

# Web Apps and Dashboards

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## Running Python in R

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Master in Business Analytics

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# WEB APPS AND DASHBOARDS

# Main Idea/purpose

- Provide an interface to clients so they can interact with:
  - A visualization
  - Data
  - A model
  - A combination of all
- A web app/dashboard allows to show more information than a single static plot,
- Provides more accountability about what is been shown
- Opposite of ‘one size fits all’ type of solutions
  - Let (guide) the client to customize its own analysis.

COVID-19 en Chile



NUEVOS CASOS CONFIRMADOS POR 100.000 HABITANTES

HOY, DOMINGO 24 DE MAYO

0 0.5 1 2.5 5 10 50+

VER GRÁFICOS LIMPIOS

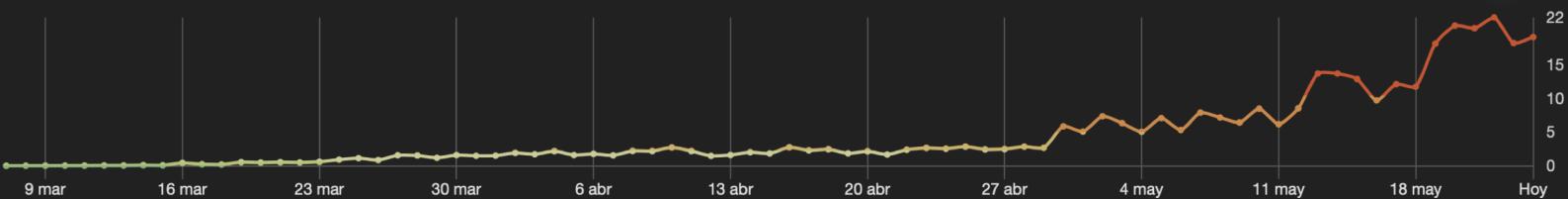
ARGENTINA

CHILE

19,1

NUEVOS CASOS  
CONFIRMADOS  
POR 100.000  
HABITANTES

↑ +0,9 respecto al día anterior  
69.102 casos informados hasta el  
domingo 24 de mayo  
Chile tiene 19.458.310 habitantes



Fuente de datos: Planilla del profesor Jorge Pérez | © MapTiler © OpenStreetMap contributors

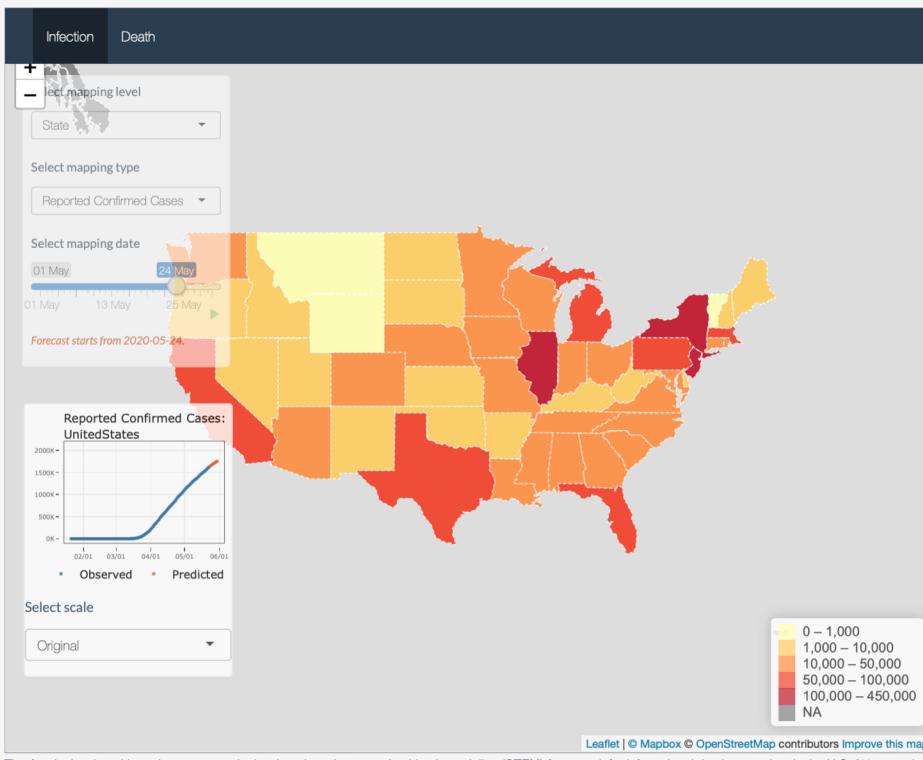
Buscar comuna



## COVID-19 U.S. Dashboard

A Shiny App to visualize, track, and predict real-time infected and death cases of COVID-19 in the U.S.

--- A 7-day rolling forecast of COVID19 infected and death count and corresponding risk analysis



The App is developed based on our recently developed spatiotemporal epidemic modeling (STEM) framework for infected and death count data in the U.S. (48 states in total)

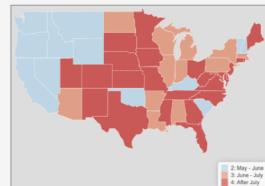
## Statistical Insights

### Space-time Forecast of Infectious/Death Count and Risk Analysis

**Goal:** We aim to provide a user-friendly tool to visualize, track and predict real-time infected/death cases of COVID-19 in the U.S., based on our collected data and proposed methods, and thus further illustrate the spatiotemporal dynamics of the disease spread and guide evidence-based decision making.

**Method:** We established a new spatiotemporal epidemic modeling (STEM) framework for space-time infected/death count data to study the dynamic pattern in the spread of COVID-19. The proposed methodology can be used to dissect the spatial structure and dynamics of spread, as well as to assess how this outbreak may unfold through time and space. [Click here to read our paper on arXiv]

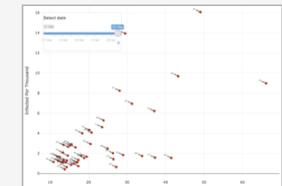
**Shiny Apps:** Currently, we offer two main R shiny apps in our dashboard. The first app is targeted to serve the local communities, and we provide a real-time 7-day forecast of the infection/death count up to the county level. The second app offers a four-month ahead prediction based on the most recent data, and it is updated weekly. This app is useful for policymakers and public health leaders to understand how this outbreak may unfold through time and space in the future. For example, it can give hospitals an idea of how quickly they need to expand their capacity and by how much. We also included multiple small apps below to share our findings and insights with the general public.



