/\*Activity 9

Ref: Chapter 9, Biostat

This code is what is being uploaded

in SAS Studio\*/

/\*Activity 9.1(i)\*\*\*\*\*\*\*\*/

**data** act9pt1;

input wbc Antibio $ Bact\_cul $ Sex $ Service $ Dur\_stay Age Temp;

cards;

8 No No Female med. 5 30 99.0

5 No Yes Female med. 10 73 98.0

12 No No Female surg. 6 40 99.0

4 No No Female surg. 11 47 98.2

11 No No Female surg. 5 25 98.5

6 Yes No Male surg. 14 82 96.8

8 Yes Yes Male med. 30 60 99.5

7 No No Female med. 11 56 98.6

7 No No Female med. 17 43 98.0

12 No Yes Male surg. 3 50 98.0

7 No Yes Female med. 9 59 97.6

3 No No Male surg. 3 4 97.8

11 Yes No Female surg. 8 22 99.5

14 Yes Yes Female surg. 8 33 98.4

11 No Yes Female surg. 5 20 98.4

9 No No Male surg. 5 32 99.0

6 Yes No Male surg. 7 36 99.2

6 No No Male surg. 4 69 98.0

5 Yes No Male med. 3 47 97.0

6 No No Male surg. 7 22 98.2

10 No No Male surg. 9 11 98.2

14 Yes No Male surg. 11 19 98.6

4 No No Female med. 11 67 97.6

5 No No Female surg. 9 43 98.6

5 No No Female med. 4 41 98.0

;

**run**;

/\*proc print noobs;run;\*/

/\*Activity 9.1(ii) & (iii)\*\*\*\*\*\*\*\*/

**proc** **univariate** data=act9pt1 mu0=**6**;

ods select TestsForLocation;

var wbc;

title "Result of act 9.1: sign test";

**run**;

/\*\*\*\*\*Act 9.2, (a), Ref: problem 9.15, page 366\*\*\*\*\*/

**data** act9pt2;

input breast\_fed bottle\_fed;

diff=breast\_fed-bottle\_fed;

cards;

20 18

11 35

3 7

24 182

7 6

28 33

58 223

7 7

39 57

17 76

17 186

12 29

52 39

14 15

12 21

30 28

7 8

15 27

65 77

10 12

7 8

19 16

34 28

25 20

;

**run**;

/\*proc print data=act9pt2;run;

proc univariate data=act9pt2 normal;

var breast\_fed bottle\_fed;

run;\*/

\*proc univariate performs Wilcoxon signed-rank test;

**proc** **univariate** data=act9pt2;

ods select TestsForLocation;

title "Result (b) & (c) of act 9.2: signed rank test";

var diff;

**run**;

/\*\*\*\*\*Act 9.3, Ref: problem 9.15, page 366\*\*\*\*\*/

libname lib "C:\Users\kislam\Desktop\Courses\Stat 468 568 BioStat";

ods select WilcoxonTest;

**proc** **npar1way** data=lib.smoke wilcoxon;

title "Result of act 9.3: signed sum test";

class gender;

var Day\_abs;

**run**;

/\*Act 9.4: Pemutation rank-sum test\*/

**proc** **iml**;

/\*define two groups as vectors:

grp1 and grp2\*/

grp1 = {**7.5**,**12.6**,**3.8**,**20.2**,**6.8**,**403.3**,**2.9**,**7.2**,**10.5**,**205.4**};

grp2 = {**8.2**,**13.3**,**102.0**,**12.7**,**6.3**,**4.8**,**19.5**,**8.3**,**407.1**,**10.2**};

call randseed(**123456**); /\* set random number seed \*/

/\* stack two grps into into a single grp vector\*/

grp = grp1//grp2; /\* stack data into a single vector\*/

n1 = nrow(grp1);

n = n1 + nrow(grp2);

/\*Assign ranks to the combined vector grp\*/

r=rank(grp);

/\*observed value of the rank-sum statistics due to grp1\*/

robs=sum(r[**1**:n1]);

/\*generate k=1000 samples WOR for 1000 permutations\*/

k= **1000**;

/\* define nulldist, a result holder vector\*/

nulldist = j(k,**1**);

do i = **1** to k;

rs = sample(r, n, "wor");

nulldist[i] = sum(rs[**1**:n1]); /\* sum of ranks due to x1 sample \*/

end;

pL=mean(nulldist<=robs);

pR=mean(nulldist>=robs);

pT=**2**\*min(pL,pR,**0.5**);

title "Act 9.4: Obs rank-sum statistic:";

print robs;

print "p-values of rank-sum permutation test:", pL pR pT;

**quit**;

/\*proc iml;

x={1,5,2,9};

r=rank(x);

s=sum(r);

print x, r, s;

quit;

\*/