

OFFICE OF THE GOVERNOR OF THE COMMONWEALTH OF VIRGINIA

## DATA GOVERNANCE ROADSHOW

CHIEF DATA OFFICER CARLOS RIVERO

## WHY DATA GOVERNANCE?

- To ensure data are sound, **SECURE**, and accessible to qualified users
- To improve **PRODUCTIVITY** and efficiency
- To increase the **VALUE** of the commonwealth's data assets by guiding and enabling its evolution from information to intelligence
- To promote data discovery, exploration, integration, and sharing through the implementation of enterprise **STANDARDS**

## CHIEF DATA OFFICER

- Guides the development of enterprise standards, policies, and best practices to ensure the organization's data holdings increase in VALUE over time
- LIAISE between Mission and Technology Programs
- Leads enterprise data governance across the Commonwealth
- **PROMOTES** secure data sharing

#### DATA VALUE CHAIN

- A data value chain describes the **EVOLUTION** of data from information to intelligence within an organization.
- It encapsulates the various **FORMS** data can take as organizational units transform it to fit their needs.
- As such, its inherent **VALUE** increases the more it is used.
- A **FEEDBACK** loop is created when changes to data collection programs are implemented due to the identification of knowledge gaps.
- Thus, supporting a virtuous cycle of **CONTINUOUS IMPROVEMENT** and increasing the value of the organization's data assets.

## Actionable Decisions

**INTEGRATE** 

**INTELLIGENCE** 

**ASSIMILATE** 

**KNOWLEDGE** 

INTERPRET

**INFORMATION** 

**COLLECT** 

**DATA** 

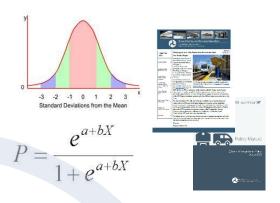
MANAGEMENT **SUPPORTS GUIDES** INTELLIGENCE ARCHITECTURE **PRINCIPLES DRIVES INFORMS** GOVERNANCE

#### **PRINCIPLES**

- Used to support mission goals
- Interpreted, analyzed, and assimilated to support ACTIONABLE decisions
- Standardized to promote **INTEROPERABILITY** and integration
- Managed to maintain quality, INTEGRITY, and reliability
- Accessible with appropriate **SECURITY** controls
- Disseminated to promote **REUSE**

DATA
INTEROPERABILITY
SUPPORTING
INTEGRATION
AND TACTICAL USE





RESEARCH
UNIVERSITIES AND
PRIVATE BUSINESSES
CONDUCT ANALYTICS
RESEARCH AND
DEVELOP ALGORITHMS



KNOWLEDGE GAPS
IDENTIFIED AND
MITIGATED
SUPPORTING
CONTINUOUS
IMPROVEMENT



ALGORITHMS ARE
'OPERATIONALIZED'
AND EMBEDDED
INTO
COMMONWEALTH
INTELLIGENCE
PRODUCTS VIA TECH
TRANSFER
SUPPORTING
STRATEGIC, TACTICAL,
OPERATIONAL LEVELS

**AGENCY OPERATIONS** 

#### BENEFITS

- IMPROVE OPERATIONAL EFFICIENCY
- MORE CITIZEN-CENTERED SERVICES
- BETTER OUTCOMES FOR CONSTITUENTS

#### OPERATIONAL EFFICIENCY

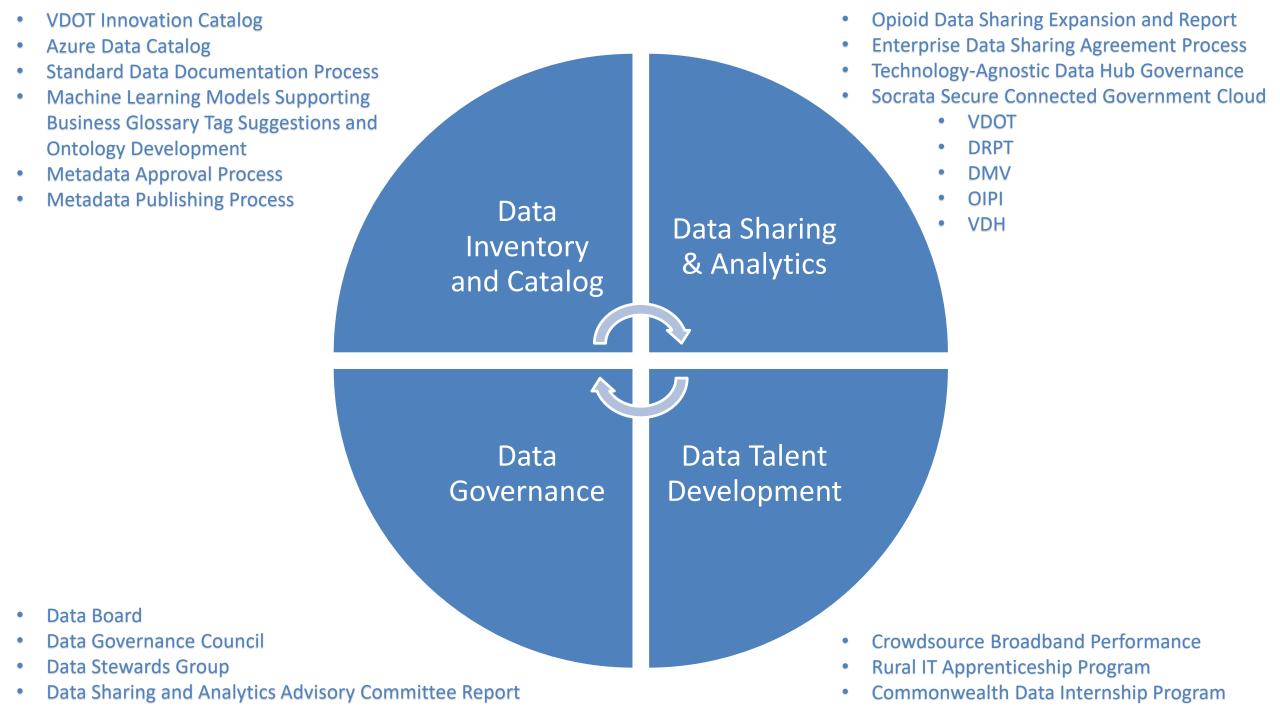
- Verify newborn screenings against birth records (DGS CLS & VDH VR)
- Continuity of care through Medicaid enrollment (DOC, DMAS, DSS, DCJS)
- Improving cash forecasting (Treasury, VDOT, DOE, Tax, DMAS)
- Electronic Health Records (DOC, DCJS, DJJ, DBHDS, VDH)
- Automatic account creation VA-Common Access Portal (DSS, DARS, DBVI, VEC, VCCS, DOE)

#### CITIZEN-CENTERED SERVICES

- One-stop workforce referral service (VA-Common Access Portal)
- One-stop change of address portal (DMV, VEC, VRS, DARS, Tax)
- Homelessness Coordinated Entry System (DHCD)
- Unified payment system
- Common licensing and permitting

## **OUTCOMES FOR CONSTITUENTS**

- Reduce opioid and substance use related overdose deaths
- Reduce homelessness (especially among vulnerable populations)
- Reduce unemployment and underemployment
- Reduce recidivism
- Increase school readiness
- Increase strategic planning capabilities among localities



# https://administration.Virginia.gov/cdo



Data Governance Initiatives Advisory Committee Events



#### Carlos Rivero, Chief Data Officer

Role of the Chief Data Officer

Generally speaking, the primary role of the Chief Data Officer (CDO) is to increase the value of the



## DATA GOVERNANCE SURVEY

- Develop a commonwealth-wide data governance policy
- Engage as many stakeholders as possible (agencies, cities, counties, universities, boards)
- In the process
  - Identify how we are currently sharing data
  - Identify how we would like to share data in the future
  - Understand the relative risks and strategies to mitigate those risks
  - Determine where the commonwealth can invest to improve outcomes

## https://cit.smartcitiesactivator.com



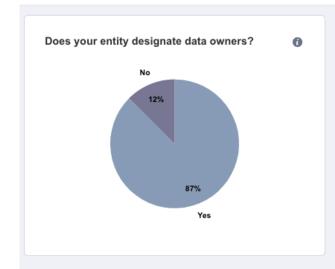
#### HOW DATA WILL BE USED

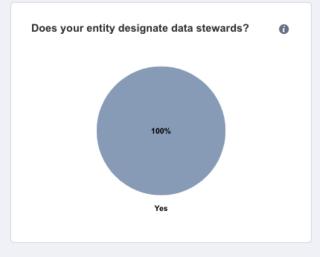
- Identify data use cases
- Find common needs and priorities (e.g., opioids, public safety, education)
- Develop a set of policy and budget recommendations for both state and local level governments

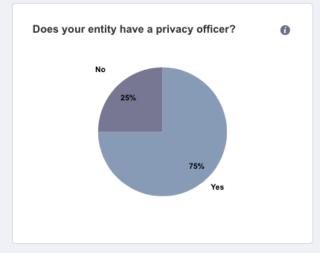
#### SURVEY TOPICS

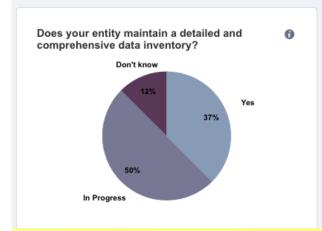
- Who is responsible for data governance
- What policies are in place (data governance, data sharing, privacy, etc...)
- What is the level of expertise (training and certifications)
- How is data being used
- How will data be used in the future

