

# Fairfax County Fire and Rescue Department Rethinking Data Analysis

## USE OF DATA CASE STUDY

### The Opportunity

Fairfax County (Virginia) Fire and Rescue Department Fire Chief John Butler and department staff members recognized an opportunity to strengthen the organization's use of data by centralizing the department data analysts and Geography Information Systems (GIS) specialists so that they could share their knowledge and collaborate in developing new approaches to the use of data.

### The Action

The department created the Data Analytics Strategy Management Division, appointed a manager to lead the new workgroup and brought analytics staff across the organization into the new division.

### The Outcome

The division has developed new work practices and ways to analyze and report the data by following three fundamental principles:

1. Eliminating paper reports by designing and delivering digital-based analyses using dashboards and similar custom-tailored methods.
2. Looking into why the department has historically collected data with the goal of shedding antiquated processes and invest time in more progressive approaches.
3. Utilizing a peer-review process on all reports, with a second individual from the division reviewing the output to guard against bias in the analysis and bolster reliability.

#### DEPARTMENT INFO

FAIRFAX COUNTY FIRE AND RESCUE DEPARTMENT

POPULATION SERVED: 1.15 MILLION

TOTAL UNIFORMED PERSONNEL: 1,400

TOTAL CIVILIAN PERSONNEL: 180

FIRE STATIONS: 39

ISO CLASS: I

GOVERNANCE: COUNTY EXECUTIVE, BOARD OF SUPERVISORS

HIGHEST LEVEL OF EMS SERVICE PROVIDED: ALS TRANSPORT

ANNUAL BUDGET: \$235 MILLION

## Introduction

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The County of Fairfax in Virginia developed and implemented a data analytics framework to guide its actions and routinely assess the impact of the programs it provides to the residents and business community. This philosophy is reflected in the operation of the fire department, which protects 1 million-plus residents and responds to more than 100,000 requests for service annually. The volume of the data generated is significant, but more importantly, it contains trends that may be hidden from the casual observer. The challenge is to find it.

## The Opportunity

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In the years leading up to 2018, the Fairfax County Fire and Rescue Department employed several analysts and GIS specialists scattered across the agency. They supported various stand-alone programs, frequently focusing on only that program's needs and operating in self-imposed silos. Fire Chief John Butler, CFO, CEMSO, CTO, FM, and department staff members recognized an opportunity to strengthen the organization's use of data by bringing these skilled individuals into a central workgroup where they could share their knowledge and collaborate in developing new approaches in the use of data.

## The Action

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The creation of the new division started with the approval of the county executive and the Board of Supervisors in 2019. This took much of the year as the proposal worked through the review, approval, and budget development process. A key component was the creation of a new position that would manage the division, which was launched in February 2020. The Division has 10 employees, a manager, four analysts, three GIS Specialists, a database manager, and a uniform incident report coordinator.

Fairfax County Fire and Rescue is not data-driven, it is data-informed. John Morrison, Manager – Data Analytics Strategy Division

Most newly formed workgroups face challenges related to workflow, internal communications, developing workplace relationships, and the like. The immediate challenge faced by this nascent group was the pandemic and its impact, which included working remotely. To address this, team meetings were held each morning to review what had occurred the previous day and what was planned for the coming day. This coordinated and focused the team members' time and energy and accelerated the development process, sometimes called "Forming, Storming, Norming, and Performing." This process refers to the team's four stages of psychological development as they

work on a project. They move through each stage as they overcome challenges, learn to work together, and eventually focus on accomplishing a shared goal.

Division Manager John Morrison, CFO has a data analytics background in the private sector but has also served as the fire chief of a volunteer fire department in Fairfax County. He has used that combined experience to help tailor the division’s work product to meet the needs of its consumers. For example, a ride-along program was designed for the division staff members in which, every quarter, they spend up to 12 hours with an engine, ambulance, battalion chief, or 9-1-1 dispatcher observing how these individuals do their jobs. This is because the information collected, and reports generated from those incidents are the sources of critical data the division uses. This ride-along program also has helped responders understand that the reports they submit are read, the data is analyzed, and how those pieces of information are used to guide the department.

