

# M<sup>2</sup>: Mary's matrix

Purpose of Test	Nominal Data (Non-parametric Tests)	Ordinal Data (Non-parametric Tests)	Interval/ Ratio Data (Parametric Tests)
<b>Comparison of sample to theoretical population*</b>	<ul style="list-style-type: none"> <li>•chi square goodness of fit</li> </ul>	<ul style="list-style-type: none"> <li>•Kolmogorov-Smirnov goodness of fit</li> </ul>	<ul style="list-style-type: none"> <li>•One sample t test</li> </ul>
<b>Correlation of Variables*</b>	<ul style="list-style-type: none"> <li>•chi square test of independence/association</li> <li>•Contingency coefficient</li> <li>•Relative Risk/Odds Ratio</li> <li>•Kappa</li> </ul>	<ul style="list-style-type: none"> <li>•Spearman correlation</li> </ul>	<ul style="list-style-type: none"> <li>•Pearson correlation</li> <li>•Regression</li> <li>•Multiple regression</li> <li>•Special cases regression (e.g., logistic)</li> </ul>
<b>Comparison of Groups (two or more groups, post-test only)†</b>	<ul style="list-style-type: none"> <li>•chi square test of homogeneity/difference</li> <li>•Relative Risk/Odds Ratio</li> <li>•CHAID</li> </ul>	<ul style="list-style-type: none"> <li>•Mann-Whitney test (if only 2 groups)</li> <li>•Kruskal-Wallis ANOVA (if &gt; 2 groups)</li> </ul>	<ul style="list-style-type: none"> <li>•Independent samples t test (if only 2 groups)</li> <li>•One-way between groups ANOVA F test (if &gt; 2 groups)</li> <li>•Multi-way between groups ANOVA F tests (if factorial)</li> </ul>
<b>Comparison of Trials (two or more tests, no control group)†</b>	<ul style="list-style-type: none"> <li>•McNemar's chi square</li> </ul>	<ul style="list-style-type: none"> <li>•Wilcoxon test (if only 2 trials)</li> <li>•Friedman ANOVA (if &gt; 2 trials)</li> </ul>	<ul style="list-style-type: none"> <li>•Paired samples t test (if only 2 trials)</li> <li>•One-way repeated measures ANOVA F test (if &gt; 2 trials)</li> <li>•Multi-way repeated measures ANOVA F tests (if factorial)</li> </ul>
<b>Comparison of Groups and Trials (two or more groups, tested two or more times)‡</b>	<ul style="list-style-type: none"> <li>•Survival analysis</li> <li>•Cox proportional hazards regression</li> </ul>		<ul style="list-style-type: none"> <li>•General Linear Model</li> <li>•Linear Mixed Model</li> <li>•Generalized Linear Model</li> <li>•Generalized Estimating Equations</li> <li>•Individual Growth Curves</li> <li>•Structural Equation Modeling</li> </ul>

\*Observational study †Quasi-experimental study (e.g., pre-post test) ‡Experimental study (e.g., RCT)