

Mental Accounting in College: Students and 'Free Money'

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Spring Semester Dates Campus Open: 1/20/19, Start: 1/22/19, End: 5/8/19, Campus Closed: 5/20/19

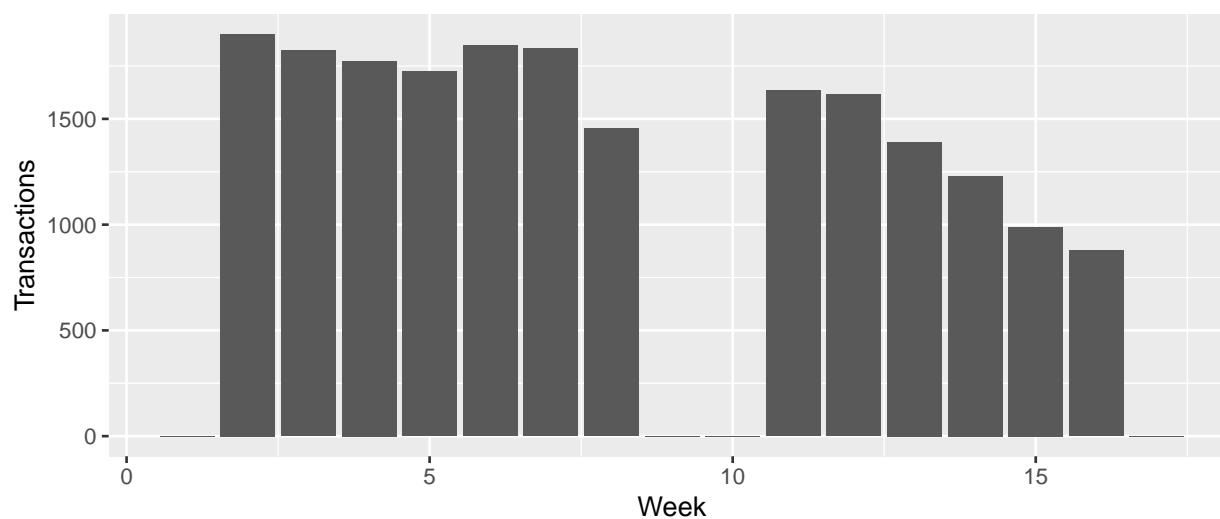
Fall Semester Dates Campus Open: 8/31/19 Start: 9/3/19, End: 12/11/19, Campus Closed: 12/21/19

```
flex_data <- read_csv("flex_data.csv")
flex_data <- flex_data %>% mutate(Time = mdy_hm(Time)) %>% mutate(Week = epiweek(Time)) %>% rename(AmountSpent = AmountSpent)
flex_data <- flex_data %>% filter(Time >= '2019-01-20' & Time <= '2019-12-19') %>% filter(AmountSpent > 0)

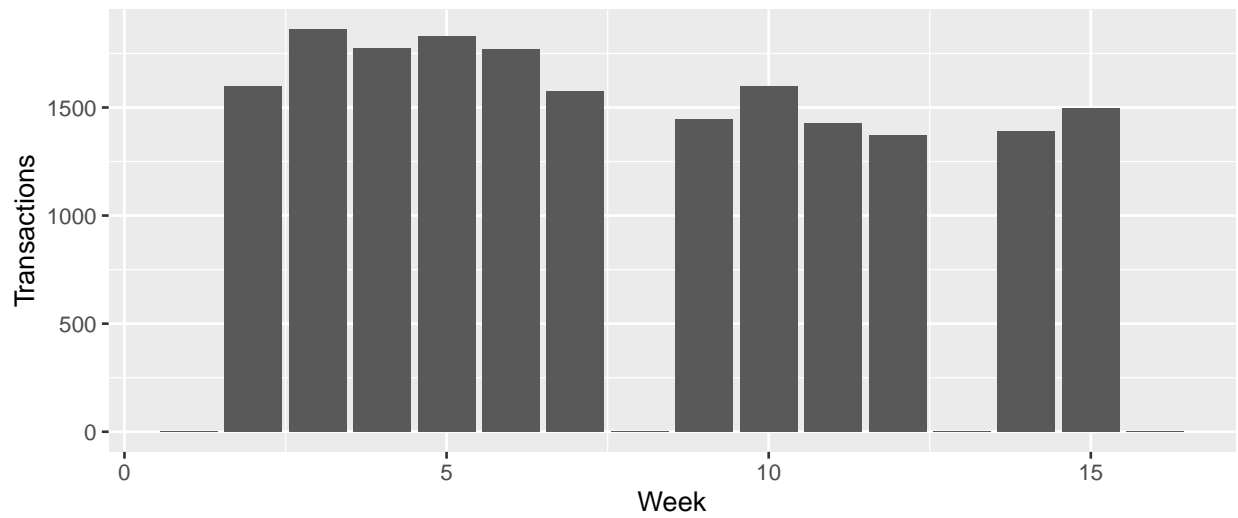
#Transactions by week
springtrans <- flex_data %>% filter(Time <= '2019-5-19') %>% mutate(Week = Week-3) %>% filter(Week!=1 & Week!=2)
falltrans <- flex_data %>% filter(Time >= '2019-9-1') %>% mutate(Week = Week-35) %>% filter(Week!=1 & Week!=2)

springtransactions <- springtrans %>% group_by(Week) %>% summarize(Transactions = n()) %>% rbind(c(1,0), c(2,0))
falltransactions <- falltrans %>% group_by(Week) %>% summarize(Transactions = n()) %>% rbind(c(1, 0), c(2, 0))

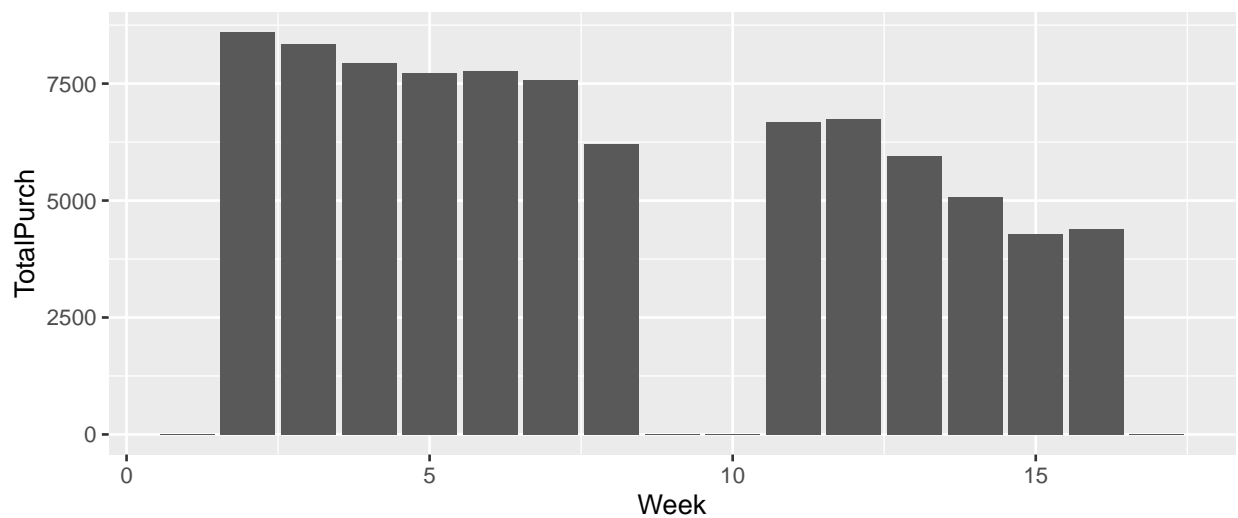
ggplot(springtransactions) + geom_bar(aes(x=Week, y=Transactions), stat='identity')
```



