

# Distributing map studies

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## Abstract:

In this presentation, we introduce and discuss MapStudy (<https://github.com/uwcartlab/mapstudy>), a survey tool developed by the University of Wisconsin Cartography Lab supporting distributed empirical research on interactive web maps.

The COVID-19 global pandemic has forced researchers across the academy to rethink how they come to know the world. This is particularly true for graduate research and mentoring, where project cycles may have fit entirely within the pandemic timeline. For cartography, among other challenges, we need to rethink how we collaborate on research and design, how we learn from our audiences or users about design, and what we ask of our maps.

While the pandemic has imposed significant barriers to accessing our work spaces, our research equipment, and each other, arguably there are fewer barriers to accessing maps and geospatial data now than ever before (Ricker et al. 2020). Many maps today are digital and interactive and disseminated online or through mobile devices. Further, some of the most popular stories released by major news rooms during and about the pandemic are driven by maps and visualizations (e.g., Stevens 2020 discussed in Cairo 2020). Thus, while the pandemic has shifted (temporarily or not) *why* and *how* we use maps, it certainly has not shifted *if* we use maps, and we need to distribute our user studies (not temporarily) to understand these new *why*'s and *how*'s.

Our work aligns with efforts to distribute empirical methods in cartography (see Robinson 2011 for a review of challenges). Distributed methods also are drawing attention in information visualization for evaluating design of charts and diagrams, as online services such as Amazon Mechanical Turk afford wider access to non-student populations but also present new ethical considerations for human subjects research (Kosara & Ziemkiewicz 2010, D'Ignazio & Klein 2020). A range of survey tools now exist to support distributed studies, but few account for the interactivity and dynamism increasingly common in online and mobile map experiences.

MapStudy is a modularized, configurable, and extensible framework for rapid design and implementation of map-based surveys. We began development on MapStudy in 2017 with the dual purpose of supporting controlled (in person) and distributed (online) studies on interactive and web map design. The stable MapStudy version 1.0 was released in 2020 with added functionality and documentation for distributed studies. MapStudy as a distributed survey tool supports both quantitative and qualitative map-based research and can be implemented as a factorial study for hypothesis-driven research as well as a discount evaluation on a web map prototype as part of a user-centered design process.

In this presentation, we demonstrate how to configure and run a MapStudy distributed survey. As part of this demonstration, we identify opportunities within the MapStudy modular design for both novel and replication studies in graduate research. We also offer considerations and challenges for distributing map studies moving forward, including new design techniques, new measures of map uptake and engagement, new user groups and use contexts, and new considerations for distributed human subject research.

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