EMPOWERING SMART DECISION-MAKING THROUGH SMART DATA

RECENT BIG DATA INITIATIVES HAVE DRIVEN AGENCIES TO INVEST IN NEW TECHNOLOGIES AND METHODS TO ENHANCE COMPUTING POWER AND INSIGHTS GENERATED BY BIG DATA.
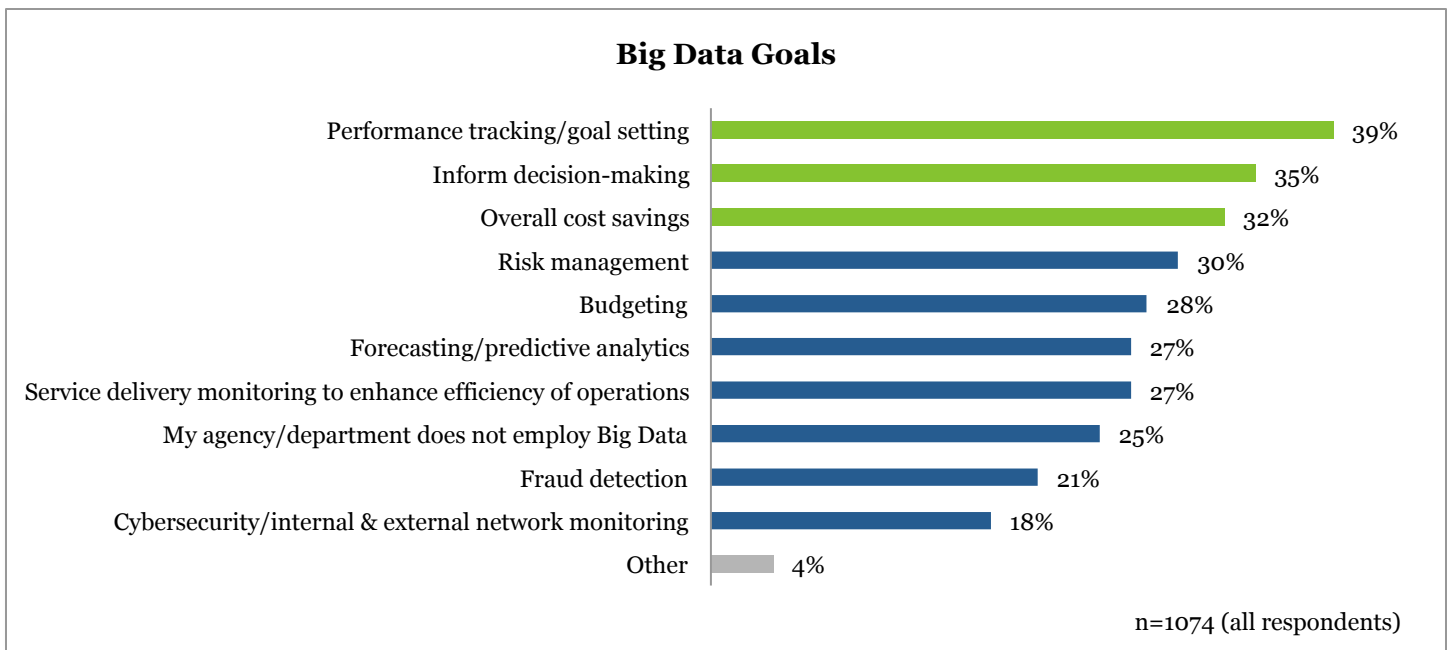
As a result, federal leaders are faced with a variety of decisions regarding IT purchases, staff training and hiring, and what insights they seek from using Big Data. In response, Government Business Council (GBC) partnered with Booz Allen Hamilton to identify domains in which Big Data is making a significant impact—health, financial services, and justice/homeland security—and surveyed executives from agencies in those domains, asking them about their biggest challenges and opportunities with respect to Big Data.

The survey, released in February 2014, yielded a total of 1,087 responses from across the federal government. The survey consisted of general questions for all respondents as well as subsections for each domain. The subsections include responses from the health (n=350), financial services (n=355), and justice/homeland security (n=264) domains. The sample represents the opinions and perceptions of those within senior leadership positions in the federal government. Sixty one percent of respondents have a rank of GS-13 or above.
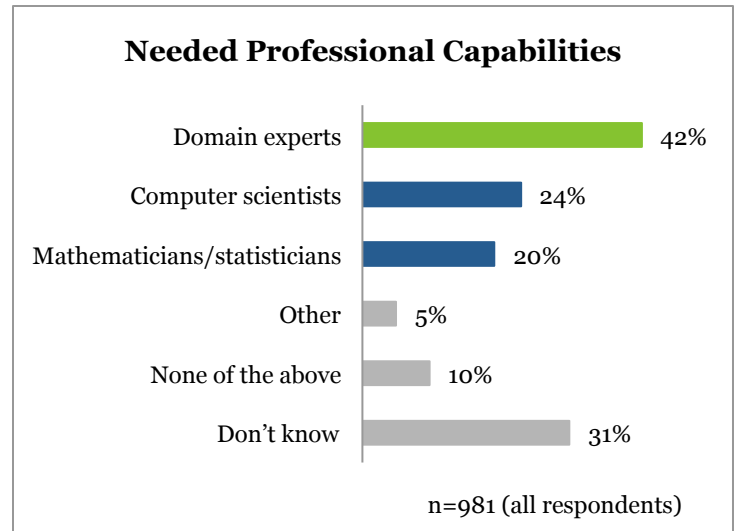
Current State of Big Data in Federal Agencies

