Report of Round 4 Census (2003)

Kanchanaburi Project

Institute for Population and Social Research

Mahidol University

Supported by The Wellcome Trust

October 2005

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no. 1-2/05

IPSR Publication No. 304

ISBN 974-9930-77-0

Report of Round 4 Census (2003)

Cataloging-in Publication Data

Report of Round 4 Census (2003) / editor, Philip Guest, Aree Jampaklay. - - 1st ed. - - Nakhonpathom : Kanchanaburi Project, Institute for Population and Social Research, Mahidol University. 2005.

(Publication / Institute for Population and Social Research, Mahidol University : no. 304)

ISBN 974-9930-77-0

1. Demographic surveys. 2. Demographic transition. 3. Household surveys. I. Guest, Philip, ed. II. Aree Jampaklay, ed. III. Mahidol University. Institute for Population and Social Research. Kanchanaburi Project. IV. Series

HB 850.5.T5 R425 2005

Published in October, 2005, 1,000 copies

Published by: Institute for Population and Social Research
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Preface

Supported by The Wellcome Trust, the Institute for Population and Social Research, Mahidol University has conducted the Kanchanaburi project since 2000. The objective of the project is to undertake research on population change and to link that change to social, economic, and environmental factors. The project also supports research on the effect of government and private sector policies on population processes. Finally, the Kanchanaburi project supports action research that is designed to improve the quality of life of the population living in the field site. To undertake the research activities, a longitudinal database containing demographic, social, and economic data from the population of the study areas included in the Kanchanaburi project has been created.

This report presents data collected from the Kanchanaburi field site population in 2003 (round 4). It includes population, economic, social, environmental, and health data as well as data related to the participation of the field site population in community development activities.

The Institute for Population and Social Research believes that the results from the analysis of the data collected will be beneficial to developing policy at the community level. It is our expectation that the results will stimulate further study of various dimensions of the field population and that this will ultimately contribute to strong and sustainable community development at provincial and national levels. Improvement of the quality of life among Kanchanaburi people is the project's ultimate goal.

Associate Professor Dr. Churnrurtai Kanchanachitra
Director of Institute for Population and Social Research

Acknowledgement

The round 4 census (2003) as well as this report would not be possible without the assistance of many people and the research team wish to express our sincere gratitude to those that assisted us.

All respondents participating in the project willingly devoted their time providing information in every census round. The data obtained from them are truly invaluable. Each of them deserves special credit and we would like to thank them all. Our gratitude also goes to sub-district heads, village headmen, community leaders, and other relevant persons who helped coordinate with respondents and facilitate the survey in every way they could.

We would like to thank Kanchanaburi Provincial Office for providing the research team with the opportunity to explain the objectives of the census to relevant government organizations in Kanchanaburi before the data collection took place. All district heads, staff of provincial municipal office, Thamaka municipal office, and sub-district administrative organizations in the study area facilitated coordination and helped in accommodating field workers. Thank you very much.

Our effective field workers, both in the household interviewing and GIS teams, played a major role in making fieldwork successful through obtaining high quality data. All supervisors carefully and tirelessly devoted their energy in supervising interviewing and checking completed questionnaires. We thank them all. We especially thank Wannee, Yaowalak, Anupong, Jeerawan, Pairat, Panya, and Wipaporn for the special efforts they put into the census.

Achara and Kwanjit, IPSR Ph.D. students, were involved in the process of developing questionnaires and questionnaire pre-testing and supervisor and interviewer training. We would like to express our thanks to them.

We would also like to convey our gratefulness to Associate Professor Dr. Bencha, Professor Dr. Pramote, and Associate Professor Dr. Chanya, the project investigators, as well as other IPSR faculty and researchers for their valuable inputs.

All IPSR administrative staff facilitated every step of the research, especially Mrs. Orapan, IPSR secretary and Miss Juthakan, head of the financial staff, Mr. Somchai and Mrs. Jutharat, report publication arrangements. Mrs. Somying endlessly devoted her time and efforts proofing and formatting the manuscript. We would like to applaud her for the excellent work.

Finally, we wish to thank the Wellcome Trust for funding the Kanchanaburi project.

The research team
November 2004

ABSTRACT

Report of Round 4 Census (2003)
Institute for Population and Social Research, Mahidol University

The Kanchanaburi Project is a demographic surveillance system, which records population changes (demographic, social, economic and health) in a field site consisting of 100 villages/census blocks. This fourth round census was conducted from 1st July to 27th August 2003.

The enumeration listed 12,356 households with a population of 42,816 (20,350 males and 22,466 females). Compared to the third round, the number of households decreased by 3 percent, while the population decreased by 5 percent. The majority of the population was working in the agriculture sector. There was still a significant proportion of the population that had never been to school, about 13 percent of males and 19 percent of females, a decrease compared to the 3rd round census. The majority of the study population speaks Thai for daily use, although more than one third speak non-Thai in the highland stratum.

Fertility is at replacement level and continues to decrease. A woman has two children on average. Women in the highland stratum still have the highest fertility, while women in the urban/semi-urban stratum have the lowest. About 80 percent of women are using contraceptives, a small decrease from the level recorded in the previous round. Female sterilization is still the most popular contraceptive method, followed by the oral pill and injection.

Regarding nuptiality, women marry earlier than men and are more likely than men to be currently widowed, divorced, and separated. Most couples live together. Only one-half of marriages are registered. For those who are single, a significant proportion of women state that they do not intend to marry.

About 20 percent of the population were migrants. Seven percent were in-migrants, while 13 percent were out-migrants. The out-migration rate has increased compared to the previous round. The majority of migrants were between 15-29 years old. Most migrated within Kanchanaburi province. This pattern portrays continuity rather than changes from previous rounds.

The mortality rate was 7 persons per 1,000 population. Mortality rates were higher for men than for women, although there were no gender differences regarding mortality patterns and no changes between survey rounds. Non-communicable disease was the highest reported cause of death. Most deaths were registered.

About 8 percent of the study population aged 15 years and older are disabled. Most disabilities are physical and movement disabilities because of chronic disease and sight disability predominate. The largest proportion of disabled persons falls in the 45-49 age group.

Consumption of addictive substances (i.e.; cigarettes, beer, and liquor) have increased from previous rounds.

Eighteen percent of persons at least 15 years of age are taking care of elderly. Most of them are in the working age group. Their attitudes as well as practice suggest that elderly in Thai society will have young generations to look after them in the future.

Commuting patterns suggest that the population in the plantation and highland strata spend the longest time commuting from home to a workplace or school. However, the population in the urban/semi-urban stratum have the highest costs of commuting. The most popular mode of commuting is by motorcycle.

About 15 percent of the study population aged 15 and older have some form of insurance. The most popular insurance are house, cremation insurance, land, savings, and life insurance. There is no gender difference in the proportion possessing insurance. However, there are differences in proportions with insurance according to age, education, and income.

It was found that three-fourths of the population had received the "30 Baht Health Care Card Scheme" or "Gold Card". There are no differences by gender or age, but there are differences by education and income in proportions holding a Gold Card. Utilizing the card may differ by gender, age, education and income.

The majority of respondents know about the village/community fund or "One Village - One Million Baht Project", although less than half participate in the fund. Respondents in urban/semi-urban stratum are less likely to participate compared to respondents in other strata. However, other data suggest that the operation of the fund has reached its main goal.

About one third of study villages participate in OTOP (One Tambol, One Product) project. Most participation is related to production. The product that is most likely to be produced is local food. For those villages not participating, the main reason is related to the lack of readiness of villagers in terms of time, knowledge of production, and location for production.

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1. Introduction

Aree Jampaklay

One of the main objectives of Kanchanaburi project is to create a longitudinal database that can be used to address research questions of how socio-economic and environmental changes affect population dynamics. Kanchanaburi represents an ideal setting for this objective. Because of its geographical location that borders Myanmar, movement between Kanchanaburi and Myanmar is common. This has a profound impact on people's lives in various dimensions including health and cultural assimilation. Kanchanaburi is also an important area of plantation agriculture, has many factories located, and is a major tourist destination. This diversity in economic structure and geography is reflected in diversity in lifestyles. The one hundred study villages located in the field site were selected to capture this diversity in socio-economic and environmental features.

As with the first field site census in 2000, the following censuses have taken place during the same period of the year, commencing on July 1 and finishing at the end of August. The Kanchanaburi Demographic Surveillance System (DSS) has created datasets at both the macro and micro levels. This report presents findings from the data collected in 2003 (round 4) on demographic events (fertility, mortality, and migration), nuptiality, socioeconomic characteristics, health, health behavior, and environment at the village, household, and individual levels. The report also provides details of the methodology, village profiles obtained from interviewing village leaders and key informants, and geographical aspects of study areas.

In addition to the data described above, data collection in round 4 included information that had not been collected in the previous rounds including disability, aging, commuting, insurance, knowledge and participation in village funds and urban community, and government policy.

Similar to reports from the previous rounds, this report is framed to present only preliminary and descriptive findings. More in-depth analysis of the data is presented in other reports. Therefore, most of the findings shown here are exploratory rather than analytical.

2. Design and Methodology

Yupin Vorasiriamorn and Varachai Thongthai

2.1 Concepts and definitions

The Institute for Population and Social Research (IPSR) annually collects data using a population census for every household and for every individual aged 15 years and over in each village/block in the study area. The study units are 102 villages/census blocks distributed throughout Kanchanaburi province. The data collected includes population, economic, social and health related information. For data collection purposes, each household from which data are collected is given a unique code.

For the Round 4 (2003) census, interviewers matched households and each individual to households in Round 3 (2002) by using the household listing from Round 3 (2002). Each household in the household listing has their own code called the ***"Household Code"*** and each individual in this household listing has their own code called the ***"Individual Code".***

Interviewers first recorded all members of the household from the Round 3 (2002) listing and then added to the Round 4 (2003) listing the new members who had moved into the household after July 1st, 2002. All household members were named in the household listing and included any member who migrated or who had died since the Round 1 (2000), Round 2 (2001) and Round 3 (2002) censuses.

2.1.1 Definition of household

The Round 4 (2003) census employed the same definition between "*new*" and *"old"* households and individuals as in Round 1 (2000), Round 2 (2001) and Round 3 (2002). The definitions of households are as follows:

An old household refers to a household that:

1. Was recorded in Round 1 (2000), Round 2 (2001) and Round 3 (2002) and remains the same household in Round 4 (2003);

2. Was recorded in Round 1 (2000), Round 2 (2001) and Round 3 (2002) but subsequently separated into two or more households. In this census, the household that has the same household head as in the first round is the "*Old household"*.

3. The household head of an "old household" has moved to a new house in the same village (moving alone). This new house was automatically an "*old household*" in which all members of this household are new members and are given a code that depends on the status of the household head. The pre-printed roster followed the status of household head.

4. The household head of an "old household " that already had a pre-printed roster had moved to a house in the same village that also had a pre-printed roster. In this case the two households were automatically " *old households*".

A New household is a household in the study area that has not been interviewed since Round 1 (2000) because of one of the following reasons:

1. A household newly settled in the study area after 1st July 2002;

2. A household in the study area that was not interviewed and recorded since Round 1 (2000) and has not been given a Household Code;

3. A household that separated from an old household (but still is in the same village) for any reason, e.g. marriage;

4. An old household (the same number) from which all persons had moved out and all new members have moved in (e.g. new rental household)

A household where all members had moved out is a household that was interviewed in Round 1 (2000), Round 2 (2001) and Round 3 (2002) but in Round 4 (2003) all members had moved to live outside the village or had migrated to work outside the village during the fourth round census. This type of household was recorded in the form as ***" Moved out all household ".***

An individual household refers to a household in which one or more persons make mutual arrangements for the common provisioning of food and other essentials of living. These persons may either be related or unrelated by blood, marriage or adoption.

A group household refers to a household comprised of a group of unrelated persons who live together and share lodging and regulations. This group of persons may share or may not share food or living arrangements in the form of an

institutional group household. In this census, group households include temples, prisons or welfare homes.

2.1.2 Household membership

Household membership refers to anyone who resides in a particular household (sharing food, living arrangements, etc. in the same household) for at least one month continuously during the period July 2002 - July 2003.

2.2 Study area and village selection

The villages for the Kanchanaburi project was selected using a stratified systematic design. The primary selection units for rural areas were villages and for urban areas were census blocks.

The data for selection were collected from the Kanchanaburi provincial offices of various ministries concerning the amount of agricultural land in each village, the amount of wet rice crops grown, the amount of plantation crops grown (cassava and sugar cane), the number of adult workers employed in industry, and the total population.

The study area in Round 4 (2003) included 102 villages/census blocks because one village in the upland stratum of Round 3 (2002) had split into 2 villages. This village is Kui Yae (Muu 2) located in Thongphaphum District.

The study area was divided into five strata, which were categorised according to the main occupation of the population and land use patterns. These strata are: 1) urban/semi-urban (industrialised), 2) rice producing, 3) plantations, 4) uplands

areas, and 5) mixed economy. The characteristics of each of these strata include the following.

The Urban/Semi-urban (industrialized) stratum covers the population living in municipal areas. The latter have been categorized into census blocks by the National Statistical Office (NSO). This strata also covers villages that have a significant proportion of their labour force employed in industries.

The Rice stratum villages are those located in lowland areas where the main occupation is rice cultivation.

The Plantation stratum comprises villages that are also located in lowland areas, and where the major occupation of the local people is cultivating cassava or sugar cane.

The Uplands stratum contains villages located in the three uplands districts, which are Saiyoke, Thongphaphum and Sangkhlaburi districts.

The Mixed Economy stratum contains villages that could not be classified into the other strata described above.

2.3 Method of data collection

The method used for data collection was structured interviews and entailed the use of three sets of questionnaires: village, household and individual.

The Village questionnaire consisted of seven parts: general village data, agriculture, occupation, infrastructure and transportation, health, community development, and government policy.

The Household questionnaire consisted of five sections: basic data on the household members, mortality, household characteristics, land use for agriculture and environment, and government policy. The interviewers observed household characteristics and recorded them in an observation form.

The Individual questionnaire was used for respondents aged 15 and over. It consisted of seven sections: personal data, migration, fertility, health behaviour, experiences and perceptions towards care and support for the elderly, future security, and specific questions about health status and disability.

2.4 Questionnaire pre-testing

All questionnaires were pre-tested in Kanchanaburi villages that were located outside of the study area. Three pre-tests were undertaken as follows:

- 1st Pretest : 7th-8th March, 2003 in one village,
- 2nd Pretest : 7th – 9th April, 2003 in one village, and
- 3rd Pretest : 20th – 21st May, 2003 in one village.

Before and after each pre-test, a meeting was held among the research working group members in order to obtain suggestions and recommendations for

questionnaire revision. At the same time, a manual for collecting data for all of the questionnaires was prepared.

2.5 Data collection period

Data collection started on July 1st, 2003 and ended on August 27th, 2003 (58 days in total).

2.6 Data collection team

For Round 4 (2003), The Institute for Population and Social Research collaborated with a local education Institute "The Research Center - Kanchanaburi Rajabhat Institute", the Governor's Office, the District office and Village Headman in the study area and a local newspaper in advertising of the selection of supervisors and interviewers. Priority in the selection of interviewers was given to local residents of Kanchanaburi.

A Local Interviewer Model was experimented with in Round 3 (2002) in 3 villages in order to examine whether this method of data collection provided better quality data. Round 4 (2003) followed this model by expanding the number of local interviewers to 38 persons to collect data in 30 villages and 9 blocks. The selection of local interviewers were as follows;

Step 1: During a selection process of an interviewer, a candidate for an interviewer position would identify the name of a village in which they would stay that was in the study area or nearby. They were asked to

name a village from which they could collect data on a daily basis from a study village.

Step 2: a) Listing all persons (who met the qualification of interviewer selection) from the total villages/blocks.

b) Interviewing and recruiting the local interviewers.

There were 78 people in the data collection team, including 10 field supervisors, 30 interviewers and 38 local interviewers. Ten teams were responsible for collecting the data. On average, each team consisted of one field supervisor, 4-5 general interviewers and 3-4 local interviewers with the number depending upon the number of villages and area to be covered. Each local interviewer was responsible for his/her village where he/she resided. Each team/local interviewer arrived in the first village on June 30th, 2003 and began data collection on July 1st, 2003.

The process of training data collection teams was divided into two steps. The first step entailed recruiting and training field supervisors over a six-day period from 23rd – 28th May, 2003. After selection of field supervisors, they went to sample villages for mapping and listing households. In the second step from 16th – 27th June, 2003, the interviewers were trained, and concepts and definitions of each question in the questionnaires were explained. The interviewers learned about interviewing techniques and practiced interviewing.

2.7 Data collection

2.7.1 Updated village mapping

Village mapping in Round 4 (2003) consisted of updating village maps from Round 3 (2002) and data from the GIS survey as follows;

1. The village headman and other community leaders were asked to determine if there had been any changes in village boundaries over the previous year. The village boundaries were then identified and a map was drawn covering details of roads in and out of the village, railways and waterways (rivers, canals, reservoirs) and these details were added to the map that was used in the precious round.

2. Also noted were the positions of key village centers (e.g., temple, school, health centre, shops, headman's house). If there were any changes in households (new or moved out) these were also added to the map that was used in the precious round.

3. On the map, each household or group of households was allocated a number and the name of the household head was noted.

4. On the map, notations were also made concerning what households might be difficult to interview.

2.7.2 Updated listing

An updated listing from the listing used in Round 3 (2002) and the data from the GIS survey was obtained with the assistance of the village headman as follows;

1. First, when the data collection teams arrived the villages in the study area this listing was updated through interviews with the village headman;
2. The household listing was also updated during the Round 3 (2002) census, with any household without a household number being added into the updated listing. Households that had the same household registration number recorded in the household listing of the first, second and third round censuses, but where nobody had resided, were checked again to see if there was any person now residing. If it was found that a household was considered as derelict by the neighbours, the interviewer recorded this as a derelict household and completed all details on the form; and
3. For a derelict household recorded in Round 3 (2002) that was occupied by a new household in Round 4 (2003), a household number was assigned and the household were then visited.

2.7.3 Data collection process

2.7.3.1 Field work plan

The following actions were undertaken for field work- :

1) Arranged for interviewers in teams and local interviewers to collect data in the upland area in 5 villages in Saiyoke district in the first week of the data collection period,

2) Distributed team interviewers and local interviewers to finish the schedule of data collection in all study areas, and

3) Expected any team interviewer and local interviewer that finished their schedule of data collection early to re-check and interview the households that remained from the first week of data collection in Saiyoke district.

2.7.3.2 Data collection

The method of face to face interviews that was used in the first, second and third rounds was also used in this round. The procedures for each type of questionnaires used were as follows:

Village questionnaire

Field supervisors obtained village data through group interviews with village headmen, village committee members, members of Tambol (subdistrict) Administrative Organisations, monks, teachers or women's group members. A minimum of three members from the community were interviewed. They began by introducing the background of the Kanchanaburi project and asking for consent for the interview.

Household questionnaire, Individual questionnaire and specific questions about health status and disability.

Interviewers obtained household data by interviewing household heads, and individual data by interviewing individuals aged 15 and over. Interviewers began by providing respondents with background information about the Kanchanaburi project, why their information was important, and asked them for their consent. For the specific questions about health status and disability, individuals eligible for interview where those who had been sick with a chronic disease for a 6-month period and had been diagnosed by a doctor or who self-reported that they were sick or disabled for a 6-month period.

If an interviewer faced difficulties in interviewing, field supervisors assisted interviewers in explaining the objectives of the Kanchanaburi project. This helped decrease the number of non-responses.

If an interview could not be obtained at the first or second visit, a household was visited a third time. After three visits, if consent could not be obtained for the interviews the household was recorded as a non-response.

Local interviewers were directly supervised by both field supervisor and the researchers of the Kanchanaburi project during field visits. He/she carefully checked each questionnaire after interviewing.

Researchers also went to visit and supervise the data collection teams every week.

2.8 Data quality control

The process of data quality control started during the first week of data collection. The data collection teams not only went to gather the data in Saiyoke district but also participated in discussions in group meetings every day. This activity contributed to a shared understanding of the questionnaires. The process of data quality control was as follows;

- The thirty interviewers in the data collection teams checked the quality of data after interviewing by exchanging the completed questionnaires before handing them to supervisors. Sometimes interviewers went back to re-interview after questionnaire checking. Researchers completed the field edit by spot checks when they visited and monitored the teams. Team meetings were arranged when researchers found any problems.
- The thirty-eight local interviewers checked the quality of data after interviewing by themselves and waited for researchers to monitor and supervise them. Sometimes local interviewers went back to re-interview after questionnaire checking.
- Researchers were the local interviewers' supervisors. Supervisors visited and monitored the areas where local interviewers were responsible for data collection.

The field edited questionnaires were sent to the field station at Saiyoke where they were re-edited.

After completion of the fieldwork, 15 persons from the data collection teams were recruited for data processing. This process took 4 months (1st September – 30th December 2003).

2.9 Data

2.9.1 Response rate and time of interview

There were 16,150 eligible households in the study communities, and of these 12,356 were interviewed. This results in a response rate of 77 percent. From the households interviewed, there were 30,035 eligible individuals, of whom 28,873 cases were interviewed. Therefore the response rate for individuals is 96 percent (see Table A1.1 in the Appendix 1).

The high non-response rate for households were largely due to households that had moved out (75 percent) and could not find the house (12 percent). There were very few household that refused to be interviewed (3 percent). Not available or at work (43 percent), sick/old/handicap (38 percent), and refuse to interview (16 percent) were the most frequently cited reasons for individuals who could not be interviewed (see Table A1.2 in the Appendix 1).

The time spent for household interviews ranged from 3 minutes to 1 hour and 40 minutes and depended on the difficulty of interviewing. The average time spent on a household interview was 20 minutes. The interview time for individuals ranged from 2 minutes to 1 hour and 5 minutes, with an average of 14 minutes (see Table A1.1 in the Appendix 1).

2.9.2 Quality of data

In evaluating the data quality, opinions of interviewers were recorded at the end of each household and individual interview. These opinions included

interview setting, presence of a third person or persons, interview involvement of the third person, cooperation and reaction of interviewee, and interviewer's view of the overall quality of data (see details in Table A1.3 Appendix 1).

Overall, opinions were similar for both questionnaires (same set of questions). Most interviewers thought that the quality of data was good and very good in general (94 percent). Only five percent of interviewers thought the data were of average quality and less than half percent stated that they obtained poor quality data.

More than half thought that the setting for the interview was private and quiet (61 percent for household interviews and 58 percent of individual interviews). A noisy, but private setting was reported for 36 percent of household interviews and 39 percent of individual interviews. Very few interviewers reported that the setting was not private and that this affected the interview (3 percent for household and 3 percent for individual). However, less than one percent reported that they had to stop the interview due to the setting.

More than half of the household interviews (57 percent) were completed in the absence of a third party. The rest were interviewed whilst a third party was present all the time (29 percent) and present sometimes (13 percent). However, that person(s) were mainly other household members (73 percent) and neighbours (30 percent). Nearly half of the others present only listened to the interview.

More than half of the individual interviews (54 percent) were completed without a third party present. During the interview, the presence of the third party at all times was 31 percent and at sometimes was 14 percent. Those present were

mainly other household members (82 percent) and neighbours (21 percent). More than one half of the others preset helped the respondents answer questions, but only for a few questions.

Almost all respondents provided good to excellent co-operation. Less than one percent of the interviewers reported that co-operation was poor. Moreover, the majority of the respondents reacted positively during the interview. Whilst one-tenth of respondents were neutral about the interview, less than one half of a percentage point were reported to be unhappy about the interview.

The topics that were not liked by respondents were related to personal characteristics of the household members, housing characters and debt.

In conclusion, it could be said that the quality of data was good to very good. This is due, in part, to three pre-tests of the questionnaire. The lengthy recruitment process, as well as detailed training sessions for supervisors and interviewers, were other reasons contributing to good data quality.

3. Village Data

Chanya Sethaput

Village data under the Kanchanaburi Project was collected in rural and semi-urban areas. The aim of this chapter is to examine the change in village characteristics by comparing the Round 2 and Round 4 censuses in 2001 and 2003. Village data from the Round 3 is not presented. Village data from every census were obtained by group interview of at least 3 key informants in the village such as village headman, sub-district organization representative or other senior persons. In the Round 2 census, there were 86 villages but in Round 4, the number of villages had increased to 89 due to the change in definition of urban or rural areas, and divisions of village by Ministry of Interior according to number of household and population (see Table 3.1). For each of the two census rounds, different persons could provide data, as the positions of key informant (such as headman) can change.

Table 3.1 Number of villages by strata and round

	Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Total (village)	6	7	20	21	20	20	20	21	20	20	86	89

3.1 General information

The average number of households per village in the 5 study strata between the 2 rounds was not markedly different, except in the Semi-urban stratum, where the number of households increased markedly. Compared with 2002 data (data not shown), there was little difference between 2002 and 2003 in the mean number of households in Semi-urban stratum (196 and 201 households per village).

The average population per village is similar in the rice, plantation and mixed economy strata and did not vary substantially between 2001 and 2003 (see Table 3.2). The average village size was higher in the Semi-urban and Uplands strata, and there was a substantial increase between the two rounds in the mean population of Semi-urban stratum.

The mean male population per village in study strata varied little between the two rounds. The only exception was for the Semi-urban stratum where there was a large increase in the mean number of males per village. The same pattern can be observed for females.

Table 3.2 Average number of households and population per village, by strata and round

	Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Average household	141	195	100	104	100	101	141	155	120	133	117	129
Average population	642	857	470	474	465	461	646	708	586	594	556	583
Average male population	283	409	224	227	227	204	322	355	291	286	270	279
Average female population	354	448	246	248	239	217	324	352	295	308	285	294

Overall, there was a decrease in the number of factories located in study villages (see Table 3.3), although the number of villages that were the location of factories increased marginally from 16 to 17 between the 2 rounds.

Table 3.3 Number of villages where factories are located by strata and round

Number of factory	Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
1 factory	2	1	3	1	1	0	4	3	1	3	11	8
2 factories	1	2	1	2	0	1	0	0	1	2	3	7
3 – 4 factories	0	1	0	0	0	0	0	0	2	1	2	2
Total (village)	3	4	4	3	1	1	4	3	4	6	16	17

3.2 Agriculture

From Table 3.4 the importance of rainwater as the main source of water for agriculture in the study villages can be clearly seen. Nearly all rural villages used rain water for agriculture, except in semi-urban areas where rain water was less important. In addition to rain water, there were other natural sources of water, such as canals. Constructed sources of water, such as man-made ponds, small dams, and underground water, were found in all strata but not in large numbers. The one noticeable change between 2002 and 2004 in sources of water for agriculture was the greater availability of piped water in the Uplands stratum.

