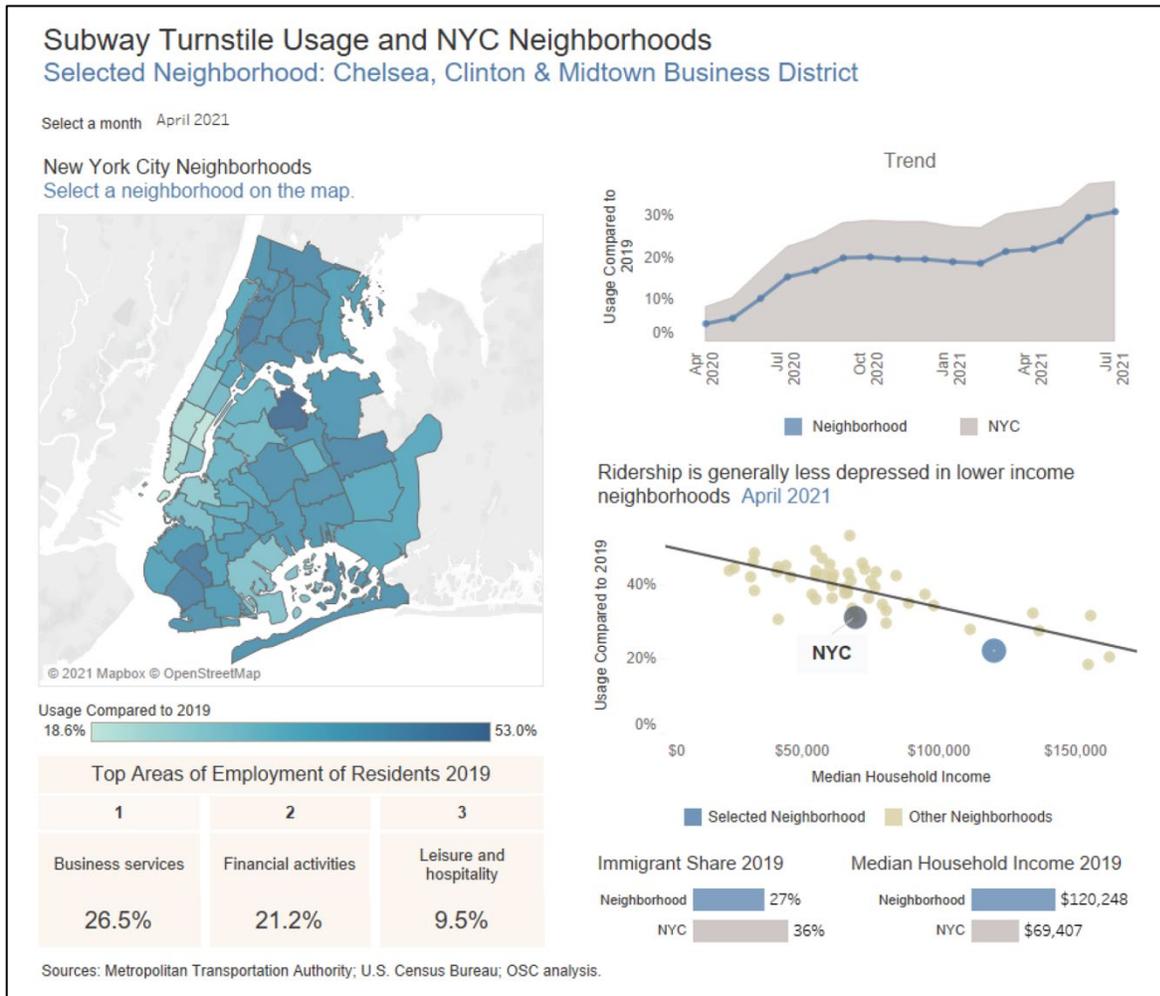
Strengthening Impact through Data Visualization

When communicating findings based on data analysis, presenting results visually can help the audience quickly grasp key results and their implications for operations, financial stewardship and public policy.

