



COMMONWEALTH of VIRGINIA

Office of the Governor

Office of Data Governance and Analytics Annual Report

*Report Submitted to the Governor and General Assembly Pursuant
to Article 13 (§ 2.2-2558 et seq.) of Chapter 25*

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Office of Data Governance and Analytics

Office of the Secretary of Administration



Table of Contents

| | |
|--|----|
| Executive Summary | 3 |
| Introduction | 4 |
| Proof of Performance | 5 |
| Solutions and Resources | 5 |
| Commonwealth Executive Branch Agency Projects | 8 |
| Virginia's Data Governance Framework | 10 |
| Commonwealth of Virginia Data Advisory Commission | 11 |
| Data Operations | 13 |
| Executive Data Board | 14 |
| Data Governance Council | 14 |
| Data Stewards Group | 15 |
| Office of Data Governance and Analytics | 16 |
| Previously Proposed Office of Data Governance and Analytics Organizational Structure | 18 |
| Appendix 1. Artifacts from Previous Data Sharing Activities | 20 |
| Appendix 2. Data Management Maturity Assessment Results | 22 |
| Appendix 3. Data Governance Framework | 24 |
| Appendix 4. Virginia Data Advisory Commission Regions | 25 |



Executive Summary

The Office of Data Governance and Analytics (ODGA) within the Secretary of Administration was officially established on July 1, 2021. The organization has grown from a staff of four to now fifteen and growing. Even with a small team, limited resources, and the establishment of the organization during a pandemic, ODGA has stamped itself as invaluable within the Commonwealth of Virginia having supported Governor-level initiatives and developed innovative solutions to support agencies. Furthermore, the Office of Data Governance and Analytics has been heralded as a thought leader for other states in terms of open data, infrastructure, and business intelligence capabilities.

Most recently, the Chief Data Officer has been asked to collaborate on several initiatives including workforce development, cybersecurity, and Operation Bold Blue Line. Not without mention is the continued work on developing the Commonwealth of Virginia's first universal entity index, known as CoVERED (Commonwealth of Virginia Entity Resolution for Enterprise Data), that paves the way for a single citizen experience.

This report highlights the Office of Data Governance and Analytics' proof of performance, which includes solutions the team has developed or are in development, as well as Commonwealth executive branch agency projects. The Virginia Data Governance Framework section outlines the Virginia Data Advisory Commission and the Commonwealth of Virginia data governance structure in progress.

The Office of Data Governance and Analytics asks that the General Assembly view this report with the awareness of what has been accomplished on a short runway with limited staff and during an administration transition. The organization is poised for growth and has established an outstanding reputation with each agency engagement. We are standing at the threshold for realizing the potential impact the Office of Data Governance and Analytics can have on the Commonwealth of Virginia, ultimately establishing Virginia as a national leader in data-driven performance management.

In the coming months, the Office seeks to make the role of the Chief Data Officer as well as the agency permanent while securing general funding to expand the incredible work that has begun. This growth allows the ODGA to better support agency partners and constituents as the work continues to stabilize the ecosystem of data governance and data sharing in the Commonwealth.



Introduction

During the 2021 Special Session of the General Assembly of Virginia, § 2.2-203.2:4 of the Code of Virginia was amended and reenacted by adding in Chapter 25 of Title 2.2 an article numbered 13, consisting of sections numbered 2.2-2558 through 2.2-2564 that called for the creation of the Office of Data Governance and Analytics within the Office of the Secretary of Administration on July 1, 2021. This legislation also codified the Data Governance Framework proposed by the Data Sharing and Analytics Advisory Committee from the 2019 report to the General Assembly Pursuant to Chapter 679 of the 2018 Acts of the Assembly. In January 2022 the Youngkin Administration began their work and appointed a new Commonwealth Chief Data Officer, Ken Pfeil, on April 1, 2022. The operations of the Office of Data Governance and Analytics are overseen by the politically appointed Chief Data Officer of the Commonwealth.

The Office of Data Governance and Analytics is charged with fostering and overseeing the effective sharing of data among state, regional, and local public entities and public institutions of higher education, implementing effective data governance strategies to maintain data integrity and security, and promoting access to Commonwealth data, including open data. The purpose of the Office is to also increase the use of data and data analytics to improve the efficiency and efficacy of government services and improve stakeholder outcomes, ultimately establishing the Commonwealth as a national leader in data-driven policy, evidence-based decision making, and outcome-based performance management.

This report serves to highlight the accomplishments of the Office of Data Governance and Analytics over the last year and outline the necessary resources required to deliver the following objectives:

- Promote and facilitate, subject to all applicable federal and state laws, rules, and regulations, the secure and appropriate sharing and use of data assets of the Commonwealth in support of data-driven policymaking, research, analysis, study, and economic development;
- Maximize the value and utility of Commonwealth data related investments and assets;
- Promote increased data sharing between state agencies and localities providing tangible operational improvements assisting state agencies and localities in fulfilling their missions in a more coordinated, cost-efficient manner;
- Provide for public access to certain data assets, where lawful and appropriate, enhancing research, innovation, and insight by implementing a website (<https://data.virginia.gov/>) dedicated to hosting open data from state, regional, and local public entities and public institutions of higher education and providing links to any other additional open data websites in the Commonwealth;
- Develop innovative data analysis and intelligence methodologies and best practices to promote data-driven policy making, decision making, research, and analysis;
- Manage and administer the Commonwealth Data Trust;
- Identify, coordinate, and oversee studies linking government services to stakeholder outcomes.



Proof of Performance

The report reflects activities, resources and solutions under development and in production provided by the Office of Data Governance and Analytics, including agency and Commonwealth projects relating to data sharing, governance, and analytics. Links to digital artifacts from previous milestones and deliverables have been included in the text and listed in Appendix 1.

Solutions and Resources

- **Infrastructure:** The Office of Data Governance and Analytics is the central data hub for state agencies to share, research, and glean insights from all the datasets the Commonwealth has to offer. The ODGA infrastructure is fully scalable and uses Microsoft's latest security standards and frameworks to ensure all data is secure and protected. ODGA can work with various data sources including databases, file systems, and agency data sources. The Azure Data Lake is the primary location where all data is stored prior to ingesting it into ODGA's data warehouses or data marts. The Azure Data Lake will also serve as the storage location for non-structured data (such as images, videos, social media data, etc.) to be used in research, analytics, or reporting. Each Commonwealth Data Trust member's data will be separated into their own storage blob with the appropriate data governance policies applied. Only the ODGA will have access to these database systems, all other users will access data through data marts. These systems will store the raw data (PII/PHI data included) that will serve as the single source of truth. Each agency will have their own Azure Data Warehouse which will allow the appropriate data governance policies to be applied. Another benefit to the separated data warehouses is that each agency's instance(s) can be scaled appropriately and effectively track the cost of that resource. Data will be replicated from the ODGA's data warehouses to data marts that will be the primary form of data retrieval from the ODGA. These data marts will be accessed in many different ways by users or systems such as:
 - Researchers
 - Data Sharing
 - Machine Learning and AI
 - Reporting
 - Virginia Open Data Portal
- **Commonwealth Predictive Analytics Environment:** ODGA is establishing a predictive analytics model in cloud AI/ML for agencies to leverage. Examples might include predictive mental health decline, cybersecurity, homelessness prevention, resource/capital investments, weather event impacts, and more.
- **Commonwealth Data Trust (<https://www.odga.virginia.gov/commonwealth-data-trust/>):** In 2016, The Secretary of Health and Human Resources (HHR) provided a report to the Governor and the House Appropriations and Senate Finance Committees describing a plan to improve the data governance structure in HHR agencies in order to streamline business processes, increase operational efficiency and effectiveness, and minimize duplication and overlap of