## AGENCY ACCOUNTABILITY

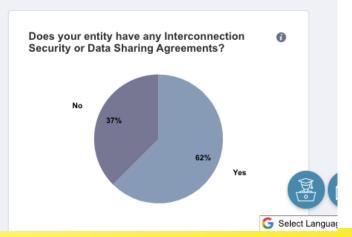




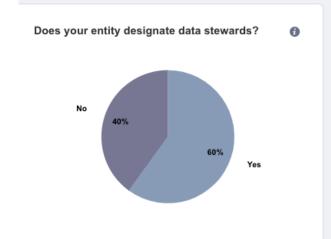


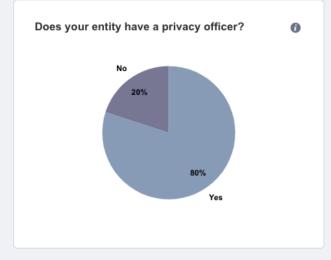


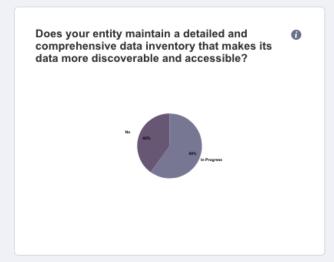


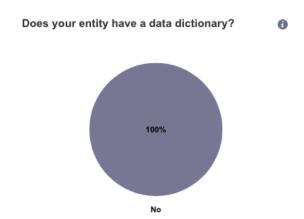


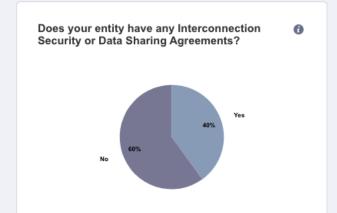
# CITY/COUNTY ACCOUNTABILITY





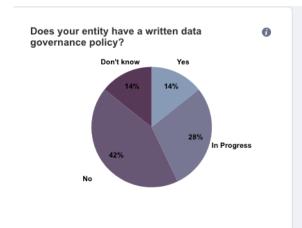




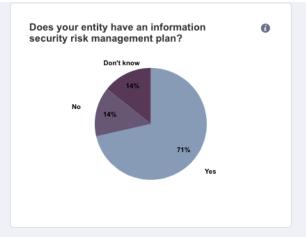


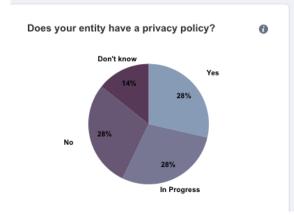


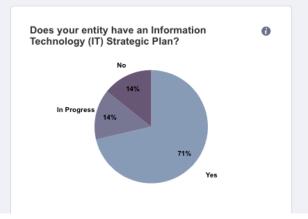
## AGENCY SYSTEM WIDE POLICIES

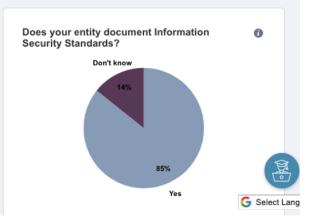




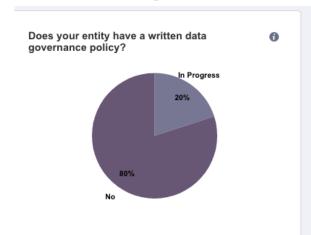


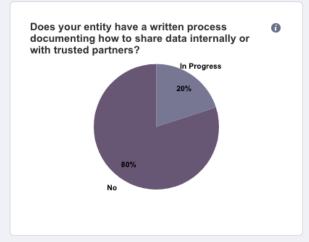


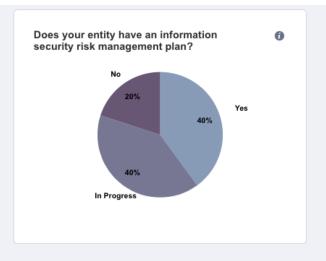


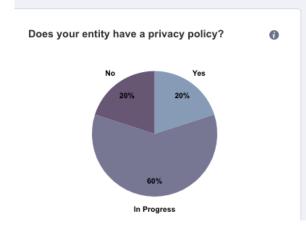


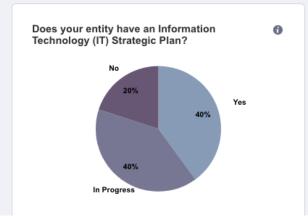
