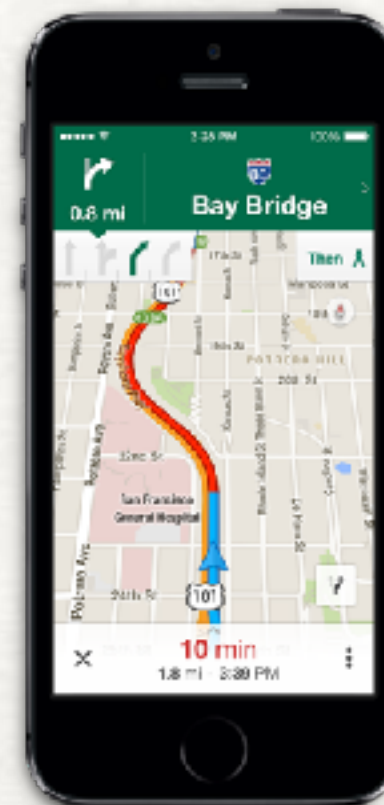


WINSTON SAUNDERS  
@PDXRLANG MEETUP DEC 2016

LET'S SHINY!

# INTERACTIVE GRAPHICS. SO MUCH BETTER.

- Static: “pushes” information to the user.
- Interactive: user “pull” to explore and educate themselves





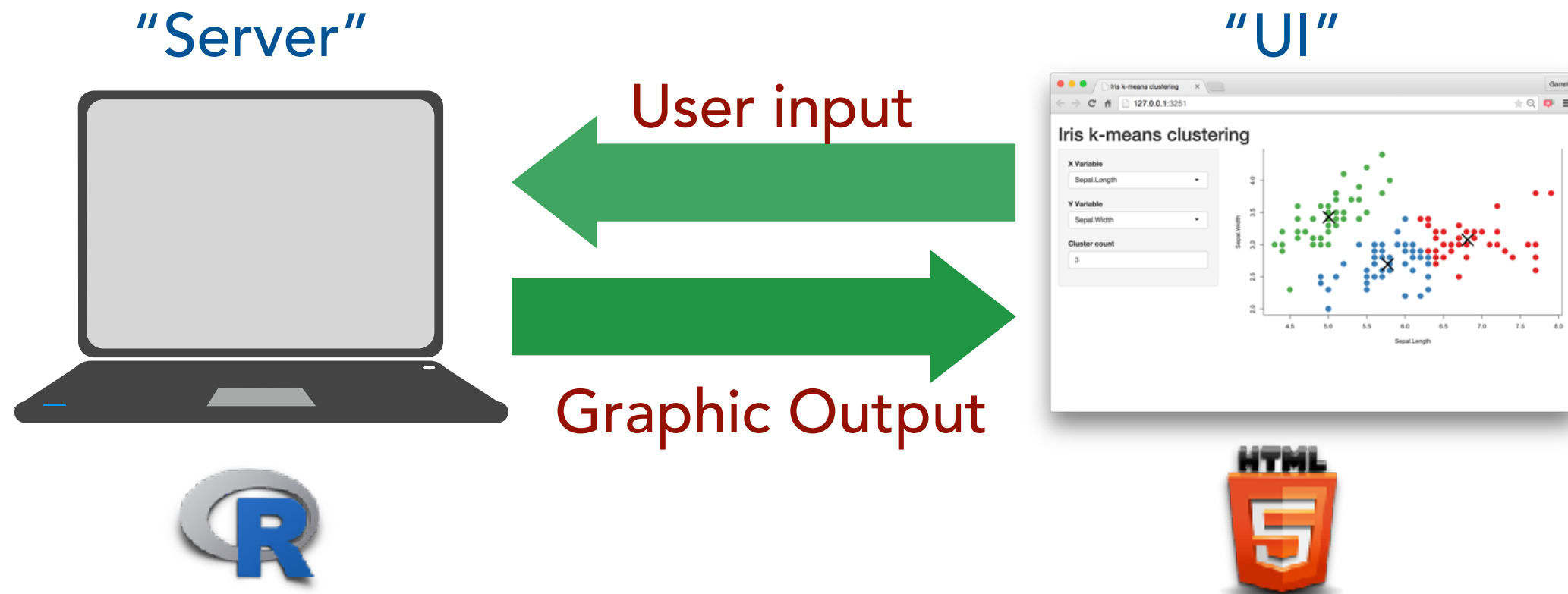
# AGENDA

- Shiny Intro
- Hello World
- Widgets are Key
- Resources



<http://shiny.rstudio.com/tutorial/>

# TWO PROGRAMS MAKE SHINY WORK



© CC 2015 RStudio, Inc.

