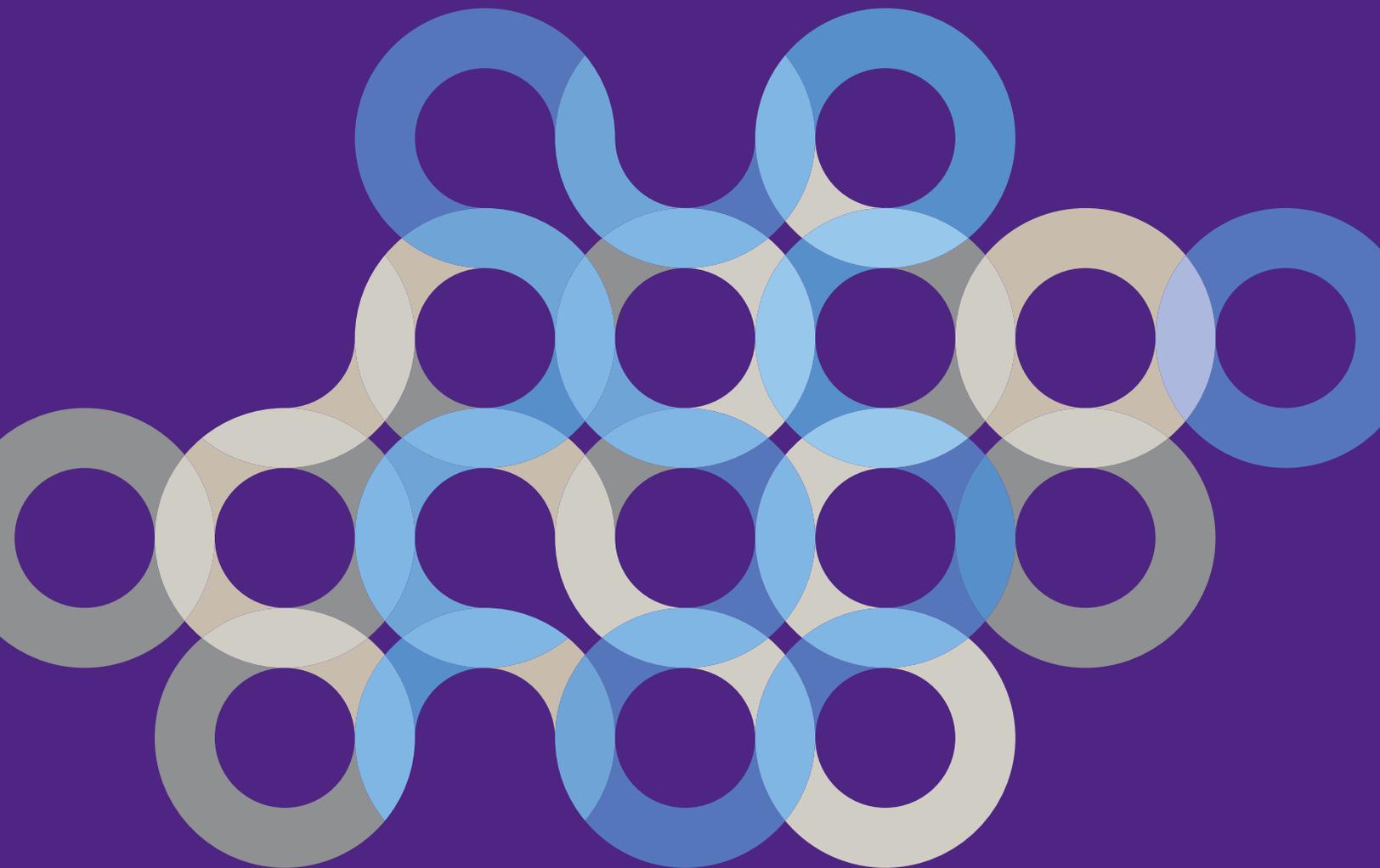

EFFECTIVE DATA GOVERNANCE

A Survey of Federal Chief Data Officers

AUGUST 2020



DATA FOUNDATION

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Executive Summary

When Congress passed the bipartisan Foundations for Evidence-Based Policymaking Act (Evidence Act), it set clear expectations for federal agencies to strengthen data governance. Agencies are required to inventory data, promote openness and publication of information, and ensure leadership is in place to improve data management overall. It also formalized the role of the Chief Data Officer (CDO) in agencies and standardized CDOs responsibilities.

The Data Foundation, in partnership with Grant Thornton Public Sector and Qlik, surveyed federal government CDOs to assess progress implementing their new roles and responsibilities. There are signs of progress, as federal agencies implement the Evidence Act and supplemental guidance from the Executive Branch. Key findings of the survey include:

- **Designated CDOs are experienced, tenured civil servants.** Most CDOs have years of experience in the federal government and their specific agency, even if their role as CDO has been brief. Among responding CDOs, 97% worked for the federal government for five or more years; 61% have been with the same organization for at least five years.
- **CDOs report progress on key deliverables.** Nearly 75% of CDOs reported successful data governance efforts and progress developing data inventories, core requirements enumerated in the Evidence Act.
- **Challenges and barriers to effective CDO implementation remain.** Even as CDOs make progress on core obligations, they note challenges to meeting individual responsibilities and community expectations. Three-in-five CDOs cite financial and budgetary constraints as significant barriers to promoting data-driven government; half have experienced challenges defining the CDO role in government.
- **CDOs agree on ongoing priorities.** Despite challenges, many CDOs voice agreement on data governance priorities over the next year. Nearly three-quarters are prioritizing completion of their agency data inventory, two-thirds intend to focus on improving data, as well as implementing a broad data strategy, and half are focused on assessing agency data maturity.

The long-term success of the CDO role is critical for ensuring government data is managed as an asset and used to improve decision-making. Collectively, CDOs indicate progress meeting expectations, despite the

challenges. Survey results suggest several opportunities to support CDOs in their implementation of the Evidence Act over the next year:

①

CDOs need sustained resources to implement data priorities.

As development of the CDO function advances, sufficient resources are required to ensure CDOs have appropriate staff, expertise, and analytical capabilities.

②

Agencies must make increased data literacy a priority.

Data literacy is the ability to read and communicate the meaning of data, while also recognizing the value of information to policy development and decision-making. Strategies that build a more data literate workforce will strengthen agencies' ability to manage and use data effectively.

③

Agency leadership must recognize and support the CDO role and CDO community.

As senior leaders in agencies with important responsibilities, CDOs need sustained support, engagement, and collaboration from other senior leaders responsible for operations, finances, and program implementation.

④

CDOs can benefit from the user community's involvement.

Although CDOs actively seek public feedback, the data user community must proactively offer feedback and use the data. For example, data users must make use of the data inventories published and communicate issues and needs to the CDO. Use of information will have a positive feedback loop on capabilities and validate the demand for ongoing efforts.

The Evidence Act enshrines the role of the federal CDO into law. A growing cohort of CDOs are striving to make the data governance function not just a legal requirement, but one that is embedded into agency cultures and practices. While risks facing the CDO

community are real, the potential for strengthening agency performance is great. CDOs are laying the foundation for major improvements in government's operations that will benefit the American people for years to come.

Introduction

The formal establishment of Chief Data Officers (CDO) in federal agencies sets the stage for transformation in the government's use of data in the years to come. CDOs have the monumental task of governing and better utilizing troves of data collected by government agencies. For many agencies, the activities and responsibilities of the CDO are new; for others, the CDO is part of an evolving tapestry of management activities intended to support core missions.

With the exponential growth in the volume of data collected by agencies, there is mounting pressure to ensure data are well-organized, high quality, and effectively and ethically managed. Clear and consistent understanding of CDO successes, challenges, and opportunities is necessary for government leaders and non-governmental partners in order to support the growing CDO community and efforts to use data more strategically.



The Data Foundation's survey of Federal CDOs, conducted in partnership with Grant Thornton Public Sector and Qlik, surveyed government CDOs and other officials to determine progress in implementing the roles and responsibilities across federal agencies. With

CDOs now in place, the prioritization of activities within agencies is becoming clearer and more defined. This survey intends to discover the priorities, challenges, and opportunities facing the CDO community.

The Foundations for Evidence-Based Policymaking Act and the OPEN Government Data Act

In 2018, Congress passed the Foundations for Evidence-Based Policymaking Act (Evidence Act) to improve organization and use of data for decision-making in federal agencies. The Evidence Act emerged from recommendations of the U.S. Commission on Evidence-Based Policymaking. The Evidence Commission recommended strategies for improving access to government data, strengthening existing privacy protections, and enhancing the capacity to use data. With half of the Evidence Commission's recommendations included in the Evidence Act, the law makes substantial improvements to the legal infrastructure for evidence-based policymaking.

The first title of the Evidence Act focuses primarily on capacity-building and requires agencies to:

- Create new leadership roles for program evaluation and statistical officials.
- Direct agencies to produce learning agendas, which are essentially strategic plans for research and evaluation activities.
- Establish a new advisory committee, called the Advisory Committee on Data for Evidence Building, to provide advice on future data infrastructure capabilities in government.

The second title of the Evidence Act, the OPEN Government Data Act, requires agencies to:

- Establish the CDO role and articulates specific qualifications and duties for the new role.
- Establish a presumption that government data are open by default unless restrictions apply.
- Publish inventories of data and begin making improvements to public information that summarizes the data government collects (i.e., metadata).

The third title of the Evidence Act on privacy:

- Contains reauthorization of an existing framework called the Confidential Information Protection and Statistical Efficiency Act (CIPSEA).
- As one of the strongest privacy frameworks in the world, lawmakers expanded the capabilities for CIPSEA-designated agencies to have greater access to government data in exchange for strong protections of identifiable personal or organizational information.

Collectively, the titles of the Evidence Act aim to establish a new culture across government to better use data that is already collected, ensuring decision-makers have access and can use relevant insights to inform decisions. The Executive Branch has operationalized many of the requirements in the Evidence Act, along with other data laws and policies, as part of the Federal Data Strategy published in December 2019.

Profile of a CDO

The Evidence Act specifies qualifications for federal CDOs appointed at a departmental or agency level. These qualifications include training and experience in core aspects of the CDO's prescribed responsibilities, such as data collection, management, and governance. The law does not require that CDOs be familiar with the agency's mission or even government in general. Ultimately, the decisions for qualifying and appointing CDOs is an agency decision.

Despite this, most CDOs surveyed in this report bring years of relevant government experience to the role. Among responding CDOs, 97% worked for the federal government for five or more years and 61% have been with the same organization for at least five years. This finding suggests those serving as CDOs have a deep understanding of the structure of their organization, familiarity with relevant data, an ability to navigate the existing culture of their organizations, and perhaps most importantly firsthand experience about the ways agency and government data can be leveraged to improve government programs.

While there is little evidence today about which reporting structure is most effective for CDOs, survey respondents indicated the CDO role needs to be more clearly defined in relationship to the Chief Information Officer (CIO).

It is also possible the opaqueness of responsibilities may improve over time as the official CDO role matures. Most CDOs in government have served in the position for less than two years. Just one-third reported in the survey that they had served as a CDO for more than two years.

About one-third of CDOs report to the CIO position in the department, agency, or bureau. Others report to a mix of senior officials, including agency heads and Chief Operating Officers (COOs). While there is no obvious delineation in the survey responses for why agencies chose their reporting structure, clear distinctions exist for CDOs who report to a CIO. For example, CDOs reporting to CIOs tend to have a smaller staff than CDOs reporting to other senior agency officials.

CDOs also demonstrate significant coordination with other leadership roles in the agency. All CDOs reported collaborating with at least one other senior agency official on a daily or weekly basis. Additionally, 68% coordinated with three or more senior agency officials on a weekly basis. The survey found that CDOs also coordinate with the newly established positions under the Evidence Act, namely the Evaluation Officer and Statistical Official. CDOs with staff may be more able to facilitate important collaboration activities.

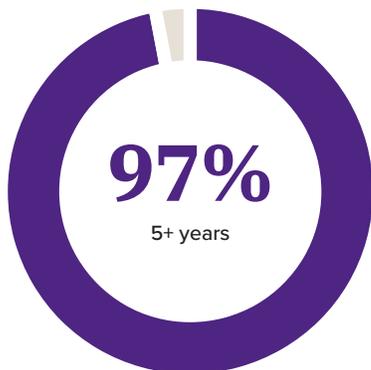
The level of coordination between the CDO and CIO was higher than any other single position included in the survey questionnaire.



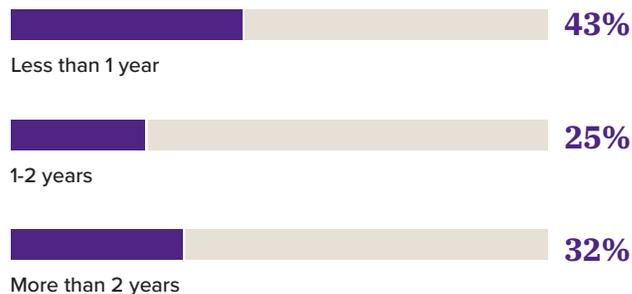
96%

CDOs report collaborating with the CIO on a daily or weekly basis. This reflects the need for alignment and coordination between these two distinct yet important roles.

How long have you worked in the federal government?



How long have you been CDO?



How many employees or contractors support the CDO?



How long have you worked in your current organization?



How often do you collaborate with other senior officials?

	Daily or Weekly	Monthly	Annually
Evaluation Officer	36%	28%	8%
Chief Information Officer	96%	0%	4%
Statistical Official	38%	23%	8%
Chief Financial Officer	25%	43%	14%
Chief Operating Officer	44%	19%	7%
Agency Head	42%	46%	8%