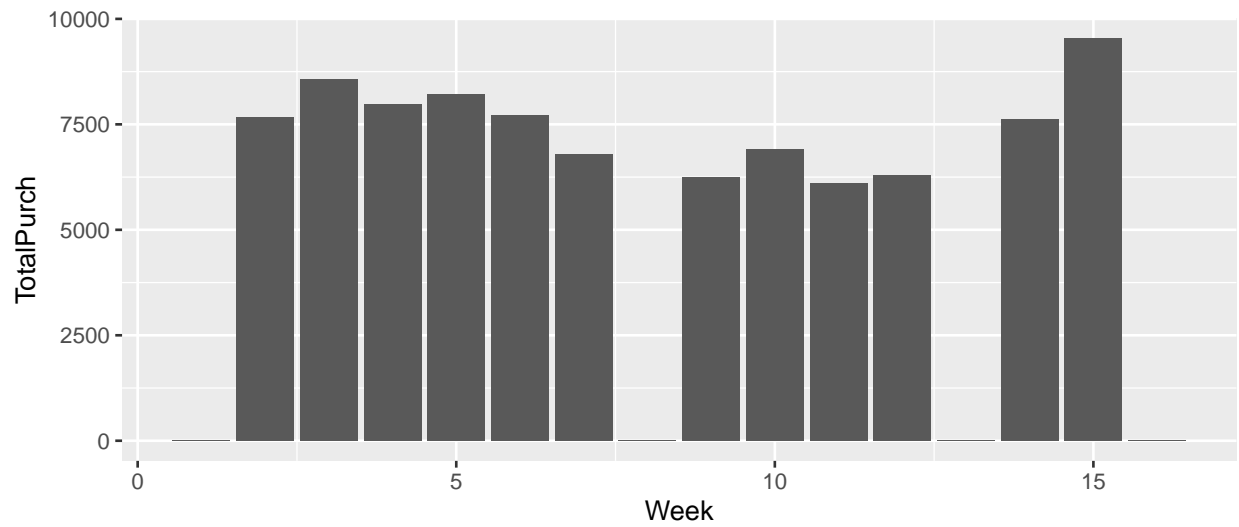
```
ggplot(falltransactions) + geom_bar(aes(x=Week, y=Transactions), stat='identity')
```



```
#Purchases by week
springpurchases <- springtrans %>% group_by(Week) %>% summarize(TotalPurch = sum(AmountSpent)) %>% rbind(
fallpurchases <- falltrans %>% group_by(Week) %>% summarize(TotalPurch = sum(AmountSpent)) %>% rbind(c(
ggplot(springpurchases) + geom_bar(aes(x=Week, y=TotalPurch), stat='identity')
```