current and future systems development. The report identified several actions and initiatives to address data governance, privacy, and security within the HHR Secretariat including HIPAA compliance across all HHR agencies, extend “proper purpose” to include HIPAA-defined uses, update the eMOU (enhanced Memorandum of Understanding) developed in 2012 to extend beyond HHR agencies creating a Commonwealth-wide data trust, establish enterprise level “Analytics as a Service”, establish a cross-agency data governance structure, and establish a “Public-Private Data Collaborative” similar to the Commonwealth Data Commission described in the 2019 report containing the Advisory Committee’s recommendations. The CDO’s Office, worked with the Office of the Attorney General to develop the safe, secure, and legally compliant information sharing environment that establishes consistent requirements for trust members through a standardized data sharing agreement process. The Data Trust provides a scalable alternative to multiple “point-to-point” sharing, promotes trust among its members through common rules for data security, privacy, and confidentiality and reduces technical costs by onboarding to a single environment using standard NIEM protocols. The first organization joined the Commonwealth Data Trust in March 2020 and there are now 16 member organizations, that number is expected to grow to 25 by January 2023. Examples of the Data Trust agreements can be found at <https://www.odga.virginia.gov/commonwealth-data-trust/>

- **Universal Entity Index (UEI):** ODGA has designed and implemented the creation of a universal entity index, a crosswalk table that is Virginia’s first de-identified repository of all Virginians. This crosswalk table was leveraged to provide intelligence and analytics from multiple systems to assist agencies with their data needs. More specifically, the UEI provides the ability for agencies to merge their datasets with other contributed datasets while the data is deidentified. It also paves the way for the development of a true Single Citizen Experience.
- **Commonwealth of Virginia Entity Resolution for Enterprise Data (CoVERED)** (<https://www.odga.virginia.gov/solutions/covered/>): The Commonwealth of Virginia Entity Resolution for Enterprise Data (CoVERED) is a solution that securely and appropriately consolidates data from multiple systems across the state. This was leveraged heavily for the COVID-19 response and vaccine administration. The process involves ingesting multiple data streams separating the attributes that identify individuals (PII) from those that characterize the government services they receive by leveraging partnerships with executive branch agencies and other organizations through the Commonwealth Data Trust. It is the foundation for the development of the *Universal Entity Index* for the Commonwealth, which is a crosswalk table linking individuals across multiple systems without using their personally identifiable information.
- **Commonwealth of Virginia Enterprise Reporting Solution (CoVERS)** (<https://www.odga.virginia.gov/solutions/covers/>): This is a value-added component to participating in the Commonwealth Data Trust and provides Commonwealth of Virginia agencies the infrastructure, system lifecycle administration services, and human resources needed to manage the deployment and consumption of business intelligence products. This gives agencies the ability to publish the business intelligence products they need without having to invest valuable resources to develop and manage their own data intelligence



infrastructure. Thus, allowing agencies to spend more time focusing on the services they provide to the people they serve. CoVERS is a Microsoft Power BI-based environment where agencies and/or their agents develop the intelligence products (reports, visualizations, or dashboards) and ODGA deploys them to a test environment for review and promotes to the production environment once approved, alleviating the need for agencies to invest in their own technical and human infrastructure.

- **Azure Data Catalog** (<https://www.azuredatacatalog.com>): The Azure Data Catalog is an inventory of the Commonwealth’s data assets. This repository of data combined with metadata is a powerful tool for self-service business intelligence, empowering Commonwealth agencies to make more informed decisions. The metadata is what supports data discovery and sharing and includes names of data tables, data elements within the tables and views, descriptions of the data elements, and how it is related to other data that individuals might want to use. Well-defined metadata can enable the transformation of data into intelligence and actionable insight. Some metadata contains information relevant to the retention and archiving requirements for data and allows organizations to track data assets for compliance purposes.
- **Metadata Dictionary** (<https://metadata.cdo.virginia.gov>): The Commonwealth Metadata Dictionary provides valuable context about data assets that enable individuals to share data in useful ways, ultimately enabling the transformation of data into intelligence and actionable insight.
- **Secure Connected Government Cloud – SCGC**: The SCGC environment supports secure and appropriate data sharing of restricted-use data with Commonwealth Data Trust members across the Commonwealth including state agencies, localities, academic institutions, and private organizations.
- **Virginia Open Data Portal** (<http://www.data.virginia.gov/>): The first Open Data Portal was launched in 2017 by The Secretary of Technology, Library of Virginia, and VITA to establish a public-facing website that supported the discovery, accessibility, and utilization of the state’s open data assets. The Office of Data Governance and Analytics and Library of Virginia re-launched the portal in June 2020 on a dynamic platform that not only hosts the data catalog, but allows users to view stories and dashboards, create their own visualizations, filter data, export data, and access it via application program interfaces (API’s) to build solutions in web and mobile applications. The portal launch was accelerated to provide the initial 14 COVID-19 datasets from the Virginia Department of Health to the public. The Data Catalog now holds *over 800 datasets* and counting plus several dashboards and visualizations.
- **Virginia Datathon** (<https://www.odga.virginia.gov/datathon/>): The Office of the Governor and the Secretary of Technology hosted the first annual “Datathon” challenge in 2014 to promote the use of open data and data analytics. In 2020, the ODGA and Library of Virginia took over management of the event and hosted the largest Virginia Datathon to date, and virtually. The event continues bringing together state agencies and has expanded to include students, localities, non-profits, and the private sector to leverage technology and data to develop innovative solutions addressing complex problems. The next Virginia Datathon is planned for April 2023.



