

# Adding More Interactivity to Shiny

## Warnings about Shiny

- Controller variables can only be used once in a shiny app - `sliderInput("thisVar", ...)` only one slider can be created in the app that uses `input$thisVar`
- Duplicate output cannot be used in shinyApps, it will create errors. So you cannot have multiple instances of `plotOutput("myFancyPlot")` in your app

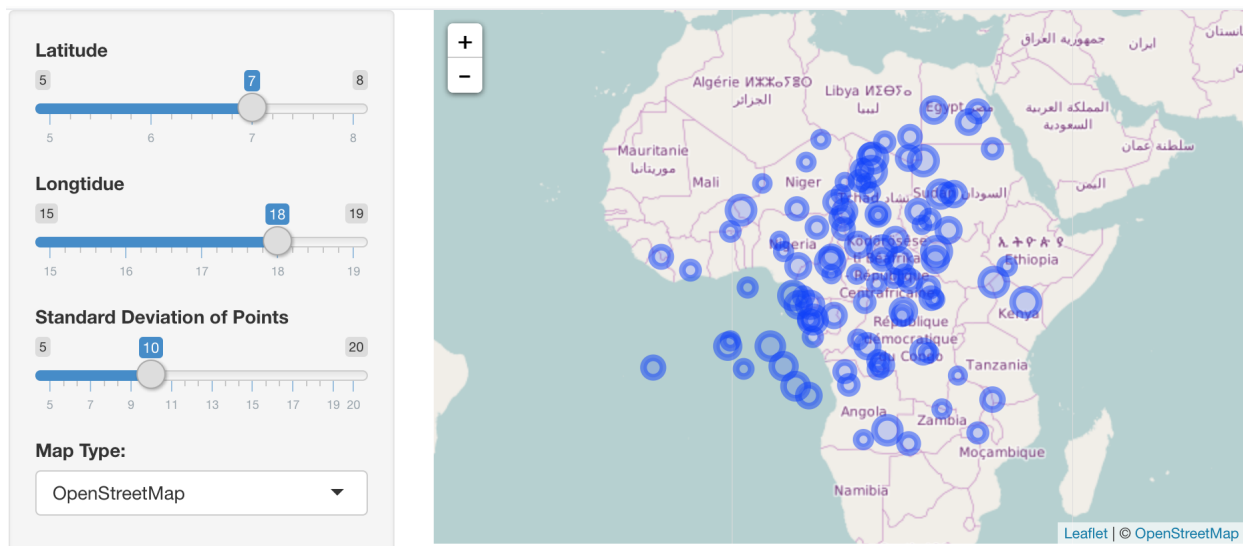
## Interactive Data Visualisations

So far we've built a Shiny app with interactive elements, but not interactive charts. But *all* htmlwidget-dependent interactive elements can be inserted into Shiny apps.

Many of the htmlwidget-dependent libraries have built in Shiny integration - allowing actions (like clicking) inside of a chart to be communicated to the Shiny server code.

## Leaflet in Shiny

The following Shiny app uses Leaflet:



## Reactivity

Building interactive elements with Shiny is incredibly simple, the difficulty arises in controlling that interactivity - when and how things update.

In the Shiny framework interactivity is achieved through **reactive** expressions which essentially invalidate one another, by moving a slider you are updating a variable which invalidates the dependent output resulting in re-evaluation.

## Reactivity

The simplest demonstration of reactive expressions is provided by this example:

