Data Visualization

Project Review 3- Dashboard

1) Data set name
FIFA 19 complete player dataset

2) URL
https://www.kaggle.com/karangadiya/fifa19#data.csv

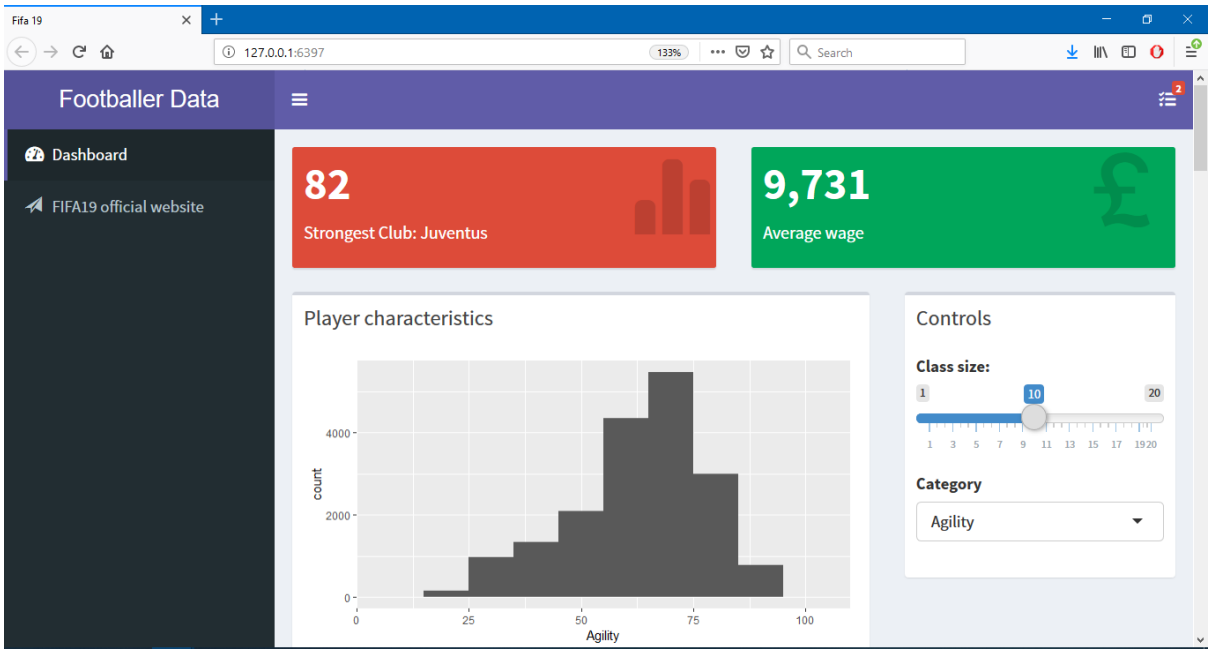
3) Code:

```
# load the required packages
library(shiny)
require(shinydashboard)
library(ggplot2)
library(dplyr)

data =
read.csv('C:\\Users\\Krishna\\Desktop\\footballerData\\data.csv',stringsAsF
actors = F,header=T)

#head(recommendation)


#Dashboard header carrying the title of the dashboard
header <- dashboardHeader(title = "Footballer Data",
  dropdownMenu(type = "tasks", badgeStatus = "danger",
    taskItem(value = 5, color = "aqua",
      "Percentage of players from Brazil"
    ),
    taskItem(value = 40, color = "green",
      "Number of players in Juventus"
    )
  ))

#Sidebar content of the dashboard
sidebar <- dashboardSidebar(
  sidebarMenu(
    menuItem("Dashboard", tabName = "dashboard", icon = icon("dashboard")),
    menuItem("FIFA19 official website", icon =
icon("send",lib='glyphicon'),
             href = "https://www.easports.com/fifa")
  )
)


frow1 <- fluidRow(
  valueBoxOutput("value1",width=6)
  ,valueBoxOutput("value2",width=6)
  #,valueBoxOutput("value3")
)

frow2 <- fluidRow(

  box(title="Player characteristics",width=8,plotOutput("ao",height=250)),

  box(width=4,title="Controls",sliderInput("slider","Class
size:",min=1,max=20,value=10),
selectInput("category","Category",choices=attr)),
```

