

Key

Logistic Regression Practice

OR estimation among 3 groups
3-26-10

Suppose we have 3 groups with group 1 serving as the reference group. The data are as follows

	Disease	
	yes	no
g1	10	25
g2	25	12
g3	18	15

Dummy variable table

	group2	group3
g1	0	0
g2	1	0
g3	0	1

If we constructed the 2x2 table for g2 and g1 we would have:

	yes	no
g2	25	12
g1	10	25

$$OR = \underline{5.208}$$

Also we could ^{put} do the same for g3 and g1.

	yes	no
g3	18	15
g1	10	25

$$OR = \underline{3.00}$$

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Exp(Est)
Intercept	1	-0.9163	0.3742	5.9971	0.0143	0.400
group2	1	1.6503	0.5132	10.3419	0.0013	5.208
group3	1	1.0986	0.5121	4.6028	0.0319	3.000

1. A logistic model $g(x) = \beta_0 + \beta_1 \text{ group 2} + \beta_2 \text{ group 3}$ was fit to the data.

1. What is the value for $\hat{\beta}_1$? 1.6503
2. What is an interpretation for this value?
This is the $\ln(\text{OR})$ for group 2 compared to group 1
3. What is the standard error for the $\ln(\text{OR})$ for group 2 compared to group 1? 0.5132
4. What is the $\ln(\text{OR})$ for group 3 compared to group 1? 1.0986
5. What is the standard error for the $\ln(\text{OR})$ for group 3 compared to group 1? 0.5121
6. What is the OR for group 3 compared to group 1? 3.00
7. Calculate a 95% CI for the OR of group 3 compared to group 1. (1.100, 8.185)