

## APPENDIX

## I

SONGKHLA  
CANCER  
REGISTRY*Hutchha Sriplung, M.D.***Registration area**

Songkhla is one among 14 provinces located in the southern part of Thailand at latitude 07 12 N and longitude 100 36 E. The Songkhla Registry covers the area of 16 districts and the population estimated at the year 1999 of 1 236 926. About 80% of the population are Buddhists, and nearly 20% are Moslems. Christians and others account for less than 1% of the population. People with Chinese blood live in Songkhla town and Hat Yai city which is one of the economic centers of the south of Thailand.

**Cancer care facilities**

General health care in the region is provided predominantly by the government of Thailand. There are three hospitals with over 500 beds, 13 community hospitals and an extensive network of health care facilities at the household level. This is supplemented by private practitioners, a few private hospitals, and a few small special hospitals, all in the urban area. The university hospital of Prince of Songkla University is the biggest one of the two places in the south of Thailand that provide radiotherapy services. Another one is Surat Thani cancer center. A few other large hospitals also have facilities for cancer surgery and chemotherapy. Patients suspected to have cancer in the health care system and community hospitals are referred to Songkhla, Hat Yai and Songklanagarind hospitals.

**Registry structure and methods**

The registry is organized within the Faculty of Medicine, Prince of Songkla University. It is staffed by three part-time medical

doctors, a full-time nurse as a registrar and four full-time workers.

The Songkhla registry undertakes active case finding from 23 sources of data consisting of Songklanagarind hospital, Hat Yai hospital, Songkhla hospital, community hospitals, private hospitals, special hospitals, provincial health office, and the population registration office of the province. The completeness of death registration is acceptable but the cause of death is not at high accuracy, being mostly cardiopulmonary arrest and senility. After the national health care reform started in 2000, the validity of the death certificates has been improving. The hospital-based registry of the Songklanagarind hospital is also run by the registry staff and the data are shared with the registry of Songkhla. Hat Yai hospital has its own system of cancer case report but not a full scaled hospital-based cancer registry and provides the cases residing in Songkhla to the registry. The registry staff visits Hat Yai, Songkhla, and private hospitals to consults the medical and pathology records. Assigned staff in community hospitals sends the record forms of cancer cases to the registry once a year. They are regularly visited by registry staff to reviews the procedures. Some cases are sent to the registry by the network of cancer registries in Thailand, especially the registry of Bangkok.

**Notes on data**

The number of undiagnosed and unregistered cancer cases is difficult to estimate. Some Moslems in a remote area in the south of Songkhla visit large hospitals in the two nearby provinces and some of them, especially the elderly, use

traditional herbal medicines and never enter the health care system of the country. Because of the linkage between the referral system and the new national health assurance system, it is expected that only a small number of cancer patients in that remote area seek medical fa-

