Chapter 3

Preliminary Data Analysis

In this chapter we describe the preliminary data analysis the occurrences of terrorist events in 2004 and 2005 in the three southernmost provinces and four districts in Songkla. The chapter has two sections. In the first section we show frequency distributions of the variables. In Section 3.2 we show schematic range maps of the geographic distribution of the occurrences event terrorist rate for the two years 2004 and 2005.

3.1 Descriptions of the terrorist event occurrences

Preliminary Analysis

Table 3.1 shows the numbers of events recorded in the region by severity in each of the two years. Overall, there was an increase of approximately 50% from 2004 to 2005. Over 50% of the events (56% in 2004 and 53% in 2005) resulted in at least one fatality.

	Event severity								
year	1	2	3	5	6	7	8	9	Total
2004	54	36	2	62	34	458	700	125	1471
2005	72	130	35	166	162	483	906	260	2214
Total	126	166	37	228	196	941	1606	385	3685

Table 3.1: Classification of events by severity in each year

The daily incidence of events varied substantially over the two-year period, with a maximum of 126 events recorded on 26 October 2005. Relatively high incidences of

events were recorded as well on 9 June 2005 (96 events), 22 April 2004 (76 events) and 31 August 2005 (67 events). No events were recorded on 47 days. Figure 3.1 shows the maximum and minimum numbers of events for each week (Monday to Sunday). The curve in this graph plots the average numbers of events in successive weeks.

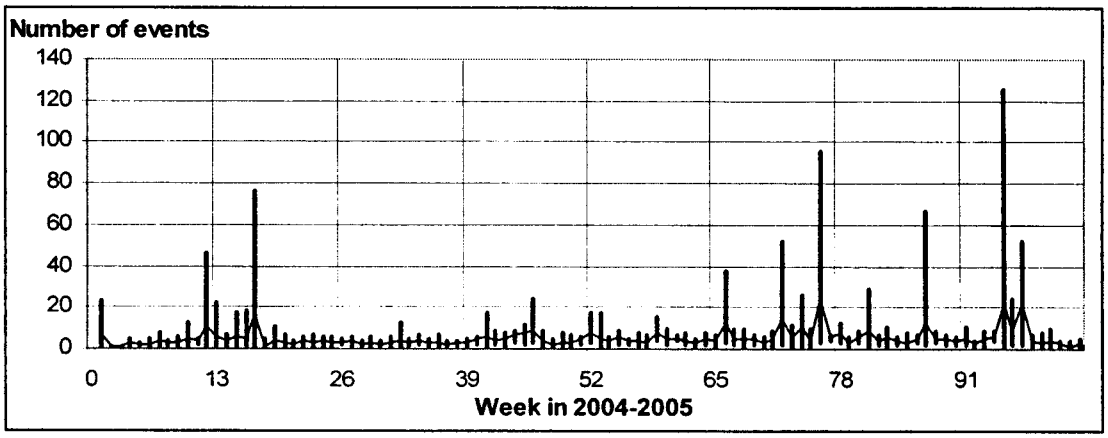

Figure 3.1: Minimum and maximum numbers of events by week

Table 3.2 shows the incidences of events by month for each year. Over the two-year period, the proportions of events were higher in the March-June and October-November periods. However, this seasonal effect is not the same for the two years, with lower proportions in March, April and December in 2005 than in 2004, and correspondingly higher proportions in May and June. In confirmation, Pearson's independence test for the association between month and year gives a chi-squared statistic of 243.2 with 11 degrees of freedom, $p < 0.05$.

