

Data Analysis and Statistical Procedures for Different Types of Variables.

Y - Dependent (Criterion) Variable Continuous or Ordinal	Continuous (Ordinal) Correlation & Regression Analyses	Nominal (Ordinal) Group Comparison (ANOVA models)
Descriptive Statistics	Pearson r . Scatterplots $\hat{Y} = a + bX$ and standardized regression coefficient ($\hat{\beta} = r$).	Means and Standard Deviations for each group.
Test Statistics	t for regression coefficient and F for full model are equivalent.	t for $J = 2$ groups and F for $J > 2$ groups. For more than two groups some form of multiple comparisons procedure is needed.
Effect Size Estimates	R^2	$\eta^2 = R^2$, ω^2 , or Cohen's d .
Multiple X	Multiple Regression	Factorial ANOVA
Descriptive Statistics	Multiple R , $\hat{Y} = a + b_1X_1 + b_2X_2 + \dots + b_kX_k$ $\hat{Z}_Y = \hat{\beta}_1Z_{X1} + \hat{\beta}_2Z_{X2} + \dots + \hat{\beta}_kZ_{Xk}$	Means and Standard Deviations for each group. Interaction Graphs.
Test Statistics	t for regression coefficients and F for full model.	F for each effect. Simple main effect analyses or interaction contrasts are used to investigate significant interactions.
Effect Size Estimates	R^2 for full model. Semi- partial R^2 for each predictor.	$\eta^2 = R^2$, ω^2 , or Cohen's d for each effect.
Multiple Continuous Y	Canonical Correlation Analyses are used. Factor Analysis can be performed for data reduction.	MANOVA or Repeated Measures ANOVA are used depending on the research design.
Y - Nominal Variable	Logistic Regression when $J = 2$ categories. Odds Ratio are often used to interpret results. Discriminant Function Analysis often used when $J \geq 2$. DFA is equivalent to MANOVA. When there is only one Y, DFA is equivalent to ANOVA and independent group t test.	Contingency Table Analysis Descriptive Statistics - Proportions for each group or category. Effect size - ϕ^2 . Test Statistics - χ^2 test of homogeneity or independence.
Multiple X	Logistic Regression and DFA extend for Multiple X.	Loglinear Analyses Odds Ratio are often used to interpret results.