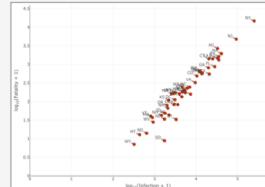
Peaks & Ends



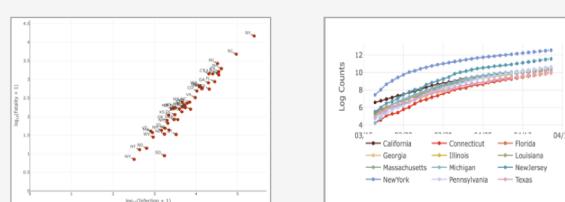
States hit maximum daily new cases



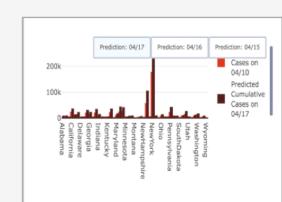
Confirmed cases vs tests



Read More



Read More



Read More

# Sentify

by RCharlie

Type an artist name

Choose an artist from these matches on Spotify

Radiohead

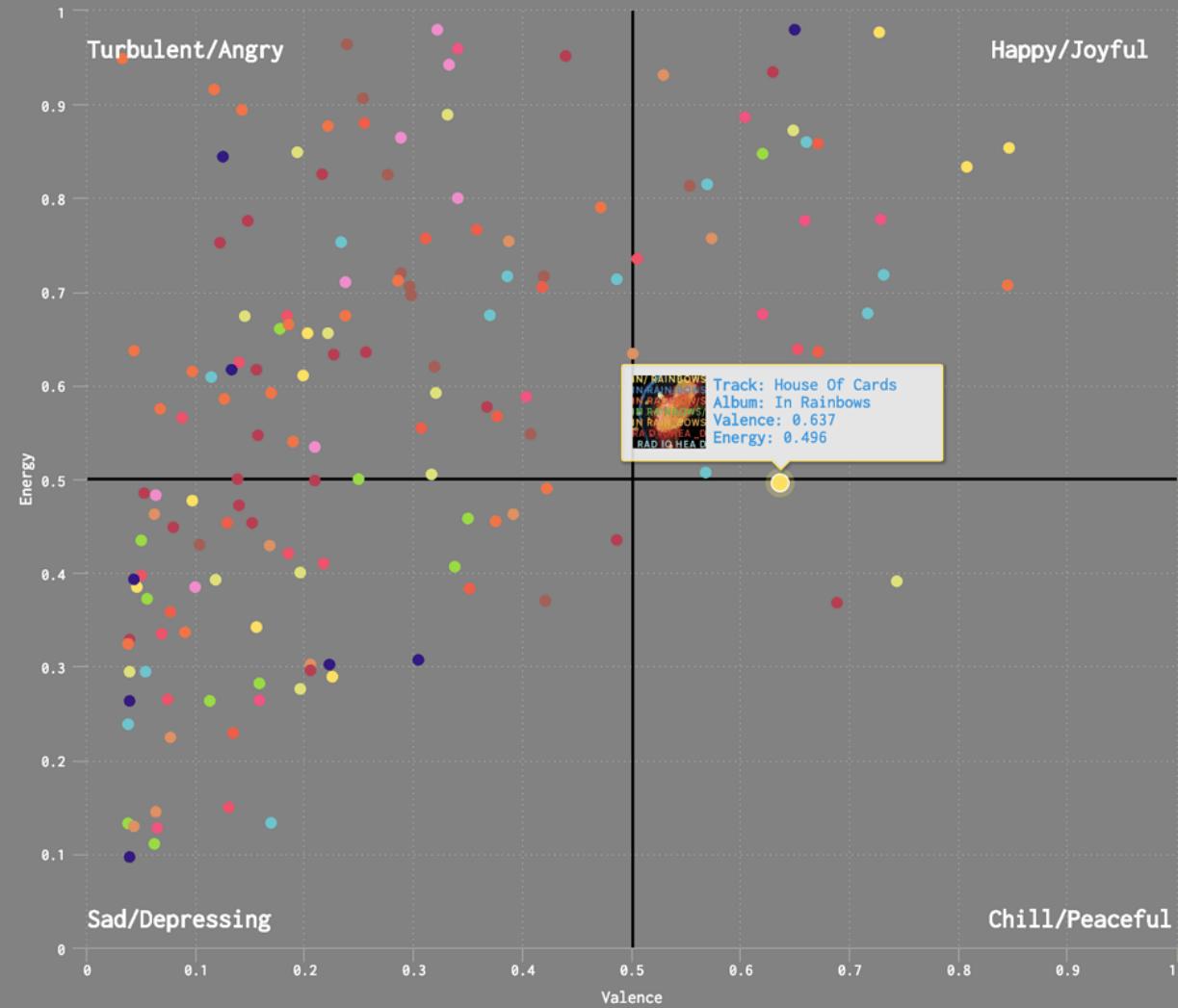


**GENERATE PLOT**

Play song preview on hover

▶
0:01 / 0:30

🔊
⋮



● A Moon Shaped Pool

● Amnesiac

● Hail To the Thief

# ISOLINES

Origin:

-33.006396, -71.545372



Departure date:

2020-05-24



Time range:

0:00      17:00      23:00

0 3 6 9 12 15 18 21 23



Mode:



Range type:

Time (minutes)      Distance (miles)



Minimum range: Maximum range:

5      60

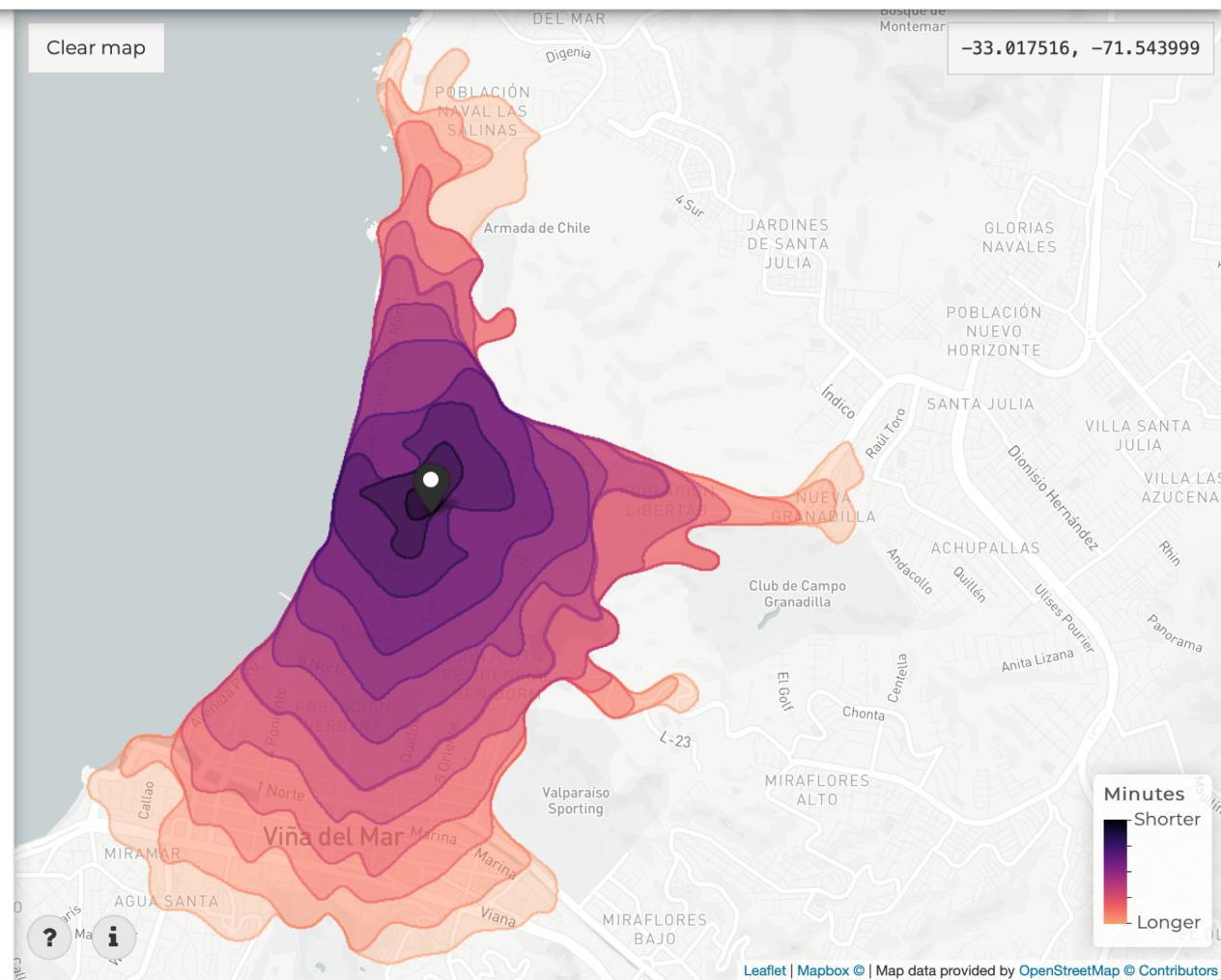


Interval size:

5



Request isolines



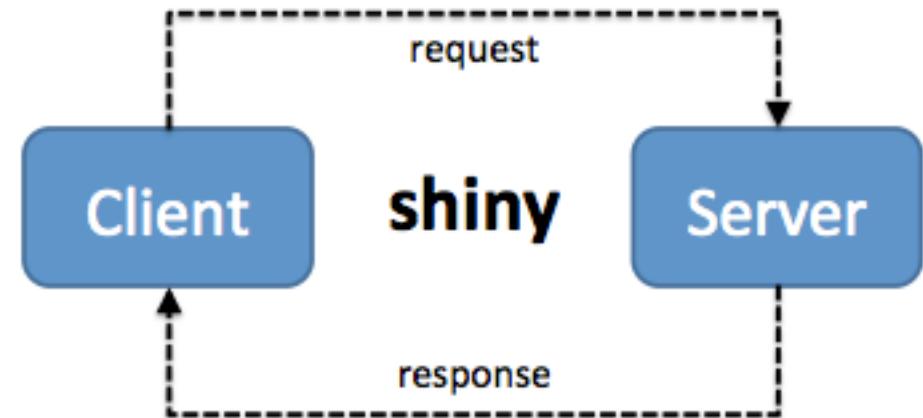
Download results

Let's make your data shine!

# WEB APPS

# Shiny

- R Package to do web apps
- Main structure
  - UI script:
    - User Interface script → HTML
  - Server script:
    - Scripts that process the UI calls in R



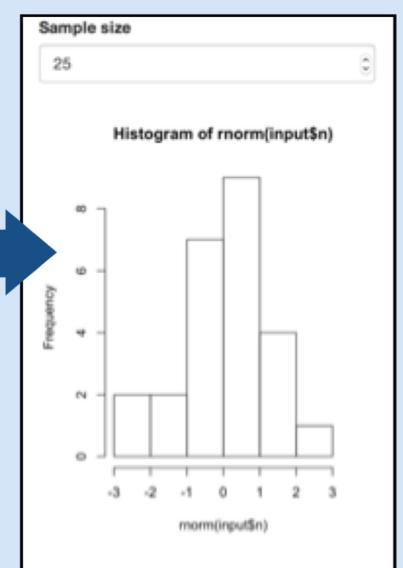
```

library(shiny)

ui <- fluidPage(
  numericInput(inputId = "n",
               "Sample size", value = 25),
  plotOutput(outputId = "hist")
)

server <- function(input, output) {
  output$hist <- renderPlot({
    hist(rnorm(input$n))
  })
}

shinyApp(ui = ui, server = server)
  
```



# Time to practice

~/Dropbox/Documents/005 Teaching/001 Economic Geography/04 Spatial Analytics/Clases2 - RStudio

Console Terminal Deploy Jobs

~/Dropbox/Documents/005 Teaching/001 Economic Geography/04 Spatial Analytics/Clases2/

```
R version 3.5.2 (2018-12-20) -- "Eggshell Igloo"
Copyright (C) 2018 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin15.6.0 (64-bit)

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.

> shiny::runApp('Class_09/Test_01')
Loading required package: shiny

Listening on http://127.0.0.1:3959

>
```

Files Plots Packages Help Viewer

New Folder Delete Rename More

Clases2

	Name	Size	Modified
	..		
	.gitignore	570 B	Apr 6, 2020, 11:51 AM
	.Rhistory	18.6 KB	May 21, 2020, 12:37 PM
	Ayud_01		
	Ayud_02		
	Ayud_03		
	Ayud_04		
	Ayud_05		
	Clases.Rproj	205 B	May 24, 2020, 3:02 PM
	Class_01		
	Class_02		
	Class_03		
	Class_04		
	Class_05		
	Class_06		
	Class_07		
	Class_08		
	Class_09		
	Instrucciones_de_como_hacer_las_...	236 KB	Mar 11, 2020, 1:31 PM
	LICENSE	1 KB	Apr 6, 2020, 11:51 AM
	README.html	615.8 KB	Mar 15, 2020, 10:41 PM
	README.md	1019 B	Mar 15, 2020, 10:46 PM
	Srcipt_prueba.R	4 B	Mar 24, 2020, 12:58 PM
	Syllabus_SpatialAnalytics_UAI_Lop...	127.1 KB	Feb 24, 2020, 4:10 PM

