

# MAKING SHINY APPS EASIER WITH {GOLEM}

Vasili Fokaidis, Biostatistician I



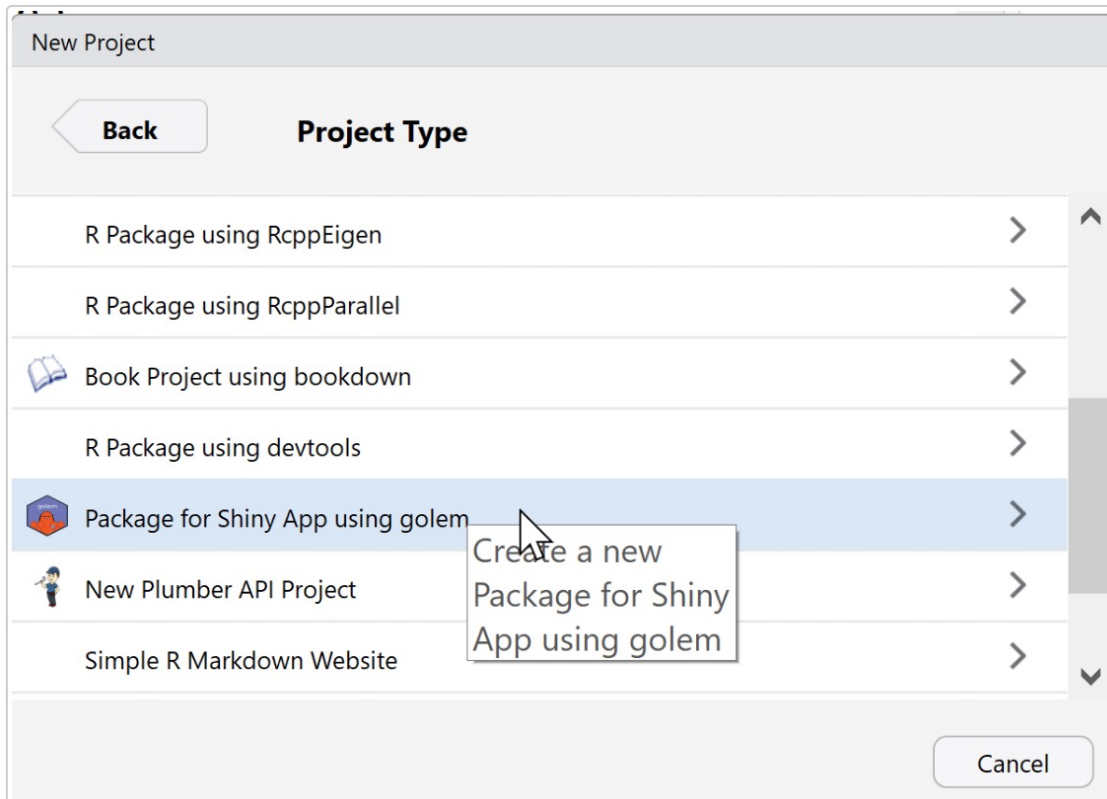
## DEFINITION:

- “A golem is a creature formed out of a lifeless substance such as dust or earth that is brought to life by ritual incantations and sequences of Hebrew letters. The golem, brought into being by a human creator, becomes a helper, a companion, or a rescuer of an imperiled Jewish community.”

# WHAT IS GOLEM?

- Golem is a skeleton for building a package that will produce and run your shiny app
- Why build a package – don't we want to build the app?
  - Yes! This package helps build the app
  - We write it to a Github repository (for example) and call our new package to produce shiny apps  
REALLY QUICKLY
  - Build it once, use it forever 🎉

# STEP 1: INSTALL GOLEM & CREATE PROJECT



- We start by installing {golem} as we would any other package
- Then R gives you the option to create a package for a shiny app

# STEP 2: GOLEM CREATES ALL DEPENDENT SCRIPTS

```
#> └─ DESCRIPTION
#> └─ NAMESPACE
#> └─ R
#> |   └─ app_config.R
#> |   └─ app_server.R
#> |   └─ app_ui.R
#> |   └─ run_app.R
#> └─ dev
#> |   └─ 01_start.R
#> |   └─ 02_dev.R
#> |   └─ 03_deploy.R
#> |   └─ run_dev.R
#> └─ inst
#> |   └─ app
#> |   |   └─ www
#> |   |       └─ favicon.ico
#> |   └─ golem-config.yml
#> └─ man
#>     └─ run_app.Rd
```

- {golem} does all the hard work and creates just about everything we'll need to create our package
- There is a very good step by step tutorial [here](#) showing how to navigate each of these files

## STEP 3: TAILOR THE APP TO YOUR NEEDS

- Build out what tables, plots, interactivity you want (having knowledge of shiny modules/apps can be very helpful, but it's not too terrible to learn on the go)
- View your app, test it out, and improve it for each project you use it on!

