Lecture 4a: Practice Problems

John McGready
Johns Hopkins University
Practice: Paired Data?

1. Which of the following examples involve the comparison of paired data?
   - If so, on what are we pairing the data?
a) In Baltimore, a real estate practice known as “flipping” has elicited concern from local and Federal government officials
   - “Flipping” occurs when a real estate investor buys a property for a low price, makes little or no improvement to the property, and then resells it quickly at a higher price
   - This practice has raised concern, because the properties involved in “flipping” are generally in disrepair and the victims generally have low incomes
   - Fair housing advocates are launching a lawsuit against three real estate corporations accused of this practice
a) In Baltimore, a real estate practice known as “flipping” has elicited concern from local and Federal government officials
   - As part of the suit, these advocates have collected data on all houses purchased by these three corporations which were sold in less than one year after they were purchased
   - Data were collected on the purchase price and the resale price for each of these properties
   - The data were collected to investigate whether the resale prices were, on average, higher than initial purchase price
   - A confidence interval was constructed for the average profit in these quick turnover sales
b) Researchers are testing a new blood pressure-reducing drug; participants in this study are randomized to either a drug group or a placebo group
   - Baseline blood pressure measurements are taken on both groups and another measurement is taken three months after the administration of the drug/placebo
   - Researchers are curious as to whether the drug is more effective in lowering blood pressure than the placebo
c) Researchers are interested in the impact of a vegan diet on risk factors for coronary heart disease (CHD) in subjects with a family history of CHD; researchers randomly select 100 such families with more than one child and randomize two siblings from each family to either a vegan diet, or an omnivorous diet (one sibling on each diet); these diets, prescribed by a nutritionist, are to last for six weeks

- Baseline CHD risk factor measurements are taken (BP, cholesterol level, percent body fat) on each participant
- Follow-up CHD risk factor measurements are taken at the end of the six-week diet period
- Changes in risk factor levels are to be compared between those on the vegan diet and those on the omnivorous diet