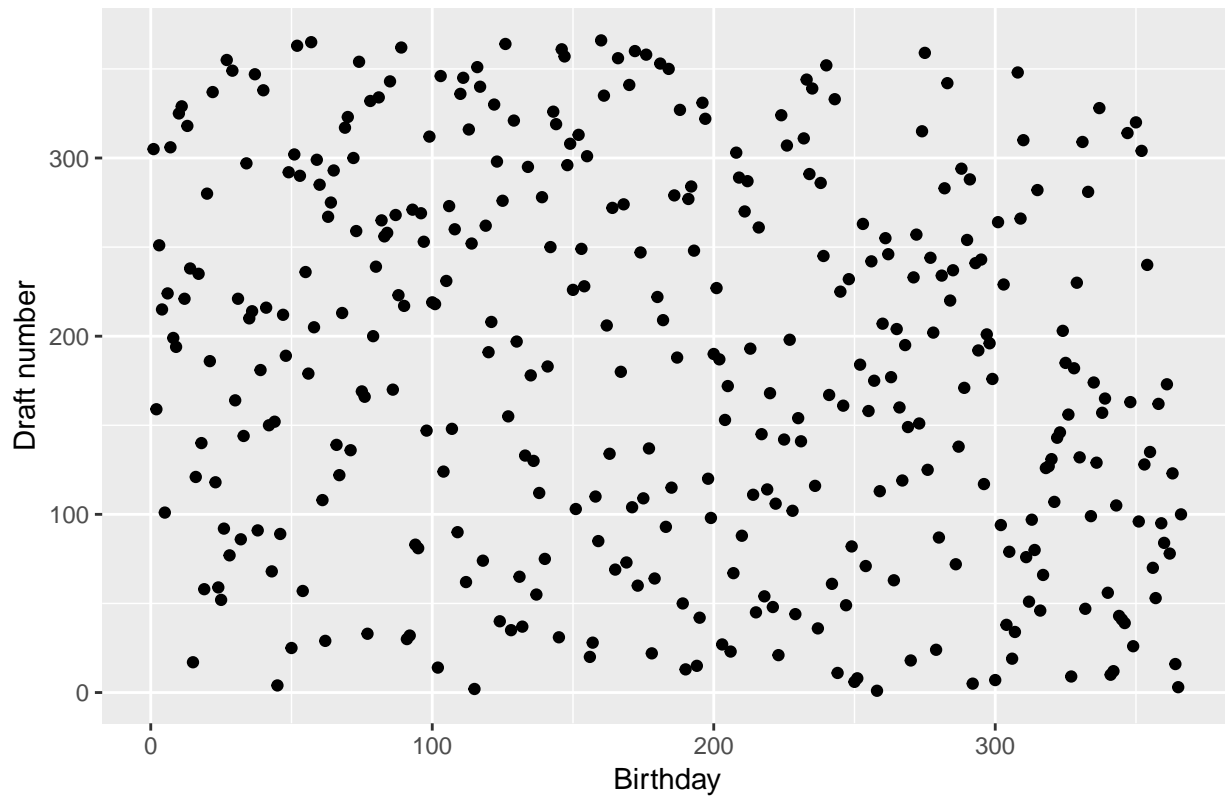


lab5

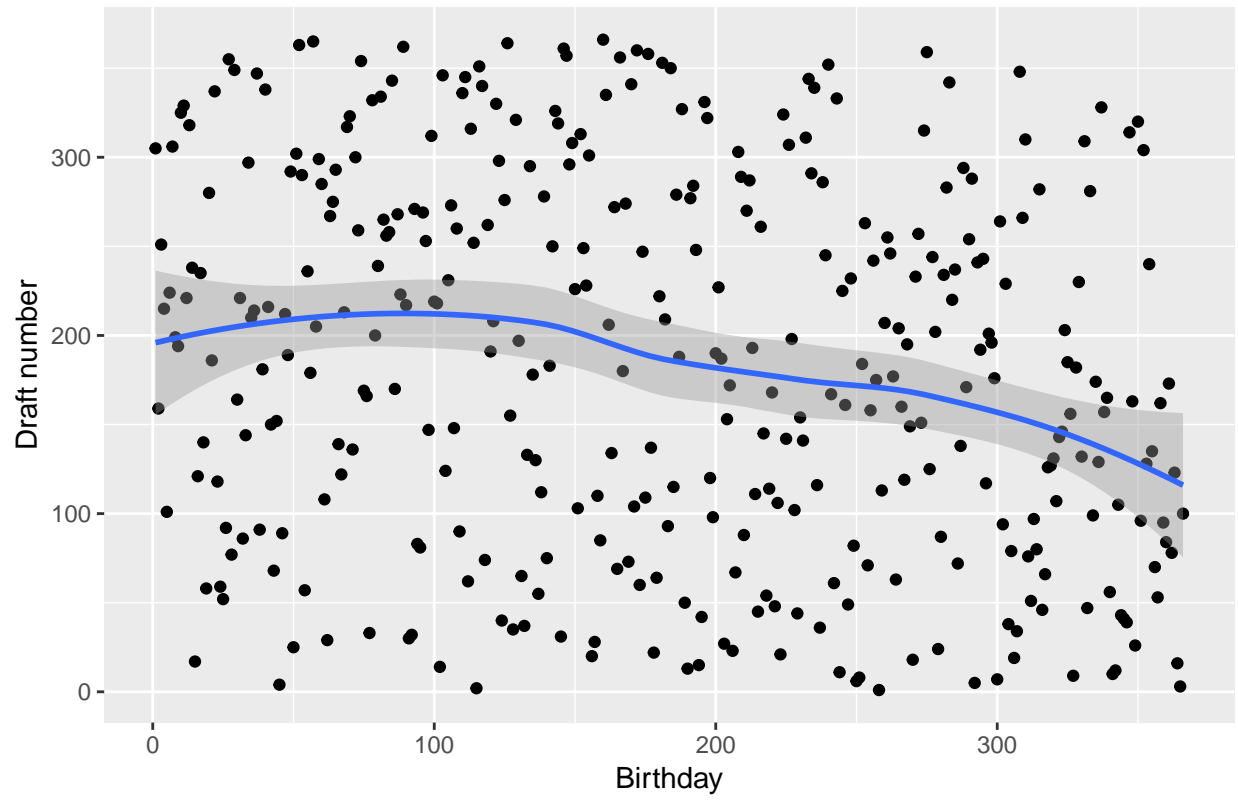
Omkar Bhutra

