Demographic Factors Affecting Employment in
Pattani and Songkla Provinces of Thailand

Pun Thongchumnum

Department of Science

Faculty of Technology and Environment, Prince of Songkla University, Phuket Campus

80/4 Vichitsongklarm Rd, Katu, Phuket, 83120 Thailand

E-mail: tpun@phuket.psu.ac.th

Sunari Suwanro

Department of Mathematics and Computer Science,

Faculty of Science and Technology, Prince of Songkla University, Pattani Campus

181 Charoenpradit Rd., Rusamilae, Muaeng, Pattani, 94000 Thailand

E-mail: ssunari@bunga.pn.psu.ac.th

Chamnein Choonpradub

Department of Mathematics and Computer Science,

Faculty of Science and Technology, Prince of Songkla University, Pattani Campus

181 Charoenpradit Rd., Rusamilae, Muaeng, Pattani, 94000 Thailand

E-mail: cchamnie@bunga.pn.psu.ac.th

Abstract

This study investigated the effects of demographic factors on the employment of people in Pattani and Songkla Provinces of Thailand. The outcome variable is binary employment status (employed or unemployed). The determinant variables are education completion level (none, elementary, secondary, high) and the demographic factors gender, religion (Islam or Other), seven 5-year age groups (25-29 to 54-59), and district. We used data from the 2000 Census of the National Statistical Office. The analysis method involved first stratifying by religion, gender and district and then fitting logistic regression models in each stratum to determine odds ratios for the association between the outcome and the education completion level factor after adjusting for age group, and then combining these odds ratios using meta-analysis to obtain the overall independent association between education completion and unemployment in each province. The results showed that in Songkla province persons who had completed secondary education had no advantage in gaining employment over those who had completed only elementary education. And in Pattani province, those who had completed secondary education had a substantially higher unemployment rate than those with only an elementary education.

Keywords: Unemployment rate, Education completed, Age group, Religious affiliation, District, Logistic regression, Odds ratio

1. Introduction

The total population of Thailand increased from 55.8 million in 1990 to 62.3 million in 2000. In November 2000, 53.3% was in the labour force while about 24.8% were over 13 years old but not in the labour force. The rest of the population (21.9%) was under 13 years of age. Among those who were employed, only 2.7 percent were employers, while 40.3 percent were employees and 57 percent were classified as other workers.

According to the *Thailand Development Research Institute (TDRI)*, the total number of unemployed in the population in the third quarter of 2001 was 930,000. Among them, 381,000 (41%) were new graduates, 325,000 (35%) were in the informal sector, such as those who were self-employed and farm workers; and 223,000 (24%) were public officials and company employees. The unemployment rate is usually high during the third quarter since this is the cultivation season (National Statistical Office 2001).

The quality of the labor force is one of the most important determinants of Thailand's long-term growth prospects. It will take a sustained commitment to rectify current weaknesses. For example, 80% of Thailand's labor force has only elementary education or less, compared with 60% and 50% for Malaysia and the Republic of Korea, respectively. Although the Government has made considerable efforts to expand education opportunities, elementary school completion rates have actually fallen in recent years (to 69% in 1996). About 5.5 million people in the 6-19 year-old age group are not in school or any form of training. For rural people, participation in education or skill development programs remains strikingly low. For those who do participate, standards are poor. Low quality and low enrolment appear to be strongly correlated. With regard to training, only 1% of the labor force participates in formal, institution-based programs. In-house and on-the-job training schemes have been increasing, but skill shortages have been one of the main factors impeding Thailand's transition to higher value-added industries.

Thailand's success in making elementary education compulsory has not been replicated in secondary and higher levels of education. Although the transition rate from elementary to secondary level has improved from less than 50% in the 1980s to about 90% in 1996, the enrolment rate has remained very low at 34% of the population aged 15-17. Also, there has been little improvement of quality in secondary education, especially in science and mathematics (Asia Development Bank 1999, page 6).

