\*6.8;

**proc** **format**;

value edfmt **1**='<=7' **2**='8-9' **3**='10-11' **4**='12+';

**run**;

**data** mom;

infile '\\apporto.com\dfs\LOYOLA\23SPStatisticalComputingST710W01\Elliott\btt.dat';

input socio **33** momeduc **29** socio5 **73**;

title 'Mother Education level';

format momeduc edfmt.;

label momeduc = 'Grade Completed'

socio ='Mother Socioeconomic Status at Birth'

socio5 ='Mother Socioeconomic Status at 5';

**run**;

\*part a;

**proc** **sgplot** data=mom;

vbar momeduc ;

**run**;

\*part b;

**proc** **sgplot** data=mom;

title 'Histogram of Socioeconomic Status at Birth';

density socio/type=kernel;

**run**;

**proc** **sgplot** data=mom;

title 'Histogram of Socioeconomic Status at 5 Years Old';

density socio5/type=kernel;

**run**;

6.8b description: The distribution of the mother’s socioeconomic status at the time of the child’s birth was a normal distribution with a slight skew to the left. In contrast, the mother’s socioeconomic status at the time of the child’s 5th birthday was not a normal distribution. The distribution still has the left-skew, but it now shows high density spiking at each socioeconomic level. This suggests that there was a change in some of the mother’s status in those 5 years changed significantly.

\*8.4;

**data** poisson;

do i= **1** to **700**;

x= ranpoi(**86438**, **5**);

output;

end;

**run**;

**proc** **sgplot** data=poisson;

title 'Poisson Distribution of 700 Random Numbers';

histogram x;

**run**;

8.4 description: The shape of the distribution histogram is a normal distribution with a skew to the left.

\*8.6

show hist of 1000 values of x1;

**data** exponent1;

do iteration=**1** to **1000**;

x= ranexp(**86438**);

output;

end;

**run**;

**proc** **sgplot** data=exponent1;

title 'Exponent Distribution of 1000 Random Numbers: lambda=1';

histogram x;

**run**;

\*show hist plot of 1000 values of x7;

**data** exponent7a;

do iteration=**1** to **1000**;

x= ranexp(**86438**);

lam7=x/**7**;

output;

end;

**run**;

**proc** **sgplot** data=exponent7a;

title 'Exponent Distribution of 1000 Random Numbers: lambda=7';

histogram lam7;

label

lam7='Lambda=7';

**run**;

8.6 comparison of lambda=1 vs lambda=7 with 1000 samples: The distribution of 1000 samples of lambda 1 vs lambda 7 shows that when the lambda number is higher, the exponential graph will be steeper.

\*create dataset for 10 values repeated 1000 times;

**data** exponent7;

do iteration=**1** to **1000**;

do group=**1** to **10**;

x= ranexp(**86438**);

lam7=x/**7**;

output;

end;

end;

**run**;

\*find mean and output as table;

**proc** **sql**;

create table work.avgs as

select iteration, mean(lam7) as mean

from exponent7

group by iteration;

**quit**;

\*merge table for mean and original exponent7 data;

**data** expwavg;

merge exponent7 avgs;

by iteration;

**run**;

\*create hist of mean with normal curve overlay;

**proc** **univariate** data=expwavg;

title 'Mean of Exponent Distribution of 1000 Random Numbers with lambda=7';

histogram mean /normal;

**run**;

8.6 mean description: The shape of the distribution is a normal bell curve with a skew to the left.