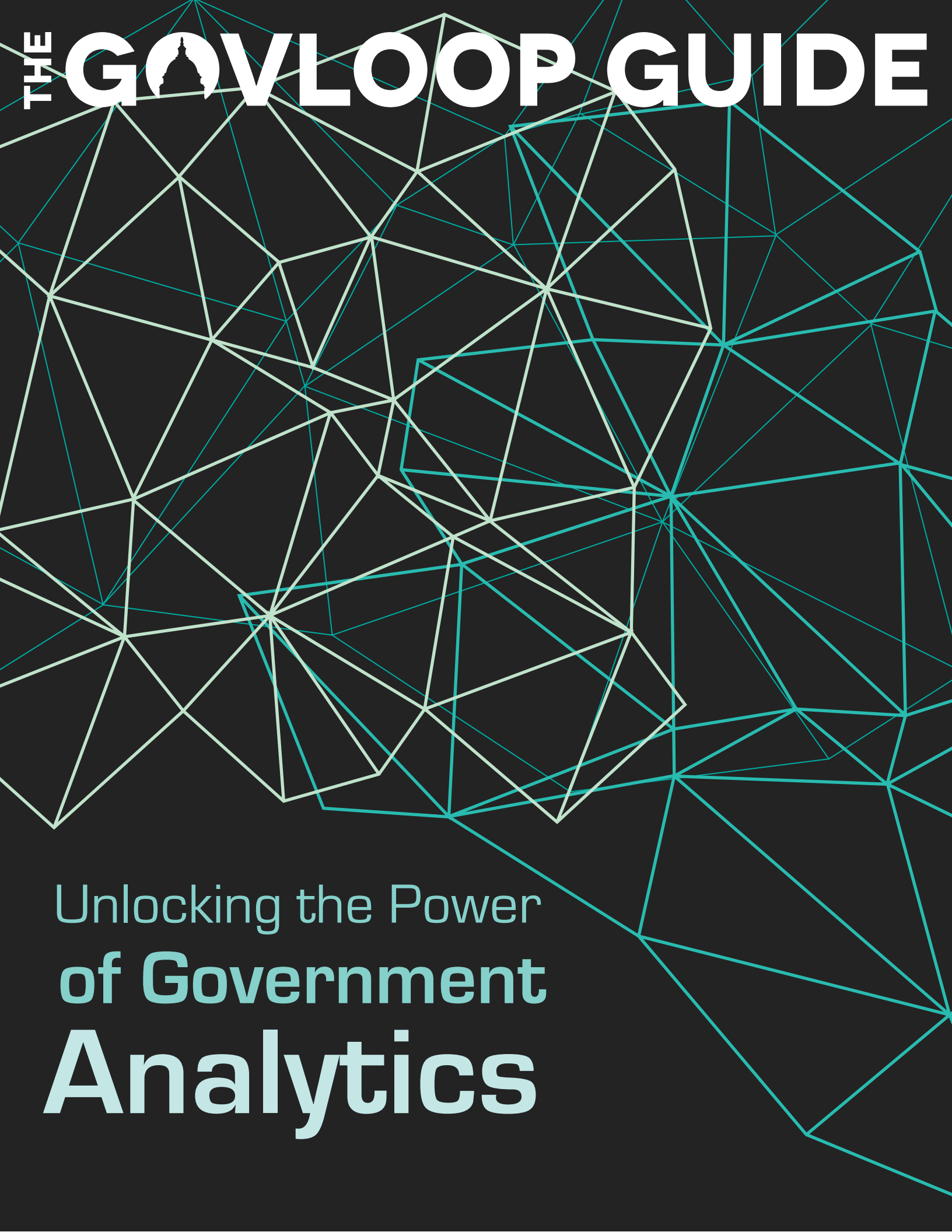




THE GOVLOOP GUIDE

Unlocking the Power
of **Government**
Analytics

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ABOUT GOVLOOP

LOCATION

GovLoop is headquartered in Washington D.C with a team of dedicated professionals who share a commitment to connect and improve government.

GOVLOOP

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GovLoop's mission is to connect government to improve government. We aim to inspire public sector professionals by acting as the knowledge network for government. The GovLoop community has over 60,000 members working to foster collaboration, solve problems and share resources across government.

The GovLoop community has been widely recognized across multiple sectors. GovLoop members come from across the public sector. Our membership includes federal, state, and local public servants, industry experts and professionals grounded in academic research. To-

day, GovLoop is the leading site for addressing public sector issues.

GovLoop works with top industry partners to provide resources and tools to the government community. GovLoop has developed a variety of guides, infographics, online training and educational events, all to help public sector professionals become more efficient Civil Servants.

GovLoop's 2012 Technology in Review Report is sponsored by Cisco, Google, GovDelivery, HP, IBM, Oracle and Microsoft.

EXECUTIVE SUMMARY

GovLoop's report, *Unlocking the Power of Government Analytics*, will provide an overview of government analytics, identify leading case studies, and integrate the results of a recent GovLoop survey from 280 members of the GovLoop community. Further, this report will provide ten steps to leverage analytics within a government agency. This report includes expert interviews from:

John Landwehr, *Vice President of Digital Government Solutions, Adobe*

Nils Engel, *Solutions Engineer, Adobe*

Karen Danczak-Lyons, *Library Director, City of Evanston*

Beth Blauer, *former Maryland StateStat Director*

Staff Members, *Centers for Medicaid and Medicare Services*

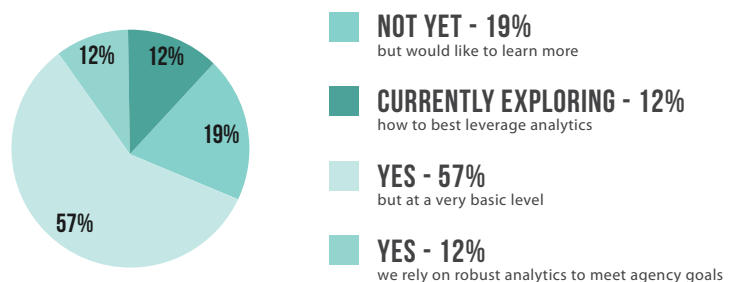
The case studies highlighted in this report identify strategies for agencies to identify cost saving measures, improve performance and efficiency, and develop new strategies to enhance customer service through analytics. Undoubtedly, analytics is transforming the way government operates and delivers services to customers. At all levels of government, agencies are now challenged to reduce costs, improve efficiency, and implement innovative measures to meet the complex needs of an agency.