Table 3.4 Number of villages by source of agricultural water, strata and round (multiple responses)

Source of water	Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Irrigated canal	4	4	9	9	0	0	0	0	7	6
Underground										
- less than 5	0	0	6	0	2	1	0	1	5	2
- more than 5	4	4	1	1	5	2	0	0	11	11
Natural pond	1	1	4	0	7	4	12	7	10	4
Small lake	0	0	2	0	1	0	1	1	1	0
Small dam	0	0	0	0	3	2	2	2	4	3
Rain water	2	1	17	18	20	19	20	21	14	11
Dug pond	0	0	5	0	5	1	1	1	1	2

In comparing the two census rounds there was a change in the volume of water available by source of water (see Table 3.5). In Round 2, the volume of water from natural sources in 48 of all 86 villages had decreased from the previous year, while only in 10 villages had the volume of water increased from the previous year. Meanwhile, in Round 4, the volume of water in 22 of the 89 villages had decreased, while an increase of water volume was found in 33 villages. There was little change in the volume of water available from natural sources in most of Semi-urban stratum.

Table 3.5 Number of villages by volume of water from natural sources, strata and round

Volume of water from natural sources compared with last year	Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Decrease	2	0	8	3	17	4	7	12	14	3	48	22
Increase	0	1	1	12	0	9	7	2	2	9	10	33
Same	4	5	4	6	0	5	6	7	4	7	18	30
Don't know	0	0	1	0	0	0	0	0	0	0	1	0
No natural source	0	1	6	0	2	2	0	0	0	1	8	4
Total (village)	6	7	20	21	20	20	20	21	20	20	85*	89

* (1 missing)

3.3 Occupation

Overall, the main occupation of people in most study villages in both census rounds was agriculture. Next to agriculture were business and agricultural labour. Manufacturing occupations were found in few villages. Government service was mentioned as a major occupation in some villages (see Table 3.6).

Although agriculture remained the main occupation in most villages, there was an increase there was an increase in the number of villages where business was a major occupation. Agricultural labour as a main occupation decreased in mixed economy areas and increased in rice growing villages. There was only 1 village, located in the Uplands stratum, where collection of forest products was listed as a major occupation.

Table 3.6 Number of villages by main occupation, strata and round

Occupation	Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Agriculture	6	7	20	21	20	20	20	21	19	19
Agricultural labour	3	1	8	16	15	13	11	12	14	6
Non agriculture labour	0	4	7	9	4	13	9	13	2	13
Government service/state enterprise	0	4	7	9	4	13	9	13	2	13
Business	3	6	10	8	11	12	15	18	11	16
Others	0	0	1	4	1	3	0	2	1	1
Factory worker	3	3	6	6	5	1	0	0	7	2
Manufacture	0	0	1	1	0	2	0	1	0	0
Forest collector	0	0	0	0	0	0	1	1	0	0

Table 3.7 show the type of cash crops grown in study villages. Among the study villages, plantation crops are grown more widely than rice. Fruit and vegetables are also grown in most areas. Comparing the 2 rounds (2001 and 2003), there was no major change in the cropping patterns. In the Mixed economy stratum the number of rice villages decreased from 9 to 5 villages while fruit villages increased from 9 to 14 villages.

Table 3.7 Number of villages growing cash crops by strata and round (multiple responses)

Crop	Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Rice	4	3	20	19	10	8	19	11	9	5
Cash crop	6	7	18	18	20	20	17	18	19	19
Vegetable	4	5	7	8	12	12	12	15	18	16
Fruit	2	3	11	6	12	15	20	17	9	14
Tree	1	1	5	6	10	14	10	14	7	10
Other	0	0	0	1	1	2	0	5	0	3

Animal husbandry was found in many villages (see Table 3.8). Animals most commonly raised were cows, chicken, buffalo and pigs. Other animals – fish, ducks, and goats -- were less frequently raised as a source of income. There was little change over the 2 rounds in the number of villages where animals were raised. Overall there were more villages where animals were raised in Round 4 than in Round 2. This suggests that more villagers were raising animals for sale. A new form of animal husbandry, sheep raising, was mentioned in 3 villages. Silk worm raising increased from 1 to 3 out of 89 villages.

Table 3.8 Number of villages with animal husbandry by strata and round (multiple responses)

Animal husbandry	Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Cow	5	6	19	21	16	17	17	19	19	19
Buffalo	0	0	6	5	3	4	12	10	2	3
Pig	0	5	10	19	11	18	14	16	7	13
Chicken	1	2	14	16	13	18	17	14	10	12
Fish	2	3	9	4	5	4	15	12	2	5
Pawn	0	0	2	3	0	0	0	0	0	0
Frog	0	0	1	0	0	1	2	1	1	0
Goat	0	0	1	1	2	1	1	2	0	1
Silk worm	0	0	0	0	0	1	1	1	0	1
Duck	0	0	3	3	2	7	2	8	0	3
Cricket	0	0	1	0	0	0	0	0	0	0
Sheep	0	0	0	1	0	1	0	1	0	0

3.4 Public facilities and communication

Data in Table 3.9 demonstrate an increase in the availability of public facilities in study villages between 2001-2003. This is most notable for telecommunications, such as public telephone, home phone and mobile phone. An increase of internet access, though still not widely available, was observed. In contrast use of the 2-way radio, which was formerly popular in remote areas where public telephones

were not available, declined. At present, the cellular phone has almost entirely replaced the 2-way radio.

Table 3.9 Number of villages by public facilities, strata and round (multiple responses)

Public facilities	Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Working public telephone	4	6	11	15	7	14	13	17	13	16
Home telephone	5	6	8	10	5	10	11	11	12	12
Cellular phone	6	7	19	21	17	19	13	13	20	20
Broadcasting post	5	6	12	14	16	17	15	20	17	16
2 way radio	6	1	14	9	12	6	13	9	17	11
Internet connection	1	3	0	1	0	1	0	1	1	4
Bus route	1	2	9	11	10	9	14	14	5	6

For public transportation, data showed no major changes in access to bus routes through villages. However, the data in Round 3 shows that road accessibility between villages and district towns improved.

Table 3.10 indicates that villages in the study area are affected by flooding. In Round 4, 5 villages in the uplands and rice areas faced floods while in semi-urban areas people were free from flood in Rounds 2 and 4.

Table 3.10 Number of villages with floods by strata and round

Flood	Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Yes	0	0	0	5	3	3	0	5	3	4
No	6	7	20	16	17	17	20	16	17	16
Total (villages)	6	7	20	21	20	20	20	21	20	20

3.5 Health

The major disease mentioned by village leaders was the common cold, this was evident in both rounds (see Table 3.11). There was an increase in the number of villages where colds were cited as a major sickness. In upland villages, colds were noted as a health problem in every village in Round 4 (an increase from 4 to 20 villages over the 2 rounds). Malaria is an important sickness in uplands areas and the number of residents who contracted malaria has not, according to village leaders, declined.

Other non-communicable diseases such as diabetes, hypertension and bone disease appear to becoming more widespread, especially in rice growing villages. Hemorrhagic fever was also a health problem in many villages. Notably, HIV/AIDS was mentioned as important disease in only a few villages.

Table 3.11 Number of villages by major diseases, strata and round (multiple response)

Disease	Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)	Round 2 (2001)	Round 4 (2003)
Colds	6	7	15	18	19	19	5	20	12	18
Malaria	0	0	0	0	0	1	15	15	2	3
Allergy	0	2	0	0	0	1	0	0	0	2
Diabetes	0	0	0	4	0	3	0	0	0	1
Hypertension	0	0	0	6	0	3	0	1	0	2
Hemorrhagic fever	0	1	0	4	1	0	0	8	2	4
Bone diseases	0	0	2	4	0	2	0	0	1	0
Pain	0	0	1	2	0	0	0	0	0	0
Respiratory diseases	0	0	1	0	0	1	0	1	1	1
HIV/AID	0	0	0	1	0	0	0	0	1	1
Stress	0	0	1	0	0	0	0	0	0	0

3.6 Summary

In summary, comparing data from Round 2 in 2001 and Round 4 in 2003, there were village-level changes in occupational patterns and the health. These findings provide a context within which to focus on the household and individual data.

4. Spatial Data

Kriengsak Rojnkureesatien

4.1 Topography of Kanchanaburi

Kanchanaburi is located 120 kilometers west of Bangkok between 13° and 15° north latitude and 98° and 100° east longitude. Kanchanaburi is bordered in the northwest and the west by the neighboring country of Myanmar, in the north and northeast by Tak and Utaithani provinces, in the east by Supanburi province, and in the south by Nakhonpathom and Ratchaburi provinces (figure 4.1).

The topography of Kanchanaburi has three dominant landscapes. The first is the mountainous area in the north and the west. The highest point is about 1,800 meters above sea level. This hilly area is called the Ta Now Sri range and it comprises the border between Thailand and Myanmar. This range covers Sangkhla Buri, Thong Pha Phum, Sri Sawat, and Sai Yok districts and some parts of Dan Makham Tia, Muang and Bo Ploi districts. The second is the plateau and small hill area located on the eastern side of Kanchanaburi, in Panom Thuan, Huay Krachoa, Loa Kwan and Bo Ploi districts. The last landscape is a flat alluvial plain, that covers the south and southeast of Kanchanaburi and includes the districts of Tha Maka, Tha Muang, and some part of Muang and Panom Thuan. Kanchanaburi has an area of about 19,483 square kilometers and three fourths are protected areas, such as reserved forest and wildlife sanctuaries.

Kanchanaburi, for administrative purposes, is divided into 13 districts (amphoe) consisting of 95 subdistricts and 877 villages. The population of Kanchanaburi is about 730,000, most of whom are ethnic Thais, with the remainder belonging to the Karen, Mon, Lao ethnic groups, and migrants from Myanmar. Agriculture is the main occupation. As noted in an earlier chapter, the field site is divided into five strata: Urban/semi-urban, Rice, Plantation, Uplands, and Mixed economy. The distribution of field site communities among strata is shown in Figure 4.2.

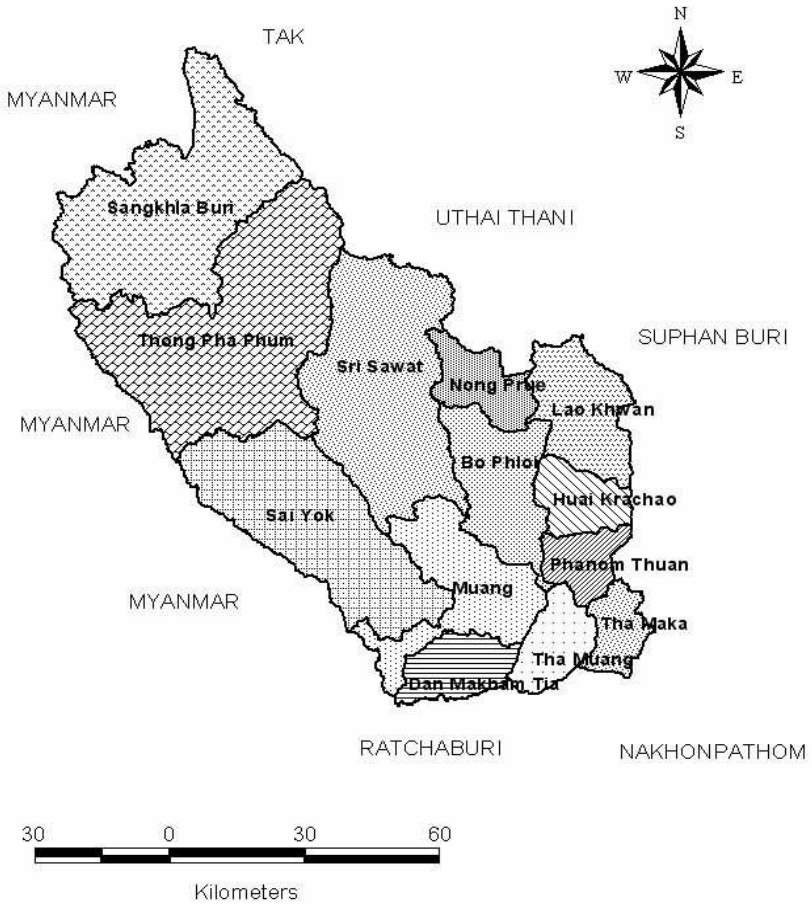


Figure 4.1 Map of Kanchanaburi

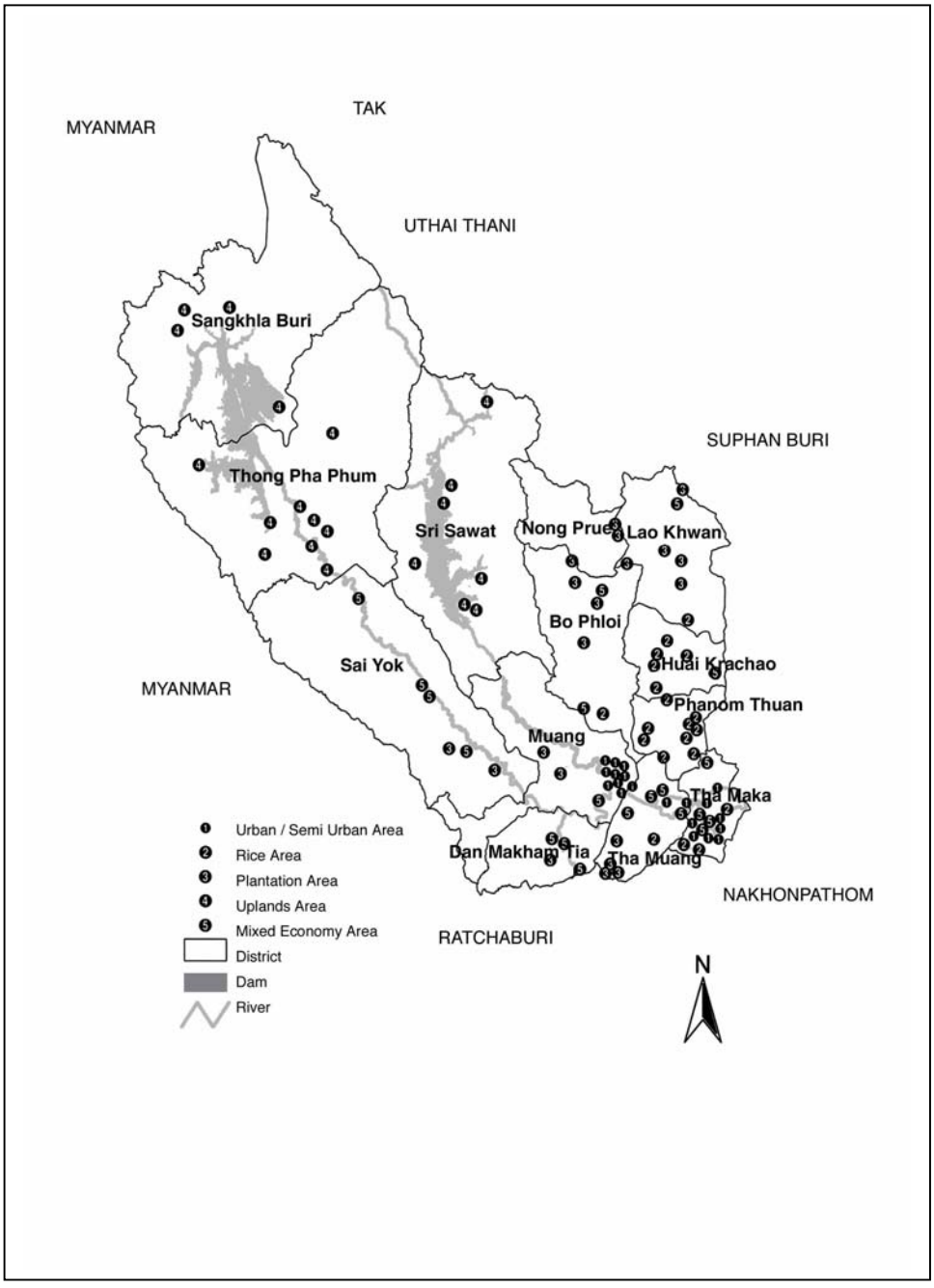


Figure 4.2 Five Strata of Study Area

The Urban/semi-urban stratum (Figure 4.3) consists of municipal areas and villages that share a boundary with municipal areas. Most of the population work in the non–agricultural sector. The majority of buildings are made of concrete. Commercial buildings and grocery stores can be found on almost every street.

The rice stratum (Figure 4.4) consists of communities located mainly on the flat plains with access to an irrigation system. All villages in these strata are located outside municipal areas. Houses are usually built close to each other, clustered on an area not prone to flooding and surrounded by paddy fields in areas that floods. Farm sizes are smaller than those of farms in the Plantation stratum. The Plantation stratum (Figure 4.5) communities are usually located in uplands areas where flooding is rare. Houses are scattered and many are located on farm lots. Plantation crops gown include sugarcane, cassava, maize, orchard and rubber trees.

The Uplands stratum (Figure 4.6) consists of the three districts that are the most mountainous. Most of the land in these districts is protected and set aside as parks and forests. Villages in this stratum are of two main types. The first type is a resettlement community. These are usually villages where the government has settled population who have been displaced because of dam construction or because they had to be relocated from reserve areas. Usually these communities are well planned. These villages have good internal road networks and usually follow a block or wishbone pattern of settlement. The second type consists of original villages that still exist in reserve areas. These villages generally have bad road and often are cut-off during the wet season. In both types of villages there is usually no legal ownership documents for land. Most villagers have small subsistence farms and earn cash from casual labour. Migration rates in this area rates are high.

The last strata is the Mixed economy stratum (Figure 4.7), located mainly in central and south portions of Kanchanaburi. Communities in this stratum differ widely in terms of landscape and occupational composition.

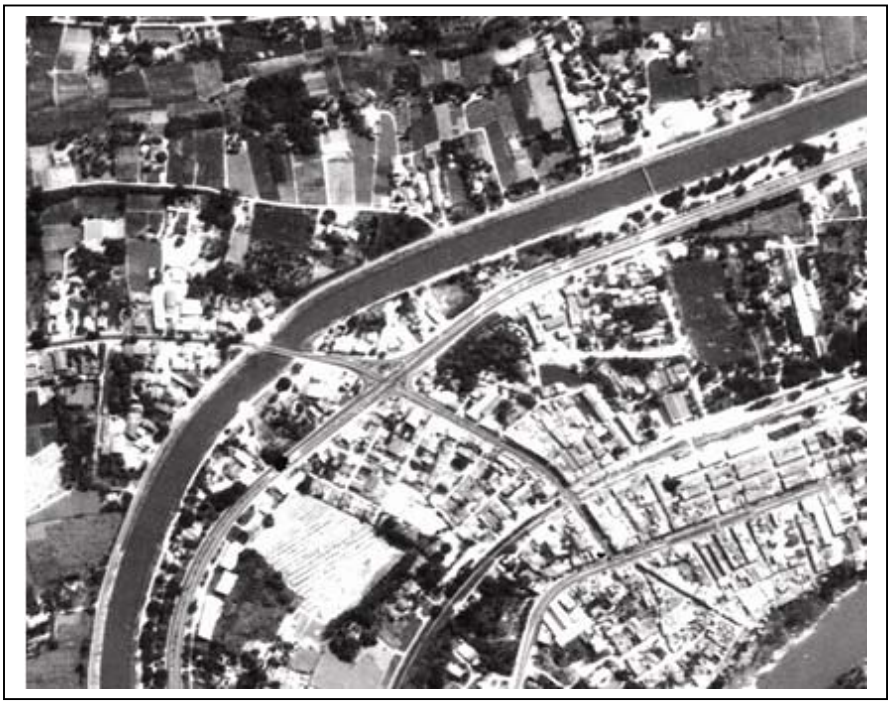


Figure 4.3 **Aerial photograph of Urban/semi urban stratum community**

Figure 4.4 **Aerial photograph of Rice stratum community**

Figure 4.5 **Aerial photograph of Plantation stratum community**

Figure 4.6 **Aerial photograph of Uplands stratum community**

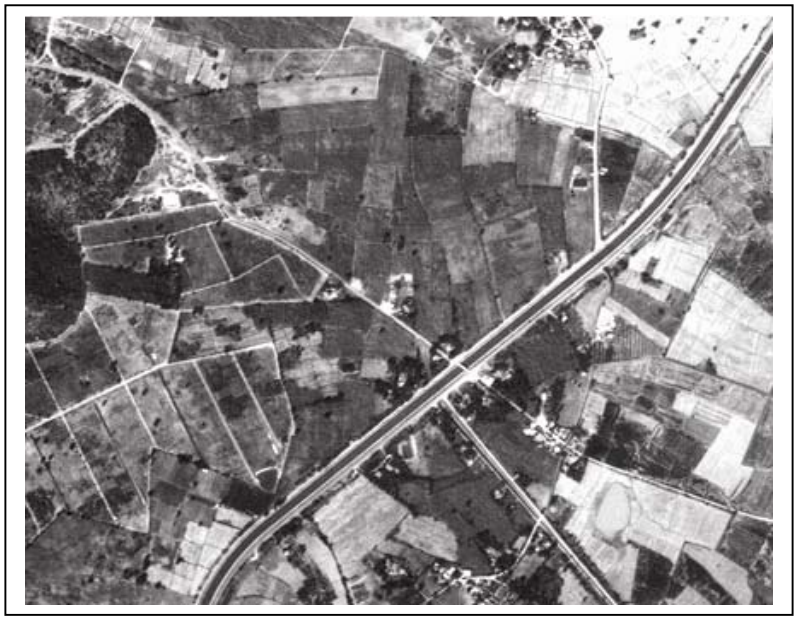


Figure 4.7 **Aerial photography of Mixed economy stratum community**

4.2 Collecting of spatial data

Spatial data for the Kanchanaburi project was provided by several government departments. These included the Royal Thai Survey Department, Land Development Department, and the Department of Environmental Quality Promotion. These data were in the form of aerial photographs, satellite images, topographic maps, and other digital information, such as locations of villages, schools, health centers, boundaries of provinces and districts, rivers, roads, and land use. All household locations in the field site were collected by GPS (global position system). These spatial data were integrated into the database system with the census data.

Before spatial data collection commenced, a training session for basic geographic information system and using of GPS was conducted for data collectors. In the first round, 10 staff were divided into 5 teams of 2 collected data over a period of 53 days from 26 April to 17 June 2001. For the second round, 6 staff collected data for 77 days from 15 September to 30 November 2003.

Spatial data was first collected in 2001, with a second round of data collection in 2003, and a third in 2004. In the first round, 6 GPS units with year 2000 household rosters were used to collect household locations. The location of schools and health centers were also collected at the same time. In the second round of spatial data collection, household rosters from census rounds 3 and 4 were used to identify new household locations and other important places. Each location in the database has a pair of x and y coordinates, collection date and household ID. These spatial data from GPS units were transferred to a computer, tabulated and then merged or linked with the baseline survey data by using the

household ID as common field. These data can then be linked to graphics, tables, and photos on the map for further analysis.

Table 4.1 Numbers of geo-reference points of households and other landmarks in field site by strata and year

Year	Urban / semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
2001	3,340	2,137	2,145	3,579	2,787	13,988
2002	419	135	332	421	579	1,886
2003	217	73	111	250	72	723
Total	3,976	2,345	2,588	4,250	3,438	16,597

Table 4.1 shows numbers of geo-reference points of households and other landmarks in the field site areas. The points include village centers, schools, churches, health centers and roads. Locations of new households are collected each year, but locations of households that moved out are not deleted.

Spatial data is integrated and checked for accuracy of point position and adjusted to the standard coordinate system for future use with spatial data from other sources in governmental organizations.

5. General Characteristics of the Study Population

Aree Jampaklay

5.1 Population size

There were 42,816 persons in the study area included in the round 4 (2003) census, 20,350 males and 22,466 females. They are from 12,356 households. The population size had decreased compared to previous censuses, especially in urban/ semi-urban and Uplands strata. The population distribution among strata was as follows: 27 percent in the Uplands, 21 percent in the Mixed Economy stratum, 20 percent in the Urban/semi-urban communities, 16 percent in the Rice stratum, and 16 percent in the Plantation stratum (Table 5.1 and Figures 5.1 and 5.2)

5.2 Age and sex structure

Table 5.2 shows the percentage distribution of population by age and strata for the third (2002) and the forth censuses (2003). The table indicates that the age structure of the study population has remained unchanged in all strata. The population pyramids (Figures 5.3-5.7) suggest that the age and sex structure of population included in this census is similar to that of the population in previous rounds (see Reports round 1, 2, and 3).

Table 5.3 divides the population into 3 groups, children (less than 15), productive ages (15-59 years old), and ageing population (older than 60 years old). Comparing the data in the round 4 census with the previous 3 rounds shows that

for all rounds the proportion aged less than 15 years old is highest in the Uplands stratum (37 percent) and lowest in the Urban/semi-urban stratum (25 percent). By contrast, the proportion in the productive ages is highest in the Urban/semi-urban stratum (64 percent) and lowest in the Uplands stratum (55 percent). The Urban/semi-urban stratum is an area of high in-migration for persons seeking employment. The proportion of the population aged 60 and over is highest in Rice stratum (13 percent) and lowest in the Uplands stratum (9 percent).