Impact of the COVID-19 Pandemic on Subway Ridership in New York City

The COVID-19 pandemic has had a profound impact on subway ridership. Citywide, April 2020 ridership was just 8.3 percent of what it was in April 2019, and the recovery has so far been both uneven and incomplete. To help the public visualize this, OSC utilized Metropolitan Transit Authority (MTA) turnstile data and U.S. Census Bureau data to create [an interactive map and dashboard](#) comparing subway ridership, immigrant share, residents' industry of employment, and median household income by neighborhood. The dashboard, which will continue to be updated monthly until ridership nears pre-pandemic levels, allows users to display data for any neighborhood and month going back to April 2020. Ridership numbers are compared to the same month in 2019.

FIGURE 8: Subway Ridership in the Wake of the Pandemic



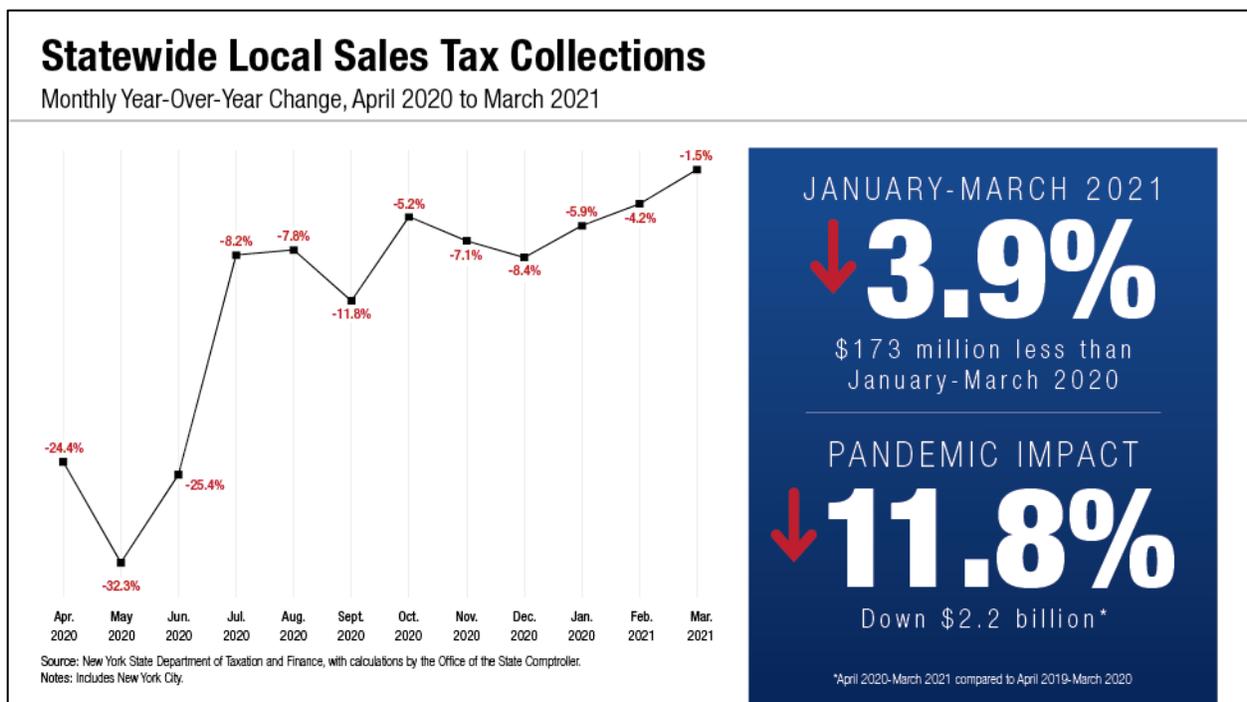
The data shows that ridership as a percentage of pre-COVID levels has remained much higher in lower-income neighborhoods than in wealthy ones throughout both the pandemic and the recovery. To facilitate deeper analysis, the dashboard also provides station-level detail, displaying selected highly trafficked stations, as well as the 10 least and 10 most impacted stations each month. A link to the underlying data is included, based on multiple requests for additional transparency from the public. This provides riders, the MTA, elected officials and other stakeholders with valuable information for advocacy and policy decisions as they navigate the recovery. The chair of the Pandemic Response Accountability Committee, Inspector General, U.S. Department of Justice, mentioned the dashboard in his testimony before the U.S. House of Representatives Committee on Transportation and Infrastructure hearing on