On a day-to-day basis, government agencies collect, create, store and manage large volumes of data. Whether the data is from transactions online, visits to web pages, interactions on social media, government agencies are creating enormous volumes of data daily. Likewise, the data collected is either in structured and unstructured formats, which makes extracting knowledge a challenge. In some cases, decision makers do not have access or the right

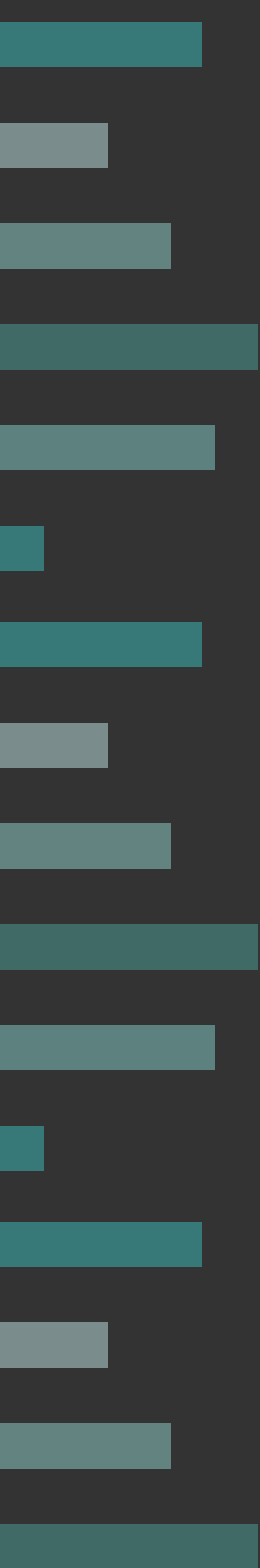
data infrastructure to support improved decision-making through analytics.

In a survey of the GovLoop community, participants were asked if they are using analytics in their agency. Overwhelmingly, agencies reported they are indeed using analytics in some capacity. In the survey, 57 percent of respondents stated, "Yes - but a very basic level," 12 percent stated that they rely on robust analytics, 12 percent also stated they are currently exploring how to best use analytics, and 19 percent stated they are not using analytics yet, but would like to learn more. From our survey, it is clear that agencies understand the power of government analytics, and that there is enormous potential in using analytics to reduce costs, increase efficiencies and improve service delivery.

At GovLoop, our mission is to "connect government to improve government." Consistent with our mission, this report provides improved awareness to the power of government analytics to help transform and modernize government agencies. With any questions about this report, please reach out to Pat Fiorenza, Senior Research Analyst, GovLoop.



ARE YOU USING ANALYTICS IN YOUR AGENCY?



UNLOCKING THE POWER OF GOVERNMENT ANALYTICS

Expert Insights: Three Steps to Implement Analytics

In an environment where agencies are looking to streamline activities, maximize efficiency and significantly decrease waste, fraud and abuse, a comprehensive analytics solution should be considered by government agencies.

John Landwehr, Vice President of Digital Government Solutions and Nils Engel, Solutions Engineer of Adobe provides expert insights how to implement an analytics program in the public sector.

With the volume, variety, and velocity in which data is collected by government agencies, analytics software helps “organizations better manage their systems by measuring the efficiency, usage, trends, interactions, and the correlations of people, places, and things within their organization,” states Nils Engel, Solutions Engineer at Adobe in a recent interview with GovLoop.

In our interview, Landwehr, described a few of the activities Adobe’s software completes for its clients:

“Adobe provides solutions that are both cloud-

based as well as behind your firewall. So we can provide anything from standard web reporting, what people are doing on your website, how they get there, are they able to get to the end goal of the website, and all the way to very advanced analytics on the web data. Adobe can also see if people are trying to hack into your website, or doing things that they shouldn’t be on your website, and then are able to understand specifically where those attacks are coming from.”

To address the need to serve agencies with both low and high security requirements, Adobe has created differing programs to provide varying levels of services to a myriad of clients. These programs can exist on the cloud or behind a firewall. Such software can serve both small companies that are curious about the success of an application, or agencies in the intelligence community that desire to use complicated analytics but need tighter security.

The variety of activities that analytics software can complete ranges from complicated security analysis to simple data interpretation. Through analytics, programs can measure the potential

lifespan of product popularity or the actual lifespan of a piece of high tech machinery. In today's fiscal climate, data analysis is used to justify funding, to "provide proof of value," states Engel. The data collected as evidence can be:

- How often a document/application is reviewed or used
- If content by specific creators is used more than others
- Who has access to what document/application at what time

Instead of basing decisions and conversations on emotional or anecdotal evidence, agencies can use the data collected to provide concrete proof of whether applications/programs should be continued or eliminated. Processes such as these minimize waste and streamline budgeting debates.

According to Engel, one of the major benefits of increasing analytics in government is being able to "understand the impact and effectiveness of websites and mobile applications." Agencies do not want

to be left behind in the digital era, and by creating workable and usable online sources, they can better serve the public. However, the issue is not convincing agencies of the importance of creating an analytics program.

The challenge is informing agencies on the best practices and strategies to implement one. Adobe provided some insights as to ways an agency of any size and budget could begin to create an analytics program.

How to Implement an ANALYTICS PROGRAM



STEP ONE

Identify and Collect Data

Engel states, "It's all about data, so you need to have access to data in order to do the analysis." To start an analytics program, an agency must, of course, have data. The first step is to identify a data need and then to collect the data to support agency needs.



STEP TWO

Create a Plan

When starting an analytics program it is important to create a strategy. "Putting together a methodology that will collect the appropriate data about the events that are occurring so the analysis can be done" will ensure that the program will continue instead of hitting a wall soon after implementation.



STEP THREE

Get Managers on Board

Analytics needs to be implemented from a "top-down approach." Managers need to be leaders in not only starting, but also continuing to support the program. With proper leadership, agencies can understand the goal of an analytics program and can ensure that employee's responsibilities work towards analytics goals.

VISITORS TO WEBSITE

10,000
TOTAL
VISITORS

6,000
VISIT MAKE
A CLAIM
SECTION

1,800
VISIT
MANAGE
YOUR CLAIM

54
SUCCESSFULLY
SUBMIT
A CLAIM

100%
OF VISITORS

60%

30%

3%

Adobe & Digital Government

Effectively Measure interaction and Engagement.
Drive Adoption of Citizen Self Service.
Improve Agency Performance.
Reduce Administrative Costs.

Adobe Analytics delivers the complete picture of digital citizen engagement that helps you track, analyze and optimize information services and citizen-agency engagement across multiple channels-including walk-up, call center, mail, online and mobile.

Optimizing your agency's online presence with Adobe SiteCatalyst while visualizing invaluable knowledge of historical website interactions with Adobe Insight will transform your agency's online experience and reduce the opportunity for fraud.

