

NAKING A DIFERENCE WITH DATA

Why analytics are a powerful tool for the public good

INTRODUCTION

overnment agencies have always collected data to support specific programs and purposes. But it's increasingly clear that this information, when shared more broadly and analyzed, can be a powerful tool to support better decision-making and resource allocation in the public sector.

Research indicates that organizations have a huge opportunity to extract more value from the data they already possess. Public sector data analysts report that they spend 47 percent of their time collecting and organizing data but less than one-third of their time actually gleaning actionable insights from it.¹ Even the private sector has a hard time harnessing its data — a Forrester study found that technology executives believe only 12 percent of the data they have available is actually analyzed.²

That's problematic because the benefits that can be gained from analyzing data are pretty impressive and they're not just about increasing efficiencies or decreasing costs. Analyzing data and applying analytics gives governments the opportunity to make a difference in people's lives, which is the reason many government employees entered public service in the first place.

Cutting-edge analytics puts data to work to improve outcomes — not by replacing government officials as the decision-maker, but by providing officials better tools with which to make decisions. Consider how Chicago is using analytics to prioritize restaurant inspections — starting with the most likely offenders — to ensure patrons don't contract a food-borne illness. Tools like these help governments maximize the impact and effectiveness of their resources, which improves program performance without increasing cost.



LESS THAN OF PUBLIC SECTOR ANALYSTS' TIME IS SPENT ANALYZING DATA

ONLY OF AVAILABLE DATA IN THE PRIVATE SECTOR IS ANALYZED

READ ON TO LEARN HOW IOWA, NORTH CAROLINA, CALIFORNIA AND MASSACHUSETTS are using analytics to make a difference and some of the most important do's and don'ts for analytics initiatives.

ENSURING ACCURATE PAYMENTS IN IOWA

Iowa's Department of Revenue (DOR) collects more than \$8.5 billion annually, and that's net of the \$1 billion it sends in refunds.³ For state revenue departments, the most immediate policy goals are to ensure taxpayers are paying what they owe to fund state priorities and to avoid improper or fraudulent refunds.

In 2015, the Iowa DOR began using data analytics in an analytics-as-a-service model. Before launching the partnership with its third-party provider, the DOR took steps to protect taxpayer confidentiality and received IRS approval to share federal taxpayer information for this purpose.

The analytics-as-a-service model works like this: Each day, the DOR pulls data from tax returns and other sources to compile a file, which is shared with the third party for analysis. The same day, the third party provides a compliance risk score, estimated case value and a recommended action for each case. This analytics-as-a-service process saves DOR countless hours in identifying patterns and inconsistencies, which would otherwise need to be executed manually.

The analytics service helps ensure taxpayers pay their fair share without delaying tax refunds, says DOR Director Courtney Kay-Decker. "The system allows us to do a better job of not bothering the 98 percent of Iowa taxpayers who comply and focus our resources more efficiently on the 2 percent who don't."

The department also uses this process to detect fraud and non-compliance in its rent reimbursement program for the elderly. As with tax data, the DOR pulls data from applications for the program; the data is run through the third-party system and returned with recommendations to further investigate applications with anomalies.

Mitigating fraud and non-compliance surrounding the state's rent reimbursement program has lasting impacts that go beyond improving operational efficiencies. One huge benefit is improving living standards, health and overall quality of life for the area's aging residents by ensuring they have access to clean, safe housing.

The DOR's sophisticated fraud detection systems haven't slowed the processing of transactions, which means tax returns and housing assistance are still timely. Some government officials assume they have to compromise speed for accuracy. Iowa's DOR demonstrates it is largely a false trade-off. "Adding the analytics process didn't materially

change the amount of time it takes us to process returns," says Kay-Decker.

The system also maximizes the effectiveness of state auditors. "There will always be issues that need to be analyzed by a person," says Kay-Decker. "This allows the low-hanging fruit to be handled by the system and leaves the complex issues that require judgment for our employees."