“Assessing the Federal Government’s COVID-19 Relief and Response Efforts and its Impact.” Specifically, he stated that the data “highlight[s] the need for proper management of funds, as well as provide[s] key insights and information about the impact of the pandemic on the ground.”¹

Sales Tax Tracking

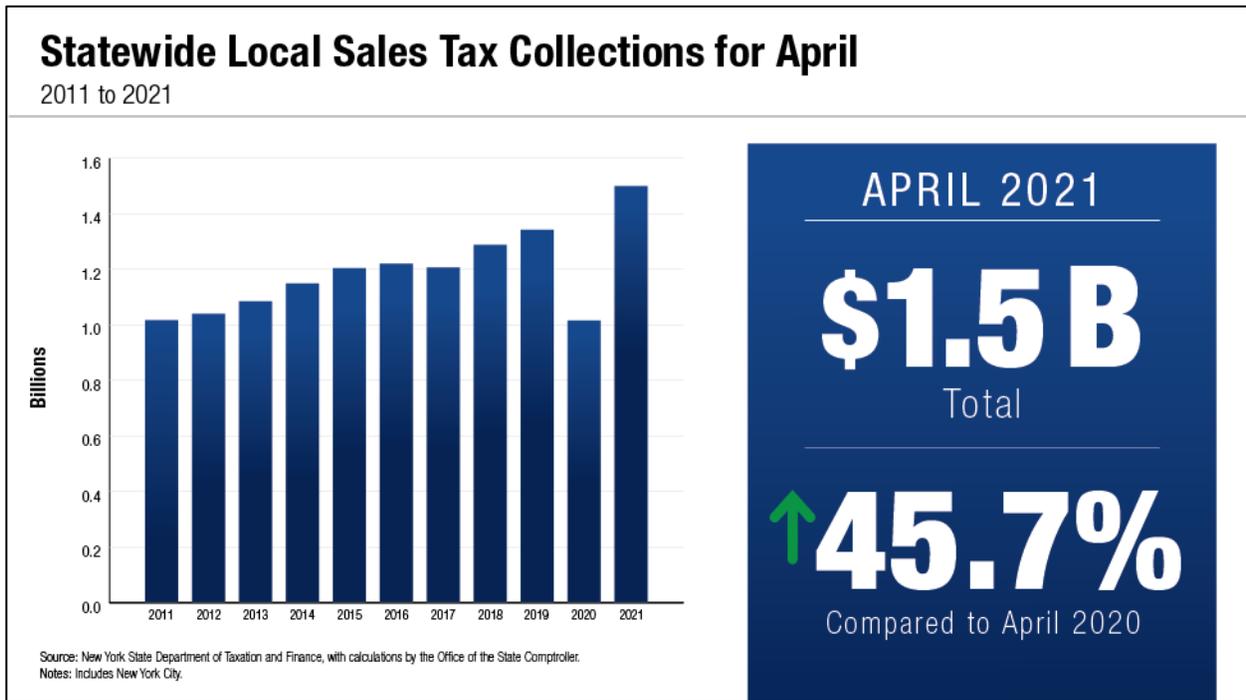
OSC has been using monthly sales tax collections data issued by the Department of Taxation and Finance to track and report on trends in this major source of local government revenue in near real time. Quarterly reports and monthly press releases have featured graphics (see Figures 9 and 10) that give a sense of the magnitude of the initial drop and the current recovery.

FIGURE 9: Pandemic Impact on Sales Tax Collections



¹ Statement of Michael E. Horowitz Chair, Pandemic Response Accountability Committee, Inspector General, U.S. Department of Justice before the U.S. House of Representatives Committee on Transportation and Infrastructure concerning “Assessing the Federal Government’s COVID-19 Relief and Response Efforts and its Impact,” 117th Cong. (2021-22), July 29, 2021.

