Creative FirstWatch Applications Enable Groundbreaking Public Health Initiatives

Next-Level Data Analysis for 9-1-1 Calls

Background

The Milwaukee Fire Department (MFD) is the primary fire suppression, prevention, rescue, and emergency medical service for the city of Milwaukee. Many of the department's 700 firefighters are also paramedics who staff MFD's 12 ambulances. The department operates a public safety answering point, which receives approximately 55,000 calls per year and provides dispatch for both fire and EMS services.

The Need

In recent years, the city of Milwaukee has been plagued by public health issues that require the MFD to go beyond the 9-1-1 call. Like many cities across the country, they're facing an opioid epidemic and a record-breaking death toll from overdoses. Milwaukee is also experiencing an uptick in gun violence, which includes mass shootings and the frequent victimization of children.

In response to these challenges, MFD sought new ways of getting follow-up assistance to patients to reduce the volume and frequency of calls. MFD developed extensive community outreach initiatives and partnered with a variety of agencies to create a continuum of care for their patients.

Joshua Parish, NRP, MSc, MPH, Assistant Chief – EMS, Training, Education & Wellness, has a statistical and behavioral science background, which has been key to his role in the MFD's public health initiatives. Chief Parish notes that when he came on board, the department was using FirstWatch, connected to its CAD system, to monitor key performance indicators (KPIs) such as turnout times, response times, and hospital turnaround times. He understood its capabilities for transforming the department's raw data into useful, actionable information to improve its operations and performance.

"Since FirstWatch was also holding all our 9-1-1 call-typing data, I also knew that I could use it to extract certain types of calls to monitor," says Parish. "I knew that I could look at more than vehicle times–that I could look at any data point."

Joshua Parish, NRP, MSc, MPH, Assistant Chief

Solution

Parish led the charge for using FirstWatch in new, creative ways, and implementing a number of user-defined data filters, called "triggers," specific to public health initiatives. These triggers provide alerts based on specific 9-1-1 calls, to be followed up on by the department or one of the partnering agencies. "These initiatives help us be proactive in prevention using the behavioral components of our 9-1-1 caller set," Parish explains.

They started by connecting FirstWatch to the department's electronic patient care reports (ePCR), which opened new opportunities, including analyzing drug overdose calls. That process included a learning curve as the department worked with FirstWatch developers on the appropriate triggers.

"We initially had a trigger running that was supposed to be looking at overdoses by scraping dispatch comments for key words including 'heroin,' 'overdose,' and 'opioid,'" says Parish. Soon they realized that the proper indicator of overdose was actually the clinical administration of naloxone.

The trigger that they are now using combines ePCR data and dispatch data. "FirstWatch gave us a way to grab two different datasets and merge them together using a clinical indicator that was relevant for overdose, without a caller actually saying there was an overdose," Parish explains.

Parish notes that this capability allowed them to create a completely new post-overdose follow-up initiative. That team receives reports based on the trigger, and follows up on non-lethal overdose cases with harm reduction and inpatient rehabilitation information.
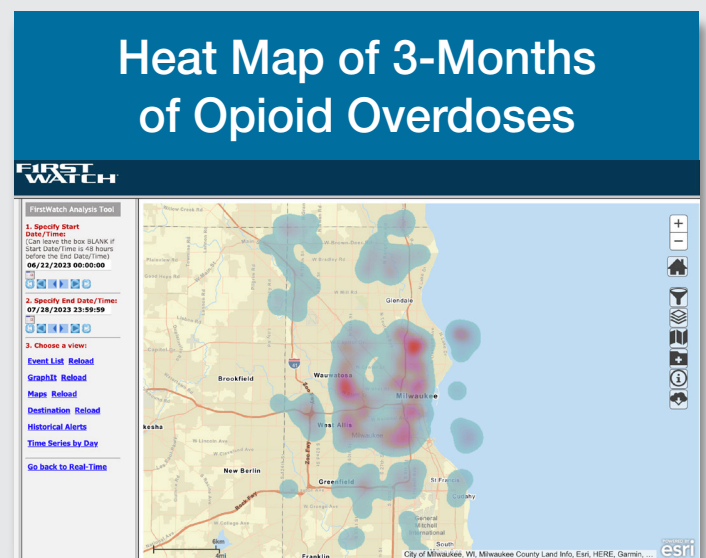
Milwaukee's record-breaking gun violence in recent years led the department to create multiple triggers to track shootings. They first identified where the incidence of shootings were the highest, determined correlations, and analyzed how to decrease the notification time to the appropriate agencies. Now, FirstWatch tracks penetrating trauma events, whenever an object breaks the skin and enters the body, such as in a stabbing or gunshot wound. A notification tool tells partnering agencies about the call and where it's located. Adds Parish, "Our goal is to be a resource to our partners so they can take action on it."

In addition to drug and violence intervention, the MFD uses FirstWatch to increase vaccination uptake, particularly with the flu vaccine in high-risk populations. By setting triggers for 9-1-1 calls for breathing incidents, they're able to follow-up with patients to drive vaccinations prior to flu season. They've also evaluated 9-1-1 calls for non-emergency obstetrics to automate key notifications so the health department can follow up and connect patients with prenatal services.

"Having this system and being able to directly pull out or infer answers is so much faster than going to our technical services department and asking them to generate a report," says Parish. "Having the information already sorted is extremely valuable–all coming off in a very standard way once I create a trigger. I can build data models and manipulate them very rapidly."

The newest MFD project on the horizon will explore violent incidents in school-age children, with FirstWatch identifying how often such events occur in the home.

Heat Map of 3-Months of Opioid Overdoses

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