## STEP 4: RUN YOUR APP!


- This is the fun part, but also very important part
- Shiny apps are often about look and feel, so it's important to look at your app as you build it and see what works and what doesn't
  - This is especially important for building something that makes sense for Pls, for example

# WHY DO ANY OF THIS?

- R Markdowns are our tried-and-true deliverable. They get the job done, and have some interactivity to an extent (highcharter (shameless plug on my last talk), plotly, etc.)
- But wouldn't it be nice to give PIs/researchers the ability to view plots/tables on their own!
- We often find ourselves having to change one variable/plot on our end, then re-knit and send a new knitted markdown back out just for one plot
  - This can help make viewing plots/tables more efficient for both us (biostatisticians) and PIs 🙌

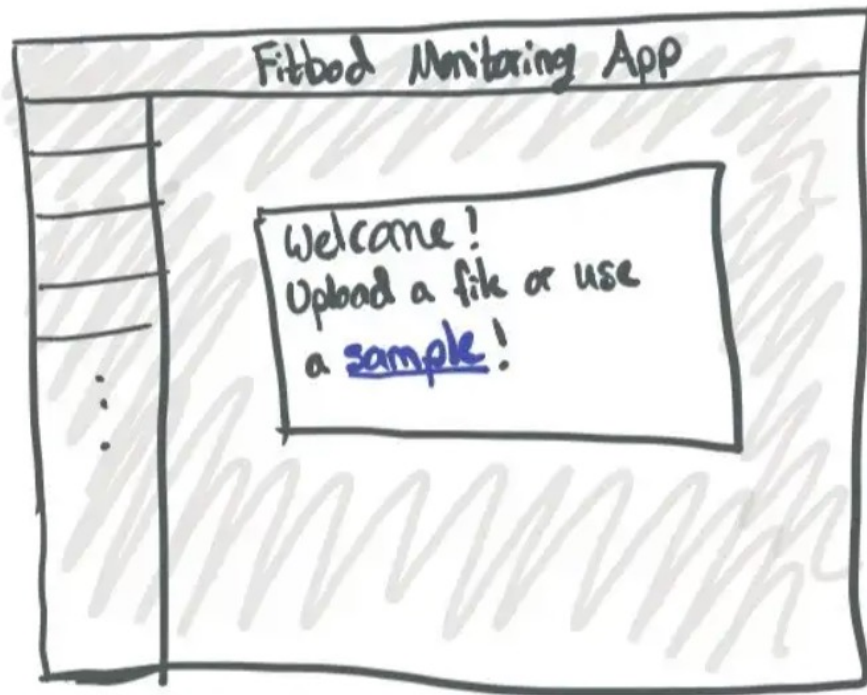


# IT'S NOT ALL RAINBOWS AND BUTTERFLIES

- Shiny apps can make us a little plot-crazy
- Often, PIs come to us to figure out which relationships to plot and analyze, so even with a fancy shiny app, we will still need to provide them with some guidance on what makes sense for their variables/study
- Shiny apps are not for everyone. They're very cool and fancy, but we can't expect that it is a good option for every PI/study – sometimes simple is better 

