Oct 2024

R Shiny Masterclass Series - Introduction

Case study, top 10 tips for data visualisation with R Shiny and wrap-up

EPI-interactive

Agenda

- **Session 1** | 30 September | Getting started with Posit Cloud and your first R Shiny app
- **Session 2** | 01 October | R Shiny core concepts and mobile ready layout
- **Session 3** | 03 October | R Shiny user interface components, reactivity and debugging
- **Session 4** | 07 October | Data sources and data processing in R Shiny
- **Session 5** | 08 October | Maps and spatial visualisation with Leaflet: adding map layers, annotations, pins, filters and legend
- **Session 6** | 10 October | Interactive charts with Plotly: chart types, customising hover boxes and chart styling
- **Session 7** | 14 October | Publishing R Shiny apps, design considerations and case study
- **Session 8** | 15 October | Case study, top 10 tips for data visualisation with R Shiny and wrap-up

Today

Recap: Session 7 challenge

What we'll cover:

- Case study
- Top 10 tips
- Wrapping up

Top 10 Tips

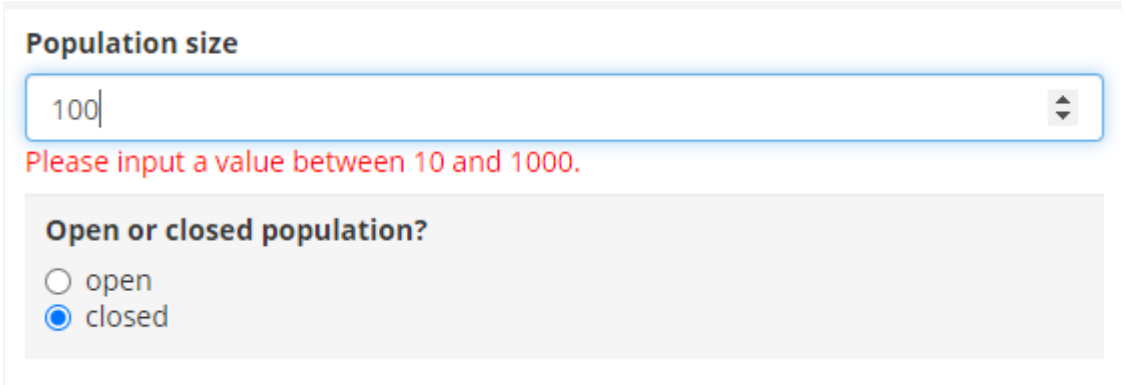
1 – Limit input values

OK:

Checkbox, date input, radio buttons, select box, sliders

Think twice:

Numeric input, file input



Tip:

- Define min and max values, default value and increment!
- File upload – check format and values

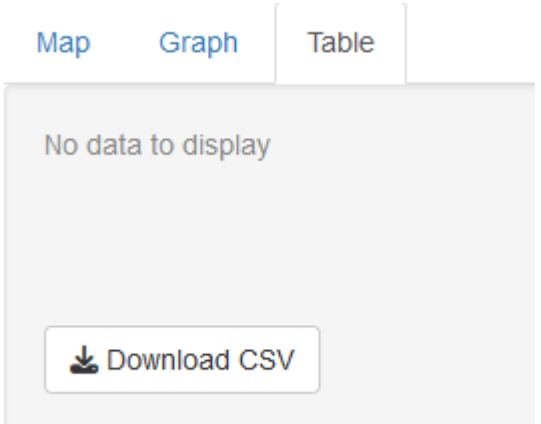
2 – Manage no data

```
output$world_data_chart <- renderPlotly({
  # req(!is.null(filtered_data()))
  validate(need(!is.null(filtered_data()), "No data to display"))

  plot_ly(
    data = filtered_data(),
    x = ~subregion,
    y = ~total_pop
    )
})
```

Symptom:

- Shiny errors at start before graphs are displayed
- Graphs don't show at all



Tips:

- Use req to stop a calculation "behind the scenes"
  https://shiny.rstudio.com/articles/req.html
- Use validate and need to check values and output message
  https://shiny.rstudio.com/reference/shiny/latest/validate.html

3 – Show progress

Symptom:

- App freezes
- User is not sure what's going on

Tips:

- Add a progress bar / counter (use withProgress, incProcess)

