

Chapter 3

Preliminary Data Analysis

In this chapter we describe the preliminary data analysis of liver cancer incidence in Songkhla province between 1989 and 2007. The description of determinant variables and outcome variable of interest, the distribution of determinant and trend of incidence rate classified by determinants.

3.1 Variables of interest

The role of the variables classified as determinant and outcome. These variables and role and data type are listed in Table 3.1

Variable	Role	Type
Gender	Determinant	Binary
Religion	Determinant	Binary
Topography	Determinant	Binary
Area	Determinant	Nominal (11)
Age group	Determinant	Ordinal (4)
Year	Determinant	Ordinal (5)
Number of case patients	Outcome	Continuous (discrete)

Table 3.1: Variables and their role and data type

There are 6 determinants are in total. Three (Gender, Religion, Topography) are binary variables two (Age group, Year) are ordinal variables and one (Area) is nominal. The outcome of interest in this study is the numbers of liver cancer patients in Songkhla province.

3.2 Distributions of Determinants

Determinants	Category	Count (n = 1,254)	percent
Gender	Male	998	79.6
	Female	256	20.4
Age Groups	<30	22	1.8
	30-44	180	14.4
	45-59	421	33.6
	60+	631	50.3
Religion	Buddhist or Other	1,097	87.5
	Islam	157	12.5
Topography	HCC	1,093	87.2
	CCA	161	12.8
Areas	1:Muang	172	13.7
	2:Chana + Namom	104	8.3
	3:Nathawi	56	4.5
	4:Thepa	48	3.8
	5:Saba Yoi	19	1.5
	6:Ranod + Krsea Sinthu + Sathing Phra + Khuan Niang	202	16.1
	7:Rattaphum	74	5.9
	8:Sadao + Khlong Hoikhong	120	9.6
	9:Hat Yai	381	30.4
	10:Bang Klam	17	1.4
	11:Singha Nakorn	61	4.9
Years	<1992	134	10.7
	1992-1995	149	11.9
	1996-1999	158	12.6
	2000-2003	279	22.2
	2004-2007	534	42.6

Table 3.2: Frequency distribution of liver cancer patient separated by determinants

The frequency distributions of the liver cancer patients in Songkhla province during 1989-2007 are shown in Table 3.2. There were 1,254 liver cancer patients and more than three-fourth (76.9%) of the liver cancer patients were male. About half (50.3%) were aged more than 60 years and the majority is Buddhist 87.5%. The majority HCC was more than CCA and Hat Yai had the highest incidence among the study areas.

3.3 Incidence rate of Determinants

The trends of incidence rate per 100,000 population of liver cancer patients by gender, topography, age groups and area are shown in figure 3.1-3.4

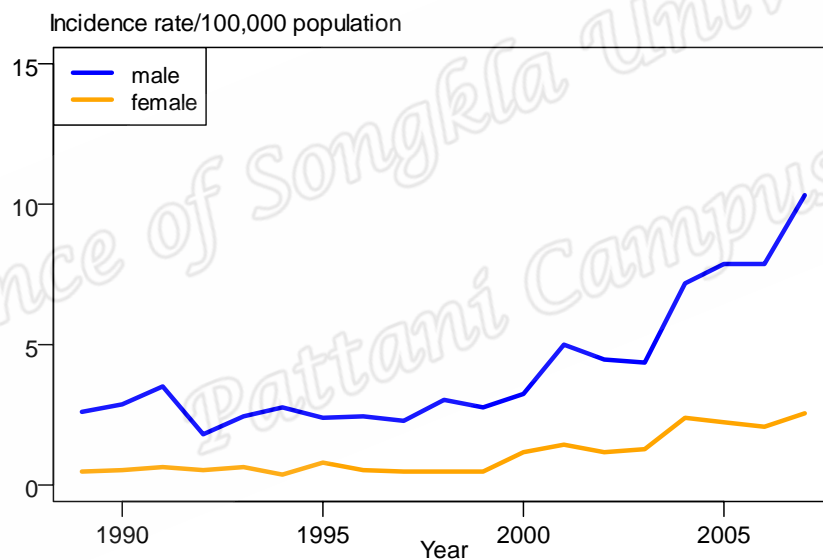


Figure 3.1: Incidences rates of liver cancer separated by gender

The incidence rate trend for both males and females are increasing, with males having a higher trend than females. The incidence rate was highest in 2007 with 10.35 and 2.55 for male and female respectively.