# CITY/COUNTY SYSTEM WIDE POLICIES

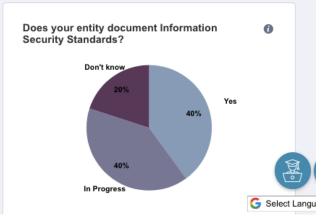




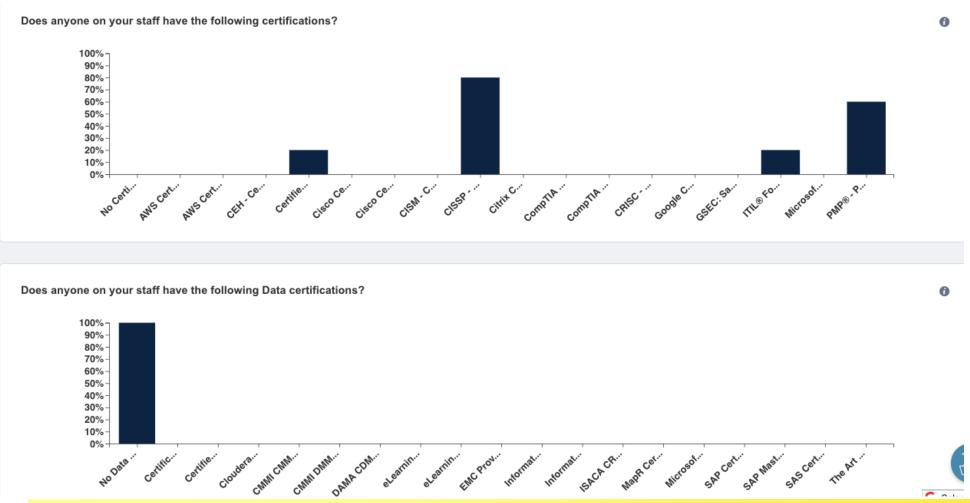




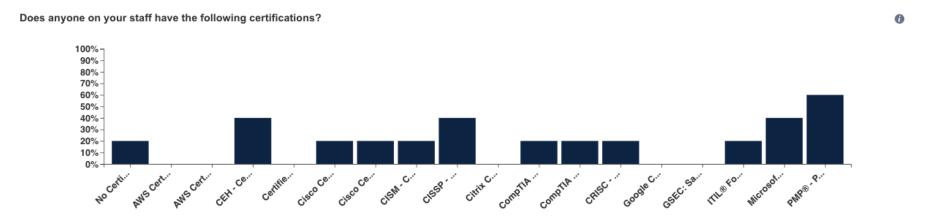


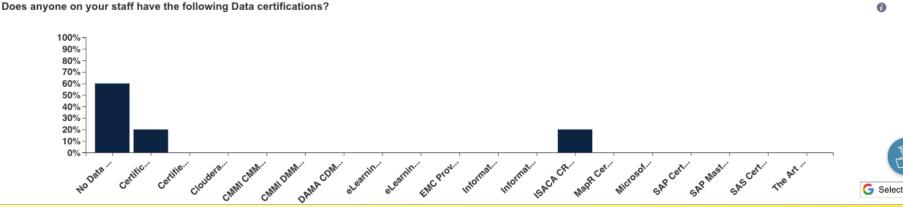


## AGENCY CYBER & DATA CERTIFICATIONS



# CITY/COUNTY CYBER & DATA CERTIFICATIONS

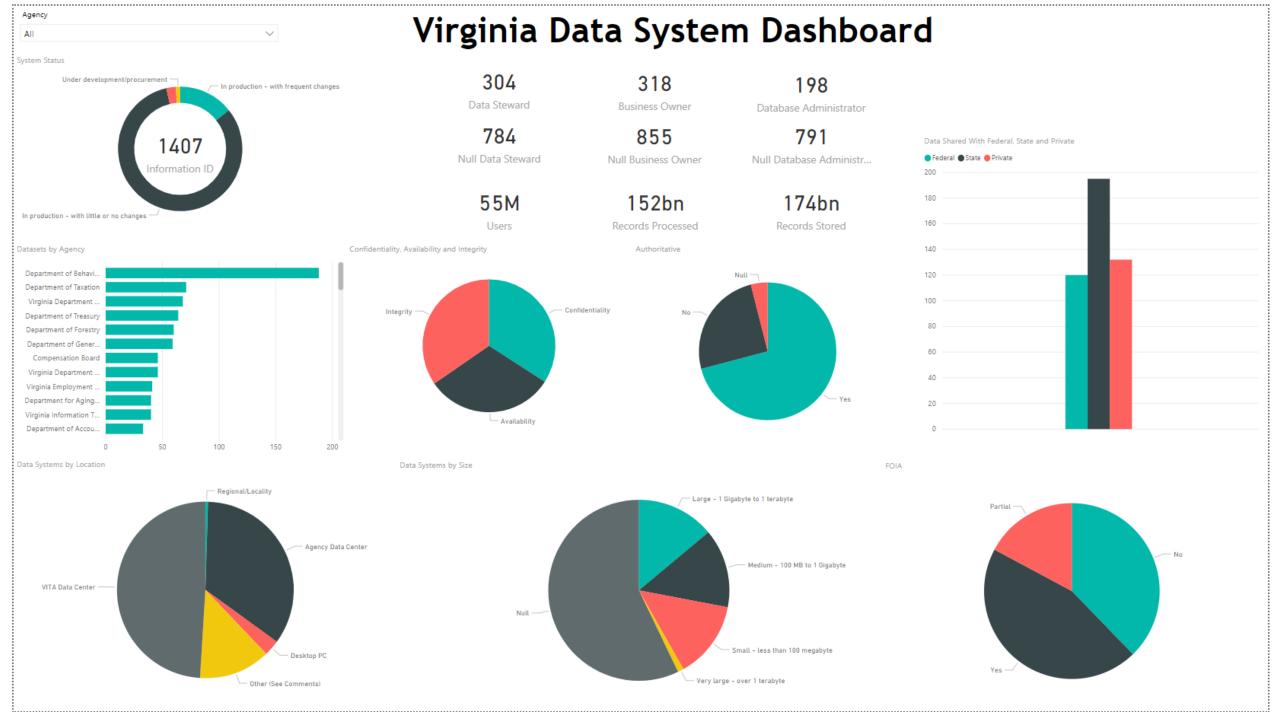


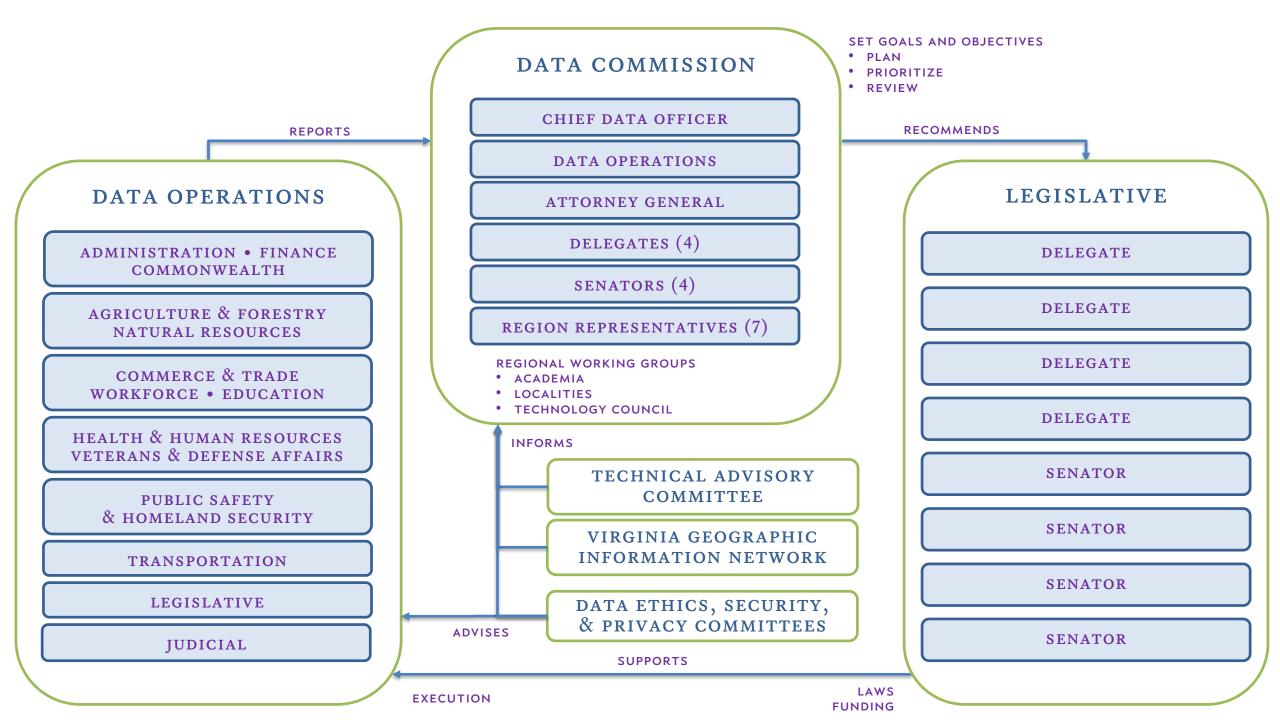


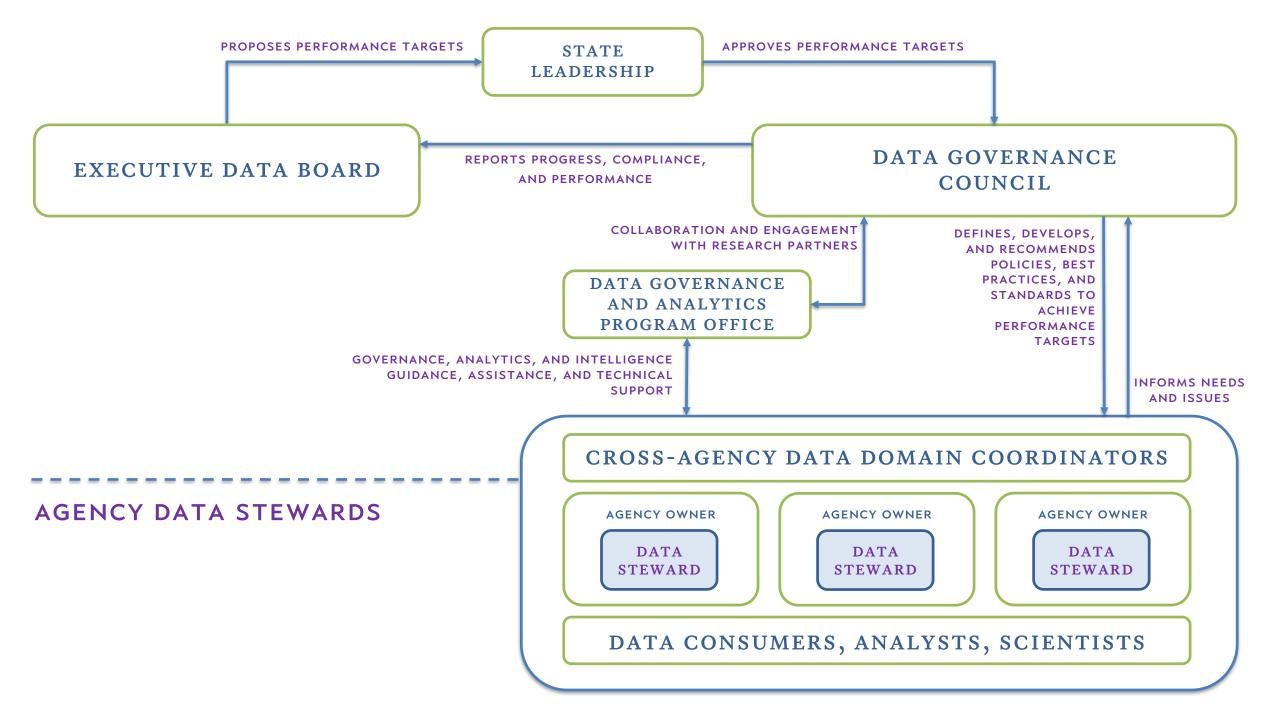
# QUESTIONS ABOUT THE SURVEY?

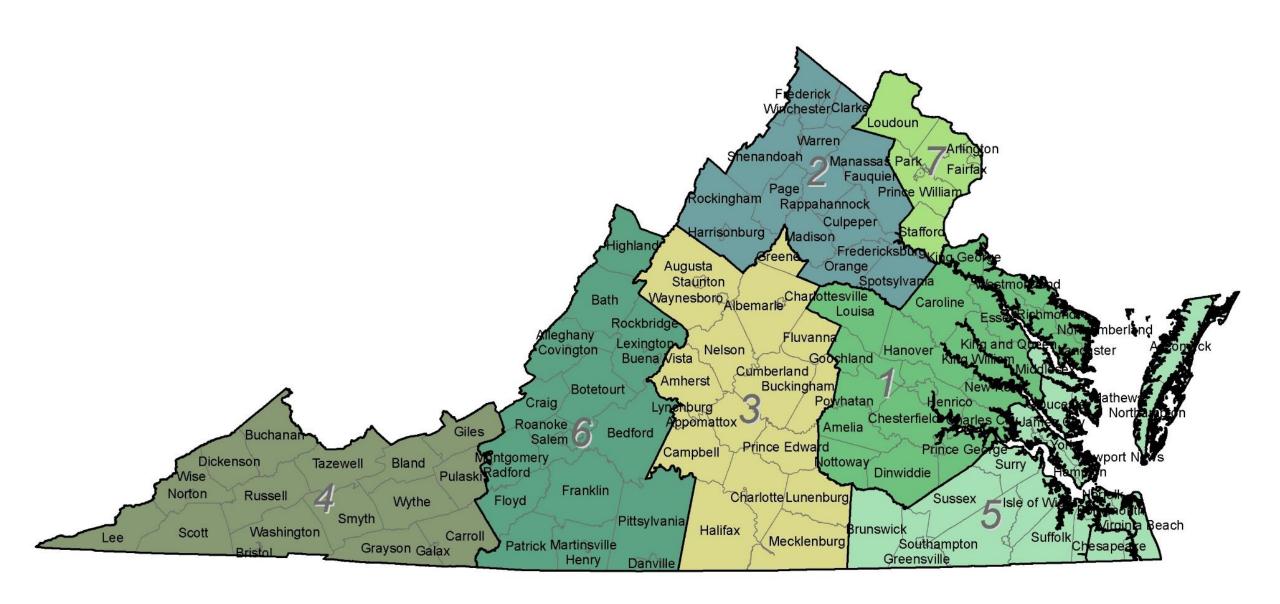
- Relevant information
  - Press release announcing survey <a href="http://bit.ly/32xVtKS">http://bit.ly/32xVtKS</a>
  - Policy questions <u>survey.support@governor.virginia.gov</u>
  - Custom service questions customerservice@smartcitiesactivator.com

