Create data sets for Week 8

Stat 201: Statistics I

April 8, 2019

Smoking data

```
bl.cpd.mean <- 14.6

ctrl.n <- 48
ctrl.cpd.mean <- 12.5

trt.n <- 48
group1.cpd.mean <- 11
group.cpd.diff <- -1

cpd.sd <- 2

ctrl.cpd <- rpois(ctrl.n, ctrl.cpd.mean)

group1.cpd <- rpois(trt.n, group1.cpd.mean)
group2.cpd <- group1.cpd + round(rnorm(trt.n, mean = group.cpd.diff, sd=cpd.sd))

cpd <- data.frame(control=ctrl.cpd, group.A=group1.cpd, group.B=group2.cpd)
write.csv(cpd, "../smoking.csv", row.names = FALSE)

ctrl.cpd
```

```
##  [1] 17 10 12  8 12 17 12 19 12 17 20  7 17 15 15 14 15  9 11  6 18 13 13
## [24] 11 15 14  9 14 14 16 10 10  9 14 11 22 15  9 19 14 13  9 18 14 17 12
## [47] 16 11
```

```
sd(ctrl.cpd)
```

```
## [1] 3.590213
```

```
group1.cpd
```

```
##  [1] 11 10 16 12 11 16 11  6  7 13 14 16  7 13 12  8 12 11  8 10  7 10 10
## [24]  7 13 15  9 13 15  7 13 18 14 14  7 10  8  9 10 11 11 10 11  9  9  5
## [47] 16 23
```

```
sd(group1.cpd)
```

```
## [1] 3.512642
```

```
group2.cpd
```

```
##  [1] 10  7 18  9 10 17 10  6  4 15 11 13  8 14  9  6 11  9  4 13  4  5  5
## [24]  7 11 11  9  8 14  5 15 15 12 17  3 12  8 13  8  9 13 11 11  2  7  4
## [47] 14 21
```

```
sd(group2.cpd)
```

```
## [1] 4.297245
```

```r
t.test(ctrl.cpd, mu=bl.cpd.mean)
```

```
##
##  One Sample t-test
##
## data:  ctrl.cpd
## t = -2.2433, df = 47, p-value = 0.02963
## alternative hypothesis: true mean is not equal to 14.6
## 95 percent confidence interval:
##  12.39501 14.47999
## sample estimates:
## mean of x
##   13.4375
```

```r
t.test(ctrl.cpd, group1.cpd, alternative = "greater")
```

```
##
##  Welch Two Sample t-test
##
## data:  ctrl.cpd and group1.cpd
## t = 3.0748, df = 93.955, p-value = 0.001379
## alternative hypothesis: true difference in means is greater than 0
## 95 percent confidence interval:
##  1.024813      Inf
## sample estimates:
## mean of x mean of y
##  13.43750  11.20833
```

```r
t.test(group1.cpd, group2.cpd)
```

```
##
##  Welch Two Sample t-test
##
## data:  group1.cpd and group2.cpd
## t = 1.5603, df = 90.422, p-value = 0.1222
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.3414348  2.8414348
## sample estimates:
## mean of x mean of y
## 11.208333  9.958333
```

```r
t.test(group1.cpd, group2.cpd, paired = T)
```

```
##
##  Paired t-test
##
## data:  group1.cpd and group2.cpd
## t = 3.5933, df = 47, p-value = 0.0007792
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.5501842 1.9498158
## sample estimates:
## mean of the differences
##                    1.25
```