Table 5.1 Household size and population size by sex, strata and census round

	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed	Total
Household						
Round 1 (2000)	2,580	1,888	1,845	2,939	2,360	11,612
Round 2 (2001)	2,776	1,969	1,968	3,328	2,616	12,657
Round 3 (2002)	2,664	2,024	1,986	3,399	2,607	12,680
Round 4 (2003)	*2,550*	*1,985*	*1,976*	*3,235*	*2,610*	*12,356*
Total population						
Round 1 (2000)	9,198	7,196	6,706	10,868	8,646	42,614
Round 2 (2001)	9,797	7,348	7,079	12,318	9,487	46,029
Round 3 (2002)	9,416	7,239	6,869	12,299	9,220	45,043
Round 4 (2003)	*8,751*	*6,955*	*6,657*	*11,429*	*9,024*	*42,816*
Male population						
Round 1 (2000)	4,257	3,371	3,256	5,454	4,088	20,378
Round 2 (2001)	4,594	3,437	3,429	6,225	4,512	22,197
Round 3 (2002)	4,431	3,358	3,324	6,182	4,378	21,673
Round 4 (2003)	*4,044*	*3,219*	*3,203*	*5,620*	*4,264*	*20,350*
Female population						
Round 1 (2000)	4,941	3,825	3,450	5,414	4,558	22,236
Round 2 (2001)	5,203	3,911	3,650	6,093	4,975	23,832
Round 3 (2002)	4,985	3,881	3,545	6,117	4,842	23,370
Round 4 (2003)	*4,707*	*3,736*	*3,454*	*5,809*	*4,760*	*22,466*

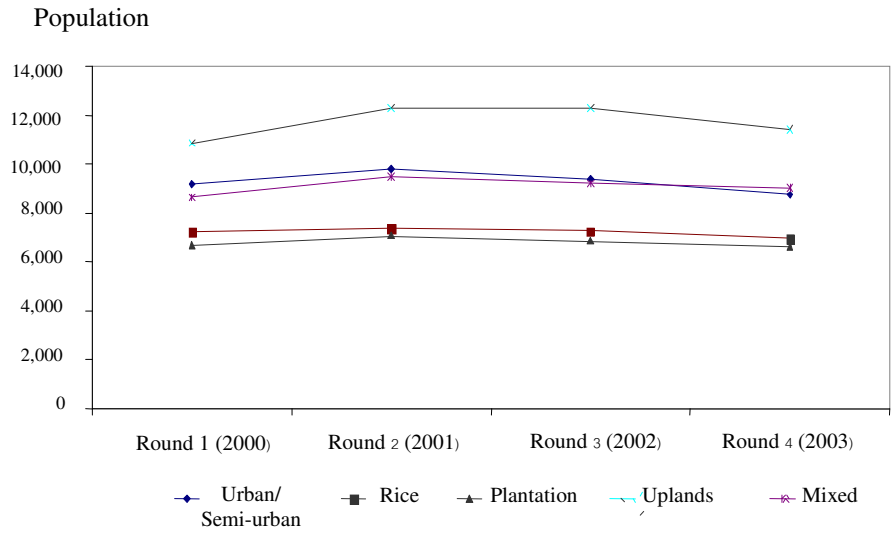


Figure 5.1 Population size in the census by strata and census rounds

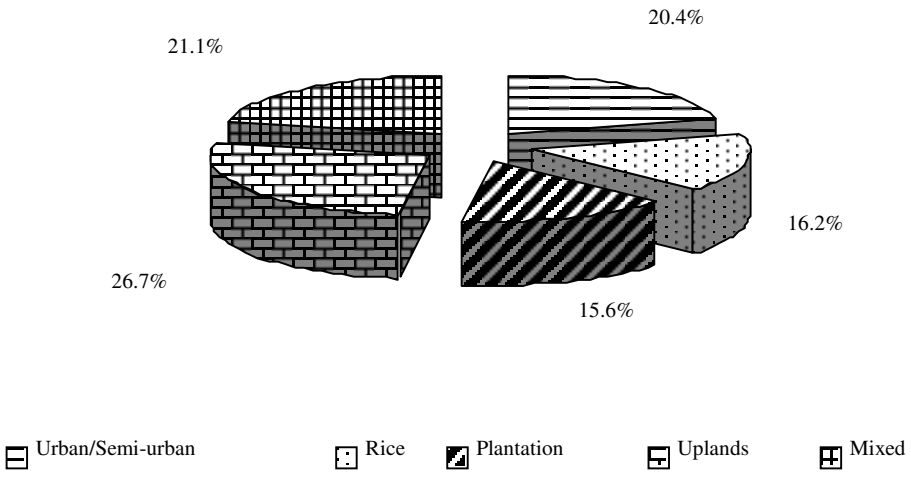


Figure 5.2 Population distribution by strata, Round 4

Table 5.2 Population distribution by age and strata, Rounds 3 (2002) and Round 4 (2003)

Age group	Urban/ Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	Round 4 (2003)
0-4	7.4	*6.9*	8.5	*7.8*	8.4	*8.3*	11.9	*12.0*	8.1	*7.6*	9.1	*8.8*
5-9	8.9	*9.2*	10.0	*10.3*	10.7	*11.0*	12.6	*13.0*	9.9	*10.0*	10.6	*10.8*
10-14	8.5	*8.7*	10.1	*9.8*	11.1	*10.6*	11.2	*11.7*	9.7	*10.2*	10.1	*10.3*
15-19	7.8	*7.3*	6.9	*6.8*	7.3	*6.7*	6.0	*5.2*	6.8	*6.8*	6.9	*6.5*
20-24	6.8	*6.5*	5.0	*4.7*	5.8	*5.2*	5.9	*5.3*	5.8	*5.5*	5.9	*5.5*
25-29	8.4	*7.4*	7.3	*6.8*	7.7	*7.6*	7.7	*6.7*	7.9	*7.3*	7.8	*7.1*
30-34	8.3	*7.8*	7.5	*7.6*	7.9	*7.4*	8.2	*8.3*	8.2	*7.9*	8.0	*7.9*
35-39	8.4	*8.8*	8.5	*8.6*	8.4	*8.5*	7.7	*7.8*	7.9	*8.1*	8.1	*8.3*
40-44	8.5	*8.3*	7.8	*7.9*	8.1	*8.3*	7.3	*7.1*	7.5	*7.8*	7.8	*7.8*
45-49	7.2	*7.4*	6.2	*6.5*	6.2	*6.7*	6.3	*6.5*	7.2	*7.2*	6.7	*6.9*
50-54	5.3	*6.3*	5.5	*6.0*	5.1	*5.4*	4.3	*4.6*	5.9	*5.8*	5.1	*5.6*
55-59	3.9	*4.0*	3.6	*3.7*	3.6	*3.8*	3.2	*3.4*	4.5	*4.5*	3.7	*3.9*
60-64	3.5	*3.7*	4.1	*4.0*	3.6	*3.7*	2.8	*3.0*	3.3	*3.5*	3.4	*3.5*
65-69	2.6	*2.8*	3.0	*3.3*	2.5	*2.8*	2.0	*2.3*	2.8	*3.0*	2.5	*2.8*
70-74	1.9	*2.0*	2.6	*2.6*	1.7	*2.0*	1.6	*1.6*	2.1	*2.2*	2.0	*2.0*
75-79	1.5	*1.6*	1.6	*1.9*	1.1	*1.1*	0.9	*1.0*	1.2	*1.3*	1.2	*1.3*
80-84	0.7	*0.8*	1.0	*0.9*	0.5	*0.5*	0.3	*0.3*	0.7	*0.7*	0.6	*0.6*
85-89	0.4	*0.3*	0.6	*0.6*	0.3	*0.3*	0.2	*0.2*	0.4	*0.4*	0.3	*0.3*
90-94	0.2	*0.2*	0.1	*0.1*	0.1	*0.1*	0.1	*0.1*	0.0	*0.1*	0.1	*0.1*
95-99	0.0	*0.1*	0.0	*0.0*	0.0	*0.0*	0.0	*0.0*	0.1	*0.0*	0.0	*0.0*
100+	0.0	*0.0*	0.0	*0.0*	0.0	*0.0*	0.0	*0.0*	0.0	*0.0*	0.0	*0.0*
Total	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*
Number	9,405	*8,750*	7,233	*6,955*	6,866	*6,656*	12,295	*11,428*	9,220	*9,024*	45,019	*42,813*

Note : Those persons who could not provide their age are excluded from the table

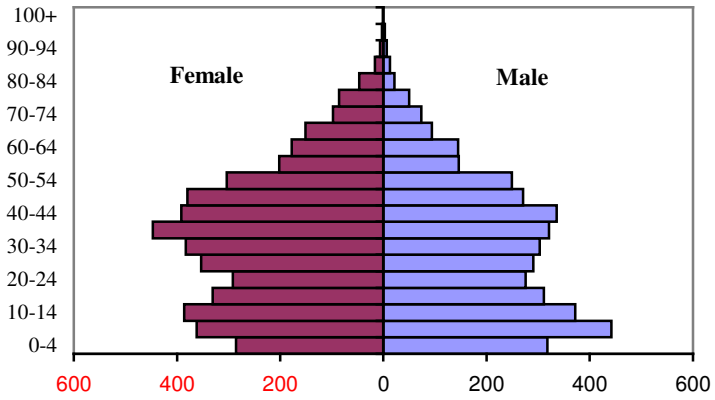


Figure 5.3: Population pyramid: Urban/Semi-urban

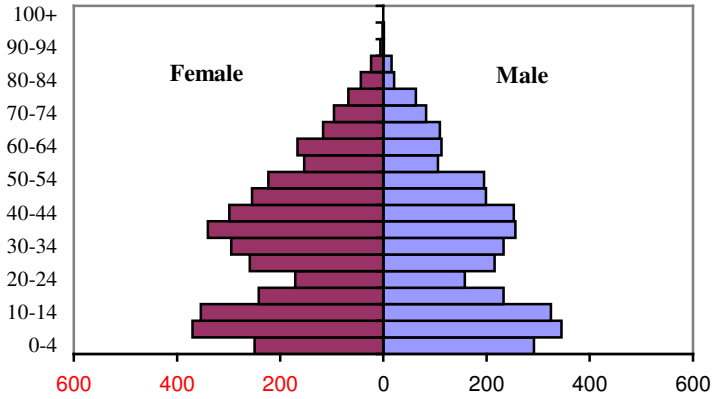


Figure 5.4: Population pyramid: Rice

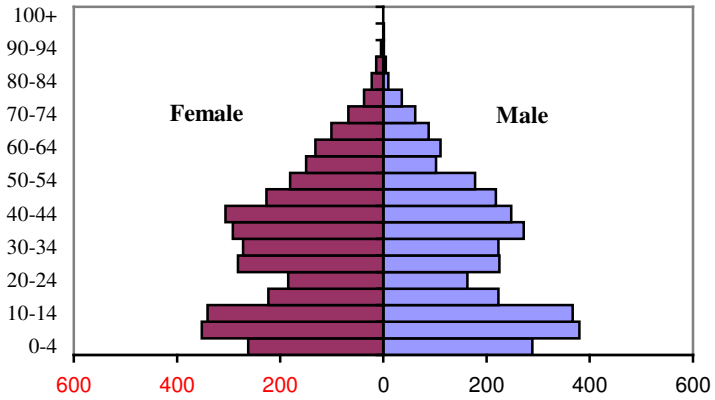


Figure 5.5: Population pyramid: Plantation

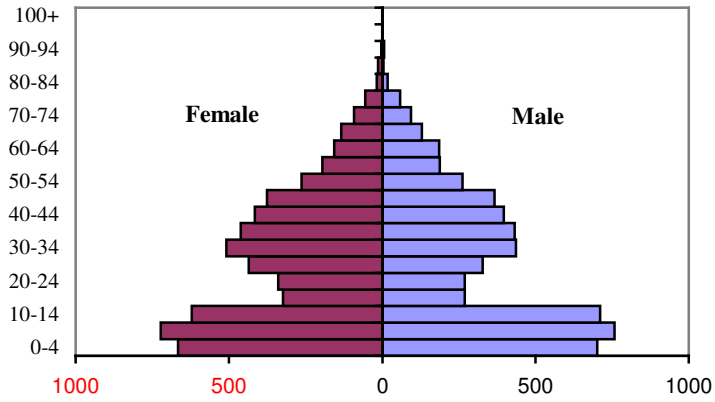


Figure 5.6: Population pyramid: Uplands

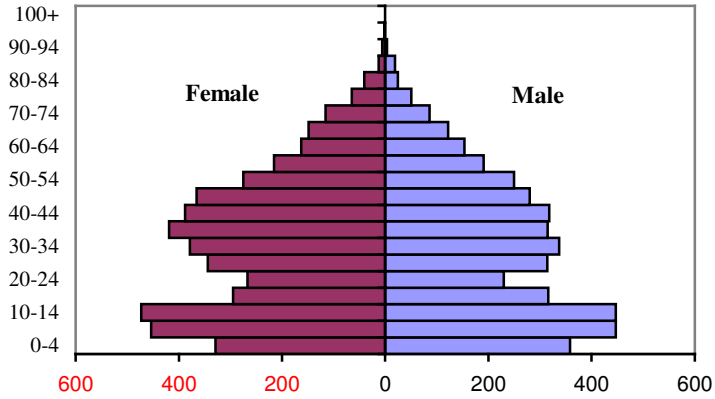


Figure 5.7: Population pyramid: Mixed economy

Table 5.3 Percentage distribution of study population by broad age group, strata, and census round

Strata	0 – 14				15 - 59				60+			
	Round1 (2000)	Round2 (2001)	Round3 (2002)	Round4 (2003)	Round1 (2000)	Round2 (2001)	Round3 (2002)	Round4 (2003)	Round1 (2000)	Round2 (2001)	Round3 (2002)	Round4 (2003)
Urban/Semi-urban	24.5	25.1	24.8	*24.8*	65.2	64.3	64.3	*63.9*	10.3	10.6	11.0	*11.4*
Rice	28.7	28.5	28.6	*27.8*	59.0	59.0	58.2	*58.8*	12.3	12.5	13.2	*13.4*
Plantation	30.3	30.1	29.9	*29.9*	60.5	60.7	59.5	*59.6*	9.2	9.2	9.7	*10.4*
Uplands	36.1	36.1	35.5	*36.6*	56.6	56.3	56.2	*54.9*	7.3	7.6	7.8	*8.5*
Mixed	28.5	27.9	27.3	*27.8*	61.2	61.8	61.0	*60.9*	10.3	10.3	10.6	*11.3*
Total	**29.9**	**29.9**	**29.8**	***29.9***	**60.4**	**60.2**	**60.0**	***59.4***	**9.7**	**9.8**	**10.2**	***10.8***

Table 5.4 Percentage distribution of population 60 years and older and 80 years and older by strata and census round

Strata	60 years and older				80 years and older			
	Round 1 (2000)	Round 2 (2001)	Round 3 (2002)	*Round 4 (2003)*	Round 1 (2000)	Round 2 (2001)	Round 3 (2002)	*Round 4 (2003)*
Urban/Semi-urban	10.3	10.6	11	*11.4*	1.2	1.3	1.4	*1.4*
Rice	12.3	12.5	13.2	*13.4*	1.6	1.7	1.8	*1.7*
Plantation	9.1	9.2	9.8	*10.4*	0.9	0.9	0.9	*0.9*
Uplands	7.3	7.6	7.8	*8.5*	0.5	0.6	0.6	*0.6*
Mixed	10.3	10.4	10.7	*11.3*	1.1	1.3	1.2	*1.2*
Total	**9.7**	**9.8**	**10.2**	***10.8***	**1.0**	**1.1**	**1.1**	***1.1***

Table 5.4 provides more detail on the population aged 60 years and over, dividing this age group into those aged 60 years and older and 80 years and older. This latter group is called the oldest old. In all census rounds, the proportion of the oldest old is highest in the Rice stratum and lowest in the Uplands stratum. The increase in the proportion of the population aged 80 and above is consistent with national patterns, with this segment of the Thailand's ageing population increasing both in number and as a proportion of the population. The pace of the increase is most rapid in the Uplands stratum, especially among those aged 60 years and older, from Round 3 to Round 4, where the ageing population is smallest.

5.3 Sex ratio

The sex ratio is the number of males per 100 females. A sex ratio higher than100 shows more males than females. By contrast, a sex ratio that is lower than 100 indicates a smaller number of males relative to females. Generally, sex ratios are high in young age groups and gradually decrease as age increases. Table 5.5 shows sex ratios by strata and age group. It also contrasts sex ratios in the child, productive, and ageing populations. Clearly, the sex ratio is highest among children. There are about 105 boys to 100 girls (Round 4). The sex ratio of productive age group reduces to 85 (Round 4). The sex ratio is lowest among the aged population, where there are about 61 males for every 100 females. This pattern is consistent across strata.

Table 5.6 compares the overall sex ratio of the field site population from Round 1 to Round 4. Results indicate that the number of females is greater than the number of males. Sex ratios have not been changed substantially between censuses. For every census round, the sex ratios are highest for the Uplands and Plantation strata.

Table 5.5 Sex ratios by age group and strata, Round 3 and Round 4 (2003)

Age group	Urban/Semi-urban		Rice		**Plantation**		**Uplands**		**Mixed**		**Total**	
	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*
0-14	110.8	*109.5*	99.2	*98.8*	107.4	*108.6*	108.8	*108.0*	100.1	*99.7*	105.7	*105.2*
15-59	84.5	*81.2*	82.2	*82.6*	88.8	*87.4*	96	*88.8*	87.8	*86.5*	88.3	*85.4*
60+	72.5	*69.4*	80.4	*77.9*	85.9	*82.4*	104.9	*104.4*	82.3	*83.1*	84.3	*82.7*
80+	56.3	*60.0*	48.3	*51.3*	48.8	*40.5*	56.5	*76.3*	76.2	*77.4*	57.1	*60.8*
Total	**88.9**	***85.9***	**86.5**	***86.2***	**93.8**	***92.7***	**101.1**	***96.7***	**90.4**	***89.6***	**92.7**	***90.6***

Table 5.6 Sex ratios by age group, strata and census round

Round	Urban/Semi-urban	Rice	Plantation	**Uplands**	Mixed	Total
Round 1 (2003)	86.1	87.8	93.6	99.8	88.9	91.5
Round 2 (2001)	87.3	87.8	93.5	101.7	90.2	92.6
Round 3 (2002)	88.9	86.5	93.8	101.1	90.4	92.7
Round 4 (2003)	*85.9*	*86.2*	*92.7*	*96.7*	*89.6*	*90.6*

Table 5.7 Median age of population by strata and census round

Round	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed	Total
Round 1 (2003)	31.0	30.0	28.0	26.0	30.0	29.0
Round 2 (2001)	31.0	30.0	28.0	26.0	29.0	29.0
Round 3 (2002)	30.0	29.0	28.0	25.0	29.0	28.0
Round 4 (2003)	*32.0*	*32.0*	*30.0*	*27.0*	*31.0*	*30.0*

5.4 Median age

The median age is the age which divides the population into two equal proportions, with one-half younger and one-half older than the median age. Table 5.7 presents the median age by strata and census rounds (Round 1 to Round 4). The median age of the population in Round 4 is 30 years old, a 2 year increase from Round 3. The increase occurs in all strata. The median age of the population of the Urban/semi-urban and Rice strata is highest (32 years old), while the median age of the population in the Uplands strata is lowest (27). This result is consistent with the age structure of the study population discussed earlier, where it was observed that the Uplands stratum has the youngest population.

5.5 Dependency ratios

The dependency ratio is the ratio of proportion of the population younger than 15 years old and the proportion aged 60 years and older (the dependent ages) to the proportion of population in productive ages (15-59 years old). The ratio is expressed per 100 population. A ratio of 100 would indicate that the proportion of dependents and productive age populations was equal. The assumption is that the young and the old are economically dependent on the productive population. The dependency ratio increases if the proportion of the young and the old increases, meaning that the burden falling on the productive population would increase.

Table 5.8 shows the overall dependency ratio, dependency ratio at young ages, and dependency ratio at old ages by strata from Round 1 (2000) to Round 4

(2003). In round 4, 100 persons in their productive ages have 68-69 dependents (50 children and 18 aged persons). This is a 2-person increase from the previous round. This increase is due to the increasing proportion of the population who are aged 60 years and over. We can see that while the dependency ratio of the young remains unchanged, the dependency ratio of the old increases in almost all strata.

Table 5.8 Total dependency ratio, young dependency ratio, and old dependency ratio by strata and census round

Strata	Total dependency ratio				Young dependency ratio				Old dependency ratio			
	Round 1 (2000)	Round 2 (2001)	Round 3 (2002)	*Round 4 (2003)*	Round 1 (2000)	Round 2 (2001)	Round 3 (2002)	*Round 4 (2003)*	Round 1 (2000)	Round 2 (2001)	Round 3 (2002)	*Round 4 (2003)*
Urban/Semi-urban	53.4	55.6	55.6	*56.6*	37.5	39.0	38.5	*38.7*	15.8	16.5	17.1	*17.8*
Rice	69.6	69.5	71.8	*70.1*	48.7	48.3	49.1	*47.3*	20.9	21.2	22.7	*22.8*
Plantation	65.2	64.75	66.6	*67.7*	50.1	49.6	50.5	*50.2*	15.1	15.1	16.3	*17.4*
Uplands	76.8	77.6	76.9	*82.1*	63.8	64.1	63.1	*66.6*	13.0	13.4	13.8	*15.5*
Mixed	63.3	61.9	62.1	*64.2*	46.5	45.2	44.8	*45.6*	16.8	16.7	17.3	*18.6*
Total	**65.6**	**66.0**	**66.7**	***68.5***	**49.5**	**49.7**	**49.6**	***50.3***	**16.1**	**16.3**	**17.1**	***18.2***

The dependency ratio is highest in the Uplands stratum in all census rounds, while it is lowest in the Urban/semi-urban stratum. Every 100 persons aged 15-59 in the Uplands stratum are responsible for about 82 young and old persons (67 children and 16 aged). This burden is 1.5 times higher than for 100 persons aged 15-59 in the Urban/semi-urban stratum, who are responsible for 57 dependent persons (39 children and 18 old persons). The population in the Uplands stratum has the highest dependency ratio because it has the highest young dependency ratio, whereas the population in the Urban/semi-urban stratum has the lowest dependency

ratio because it has the lowest young dependency ratio. The dependency ratio in the Rice stratum is the second highest. Even though the proportion of the young population in the Rice stratum is much lower than the Uplands stratum, the proportion of the old is clearly higher than in other strata.

5.6 Summary

There are 42,816 people from 12,356 households enumerated in Round 4 (2003). There are slightly more females than males in all strata. The proportion of population is highest in Uplands stratum (27 percent), and lowest in the Plantation stratum (16 percent). The population size has decreased in all strata. The age and sex structure of the population has changed little over the four census rounds. There are more males than females at young ages but as age increases, there are more females than males. The proportion of the population at young ages is much higher in the Uplands stratum compared to other strata. As a consequence, the dependency ratio of the population in this strata is the highest. At the same time, the Rice stratum population has the highest population at older ages resulting in a high dependency ratio, though its young population is not as high as that found in the Uplands stratum.

6. Social and Economic Status

Aree Jampaklay

In order to understand the context of demographic change in the study population, data on social and economic characteristics is required. This chapter presents an overview of the social-economic characteristics of the census population by strata and by sex, comparing data from Round 4 (2003) with data from Round 3 (2002). Socio-economic characteristics in this chapter refer to the main activity or main occupation of respondents aged 15 and older, education of individuals aged 7 years and older, and language used in the household.

6.1 Main occupation

The main occupation in this survey is defined as the main activity reported by respondents. For those having more than one occupation and who could not decide what their main occupation is, the criterion for defining the main occupation is the activity for which the respondent devoted most of their working time. This chapter categorizes main occupation into 9 groups: agriculture, academic/professional, business and administrative and clerical, sales, service, transportation and communication, craft and labor, students, and other occupations.

The main occupation of women and men is presented in Figures 6.1 and 6.2 respectively. Agriculture is the main occupation of the majority of persons in the

field site population. More than a half of men are in the agricultural sector. The proportion of those working in the agricultural sector had decreased, however, from 54 percent in Round 3 (2002) to 51 percent in Round 4 (2003). Beside agriculture, the proportion of the population in other types of work is equally distributed. The second most frequently cited work for men is crafts and labor. More than one eighth of men are in this category. The proportion of men in this kind of work has slightly increased from previous rounds (see Reports for Round 1, 2 and 3). Sales, business and administration, transportation and communication, and professionals each employ approximately 10 percent of the population age 15 and over. The proportion of men who were unemployed, which was about 9 percent in Round 3 (2002), increased to 10 percent in Round 4 (2003). Students comprise about 5 percent of the population aged 15 and older. Except for agriculture and professionals, the proportions in all occupational categories increased between Round 3 and Round 4. The field site economy is slowly transforming from an agricultural-based economy to a more broadly structured economy.

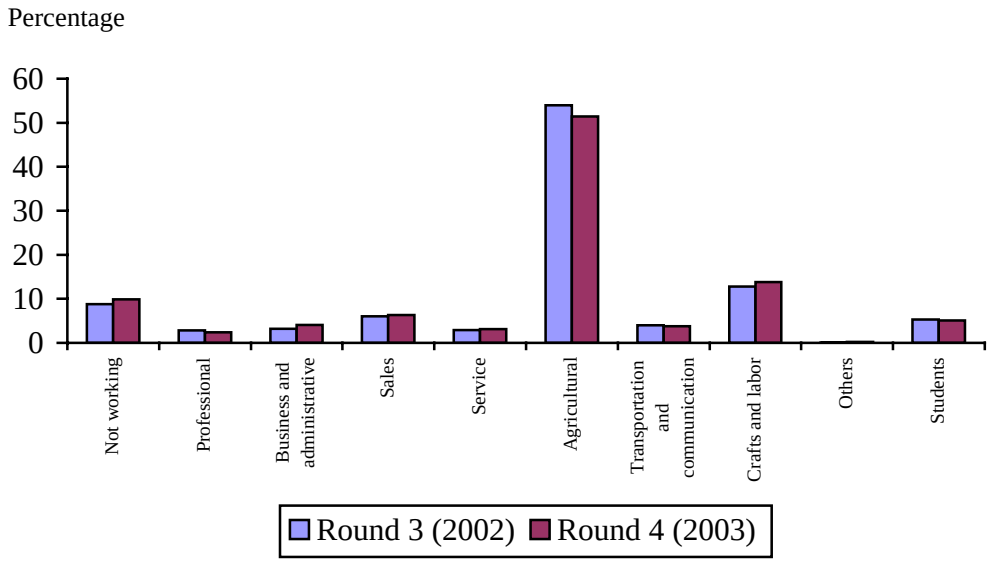


Figure 6.1 Main occupation of men aged 15 years and older, Round 3 (2002) and Round 4 (2003)

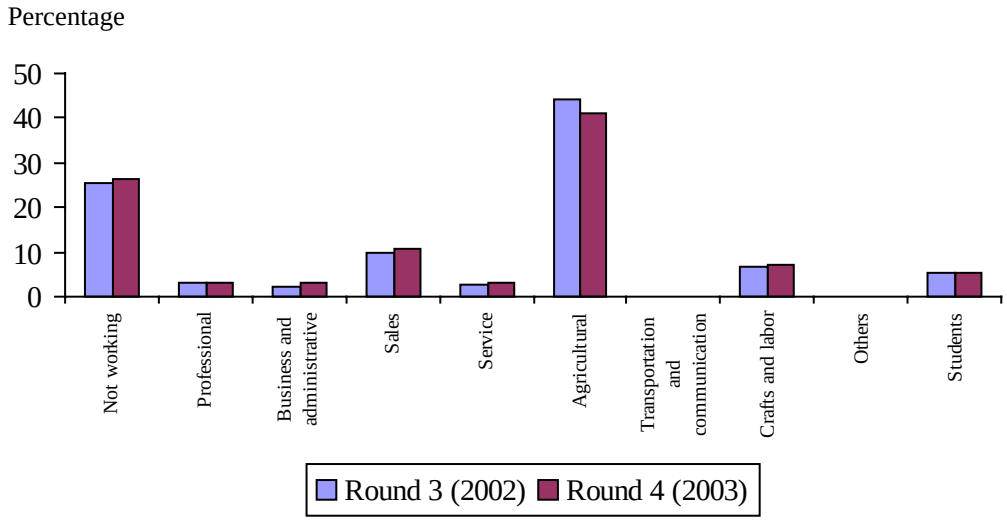


Figure 6.2 Main occupation of women aged 15 years and older, Round 3 (2002) and Round 4 (2003)

For women (Figure 6.2), the highest proportion is employed in the agricultural sector (41 percent), although as with men there has been a decrease in this proportion across census rounds. The second most frequently stated occupation for women is sales (more than one tenth of women aged 15 and over are in this category), which represent an increase of 1 percentage point over 2003. This is followed by crafts and labor (7 percent), which has also increased from Round 3. Approximately 3 percent or women work in each of the categories of professional, business and administrative, and sales. About three times the proportion of women, compared to men aged 15 and over are not working. There has been a slight increase over time in the proportion of women not working: from 24 percent in Round 1 (2000) to 26 percent in Round 4 (2003). It should be stressed, however, that many of the women who are classified as not working are homemakers, which in this study in not defined as an economic activity.