Environment History Connections Git

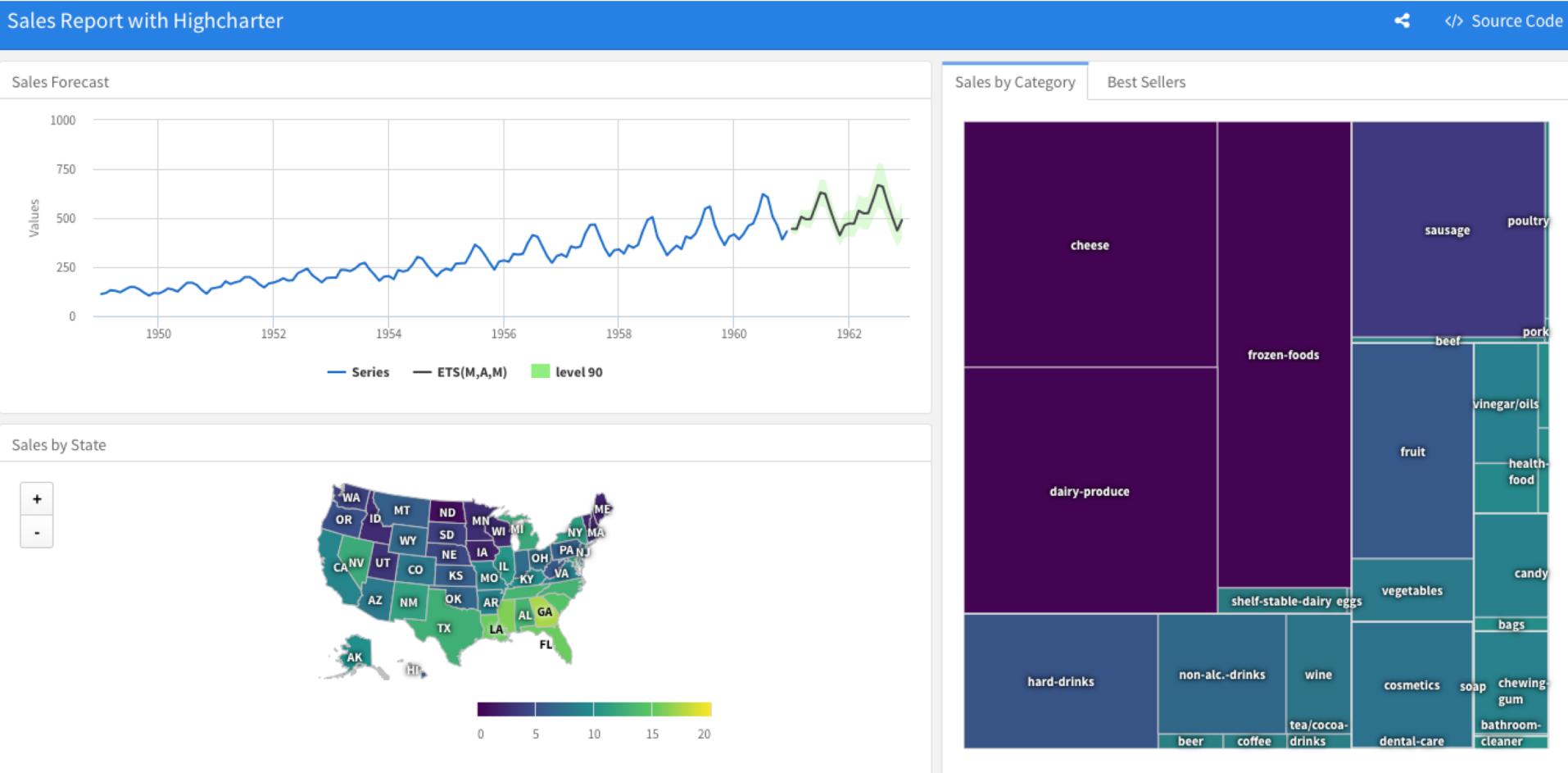
Bring all your graphs together

# DASHBOARDS

# Flexdashboards

- Dashboards
  - Collection of data visualizations to make sense of an issue
  - Two main types
    - Static – just show info in a good layout
      - This can be interactive, but not reactive
    - Dynamic/Reactive
      - Shiny based only
      - Flexdashboards

# Non-reactive Dashboard



<https://beta.rstudioconnect.com/jjallaire/htmlwidgets-highcharter/htmlwidgets-highcharter.html#sales-by-category>

# Reactive Dashboard

