



Kansas LTAP Newsletter

The Use of Drones by Road and Bridge Agencies in Kansas - Now and in the Future

By Lisa Koch, Kansas LTAP

In recent years, unmanned aerial systems (UASs), or drones, equipped with auxiliary technologies have been used to gather photography and data for numerous industries including the military, agriculture, and forestry. Some in the transportation sector have begun to adopt the use of drones for the purpose of reducing staff time in the field. The use of drones in the transportation field is still new, research results on efficiencies is inconsistent, and use of the technology for data collection is rarely taught in engineering programs; therefore it is up to the agency to invest in education on this topic.

To assist local agencies, the University of Kansas Transportation Center, through a State Transportation Innovation Council grant by the Federal Highway Administration, has spent the past year understanding the state of the practice related to the use of drones in road and bridge agencies and how drones are currently used by practitioners in Kansas. The goal of the research is to create educational programming to increase the use of drones where results are most likely to improve efficiencies for road and bridge agencies.

As part of the research, a survey was conducted on the use of drones in Kansas by road and bridge professionals currently -- and the interest in future use of this technology. This article will focus on the results of the survey and outline plans for training in Kansas on this topic.

A survey of 12 questions was sent to the Kansas LTAP mailing list, which included 631 individuals. Of those invitations, there were 55 responses, or a response rate of 8.7 percent. We appreciate those who took the time to respond to this survey.

The initial question asked about drone usage. Of those who responded to the survey, only 20% stated that their agencies used drones for agency work. We then asked those who do use drones at their agency about the purpose, the following were the main responses:

- Bridge inspection
- Land surveying and mapping
- Emergency response
- Flooding issues
- Infrastructure inspection

Two-thirds of agency respondents who use drones use in-house resources, with the remainder using contractors to provide drone services. Of those that use in-house resources, 77% assist other departments in their jurisdiction with their drone needs. The respondents were asked about the frequency of their use of drones. The majority of respondents who use drones use them between 1-20 times per year.

Respondents were asked to describe their experience of using drones as part of their work. Those who provided answers where positive. The work that they did with the drones (aerial photography for communications, updating construction progress, or measuring stockpiles) was not generally data-intensive. There was an interest in learning more about the capabilities of data collection and management using drone tools so that data from drones could be integrated into day to day operations.

The final questions of the survey asked respondents about interest in coursework related to drones for road and bridge professionals. 51% of respondents said that they would be interested in training in this area, with the following topics being of the most interest:

- Land surveying and mapping
- Infrastructure inspection
- Bridge inspection
- Traffic data collection

The information gathered from the survey was helpful in identifying the market for potential coursework and the areas of interest for study. The KUTC is considering the following framework for a future class for local agencies on UAS:

An initial webinar that provides an overview of the use of UAS for local road and bridge professionals (this webinar is being piloted on August 20, 2020)

Those interested in receiving operator licensure should do so. The KUTC recommends K-State's Polytechnic Drone Operator Training in Salina as the training of choice in Kansas.

The KUTC will partner with industry experts to provide additional content for specific topics, such as those listed above, that mixes classroom time and field time, to provide students with experience in specific UAS methodology.

The KUTC will also work with KU faculty to discuss methods for including UAS education in the civil engineering curriculum so that future engineers learn these techniques while in school. Education, both through bachelor's and master's degree programs and through LTAP, is essential for adopting drones as a regular piece of an engineer's and agency's toolkit.

Do you have ideas for how to increase drone usage or interesting stories of your use of drones on the job? Let us know. Contact Lisa Koch at kolisach@ku.edu.