While collecting all that's owed and mitigating wrongly distributed refunds is the DOR's preeminent goal during tax season, advanced analytics also helps agencies better distinguish fraud, which requires intent, from inadvertent non-compliance. While there is no foolproof way to immediately differentiate between the two in every case, DOR is becoming far more sophisticated at determining which characteristics are more likely to be indicative of one or the other.

Once the bulk of taxes have been collected, the distinction between fraud and honest mistakes becomes important because each requires a different agency response. Those who attempt to defraud the state are investigated and prosecuted, and those who made an error during the filing process receive additional education.

Analytics also helps highlight common non-compliance areas and the DOR uses this information to target taxpayer education initiatives. For example, when the data showed that many qualifying taxpayers didn't understand how to submit the application for a solar energy state tax credit, the DOR developed educational materials about how to apply for the credit, then sought and received feedback from the solar energy industry to improve what was ultimately distributed.

"We try to put ourselves in the shoes of someone who knows nothing about state tax law and then figure out how to make it easy for that person to comply," says Kay-Decker. If a particular provision of state tax law is problematic or confusing for taxpayers, the DOR alerts state legislators and works with them to correct the problem.

Even audits can be used as an opportunity to educate. If fraud isn't suspected, auditors approach the process with the goal of helping the taxpayer understand his or her mistake so it isn't repeated. "We assume taxpayers have good intentions until they give us a reason to believe otherwise," Kay-Decker says. "It's no accident that we have one group that works fraud and a different one to address non-compliance."

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SUPPORTING INJURED EMPLOYEES IN NORTH CAROLINA

Workers' compensation is a \$1.5 billion market in North Carolina, and that doesn't include larger employers who have the wherewithal to self-insure.⁴ Most businesses with three or more employees are required to carry workers' compensation insurance.

Since North Carolina has no workers' compensation fund, employees of non-compliant companies who are injured on the job can find themselves with no insurance to fall back on and no way to pay mounting medical bills. In these cases, the state's Industrial Commission (NCIC) provides an administrative forum in which the employee may pursue action against an employer. It's not unusual for the injured employee to ultimately require public assistance. Though he or she could potentially sue the employer, the process is long and uncertain, and employers without insurance are often small businesses that may be unable to pay court judgments. In addition to providing the administrative forum, the NCIC's Compliance and Fraud Investigative Unit works to bring the uninsured employer into compliance with the insurance mandate.

Besides protecting employees injured on the job, enforcing the workers' compensation mandate helps ensure a level playing field. Insurance isn't cheap, and businesses that comply with the coverage requirement shouldn't be at a competitive disadvantage from those businesses that do not.

To address these concerns, North Carolina launched the Noncompliant Employer Targeting System (NETS) in early 2014. The system uses data analytics to help the state enforce the insurance mandate. Among other things, NETS compares data on how many employees a company has — which businesses must file with the North Carolina Division of Employment Security (DES) — against data compiled by the North Carolina Rate Bureau, where companies report if they have workers' compensation insurance. If a company reports having three or more employees to the DES, but doesn't appear on the Rate Bureau list, NETS generates an alert identifying the discrepancy.

The result has been large increases in fines assessed and collected against non-compliant companies before any workers' compensation claims are filed. NETS became operational partway through 2014, and fines collected have increased from approximately \$342,000 in 2013/2014 to \$1.5 million in 2015/2016. Six NCIC law enforcement personnel also conduct proactive onsite enforcement operations with employers identified by NETS as non-compliant, which can result in misdemeanor charges.

"Employers always tell me, 'I can't afford to have workers' comp insurance," says NCIC Director of Compliance and Fraud Bryan Strickland. "I tell them, 'You can't afford not to have it." In addition to at least temporarily losing an employee to injury, the employer could be on the hook for medical bills if the employee is uninsured.

Just as data from DES helps NCIC find employers who aren't compliant with state workers' compensation law, DES can use the data to determine which businesses have workers' compensation insurance but aren't making the appropriate unemployment insurance payments.