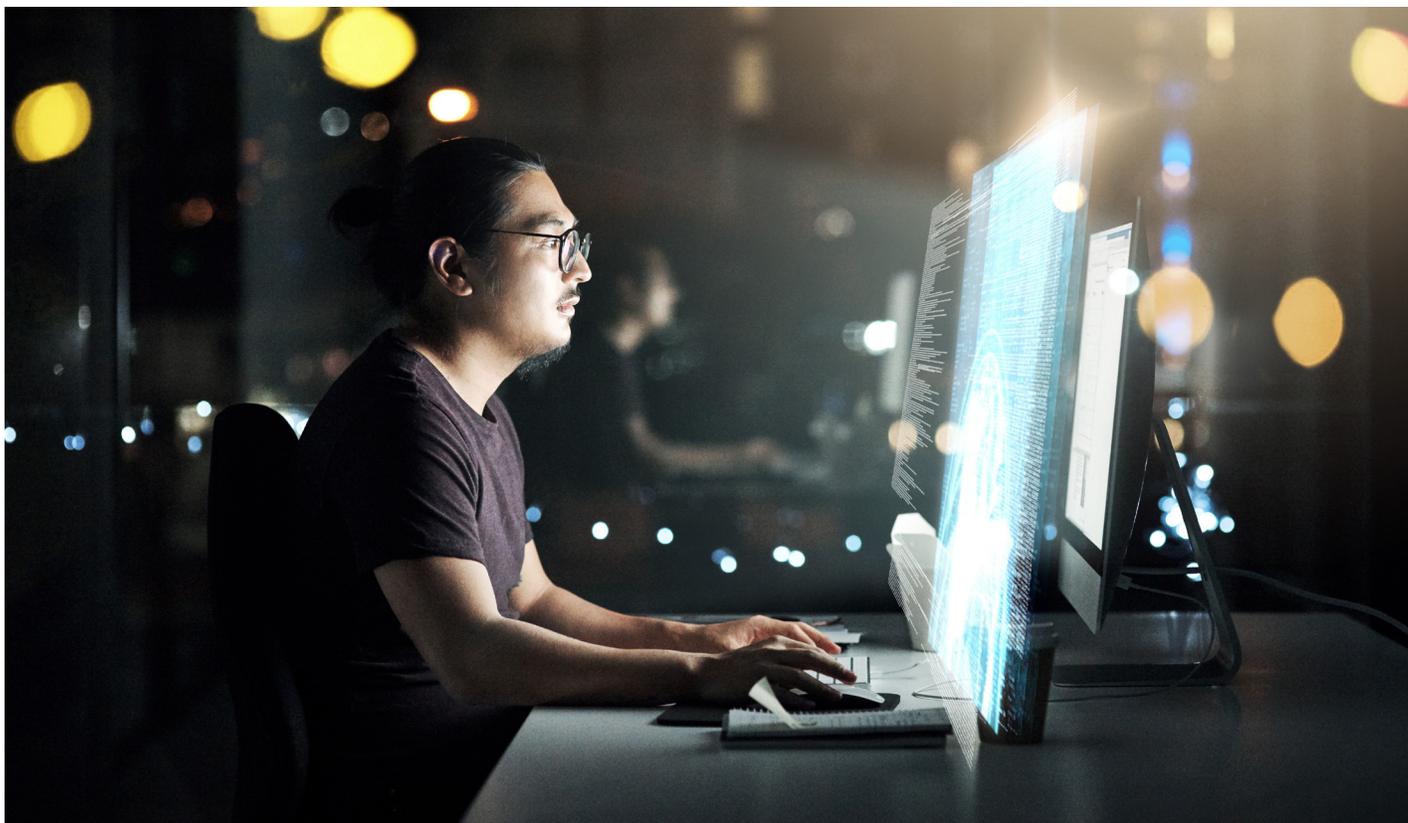
Achieving a Data-Driven Government

The purpose of having a CDO as envisioned by the Evidence Act is to better organize government data and use data to make real-world decisions. However, CDOs are only one factor necessary in achieving data-driven government.

Of the organizations represented by CDOs who responded to the survey, 93% said leadership relies on data-driven insights some (50%) or all (43%) of the time. Those who indicated leadership relied on data-driven insights only sometimes cited as potential reasons reluctance to change approaches among senior leaders or an absence of the right kind of high-quality data.



Leadership relies on data-driven insights when making mission decisions all the time or sometimes



The Impact of a Global Pandemic on Federal CDOs

The global coronavirus pandemic highlights the need for rapid, real-time information to support decision-making in government. Many traditional government data systems and reporting processes were designed for semi-annual or annual reports and analytics, yet in a global health crisis, decision-makers need information much faster – on a daily or even hourly basis. This environment and context places additional pressures on new CDOs, while also creating opportunities for changing the perspective and the utility of data in government’s decision framework.

Interviews conducted with CDOs after completing the survey and during the beginning of the pandemic suggested the importance of the CDO role was quickly recognized as decision-makers needed real-time health data. CDOs reported they were receiving new data requests, including those focused on the health care infrastructure as COVID-19 began spreading across the country. As Congress and the President appropriated

emergency spending to address the pandemic, CDOs also received additional requests to monitor spending and outputs associated with program activities.

As new demands were placed on CDOs due to the pandemic, other activities slowed or were delayed. However, CDOs who responded to the survey reported a continued focus on achieving key deliverables such as new data governance processes and completion of data inventories for their organizations.

If anything, the global pandemic highlights an ongoing need for government to have data collection, management, and analytic capabilities at the ready to support decision-making needs. Responsibilities assigned to CDOs for coordinating new data collections (both primary and secondary), governing data, and even developing appropriate data standards can all support the infrastructure for ensuring high-quality, relevant data are available for use.

The Role of the CDO

Today, the federal CDO community believes many of their responsibilities are generally understood by other leaders and stakeholders within their respective agencies. While almost all CDOs (86%) indicated they understood the expectations for their role, only 54% had a clear conception of how they would be successful fulfilling those responsibilities. Several CDOs raised concerns about how to be successful using existing resources, suggesting it is necessary to improve the knowledge, skills, and resources available to CDOs in order to properly fulfill their duties.

Among surveyed CDOs, the top identified responsibility was to establish and implement data policies and data governance (71%). CDOs also prioritized data use and a focus on quality and security. Recognizing the balance between developing data governance policies and ensuring capabilities, CDOs indicated that significant time is dedicated to preparatory activities, such as data cleaning and organization. CDOs estimate staff spend more than half of working hours collecting and preparing data for analysis. This suggests efforts to streamline and automate data collection and curation could reduce the amount of time spent on tedious data manipulation and enable staff to focus on business intelligence, analytics, reporting, and promoting data use throughout the organization.

