- Enroute_arrive time increase with new CAD system
- A good chunk (~40%) of calls not dispatched in two minutes or less (International Academies of Emergency Dispatch recommendation)

A Missourian data analysis showed that about 40% of calls were not dispatched in two minutes or less, which is BCJC's goal and the recommendation of the International Academies of Emergency Dispatch. Those calls included both life-threatening and non-life threatening calls, however, a BCJC employee said in an email that dispatchers strive to answer all calls in the two-minute time frame.

Piper believes that selecting a goal that is too fast leads to slower responses in the end, and though two minutes is recommended by national authorities on EMS, he doesn't know that it's the right number for BCJC. (7:45 ish in part 3: "So, I don't know that two minutes is the right number for us," Piper said. "That's just a goal that we set.") "When we first set it, it was probably faster, it probably gave us a goal to aspire to because we weren't doing it in under two minutes," Piper said.

He said that the two-minute goal comes from the National Fire Protection Association standards. However, BCJC also turns to the International Academies of Emergency Dispatch, which doesn't recommend setting an arbitrary number for a dispatch goal.

"Call-takers, people in performance, they will try to take shortcuts in order to meet that number, Piper said. "And what does that mean? That means that they take a shortcut in verifying an address, and then the units go to the wrong location, and did you save any time? No, you didn't save any time. You really need to do what you need to do to do the call right, to get the right equipment and the right personnel to the right location on the first go at it.

While the CAD makes calculations and recommendations for an efficient dispatch, dispatchers have to obtain the most important information through a conversation with the person on the phone. Dispatchers have to take the time to collect information, verify information and ask detailed questions to ensure that medical providers with the right level of skill and appropriate equipment are dispatched to a scene. And many times, the caller is in a crisis or panicked.

Verification of the emergency location and verification of the problem are the most important things for dispatchers to nail down on the phone so people with the required level of skill and the required equipment to address a medical emergency go to the correct location, Piper said.

"If you're not doing that, you can cause an extended response time because you get there and you find out you don't have what you need, so then you have to dispatch another unit," he said.

A challenge that BCJC and other 9-1-1 call centers across the United States face comes with the prevalence of mobile phones. Most callers call from a mobile device, and it is a lot more

difficult for dispatchers to pinpoint the location of a wireless phone than now obsolete landlines. This challenge has actually increased call-processing times, Piper said, though location technology is improving.

“Oftentimes in emergencies people will go to another location to make the call, so what you’re seeing on your map is not actually where the emergency is, so if you make an assumption that it is, then you end up sending people to the wrong location,” Piper said. “So we have to spend more time in communicating over the phone, talking to the person to make sure that using our processes that we’re going to the right location and then also doing some basic due diligence to make sure that we’re sending the right things.”

Getting information from someone who isn’t familiar with Columbia’s geography makes calls challenging, as well as language barriers with English-speaking dispatchers. **However, there’s technology for that.**

Although it’s important to dispatch units to life-threatening calls as quickly as possible, a drawback of setting a time limit or hard goal is that it might encourage dispatchers to be less thorough in the interest of working faster, Piper said.

He also noted that on the phone, dispatchers are trained to provide medically approved instructions to callers, which is also part of emergency medical response. The instructions could help them give CPR to a person in cardiac arrest, control bleeding or assist in childbirth.

“The caller is providing help to the patient until the next level of care gets there,” Piper said.

How CAD system works

The computer-aided dispatch is a tool that Boone County Joint Communications uses to dispatch EMS agencies: University Hospital, Boone Hospital Center, the Columbia Fire Department, Boone County Fire Protection District and Southern Boone Fire Protection District. As units begin traveling and later arrive on scene, they use radios to communicate that progress back to BCJC, and the CAD records the timeline.

“Even though the CAD is ours, each agency has a mechanism to go to the CAD system, and actually it pulls over to their reporting system, so from their system they know when they got the call, when they were dispatched, when they went enroute, when they arrived on scene and how long they were on scene,” Piper said.

In 2018, the county changed CAD systems. The ability to use automatic vehicle location technology for dispatch was a big draw of the new system. This technology recommends the best unit to dispatchers to respond to an emergency.