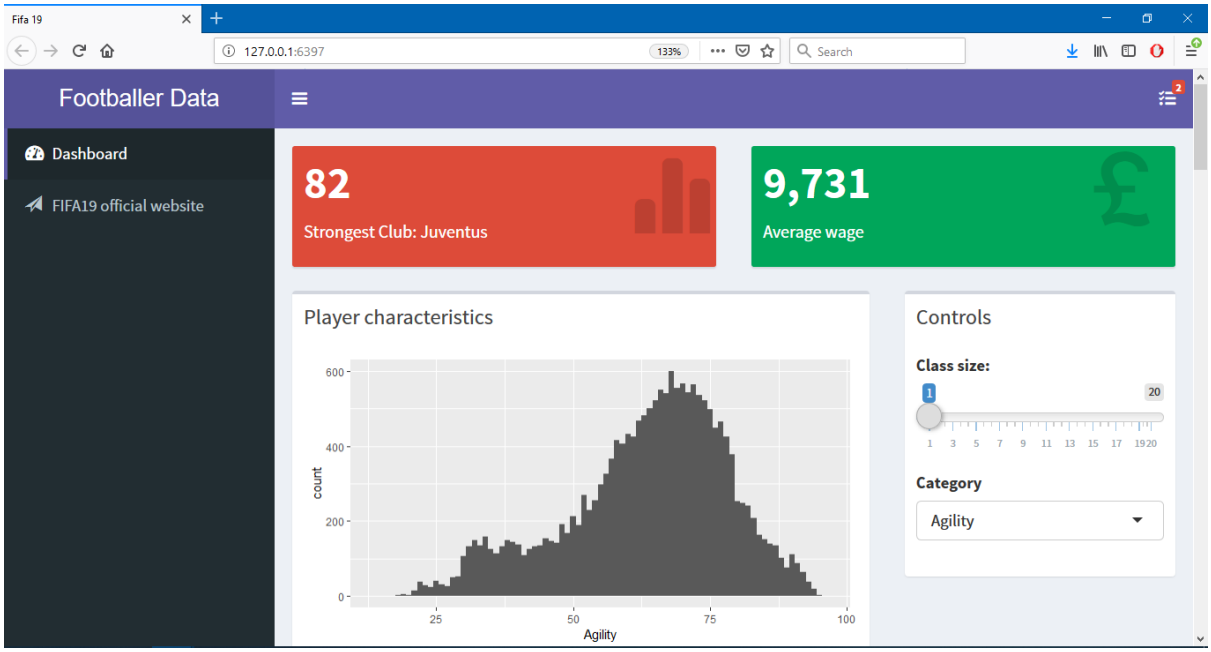
```
  box(title="Players from
countries",width=12,plotOutput("world",height=300)),

  box(width=12,title="Overall Rating vs Wage",plotOutput("overallWage")),

  box(title="Height vs Agility",width=12,plotOutput("heightAg")),

  box(title="Age vs Wage",width=12, plotOutput("ageWage")),

  box(title="Height vs weight", width=12,plotOutput("heightWe"))

)



# combine the two fluid rows to make the body
body <- dashboardBody(frow1, frow2)

#completing the ui part with dashboardPage
ui <- dashboardPage(title = 'Fifa 19', header, sidebar, body,
skin='purple')

# create the server functions for the dashboard
server <- function(input, output) {

  #some data manipulation to derive the values of KPI boxes
  wageR <- mean(data$WageNum, na.rm=TRUE)
  clubR <- data %>% group_by(Club) %>% summarise(value =
mean(Overall,na.rm=TRUE)) %>% filter(value==max(value))
  couR <- data %>% group_by(Nationality) %>% summarise(value =
sum(Overall,na.rm=TRUE)) %>% filter(value==max(value))


  #creating the valueBoxOutput content
  output$value1 <- renderValueBox({
    valueBox(
      formatC(clubR$value, format="d", big.mark=',')
      ,paste('Strongest Club:',clubR$Club)
      ,icon = icon("stats",lib='glyphicon')
      ,color = "red")


  })



  output$value2 <- renderValueBox({

    valueBox(
      formatC(wageR, format="d", big.mark=',')
      ,'Average wage'
      ,icon = icon("gbp",lib='glyphicon')
      ,color = "green")

  })



  #output$value3 <- renderValueBox({
  #
```

```
  # valueBox(
  #    formatC(couR$value, format="d", big.mark=',')
  #    ,paste('Strongest country:',couR$Nationality)
  #    ,icon = icon("menu-hamburger",lib='glyphicon')
  #    ,color = "yellow")

  #creating the plotOutput content

  #})


  output$ao = renderPlot({
    va=input$category

ggplot(data=data,aes(x=va))+geom_bar(binwidth=input$slider,stat='count')})

  output$world = renderPlot({
    countryCount=count(data,Nationality)
    try=ggplot()+
    geom_map(aes(x=long,y=lat,map_id=region), data=map_data("world"),
map=map_data("world"))+
    geom_map(aes(fill=log(n), map_id=Nationality), map=map_data("world"),
data=countryCount)+
    scale_fill_gradient2(name = "log(No. of players)", low = "white", mid =
"yellow", high = "red")
    try})


  output$overallWage= renderPlot({
    ggplot(data=data,aes(x=Overall,y=WageNum))+ geom_point()+geom_smooth()
    })

  output$heightAg= renderPlot({
    ggplot(data=data, aes(x=Height,y=Agility,color=BodyType))+geom_point()
    })

  output$ageWage=renderPlot({
    ggplot(data=data, aes(x=Age,y=WageNum,color=SkillMoves))+ geom_point()+
geom_smooth()
    })

  output$heightWe=renderPlot({
    ggplot(data=data,
aes(x=Height,y=Weight,color=InternationalReputation))+ geom_point()
    })

}

shinyApp(ui, server)
```