Survey response deadline changed – NOW October 30, 2019



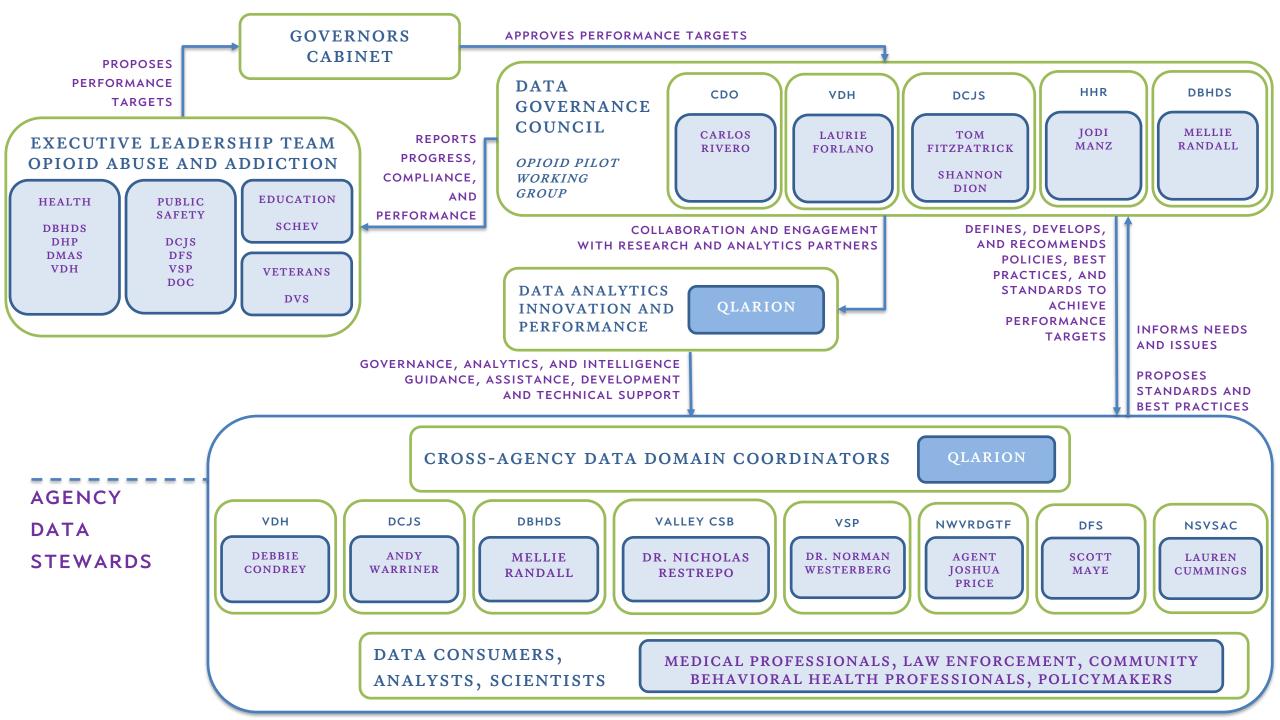






#### ROLES AND RESPONSIBILITIES

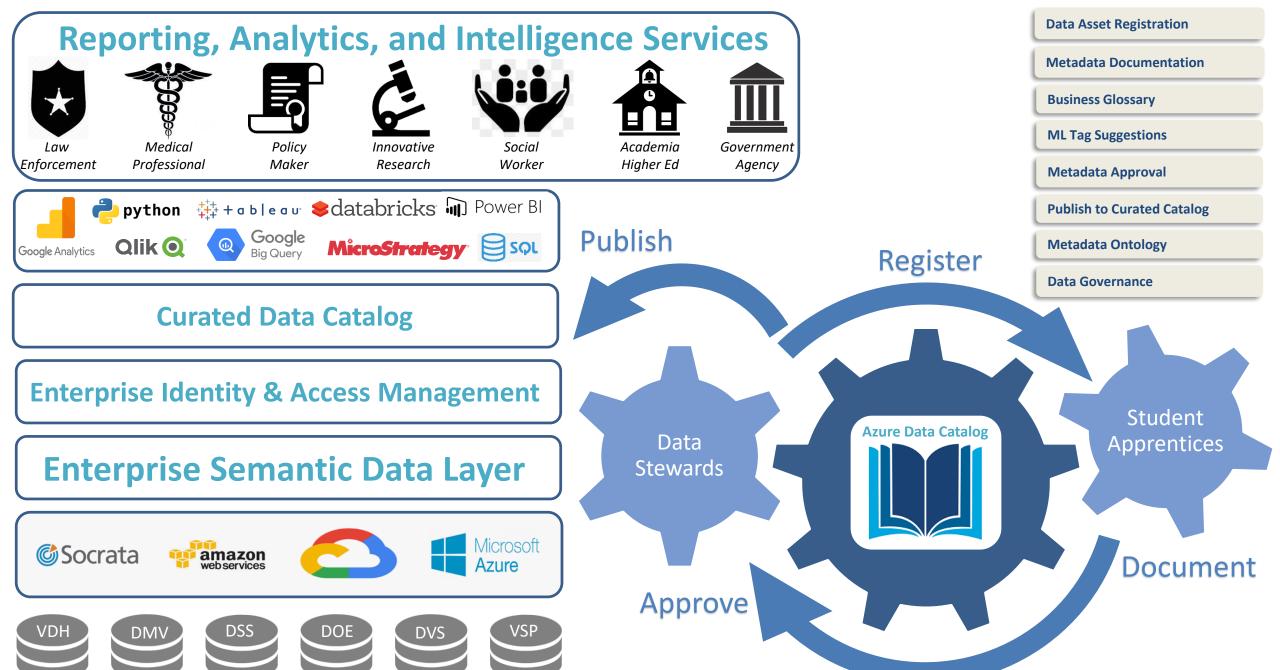
**Executive Steering Committee EXECUTIVE LEVEL** Data Governance Council STRATEGIC LEVEL Agency Data Officers Data Management Technical Team Data Domain Managers/Experts Business/Program Management TACTICAL LEVEL Geospatial Information Officers **Information System Security Officers** Information System Security Managers Data Stewards **OPERATIONAL LEVEL** Data Scientists, Architects, Engineers, Analysts, and Consumers



#### DATA TRUST

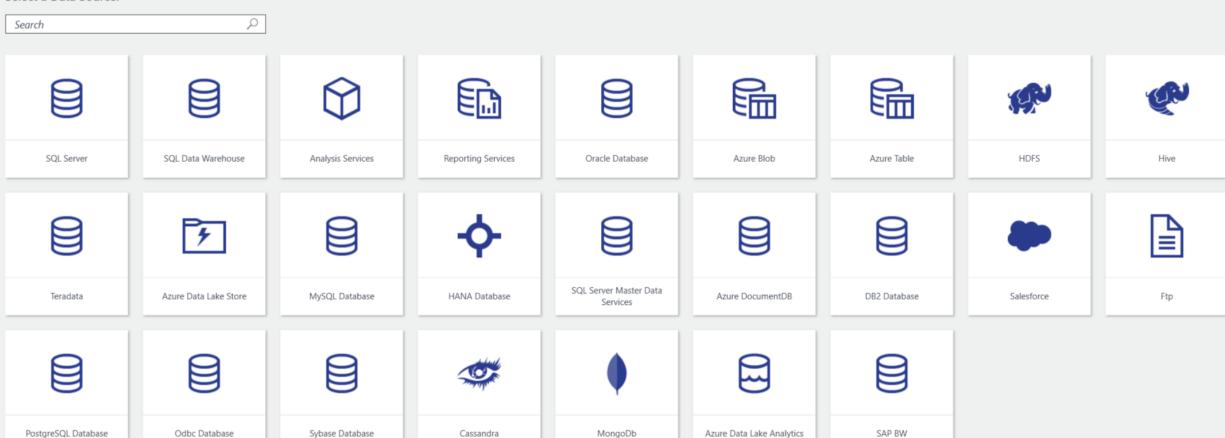
Safe, secure, and legally compliant information sharing environment

- Establish consistent requirements for trust members through a standardized data sharing agreement process
- Provide a scalable alternative to multiple "point-to-point" sharing
- Promote trust among trust members through common rules for data security, privacy, and confidentiality
- Reduce technical costs by onboarding to a single environment using standard NIEM protocols

