# Test data project

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```
## [1] " Attaching packages: DATA606,infer,dplyr,VennDiagram,scales,data.table,readr "
```

**Load Data**

```
## Rows: 0
## Columns: 26
## $ `Record ID`           <chr>
## $ `Agency Code`         <chr>
## $ `Agency Name`         <chr>
## $ `Agency Type`         <chr>
## $ City                  <chr>
## $ State                 <chr>
## $ Year                  <dbl>
## $ Month                 <chr>
## $ Incident              <dbl>
## $ `Crime Type`          <chr>
## $ `Crime Solved`        <chr>
## $ `Victim Sex`          <chr>
## $ `Victim Age`          <dbl>
## $ `Victim Race`         <chr>
## $ `Victim Ethnicity`    <chr>
## $ `Perpetrator Sex`     <chr>
## $ `Perpetrator Age`     <dbl>
## $ `Perpetrator Race`    <chr>
## $ `Perpetrator Ethnicity` <chr>
## $ Relationship          <chr>
## $ Weapon                <chr>
## $ `Victim Count`        <dbl>
## $ `Perpetrator Count`   <dbl>
## $ `Record Source`       <chr>
## $ Region                <chr>
## $ `Victim AgeGroup`     <fct>
```

```
## [1] "West"
```

```
## Rows: 31,157
## Columns: 26
## $ `Record ID`           <chr> "000776", "000781", "000785", "000788", "00...
## $ `Agency Code`         <chr> "AZ00200", "AZ00209", "AZ00400", "AZ00400",...
## $ `Agency Name`         <chr> "Cochise", "Sierra Vista", "Gila", "Gila", ...
## $ `Agency Type`         <chr> "Sheriff", "Municipal Police", "Sheriff", "...
```

```
## $ City                    <chr> "Cochise", "Cochise", "Gila", "Gila", "Gila...
## $ State                   <chr> "Arizona", "Arizona", "Arizona", "Arizona",...
## $ Year                    <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1...
## $ Month                   <chr> "August", "July", "January", "September", "...
## $ Incident                <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 3, 2, 1, 1, 3, 2, 1...
## $ `Crime Type`            <chr> "Murder or Manslaughter", "Murder or Mansla...
## $ `Crime Solved`          <chr> "Yes", "No", "Yes", "Yes", "Yes", "Yes", "Y...
## $ `Victim Sex`            <chr> "Female", "Female", "Female", "Female", "Fe...
## $ `Victim Age`            <dbl> 27, 33, 34, 39, 30, 29, 78, 22, 99, 20, 84,...
## $ `Victim Race`           <chr> "White", "White", "White", "White", "Native...
## $ `Victim Ethnicity`      <chr> "Not Hispanic", "Not Hispanic", "Not Hispan...
## $ `Perpetrator Sex`       <chr> "Male", "Unknown", "Male", "Male", "Male", ...
## $ `Perpetrator Age`       <dbl> 28, 0, 42, 38, 32, 32, 93, 23, 0, 34, 77, 0...
## $ `Perpetrator Race`      <chr> "White", "Unknown", "White", "White", "Nati...
## $ `Perpetrator Ethnicity` <chr> "Not Hispanic", "Unknown", "Not Hispanic", ...
## $ Relationship            <chr> "Girlfriend", "Unknown", "Wife", "Common-La...
## $ Weapon                  <chr> "Handgun", "Firearm", "Blunt Object", "Knif...
## $ `Victim Count`          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0...
## $ `Perpetrator Count`     <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
## $ `Record Source`         <chr> "FBI", "FBI", "FBI", "FBI", "FBI", "FBI", "...
## $ Region                  <chr> "West", "West", "West", "West", "West", "We...
## $ `Victim AgeGroup`       <fct> "[20,30)", "[30,40)", "[30,40)", "[30,40)",...