**LET'S LOOK AT AN EXAMPLE: A FITNESS APP**

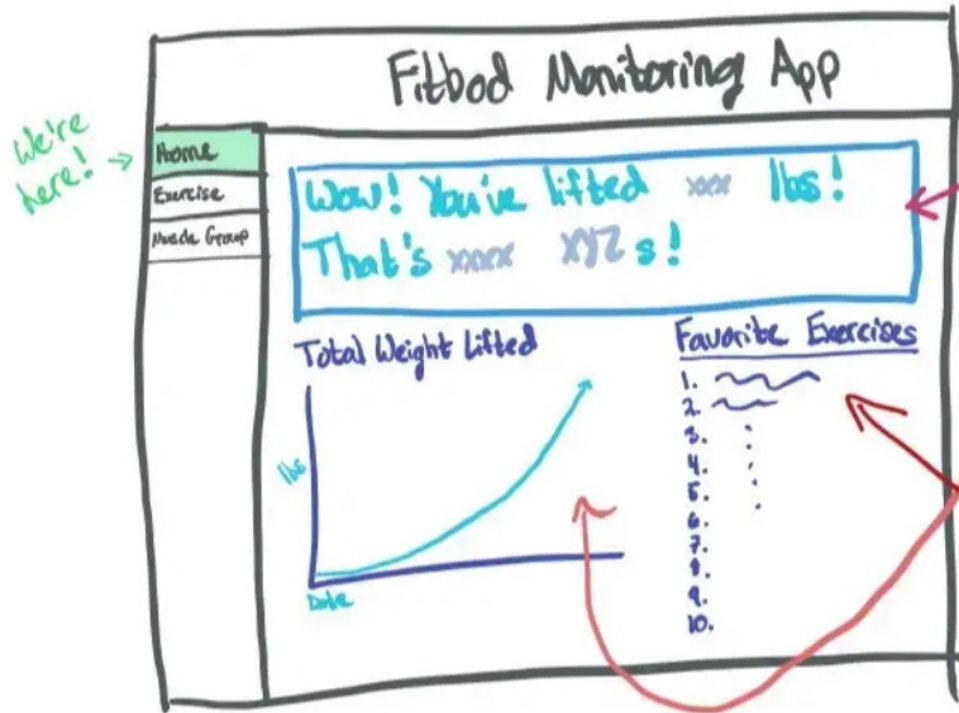
# LANDING PAGE



Pop-up box to choose a data source.

- This example is pulled from the tutorial linked [earlier](#) in the presentation – it helps visualize each step as you go!
- I like this feature because the app can ingest (preferably clean) data and do all the work for you

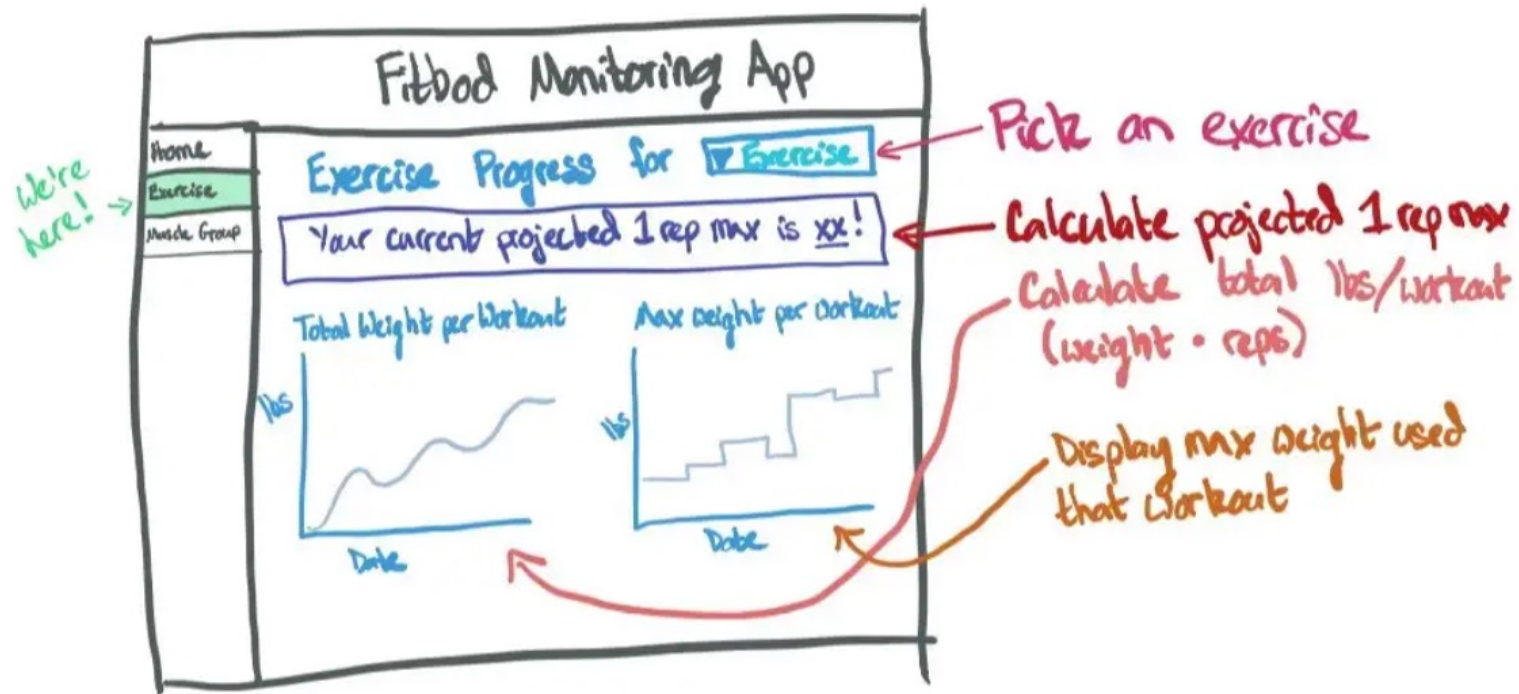
# HOME TAB



- Calculate total lbs
- Calculate how many of something that is
- Display text in box
- Graph cumulative weight lifted over time
- Rank how often (how many workouts) an exercise is performed in