27 February 2019

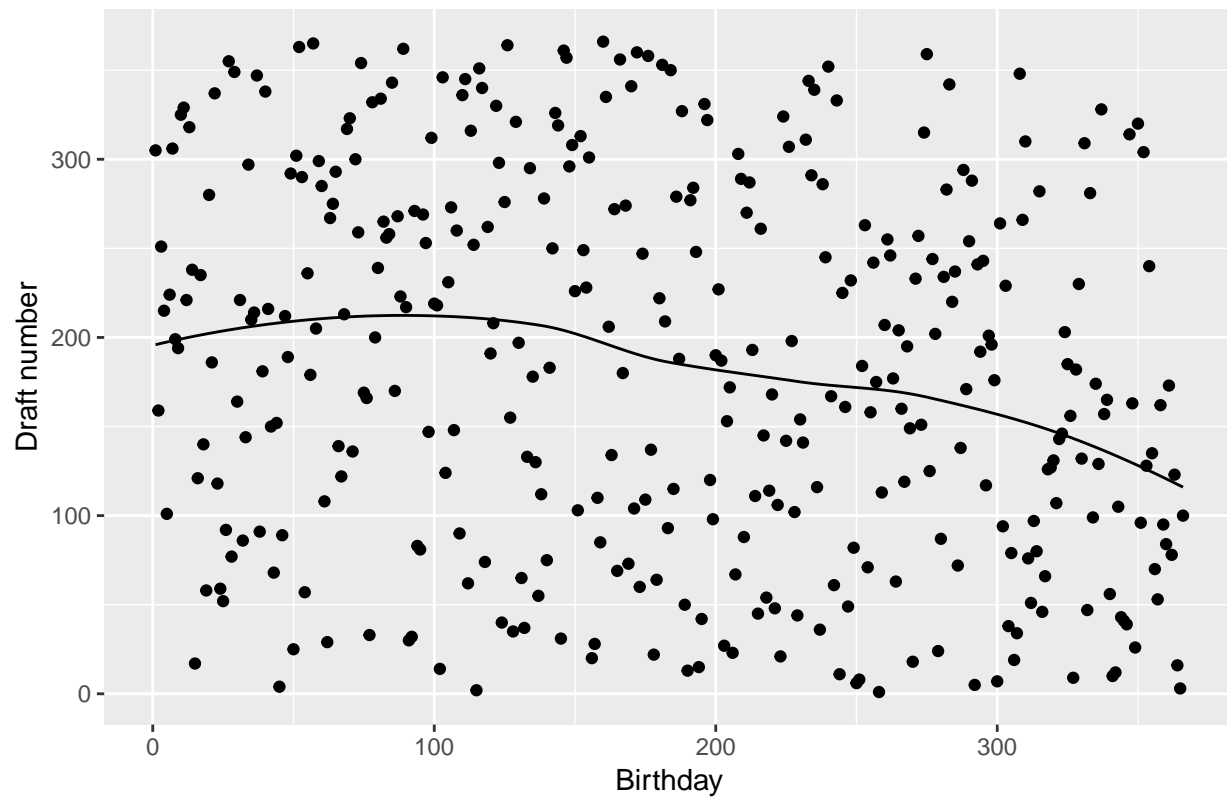
Draft Number vs. Day of birth