Tables 6.1 and 6.2 provide the occupational distribution by strata for males and females respectively. Patterns of occupation between strata are distinct, especially between people in the Urban/semi-urban stratum and people in other strata. Except for people in the Urban/semi-urban stratum, the majority of the population is involved in agriculture, while crafts and labor and sales are the main occupations for the majority of men and women respectively in the Urban/semi-urban stratum. However, even in the Urban/semi-urban stratum, agriculture is still the main occupation of a substantial proportion of people (16 percent for men and 14 percent for women). The stratum with the highest proportion employed in the agricultural sector is the Uplands stratum for men (more than two thirds) and the Plantation stratum for women (more than a half).

When comparing changes between Round 3 (2002) and Round 4 (2003), it is clear that there has been a decrease in the dominance of the agricultural sector. The proportion of both women and men in the Uplands and Mixed economy strata working in the agricultural sector has decreased. A decrease also occurred for women in the Plantation stratum and for men in the Urban/semi-urban stratum.

People in the Urban/semi-urban stratum are also different from people in other strata with respect to non-agricultural occupations. This is especially true for professionals, who are more likely to be found employed in the Urban/semi-urban stratum than in the other four strata. The proportion unemployed is another source of variation between the Urban/semi-urban and other strata. Although the proportion unemployed increased from Round 3 (2002) to Round 4 (2003) in all strata, the proportion unemployed is highest, and increased at the most rapid pace, in the Urban/semi-urban stratum. At the same time, the proportion of women not working is highest in the Uplands stratum.

In sum, data on occupation in this census round indicates that agriculture remains the main job of the study population. Nevertheless, strata differentials and gender differentials in occupational structure are observed.

Table 6.1 Percentage distribution of male population aged 15 years and older by the main occupation, strata and census round

Main occupation	Urban/ Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*
Not working	11.3	*13.3*	10.1	*10.9*	8.3	*8.5*	6.7	*8.0*	8.7	*9.0*	8.8	*9.9*
Professional	5.5	*5.8*	1.3	*1.0*	1.0	*0.8*	2.8	*2.3*	2.8	*1.6*	2.8	*2.4*
Business and administrative	5.6	*5.7*	2.3	*1.4*	2.6	*3.2*	2.6	*5.1*	2.8	*4.2*	3.2	*4.1*
Sales	14.3	*13.7*	4.0	*4.3*	3.1	*3.8*	3.1	*3.8*	5.5	*5.7*	6.0	*6.3*
Service	6.6	*6.5*	1.7	*1.4*	1.4	*1.7*	1.9	*2.5*	2.7	*2.9*	2.9	*3.1*
Agricultural	16.3	*15.5*	57.8	*58.1*	66.3	*66.5*	73.8	*67.3*	52.4	*50.9*	54.0	*51.4*
Transportation and communication	7.9	*7.4*	3.2	*2.6*	2.6	*2.0*	1.6	*1.8*	5.1	*4.8*	4.0	*3.8*
Crafts and labor	24.1	*24.2*	12.2	*14.2*	9.6	*9.3*	4.9	*6.0*	15.0	*15.7*	12.8	*13.8*
Others	0.1	*0.3*	0.2	*0.1*	0.2	*0.1*	0.0	*0.2*	0.1	*0.1*	0.1	*0.2*
Students	8.3	*7.7*	7.2	*6.2*	5.1	*4.3*	2.6	*2.9*	4.8	*5.2*	5.3	*5.1*
Total	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0.*
Number	2,622	*2,730*	2,109	*2,147*	2,093	*2,088*	3,505	*3,333*	2,863	*2,890*	13,192	*13,188*

Table 6.2 Percentage distribution of female population aged 15 years and older by the main occupation, strata and census round

Main occupation	Urban/ Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*
Not working	30.1	*28.3*	22.9	*20.1*	19.8	*20.6*	30.9	*33.8*	21.7	*24.9*	25.6	*26.3*
Professional	7.5	*7.4*	1.5	*1.4*	1.1	*1.2*	2.7	*2.6*	2.7	*1.9*	3.3	*3.1*
Business and administrative	4.8	*6.0*	1.6	*1.0*	1.2	*2.4*	0.8	*2.3*	2.8	*3.3*	2.3	*3.2*
Sales	19.6	*20.3*	5.6	*7.0*	5.6	*5.9*	6.7	*8.2*	8.9	*9.6*	9.6	*10.6*
Service	6.4	*6.5*	0.9	*1.3*	1.8	*2.6*	1.2	*2.1*	2.4	*2.9*	2.6	*3.2*
Agricultural	14.1	*14.0*	50.3	*51.5*	60.9	*57.7*	53.3	*45.3*	47.5	*43.8*	44.3	*41.0*
Transportation and communication	0.2	*0.3*	0.1	*0.2*	0.0	*0.0*	0.1	*0.0*	0.1	*0.0*	0.1	*0.1*
Crafts and labor	9.2	*9.4*	10.0	*10.9*	5.6	*5.4*	1.4	*2.8*	8.4	*8.5*	6.7	*7.3*
Others	0.2	*0.2*	0.1	*0.3*	0.0	*0.0*	0.0	*0.1*	0.0	*0.1*	0.1	*0.1*
Students	8.1	*7.6*	7.1	*6.3*	4.0	*4.1*	3.0	*2.9*	5.5	*5.0*	5.5	*5.2*
Total	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*
Number	3,379	*3,469*	2,702	*2,675*	2,429	*2,428*	3,805	*3,720*	3,392	*3,393*	15,707	*15,685*

6.2 Education

In Thailand, the level of education is probably the most important indicator of social status. This section presents data on educational levels of women and men aged 7 years and older. Education in this chapter refers to formal and informal education, excluding those who obtained a religious education and those with unknown information about their education or those whose answers are ambiguous and hence cannot be classified into completed grades.* Education is classified into 6 levels: no schooling, some primary level, finished primary level, early secondary level, late secondary level, and higher than secondary level.

Table 6.3 shows not only that the distribution of completed education varies among strata, but also that there exists marked gender differences in education. Overall, about one eighth of men and one fifth of women have never had any formal schooling. However, this proportion has decreased compared to Round 3 (2002).

Strata differentials in education are distinct. This is particularly evident between Urban/semi-urban and other strata. The proportion of the population with no schooling is the lowest in the Urban/semi-urban stratum; less than 5 percent for men and about 8 percent for women. The proportion also varies across other strata. The highest proportion that have had no schooling is found in the Uplands stratum, where the proportion in this category is almost 4 times higher than in the Plantation stratum. In the Uplands stratum, almost one third of men and more than one third of women have never attended school. However, from Round 1 to Round 4, the proportion with no education in the Uplands, as in other strata,

* There were 23 persons obtained religious education and 18 persons with unclear information.

decreases. One factor that contributes to low levels of education in the Uplands stratum is the significant ethnic minority and migrant populations that are found in the Uplands. Not only do these minority groups have more limited access to education compared to Thais, the education that they may have received in their home country (usually Myanmar) was probably coded as no education. To a large extent, therefore, the percentage with no school education implies no education in the Thai educational system.

The proportions with no schooling are similar for the Plantation, Rice, and Mixed Economy strata. The proportions are much higher than those in Urban/semi-urban stratum, but much lower than in the Uplands stratum.

A high proportion of the population (more than one third), irrespective of strata of residence and sex, completed less than a primary school level of education (less than 6 years). In the Rice and Plantation strata, about one-half finished less than a primary school level. Overall, the proportion of the population that finished at least primary school (6 years) is 16 percent for men and 15 percent for women.

The proportion of the population that finished more than a secondary level of education provides an indication of access to education. This proportion is highest in the Urban/semi-urban stratum. The proportion of males in the Urban/semi-urban stratum with a completed secondary school level of education is about 5 times higher than for males in the Rice and Uplands strata, about 7 times higher than for men in the Plantation stratum, and 2 times higher than for men in the Mixed economy stratum.

Table 6.3 Percentage distribution of population aged 7 years and older by educational level, sex, and strata, Round 3 (2002) and Round 4 (2003

Sex/Educational level	Urban/ Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*
Male												
No schooling	10.4	*3.5*	12.2	*6.4*	14.0	*7.8*	36.7	*31.3*	13.1	*6.2*	19.2	*12.7*
<Primary	31.9	*37.1*	43.3	*49.7*	42.2	*49.8*	34.4	*40.6*	39.2	*45.7*	37.5	*43.9*
Primary	12.8	*12.4*	19.2	*19.3*	22.0	*21.0*	11.8	*10.7*	17.8	*18.1*	16.0	*15.7*
Lower secondary	15.6	*16.8*	11.5	*13.9*	10.1	*11.8*	8.2	*9.5*	12.0	*13.3*	11.3	*12.8*
Higher secondary	15.8	*16.3*	10.4	*7.5*	9.7	*7.8*	6.7	*5.1*	3.0	*3.0*	7.0	*9.5*
>Secondary	13.4	*13.9*	3.4	*3.1*	2.1	*1.8*	2.2	*2.9*	5.8	*5.3*	5.4	*5.5*
Total	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*
Number	4,677	*3,349*	3,649	*2,680*	3,639	*2,685*	6,544	*4,480*	4,788	*3,588*	23,297	*16,782*
Female												
No schooling	12.3	*7.7*	18.5	*12.6*	22.4	*18.7*	41.2	*37.0*	17.4	*12.3*	23.4	*18.5*
<Primary	35.6	*39.9*	43.5	*50.0*	40.9	*46.3*	33.4	*38.6*	42.2	*48.0*	38.6	*44.0*
Primary	10.8	*11.8*	16.9	*17.8*	19.4	*17.9*	10.8	*10.9*	16.1	*16.3*	14.3	*14.5*
Lower secondary	12.1	*12.2*	9.7	*9.7*	7.9	*9.3*	7.2	*6.8*	9.6	*10.5*	9.3	*9.6*
Higher secondary	13.7	*12.7*	7.9	*7.0*	6.8	*5.4*	4.7	*4.0*	9.1	*7.8*	8.4	*7.4*
>Secondary	15.4	*15.7*	3.5	*2.9*	2.6	*2.4*	2.6	*2.7*	5.6	*5.1*	6.1	*6.0*
Total	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*
Number	5,241	*4,076*	4,211	*3,239*	3,848	*2,988*	6,395	*4,745*	5,247	*4,131*	24,942	*19,179*

Differentials by gender are also apparent. Women have lower levels of education than do men. Compared to men, the proportion of women with no education is higher, while the proportion of women with higher than a primary level of education is lower. Gender differentials between strata also vary. Figure 6.3 shows the percentage of women and men without any schooling by strata for Round 3 (2002) and Round 4 (2003). The gender gap is smallest in the Urban/semi-urban stratum, while it is largest in the Plantation and Rice strata. The gender gap in education for the Uplands stratum is similar to that of the Mixed economy stratum. Note also that from Round 3 (2002) to Round 4 (2003), the proportion of men with no education decreased more than for women.

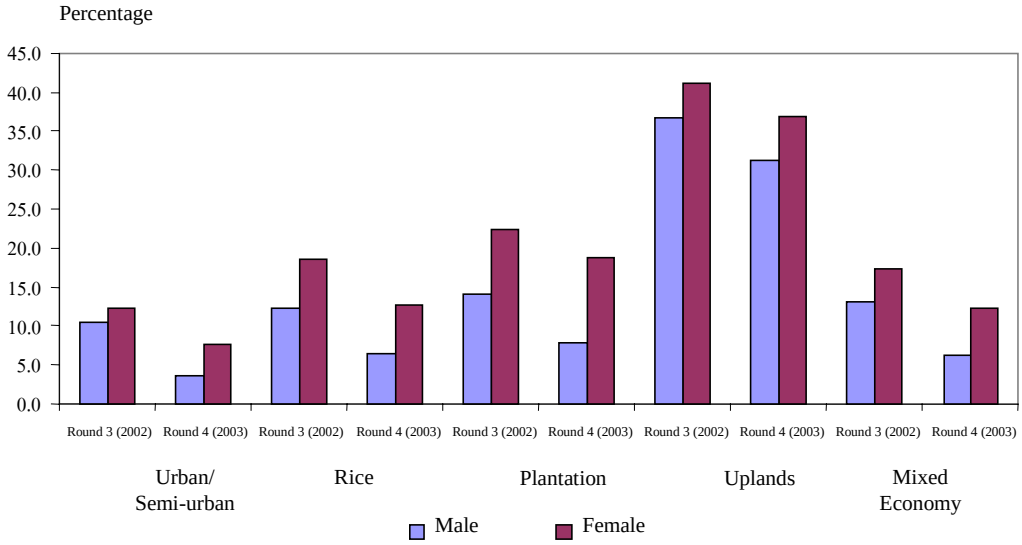


Figure 6.3 Percentage distribution of population with no school education by sex and strata, Round 3 and Round 4

6.3 Language used in the household

Languages people use in their normal daily activities reflect the cultural diversity of a population, and also suggest diversity in ethnic group affiliation. Table 6.4 presents the percentage distribution of the household population by language spoken at home. The data are presented for Round 4 (2003) with Round 3 (2002). Except for the Uplands stratum, the majority of the study population speak Thai as their daily language (98 percent). The proportion of households speaking other languages is very small (less than 1 percent), except in the Mixed economy stratum where about 1 percent speak Mon. Comparing data between two rounds suggests that the distribution of household language use remained unchanged over the two most recent census years.

In the Uplands stratum, about 61 percent of households speak Thai at home. For households where Thai is not the language of daily use, the languages used are quite varied. The most common non-thai languages are Karen, Karang, and Pakayaw (about one fifth). About one tenth of households speak Mon. The proportion of households speaking Burmese was about 6 percent in Round 3 (2002) and about 5 percent in Round 4 (2003).

Table 6.4 Percentage distribution of household by language used daily and strata, Round 3 (2002) and Round 4 (2003)

Sex/Educational level	Urban/ Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*	Round 3 (2002)	*Round 4 (2003)*
Thai	98.8	*98.3*	99.6	*99.1*	98.6	*98.8*	61.2	*60.8*	97.7	*97.4*	88.6	*88.5*
Mon	0.2	*0.3*	0.0	*0.1*	0.1	*0.1*	9.6	*9.1*	1.0	*1.6*	2.8	*2.8*
Laotian	0.5	*0.9*	0.3	*0.3*	0.9	*0.8*	2.2	*2.8*	0.0	*0.2*	0.9	*1.1*
Burmese	0.2	*0.1*	0.0	*0.0*	0.3	*0.3*	5.8	*4.8*	0.8	*0.5*	1.8	*1.4*
Karen/Karang/Pakayaw	0.1	*0.1*	0.0	*0.0*	0.1	*0.0*	2.0	*2.0*	0.2	*0.1*	5.5	*5.6*
Other	0.2	*0.2*	0.2	*0.5*	0.1	*0.2*	1.0	*1.3*	0.3	*0.2*	0.4	*0.5*
Don't know	0.0	*0.0*	0.0	*0.1*	0.0	*0.0*	0.0	*0.0*	0.0	*0.0*	0.0	*0.1*
Total	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*	100.0	*100.0*
Number	3,379	*3,469*	2,702	*2,675*	2,429	*2,428*	3,805	*3,720*	3,392	*3,393*	15,707	*15,685*

6.4 Summary

Agriculture remains the main occupation of the study population. The exception is for the population in the Urban/semi-urban stratum, where the highest proportion of the population is found in crafts/labor and sales. However, the proportion of the labor force age population found in agriculture has decreased over time, while the proportion in crafts/labor, business/administrative, sales, and service occupations has increased. The second and the third highest proportion of population fall into crafts/labor and sales occupational categories for men, and into sales and crafts/labor occupational categories for women. About 10 percent of men and about 26 percent of women are unemployed. Respondents in the Urban/semi-urban are more likely to work as professionals than are respondents in other strata. At the same time, the proportion of men who are unemployed is highest in the Urban/semi-urban stratum and has increased at the most rapid pace compared to other strata. The level of unemployment for women is highest in the Uplands stratum.

Educational levels vary by strata, especially between Urban/semi-urban and other strata. There are also substantial differentials in completed levels of education between men and women. In the Urban/semi-urban stratum the proportion that have never been to school is lowest, while the proportion that have finished more than a secondary level of education is highest. By contrast, in the Uplands stratum the proportion with no schooling is the highest of any strata and the proportion who have completed secondary school is the lowest. The education distributions of the populations of the Plantation, Rice and Mixed strata are similar and are intermediate to those of the Urban/semi-urban and Uplands strata. Over time there has been a decrease in the proportions with no schooling. Men are educationally

advantaged compared to women. The gender gap is least evident in the Urban/semi-urban stratum and most evident in the Plantation and Rice strata.

Most households use Thai as their daily language. The exception is for the Uplands stratum, where less than two thirds of households speak Thai on a daily basis. The remaining households in the Uplands stratum are most likely to speak Karen, Karang, and Pakayaw. Other languages often used are Mon and Burmese.

7. Fertility and Family Planning

Varachai Thongthai

Fertility is a major component of change in both the size and age-sex structure of a population. On the one hand, births increase the number of the population age 0. On the other hand, family planning has direct effects on fertility.

7.1 Fertility

Fertility can be described in terms of level, trend, and pattern. The total fertility rate (TFR) is an indicator of the fertility level. The changes in TFR through time indicate the trend in fertility. Furthermore, age-specific fertility rates (ASFR), which describe age differentials in fertility, are indicators of the fertility pattern. Changes in the fertility pattern effect the level and trend of fertility.

7.1.1 Levels, patterns and trends

Overall fertility levels in the study areas has reached replacement level. Therefore, there has been little change in term of TFR during the past three years. TFR was stable in the first two round (2.10). It declined to 2.03 in the third round and declined further to 2.02 in the fourth round. This indicates a declining trend of fertility.

The fertility pattern was also similar during the past three years. The age-specific fertility rate was still low amongst women aged 15-19 years old. The rate increased rapidly in the next age group (20-24 years old), then declining again till the end of the reproductive ages (45-49 years old). However, in the fourth round, there was a higher concentration of fertility in 20-24 years old compared to the previous three rounds. The fertility rate declined quite rapidly thereafter and even ended before the end of reproductive ages (ASFR of 45-49 years old equal 0). This demonstrates the characteristic of a controlled fertility population (see Figure 7.1 and Table A7.1 in Appendix).

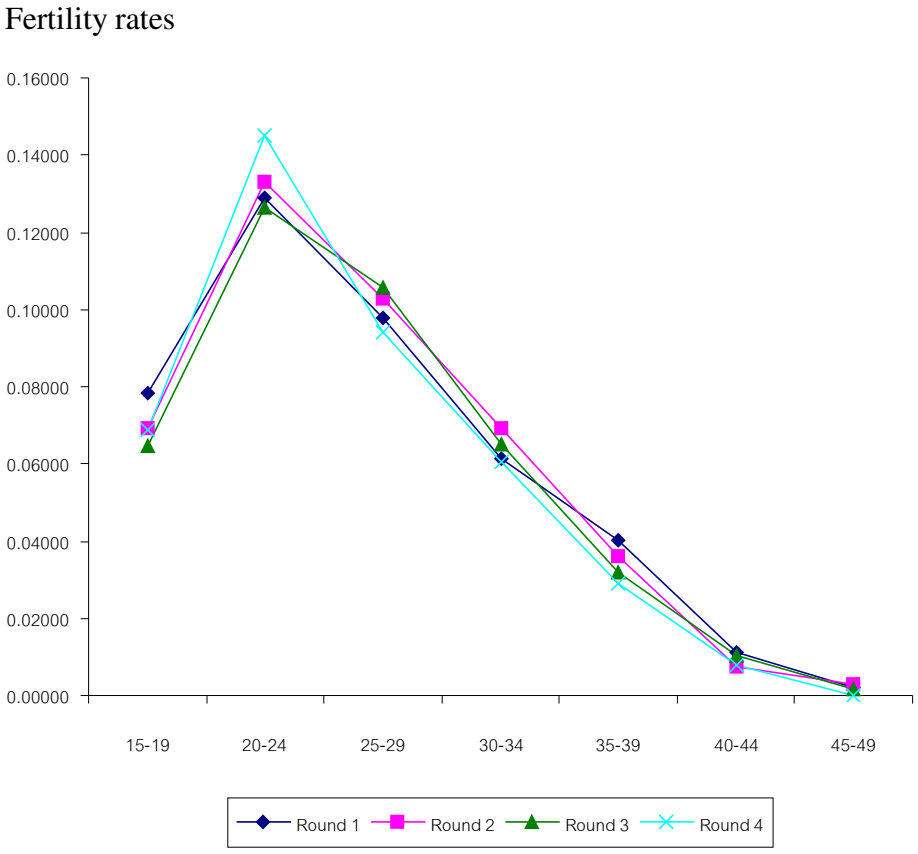


Figure 7.1 Age specific fertility rates by survey round

There was little change in fertility pattern amongst strata in the last three years. Fertility remained highest in the Uplands area and lowest in the Urban/semi-urban area. Nevertheless, fertility in the Mixed economy area had declined to the same level as of Urban/semi-urban stratum. Fertility in the rice growing area was the second lowest, followed by the Plantation area (see Table 7.1).

Table 7.1 **Age specific fertility rates and total fertility rates of women in reproductive age by strata, Round** 4 (2003)

Age	Age specific fertility rates					
	Urban/Semi -urban	Rice	Plantation	Uplands	Mixed Economy	Total
15-19	0.03618	0.03828	0.08955	0.11148	0.06522	0.06873
20-24	0.11070	0.11765	0.14433	0.22414	0.09163	0.14506
25-29	0.04624	0.12545	0.11027	0.11422	0.07775	0.09391
30-34	0.06417	0.06093	0.04301	0.07475	0.04972	0.06037
35-39	0.03731	0.01770	0.02206	0.04464	0.01759	0.02905
40-44	0.00767	0.00678	0.00645	0.01754	0.00000	0.00783
45-49	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
TFR	1.51	1.83	2.08	2.93	1.51	2.02

Age-specific fertility rates amongst strata had a similar pattern. It was low in the beginning of the reproductive period (15-19 years old), and then increased rapidly in the next age group (20-24 years old). This was the peak of their fertility, with the exception of rice growing area, which reached the peak at ages 25-29 years. Fertility rates then gradually declined and women had ceased having children by the age of 45. It is interesting to note that women in the Mixed economy stratum had stopped giving birth even earlier, with none delivering after the age of 39 (see Table 7.1).

7.2 Family planning

Family planning has a direct effect on fertility, especially in a controlled fertility society. Couples tend to postpone their child rearing by means of contraception until they are ready to have a child. They stop using contraception in order to have children. Afterwards they will continue to use contraceptive methods to postpone pregnancy. Once they have enough children, they would normally use permanent contraceptive method to stop further pregnancy.

7.2.1 Level and pattern of contraception

Overall, the level of use of contraception was high in the study areas. The contraceptive prevalence rate (CPR) increased continuously in the first three rounds. However, CPR slightly declined in this fourth round, from 79.1 percent to 78.3 percent. This decline was a result of lower CPR in the Urban/semi-urban and Mixed economy areas. Nevertheless, CPR in other areas increased (see Table 7.2).

Table 7.2 Contraceptive prevalence rates by strata and round.

Round	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	All
Round 1 (2000)	74.9	74.3	78.7	64.3	80.2	73.5
Round 2 (2001)	78.5	77.2	81.0	69.3	81.1	76.6
Round 3 (2002)	82.0	80.3	82.5	71.5	83.9	79.1
Round 4 (2003)	79.5	80.9	83.1	72.1	80.1	78.3

There was no change in contraceptive method choice. Couples use permanent methods (female sterilisation or vasectomy) to stop pregnancy and use temporary

methods to postpone pregnancy. Moreover, almost all couples used modern contraceptive methods. There were only 2 percent of current users who were using natural methods (safe period and withdrawal) or other traditional methods.

Female sterilisation was still the most popular contraceptive method. It comprised 36 percent of current users. The second most popular method was the pill (30 percent), followed by injection (24 percent). Therefore, these three methods combined constituted about nine-tenths of current users.

The contraceptive pattern described above was observed in three strata (rice, plantation, and uplands). In Urban/semi urban stratum, the proportion of users who use injection was lower compared to other strata. However, the proportion of users who use female sterilisation, condom, and natural methods was higher in the Urban/semi-urban stratum (see Figure 7.2).