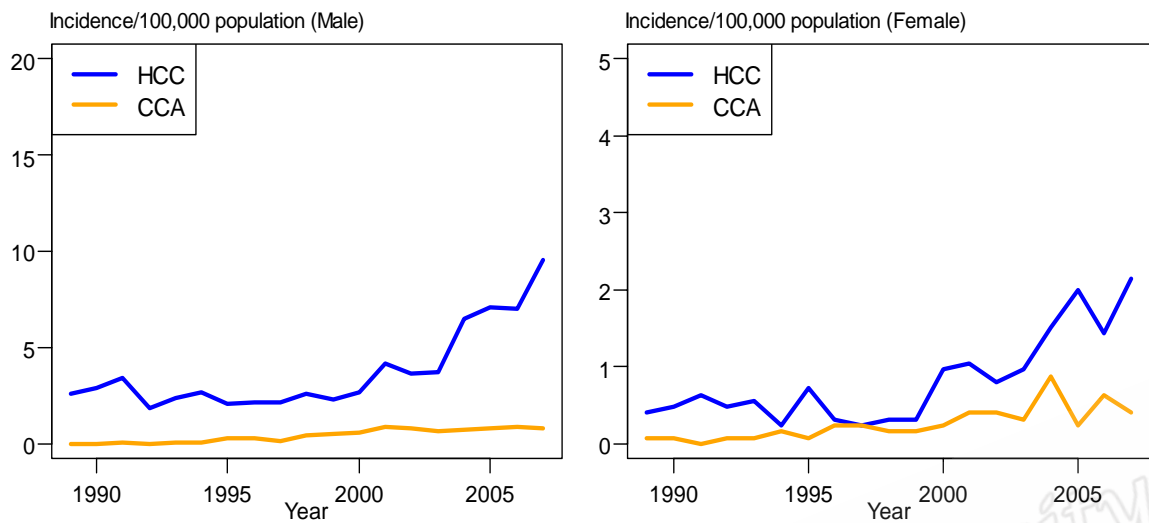


Figure 3.2: Overall annual male and female of incidence rate for each topography

Figure 3.2 shows the trends of incidence rates between liver cancer topography. The left panel shows the incidence rates of HCC and CCA for males. The trends of HCC were higher than trend of CCA. The incidence rates of HCC sharply increased between 2003 to 2007 and highest in 2007 with 9.56 per 100,000 population while the incidence rates of CCA were slightly constant in 1989 to 2007. The right panels show the incidence rates of HCC and CCA for females. The trend of HCC was higher than the trend of CCA. The incidence rates of HCC sharply increased between 2002 to 2007 and highest in 2007 with 2.51 per 100,000 population while the incidence rates of CCA were slightly constant between 1989 to 2000 and gradually increased in 2004 with 0.88.