FIGURE 10: Sales Tax Collections Rebound in 2021

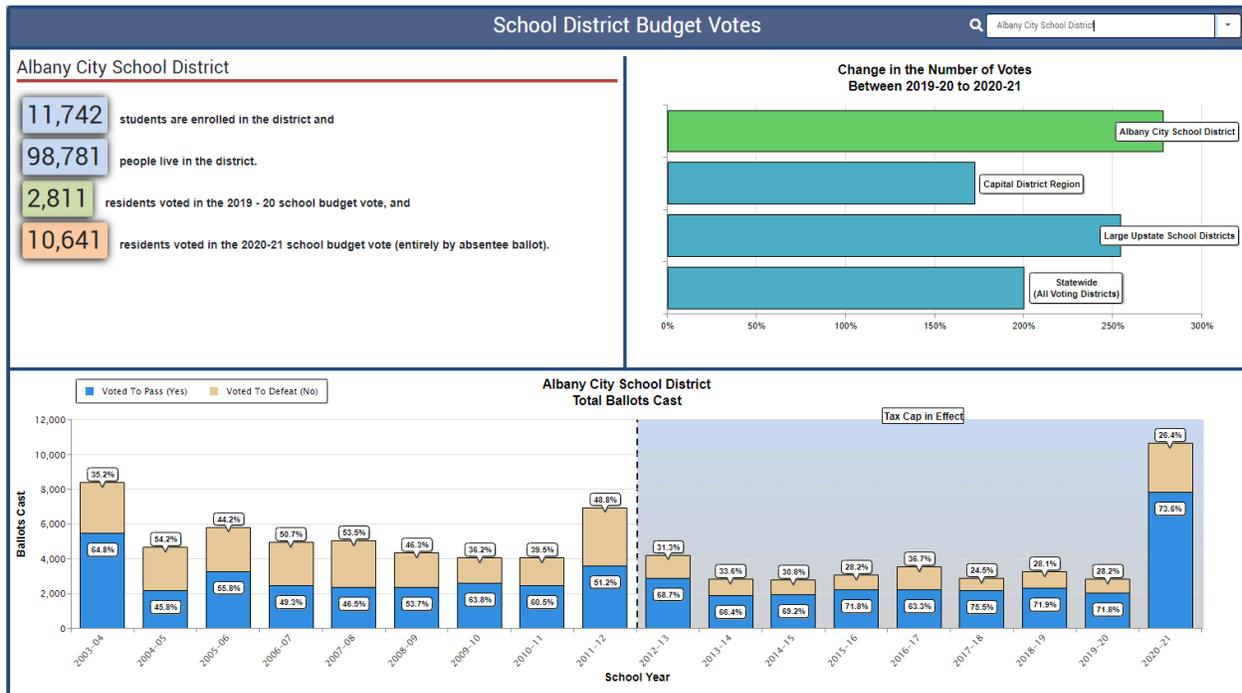


School Budget Votes

The impact of the COVID-19 pandemic on school district operations was substantial, driving unprecedented changes to many core functions and processes, including the annual school budget vote. In response to the pandemic, school districts in New York State were required to provide all residents with an absentee ballot. Subsequently, the number of votes cast per budget increased significantly in almost all districts statewide, more than doubling in the majority of them.

OSC used school budget vote data from the State Education Department to create an interactive tool allowing users to select a specific school district to see a tailored visualization of the budget vote data, including population statistics, a regional comparison of the percentage change in the number of votes cast in 2020 and a longitudinal analysis of the number of votes cast annually since 2003.

