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CPH576D SAS and Data Management

11/17/2014

Mid-Term 2

I combined patient and donor information for 610 pancreas transplant patients. Donors had significantly lower ages than recipients at the time of transplant (p<0.001). Recipients had a mean age of 46.78 years whereas donors had a mean age of 25.64 years. Also, the distribution of donors was generally normal (figure 1) whereas there appeared to be a spike in donor between the ages of 17 and 23. The oldest pancreas donor 54.74 years of age and the oldest recipient was 75.99 years of age.

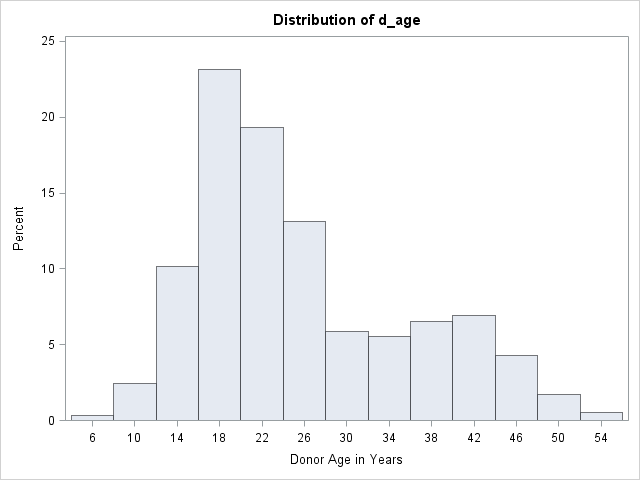
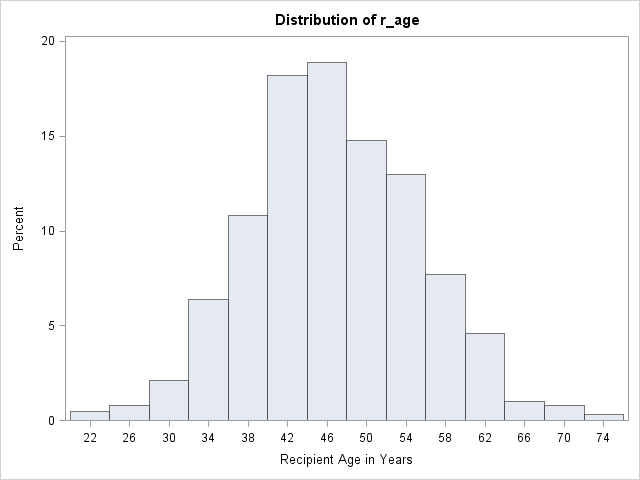


Figure 1: Distribution of donor and recipient ages.

I did not find a correlation between donor and recipient age (ρ=0.027, p-value=.522). Table 1 gives the number of patients which survived 1, 2, or 3 or more years after transplantation. However, these numbers are potentially biased low because we do not have final status for all cases. Table 2 gives the number of cases lost to follow-up because of loss, transfer of care, or re-transplant for 1, 2, or more than 3 years post-transplant.

Table1: Survival of patients 1, 2, and 3 years post-transplant.

| **Survived at least 1 year** | **Survived at least 2 years** | **Survived at least 3 years** |
| --- | --- | --- |
| 417.00 | 285.00 | 164.00 |

Table 2: Number of patients lost to follow-up at 1, 2, and more than 3 years post-transplant.

| **Missing by 1 year** | **Missing by 2 years** | **Missing on or after 3 years** |
| --- | --- | --- |
| 151.00 | 134.00 | 174.00 |

SAS Code:

**data** tr;

set class.test\_pta\_reg;

run;

**data** tf;

set class.test\_pta\_fu;

run;

**data** tc;

set class.test\_pta\_cdr;

run;

**proc** **sort** data=tf;

by px\_id px\_stat\_dt;

**run**;

\*Identify last follow-up;

**data** ttf;

set tf;

by px\_id;

latest = last.px\_id;

run;

\*remove all other cases;