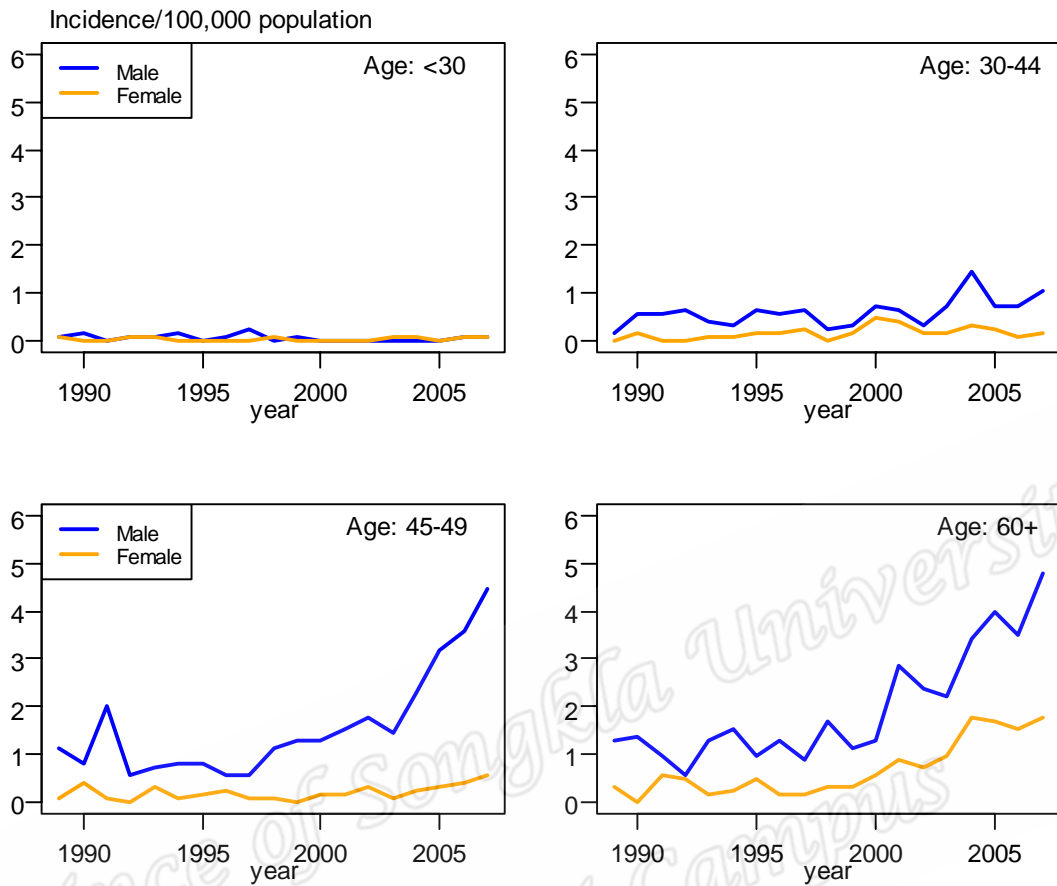


Figure 3.3: Distribution of incidence rate and years classified by Age group

Figure 3.3 shows the trends of incidence rates between liver cancer by genders and age groups. The incidence rates of males were higher than females in 30 years or more. The highest incidence occurred in the 60+ age group.

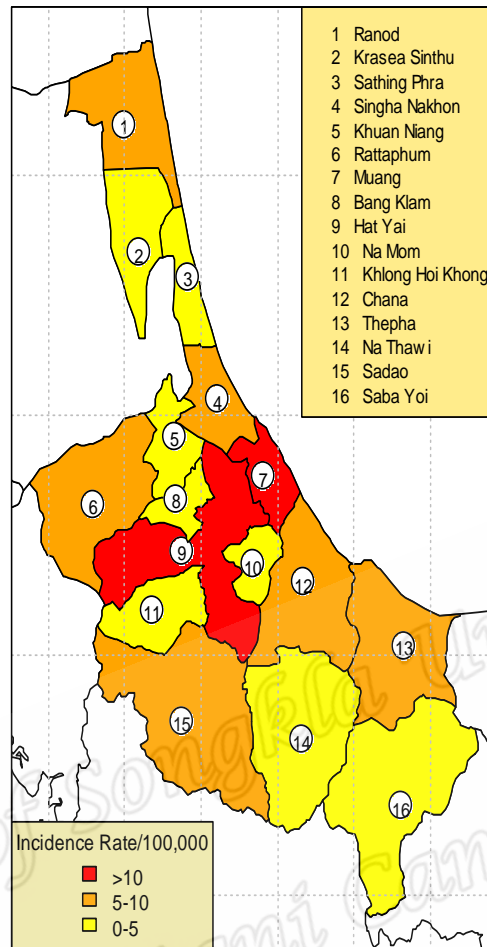


Figure 3.4 Schematic maps of liver cancer incidence classified by districts

Figure 3.4 shows a schematic map of the incidence rate per 100,000 population by district. Hat Yai and Muang had liver cancer incidence rate higher than 10, Ranod, Singha Nakhon, Rattaphum, Sadao, Chana and thepha had incidence rate between 5-10 and other district had incidence rate less than 6.