posc_207_Sunny

```
knitr::opts_chunk$set(echo = TRUE)

##############################
# Sunny Shao       #
# Basic Classes and methods #
# Week 6               #
##############################
library(tidyverse)
```

```
## ── Attaching packages ─────────────────────────────────────────────────────────────────────
──────────────────── tidyverse 1.2.1 ──

## ✓ ggplot2 2.2.1     ✓ purrr   0.2.4
## ✓ tibble  1.4.2     ✓ dplyr   0.7.4
## ✓ tidyr   0.8.0     ✓ stringr 1.3.0
## ✓ readr   1.1.1     ✓ forcats 0.3.0

## ── Conflicts ────────────────────────────────────────────────────────────────────────────
──────────────────────── tidyverse_conflicts() ──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()
```

```
rm(list=ls())

setClass("cmps_2016", representation(data = "data.frame",
                                     groups="character"))

####################################
# generate summarize table Data #
####################################
cmps <- readxl::read_xlsx("~/Dropbox/pd_research/new working
directory/CMPS.xlsx")
cross<-table(cmps$pd, cmps$Generation)
prop.table(cross,2)*100
```

```
##
##            1        2        3        4
##   0 53.43511 46.80632 44.09171 40.11754
##   1 46.56489 53.19368 55.90829 59.88246
```

```
generation <- c(1:4)
pd <- c(47,53,56,60)
dat <- data.frame(generation, pd); dat
```

```
##   generation pd
## 1          1 47
## 2          2 53
## 3          3 56
## 4          4 60
```

```
dat$pd <- as.integer(dat$pd)
#####################################
# Create Function that outputs class #
#####################################

dat_prep <- function(dat) {
  dat <- dat[,1:2]
  tab_out <- dat
  groups <- c("Generational Status", "Percent Perceived Discrimination")
  tab_out <- new("cmps_2016", data = tab_out, groups=groups)