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OVERVIEW OF GOVERNMENT ANALYTICS

With the explosion of data in the public sector, government agencies are now challenged to identify ways to unlock the power of government analytics. Agencies are exploring ways to manage and store large volumes of data collected on a day-to-day basis. Whether it involves transactions online, visits to web pages, or interactions on social media, government agencies are creating enormous volumes of data daily.

Ami Wazlawik, a former GovLoop Research Fellow, writes on GovLoop that analytics is “the extensive use of data, statistical and quantita-

tive analysis, explanatory and predictive models, and fact-based management to drive decisions and actions.” (i)

In many cases, analytics has improved services, increased transparency, and provided increased accountability to government programs. Wazlawik continues:

“Given the reality of budget constraints and a seemingly endless supply of data, the advantages of using analytics are clear. A fully developed analytics system, however, does not simply appear overnight. Agencies need mon-



Government Case Studies & Analytics Resources

1. [HowTo.Gov: Digital Metrics for Federal Agencies](#)
2. [CDC eHealth Metrics Dashboard](#)
3. [EPA Site Statistics](#)
4. [USDA Page-Tagging Metrics Strategy](#)
5. [City of Boston](#)
6. [U.S GAO Cost Effectiveness Evaluation](#)
7. [Web Metrics Among CENDI Agencies](#)
8. [Los Angeles County Child Care Fraud](#)
9. [Washington DC Fire Hydrant Tracking and Assessment](#)
10. [North Carolina Dept. of Health and Human Services Fraud Detection](#)

ey, staff, appropriate data and technology, supportive leadership, and a goal or target, to really make the best use of analytics. Leaders need to work to integrate analytics into the work and culture of their respective agencies, and need to encourage cooperation between agencies and partnerships with outside organizations, when needed.”

Wazlawik could not be more accurate in her assessment.

To further reinforce Wazlawik’s observation and to ground it in feedback from the GovLoop community, consider some of the results from a survey GovLoop conducted on analytics, which elicited 280 responses. In that survey, participants were asked to define the benefits of analytics. The results of two questions from the survey can be found below.

WHAT ARE THE BENEFITS OF ANALYTICS IN GOVERNMENT?

Survey participants were asked to define the benefits of adopting an analytics initiative. Participants could select all answers that applied from among transparency and accountability; improved efficiency and productivity; control waste, fraud and abuse; manages resources, budgets and controls costs; and drives improved decision-making. Respondents selected “drives improved decision-making,”

• WHAT ARE THE BENEFITS OF ANALYTICS IN GOVERNMENT? •



as the core benefit of analytics (68 percent). Respondents also stated other benefits of analytics, such as:

"Find the story lines you want to tell. See if data will speak to that,"

"Analytics helps tell the story of why investments in website are important. Their use helps define ROI and makes a case for web investments,"

"Decisions made from numerical data rather than gut feel," and,

"Better allocation of human resources - time, energy, talent."

On the other hand, four challenges for analytics also

emerged from participant responses to the GovLoop survey. The challenges were the **volume, variety, velocity, value** of the data collected. These findings are consistent with current trends around big data, analytics and data use in the federal government. Our findings reinforce the need for improved education on how agencies can best leverage data and analytics within their agency.

VOLUME

The biggest challenge with government analytics is the "associated costs and time required to make the right decisions on what, when, who, how, in regards to collecting, managing and using the data,"

said one GovLoop survey participant.

One of the core challenges for government employees is understanding the sheer number of data points that are created by the agency. In a recent [white paper](#), *Accelerating Government Intelligence to the Speed of Thought*, Adobe writes:

"The sheer magnitude of the data that needs to be combed is staggering. In today's digital world, individuals, corporations, organizations, and governments all generate huge volumes of data. Every phone call, credit card transaction, and visit to a website creates a data point that is collected and stored in a different system. This translates to massive datasets for analysts to access and manipulate."

As this report has already indicated, the challenge for government employees is how to best map data to solve organizational challenges. With large volumes of data, it is imperative that agencies identify the right data to solve the problem they have addressed.

VARIETY

A second challenge is that data comes in a variety of forms, and standardizing information can potentially be a large undertaking for government agencies. The Adobe report

further states:

“Data is in a multitude of disparate data types. Transactional data that provides information about events, such as credit card purchases, the details of a cell phone call, or an airline flight booking. There is also streaming data, or a continuous flow of log-type information that follows movement, such as a web log that streams information on what a user is doing—every page visited, every click, every item viewed,

and so forth. Lastly, unstructured data is constantly being generated such as blogs, comments on articles, discussion forums, email, and other socially driven communication and commentary. Combining these disparate data types into one common environment for analysis is a daunting task.”

Although this is a daunting task for government agencies, standardizing this data is imperative to leverage government analytics. Part of the

challenge also involves working collaboratively across an agency to provide access to data that will be critical to the analytics program.

One respondent to the Gov-Loop survey confirmed this challenge, indicating that one of her top hurdles was, “Data entered multiple times in multiple places. Also, data validation is a huge issue as is culture that lives and dies by complicated and complex spreadsheets. In addi-

— WHAT ARE SOME CHALLENGES OF GOVERNMENT ANALYTICS? —

—VARIOUS TYPES OF DATA COLLECTED

DIFFICULT TO FIND RELATIONSHIPS

63%

—ACCESS TO INFORMATION

DOES NOT HAVE ACCESS TO RIGHT DATA

56%

—STORING AND MANAGING LARGE

VOLUMES OF DATA

42%

—SPEED AT WHICH DATA IS CREATED

HARD TO MAKE SENSE OF VOLUME

38%

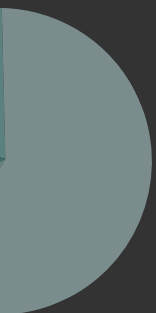
tion, benchmarking is difficult when exceptions are made for every 1 special case.”

VELOCITY

Data can change the minute or second it is captured. With the speed at which data is collected and moves, an analyst is challenged to keep up with rapidly-changing data sets. This is where an analytics solution can be imperative to the success of an analytics program, as an analytics solution can be seamlessly integrated to the decision making process to track data and make data-based decisions.

VALUE

For government agencies, one constant challenge is identifying what data is high value, and what data may just be clutter. One survey respondent described this challenge as, “Parsing data to determine what applies to my program versus the overall agency.” Some data might be more valuable than other data for addressing challenges within an agency. For government leaders, they need to clearly articulate which information will allow them to make the soundest data-based decision.



DATA DRIVEN DECISIONS: HOW ANALYTICS TRANSFORMS SERVICES

A case study from Evanston
Public Library

Public libraries continue to be an important gathering place for communities. Libraries serve as meeting locations, provide access to the Internet, and function as a knowledge hub for people to research information.