**data** ltf;

set ttf;

if latest = **0** then delete;

run;

\*Some cases are missing date and status but these are also missing for previous observations in the full data;

\*Check for missing identifiers;

**proc** **means** data=ltf nmiss;

var px\_id;

**run**;

**proc** **means** data=tr nmiss;

var px\_id;

**run**;

\*rename vars in Ltf so as not to overwrite vars in tr;

**data** Ltf;

set ltf;

tx\_dtl= tx\_dt;

px\_stat\_dtl= px\_stat\_dt;

px\_statl= px\_stat;

drop tx\_dt px\_stat\_dt px\_stat latest;

run;

\*Sort fu and reg data for merging;

**proc** **sort** data = ltf;

by px\_id;

**run**;

**proc** **sort** data = tr;

by px\_id;

**run**;

\*1:many merge;

**data** new;

merge tr ltf;

by px\_id;

run;

\*Find Last follow-up;

**data** new;

set new;

\*find the most recent followup;

lfup = max(px\_stat\_dt, px\_stat\_dtl);

format lfup date7.;

\*define status based on which was most recent;

if lfup=px\_stat\_dt then lstat=px\_stat;

if lfup=px\_stat\_dtl then lstat = px\_statl;

run;

\*limit to only cases with Donor ID;

**data** new2;

set new;

if px\_d\_idn = "" then delete;

run;

\*Sort by donor\_id for merge with CDR data;

**proc** **sort** data = new2;

by px\_d\_idn;

**run**;

**proc** **sort** data = tc;

by dnr\_idn;

**run**;

**data** all;

merge new2 tc (Rename=(dnr\_idn=px\_d\_idn));

by px\_d\_idn;

run;

\*limit to cases with both donor and px info;

**data** all2;

set all;

if px\_id = **.** then delete;

run;

\*compute donor and recpient age;

**data** all2;

set all2;

d\_age = yrdif(d\_dob,referral\_dt,'actual');

r\_age = yrdif(r\_dob,tx\_dt,'actual');

run;

\*descibe different ages;

**proc** **means** data=all2 mean max min std nmiss;

var d\_age r\_age;

**run**;

**proc** **univariate** data= all2 ;

label d\_age = "Donor Age in Years";

label r\_age = "Recipient Age in Years";

var d\_age r\_age;

histogram;

**run**;

**proc** **ttest** data=all2;

var d\_age r\_age;

**run**;

\*Correlation between recipient and donor age;

**proc** **corr** data = all2;

var d\_age r\_age;

**run**;

\*Calculate time till death;

**data** all2;

set all2;

\*years to last follow-up;

ttlfup = int(yrdif(tx\_dt,lfup));

\*remove case where last follow-up comes before tx date;

if ttlfup < **0** then delete;

\*categorize survival into 1, 2, and 3 years;

if (ttlfup >=**1**) and (lstat = 'A') then surv1 = **1**;

if (ttlfup >=**2**) and (lstat = 'A') then surv2 = **1**;

if (ttlfup >=**3**) and (lstat = 'A') then surv3 = **1**;

\*find number of missing follow-ups in each time period;

if (ttlfup =**1**) and (lstat ne 'A' or lstat ne 'D') then miss1 = **1**;

if (ttlfup =**2**) and (lstat ne 'A' or lstat ne 'D') then miss2 = **1**;

if (ttlfup >=**3**) and (lstat ne 'A' or lstat ne 'D') then miss3 = **1**;

run;

\*Tabulate by survival years and fup status;

**proc** **tabulate** data=all2;

label surv1 = "Survived at least 1 year";

label surv2 = "Survived at least 2 years";

label surv3 = "Survived at least 3 years";

var surv1 surv2 surv3;

table surv1\*sum surv2\*sum surv3\*sum;

**run**;

**proc** **tabulate** data=all2;

label miss1 = "Missing by 1 year";

label miss2 = "Missing by 2 years";

label miss3 = "Missing on or after 3 years";

var miss1 miss2 miss3;

table miss1\*sum miss2\*sum miss3\*sum;

**run**;

SAS log:

1 data tr;

2 set class.test\_pta\_reg;

3 run;

NOTE: There were 610 observations read from the data set CLASS.TEST\_PTA\_REG.

