The rats, part 1

January 28, 2011

Data:

```
0 lived
1 died
2 lived
3 lived
4 died
5 died
```

SAS code and output:

```
data rat;
  infile "rat.dat";
  input dose survival $;

proc print;

proc logistic;
  class survival;
  model survival(event='lived') = dose;
  output out=rat2 pred=pred;

proc print data=rat2;
```

```
Obs     dose      survival
 1        0         lived
 2        1         died
 3        2         lived
 4        3         lived
 5        4         died
 6        5         died
```

```
The LOGISTIC Procedure
           Model Information
Data Set                      WORK.RAT
Response Variable             survival
```

```
Number of Response Levels        2
Model                       binary logit
Optimization Technique      Fisher's scoring

Number of Observations Read              6
Number of Observations Used              6

          Response Profile
 Ordered                     Total
   Value       survival    Frequency
       1       died                3
       2       lived               3
Probability modeled is survival='lived'.

                  Model Convergence Status
          Convergence criterion (GCONV=1E-8) satisfied.

          Model Fit Statistics
                            Intercept
                Intercept       and
Criterion          Only     Covariates
AIC              10.318        10.773
SC               10.110        10.356
-2 Log L          8.318         6.773

          Testing Global Null Hypothesis: BETA=0
Test                 Chi-Square       DF      Pr > ChiSq
Likelihood Ratio        1.5449         1          0.2139
Score                   1.4286         1          0.2320
Wald                    1.2037         1          0.2726

          Analysis of Maximum Likelihood Estimates
                              Standard        Wald
Parameter    DF    Estimate     Error    Chi-Square    Pr > ChiSq
Intercept     1      1.6841    1.7978       0.8774        0.3489
dose          1     -0.6736    0.6140       1.2037        0.2726

The LOGISTIC Procedure
          Odds Ratio Estimates
            Point           95% Wald
Effect    Estimate      Confidence Limits
dose        0.510        0.153       1.699

Association of Predicted Probabilities and Observed Responses
Percent Concordant      77.8     Somers' D      0.556
Percent Discordant      22.2     Gamma          0.556
```

```
Percent Tied              0.0    Tau-a          0.333
Pairs                      9     c              0.778

Obs    dose    survival    _LEVEL_      pred
 1       0      lived        lived     0.84344
 2       1      died         lived     0.73310
 3       2      lived        lived     0.58342
 4       3      lived        lived     0.41658
 5       4      died         lived     0.26690
 6       5      died         lived     0.15656
```