Project 3 Data Summaries

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March 31, 2023

Collection Method and Description

Using a ball and a bucket both of us did 20 trials with different hands and angles based on a random number from a random number generator to see if there is evidence that one way of throwing a ball is dominant. Each hand/angle combination was assigned a number from 1-4.

1. Left Over
2. Right Over
3. Left Under
4. Right Under

Variables

Response: Make or Miss Explanatory: Overhand/Underhand and Right Hand/Left Hand

```
library(readr)
DataCollectionProject3 <- read_csv("~/Projects/Project 3/DataCollectionProject3.csv")
```

```
## Rows: 40 Columns: 4
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (3): LeftRight, OverUnder, MakeMiss
## dbl (1): TrialNumber
```

```
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
head(DataCollectionProject3)
```

```
## # A tibble: 6 x 4
##   TrialNumber LeftRight OverUnder MakeMiss
##         <dbl> <chr>     <chr>     <chr>
## 1           1 Right     Under     Miss
## 2           2 Left      Over      Miss
## 3           3 Right     Under     Miss
## 4           4 Left      Over      Miss
## 5           5 Left      Under     Miss
## 6           6 Right     Under     Miss
```

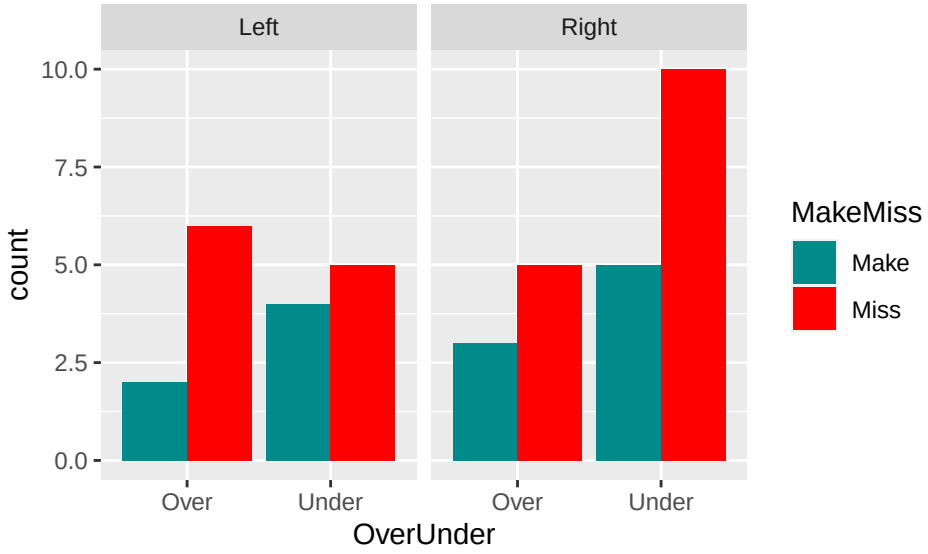
Hypotheses

H0: pi_left = pi_right

Ha: pi_left != pi_right

Graphs

```
gf_bar(~OverUnder|LeftRight, fill=~MakeMiss, data=DataCollectionProject3, position=position_dodge( ))%>%
gf_refine(scale_fill_manual(values = c("darkcyan","red")))
```



When throwing a ball into a basket, the right hand seems to make it into the basket more than the left hand.

Proportion Test

```
tally(MakeMiss~LeftRight, data=DataCollectionProject3)
```

```
##         LeftRight
## MakeMiss Left Right
##     Make    6     8
##     Miss   11    15
```

```
prop.test(c(6,8),c(17,23),alternative = "two.sided", conf.level = 0.9)
```

```
##
##  2-sample test for equality of proportions with continuity correction
##
## data:  c out of c6 out of 178 out of 23
## X-squared = 4.0711e-31, df = 1, p-value = 1
## alternative hypothesis: two.sided
## 90 percent confidence interval:
##  -0.2510571  0.2612873
## sample estimates:
##    prop 1    prop 2
## 0.3529412 0.3478261
```

Given a 90% confidence interval, we fail to reject the null hypothesis, due to 0 being included in the interval.

We can conclude that there is a no significant difference between what hand you throw a ball with.