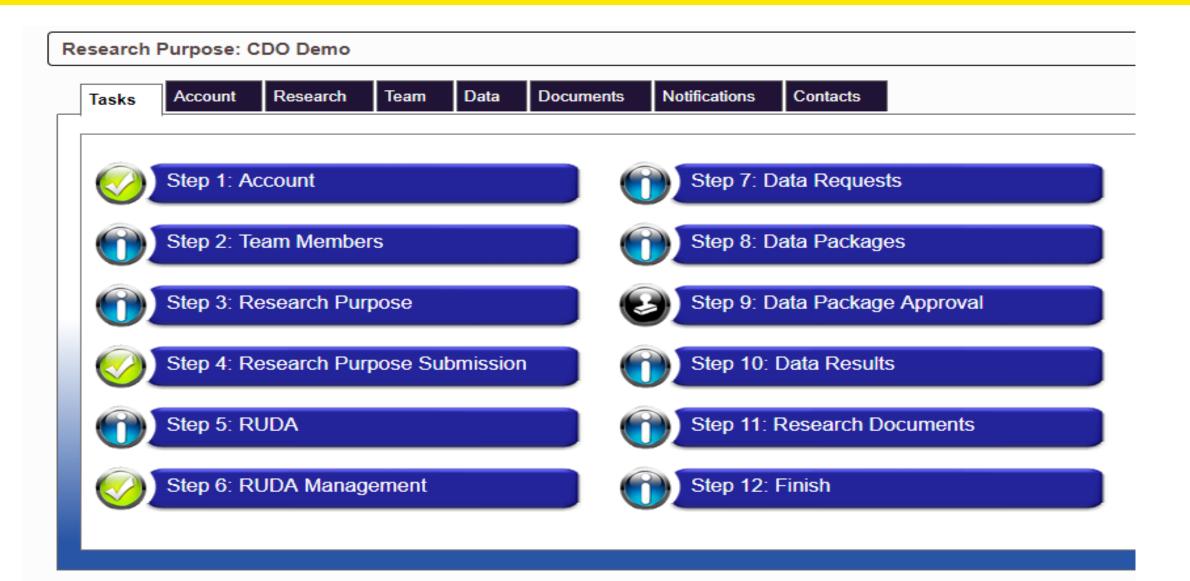


#### Microsoft Azure Data Catalog

#### Select a Data Source:



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#### DATA CULTURE

- Establish AWARENESS
- Facilitate ENGAGEMENT
- Provide INSPIRATION
- Promote **EMPOWERMENT**

#### STUDENT ENGAGEMENT

- Rural **APPRENTICESHIP** Program
  - Data Documentation and Visualization
  - Data Quality Assessments
- Commonwealth Data **INTERNSHIP** Program
  - Exploratory Data Analysis
  - Data Modeling
- Commonwealth Analytics **FELLOWSHIP** 
  - Data Analytics
  - Predictive Modeling
  - Machine Learning

#### DATA SCIENCE BRAIN TRUST

- Students work on increasingly complex data projects as they mature academically
- University faculty collaborate with agency subject matter experts on research proposals to support students and develop algorithms
- Innovative businesses "operationalize" algorithms developed by research universities through integration with the stakeholder's intelligence framework supporting **ACTIONABLE DECISIONS**

# FRAMEWORK FOR ADDICTION ANALYSIS AND COMMUNITY TRANSFORMATION

- FAACT is a data sharing and analytics platform to address the opioid and addiction crisis
- Originally created through a partnership between the Winchester community, the Commonwealth, and Qlarion
- Brings together data across many relevant disciplines
- Provides insight and access not possible before
- Piloted in NW Virginia in late 2018 currently expanding into the Roanoke Valley region with additional regions and data sets planned

#### FAACT DATA SETS

During the pilot phase (August 2018 – April 2019), the data sets included:

- PRE-TRIAL
- COMMUNITY CORRECTIONS
- POLICE INCIDENTS
- REGIONAL OVERDOSES
- LAB ANALYSIS RESULTS

- HOSPITAL ADMISSIONS AND PATIENTS
- SOCIAL SERVICES
- UNEMPLOYMENT
- POVERTY
- EDUCATION

#### FAACT DATA SOURCES

The organizations that have contributed data so far included Federal, State, Local and Private organizations:

- DCJS
- LOCAL CORRECTIONS
- VA STATE POLICE
- COMMUNITY SERVICE BOARD

- VA DEPT OF FORENSIC SCIENCES
- WINCHESTER POLICE DEPARTMENT
- PRIVATE HEALTHCARE SYSTEM
- US CENSUS AND BUREAU OF LABOR

# FAACT PROPOSED STATEWIDE AND NATIONAL DATA SETS

- EMERGENCY MEDICAL SERVICES
- EMERGENCY DEPARTMENT
- PRESCRIPTION MONITORING PROGRAM
- PROBATION DETAIL
- DRUG COURT

- NEONATAL SCREENING
- EDUCATION DETAIL
- ALL CRIME INCIDENTS
- OD MAP
- ARCOS

#### FAACT DATA USES

The data is accessible in two ways within the platform

- Data Sharing
  - Used by authorized users to conduct their own analysis
  - Every data element is accessible via API or export
- Analytics
  - Curated analytics designed for ease of use and self service
  - Answers questions such as:
    - How do user profiles differ by substance?
    - What is the level of harm associated with a specific user/substance profile?
    - What are the geographic patterns associated with user activity?
    - What crimes are correlated with the use of particular substances?
  - Advanced analysis helps to identify the micro-segmented populations that are at risk of a substance abuse disorder

# FAACT BENEFITS IN WINCHESTER, VA

- Becoming more proactive through the timely use of data (e.g., emerging drug threats)
- Understanding "Age of First Use" to drive attention to appropriate youth engagement through an evidence-based curriculum and provide parents, guardians, and caregivers with tools to identify and address substance use early on (e.g., Give Me a Reason Program)
- Adjusting and co-locating staff at strategic locations to better align with community needs (e.g., coalition peers in medical facilities, community centers, and academic institutions)
- Improved understanding of relationships between disparate data sets (e.g., crimes associated with attributable to addiction, time from first use to first arrest)
- Identifying demographic differences between user populations to better engage, treat, and support (e.g., opioid versus stimulant dependency)
- Using the platform to attract and acquire additional funding through data-driven actions and evidence-based policymaking (e.g., \$1M in grants for the Winchester Coalition)

#### ISSUES ENCOUNTERED

- Sharing data is a vague and ill-defined process which takes a lot of time and effort to be successful (even for non-sensitive data)
- Due to organizational reluctance with data sharing, project was initially limited to non-sensitive data
- Source data was poorly documented across most systems (e.g., lack of data dictionaries)
- Needed to conform data to a common standard (e.g., NIEM) to link across systems
- Lack of procurement processes and IT services required innovative approaches and solutions

# FAACT - WHAT'S NEXT?

- Add more regional, statewide, and national data sets
- Implement a robust governance model through the development of a data trust and establishing a Data Governance Council
- Make the analytics platform available to users across the commonwealth to widen the impact
- Better integrate data sets at the person level by incorporating sensitive de-identified data
- Augment the analytical capabilities of the platform by adding new data, methods, and models
- Increase community adoption and engagement to save lives

#### **REGIONAL OVERDOSE ANALYSIS**

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#### Task Force Overdose Tracking Analysis