Are a CDO's responsibilities clear?



54% of CDOs say they know what is expected and how they will be successful in their position

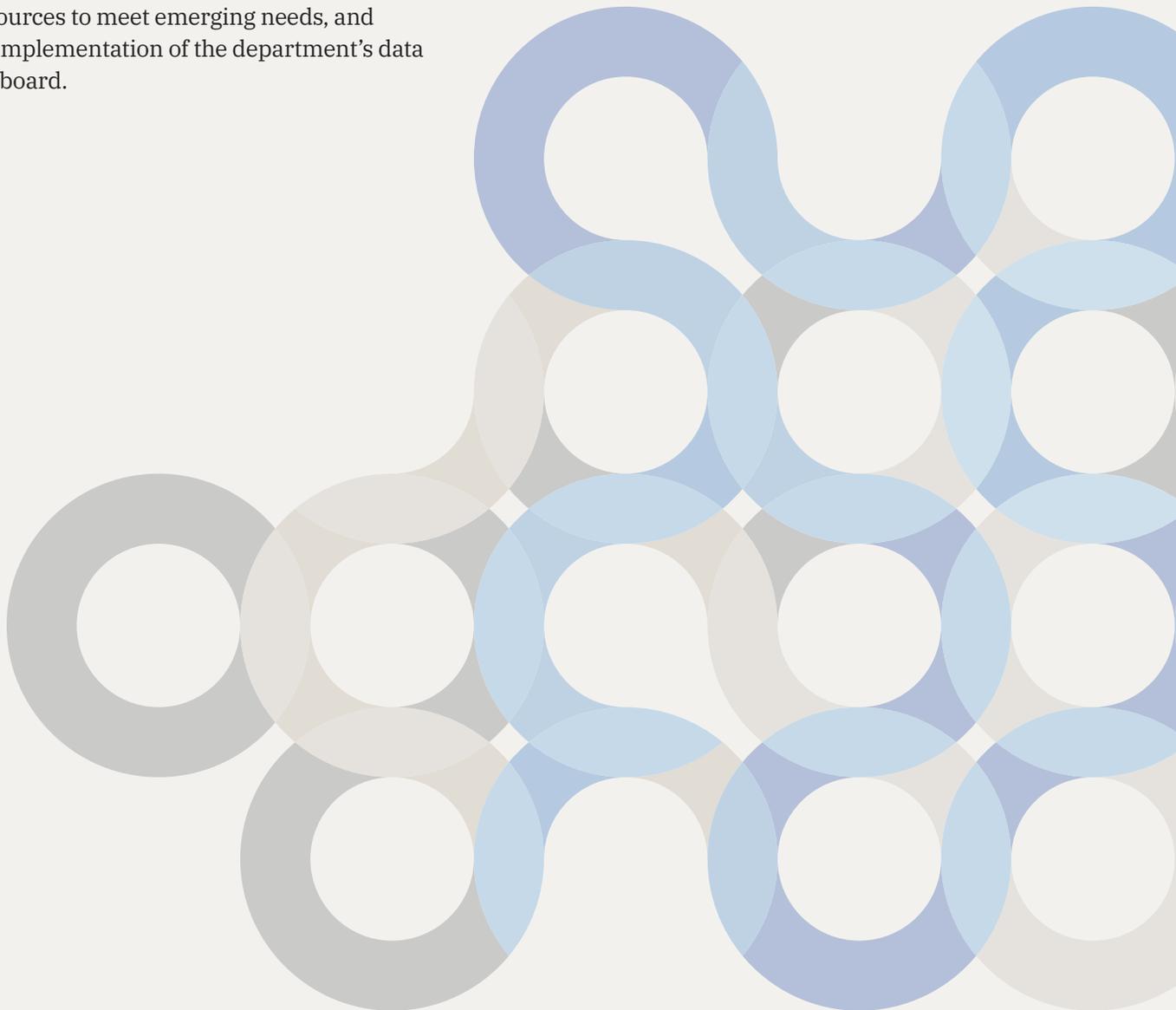
What should the top responsibilities for a CDO be?

- 1** Establishing and implementing data-related governance and policies
- 2** Using data to build solutions that improve operations and mission effectiveness
- 3** Implementing data quality, management, and security
- 4** Creating an enterprise data architecture for your organization
- 5** Implementing data analytics and business intelligence reporting
- 6** Integrating data sets for use by researchers and policymakers

U.S. Department of Education CDO Engaging in Public-Private Partnerships to Maximize Effectiveness

The U.S. Department of Education's Chief Data Officer leads a unit reorganized to support implementation of the Evidence Act's requirements. The Office of the CDO at Education specifically includes a division that focuses on data analysis and a division that supports data governance activities. Together, the divisions highlight the view of the major responsibilities for Education's CDO, while also providing staff capacity to advance capabilities for assessing data maturity, aligning resources to meet emerging needs, and supporting implementation of the department's data governance board.

In 2020, the Education Department's CDO also hosted a non-government event to gather feedback from outside experts about potential solutions and opportunities available to the department. The approach was a recognition of the role for public-private partnerships in advancing the role of the CDO and fulfilling designated responsibilities.



