

## Inference for Categorical Variables

effect modification vs confounding

if we don't take effect modification into account, we get an over-generalized estimate of the relationship between the outcome and the exposure for the entire co-hort

- Breslow-Day Test examines if evidence of a differential association between two variables across the level of a third variable
  - similar limitations to Cochran-Mantel-Haenszel test

## Cochran-Mantel\_haenszel test

- limitations
  - can only adjust for one variable at a time

looks at two binary categorical variables while adjusting for the value of a third categorical variable

## Parametric One-Sample Inference of Categorical Variables

- one-sample proportion test
  - do NOT use Yate's continuity, so specify:
    - `prop.test(..., correct = FALSE)`
- $\chi^2$  goodness of fit test
  - to ensure sufficient sample size:  $n \cdot p_{i0} > 5$
  - don't use continuity corrections!
    - `chisq.test(..., correct = FALSE)`

**NOTE:** *one-sample single proportion test* gives a 95% CI -  $\chi^2$  does not!

## Types of Probabilities

### Joint, Marginal and Conditional Probabilities

- QI
  - [SQUIRE 2.0 for QI Reporting](#)
  - Stepped-wedge trial
    - [Link](#)
- Linear regression
  - [Q-Q plot](#)
  - plot of residuals
  - [Cook's Distance](#)
  - these are different!
    - correlative
    - descriptive
    - predictive
    - associative
- confounding vs. effect modification

to assess a paired difference

- create histogram
- plot as box plot
- make [Q-Q plot](#)

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