

4.1 HW #s 1, 3, 5, 7, 9, 11, 13

11] Population: all local businesses
Sample: the 73 businesses that returned the survey

13] Population: the 1,000 envelopes stuffed each hour
Sample: the 40 selected envelopes

15] This is a voluntary survey and only people with strong opinions on the subject (strong enough that they are willing to spend time and money) will respond to this advertisement.

7] This is a voluntary response sample. It is biased in favor of those who feel most strongly about the issue being surveyed.

19] (a) This is a convenience sample

(b) It is unlikely that the first 100 students to arrive at school are representative of the student population in general.

The reported average of 7.2 hrs of sleep is probably higher since you might expect that the students who arrive first are those who got a good night's sleep the night before. Students that received less sleep the night before are probably more likely to run late the next morning.

4.1 cont

- 11 (a) Number the 40 students from 01 to 40 (use 2 digits!) alphabetically by last name.
* Go to the random number table (TABLE D).
* Pick A STARTING POINT SAY LINE 121 and record 2 digit numbers UNTIL you HAVE 5 UNIQUE NUMBERS BETWEEN 01 and 40. see below

~~11~~, ~~46~~, ~~10~~, ~~49~~, ~~84~~, (29), (07), ~~11~~, ~~48~~, ~~63~~, ~~81~~, ~~48~~ (34)
~~11~~, ~~52~~, ~~22~~, (23), ~~45~~, (10)

Select Names corresponding to 29, 07, 34, 23 & 10.

- (b) Now use Line 107 to select sample of the 40 Names given

107: 82, 73, 95, 78, 90, (20), 80, 74, 75, (11), 81, 67, 65, 53,
00, 94, (38), (31), 48, 93

108: 60, 94, (07)

Sample: 20 - JOHNSON
11 - DRABIN
38 - WASH BORN
31 - RIDER
07 - CALLOWAY

- 13 (a) Number the plots from 0001 to 1410. Go to the Random number table, and start on Line 131 (just pick a line for starting point) and record 4-digit numbers UNTIL you have 10% sample (141 unique numbers)
Exclude numbers outside the range and repeats

(b) Line 131 (0500), ~~7166~~, 3281, 1941, 4873, (0419),
~~7855~~, ~~7645~~, 1959, 6565
Line 132 ...
Line 133 4574, (0418)

The first 3 plot numbers are 0500, 0419, 0418.

4.1 HW #'s 17, 19, 21, 23, 27, 31, 33, 35

OPTIONAL #'s 37-42

- 17
- A TO OBTAIN A RANDOM SAMPLE, THE PHONES MUST BE NUMBERED IN SOME WAY, KEEPING TRACK OF THE ORDER OF 1000 PHONES MAY BE DIFFICULT
- B IT IS POSSIBLE THAT THE QUALITY OF THE PHONES PRODUCED CHANGE OVER THE COURSE OF THE DAY SO THAT THE LAST PHONES MANUFACTURED ARE NOT REPRESENTATIVE OF THE DAY'S PRODUCTION
- C EACH SAMPLE OF 20 PHONES DOES NOT HAVE THE SAME PROBABILITY OF BEING SELECTED. IN FACT, THE 20 PHONES THAT ARE SAMPLED BE THE 50TH, 100TH ... 1000TH; THE OTHERS HAVE NO CHANCE OF BEING SAMPLED

19 FOR THE STUDENTS (IN ABC ORDER) ASSIGN THEM 01-30, DISREGARD 00, 31-99 and Repeats START AT LINE 123

123: 54 58 (08) (15) (07) (27)

There are ten faculty members, number them 0-9 in order to use a one digit number

The students are
08 - Ghosh
15 - Jones
07 - Fisher
27 - Show

123: Continue with the same line

↳ 1 0

The teachers are 0 - Andrews
1 - Besicovitch

4.1 CONT

STRATIFIED RANDOM SAMPLE

- 21 a) Use the 3 types of seats as the 3 strata since ticket prices will be similar within each strata but different among the 3 strata.
- b) A stratified sample may be difficult to implement since individuals would be all around the 100,000 seat stadium and this would be time consuming.

It might be easier to obtain a cluster sample because would be many people sitting all together who would be part of the sample.

The clusters could be the section numbers

- 23 This is not an SRS because some samples of size 250 have no chance of being selected. For example, it would be impossible to have samples of 250 males or 250 females.

- 27 USING THE PHONE BOOK RESULTS IN UNDER COVERAGE BECAUSE HOUSEHOLDS WITHOUT TELEPHONES AND UNLISTED NUMBERS ARE OMITTED FROM THIS SAMPLING FRAME. SUCH HOUSEHOLDS COULD BE MADE UP OF
- ① POOR INDIVIDUALS (WHO CANNOT AFFORD A PHONE)
 - ② THOSE WHO CHOOSE NOT TO HAVE PHONES
 - ③ THOSE WHO DO NOT WANT NUMBERS LISTED

IF THE VARIABLE BEING MEASURED TENDS TO HAVE DIFFERENT VALUES FOR THOSE EXCLUDED BY THIS SAMPLING METHOD, THEN OUR SAMPLE RESULT WOULD BE OFF IN A PARTICULAR DIRECTION FROM THE TRUTH ABOUT THE POPULATION OF HOUSEHOLDS.

4.1 CONT

31 (a) NON RESPONSE. = $1 - \frac{5029}{45,956} = 1 - .109 = 89.1\%$

↑
↑
 response rate non response rate

(b) Nonresponse may be a result of people that drive more tend to be home less. As a result the high amount of nonresponse gave the researchers a lower mean number of miles.

33 880 SRS of drivers
171 admitted running at least 1 red light

- Most people would not admit to running a red light so it is reasonable to believe they are telling the truth
- on the other hand there are people that would not admit running a red light.
- As a result, we expect the bias is understating the number of people that truly ran a red light

35 Wording bias

- (a) The wording is clear. THE QUESTION IS SLANTING IN THE FAVOR OF WARNING LABELS
- (b) The wording is clear. It is clearly slanted in favor of national health insurance by asserting that it would reduce administrative costs.
- (c) The wording is too technical for many people to understand. It is slanted because it suggests reasons why one should support recycling. It could be rewritten "Do you support economic incentives to promote recycling"

37 C

38 D

39 D

40 C

41 E

42 C