NOTE: The data set WORK.TR has 610 observations and 8 variables.

NOTE: DATA statement used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

4

5 data tf;

6 set class.test\_pta\_fu;

7 run;

NOTE: There were 82602 observations read from the data set CLASS.TEST\_PTA\_FU.

NOTE: The data set WORK.TF has 82602 observations and 4 variables.

NOTE: DATA statement used (Total process time):

real time 0.03 seconds

cpu time 0.03 seconds

8

9 data tc;

10 set class.test\_pta\_cdr;

11 run;

NOTE: There were 108516 observations read from the data set CLASS.TEST\_PTA\_CDR.

NOTE: The data set WORK.TC has 108516 observations and 4 variables.

NOTE: DATA statement used (Total process time):

real time 0.03 seconds

cpu time 0.03 seconds

12

13 proc sort data=tf;

14 by px\_id px\_stat\_dt;

15 run;

NOTE: There were 82602 observations read from the data set WORK.TF.

NOTE: The data set WORK.TF has 82602 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time 0.03 seconds

cpu time 0.03 seconds

16 \*Identify last follow-up;

17 data ttf;

18 set tf;

19 by px\_id;

20 latest = last.px\_id;

21 run;

NOTE: There were 82602 observations read from the data set WORK.TF.

NOTE: The data set WORK.TTF has 82602 observations and 5 variables.

NOTE: DATA statement used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

22 \*remove all other cases;

23 data ltf;

24 set ttf;

25 if latest = 0 then delete;

26 run;

NOTE: There were 82602 observations read from the data set WORK.TTF.

NOTE: The data set WORK.LTF has 15830 observations and 5 variables.

NOTE: DATA statement used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

27 \*Some cases are missing date and status but these are also missing for previous observations

27 ! in the full data;

28 \*Check for missing identifiers;

29 proc means data=ltf nmiss;

30 var px\_id;

31 run;

NOTE: Writing HTML Body file: sashtml.htm

NOTE: There were 15830 observations read from the data set WORK.LTF.

NOTE: PROCEDURE MEANS used (Total process time):

real time 0.92 seconds

cpu time 0.67 seconds

32 proc means data=tr nmiss;

33 var px\_id;

34 run;

NOTE: There were 610 observations read from the data set WORK.TR.

NOTE: PROCEDURE MEANS used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

35 \*rename vars in Ltf so as not to overwrite vars in tr;

36 data Ltf;

37 set ltf;

38 tx\_dtl= tx\_dt;

39 px\_stat\_dtl= px\_stat\_dt;

40 px\_statl= px\_stat;

41 drop tx\_dt px\_stat\_dt px\_stat latest;

42 run;

NOTE: There were 15830 observations read from the data set WORK.LTF.

NOTE: The data set WORK.LTF has 15830 observations and 4 variables.

NOTE: DATA statement used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

43

44 \*Sort fu and reg data for merging;

45 proc sort data = ltf;

46 by px\_id;

47 run;

NOTE: There were 15830 observations read from the data set WORK.LTF.

NOTE: The data set WORK.LTF has 15830 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

48 proc sort data = tr;

49 by px\_id;

50 run;

NOTE: There were 610 observations read from the data set WORK.TR.

NOTE: The data set WORK.TR has 610 observations and 8 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time 0.00 seconds

cpu time 0.00 seconds

51 \*1:many merge;

52 data new;

53 merge tr ltf;

54 by px\_id;

55 run;

NOTE: There were 610 observations read from the data set WORK.TR.

NOTE: There were 15830 observations read from the data set WORK.LTF.

NOTE: The data set WORK.NEW has 15853 observations and 11 variables.