Libraries across the country are undergoing a transformation in how services are delivered, and libraries are rapidly changing their service delivery models. As people have become increasingly reliant on technology, libraries have been adapting to the new ways people consume information. In order to keep the pace of technology advancements, many public libraries are using analytics, and using data to modernize services and offerings to patrons.

GovLoop recently spoke with Karen Danczak-Lyons, Library Director of the Evanston, Illinois, Public Library. The interview highlights how the City of Evanston Library has used data to transform library services, and update systems to keep pace with service demands from patrons. Danczak-Lyons states, "Traditionally, especially at public libraries, we have looked at circulation as indicators of usage, but we are really broadening as our service delivery models have changed."

Many of the changes Danczak-Lyons highlights in the interview were also reflected in a recent Pew study published in January of 2013, [Library Services in the Digital Age](#). The study

"Print is shrinking and trending more towards online databases and websites, so we are looking at usage patterns, which help guide investment decisions."

Karen Danczak-Lyons,
*Library Director, Evanston, Illinois,
Public Library*

shows how library patrons desire an expansion of digital services, and continuation of print services. Danczak-Lyons expressed a very similar sentiment as the Pew study, stating:

"Print is shrinking and trending more towards online databases and websites, so we are looking at usage patterns, which help guide investment decisions. Not that we will ever get rid of print resources, but depending on the quality and depth of the resources of the database, that's something we look at strategically and shift our resources more and more into that area."

Clearly, libraries are transitioning how services are delivered. Much of the transformation is due to how the internet has dramatically changed how people access information. As libraries adjust their services, they are challenged to con-

tinue to provide traditional library resources. The Pew Report states, "The availability of free computers and internet access now rivals book lending and reference expertise as a vital service of libraries. Further, the report finds that 77 percent of people say free access to computers is a "very important" service provided by libraries.

In Evanston, as is true across the country, the public library is one of the only spots people can receive free internet access. Danczak-Lyons states:

"For many parts of our patron base, we are the only internet access they have. With so many people losing their jobs, and can no longer use the internet through work, or they can no longer afford it at home, we are creating the second digital divide, so people that have used the internet and value it, but no longer can afford it are now returning to public libraries more and more."

Other data that Evanston Public Library collects includes internet use data, foot traffic, database use, and website analytics. All of this data is used to improve the quality, and kinds of services that are collected.

An analytics example that Danczak-Lyons identifies is

that the library tracks information around desktop computers. The library looks at wait time and demand for public access to a computer. Knowing this information, staff can decide what kind of investments to make for internet use, whether that is decisions around installing new computers or providing more bandwidth for internet access. "We track not only internet sessions used, but the demand and wait time for computers guides us into decisions of where and what kind of computers to install," states Danczak-Lyons.

3 LESSONS LEARNED FROM EVANSTON PUBLIC LIBRARY

The Evanston public library is an excellent case study as to how using analytics and data can help improve decision-making. The conversation with Danczak-Lyons offered many best practices, lessons learned and tips for those invested in an analytics program. Below you will find the top three lessons learned from the Evanston Public Library.

1. Take Emotion Out of Decision Making

"Analytics helps take emotion out of the decision making. When resources are scarce or limited and the need is great, finding a fact based way to make decisions can help move



programming forward,” states Danczak-Lyons.

No matter how large or small the decision, clarity when making a decision is essential. This does not mean that decisions are made in a robotic fashion. In fact, the calmness and clarity of a leader while making decisions shows the ability to manage emotions, and rationalize each decision. It’s an imperative skill for leaders, who are constantly learning how to manage emotions, in order to make the right decision for their organizations. When articulating a position and explaining a decision, it’s not just taking into consideration hard facts; it’s acknowledging and empathizing with the very human element of decision mak-

ing. Analytics is essential to this process, and knowing that a decision is grounded in data can help decision makers arrive at a difficult and challenging decision.

2. Use Data to Define Customer Needs and Demands

“You need to be clear how you are defining and collecting these data points, and what is brought into an analysis to reach a conclusion,” states Danczak-Lyons.

At the Evanston Public Library, clearly data has been collected and used to make informed decisions about how to best use data to improve services. Decisions around wireless

data, desktop computers, research databases, all have been made due to advanced knowledge of how patrons are accessing information. “Our patrons have their own devices, not necessarily a computer, maybe a tablet or smartphone they want to use to access the internet, so we use this data to know if we need to invest in more bandwidth for internet,” states Danczak-Lyons.

3. Set Success Metrics

Critical to the success of a program is setting performance metrics and understanding how success is defined for an organization. As Lyons states, “Identifying at the front end of what you’re going to measure and how, and trying to describe what success looks like, so you know what success looks like when you see it.” This process is essential for managers. By defining success, agencies can set benchmarks, measure against past performance, and identify new methods to improve services.

INCREASING TRANSPARENCY INITIATIVES THROUGH ANALYTICS

A case study from Maryland
StateStat

Transparency is cited by public and private agencies as one of the major benefits of using analytics. While companies in the public and private sectors may ultimately have differing goals, their use of data to improve transparency can be very similar. Transparency can be described as providing the public with large amounts of data about a company or agency in order to represent its activities. This information can reflect spending, and potentially gain support and trust from the public. It can also benefit the agencies themselves. Maryland StateStat has harnessed the power of analytics to transform Baltimore.

In the late nineties, Martin O'Malley came to office as mayor of Baltimore. At the time the city

had a high murder rate, poverty was rampant and trash lined the streets. Local federal employees would be absent at work and necessary tasks would go unfinished. New York City, which had experienced these problems a decade earlier, was now using a program called CitiStat to collect data and then analyze it to learn more about the crime and other issues that plagued the city in search of remedies. O'Malley decided to replicate New York CitiStat to address similar challenges in Baltimore.

O'Malley wanted to run government like a business in the sense that government agencies would have a more concrete awareness of assets and functions. For example, O'Malley wanted to be able to know how many trash

removal trucks Baltimore had and where they were scheduled to pick-up, so if trash was left on the side of the road, there was a clear path to holding someone accountable. On a larger scale, the Mayor wanted to cut down violent crimes and to work on sustainability projects, all of which he currently accomplished or is on track to accomplish. O'Malley was able to succeed because of the transparency that came from using analytics. This has since been used for the collecting and analyzing data for the rest of the state of Maryland.

To get more insight on the effects of analytics and the benefits of transparency in the public sector, GovLoop interviewed Blauer, a former employee at Maryland State Stat. According to Beth Blauer, there are three major advantages to using analytics to create transparency of local government.

5 LESSONS LEARNED MARYLAND STATE STAT

1. Know Your Agency

Blauer identifies, "getting your data all in one place provides an enormous opportunity to baseline and figure out where you are." Analytics provides the opportunity for an agency to look at itself more objectively. Through analytics initiatives, agencies can reveal places where spending needs to decrease, how to improve communication across an organization and clearly define the quality of the services the agency provides.

