STAT 8320 Spring 2015 Assignment 2

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```
libname da2 'C:\Users\psy6b\Desktop\8320 datasets';
ods graphics on;
options ls=70 ps=35;

data da2.h5q2;
infile 'C:\Users\psy6b\Desktop\8320 datasets\growthdata.dat';
input t @;
do i=1 to 6;
input y @;
output;
end;
run;

data aver;
set da2.h5q2;
by t;
retain count yave;
if first.t then do;
count=0;
yave=0;
end;
count+1;
yave+y;
if last.t then do;
y=yave/count;
```

```
i=7;
output;
end;
keep t i y;
run;

data da2.h5q2plot;
set da2.h5q2 aver;
run;

proc sort data=da2.h5q2plot;
by i;
run;

symbol interpol=join;
proc gplot data=da2.h5q2plot;
plot y*t=i;
run;
quit;


proc nlmixed data=da2.h5q2;
parameters beta1=140 to 240 by 25
beta2=850 to 1050 by 100
beta3=250 to 400 by 50
resvar=30 to 50 by 10
varu=400 to 1600 by 500;
e=exp(-(t-beta2)/beta3);
model y ~ normal((beta1+u)/(1+e), resvar);
random u ~ normal(0,varu) subject=i out=EBlups;
predict beta1/(1+e) out=pred;
predict (beta1+u)/(1+e) out=predB;
estimate 'Beta_3=350?' beta3-350;
ods output ParameterEstimates=estimates;
run;

proc sort data=pred;
by i t;
```

```
run;
proc sort data=predB;
by i t;
run;
data panelplot;
merge predB(rename=(pred=PredB)) pred;
by i t;
length type $20;
keep i t type resp;
type='measurement';
resp=y;
output;
type='cluster-specific';
resp=predb;
output;
type='population-average';
resp=pred;
output;
run;

proc sgpanel data=panelplot;
panelby i/spacing=5 rows=2 columns=3 novarname;
vline t/response=resp group=type;
run;

proc print data=eblups;
title 'Estimation of Random Effect';
var i Estimate tValue Probt;
run;

title;




data da2.h5q31;
infile 'C:\Users\psy6b\Desktop\8320 datasets\ssttornado532001.dat';
```

```
retain ss1-ss49;
array ss{49} ss1-ss49;
if _N_=1 then do; input ss1-ss49;end;
loc+1;
drop ss1-ss49;
do t=1 to 49;
sst=ss{t};
input torn @;
output;
end;
run;

data da2.h5q32;
infile 'C:\Users\psy6b\Desktop\8320 datasets\MOtornlatlon.dat';
loc+1;
input lat lon;
run;

proc sql;
create table da2.h5q3
as select * from da2.h5q31 as a, da2.h5q32 as b
where a.loc=b.loc;
run;
quit;

proc glimmix data=da2.h5q3;
class loc;
model torn = sst sst*loc / dist=poisson link=log ddfm=betwithin solution;
random intercept / subject=loc type=sp(exp)(lon lat);
nloptions tech=newrap;
output out=h5q3out pred(ilink)=predicted lcl(ilink)=lower ucl(ilink)=upper pred
run;

data panelplot2;
set h5q3out;
length type $20;
keep loc t type resp;
t=t+1952;
```

```
type='measurement';
resp=torn;
output;
type='cluster-specific';
resp=predicted;
output;
type='lower bound';
resp=lower;
output;
type='upper bound';
resp=upper;
output;
run;

proc sgpanel data=panelplot2;
where loc le 4 and loc ge 1;
panelby loc/rows=2 columns=2 spacing=5;
vline t/response=resp group=type;
colaxis fitpolicy=thin alternate;
run;
proc sgpanel data=panelplot2;
where loc le 8 and loc ge 5;
panelby loc/rows=2 columns=2 spacing=5;
vline t/response=resp group=type;
colaxis fitpolicy=thin alternate;
run;
proc sgpanel data=panelplot2;
where loc le 12 and loc ge 9;
panelby loc/rows=2 columns=2 spacing=5;
vline t/response=resp group=type;
colaxis fitpolicy=thin alternate;
run;
proc sgpanel data=panelplot2;
where loc le 16 and loc ge 13;
panelby loc/rows=2 columns=2 spacing=5;
vline t/response=resp group=type;
colaxis fitpolicy=thin alternate;
run;
```

```
proc sgpanel data=panelplot2;
where loc le 20 and loc ge 17;
panelby loc/rows=2 columns=2 spacing=5;
vline t/response=resp group=type;
colaxis fitpolicy=thin alternate;
run;
```

Figure 1: Regression Analysis

The Mixed Procedure

Model Information

Data Set	WORK.SPLIT
Dependent Variable	milk
Covariance Structure	Variance Components
Estimation Method	Type 1
Residual Variance Method	Factor
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information

Class	Levels	Values
plot	3	1 2 3
past	4	1 2 3 4
min	2	1 2

Dimensions

Covariance Parameters	3
Columns in X	15
Columns in Z	15
Subjects	1
Max Obs per Subject	24

Number of Observations

Number of Observations Read	24
Number of Observations Used	24
Number of Observations Not Used	0

Figure 2: Graphs for Regression Analysis