Mental Accounting in College: Students and 'Free Money'

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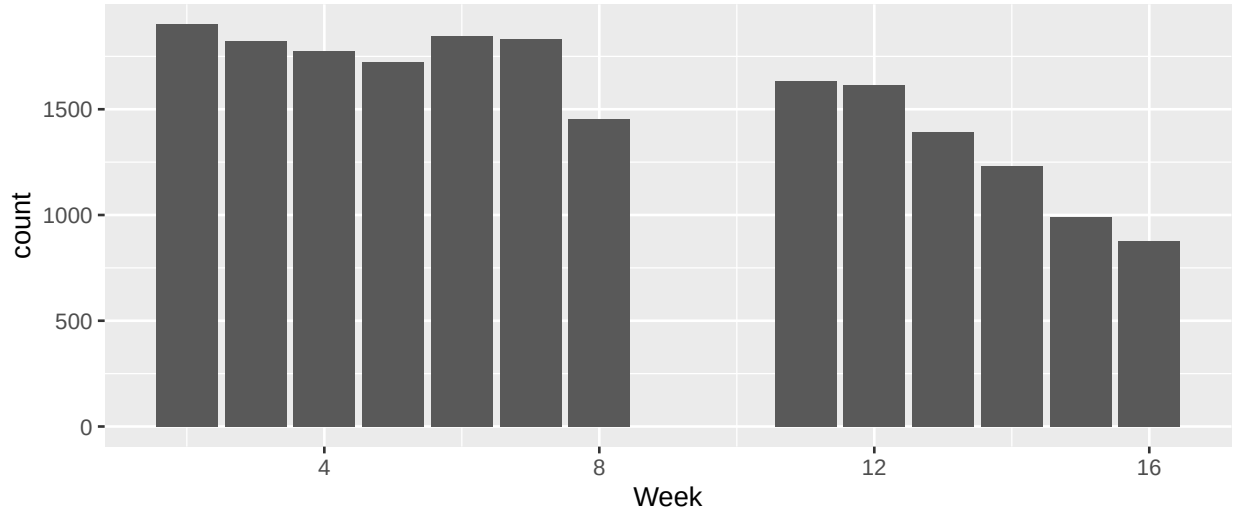
Spring Semester Dates Campus Open: 1/20/19, Start: 1/22/19, End: 5/8/19, Campus Closed: 5/20/19

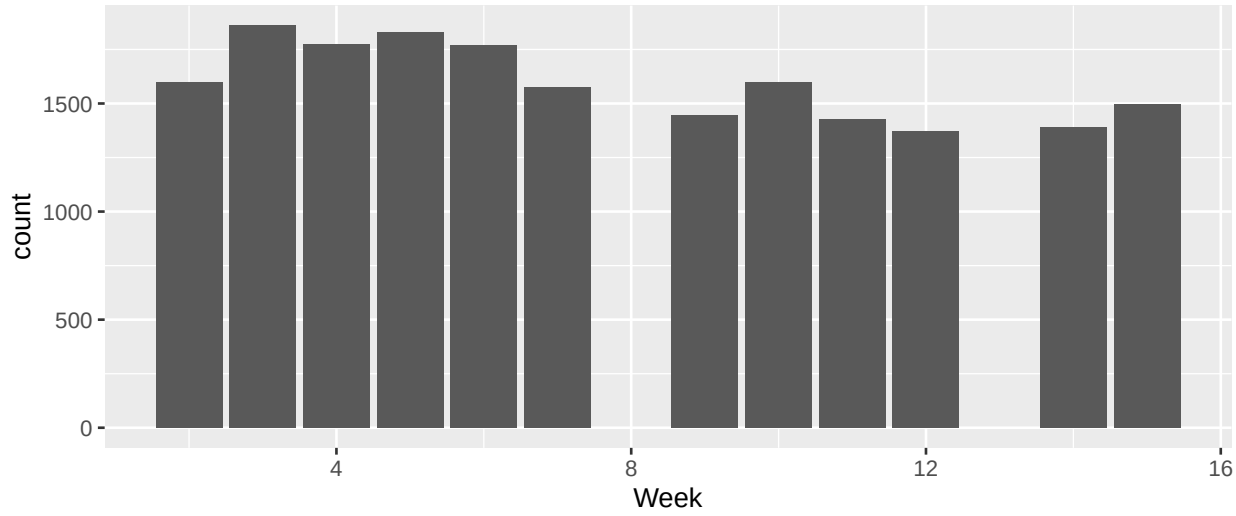
Fall Semester Dates Campus Open: 8/31/19 Start: 9/3/19, End: 12/11/19, Campus Closed: 12/21/19