Draft Number vs. Day of birth

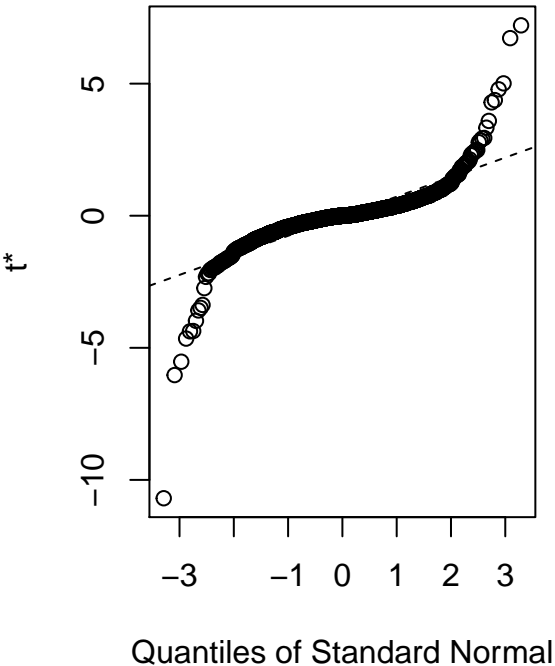
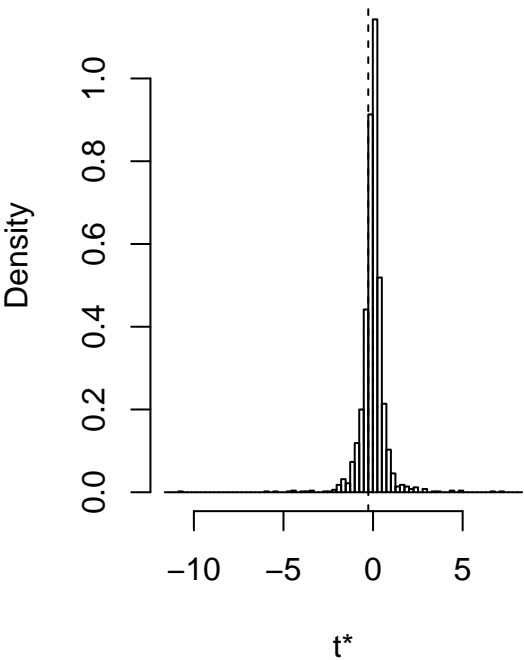