1. UI displays input/output
2. Server runs R code in the background

## TO FOLLOW ALONG

- browse to [bit.ly/pdxdata\\_shiny](https://bit.ly/pdxdata_shiny)
- open `hello_world.R`

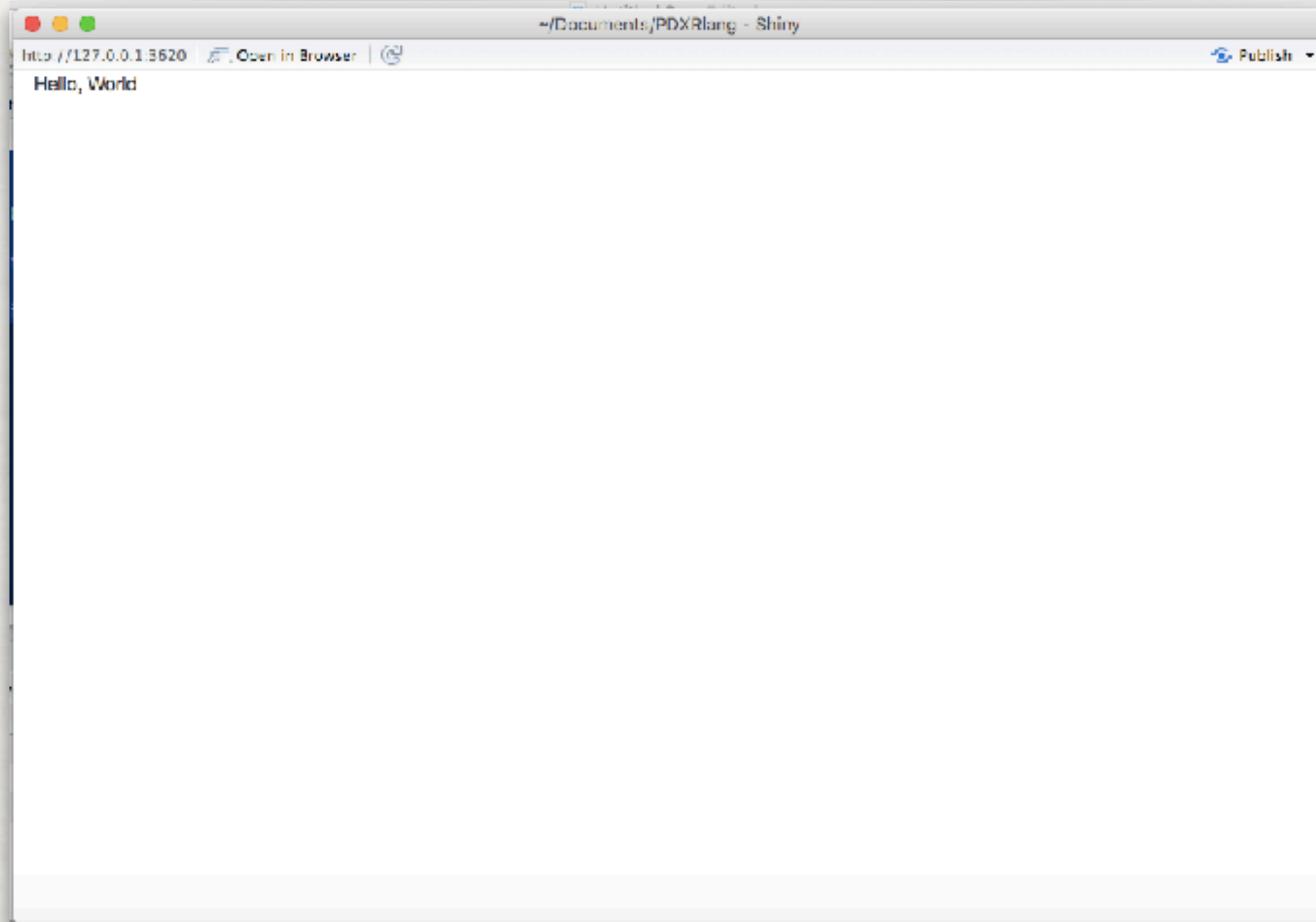


# IF YOU RUN THIS...

```
## Hello World Shiny App  
  
library(shiny)  
  
shinyApp(  
  ui = fluidPage("Hello World"),  
  server = function(input, output) {}  
)
```

