Doing good with government data

Improving health,
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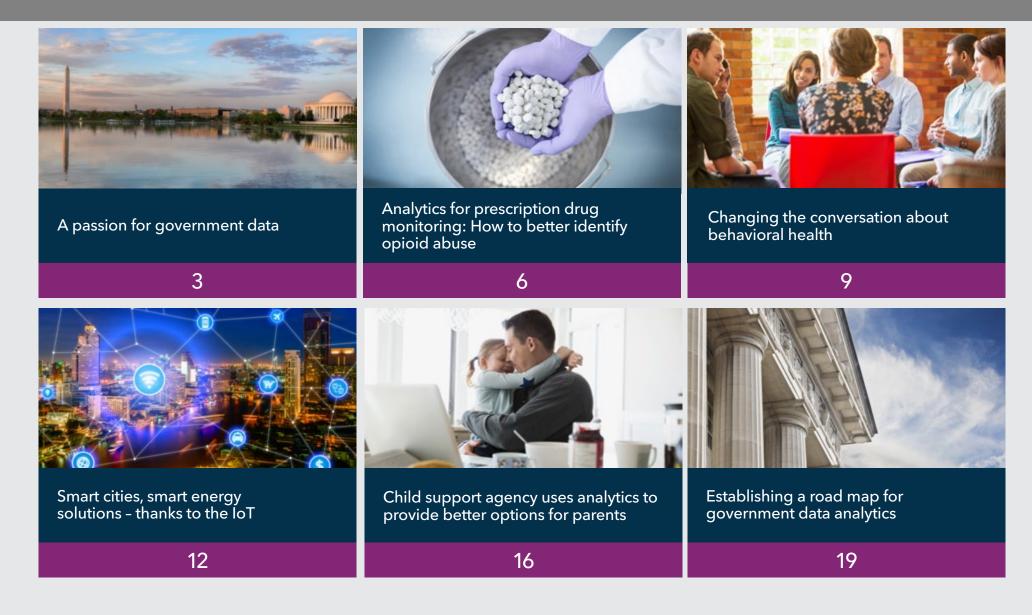preventing fraud – and more

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Big data. Citizen data. Open data. Data for good. No matter what you call it, if your government organization is collecting data of any kind, you are in a position to make use of that data to improve the lives of your citizens.

You may wonder where to start in using analytics to improve operations and enrich the lives of citizens. Quite simply, analysis begins with a problem. What issue do you want to solve? What task needs to be simplified? Start by solving that one problem. Then, after gleaning value from that first solution, use analytics to solve other problems throughout the organization.

The end result? Better policymaking occurs, more effective legislation is enacted, targeted programs and services are appropriately directed to those who most need the assistance, and we can sleep well knowing our taxpayer dollars are being used to their fullest potential.

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A passion for government data

Empowering agencies to make better decisions

Marie Lowman
Principal Industry Consultant
for Government, SAS

At every point of intersection between government and people, data is created. This data is being generated at an unprecedented rate, from an unprecedented number of sources. Data comes in all shapes and sizes: from citizens, law enforcement communities, businesses, other government entities, hospitals, utilities, roads, courts, prisons and so on. As governments confront the challenges of collecting and storing data, many are also grappling with how to extract meaningful insight from the data at their disposal.

Empowering government entities to collect meaningful data and then analyze and understand it in order to make better decisions is what I do for a living. It is a passion of mine.

Throughout my 21 years in the tech industry and eight-plus years serving in the public sector as an elected city council member and appointed commissioner, I have witnessed the increasing volume and velocity of data sources, and their overwhelming effect on government organizations – for better and for worse. The worse is when governments have no idea how to harness this data and use it for good. They make decisions with very little context, sometimes simply rendering a decision based on instinct alone. The better way is when data is used as a catalyst to drive informed decision making, like how early identification of at-risk children can lead to safe housing and other effective programs.