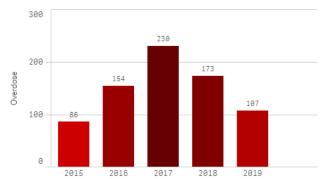
Jurisdiction Sex

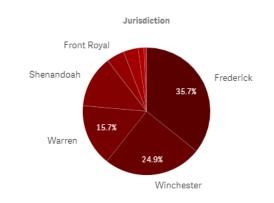
Age Group

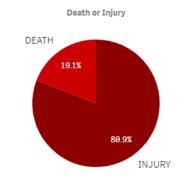
Year

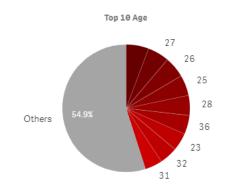
Month

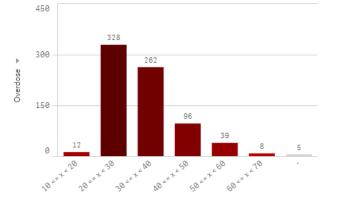
Date









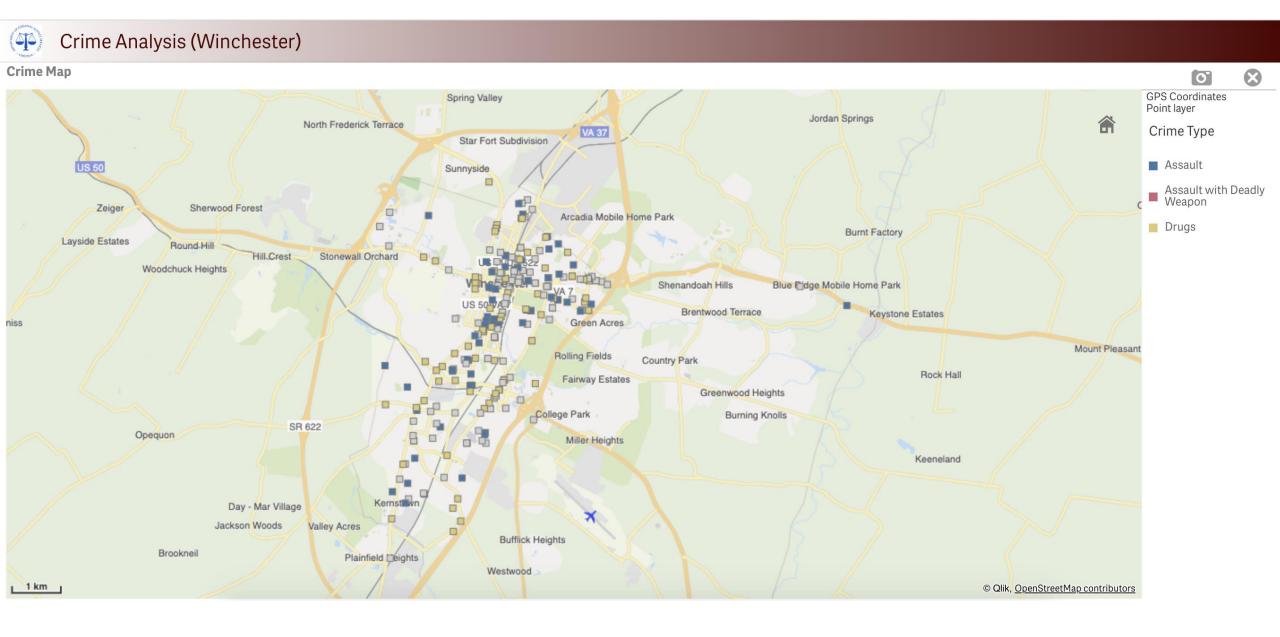


Age Group ▼

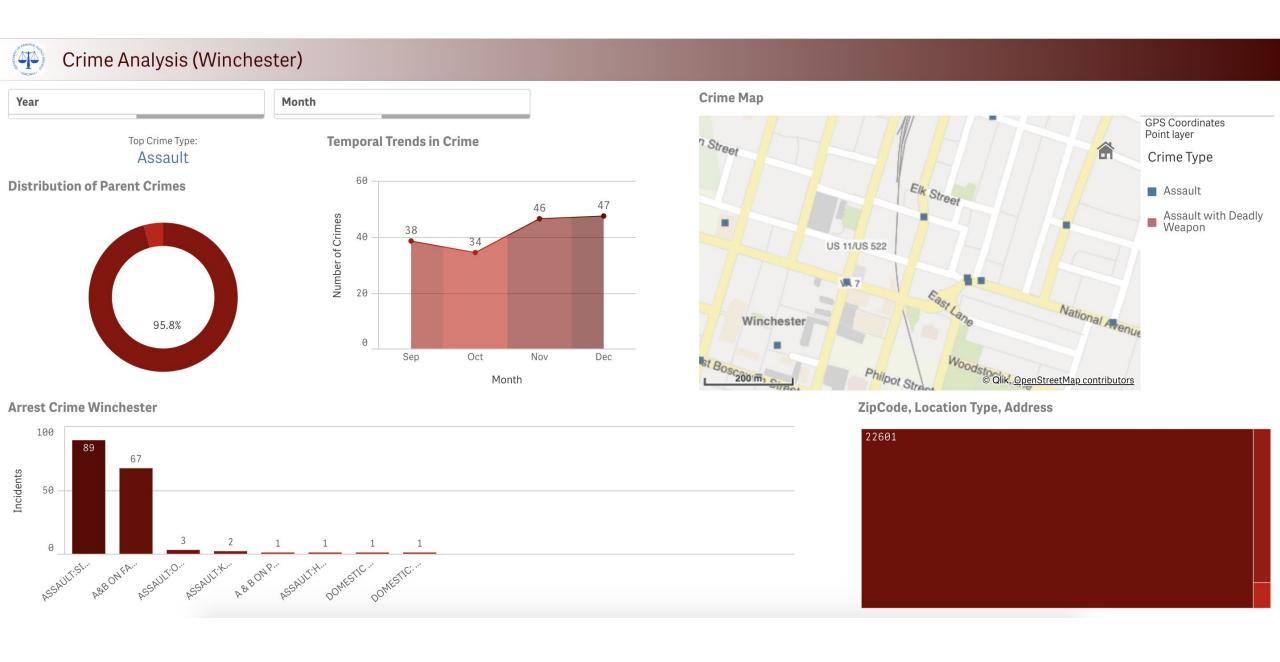
#### Overdose Tracking

Jurisdiction Q	Sex Category C	Age Q	Death or Injury Q	Date Q	Overdose	Multiple Overdose	Fentanyl Detected	
Totals				•	750	60	71	
Shenandoah	MALE	24	INJURY	8/21/2019	1	0	0	
Front Royal	MALE	61	DEATH	8/16/2019	1	0	0	
Frederick	MALE	41	INJURY	8/15/2019	1	0	0	
Shenandoah	MALE	35	INJURY	8/12/2019	1	0	0	
Winchester	MALE	26	INJURY	8/10/2019	1	0	0	
Shenandoah	MALE	22	INJURY	7/31/2019	1	0	0	
Front Royal	FEMALE	44	INJURY	7/31/2019	1	0	0	
Shenandoah	FEMALE	36	INJURY	7/30/2019	1	0	0	
Front Royal	MALE	49	DEATH	7/29/2019	1	0	1	
Front Royal	FEMALE	36	DEATH	7/27/2019	1	0	0	
Frederick	FEMALE	24	INJURY	7/27/2019	1	0	0	
						-	-	

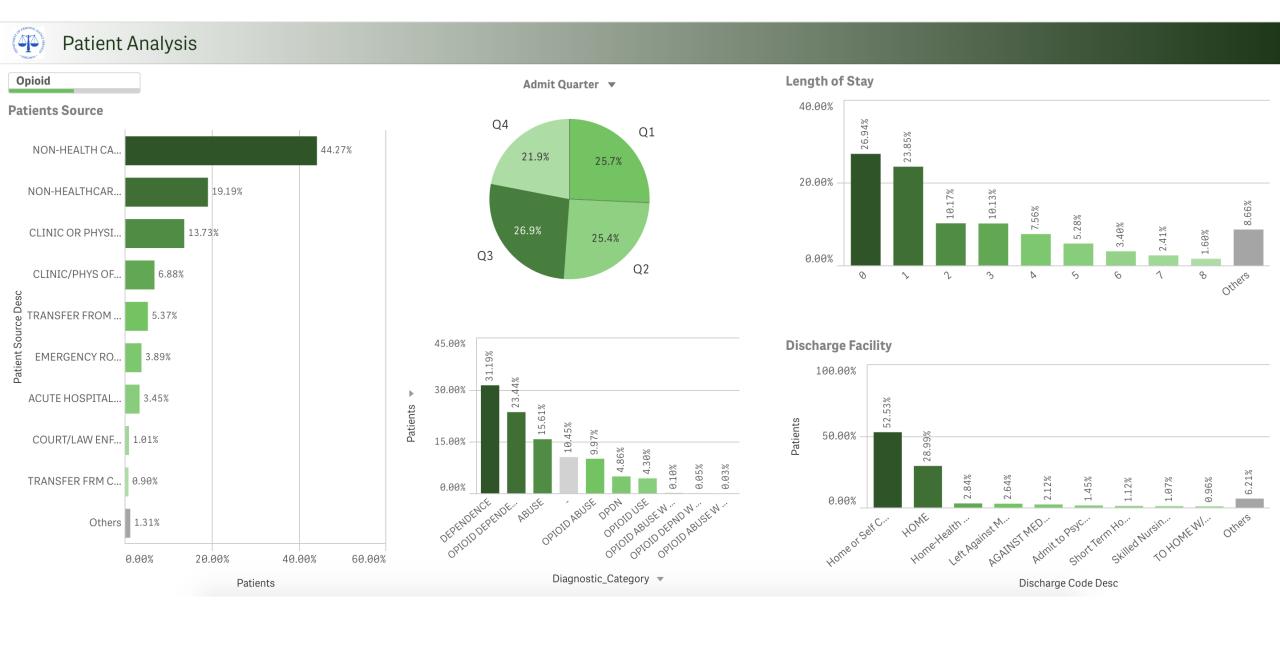
#### GEOSPATIAL CRIME ANALYSIS (DRUG AND VIOLENT CRIMES)



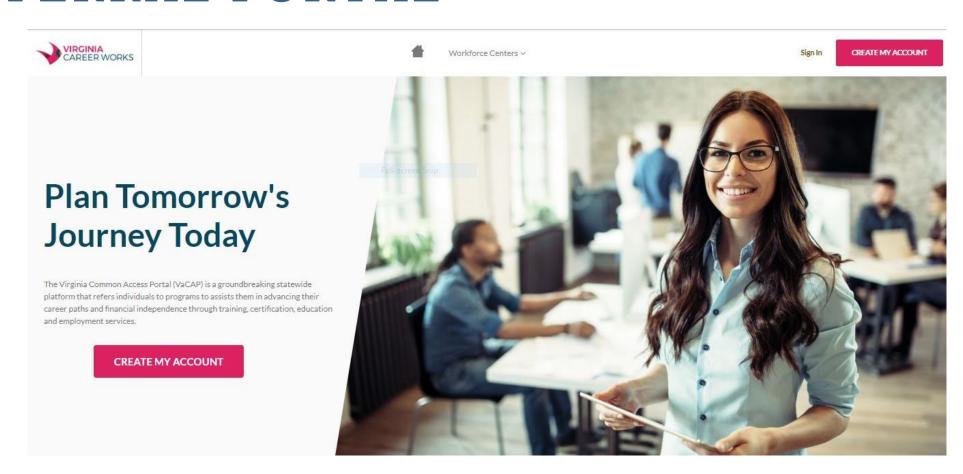
#### STREET LEVEL VIOLENT CRIME ANALYSIS