Pretty close to the shortest meaningful Shiny code

# ...YOU SHOULD SEE THIS



# HELLO REAL WORLD

```
library(shiny)
```

```
shinyApp(  
  ui = fluidPage("Hello Markdown"),  
  server = function(input, output){}  
)
```

**UI WIDGETS HERE**  
SEPARATED BY COMMAS

**SERVER R-CODE HERE**  
VARIABLES PASSED BY "\$"



# WIDGETS == KEY

<http://shiny.rstudio.com/reference/shiny/latest/>

Shiny by RStudio

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## Function reference version 0.14.2

### UI Layout

Functions for laying out the user interface for your application.

<code>absolutePanel</code> ( <code>fixedPanel</code> )	Panel with absolute positioning
<code>bootstrapPage</code> ( <code>basicPage</code> )	Create a Bootstrap page
<code>column</code>	Create a column within a UI definition
<code>conditionalPanel</code>	Conditional Panel
<code>fillPage</code>	Create a page that fills the window
<code>fillRow</code> ( <code>fillCol</code> )	Flex Box-based row/column layouts
<code>fixedPage</code> ( <code>fixedRow</code> )	Create a page with a fixed layout
<code>fluidPage</code> ( <code>fluidRow</code> )	Create a page with fluid layout
<code>headerPanel</code>	Create a header panel

## TO FOLLOW ALONG

- browse to [bit.ly/pdxdata\\_shiny](https://bit.ly/pdxdata_shiny)
- open `actual_demo.R`

# UI

```
library(shiny)
library(shinythemes)

ui <- fluidPage(
  theme = shinytheme("cerulean")
  , titlePanel("Central Limit and Sqrt(n)")
  , sidebarPanel(
    radioButtons("stat", "Statistic:",
      choices = c("Mean" = "mean",
        "Median" = "median"), width = 4)
    , sliderInput("logpoints", "log10(points in each sample)",
      min = 1, max = 5, value = 1, step = .5)
    , sliderInput("logsamples", "log10(samples)", min = 1,
      max = 4, value = 1.5, step = .5)
  )
  , mainPanel(
    plotOutput("disthist")
  )
)
```



# SERVER

```
server <- function(input, output) {  
  output$disthist <- renderPlot({  
    stat.compute <- function(x, type) {  
      switch(type,  
        mean = mean(x),  
        median = median(x))  
    }  
  
    set.seed(8765309)  
    sample.means <-  
      replicate(as.integer(10^input$logsamples),  
        mean(  
          runif(as.integer(10^input$logpoints))  
        )  
      )  
    hist(sample.means, xlim = c(0.2,0.8))  
    abline(v = stat.compute(sample.means, input$stat), col = "red")  
  })  
}  
  
shinyApp(ui = ui, server = server)
```



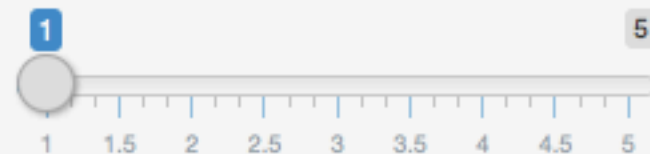
# Central Limit and Sqrt(n)

Statistic:

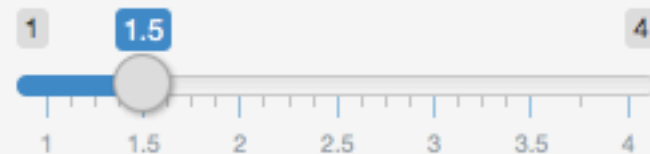
☒ Mean

☐ Median

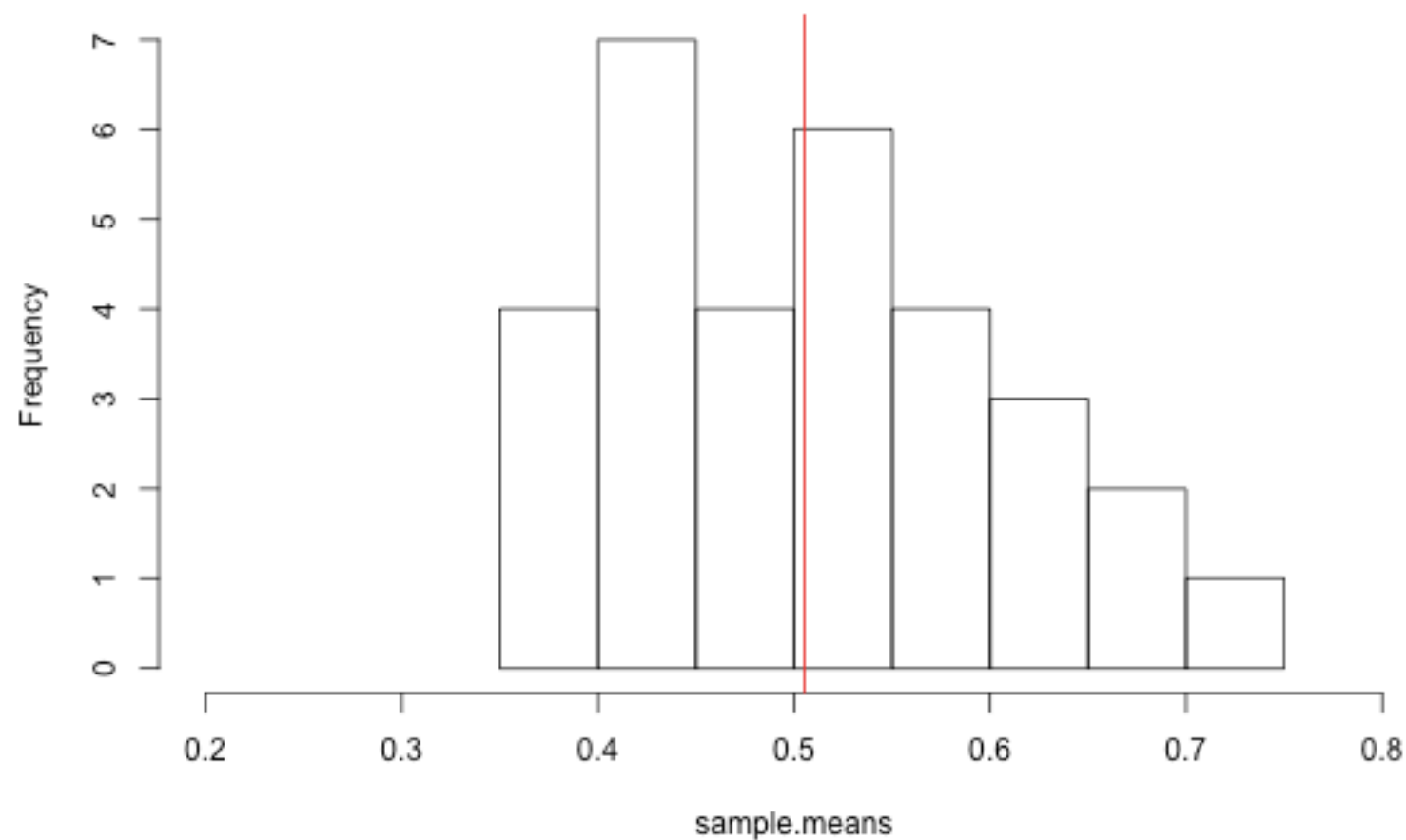
log10(points in each sample)



log10(samples)



Histogram of sample.means

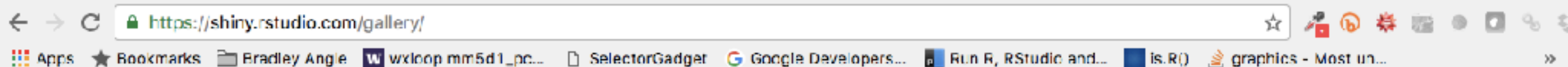


# BEYOND BASIC SHINY

- Excellent ~ 2 hr intro <http://shiny.rstudio.com/tutorial/>
- Shiny Devcon videos <https://www.rstudio.com/resources/webinars/shiny-developer-conference/>
- css formatting options <https://shiny.rstudio.com/articles/css.html>
- Javascript (c3.js) customizations <https://blog.rstudio.org/2016/05/06/shiny-javascript-tutorials/>
- Publish on [shinyapps.io](http://shinyapps.io) (cloud deployment)
- rstudio::conf2017 for developments and tutorials
- other web resources galore



