This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike License. Your use of this material constitutes acceptance of that license and the conditions of use of materials on this site.

Copyright 2009, The Johns Hopkins University and John McGready. All rights reserved. Use of these materials permitted only in accordance with license rights granted. Materials provided “AS IS”; no representations or warranties provided. User assumes all responsibility for use, and all liability related thereto, and must independently review all materials for accuracy and efficacy. May contain materials owned by others. User is responsible for obtaining permissions for use from third parties as needed.

JOHNS HOPKINS
BLOOMBERG
SCHOOL of PUBLIC HEALTH

Lecture 9b: Practice Problem Solutions

John McGready
Johns Hopkins University

Solutions

1. Referring to each of the “almost random” assignment methods detailed in this lecture (alphabetical, sequential, telephone/social security number), can you suggest how each method could yield a biased (non-random) assignment?

Solutions

- Alphabetical
  - It is possible that certain ethnicities are more likely to have names on the first or last half of the alphabet
  - May get family members: non-independent individuals
  - This could skew the distribution in your assignment groups

- Sequential
  - Morning visitors at a clinic could be different from afternoon visitors in terms of employment status, job type, and lifestyle

- Telephone number/social security number
  - It is possible there existed underlying number assignment schemes related to subject characteristics—neighborhood, year of birth, income, etc.

Solutions

2. Compare block randomization to simple randomization
   - Block randomization is a method of randomization appropriate when the total number of available subjects is small
   - While simple randomization assigns subjects to a treatment group individually, block randomization assigns subjects to treatment groups in blocks of four
   - Each of the assignment blocks is balanced (equal number of treatment and control assignments) and blocks are selected by a random method