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

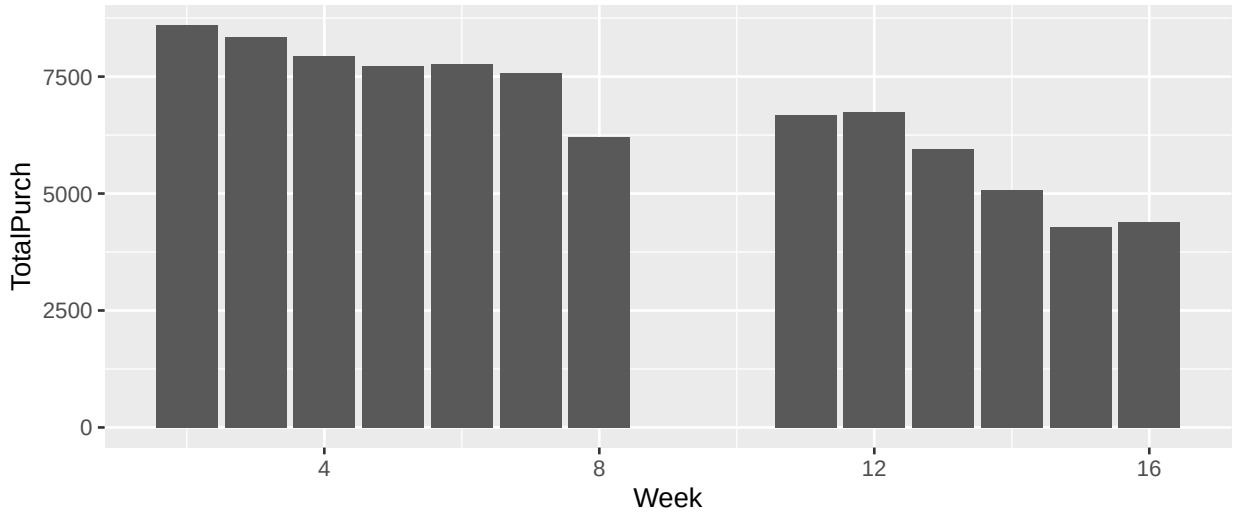
```
#Transactions by week
springtrans <- flex_data %>% filter(Time <= '2019-5-19') %>% mutate(Week = Week-3) %>% filter(Week!=1 &
falltrans <- flex_data %>% filter(Time >= '2019-9-1') %>% mutate (Week = Week-35) %>% filter(Week!=1 & W

ggplot(springtrans) + geom_bar(aes(x=Week))
```