“When a call comes in and you put in the address of a call the CAD system looks at all the units and it does a calculation based on the road system and how fast they can get there, and it picks the unit that truly is the closest available unit that can get to a call,” Piper said. “It’s not operating off the station that they’re assigned to. It’s actually operating off of where the vehicle, where the crew is actually at at a given moment.”

The new system presents a tradeoff, though: Response times are faster, but analyzing data over time is harder.

Marcus Carr
because it provides their “common point of communication,” as Carr put it:

Retrieving records from before the system change is possible, but “it’s a fairly cumbersome process,” Carr said, and agencies deal with it on a daily basis, when they’re reviewing calls and doing research over time.

However, the AVL feature is a “huge benefit to the customers” and makes the challenges worth the efficiency — at least from the EMS side.

“To have to go through some extra headaches on the non-emergency side, as far as pilfering through data to figure out a problem, I would rather exchange that for having crews dispatched by AVL any day,” he said.

The other benefits of the new system streamlined records primarily for law enforcement.

How BCJC and EMS providers review response times

BCJC is accredited, so calls are randomly selected and reviewed independently every week, and feedback in the form of a report is given to the person who responded to the 9-1-1 call (part 4, 6:45ish). That review covers how a dispatcher categorized a call and whether they asked the right questions in the right order, Piper said.

BCJC also regularly reviews calls itself, Piper said, especially when a call took longer than normal.

“In our piece of the puzzle we look at things like how quickly are we answering the phone, or when we get a call, how quickly from the time we answer the call are we dispatching a unit, and what can we do, what improvements can we make in those elements,” Piper said.

BCJC controls the beginning of the process, when a call is answered and the CAD matches an appropriate unit to respond. Emergency medical providers analyze how quickly they arrive on

scene after being dispatched, their turnout and travel times, basically the parts of the process after dispatch.

CFD and UHC are also accredited, so calls are externally reviewed regularly. CFD also publishes quarterly and annual reports that share information about its EMS response and benchmarks used to evaluate performance. The station uses National Fire Protection Agency recommendations for its goals in EMS response.

Josh Creamer has a master Excel spreadsheet that he keeps up to date with different pivot tables to do analysis over time, he said.

Solutions to long response times could be more units, more stations spread out across the county, changes in processes that make their response to calls better.

Turnout time, which spans from when responders are notified of the call to the moment the unit is in motion, is the only part of the process responders can control. They don't control dispatch time, and they aren't able to change road conditions, traffic or construction as they drive to a scene.

The layout of fire stations is designed for the fastest turnout time possible, Frazier said. Drive-thru stations, which don't require units to back into a single garage, are preferred, and inside, beds are near suits and the access to the truck, so firefighters don't have to move very far within the station to go from resting to preparing to respond to a call and leaving the station.

However, because some firefighters are volunteers, they may not even be at the station when a call comes in.

Stations that are away from busy intersections and not seated on top of hills, where visibility of nearby traffic is poor, also help with efficiency.

NEW STATIONS

Some calls will de facto show longer response time

Data from the new CAD system comes with flaws, though. In some situations, typically those in which a weapon or hazardous material is involved or there is a threat of violence, a unit's recorded arrival time is far later than the actual time the unit arrived on scene. This is because medical providers have to "stage" while police secure the scene. The time they are finally able to assess someone needing medical attention is their recorded arrival time, not the time they made it to the scene.

Among the calls that require medical providers to wait for a scene to be secured before they help a person in need are attempted suicides, calls that Blomenkamp categorized as some of the department's "most difficult."

"A lot of times those callers are obviously having one of the worst days of their lives, and so information is usually pretty scarce," Blomenkamp said. "We just can't put our people in a bad position, so we have to just wait for law enforcement."

Fire calls generally take departments longer to prepare for than medical calls because fires require responders to put on suits, Frazier said.

The new system makes tracking EMS responses over time harder. In the old system, the data showed accurate response times for multiple providers who responded to a call, all in one file. In the new system, a call with multiple responders isn't stored in one single file, and in the CAD data, it appears as more than one call.