# SPSS: 2 Between Groups ANOVA

Application: To compare means of a quantitative variable obtained from 2 independent groups.

Research Hypothesis: The researcher hypothesized that stores with separate reptile departments would have reptiles of better overall quality than stores that did not have separate reptile departments.

H0: for this analysis: Pet shops which do not have separate reptile departments have the same mean reptile quality ratings as shops that do have separate reptile departments.

Analyze ➔   Compare Means ➔   One-way ANOVA
* highlight the "Dependent" variable (be sure it is **quantitative**) and click the arrow
* highlight the "Factor" (IV, grouping) variable (be sure it is **qualitative**) and click the arrow
* "Options" — check that you want "Descriptive Statistics
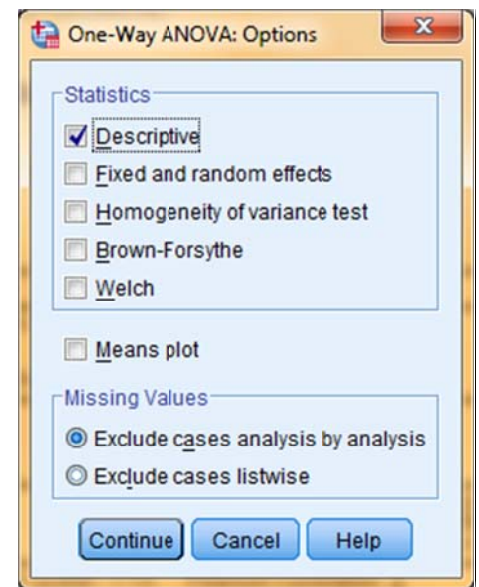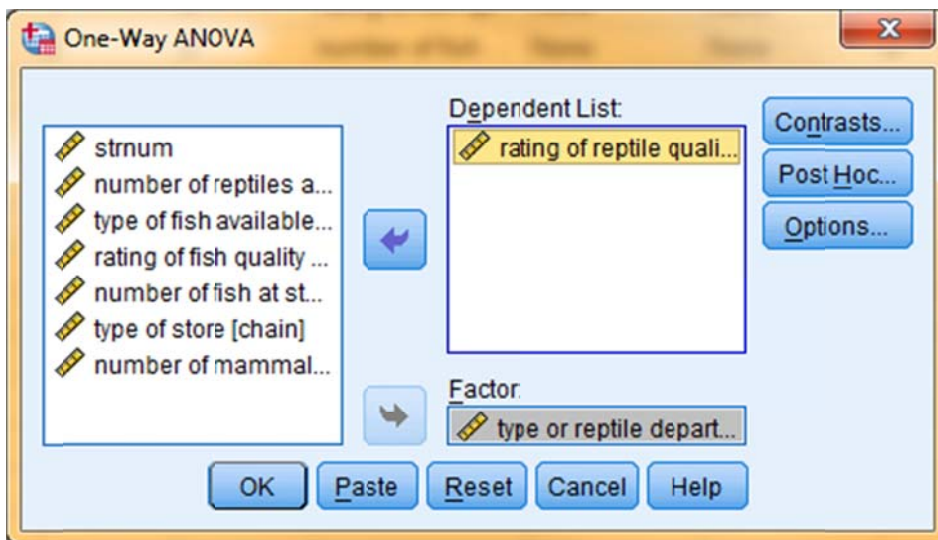
SPSS Syntax

ONEWAY reptgood BY reptdept   ⬅ Dependent variable(s) BY Factor
 /STATISTICS DESCRIPTIVES   ⬅ get descriptive statistics for each factor group
 /MISSING LISTWISE.   ⬅ listwise deletion (alternative is "ANALYSIS")

Descriptives

rating of reptile quality - 1-10 scale

	N	Mean	Std. Deviation
not separate	6	4.00	1.897
separate dept	6	7.33	1.862
Total	12	5.67	2.498

The p-value of .012 means that there is about a 1.2% chance that this result is a Type I error.

Remember, even if the printout shows it, never report p = .000, because that would suggest there is no possibility of a Type 1 error. Instead, report "p < .001"

ANOVA

rating of reptile quality - 1-10 scale

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.333	1	33.333	9.434	.012
Within Groups	35.333	10	3.533		
Total	68.667	11			

df effect
df error

p-value
Mean Square Error (MSE)

Reporting the Results:

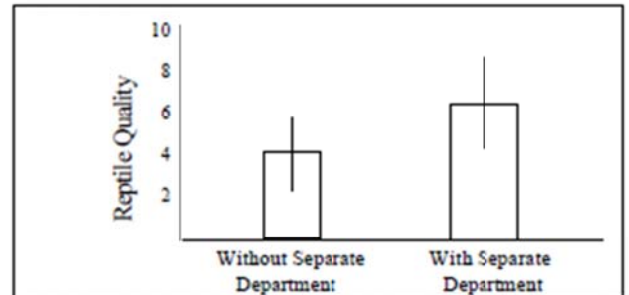| Table 1. Summary of reptile qulaity for each type of pet store			
Type of Reptile Department	Mean	Std	n
Without a Separate Reptile Dept.	4.00	1.90	6
With a Separate Reptile Dept.	7.33	1.86	6

Figure 1. Mean reptile quality for each type of reptile department (+/- 1 std shown)

Table/Figure 1 shows the mean and standard deviation of Reptile Quality for each type of Reptile Department. As hypothesized, pet stores with separate reptile departments had significantly higher mean ratings than those without separate departments, F(1,10) = 9.43, p = .012, Mse = 3.53.

It is important to report the univariate statistics for the dependent variable for both groups before presenting the ANOVA results. Often these are presented in a table or a figure.

As in the example, be sure to communicate:
- The research hypothesis (if there is one)
- The statistical results
- Whether or not those results support the research hypothesis

Reporting the Results:
Those stores without separate reptile departments displayed reptiles with a mean quality rating of 4.0 (S = 1.90), whereas those that did have separate departments had a mean rating of 7.33 (S = 1.86). As hypothesized, pet stores with separate reptile departments had significantly higher mean ratings than those without separate departments, F(1,10) = 9.43, p = .012, Mse = 3.53.

Sometimes, the univariate statistics are presented in text, along with the correlation results.

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