Of the five southern border provinces north of Malaysia, four (Pattani, Yala, Narathiwat and Satun) are different from other areas in Thailand. Their people have a different language, religion and culture to the rest of Thailand. The fifth of these border provinces, Songkla is the only one of the five with a non-Muslim majority (77%). Muslim people comprised 80% in Pattani, 82% in Narathiwat, 80% in Yala, and 68% in Satun (National Statistical Office 2006). Furthermore, Songkla had different education completion rates. At the 2000 census, of the population over 25 years of age, 27.6% in Pattani had not completed elementary education compared with only 14.6% in Songkla. Arguably, such education completion rates affect the individual's stability of occupation, income, and employment status. The negative consequences of unemployment affect not only the individual, but also society at large. Joblessness is connected with negative impacts on the personal perspectives of life, political opposition and integration problems (Strasser 1997).

These considerations prompted us to study the influence of education completion level on unemployment status and compare these associations in Songkla and Pattani, two of the southern Thai provinces with differing levels of educational completion and demographic characteristics. The results of this study could be useful for deciding policy and action in education, for better employment and social integration outcomes.

2. Materials and Methods

2.1 Study design and variables

The study is cross-sectional, based on population data selected from the 2000 Population and Housing Census of Thailand.

Because of the substantial proportions of young persons in education and of older persons in retirement, persons aged 0-24 and 59+ years were excluded from the analysis. Also excluded were those whose level of education completed was not recorded and others whose occupational category was recorded as 'not stated'. Thus full-time students, early retires, unpaid carers within a family and others who did not consider themselves unemployed were excluded from the data. As a result, the focus of this study is very close to the usual definitions of 'labour force', those people seeking employment, whether unemployed or employed in any of the three broadly defined occupational categories (agriculture, elementary, professional). In this classification *elementary* includes plant, service, and various unclassified occupations. The 'unemployment rate' is thus defined as the number of unemployed as a percentage of the total number in the labour force. The total study sample was 232,220 persons for Pattani and 551,695 persons for Songkla. Table 1 shows unemployment rates by age group and occupational category in Pattani and Songkla.

The determinant variables are demographic factors consisting of gender, religion (Islam or Other), age group, education level (none, primary, secondary, high) and district. Data from smaller geographically proximate districts were combined to avoid zero counts in the statistical analysis, reducing the number of regions from 12 to 7 in Pattani and from 16 to 11 in Songkla, as illustrated in Figure 1.

2.2 Statistical methods

The specific aim of the study was to examine the association between unemployment status and completion of education, and to compare these associations in the two selected provinces, after taking into account demographic factors (age group, gender, religion, and location of residence). Since the unemployment outcome is binary and the education completion determinant is a categorical variable with four factors, this association may be described by a set of odds ratios, and logistic regression (see, for example, Hosmer and Lemeshow 2000) may be used to adjust these odds ratios for the demographic factors. To facilitate comparisons with respect to different levels of education completion, we chose completion of elementary education as the referent level. This allows the results to be expressed in terms of three odds ratios: none versus elementary, secondary versus elementary, and high versus elementary.

Preliminary analysis involved using the logistic regression model to compute separate age-group adjusted odds ratios for each combination of gender, religion and location in each province, giving 44 (2 x 2 x 11) such odds ratios for Songkla province and 28 (2 x 2 x 7) for Pattani province.

Further analysis involved using meta-analysis to combine these odds ratios within each province, and thus obtain overall odds ratios showing the associations between unemployment and each level of education completion. Since odds ratios are more symmetrically distributed when expressed on a logarithmic scale, and logistic regression routinely provides estimates and standard errors of natural logarithms of odds ratios, we did the meta-analysis on the logarithms of the odds ratios, using a method described in McNeil (1996) as follows.

Denote the estimated log odds ratio in stratum g by y_g, its standard error by σ_g and define the weight $w_g = 1/(\sigma_g)^2$. Then the overall (combined) estimate of the log odds ratio is the weighted mean

$$\bar{y} = \frac{\sum w_g y_g}{\sum w_g} , \tag{1}$$

and its standard error is

$$\sigma_{\bar{y}} = \frac{1}{\sqrt{\sum w_g}} . \tag{2}$$

The overall odds ratio estimate is thus obtained by exponentiation as $\exp(\bar{y})$ and its corresponding 95% confidence interval is given by $\left(\exp(\bar{y} - 1.96\,\sigma_{\bar{y}}), \exp(\bar{y} + 1.96\,\sigma_{\bar{y}})\right)$. Confidence intervals for the individual odds ratios may be plotted together with the combined results as a meta-analysis plot (see, for example, Moja et al 2007). The statistical analysis was performed using R (R Development Core Team, 2007).