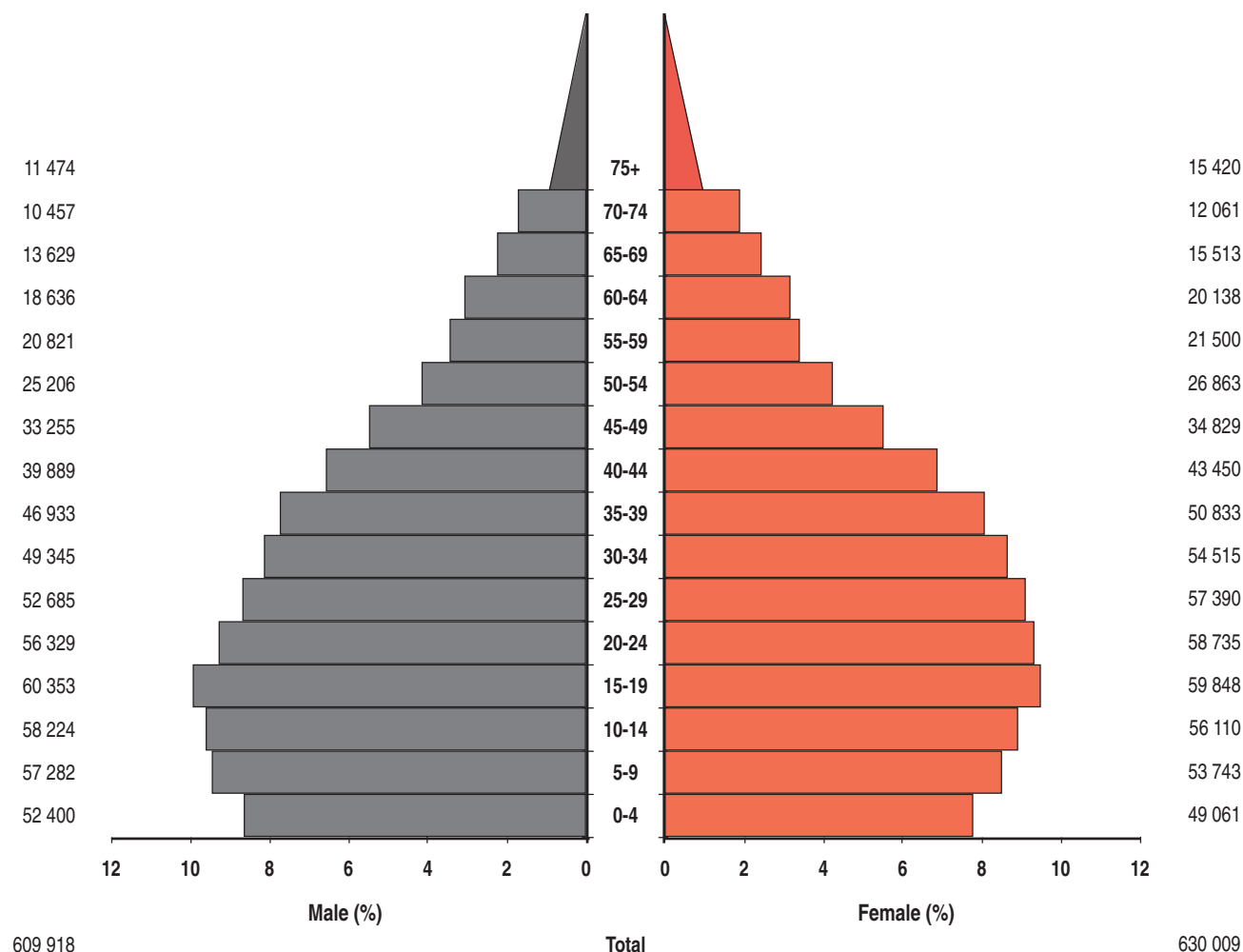
cilities outside the province. A few other cases look for special medical care in Bangkok, the capital of Thailand.

**Use of the data**

The registry is preparing a fif-

teen-year report providing information on cancer incidence and trends in Songkhla. It provides data for causation studies especially in the field of oral and esophageal cancer which is the main burden in this area.