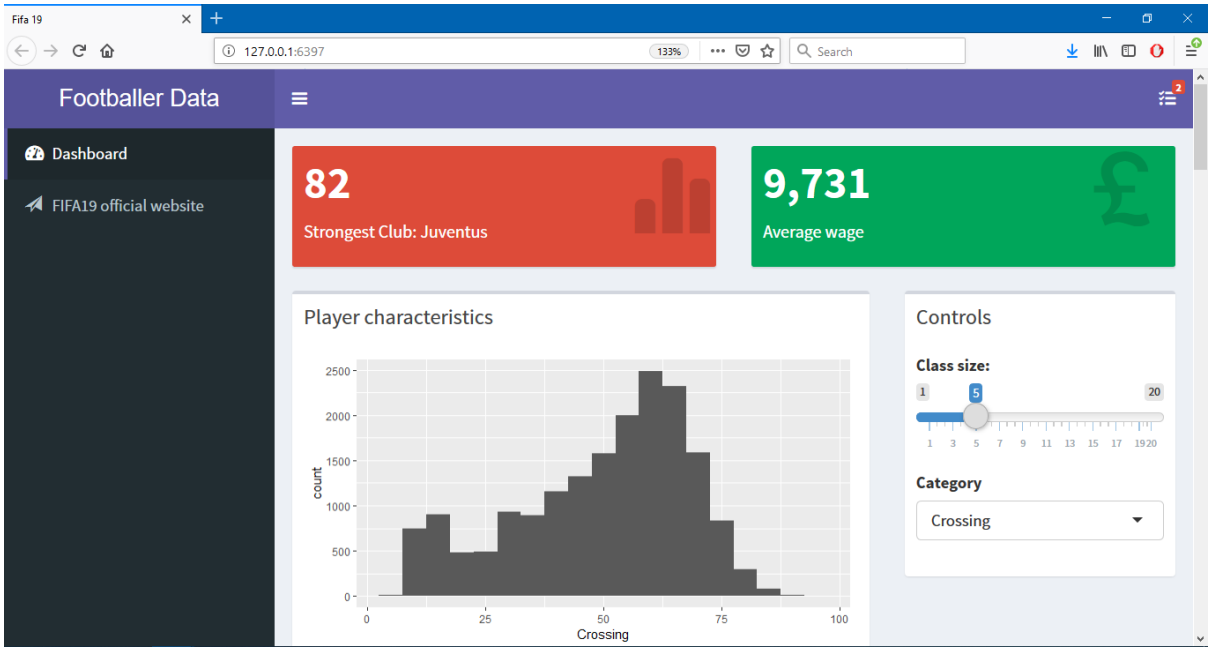
4) Screenshots



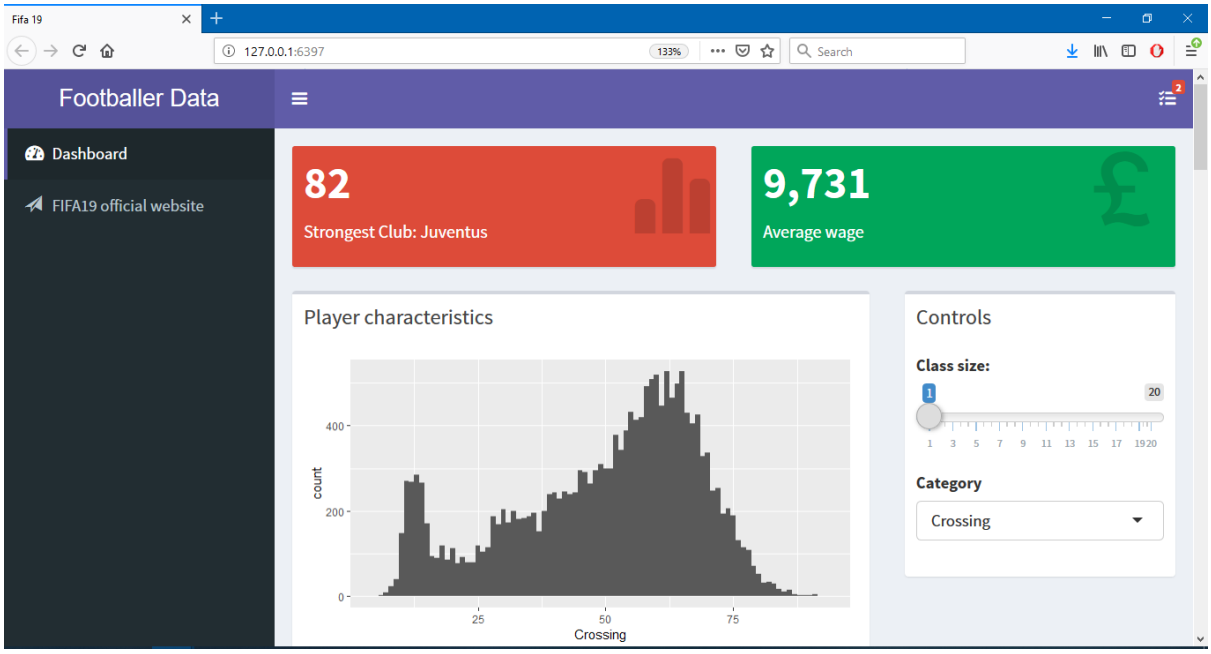
In this image, there are two value boxes and a plot with its controls in the dashboard body. There is also an option of following the link in the sidebar. The value box on the left gives statistics such as the strongest team, with the highest average player rating equal to82. The value box on the right gives the average wage of all football players in the game.