Topics for previous Datathons included:

- 2016 – New Virginia Economy
 - 2017 – Opioid Addiction
 - 2019 – Equity in Education
 - 2020 – Communities and COVID-19
 - 2021 – Addressing Hunger with Bits and Bytes
- **Locality Outreach:** In August 2022, Commonwealth Chief Data Officer, Ken Pfeil, embarked on a locality outreach roadshow to explore how the Office of Data Governance and Analytics can support locality data strategy, provide resources, and to uncover points of intersection between locality initiatives and Commonwealth of Virginia work. The CDO will visit roughly 2 localities each month with the anticipation of having visited 25 by July 1, 2023. Localities chosen are geographically disbursed and consist of both cities and counties, urban and rural. The following localities and events were engaged with in 2022:
 - Norfolk
 - Arlington
 - Virginia Beach
 - Montgomery County
 - Rockingham County
 - Stafford County
 - Sussex County
 - Virginia Municipal League Annual Conference

A live PowerBI report tracker to view which visits are planned next can be viewed at <https://sage-reports.cdo.virginia.gov/Reports/powerbi/CDO/CDO%20Localities%20Outreach%20Tracker>

Commonwealth Executive Branch Agency Projects

- **The Virginia Department of Health (VDH):** Due to the successful collaboration and support of VDH during COVID-19 and the vaccine administration, VDH has engaged with ODGA to manage the entity resolution process across multiple data systems leveraging CoVERED and using Verato (an entity resolution firm) to add social determinants of health data (SDOH) to individual records. In 2022, ODGA provided VDH with matched records of 7.6 million Virginians regarding social determinates of health data. VDH is now able to add this data to the vaccine and immunization data they already have in their repository.
- **Virginia State Police (VSP):** In October 2022, the Office of Data Governance and Analytics facilitated a Data Management Maturity Assessment (*Appendix 2*) and as a result, VSP reached out to engage the ODGA to assist with a modernization effort that will result in optimizing utilization of their data and maturation of their data management and governance.
- **Operation Bold Blue Line:** This is a [Governor's initiative](#) to identify and reduce violent crime in 12 specific localities. The ODGA is engaged to manage the data collection and consolidation and to support the resulting analytics. The data processing and management is hosted within the ODGA infrastructure. A key outcome will be increasing the reporting frequency on datasets



that localities normally report to VSP from once a month to weekly at minimum. The ODGA will be responsible for the presentation and visual layers of data analytics leveraged by the Governor's Cabinet and Violent Crime Task Force to make critical business decisions that can benefit constituents in these areas. Targeted localities are:

- | | |
|----------------|--------------|
| ▪ Chesapeake | ▪ Norfolk |
| ▪ Danville | ▪ Petersburg |
| ▪ Emporia | ▪ Portsmouth |
| ▪ Lynchburg | ▪ Richmond |
| ▪ Martinsville | ▪ Roanoke |
| ▪ Newport News | ▪ Hampton |

- **Department of Motor Vehicles & Chief Transformation Office:** The Chief Transformation Office has engaged the ODGA to support the data-driven transformation efforts across state government. The first agency of focus is the Department of Motor Vehicles (DMV). Daily status reports from each DMV location are being provided to the ODGA for the creation of dashboards that the Chief Transformation Office is using to upgrade efficiency within DMV. Data points collected include average wait time, average number of customers served, average window utilization, and more. From initial engagement to dashboard delivery was less than two months. In a nutshell, the ODGA is providing the analysis and business intelligence needed by the Chief Transformation Office to drive change and increase efficiency within state government.
- **Workforce:** ODGA is partnering with the Secretary of Labor and Department of Education to connect the Workforce Data Trust, the Department of Education's Virginia Longitudinal Data System (VLDS), and the Commonwealth Data Trust into an overall workforce management ecosystem. This efficiency will result in the ability to operationalize and automate workforce initiatives across the Commonwealth to facilitate job growth while laying the groundwork for the Single Citizen Experience.
- **Virginia Department of Emergency Management:** The ODGA was engaged to complete a payroll automation project to categorize employees by disaster for each pay period that generates a file to be uploaded into the Cardinal General Ledger System. The automation of this process relieves VDEM staff of manually transforming this data every pay period and saves countless staff hours. In 2022, results were realized with The Payroll Automation Tool that allowed VDEM's Accounting Office to reallocate nearly 1.2 million dollars in disaster payroll expenses by efficiently reducing the need for reconciling data sets from three disparate enterprise systems used for payroll processing. Prior to the automated tool, VDEM Accountants manually reconciled the three data sets using a combination of Microsoft Excel functions and formulas to segregate, analyze and compute the detailed payroll data to ensure employees earnings and fringe benefit expenses were properly reallocated. Depending on the duration of the disaster the volume of payroll being reconciled utilizing the manual process would take 1-3 weeks as Accountants balanced competing priorities. The automated function reduced this process to *less than 1.5 hours*.
- **Virginia Employment Commission:** In 2021, VEC was tasked with identifying fraud across multiple systems including legacy mainframe technologies. ODGA provided guidance in the



development of the Statement of Requirements as well as solution support by hosting the Fraud Detection and Analytics solution that is still in production today. In addition, VEC partnered with ODGA again to create a series of dashboard reports that includes 17 reports surrounding claims and payment reconciliations.

The Virginia Employment Commission (VEC) partnered with the Office of Data Governance and Analytics (ODGA) to host a fraud data analytics solution that VEC and a private vendor developed. This solution was designed to enable the VEC to quickly identify and investigate fraudulent and potentially fraudulent claims for unemployment compensation. Work on developing the solution began in early March, and it was deployed on July 31, 2021. During the first three weeks of its use, the VEC was able to identify 1,675 claims that displayed significant characteristics of fraud. This enabled the agency to target investigation resources on those claims that had a potential dollar value of \$11.1 million. On August 19, 2021 the VEC was able to use this tool to identify and shut down 249 claims that were the direct result of a "bot" attack by a criminal element. The tool has proven very effective. Our partnership with the ODGA was extremely important to the speed with which we were able to deploy this solution since we were able to leverage the ODGA's existing infrastructure and development tools.

~Suganya Kumar, Project Manager, Virginia Employment Commission

- **Integrated Data for Enterprise Analytics (IDEA):** During the 2018 legislative session, the General Assembly created the position of the Chief Data Officer (CDO) for the Commonwealth of Virginia mandating the CDO work on a pilot project, the Framework for Addiction Analysis and Community Transformation (FAACT), to demonstrate the value of data sharing and analytics as a response to the opioid crisis. The Virginia Department of Criminal Justice Services (DCJS) and the Department of Behavioral Health and Developmental Services (DBHDS) worked with the CDO to develop and pilot a data-sharing platform, the Integrated Data for Enterprise Analytics (IDEA), that could respond to the opioid crisis in the Northern Shenandoah Valley. In 2019 alone, opioid overdoses went from an average of 31% to 15% from Q1 to Q4. During COVID-19 and the vaccine administration the data sharing platform, IDEA, was expanded to create dashboards that provided a wide-variety of data and powerful self-service analytics supporting Commonwealth leaders as they responded to the crisis. ODGA continues to provide funding for the IDEA platform leveraged by DCJS for additional initiatives such as the collaborative program to eradicate human trafficking.