The state is currently reaching out to other agencies to gauge interest in using a version of the system to aid in compliance efforts. According to Strickland, "Our success should be a reason for others to try this."

IDENTIFYING NON-COMPLIANT EMPLOYERS

Launched in 2014, NETS uses data analytics to enforce the North Carolina's workers' compensation insurance mandate. The result has been large increases in fines collected from non-compliant businesses.

NUMBER OF PROSECUTIONS

FINES COLLECTED 2013-14 \$342,000 2014-15 2015-16

\$993,000 \$1.5 MILLION

150

101

18

COMBATING DRUG ABUSE IN CALIFORNIA & MASSACHUSETTS

The United States comprises less than 5 percent of the world's population, however, it consumes approximately 80 percent of the world's opioid supply.⁵ On average, 44 people in the U.S. die each day from an opioid or prescription painkiller overdose.⁶ Analytics can play a role in combating the epidemic.

CURES (Controlled Substance Utilization Review and Evaluation System) is California's prescription drug monitoring system. In January 2016, California launched CURES 2.0, an upgrade over the state's original system, which enables prescribers and dispensers to review a patient's medical history to identify indications of drug abuse prior to writing a new prescription. The upgraded system now uses analytics to proactively alert doctors when a patient has a dangerous amount or mixture of controlled substances.

Prescribers are notified daily about any of their patients who reach various prescribing thresholds, such as obtaining prescriptions from 6 or more prescribers or pharmacies over the last year, having a prescription for opioids for more than 90 consecutive days, or having a current prescription for both benzodiazepines and opioids. Prescribers also can instigate alert messages to warn pharmacists and fellow doctors of mutual patients of concern.

The recent CURES updates provide improved analytics; real-time 24/7 access; the ability to integrate with health information systems; and an opportunity for collaboration among prescribers, dispensers and the criminal justice system. With analytics, California is providing timely insights to doctors, allowing them to make better informed decisions on how to treat their patients.

Similarly, in Massachusetts, the Department of Public Health (DPH) analyzed data to identify patterns and develop an early warning system about geographic areas that may see an increase in overdoses and potential deaths.⁷ Access to this data can help health officials mitigate the spread

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- Monica Bharel, Commissioner, Massachusetts Department of Public Health

of a particularly virulent drug by making more informed decisions about when and where to deploy resources, ultimately saving lives and preventing widespread use of illegal substances.

The project involves teams from seven state agencies, including DPH, the Office of the Chief Medical Examiner, the Department of Corrections and the Department of Information Technology. This broad collaboration resulted in a data model that allows for simultaneous analysis of 10 datasets with information relevant to opioid deaths.

DPH Commissioner Monica Bharel says the work shows how data sharing and analytics can be used to address urgent and complex issues.

"The ability to look as broadly and as deeply at public health data has been a unique challenge, but one that has given us a much greater understanding of the current opioid epidemic," Bharel said in a July status report to state lawmakers.

Bharel also called the initiative a national example of how existing data can be "used in new and innovative ways to support policy and decision-making, and to allocate resources more efficiently and effectively."







THE DO'S AND DON'TS OF ANALYTICS

Analytics are a powerful tool, but many initiatives aren't successful. Gartner predicts that through 2017, approximately 60 percent of big data projects will ultimately be abandoned, failing to go beyond piloting and experimentation.⁸ Below are some key pieces of advice for your analytics initiative.

DON'T BE A VICTIM OF BAD DATA.

The axiom "garbage in, garbage out" is particularly relevant with analytics, where projects will likely fail if the quality of the information is inferior. Like a chain that is only as strong as its weakest link, data analytics are only as good as the data itself.

There are various reasons for poor data quality, including ineffective systems controls, siloed systems, lack of centralized control over data, insufficient training and more. It's important that agencies identify these issues and work toward a resolution before embarking on a data analytics initiative. "Good data that is well-curated leads to good decisions," says Kay-Decker.