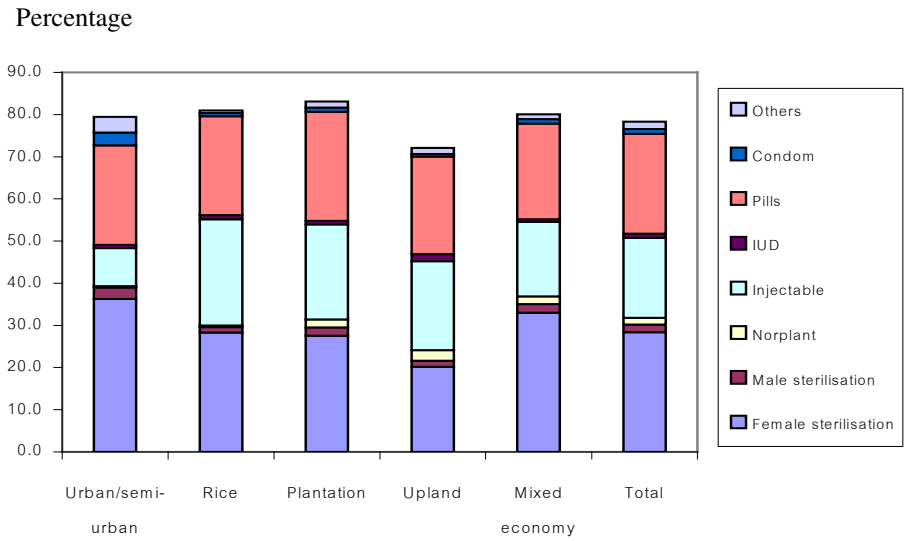


Figure 7.2 Percentage distribution of currently married women in reproductive age who were using contraception by contraceptive methods and strata

Figure 7.2 also showed the similarity of contraceptive method choice pattern between the Mixed economy and Urban/semi urban strata. That is the high proportion of female sterilisation users on the one hand and a low proportion of injection users on the other hand. However, the proportion of condom users and natural method users were low in the mixed economy area.

7.2.2 Contraceptive use status

As mentioned earlier, couples might use contraceptive methods to postpone pregnancy till they were ready to have children. Therefore, those who had used contraception before might not use it now. Whilst the contraceptive prevalence rate captures those who are currently using contraception, it misses those who had used contraception before but are not using it now. Contraceptive use status describes the complete experience of contraceptive use amongst currently married women in reproductive ages (MWRA).

Overall, only 8 percent of MWRA had never used any contraceptive methods. Whilst, 78 percent of MWRA were currently using contraceptive methods, about 14 percent had ever used in the past but were not using now.

The proportions of MWRA who ever used contraception were similar amongst strata, even for those in the Uplands stratum where contraceptive prevalence rate was the lowest (see Table 7.3). The proportion of never users was highest in the Uplands stratum.

Table 7.3 Percentage distribution of MWRA by contraceptive status and strata, Round 4 (2003)

Status	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Using contraception	79.5	80.9	83.1	72.1	80.1	78.3
Ever used contraception	12.5	14.0	13.1	15.4	13.6	13.9
Never use contraception	8.0	5.1	3.9	12.5	6.3	7.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

7.2.3 First contraceptive method

Spacing or postponement of pregnancy was most common for the first time contraceptive users. Therefore, most of their first contraceptive methods were temporary, mainly the pill or injection. However, about 18 percent of the first time users stated that they started to use contraception with the aim to stop having children. Nevertheless, permanent contraceptive methods (mainly female sterilisation) accounted for only one-tenth of the first time contraceptive methods choice.

The pattern of use of the first contraceptive method described above was observed in three strata, namely, urban/semi-urban, plantation, and mixed economy. However, in the rice growing stratum, the proportion using a first method to postpone pregnancy was the highest. In contrast, the proportion using a first method for pregnancy postponement was lowest in the Uplands (see Table 7.4).

Table 7.4 **Percentage distribution of first time contraceptive users by reason and strata, round 4**

Reason of using	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Spacing	83.8	85.6	82.0	79.5	81.9	82.2
Stopping	16.2	14.4	18.0	20.5	18.1	17.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

7.3 Summary

The overall level of fertility in the study areas is at the replacement level and is gradually declining. Furthermore, the fertility pattern has become more concentrated at ages 20-24 years old and fertility ends before reaching the last reproductive age group (age-specific fertility rate equaled 0 at 45-49 years). This phenomenon demonstrated a pattern of controlled fertility.

The contraceptive prevalence rate, which is an indicator of the level of contraceptive use was lower in this round after increasing for the past three years. Female sterilisation was still the most popular method in all strata, except in the Uplands where the pill and injection were the most favoured methods. In other strata, the pill and injection were the second and third preferred choices. In total, nine out of ten contraceptive users were using these three contraceptive methods, female sterilisation, pill, and injection.

Although 78 percent of currently married women in reproductive ages were using a contraceptive method at the time of the survey, 92 percent of MWRA had experience of using contraceptive methods. Postponement of pregnancy or spacing was the main reason in accepting the first contraceptive method. Only 18 percent of first time users stated their reason for first use was to stop pregnancy.

8. Marriage Patterns

Aree Jampaklay

One component of population dynamics that is important, especially with regard to fertility, is marriage patterns. Data on marriage patterns in this chapter are derived from interviewing individuals aged 15 and older. This chapter presents information on marital status, co-residence with spouse, proportion never married, age at first marriage, intention to get married for those not currently married at the time of data collection, and marriage registration.

8.1 Marital status

More than two thirds of the study population aged 15 and older are currently married. The proportion of women currently married is slightly lower than for men, and the proportion of women never married is much lower than for men. This indicates that the proportion of women entering marriage is higher than for men, although it should be noted that differentials in the age at marriage also contribute to this gender difference. Note also that for those ever married, the proportion of women who are widowed, divorced, or separated is almost three times higher than for men. The difference between men and women in the proportion divorced is not large, although the proportion of women divorced is also higher than that observed for men. (Table 8.1)

Table 8.1 Percentage distribution of population by marital status, sex and strata, Round 4

Marital status	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Never-married	25.6	22.4	20.6	18.1	19.2	13.8	16.9	8.9	20.6	15.5	20.5	15.6
Married	67.6	59.2	73.2	64.2	75.4	70.6	77.7	77.6	73.2	68.8	73.5	68.3
Widowed	2.6	11.7	3.5	12.5	2.1	10.8	2.6	9.5	2.8	10.8	2.7	11.0
Divorced	1.2	1.8	0.2	0.5	0.1	0.5	0.2	0.5	0.5	0.6	0.5	0.8
Separated	3.0	4.9	2.4	4.8	3.3	4.5	2.6	3.5	2.9	4.4	2.8	4.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	2,730	3,469	2,147	2,675	2,088	2,428	3,333	3,720	2,890	3,393	13,188	15,685

8.2 Co-residence with spouse

Table 8.2 shows with whom currently married persons were residing at the time of the census. Almost all live with their spouse (96 percent). This information implies that living separately due to migration is not common in the study area. The proportion of spouses living together is highest in the Urban/semi-urban stratum, while the highest proportion of spouses not living together is found in the Mixed economy and Upland strata. Gender differences are also notable. The proportion of women not living with their husbands is about three times higher than currently married men not residing with their wives. This probably reflects a greater likelihood of men moving out to work and leaving wives behind.

Table 8.2 Percentage distribution of population currently married by co-residence status, sex, and strata, Round 4 (2003)

Co-residence status	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Living with Spouse	98.2	96.0	98.8	94.9	98.2	93.8	98.4	92.8	974	93.5	98.2	94.1
Not living with Spouse	1.8	4.0	1.2	5.1	1.8	6.3	1.6	7.2	2.6	6.5	1.8	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

8.3 Proportion never married

The proportion never married is a central indicator of marriage patterns. Overall, women marry at younger ages than do men; the proportion never- married is much higher at young ages for men than for women (Table 8.3). However, the patterns change at older ages. Across strata, for those younger than 35 years old, the proportion never married is higher for men (except for Urban/semi-urban stratum where there are similar proportions of women and men in the 30-34 age group who are never-married). For those aged 35 years and older, the proportion of women never married is higher than for men, especially for the population aged 50 years and older. In Urban/semi-urban and Rice strata, the proportion of never-married women is several times higher than for men. This reflects the fact that while women tend to marry at younger age compared to men, if not yet married when reaching their mid-thirties women have a lower probability of marriage compared to men. However, this is not the case for the Uplands stratum where the proportion never married is higher for men in almost all age groups.

Comparing among strata and across age groups, the proportion never married is highest in the Urban/semi-urban stratum. The exception is for those aged 30-34 years, for whom the proportion never married among men is highest in the Mixed economy stratum. At the same time, the lowest proportion never married is found in the Uplands stratum. This is true in all age groups.

Table 8.3 Percent of population never married by age group, sex, and strata, Round 4 (2003)

Age	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed	
group	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
15-19	93.9	85.2	93.7	83.1	93.8	72.0	93.3	67.3	89.5	70.4
20-24	65.6	43.4	63.6	32.3	54.6	23.3	54.2	11.8	52.6	36.4
25-29	42.7	28.0	32.2	19.1	26.6	16.6	23.4	7.9	32.1	15.9
30-34	17.0	18.1	15.5	11.8	11.6	8.3	9.9	4.6	19.0	10.0
35-39	12.0	15.1	7.0	11.1	6.0	8.4	7.6	1.8	8.7	6.3
40-44	9.7	9.5	3.3	10.2	3.3	5.3	2.9	1.2	3.5	9.2
45-49	3.5	11.7	2.1	10.0	3.3	4.1	3.9	1.1	1.1	7.0
50-54	2.1	9.6	1.1	7.8	0.6	4.5	0.4	0.8	2.0	9.3
55-59	2.1	10.8	2.0	9.9	2.0	4.7	1.6	0.0	2.2	4.7
60+	2.2	7.8	1.3	5.7	1.3	1.9	1.3	0.7	0.7	3.9
Total	25.6	2.4	20.6	18.1	19.2	13.8	16.9	8.9	20.6	15.5
N	700	776	443	483	400	334	562	332	595	525

8.4 Age at first marriage

The proportion of population who are never married, suggests that people in the Urban/semi-urban stratum marry at the oldest ages and that those in the Uplands stratum marry at the youngest ages. Age at first marriage (measured by the Singulate mean age at marriage-SMAM) presented in Table 8.4 confirms this observation. Women in the Urban/semi-urban stratum marry on average at about age 23, about three years later than women in the Uplands stratum. Men in the

Urban/semi-urban stratum marry at about age 27, while males in the Uplands stratum enter marriage on average at age 24. Across strata, women on average marry at an age about four years younger than men.

Table 8.4 Age at first marriage (SMAM) by sex and strata, Round 4 (2003)

Strata	Male	Female
Urban/Semi-urban	26.6	22.6
Rice	25.5	21.3
Plantation	24.5	20.6
Uplands	24.2	19.5
Mixed	24.9	20.4
Total	25.1	20.7

8.5 Intention to marry

Those persons aged 15-49 years who were not currently married (never married, widowed, divorced, and separated) at the time of the census were asked if they intended to marry. Interestingly, women are much less likely than men to state that they intend to marry (less than one fourth for women vs. about two fifths for men). Women in the Mixed economy stratum were the least likely to report an intention to marry, while women in the Urban/semi-urban stratum were the most likely to state a definite intention of not to marry. Approximately one-half of both women and men replied that they were not certain about whether they would get married (Table 8.5).

Table 8.5 Percentage distribution of the population not currently married by their intention to marry, sex, and strata, Round 4 (2003)

Intention to marry	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Intend to marry	39.7	21.7	38.3	22.4	35.8	23.6	43.8	26.3	39.0	19.8	39.6	22.5
Intend not to Marry	10.1	30.5	7.6	30.5	8.4	25.4	9.2	26.3	8.4	26.8	8.9	28.3
Uncertain	47.9	43.6	50.4	41.2	50.0	45.6	44.8	42.5	47.1	47.4	47.8	44.0
Refuse to answer*	2.3	4.1	3.7	5.9	5.7	5.5	2.3	4.8	55	6.0	3.7	5.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	779	917	486	593	452	45	621	494	656	635	2,994	3,084

* "Don't know" response included

When the analysis is restricted to the never married (Table 8.6), the gender difference in intention to marry remains. Among the never married, a much lower proportion of women than men intend to marry (30 percent vs. 44 percent), and a much higher proportion intend not to marry (20 percent vs.7 percent). The proportion of those falling into the uncertain group is about the same for women and for men (47 percent). By strata, the lowest proportion of women intending to marry is found for the Mixed economy stratum (about one fourth), while the highest proportion is observed for the Uplands stratum. Women in the Urban/semi-urban stratum are most likely to report an intention not to marry, with almost one-quarter of never married women in this stratum stating that they do not intend to marry.

Table 8.6 Percentage distribution of never-married population by intention to marry, sex, and strata, Round 4 (2003)

Intention to marry	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Intend to marry	44.2	27.7	41.9	31.0	39.4	31.7	47.8	37.6	43.4	25.7	43.7	30.0
Intend not to Marry	8.3	23.8	6.7	23.2	5.1	17.0	7.4	13.2	6.2	19.6	6.9	20.3
Uncertain	45.6	46.1	49.5	43.7	50.6	46.8	43.7	47.7	46.0	51.1	46.7	47.1
Refuse to answer*	1.9	2.3	1.8	2.1	4.8	4.5	1.1	1.5	4.5	3.6	2.7	2.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	684	685	434	423	393	312	552	327	583	470	2,646	2,217

* "Don't know" response include

8.6 Marriage registration

Table 8.7 displays the percent of the currently married that registered their marriage. The information refers to the current marriage. Less than a half of respondents registered their marriage, with only small differences between men and women. There are strata differentials, however. For both women and men, marriage registration is most prevalent in the Urban/semi-urban and Rice strata, while it is least prevalent in the Uplands stratum.

Table 8.7 Percentage distribution of currently married population by marriage registration for current marriage, sex, and strata, Round 4 (2003)

Marriage registration	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Registered	54.4	57.6	55.8	55.2	41.7	43.0	31.1	31.7	43.4	46.4	43.7	45.1
Not registered	45.2	42.1	43.9	44.3	57.7	56.7	68.6	67.9	56.3	53.2	56.0	54.5
Don't know	0.4	0.3	0.3	0.5	0.6	0.3	0.3	0.4	0.4	0.4	0.4	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	1,207	1,522	991	1,223	1,062	1,295	1,796	2,315	1,372	1,760	6,428	8,115

8.7 Summary

Marriage patterns of the study population follow that of the Thai population. Women, compared to men, marry at younger ages, and are more likely to be widowed, divorced, or separated. Most currently married people live with their spouses. For those not currently married, a lower percent of women then man intend to marry and a higher percent intend not to marry. The proportion of those who are uncertain about whether they will marry is similar for women and men. Slightly less than one-half of the currently married have registered their marriage.

9. Migration

Sureeporn Punpuing and Philip Guest

Migration is defined as a movement in or out of the village of current residence during the 12 months prior to the census. It is important to note that this analysis includes migration within and out of field site communities and also the movement of entire households. A minimum of one month of residence is required for a person to be defined as a usual resident of the household. The period of migration is between July 1st, 2002 and June 30th, 2003. Migration information is obtained from the household questionnaire. In Round 4 (2003) the list of family members from Round 3 (2002) was updated. Therefore if a family member who was listed in Round 3 (2002) had moved out from the household, he/she is defined as an out-migrant. On the other hand, if a new family member moved into the current household, he/she will be defined as an in-migrant. Those who remained in the household for both censuses are non-migrants. Persons belonging to new households and who had not been enumerated as usual residents in Round 3 (2002) but who are usual residents in Round 4 (2003) were defined as in-migrants during 2002-2003.

In-migration and out-migration rates were calculated from the number of in-migrants or out-migrants per 100 population at the time of census. As Round 1 (2000) could only identify in-migration (see 2000 baseline report), this report includes a comparison of in-migration from Round 1 (2001) to Round 4 (2003), and out-migration from Round 2 (2001) to Round 4 (2003).

More than 80 percent of the field site population were non-migrants in the year prior to Round 4, with an in-migration rate of 7 and an out-migration rate of 13

per hundred population, which results in a net out-migration rate of 6 per hundred population (see Table 9.1).

Both in-migration and out-migration rates, eight and fifteen respectively, were highest in the uplands stratum, with the net out-migration rates of the Uplands being seven per hundred. In the Rice stratum, the out-migration rate was lowest, ten per hundred, while the Plantation stratum has the lowest in-migration rate (6 per 100) (see Table 9.1 and Figure 9.1).

The findings from Round 1 (2000) to Round 4 (2002) indicates that the out-migration rate has increased, while the in-migration rate has declined in every strata. This may be because:

1. The economic recovery that has occurred after 2002 may have led to increasing out-migration from the study area.

2. The Thai government policy that allowed registration and provided work permits to undocumented migrants may have encouraged the movement of cross-border migrants in order to find employment elsewhere in Thailand.

3. During 2002-2003, the Thai government promoted the tourist industry in Kanchanaburi, particularly in the Uplands stratum, which may have attracted people to move to work in this area.

4. There have been major improvements in the transportation system, especially the completion in 2002 of the upgraded highway between Muang Kanchanaburi and Sai Yok, and to Phanum Thun districts.

This may have allowed the population to choose to commute to work instead of migrating.

5. The refusal rate in the urban area has been increased over time. This leads to a tendency of under enumeration of in-migrants in urban area.

One reason that there is a high mobility of the population in the Uplands is the large number of migrants from Myanmar who regularly change their place of residence and workplace because of their lack of land ownership.

9.1 In-migration

The in-migration rate recorded in the Round 4 (2003) was lower than that of the Round 3 (2002) in every stratum except for the Rice stratum. The migration rate in the Urban/semi-urban decreased two points (from 9 to 7), 7 to 6 in the Plantation, 9 to 8 in the Uplands, and 7 to 6 in the Mixed economy strata (see Figure 9.2). There was an increasing rate of in-migration in the Rice stratum from 5 to 6 per hundred. The in-migration rate declined when compared with Round 2 (2001) in every study area, except for the Rice stratum. However, the in-migration rate was higher than that of Round 1 (2000) in every study area, except for the Urban/semi-urban stratum.

The proportion of male in-migrants was higher than that of female in-migrants in every stratum, except for the Urban/semi-urban. The largest difference in male and female in-migration rates was in the Mixed economy stratum. When the in-migrants are distributed by age and sex, it was found that the percent of in-migrants aged 0-9 years, range from 13 to 25 percent. The proportion of migrant age 0-9 is the highest in the Uplands stratum, consisting of 20 and 25 percent of male and female migrants respectively (see Table 9.2).

The proportion of in-migrants age 15-29 years was the highest in the rice stratum, with 45 and 47 percent for males and females respectively. For males, the percent of in-migrants who were aged 15-29 years was 41 percent in the Urban/semi-urban, 39 percent in the Plantation, 34 percent in Uplands and 39 percent in the Mixed economic strata. For females, the percent of in-migrants who were aged 15-29 years were 40 percent in the Urban/semi-urban, 37 percent in the Plantation, 35 percent in Uplands and 42 percent in the Mixed economic strata (see Table 9.2).

Approximately 62, 55, 50, 43 and 41 percent of in-migrants in Urban/semi-urban, Uplands, Mixed economy, Plantation and Rice strata respectively, migrated from within Kanchanaburi. The next largest proportion came from other provinces in the Central region. The proportion of in-migrants from Bangkok was the highest in the Rice and Plantation strata (15 percent), and lowest in the Urban/semi-urban stratum (nine percent). The proportion of in-migrants from the Northeast region was the highest in the Plantation and Mixed economy (7 percent), and lowest in the Urban/semi-urban (one percent). In every study area, only small proportions of in-migrants were from the North or South regions of Thailand. The Uplands stratum has a special characteristic, with about five percent of in-migrants originating from abroad, while there was a very small proportion of international in-migrant in other strata, and in the Plantation stratum that there was no recorded international in-migration (see Table 9.3). The majority of the international in-migrants came across the border from Myanmar.

Comparing place of origin for the in-migrants from Round 1(2000) to Round 4 (2003) indicates a similar pattern of place of origin, with more than half of the movement within Kanchanaburi province. Furthermore, both censuses found that the Plantation stratum remains a major destination for migrants from other provinces in the Central and Northeast regions. This is largely seasonal in-migration. There is

a high demand for laborers during the cane-cutting period. When there is not enough labor from Kanchanaburi province, workers from other provinces are recruited.

9.2 Out-migration

The level of out-migration has increased in every study area since Round 2 (2001), with the exception of the Mixed economy stratum where the out-migration rate has declined one percent (see Figure 9.3)

The level of male out-migration was higher than that of female out-migration in every strata, except for the Urban/semi-urban stratum where there was equal proportion of male and female out-migration (10 percent). The largest difference in out-migration rates occurred in the Uplands stratum (18 and 15 percent respectively). When out-migrants are distributed by age and sex, it was found that 11 to 19 percent of out-migrants were aged 0-9 years. This reflects family moves, in which children move with their parents. In the Uplands, 17 and 19 percent of male and female out-migrants respectively were aged 0-9 years.

Similar to the in-migration patterns, the out migration of persons aged 15-29 was the highest in the Rice stratum, were 50 and 45 percent of male and female migrants respectively. For males age 15-29 years, the 39 percent of out-migrants in Urban/semi-urban, 47 percent in the Plantation, 40 in the Uplands, and 38 percent in the Mixed economy strata were aged 15-29. For females, 44 percent of out-migrants in Urban/semi-urban, 38 percent in the Plantation, 39 in the Uplands, and 42 percent in the Mixed economy strata were aged 15-29 (see Table 9.2).

For the destination of out-migration, approximately 46, 42, 40, 40 and 34 percent of out-migrants in the Uplands, Mixed economy, Plantation, Rice and Urban/semi-

Urban strata respectively migrated within Kanchanaburi. Other provinces in the Central region were major destinations of out-migrants in every study area, particularly for Rice stratum migrants, where about 31 percent of migrants moved to other Central region provinces. The proportion of out-migrants to Bangkok was highest in the Rice stratum (17 percent), and lowest in the Urban/semi-urban stratum (13 percent). The proportion of out-migrants to the Northeast region was highest in the Mixed economy (six percent), and there were small proportions of out-migrants to the North and the South. Five percent of migrants from the Uplands moved to foreign countries, mainly Myanmar, while about two percent of out-migrants in the Mixed economy stratum moved to foreign countries (see Table 9.3).

9.3 Summary

The out-migration rate was higher than the in-migration rate. The overall net out-migration rate was 6 per hundred population. The in-migration rate for Round 4 (2003) was lower than those of Round 2 (2001) and Round 3 (2002) in every study area, except for the Rice stratum. The out-migration rate from Round 4 (2003) was higher than those of Round 2 (2001) and Round 3 (2002) in every study area, except for the Mixed economy stratum. The majority of the population (81 percent) in the field site study did not migrate during the period July 1st, 2002 - June 30th, 2003.

Both the in-migration and out-migration rates were the highest in the Uplands stratum (8 percent and 15 percent respectively). In the Rice stratum, there was little population change from migration, with the net out-migration of four percent the lowest rate of the five study strata.

Males were more migratory than females, and the proportion of migrants at ages 15-29 was the highest compared with those of other age groups. This probably is related to migration for education, work or marriage. However, it was found that in and out-migration rates or the population age 0-9 years were almost as high as those of population aged 20-24 years. This may be related to the family movement.

In the field site study, both in-migration and out-migration was mainly short-distance migration, particularly within Kanchanaburi province, and between Kanchanaburi and other provinces in the Central region and Bangkok. Kanchanaburi is a province in the Central region, and the travel between some districts of Kanchanaburi and some provinces in the Central region or Bangkok can be undertaken within a few hours. Migration between Kanchanaburi province and the Northeast, North and South regions seems to mainly be a result of the in-migration and out - migration (probably return migration) of migrant workers. Moreover, it is likely that the international migration is also short-distance migration between uplands area of Kanchanaburi province and the country on the other side of the border, Myanmar.