  return(tab_out)
}

###########################################
# Creating Plot Method for Class: cmps_2016 #
###########################################

plot.cmps_2016 <- function(x, ...) {
  # Extract columns 1 and 2 from dat_prep function output
  xvar <- x@data[,1]
  yvar <- x@data[,2]
  # Initite plot() within the function
  # Note: ggplot2() will also work here
  plot(xvar, yvar,
       xlab=x@groups[1],
       ylab=x@groups[2],
       bty="n",
       main = "Percent Perceived Discrimination by Generation",
       ...)
}

############################
# Initiate First Function #
############################

p_dat <- dat_prep(dat); p_dat
```

```
## An object of class "cmps_2016"
## Slot "data":
##   generation pd
## 1          1 47
## 2          2 53
## 3          3 56
## 4          4 60
```

```
##
## Slot "groups":
## [1] "Generational Status"              "Percent Perceived Discrimination"
```

```
# Check Type of Clas (is S4 class/method?)

isS4(p_dat)
```

```
## [1] TRUE
```

```
# Look at attributes
names(attributes(p_dat))
```

```
## [1] "data"   "groups" "class"
```

```
# How to Access Object Attributes
p_dat@data
```

```
##   generation pd
## 1          1 47
## 2          2 53
## 3          3 56
## 4          4 60
```

```
p_dat@groups
```

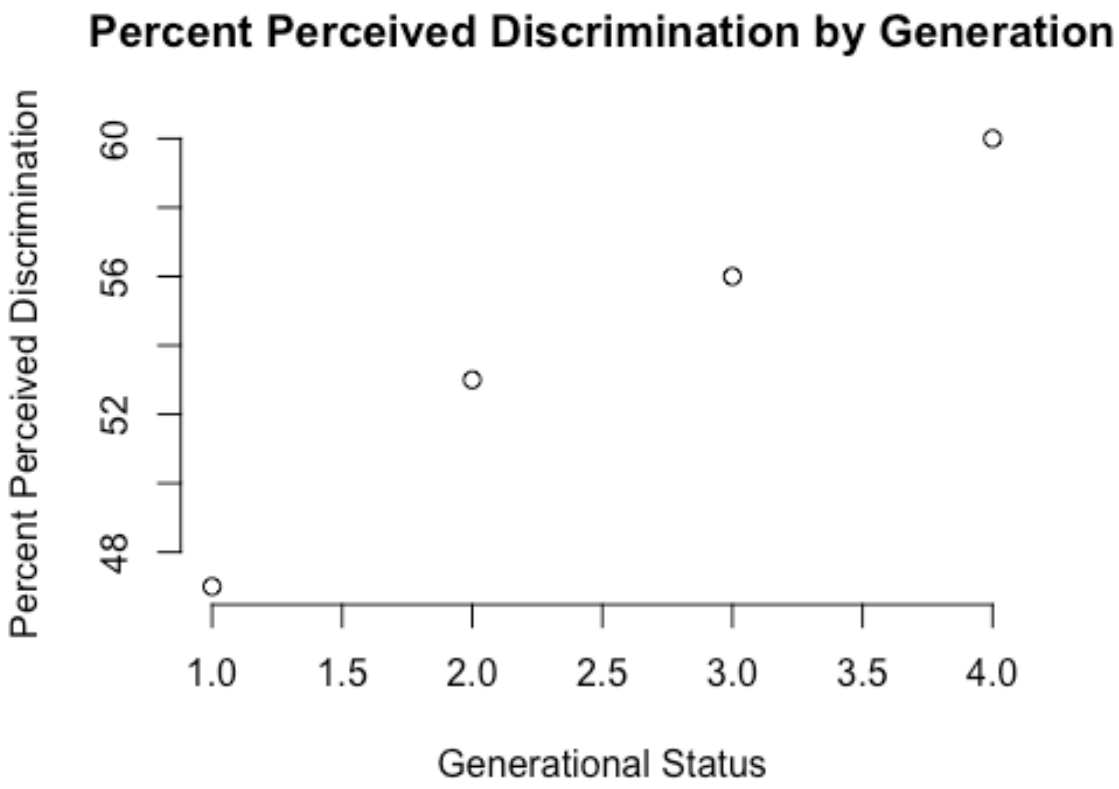
```
## [1] "Generational Status"              "Percent Perceived Discrimination"
```

```
p_dat@class
```

```
## [1] "cmps_2016"
## attr(,"package")
## [1] ".GlobalEnv"
```

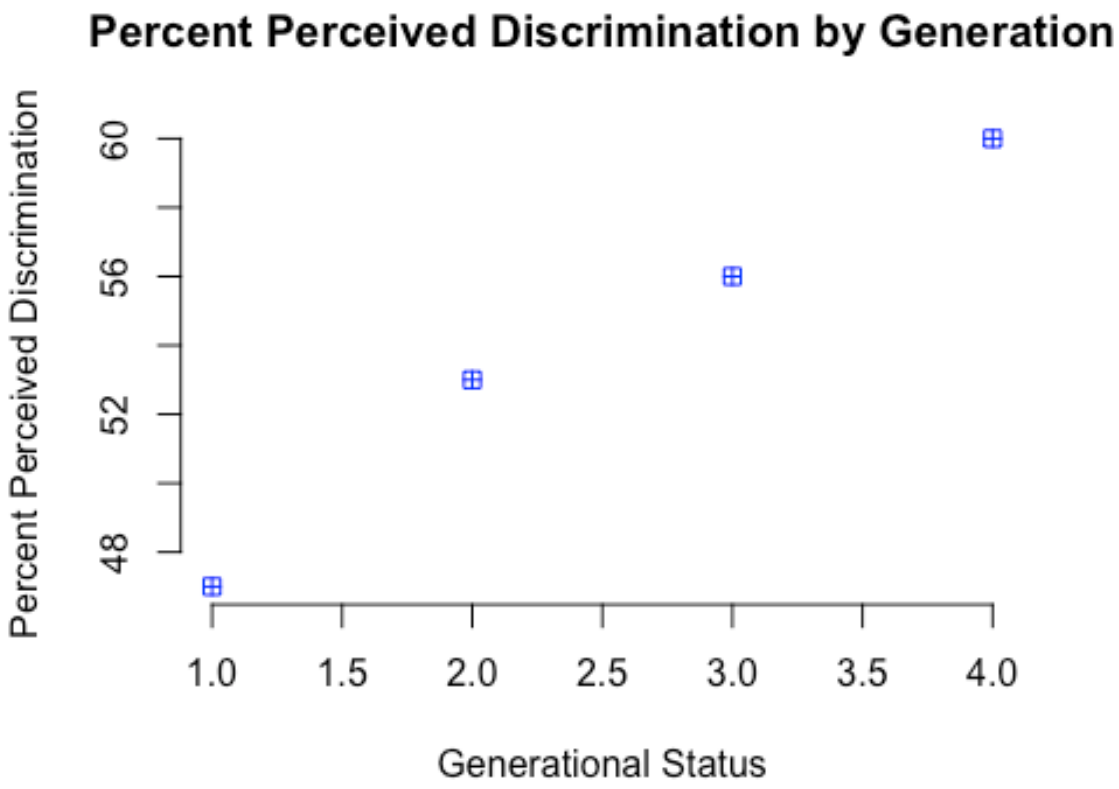
```
######################
# Plot p_dat object #
######################

plot(p_dat)
```




```
###################################
# Make Adjustments                #
###################################

