**Here is SAS code for producing plots useful for logistic regression (and other models) with the least amount of code. Following this is an R script that does basically the same thing.**

**After examining the figures, what other model might fit the data better?**

**data** donner;

input name $ **1**-**20** family $ age sex $ survived death $ **51**-**61** ;

datalines;

Antoine Other 23 Male 0 1846-12-29

Breen, Edward Breen 13 Male 1 <NA>

Breen, Margaret I. Breen 1 Female 1 <NA>

…

Run;

title "Two possible loess";

ods graphics/imagefmt=jpeg;

**proc** **sgplot** data=donner;

xaxis label = "Age";

yaxis label = "Probability/proportion survived";

scatter x = age y = survived;

\* Used different smooth values to choose one;

loess x = age y = survived/nomarkers smooth=**0.25**;

loess x = age y = survived/nomarkers smooth=**0.50**;

**run**;

/\* To jitter was actually have to create a jittered data -- reveals some "hiding" ones \*/

**data** jdonner;

 set donner;

 \* change .008 to your liking;

 jit = **.008**\*rannor(**43534**);

 jsurvived= survived+jit;

**run**;

\* Loess and jitter;

**proc** **sgplot** data=jdonner;

xaxis label = "Age";

yaxis label = "Probability/proportion survived";

scatter x = age y = jsurvived / markerattrs = (size = **8** symbol = circle);;

loess x = age y = survived/nomarkers smooth=**0.50**;

**run**;

/\* Lets add logit model fitted values\*/

**proc** **sort** data=jdonner;

 by age;

**run**;

title "Logit, Loess and Jitter";

**proc** **genmod** data=jdonner DESCENDING;

 model survived = age / link=logit dist=binomial;

 output out=mylogit pred=plogit;

**run**;

**data** jdonner;

 set jdonner mylogit;

**run**;

**proc** **sort** data=jdonner;

 by age;

**run**;

**proc** **sgplot** data=jdonner;

xaxis label = "agement Score";

yaxis label = "Probability/proportion survived";

scatter x = age y = jsurvived / markerattrs = (size = **8** symbol = circle color=blue);

loess x = age y = survived/nomarkers smooth=**0.50**;

series x = age y= plogit2 ;

**run**;

# R script

setwd("…put path to data here…")

donner <- read.table(file="DonnerData.txt", header=TRUE)

names(donner)

head(donner)

# fit loess to data

lw1 <- loess(survived~ age,data=donner)

# Draw graph of Data and Loess

plot(donner$age,jitter(donner$survived,0.1),

 main="Donner Party Survivals vs Age",

 xlab="Age",

 ylab="Probabilty of Survival",

 cex=1.75,

 col="black",

 pch=20

 )

j <- order(donner$age)

lines(donner$age[j],lw1$fitted[j],col="cyan",lwd=3)

text(30,.7,"Fitted Loess Curve",col="cyan")

# Fit Logit model

summary( logit.mod <- glm(survived ~ age, data=donner, family=binomial(link="logit")) )

donner$logit.fit <- fitted.values(logit.mod)

# Add fitted values to figure

j <- order(donner$age)

lines(donner$age[j],donner$logit.fit[j],col="blue",lwd=3)

text(60,.30,"survived ~ age",col="blue")