

An Introduction to Shiny and R Markdown with Applications in Research and Drug Development

Phil Bowsheer, RStudio

Course Description:

RStudio will be presenting an overview of Shiny, R Markdown and HTML Widgets for the R user community at Statistical Computing 2018 on Monday, July 9th 2018. This is a great opportunity to learn and get inspired about new capabilities for creating compelling analyses with applications in research and drug development. No prior knowledge of R, RStudio or Shiny is needed. This short course will provide an introduction to flexible and powerful tools for statistical analysis, reproducible research and interactive visualizations. The hands-on course will include an overview of how to build Shiny apps and R Markdown documents. Immunogenicity examples will be reviewed and generated for each topic.

Shiny is an open source R package that provides an elegant and powerful web framework for building web applications using R. Shiny combines the computational power of R with the interactivity of the modern web. Shiny allows users the flexibility of pulling in whatever package in R needed to solve a problem. There are no limits to the types of applications one can build, and no constraint on the visualizations that can be used. Developers get the benefit of an open source ecosystem for R, along with the open source ecosystem for Javascript visualization libraries, thereby allowing one to create highly custom applications. Shiny helps you turn your analyses into interactive web applications without requiring HTML, CSS, or JavaScript knowledge. This powerful concept allows you to easily deliver results as interactive data explorations instead of static reports to your stakeholders and non R users. Immunogenicity assessments via Shiny will be covered. An introduction to databases via R will be reviewed along with how to connect Shiny apps to databases. An introduction to creating web APIs with your existing R code will also be discussed.

R Markdown is an authoring format that enables easy creation of dynamic documents, presentations, and reports from R. It combines the core syntax of markdown with embedded R code chunks that are run so their output can be included in the final document. R Markdown documents help to support reproducible research and can be automatically regenerated whenever underlying R code or data changes. Various types of R Markdown output will be covered, including blogdown and bookdown. An R Notebook is an R Markdown document with chunks that can be executed independently and interactively, with output visible immediately beneath the input. R Notebooks can be thought of as a special execution mode for R Markdown documents. The OpenFDA package and immunogenicity assessments will be used for the course examples regarding R Markdown reports and R Notebooks.

RStudio will be showcasing several compelling examples as well as learning resources. As part of the short course, some available drug development-related R Shiny apps and R Markdown reports will be illustrated.

Required Hardware / Software:

- Attendees will need their **laptops**.
- A RStudio Server Pro instance is provided for each attendee - **internet required**
- Please test <http://charleston.rstudio.com>
- Examples will be on github