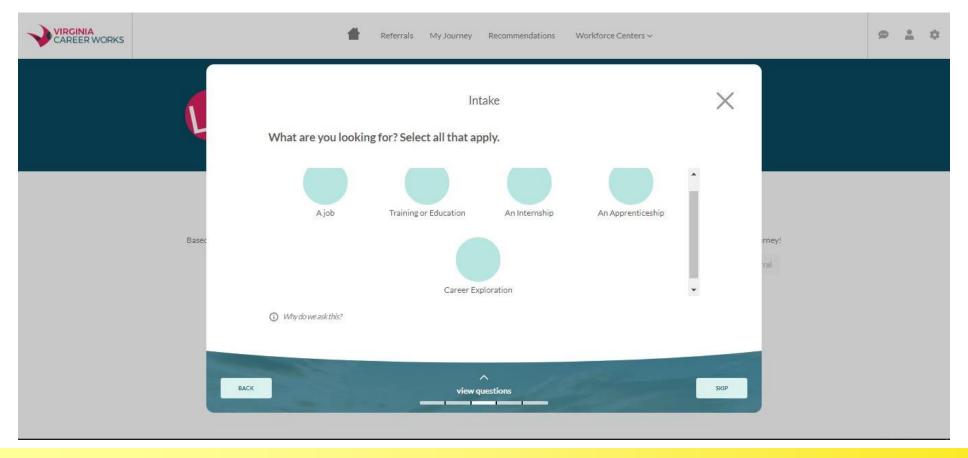
#### VALLEY HEALTH PATIENT ANALYSIS



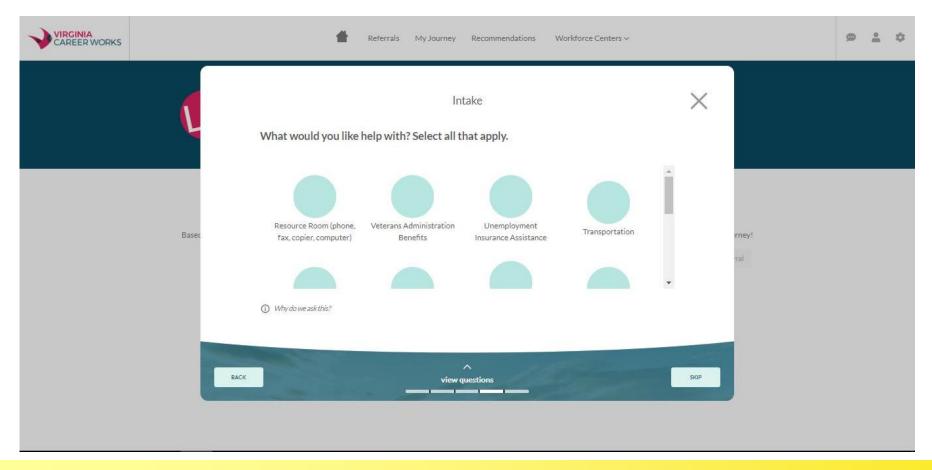
### VIRGINIA CAREERWORKS REFERRAL PORTAL



## VIRGINIA CAREERWORKS REFERRAL PORTAL



### VIRGINIA CAREERWORKS REFERRAL PORTAL



## DATA TRUST



Trade Act Programs Veterans Programs Labor Exchange Services Targeted Labor Market Information



Virginia Rehabilitation Center for the Blind and Vision Impaired

Vocational Rehabilitation Program Technical Assistance for Business Business Enterprise Program Virginia Industries for the Blind



Virginia Initiative for Employment Not Welfare

– Employment Advancement for TANF Participants
SNAP Employment and Training
Virginia Refugee Resettlement Program



Office of Career, Technical and Adult Education
Microsoft IT Academy
Path to Industry Certification
Workplace Readiness Skills Assessment
High School Equivalency and Adult High School Diplomas
Adult High School English as a Second Language (ESL)
PluggedIn VA



Industry Certifications and Professional Licensures Courses Customized Training for Businesses and Individuals Career Coaching

WIA Adult, Youth and Dislocated Worker/Rapid Response Post-secondary Career & Technical Education (CTE)





Senior Community Service Employment Program Vocational Rehabilitation Program Wilson Workforce and Rehabilitation Center



Customized Workforce Training Virginia Jobs Investment Program Higher Education Business Resources



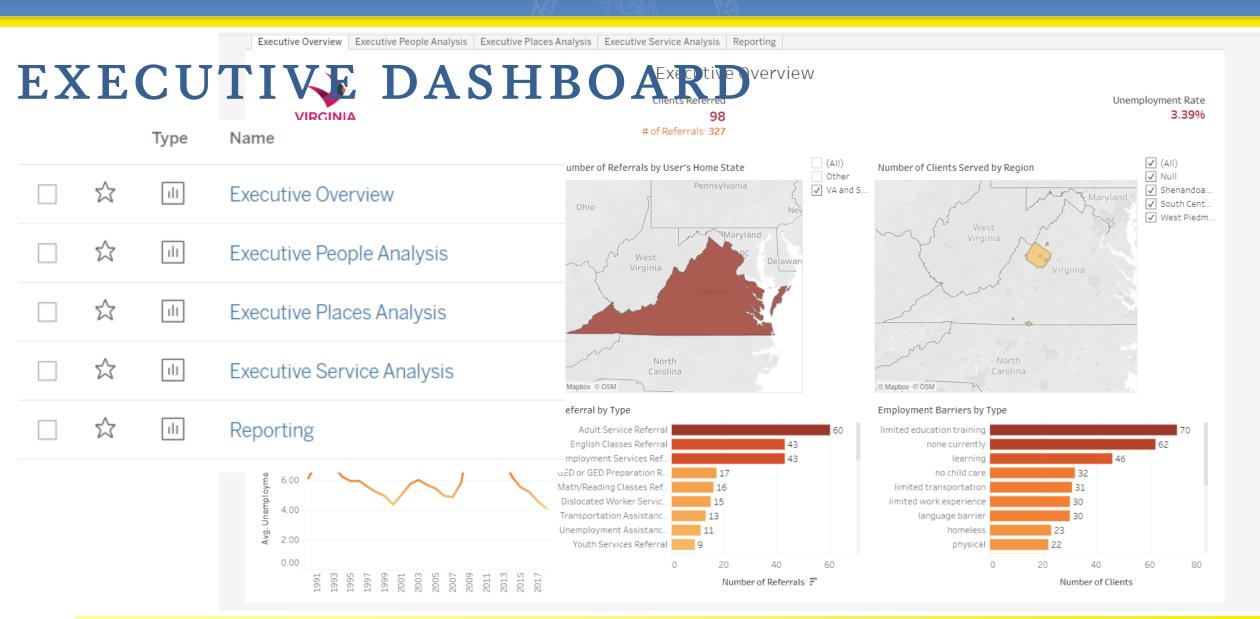
State Approving Agency for Veterans
Education and Training
Virginia Military Survivors and Dependents
Education

Virginia Values Veterans Virginia Transition Assistance Military Medics and Corpsmen

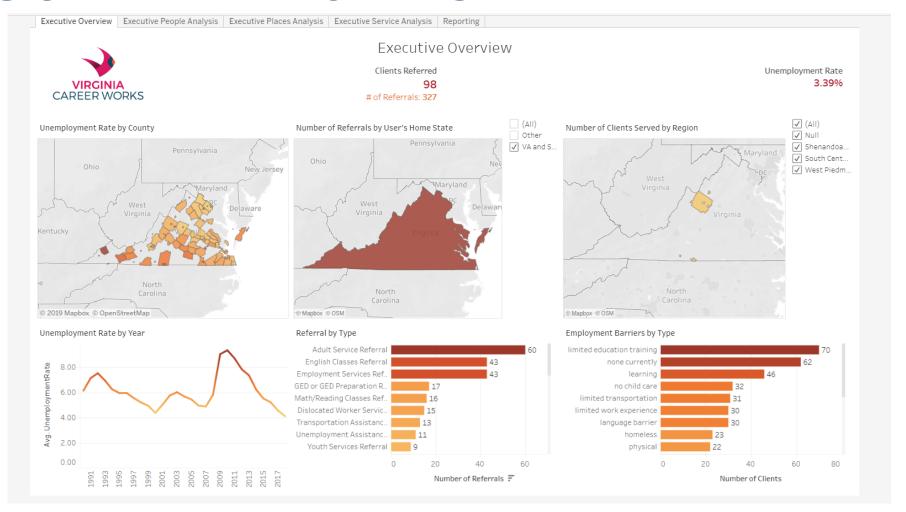
#### PERFORMANCE DASHBOARDS

- EXECUTIVES
- SERVICE MANAGERS
- SYSTEM ADMINISTRATORS
- VIRGINIA WORKFORCE REPORTS

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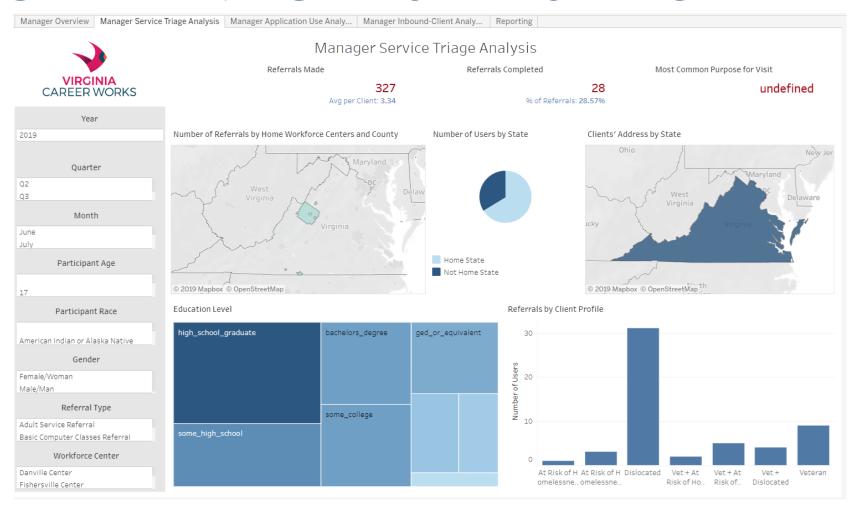
### EXECUTIVE DASHBOARD