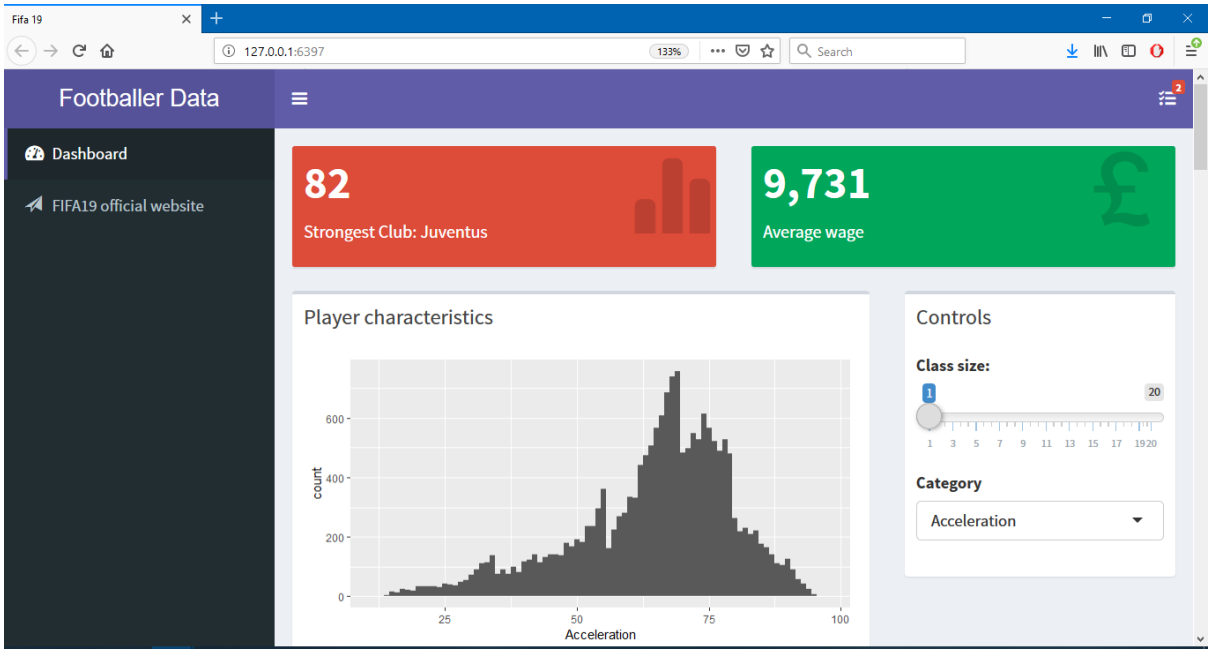
The barplot below the value boxes has the rating given in the x axis and the number of players given in the y axis. The category for the rating can be chosen using the drop-down menu called category in the box to the right of the plot. The class size for the barplot can be chosen using the slider placed above the drop-down.



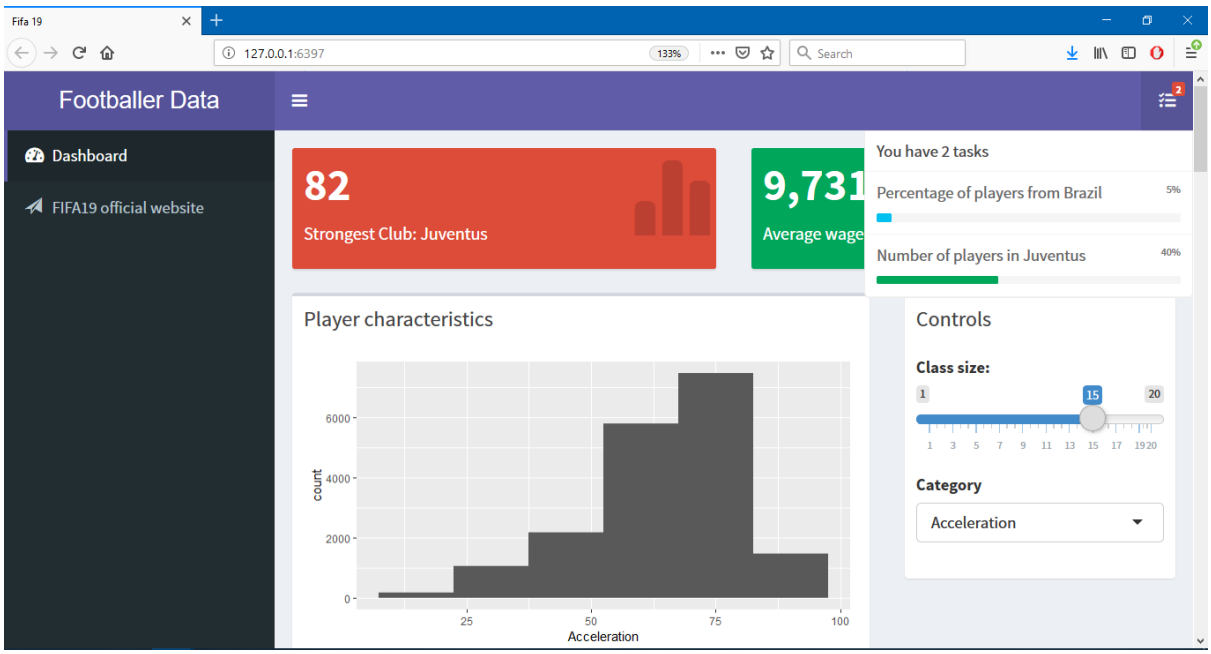
This is an example where the class size as well as the category has been varied.