2. Have Realistic Goals

Before analytics, government agencies had to rely on anecdotal evidence, limited data and the desires of leaders. With data being widely available, agencies employees and con-

stituents can understand their capabilities and limitations of an agency and then created expectations and goals.

Blauer states, "The use of data and analytics from a baseline perspective helps agencies create more realistic strategic goals, and strategic planning in government helps you contextualize what you're trying to do." In the end, both the agency and the public will be more satisfied with project outcomes.

3. Hold People Accountable and Recognize the Importance of Leadership

Accountability also lies at the heart of the desire for increased transparency. President Obama stated, "Transparency promotes accountability and provides information for citizens about what their government is doing. Information



maintained by the Federal Government is a national asset."

Maryland StateStat, according to Blauer, "was not designed as a transparency initiative; we were a performance management initiative." The goal initially was to improve productivity; however, by using analytics State Stat learned how to collaborate and communicate with all of their partners to provide a more transparent work process.



Through Blauer's interview, we have learned about the benefits that come from harnessing data and using it to benefit the functions of a local government agency. As one of the first states to widely use analytics, Maryland StateStat has shown the value of increased transparency.

Blauer described leadership as the most important step in any analytics initiative. "Leadership is the first thing," She said, "you need to have a cheerleader." Leadership provides legitimacy in the efforts of government employees. If a visible leader spearheads or supports an initiative, then other employees and constituents will be more likely to support and trust the program.

4. Show a Clear Business Value

Though analytics adoption is increasing, local governments

and the public may still not understand its benefits. If an agency makes data and the results of the analytics available then this transparency will allow the public to see the agency's analytics program value. On the Maryland StateStat website, there is a section called "Open Data Portal" that provides statistics from everything from number of arrests to greenhouse gas emissions. By providing this information, citizens can know the state of their city and the efforts that their local government is making to improve their community.

5. Collect Right Data and Develop Baselines

When it comes to analytics, data is the most important aspect. This data needs to be information that will support the efforts of an agency. To determine the type of data an agency needs, the agency needs to

determine what data it already has and what type of information will be needed, thus creating a baseline.

Blauer points out that "baseline helps you strategically figure out where you want to be, so you can start building your goals and not make decisions based on anecdotes or not based on evidence." The data needs to be verified so that decisions are concrete and can be understood by employees and the public. In the beginning, says Blauer, many employees and constituents may question the validity of the data but "when you have an analytics tool that is constantly utilizing the data, over time your data is evolving. We were constantly testing the data and comparing it to other data, making sure we understood the data very well. We saw the quality increase over time."



FIGHTING WASTE, FRAUD AND ABUSE THROUGH ANALYTICS

A case study from Centers for Medicare
& Medicaid Services (CMS)

GovLoop recently had the opportunity to speak with staff members from the Centers for Medicare and Medicaid Services (CMS). CMS staff provided expert insights on the importance of analytics to control waste, fraud and abuse. In 2010, CMS and the Department of Health and Human Services (HHS) launched an aggressive campaign to reduce fraud for medical claims.

To meet their goals of reducing fraud, CMS developed a new anti-fraud tool using predictive analytics and real-time data to spot abnormalities for fee-for-service claims. CMS has provid-

ed a thorough analysis of the Fraud Prevention System (FPS) in a recent report to Congress.

The FPS was required under the Small Business Jobs Act of 2010 (SBJA). In the [report](#) to Congress, CMS staff states:

“Since June 30, 2011, the FPS has run predictive algorithms and other sophisticated analytics nationwide against all Medicare fee-for-service (FFS) claims prior to payment. For the first time in the history of the program, CMS is systematically applying advanced analytics

against Medicare FFS claims on a streaming, nationwide basis.”

The SBJA identifies specific functional requirements of the predictive analytics technologies for CMS. This report identifies the following requirements for CMS:

- Provide a comprehensive view of Medicare FFS provider and beneficiary activities to identify and analyze provider networks, billing patterns, and beneficiary utilization patterns and identify and detect patterns that represent a high risk of fraudulent activity
- Integrate fully with the Medicare FFS claims flow
- Analyze large datasets for unusual or suspicious patterns or anomalies before payment and prioritize suspicious activity
- Capture outcome information to continually refine and enhance the system
- Prevent payment of fraudulent claims.

The Fraud Prevention System (FPS) developed by CMS uses predictive analytics technology to identify and prevent medical fee-for-service (FFS) claims. Since June 2011, CMS has been using FPS to screen FFS claims. To build the sys-

tem, CMS worked across sectors to learn best practices from the telecommunications and banking industry.

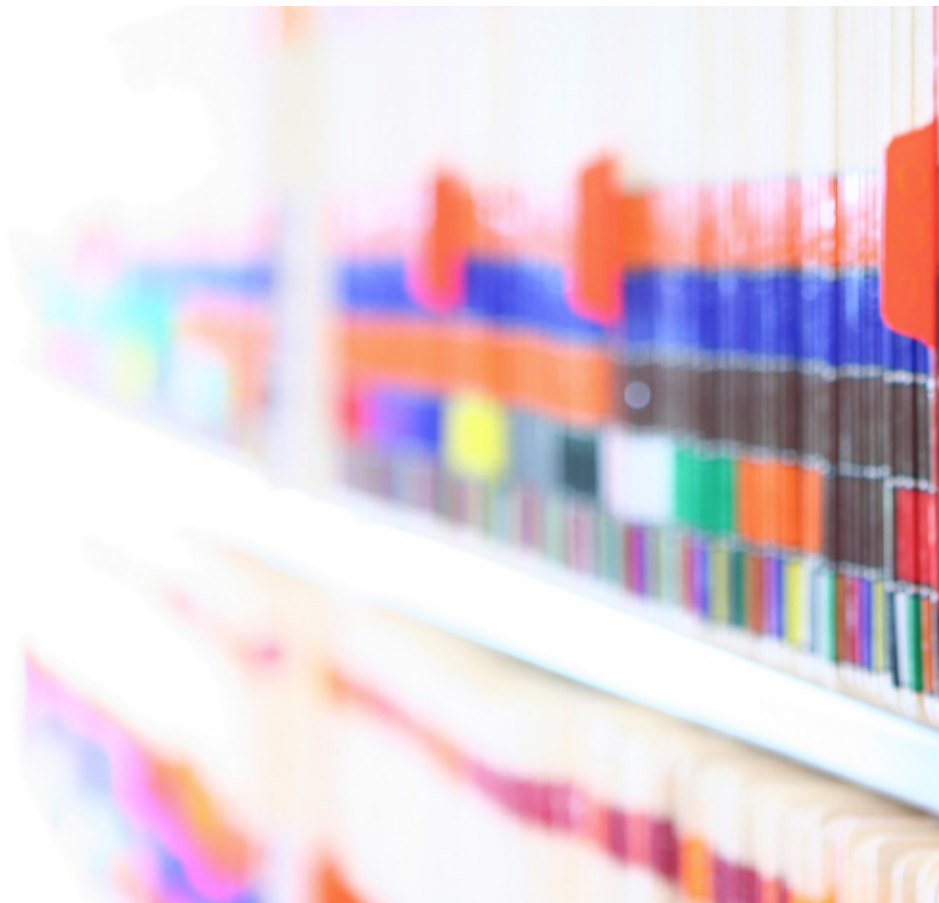
The report to Congress identifies three analytic strategies that CMS has implemented: anomaly detection models, predictive models, and social network analysis.