**Figure 1** Population pyramid, Songkhla, 1999



**Table 1** Annual incidence, Songkhla, 1998-2000

	Male						Female						ICD-10
	No.	Freq.	Crude	ASR	Cum. rates		No.	Freq.	Crude	ASR	Cum. rates		
	cases	(%)	rate	world	0-64	0-74	cases	(%)	rate	world	0-64	0-74	
		(per 100,000)	(per 100,000)	(percent)	(percent)			(per 100,000)	(per 100,000)	(percent)	(percent)		
Lip	3	0.2	0.2	0.2	0.01	0.01	7	0.4	0.4	0.3	0.01	0.02	C00
Tongue	70	4.2	3.8	4.5	0.18	0.56	12	0.7	0.6	0.7	0.03	0.10	C01-02
Salivary gland <sup>4</sup>	0.2	0.2	0.2	0.01	0.01	6	0.3	0.3	0.3	0.03	0.03		C07-C08
Mouth	74	4.4	4.1	4.7	0.23	0.56	27	1.5	1.4	1.5	0.04	0.20	C03-C06
Oropharynx	22	1.3	1.2	1.4	0.09	0.14	5	0.3	0.3	0.2	0.01	0.02	C09-C10
Nasopharynx	45	2.7	2.5	2.6	0.17	0.27	17	0.9	0.9	0.9	0.06	0.09	C11
Hypopharynx	42	2.5	2.3	2.7	0.10	0.35	8	0.4	0.4	0.4	0.01	0.05	C12-C13
Pharynx unspecified	5	0.3	0.3	0.3	0.02	0.02	0	0.0	0.0	0.0	0.00	0.00	C14
Esophagus	122	7.3	6.7	8.1	0.40	1.12	30	1.6	1.6	1.8	0.06	0.32	C15
Stomach	44	2.6	2.4	2.8	0.14	0.30	17	0.9	0.9	1.0	0.04	0.15	C16
Small intestine	4	0.2	0.2	0.2	0.01	0.01	2	0.1	0.1	0.1	0.01	0.02	C17
Colon	89	5.3	4.9	5.7	0.26	0.66	69	3.8	3.7	3.8	0.16	0.50	C18
Rectum	72	4.3	4.0	4.5	0.26	0.50	61	3.3	3.2	3.6	0.24	0.47	C19-21
Liver and bile duct	122	7.3	6.7	7.7	0.52	0.92	38	2.1	2.0	2.1	0.12	0.23	C22,C24
Gallbladder	3	0.2	0.2	0.2	0.02	0.02	11	0.6	0.6	0.6	0.02	0.07	C23
Pancreas	24	1.4	1.3	1.5	0.09	0.22	8	0.4	0.4	0.5	0.04	0.05	C25
Nose, sinuses etc.	15	0.9	0.8	0.9	0.05	0.09	3	0.2	0.2	0.1	0.00	0.02	C30-C31
Larynx	62	3.7	3.4	4.0	0.18	0.49	7	0.4	0.4	0.4	0.02	0.06	C32
Bronchus, lung	211	12.7	11.6	13.5	0.70	1.83	86	4.7	4.6	4.9	0.29	0.59	C33-C34
Other thoracic organs	4	0.2	0.2	0.2	0.02	0.02	3	0.2	0.2	0.2	0.02	0.02	C37-C38
Bone	8	0.5	0.4	0.5	0.03	0.03	9	0.5	0.5	0.5	0.03	0.03	C40-C41
Connective tissue	22	1.3	1.2	1.2	0.07	0.10	9	0.5	0.5	0.5	0.05	0.05	C47,C49
Melanoma of skin	8	0.5	0.4	0.5	0.02	0.05	7	0.4	0.4	0.4	0.02	0.04	C43
Other skin	74	4.4	4.1	4.7	0.20	0.54	68	3.7	3.6	3.4	0.14	0.32	C44
Breast	6	0.4	0.3	0.4	0.04	0.05	322	17.7	17.0	17.2	1.36	1.81	C50
Uterus unspecified							3	0.2	0.2	0.2	0.01	0.02	C55
Cervix uteri							385	21.1	20.4	20.6	1.63	2.28	C53
Placenta							10	0.5	0.5	0.5	0.03	0.03	C58
Corpus uteri							56	3.1	3.0	3.3	0.30	0.37	C54
Ovary							106	5.8	5.6	5.7	0.49	0.60	C56
Other female genital							20	1.1	1.1	1.1	0.10	0.12	C51,C52,C57
Prostate	65	3.9	3.6	4.1	0.04	0.39							C61
Testis	5	0.3	0.3	0.3	0.01	0.03							C62
Penis	33	2.0	1.8	2.2	0.12	0.25							C60
Bladder	72	4.3	4.0	4.5	0.16	0.47	15	0.8	0.8	0.8	0.03	0.08	C67
Kidney etc.	14	0.8	0.8	0.9	0.04	0.12	10	0.5	0.5	0.6	0.04	0.05	C64-C66:C68
Eye	6	0.4	0.3	0.4	0.02	0.02	6	0.3	0.3	0.4	0.01	0.02	C69
Brain, nervous system	22	1.3	1.2	1.3	0.10	0.11	22	1.2	1.2	1.2	0.07	0.09	C70-C72
Thyroid	23	1.4	1.3	1.3	0.08	0.15	114	6.3	6.0	5.7	0.45	0.56	C73
Other endocrine	5	0.3	0.3	0.3	0.02	0.02	6	0.3	0.3	0.4	0.03	0.03	C74-C75
Hodgkin disease	9	0.5	0.5	0.5	0.03	0.04	5	0.3	0.3	0.2	0.02	0.02	C81
Non-Hodgkin lymphoma	88	5.3	4.8	5.1	0.32	0.57	73	4.0	3.9	3.9	0.23	0.43	C82-C85,C96
Multiple myeloma	15	0.9	0.8	0.9	0.05	0.12	19	1.0	1.0	1.1	0.06	0.17	C88,C90
Lymphoid leukemia	19	1.1	1.0	1.1	0.06	0.07	24	1.3	1.3	1.5	0.08	0.10	C91
Myeloid leukemia	28	1.7	1.5	1.7	0.10	0.20	33	1.8	1.7	1.8	0.12	0.17	C92
Leukemia unspecified	12	0.7	0.7	0.7	0.04	0.06	21	1.2	1.1	1.1	0.06	0.09	C95
Other and unspecified	96	5.8	5.3	6.0	0.36	0.76	62	3.4	3.3	3.4	0.20	0.38	O&U
<b>All sites</b>	<b>1667</b>	<b>100.0</b>	<b>91.6</b>	<b>104.5</b>	<b>5.36</b>	<b>12.25</b>	<b>1822</b>	<b>100.0</b>	<b>96.4</b>	<b>98.9</b>	<b>6.76</b>	<b>10.88</b>	<b>ALL</b>