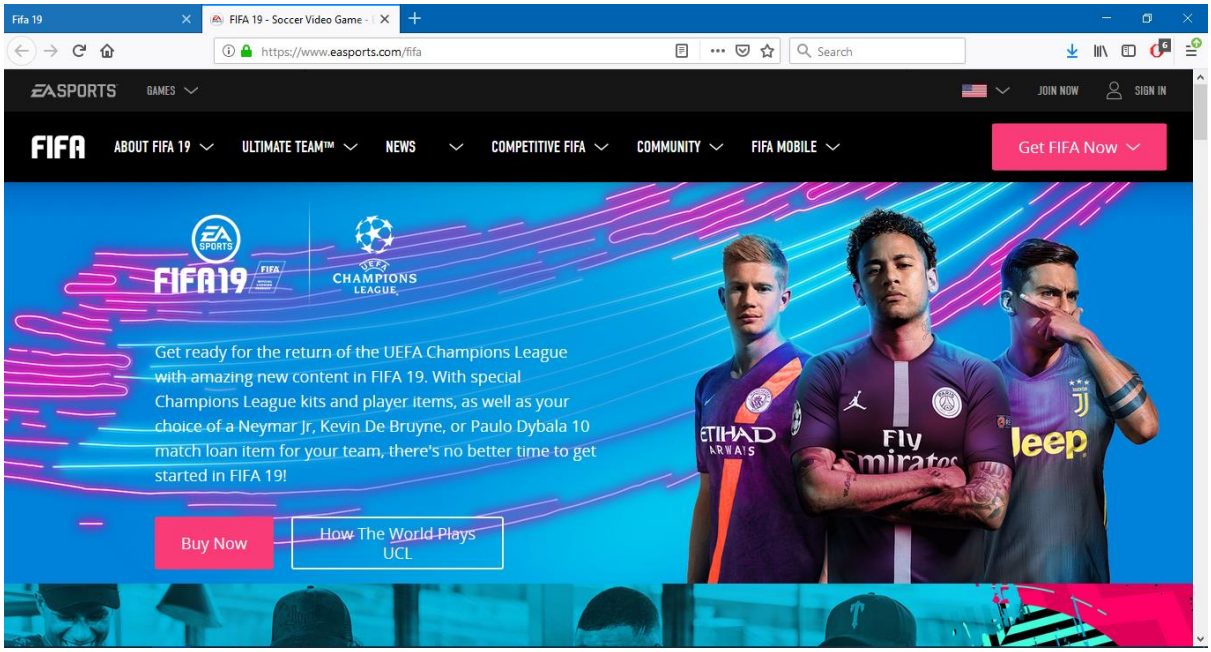
Here the class size has been reduced to individual ratings. We can see that most players have a crossing rating of around 65. The hill then falls steeply as number of players with high crossing rating decreases substantially, at a rate higher than that at which it was increasing. A large number of players are rated around 10 for crossing too. Most of these players must be goal keepers who have no crossing ability.



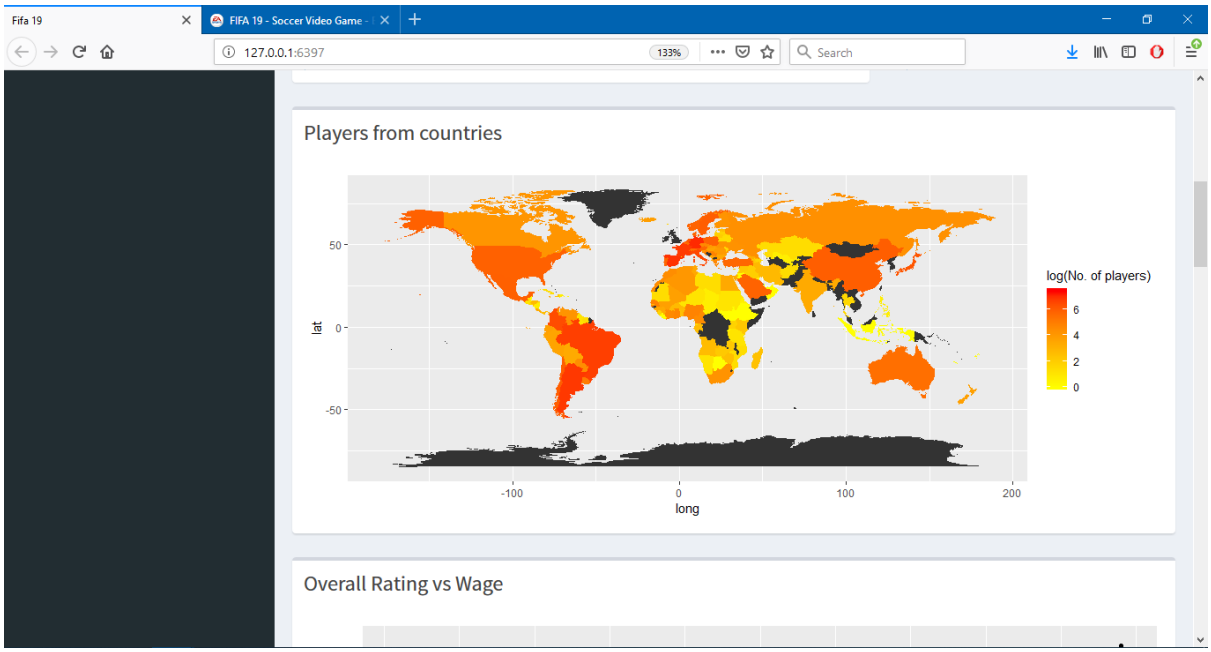
Here, the category has been changed to acceleration. We can see that it is more evenly spread out than the last plot. Even goal keepers need pace to get to the ball before the striker. A large number of players have been rated 65 for acceleration. This number falls sharply soon after and then once again.