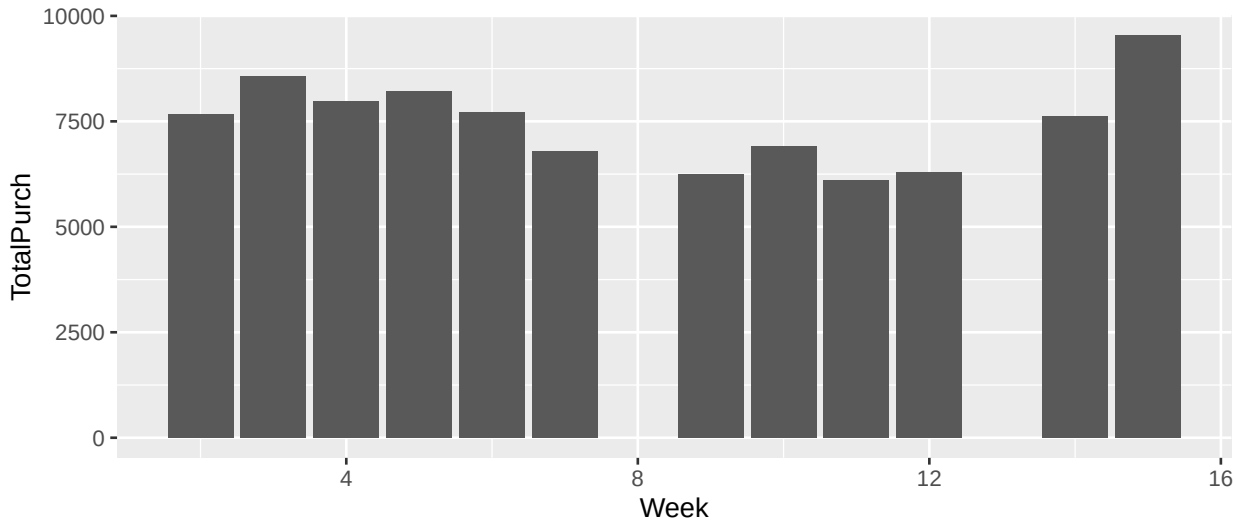

```
ggplot(falltrans) + geom_bar(aes(x=Week))
```




```
#Purchases by week
springpurch <- springtrans %>% group_by(Week) %>% summarize(TotalPurch = sum(AmountSpent))
fallpurch <- falltrans %>% group_by(Week) %>% summarize(TotalPurch = sum(AmountSpent))

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




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




```
#Amount Spent Per Transaction
springppt <- springtrans %>% group_by(Week) %>% summarize(TotalTrans = sum(as.double(Week)), TotalPurch
#springppt <- springtrans %>% group_by(Week) %>% mutate(TotalTrans = count(Week)) %>% summarize(TotalPu



fallppt <- falltrans %>% group_by(Week) %>% summarize(TotalTrans = sum(as.double(Week)), TotalPurch = su

springppt
```

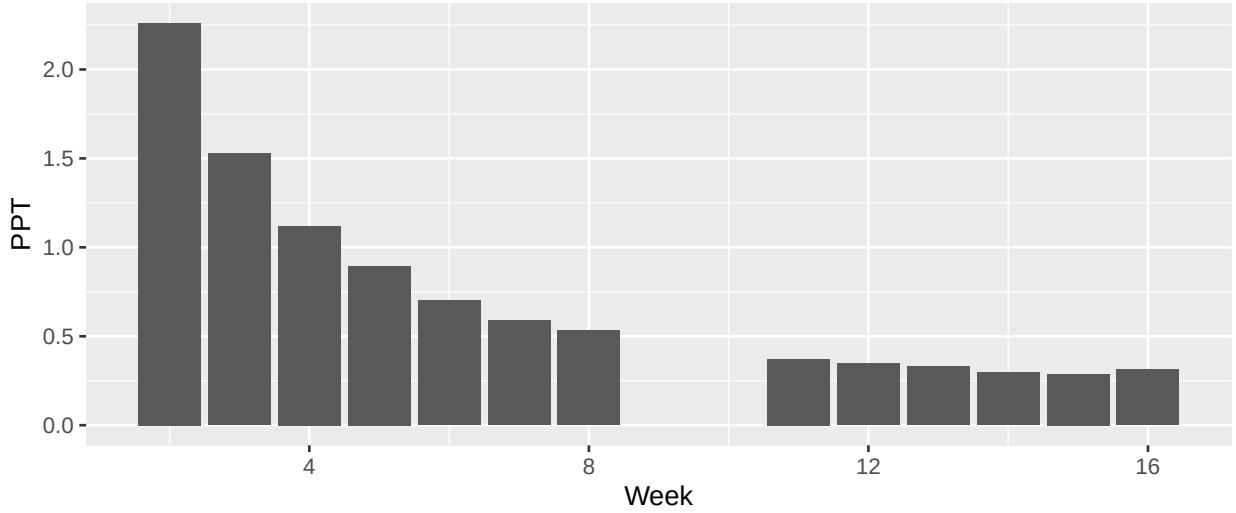
```
## # A tibble: 13 x 4
##     Week TotalTrans TotalPurch   PPT
##    <dbl>      <dbl>      <dbl> <dbl>
##  1     2       3802      8595. 2.26
##  2     3       5466      8351. 1.53
##  3     4       7092      7943. 1.12
##  4     5       8625      7728. 0.896
##  5     6      11082      7768. 0.701
##  6     7      12824      7570. 0.590
##  7     8      11632      6206. 0.534
##  8    11      17963      6686. 0.372
##  9    12      19380      6743. 0.348
## 10    13      18083      5956. 0.329
## 11    14      17220      5081. 0.295
## 12    15      14835      4277. 0.288
## 13    16      14064      4394. 0.312
```