In our interview, CMS staff identified that through robust analytics adoption, the agency is able to improve the allocation of investigative resources and become more efficient identifying and finding fraudulent claims.

Anomaly Detection Models

The first model that is used by CMS is the anomaly detection model, which is a sophisticated model that defines thresholds of acceptable behavior. This model compares an individual providers behavior patterns and contrasts with that of a peer group. The report states,

“Certain behaviors and characteristics that indicate potential fraud may also be indications of acceptable behavior. For example, if a provider bills for many more services than are normally performed by similar providers in a defined time





“The ability to link providers through their social networks helps CMS and its law enforcement partners unravel the complex relationships among fraudulent providers and between providers and beneficiaries.”

Staff Members, CMS
Report to Congress

period, the FPS can alert an investigator to inspect the claim prior to payment.”

Predictive Analytics

CMS has also developed rigorous predictive analytics models to spot and identify fraudulent claims. This model uses data collected from previous fraud cases to help predict future instances of fraud while allowing CMS to investigate suspicious complaints. The CMS report states, “Developing predictive models requires advanced analysis because a fraudulent claim may become apparent only when factors are considered in combina-

tion; whereas independently, those factors may not be suspicious.”

Social Network Analysis

Social network analysis models are also used by CMS to identify links to fraudulent complaints. “The ability to link providers through their social networks helps CMS and its law enforcement partners unravel the complex relationships among fraudulent providers and between providers and beneficiaries,” states CMS.

The FPS has saved CMS millions of dollars, and allowed CMS to identify claims and patterns of

behavior. This process allows them to understand trends, and since information is occurring in real-time, FPS is able to immediately spot fraud, saving the time of investigators and CMS staff.

CMS staff mentioned that for those getting started with analytics, it is essential to clearly define the problem that is being solved, be sure the right data is collected, and identify resource needs for an analytics project.



TEN STEPS TO LEVERAGING ANALYTICS IN THE PUBLIC SECTOR

Whether you are looking to implement predictive analytics, or to use your web data in a more compelling way, this report highlighted common challenges, case studies, and strategies to get you started. This report concludes with ten steps to truly leverage analytics in the public sector.

1. SHARE DATA AND RESOURCES

There is enormous value in finding and talking to people with similar challenges and have already worked through challenges while adopting analytics programs. Peers within an agency can serve as an imperative resource for the success of any analytics program.

Collaboration is also essential for analytics adoption. Agencies will have to work collaboratively across departments to share information and resources. This will also build trust, improve communications and help to develop a culture of analytics across the agency.

2. FIND STRONG LEADERSHIP

Leadership needs to be in support of the analytics program, provide adequate resources and clearly chart a course for an analytics initiative within the agency. Without leadership, analytics initiatives will not be able to fully leverage all the potential of making data driven



decisions. Leaders should encourage analytics programs within an agency, and work to craft a culture that makes data based decisions.

3. GET A CLEAR VISION OF HOW TO USE ANALYTICS TO SOLVE A PROBLEM.

For analytics programs to be

truly successful, the program needs to be clearly mapped towards an organizational challenge or deficiency that can be solved with proper data analysis.

The importance of having a clear vision became extremely clear throughout our interviews and survey. One survey respondents said, "I have

learned the best analyses are best completed by those who have a clear understanding of the mission of the agency and defined goals of the websites. Additionally, there must be a plan for implementation based on analytics gathered even with the current state of the budget.

4. IDENTIFY THE RIGHT DATA.

Start by understanding what data is needed to solve the problem, and know where to access, share and store this information. This process is critical, and agencies need to know that the data they have is the right data for the problem they are trying to solve. Once the right data has been identified, agencies can begin to benchmark data and measure against past performance for any indicators they define. As one survey participant identified, "Benchmarking as another data point to judge success; informed decision making."

5. ADDRESS CHALLENGES FOR IMPLEMENTATION.

Analytics presents a lot of challenges. Be sure to map these out front and think strategically how to solve and work through challenges. One strategy is to engage core stakeholders up front, and continue to integrate them throughout the process. This means clearly defining impact on related programs, which employees will be directly involved, and strategies needed.

6. ASSESS WORKFORCE AND BUILD SUPPORT TEAM.

Training for analytics is essential. Once an analytics program has kicked off and started, everyone on the team should know how to use the tools and access the information. Analyt-

ics is still emerging within the public sector, and although there is a clear value for analytics, it can be faced with resistance. Like any new initiative that is disruptive to an agency, innovators must elicit support from their peers and senior officials.

Although budgets may not be flexible enough to allow it, typically it makes sense to have an analytics group within the agency. A small, focused and passionate team is necessary for analytics. Team members should feel empowered to work in high functioning and collaborative environments. With a passionate team, analytics can move to broader adoption at the agency.

7. START SMALL AND BUILD QUICK WINS THROUGH A PILOT.

"It may cost and take time to run through scenarios/do a feasibility study before installation, testing, and implementation, but it's worth the trouble," states a survey participant.

Like many IT initiatives, analytics programs will take some time, and agencies should focus on small iterations to improve. Success will not occur overnight. If agency leaders can start by having a small pilot program and gaining a few quick wins to show value of analytics, the program will have more support and suc-

cess with broader analytics adoption. By starting small, many challenges can be addressed with more attention, and can ease implementation efforts as the analytics programs scales to the rest of the agency.

8. CHOOSE THE PROPER REPORTING TECHNIQUES.

This report touched on a few of the report techniques that can be used for government agencies. They need to be sure that the techniques match the needs of the organization. In many instances, agencies are collecting various kinds of data across the agency, combining data from different sources and running advanced analytics programs. Clearly, to streamline information, agencies need to set reporting strategies for different channels and resources. It is the responsibility of agencies to present a coherent reporting strategy to its employees and constituents that cater to a specific analytics need.