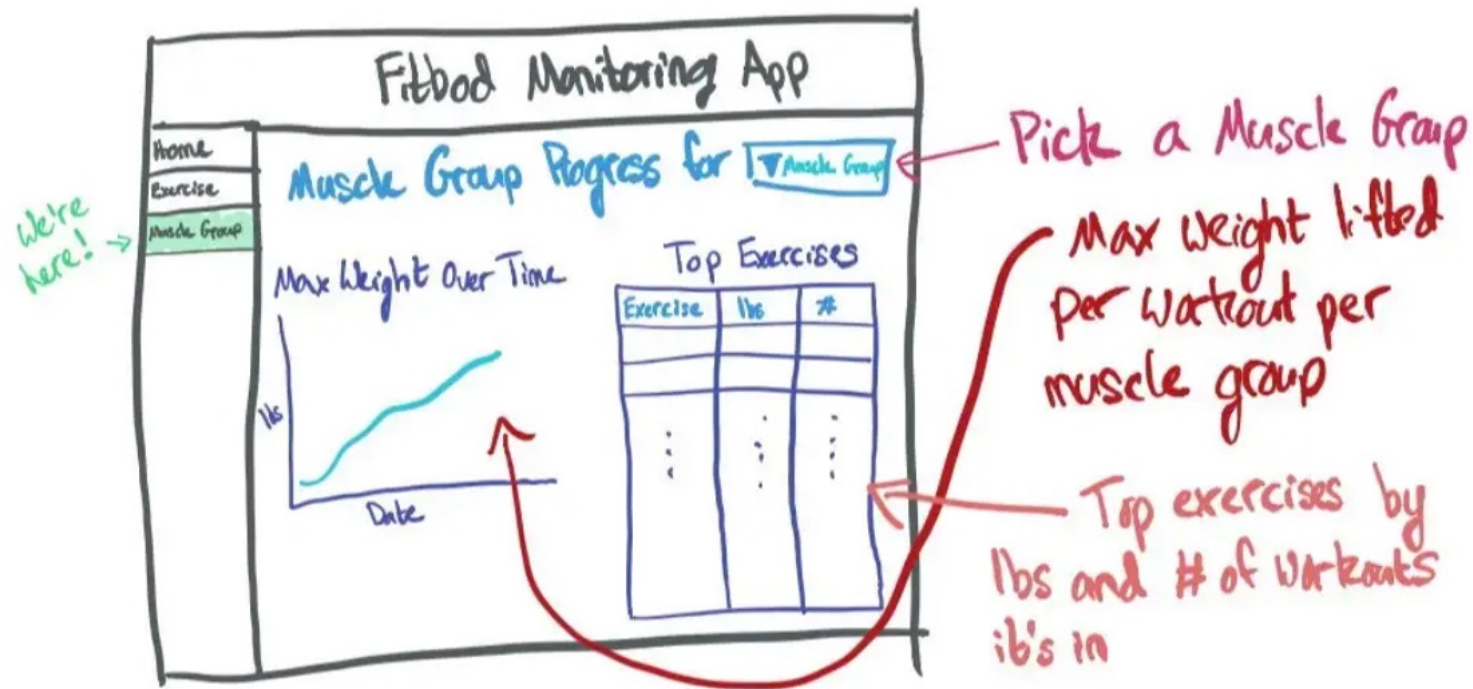
- The home tab could be an EDA tab for example showing distribution of predictors, Table 1s, and more

# EXERCISE TAB



- Here is where it gets good
- The following tabs can be outcomes for example
  - Outcome 1 can display regression results, (i.e. outcome 1 vs. a selection of predictors)

# MUSCLE GROUP TAB



- This can be outcome 2 and so on
- You can add the functionality of variable selection for EDA/[modeling](#)
  - These can be a set list which gives you a little control over what a PI can input

# MY GOAL

- Together we can create a standardized {shinywcm} package that's publicly available to all of our biostatisticians via Github
- Similar to our personalized WCM knitted markdown files, we can create a WCM shiny app that reps our WCM color palette all while displaying our polished results
- Think about it more as another tool in the toolbelt as opposed to a replacement for what already works 🎉

# NAVIGATING THE GITHUB TUTORIAL

- Let's take a closer look at the [Github repo](#) and see what this script looks like and how we can adapt it to our projects