# HTTPS://SHINY.RSTUDIO.COM/GALLERY/



Shiny by RStudio

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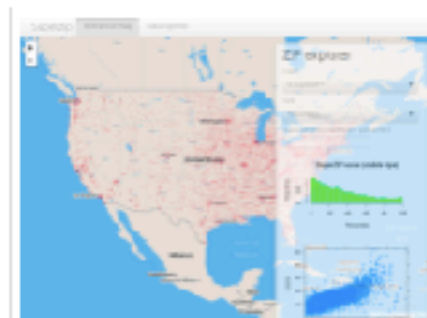
HELP

## Gallery

This gallery contains useful examples to learn from. Visit the [Shiny User Showcase](#) to see an inspiring set of sophisticated apps.

### Interactive visualizations

Shiny is designed for fully interactive visualization, using JavaScript libraries like [d3](#), [Leaflet](#), and [Google Charts](#).



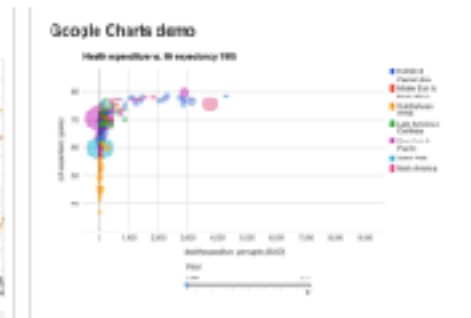
SuperZip example



Bus dashboard



Movie explorer



Google Charts

### Start simple

If you're new to Shiny, these simple but complete applications are designed for you to study.

# RSTUDIO CHEATSHEET

The screenshot shows the RStudio application window. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Window, and Help. The Help menu is open, displaying options like Search, R Help, About RStudio, Check for Updates, RStudio Docs, RStudio Support, Cheatsheets (highlighted), Keyboard Shortcuts Help, Markdown Quick Reference, Roxygen Quick Reference, and Diagnostics. The Cheatsheets submenu is also open, listing various cheat sheets such as RStudio IDE Cheat Sheet, Data Manipulation with dplyr, tidyrr, Data Visualization with ggplot2, R Markdown Cheat Sheet, R Markdown Reference Guide, Shiny Web Applications (highlighted), and Package Development with devtools. The main editor window shows an R script for a Shiny app. The console window at the bottom displays the R startup message.

**Help Menu:**

- Search
- R Help
- About RStudio
- Check for Updates
- RStudio Docs
- RStudio Support
- Cheatsheets**
- Keyboard Shortcuts Help
- Markdown Quick Reference
- Roxygen Quick Reference
- Diagnostics

**Cheatsheets Submenu:**

- RStudio IDE Cheat Sheet
- Data Manipulation with dplyr, tidyrr
- Data Visualization with ggplot2
- R Markdown Cheat Sheet
- R Markdown Reference Guide
- Shiny Web Applications**
- Package Development with devtools

**Editor Window:**

```
1 ## Hello World Shiny App
2
3 library(shiny)
4
5 ui <- fluidPage("Hello, World")
6
7 server <- function(input, output) {}
8
9 shinyApp(ui = ui, server = server)
```

