

## Connections (ch 8)

- In the limit of large sample size
  - point estimates good enough
  - similar results with other approaches
- Unbiased estimates
  - arbitrary goal
  - minimizing bias will often lead to increase in variance

### Slide 1

- Confidence intervals
  - coverage in limit of large samples good thing
  - definition to loose
    - eg. interval that is empty 5% of the time and contains all of the real line 95% of the time

## Connections (ch 8)

- Hypothesis testing
  - point null hypotheses  $\theta = \theta_0$
  - in problems involving a continuous parameter, the hypothesis that it is exactly eg. zero is rarely reasonable
  - more intuitive to estimate posterior distribution or a corresponding interval

### Slide 2

- Multiple comparisons
  - can be handled nicely with hierarchical model
- Permutation tests, jackknife, bootstrap
  - useful tools for data summary and exploratory analysis
  - no specified probability model

## Some challenges (ch 8)

- Noninformative prior distributions
  - it is not always clear what is a minimal information for certain parameter
  - more difficult with many parameters
  - often better use weakly informative priors
- Accounting for model choice in data analysis
  - what is the effect of iterative model building?

### Slide 3

- Model comparison
  - DIC has asymptotic and partially frequentist justification
  - cross-validation seems to be robust although has its own problems
  - many predictive approaches, no consensus which one is the best

## General advice (ch 9)

- Setting up probability models
  - build models hierarchically
- Model evaluation
  - almost all models are approximate
  - checking the fit of a model to data and prior assumptions is important

### Slide 4

- Computation
  - simulation based methods generic, but may be slow and difficult to check convergence
  - analytic approximations increasing again popularity
    - in this course only normal approximation was introduced