Check: http://shiny.rstudio.com/gallery/progress-bar-example.html

4 – Delay reactions

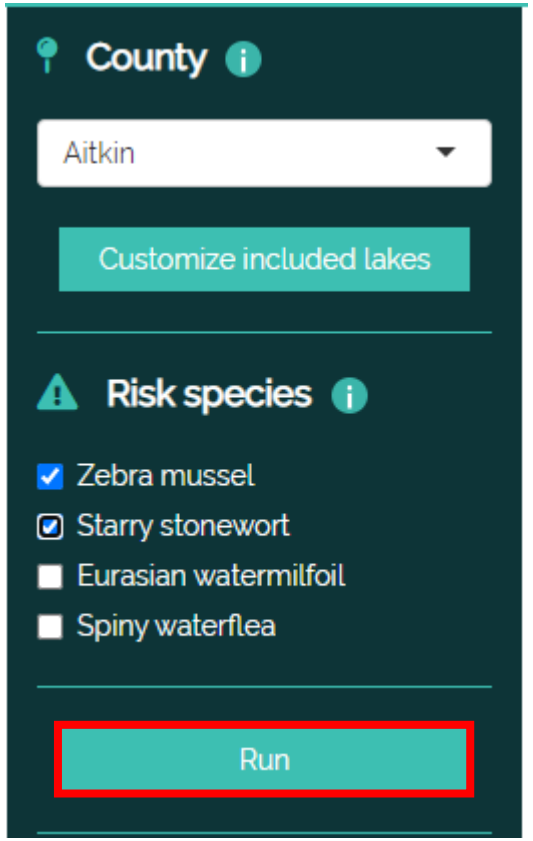
When to restrict reactivity?

- Long calculations
- Multiple parameters
- UX

Tips:

- Use Action Button with eventReactive()
- Code is isolated until button is changed

Check: https://shiny.rstudio.com/articles/action-buttons.html (see Pattern 2 on page)



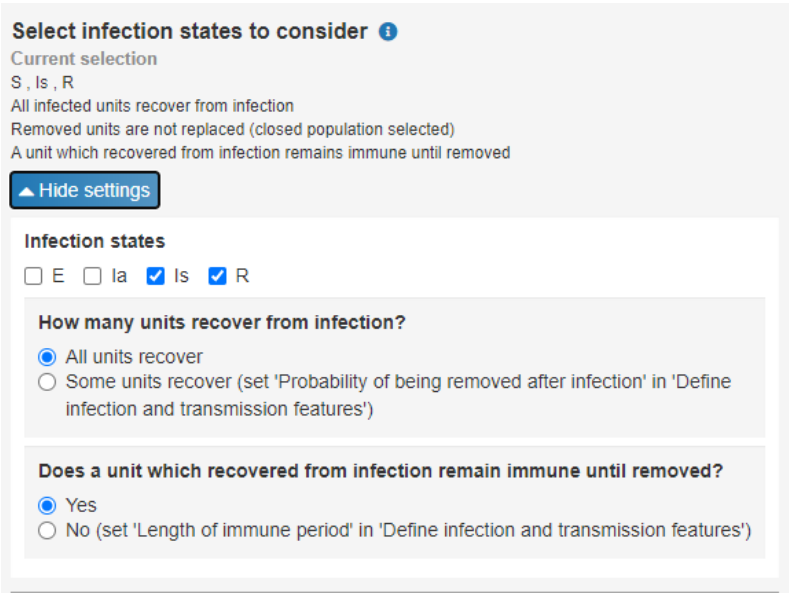
5 – Group controls

Too many parameters?

- UX problem…

Tips:

- Visually group parameters, e.g. wellPanel
- Combine reactive and non-reactive elements



Check: https://shiny.rstudio.com/gallery/bus-dashboard.html

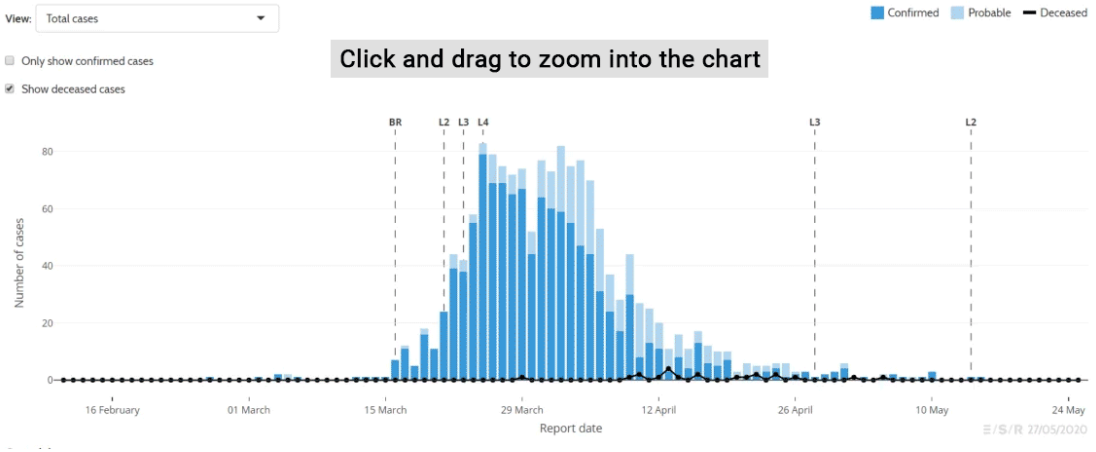
6 – Provide context

Guide the user what they see and can do…

- Add page lead-in descriptions
- Use info buttons for in-depth descriptions
- Add tabs with descriptions

Other:

- User guides
- Video tutorials with case studies



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7 – Documentation

Would someone else be able to read your code?