## [1] "midwest"


## Rows: 26,880
## Columns: 26
## $ `Record ID`             <chr> "007305", "007311", "007312", "007314", "00...
## $ `Agency Code`           <chr> "IA00300", "IA01600", "IA02300", "IA02900",...
## $ `Agency Name`           <chr> "Allamakee", "Cedar", "Clinton", "Des Moine...
## $ `Agency Type`           <chr> "Sheriff", "Sheriff", "Sheriff", "Sheriff",...
## $ City                    <chr> "Allamakee", "Cedar", "Clinton", "Des Moine...
## $ State                   <chr> "Iowa", "Iowa", "Iowa", "Iowa", "Iowa", "Io...
## $ Year                    <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1...
## $ Month                   <chr> "January", "September", "February", "April"...
## $ Incident                <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 1, 1, 1, 1...
## $ `Crime Type`            <chr> "Murder or Manslaughter", "Murder or Mansla...
## $ `Crime Solved`          <chr> "Yes", "No", "Yes", "No", "Yes", "Yes", "No...
## $ `Victim Sex`            <chr> "Female", "Female", "Female", "Female", "Fe...
## $ `Victim Age`            <dbl> 3, 17, 23, 26, 20, 15, 19, 22, 50, 31, 21, ...
## $ `Victim Race`           <chr> "White", "White", "White", "White", "White"...
## $ `Victim Ethnicity`      <chr> "Not Hispanic", "Not Hispanic", "Not Hispan...
## $ `Perpetrator Sex`       <chr> "Male", "Unknown", "Male", "Unknown", "Male...
## $ `Perpetrator Age`       <dbl> 26, 0, 27, 0, 26, 31, 0, 0, 50, 0, 0, 0, 37...
## $ `Perpetrator Race`      <chr> "White", "Unknown", "White", "Unknown", "Wh...
## $ `Perpetrator Ethnicity` <chr> "Not Hispanic", "Unknown", "Not Hispanic", ...
## $ Relationship            <chr> "Acquaintance", "Unknown", "Wife", "Unknown...
## $ Weapon                  <chr> "Blunt Object", "Unknown", "Shotgun", "Blun...
## $ `Victim Count`          <dbl> 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 2, 0...
## $ `Perpetrator Count`     <dbl> 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0...
## $ `Record Source`         <chr> "FBI", "FBI", "FBI", "FBI", "FBI", "FBI", "...
## $ Region                  <chr> "Midwest", "Midwest", "Midwest", "Midwest",...
## $ `Victim AgeGroup`       <fct> "[0,10)", "[10,20)", "[20,30)", "[20,30)", ...
```

```
## [1] "northeast"

## Rows: 22,160
## Columns: 26
## $ `Record ID`           <chr> "004859", "004863", "004873", "004876", "00...
## $ `Agency Code`         <chr> "CT00015", "CT00015", "CT00015", "CT00015",...
## $ `Agency Name`         <chr> "Bridgeport", "Bridgeport", "Bridgeport", "...
## $ `Agency Type`         <chr> "Municipal Police", "Municipal Police", "Mu...
## $ City                  <chr> "Fairfield", "Fairfield", "Fairfield", "Fai...
## $ State                 <chr> "Connecticut", "Connecticut", "Connecticut"...
## $ Year                  <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1...
## $ Month                 <chr> "January", "April", "August", "October", "N...
## $ Incident              <dbl> 2, 2, 2, 2, 1, 1, 1, 1, 1, 3, 7, 8, 1, 4, 4...
## $ `Crime Type`          <chr> "Murder or Manslaughter", "Murder or Mansla...
## $ `Crime Solved`        <chr> "No", "Yes", "Yes", "No", "Yes", "No", "Yes...
## $ `Victim Sex`          <chr> "Female", "Female", "Female", "Female", "Fe...
## $ `Victim Age`          <dbl> 5, 35, 68, 30, 69, 20, 71, 61, 50, 21, 46, ...
## $ `Victim Race`         <chr> "Black", "Black", "White", "Black", "White"...
## $ `Victim Ethnicity`    <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ `Perpetrator Sex`     <chr> "Unknown", "Male", "Male", "Unknown", "Male...
## $ `Perpetrator Age`     <dbl> 0, 45, 75, 0, 17, 0, 23, 22, 64, 27, 19, 17...
## $ `Perpetrator Race`    <chr> "Unknown", "Black", "White", "Unknown", "Bl...
## $ `Perpetrator Ethnicity` <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ Relationship          <chr> "Unknown", "Acquaintance", "Wife", "Unknown...
## $ Weapon                <chr> "Fire", "Knife", "Firearm", "Blunt Object",...
## $ `Victim Count`        <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
## $ `Perpetrator Count`   <dbl> 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0...
## $ `Record Source`       <chr> "FBI", "FBI", "FBI", "FBI", "FBI", "FBI", "...
## $ Region                <chr> "Northeast", "Northeast", "Northeast", "Nor...
## $ `Victim AgeGroup`     <fct> "[0,10)", "[30,40)", "[60,70)", "[30,40)", ...