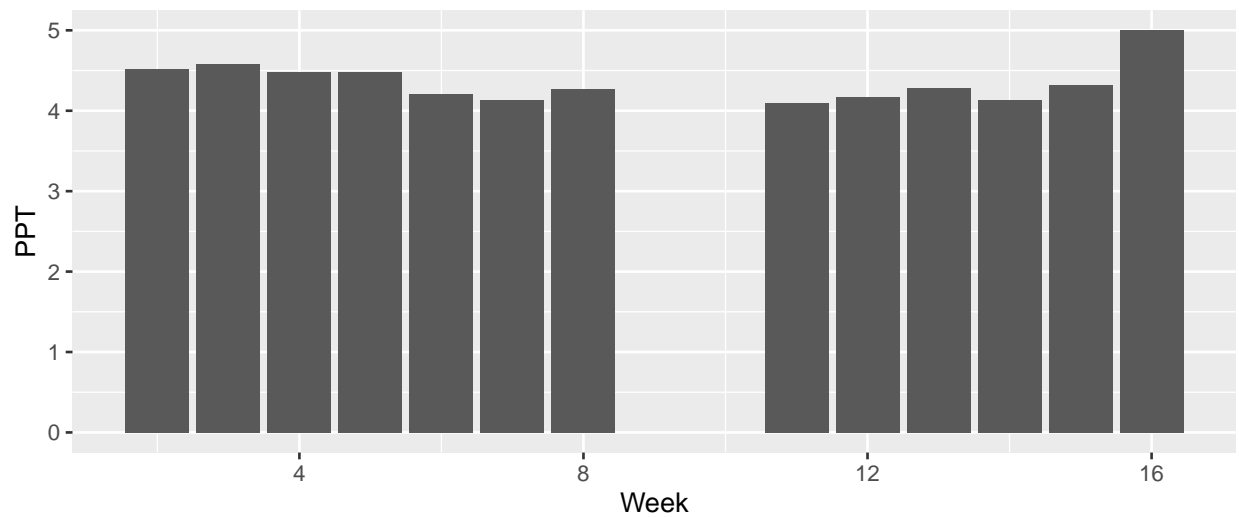
```
ggplot(fallpurchases) + geom_bar(aes(x=Week, y=TotalPurch), stat='identity')
```



