

Case Study – How KHEL Uses Mobile Laboratories to Serve Vulnerable Kansans

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KHEL's Mission Statement

The Kansas Health and Environmental Laboratories (KHEL) stated mission is "To provide timely and accurate analytical information for public health benefit in Kansas and to assure the quality of statewide laboratory services through certification and improvement programs". Prior to the Covid-19 pandemic, all samples were transported back to the laboratory facility in Topeka for analysis. The delay caused by transportation did not affect the timely delivery of the results and appropriate action could be taken based on the results.

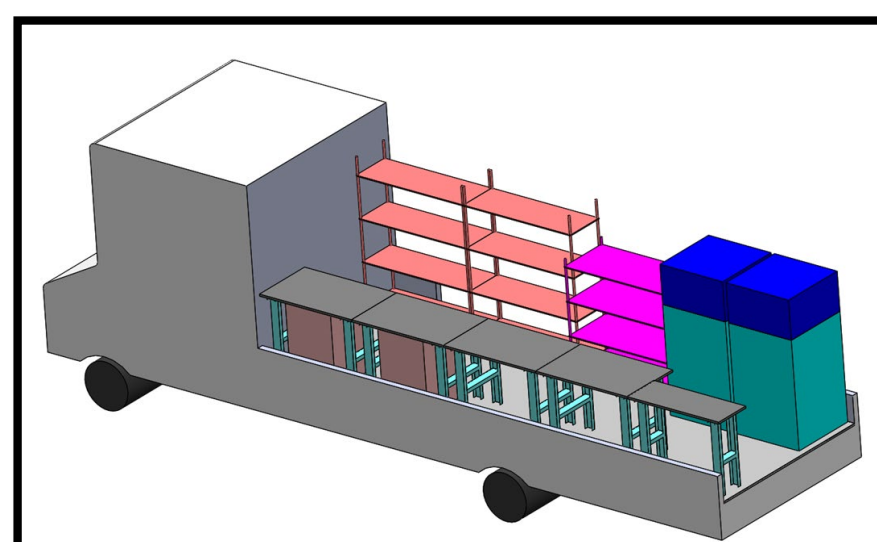


Covid-19 analysis, however, has a comparatively short timeframe in which the analysis results are actionable, with the value rapidly decreases over time. If a person suspects they have Covid-19, but cannot or will not isolate themselves without laboratory confirmation, the longer the results take the more people they are likely to infect, thus continuing the pandemic.

Due to the short window of providing actionable Covid-19 results, leadership at KHEL started looking for innovative ways to meet their stated mission for difficult to reach Kansans. One of several methods implemented was to gain the ability to take the laboratory to the sample with a mobile laboratory vehicle. MRIGlobal was selected to design and build the vehicles, which were delivered in the winter of 2020.

The Vehicle

The MRIGlobal team of engineers quickly sourced two Freightliner MT-55 trucks which were available for immediate delivery. With a large open workspace, built in generator, and shore power connections, it was a great base vehicle because much of the work which would slow down delivery had already been completed.



Left: New truck delivered to MRIGlobal facility. Center: Layout designs used to determine interior layout of the vehicle. Right: Interior of the laboratory vehicle setup to analyze Covid-19 samples.

KHEL wanted the interior layout and equipment selection to be useful for not only the Covid-19 response, but for future, yet to be determined, uses. Working closely with MRIGlobal engineers experienced in mobile laboratory design, the interior configuration was determined. Half of the truck was determined to be laboratory grade bench space, with the other half used for cold storage, general workspace, consumables storage, and sink. Additional outlets were added, allowing equipment to be powered anywhere along the bench. All of this equipment was secured in a manner which allows for easy reconfiguration if necessary for different type of laboratory setup.