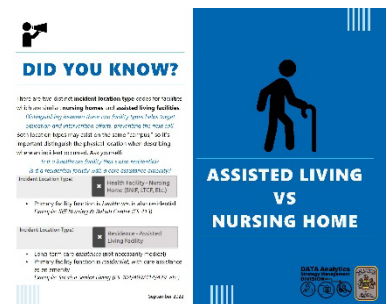
Morrison also observed that the department is not data-driven but data-informed. That means that while data and their analysis are valuable, there are some equally important factors that are difficult to attach a numerical value to for the purposes of analytics. He cited the example of political considerations that can be a driving influence in policy-driven decisions. As such, data is used to inform decisions, but managers also use their professional experience and knowledge of the fire service and the environment in which the department functions to form conclusions, policies, and guidance.

## The Outcome

Since its creation, the division has made significant strides in the quality, variety, and usefulness of the data provided to the organization. It adopted three guiding principles to do this:

1. Eliminating paper reports by designing and delivering digital-based analysis using dashboards and similar custom-tailored methods.
2. Looking into why the department has historically collected data with the goal of shedding antiquated processes and invest time in more progressive approaches.
3. Utilizing a peer review process on all reports wherein a second individual from the division reviews the output to guard against bias in the analysis and bolster reliability.

To address the ongoing issue of data literacy, the division created a monthly update entitled “Did You Know?” which examines a relevant topic on data entry or analysis. This helps personnel understand how to properly report within the NFIRS and NEMISIS guidelines and why the consistent collection of valid data matters in the field, fostering consistent data-entry practices among both field responders and their supervisors,



## FAIRFAX COUNTY FIRE AND RESCUE - RETHINKING DATA ANALYSIS

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The division also provides in-person training for new field responders, fire officers, and instructors during the department-developed Officer Development Academy. It also created a centralized data warehouse that gathers essential data, including that generated by third-party vendors. The staff also is focusing on automating specific tasks, such as ordering medical supplies for restocking based on what is used during an EMS response and notifying the county-contracted elevator inspection company following a response for an elevator malfunction. In addition, a start-of-tour report is provided to the oncoming battalion chiefs that review the previous shift activity in that battalion.

The division has expanded the use of data dashboards that help to synthesize sometimes large datasets into digestible, readily understood formats. These are easily updated and can provide real-time performance data to users.

Division staff also participate in regional meetings with the analytic programs from partner fire departments in the Washington, D.C., metropolitan area. These serve to develop professional relationships and improve the cooperation between agencies protecting a large and diverse population.



## Tips for Replication

- Invest in report-writing presentations for field responders. They can go a long way to ensure the quality of the data provided in their reports.
- Anticipate the manager's information needs and design the response to support that.
- Ensure that your department can pull data on-demand from the vendor's servers rather than having to download it into a spreadsheet and import it into your servers. Third-party products such as cloud-based records management systems do not always "talk" to each other.

## Additional Resources

<https://www.fairfaxcounty.gov/fire-ems/>

What is Forming, Storming, Norming, and Performing?

<https://www.sixsigmadaily.com/what-is-forming-storming-norming-performing/#:~:text=The%20concept%20of%20Forming%2C%20Storming,on%20accomplishing%20a%20shared%20goal>

## About CPSE and Metro

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Public Safety  
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The Center for Public Safety Excellence (CPSE) helps high-performing fire departments and emergency service professionals in their efforts to continuously improve through accreditation, credentialing, and education.

[www.cpse.org](http://www.cpse.org)



The Metropolitan Fire Chiefs Association brings fire service professionals together to address the challenges of large-jurisdiction departments across the globe serving as an educational resource and promoting best practices for members to follow.

[www.nfpa.org/metro](http://www.nfpa.org/metro)

CPSE and Metro have partnered to develop this series highlighting proven practices of Metro departments accredited by CPSE's Commission on Fire Accreditation International.