	Month of Year												
Year	Jan	Feb	Mar	Apr	Ma	Jun	July	Aug	Sept	Oct	Nov	Dec	Tot
2004	56	81	18	221	87	91	88	10	82	15	174	15	14
2005	11	13	15	154	25	30	16	19	13	27	261	72	22
Total	173	218	338	375	341	391	249	301	218	422	435	224	368
Percent	4.7	5.9	9.2	10.2	9.2	10.6	6.8	8.2	5.9	11.4	11.8	6.1	5

Table 3.2: Event incidence by month for each year

Tables 3.3 and 3.4 show the distributions of events by hour of day and by day of the week. The most frequent periods were between 8 and 9 pm (13.7% and 11.8%, of the total, respectively, compared with an average of 4.5% for other hours of the day). The most likely days were Wednesdays and Thursdays (18.3% and 20.0% of events, respectively, compared with 12.3% events on average for other days). These differences are highly statistically significant, all giving p-values less than 0.0001 when assessed using Pearson chi-squared test for uniformity.

Hour	1	2	3	4	5	6	7	8	9	10	11	12	Total
am	78	90	67	85	88	76	172	210	188	129	105	105	1393
pm	88	76	75	81	118	128	176	485	416	230	149	119	2141
Total	166	166	142	166	206	204	348	695	604	359	254	224	3534

Table 3.3: Events by hour of day reported (1 = 12-1 etc; time unavailable for 151 evets)

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
479	443	676	739	511	395	442	3685
(13.0)	(12.0)	(18.3)	(20.0)	(13.9)	(10.7)	(12.0)	(100.0

Table 3.4: Events by day of week reported

3.2 Map Comparison

In this section we describe the geographic distribution of the events and use maps to identify areas of high risk in the three southernmost provinces and the four bordering districts in Songkla in years 2004 and 2005. We can do this using the risk rates and the methods for mapping such data routinely provided by geographical information systems (GIS).

For each annual set of occurrences of terrorist event we construct schematic range maps showing how risk rates vary in the three southernmost provinces and four districts in Songkla from 2004 and 2005. The risk rates are grouped into five colour bands as follows.

Light pink : Very low

White pink : Low

Pink : Middle

Red : High

Bloodshot : Very high

For each set of occurrences of terrorist events, the risk rate for 2004 are used as a basis for classification, so that the subdistricts in the target region are classified into

five groups each containing approximately 20% of the data, and the same group boundaries are used for the allocation in the following year. These maps can thus be used to see how the occurrences of terrorist events changed from 2004 to 2005.

Figure 3.2 shows grid maps of the regional distributions of event rates for 2004 and 2005, whereas Figure 3.3 shows the corresponding grid maps for the average event rate over the two years 2004-2005 (left panel), and for the increase in this rate from 2004 to 2005 (right panel). The distributions of the event rates in the bands used to create the thematic range maps underlying these grid maps are given in Table 3.5.