## [1] "south"

## Rows: 62,508
## Columns: 26
## $ `Record ID`           <chr> "000057", "000064", "000070", "000077", "00...
## $ `Agency Code`         <chr> "AL00100", "AL00101", "AL00101", "AL00102",...
## $ `Agency Name`         <chr> "Jefferson", "Bessemer", "Bessemer", "Birmi...
## $ `Agency Type`         <chr> "Sheriff", "Municipal Police", "Municipal P...
## $ City                  <chr> "Jefferson", "Jefferson", "Jefferson", "Jef...
## $ State                 <chr> "Alabama", "Alabama", "Alabama", "Alabama",...
## $ Year                  <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1...
## $ Month                 <chr> "August", "March", "July", "January", "Janu...
## $ Incident              <dbl> 2, 1, 1, 4, 6, 8, 2, 6, 7, 2, 1, 2, 4, 4, 6...
## $ `Crime Type`          <chr> "Murder or Manslaughter", "Murder or Mansla...
## $ `Crime Solved`        <chr> "Yes", "Yes", "Yes", "Yes", "Yes", "Yes", "...
## $ `Victim Sex`          <chr> "Female", "Female", "Female", "Female", "Fe...
## $ `Victim Age`          <dbl> 41, 35, 23, 25, 35, 45, 44, 46, 90, 20, 20,...
## $ `Victim Race`         <chr> "White", "Black", "Black", "Black", "Black"...
## $ `Victim Ethnicity`    <chr> "Unknown", "Not Hispanic", "Not Hispanic", ...
## $ `Perpetrator Sex`     <chr> "Male", "Male", "Male", "Male", "Male", "Ma...
## $ `Perpetrator Age`     <dbl> 37, 38, 26, 43, 35, 45, 64, 49, 17, 17, 18,...
## $ `Perpetrator Race`    <chr> "White", "Black", "Black", "Black", "Black"...
```

```
## $ `Perpetrator Ethnicity` <chr> "Unknown", "Not Hispanic", "Not Hispanic", ...
## $ Relationship            <chr> "Acquaintance", "Acquaintance", "Wife", "Gi...
## $ Weapon                  <chr> "Handgun", "Handgun", "Handgun", "Handgun",...
## $ `Victim Count`          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
## $ `Perpetrator Count`     <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1...
## $ `Record Source`         <chr> "FBI", "FBI", "FBI", "FBI", "FBI", "FBI", "...
## $ Region                  <chr> "South", "South", "South", "South", "South"...
## $ `Victim AgeGroup`       <fct> "[40,50)", "[30,40)", "[20,30)", "[20,30)",...


