Commonwealth of Virginia Battles COVID-19 with Highly Flexible, Scalable, and Secure Data Platform

Data Platform Demonstrates Extreme Versatility as State Onboards New Data Sources in Just a Few Days to Support COVID-19 Response

Times of great adversity often fuel tremendous ingenuity, and the COVID-19 pandemic is no exception. Recently, the Commonwealth of Virginia demonstrated the power of creative thinking and technology foresight to solve new challenges—specifically, the need to share accurate and timely COVID-related data across agencies and with the community.

When faced with this pressing need, the Commonwealth's Chief Data Officer, Carlos Rivero, knew that Virginia already had in place an ideal data platform, built on solutions from Amazon Web Services (AWS), which could rise to the challenge. A can-do spirit and this flexible framework enabled the Commonwealth to ramp up quickly—in just a few days—to deliver information vital to protecting the health and safety of Virginians during this unprecedented time.

"Our AWS-based data platform has allowed us to focus on problem solving and not infrastructure requirements at a time when decisive action matters most," Rivero said.

Battling Addiction with Better Data

The journey actually started in 2018 in the midst of another public health crisis, the opioid epidemic. Opioid abuse has claimed the lives of more than 1,000 Virginians each year recently. It became increasingly apparent that data can and must play a greater role in combatting this deadly epidemic. Public officials required more insight into communities at greatest risk, paths to addiction, hospitalizations, and interaction with law enforcement. Unfortunately, the data needed to yield these critical insights resides in various silos within and outside government. The Commonwealth needed an environment that would allow users to connect these data points rapidly and securely.

The answer was an initiative called the Framework for Addiction Analysis and Community Transformation (FAACT). A collaboration between the Virginia Departments of Criminal Justice Services (DCJS) and Behavioral Health and Developmental Services (DBHDS), the platform shares data across government agencies and local organizations.

For the initial two-year grant period, DCJS contracted with Qlarion Inc. to develop the FAACT system. FAACT is built on the Tyler Technologies Socrata Connected Government Cloud, which runs exclusively on AWS. It launched with a pilot in the Northern Shenandoah Valley in 2018 and expanded to include the Roanoke Valley in 2019 after receiving accolades, including a 2019 Virginia Governor's Technology Award.

Agencies and organizations that participate in FAACT have access to the type of cross-functional, high-impact data and analysis needed to drive critical decisions as they respond to the opioid crisis and other complex challenges related to substance use and addiction.

In developing FAACT, the team had several priorities. This first was data governance. Rivero and his team knew that trust would be fundamental to a successful initiative as the platform would bring together data assets from a broad range of public agencies, including law enforcement, as well as private organizations, such as healthcare providers. To this end, the team created the Data Trust, managed by Rivero and a governance council that includes representatives from participating organizations and agencies. The Data Trust establishes governance mandates, rules, and a legal framework for sharing data.

Other priorities included data security, robust analytical capabilities, and the ability to scale rapidly. Rivero and his team looked to AWS solutions to achieve secure data sharing, self-service analytics, and powerful predictive capabilities that enable the deep analysis needed to identify trends and patterns around substance abuse and addiction. AWS solutions powering the platform include Amazon Elastic Compute Cloud (Amazon EC2), Amazon Simple Storage Service (Amazon S3), and Amazon Relational Database Services (Amazon RDS).

"FAACT was the Commonwealth's first cross-agency, cloud-based data sharing platform," explained Rivero. "We had to be able to incorporate a wide range of data from government and private entities quickly with little friction. The platform had to be flexible and ensure high levels of security. AWS delivers on all of these requirements and more."

Since going live, FAACT has had a powerful impact. "From a real-world benefits perspective, we can see patterns and trends in data sets that have allowed communities to respond more rapidly and effectively," Rivero said. "For example, we gained insight into the true age of first use for various drugs so communities can better target outreach and education efforts."

Rivero also explained law enforcement task forces have leveraged data to respond rapidly to dangerous drugs infiltrating a community. For example, in 2019 there was a spike in overdoses in one hospital. The task force used data in the FAACT dashboard and interviewed individuals to identify the source of the drugs. Law enforcement apprehended the individuals responsible for distribution, and for the next several weeks, there were no additional overdoses in the community. FAACT is just beginning to scratch the surface of its value in the fight to end opioid addiction, explained Rivero.

Rapid Pivot for COVID-19

Fast forward to the COVID-19 pandemic. The Commonwealth had two critical priorities: ensuring the health of residents and enabling safe resumption of economic activity at an appropriate time. Data once again was critical to both objectives, and time was of the essence.

> Rivero and his team immediately recognized the ability to scale the FAACT platform for this new mission. A few factors were critical to this flexibility. First, the Data Trust was already in place making it easy to onboard new data sources. In addition, the AWS-based platform enabled rapid and frictionless loading of these new data sources while ensuring security. Scalability, simplicity, and security once again were the foundation for success, and AWS delivered all three.

In just a few days, the team expanded FAACT to create a central location for securing and sharing critical COVID-19 response data across Virginia. The platform includes data as diverse as the number of cases, private/state testing volumes and results, hospital resource levels, personal protective equipment (PPE) levels, intensive care unit bed and ventilator availability, healthcare staffing levels, and much more. The data, which is updated every 15 minutes, spans multiple agencies, such as the Virginia Department of Health, the Department of General Services/Division of Consolidated Laboratory Services, and the Virginia Department of Emergency Management. It also includes information from the Virginia Hospital and Healthcare Association. In recent weeks, the Commonwealth has added Department of Corrections data to the platform.

FAACT drives a set of near real-time analytics for Governor Ralph Northam and his team to use as they make evidence-based response decisions and provide daily updates. Other senior state officials are also using FAACT daily to make informed decisions. This insight was particularly important in the early days of the epidemic and played a role in the Commonwealth's ability to provide PPE where it was needed and ensure adequate healthcare resources, including hospital beds, throughout the crisis.

"Without FAACT's technical infrastructure, legal framework and corresponding Data Trust already in place, secure cross-agency sharing of sensitive health-related data that took just days to complete would have taken months," Rivero said. "Our ability to quickly expand FAACT is a prime example of the immense value of a repeatable model that can be leveraged quickly and effectively in a time of need."
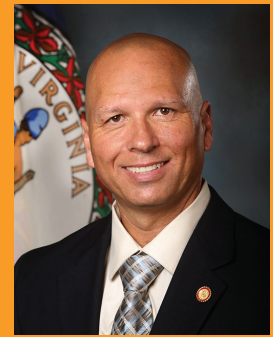
Carlos Rivero,
Chief Data Officer,
Commonwealth
of Virginia

Moving Forward

Rivero and his team continue to evolve the FAACT platform. They are working on a health district dashboard that will support the Commonwealth in achieving its goal of testing two-to-four percent of the population as well as an Open Data Portal to facilitate public access to Commonwealth data.