Project 3 Final Report

Benjamin Goldstone

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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
```

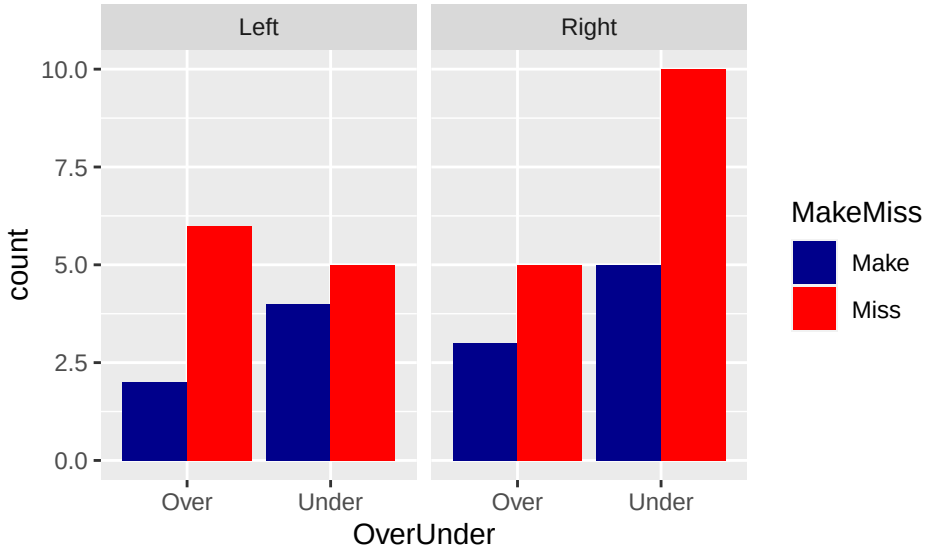
Hypotheses

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("darkblue","red")))
```



When throwing a ball into a basket, the right hand seems to make it into the basket more than the left hand. In addition, when using underhand we made more baskets than when we used overhand.

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 = "less", 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 = 0.5
## alternative hypothesis: less
## 90 percent confidence interval:
##  -1.0000000  0.2058358
## sample estimates:
##    prop 1    prop 2
## 0.3529412 0.3478261
```

Conclusion

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

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