Chapter 4

Statistical Modeling

Logistic regression is well known for modeling of binary outcome. Since the outcome variable has more than 2 levels, multinomial logistic regression is an appropriate method for assessing the effect of determinant on the outcome.

4.1 Multinomial logistic regression model

For the association between type of land use change and location were identified by using multinomial logistic regression. The results are shown in table 4.1.

Parameter Estimate		Coefficient	St. Error	p-value
2:Natural to Farm/Developed :	constant	0.0606	0.3483	0.8618
	1: North	0		
	2: South	1.1104	0.5605	0.0476
	3: River	0.7660	0.5716	0.1802
3:Farm/Developed to Natural :	constant	-0.6932	0.4330	0.1094
	1: North	0		
	2: South	-0.2231	0.602	0.7109
	3: River	0.9445	0.6644	0.1552
4:Farm/Developed to Farm/Developed :	constant	0.4855	0.3177	0.1265
	1: North	0		
	2: South	0.7086	0.462	0.1251
	3: River	0.7466	0.5343	0.1623

Residual Deviance: 450.44 AIC: 468.44

Table 4.1 Model of association between type of land use change and location.

Table 4.1 shows Table 4.4 shows the estimated parameters, where the 1: Natural to Natural to be our referent outcome category. Apart from constant term and indicate this in the model, for a summary of the model.

The result after fitting a multinomial logistic regression model shows in the south was associated with Natural changed to Farm or Developed. The model provides a residual deviance of 450.44 with 6 degrees of freedom. The 95% confidence interval of the coefficients were computed base on the coefficients and the standard errors.The proportions and their 95% confidence intervals were shown in percent of land use change for each location (figure 4.1).

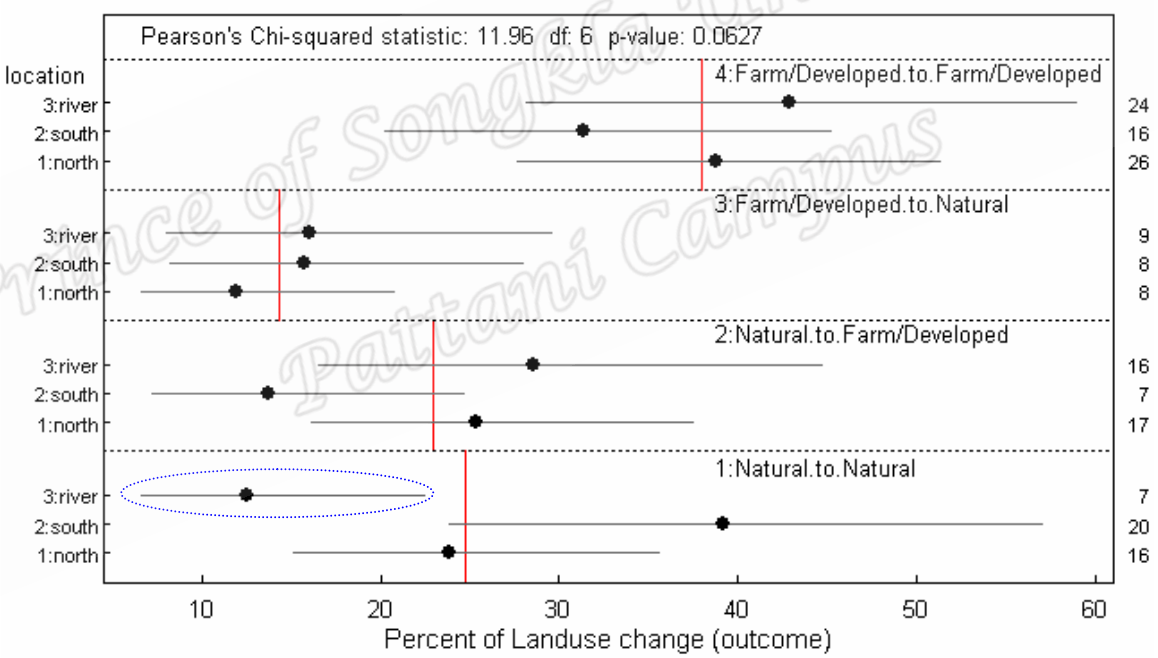

Figure 4.1: 95% confidence intervals plot of land use change for each location

Figure 4.1 shows 95% confidence intervals plot of land use change. Although there were various land use changes among 4 groups of land use change, land use change in each group was compared with its overall proportion.

It was found only statistically significant patterns was ‘natural remaining natural’ had less natural land was preserved around the river, but more was preserved in the south area.

For other groups among the location, in the south was less likely to be changed from natural changed to farm or developed than other locations.