NOTE: DATA statement used (Total process time):

real time 0.00 seconds

cpu time 0.00 seconds

56 \*Find Last follow-up;

57 data new;

58 set new;

59 \*find the most recent followup;

60 lfup = max(px\_stat\_dt, px\_stat\_dtl);

61 format lfup date7.;

62 \*define status based on which was most recent;

63 if lfup=px\_stat\_dt then lstat=px\_stat;

64 if lfup=px\_stat\_dtl then lstat = px\_statl;

65 run;

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

30 at 60:8

NOTE: There were 15853 observations read from the data set WORK.NEW.

NOTE: The data set WORK.NEW has 15853 observations and 13 variables.

NOTE: DATA statement used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

66

67 \*limit to only cases with Donor ID;

68 data new2;

69 set new;

70 if px\_d\_idn = "" then delete;

71 run;

NOTE: There were 15853 observations read from the data set WORK.NEW.

NOTE: The data set WORK.NEW2 has 610 observations and 13 variables.

NOTE: DATA statement used (Total process time):

real time 0.00 seconds

cpu time 0.00 seconds

72

73 \*Sort by donor\_id for merge with CDR data;

74 proc sort data = new2;

75 by px\_d\_idn;

76 run;

NOTE: There were 610 observations read from the data set WORK.NEW2.

NOTE: The data set WORK.NEW2 has 610 observations and 13 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time 0.00 seconds

cpu time 0.00 seconds

77 proc sort data = tc;

78 by dnr\_idn;

79 run;

NOTE: There were 108516 observations read from the data set WORK.TC.

NOTE: The data set WORK.TC has 108516 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time 0.03 seconds

cpu time 0.03 seconds

80 data all;

81 merge new2 tc (Rename=(dnr\_idn=px\_d\_idn));

82 by px\_d\_idn;

83 run;

NOTE: There were 610 observations read from the data set WORK.NEW2.

NOTE: There were 108516 observations read from the data set WORK.TC.

NOTE: The data set WORK.ALL has 108517 observations and 16 variables.

NOTE: DATA statement used (Total process time):

real time 0.04 seconds

cpu time 0.04 seconds

84 \*limit to cases with both donor and px info;

85 data all2;

86 set all;

87 if px\_id = . then delete;

88 run;

NOTE: There were 108517 observations read from the data set WORK.ALL.

NOTE: The data set WORK.ALL2 has 610 observations and 16 variables.

NOTE: DATA statement used (Total process time):

real time 0.03 seconds

cpu time 0.03 seconds

89 \*compute donor and recpient age;

90 data all2;

91 set all2;

92 d\_age = yrdif(d\_dob,referral\_dt,'actual');

93 r\_age = yrdif(r\_dob,tx\_dt,'actual');

94 run;

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=01/10/03 px\_stat\_dt=10/17/03 px\_stat=A r\_gender=F dtype=C px\_d\_idn=QAH068 px\_id=-1965788

r\_dob=08/05/63 tx\_dtl=12073 px\_stat\_dtl=12263 px\_statl=A lfup=17OCT03 lstat=A referral\_dt=08JAN03

d\_dob=. d\_gender=M d\_age=. r\_age=39.432876712 \_ERROR\_=1 \_N\_=4

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=02/26/03 px\_stat\_dt=04/15/05 px\_stat=A r\_gender=M dtype=C px\_d\_idn=QBX021 px\_id=-1946139

r\_dob=08/26/51 tx\_dtl=11827 px\_stat\_dtl=14774 px\_statl=A lfup=15APR05 lstat=A referral\_dt=24FEB03

d\_dob=. d\_gender=M d\_age=. r\_age=51.504109589 \_ERROR\_=1 \_N\_=16

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=05/10/03 px\_stat\_dt=06/20/03 px\_stat=D r\_gender=M dtype=C px\_d\_idn=QEI023 px\_id=-1973686

r\_dob=11/03/61 tx\_dtl=13276 px\_stat\_dtl=13761 px\_statl=L lfup=20JUN03 lstat=D referral\_dt=07MAY03