FIGURE 11: School Budget Vote Interactive Visualization



GIS/Mapping

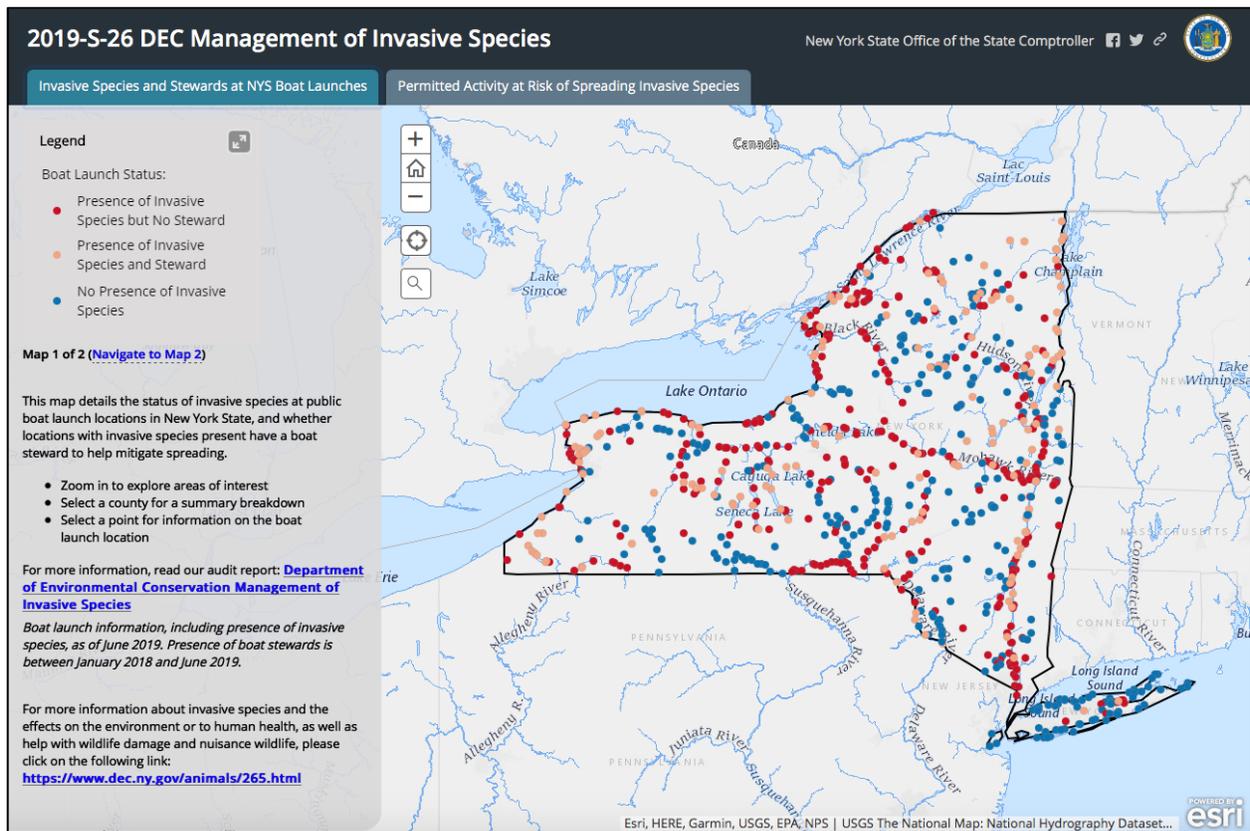
OSC has strengthened its use of Geographic Information Systems (GIS) data visualizations so that readers can quickly and easily interpret patterns, scenarios or dilemmas. Two recent examples involve preventing the spread of invasive species and assessing access to Career and Technical Education programs.

Many species of plants and animals currently found in the State are not indigenous and may cause habitat degradation, loss of native species, risks to public safety, human illness, or damage to crops and livestock, and are thus deemed “invasive.” Invasive species aggressively outcompete native species, adversely affecting the ecological integrity of the State’s natural communities and systems. As part of an audit of the Department of Environmental Conservation’s management of invasive species, OSC used data from several Department of Environmental Conservation internal systems to document the absence of boat stewards (who help prevent the spread of invasive species) at 643 of 837 launch sites from January 2018 to June 2019.