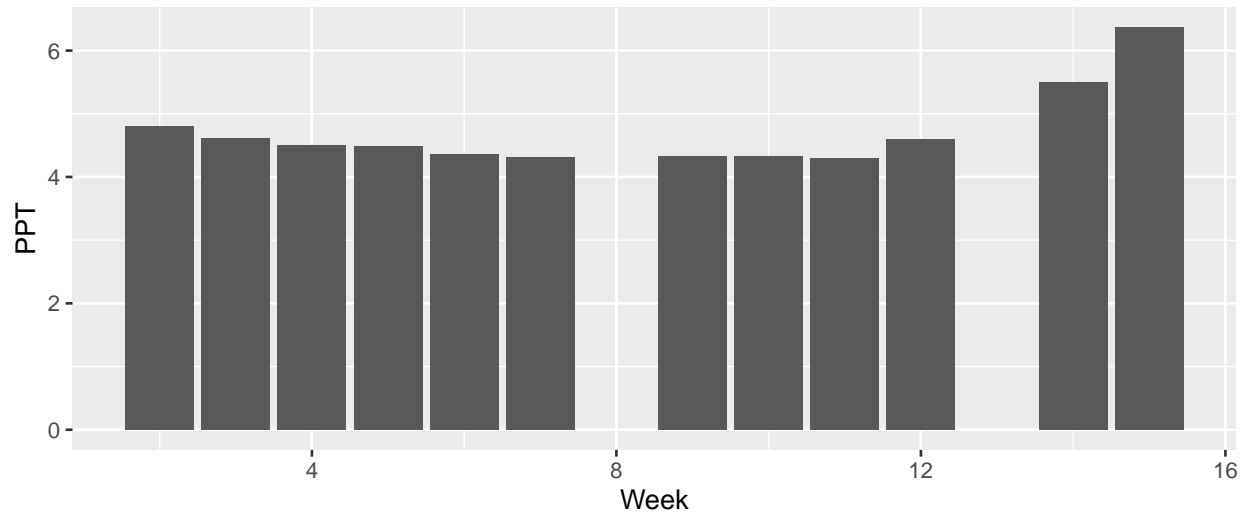
#Amount Spent Per Transaction

```
springppt <- springtrans %>% group_by(Week) %>% summarize(TotalTrans = n(), TotalPurch = sum(AmountSpent))
fallppt <- falltrans %>% group_by(Week) %>% summarize(TotalTrans = n(), TotalPurch = sum(AmountSpent))
```

```
ggplot(springppt) + geom_bar(aes(x=Week, y=PPT), stat='identity')
```

