Test 2

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Results

Car Fuel Economy

This dataset contains a subset of the fuel economy data that the EPA makes available. It contains only models which has a new release every year between 1999 and 2008 – this was used as a proxy for the popularity of the car.

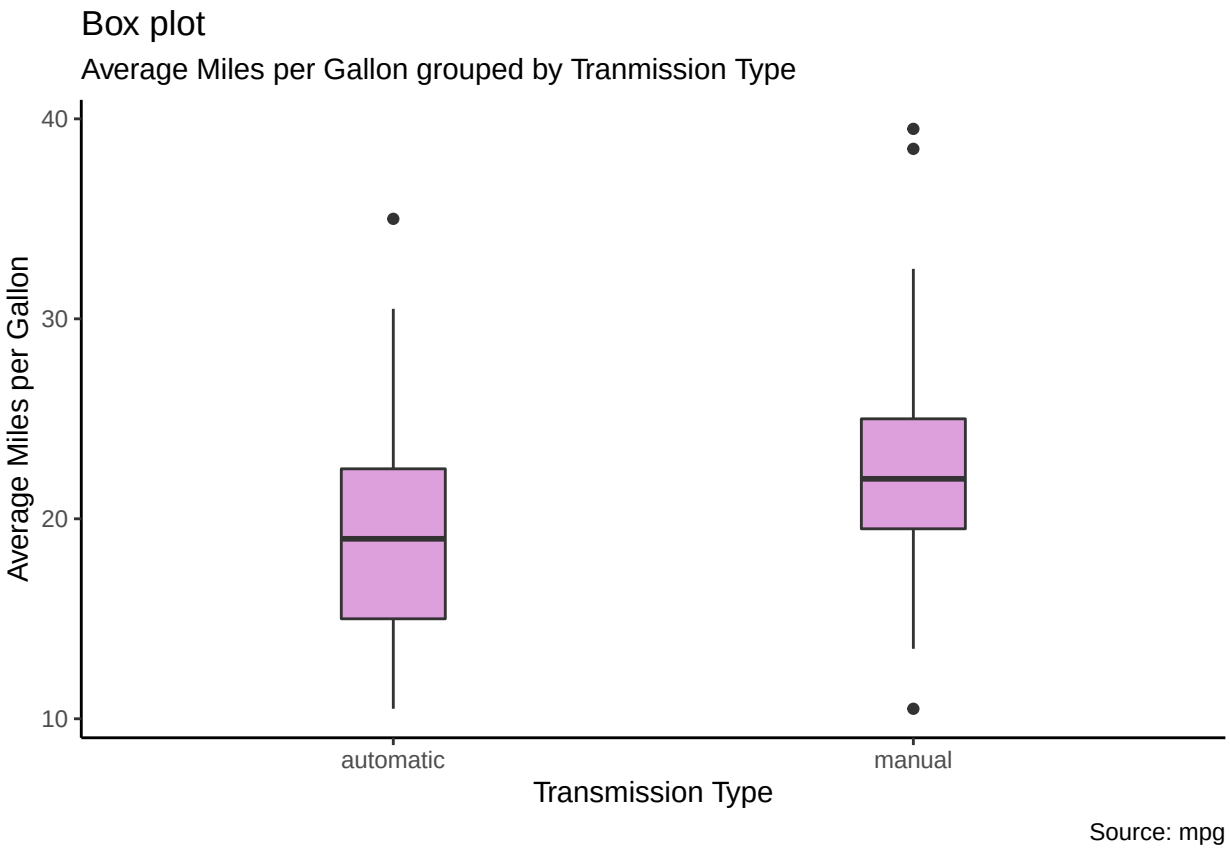
In order to ananlyze this data, we first created a new variable that averaged city miles per gallon and highway miles per gallon into one composite average miles per gallon. We were interested in assessing whether automatic or manual vehicles used more average miles per gallon. Please review the table below:

```
## # A tibble: 2 x 3
##   transmission_type `mean avg_mpg` `sd avg_mpg`
##   <chr>                      <dbl>        <dbl>
## 1 automatic                   19.1         4.68
## 2 manual                      22.2         5.16
```

We conducted a linear model where we regressed the average miles per gallon on transmission type. Results indicate that people who drive manual cars, on average, use more miles per gallon (M = 22.23, SD = 5.16) than people who drive automatic vehicles (M = 19.13, SD = 4.68), t(232) = 4.60, p < .001.

```
##
## Call:
## lm(formula = avg_mpg ~ transmission_type, data = d)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -11.7273  -3.7031  -0.1789   2.8694  17.2727
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               19.1306     0.3867  49.469  < 2e-16 ***
## transmission_typemanual    3.0967     0.6742   4.593 7.15e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.846 on 232 degrees of freedom
## Multiple R-squared:  0.08337,    Adjusted R-squared:  0.07941
## F-statistic:  21.1 on 1 and 232 DF,  p-value: 7.154e-06
```

Please refer to the Figure below.


Box plot
Average Miles per Gallon grouped by Tranmission Type
Average Miles per Gallon
40
30
20
10
automatic
manual
Transmission Type
Source: mpg