To illustrate various aspects of the risk of invasive species spread at boat launch locations, two interactive GIS maps were developed by overlaying several data sources. The first interactive map illustrates the presence of invasive species and boat stewards at boat launches across the State, while the second interactive map provides granular information about individual boat launch sites. Figure 12 shows a static version of the boat launch map. Below is a link to view both interactive maps:

<https://nysosc.maps.arcgis.com/apps/MapSeries/index.html?appid=346f5190d30a4d0291e08d740513bc80&entry=2>

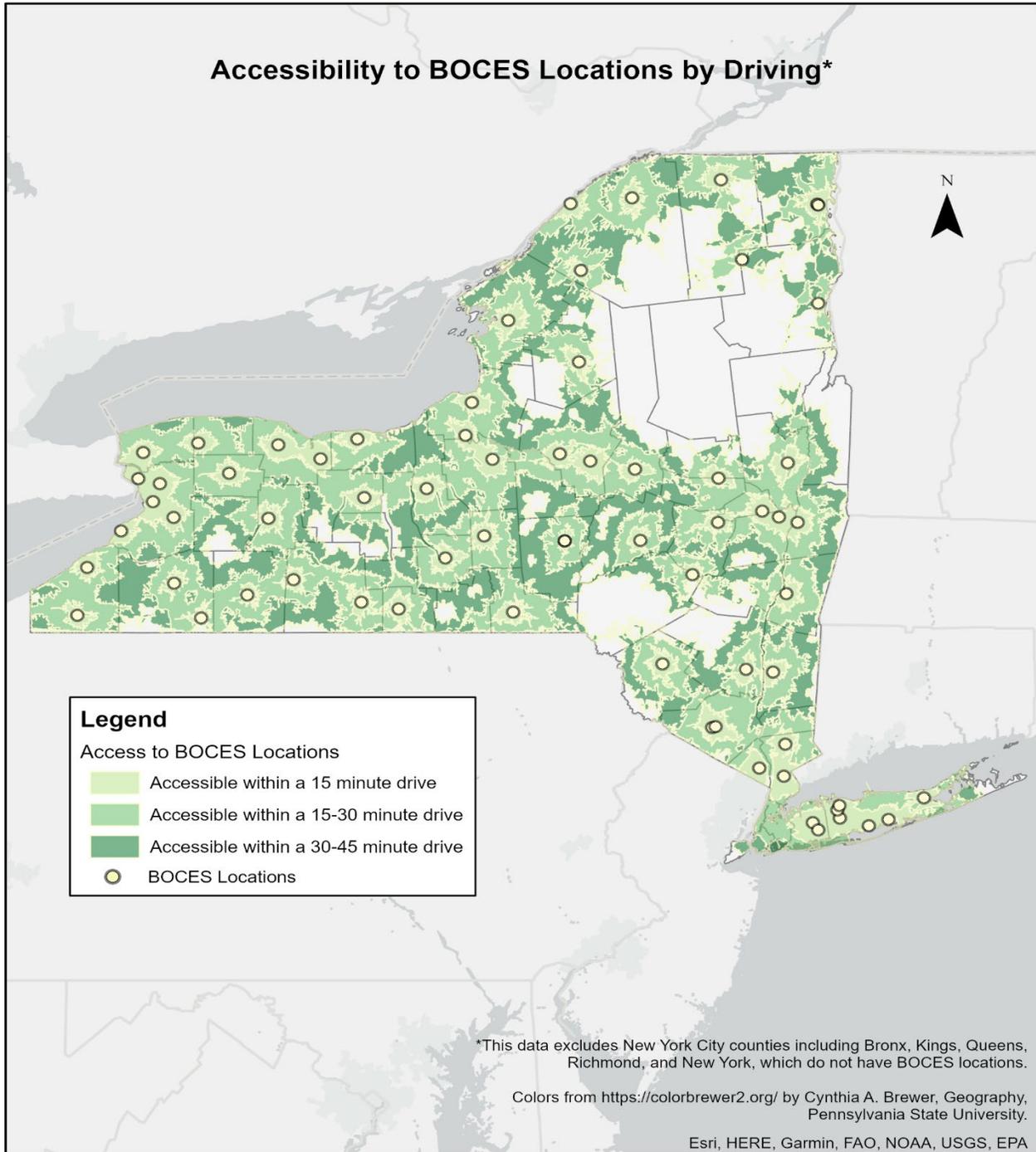
FIGURE 12: Invasive Species and Boat Stewards at Boat Launch Locations



Portions of the maps contained in this report include the intellectual property of Esri and its licensors and are used under license. Copyright © 1987-2020 Esri and its licensors. All rights reserved.

