

Statistics 528 – Homework 5 Solutions

Corrected Version

3.8

(a) In the study, no deliberate assignment of the anesthetics to the patients was done in order to see the effect of the anesthetics on death rates.

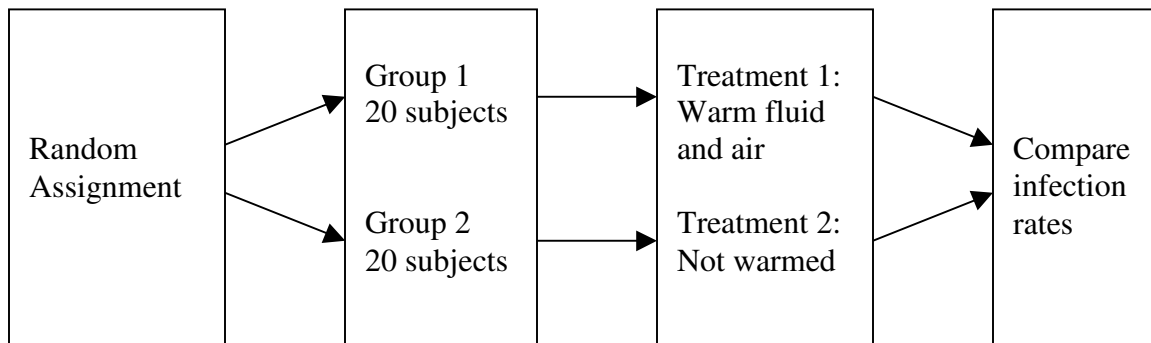
(b) Type of surgery, patient allergy to certain anesthetics, how healthy the patient was before the surgery.

3.10

Experimental units are the individual package liners. Factor is the temperature of the jaw at which package liners are sealed. Treatments are four different temperatures (250° F, 275° F, 300° F, and 325° F) applied. Response is the peel strength.

3.14

(a) Outline of the design:



(b)

There are two ways to do this part. One is using Minitab. Please see Minitab handout 3 for instructions.

Alternatively, we can do it by hand using Table B in textbook.

Step 1. Label: give each subject a numerical label,

01, 02, ..., 39, 40

Step 2. Table: begin at line 121 in Table B, and read two-digit groups.

71487 09984 29077 14863 61683 47052 62224 51025 ...

the first 10 two-digit groups in this line are

71 48 70 99 84 29 07 71 48 63

Each of these two-digit groups is a label. Ignore the labels 00 and 41 to 99. The first labels between 01 and 40 that we encounter in the table choose subjects for the experimental group.

So we choose the first group Ng(29), Cordoba(07), Sugiwara(34), Kaplan(22), Devlin(10), Lucero(25)...

3.16

(a) The effect of operating team would be confounded with the effect of the treatment on infection rates. If one team is more experienced than another, we can hardly distinguish the warming effect from the effect of better operation.

(b) This is a double-blind design. This prevents the operating team from treating one type of patient different from another. It also prevents different treatment by the doctors who follow the patients after surgery and who, presumably, assess their improvement.

3.32

(a)

Row	subject	xweight	block
1	Williams	22	1
2	Festinger	24	1
3	Hernandez	25	1
4	Moses	25	1
5	Santiago	27	2
6	Kendall	28	2
7	Mann	28	2
8	Smith	29	2
9	Brunk	30	3
10	Obrach	30	3
11	Rodriguez	30	3
12	Loren	32	3
13	Jackson	33	4
14	Stall	33	4
15	Brown	34	4
16	Dixon	34	4
17	Birnbaum	35	5
18	Tran	35	5
19	Nevesky	39	5
20	Wilansky	42	5

(b)

Please see the Minitab handout 3 for instructions.

Alternatively, use table B. Take the Block 1 as the example. Give each subject in block 1 a numerical label, Williams (1), Festinger (2), Hernandez (3), Moses (4). Suppose we begin at line 121 in Table B, and read one-digit groups.

71487 09984 29077 14863 61683 47052 62224 51025 ...

Each of these one-digit groups is a label. Ignore the labels 0 and 5 to 9. The first labels between 1 and 4 that we encounter in the table choose subject for the experimental group A. The second one B. ... So we choose Williams (number 1) to A, Moses (4) to B, Festinger (2) to C, Hernandez (3) to D.

3.38

(a) All the adults in the country. Depending on the intent of the opinion poll, the population could consist of only adults eligible for voting in the country.

(b) In the inspection of each lot, the population consists of hardwood pieces in the lot.

(c) All households in the US.

3.50

The chance of being interviewed is $3/30$ for students over age 21 and $2/20$ for students under age 21. This is $1/10$ in both cases. It is not an SRS because not all combinations of

students have an equal chance of being interviewed. For instance, groups of five students all over age 21 have no chance of being interviewed. It is in fact, a stratified random sample.

3.53

(a) $13,147+15,182+1,448=29,777$.

(b) There is nothing to prevent a person from answering several times. Also, the respondents were only those who went to that Web site and took the time to respond.

(c) The results are slanted towards the opinions of men, who might be less likely to feel that female athletes should earn as much as men.

3.58

68% is a parameter: 73% is a statistic.

3.62

(a) High bias and high variability.

(b) Low bias and low variability.

(c) Low bias and high variability.

(d) High bias and low variability.

3.68

(a) Results are subject to chance variation.

Note that the smallest possible mean is 61.75 (using the smallest scores) and the largest is 77.25 (using the largest scores).

(b) Results will vary, but the center would be around 69.4.