Statistical tests

Statistical concepts for clinical investigators
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The table below, while not intended as complete, organizes a variety of commonly used statistical tests according to several important features of a research question:

1. the level of measurement of the primary outcome
2. the number of groups being compared
3. the degree or correlation (versus independence) among observations

		Outcome's Level of Measurement				
		Nominal	**Ordinal**	**Interval or Ratio**		**Time to Event (Survival Analysis)**
Number of groups	**Observations independent or correlated**			**Distribution unknown**	**Distribution assumed normal**	
1 sample		Binomial X2 Goodness of fit (GOF)	Kolmogorov-Smirnov	Test for symmetry	One sample t	
2 samples	**Independent**	Chi-square Fisher's exact	Wilcoxon-Mann-Whitney	Permutation tests	Indep. t	Kaplan-Meier estimator of median survival (log rank test)
	correlated or matched	McNemar X2	Wilcoxon signed rank test	Permutation tests	Paired t	
k samples	**Independent**	Pearson Chi-square	Kruskal-Wallis one way AOV		Analysis of variance (ANOVA)	Kaplan-Meier estimator of median survival (log rank test)
	correlated or matched	Cochran Q	Friedman AOV by ranks		ANOVA on repeated measures / mixed models	
Concordance or correlation		Kappa	Spearman rank order correlation coefficient Kendall tau Kendall W		Pearson r	
Regression and Modeling		Logistic regression Poisson regression Generalized estimating equations		Robust regression	Linear regression / Analysis of covariance	Cox proportional hazards regression