Governments must be able to separate the relevant from the insignificant and the public from the confidential to ensure effectiveness and excellent stewardship. Analytics is the key to unlocking the true value hidden in this ever-growing data.

Committed government leaders dream of making their communities stronger, more economically viable, safer, and better places to live and work. For some, leveraging analytics is making this dream a reality.

With sophisticated analytics, government leaders can pinpoint the underlying value in all their data. By unifying their data, they can see connections across agencies to better serve citizens. They can get an eye-opening, big-picture view that crosses cultural and political boundaries. They can understand not only what happened in the past, but also why it happened and what is likely to happen next. Government leaders can begin to see what they need to do to make it happen again (if it was positive) or to prevent it (if it was negative).

The articles in this e-book touch on several areas of government where analytics is making, or could make, a significant impact in the way governments operate. Insights gleaned from early childhood into adulthood and from a broad range of government social and policy areas offer a clearer picture of the many touch points government has with its citizens.

From child welfare and public health to combating prescription abuse and improving education, analytics enables insight about the interactions of government programs and provides guidance for effective program performance, efficient government operations and improved citizen quality of life.

Throughout the following pages, you'll find we've pulled together some of our favorite best practices that showcase the role analytics plays in better decision making. This compilation is not meant to be exhaustive – we're just getting started!

This article is adapted from the book A Practical Guide to Analytics for Governments.

Committed government leaders dream of making their communities stronger, more economically viable, safer, and better places to live and work. For some, leveraging analytics is making this dream a reality.

Marie Lowman is a Principal Industry Consultant for Government at SAS. For over 21 years, Lowman has overseen SAS' commitment to helping government organizations provide high-quality services to their constituents while maximizing resources and budgets. Lowman served for more than five years as an appointed planning and zoning commissioner and currently serves as an elected council member for the city of Bee Cave, TX. She recently edited the book *A Practical Guide to Analytics for Governments*.

Analytics for prescription drug monitoring: How to better identify opioid abuse

A prescription drug monitoring program (PDMP) can deliver insights that prescribers and dispensers can use to deter abuse and diversion

These cultural icons share a tragic connection:

Glee star Cory Monteith	Oscar-winning actor Heath Ledger	Michael Jackson, the king of pop	Playboy model and TV personality Anna Nicole Smith	Acclaimed musician and artistic innovator Prince
31	28	50	39	57

They all died too young from accidental overdoses of prescription painkillers – mostly synthetic opioids – or a cocktail of prescription drugs.

Headline-making celebrity deaths only hint at the scope of the problem. According to the US Centers for Disease Control and Prevention (CDC), drug overdose is the leading cause of accidental death in the US, with 47,055 lethal drug overdoses in 2014. Opioid addiction is driving this epidemic, with 18,893 overdose deaths related to prescription pain relievers.

The brands are household names: Percocet, Vicodin, OxyContin. Their medical origins lead to the perception that they are safer than street drugs, but their potency makes them dangerous. Consider that by 2012, fentanyl (Duragesic, Actiq, Fentora, etc.) had become the most widely used synthetic opioid for palliative pain relief. Fentanyl is about 80 to 100 times stronger than morphine and 40 to 50 times stronger than pharmaceutical-grade, 100-percent-pure heroin. Accidental contact with even a used fentanyl patch can kill a child.

The euphoria these drugs can produce makes them highly addictive and widely misused. The CDC has officially declared it an epidemic. It affects people of all backgrounds and geographies across the socioeconomic spectrum.

To tackle this epidemic, a lot of effort has been put into state-run prescription drug monitoring programs (PDMPs) that establish databases of prescriptions written and filled, with secure online portals for accessing that data. The concept is good: Provide a comprehensive view of prescription and use patterns to make it easy for pharmacies, providers and policymakers to spot telltale signs of abuse/addiction. But in practice, PDMPs have some shortcomings:

- Data must be integrated from many sources. Combining data from numerous pharmacies and medical providers to get a single view of patient behavior has been complex and time-consuming, a challenge compounded by privacy issues.

