

Based on IMDb Reviews

$H_0: \mu_{LA} - \mu_A = 0$ (The mean reviews of the two groups are the same.)

$H_A: \mu_{LA} - \mu_A \neq 0$ (The mean reviews of the two groups are not the same.)

```
> t.test(IMDB_LiveAction, IMDB_Animated)
```

```
    welch Two Sample t-test
```

```
data:  IMDB_LiveAction and IMDB_Animated
t = 1.1983, df = 24.737, p-value = 0.2421
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2383618  0.9008618
sample estimates:
mean of x mean of y
  7.22500  6.89375
```

We cannot reject the null hypothesis at the 5% level of significance. This is because the p-value is 0.2421. The data suggest that the mean review score of Marvel's live action is the same as Marvel's animated TV series.

ANOVA

1. Histogram for all group of data follows the normal curve with the exception of Rotten Tomatoes Audience Reviews for Live Action TV series.
2. The groups are independently sampled.
3. Homogeneity of variance (Test for equal population standard deviation condition)

$H_0: \sigma_1^2 = \sigma_2^2 = \dots = \sigma_k^2$.

$H_0: \sigma_1^2 \neq \sigma_2^2 \neq \dots \neq \sigma_k^2$.

```
> bartlett.test(Review ~ x, data = ANOVA_IMDb_and_RT)
```

```
    Bartlett test of homogeneity of variances
```

```
data:  Review by x
Bartlett's K-squared = 33.221, df = 5, p-value =
3.402e-06
```

The p-value is 3.402e-06. Reject the null hypothesis at the 5% level of significance.

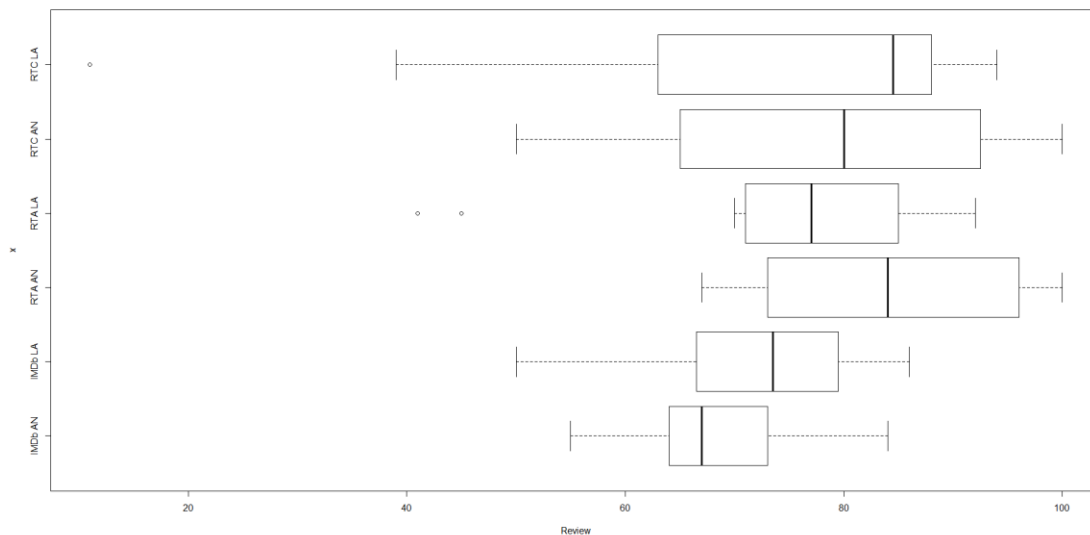
```
> favstats(Review ~ x, data = ANOVA_IMDb_and_RT)
```

	data	min	Q1	median	Q3	max	mean	sd
1	IMDb AN	55	64.00	67.0	72.50	84	68.93750	7.649320
2	IMDb LA	50	67.25	73.5	79.25	86	72.25000	9.643651
3	RTA AN	67	73.00	84.0	96.00	100	84.23077	11.519215
4	RTA LA	41	71.50	77.0	84.75	92	74.92857	15.249032
5	RTC AN	50	65.00	80.0	92.50	100	77.85714	20.788046
6	RTC LA	11	66.75	84.5	87.75	94	73.35714	24.295005

	n	missing
1	32	0
2	16	0
3	13	19
4	14	2
5	7	25
6	14	2

Of all the reviews, Rotten Tomatoes audience reviews for Marvel's animated series have a high median and the highest mean review scores. However, on IMDb, Marvel's animated series have the lowest median and mean review score.

```
> boxplot(Review ~ x, data = ANOVA_IMDb_and_RT, horizontal = TRUE)
```



H₀: The mean of the median average reviews scores is the same.
H_A: The mean of the median average review scores is not the same.

```
> oneway.test(Review ~ x, data = ANOVA_IMDb_and_RT)
```

One-way analysis of means (not assuming equal variances)

data: Review and x
F = 3.8152, num df = 5.000, denom df = 27.997,
p-value = 0.00924

The p-value is 0.00924. We cannot reject the null hypothesis at the 1% level of significance. The data suggests that the mean of the median average review scores is the same.

**omitted data without reviews

```
A <- aov(Review ~ x, data = ANOVA_IMDb_and_RT)
> summary(A)
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
x	5	2345	469	2.333	0.0485 *
Residuals	90	18090	201		

Signif. codes:

0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```
> TukeyHSD(A)
```

Tukey multiple comparisons of means
95% family-wise confidence level

Fit: aov(formula = Review ~ x, data = ANOVA_IMDb_and_RT)

\$x

	diff	lwr	upr
IMDb LA-IMDb AN	3.312500	-9.328513	15.953513
RTA AN-IMDb AN	15.293269	1.714643	28.871895
RTA LA-IMDb AN	5.991071	-7.238207	19.220350
RTC AN-IMDb AN	8.919643	-8.307154	26.146440
RTC LA-IMDb AN	4.419643	-8.809635	17.648921
RTA AN-IMDb LA	11.980769	-3.434942	27.396481
RTA LA-IMDb LA	2.678571	-12.430329	17.787472
RTC AN-IMDb LA	5.607143	-13.101882	24.316167
RTC LA-IMDb LA	1.107143	-14.001758	16.216043
RTA LA-RTA AN	-9.302198	-25.203857	6.599461
RTC AN-RTA AN	-6.373626	-25.728509	12.981256
RTC LA-RTA AN	-10.873626	-26.775285	5.028032
RTC AN-RTA LA	2.928571	-16.182844	22.039987
RTC LA-RTA LA	-1.571429	-17.175834	14.032977
RTC LA-RTC AN	-4.500000	-23.611415	14.611415

	p adj
IMDb LA-IMDb AN	0.9729417
RTA AN-IMDb AN	0.0179455
RTA LA-IMDb AN	0.7739484
RTC AN-IMDb AN	0.6602064
RTC LA-IMDb AN	0.9253618
RTA AN-IMDb LA	0.2201576
RTA LA-IMDb LA	0.9954157
RTC AN-IMDb LA	0.9520475
RTC LA-IMDb LA	0.9999372
RTA LA-RTA AN	0.5331455
RTC AN-RTA AN	0.9295321
RTC LA-RTA AN	0.3554553
RTC AN-RTA LA	0.9977009
RTC LA-RTA LA	0.9996991
RTC LA-RTC AN	0.9831227

`plot(TukeyHSD(A))`