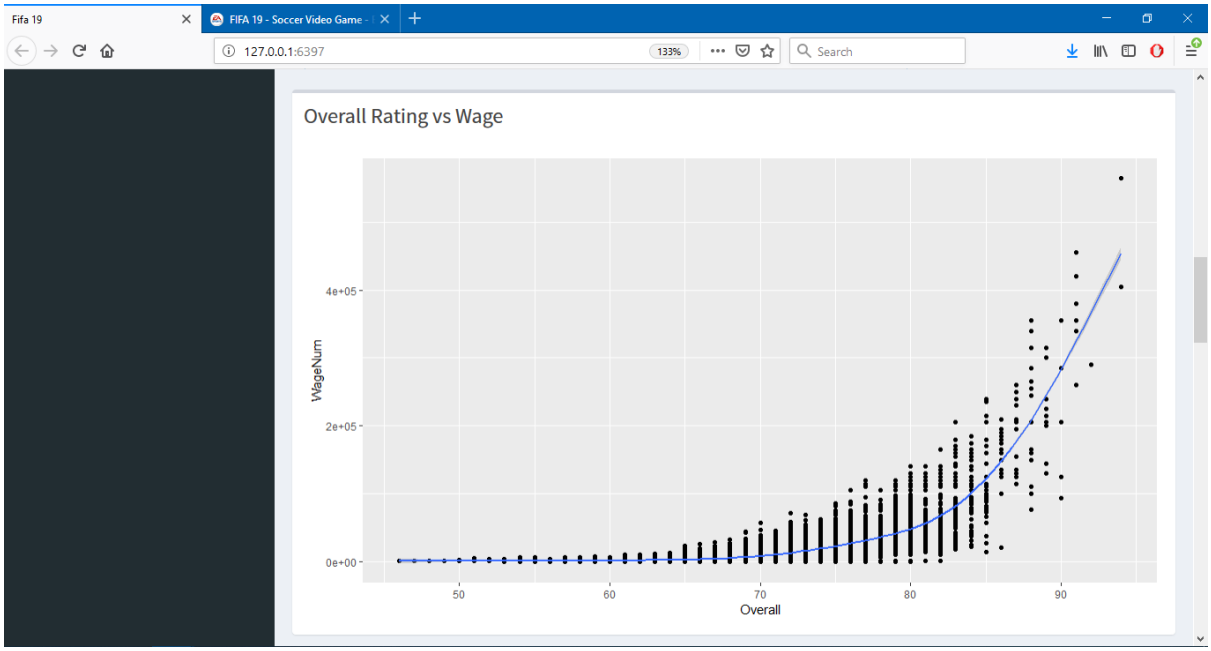
This fall can be analyzed by grouping 15 ratings together by increasing the class size. Here, we can also see the contents of the drop-down menu.



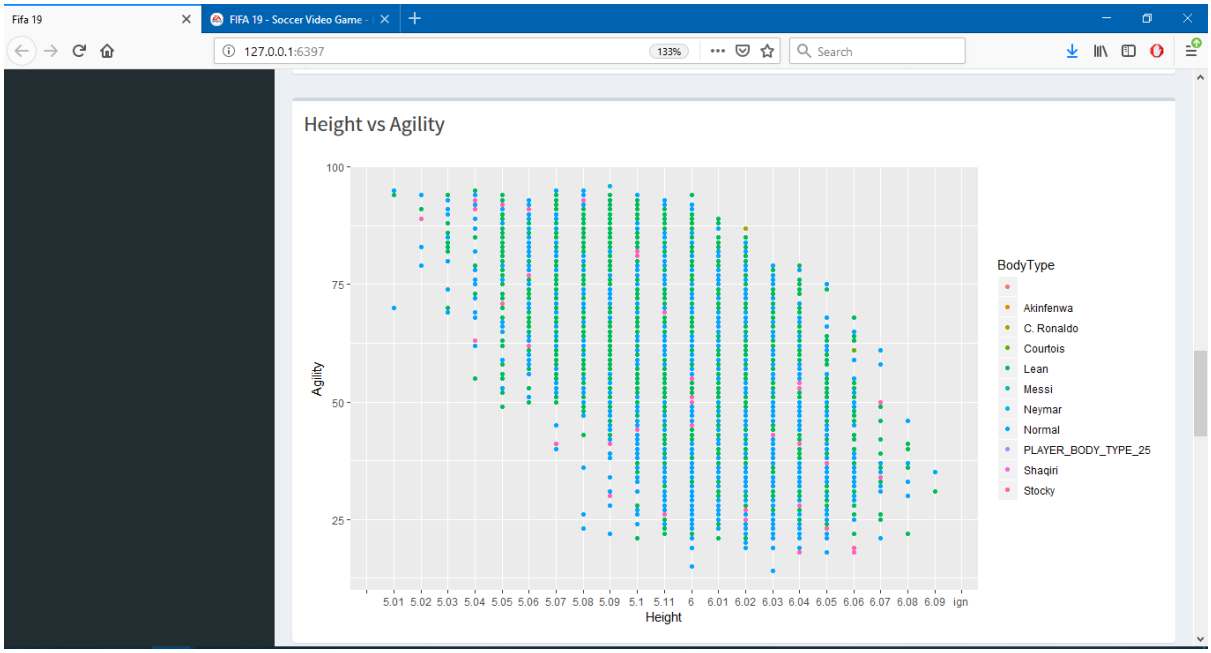
When the FIFA19 Official website option in the sidebar is clicked, a new tab is opened an the FIFA website is opened on it.