- That data isn't necessarily turned into insight. Most PDMPs simply collect data about what was prescribed and what was dispensed. Few actively analyze the data to find inappropriate or suspicious behaviors.

- Many physicians don't use them. PDMP systems are mandatory in 49 states, but only 22 require prescribing physicians to consult them before prescribing, and compliance is far from perfect. Physicians complain that it doesn't fit their workflow and that access controls make it too time-consuming.

With the web portal already open, it can still take three to seven minutes to look up a patient and evaluate the records. If the physician has only 15 minutes with the patient, that's too long.

Compounding the promise and potential of PDMPs

In the International Institute for Analytics report *Data and Analytics to Combat the Opioid Epidemic*, Steve Kearney and Jen Dunham of SAS take an in-depth view of the issue and how to address it. Their key message: It's not enough to say, "Let's improve the current PDMPs so providers will use them." We need to have more and better knowledge out of these programs.

When a patient is seeing three specialists and using more than one pharmacy, the PDMP's simple list of prescriptions can get difficult to decipher, and the prescription is just one piece of the puzzle. You need to be able to bring in other data, such as electronic health records and emergency room records, to get full context.

Better data can do much more for PDMPs than just identify "pill mills" for investigation. Better data can inform better treatment protocols, better provider education and better policy decisions. With more comprehensive data and the analytics to make sense of it, everybody benefits:

- Physicians can understand how their treatments and results compare with those of their peers, as well as what specific patterns give early warning of addiction or overdose. They can recognize patient scenarios that analytics has uncovered, prescribe or refer correctly, and achieve the best overall outcomes.

- Payers can determine whether prescriptions are appropriate or potentially being misused or diverted, and take action to protect their patients from addiction while avoiding paying out for fraud or misuse.

- Large hospital systems, licensing boards and public health agencies can make faster, data-driven decisions, benchmark providers by specialty, and develop better treatment guidelines, educational initiatives and resource allocations.

- Pharmacies can understand how their dispensing activity compares by geography, payment source, provider and patient mix. Data and analytics can identify anomalies that might signal areas of concern.

- States can better understand where to appropriate funding for treatment facilities based on the combination of local need and which facilities have the best outcomes for patients with specific histories.

- Health care providers and researchers can develop better treatment protocols, both for pain in the first place and for remediation when patients are becoming dependent on the drugs.

Bringing the data together helps the various constituencies work together. It helps everybody see and understand the bigger picture, as well as clarify and focus on the outcomes we want – saving lives instead of making headlines.

The opioid epidemic presents a much broader data management challenge than the traditional PDMP. More and better analytics and nontraditional ways of working together across agencies and information systems are needed to inform better decisions and outcomes.

Changing the conversation about behavioral health

San Bernardino County uses data management and advanced analytics to improve care and address misconceptions

It's common to hear people tell a personal story about battling cancer, fighting heart disease or treating diabetes, but you rarely hear sincere dialogue about severe depression, addiction or behavioral health conditions in general.

Stigmatization of behavioral health disorders is a major obstacle to fight these health conditions. California's San Bernardino County Department of Behavioral Health (DBH) is working to change that. Although many effective treatments and services are available, the DBH knows that people can feel uncomfortable or intimidated about seeking help – if they even know that assistance is available.

DBH uses SAS Data Management paired with sophisticated SAS Analytics to improve the quality of data and find insight within all this information. Now, the department can find better ways to connect people to the right type of behavioral health services – and enable them to live healthier, more satisfying lives.

Using data to improve citizens' lives

DBH started with data about its programs and their adoption. The department's Research and Evaluation team uses SAS to answer questions about consumer engagement with the behavioral health system in order to draw accurate conclusions and offer appropriate assistance and care.

"We need to make good decisions about the community we're serving, and the best way to do that is to collect, manage and analyze data," said Sarah Eberhardt-Rios, Deputy Director for Program Support Services at DBH. "One of the benefits of our SAS data warehouse is the ability to bring a lot of disparate data sources together, as this helps tell a person's story and shapes how we can assist."