Success in Implementing Core Responsibilities

CDOs have made notable progress implementing the core responsibilities of their new positions. Nearly three-quarters of surveyed CDOs cited the launch of a data governance board in the past year, a requirement of the Federal Data Strategy's 2020 Action Plan.

Since the completion of the survey, the White House Office of Management and Budget reported that the largest federal agencies complied with the requirements to establish a governance board. In addition, many agencies are publicly posting information about membership, charters, and meetings for public transparency and accountability.

The CDO survey specifically asked respondents to provide additional details about data governance boards. While almost all the boards are inclusive of representatives from an organization's multiple operating units, the representatives vary in

organizational seniority and position. Common board functions include: developing organizational data policy, resolving disagreement between operating units, and helping to shape implementation of the Federal Data Strategy 2020 Action Plan requirements.

Another area of progress is agency data inventories. Nearly 80% of CDOs highlighted successes in taking steps to develop inventories for agency data assets. The creation of data inventories has been an expectation for federal agencies since 2013, but the new legal requirement ensured agencies more completely and accurately produce a real-time inventory.

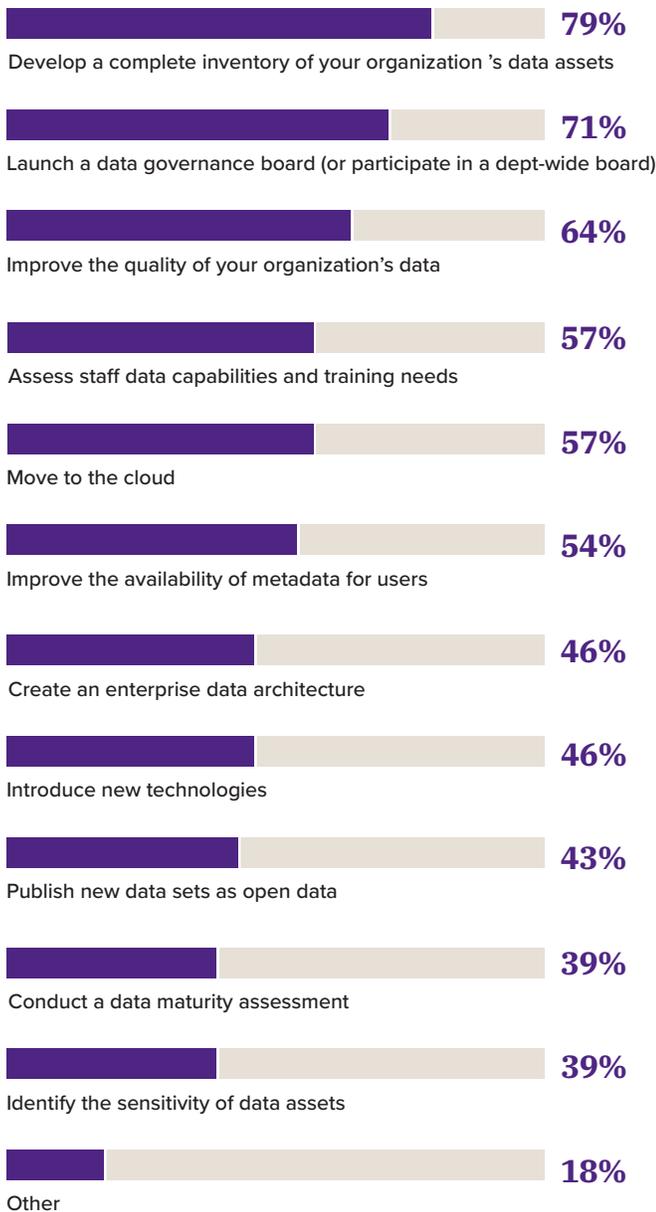
In addition, more than half of CDOs recognized accomplishments including: improving data quality (64%), assessing staff capabilities and needs (57%), migrations to cloud-based services (57%), and availability of metadata (54%).