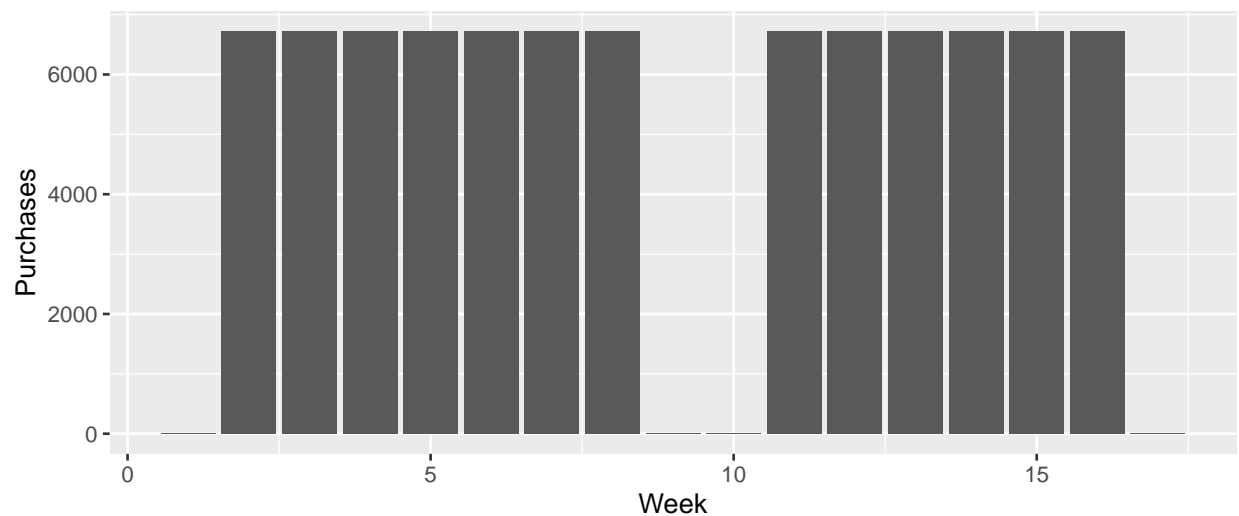


```
ggplot(fallppt) + geom_bar(aes(x=Week, y=PPT), stat='identity')
```

