

U Wroclaw, Fall 2015
Applied Stats
DISCUSSION/LAB 11: Analysis of variance ANOVA
One-Way ANOVA, Multiple comparisons

We will use two data sets: mortardata.xls, and dietdata.*.

Mortardata: A researcher is interested in the difference between mortar of age 3 and age 28. Is it significant on a 5% significance level? Which differences in mortar strengths by age are significantly different?

Results for: mortardata

Tukey Pairwise Comparisons

Tukey Simultaneous Tests for Differences of Means

Difference of Levels	Difference of Means	95% CI
7 - 3	0.008	(-0.363, 0.378)
28 - 3	0.499	(0.135, 0.863)
90 - 3	0.151	(-0.220, 0.522)
180 - 3	0.548	(0.196, 0.899)
365 - 3	0.353	(0.001, 0.705)
28 - 7	0.492	(0.128, 0.855)
90 - 7	0.143	(-0.227, 0.514)
180 - 7	0.540	(0.188, 0.892)
365 - 7	0.345	(-0.006, 0.697)
90 - 28	-0.348	(-0.712, 0.015)
180 - 28	0.048	(-0.296, 0.393)
365 - 28	-0.146	(-0.490, 0.198)
180 - 90	0.397	(0.045, 0.748)
365 - 90	0.202	(-0.150, 0.554)
365 - 180	-0.195	(-0.526, 0.137)

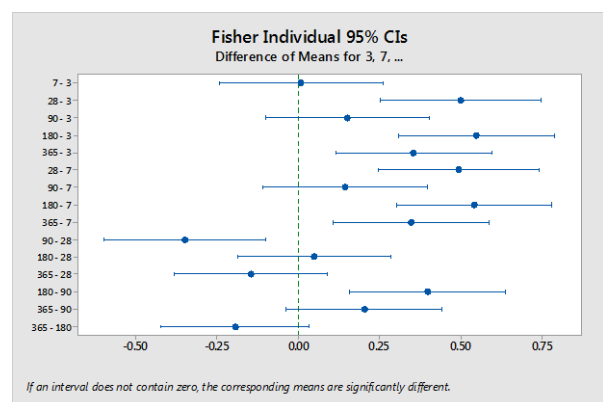
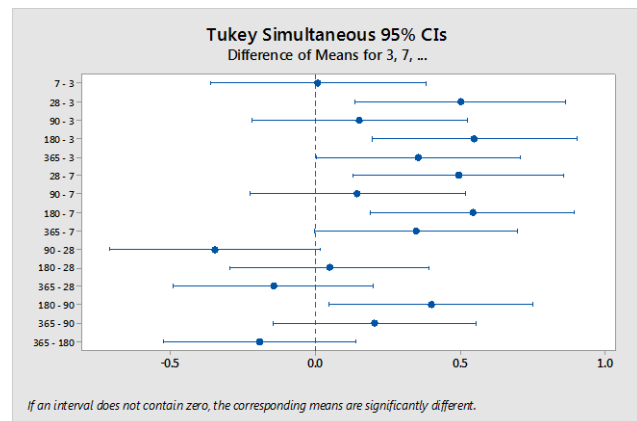
Individual confidence level = 99.54%

Fisher Pairwise Comparisons

Fisher Individual Tests for Differences of Means

Difference of Levels	Difference of Means	95% CI
7 - 3	0.008	(-0.245, 0.260)
28 - 3	0.499	(0.251, 0.747)
90 - 3	0.151	(-0.102, 0.403)
180 - 3	0.548	(0.308, 0.787)
365 - 3	0.353	(0.113, 0.592)
28 - 7	0.492	(0.244, 0.739)
90 - 7	0.143	(-0.109, 0.396)
180 - 7	0.540	(0.301, 0.779)
365 - 7	0.345	(0.106, 0.585)
90 - 28	-0.348	(-0.596, -0.101)
180 - 28	0.048	(-0.186, 0.283)
365 - 28	-0.146	(-0.381, 0.088)
180 - 90	0.397	(0.157, 0.636)
365 - 90	0.202	(-0.037, 0.441)
365 - 180	-0.195	(-0.420, 0.031)

Simultaneous confidence level = 64.37%



Dietdata.*. A researcher is interested in the difference between diets for age groups 0 to 11 and 45+ . Is it significant on a 5% significance level? Which differences in diet by age group are significantly different?

One-way ANOVA: 0 to 11, 12 to 24, 25 to 45, 45+

Tukey Pairwise Comparisons

Tukey Simultaneous Tests for Differences of Means

Difference of Levels	Difference of Means	95% CI
12 to 24 - 0 to 11	-1.60	(-4.80, 1.60)
25 to 45 - 0 to 11	-0.56	(-3.34, 2.23)
45+ - 0 to 11	-1.61	(-4.90, 1.69)
25 to 45 - 12 to 24	1.04	(-1.90, 3.99)
45+ - 12 to 24	-0.01	(-3.44, 3.42)
45+ - 25 to 45	-1.05	(-4.10, 2.00)

Individual confidence level = 98.94%

Fisher Pairwise Comparisons

Fisher Individual Tests for Differences of Means

Difference of Levels	Difference of Means	95% CI
12 to 24 - 0 to 11	-1.60	(-4.02, 0.82)
25 to 45 - 0 to 11	-0.56	(-2.66, 1.55)
45+ - 0 to 11	-1.61	(-4.09, 0.88)
25 to 45 - 12 to 24	1.04	(-1.18, 3.27)
45+ - 12 to 24	-0.01	(2.60, 2.59)
45+ - 25 to 45	-1.05	(-3.35, 1.25)

Simultaneous confidence level = 80.19%