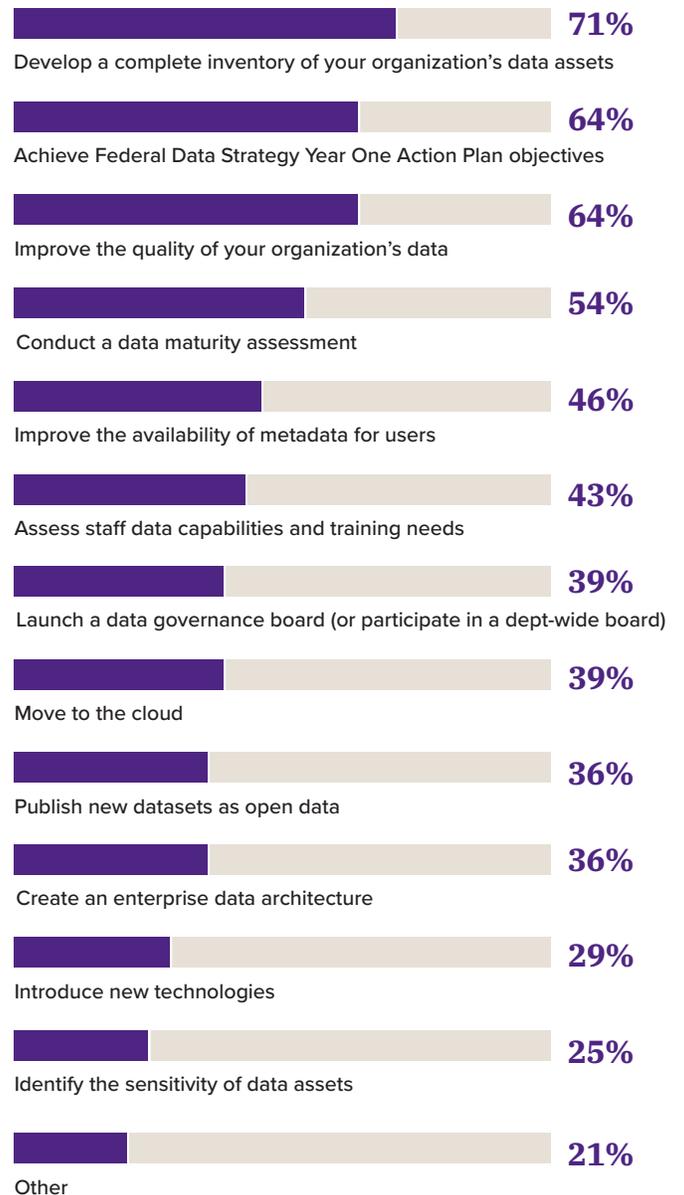
Federal government CDOs expect to continue progress in implementing key provisions of the Evidence Act and Federal Data Strategy 2020 Action Plan over the next year, including: further advance data inventories

(71%) and improve data quality (64%). Each of the future priorities for agency CDOs reflects the progress to date and potential opportunities for improvement.

Progress of Federal CDOs Over the Past Year



CDO Focus Over Next Year



Challenges Facing Federal CDOs

Respondents to the CDO survey were asked to identify the main challenges faced in their work and across the CDO community. A few common themes emerged from the answers.

- **Change Management.** The most frequently mentioned challenges revolve around the development of the CDO as a new function within many agencies, including capabilities for organizational change management (58%). Change management concerns include modifying how agency leadership view the importance of evidence-informed decisions, how leadership support CDO activities, and growing an agency culture that recognizes the importance of data.
- **Role Clarity.** Another common challenge focused on the clarity of role of the CDO itself (50%). While respondents generally perceived they understood the role and how to fulfill it, CDOs struggled to address some conflicts between the CIO and others about the expectations for the role. This relationship is further complicated when CDOs directly report to the CIO, or where the collaboration between the senior officials was less robust.
- **Resource Needs.** Many CDOs cited challenges due to financial and personnel resource constraints. Only 25% of CDOs believe the resources available for implementation are satisfactory to meet the requirements. In describing resources, many CDOs recognize appropriations have not yet materialized to support the current and planned activities required to meet the Evidence Act and Federal Data Strategy 2020 Action Plan implementation.

There are slight, but interesting differences between what the CDOs mention as barriers to becoming a data-driven organization and what they view as most important resources to achieve their mission. While a majority (61%) of CDOs view financial and budgetary constraints as a significant barrier to becoming a data-driven organization, most CDOs report having at least some of the resources they need for success.

- **Data Governance Deliverables.** Another commonly mentioned challenge was addressing data governance deliverables (31%). CDO concerns about this key responsibility range from the development of strategies to establish a framework and standards for cross-agency data sharing, to improving the efficiency of data collection, to secure sharing of protected data. When asked to identify the resources most important, CDOs stated the top need was for agency leadership to allocate other discretionary resources to meet emerging needs.
- **Data Literate Workforce.** CDOs value the development of a data literate workforce and recognize the absence of data literacy is a limiting factor for achieving a more data-driven culture in government. This suggests ongoing education and training for policy officials, senior executives, and other career staff would further support the CDO.

Top Challenges Facing CDO Community

- 1 Organizational change management
- 2 Defining CDO Role
- 3 Prioritizing with available resources
- 4 Executing data governance deliverables

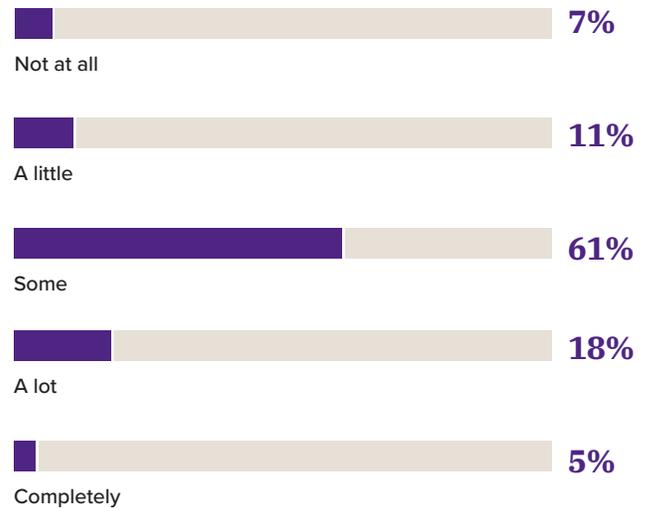
What Resources are Most Important for CDOs?



