Practical Statistics
Module 6: Key Points

Key Statistical Questions

1. What were the types of variables used?
   - Independent / Intervention
   - Dependent / Outcome
2. What statistics were used to describe the distribution of variable values?
   - Central Tendency
   - Dispersion
3. How was the relationship between variables described?
   - Measure of Association
   - Measure of Statistical Precision

Variable Types

Continuous variables

A variable that may assume any value within an interval (e.g. age, height, blood pressure, etc.)
The intervals are constant. You can equate them. The interval properties of this variable type allow certain mathematical operations that are not appropriate for other variable types.

Discrete (categorical) variables (a variable may assume only values within a discrete set)

- Ordinal - multiple ordered categories (e.g. MRC muscle strength scale). The intervals aren't comparable.
- Nominal - multiple non-ordered categories (e.g. race)
- Dichotomous (yes no)

Comparison Between Different Variable Types

	Nominal	Ordinal	Interval
Same or Different	Yes	Yes	Yes
Greater than or less than	No	Yes	Yes
Magnitude of Difference	Yes	No	Yes

Central Tendency and Dispersion

Scale	Central Tendency	Dispersion
Nominal	Mode	Proportions
Ordinal	Median	Interquartile distance from 25th - 75% Percentage
Interval	Mean	Standard Deviation

A related concept to SD is the Standard error. This is calculated taking the SD of your dataset and dividing it by the square root of the sample size. The SE gives you an idea of the distribution of means if you repeated the study over and over. You can actually calculate confidence intervals form the SE. It is another way of describing the distribution of values of an interval variable

Measures of Association and Tests of Significance by Variable Type

Variable		Measure of Association	Test of Significance (p-value	Statistical Precision
Nominal	Nominal	Risk Difference Relative Risk Odds Ratio	Chi Square Fisher Exact Test (small sample size)	Confidence Interval
Nominal	Ordinal	Difference in Medians	Wilcoxon (aka, Wilcoxon-Mann-Whitney)	Confidence Interval
Nominal	Interval	Difference in Means	T-test (2 means) ANOVA (more than 2 means)	Confidence Interval