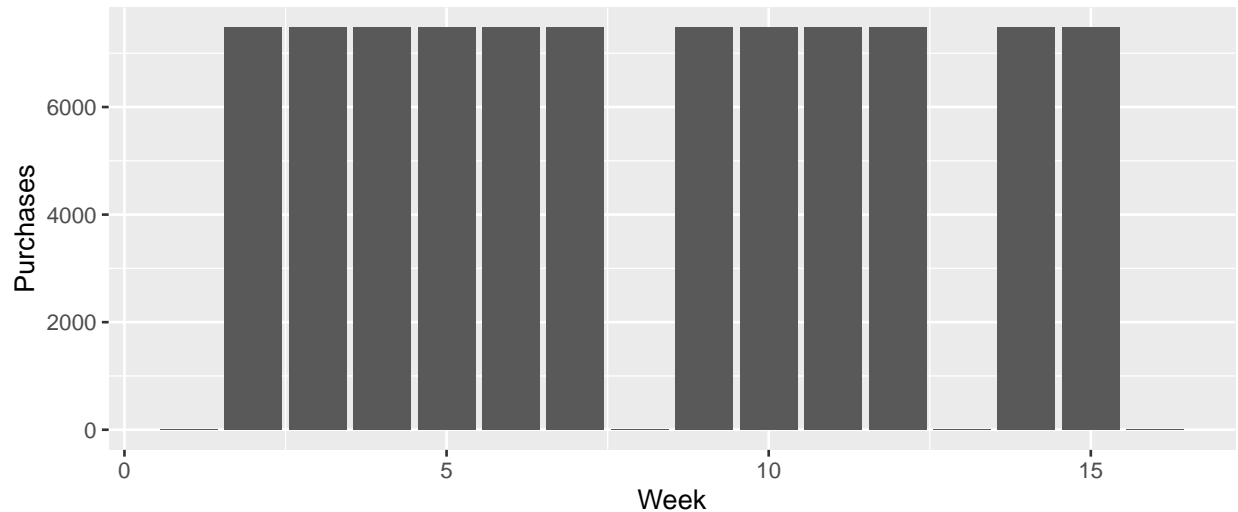


#Creation of consistent null dataframes

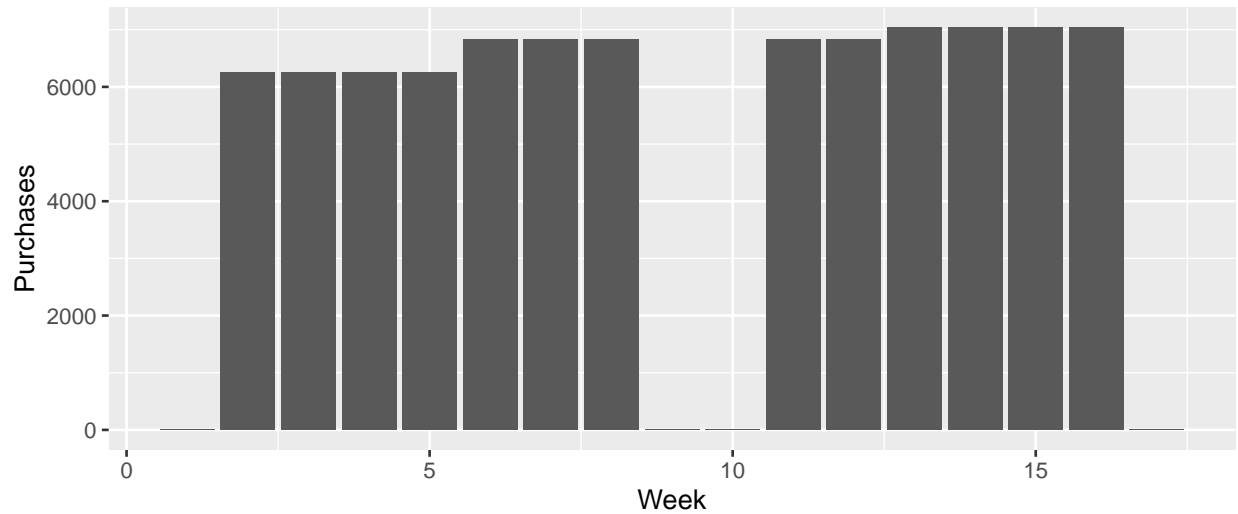
```
sprnullconsistent <- data.frame("Week"=1:17, "Transactions"= c(0,sum(springppt$TotalTrans)/13,sum(springppt$TotalTrans)/13,0))
sprnullconsistentprob <- data.frame("Week"=1:17, "Probability"=c(0,1/13,1/13,1/13,1/13,1/13,1/13,1/13,0,0,0,0,0,0,0,0,0))
fallnullconsistent <- data.frame("Week"=1:16, "Transactions"= c(0,sum(fallppt$TotalTrans)/12,sum(fallppt$TotalTrans)/12,0))
fallnullconsistentprob <- data.frame("Week"=1:16, "Probability"=c(0,1/12,1/12,1/12,1/12,1/12,1/12,1/12,0,1/12,1/12,1/12,1/12,1/12,1/12,0))
ggplot(sprnullconsistent) + geom_bar(aes(x=Week, y=Purchases), stat='identity')
```



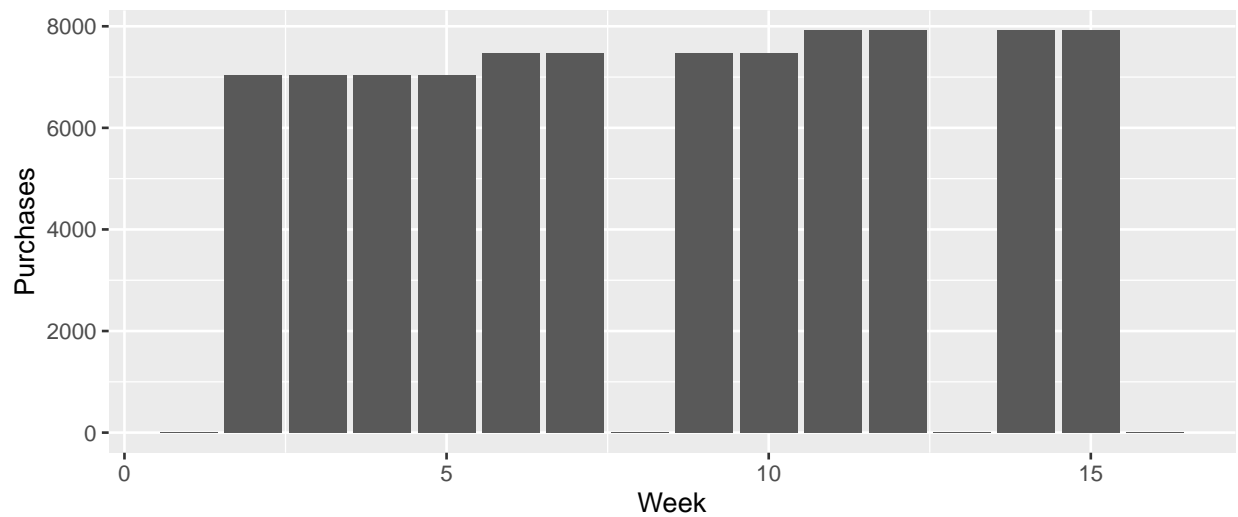
```
ggplot(fallnullconsistent) + geom_bar(aes(x=Week, y=Purchases), stat='identity')
```