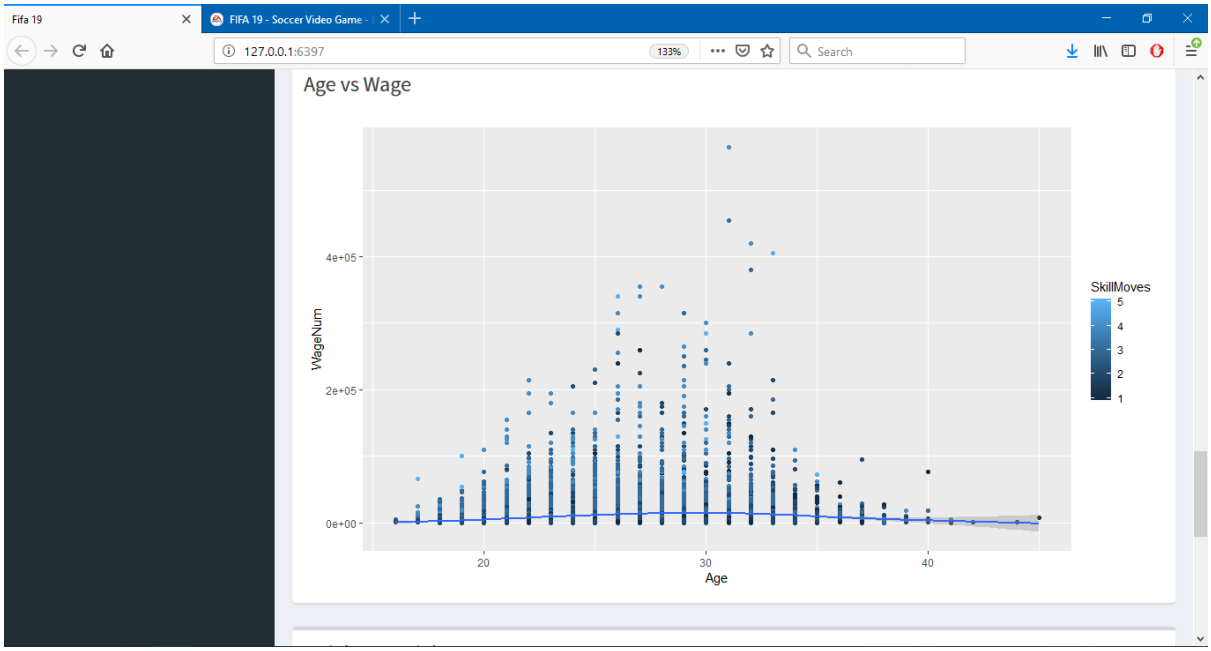
This plot is made by plotting the logarithmic function of the number of players from respective countries on a world map. A direct plot would not be able to compensate the large variation present in the number of players from different countries. Hence log(n) has been used. The countries coloured red are the countries from where most players come, whereas the the countries in yellow are the countries with least players in the game. This is very similar to the real-world scenario, where most professional football players are from South America and Europe, with a fairly large number of players coming from Australia, China and North America. Although large, this is a disproportionately small number of people compared to the size of these countries. India has a very small number of players despite its large size.



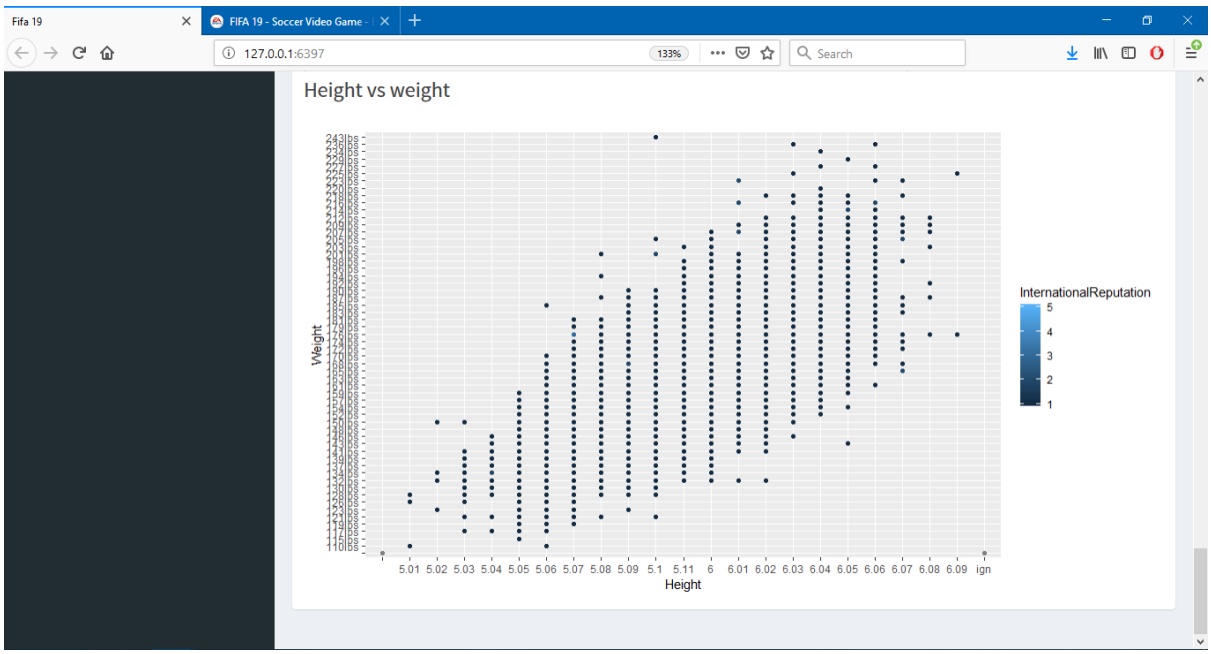
In this image, the wage of players is plotted against their overall rating. The overall rating tells us how good a player is for their respective position. We see that the wage that a player receives increases exponentially as the overall rating of a player increases. This is true in real life too. Big players like Messi get paid hundreds of thousands of euros every week whereas players in average teams get paid much lesser.