Table 9.1 In-migration and out-migration rates by strata, Round 4 (2003)

Migration	Urban/ Semi urban	Rice	Plantation	Uplands	Mixed Economy	Total
Out migration to other villages	12.9	9.6	12.8	15.0	11.4	12.6
In migration from other villages	6.7	5.9	5.6	7.5	6.2	6.5
No migration	80.4	84.6	81.6	77.5	82.4	80.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	10,220	7,815	7,873	13,920	10,408	50,236

Table 9.2 Percent migrants: July 1st, 2001- June 30th, 2003 by strata, sex and age

Age group	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration
Male												
0-9	16.7	11.0	18.8	13.6	12.8	15.3	19.8	17.3	17.8	15.2	17.7	14.8
10-14	5.0	5.9	3.4	7.0	4.7	11.8	11.6	12.3	7.9	7.1	7.5	8.3
15-19	9.7	9.2	9.0	20.9	11.1	19.4	8.6	17.0	11.9	15.2	9.9	11.7
20-24	17.9	16.7	15.8	17.9	17.4	16.4	14.0	12.7	13.3	9.7	15.3	11.8
25-29	13.8	13.2	20.1	11.1	10.2	10.7	11.0	10.6	13.6	12.8	13.2	10.4
30-34	9.1	11.3	9.0	8.9	8.1	13.3	10.8	12.3	10.5	12.2	9.8	11.6
35-39	8.5	8.6	4.7	6.5	10.2	11.8	7.3	9.3	7.3	6.7	7.6	8.4
40-44	7.2	6.4	6.4	5.1	7.7	5.9	3.7	7.3	5.1	7.6	5.6	6.7
45-49	2.8	4.1	4.3	3.0	7.7	5.0	3.4	6.8	3.4	6.7	4.0	5.3
50-54	4.4	2.9	1.7	3.3	3.8	3.5	3.4	3.4	2.0	4.0	3.1	3.3
55-59	1.6	1.9	1.3	1.1	0.9	1.5	1.7	2.6	3.1	4.1	1.8	2.3
60+	3.1	5.0	5.6	5.1	5.5	4.8	4.9	5.0	4.2	4.8	4.6	4.7
unknown	0.0	0.4	0.0	0.5	0.0	0.9	0.0	0.4	0.0	0.3	0.0	0.6
Total	9.7	10.4	7.1	6.1	7.2	8.7	16.4	18.3	10.8	9.7	51.2	53.2

Table 9.2 Continued

Age group	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration
Female												
0-9	13.9	12.4	15.1	13.5	19.2	13.3	24.9	18.5	19.1	14.5	19.2	15.6
10-14	7.1	5.1	6.2	9.4	6.4	10.5	7.0	11.6	4.8	6.7	6.4	8.7
15-19	13.1	14.6	14.2	21.2	12.3	17.2	12.1	16.7	15.4	15.0	13.3	13.8
20-24	14.8	16.1	14.7	13.2	13.3	9.2	13.3	11.8	14.7	15.4	14.1	12.4
25-29	12.3	13.3	17.8	11.0	11.8	11.1	9.8	10.7	11.6	11.7	12.1	11.6
30-34	11.5	11.9	10.7	9.1	9.4	10.2	8.6	7.1	8.9	10.8	9.7	10.3
35-39	9.6	7.1	4.9	6.6	4.9	8.7	5.1	4.3	7.5	5.8	6.5	6.8
40-44	3.8	4.7	4.0	3.9	8.9	5.2	6.8	5.3	6.1	3.7	5.9	5.4
45-49	3.6	5.4	3.1	2.8	4.4	3.3	2.3	5.2	3.8	3.0	3.3	4.8
50-54	2.2	2.0	4.0	1.7	2.0	2.8	1.6	2.1	1.7	4.2	2.1	2.8
55-59	2.7	1.5	1.3	2.2	2.5	3.1	2.2	1.7	3.1	2.1	2.4	2.1
60+	5.2	5.6	4.0	4.4	4.9	5.0	6.3	4.5	3.4	6.9	5.0	5.2
unknown	0.3	0.3	0.0	1.1	0.0	1.4	0.0	0.4	0.0	0.2	0.1	0.6
Total	11.2	10.4	6.9	5.7	6.2	7.2	15.6	14.5	8.9	8.9	48.8	46.8

Table 9.3 Percentage distribution of destination and origin place of migration by strata , Round 4 (2003)

Region	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed Economy		Total	
	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration	in-migration	out-migration
Kanchanaburi	61.7	34.4	41.4	40.2	42.5	40.4	54.8	46.3	50.1	42.3	51.8	41.4
Bangkok	8.8	12.5	14.6	16.6	14.8	14.1	9.7	13.9	14.7	15.6	11.9	14.3
Central	21.9	19.1	32.9	31.3	28.1	29.8	20.3	15.6	23.6	26.2	24.1	22.4
Northeast	1.2	2.3	4.4	2.9	7.3	5.1	4.7	2.7	6.8	5.7	4.7	3.6
North	2.3	2.0	3.5	2.1	4.1	4.4	3.6	3.9	2.5	1.4	3.2	2.9
South	3.8	1.9	2.0	2.7	3.2	1.3	1.1	1.2	2.0	2.2	2.3	1.7
Foreign	0.1	0.5	0.9	0.0	0.0	0.6	5.4	4.8	0.3	2.0	2.0	2.2
Unknown	0.1	27.4	0.4	4.1	0.0	4.4	0.2	11.7	0.0	4.5	0.2	11.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	684	1,323	459	747	438	1,010	1,047	2,084	647	1,183	3,275	6,347

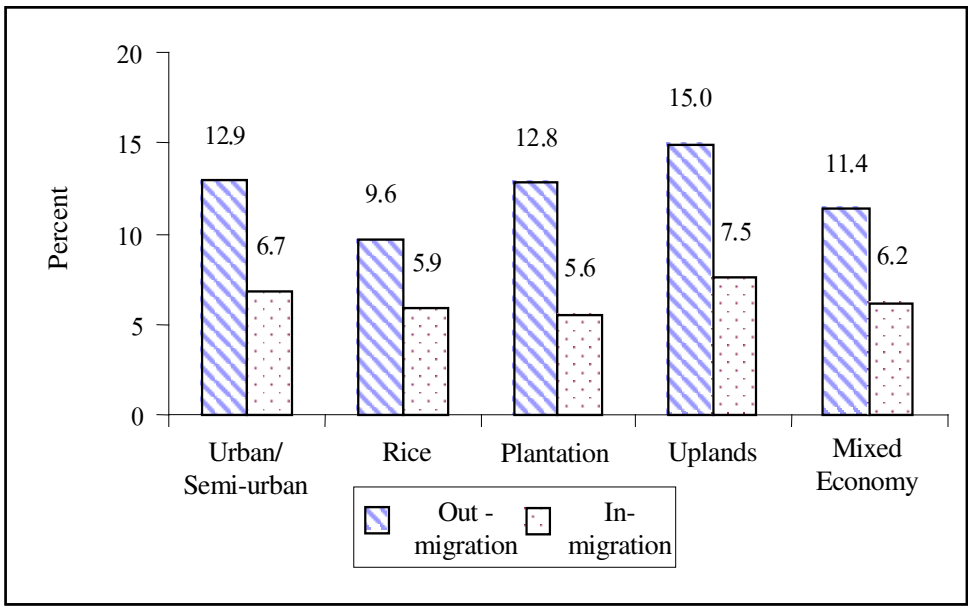


Figure 9.1 In-migration and out-migration rates, Round 4 (2003)

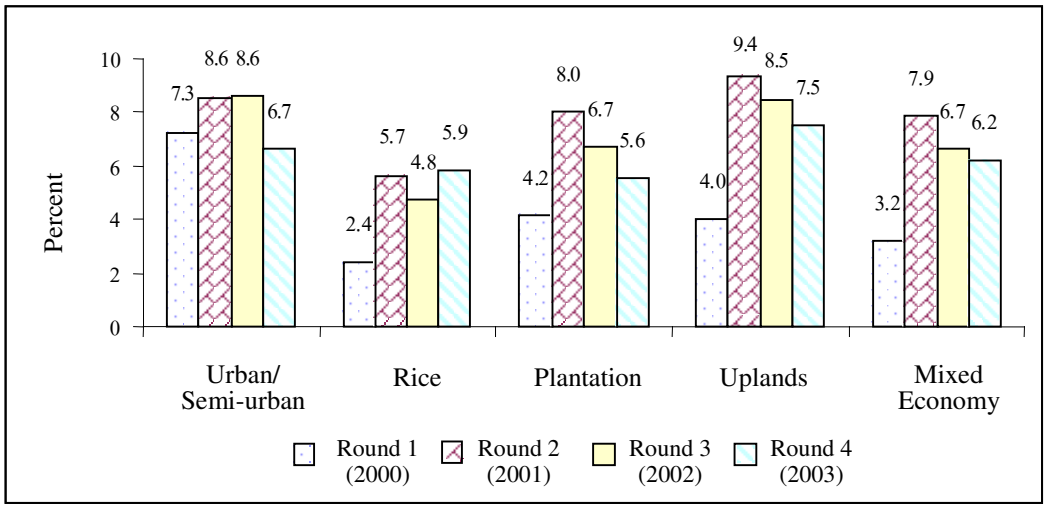


Figure 9.2 In-migration rates : Round 1 (2000) - Round 4 (2003)

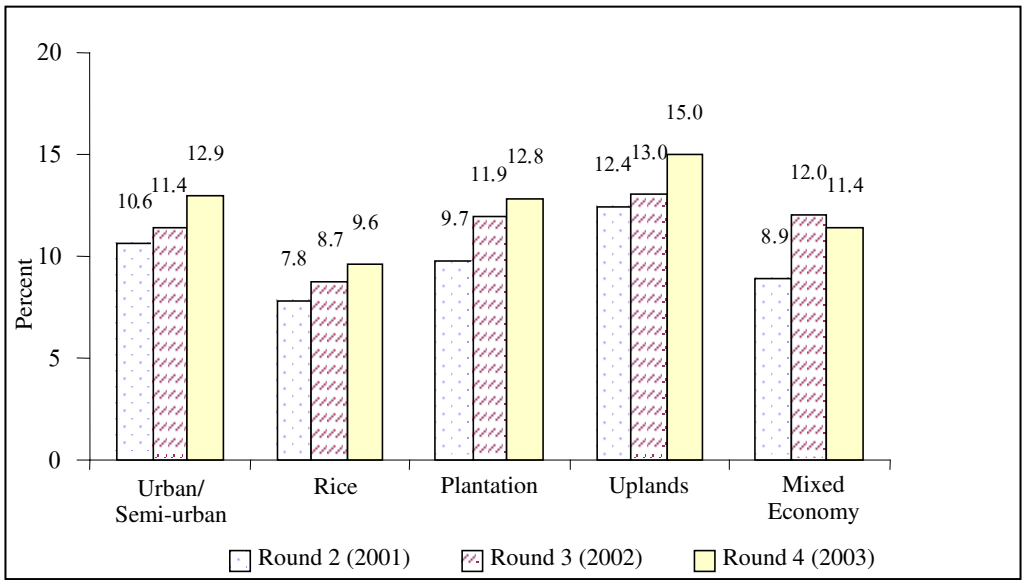


Figure 9.3 Out-migration rates : Round 2 (2001) - Round 4 (2003)

10. Mortality

Patama Vapattanawong

10.1 General information

For Round 4 (2003) there were 12,356 enumerated households. Two hundred and seventy-four of these households had at least one member who died during the 12-month period prior to the census (July 1st, 2002 – June 30th, 2003). Of this total, 269 households had one member die, while two deaths were recorded in each of 4 households. There was only one household where three members died. Thus, the total number of deaths was 280 compared to 421 for Round 1 (2000), 267 for Round 2 (2001), and 257 for Round 3 (2002).

10.2 Mortality levels and patterns

For the 280 deaths in the 12-month period prior to the census, 155 (55 percent) were males and 125 (45 percent) were females. The male death rate was 8 per thousand while the female death rate was 6 per thousand. For both sexes combined, the crude death rate was 7 per thousand. Comparing the mortality rate for Round 4 (2003) with the rate for the previous three rounds (Round 1 to Round 3), it was found that the mortality rate for Round 4 (2003) was close to that for Round 2 (2001) and Round 3 (2002) but significantly lower than that for Round 1 (2000) (see Table 10.1).

Table 10.1 Mortality indicators, Round 1 (2000) – Round 4 (2003)

Sex	Round 1 (2000)		Round 2 (2001)		Round 3 (2002)		Round 4 (2003)	
	Number of Deaths	Death Rate (per thousand)	Number of Deaths	Death Rate (per thousand)	Number of Deaths	Death Rate (per thousand)	Number of Deaths	Death Rate (per thousand)
Male	256	13	170	8	150	7	155	8
Female	165	7	96	4	107	5	125	6
Total	**421**	**10**	**267**	**5**	**257**	**6**	**280**	**7**

The mortality pattern, as indicated by age-sex specific death rates, was similar to that found in all previous rounds, as well as that found for the general population of Thailand. For Round 4 (2003), the infant mortality (under-one mortality) was high. Mortality then gradually decreased until the 10 – 14 years age group, which had the lowest mortality rate. Then mortality gradually increased. A rapid rate of increase was clearly seen after aged 55 years for males and 70 years for females.

Both males and females had the same mortality pattern. The mortality level for females was lower than for males in almost all age groups. However, within the study population, the mortality rate of females aged 90 years and over was higher than for males (see Table 10.2 and Figure 10.1).

Table 10.2 Population, number of deaths and death rates by age and sex, Round 4 (2003)

Age	Population		Number of Deaths		Death Rate (per thousand)	
	Male	**Female**	Male	**Female**	**Male**	**Female**
0	371	369	1	2	2.7	5.4
1-4	1,588	1,424	5	5	3.1	3.5
5-9	2,373	2,261	4	2	1.7	0.9
10-14	2,222	2,175	5	1	2.3	0.5
15-19	1,353	1,415	5	0	3.7	0.0
20-24	1,097	1,255	5	0	4.6	0.0
25-29	1,374	1,674	8	4	5.8	2.4
30-34	1,533	1,838	8	9	5.2	4.9
35-39	1,596	1,960	11	5	6.9	2.6
40-44	1,552	1,801	7	5	4.5	2.8
45-49	1,335	1,604	6	6	4.5	3.7
50-54	1,134	1,246	14	5	12.3	4.0
55-59	733	918	8	6	10.9	6.5
60-64	709	797	9	11	12.7	13.8
65-69	544	652	11	10	20.2	15.3
70-74	399	470	21	16	52.6	34.0
75-79	259	313	13	11	50.2	35.1
80-84	96	173	4	12	41.7	69.4
85-89	57	82	7	6	122.8	73.2
90+	25	38	3	9	120.0	236.8
Unknown	0	2	0	0	–	–
Total	**20,350**	**22,467**	**155**	**125**	**7.6**	**5.6**
	42,817		**280**		**6.5**	

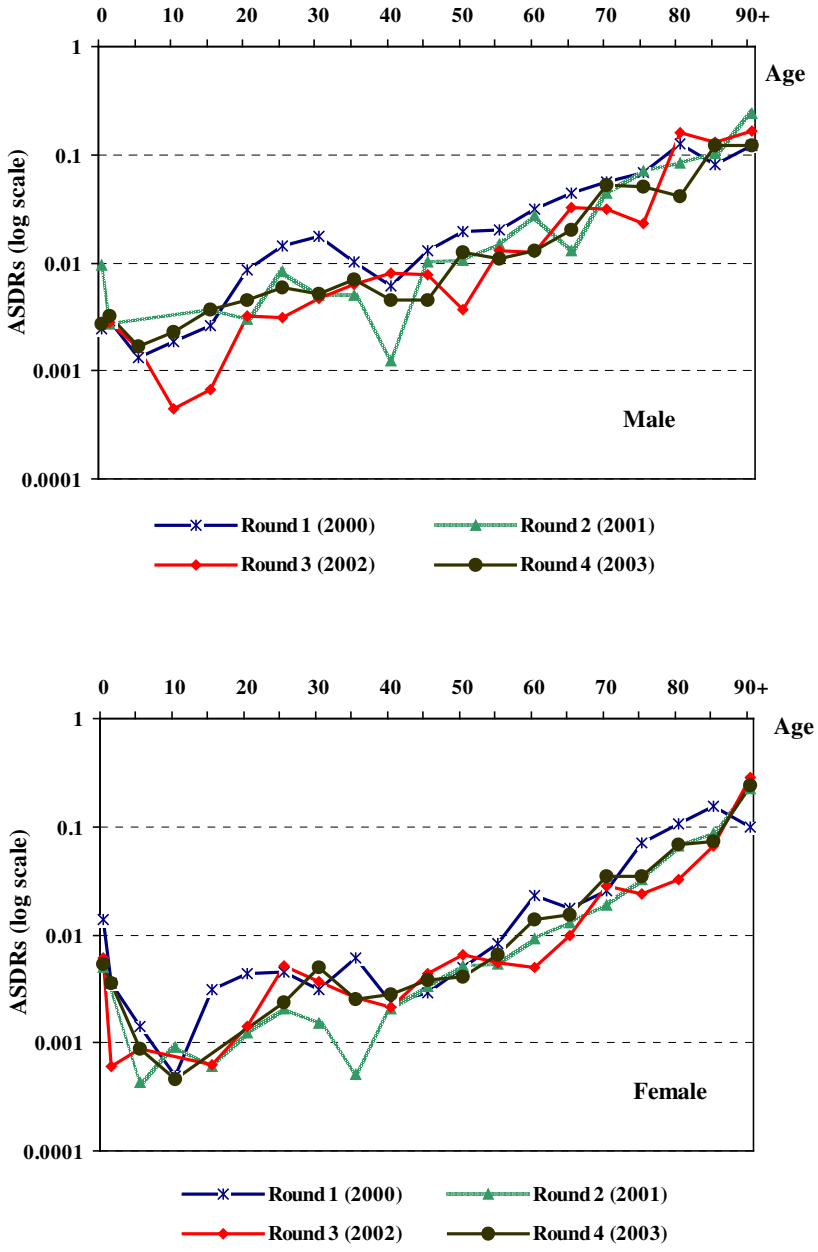


Figure 10.1 Age-sex specific death rates, Round 1 (2000) - Round 4 (2003)

10.3 Mortality by strata

Classifying by strata within the study area revealed two different mortality levels in this round. The mortality rates for Urban/semi-urban and Rice strata were about 8 – 10 per thousand while mortality rates for Plantation, Uplands and Mixed economy strata were about 5 – 6 per thousand. It is seen that mortality rates for the Urban/semi-urban and Rice strata were clearly higher than the other three strata.

When comparing with Round 3 (2002), mortality rates of Urban/semi-urban, Rice and Plantation strata for Round 4 (2003) increased while the mortality rates for the Uplands and Mixed economy strata decreased Moreover, it is found that the mortality levels by strata in this round were similar to those found in Round 2 (2001) (Figure 10.2).

The mortality pattern presented by age-sex specific death rates was not smooth. Rather, it fluctuated across age groups. The cause of this fluctuation was due to the small population size for each age group. As a result, either increasing or decreasing numbers of deaths in these age groups could markedly affect mortality rates (Table 10.3).

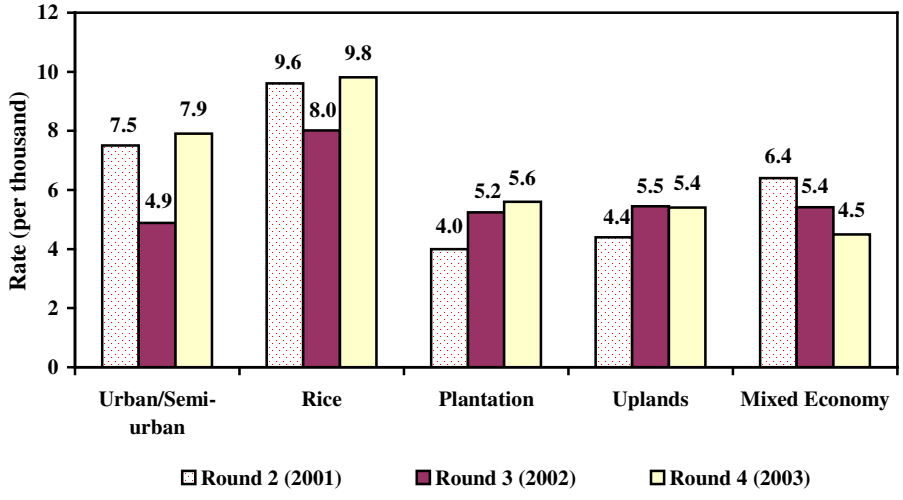


Figure 10.2 Crude death rates by strata, Round 2 (2001) – Round 4 (2003)

Table 10.3 Age-sex specific death rates (per thousand) by strata, Round 4 (2003)

Age	Urban/Semi-urban		Rice		Plantation		Uplands		Mixed Economy	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	18.9	0.0	0.0	0.0	0.0	0.0	0.0	13.9	0.0	0.0
1-4	0.0	0.0	0.0	5.0	0.0	0.0	5.4	7.7	6.8	0.0
5-9	0.0	0.0	8.7	0.0	2.6	0.0	0.0	2.8	0.0	0.0
10-14	2.7	0.0	0.0	0.0	2.7	2.9	2.8	0.0	2.2	0.0
15-19	3.2	0.0	4.3	0.0	4.5	0.0	3.7	0.0	3.2	0.0
20-24	3.6	0.0	12.7	0.0	6.1	0.0	3.7	0.0	0.0	0.0
25-29	10.3	0.0	4.6	7.7	8.9	3.5	3.0	2.3	3.2	0.0
30-34	3.3	2.6	8.6	10.2	0.0	11.0	2.3	2.0	11.9	2.6
35-39	9.3	8.9	15.6	0.0	3.7	0.0	4.6	2.2	3.2	0.0
40-44	11.9	2.6	4.0	3.3	0.0	3.3	0.0	4.8	6.3	0.0
45-49	3.7	5.3	5.0	3.9	4.6	4.4	8.2	5.3	0.0	0.0
50-54	12.0	3.3	15.4	4.5	11.2	5.5	15.3	0.0	8.0	7.3
55-59	6.8	5.0	37.7	6.5	0.0	0.0	16.0	15.3	0.0	4.6
60-64	13.8	22.5	8.8	18.0	18.0	15.2	10.8	12.7	13.0	0.0
65-69	21.3	26.5	18.2	8.5	11.4	19.8	15.4	14.9	32.8	6.7
70-74	94.6	40.8	84.3	41.7	32.3	44.1	21.3	32.6	34.9	17.2
75-79	60.0	34.9	47.6	44.1	55.6	26.3	67.8	35.7	19.6	30.8
80-84	0.0	85.1	142.9	22.7	0.0	0.0	0.0	166.7	40.0	97.6
85-89	76.9	58.8	187.5	125.0	200.0	0.0	250.0	0.0	52.6	153.8
90+	100.0	272.7	0.0	250.0	0.0	600.0	0.0	0.0	500.0	125.0
Crude death rate	**8.9**	**7.0**	**12.7**	**7.2**	**5.6**	**5.5**	**5.7**	**5.2**	**6.6**	**3.4**
	7.9		**9.8**		**5.6**		**5.4**		**4.9**	

The sex differential in mortality for Round 4 was similar to the three previous rounds, with male mortality higher than that of females in every stratum (Figure 10.3).

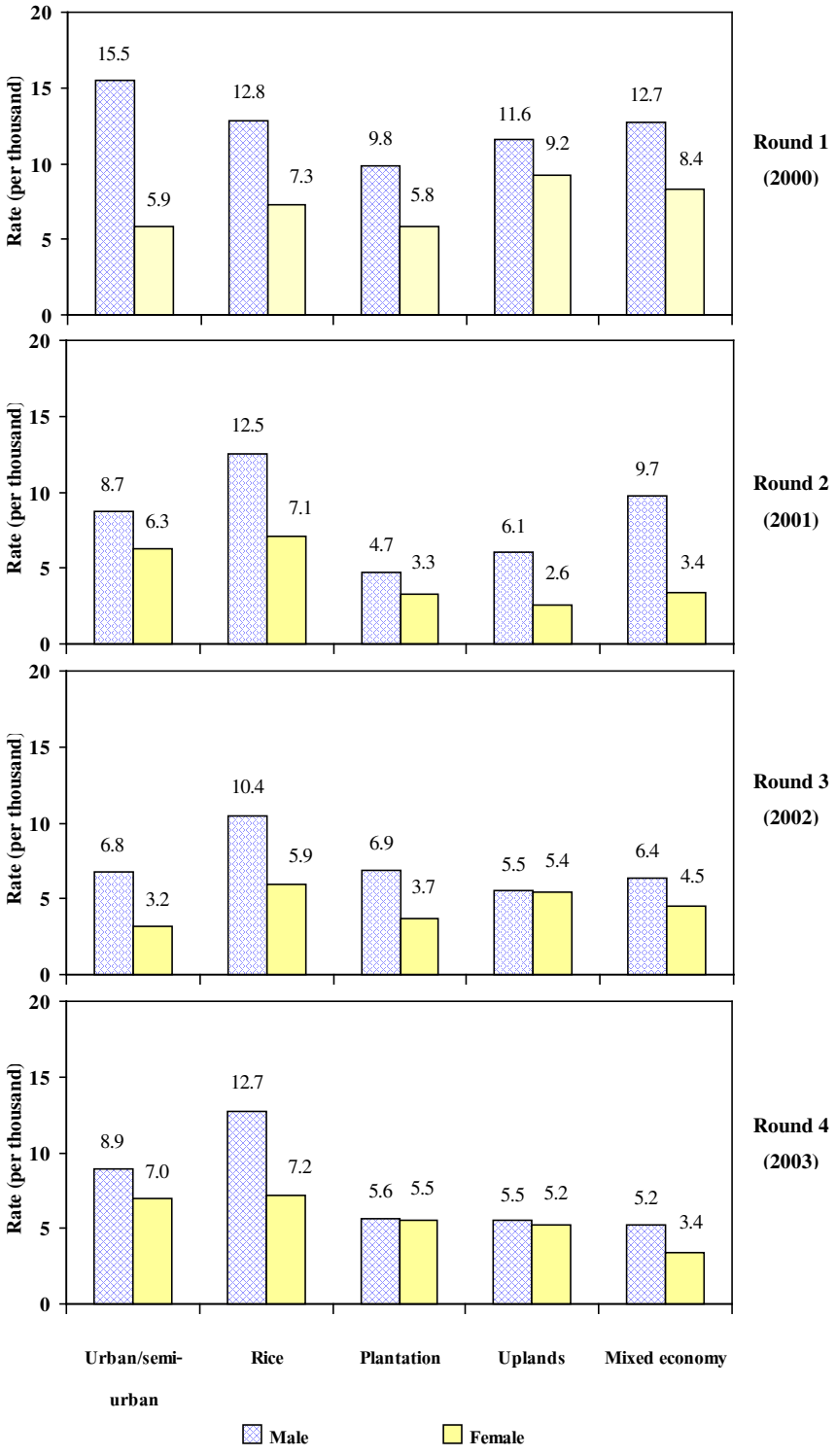


Figure 10.3 Death rates (per thousand) by sex and strata, Round 1 (2000) – Round 4 (2003)

10.4 Cause of deaths

For Round 4 (2003), six major causes of deaths were included as possible responses in the questionnaire. These causes were sickness from non-infectious disease, sickness from infectious disease, accident, homicide, suicide, and senility.

According to the six major groups of cause of deaths, sickness from non-infectious disease was the major cause for the 280 deaths that occurred within the one year before the Round 4 (2003) census. About half of all deaths, or 44 percent, occurred due to non-infectious disease. The second main cause was infectious disease (21 percent). Deaths caused by senility accounted for the next highest percentage of deaths (18 percent). The fourth most frequently cited cause was accidents (14 percent). Deaths caused by homicide and suicides were 4 percent of all deaths. Deaths from unknown causes were rare (less than 1 percent) (Figure 10.4).

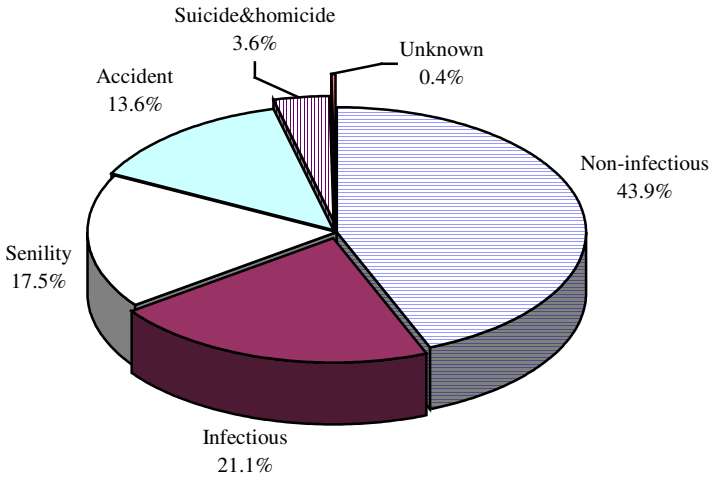


Figure 10.4 Percentage distribution of deaths by cause of death, Round 4 (2003)

Analysis of causes of death by strata showed a similar first cause of deaths for each strata but some different patterns of other causes of deaths (see Table 10.4).

In order to compare the pattern of causes of deaths from Round 1 (2000) to Round 4 (2003), some causes of deaths were grouped. The new combinations of causes of deaths were 1) sickness 2) accident 3) self-harm and assault 4) others.

- Causes of deaths from sickness included deaths from infectious, non-infectious diseases and senility.
- Causes of deaths from accidents are defined as deaths from all external causes that occurred unintentionally.
- Causes of deaths from self-harm and assault means deaths from all intentional events including intentional self-harm and assault by other people.
- Causes of deaths from others include deaths from all other causes that were not included in three causes above.

