Tutorial: Visualizing Spatial Data on the Web Using RStudio, Leaflet, & Shiny

17th International Symposium on Visual Computing
San Diego, CA, USA
October 3-5, 2022

http://www.isvc.net

Tutorial Abstract

This tutorial will provide a hands-on introduction to visualization of spatial data using interactive maps that can be deployed as public web pages. We will use a combination of RStudio, the Shiny package, and the Leaflet open-source library to provide an introduction on how to combine data and maps to create public web pages. Attendees will gain an overview of RStudio, Leaflet, and Shiny Applications. They will learn how to install packages for leaflet and Shiny, create and customize different types of leaflet maps, including a choropleth, and develop a Shiny application deployable on the web.

Tutorial Description

Maps provide an intuitive interface while communicating elements that are related spatially and presented visually. Any data holding a spatial component lends itself to presentation on a map. Interactive maps allow us to explore spatial data, build layers, identify patterns, drill down to reveal additional information, and inform data-driven decisions. This tutorial will introduce attendees to the seamless integration between RStudio, Shiny, and the Leaflet Mapping Library to enable the creation of spatially mapped data on the web with minimal friction.

Tutorial Objectives

The overall objective of this tutorial is to introduce the mapping of spatial data using RStudio and create web visualizations containing mapped data using Shiny.

After completing this tutorial, attendees will be able to:

- Describe key features of RStudio, Leaflet, and Shiny
- Download and install each package.
- Create Base Maps
- Annotate base maps
    - Including adding Markers, Circles, and Polygons
- Add and format Popups and Labels elements
- Create a Choropleth Maps
- Integrate Shiny and Leaflet to display maps on the web

In summary, upon completion of this tutorial, attendees will be equipped with enough knowledge to create various maps and populate the maps with makers, popups, and other interactive elements. We will use real data to inform the appearance of a choropleth map and finally deploy the application to the web seamlessly using Shiny.

Intended Audience

This tutorial is suitable for attendees that would like to learn more about mapping data and using the Shiny app with RStudio to deploy the maps to the web. Attendees should have some programming experience, but not necessarily in RStudio.

Tutorial Duration

This will be a half-day tutorial.

Organizers

Ann McNamara, Department of Visualization at Texas A&M University, ann@exchange.tamu.edu

Ann McNamara is the Associate Dean for Research in the College of Architecture and an Associate Professor in the Department of Visualization at Texas A&M University. She is the founding director of the VIVID Lab, an interdisciplinary lab devoted to the advancement of data visualization and information design. Her research focuses on advancing computer graphics and scientific visualization through novel approaches for optimizing an individual's experience when creating, viewing, and interacting with virtual and augmented spaces.

Date

- TBD