In a recent report, the TechAmerica Foundation defines Big Data as the rapid acceleration in the expanding volume of high-velocity, complex, and diverse types of data. The report goes on to highlight the transformative power of Big Data, noting, "successful Big Data initiatives seem to start not with a discussion about technology, but rather with a burning business or mission requirement that government leaders are unable to address with traditional approaches."[1] Indeed, federal leaders face a number of challenges that Big Data has the potential to help them solve. When asked about the goals their agencies are trying to achieve using Big Data, a plurality of respondents (39 percent) identifies performance tracking/goal setting. Other popular goals include informing decision-making (35 percent) and cost savings (32 percent).

Big Data Goals

Goal	Percentage
Performance tracking/goal setting	39%
Inform decision-making	35%
Overall cost savings	32%
Risk management	30%
Budgeting	28%
Forecasting/predictive analytics	27%
Service delivery monitoring to enhance efficiency of operations	27%
My agency/department does not employ Big Data	25%
Fraud detection	21%
Cybersecurity/internal & external network monitoring	18%
Other	4%

n=1074 (all respondents)

Although federal leaders identify many benefits of Big Data, the complexity and amount of data-related mandates – for example, continuous monitoring, Executive Order 13636, FISMA, Trusted Internet Connections, among others – can be challenging.
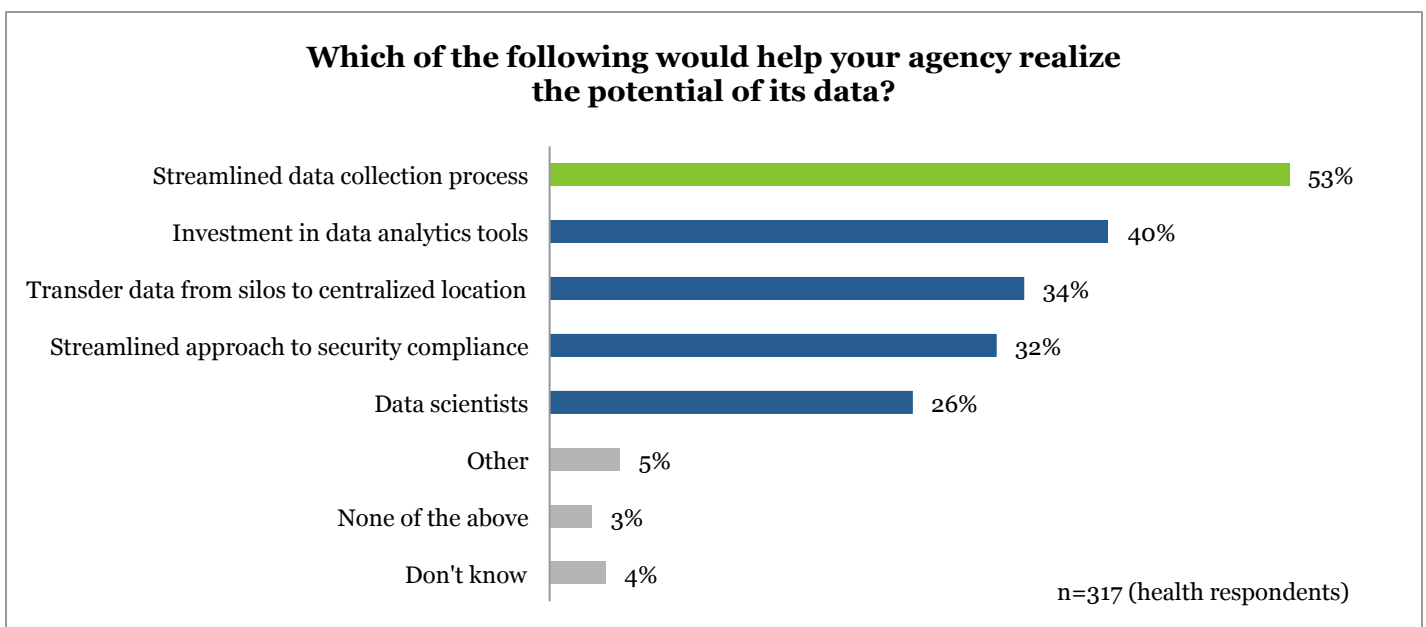
Federal leaders must also grapple with various types of data, from health records to transactions to emails and other correspondence. As Big Data becomes more diverse, agencies will need a workforce that commands a wide array of expertise. However, 59 percent of federal leaders surveyed indicate there is work to be done acquiring the necessary professional capabilities. Specifically, a plurality of federal leaders (42 percent) notes that domain experts are in high demand.