Virginia's Data Governance Framework

The General Assembly of Virginia in the 2018 Session enacted Chapter 679 of the Acts of the Assembly ("Chapter 679") to mitigate some of the data sharing restrictions identified in the 2018 Report on Implementation of HB2457 – Data Sharing Among State Health and Human Resources Agencies (Chapter 467, 2017) by defining "proper purpose" as it relates to inter-agency data sharing.



“Proper purpose” includes the sharing or dissemination of data or information among and between agencies in order to

- (i) streamline administrative processes to improve the efficiency and efficacy of services, access to services, eligibility determinations for services, and service delivery;*
- (ii) reduce paperwork and administrative burdens on applicants for and recipients of public services;*
- (iii) improve the efficiency and efficacy of the management of public programs;*
- (iv) prevent fraud and improve auditing capabilities;*
- (v) conduct outcomes-related research;*
- (vi) develop quantifiable data to aid in policy development and decision making to promote the most efficient and effective use of resources; and*
- (vii) perform data analytics regarding any of the purposes set forth in this definition*

While this legislation expanded the scope and paved the way for increased data sharing amongst Executive Branch Agencies, it did not address the fundamental need for enterprise-wide data governance across the Commonwealth. The lack of a comprehensive data inventory as well as data standards, data dictionaries, and regulation and compliance surrounding data quality makes understanding agency data very difficult both internally as well as externally between agencies. While organizations are focused on their mission mandates and operational goals, they may not be aware of the impact their data can have on the effectiveness of their sister agencies or organizations. As such, agencies have little incentive to document or model their respective data beyond their current operational interests.

The Data Governance Framework resulting from previous activities and deliverables not only helped to inform the agency engagement and analysis presented in this report, the framework recommended by the 2016 HHR report served as a potential starting point for the state government to act on the recommendations.

Commonwealth of Virginia Data Advisory Commission

During the 2021 Special Session of the General Assembly of Virginia, § 2.2-203.2:4 of the Code of Virginia was amended and reenacted by adding in Chapter 25 of Title 2.2 an article numbered 13, consisting of sections numbered 2.2-2558 through 2.2-2564 that codified the Data Governance Framework proposed by the Data Sharing and Analytics Advisory Committee in its 2019 report to the Governor and the General Assembly and administratively implemented by Governor Northam in January 2020.

§ 2.2-2558. (Expires July 1, 2024) Virginia Data Advisory Commission; purpose.

The Virginia Data Advisory Commission (the Commission) is established as an advisory commission in the executive branch of state government. The Commission shall advise the Office of Data Governance and Analytics (the Office), established pursuant to § 2.2-203.2:4, on issues related to data sharing, including open data, data analytics, and data governance. The



Commission shall (i) set, plan, and prioritize data sharing performance goals for the Commonwealth, (ii) review agency accomplishments, and (iii) recommend solutions that will establish the Commonwealth as a national leader in data-driven policy, evidence-based decision making, and outcome-based performance management.

2021, Sp. Sess. I, c. 314.

§ 2.2-2559. (Expires July 1, 2024) Membership; terms; vacancies; chairman and vice-chairman.

A. The Commission shall have a total membership of 27 members that shall consist of six legislative members, seven nonlegislative citizen members, and 14 ex officio members. Members shall be appointed as follows: three members of the Senate, to be appointed by the Senate Committee on Rules; three members of the House of Delegates, to be appointed by the Speaker of the House of Delegates in accordance with the principles of proportional representation contained in the Rules of the House of Delegates; and seven nonlegislative citizen members to be appointed by the Governor. The Executive Secretary of the Supreme Court of Virginia, the Chief Workforce Advisor to the Governor, the Chief Data Officer of the Commonwealth, the Secretary of Administration, the Secretary of Health and Human Resources, the Secretary of Public Safety and Homeland Security, the Secretary of Finance, the Secretary of the Commonwealth, the Secretary of Agriculture and Forestry, the Secretary of Natural and Historic Resources, the Secretary of Commerce and Trade, the Secretary of Education, the Secretary of Veterans and Defense Affairs, and the Secretary of Transportation, or their designees, shall serve ex officio with voting privileges. Nonlegislative citizen members appointed by the Governor shall represent the seven geographic areas of the Commonwealth. Of the nonlegislative citizen members, at least one shall represent a baccalaureate public institution of higher education in the Commonwealth, at least one shall be an elected official representing a local government in the Commonwealth, and at least one shall represent a private business with expertise and experience in the establishment, operation, and maintenance of a data intelligence platform.

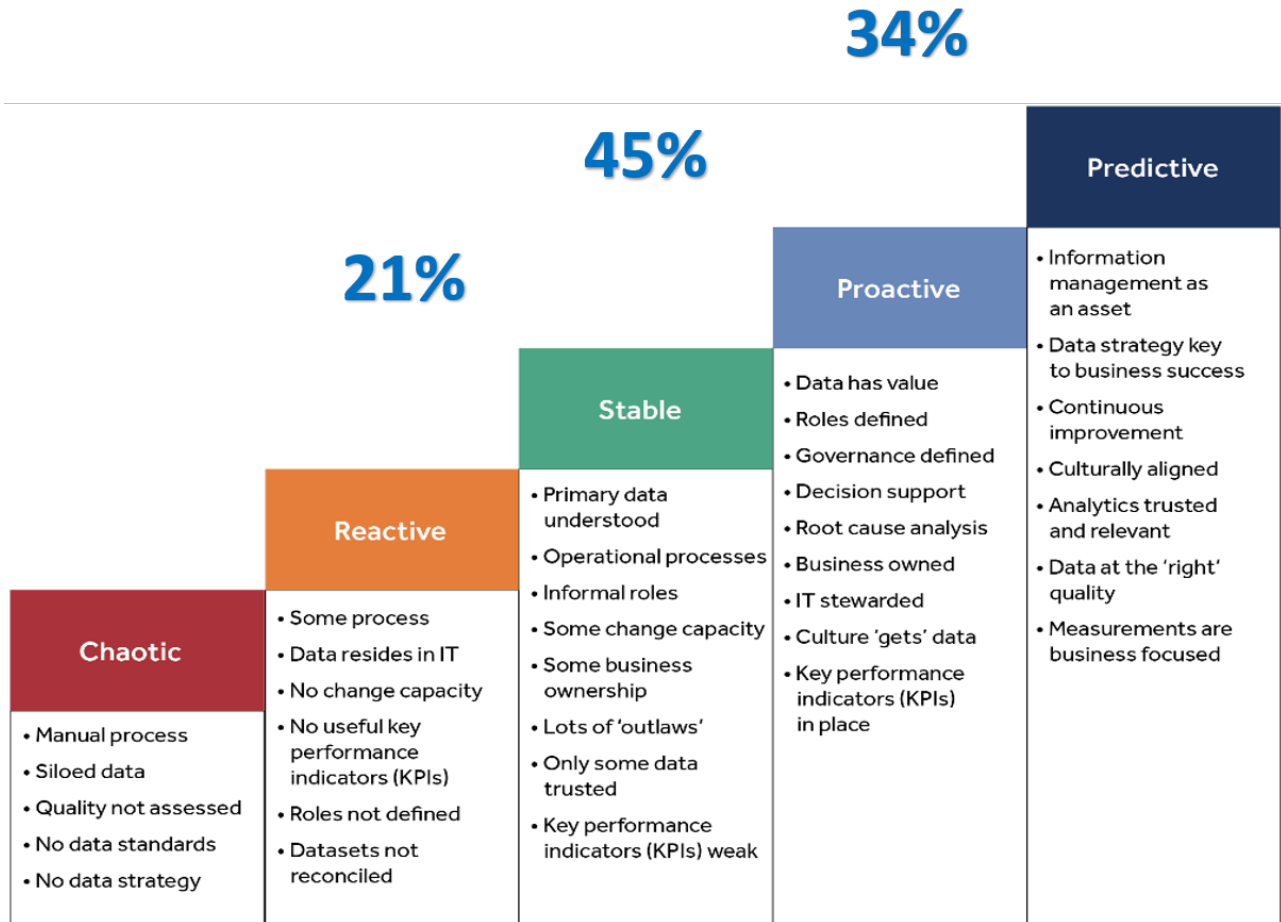
During 2022, the Virginia Data Advisory Commission convened on July 19, 2022 and October 25, 2022. During the meeting on July 19, 2022, the Commission recommended the Office of Data Governance and Analytics conduct a Data Management Maturity Assessment of Executive Branch Agencies. This assessment was completed prior to the Commission meeting on October 25, 2022.