```
fallppt
```

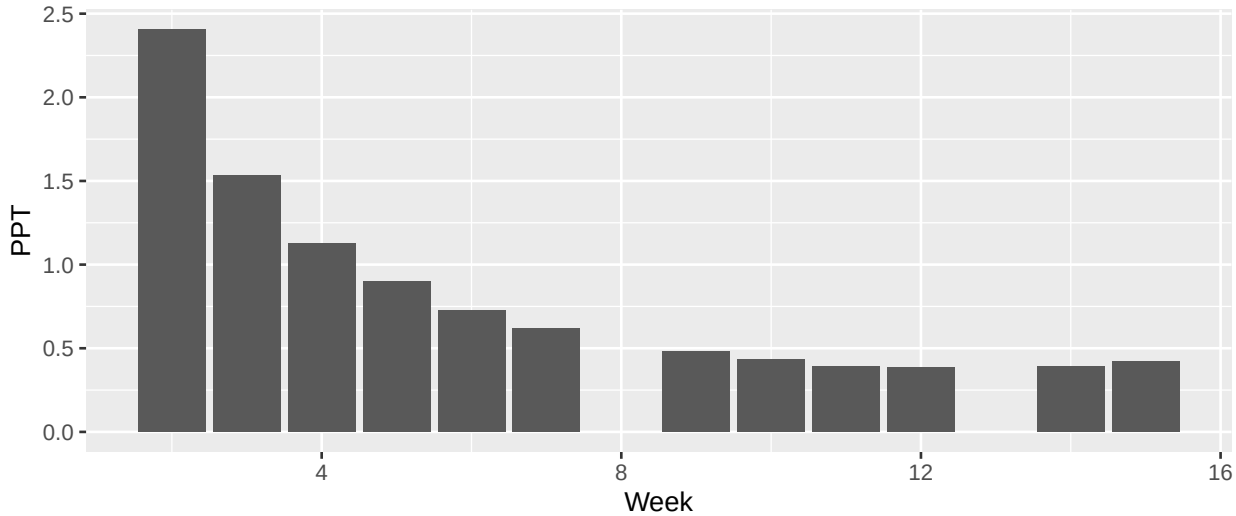
```
## # A tibble: 12 x 4
##     Week TotalTrans TotalPurch   PPT
##    <dbl>      <dbl>      <dbl> <dbl>
##  1     2       3194      7676. 2.40
##  2     3       5580      8570. 1.54
##  3     4       7100      7982. 1.12
```