9. MAP TO STRATEGIC NEEDS AT THE AGENCY.

It's imperative that the agency map out the strategic goals of analytics and what problem they are trying to solve. Once that foundation is set, agencies can work to identify the correct data streams, the format of the data, and the tools and resources needed to achieve the end goal. It's all about, as

stated by Engel, “making sure that the application, the types of events, that the source of the data that you want to analyze have the appropriate data to enable you to ask the questions that you want to answer.” This process is at the core of any analytics program for government.

10. UNDERSTAND ANY CULTURAL SHIFTS THAT MAY TAKE PLACE.

“Building an analytical culture, where data is widely used to evaluate deductions, is critical to becoming an analytically competitive organization,” states a GovLoop survey participant.

With analytics, there may be changes to culture, and leaders will potentially be faced with organizational and cultural challenges. These challenges are common in any kind of technology adoption. Leaders must be aware that these challenges will be down the road. Imperative to the success of an analytics program is for a leader to show the underlying organizational value of analytics and how it will help guide the agency towards its goals. Further, a leader must be sensitive to any changes to the day-to-day changes for employees. In addition, agencies must be aware of wider culture shifts, especially in the realm of technology.

“It may cost and take time to run through scenarios/do a feasibility study before installation, testing, and implementation, but it’s worth the trouble.”

GovLoop Survey Participant

“I have learned the best analyses are best completed by those who have a clear understanding of the mission of the agency and defined goals of the websites. Additionally, there must be a plan for implementation based on analytics gathered even with the current state of the budget.”

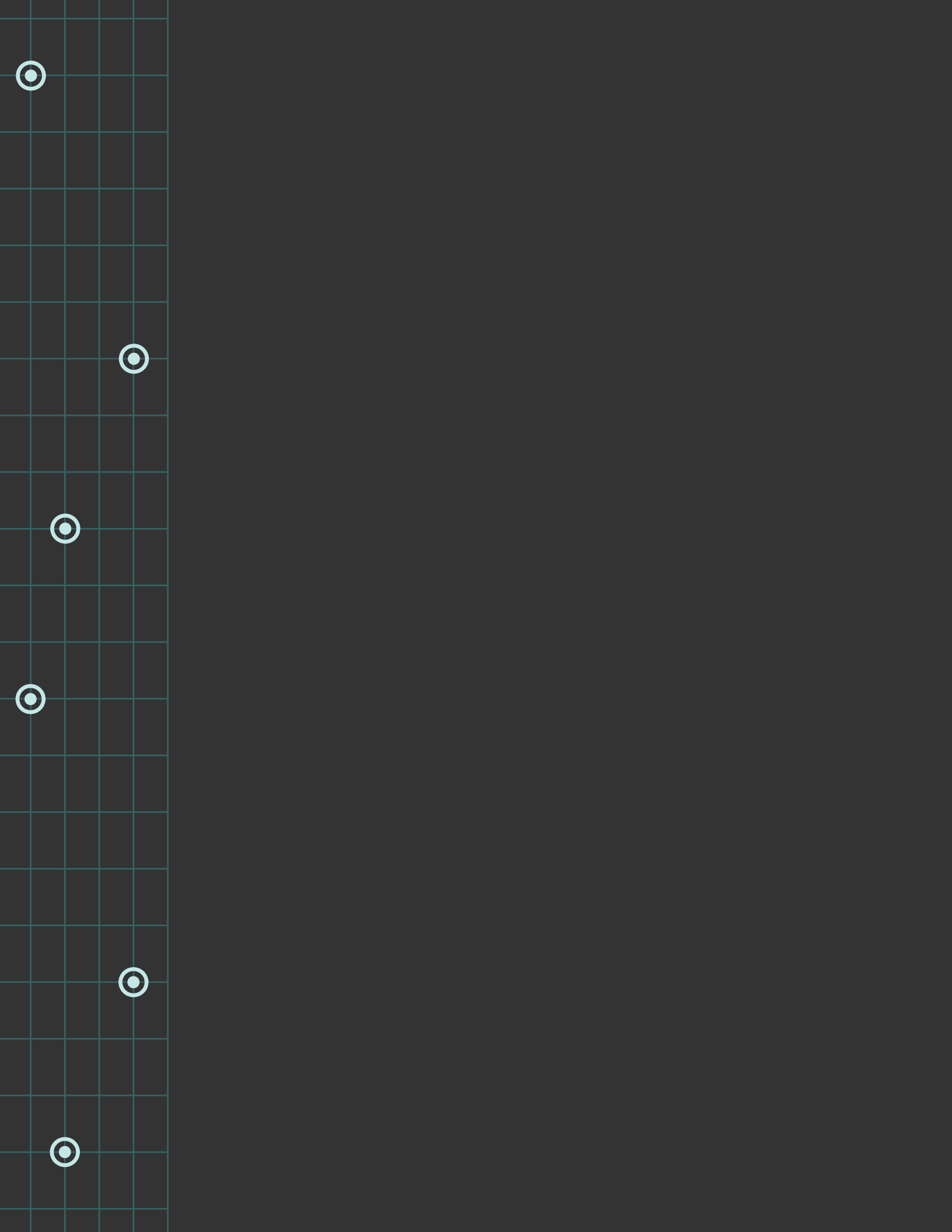
GovLoop Survey Participant

“Benchmarking as another data point to judge success; informed decision making.”

GovLoop Survey Participant

“Building an analytical culture, where data is widely used to evaluate deductions, is critical to becoming an analytically competitive organization.”

GovLoop Survey Participant



5 QUESTIONS TO ASK FOR ANALYTICS INITIATIVES

Whether it is bringing challenges to leadership, identifying value, or understanding costs, agencies today are exploring how to understand how to truly leverage the power of analytics. As many government websites are becoming increasingly transactional and services move to self-service platforms, it's becoming clear that with the volume of data that government collects, creates, stores and manages, can be used to transform how services are delivered. For government leaders looking to implement an analytics program, five basic questions come to mind to assist in the decision making process:

- Do employees have access to the right information?
- What problems are we trying to solve or what service needs improvement?
- How do agencies connect the dots and access other data?
- What new value has been created for customers and what's the return on investment?
- How do we show that value to leadership and change culture with data?



Although these questions are important, one of the first steps to unlocking the power of analytics is basic data discovery to know what format data is, how to access data, verifying authenticity and beginning to baseline information. As data can be structured (relational database), semi-structured (think XML and email) and unstructured (not predefined, doesn't fit well into relational databases), it is important to know and learn what kind of format data is in.

DO EMPLOYEES HAVE ACCESS TO THE RIGHT INFORMATION?

Understanding where data rests, the format of the data and who has access is essential to any analytics initiative.

Once the decision is made to invest in an analytics strategy, agencies must locate and ensure that they are actually collecting the right data to solve an organizational problem. For instance, if an agency is going to start recruiting employees due to members of the workforce retiring, agencies need to locate data that shows retirement trends, expected retirement dates, and the start to craft their strategy around available information, or survey and collect the right information.