The Data Management Maturity Assessment involved 30 questions covering 4 key areas:

- People and Culture
- Data Activities
- Business Process
- Technology



21% of agencies identified as being in a reactive level, 45% of agencies reported being stable, and 34% of agencies reported at the proactive level. More results are available in Appendix 2.



Data Operations

In addition to creating the Commonwealth of Virginia Data Advisory Commission to facilitate communication between data operators, legislators, and the public, the Advisory Committee also recommended, and the Governor and General Assembly established, the following governance structure to support organizations who conduct ongoing data operations. These organizations, which are not limited to the executive branch of state government, are responsible for the collection, storage, management, protection, use and dissemination of data assets. The recommended governance structure facilitates communication and collaboration between executives, senior managers, technical personnel, and data consumers. Governance should be driven by a Data Governance Council, with executive oversight, strategic goals, and performance objectives defined by an Executive Data Board. The Data Stewards Group informs the Data Governance Council of the technical needs and issues encountered as it implements the policies set forth by the Executive Data Board. The Office of Data Governance and Analytics maximizes the value and utility of Commonwealth data-related investments by promoting data sharing between state agencies, localities, and other organizations providing tangible



operational improvements assisting these organizations in fulfilling their respective missions in a coordinated, cost-effective manner.

This governance model (*Appendix 3*) enables the Commonwealth to implement policies, standards, and best practices supporting the exchange and effective use of data by state agencies, localities, and other commonwealth organizations. The Data Governance Council defines, develops, and recommends policies, standards, and best practices to achieve performance targets set by the Executive Data Board and implemented by the Data Stewards Group.

Executive Data Board

The Executive Data Board shall consist of the directors or chief executives, or their designees, of executive branch agencies engaged in data sharing and analytics projects with the Commonwealth Data Trust. The CDO shall chair the Board. Members of the Board shall (i) translate the Commonwealth's data-driven policy goals and objectives into performance targets at their respective agencies; (ii) allocate appropriate resources at their respective agencies to support data governance, sharing, and analytics initiatives; and (iii) provide any reports to the Office regarding their respective agencies' data analytics work and implementation of recommendations.

Data Governance Council

The Data Governance Council shall consist of employees of the agencies represented on the Board, selected by the Board members from their respective agencies. The CDO, or his designee, shall chair the Council. The Council shall (i) liaise between state agency operations and the CDO; (ii) advise the CDO on data technology, policy, and governance structure; (iii) administer data governance policies, standards, and best practices, as set by the Board; (iv) oversee data sharing and analytics projects; (v) review open data assets prior to publication; (vi) provide to the Board any reports on the Council's recommendations and work as required by the Board; (vii) develop necessary privacy and ethical standards and policies for Commonwealth Data Trust resources; (viii) monitor the sharing of Commonwealth Data Trust member-contributed data resources; (ix) review and approve new Commonwealth Data Trust-managed data resources; and (x) conduct any other business the CDO deems necessary for Commonwealth Data Trust governance.

The Data Governance Council is responsible for the governance of the Commonwealth Data Trust and administration of the permanent governance structure for the Commonwealth. The membership of the Data Governance Council shall be determined by the Executive Data Board. Agency participation on the council is voluntary if the agency is not a member of the data trust, but highly encouraged since the council acts as a bi-directional communication vehicle between operational units and the Commonwealth CDO. The council is expected to meet quarterly to execute the following functions:

- Advise the Executive Data Board and the Commonwealth Data Commission on technology, policy, and governance strategies to meet the Chapter 679 requirements.



- Govern the Commonwealth Data Trust
- Provide a governance, policy, and technology framework for information sharing, promoting greater utility and accessibility of data assets
- Recommend policies, standards, and guidelines for the formation, operations, and maintenance of the Data Governance Council
- Recommend policies, standards, and guidelines for defining, managing, approving, and distributing 'Open Data' maintained by state agencies
- Report progress, compliance, and performance to the Executive Data Board and the Commonwealth Data Commission
- Coordinate among agency projects and activities, to prevent duplication of functions, and to combine all agency data governance plans into a comprehensive interagency state plan
- Ensure that collection, use, and distribution of data is equitable.

Data Stewards Group

The Data Governance Framework shall provide mechanisms for the prompt identification and resolution of data quality, integrity, and security issues through the establishment and promotion of the Commonwealth Data Stewards Group. The Data Stewards Group shall consist of employees from executive branch agencies with technical experience in data management or data analytics. Executive branch agencies shall be encouraged to designate at least one agency data steward to serve on the Group and may designate multiple data stewards as appropriate based upon organizational or data system responsibilities. The Group shall (i) provide the Board and Council with technical subject matter expertise in support of data policies, standards, and best practices; (ii) implement data sharing and analytics projects promoting data accessibility, sharing, and reuse, thereby reducing redundancy across the Commonwealth; (iii) coordinate and resolve technical stewardship issues for standardized data; (iv) ensure data quality processes and standards are implemented consistently by agencies in the Commonwealth; (v) provide communication and education to data users on the appropriate use, sharing, and protection of the Commonwealth's data assets; (vi) promote the collection and sharing of metadata by registering data assets in the Virginia Data Catalog; (vii) liaise with agency project managers and information technology investment staff to ensure adherence to Commonwealth data standards and data sharing requirements; and (viii) support informed, data-driven decision making through compliance with Commonwealth data policies, standards, and best practices.