The support of other agencies is key to the success of your agency's goals. For example, the NCIC used NETS to help empower police officers to enforce laws regarding workers' compensation insurance. "Having one of our law enforcement personnel knock on the door of another business owner you know has a way of spreading the word about the workers' compensation insurance requirement," says Strickland.

And in Massachusetts, working with law enforcement is critical to the health of citizens. As the state develops an early warning system to determine geographic hotspots of opioid abuse, officers can deploy resources to monitor an area, call in first responders or make arrests to prevent deadly drug abuse.

DO Share data

Turf wars aren't new and they aren't specific to any one type of agency. As Catherine Lyles, a senior auditor for the state of Louisiana, says: "Everyone is proprietary over their systems."⁹

But gathering data from disparate sources creates a more holistic view, enabling program leaders to make even more insightful decisions. To encourage data sharing, it's important all agencies get some benefit from the arrangement — and that everyone is assured their data is safe.

For example, North Carolina's agencies were understandably protective of their data at first. "Nobody wanted to be the guinea pig," says Strickland. But the fact that the other state agencies also gain access to NCIC data has been helpful. Agencies are more willing to share data as they see how NCIC protects it. Strickland says this trust also has improved inter-agency relationships.

Some agencies or individuals may cite state or federal privacy mandates as the reason they are reluctant to share data, but often there are fewer legal impediments than anticipated once the laws are fully examined. Data sharing could become more complicated if the system is expanded into areas involving health data that's covered by the federal Health Insurance Portability and Accountability Act (HIPAA), Strickland says. But he doesn't believe the law would prevent data from being shared.

BE LIMITED BY A SKILLS GAP.

Last year, the White House announced the hiring of the first-ever U.S. chief data scientist, Dr. DJ Patil. The move was a clear acknowledgment of the importance of leveraging data to make better decisions and shape policy — and Patil isn't alone. Cities and states are hiring their own data scientists — a job the *Harvard Business Review* called "The Sexiest Job of the 21st Century" in 2014.

But the use of analytics — or even fully leveraging data — is relatively nascent, particularly in the public sector, and government agencies can struggle to find talent. In a 2014 survey of 300 federal government professionals, an overwhelming 96 percent identified a data skills gap at their agency, with only 4 percent saying their agency is effective in leveraging data.¹⁰

To improve a public service, you need analysts with domain knowledge, says Jennifer Bachner, director of the master of science in government analytics program at Johns Hopkins University. "This is essential to identifying and measuring outcomes that matter."¹¹

Still, agencies should not let a lack of talent limit their ability to improve their programs and make a difference for their citizens. The lowa and North Carolina partnerships demonstrate the benefits of analytics-as-a-service, which allows them to gain outside expertise that they otherwise might not be able to find — or afford. Additionally, rather than investing in an in-house system that could take years to develop and runs the risk of becoming obsolete, this approach can be implemented quickly and without purchasing hardware or software.

CONCLUSION

At the Iowa DOR and the NCIC, advanced analytics are improving efficiency and value for taxpayers. Beyond financial savings, the DOR's use of third-party data analysis helps the state maintain funding for priority programs. In North Carolina, the NCIC helps create a level playing field for companies, while protecting employees injured on the job. California and Massachusetts are using data to mitigate opioid abuse and improve the response to overdoses.

Governments tend to be a catch-all for an exponentially growing amount of data. With the help of analytics, agencies can put that data to work to improve operational efficiencies, maintain program integrity and improve citizens' quality of life.

This piece was developed and written by the Governing custom media division, with information and input from SAS.

Endnotes:

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- 2. http://datasmart.ash.harvard.edu/news/article/analyticsexcellence-roadmap-866
- 3. All quotes and data from a phone interview with Courtney Kay-Decker conducted on May 19, 2016.
- All quotes and data from a phone interview with Bryan Strickland conducted on July 14, 2016.
- http://www.cnbc.com/2016/04/27/americans-consumealmost-all-of-the-global-opioid-supply.html
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