```
##  4     5       9155      8225. 0.898
##  5     6      10626      7725. 0.727
##  6     7      11032      6793. 0.616
##  7     9      12996      6247  0.481
##  8    10      15960      6918. 0.433
##  9    11      15675      6114. 0.390
## 10    12      16452      6300. 0.383
## 11    14      19432      7628. 0.393
## 12    15      22470      9531. 0.424
```

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

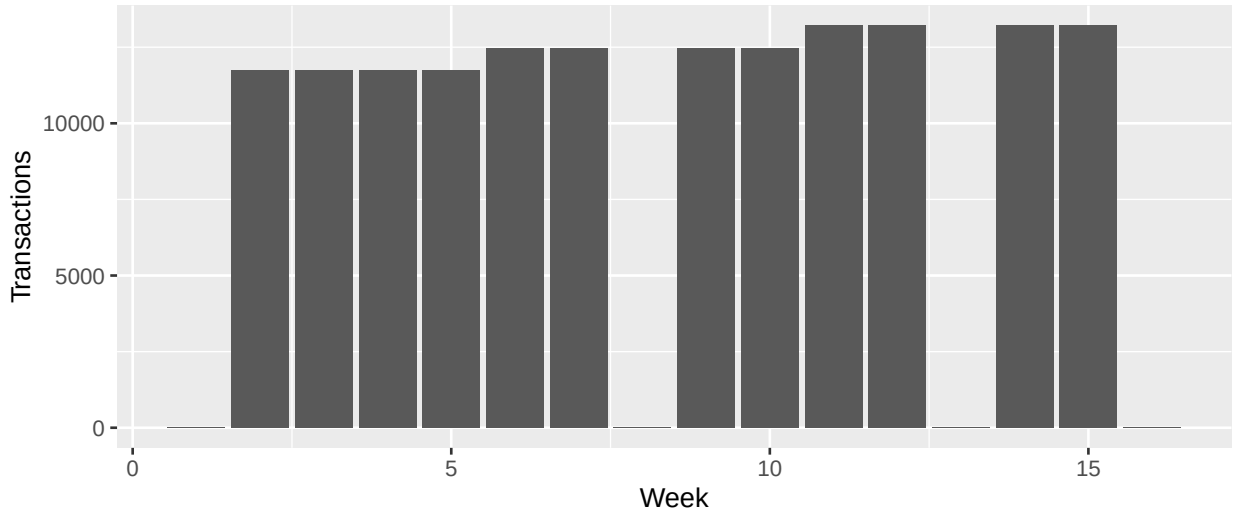



```
ggplot(fallppt) + geom_bar(aes(x=Week, y=PPT), stat='identity')
```

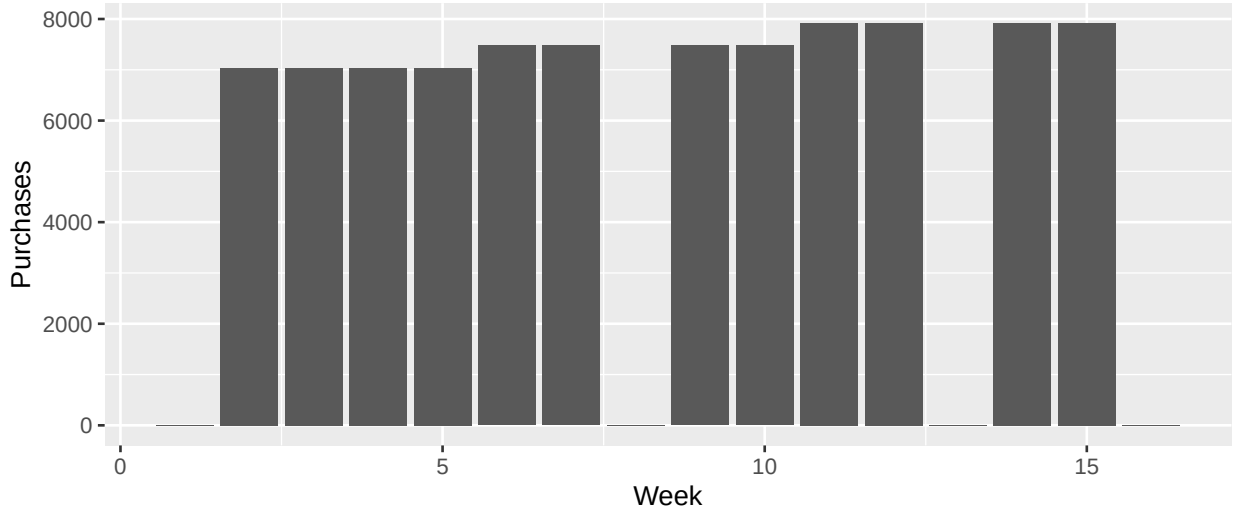