WHAT PROBLEMS ARE WE TRYING TO SOLVE, OR WHAT SERVICE NEEDS IMPROVEMENT?

With the large volume of data that is created and stored,

agencies must take a laser-like focus to solving problems with data use. If the end goal is to increase self-service through a new online portal, goals and metrics should be defined that clearly map to the overarching goal.

HOW DO AGENCIES CONNECT THE DOTS AND ACCESS OTHER DATA?

Once data is collected, stored and understood, it is important that information is shared, securely and safely. If information is confidential or sensitive information, then this information likely should not be shared. But, if information is not very confidential, like web information or page visits, then information should be

shared to peers to help them see impact of any program they are running.

WHAT NEW VALUE HAS BEEN CREATED FOR CUSTOMERS AND WHAT'S THE RETURN ON INVESTMENT?

A great case study of using customer insights and data to improve government services comes from the City of Santa Cruz. Emily Jarvis, GovLoop's Online Producer shared the story on the DorobekINSIDER. You can check out the story by following the links below, Jarvis writes:

"The City of Santa Cruz is the smallest community to ever partner with [Code for America](#), but it had one of the largest problems to solve: how to make it easier to take an idea for a small business from conception to reality. They created an online permitting portal [OpenCounter](#). The portal launched last Wednesday January 9, after an intense year of development, testing, and refinement."

This question is also particularly important, because it will indicate how data has improved a service. With clear metrics set, and a thorough analysis of data, agencies can calculate their return on investment for analytics.

HOW DO WE SHOW LEADERSHIP AND CHANGE CULTURE WITH DATA?

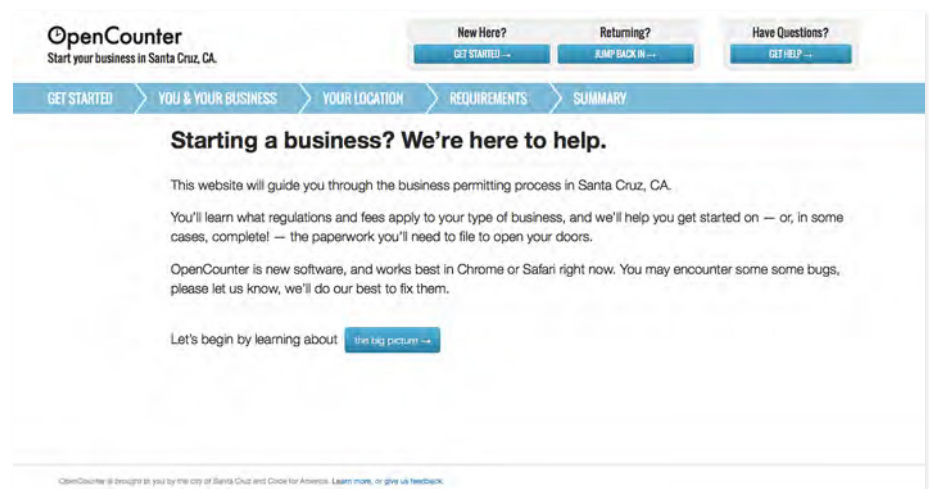
Recently GovLoop's Research Fellow, Kate Long, wrote a great post identifying that [leadership is a missing piece](#) to analytics. Be sure to check out her post, as she does a great job outlining some of the challenges to leadership and analytics. For those leading government analytics programs, it is essential to continue to craft a culture of openness, placing

a strong emphasis on program effectiveness and supporting employee needs for technology.

Starting, implementing, reforming or ending a program in government is no easy task, but the right decision can be made by sound data analysis. As government continues to develop more data and becomes increasingly complex, analytics is going to play an essential role in transforming how government operates.

"This question is also particularly important, because it will indicate how data has improved a service. With clear metrics set, and a thorough analysis of data, agencies can calculate their return on investment for analytics.

Emily Jarvis,
GovLoop Online Producer



FINAL THOUGHTS

& Acknowledgements

GovLoop's mission is to connect government to improve government. We aim to inspire public sector professionals by acting as the knowledge network for government. The GovLoop community has over 60,000 members working to foster collaboration, solve problems and share resources across government.

The GovLoop community has been widely recognized across multiple sectors. GovLoop members come from across the public sector. Our membership includes federal, state, and local public servants, industry experts and pro-

fessionals grounded in academic research. Today, GovLoop is the leading site for addressing public sector issues.

GovLoop works with top industry partners to provide resources and tools to the government community. GovLoop has developed a variety of guides, infographics, online training and educational events, all to help public sector professionals become more efficient civil servants.

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- **Beth Blauer**, *former Maryland StateStat Director*
- **Staff Members**, *Centers for Medicaid and Medicare Services*

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GOVLOOP RESOURCES

The following links are some of GovLoop's best resources of 2012. Be sure to take a look at some of the blogs, webinars, guides and trainings and join the conversation.

[DorobekINSIDER Live - Experts Weigh in on Tech Trends:](#) GovLoop: The Knowledge Network for Government, Emily Jarvis. December 20, 2012.

[Government and Analytics: A Brief Overview:](#) GovLoop: The Knowledge Network for Government, Ami Wazlawik. December 10, 2012.

[10 Benefits of Predictive Analytics: A Path to Improved Decisions:](#) GovLoop: The Knowledge Network for Government, Pat Fiorenza. November 26, 2012.

[IBM Report Highlights the Power of Predictive Analytics:](#) GovLoop: The Knowledge Network for Government, Pat Fiorenza. September 25, 2012.

[3 Benefits of Location Analytics for the Public Sector:](#) GovLoop: The Knowledge Network for Government, Pat Fiorenza. February 25, 2013.

[Improving Accountability & Making Data Driven Decisions](#) - Analytics in 2012: GovLoop: The Knowledge Network for Government, Pat Fiorenza. December 26, 2012.

[Newest Federal Jobs: Data Scientists:](#) GovLoop: The Knowledge Network for Government, Emily Jarvis. January 3, 2013.

[Is Leadership the Missing Link for Analytics?:](#) GovLoop: The Knowledge Network for Government, Kate Long. January 17, 2013.

[Measuring the Unobserved:](#) GovLoop: The Knowledge Network for Government, John Kamensky. October 29, 2012.

Interview: Beth Blauer, former employee, Maryland StateStat. January 17, 2013.

Interview: John Landwehr, Vice President of Digital Government Solutions, Adobe; Nils Engel, Solutions Engineer, Adobe. February 7, 2013.

Interview: Karen Danczak-Lyons, Library Director of the Evanston, Illinois, Public Library. January 3, 2013.

Interview: Staff, CMS. January 24, 2013.



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