[illegible]

```
fallnullweightedprob <- data.frame("Week"=1:16, "Probability"= c(0,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4,p1fallprob/4))
ggplot(sprnullweighted) + geom_bar(aes(x=Week, y=Purchases), stat='identity')
```



```
ggplot(fallnullweighted) + geom_bar(aes(x=Week, y=Purchases), stat='identity')
```



Chi Squared Models

```
#Two Nulls Against One Another
chisq.test(sprnullweighted$Transactions, sprnullconsistentprob$Probability, simulate.p.value = TRUE)
```

```
##
## Pearson's Chi-squared test with simulated p-value (based on 2000
```

```

## replicates)
##
## data: sprnullweighted$Transactions and sprnullconsistentprob$Probability
## X-squared = 17, df = NA, p-value = 0.0009995

chisq.test(sprnullweighted$Purchases, sprnullconsistentprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: sprnullweighted$Purchases and sprnullconsistentprob$Probability
## X-squared = 17, df = NA, p-value = 0.002499

chisq.test(fallnullweighted$Transactions, fallnullconsistentprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: fallnullweighted$Transactions and fallnullconsistentprob$Probability
## X-squared = 16, df = NA, p-value = 0.001499

chisq.test(fallnullweighted$Purchases, fallnullconsistentprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: fallnullweighted$Purchases and fallnullconsistentprob$Probability
## X-squared = 16, df = NA, p-value = 0.003998

#Spring Transactions Chi Squared
chisq.test(springtransactions$Transactions, sprnullconsistentprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: springtransactions$Transactions and sprnullconsistentprob$Probability
## X-squared = 17, df = NA, p-value = 0.3018

chisq.test(springtransactions$Transactions, sprnullweightedprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: springtransactions$Transactions and sprnullweightedprob$Probability
## X-squared = 51, df = NA, p-value = 0.004498

```

```

#Spring Purchases Chi Squared
chisq.test(springpurchases$TotalPurch, sprnullconsistentprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: springpurchases$TotalPurch and sprnullconsistentprob$Probability
## X-squared = 17, df = NA, p-value = 0.2984

chisq.test(springpurchases$TotalPurch, sprnullweightedprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: springpurchases$TotalPurch and sprnullweightedprob$Probability
## X-squared = 51, df = NA, p-value = 0.004498

#Fall Transactions Chi Squared
chisq.test(falltransactions$Transactions, fallnullconsistentprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: falltransactions$Transactions and fallnullconsistentprob$Probability
## X-squared = 16, df = NA, p-value = 0.2679

chisq.test(falltransactions$Transactions, fallnullweightedprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: falltransactions$Transactions and fallnullweightedprob$Probability
## X-squared = 48, df = NA, p-value = 0.001499

#Fall Purchases Chi Squared
chisq.test(fallpurchases$TotalPurch, fallnullconsistentprob$Probability, simulate.p.value = TRUE)

##
## Pearson's Chi-squared test with simulated p-value (based on 2000
## replicates)
##
## data: fallpurchases$TotalPurch and fallnullconsistentprob$Probability
## X-squared = 16, df = NA, p-value = 0.2724

```



```
chisq.test(fallpurchases$TotalPurch, fallnullweightedprob$Probability, simulate.p.value = TRUE)
```

```
##  
## Pearson's Chi-squared test with simulated p-value (based on 2000  
## replicates)  
##  
## data: fallpurchases$TotalPurch and fallnullweightedprob$Probability  
## X-squared = 48, df = NA, p-value = 0.004498
```