```
#Creation of consistent null dataframes
#Tested - Sums of spring/fall consistent nulls add up to sum of purchases and transactions from spring/
sprnullconsistent <- data.frame("Week"=1:17, "Transactions"= c(0,sum(springppt$TotalTrans)/13,sum(sprin

fallnullconsistent <- data.frame("Week"=1:16, "Transactions"= c(0,sum(fallppt$TotalTrans)/12,sum(fallpp
```

```
#285/518=55.02% of students believe they spend consistently (1/3 beginning, 1/3 middle, 1/3 end)
#86/518=16.60% of students believe they spend most in beginning (1/2 beginning, 1/3 middle, 1/6 end)
#147/518=28.38% of students believe they spend most at end (1/6 beginning, 1/3 middle, 1/2 end)

#Tested - Sums of spring/fall weighted expectation nulls add up to sum of purchases/transactions from s
#Note - each period represents total spending expected during that period, then divided by number of we
#Possible error - since spring semester is 13 applicable weeks, middle period is 5 weeks instead of 4,
p1springtrans <- .5502*sum(springppt$TotalTrans)*(1/3) + .1660*sum(springppt$TotalTrans)*(1/2) + .2838*
p2springtrans <- .5502*sum(springppt$TotalTrans)*(1/3) + .1660*sum(springppt$TotalTrans)*(1/3) + .2838*
p3springtrans <- .5502*sum(springppt$TotalTrans)*(1/3) + .1660*sum(springppt$TotalTrans)*(1/6) + .2838*

p1springpurch <- .5502*sum(springppt$TotalPurch)*(1/3) + .1660*sum(springppt$TotalPurch)*(1/2) + .2838*
p2springpurch <- .5502*sum(springppt$TotalPurch)*(1/3) + .1660*sum(springppt$TotalPurch)*(1/3) + .2838*
p3springpurch <- .5502*sum(springppt$TotalPurch)*(1/3) + .1660*sum(springppt$TotalPurch)*(1/6) + .2838*

sprnullweighted <- data.frame("Week"=1:17,
"Transactions"= c(0,p1springtrans/4,p1springtrans/4,p1springtrans/4,p1springtrans/4,p2springtrans/5,p2s
"Purchases"= c(0,p1springpurch/4,p1springpurch/4,p1springpurch/4,p1springpurch/4,p2springpurch/5,p2spri

p1falltrans <- .5502*sum(fallppt$TotalTrans)*(1/3) + .1660*sum(fallppt$TotalTrans)*(1/2) + .2838*sum(fa
p2falltrans <- .5502*sum(fallppt$TotalTrans)*(1/3) + .1660*sum(fallppt$TotalTrans)*(1/3) + .2838*sum(fa
p3falltrans <- .5502*sum(fallppt$TotalTrans)*(1/3) + .1660*sum(fallppt$TotalTrans)*(1/6) + .2838*sum(fa

p1fallpurch <- .5502*sum(fallppt$TotalPurch)*(1/3) + .1660*sum(fallppt$TotalPurch)*(1/2) + .2838*sum(fa
p2fallpurch <- .5502*sum(fallppt$TotalPurch)*(1/3) + .1660*sum(fallppt$TotalPurch)*(1/3) + .2838*sum(fa
p3fallpurch <- .5502*sum(fallppt$TotalPurch)*(1/3) + .1660*sum(fallppt$TotalPurch)*(1/6) + .2838*sum(fa

fallnullweighted <- data.frame("Week"=1:16,
"Transactions"= c(0,p1falltrans/4,p1falltrans/4,p1falltrans/4,p1falltrans/4,p2falltrans/4,p2falltrans/4
"Purchases"= c(0,p1fallpurch/4,p1fallpurch/4,p1fallpurch/4,p1fallpurch/4,p2fallpurch/4,p2fallpurch/4,0,

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




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




```
sum(fallnullweighted$Purchases)
```

```
## [1] 89709.64
```

```
sum(fallnullweighted$Transactions)
```

```
## [1] 149672
```