For example, the organization maps data about its consumer population and uses these maps to determine the best locations for different behavioral health services that will best meet the location needs of those they serve.

Analysts can see which areas need improved access, find places they thought were underserved that actually weren't, and see how this affects their network of providers.

Using this data, DBH began to see, among other things, patterns of re-hospitalization. The department reviewed how long people had been in care, what systems they came from, what services were used, and what services could potentially keep them out of the hospital. DBH discovered that it had preconceived notions about hospitalizations and how to connect patients to outpatient services. This insight was used to change how the department provided outreach for outpatient services, to both consumers and hospital staff.

To make these connections, SAS helps DBH identify patterns that it would not be able to otherwise detect. "We start with a question or hypothesis and mine our data warehouse for answers. If we find that our hypothesis was wrong, we ask additional questions," Eberhardt-Rios explains. "This approach saves us months or years of manual or other types of analysis. Ultimately, we become much faster and nimbler, which means our community members are getting the health services they need quicker."

DBH relies on analytics to guide its operations – everything from service strategy and community outreach to improving quality of care.

When focused on enhancing care, staff can look at the targets for a particular program, measure how well outcomes meet those targets, and then give that information to clinicians working with consumers so they can see individual change. "When you can show the very important work of our providers is helping people and making positive change, morale and quality of care increases," says Eberhardt-Rios.

"SAS has given us more credibility because now the data we're sharing is easily digestible, valuable and relatable," she adds. "While we still have a long way to go, and many improvements are needed, the opportunity to use

data in decision making for public mental health is endless, and analytics gets you there."

Shifting mindset and promoting wellness

DBH's data analysis has helped identify barriers to care. The data has shown a different, less stigmatizing picture than many people in the field have thought.

"In the past, we've developed systems and business processes under the assumption that people frequently avoid care. But analytics tells us that they're often eager to access services," says Dr. Joshua Morgan, Chief of Behavioral Health Informatics for DBH. "We found that they've been knocking on our doors, but sometimes the most appropriate intervention services have been difficult to access, mostly because the array and types of services we offer aren't widely known. If their inability to access services is due to a barrier that we have unintentionally contributed to, we work diligently to change that."

"Our greatest responsibility and commitment is to access quality care for those we serve," adds Eberhardt-Rios.

In addition to stimulating process improvements within the department, data analysis has a wider reach. DBH shares its results with other groups, like hospitals, law enforcement, schools, community representatives and elected officials.

"The data analysis we conduct with SAS helps us promote awareness, wellness, resilience and recovery in our community," says Morgan. "When we've shared our findings with our partners, they've been very receptive to the analysis and encouraged by the many ways we're reaching residents of San Bernardino County – a goal we all share. Having this open dialogue helps shape outreach efforts and increases our momentum in the behavioral health movement."

Dr. Joshua Morgan
Chief of Behavioral Health Informatics

"The data analysis we conduct with SAS helps us promote awareness, wellness, resilience and recovery in our community."

Smart cities, smart energy solutions – thanks to the IoT

Anne-Lindsay Beall
SAS Insights Editor

Several years ago, Envision America launched its first energy initiative: a partnership with the city of Charlotte, Duke Energy, UNC Charlotte and local businesses to help downtown Charlotte's biggest buildings reduce energy consumption by 20 percent.

It was a lofty goal, but 61 of Charlotte's 64 downtown high-rises signed on. And with the help of shadow meters and public kiosks that illustrated energy costs and consumption levels, building managers, tenants and occupants worked together to make it happen. They turned off lights, unplugged monitors, adjusted thermostats, revised janitorial practices and more.

"Simple changes added up to huge results," says Envision America Executive Director Amy Aussieker. "A 17.2 percent reduction in energy and $18 million in savings."