Laboratory Diagnostics Uses

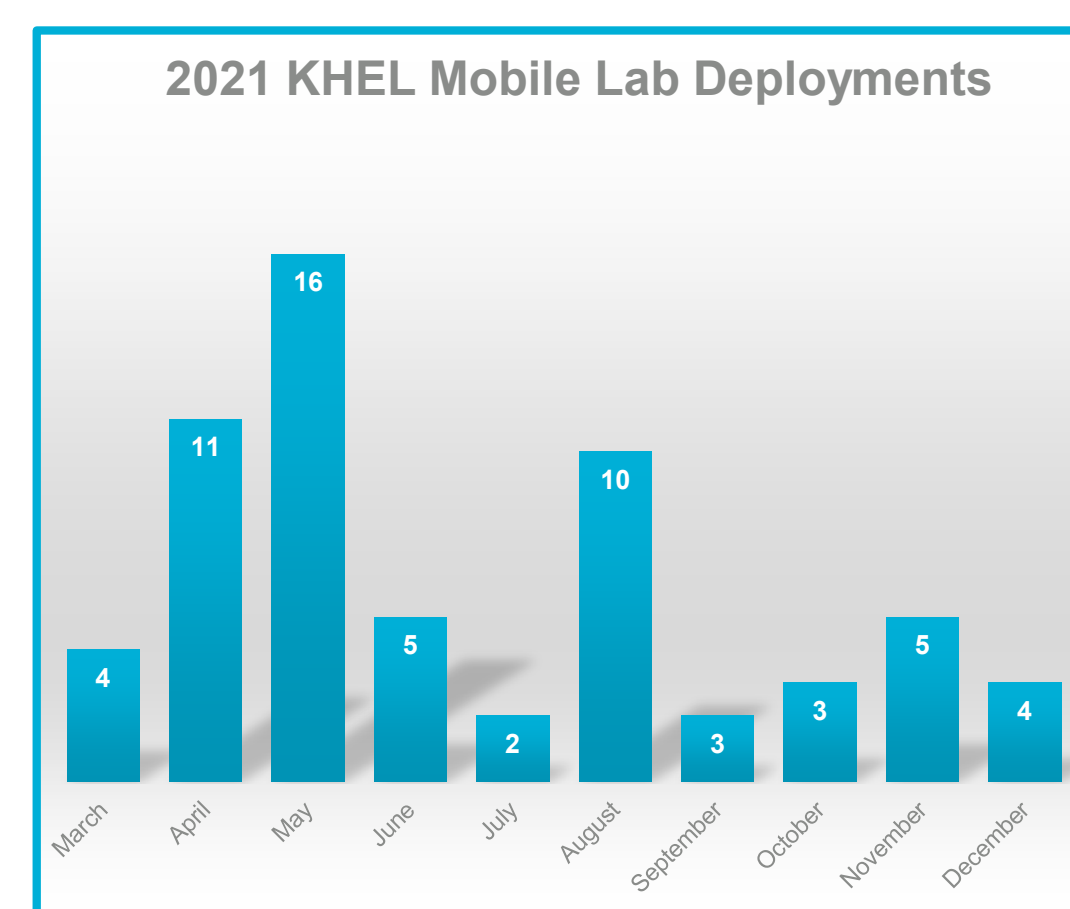
In 2021, Kansas Health and Environmental Laboratory, part of the Kansas Department of Health and Environment, used their new mobile laboratory vehicles to serve thousands of Kansans at many different types of events across the state. At some events, the KHEL staff performed on-site testing using the mobile laboratory vehicles. In other places, the communities' needs called for collecting specimens that would be transported and processed at KHEL's main laboratory in Topeka. The versatility of the laboratory vehicle allowed KHEL to listen to the needs of a specific community and provide them with services to continue the fight against the spread of Covid-19.

Most of the on-site testing clinics were in response to high needs in underserved communities found all throughout Kansas. KHEL performed many on-site Covid-19 rapid antigen and PCR testing for people who did not have access to traditional testing locations, often due to lack of transportation. The mobile laboratory was able to deploy to an easily accessible area, reducing the burden of the commute. It also served Kansans who do not have access to phone or email and therefore wouldn't be able to receive their results, because KHEL was able to provide accurate and timely test results and report to patients immediately.