3. Results

Table 2 gives the estimates and standard errors of the age-group adjusted log odds ratios after fitting the logistic regression models separately in each of the 44 demographic cells defined by combinations of gender, religion and district in Songkla (lower panels) and Pattani (upper panels). Since no non-Muslim males who had completed only secondary education were unemployed in the region comprising Panare, Saiburi and MaiKaen districts of Pattani province, the odds ratio for this group is zero and its logarithm cannot be calculated. For meta-analysis calculation the values for this cell were replaced by the corresponding values for high education completion. Figure 2 shows meta-analysis plots for the comparison between secondary education completion and elementary education completion. Table 3 shows the overall odds ratios and corresponding 95% confidence obtained by applying formulas (1) and (2) to the individual values given in Table 2.

4. Discussion

The individual's level of education is an important determinant of occupational success. (Isengard, 2003) and in Thailand there is a compulsory education scheme until the end of elementary education, at grade 6 level, and usually encouragement to continue on to complete secondary education. In most parts of Thailand most students may enter public or private secondary school after completing elementary education. The curriculum of the secondary education was designed to offer various fields of academic knowledge as well as fundamental occupational skills students can use as a basis for working in their future careers.   Findings of this study in Pattani and Songkla provinces are partly in agreement with Isengard's statement and partly inconsistent with it: partly showing that employment is an incentive for completing more education but also revealing some disincentive. At the extremes of 'no education' and 'high education', there was general agreement, but an intermediate level of education (secondary education) did not significantly increase likelihood of employment in either province, when compared with elementary education only (OR = 1.348 for Pattani, and 0.997 for Songkla).

The statement by Isengard, and assumptions of a positive association between education level achieved and improved employment outcomes, were made in the context of western post-industrial economies where education is needed for entry to specialized service sector employment and where relatively few people work in agriculture. This contrasts with the situation in parts of southern Thailand, at least in both Pattani and Songkla provinces, where the percentages of the labour force employed in agriculture were approximately 42.6% and 34.0%, respectively (From Table 1). Experience and skills from working in agriculture, rather than the completion of secondary education, might be more valued and more likely to lead to employment in agricultural occupations. The relatively high dependence on employment in agriculture in the region might be part of the reason why completion of secondary education appears to be of little or no employment advantage in the two provinces. This possible explanation, that the agricultural economic base of these provinces, especially of Pattani Province, leads to secondary education being of little, or even negative, value for employment, could be further tested by examining age distributions in various occupations and so invites a follow-up study. It would also be useful to investigate the supply/demand situation for workers in agriculture and other sections in Pattani, and whether or not secondary education raises work goals to a point where some choose unemployment rather than laboring work.

Differences between the two provinces deserve attention. In Pattani those who had completed a secondary education were actually more likely to be unemployed, more likely than for any other level of education. There are differences in the economic bases and occupational structures of the two provinces. In Pattani, compared to Songkla, a greater proportion of the labour force is involved in agriculture and a lower proportion is in professional positions (18.5% compared to 24.1%). Both provinces have some employment opportunities for professionals, providing employment for some who complete the 'high' and 'secondary' levels of education required for entry to these occupations, but this was more-so in Songkla. If true, then together these points might explain some of the variation between Pattani and Songkla, in the results of this study.

Even if the economic structure is a factor, it cannot fully explain all of the differences between the provinces. In Songkla Province there was no clearly statistically significant relationship between the level of education (elementary or secondary) completed and unemployment, for any gender or religious group. However, in Pattani Province the Muslims differed from non-Muslims in employment outcomes associated with secondary level of education. Figure 2 reveals that, in Pattani it is Muslims, not non-Muslims, who are more likely to be unemployed after they have completed secondary education when compared to those who completed only elementary education.

In Pattani Province in general, completing secondary education after elementary education made it less likely that unemployment would be avoided, however, in some districts completing secondary education clearly was an advantage in gaining employment, at least for the non-Muslim segment of the population. In three districts of Pattani Province (Mayo, ThungYangdeang and Kapho) none of the non-Muslim population who had completed secondary education were unemployed. Most of the population in Pattani is Muslim whereas most of the population in Songkla is non-Muslim, but this study did not examine the significance of the relative ratios.