The program was so successful that the White House asked Envision America to be part of its Smart Cities Initiative. The nonprofit recently held a boot camp with 10 other cities, including New York City, Los Angeles, San Diego and Dallas, to facilitate sessions on their smart city projects.

Analytics at the core of CPS Energy's success

Meanwhile, CPS Energy of San Antonio, the largest city-owned utility in the nation, is serving more than 1.1 million customers over a 1,515-square-mile service area. The utility is No. 1 in Texas and No. 7 nationally for solar generation capacity. It's also No. 1 in Texas for demand response, and its customers' energy bills rank among the lowest nationwide.

How does CPS Energy do it? Using a flexible architecture, including Hadoop for storage and SAS® for big data analytics, CPS Energy finds nuggets of value in the data. "And, among other things, it helps us deploy the products and services that our customers want," Matt Croucher, former Director of Demand Side Analytics at CPS Energy.

"Analytics needs to become a core competency for us," says Matthew Croucher, CPS Energy's Director of Demand-Side Analytics. "With smart meters, connected devices and distributed energy resources, we can collect so much more data now."

Croucher and Aussieker recently participated in a SAS Global Forum executive panel with moderator Tim Fairchild, Business Director of SAS' Energy Practice, to answer questions about their strategies, challenges and successes. Here are some highlights from that discussion:

Fairchild: How important is data strategy when contemplating smart city strategy?

Aussieker: Imperative. It can help you make decisions before you implement big changes. Data can tell you what you need to do before you do it, and you'll have more success. Gather as much data as possible, look for the low-hanging fruit and start there. It's all about the data.

What role does analytics play?

Aussieker: It's multilevel. When we were looking at our buildings, Duke Energy used analytics to understand building processes better. The city managers were looking at smart meter data, with leak detection layering in. We used analytics to drive all of our processes forward.

Matt, you work in a conservative industry. What makes the Internet of Things (IoT) worth taking the risk?

Croucher: Because data from the IoT can help us improve our customer service. How do we continue to deliver reliable, safe services while becoming even more customer-centric? Harnessing IoT data will help us in both the traditional blocking and tackling work, as well as enabling us to mass-segment and mass-personalize our interactions with our customers.

What are the biggest hurdles to achieving energy efficiency?

Croucher: I'm an economist so this fascinates me. Customers don't always adopt what utilities think are the obvious solutions. How do you get over the rate-of-return obstacle inherent in many energy efficiency programs? In utilities, we have to figure out the best products and services we can offer.

Take lighting – for many years it was the low-hanging fruit, but now we need to pivot to more unique products and services to continue to offer customers savings opportunities. Time and time again, the customer research suggests that while saving money is important for customers, what customers are all focused on is the ability to control their usage and comfort. It's about more than just rebates. How do we optimally deploy our programs so both the customer and the utility see value, and what services do customers want now and in the next 10-20 years? Those are the questions we have to answer.

Aussieker: One of the biggest hurdles in energy efficiency is a crowded field of many different solutions. When a property manager has a tenant screaming at him about the carpet or wallpaper, figuring out the best product for energy efficiency is a challenge.

We've taken UNC Charlotte students and professors to look at buildings and make assessments. For example, maybe the property manager needs controls for lighting when there's one guy working late, so then the property manager needs to look at proposals for lighting. That's a complicated process. The big companies have experts who can manage this, but smaller companies and buildings don't have the resources.

How can analytics, smart grid, energy efficiency and demand response all fit together?

Croucher: They're connected because they all come from consumer choice and are about consumer control. If we tell customers, "You can't do this because we can't manage it," we'll lose out on being their energy adviser. With smart meters, most utilities rushed to ensure this information was presented to their customers, but so what? If you don't give customers the tools and options to control their usage, they won't be interested.

Can you give me some examples of how data-rich utility companies can use smart grid to complement and facilitate a city becoming smart?

Croucher: Use analytics to figure out how big of a system you need to build, and make sure you're asking the right questions: Do we need to oversize the system? Do we need to rethink sizing parameters, especially in a declining usage environment? Can we deploy programs to particularly troublesome areas? What approach is cost-efficient?

