Exploring the South African school’s directory with R

Megan Beckett
@mbeckett_za

satRday 2019
Multilayered, multicultural and multicoloured
### Quarter 4 of 2016: March 2017

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## My aims
## My aims

- Learner and educator number
- Quintile
- Sector
- Phase
- Rural or urban
Data exploration - size of schools

Histogram of no. of learners

Histogram of no. of educators
Data exploration - quintiles

Distribution of schools in South Africa across "quintiles"

- Quintile 1
- Quintile 2
- Quintile 3
- Quintile 4
- Quintile 5
- NA

School count

Quintile
Data exploration - quintiles

Distribution of schools in South Africa across "quintiles"

Distribution of schools in each province in South Africa across "quintiles"
Data exploration - rural or urban

Rural vs urban schools in South Africa

- RURAL
- URBAN
- null
- NA
Data exploration - rural or urban

Rural vs urban schools in South Africa

Urban vs Rural schools in each province in South Africa

School count
Putting schools on the map
Putting schools on the map

Geospatial data

Geocoding

1. Google
   ```
   library(ggmap)
   geocode()
   ```

2. Open Street Maps
   ```
   library(tmap)
   geocode_OSM()
   ```
Putting schools on the map

“Behind Zamimpilo Market next to Khonzela Store”

“NEXT TO XIMHUNGWE POST OFFICE”
Putting schools on the map
Putting schools on the map
Creating an interactive map

“Leaflet is the leading open-source JavaScript library for mobile-friendly interactive maps.”

The R package makes it easy to integrate and control Leaflet maps in R.
Creating an interactive map

“Leaflet is the leading open-source JavaScript library for mobile-friendly interactive maps.”

The R package makes it easy to integrate and control Leaflet maps in R.

Really easy and convenient to integrate with Shiny.

# UI
plotOutput() ---> leafletOutput()

# SERVER
renderPlot() ---> renderLeaflet()
Creating an interactive map

To modify a map that’s already running in the page, you use the `leafletProxy()` function in place of the `leaflet()` call, inside an `observe()` function.

```r
server <- function(input, output) {

  # Create the base map that won't change
  output$map <- renderLeaflet({
    leaflet() %>%
      addTiles()
  })

  # Define the aspects that can change within an observer
  observe({
    size_by <- input$size
    radius <- sa_schools[[size_by]]

    leafletProxy("map", data = sa_schools) %>%
      clearShapes() %>%
      addCircles(~longitude, ~latitude, radius=radius)
  })
}
```
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```

**Design decisions:**

**Size by:**
- Learner number
- Educator number

**Colour by:**
- Quintile
- Phase
- Sector
- Rural or urban
Starting simple
Starting simple
Let’s take a look!

mbeckett.shinyapps.io/SouthAfricanSchools
Visualising quintiles
Visualising rural vs urban schools
School sector
Exploring - reactive plots

South African Schools
Interactive map
School directory
About
Exploring - “zones” of missing data
Exploring - echoes from Apartheid
Exploring - echoes from Apartheid
Thank you! Questions?

mbeckett.shinyapps.io/SouthAfricanSchools

Please do take a look!

@mbeckett_za