

# Flexible distribution-free & robust testing common hypotheses about numerical data

Subject of comparisons H0 vs. H1	1 factor				2+ factors + interactions		
	2 levels		k levels		of k levels	+ numerical covariates	+ repeated data
	unpaired	repeated data	unpaired	repeated data			
stochastic equivalence vs. stochastic superiority	<ul style="list-style-type: none"><li>Mann-Whitney (Wilcoxon)</li><li>Brunner-Munzel</li></ul>	Signed-rank (Wilcoxon)	Kruskal-Wallis	<ul style="list-style-type: none"><li>Friedman</li><li>Skillings-Mack RM-ANOVA</li><li>ATS</li><li>WTS</li><li>ART ANOVA</li></ul>	<ul style="list-style-type: none"><li>ATS ANOVA-Type Statistic</li><li>[p] WTS permuted Wald-T.S,</li><li>ART ANOVA Aligned-Rank Transform</li><li>Brunner-Dette-Munk</li></ul>	Ordinal Logistic Regression = Proportional-Odds Model + Wald or LRT inference	GEE-fit Generalized Estimating Equations Ordinal Logistic Regression with appropriate correlation structure
equal means vs. unequal means	<ul style="list-style-type: none"><li>Permutation Welch t,</li><li>Permutation Yuen-Welch t (outliers)</li></ul>		<ul style="list-style-type: none"><li>Van der Waerden</li><li>Permutation 1-way ANOVA</li><li>GEE-fit General Linear Model</li></ul>	GEE-fit General Linear Model appropriate correlation structure	<ul style="list-style-type: none"><li>GEE-General Linear Model + Wald inference</li><li>GEE-fit Ordinal Logistic Regression + extra work to estimate the eCDF</li><li>Robust (huberized) Linear Mixed Model + Wald/LRT</li></ul> <div>For <b>known</b> non-Gaussian distributions</div> <ul style="list-style-type: none"><li>Generalized Linear/Additive Mixed Model + Wald/LRT</li><li>GEE-fit Generalized Linear Model + Wald</li></ul>		
equal medians vs. unequal medians	<ul style="list-style-type: none"><li>Brown-Mood's</li><li>MW(W) under IID samples</li></ul>	Wilcoxon on symmetric sample	<ul style="list-style-type: none"><li>Quantile regression (with random effects) + Wald or bootstrap inference</li><li>Khmaladze test for pure location shift</li></ul>				