**Table 2** Percentage of morphologically verified and death certificate only cases, Songkhla, 1998-2000

	Male			Female			ICD-10
	Cases	%MV	%DCO	Cases	%MV	%DCO	
Oral cavity	151	96.7	0.0	52	92.3	0.0	C00-C08
Oropharynx, etc.	27	96.3	0.0	5	100.0	0.0	C09-C10;C14
Nasopharynx	45	100.0	0.0	17	100.0	0.0	C11
Hypopharynx	42	97.6	0.0	8	100.0	0.0	C12-C13
Esophagus	122	89.3	0.8	30	83.3	0.0	C15
Stomach	44	95.5	2.3	17	100.0	0.0	C16
Small intestine	4	100.0	0.0	2	100.0	0.0	C17
Colon and rectum	161	93.2	0.0	130	90.0	0.8	C18-C21
Liver and bile duct	122	43.4	0.8	38	50.0	0.0	C22;C24
Gallbladder	3	66.7	0.0	11	100.0	0.0	C23
Pancreas	24	54.2	0.0	8	75.0	0.0	C25
Nose, sinuses etc.	15	100.0	0.0	3	100.0	0.0	C30-C31
Larynx	62	95.2	0.0	7	71.4	0.0	C32
Bronchus, lung	211	84.8	1.4	86	74.4	0.0	C33-C34
Other thoracic organs	4	100.0	0.0	3	66.7	0.0	C37-C38
Bone	8	87.5	0.0	9	88.9	0.0	C40-C41
Connective tissue	22	95.0	0.0	9	100.0	0.0	C47,C49
Skin and melanoma	82	98.8	0.0	75	100.0	0.0	C43-C44
Breast	6	100.0	0.0	322	92.5	0.0	C50
Cervix uteri				385	95.1	0.0	C53
Corpus uteri				56	98.2	0.0	C54
Uterus unspecified				3	100.0	0.0	C55
Ovary				106	94.3	0.0	C56
Other female genital				20	0.0	0.0	C51,C52,C57
Placenta				10	70.0	0.0	C58
Penis	33	90.9	0.0				C60
Prostate	65	96.9	0.0				C61
Testis	5	100.0	0.0				C62
Kidney etc.	14	92.9	0.0	10	80.0	0.0	C64-C66,C68
Bladder	72	88.9	0.0	15	86.7	0.0	C67
Eye	6	100.0	0.0	6	100.0	0.0	C69
Brain, nervous system	22	54.5	0.0	22	68.2	4.5	C70-C72
Thyroid	23	95.7	0.0	114	97.4	0.0	C73
Other endocrine	5	80.0	0.0	6	66.7	0.0	C74-C75
Hodgkin disease	9	100.0	0.0	5	80.0	0.0	C81
Non-Hodgkin lymphoma	88	100.0	0.0	73	100.0	0.0	C82-C85,C96
Multiple myeloma	15	100.0	0.0	19	94.7	0.0	C88;C90
Leukemia	59	98.3	1.7	78	60.3	0.0	C91-C95
Other and unspecified	96	66.7	22.9	62	77.4	16.1	O&U
All sites	1667	86.9	1.8	1822	92.8	0.7	ALL