Various aspects of Muslim culture in southern Thailand deserve further attention. One is that a significant and increasing proportion of Muslim students attend Muslim secondary schools in Pattani Province. The question of whether or not the different curriculum in those schools influences employment prospects invites further study.

Further investigation of the education/employment relationship is especially important because where unemployment follows secondary education there is likely to be increased disillusionment and lack of social integration into the broader society. This might worsen the political situation in southern Thailand.

5. Conclusion

The conclusions are as follows:

a) Students in Thailand are usually encouraged to continue on from elementary education to complete secondary education. This appears to have some justification in light of the findings of this study, that completing 'no education' led to less likelihood of being employed, and completing a 'high' level of education led to a greater likelihood of being employed, when both were compared to having completed elementary education.

b) However, in this study it was found that in Songkla Province that there was no significant employment advantage in completing secondary education and in Pattani there was actually a statistically significant disadvantage for gaining employment, based on comparisons with completion of elementary education only, associations measured by estimated Odds Ratios. The finding for Songkla was surprising. It was even more unexpected to find that in Pattani the completion of secondary education was associated with the highest rate of unemployment, higher than for those who had completed elementary education and also higher than for those with no education completed.

c) Further study of this education and employment relationship in more detail is desirable. If this issue is not addressed then for many in southern Thailand there might be limited incentive to complete secondary education and also limited social integration.

Acknowledgement

References

Asia Development Bank. (1999). *Interim Country Operational Strategy Study (Thailand)*.Asia Development Bank Publication. Bangkok.

Hosmer, D.W. & Lemeshow, S. (2000). *Applied Logistic Regression.* (2nd ed). John Wiley& Sons. New York.

Isengard,Bettina.(2003).Youth Unemployment: Individual Risk Factors and Institutional Determinants:A Case Study of Germany and the United Kingdom. *Journal of Youth Studies* 6(4), 357-77.

McNeil, Don. (1996). *Epidemiological Research Methods*. John Wiley & Sons. New York.

Ministry of University Affairs. (2000). *Education in Thailand:2001/2002*. ONEC Publication. Bangkok.

Moja et al. (2007). Understanding systematic reviews:the meta-analysis graph (also called 'forest plot'*Intern Emerg Med* (2007) 2:140-142.

National Statistical Office. (2001). *Labors Force Survey : Round 1.* NSO Publication. Bangkok.

National Statistical Office. (2001). *Report of the Labour Survey Whole Kingdom 2000 (Round 4 :November).* NSO Publication. Bangkok.

National Statistical Office. (2006). *Classification of Population: Gender, Housing and Housing Types Regions and Provinces in 2000.* NSO Publication. Bangkok.

R Development Core Team. (2007). *R: A language and environment for statistical computing.* R Foundation for Statistical Computing. Vienna.

Strasser, H (1997) *Langzeitarbeitslose z wischen diskontinuierlichen Erwerbsverlaufen und sozialer*

Selektion, in:G.Klein & H. Strasser (Eds) Schwer vermittelbar:zur Theorie und Empirie derLangzeitarbeitslosigkeit (Opladen, Westdeutscher Verlag).

Table 1. Employment rate by age and occupational group in Pattani and Songkla Province

Age group	Unemployed		Agriculture		Elementary		Professional	
	Pattani	Songkla	Pattani	Songkla	Pattani	Songkla	Pattani	Songkla
25-29	20.5	16.6	33.6	25.5	28.1	31.1	17.8	26.8
30-34	14.8	12.4	39.5	29.9	27.1	32.7	18.6	25.0
35-39	12.4	10.7	41.0	32.4	26.2	31.3	20.4	25.6
40-44	11.1	10.0	42.6	34.4	24.1	29.5	22.2	26.1
45-49	10.8	10.3	49.4	39.7	20.7	27.0	19.2	23.0
50-54	13.1	13.1	52.5	43.7	18.0	23.8	16.4	19.3
55-59	17.6	18.0	55.8	47.8	15.1	19.0	11.6	15.2
Total	14.6	12.8	42.7	34.0	24.2	29.1	18.6	24.1

Table 2.   Means and standard errors of age-group adjusted log odds ratios associating unemployment status with education completion by gender, religion and region in Songkla and Pattani provinces