And don't view "smart" as just making things cheaper or using less water or electricity: For example, how can you alert people that there's an accident around the corner using street lighting? The smart city concept is so much more than just efficiency in consumption. It's about information; how can we quickly transfer the correct information to citizens so that they can help make smart decisions. That will be how you make the city more efficient.

What is the value of the culture of analytics and the smart city story?

Aussieker: How do you translate all this down to the citizen? Baby steps. Smart meters, allowing choices about saving costs, saving the environment – there are many messages to many people. Ultimately people want to live in safe, clean happy neighborhoods, and smart technology needs to help achieve this. Data and analytics can help get us there, but sometimes the translation is hard. In Charlotte, we translated everything into economic development: Smart city makes it easier for businesses to do business in Charlotte. For example, if Charlotte charges less for utilities, you're more likely to move your business to Charlotte.

What are your thoughts on data scientists?
Are there enough out there to meet growing demand?

Croucher: Universities are focused on teaching technical skills, and aren't teaching the business side. Data scientists in utilities will have to get used to data not being pristine, and they will spend a lot of time cleaning the data and understanding what the data represents. The first thing analytics professors should give students is a dirty data set to work with and then ask them to prove why big data analytics is worth the investment in data collection and analysis.

Aussieker: Charlotte has an open data portal, and we have lots of data scientists working for the city, but they need a translator. If you put them with the assistant city managers, there's a gap in understanding. For smart city initiatives to succeed, there needs to be a person in between to understand what we can get out of analytics and explain that to the city program leaders to help them understand the opportunities.

Croucher: Data scientists need to be paired up with business units. And business units need to know a little about analytics to converse.

Child support agency uses analytics to provide better options for parents

Orange County's data-driven approach empowers caseworkers to help parents make decisions that benefit their children.

When parents don't – or are unable to – meet their child support obligations, social service agencies often have little recourse. Jailing delinquent parents won't help them pay their bills, and the threat of jail could lead them to further avoid child support staff – and their children. Rather than help the child, these efforts can send a parent and their children into a poverty spiral.

California's Orange County Child Support Services is trying something different. It uses analytics to predict who is at high risk of failing to pay support and identifies the factors that could get the parent into compliance more effectively. This new approach is data-driven – based on the county's extensive research into the factors that help parents fulfill their obligations – and sensitive. The ultimate goal is to reduce the number of children living in poverty.

Steve Eldred, Director of Orange County Child Support Services, says that predictive analytics, used in conjunction with social safety net support tailored to the individual, can help the agency find long-term solutions that help parents support their children. It is an approach that he believes works particularly well in areas like Orange County, where jobs are plentiful and wages are decent – but the cost of living is high. Eldred's team focuses on finding ways to help noncustodial parents earn enough to pay their child support.

"The model of 'People won't support their children without coercion or threat of jail' isn't effective or accurate. We start from the premise that almost all parents want to support their children to the best of their ability. So let's tailor social support to enhance that ability. Our approach is to concentrate on multigenerational poverty and look at the long term rather than the short term," Eldred says. The county's caseworkers manage 69,000 active child support cases annually, with 12,000 new cases opened each year.

Looking long-term

Prior to using predictive analytics, caseworkers tried to figure out how to help parents be in a better position to pay, but the data was not easy to access. Staffers would poke through dozens of screens to scrape together details on the parent that might point to a solution. Could they use more education? Did they need social services support themselves? "They don't really have the luxury to go through 100 screens to decipher what is pertinent to the case," Eldred says.

Analytics surfaces the best course of action, sparing the caseworker from trying to guess the best option for recourse.

