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The SENIC Study - Appendix C

From 1975-1976, 113 hospitals were surveyed  to determine whether
infection surveillance
and control programs have reduced the rates of hospital-acquired
infection.

Our goal is to determine how the expected risk of infection
changes with:
  - average patient age (age)
  - average length of stay (stay)
  - percent of 35 potential facilities and services provided by
the hospital (facilities).
*****************************************************************
**************************/

ods rtf file = 'senic.rtf';
ods graphics on;
ods select all;
data senic;
infile "C:/users/khchen/Documents/My SAS
Files/9.3/senicdata.txt";
input id stay age risk culture xray beds school region nptns
nnurse facilities;
run;


/
*****************************************************************
**********
Try to visualize the univariate associations
*****************************************************************
***********/
proc corr data = senic;
var risk age stay facilities;
run;

PROC SGSCATTER data=senic;
MATRIX risk age stay facilities /DIAGONAL = (HISTOGRAM);
RUN;




/
*****************************************************************
**********
Look at univariate regression models
*****************************************************************
```

```
***********/
title 'Look at univariate regression models';
proc reg data=senic;
model risk = age ;
model risk = stay;
model risk = facilities;
run;quit;



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***********/
title 'Run the multivariate model';
proc reg data = senic;
model risk = age stay facilities;
plot r.*age;
plot r.*stay;
plot r.*facilities;
plot r.*nqq.;
run;


/
**********************************************************************
**********
Everything looks good so far.
Do we need interactions between our variables (think about what
this means).
Let's do a graphical check (will talk about formal checks in
chapter 7).
**********************************************************************
***********/
data interactions;
set senic;
AgeStay= age*stay;
AgeFac = age*facilities;
StayFac = stay*facilities;
run;

title 'look at interaction';
proc reg data = interactions;
model risk = age stay facilities;
var AgeStay AgeFac StayFac;
plot r.*AgeStay;
plot r.*AgeFac;
plot r.*StayFac;
run;
```

```
title 'use test';
proc reg data = interactions;
model risk = age stay facilities /ss1 ss2;
stayfacility: test stay=0,facilities =0;
run;

title 'use restrict'
proc reg data = interactions;
model risk = age stay facilities;
restrict stay=0,facilities =0;
run;

title 'use glm';
proc glm data = interactions;
model risk = age stay facilities;
contrast 'stayfacility' stay 1, facilities 1;
run;


/
**********
See pdf file for overview and conclusions
**********/
ods rtf close;
ods graphics off;
```