- You’re not always the only one working on code, others need to know what's happening
- Use comments to clarify complex blocks of code
- Separate your app into separate files (modules)
- Use line comments to split up sections in the same file *(Ctrl + Shift + r)*
- Use meaningful variable / function names
- Keep related functions and blocks of code close to each other
- Check that your code is properly indented *(Ctrl + i)*

8 – Interactive or image-based outputs?

Interactive:

- Plotly www.plot.ly/r/
- Leaflet https://rstudio.github.io/leaflet/
- Custom

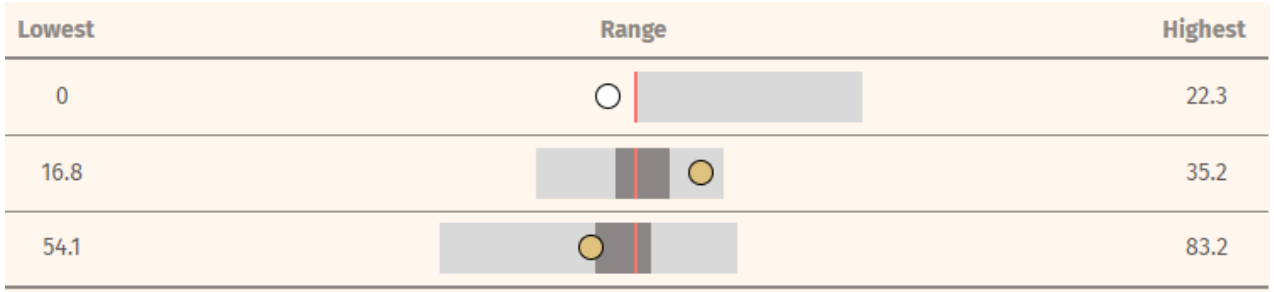


Image-based:

- Pretty much anything goes… (use renderPlot, plotOutput)
- Check sizing

9 – Testing and feedback process

Testing and refinement:

- Can take up to 50% of development effort (or more)
- Internal vs. external testing
- Typically 3 draft versions

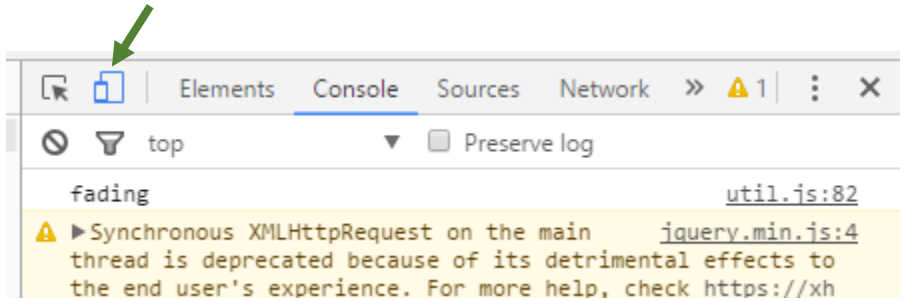
Providing feedback:

- Controlled way to provide feedback
- Feedback sheet
- Issue tracker system (e.g. GitLab, GitHub)

10 – Mobile readiness

To consider at the start of the project:

- Target devices
- Min/max screen resolutions



Test:

- In Chrome – use Developer Tools [Ctrl+Shift+I] go to “Device Toolbar”
- Or: MobileTest.me
- Test on devices where possible!

R Shiny open source repositories

We develop innovative data-driven dashboards for better decision making, data sharing and teaching – open-source technology is at the heart of what we do, here are some coding samples we'd like to give back to the community.

Looking for more? Contact us at info@epi-interactive.com

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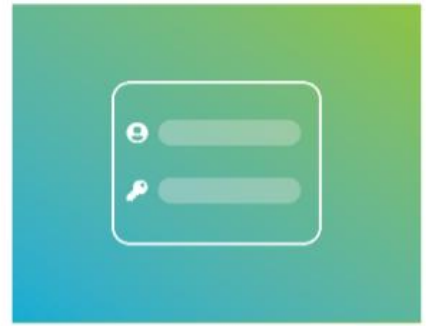
Progress Indicator

User Authentication



Datatable Overlay

Custom Theming

Dynamic PDF Generator

Choropleth Grid

Wrapping up

Open question session
- Anything to clarify from our sessions?
- How comfortable are you using R and R Shiny now?
- What concepts have been most useful?

Wrapping up:
- Certificates, Posit Cloud, learning platform, recordings
- Where to from here?

Thank you for joining the Masterclass!
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