Example1

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Effects of exposure to high concentrations of waterborne Tl on K and Tl concentrations in Chironomus riparius larvae

Belowitz, R., Leonard, E. M., & O'Donnell, M. J. (2014). Effects of exposure to high concentrations of waterborne Tl on K and Tl concentrations in Chironomus riparius larvae. Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology, 166, 59-64.

This example compares the published data from the cited article to results of this web application using the same raw data.

The results reported in the publication:

Show 25 entries Filter:

Experiment	LC_{50} (µg/L)	lower confidence limit (µg/L)	upper confidence limit (µg/L)
1	1.111	0.978	1.262
2	0.782	0.697	0.876
3	1.864	1.656	2.098
4	1.423	1.242	1.629
5	1.051	0.904	1.222
6	0.812	0.692	0.951
7	1.562	1.392	1.752
8	1.203	1.031	1.403
9	1.453	1.291	1.636
10	0.561	0.452	0.696
11	0.68	0.603	0.766
12	0.752	0.654	0.864

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The results for the web application:

Show 25 entries Filter:

Experiment	LC_{50} (µg/L)	lower confidence limit (µg/L)	upper confidence limit (µg/L)
1	1.116	0.9949	1.236
2	0.8344	0.6731	0.9956
3	2.168	1.746	2.59
4	1.518	1.2	1.836
5	1.184	0.3772	1.991
6	0.7854	0.6782	0.8925
7	1.589	1.382	1.797
8	1.475	1.101	1.849
9	1.551	1.368	1.734
10	0.5462	0.2934	0.7989
11	0.7323	0	1.477
12	0.8774	0.5842	1.171

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The Shapiro test using the data from the publication:

```
    Shapiro-Wilk normality test

data:  dati.1$ab[location == "publication"]
W = 0.94878, p-value = 0.6192
```

The Shapiro test using the data from the web application:

```
    Shapiro-Wilk normality test

data:  dati.1$ab[location == "application"]
W = 0.94026, p-value = 0.5014
```

The result of the Shapiro test with p values greater than 0.05 assume the both sets of data come from normal distribution.

The Levene test results:

```
Levene's Test for Homogeneity of Variance (center = mean)
      Df F value Pr(>F)
group  1   0.326 0.5738
      22
```

The Levene's test result of a p-value greater than 0.05 indicates that the variances for both sets of data are not different.

The ANOVA analysis:

```
            Df Sum Sq Mean Sq F value Pr(>F)
location     1  0.053 0.05252   0.271  0.608
Residuals   22  4.262 0.19375
```

The ANOVA analysis shows that both data sets have statiscally equal means.

The Tukey HSD analysis:

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

Fit: aov(formula = results.lm)

$location
                               diff        lwr       upr     p adj
publication-application -0.09355833 -0.4662285 0.2791118 0.6078163
```

The Tukey HSD analysis indicates that no significant differences exist between the means of the publication results and the web application results.