Health – The Affordable Care Act (ACA) stresses the importance of reducing paperwork and administrative costs by calling for a series of changes to standardize billing and requiring health plans to adopt systems for secure, confidential, electronic exchange of health information.[2] As electronic health records (EHR) become more pervasive, federal agencies increasingly are valuing the flow and availability

Needed Professional Capabilities

Capability	Percentage
Domain experts	42%
Computer scientists	24%
Mathematicians/statisticians	20%
Other	5%
None of the above	10%
Don't know	31%

n=981 (all respondents)

of information. In fact, 25 percent of health services respondents indicate that they are in the process of readying EHR as a result of the ACA. Furthermore, 82 percent consider sharing clinical and/or patient data with other healthcare organizations to be at least somewhat important.

Despite some progress in readying EHR for consumer use, more work can be done to make Big Data more accessible or easier to use for federal leaders. For example, 53 percent of federal health leaders report that a streamlined data collection process would assist them in realizing the potential of their data. In

Which of the following would help your agency realize the potential of its data?

Option	Percentage
Streamlined data collection process	53%
Investment in data analytics tools	40%
Transder data from silos to centralized location	34%
Streamlined approach to security compliance	32%
Data scientists	26%
Other	5%
None of the above	3%
Don't know	4%

n=317 (health respondents)

addition, 40 percent say that investing in data analytics tools would help their agency realize the potential of its health data. These two areas were greater than any other area of investment identified by the respondents—including the transfer of data from silos and hiring data scientists—illustrating that agencies have needs across the spectrum of Big Data investment opportunities.
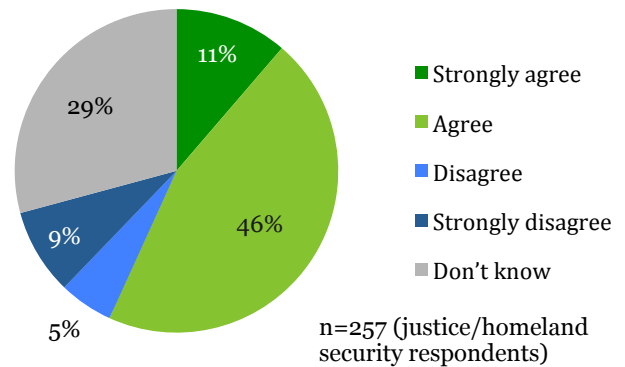
Justice/Homeland Security Services – Agencies that work in the security and justice domains face immense cybersecurity challenges. Increasingly, malicious actors are targeting federal IT systems. In addition, mandates are driving agencies to identify continuous monitoring IT tools that will track behavior on system networks. Continuous monitoring technology automates monitoring of agency networks, generating massive amounts of data as it tracks network status and user behavior.

Continuous monitoring mandates from the Office of Budget and Management and other agencies pose a significant challenge for all federal leaders, especially those working in cybersecurity. Among federal executives who work in justice/homeland security, 57 percent report that their agency uses data to improve its cybersecurity posture.
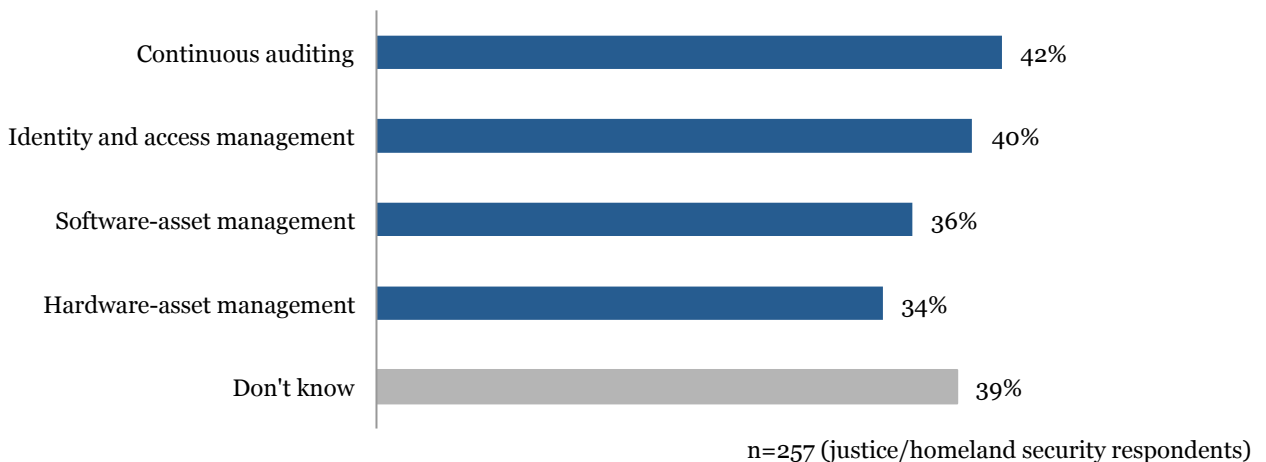
Did You Know?