### SERVICE MANAGERS DASHBOARD

	Type	Name
$\stackrel{\wedge}{\boxtimes}$	ılı	Manager Overview
$\stackrel{\wedge}{\boxtimes}$	ılı	Manager Service Triage Analysis
$\stackrel{\wedge}{\boxtimes}$	ılı	Manager Application Use Analysis
$\stackrel{\wedge}{\boxtimes}$	ılı	Manager Inbound-Client Analysis
$\stackrel{\wedge}{\simeq}$	ılı	Reporting

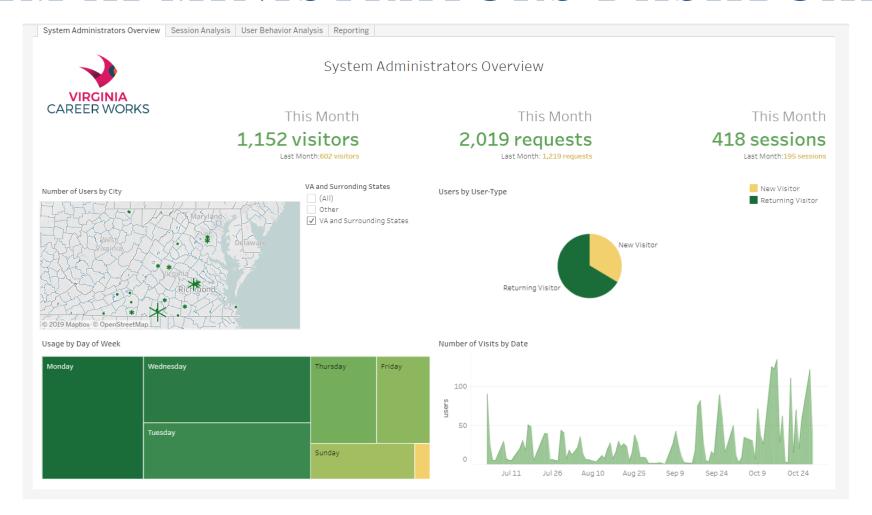
#### SERVICE MANAGERS DASHBOARD



#### SYSTEM ADMINISTRATORS DASHBOARD

Туре	Name
ılt	System Administrators Overview
ılt	Session Analysis
ılı	User Behavior Analysis
Ili	Reporting

#### SYSTEM ADMINISTRATORS DASHBOARD



### VIRGINIA WORKFORCE REPORTS

Type	Name
ılt	VA Referrals by Type and Locality
ılt	VA Customer ID by Service Area
ılı	VA Unkown Workforce Center

#### VIRGINIA WORKFORCE REPORTS

VA Referrals by Type and Locali... VA Customer ID by Service Area VA Unkown Workforce Center



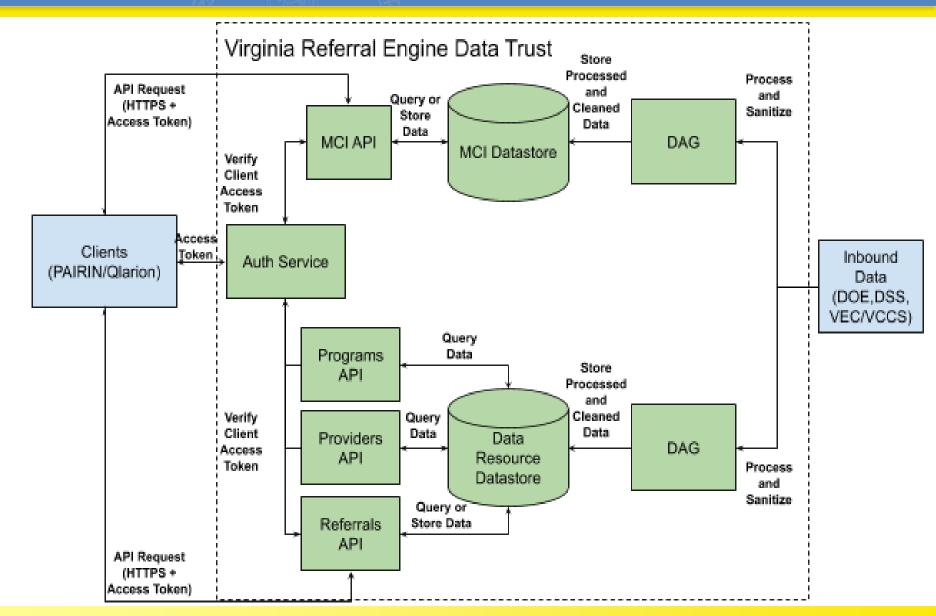
#### VA Referrals by Type and Locality

#### Workforce Center

- ✓ (AII)
- ✓ Danville Center
- ✓ Fishersville Center
- ✓ Harrisonburg Cen...
- ✓ Lake County Center
- ✓ Martinsville-Henr...
- ✓ South Boston Cen...
- ✓ Unknown Workfor...

	Danville Ce	Fishersville	Harrisonbu	Lake Count	Martinsvill	South Bost	Unknown	Total by
Referral	Danville City	Augusta	Harrisonbu	Mecklenburg	Martinsvill	Halifax	No Location	Referral
Adult Service Referral	6	3	16	3	8	90	69	195
Basic Computer Classes R	3						9	12
Child Care Assistance Ref	1		1		1		1	4
Clothing Assistance Refer	1			1				2
Communication Services					3		3	6
Create Account		1	1		1	1	5	9
Dislocated Worker Servic		4	4	2	2	16	8	36
Drug or Alcohol Programs	1	1		1		1	2	6
Emergency Bill Payments	2				1	1	1	5
Employer Services Referral		1					4	5
Employment for Individua		3				9	6	18
Employment Services Ref	6			3		93	27	129
Employment, Education &		3			3		12	18
English Classes Referral	3	6		3		78	39	129
Food Assistance Referral	1	1	1		1		2	6
Fuel assistance Referral						1	2	3
GED or GED Preparation R	3	3			3	30	12	51

## DATA TRUST



#### IMPLEMENTATION PLAN

- OCTOBER DECEMBER 2019: 3 REGIONS
- JANUARY MARCH 2020: 6 REGIONS
- APRIL JUNE 2020: 6 REGIONS
- JULY 1, 2020: FULL STATEWIDE IMPLEMENTATION

### INFORMATIONAL SLIDES

#### COMMONWEALTH DATA COMMISSION

- Executive Branch (Advisory)
- 25 members (8 legislative, 7 citizen, 10 state officials)
- Study, report, advise, and make recommendations to the Governor and the General Assembly on all areas of data governance, quality, sharing, analytics, and performance management
- Cooperate with the Legislative Branch of State Government, the Attorney General's Office, and the judiciary
- Study the operations, management, jurisdiction, powers, and interrelationship of any such department, board, bureau, commission, authority, or other agency that has any direct data operation including collection, storage, management, quality, transfer, and analysis

#### COMMONWEALTH DATA COMMISSION

- Coordinate agency programs and activities, to prevent duplication of functions, and to combine all agency data governance plans into a comprehensive interagency state plan
- Review and comment on annual state budget requests
- Define responsibilities among state agencies for various data governance programs and to encourage data sharing among agencies
- Monitor the data governance, sharing, and analytics development efforts of other states and nations
- Develop recommendations that will assist in making Virginia a national leader in data-driven policy and evidenced-based decision making
- Staff assistance shall be provided to the Commission by ...

#### DATA OPERATIONS

Recommended organizational structure to support data governance, sharing, and analytics within operational units including Executive, Legislative, and Judicial branches of state government

- Executive Data Board
- Data Governance Council
- Data Stewards Group
- Data Analytics, Innovation, and Performance Management

#### EXECUTIVE DATA BOARD

- Set strategic performance objectives
- Advocate for and allocate program and project resources
- Coordinate, prioritize, and oversee multi-agency data sharing and analytics projects
- Remove barriers to implementation

#### DATA GOVERNANCE COUNCIL

- Advise the Executive Data Board and the Commonwealth Data Commission on technology, policy, and governance strategies to meet Chapter 679 requirements
- 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 implementing 'Open Data' maintained by state agencies
- Report progress, compliance, and performance to the Executive Data Board

# DATA GOVERNANCE AND ANALYTICS PROGRAM OFFICE

- Manages the Commonwealth Data Trust
- Advise executive state agencies and political subdivisions regarding state best practices concerning the creation and maintenance of data.
- Coordinate data analytics and transparency master planning for the executive state agencies and provide leadership regarding state data analytics and transparency.
- Collect, analyze, and exchange government information
- Ensure the security of government information
- Conduct the operational and procedural audits of data sharing partners
- Identify data integration and business intelligence opportunities generating greater efficiencies in state agencies, departments, and institutions
- Leverage data from transactional systems for enterprise-level state business intelligence
- 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

#### DATA STEWARDS GROUP

- Promote and facilitate the secure and appropriate sharing and use of data assets 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 sharing of data between state agencies and localities to provide tangible operational improvements to assist state agencies and localities in fulfilling their respective missions in a coordinated, cost-effective manner
- Provide public access to data assets, where lawful and appropriate, to enhance research, innovation, and insight