**Console Window:**

```
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

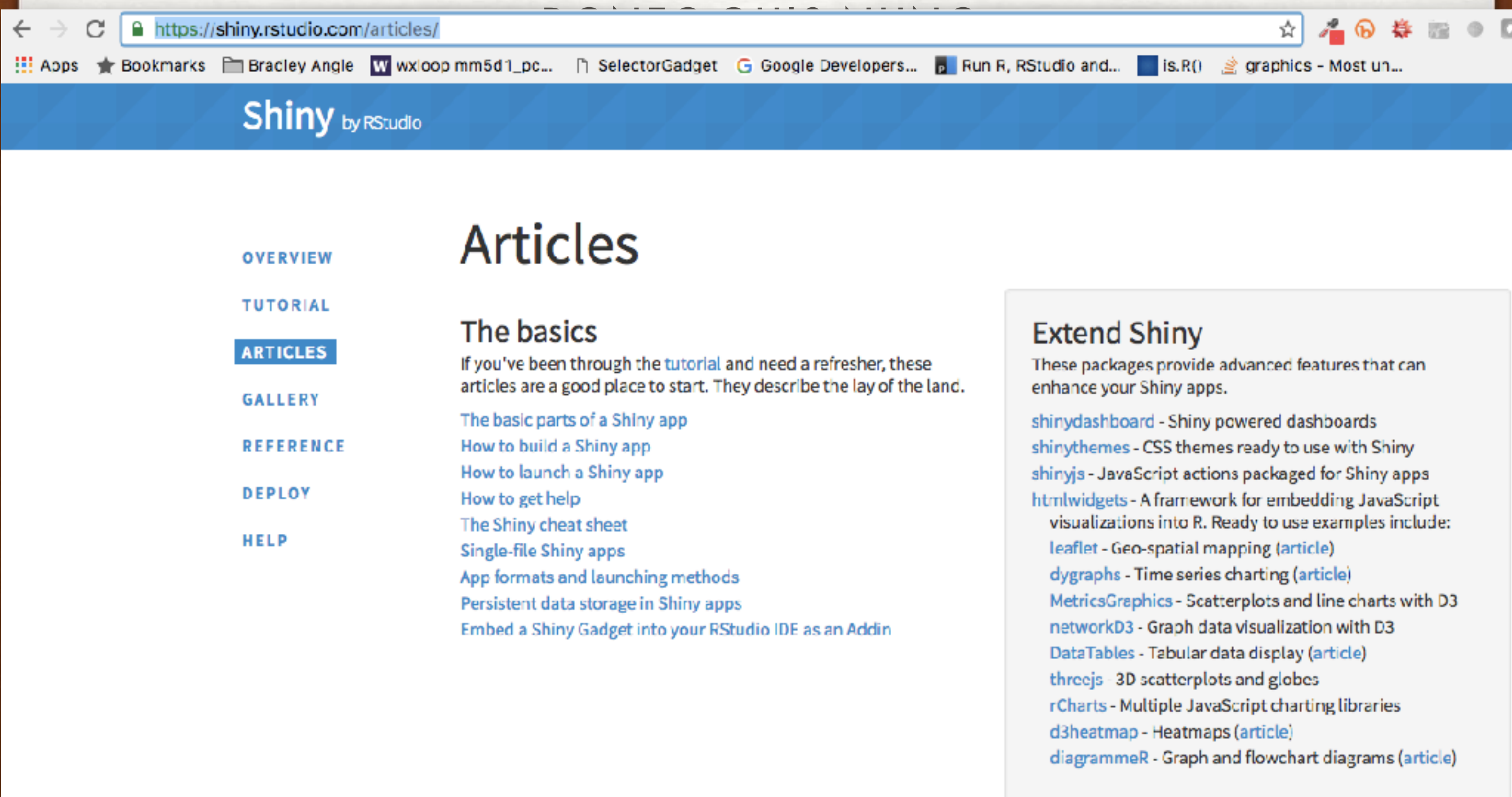
Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> |
```

# HTTPS://SHINY.RSTUDIO.COM/ARTICLES/



The screenshot shows a web browser window with the address bar displaying <https://shiny.rstudio.com/articles/>. The browser's bookmark bar includes links to 'Apps', 'Bookmarks', 'Bracley Angle', 'wxloop mm5d1\_pc...', 'SelectorGadget', 'Google Developers...', 'Run R, RStudio and...', 'is.R()', and 'graphics - Most un...'. The page header features the 'Shiny by RStudio' logo. The main content area is titled 'Articles' and includes a sidebar with navigation links: 'OVERVIEW', 'TUTORIAL', 'ARTICLES' (highlighted), 'GALLERY', 'REFERENCE', 'DEPLOY', and 'HELP'. The 'The basics' section lists several articles: 'The basic parts of a Shiny app', 'How to build a Shiny app', 'How to launch a Shiny app', 'How to get help', 'The Shiny cheat sheet', 'Single-file Shiny apps', 'App formats and launching methods', 'Persistent data storage in Shiny apps', and 'Embed a Shiny Gadget into your RStudio IDE as an Addin'. A right-hand sidebar titled 'Extend Shiny' describes packages that enhance Shiny apps, including 'shinydashboard', 'shinythemes', 'shinyjs', 'htmlwidgets', 'leaflet', 'dygraphs', 'MetricsGraphics', 'networkD3', 'DataTables', 'threejs', 'rCharts', 'd3heatmap', and 'diagrammeR'.