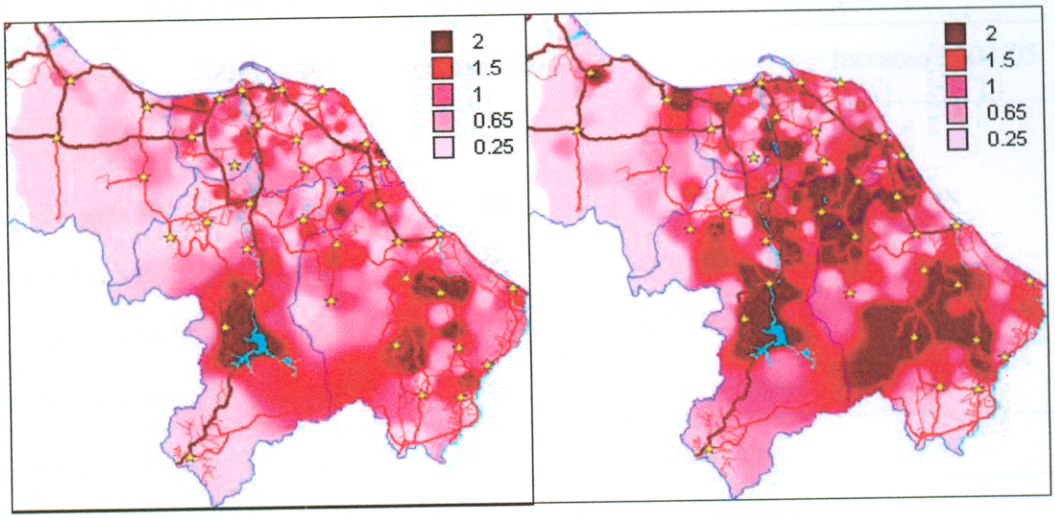

Figure 3.2: Grid map for overall event rates per 1000 population in subdistricts in 2004 (left panel) and 2005 (right panel), with major roads and towns shown

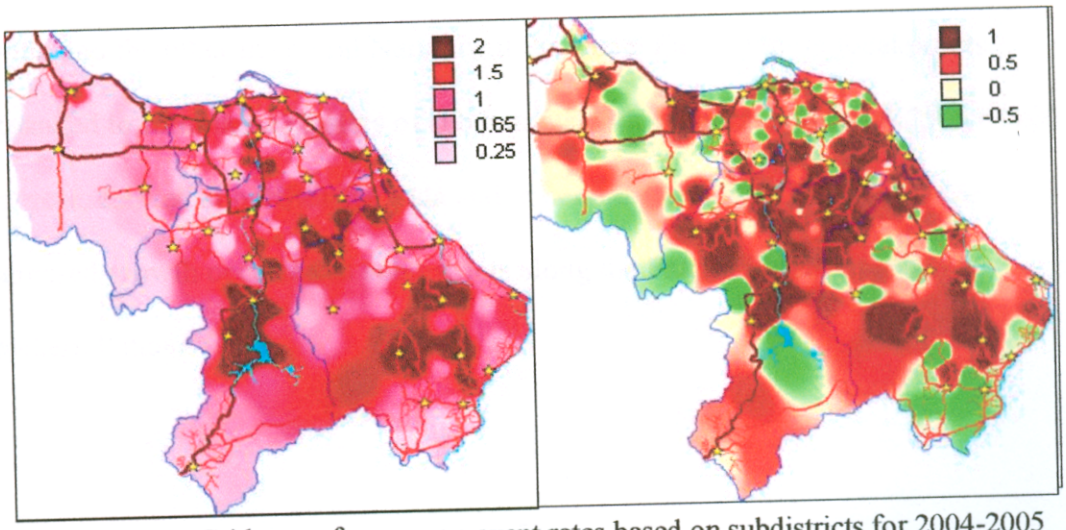

Figure 3.3: Grid maps for average event rates based on subdistricts for 2004-2005 (left panel) and for the increase from 2004 to 2005 (right panel)

Range	2004	2005	Average 2004-05	range	Increase 2004-05
0 to 0.25	50	50	50		
0.25 to 0.50	62	40	62	-1.27 to -0.20	69
0.50 to 1.00	59	69	93	-0.20 to 0.20	63
1.00 to 1.50	64	44	39	0.20 to 0.75	81
1.50 or more	55	87	46	0.75 or more	77
maximum	4.29	5.73	5.01	maximum	4.33

Table 3.5: Distributions of event rates in 2004 and 2005

It is clear from these maps that the 50% increase in the event incidence rate from 2004 to 2005 was not uniformly distributed over the region, but was concentrated in the areas where it was already high in 2004. In fact the subdistricts in Songkla Province and those bordering Malaysia appear to have decreased their terrorism event rates from 2004 to 2005. At the other extreme, there were two focal points from which the event rate grew substantially from 2004 to 2005, one in the northeastern wing of Yala Province bordering both Pattani Province to the north and Narathiwat Province to the

south, and the other in central Narathiwat Province. Each of these focal points expanded to form large clusters of subdistricts with event rates above 1.75 per 1000 per year, centred at northeaster Yala and in central Narathiwat. Smaller clusters of increased growth occurred in subdistricts along the Pattani River in central Yala and southern Pattani.