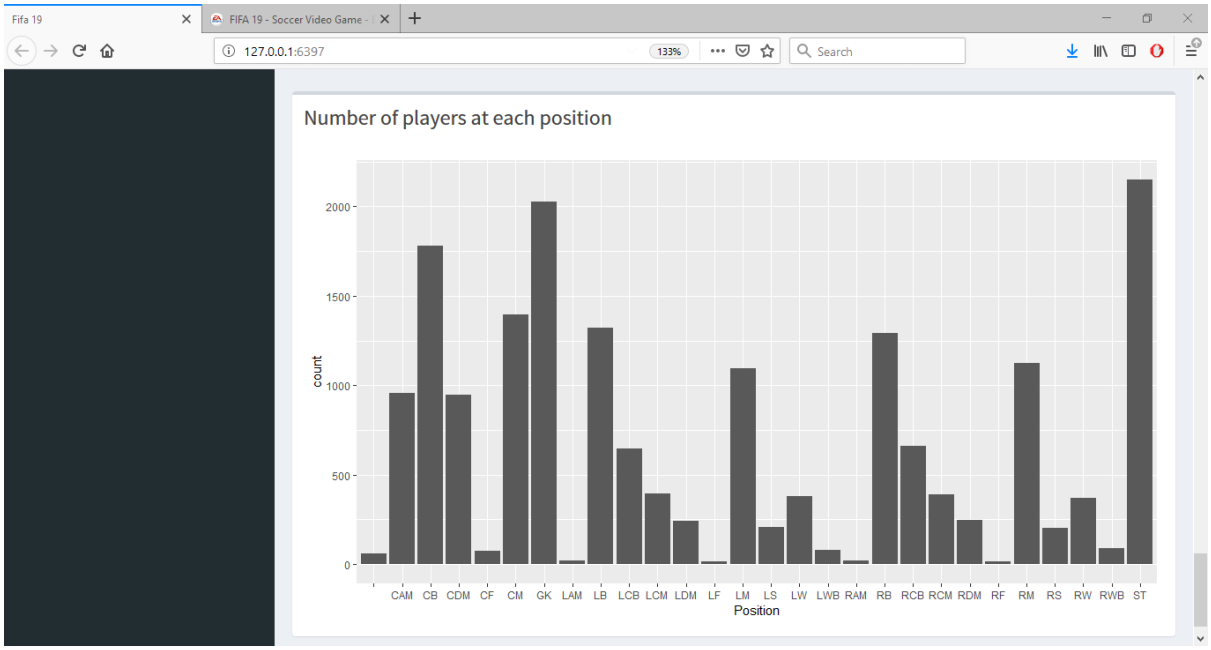
In this plot of height vs agility, it is apparent that agility decreases as a player's height increases. This is also scientifically true since as height increases, the center of gravity of the body also becomes higher and it becomes more difficult to change direction when in motion. Hence agility decreases.



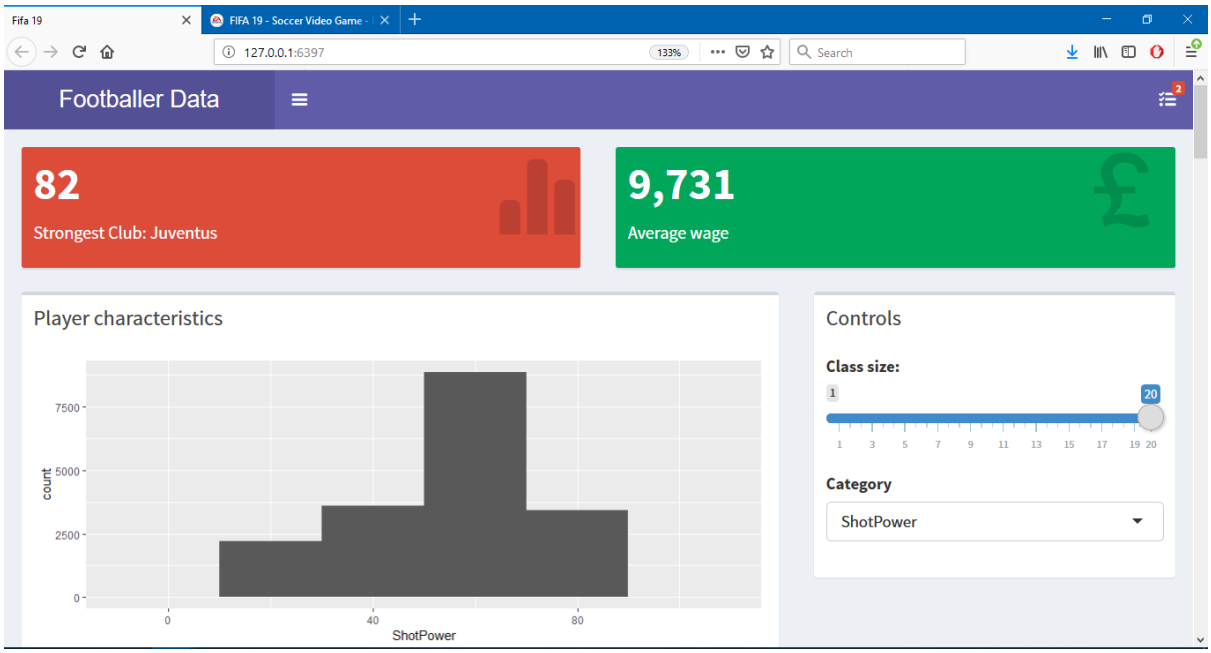
This scatter plot appears to be simple enough to be called a normal distribution, but when we plot a line plot, we see that its slope varies very gently due to the entire dataset not following the trend of the well-paid players. The well-paid players seem to peak in terms of wage around the age of 27-31. We also see that most of the top paid players are good at skill moves (rated 5).



Here we see that all footballers maintain a certain weight according to their height so that they can player the entire 90 minutes of the game without tiring themselves out. Fitness is a very important part of this sport. If we make a plot using the data of cricketers or golfers, there would almost seem to be no correlation. This graph of height vs weight can be used to analyze and compare the fitness required for different sports.



This graph gives the numbers of players that play at each position in the game. We see that most players in the game are strikers (ST), followed by goalkeepers (GK). The next most popular position is center-back (CB).



This is what the dashboard looks like with a minimized sidebar.