With better analytics, the agency gathers everything it knows about the parent, analyzes it and assigns something it calls an iScore, which details information concerning ability to pay and what factors might encourage full or timely payments. Parents with significant issues – unemployment, criminal records or homelessness – receive a "seedling" iScore classification that lets caseworkers know that this parent needs more time and help to be able to pay. Others are classified as "saplings" or "young trees" if they have one deficit that could make a significant difference in their ability to pay. "Our research shows that a person with a high school diploma or GED pays 44 percent more support over the life of that child than a high school dropout," says Eldred. With that knowledge, a caseworker might decide to encourage night school. A parent with an old felony conviction hindering employment might be sent to a public defender to get the conviction expunged. If the conviction is recent, the parent might be referred to employers who hire those recently released from prison.

In each case, analytics surfaces the best course of action, sparing the caseworker from trying to guess the best option for recourse. "We started to develop the model using 450 variables and slimmed it down to about 30 of the most significant variables," Eldred explains, noting that the models were built using information from 30,000 cases. A big benefit: Rookie caseworkers are nearly as productive as their most experienced colleagues.

"iScore is an attempt to mimic the knowledge of a 20-year caseworker," Eldred says. And while the score draws in some demographic data like ZIP code and age in its model, those are only two of 30 variables because demographic data alone can mislead.

Early results show promise
Within six months of implementation, the system has been embraced by the county's 60 caseworkers who use it daily. Among the successes:

• Using the iScore tool, a caseworker was prompted to find additional government benefits for a disabled parent that enabled him to pay $100 a month that he owed in child support.

• Another parent was referred to low-cost medical help for a nagging health problem that was interfering with work.

• Caseworkers can review iScore with a customer, then collaboratively design an earnings improvement plan that meets the customer's needs, interests and skills. "Building a success plan with parents that is tailored to them specifically, where they can see the possible results, makes all the difference for customer engagement," Eldred says.

According to Eldred, the analytic approach saves time and empowers caseworkers to help people make changes that truly benefit their children. "I had a caseworker manager tell me years ago that cases are like snowflakes," he says. "From a distance, they are all identical. But every single

one is unique. Instead of saying most 22-year-old single fathers from this ZIP code have these characteristics, we use analytics to truly understand what social, economic or structural barriers keep this particular 22-year-old from succeeding. And then we figure out how to help."

Steve Eldred
Director of Orange County Child Support Services

"We start from the premise that almost all parents want to support their children to the best of their ability. So let's tailor social support to enhance that ability. Our approach is to concentrate on multigenerational poverty and look at the long term rather than the short term."

Establishing a road map for government data analytics

It takes less time than you think

Erin Stevens
Systems Integration Manager, SAS

Lately, there has been a great deal of emphasis placed on the government's need to harness the power of big data and analytics. More data – and better analysis of that data – can assist with everything from early threat detection to entitlement and tax fraud identification.