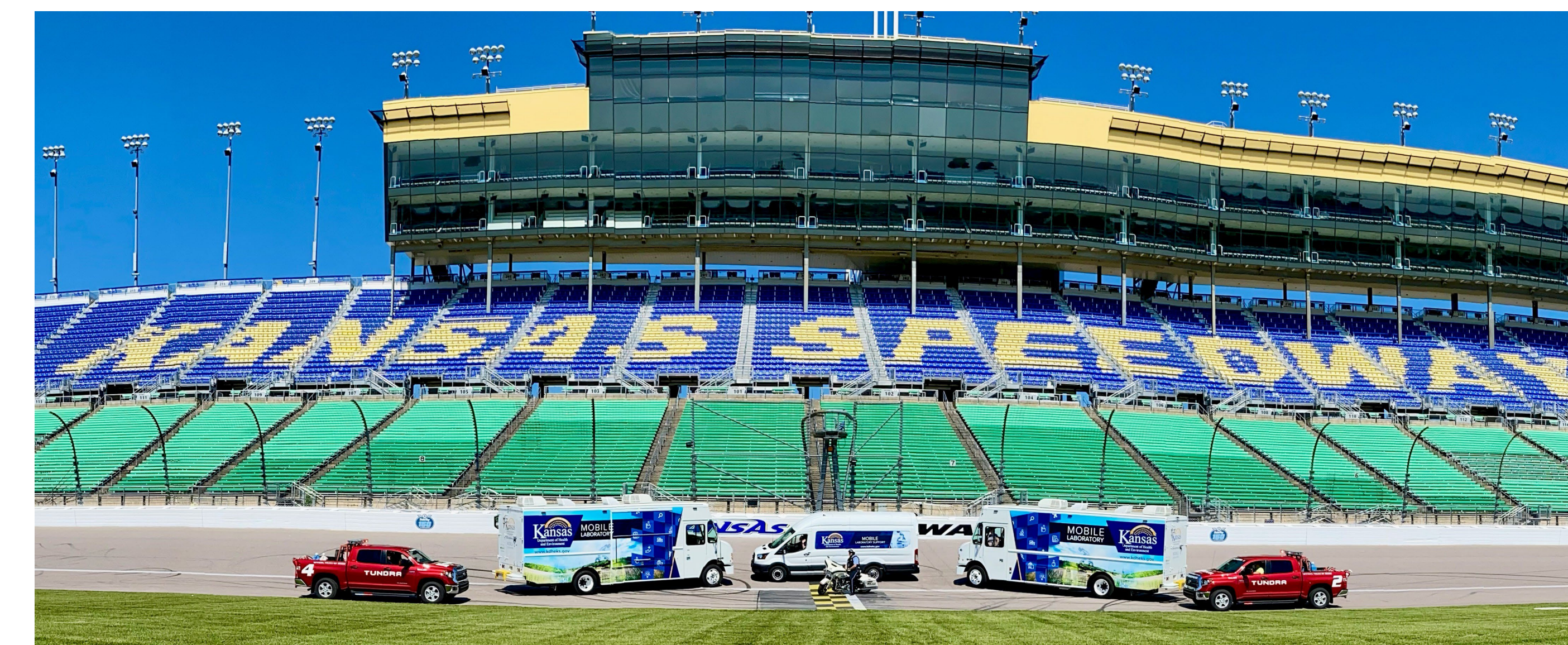
A deployment in Wichita to bring KHEL laboratory services to a homeless population unable to easily access traditional testing sites and unable to receive results in traditional methods.

Analyzing samples was only part of the services provided by KHEL staff. In some counties, partnering with the local health departments, hotel rooms were provided for homeless individuals with positive Covid results so they could properly isolate and take care of themselves throughout the symptomatic phase of the disease. While working with these communities and Local Health Departments, the need for Covid-19 and hepatitis vaccines and on-site syphilis testing became apparent and these services were added and the analysis performed on site.



Community Outreach

In addition to on-site testing, vaccination events, and other laboratory services, KHEL mobile labs have been and will continue to be used as an educational and outreach tool for Kansas Health and Environmental Laboratory. At events such as K-State football games, The Kansas Speedway, rest stops along the turnpike through Kansas, and many others mobile laboratory vehicles served as a valuable tool to draw people in to start a conversation.



At the Speedway event, participants drove their personal vehicles around the track. After, they were encouraged to get vaccinated, tested, or both and in doing so would be entered into drawings for prizes.

To date, KHEL has used the mobile laboratory vehicles at major events such as the Kansas State Fair in Hutchinson and the Swedish Festival in Lindsborg. People passing by were encouraged to participate in simple health and environmental experiments designed to educate the community on the type of work KHEL does and how tax dollars are used to provide timely and accurate analytical information for the benefit of public health and assure the quality of statewide laboratory services.

These events are meant to spark interest in Kansas youth to encourage them to consider a career in Science, Technology, Engineering, and Mathematics (STEM). As the need for mobile laboratory services decreases with the decrease in prevalence of Covid-19 throughout the state, the future outlook for the mobile laboratory vehicles is to use them for more outreach programs, while always having them at the ready to respond to public health and environmental emergencies throughout the state of Kansas.



Staff from Kansas Health and Environmental Laboratories participating in a booth at the 2021 Kansas State Fair, Hutchinson, KS.

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