



The Society of
Light and Lighting

Opinion: Lighting research during and after the pandemic

For many lighting researchers, the recent restrictions related to COVID-19 have paused most in-person laboratory or field experiments. In certain countries, regulatory institutions have allowed such experiments to resume but issued safety recommendations like pre-checking participants for disease symptoms and excluding those that are especially vulnerable. To avoid potential complications and delays, researchers are likely to resort to other research designs that enable *remote research* – eliminating the need for the experimenter and subjects to be in the same room. While unanticipated, this shift to remote research methods is an opportunity to revisit and further develop remote experimental techniques, which can have beneficial long-lasting implications on lighting research during and after the pandemic.

Perhaps the most common type of remote research is online experimentation, which can greatly benefit from improved techniques to allow for greater control or characterisation of experimental conditions, like those proposed by Villa and Labayrade.¹ Online research techniques require validation specific to the type of response collected and to the context, e.g. a technique validated for assessing pleasantness in an office may not work for assessing uniformity in outdoor lighting. New research techniques continue to emerge and will enable remote collection of objective measures such as gaze direction and high dynamic range images without specialised equipment. In fact, many of these methods and techniques are commonly used in other

disciplines, like vision science and psychology, and can be adapted for lighting research.

Not all lighting studies can be conducted online, but in the age of ubiquitous and connected technologies, there is a largely missed opportunity to utilise crowdsourced responses to lighting conditions in real environments where people live and go about their daily lives without the research being limited to a certain time and laboratory locations. For instance, outdoor street luminaires can be rated by passersby using ecological momentary assessments on mobile phones. While this approach does not provide laboratory-level control over experimental conditions, it can provide more contextual responses resulting from ‘normal’ dynamic gaze, behaviour and interactions. Further, it can also reduce bias related to the experimental setting.

Further development of remote research methods and their use in lighting research can improve the quality of lighting research. Given that sample sizes in most lighting research are relatively small, remote research can substantially increase sample sizes, reduce research costs and shorten study duration, all while reducing interaction between experimenter and subjects. Other benefits include reaching a wider audience and enrolling individuals with under-represented characteristics who typically are not reachable using common recruitment methods. The pandemic has set back our plans for in-lab experiments, but can it inspire us to think of new and creative ways to expand lighting research?

Reference

- 1 Villa C, Labayrade R. Validation of an online protocol for assessing the luminous environment. *Lighting Research and Technology* 2013; 45: 401–420.

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