d\_dob=. d\_gender=F d\_age=. r\_age=41.515068493 \_ERROR\_=1 \_N\_=40

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=06/06/03 px\_stat\_dt=06/19/03 px\_stat=R r\_gender=F dtype=C px\_d\_idn=QFE030 px\_id=-1944923

r\_dob=05/28/57 tx\_dtl=11856 px\_stat\_dtl=12925 px\_statl=A lfup=19JUN03 lstat=R referral\_dt=04JUN03

d\_dob=. d\_gender=F d\_age=. r\_age=46.024657534 \_ERROR\_=1 \_N\_=50

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=08/24/03 px\_stat\_dt=08/25/07 px\_stat=A r\_gender=F dtype=C px\_d\_idn=QHX005 px\_id=-1937237

r\_dob=06/14/59 tx\_dtl=11324 px\_stat\_dtl=11371 px\_statl=A lfup=25AUG07 lstat=A referral\_dt=.

d\_dob=. d\_gender= d\_age=. r\_age=44.194520548 \_ERROR\_=1 \_N\_=73

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=09/14/03 px\_stat\_dt=03/20/08 px\_stat=A r\_gender=M dtype=C px\_d\_idn=QIM011 px\_id=-1925947

r\_dob=09/05/53 tx\_dtl=11621 px\_stat\_dtl=11966 px\_statl=L lfup=20MAR08 lstat=A referral\_dt=12SEP03

d\_dob=. d\_gender=M d\_age=. r\_age=50.024657534 \_ERROR\_=1 \_N\_=74

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=10/12/03 px\_stat\_dt=05/22/06 px\_stat=A r\_gender=F dtype=C px\_d\_idn=QJK015 px\_id=-1923352

r\_dob=10/04/60 tx\_dtl=10962 px\_stat\_dtl=11692 px\_statl=A lfup=22MAY06 lstat=A referral\_dt=11OCT03

d\_dob=. d\_gender=M d\_age=. r\_age=43.021251591 \_ERROR\_=1 \_N\_=84

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=11/27/03 px\_stat\_dt=09/16/04 px\_stat=D r\_gender=F dtype=C px\_d\_idn=QKZ004 px\_id=-1895195

r\_dob=06/09/40 tx\_dtl=10359 px\_stat\_dtl=14456 px\_statl=R lfup=16SEP04 lstat=D referral\_dt=24NOV03

d\_dob=. d\_gender=F d\_age=. r\_age=63.466951119 \_ERROR\_=1 \_N\_=100

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=12/02/03 px\_stat\_dt=03/18/07 px\_stat=A r\_gender=F dtype=C px\_d\_idn=QLA002 px\_id=-1886080

r\_dob=12/01/41 tx\_dtl=10144 px\_stat\_dtl=10875 px\_statl=A lfup=18MAR07 lstat=A referral\_dt=28NOV03

d\_dob=. d\_gender=F d\_age=. r\_age=62.002739726 \_ERROR\_=1 \_N\_=102

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=01/28/04 px\_stat\_dt=01/17/08 px\_stat=A r\_gender=M dtype=C px\_d\_idn=RA1009 px\_id=-1891701

r\_dob=10/16/55 tx\_dtl=10472 px\_stat\_dtl=17778 px\_statl=A lfup=03SEP08 lstat=A referral\_dt=26JAN04

d\_dob=. d\_gender=M d\_age=. r\_age=48.284729396 \_ERROR\_=1 \_N\_=108

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=02/02/04 px\_stat\_dt=06/29/07 px\_stat=D r\_gender=F dtype=C px\_d\_idn=RBB003 px\_id=-1970319

r\_dob=04/27/62 tx\_dtl=12692 px\_stat\_dtl=14103 px\_statl=L lfup=29JUN07 lstat=D referral\_dt=01FEB04

d\_dob=. d\_gender=M d\_age=. r\_age=41.769623475 \_ERROR\_=1 \_N\_=116

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=02/26/04 px\_stat\_dt=01/17/08 px\_stat=A r\_gender=M dtype=C px\_d\_idn=RBY001 px\_id=-1950375