		Muslim						Other					
		mean			standard error			mean			standard error		
	region	none	second.	high	none	second	high	none	second.	high	none	second.	high
male	P1	0.881	0.231	0.644	0.090	0.085	0.087	1.277	0.477	0.669	0.246	0.123	0.107
	P2	0.539	0.457	1.225	0.182	0.147	0.189	1.894	-0.114	0.606	0.214	0.130	0.116
	P3	0.477	0.522	1.197	0.103	0.119	0.177	1.712	0.194	0.096	0.434	0.211	0.219
	P4	0.685	0.593	0.913	0.100	0.086	0.115	2.541	0.324	0.127	0.230	0.154	0.154
	P5	0.551	0.607	1.446	0.109	0.104	0.148	1.283	-	-1.393	0.892	-	0.470
	P6	0.602	0.349	0.468	0.106	0.101	0.142	1.068	-0.577	-0.510	0.445	0.331	0.297
	P7	0.114	0.294	1.047	0.102	0.098	0.123	1.791	-0.894	-0.230	0.651	0.362	0.312
female	P1	0.133	0.027	-0.865	0.053	0.055	0.066	0.570	-0.472	-1.787	0.124	0.057	0.056
	P2	0.205	0.970	0.746	0.106	0.105	0.176	0.760	0.387	0.374	0.147	0.090	0.079
	P3	-0.140	0.404	-0.254	0.060	0.098	0.185	0.558	0.324	-0.838	0.311	0.132	0.120
	P4	0.052	0.325	-0.187	0.050	0.058	0.102	0.480	0.103	-0.771	0.189	0.105	0.099
	P5	0.298	0.787	0.961	0.069	0.087	0.150	0.996	1.012	-0.438	0.861	0.312	0.305
	P6	-0.147	0.481	-0.464	0.055	0.064	0.098	-1.087	0.170	-1.082	0.498	0.216	0.204
	P7	-0.207	0.751	0.154	0.058	0.071	0.118	0.282	0.410	-0.928	0.476	0.186	0.175
male	S1	1.291	-0.740	-0.604	0.143	0.120	0.138	1.176	-0.401	-0.597	0.096	0.044	0.043
	S2	1.163	0.365	1.617	0.172	0.142	0.164	1.928	0.175	0.792	0.176	0.122	0.115
	S3	1.291	0.887	1.514	0.370	0.276	0.388	1.848	0.467	1.294	0.234	0.156	0.152
	S4	0.846	0.303	1.207	0.170	0.167	0.196	2.176	-0.067	1.225	0.249	0.205	0.170
	S5	0.721	0.500	1.996	0.210	0.292	0.323	2.082	0.646	1.281	0.273	0.200	0.204
	S6	1.019	1.353	3.924	0.621	0.462	0.476	1.782	0.490	1.047	0.113	0.064	0.066
	S7	1.887	0.745	1.575	0.308	0.257	0.266	1.738	0.492	1.074	0.181	0.119	0.116
	S8	1.403	0.219	1.059	0.167	0.169	0.202	1.379	0.262	1.003	0.128	0.102	0.099
	S9	0.966	0.041	0.467	0.181	0.127	0.134	1.262	0.175	0.340	0.071	0.042	0.039
	S10	1.234	0.293	0.443	0.302	0.225	0.321	1.713	0.180	0.919	0.244	0.192	0.190
	S11	1.395	0.338	1.302	0.178	0.214	0.249	1.736	0.538	1.131	0.168	0.101	0.110
female	S1	0.611	0.109	0.001	0.132	0.113	0.112	0.325	-0.067	-0.979	0.060	0.033	0.030
	S2	0.605	0.264	0.482	0.085	0.096	0.149	1.059	0.369	0.589	0.114	0.092	0.078
	S3	0.126	1.146	0.889	0.191	0.186	0.345	0.438	0.583	0.683	0.146	0.093	0.093
	S4	0.229	0.343	0.309	0.095	0.108	0.156	0.812	0.609	0.736	0.171	0.129	0.120
	S5	0.375	0.835	1.780	0.140	0.219	0.264	0.645	0.304	0.783	0.203	0.177	0.158
	S6	-0.484	0.367	0.220	0.449	0.277	0.454	0.622	0.335	0.188	0.078	0.048	0.048
	S7	0.195	0.826	0.746	0.199	0.167	0.204	0.574	0.726	0.693	0.127	0.093	0.090
	S8	0.117	0.067	-0.096	0.095	0.102	0.139	0.374	0.794	0.595	0.066	0.053	0.056
	S9	0.171	0.201	-0.198	0.100	0.075	0.085	0.271	0.139	-0.459	0.037	0.024	0.022
	S10	0.029	-0.068	0.309	0.177	0.154	0.234	0.578	0.578	0.490	0.165	0.144	0.159
	S11	0.137	0.231	0.224	0.119	0.147	0.207	0.859	0.323	0.493	0.105	0.078	0.076