By comparing pattern of causes of deaths for four rounds, the same pattern occurred to each Round. Deaths caused by accident and self-harm and assault, were found to decrease in Round 3 (2002), and slightly increase in Round 4 (2003) (Figure 10.5).

Table 10.4 Percentage distribution of causes of deaths by strata, Round 4 (2003)

Causes of Deaths	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy
Infectious disease	20.3	17.6	18.9	27.4	20.5
Non-infectious	43.5	42.6	43.2	45.2	45.5
Accident	15.9	16.2	13.5	11.3	9.1
Homicide	1.4	4.4	0.0	3.2	6.8
Suicide	1.4	0.0	0.0	0.0	0.0
Senility	17.4	19.1	21.6	12.9	18.3
Unknown	0.0	0.0	2.7	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0
Number	**69**	**68**	**37**	**62**	**44**

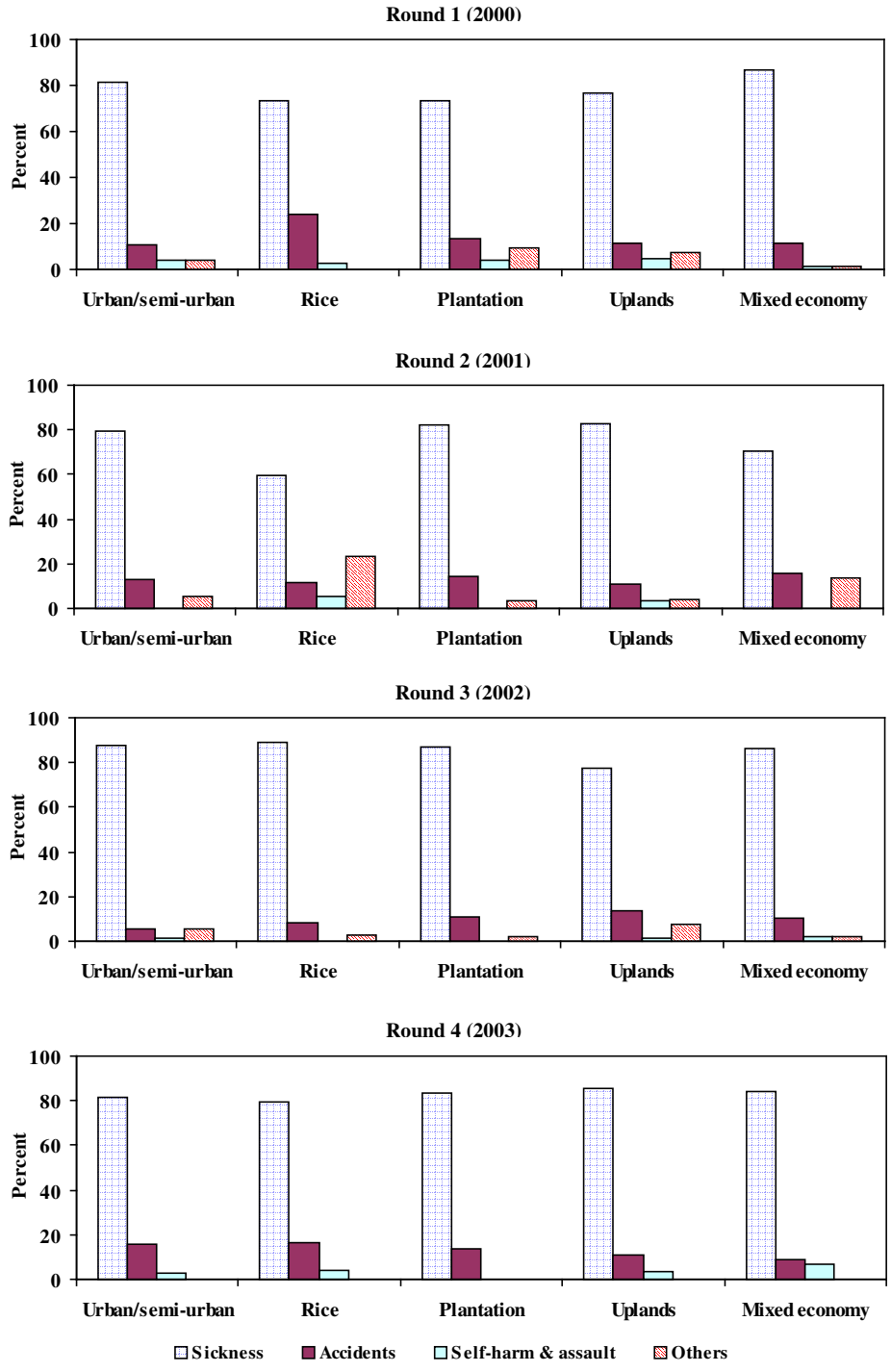

Round 1 (2000)
Round 2 (2001)
Round 3 (2002)
Round 4 (2003)
Percent
100
80
60
40
20
0
Urban/semi-urban
Rice
Plantation
Uplands
Mixed economy
Sickness
Accidents
Self-harm & assault
Others

Figure 10.5 Causes of deaths by strata, Round 1 (2000) – Round 4 (2003)

10.5 Place of death and death registration

For Round 4 (2003), three types of place of deaths were classified, deaths in health facilities, deaths at home, and deaths outside home. It was found that about one-half of all deaths occurred at home (48 percent). Deaths in health facilities consisted of 42 percent of all deaths. A further 10 percent of deaths occurred outside the home but not in a health facility (Table 10.5).

Table 10.5 Number and percentage distribution of deaths by place of death, Round 4 (2003)

Places of Deaths	Number	Percent
Health facilities	118	42.2
Government	*108*	*38.6*
Privacy/clinic	*10*	*3.6*
Home	133	47.5
Outside home	29	10.3
Total	**280**	**100.0**

The analysis also explored the extent to which the 280 deaths were registered. Results showed that 95 percent of all deaths were registered. This figure was very close to percent of deaths registered in Round 2 (2001) and Round 3 (2002) but higher than the 91 percent death registration in Round 1 (2000).

The proportion of unregistered deaths for Round 4 (2003) was still high for infant and child deaths, which was also found for Round 1 (2000) – Round 3 (2002). The proportion of both registered and unregistered deaths is shown in Figure 10.6.

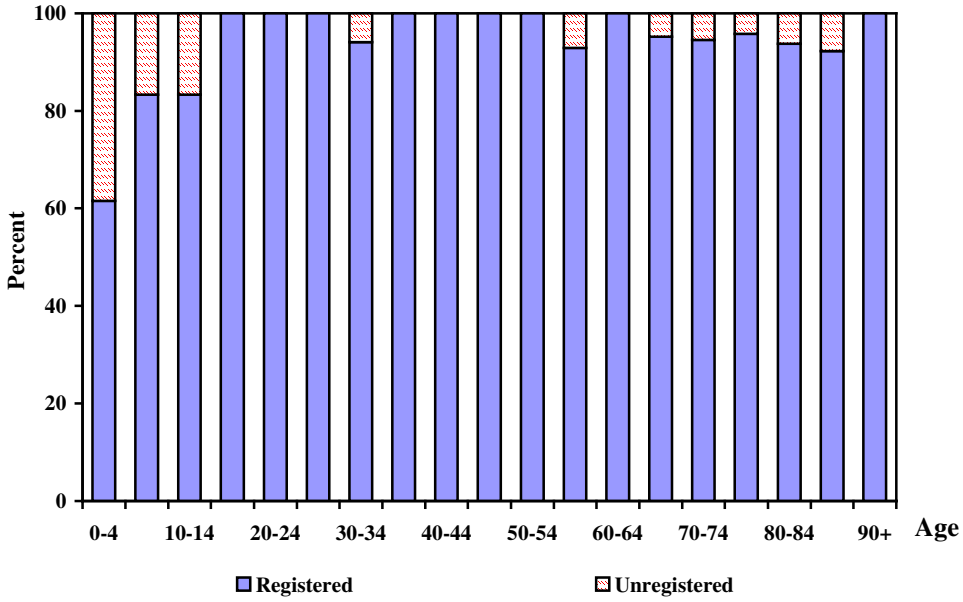


Figure 10.6 Percentage distribution of deaths by death registration and age, Round 4 (2003)

The main reasons for unregistered deaths included: (i) aliens, (ii) no time to register (iii) did not know where to register the deaths (iv) lacking documents and (v) unknown reasons. Of these reasons, the most common given for not registering a death was lack of citizenship (aliens) (8 from 15 unregistered deaths), followed by 'no time to register' (3 from 15 unregistered deaths). One unregistered death was a result of lacking documents. The last unregistered death was because his/her relative did not know where to register the death.

10.6 Summary

The mortality level for the 12-month period prior to the Round 4 (2003) census increased compared to that of Round 3 (2002). In the Round 4 (2003) census, there were 280 deaths, giving a crude mortality rate of 7 per thousand. The male mortality rate was slightly higher than the level of female mortality. By strata, the mortality rates could be grouped into two groups. The mortality rates of Urban/semi-urban and Rice strata were 8 – 10 per thousand while mortality rates of Plantation, Uplands, and Mixed economy strata were 5 –6 per thousand.

The mortality distributions by age and sex were similar to mortality patterns found within the general population, in that both male and female mortality patterns were J-shaped. Infant mortality was high, mortality then gradually decreased until the 10 – 14 year age group, which had the lowest mortality rate. Then, mortality gradually increased. Female mortality was lower than that of males in almost all age groups. This pattern was similar to those found in Rounds 1 – 3.

More than 80 percent of deaths were caused by sickness. Forty-four percent of all deaths were caused by non-infectious diseases while 21 percent were caused by infectious diseases. Senility was a major cause of death, contributing to 18 percent of all deaths. Deaths caused by accidents, homicides, and suicides increased when compared to Round 3 (2002). Of all deaths, ninety-five percent were registered.

11. Health Behaviour

Sirinan Kittisuksathit

Health behaviours are defined as behaviours that may have positive or negative effects on physical and mental well being. This chapter examines food consumption, relaxation, sources of drinking water, consumption of addictive substances, and exercise. The analysis is restricted to the population aged 15-70 living in the Kanchanaburi field site communities. The chapter describes health behaviours based on the 2003 (Round 4) census and, where applicable, compares the behaviours with those observed in earlier years.

11.1 Consumption behavior and relaxation

11.1.1 Food consumption and relaxation

From the 2003 census, we can see that the population in the Uplands area had the highest proportion that ate spicy food (50 percent), with the population in the Urban/semi urban area the least likely to eat spicy food (38 percent). The percent of the population in the Rice, Plantation and Mixed economy strata that ate spicy food was 47, 45 and 42 percent respectively.

By comparing the 2001, 2002, and 2003, we can see clearly that the practice of eating spicy food has changed in every area. The habit of eating spicy food increased in 2002 but decreased in 2003 (Table 11.1). A similar trend can be observed for the proportions eating raw food, which was highest in 2002 but

decreased in 2003 in every area, except for the Plantation and Mixed economy strata, where there was no change.

Table 11.1 Percent of the population that consume spicy or raw food by strata and round

	Urban/ Semi-urban	Rice	Plantations	Uplands	Mixed Economy
Eating spicy food					
Round 2 (2001)	36.7	45.6	46.7	43.2	43.0
Round 3 (2002)	42.0	48.8	48.1	51.5	45.5
Round 4 (2003)	*37.6*	*46.5*	*45.0*	*50.2*	*42.0*
Eating raw food					
Round 2 (2001)	*1.6*	*2.8*	*3.3*	*2.7*	*3.3*
Round 3 (2002)	*2.1*	*2.9*	*4.9*	*6.9*	*3.1*
Round 4 (2003)	*1.6*	*3.9*	*2.7*	*2.7*	*3.0*

The modern lifestyle has affected the Thai diet. Based on the Round 3 (2002) results, we can see that the Urban/semi-urban population has the highest proportion that eats fast food (5 percent), followed by the Mixed economy, the Rice and the Plantation (2 percent), and finally the population of the Uplands stratum (1 percent). The proportions eating fast food had decreased in every area, with the exception of the Mixed economy stratum, by 2003 (Table 11.2).

Less than 20 percent of the population consume snacks, with decreases in the proportion in every area between 2002 and 2003. In the Rice stratum the decrease was from 23 percent to 16 percent, in the Urban/semi-urban stratum there was a fall from 22 percent to 16 percent, in the Plantation stratum a decrease from 21

percent to 12 percent, in the Uplands the decline was from 18 percent to 10 percent. In the Mixed economy stratum the decline was much smaller.

In contrast there were increases in the consumption of both health enhancing food and vitamins. Even with these increases, however, in 2003 less than 10 percent of the population consumed health enhancing food and less than 5 percent consumed vitamins. Levels of consumption were greatest among the population of the Urban/semi-urban stratum.

Table 11.2 Percent of the population that consume fast food, snacks, health enhancing food, and vitamins by strata and round

Food	Urban/ Semi-Urban	Rice	Plantations	Uplands	Mixed Economy
Fast food					
Round 3 (2002)	4.5	1.9	1.5	1.3	1.8
Round 4 (2003)	3.5	1.1	0.9	0.4	1.8
Snacks					
Round 3 (2002)	21.7	22.8	20.9	18.3	16.5
Round 4 (2003)	16.2	16.2	12.2	10.1	15.9
Health enhancing food					
Round 3 (2002)	4.9	1.1	0.9	1.2	2.1
Round 4 (2003)	6.5	1.3	2.5	0.9	5.3
Vitamins					
Round 3 (2002)	5.3	3.2	1.8	2.6	2.5
Round 4 (2003)	5.1	1.3	1.7	1.6	2.8

11.1.2 Sources of drinking water

Water is essential to the human body. Development has caused the availability of water to change especially as now there is competition in the industry with the widespread provision of bottled water. In this report, sources of drinking water are examined.

The population in the Urban/semi-urban area are the most likely to rely on bottled water for their drinking water (61 percent), followed by tap water (27 percent), underground water (11 percent), rain water (5 percent), carbonated drinks (4 percent), and other drinks (less than 1 percent). These results suggest that the drinking habit of the population in the Urban/semi-urban area have changed now that bottled water has been introduced to their lives instead of rain water and tap water. This is also to do with the development of the city as bottled water costs more money.

The sources of drinking water of the population of the Rice stratum is the most traditional, with rain water (77 percent), tap water (12 percent), bottled water (10 percent), carbonated drinks (4 percent), underground water (4 percent), and pond water (2 percent) comprising the main sources. Bottled water is third on the list, after rain water and tap water. Also the consumption of carbonated drinks in the Rice stratum is quite different to that of the population in the Urban/semi-urban stratum.

For the population living in the Plantation stratum, rain water is the most common source of drinking water (93 percent), followed by bottled water (5 percent), and other drinks (1-2 percent). There is very little bottled water drunk and it is also very encouraging to see that levels of consumption of carbonated drinks is low.

Almost 75 percent of the Uplands population drink rain water as their source of drinking water. This is followed by tap water and other drinks (both 16 percent), bottled water (5 percent), and other drinking water and pond water (both 5 percent). Carbonated drinks are drunk by the smallest segment of the population (less than 1 percent).

Approximately 56 percent of the population in the Mixed economy stratum drink rain water, while 25 percent rely on bottled water, 16 percent drink tap water, 11 percent drink underground water, and only 2 percent drink carbonated drinks. (See Table 11.3)

Table 11.3 Percentage distribution of source of drinking water by strata: Round 4 (2003)

Type of Drink	Urban/ Semi-Urban	Rice	Plantation	Uplands	Mixed Economy
Rain Water	5.2	77.0	93.2	73.5	55.5
Tap Water	27.1	12.0	4.5	16.2	15.9
Pond Water	0.2	1.6	1.0	5.0	0.7
Underground water	11.3	3.8	1.7	0.4	11.4
Carbonated drinks	4.3	4.0	1.3	0.3	1.6
Bottled Water	61.4	10.2	5.4	4.5	24.9
Other Drinks	0.2	0.2	1.0	15.5	0.7

11.2 Exercise

Regular exercise leads to a healthier life and helps prevent illnesses and diseases. Thai people are becoming more involved in exercise due to encouragement by the government and non-government sectors. This analysis explores the prevalence of 6 forms of exercise: running, jogging, aerobics, tai chi, sports and normal

exercise. Results collected in the 2003 census show that running is more popular in the Urban/semi-urban and Mixed economy areas than in the other strata. About 25 percent of the population in the Urban/semi-urban and Mixed economy areas exercise by running however, only 20 percent of the population in the Plantation areas, 18 percent of the Uplands areas, and 11 percent of the Rice areas exercise by running.

The censuses conducted in 2002 and 2003 show similar results. There was an increase in the proportions running in the Urban/semi-urban, Plantation and Mixed economy strata, but decreases in the rice and uplands strata (see Table 11.4).

The proportions participating in jogging is low. Only 8 percent of the Urban/semi-urban population, 5 percent of the Mixed economy, and 2 percent of the Plantation, Rice and Uplands strata jog. Although there has been an increase in the prevalence of jogging in almost all strata, the overall level remain low.

From the individual censuses conducted in 2002 and 2003 we can see that there is an increase in jogging in every area except for the population in the Uplands area. Similar to the running results, the population in Urban/semi-urban and Mixed economy strata do more jogging than the others.

Although only a small proportion of the population engage in aerobics, that proportion is increasing. In 2003, 15 percent of the population in the Urban/semi-urban stratum engaged in aerobics. This is probably due to encouragement from the government, the public health industry and many sports clubs. This is apparent in the mornings and afternoons as there are many places that hold aerobics sessions for all age groups. Only 1 percent of the Urban/semi-urban population, and an even smaller proportion of the population in other strata, practice Tai Chi.

Regular participation in sports such as football and Takraw is the most popular form of exercise, with 70 percent of the population in the Rice stratum, 69 percent of the population in the Uplands stratum, 70 percent of the Plantation stratum population, 48 percent of the Mixed economy stratum population and 42 percent of the population of the Urban/semi-urban stratum participating in sports. Between 2002 with the 2003 there generally was an increase in the proportions of the population engaging in sport

Table 11.4 Percent of the population that take part in selected forms of exercise by strata: Rounds 3 (2002) and Round 4 (2003)

Type of exercise	Urban/ Semi-Urban	Rice	Plantation	Uplands	Mixed Economy
Running					
Round 3 (2545)	25.6	21.1	18.0	19.3	24.7
Round 4 (2546)	26.2	11.0	19.9	17.6	25.6
Jogging					
Round 3 (2002)	6.5	1.0	0.9	4.3	3.9
Round 4 (2003)	7.5	1.7	1.7	1.6	4.9
Aerobics					
Round 3 (2002)	8.6	2.1	1.4	1.8	2.5
Round 4 (2003)	14.8	5.8	3.5	3.8	5.7
Tai chi					
Round 3 (2002)	0.3	0.0	0.0	0.3	0.3
Round 4 (2003)	0.8	0.0	0.0	0.0	0.0
Sports					
Round 3 (2002)	45.2	59.5	73.3	65.5	55.5
Round 4 (2003)	41.7	70.4	66.9	68.8	47.9
Normal Exercise					
Round 3 (2002)	21.0	13.4	9.3	14.4	16.3
Round 4 (2003)	13.3	11.7	12.1	12.2	19.8

Approximately 32 percent of the Urban/semi-urban area adult population undertake regular exercise at free spaces in their homes, while 31 percent exercise at places close to their homes, 18 percent exercise at government sports clubs, 5 percent at public sports clubs, and only 10 percent do regular exercise at a public park. In the Rice stratum, 60 percent exercise at home and 21 percent exercise close to their homes, while 56 percent of the Plantation population exercise at home and 26 percent exercise close to their homes. Among the persons undertaking regular exercise in the Uplands population, 32 percent exercise at home, 21 percent close to their homes and 18 percent exercise at government sports clubs. Sixty percent of the Mixed economy population do their exercise at home, 39 percent close to their homes and 13 percent at local sports clubs. (See Table 11.5)

Table 11.5 Percentage distribution of the main location for exercise of the respondents that do regular exercise by strata (Round 4, 2003)

Venues for exercise	Urban/ Semi-Urban	Rice	Plantation	Uplands	Mixed Economy
Home	30.8	21.0	25.9	20.1	38.5
Public Parks	9.9	0.3	2.0	0.5	4.8
Local Sports Clubs	0.5	0.3	0.3	0.0	0.0
Space at Home	31.9	59.8	56.2	31.9	59.8
Village Clubhouse	3.5	13.1	6.6	3.5	13.1
Public Sports Clubs	5.2	1.4	2.0	5.2	1.4
Government Sports Clubs	17.7	3.8	6.6	17.7	3.8
No answer	0.4	0.3	0.3	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0

11.3 Consumption behaviour affecting health status

The Round 4 (2003) census explored the consumption of potentially addictive substances that could affect the health of the study population. The analysis explore levels of smoking, and use of alcohol, beer, wine, herbal liquor, energy beverages and canned coffee and pain relievers. The frequency of consumption of these products is considered as indicators of risk behaviour. There are 3 levels of consumption. 1) No consumption 2) Infrequent consumption 3) Frequent consumption.

11.3.1 Smoking

The highest rate of smoking was among the Uplands population (48 percent) and the lowest rate was observed for the Urban/semi-urban stratum (20 percent). Among smokers, most used cigarettes on a daily basis, with those in the Uplands stratum smoking most frequently (48 percent) (See Table 11.6).

11.3.2 Beer Consumption

More than two thirds of the population in all strata reported that they did not drink beer during the previous year. The highest level of often or daily consumption was among people living in the Rice stratum (11 percent) followed by the Urban/semi-urban stratum (10 percent). However, the highest rate of beer consumption (not daily) was among the population of the Plantation (44 percent) and Urban/semi-urban strata (39 percent) (See Table 11.6).

11.3.3 Alcohol Consumption

Two thirds of respondents did not consume liquor during the previous year. For liquor drinkers, people living in the Uplands stratum were the most likely to infrequently drink (28 percent), while the level of often or daily consumption was similar among people in all strata, with 13 percent of adults living in the Plantation, Mixed economy, and Urban/semi-urban strata reporting that they frequently drink alcohol, while 10 percent of people in the Plantation and Rice strata reported this level of risk behaviour (See Table 11.6).

11.3.4 Wine

Less than 1 percent of the population in all 5 strata drink wine daily, while 16 percent of the Urban/semi-urban population drink wine occasionally, which is the highest level of wine drinking. The lowest rate of wine drinking was observed in the Rice stratum, where 9 percent drank wine occasionally (See Table 11.6).

11.3.5 Herbal liquor

With the exception of the Uplands stratum, less than 10 percent of the adult population reported consuming herbal liquor. About 3 percent of people living in the Uplands and Mixed economic strata reported they often or daily drank this kind of liquor (See Table 11.6).

11.3.6 Energy drinks/energy beverages

Less than 20 percent of the population in all study areas reported that they had consumed energy beverages, which typically contain a high level of caffeine, during the previous year. Persons living in the Uplands stratum were the most

likely to frequently consume energy drinks (15 percent) while those living in the Plantation stratum were the least likely to consume these drinks (7 percent). People living in Urban/semi-urban stratum displayed the highest rate of often or daily drink energy beverages (9 percent) (See Table 11.6).

11.3.7 Canned coffee drinks

The majority of the population in all strata reported that they had not drunk canned coffee during the previous year. Among those who reported they engaged in this behaviour, the percent reporting frequent (often/daily) use was lower than the percentage reporting infrequent use. The highest frequency of consumption was for persons living in the Rice stratum (See Table 11.6).

11.3.8 Pain relievers

The majority of the population in all stratum reported that they did not consume pain relievers during the previous year. However, among those who reported consumption of pain relievers, the percentage reporting frequent (often/daily) and infrequent use was similar. The highest frequency of use was for persons living in the Urban/semi-urban, Mixed economy and Rrice strata (3 percent) (See Table 11.6).

Table 11.6 Percentage distribution of health risk consumption behaviour by strata : Round 4 (2003)

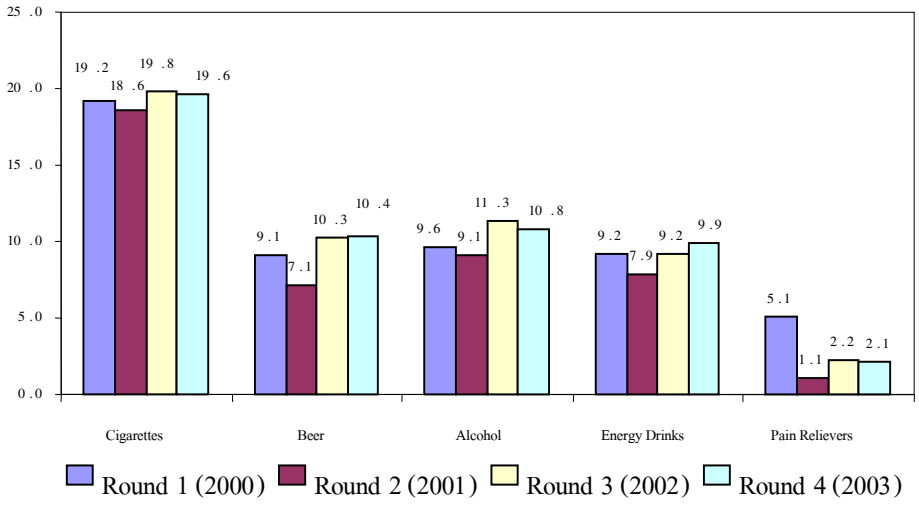
Consumption	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy
Cigarettes					
Never	78.9	75.0	71.4	50.8	72.9
Infrequently (rarely)	1.3	1.3	1.5	1.5	1.6
Frequently (often/daily)	19.8	23.7	27.1	47.7	25.5
Beer					
Never	71.2	67.2	70.0	67.4	72.5
Infrequently (rarely)	18.5	26.1	24.0	28.1	20.2
Frequently (often/daily)	10.3	6.7	5.9	4.4	7.3
Alcohol					
Never	66.4	67.0	62.5	60.0	64.2
Infrequently (rarely)	22.8	19.7	27.1	27.8	23.9
Frequently (often/daily)	10.8	13.3	10.4	12.1	11.9
Wine					
Never	82.9	90.4	86.7	89.5	84.2
Infrequently (rarely)	16.3	9.3	12.9	10.2	15.3
Frequently (often/daily)	0.8	0.3	0.4	0.2	0.5
Herbal Liquor					
Never	84.7	83.7	79.5	83.6	80.1
Infrequently (rarely)	14.9	15.6	20.0	15.8	19.2
Frequently (often/daily)	0.4	0.7	0.5	0.6	0.7
Energy Drinks/Beverages					
Never	84.8	84.5	77.9	74.8	78.6
Infrequently (rarely)	12.6	13.2	19.7	20.5	17.2
Frequently (often/daily)	2.7	2.2	2.4	4.7	4.2
Canned Drinks					
Never	73.2	69.6	67.3	69.9	67.9
Infrequently (rarely)	16.9	16.0	24.0	23.4	21.6
Frequently (often/daily)	9.9	14.4	8.7	6.7	10.5
Pain Relievers					
Never	83.8	82.6	81.5	88.5	82.7
Infrequently (rarely)	11.8	9.5	13.2	8.8	12.7
Frequently (often/daily)	4.4	7.9	5.3	2.7	4.6

11.4 Consumption behaviour over time

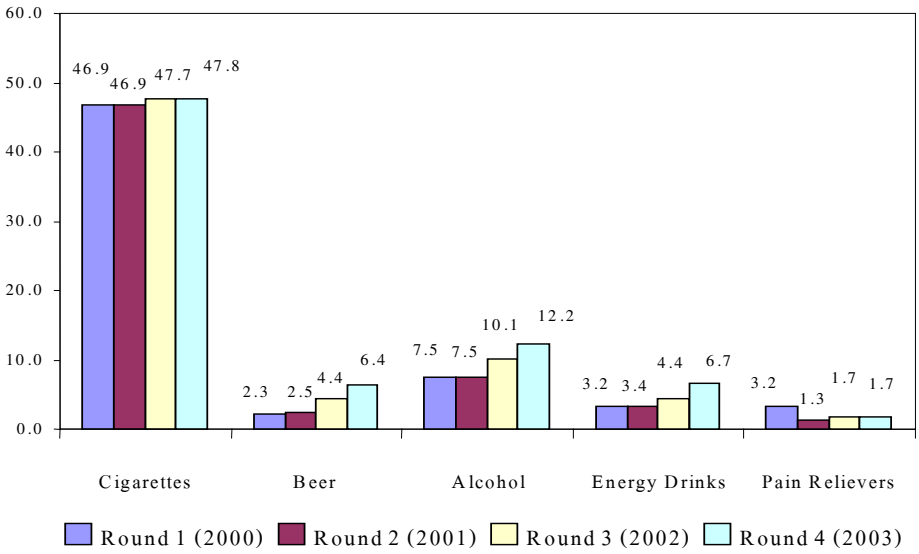
By comparing the results of the consumption behaviour of each round from Rounds 1 – 4, it was found that there was no change in the prevalence of smoking in the Urban/semi-urban area (19 percent). The prevalence of beer consumption fluctuated across the 4 rounds, although variation was not great. The highest level was reached in Round 4, when 10 percent of the population reported drinking beer. A similar situation can be observed for the consumption of other types of alcoholic beverages, with approximately 11 percent of the population in Round 4 reporting drinking alcoholic beverages. The consumption of energy drinks increased over the four rounds in the Urban/semi-urban stratum, while the consumption of pain relievers, already at a very low reported level appears to be decreasing in this stratum.