The Data Stewards Group provides technical personnel a voice and an opportunity to be engaged in the data governance process. The Data Stewards Group should have multiple working groups to support the needs of the Data Governance Council. The Data Stewards Group should meet quarterly at a minimum with working groups meeting more frequently as needed.

Cross-Agency Data Domain Coordinators



An important function of the Data Stewards Group is the coordination of data assets belonging to the same domain across multiple agencies. The data domain coordinators are able to identify potential data integrity and interoperability issues and propose solutions to the Data Governance Council. Some example domains include, but are not limited to:

- Agriculture
- Economic Development
- Education
- Environmental Quality
- Equity from a Data Perspective
- Finance
- Health
- Housing
- Labor and Veterans Services
- Law Enforcement
- Public Safety
- Social Services
- Transportation

Data domains cut across multiple agencies, cabinet offices, and commonwealth organizations requiring coordination and communication. In addition, some data elements are so ubiquitous they require enterprise-level management to maximize interoperability and re-use throughout the organization. The Cross-Agency Data Domain Coordinators is a specific, permanent working group of the Data Stewards Group.

Office of Data Governance and Analytics

The Office of Data Governance and Analytics (the Office) was created during the 2021 Special Session (<https://law.lis.virginia.gov/vacode/title2.2/chapter2/section2.2-203.2:4/>) reports to the Chief Data Officer within the Secretary of Administration and directly supports the Data Governance Council in the development of policies, standards, and best practices. This office will manage the Commonwealth Data Trust to facilitate data sharing across the Commonwealth and its partners and provide administrative support to the Virginia Data Advisory Commission, Executive Data Board, Data Governance Council, and Data Stewards Group (*Appendix 2 and 3*). In addition, the Office will provide guidance, support, oversight, and technical assistance to data trust member agencies and commonwealth organizations in the implementation of data governance, sharing, security, and analytics projects. Additional responsibilities of the Office include, but are not limited to:

- Advise executive state agencies, commonwealth organizations, and political subdivisions regarding state best practices concerning the creation and maintenance of data
- Coordinate data analytics and transparency master planning for the executive branch agencies and provide leadership regarding state data analytics and transparency
- Collect, analyze, and exchange government information



- Advocate for data sharing providing expert guidance on federal and state data privacy laws
- Conduct operational and procedural audits of executive state agencies data governance and sharing implementations
- Identify data integration and business intelligence opportunities that will generate greater efficiencies in state agencies, departments, and institutions
- Leverage data from transactional systems for enterprise-level state business intelligence
- Compare capabilities and costs across state agencies
- Ensure data integration and sharing is performed in a manner that preserves data privacy, security, and confidentiality in transferring, storing, and accessing data, as appropriate

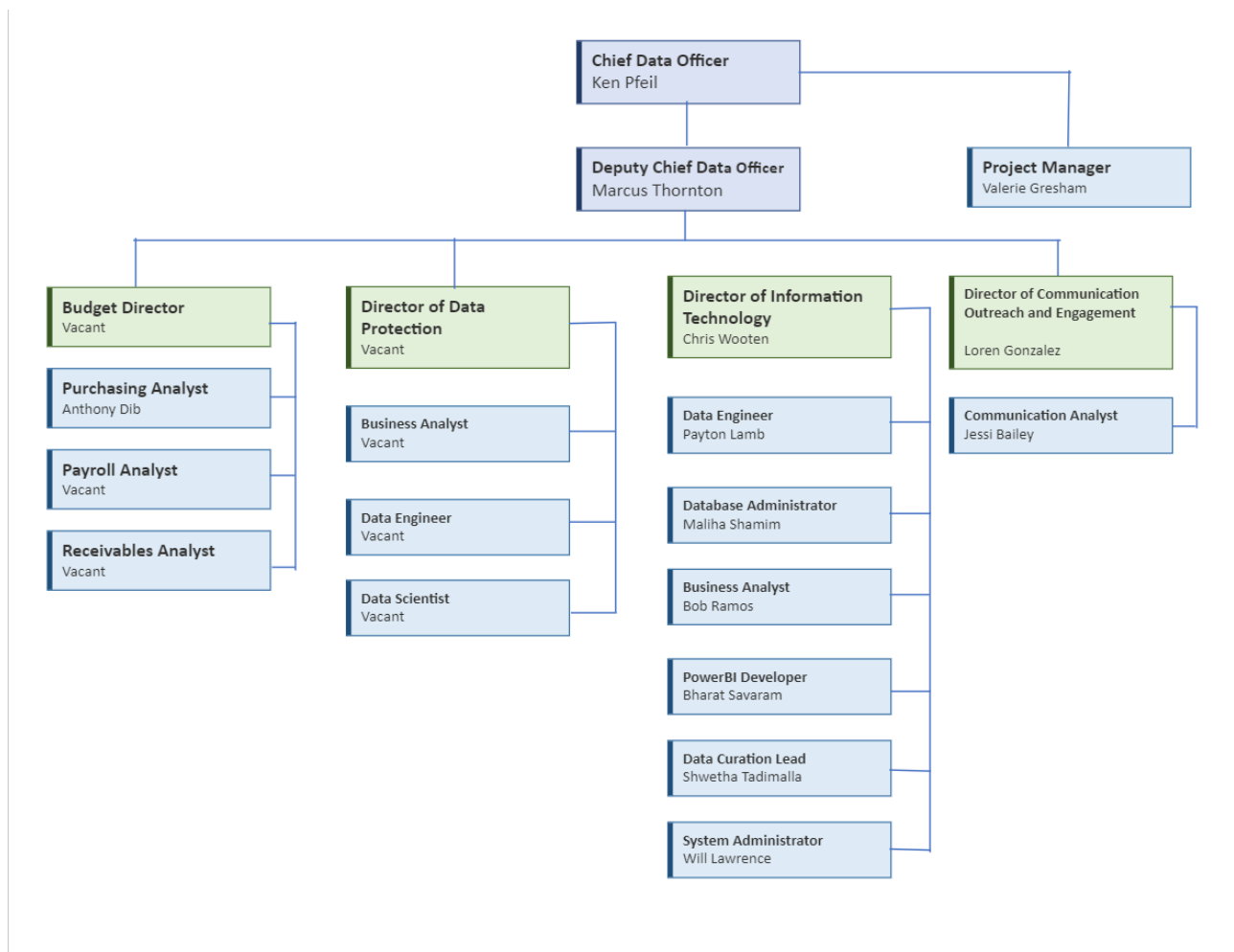


Figure 1. Current organizational structure of the Office of Data Governance and Analytics.