r\_dob=02/27/71 tx\_dtl=11720 px\_stat\_dtl=11844 px\_statl=A lfup=17JAN08 lstat=A referral\_dt=23FEB04

d\_dob=. d\_gender=F d\_age=. r\_age=32.996841081 \_ERROR\_=1 \_N\_=126

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=03/13/04 px\_stat\_dt=08/07/05 px\_stat=A r\_gender=F dtype=C px\_d\_idn=RCK026 px\_id=-1858353

r\_dob=11/08/67 tx\_dtl=12639 px\_stat\_dtl=15650 px\_statl=A lfup=07AUG05 lstat=A referral\_dt=11MAR04

d\_dob=. d\_gender=M d\_age=. r\_age=36.344666517 \_ERROR\_=1 \_N\_=132

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=06/19/04 px\_stat\_dt=06/20/08 px\_stat=A r\_gender=F dtype=C px\_d\_idn=RFQ001 px\_id=-1763381

r\_dob=09/29/60 tx\_dtl=13770 px\_stat\_dtl=17089 px\_statl=D lfup=20JUN08 lstat=A referral\_dt=16JUN04

d\_dob=. d\_gender=M d\_age=. r\_age=43.721311475 \_ERROR\_=1 \_N\_=171

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=07/13/04 px\_stat\_dt=07/09/07 px\_stat=A r\_gender=F dtype=C px\_d\_idn=RGL013 px\_id=-1930588

r\_dob=11/23/47 tx\_dtl=11509 px\_stat\_dtl=12240 px\_statl=A lfup=09JUL07 lstat=A referral\_dt=12JUL04

d\_dob=. d\_gender=F d\_age=. r\_age=56.63690396 \_ERROR\_=1 \_N\_=179

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=07/16/04 px\_stat\_dt=05/15/07 px\_stat=A r\_gender=F dtype=C px\_d\_idn=RGN018 px\_id=-1890468

r\_dob=05/28/64 tx\_dtl=10514 px\_stat\_dtl=12417 px\_statl=L lfup=15MAY07 lstat=A referral\_dt=13JUL04

d\_dob=. d\_gender=F d\_age=. r\_age=40.133879781 \_ERROR\_=1 \_N\_=180

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=11/18/04 px\_stat\_dt=01/15/08 px\_stat=A r\_gender=F dtype=C px\_d\_idn=RKQ041 px\_id=-1921652

r\_dob=07/23/63 tx\_dtl=11047 px\_stat\_dtl=11413 px\_statl=L lfup=15JAN08 lstat=A referral\_dt=13NOV04

d\_dob=. d\_gender=M d\_age=. r\_age=41.323617037 \_ERROR\_=1 \_N\_=224

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=12/30/04 px\_stat\_dt=11/17/07 px\_stat=A r\_gender=M dtype=C px\_d\_idn=RL2049 px\_id=-1763380

r\_dob=06/11/62 tx\_dtl=13252 px\_stat\_dtl=16018 px\_statl=A lfup=17NOV07 lstat=A referral\_dt=27DEC04

d\_dob=. d\_gender=F d\_age=. r\_age=42.553439629 \_ERROR\_=1 \_N\_=226

NOTE: Invalid argument to function YRDIF at line 92 column 9.

tx\_dt=01/05/05 px\_stat\_dt=01/06/08 px\_stat=A r\_gender=F dtype=C px\_d\_idn=SAC023 px\_id=-1737019

r\_dob=04/13/68 tx\_dtl=. px\_stat\_dtl=. px\_statl= lfup=06JAN08 lstat=A referral\_dt=01JAN05 d\_dob=.

d\_gender=F d\_age=. r\_age=36.729538139 \_ERROR\_=1 \_N\_=239

NOTE: Invalid argument to function YRDIF at line 92 column 9.