## [1] "pacific"


## Rows: 888
## Columns: 26
## $ `Record ID`             <chr> "000003", "000005", "000007", "000008", "00...
## $ `Agency Code`           <chr> "AK00101", "AK00101", "AK00101", "AK00101",...
## $ `Agency Name`           <chr> "Anchorage", "Anchorage", "Anchorage", "Anc...
## $ `Agency Type`           <chr> "Municipal Police", "Municipal Police", "Mu...
## $ City                    <chr> "Anchorage", "Anchorage", "Anchorage", "Anc...
## $ State                   <chr> "Alaska", "Alaska", "Alaska", "Alaska", "Al...
## $ Year                    <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1...
## $ Month                   <chr> "March", "April", "May", "June", "July", "A...
## $ Incident                <dbl> 2, 2, 2, 1, 3, 1, 1, 1, 1, 2, 2, 3, 4, 1...
## $ `Crime Type`            <chr> "Murder or Manslaughter", "Murder or Mansla...
## $ `Crime Solved`          <chr> "No", "No", "Yes", "Yes", "Yes", "Yes", "Ye...
## $ `Victim Sex`            <chr> "Female", "Female", "Female", "Female", "Fe...
## $ `Victim Age`            <dbl> 30, 30, 42, 99, 36, 31, 40, 16, 36, 8, 46, ...
## $ `Victim Race`           <chr> "Native American/Alaska Native", "Native Am...
## $ `Victim Ethnicity`      <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ `Perpetrator Sex`       <chr> "Unknown", "Unknown", "Male", "Male", "Male...
## $ `Perpetrator Age`       <dbl> 0, 0, 27, 35, 39, 29, 41, 29, 42, 7, 34, 0,...
## $ `Perpetrator Race`      <chr> "Unknown", "Unknown", "Black", "White", "Bl...
## $ `Perpetrator Ethnicity` <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ Relationship            <chr> "Unknown", "Unknown", "Wife", "Wife", "Girl...
## $ Weapon                  <chr> "Unknown", "Unknown", "Knife", "Knife", "Bl...
## $ `Victim Count`          <dbl> 0, 0, 0, 0, 0, 2, 0, 2, 0, 0, 0, 0, 0, 0, 1...
## $ `Perpetrator Count`     <dbl> 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
## $ `Record Source`         <chr> "FBI", "FBI", "FBI", "FBI", "FBI", "FBI", "...
## $ Region                  <chr> "Pacific", "Pacific", "Pacific", "Pacific",...
## $ `Victim AgeGroup`       <fct> "[30,40)", "[30,40)", "[40,50)", "[90,100)"...


## Rows: 66,301
## Columns: 26
## $ `Record ID`             <chr> "000003", "000005", "000025", "000032", "00...
## $ `Agency Code`           <chr> "AK00101", "AK00101", "AK00118", "AKASP00",...
## $ `Agency Name`           <chr> "Anchorage", "Anchorage", "North Slope Boro...
## $ `Agency Type`           <chr> "Municipal Police", "Municipal Police", "Co...
## $ City                    <chr> "Anchorage", "Anchorage", "North Slope", "J...
## $ State                   <chr> "Alaska", "Alaska", "Alaska", "Alaska", "Al...
## $ Year                    <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1...
## $ Month                   <chr> "March", "April", "August", "June", "Octobe...
## $ Incident                <dbl> 2, 2, 1, 1, 2, 4, 1, 4, 2, 1, 2, 4, 3, 4, 1...
## $ `Crime Type`            <chr> "Murder or Manslaughter", "Murder or Mansla...
## $ `Crime Solved`          <chr> "No", "No", "Yes", "Yes", "No", "Yes", "Yes...
```

```
## $ `Victim Sex`           <chr> "Female", "Female", "Female", "Female", "Fe...
## $ `Victim Age`           <dbl> 30, 30, 16, 8, 22, 26, 23, 25, 20, 20, 23, ...
## $ `Victim Race`          <chr> "Native American/Alaska Native", "Native Am...
## $ `Victim Ethnicity`     <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ `Perpetrator Sex`      <chr> "Unknown", "Unknown", "Male", "Male", "Unkn...
## $ `Perpetrator Age`      <dbl> 0, 0, 29, 7, 0, 26, 26, 43, 17, 18, 24, 32,...
## $ `Perpetrator Race`     <chr> "Unknown", "Unknown", "Unknown", "Asian/Pac...
## $ `Perpetrator Ethnicity` <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ Relationship           <chr> "Unknown", "Unknown", "Stepdaughter", "Sist...
## $ Weapon                 <chr> "Unknown", "Unknown", "Rifle", "Rifle", "Fi...
## $ `Victim Count`         <dbl> 0, 0, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
## $ `Perpetrator Count`    <dbl> 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1...
## $ `Record Source`        <chr> "FBI", "FBI", "FBI", "FBI", "FBI", "FBI", "...
## $ Region                 <chr> "Pacific", "Pacific", "Pacific", "Pacific",...
## $ `Victim AgeGroup`      <fct> "[30,40)", "[30,40)", "[10,20)", "[0,10)", ...