plot(p_dat, pch=12, col="blue")
```




```
# Try out plotting another data
cross<-table(cmps$edu, cmps$Generation)
prop.table(cross,2)*100
```

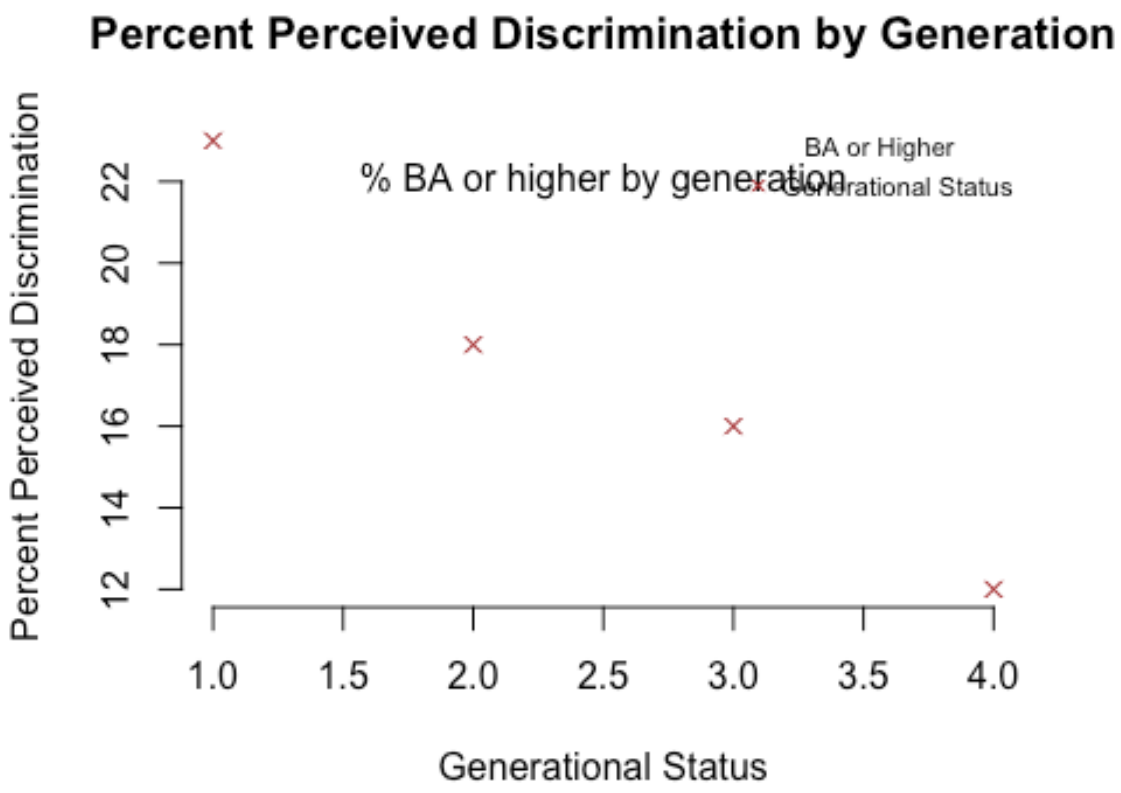
```
##
##                                1          2          3          4
##   0                   1.7677782  0.6524725  0.4409171  0.6495515
##   0.200000002980232   4.4997991  5.5975275  2.6455026  4.4540674
##   0.400000005960464  16.1510647 18.5782967 18.0776014 24.9922672
##   0.600000023841858  22.3784652 28.5370879 33.9506173 36.8079183
##   0.800000011920929  31.2173564 28.5714286 28.3068783 20.5381998
##   1                  23.9855364 18.0631868 16.5784832 12.5579957
```

```
generation <- c(1:4)
edu <- c(23, 18, 16, 12)
my_dat2 <- data.frame(generation, edu); my_dat2
```

```
##   generation edu
## 1          1  23
## 2          2  18
## 3          3  16
## 4          4  12
```

```r
my_dat2$edu <- as.integer(my_dat2$edu)


my_dat2 <- dat_prep(my_dat2)
# Plot out the data #
plot(my_dat2, pch=4, col="brown")
text(2.5,22, "% BA or higher by generation") # you can add text to
legend("topright",
       title ="BA or Higher",
       pch=4,
       col="brown",
       legend="Generational Status",
       bty="n",
       cex=.7)
```




```r
###################
# Summary Method #
###################

summary.cmps_2016 <- function(x, ...) {

  xvar <- x@data[,1]
  yvar <- x@data[,2]
```

```r
  # Print out a bunch of stuff #
  cat("data.frame() dimensions\n")
  print( dim(x@data) )
  cat("XVar Length:\n")
  print(length(xvar))
  cat("YVar Length:\n")
  print(length(yvar))

}

# Now just use summary function/method to *summarize* data #
summary(my_dat2)
```

```
## data.frame() dimensions
## [1] 4 2
## XVar Length:
## [1] 4
## YVar Length:
## [1] 4
```