← → ↻ <https://shiny.rstudio.com/articles/> ☆

Apps ★ Bookmarks Bracley Angle W wxloop mm5d1\_pc... SelectorGadget G Google Developers... p Run R, RStudio and... is.R() graphics - Most un...

**Shiny** by RStudio

## Articles

- OVERVIEW
- TUTORIAL
- ARTICLES**
- GALLERY
- REFERENCE
- DEPLOY
- HELP

### The basics

If you've been through the [tutorial](#) and need a refresher, these articles are a good place to start. They describe the lay of the land.

- [The basic parts of a Shiny app](#)
- [How to build a Shiny app](#)
- [How to launch a Shiny app](#)
- [How to get help](#)
- [The Shiny cheat sheet](#)
- [Single-file Shiny apps](#)
- [App formats and launching methods](#)
- [Persistent data storage in Shiny apps](#)
- [Embed a Shiny Gadget into your RStudio IDE as an Addin](#)

### Extend Shiny

These packages provide advanced features that can enhance your Shiny apps.

- [shinydashboard](#) - Shiny powered dashboards
- [shinythemes](#) - CSS themes ready to use with Shiny
- [shinyjs](#) - JavaScript actions packaged for Shiny apps
- [htmlwidgets](#) - A framework for embedding JavaScript visualizations into R. Ready to use examples include:
  - [leaflet](#) - Geo-spatial mapping ([article](#))
  - [dygraphs](#) - Time series charting ([article](#))
  - [MetricsGraphics](#) - Scatterplots and line charts with D3
  - [networkD3](#) - Graph data visualization with D3
  - [DataTables](#) - Tabular data display ([article](#))
  - [threejs](#) - 3D scatterplots and globes
  - [rCharts](#) - Multiple JavaScript charting libraries
  - [d3heatmap](#) - Heatmaps ([article](#))
  - [diagrammeR](#) - Graph and flowchart diagrams ([article](#))



# [HTTPS://BLOG.RSTUDIO.ORG/?S=SHINY](https://blog.rstudio.org/?s=shiny)



## Search results

### SHINY SERVER (PRO) 1.5

November 4, 2016 in [Shiny](#) | Comments closed

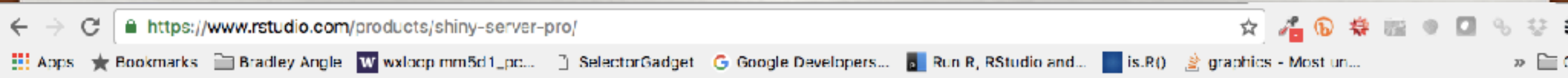
Shiny Server 1.5.1.834 and Shiny Server Pro 1.5.1.760 are now available. The Shiny Server 1.5.x release family upgrades our underlying Node.js engine from 0.10.47 to 6.9.1. The impetus for this change was not stability or performance, but because the 0.10.x release family has reached the end of its life. We highly recommend that you test [...]

### SHINY SERVER (PRO) 1.4.7

October 14, 2016 in [Security](#), [Shiny](#) | Comments closed

Shiny Server 1.4.7.815 and Shiny Server Pro 1.4.7.736 are now available! This release includes new features to support Shiny 0.14. It also updates our Node.js to 0.10.47, which includes important security fixes for SSL/TLS. Connection robustness (a.k.a. grey-outs) Shiny's architecture is built on top of websockets, which are long-lived network connections between the browser and an R [...]

HTTPS://WWW.RSTUDIO.COM/PRODUCTS/SHINY-SERVER-PRO/



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# Shiny Server Pro

Shiny combines the computational power of R with the interactivity of the modern web. R Markdown lets you create reproducible and compelling Interactive Documents. Professional data science teams choose Shiny Server Pro to secure user access, tune application performance, monitor resource utilization and get the direct support they need to create the best interactive data experiences for their customers and colleagues.

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[SCHEDULE A MEETING WITH SALES](#)



Let's stay in touch. Give us your email and we'll keep you in the loop.

[SUBSCRIBE](#)



[RStudio Documentation – Shiny Server Pro Admin Guide.](#)