The Office of Management and Budget's 25-point plan, including the Government Performance and Results Modernization Act (GPRA) and the Cloud First initiative, are reforming federal information technology management. They are turning the advancement of government data analytics from a desire to a mandate. The recent rise in chief data officer (CDO) appointments further highlights that data is now viewed as a strategic government asset. Not only can analytics make the nation more secure and streamline operations, but it can also save taxpayers billions of dollars.
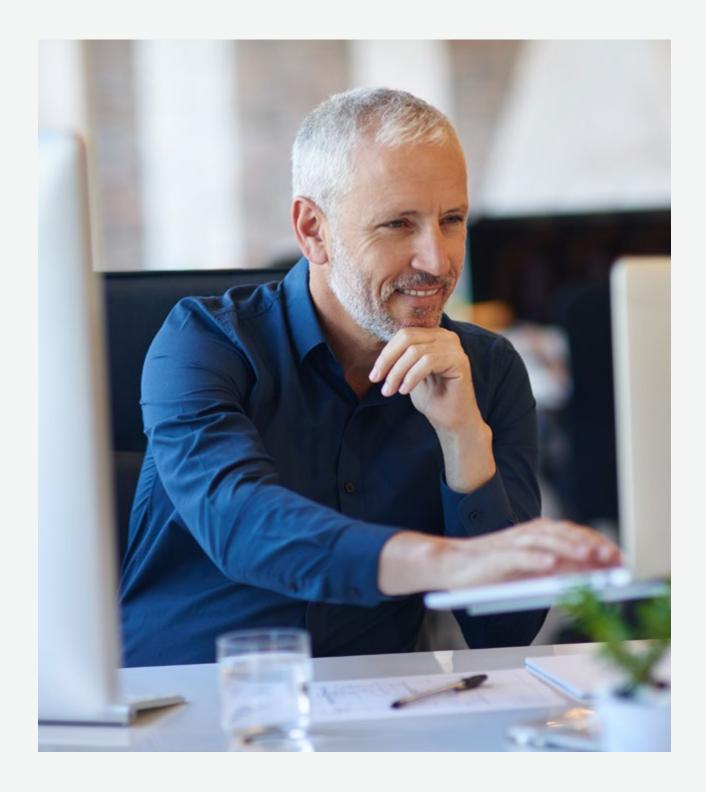
For the uninitiated, the thought of adopting analytics for government data can seem like a daunting undertaking – especially within the federal IT sphere, where actions that are not expressly permitted are often forbidden. It isn't easy to identify the appropriate analytics-based solution among all the variables, tools and technologies (that's before you even consider an agency's specific needs and compliance mandates).

Even when an agency is successful in solution identification, it has to overcome institutional inertia. This deeply ingrained attachment to "the way things have always been done" can be strong, even when traditional approaches no longer support the mission.

Establishing a strategy for government data analytics

Before an agency can harness the power of big data, it must first look inward to evaluate its current IT environment and craft a vision. Consulting

stakeholders throughout the organization can decrease the chances of ignoring important considerations in that vision. In addition, getting other stakeholders involved will increase the odds of garnering buy-in. This input and buy-in can occur through structured discovery.

Structured discovery brings together IT, business analysts and other related stakeholders to discuss current operations (strengths and challenges) and craft a unified vision. By tapping previously unengaged stakeholders, the agency gets a better understanding of its broader needs and uncovers clues about how analytics can further strategic goals.

To help align agency goals with market trends, it is often useful to engage third parties to assist with the internal review and future state planning. Third parties can help agencies discuss options for:

- **Self-service analytics:** Move data exploration and visualization into the hands of end users via easy-to-use, drag-and-drop interfaces.

- **Faster processing:** Reduce data movement and network congestion through in-database processing.

- **Centralized data storage and governance:** Combine disparate data sources to produce a single version of the truth (and take advantage of lower cost storage mechanisms, like Hadoop).

- **Simplified maintenance:** Move from PC-based software to enterprise platforms for centralized maintenance, upgrades and contracting with the potential for rolling upgrades and high availability.

These advancements focus on getting more insights out of an agency's data faster while allowing IT to prioritize more high-level, strategic decisions. Structured discovery allows agencies to consider their existing tools and processes and where they might benefit from infrastructure and software advancements. The goal is a predictive "analytics factory" that formalizes ongoing processes for analytic data preparation, model building, model management and deployment. The agency can then quickly identify questions, attain solutions and streamline improvements. Through structure discovery the agency can craft an analytics road map, with assets such as:

- **Current state infrastructure, process and output documentation.**

- **A common vision.**

- **A change management and training plan to empower IT and end users in the future state environment.**

There is no one-size-fits all for analytics solutions. Structure discovery, considering IT and the business users, can increase the odds of widespread buy-in – and for success upon implementation. Big data and analytics can be more than buzzwords; they can allow our agencies to reduce costs while improving efficacy for a safer, healthier, more secure nation.

> Technologies such as grid, cloud, in-memory processing and data visualization help organizations get more from their data.

Learn how you can bring data together in a unified fashion and see connections across agencies to better serve citizens.
Gain an eye-opening, big-picture view that crosses cultural and political boundaries.
Find out how analytics can make a significant impact in your world.

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