The GPRA Modernization Act of 2010 is also pushing agencies to use data for performance tracking. The Act calls on agencies to make better use of data for employee performance evaluations. In doing so, agencies can use data to address weaknesses in major management functions, create new approaches for business operations, and engage Congress with more evidence to address issues.

My agency uses data to improve its cybersecurity posture

- 11% Strongly agree
- 46% Agree
- 5% Disagree
- 9% Strongly disagree
- 29% Don't know

n=257 (justice/homeland security respondents)

How is your agency complying with the OMB continuous monitoring mandate?

Continuous auditing	42%
Identity and access management	40%
Software-asset management	36%
Hardware-asset management	34%
Don't know	39%

n=257 (justice/homeland security respondents)

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Despite the fact that continuous monitoring mandates are cited as a top challenge for federal leaders, more than one third of respondents (39 percent) are unsure how their agency is complying with them. Among those justice/homeland security federal leaders who indicate they are familiar with the steps their agency is taking to comply with continuous monitoring mandates, 42 percent say their agency is investing in continuous auditing tools and 40 percent say it is investing in identity and access management tools. One agency, the Department of Homeland Security, is investing $100 million in services and tools geared toward renewing agency smartcards with iris and facial recognition capabilities. [3]

Although continuous monitoring mandates impact federal cybersecurity and justice professionals directly, they pose challenges to federal executives from all domains. Going forward, careful planning and diligent execution of continuous monitoring solutions will be critical to ensuring that an agency's resources—human or hardware—are not overwhelmed by the sheer magnitude of data generated.

Financial Services – Those agencies that are charged with the management and protection of the nation's financial system have already been working with Big Data for a number of years.

For example, as early as 2008, GAO conducted an audit using analysis of large datasets to find that 41 percent of credit card transactions between 2005 and 2006 "failed to meet basic internal control standards." [4]

Today, data analytics tools continue to give federal financial services leaders the insights they need to root out fraud, waste, and abuse. Among federal financial services leaders, 62 percent report that their agency uses data warehousing at least sometimes, while 57 percent report using mining tools at least sometimes. Data mining

tools can also assist in providing predictive analytics that identify fraud, waste, and abuse. For example, USDA has begun employing psychologists and sociologists to create models for suspicious behavior, thereby assisting the Department in predicting the scenarios and conditions that lead to higher incidence of fraud.

Federal executives in the financial services domain are not just leveraging Big Data for waste, fraud, and abuse analyses. In fact, respondents note that their first priority when leveraging Big Data is improving business operations, followed closely by risk/financial management.

Conclusion

Across all domains—health, financial services, and justice/homeland security services—federal executives understand that Big Data offers opportunities for a more efficient, effective government. While federal executives admit that there are significant challenges to realizing Big Data's full potential, agencies are already seeing results from the first Big Data wave. Many federal executives understand the obstacles standing in the way of further Big Data success, such as the perceived capabilities gap or the security mandates impeding widespread data use. This understanding will prove critical in overcoming such obstacles and generating the insights needed to move government forward.

Executive Summary

▶ Federal leaders look to performance tracking as the biggest goal they would like to achieve from Big Data. The GPRA Modernization Act of 2010 is pushing agencies to use data for performance tracking. The Act calls on agencies to make better use of data for employee performance evaluations. In doing so, agencies can use data to address weaknesses in major management functions, create new approaches for business operations, and engage Congress with more evidence to address issues.

▶ Federal leaders note that the current federal workforce may not be adequately prepared to take full advantage of Big Data. Forty-two percent of all respondents note that domain experts (e.g., health, finance, justice and homeland security) are needed to leverage data at their agencies.

▶ Federal leaders are in need of systems to support data analytics, with 40 percent citing this an investment that would help them realize the potential of agency data.

Sources

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