Categorical Data Analysis
Lab material #6

```
/* Beetle Mortality Data */
data crab;
input x n y;
cards;
1.6907 59 6
1.7242 60 13
1.7552 62 18
1.7842 56 28
1.8113 63 52
1.8369 59 53
1.8610 62 61
1.8839 60 59
;
run;

proc genmod data=crab;
model y/n=x / dist=binomial link=logit;
run;
```

Output 1 Results

The GENMOD Procedure

Model Information

Data Set	WORK.CRAB
Distribution	Binomial
Link Function	Logit
Response Variable (Events)	y
Response Variable (Trials)	n

Number of Observations Read	8
Number of Observations Used	8
Number of Events	290
Number of Trials	481

Response Profile

Ordered Value	Binary Outcome	Total Frequency
1	Event	290
2	Nonevent	191

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	6	8.6398	1.4400
Scaled Deviance	6	8.6398	1.4400
Pearson Chi-Square	6	8.4334	1.4056
Scaled Pearson X2	6	8.4334	1.4056
Log Likelihood		-190.0251	

Full Log Likelihood	-18.4105
AIC (smaller is better)	40.8210
AICC (smaller is better)	43.2210
BIC (smaller is better)	40.9799

Algorithm converged.

Analysis Of Maximum Likelihood Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept	1	-59.1875	5.0530	-69.0912	-49.2838	137.20	<.0001
x	1	33.4007	2.8394	27.8355	38.9659	138.37	<.0001
Scale	0	1.0000	0.0000	1.0000	1.0000		

NOTE: The scale parameter was held fixed.

```
/* Antibiotic Data */
data antibiotic;
input x y n;
freq=y+n;
cards;
1 38 62
2 21 79
;
run;

proc genmod data=antibiotic;
class x;
model y/freq = x / dist=binomial link=logit;
run;
```

Output 2 Results

The GENMOD Procedure

Model Information

Data Set	WORK.ANTIBIOTIC
Distribution	Binomial
Link Function	Logit
Response Variable (Events)	y
Response Variable (Trials)	freq

Number of Observations Read	2
Number of Observations Used	2
Number of Events	59
Number of Trials	200

Class Level Information

Class	Levels	Values
x	2	1 2

Response Profile

Ordered Value	Binary Outcome	Total Frequency
1	Event	59
2	Nonevent	141

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	0	0.0000	.
Scaled Deviance	0	0.0000	.
Pearson Chi-Square	.	0.0000	.
Scaled Pearson X2	.	0.0000	.
Log Likelihood		-117.8021	
Full Log Likelihood		-4.8289	
AIC (smaller is better)		13.6579	
AICC (smaller is better)		.	
BIC (smaller is better)		11.0442	

Algorithm converged.

Analysis Of Maximum Likelihood Parameter Estimates

Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept		1	-1.3249	0.2455	-1.8061	-0.8437	29.12	<.0001
x	1	1	0.8354	0.3205	0.2072	1.4636	6.79	0.0091
x	2	0	0.0000	0.0000	0.0000	0.0000	.	.
Scale		0	1.0000	0.0000	1.0000	1.0000		

NOTE: The scale parameter was held fixed.