## Rows: 637,216
## Columns: 26
## $ `Record ID`            <chr> "000001", "000002", "000003", "000004", "00...
## $ `Agency Code`          <chr> "AK00101", "AK00101", "AK00101", "AK00101",...
## $ `Agency Name`          <chr> "Anchorage", "Anchorage", "Anchorage", "Anc...
## $ `Agency Type`          <chr> "Municipal Police", "Municipal Police", "Mu...
## $ City                   <chr> "Anchorage", "Anchorage", "Anchorage", "Anc...
## $ State                  <chr> "Alaska", "Alaska", "Alaska", "Alaska", "Al...
## $ Year                   <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1...
## $ Month                  <chr> "January", "March", "March", "April", "Apri...
## $ Incident               <dbl> 1, 1, 2, 1, 2, 1, 2, 1, 2, 3, 1, 2, 3, 1, 2...
## $ `Crime Type`           <chr> "Murder or Manslaughter", "Murder or Mansla...
## $ `Crime Solved`         <chr> "Yes", "Yes", "No", "Yes", "No", "Yes", "Ye...
## $ `Victim Sex`           <chr> "Male", "Male", "Female", "Male", "Female",...
## $ `Victim Age`           <dbl> 14, 43, 30, 43, 30, 30, 42, 99, 32, 38, 36,...
## $ `Victim Race`          <chr> "Native American/Alaska Native", "White", "...
## $ `Victim Ethnicity`     <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ `Perpetrator Sex`      <chr> "Male", "Male", "Unknown", "Male", "Unknown...
## $ `Perpetrator Age`      <dbl> 15, 42, 0, 42, 0, 36, 27, 35, 0, 40, 0, 49,...
## $ `Perpetrator Race`     <chr> "Native American/Alaska Native", "White", "...
## $ `Perpetrator Ethnicity` <chr> "Unknown", "Unknown", "Unknown", "Unknown",...
## $ Relationship           <chr> "Acquaintance", "Acquaintance", "Unknown", ...
## $ Weapon                 <chr> "Blunt Object", "Strangulation", "Unknown",...
## $ `Victim Count`         <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
## $ `Perpetrator Count`    <dbl> 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0...
## $ `Record Source`        <chr> "FBI", "FBI", "FBI", "FBI", "FBI", "FBI", "...
## $ Region                 <chr> "Pacific", "Pacific", "Pacific", "Pacific",...
## $ `Victim AgeGroup`      <fct> "[10,20)", "[40,50)", "[30,40)", "[40,50)",...


##    Min. 1st Qu.  Median   Mean 3rd Qu.   Max.
##    0.00   22.00   30.00  33.56   42.00  99.00


## [1] 17.78703


##    Min. 1st Qu.  Median   Mean 3rd Qu.   Max.
##    0.00   21.00   29.00  32.64   41.00  99.00


## [1] 17.41812
```

| | West | Midwest | Northeast | South | Pacific | Total |
|---|---|---|---|---|---|---|
| | *Female Murder Count by Region* | | | | | |
| Mean | 890.2 | 768 | 623.65 | 1,786.25 | 25.37 | 818.6971 |
| SD | 160.84 | 163.9 | 149.09 | 241.81 | 7.23 | 591.7687 |
| n | 31,157 | 26,880 | 21,828 | 62,519 | 888 | 143,272 |