WARNING: Limit set by ERRORS= option reached. Further errors of this type will not be printed.

tx\_dt=01/07/05 px\_stat\_dt=01/20/06 px\_stat=D r\_gender=F dtype=C px\_d\_idn=SAE018 px\_id=-1736266

r\_dob=12/14/57 tx\_dtl=13493 px\_stat\_dtl=14014 px\_statl=A lfup=20JAN06 lstat=D referral\_dt=05JAN05

d\_dob=. d\_gender=M d\_age=. r\_age=47.065753425 \_ERROR\_=1 \_N\_=240

NOTE: Mathematical operations could not be performed at the following places. The results of the

operations have been set to missing values.

Each place is given by: (Number of times) at (Line):(Column).

30 at 92:9

NOTE: There were 610 observations read from the data set WORK.ALL2.

NOTE: The data set WORK.ALL2 has 610 observations and 18 variables.

NOTE: DATA statement used (Total process time):

real time 0.03 seconds

cpu time 0.03 seconds

95 \*descibe different ages;

96 proc means data=all2 mean max min std nmiss;

97 var d\_age r\_age;

98 run;

NOTE: There were 610 observations read from the data set WORK.ALL2.

NOTE: PROCEDURE MEANS used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

99 proc univariate data= all2 ;

100 label d\_age = "Donor Age in Years";

101 label r\_age = "Recipient Age in Years";

102 var d\_age r\_age;

103 histogram;

104 run;

NOTE: PROCEDURE UNIVARIATE used (Total process time):

real time 0.95 seconds

cpu time 0.57 seconds

105 proc ttest data=all2;

106 var d\_age r\_age;

107 run;

NOTE: PROCEDURE TTEST used (Total process time):

real time 0.89 seconds

cpu time 0.29 seconds

108 \*Correlation between recipient and donor age;

109 proc corr data = all2;

110 var d\_age r\_age;

111 run;

NOTE: PROCEDURE CORR used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

112

113 \*Calculate time till death;

114 data all2;

115 set all2;

116 \*years to last follow-up;

117 ttlfup = int(yrdif(tx\_dt,lfup));

118 \*remove case where last follow-up comes before tx date;

119 if ttlfup < 0 then delete;

120 \*categorize survival into 1, 2, and 3 years;

121 if (ttlfup >=1) and (lstat = 'A') then surv1 = 1;

122 if (ttlfup >=2) and (lstat = 'A') then surv2 = 1;

123 if (ttlfup >=3) and (lstat = 'A') then surv3 = 1;

124 \*find number of missing follow-ups in each time period;

125 if (ttlfup =1) and (lstat ne 'A' or lstat ne 'D') then miss1 = 1;

126 if (ttlfup =2) and (lstat ne 'A' or lstat ne 'D') then miss2 = 1;

127 if (ttlfup >=3) and (lstat ne 'A' or lstat ne 'D') then miss3 = 1;

128 run;

NOTE: There were 610 observations read from the data set WORK.ALL2.

NOTE: The data set WORK.ALL2 has 609 observations and 25 variables.

NOTE: DATA statement used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

129

130 \*Tabulate by survival years and fup status;

131 proc tabulate data=all2;

132 label surv1 = "Survived at least 1 year";

133 label surv2 = "Survived at least 2 years";

134 label surv3 = "Survived at least 3 years";

135 var surv1 surv2 surv3;

136 table surv1\*sum surv2\*sum surv3\*sum;

137 run;

NOTE: There were 609 observations read from the data set WORK.ALL2.

NOTE: PROCEDURE TABULATE used (Total process time):

real time 0.01 seconds

cpu time 0.01 seconds

138

139 proc tabulate data=all2;

140 label miss1 = "Missing by 1 year";

141 label miss2 = "Missing by 2 years";

142 label miss3 = "Missing on or after 3 years";

143 var miss1 miss2 miss3;

144 table miss1\*sum miss2\*sum miss3\*sum;

145 run;

NOTE: There were 609 observations read from the data set WORK.ALL2.

NOTE: PROCEDURE TABULATE used (Total process time):

real time 0.03 seconds

cpu time 0.03 seconds