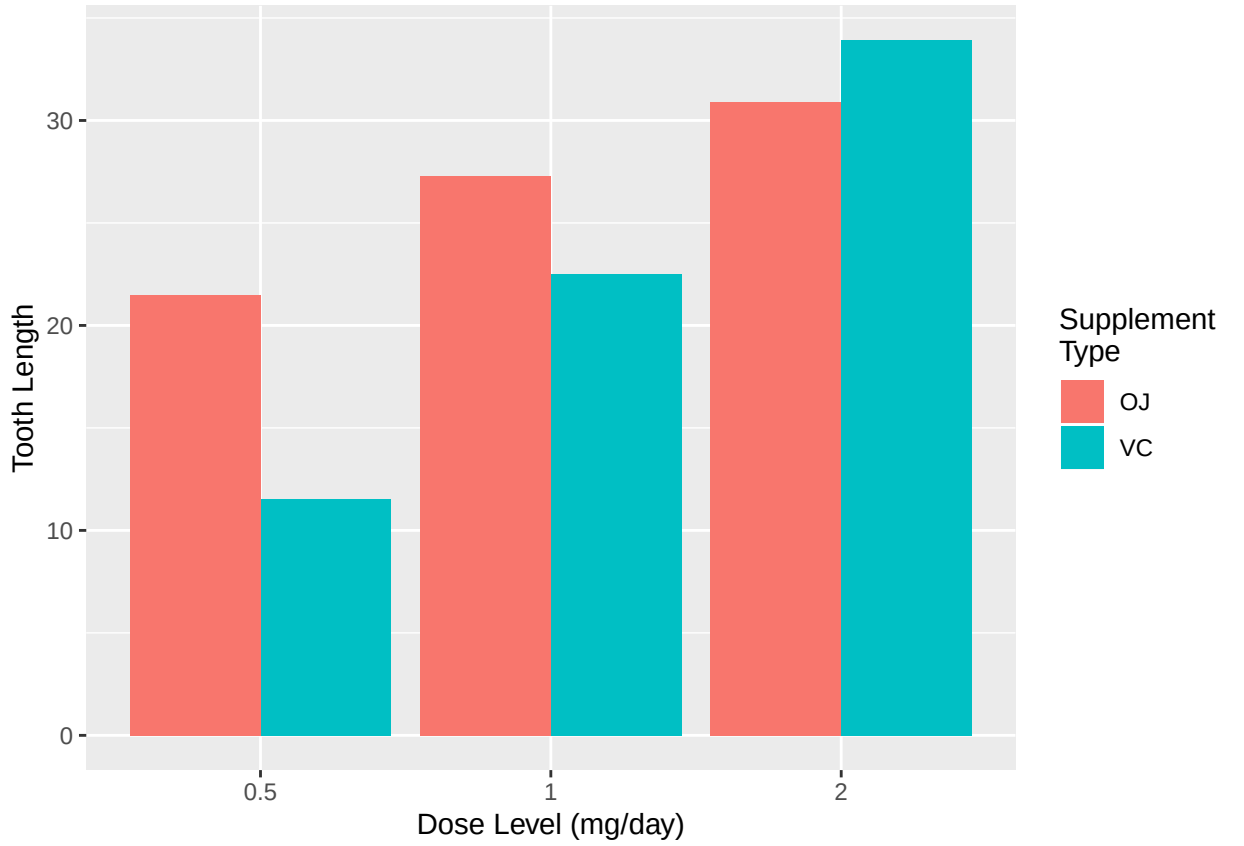
Statistical Inference Course Project Part 2

Part 2. Basic Inferential Data Analysis

Load ToothGrowth data and create plot to summarise data:

```
ggplot(ToothGrowth, aes(factor(dose), len, fill = supp)) +
  geom_bar(stat="identity", position = "dodge") +
  ylab('Tooth Length') +
  xlab('Dose Level (mg/day)') +
  scale_fill_discrete(name = "Supplement\nType")
```



Get 95% confidence intervals for each combination of dose and supplement assuming T distribution for small sample size:

```
ojconf <- ToothGrowth %>% filter(supp=="OJ") %>% group_by(dose) %>%
  summarise("OJ Confidence Intervals"=t.test(len)[4])
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
vcconf <- ToothGrowth %>% filter(supp=="VC") %>% group_by(dose) %>%
  summarise("VC Confidence Intervals"=t.test(len)[4])
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
confs <- left_join(ojconf, vcconf)
```

```
## Joining, by = "dose"
```

```
knitr::kable(confs)
```

dose	OJ Confidence Intervals	VC Confidence Intervals
0.5	c(10.0397167182875, 16.4202832817125)	c(6.01517618244589, 9.94482381755411)
1.0	c(19.9022725624783, 25.4977274375217)	c(14.9706565619722, 18.5693434380278)
2.0	c(24.1606858768009, 27.9593141231991)	c(22.7079100353849, 29.5720899646151)

This table of confidence intervals suggests that for doses 0.5 and 1.0 mg/day, the orange juice supplements promote a greater degree of tooth growth than the vitamin C supplements. For 2.0 mg/day data, the confidence intervals overlap so a conclusion cannot be reached on which supplement is more effective at this dosage.