Previously Proposed Office of Data Governance and Analytics Organizational Structure

In 2020, The Virginia Data Advisory Commission recommended the following positions be included in the Office of Data Governance and Analytics. These positions covered the breadth and depth required to meet the data governance, sharing, and analytic needs of the Commonwealth and are included here for historical reference.

- Chief Data Officer (political appointment)
- Deputy Chief Data Officer
- Program Coordinator
- Data Privacy Officer
- Data Security Analyst
- Data Curation Lead
- Data Scientist
- Data Analytics Project Manager*
- Data Analytics Specialist*
- Business Intelligence Specialist*
- Communications/Outreach/Engagement Manager
- Communications Analyst*
- Technical Project Manager*
- Data Architect*
- Data Engineer*

* Potentially more than 1 person

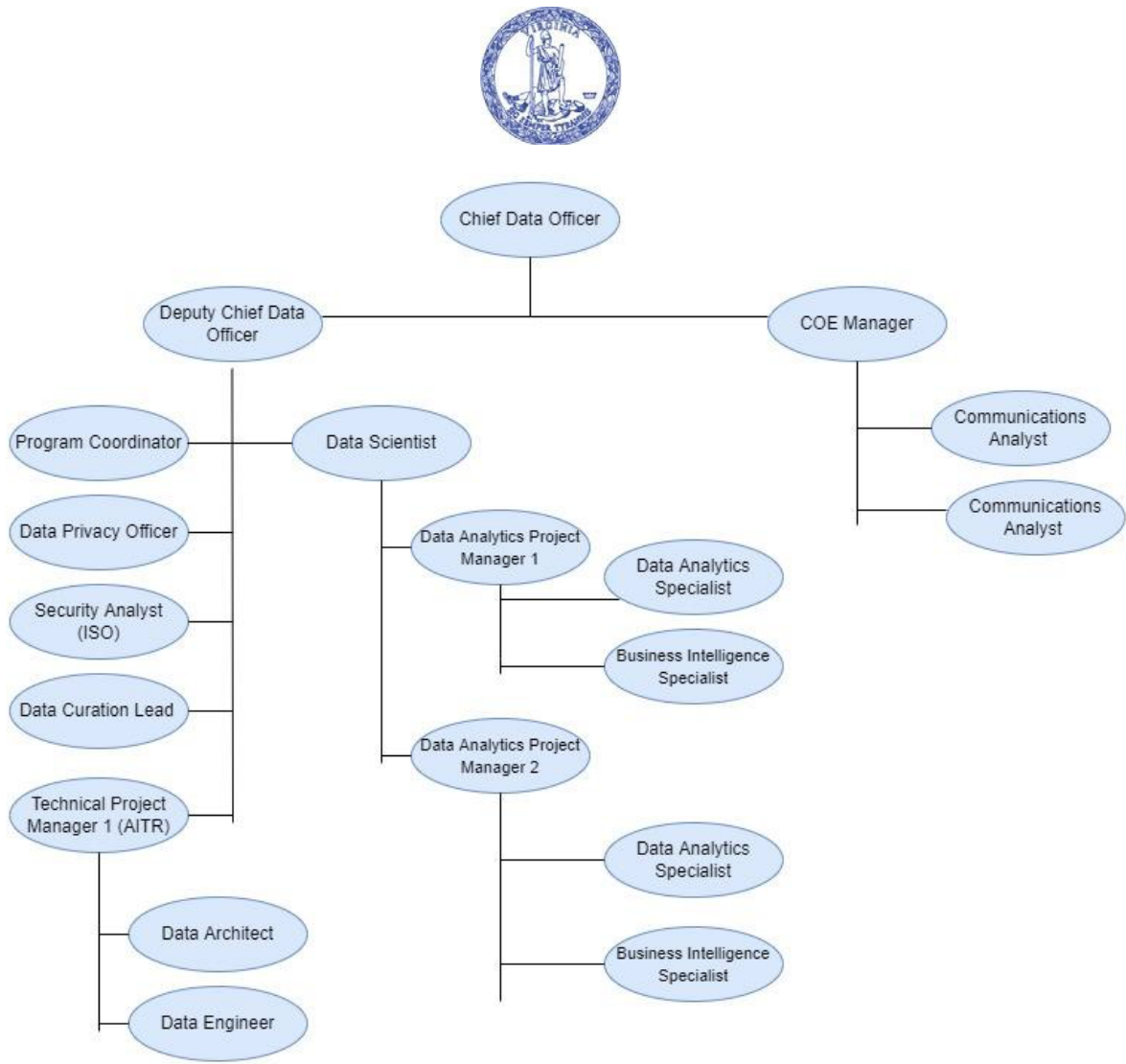


Figure 2. 2020 proposed organizational structure of the Office of Data Governance and Analytics.



Appendix 1. Artifacts from Previous Data Sharing Activities

VLDS: VLDS Book of Data Governance Version 2.1 February 16, 2017

http://vlids.virginia.gov/media/1087/vlds_book_of_dg.pdf

VITA Executive Directive 6: Cyber-related Risk Management Activities and Protections

<https://www.vita.virginia.gov/about/news-events/news-archive/2015-news--events/governor-mcauliffe-signs-executive-directive-6.html>

VITA Executive Directive 7 Final Report: Leveraging the Use of Shared Data and Analytics

<https://www.vita.virginia.gov/media/vitavirginiagov/it-governance/pdf/ExecutiveDirective7.pdf>

Secretary of Health and Human Resources and Secretary of Technology: Secretarial Committee on Data Sharing. Committee Report and Recommendations, Version 2.2. March 2012

https://www.vita.virginia.gov/media/vitavirginiagov/it-governance/ea/pdf/SCDS_DURSA_Report.pdf

Commonwealth Enterprise Information Architecture (EIA) Strategy:

https://www.vita.virginia.gov/media/vitavirginiagov/it-governance/ea/pdf/Commonwealth_EIA_Strategy_FINAL.pdf

ITRM Data Exchange Standards:

https://www.vita.virginia.gov/media/vitavirginiagov/it-governance/ea/commonwealth-data-standardization-plan/pdf/Item_427-FinalPlanSoTechTransmittal_07012013.pdf

NIEM Adoption Strategy:

https://www.vita.virginia.gov/media/vitavirginiagov/it-governance/ea/commonwealth-data-standardization-plan/pdf/Appendix_2-NIEMCorePersonStandardNarrative.pdf

Adopted Health IT Standards:

<https://www.vita.virginia.gov/media/vitavirginiagov/about/pdf/itac-and-hitsac-archives/COVHealthITStandardsAdoptedHITSACAUG2016.pdf>

Data Sharing and Analytics Advisory Committee - Data Sharing and Analytics Governance Structure for the Commonwealth of Virginia Report (2019)