Draft Number vs. Day of birth without loess smoothing

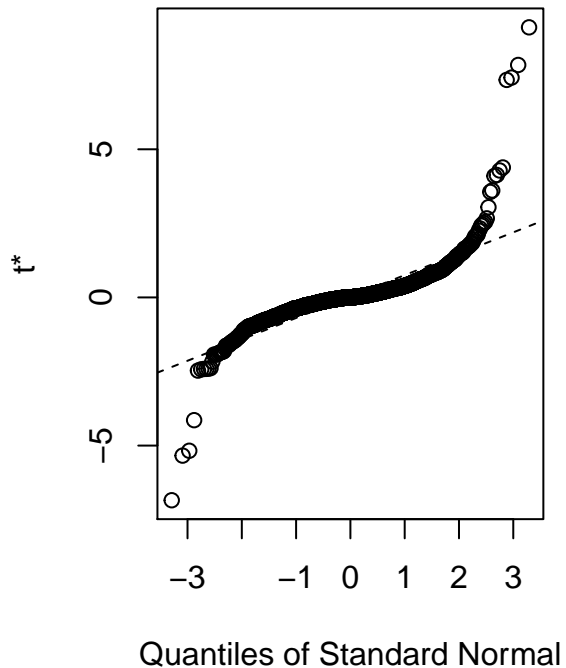
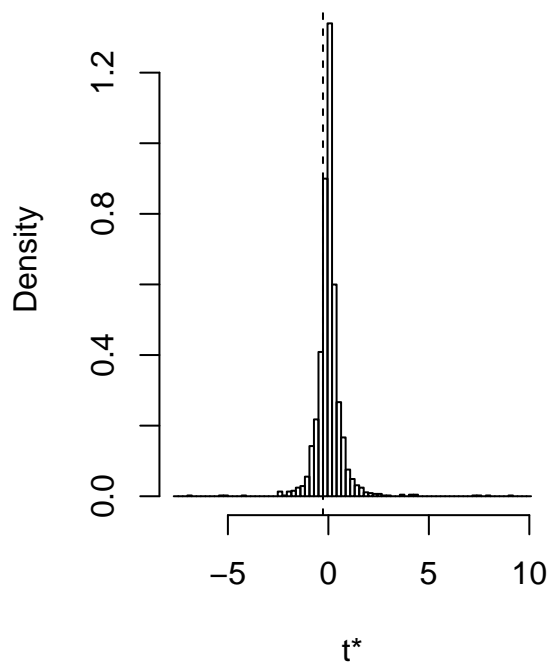


```
## BOOTSTRAP CONFIDENCE INTERVAL CALCULATIONS
## Based on 2000 bootstrap replicates
##
## CALL :
## boot.ci(boot.out = res)
##
## Intervals :
## Level      Normal          Basic
## 95%  (-1.9661,  0.9357 )  (-1.7231,  0.7665 )
##
## Level      Percentile      BCa
## 95%  ( -1.3009,  1.1888 )  (-10.6938,  0.1665 )
## Calculations and Intervals on Original Scale
## Warning : BCa Intervals used Extreme Quantiles
## Some BCa intervals may be unstable
```

Histogram of t



Histogram of t



Appendix

```
knitr::opts_chunk$set(echo = TRUE)
library("boot")
library("ggplot2")
lottery <- read.csv("lottery.csv", sep=";")
ggplot(lottery, aes(x=Day_of_year, y = Draft_No)) + geom_point() +
ggtitle("Draft Number vs. Day of birth")+labs(x="Birthday",y="Draft number")
ggplot(lottery, aes(x=Day_of_year, y = Draft_No)) +
geom_point() +
geom_smooth(method = loess) +
ggtitle("Draft Number vs. Day of birth")+labs(x="Birthday",y="Draft number")

model <- loess(Draft_No ~ Day_of_year, lottery)
lottery$Y_hat <- predict(model, lottery)
ggplot(lottery, aes(x=Day_of_year, y = Draft_No)) +
geom_point() +
geom_line(aes(y = Y_hat)) +
ggtitle("Draft Number vs. Day of birth without loess smoothing")+labs(x="Birthday",y="Draft number")
stat1 <- function(data, index){
data <- data[index,]
model <- loess(Draft_No ~ Day_of_year, data)
res <- predict(model, data)
X_a <- data$Day_of_year[which.max(data$Draft_No)]
```

```

X_b <- data$Day_of_year[which.min(data$Draft_No)]
Y_a <- res[X_a]
Y_b <- res[X_b]
answer <- ((Y_b - Y_a) / (X_b - X_a))
return(answer)
}

res <- boot(data=lottery, statistic = stat1, R=2000)
print(boot.ci(res))

plot(res)
my_permu <- function(data, index){
data <- data[index,]
model <- loess(Draft_No ~., data)
res <- predict(model, data)
X_a <- data$Day_of_year[which.max(data$Draft_No)]
X_b <- data$Day_of_year[which.min(data$Draft_No)]
Y_a <- res[X_a]
Y_b <- res[X_b]
answer <- ((Y_b - Y_a) / (X_b - X_a))
return(answer)
}
data <- lottery
data$Month <- NULL
res <- boot(data=lottery, statistic = stat1, R=2000)
plot(res)

```