In the audit of the State Education Department’s Career and Technical Education programs, a GIS map was used to show the locations of program providers to demonstrate the potential challenges posed to students regarding program access (see Figure 13).

FIGURE 13: Driving Distance to Locations Offering Career and Technical Education Programs



Portions of the maps contained in this report include the intellectual property of Esri and its licensors and are used under license. Copyright © 1987-2020 Esri and its licensors. All rights reserved.

Charts and Graphs in Audit Reports

In audits conducted by OSC's Division of Local Government and School Accountability, there has been a shift from presenting numerical data in tabular form to using charts to share that same information. Charts allow readers of OSC's audit reports to understand the data quickly and easily.

Keeping Up with Innovations in Analytics Is Essential

Like other State agencies, OSC supports staff professional development by offering employees a wide variety of formal training options. These include training from the Governor's Office of Employee Relations, online training through LinkedIn Learning, training offered through professional associations and training developed in-house to meet agency-specific needs. However, given the speed with which technology is evolving and the corresponding increase in opportunities available to potential fraudsters, OSC supplements these "standard" training offerings with opportunities designed to foster knowledge sharing across both external and internal agency boundaries.

Advancing Data Analytics through Virtual Events

To continue making advances during the COVID pandemic, OSC leveraged its pre-existing analytical capabilities. OSC took the lead in encouraging a preventive mindset by sponsoring and hosting a series of virtual events on data analytics, oversight and transparency to engage accountability professionals. Expert speakers included the Chief Data Scientist at the U.S. Government Accountability Office (GAO), and subject matter experts from USA Facts, Pew Charitable Trusts, the U.S. Pandemic Response Accountability Committee, and the Center for Responsible Artificial Intelligence. OSC's virtual seminars averaged more than 400 attendees from more than 30 national and international public sector organizations as well as internal audit directors from various New York State and New York City agencies. In addition, OSC is a contributing member of the GAO's artificial intelligence oversight framework.

Supplementing Formal Staff Development through Communities of Practice

OSC also supports staff professional development by sponsoring communities of practice to promote knowledge sharing among employees. Two of these, the Data Analyst Community of Practice and the OSC Tableau Users Group, focus on increasing knowledge of analytics methods and tools through presentations and other events that encourage knowledge transfer across organizational boundaries.

Conclusion

The implementation of Section 8-c of the State Finance Law has led OSC to embark upon a reinvigoration of its use of data analytics to fight fraud, waste and abuse. The COVID-19 pandemic has spurred further enhancements to these efforts as the rapid deployment of pandemic response programs has magnified the need for vigilance and fraud detection and prevention. OSC has responded in a multi-pronged fashion by:

- increasing the number of data sources used in audits;
- matching data from multiple sources to identify suspicious transactions;
- automating reporting to speed up analysis;
- using analytics to augment audit functions;
- analyzing the economic impact of the pandemic on New York State and local governments; and
- continuing to build staff capacity to master the evolving tools and techniques needed to extract timely, actionable findings from the vast amounts of data flowing through governmental information systems.

OSC continues to advance its efforts to use data analytics in cost effective ways to enhance the detection and prevention of fraud, waste and abuse in State spending. The benefits of enhancing data analytics capabilities are numerous and potentially include a reduction in the cost of delivering services, a more level playing field for entities doing business with New York State, and a more transparent government. All New Yorkers stand to benefit from these efforts to safeguard public money and make government more accountable and efficient.

Contact

Office of the New York State Comptroller
110 State Street, 15th Floor
Albany, New York 12236
(518) 474-4044
www.osc.state.ny.us

Prepared by the Division of the Chief Information Officer

Contributors to the Report

Division of the Chief Information Officer, Bureau of Data Analytics
Division of Local Government and School Accountability
Division of State Government Accountability
Office of Budget and Policy Analysis
Office of Operations, Bureau of Contracts
Office of Operations, Bureau of State Expenditures
Office of the State Deputy Comptroller for the City of New York



Like us on **Facebook** at facebook.com/nyscomptroller
Follow us on **Twitter** @nyscomptroller
Follow us on **Instagram** @nys.comptroller