Examples of Analysis Approaches/Statistical Tests to Use Depending on Number and Type of Dependent and Independent Variables

|  |  |  |  |
| --- | --- | --- | --- |
| **Number of Dependent Variables**  | **Number/Type of  Independent Variables**  | [**Type of Dependent Variable(s)**](http://www.ats.ucla.edu/stat/mult_pkg/whatstat/nominal_ordinal_interval.htm)  | **Examples of Analyses/Test(s)**  |
| 1  |  0 IVs (1 group/population)  | interval & normal  | one-sample t-test  |
| ordinal or interval  | one-sample median  |
| categorical (2 categories)  | binomial test  |
| categorical  |  chi-square goodness-of-fit  |
|  1 IV with 2 levels (independent groups) | interval & normal  | 2 independent sample t-test  |
|  ordinal or interval  |  |
| Wilcoxon-Mann Whitney test  |
|  categorical  |  chi- square test  |
| Fisher's exact test  |
| 1 IV with 2 or more levels (independent groups) | interval & normal  | one-way ANOVA  |
| ordinal or interval  | Kruskal Wallis  |
| categorical  | chi- square test  |
|  | other special | If DV is “time to event,” Survival analysis |
| 1 IV with 2 levels(dependent/matched groups) | interval & normal  | paired t-test   |
|  ordinal or interval  | Wilcoxon signed ranks test   |
|  categorical  | McNemar |
| 1 IV with 2 or more levels(dependent/matched groups, repeated measures) | interval & normal  | repeated measures ANOVA  |
| ordinal or interval  | Friedman test  |
| categorical  | GEE (e.g. repeated measures logistic regression) |
| 2 or more IVs (independent groups) | interval & normal  | multi-factor ANOVAgeneral linear model (GLM)multilevel model (MLM)structural equation model (SEM)  |
| ordinal or interval  | (treat DV as interval/normal or create categories—use analyses above or below) |
| categorical  | logistic regression, multinomial regression, GEE  |
|  | other special | If DV is “time to event,” Survival analysis |
| 2 or more IVs(including repeated measures, within-subject factors) | interval & normal | GLM, MLM, growth models,growth mixture models |
|  | categorical | generalized estimating equations (GEE), growth/mixture models, non-linear mixed |
|  |  |  |
| 1 interval IV  | interval & normal  | correlation   |
| linear/non-linear regression |
| ordinal or interval  |  non-parametric correlation  |
| categorical  | logistic regression  |
|  | other special | If DV is “time to event,” Survival analysis |
| 1 or more interval IVs and/or1 or more categorical IVs  | interval & normal  | multiple regression |
| analysis of covariance, GLM, MLM |
| Categorical, other special  | logistic regression, GEE, non-linear mixed, survival analysis |
| discriminant analysis  |
| >1  | 1 IV with 2 or more levels(independent groups) | interval & normal  | MANOVA/GLM, structural equation models (SEM)  |
| >1  | 2 or more IVs (categorical or interval) | interval & normal  | SEM, series of regression analyses or GEE/MLM etc. |
| 2 sets of  2 or more  | 0  | interval & normal  | canonical correlation  |
| >1  | 0  | interval & normal  | factor analysislatent variable models  |
| >1 | 0 | categorical | latent variable models for categorical data |
| **Number of Dependent Variables**  | **Number/Type of  Independent Variables**  | [**Type of Dependent Variable(s)**](http://www.ats.ucla.edu/stat/mult_pkg/whatstat/nominal_ordinal_interval.htm)  | **Examples of Analysis/Test(s)**  |

This chart was adapted by M-L. Brecht from <http://www.ats.ucla.edu/stat/mult_pkg/whatstat/choosestat.html>

which, in turn, was adapted from [Choosing the Correct Statistic](http://bama.ua.edu/~jleeper/627/choosestat.html)  by James D. Leeper, Ph.D.