<https://rga.lis.virginia.gov/Published/2019/SD6>



Commonwealth Data Trust

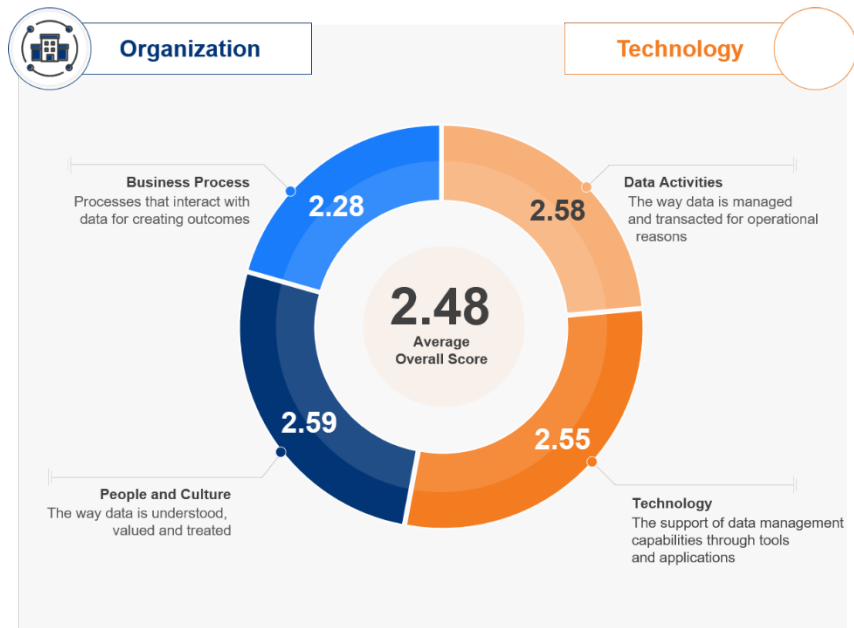
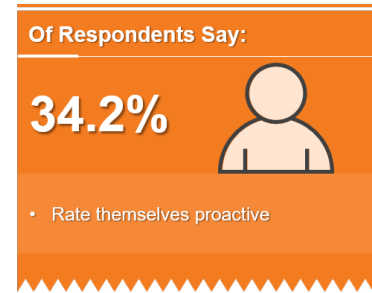
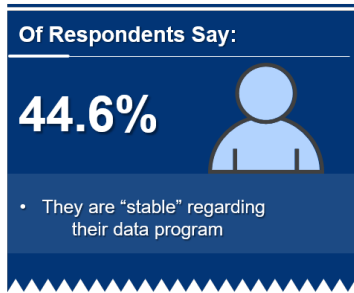
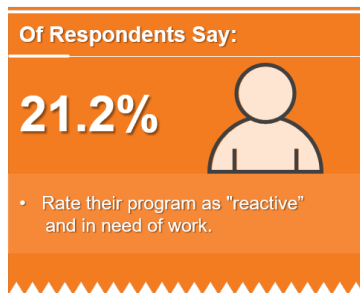
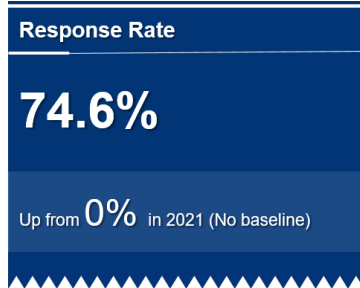
<https://www.odga.virginia.gov/commonwealth-data-trust/>

Virginia Data Advisory Commission

<https://www.odga.virginia.gov/data-governance/virginia-data-advisory-commission/>



Appendix 2. Data Management Maturity Assessment Results



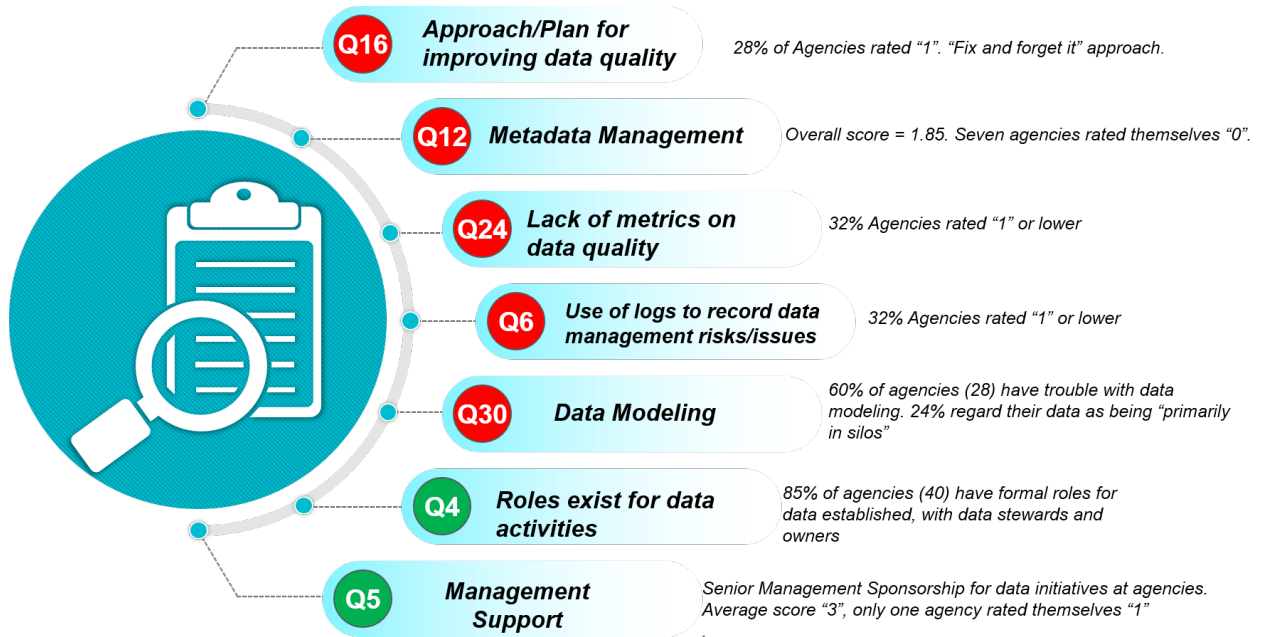
Key Observations

- Q16 - Approach/Plan for improving data quality. 13 Agencies rated "1". "Fix and forget it" approach
- Q12 - Metadata Management - Overall score = 1.85. Seven agencies rated themselves "0".
- Q24 - Lack of metrics on data quality. 32% Agencies rated "1" or lower.
- Q6 - Use of logs to record data management issues. 32% Agencies rated "1" or lower
- Q30 - 60% of agencies (28) have trouble with data modeling. 24% regard their data as being "primarily in silos".



On a positive note:

- Senior Level Sponsorship for data initiatives at Agencies. Average score “3”, only one agency rated themselves “1”
- 85% of agencies (40) have formal roles for data established, with data stewards





Appendix 3. Data Governance Framework





Appendix 4. Virginia Data Advisory Commission Regions

