Module 3: R

Submodule 8: Shiny

Expected length: 0.25 day

Guiding question: How can we make an interactive web application using R?

Concepts: Shiny app, UI controls, behavior, reactive expressions

Description: This lesson introduces students to the concept of a Shiny app and demonstrates the range of possibilities they present.

Instructor Preparation: Run all code to ensure it generates the same output as described in the lesson. Ensure students have at least one table and at least one graph constructed for their summative project.

| Materials and resources | Learning objectives |
| --- | --- |
| 08-shiny\_deck.html | 1. Familiarity with the potential uses of a Shiny app  2. Ability to construct and run a basic Shiny app |

| Length | Lesson content | Guidelines, tips, and tricks |
| --- | --- | --- |
| 30min | Shiny App demonstration | Show students three examples of functional Shiny apps, to indicate the range of possibilities. These can be selected based on current availability online and student interest. |
| 15min | Creating an App Directory and File | Participants should be following along in their own RStudio environments. |
| 15min | App Layout | Participants should be following along in their own RStudio environments. |
| 15min | UI Controls | Participants should be following along in their own RStudio environments. |
| 15min | Behavior | Participants should be following along in their own RStudio environments. |
| 60min | Formative exercise  Experiment with the code below until you have an app that produces a table and histogram(s) for each of the datasets on the dropdown.  ```{r, eval=F}  library(shiny)  library(ggplot2)  datasets <- c("economics", "seals")  ui <- fluidPage(  selectInput("dataset", "Dataset", choices = datasets),  verbatimTextOutput("summary"),  tableOutput("plot")  )  server <- function(input, output, session) {  dataset <- reactive({  get(input$dataset, "package:ggplot2")  })  output$summary <- renderPrint({  summary(dataset())  })  output$plot <- renderPlot({  plot(dataset)  }, res = 96)  }  shinyApp(ui, server)  ``` | Allow 30 minutes of independent work time.  Take up for 30 minutes, with RStudio open to demonstrate.  Ask students for errors they encountered. |
| 30min | Summative assessment: Discuss Shiny app | At this point, students will have produced some tables and graphs from their data. Introduce the concept of turning a currently-existing table and graph into a Shiny app, and give time for students to get the app started. |