Choosing the right statistical method
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• What is the purpose of the statistical analysis?
  – Research question
  – Reference population
  – Variables and their type
  – Study design

• Which statistical methods are you competent to handle?
  – Understand enough of the statistical theory
  – Able to access and use a statistical package to do the analysis
  – Able to interpret and use the findings
  – Understand the limitations or restrictions of the analysis

• Alternatively have good communication with a statistician
Statistical analyses

• Can I believe these numbers?
  – Data checking and validation
  – Summary and univariate analyses
  – Does interpretation make sense

• Is your data independent or matched?

• Appropriate analysis is specific for the study purpose, design, experimental unit and outcome variable
Statistical analysis

• If outcome is continuous e.g.
  – t-test
  – Multiple regression
  – Analysis of variance (GLM)
  – Non-parametric equivalents

• If outcome is binary (special case of categorical) e.g.
  – Chi-squared tests of association
  – Logistic regression

• If outcome is time to event e.g.
  – Survival analysis
Parametric Tests

• Assume data is drawn from a normally distributed population
  – NB: this is different to saying that the observed sample has a normal distribution

• Sometimes make the assumption of homogeneity of variance

• More powerful
# Parametric vs. Non-parametric Test Examples

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<th>Equivalent Non Parametric Test</th>
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* semi-parametric test as it assumes equal variance between groups
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