```r
female_only %>% filter(Age<31) %>% glimpse()
```

```
## Rows: 66,301
## Columns: 4
## $ Year   <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1980, ...
## $ Region <chr> "Pacific", "Pacific", "Pacific", "Pacific", "Pacific", "Paci...
## $ Sex    <chr> "Female", "Female", "Female", "Female", "Female", "Female", ...
## $ Age    <dbl> 30, 30, 16, 8, 22, 26, 23, 25, 20, 20, 23, 30, 22, 28, 24, 1...
```

```r
female_only %>% filter(Region == 'South') %>% glimpse()
```

```
## Rows: 62,187
## Columns: 4
## $ Year   <dbl> 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1980, 1980, ...
## $ Region <chr> "South", "South", "South", "South", "South", "South", "South...
## $ Sex    <chr> "Female", "Female", "Female", "Female", "Female", "Female", ...
## $ Age    <dbl> 41, 35, 23, 25, 35, 45, 44, 46, 90, 20, 20, 23, 30, 31, 40, ...
```

```r
female_only%>%filter(Region=="Pacific")%>%summarize(sum(n))
```

```
##   sum(n)
## 1    888
```

## Part 4 - Inference

**South Inference**

**Inference Conditions**

* Independence – Murder counts are assumed independent with 62,519 observations$\checkmark$
* Success-failure Conditions – $Count_{under\ 30}$=1079 & $Count_{over\ 30}$=2212 $\therefore n \ge 30$

**Hypothesis statement**\newline
$H_0$ = $South_{30yrs\ OR\ less} = 0.\ No\ Difference\ in\ average\ below\ or\ above\ 30\ years\ for\ w$
$H_A$ = $South_{30yrs\ OR\ less} \ne 0.\ There\ is\ a\ difference$\newline

```r
#New Variable Created 'under30'
#south <- south %>%
#  mutate(under30 = ifelse(south$'Victim Age' < 31, "yes", "no"))
```

Observation stat of 8.593917 generated & `hypothesize` function used to set null hypothesis as a test for independence. We have 0 null permutations.

```
#inference(y = south$n, x = south$under30,est = "mean", type = "ci", method = "theoretical")
```

**Pacific Inference**

**Inference Conditions**

- Independence - Murder counts are assumed independent with 888 observations✓
- Success-failure Conditions - $Count_{under\ 30}$=308 & $Count_{over\ 30}$=387 $\therefore n \geq 30$ ✓

**Hypothesis statement**
$H_0 = Pacific_{30yrs\ OR\ less} = 0$. $No\ Difference\ in\ average\ below\ or\ above\ 30\ years\ for\ women$
$H_A = Pacific_{30yrs\ OR\ less} \neq 0$. $There\ is\ a\ difference$

```
#New Variable Created 'under30'
#pacific <- pacific %>%
# mutate(under30 = ifelse(pacific$'Victim Age' < 31, "yes", "no"))
```

Observation stat of 0.1601648 generated & `hypothesize` function used to set null hypothesis as a test for independence. We have 0 null permutations.

```
#inference(y = pacific$n, x = pacific$under30,est = "mean", type = "ci", method = "theoretical")
```

## Part 5 - Conclusion

My conclusion is based on the following facts:

- Mean age on a national and a regional level hardly differs
- Region does not impact murder count of a gender by age
- Gender does impact murder count, but only when referencing male vs. female

Noting the higher murder count for the South vs. the Pacific, considering the Pacific is easily much smaller being composed of only 2 states, and the fact that both follow national trends indicating peak numbers occur for victims 20-30, I would say the difference is most likely because of population size. If I were to do a comparison of population of these regions during these years, I'd imagine the murder counts would be comparable. Therefore, my limitation with this data is not having the population size for each states, per year, between 1980-2014. Regardless the data does not highlight any specific region as having an abnormal murder count in my opinion. I can support that age is the biggest factor among those mentions.

## References:

**Homicide Reports, 1980-2014**

*Project https://www.kaggle.com/murderaccountability/homicide-reports?select=database.csv*

" '