What are the Most Significant Barriers to Becoming a Data-Driven Organization?



Does your CDO have resources necessary to achieve your mission?



Recommendations and Next Steps

This CDO survey offers several key observations about the role and evolution of the federal CDO:

- **Designated CDOs are experienced, tenured civil servants.** Most CDOs have years of experience in the federal government and their specific agency, even if their tenure as the CDO itself has been brief.
- **CDOs report progress on key deliverables.** Nearly 75% of CDOs reported successful data governance efforts and progress developing data inventories – the core requirements enumerated in the Evidence Act.
- **Challenges and barriers remain.** Even as CDOs make progress on core obligations, they note challenges to meeting individual responsibilities and community expectations. Three-in-five CDOs cite financial and budgetary constraints as significant barriers to promoting data-driven government; half perceive challenges clearly defining the CDO role in government.
- **CDOs agree on ongoing priorities.** Despite challenges, many CDOs voice agreement on data governance priorities over the next year. Nearly three-quarters are prioritizing completion of their agency data inventory, two-thirds intend to focus on improving data, as well as implementing a broad data strategy, and half intend to focus on assessing agency data maturity.

The long-term success of the CDO role in government is essential for ensuring government data are managed as an asset and used to responsibly and meaningfully improve decision-making. Key opportunities remain to support CDOs in their implementation of the Evidence Act while also building a sustained capacity to change agency cultures and data analysis capabilities.



RECOMMENDATION #1

CDOs need sustained resources to implement data priorities.

Chief Data Officers require enough resources to ensure adequate and appropriate staff who have the expertise and analytical capabilities necessary. Innovative strategies and approaches can be considered to ensure sufficient resources are made available, including innovation funds, temporary set-asides, and other mechanisms. Resources can also be provided through the CDO Council, a forum for building the CDO community of practice, such as knowledge sharing about successes and challenges, constructive feedback about innovative approaches, and other strategies to efficiently apply emerging practices. Agencies should consider how resources are allocated for data activities that directly support mission fulfilment and plan for future needs to ensure effective service delivery for the American people.

RECOMMENDATION #2

Agencies must make increased data literacy a priority.

Data literacy is the ability to read and communicate the meaning of data, while also recognizing the value of information to better decision-making. Strategies that build a more data literate workforce will strengthen agencies' ability to manage and use data effectively. Possible new strategies include integrating data literacy training for all agency staff and leaders, integrating data skills into performance reviews, customizing training curriculums for different types of data users, or establishing a reward system for staff and leadership who consistently exhibit data-driven decision making.

Increasing data literacy must also extend beyond the individual level to include organizational level change management to increase data literacy. Examples of organization-wide activities include agency "data days" to educate staff on data issues and protocols, publicize organizational successes, and bring in external vendors to demonstrate data methods and technologies.

RECOMMENDATION #3

Agency leadership must recognize and support the CDO role and CDO community.

As senior leaders in agencies with important responsibilities, CDOs need sustained support, engagement, and collaboration from other senior leaders responsible for operations, finances, and program implementation. This includes being included in senior C-suite level meetings, strategy discussions, and other initiatives by agency leaders.

The CDOs should also not be "dual hatted" but be able to focus on implementing statutory requirements while also changing the culture of government agencies to value and prioritize data-driven decisions.

RECOMMENDATION #4

CDOs can benefit from the user community's involvement.

Although CDOs actively seek public feedback, the data user community must proactively offer feedback and use publicly available government data. For example, data users must make use of the data inventories published and communicate issues and needs to the CDO.

The role of the CDO in the federal government has been established in statute through the Evidence Act and the OPEN Government Data Act. A growing cohort of CDOs are striving to make progress in ensuring the data governance function is embedded in agency cultures and practices – extending far beyond a mere check-the-box compliance exercise. This cultural change will both take time, but will also enable lasting progress for using government data to drive better outcomes for programs.

Appendix: Survey and Research Methods

This report reflects the results of the first government-wide survey of federal CDOs. The Data Foundation compiled an inventory of all known federal chief data officers, including those recognized on federal agency websites, through social media, news reports, and a directory of federal employees. Additional insights and research conducted by report authors and Data Foundation staff supplemented the survey findings.

The Data Foundation invited CDOs to participate by email, to complete a web-based survey in January and February 2020. Data Foundation re-invited CDOs by email twice to those non-responding. Following the third invitation, Data Foundation contacted CDOs by phone for final non-response follow-up. The response rate for the survey was 26%.

Following the field period for the survey, Data Foundation invited a sub-sample of CDOs, who consented for recontact, to participate in semi-structured interviews. These interviews provided additional context about the effects of the then-early phase effects of the COVID-19 pandemic on the role of the CDO in select agencies.





DATA FOUNDATION

The Data Foundation is a non-profit think tank based in Washington, D.C. that seeks to improve government and society by using data to inform public policymaking.

Our research and educational activities proactively and rapidly address relevant, emerging data-related needs in the country with the goal of devising realistic solutions, accelerating policy coordination, and advancing innovation. The Data Foundation values diversity and transparency in pursuit of an equitable, data-informed society.



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