



## Effects of Drones on Construction Workers at Height

### **Safety challenges of UAV integration in the construction industry: Focusing on workers at height**

*Idris Jeelani and Masoud Gheisari. CPWR Small Study, 2022.*

#### **Overview**

Unmanned aerial vehicles (UAVs) are increasingly being used on construction sites. Previous research has focused on the benefits they can offer, with little study of their potential adverse effects on the health and safety of workers. This Small Study begins to fill this gap, focusing on UAVs' effects on those who work at heights. UAVs can cause distraction, increasing the likelihood of falls, which lead to one-third of all construction fatalities. In this research, a virtual construction site was developed to simulate different high-risk scenarios, involving 153 participants with varying construction experience. The researchers used wearable sensors and self-reported questionnaires to evaluate how UAVs affected workers' attentional and psychophysiological states. There were two experiments in this study: the first aimed to indicate how UAVs presence impacted workers' attention and physiological response, while the second examined how the distance between UAVs and workers impacted their attention, physiological response, and their attitude towards UAVs.

#### **Key Findings**

- The results indicate that working with or near unmanned aerial vehicles (UAVs) reduces the attention workers devote to the task at hand, which could result in falls when they are at height.
- UAVs working at some distance (12 ft. and 25 ft.) cause more distraction than UAVs in close proximity (1.5 ft. and 4 ft.), as participants looked away from their tasks more when the UAV was farther away.
- Construction professionals generally have a negative attitude toward working with or near UAVs, but hands-on virtual reality interaction with UAVs helped participants view UAVs less negatively.
- Physiological data and the self-reported questionnaires did not show that working with UAVs at any distance causes significant psychological or emotional distress.
- Recommendations for the safe integration of UAVs in construction include training the workforce, designing UAVs to limit the frequency and severity of risks they pose, and preparing the construction sites to ensure that UAVs work efficiently and safely around workers.

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#### **Read the report:**

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