Table 3. Odds ratios and 95% confidence intervals for overall associations between unemployment status and education completion in Songkla and Pattani provinces

	education completed	Odds ratio	95% confidence interval
Songkla	none	2.088	(1.998, 2.182)
	elementary	1	-
	secondary	0.997	(0.969, 1.026)
	high	0.684	(0.665, 0.702)
Pattani	none	1.226	(1.181, 1.272)
	elementary	1	-
	secondary	1.348	(1.301, 1.398)
	high	0.811	(0.777, 0.847)
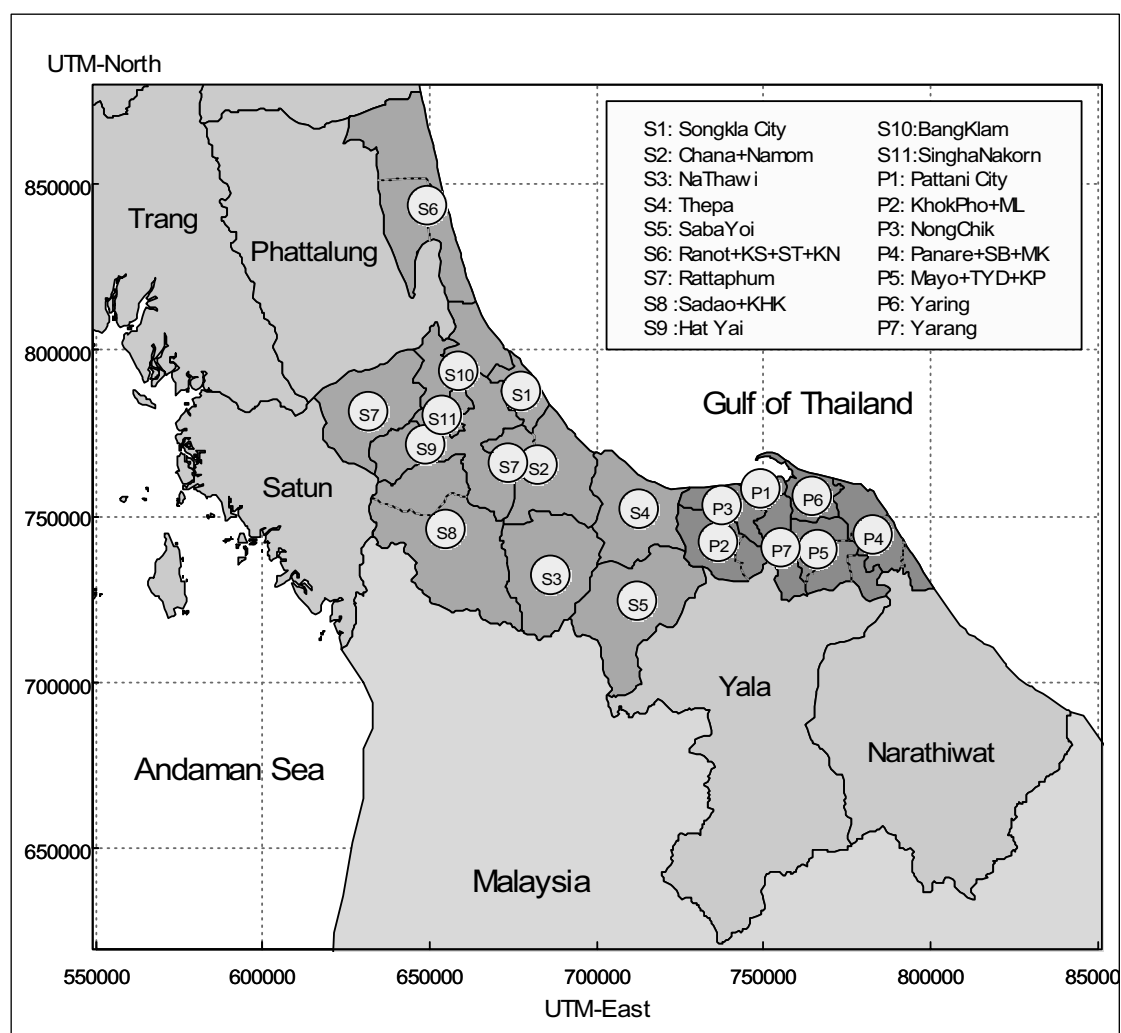
Figure 1.   Districts in Songkla and Pattani Provinces with study regions defined by aggregation
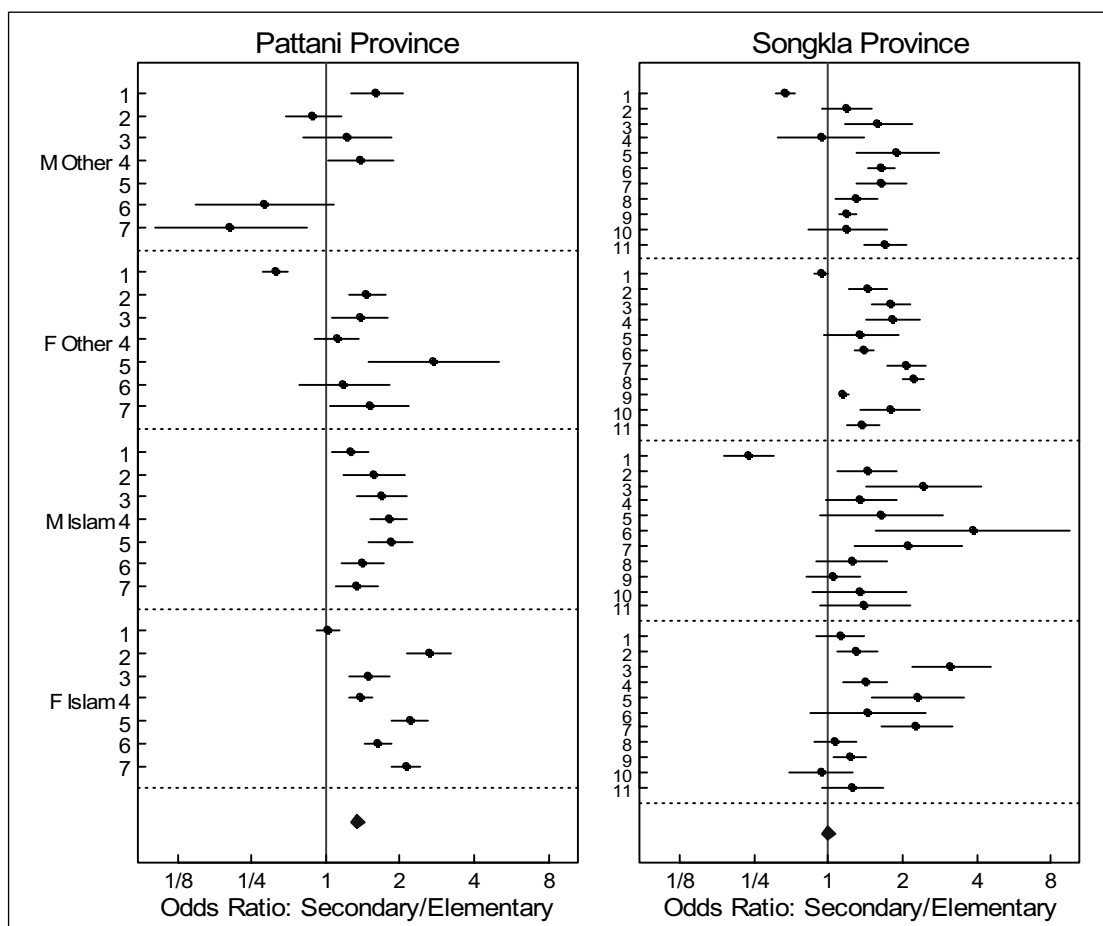
Figure 2.   Meta-analysis plots showing the associations between unemployment and
secondary versus elementary education completion in Songkla and Pattani provinces