Make your data speak: Create interactive dashboards in R with Shiny

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Description

Shiny is a powerful R package that can be used to build interactive web applications. With Shiny, researchers can build applications to present their research results, where users can interact freely with data and results. Researchers also can share functions from their R codes with other R non-users or with decision makers who need a quick and interactive tool to draw conclusions. This workshop will introduce participants to the basics of developing Shiny applications. Participants will be introduced to several case studies, where the process of creating the applications will be explained in detail and the R codes will be provided.

How the workshop can benefit PAA 2020 attendees

Shiny opens doors for innovations, where developers/researchers from any field can build fancy web applications only with R. By the end of this workshop, participants from PAA 2020 attendees will understand the architecture of Shiny applications, will be able to build their own applications based on their own demographic data or research results, and will be able to deploy a Shiny app to the RStudio server and have it ready for users.

Target audience

The target audience of this workshop is researchers who are Shiny beginners, those who have never created a Shiny app. However all participants are expected to be familiar with R and have experience writing functions and installing packages. Participants should come with their laptop and the latest versions of R, RStudio, and the Shiny package installed. The workshop is designed for 10 to 25 participants (for larger group more than 25 participants, a co-facilitator can be added to the workshop).

Preferred workshop days

Tuesday, April 21st or Wednesday, April 22nd.
Workshop duration and format

This is a 1/2 day workshop that is designed to involve a mix of slides, hands-on material and exercises. Participants should use their own laptops and will be provided access to a cloud version of R codes for the workshop.

Tentative activities and schedule

1. Introduction to Shiny
   - Welcome to the workshop!
   - Benefits of learning Shiny - Let’s get you motivated!
   - Background
   - Structure of a Shiny app
   - Let’s run our first Shiny App!

2. User interface and server functions
   - Introduction to user interface (UI) and server functions
   - Inputs and outputs
   - Reactive flow
   - How to build a reactive dashboard
   - Reactivity - rendering
   - Putting all the pieces together – shinyApp function
   - Run a reactive Shiny App

3. Time for packaging
   - Format your interface
   - HTML and tags
   - Layout panels
   - Tabs and tabsets
   - shinythemes
   - Deploy a Shiny app to RStudio server

4. Case study
   - Let’s design a Shiny app from scratch using your own data

Workshop Instructor

Mahmoud Elkasabi is a Senior Survey Statistician at the DHS Program and the author of the {DHS.rates} R package, for calculating fertility and childhood mortality indicators from survey data, and the {DHS.rates Shiny} web application, a Shiny app for the DHS.rates package. Both the R package and the Shiny app were recently featured in PLOS One: [Calculating fertility and childhood mortality rates from survey data using the DHS.rates R package](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0262268).