Final Project Demonstration

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Function 1

Here is a demonstration of the first function of interest created.

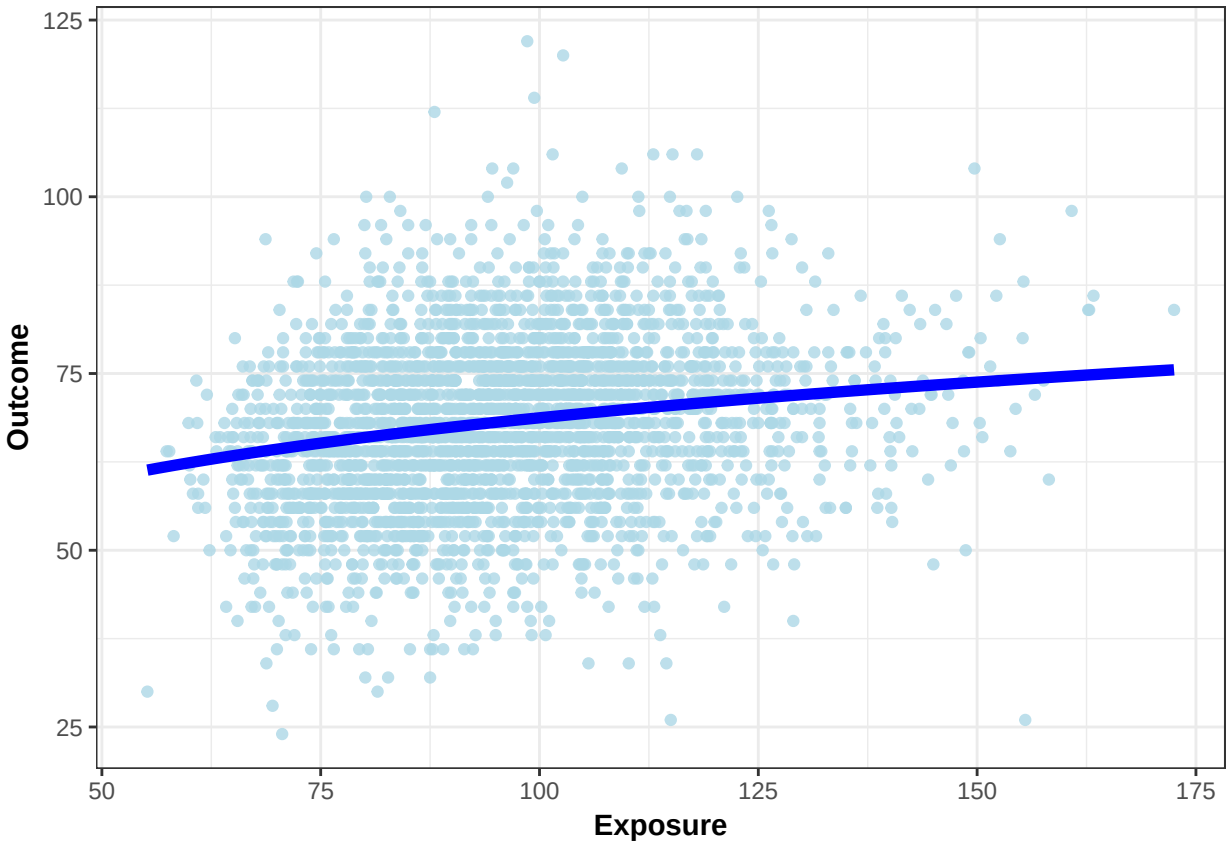
```
setwd("C:/Users/Trevor/Desktop/Epi/407A")
data<-read.table("Data_Lecture4.txt", header = TRUE)
library(FinalProjectAyersT)
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.3.3
```

```
ShapeOfExposureAssociation(data = data, Exposure = "WaistCircum", Outcome = "DiastolicBP",
                           AdjustmentVar = c("Smoked","Gender"), CompareVal = c(35,50))
```

```
## $BICVals
##                  BIC
## Linear     18338.18
## Quadratic  18341.58
## Cubic      18346.64
## Log-Linear 18334.65
## Quartiles  18347.86
##
## $Difference
##            AdjustedDiff
## Linear         1.813660
## Quadratic      3.969937
## Cubic         10.235043
## Log-Linear     4.440208
## Quartiles      0.000000
##
## $FinalModel
##                   Estimate      Estimate95CI                  Pval
## (Intercept)          15.69  ( 2.93 , 28.44 )   0.0159690279940934
## log(WaistCircum)     12.45  ( 9.69 , 15.21 ) 1.63516159863022e-18
## SmokedYes            -0.79  ( -1.73 , 0.16 )     0.10194767187707
## Gender               -2.14 ( -3.07 , -1.21 ) 6.34247626847557e-06
##
## $PlotAssociation
```

```
## Warning: Removed 98 rows containing missing values (geom_point).
```



Function 2

The second function I chose to create was a simulation of an attack roll for Dungeons and Dragons. As it is currently written it can only differentiate between melee and ranged attacks. Future itterations of this should also include a component indicating the range at which the attack is made, as distance from the target will inflict different bonuses or penalties on the result of the roll for ranged weapons.

The ideal final end point for this is to create a shiny app that players could use to create a character and perform most standard actions through the push of buttons specific to each. This function would then be attached to one of those buttons. Doing this would eliminate the need to have a separate dataframe for the character stats. The main downside of this function is that it removes the fun of rolling dice which is one of the most fun aspects of the game anyways.

```
sampleCharacter<-data.frame(cbind(Name = "Trevor", Class = "Barbarian", Str = 16,
                                  Dex = 13, Con = 14, Int = 8, Wis = 9, Cha = 11))
standardAttack(Character = sampleCharacter, Range = "Melee", Finesse = "No",
               Circumstance = "Advantage", profBonus = 3)
```

```
## [1] "I rolled a natural... 13 , which after adding my modifiers becomes..."
## [1] 19
```