The four other panels of Figure 11.1 show changes in consumption over the four rounds for each of the other four strata. The results for the other strata are generally similar to those described above for the population living in the Urban/semi-urban stratum. However, there are also differences. Levels of smoking are by far the highest among the population in the Uplands, in all strata there has been little change in the percent of the population who are smokers.

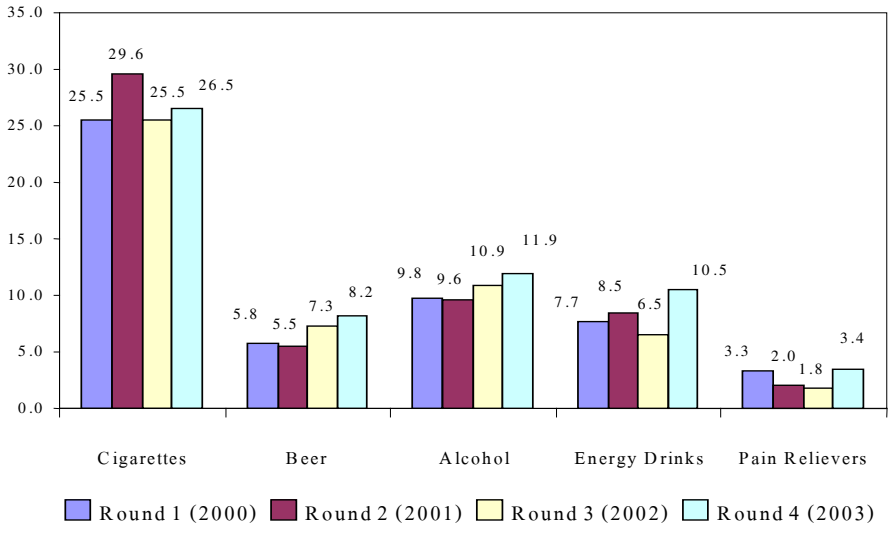
Urban/Semi-urban



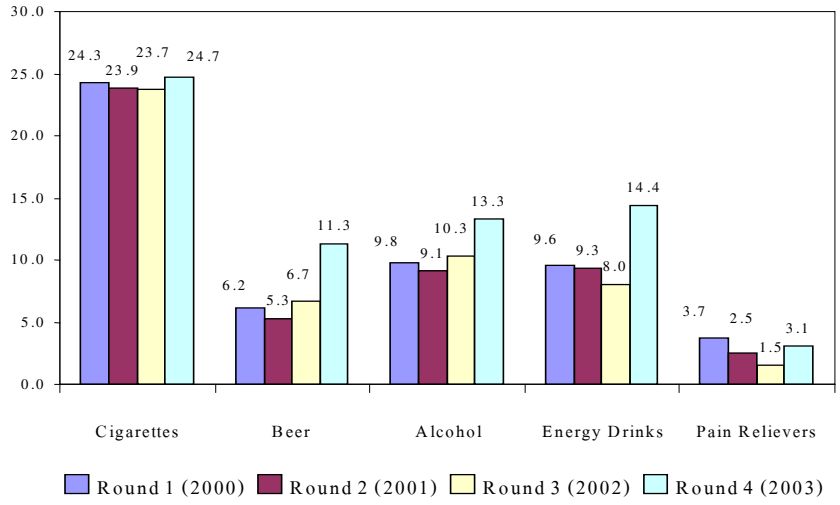
Uplands



Mixed Economy



Rice



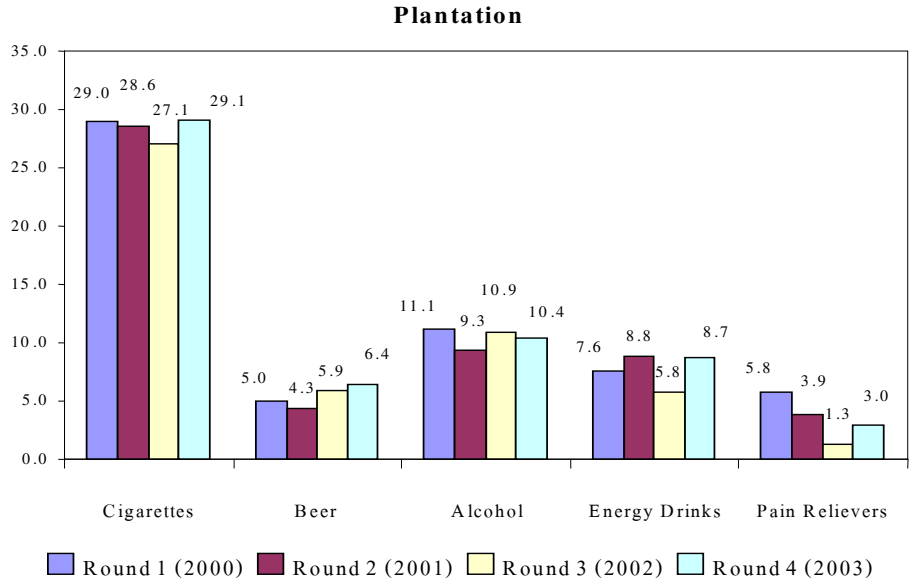


Figure 11.1: Percent consuming selected items in each stratum: by census round

In all stratum, the proportion of the population consuming beer, other alcoholic beverages and energy drinks appears to be increasing, while the proportion using pain relievers is decreasing. The trends are least apparent in the Plantation stratum.

11.5 Summary

The results described in this chapter present a contradictory view of the health behaviour of the adult population of the Kanchanaburi DSS. While higher proportions are eating more unhealthy foods, a higher proportion are also consuming vitamins and health enhancing food. Increased development is probably responsible for both of these trends. Increased incomes and less free time means

that consumption of fast food is on the increase, while increased awareness of the importance of a healthy life style leads to greater consumption of vitamins.

Bottled water is the main source of drinking water in the Urban/semi-urban stratum and is becoming more popular in the Mixed economy and Rice strata. Exercise is most common among the population of the Urban/semi-urban and Mixed economy strata running is the most popular form of exercise and is becoming more popular areas than in the other strata. Both running and aerobics are most widely practiced in the Urban/semi-urban and Mixed economy strata. Team sports have higher levels of participation in the Rice, Plantation and Uplands strata. The most popular exercise venue is space around the house or inside the house. This is followed by public parks and sports clubs.

Health risk behaviour includes the daily consumption of alcohol/beer and cigarettes. Significant proportions of the population in all 5 strata engage in these behaviours. Furthermore, the evidence from a comparison of the four census rounds suggests that the consumption of many of these addictive substances is increasing.

12. Persons with Disabilities

Pimpa Kachondham

12.1 The concept and definition of "persons with disabilities"

During the past two decades, there has been an increase in the level of interest and concern about disability in many countries. This has resulted in a rise in the demand for data on persons with disabilities. Policy makers, program managers and relevant organizations need reliable and accurate data to plan for the provision of health-care, educational and social services to meet the needs of disabled persons. However, there is still no uniform consensus on how to define persons with disabilities. The lack of a coherent concept is a major obstacle for comparison of statistics on persons with disabilities among various surveys, even within the same country. Many workshops on statistics related to persons with disabilities have been conducted to share ideas and to try to find a common agreement on definitions. The World Health Organization has set up the task force on this issue and had issued a classification called the International Classification of Impairments, Disabilities, and Handicaps (ICIDH) in 1980[1]. A goal of ICIDH was to replace the unstandardized and often pejorative terms used to refer to people with disabilities with more precise, objective and internationally recognized terminology.[2] This concept has been adopted by many countries worldwide and is currently being revised by adding some positive dimensions such as activity and participation, along with including an environmental context.

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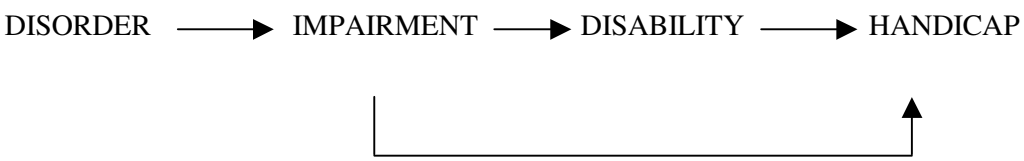
1 WHO (1980). International Classification of Impairments, Disabilities and Handicaps.

2 United Nations (1996). Manual for the Development of Statistical Information for Disability Programmes and Policies.

This revised version, the International Classification of Functioning, Disability and Health (ICF), is in the pilot stage in many countries.

The ICIDH scheme:

DISEASE or



Impairment: In the context of health experience, an impairment is any loss or abnormality of psychological, physiological, or anatomical structure or function.

Disability: In the context of health experience, a disability is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.

Handicap: In the context of health experience, a handicap is a disadvantage for a given individual, resulting from an impairment or a disability, that limits or prevents the fulfillment of a role that is normal (depending on age, sex, and social and cultural factors) for that individual.

The WHO concept has been widely accepted and adopted in many countries, particularly as the conceptual framework for developing survey instruments. However, different dimensions of this WHO recommendation are employed and used for survey questionnaires depending on how people in a society regard who is a person with a disability. This difference in preferences contributes to variations in estimates of the disabled. Many countries focus on the concept of

'impairment' as the way to define persons with disabilities. Accordingly, the survey questions focus on impairment of the body part or abnormality of the mind. The survey questions usually ask whether anyone in the household is blind or deaf, mute, loss of limb, loss of any fingers or is insane. On the other hand, some countries prefer a different aspect of the WHO recommendation by focusing on limitations of activities. This disability- oriented approach usually asks whether anyone, because of chronic health conditions, has a difficulty or limitation in undertaking major activities such as performing activities of daily living, learning, working or participating in social activities. The United Nations has collected statistics of persons with a disability from various countries around the world and found a large variation in reported prevalence rates of disability, ranging from 0.2 to 20.9 percent[3]. The high degree of variation in prevalence rates is due in part to differences in definitions and aspect of disability deployed in the survey questions, impairment or disability dimension. Prevalence rates of persons with disabilities among countries using a disability oriented approach such as the United States of America, Canada, OECD countries, Australia and New Zealand were high, ranging from 7.1 to 20.9 percent. In contrast, prevalence rates of disability among countries adopting an impairment approach, such as most Asian countries, including Thailand, are much lower, ranging from 0.2 to 5 percent.

This discrepancy was largely due to the broader coverage of disability oriented questions. For example, some questions about limitations in daily activities such as " Is..... limited or having difficulty in walking up a flight of stairs or stooping?" would cover a broader group of people including those whose disability were obvious such as people who had incomplete use of limbs from various causes as polio or accident and those whose disability were insidious such

[3] United Nations (1990). Disability Statistics Compendium.

as people who had chronic health condition that made them frail. While questions concerning impairment such as "Is.....blind or deaf or insane?" were more specific and would cover only people whose disability were either severe or explicit. Furthermore, people would feel more comfortable to discuss whether they have difficulty walking upstairs or bending down, than to talk about their abnormality in physical appearance.

In Thailand, surveys of persons with disabilities have been conducted many times by various organizations and yielded different prevalence rates. The National Statistical Office is the main organization that is responsible for conducting national surveys. Disability was included as part of the Health and Welfare Surveys, usually conducted every five years. Most of the survey questions were impairment oriented. The prevalence rates of persons with disabilities ranged between 1.7 –1.8 percent.[4] Another national survey on health and disability was conducted by the Health Research Institute in 1996. The survey questions included both impairment and disability aspects and yielded an estimate of 6.3 percent of the population, excluding persons with psychiatric or behavior disability and persons with intellectual disability[5].

12.2 Disability among the population in the Kanchanaburi study area

The scope of this study covered only persons aged 15 years and over who resided in the Kanchanaburi study area. The census instrument was the questionnaire developed by the research team and face-to-face interview technique was used for data collection. The study population was 28,873, of which 13,188 were male

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4 National Statistical Office (1991, 1996, 2001). Report of the Health and Welfare Survey.

5 Health research Institute (1996). Report of the First Health Interview and Examination Survey of the Population during 1995- 1996.

and 15,685 were female. From the study population, it was found that about 4,213 persons (14.6 percent) reported that they had some chronic health condition that had lasted at least 6 months. However, in order to define who were persons with disability, this study followed the WHO guideline by focusing on disability. A person was identified as having a 'disability' by the census if he/she reported having difficulty or limitation in performing one or more of these core activities: (1) self-care (2) mobility and (3) communication. A person was also identified as having a 'disability' if he/she reported having a problem with seeing. Self-care activities or activities of daily living (ADL) included 4 functions: eating, using the toilet and managing care, bathing and dressing, and grooming. Mobility activities included 6 functions: moving around inside the house, stooping, standing about 20 minutes, walking up 1 flight of stairs, lifting about 5 kg., and grasping small objects such as a spoon or a pen. Communication limitations included difficulty in hearing conversations, understanding speech or being understood by others besides ones own family.

Persons with disabilities were categorized into 3 groups: (1) persons with physical disabilities, which covered people who had a difficulty or limitation in performing one or more of self-care activities and people who had any kind of mobility problems, (2) persons with visual or seeing disability, and (3) persons with hearing or communication disability, which covered people who had a hearing or speaking problem. People with psychiatric/psychologial or behavioral disability and intellectual disability were not included in this study.

12.2.1 Results of the study

The study found that among the study population aged 15 years and over, there were 2,406 persons (8.3 percent) who reported having one or more type of disability. There was no difference between males and females in level of disability. The highest proportion of disabilities was physical disabilities with a rate of 5.2 percent, followed by visual disabilities (5 percent) (Table 12.1).

Table 12.1 Number and percentage distribution by disability type*

Type of Disabilities	Number			Percent		
	Male	Female	Total	Male	Female	Total
Physical Disabilities	679	819	1,498	5.1	5.2	5.2
Visual Disabilities	677	775	1,452	5.1	4.9	5.0
Communication Disabilities	227	294	521	1.7	1.9	1.8
Total	1,108	1,298	2,406	8.4	8.3	8.3

Note * Individuals may have more than one type of disabilities

When the data was analyzed by age group, there was little difference among various age group (Table 12.2). The disability rates ranged from 6.8 to 9.7 percent. However, the 40 – 49 years group seemed to have the highest rate of disabilities (6.7 percent), followed by the 40 – 44 years group (9 percent). The disability rate among the elderly group (60 years and over) was 7.7 percent, which was lower than the 40 – 49 years old group. This unexpected finding was probably due to the census methodology since the study covered only people who resided in the study area and excluded those who migrated to work or to study outside the area. Studies have found that migrants are likely to be younger and healthier than people who stayed in the area. People who were not so healthy are disadvantaged in seeking opportunities for working at other places, thus were more likely to stay at home. Another reason that could explain the lower rate of

disability among the elderly group is the nature of questions asked. Most of the questions were self- assessment of one's own function about daily activities. Older Thai people might regard that having difficulty in doing these activities was part of the normal aging process, and thus considered themselves as having no problem.

Table 12.2 Number and percentage of population with disabilities by age group and sex

Age	Total Population			Number of Persons with Disabilities			Percentage		
Group	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-19	1,212	1,309	2,521	110	104	214	9.1	7.9	8.5
20-24	1,009	1,154	2,163	78	94	172	7.7	8.1	8.0
25-29	1,296	1,606	2,902	112	148	260	8.6	9.2	9.0
30-34	1,496	1,764	3,260	120	128	248	8.0	7.3	7.6
35-39	1,529	1,916	3,445	126	156	282	8.2	8.1	8.2
40-44	1,506	1,784	3,290	145	150	295	9.6	8.4	9.0
45-49	1,320	1,609	2,929	123	160	283	9.3	9.9	9.7
50-54	1,113	1,238	2,351	97	105	202	8.7	8.5	8.6
55-59	722	922	1,644	48	64	112	6.6	6.9	6.8
60+	1,985	2,383	4,368	149	189	338	7.5	7.9	7.7
Total	**13,188**	**15,685**	**28,873**	**1,108**	**1,298**	**2,406**	**8.4**	**8.3**	**8.3**

12.2.2 Type of disabilities

Three types of disabilities were covered in the study: (a) persons with physical disabilities, (b) persons with visual disabilities, and (c) persons with hearing or communication disabilities.

(a) Persons with physical disabilities

This type of disability comprised the largest group of disabled persons. Among the study population who were 15 years and over, it was found that 1,498 persons or 5.2 percent of the study population reported having difficulty in doing one or more daily activities. This group could be divided into 2 groups, people who had a problem in self-care or activities of daily living (ADL disabilities) and people who had a mobility problem. The former group was considered more severe than the later group because activities of daily living are the most basic activities essential for living independently. Thus, if any person had a problem with self-care, this could lead to dependency and they would need support from other people.

(1) Persons with ADL disabilities

This group was comprised of people who reported having difficulty in doing one or more of these daily activities: eating, toilet and managing care, bathing/dressing and grooming. The prevalence rate of this type of disability was low among young population and increased with age. In this study, about 341 persons or 1 percent of the study population reported having some difficulty in doing one or more of these daily activities. No difference was found between males and females. People reported having most difficulty in toilet and managing care, followed by bathing and dressing, grooming and eating. From Table 12.3,

an unexpected finding is that ADL disability rates among the elderly are only 1.3 percent which is slightly lower than for the 40 - 49 years old age group (1.4 percent).

Table 12.3 Number and percentage distribution of population with ADL disability by age group

Age Group (years)	Total Population	Population with ADL Disability	
		Number	Percent
15-19	2,521	30	1.2
20-24	2,163	22	1.0
25-29	2,902	29	1.0
30-34	3,260	34	1.0
35-39	3,445	45	1.3
40-44	3,290	46	1.4
45-49	2,929	40	1.4
50-54	2,351	27	1.2
55-59	1,644	13	0.8
60+	4,368	55	1.3
Total	**28,873**	**341**	**1.2**

When looking at the need for personal assistance, which is an implicit indication of the severity of the problem, only 165 persons reported needing help from other people to do these activities. The rest, though having some difficulty, could manage to do these activities by themselves. Most of the care-providers were a spouse, offspring, or a mother. The leading cause of difficulty was chronic musculo-skeletal conditions that resulted in muscle stiffness/weakness, pain or paralysis.

(2) Persons with mobility problems

A person was identified as having a 'mobility disability' if he/she reported having a problem in performing one or more of these 6 functions: moving around inside the house, stooping, standing about 20 minutes, walking up 1 flight of stairs, lifting a weight of about 5 kg., and grasping a small object such as a spoon or a pen. Although these 6 functions were not the activities considered essential for living, like the ADL, limitations in the ability to perform these functions could impede persons from participating in social activities. Furthermore, a mobility problem would be the major obstacle for these people to go out and enjoy social life with other people because the environment is not designed and built to facilitate access to people with a mobility limitation. This type of disability was the most commonly reported disability. The result in Table 12.4 indicated that there were 1,459 persons (5.1 percent) who had a mobility problem. No difference between men and women was found. The age group that seem to have the highest level of this problem were 50- 54 years, 45 – 49 years and 20 – 24 years with the rates of 5.8 – 5.6 percent. It was noticeable that, the disability rate in the oldest age group was only 4.7 percent which was lower than those found in the working-age groups.

Activities that people reported having problems, listed from high to low, are as follows: lifting a weight 5 kg., stooping, standing about 20 minutes with the rate of 3 percent. Problems in climbing stairs and moving around inside the house were reported by 2 percent of the study population, while a limitation in hand dexterity was reported by only 1 percent.

The leading causes of these limitations were chronic health conditions related to muculo-skeletal disorders such as knee-joint pain, leg pain, muscle stiffness, muscle weakness, pararelis and paralysis, back pain, and missing or broken limb.

Table 12.4 Number and percentage distribution on population with mobility problem

Age	Number			Percent		
Group	Males	Femal	Total	Males	Females	Total
15-19	61	58	119	5.0	4.4	4.7
20-24	55	67	122	5.5	5.8	5.6
25-29	64	84	148	4.9	5.2	5.1
30-34	73	82	155	4.9	4.6	4.8
35-39	76	92	168	5.0	4.8	4.9
40-44	87	86	173	5.8	4.8	5.3
45-49	70	99	169	5.3	6.2	5.8
50-54	67	68	135	6.0	5.5	5.7
55-59	27	36	63	3.7	3.9	3.8
60+	84	123	207	4.2	5.2	4.7
Total	664	795	1,459	5.0	5.0	5.1

(b). Persons with visual impairment/disability

Individuals were categorized as having a visual impairment or disability if they reported having a problem in one or more situations, even with corrective lens/eye glasses: seeing things, seeing normal print size (about 16 point), seeing anybody's face across the street (about 4 metre distance). These type of limitation was the second most frequently reported among the study population. The study indicated

that 1,452 persons, or about 5 percent of this population, had a problem with their eyesight. Men seemed to be more likely to have a problem than women (5.1 percent in men compared with 4.9 percent in women). Most of the people complained about not being able to see things clearly, which was considered as 'low vision'. Only 43 persons were totally blind. It was noteworthy that many causes of visual impairment were preventable or curable if early diagnosis and treatment was received such as cataract, pterygium, trachoma and glaucoma.

When looking across age groups, the highest rate of visual disability was found among the age groups of 25 – 29 and 45 – 49 years with a prevalence rate of 5.9, while the rate in the oldest age group was only 4.5 percent.

Table 12.5 Number and Percentage distribution of population with visual disability

Age	Number			Percentage		
(years)	Male	Female	Total	Males	Female	Total
15-19	67	70	137	5.5	5.3	5.4
20-24	47	54	101	4.7	4.7	4.7
25-29	74	98	172	5.7	6.1	5.9
30-34	69	77	146	4.6	4.4	4.5
35-39	79	87	166	5.2	4.5	4.8
40-44	95	88	183	6.3	4.9	5.6
45-49	75	98	173	5.7	6.1	5.9
50-54	57	57	114	5.1	4.6	4.8
55-59	26	37	63	3.6	4.0	3.8
60+	88	109	197	4.4	4.6	4.5
Total	677	775	1,452	5.1	4.9	5.0

(c). Persons with hearing or communication disability

The term 'communication disability' covers two aspects of functions, hearing function and speaking function. Both functions are connected. People who have a hearing impairment usually develop speaking problems especially those who have severe hearing loss (profound hard-of-hearing and deaf). This is because a person needs to hear their own voice or other people's voices in order to form speech and language to communicate with other people. Thus when a person loses their hearing ability, his/her own voice will usually be distorted and result in 'unintelligible speech'. However, communication problems can happen in a person with normal hearing but who has some dysfunction in other organs, such as persons who have severe intellectual impairment, persons who has brain damage resulting from a stroke or brain injury that involved the speech function area.

The study revealed that there were 521 persons (1.8 percent) with a communication disability. No difference was found in prevalence between males and females. The highest rate was found in the 45 – 49 age group (2.3 percent), followed by the 40 –44 age group.

When looking at specific functions, persons in this group were categorized into 2 subgroups, persons with a hearing impairment and persons with a speaking or communication impairment.

1. **Persons with a hearing impairment.** People was categorized into this group if he/she reported having a problem in hearing what other people speak or shout. This study found that this group comprised of 367 persons, 210 females and 157 males, or only 1 percent of the study population (data not shown). The majority of them were hard-of–hearing and only 36

persons were considered 'deaf'. The main causes of hearing impairment were old age, followed by unknown/undiagnosed diseases.

Table 12.6 Number and percentage distribution of population with hearing or communication disability

Age Group	Number			Percentage		
(years)	Males	Females	Total	Males	Females	Total
15-19	27	25	52	2.2	1.9	2.1
20-24	24	18	42	2.4	1.6	1.9
25-29	19	22	41	1.5	1.4	1.4
30-34	21	25	46	1.4	1.4	1.4
35-39	16	41	57	1.0	2.1	1.7
40-44	36	36	72	2.4	2.0	2.2
45-49	27	40	67	2.0	2.5	2.3
50-54	18	25	43	1.6	2.0	1.8
55-59	11	16	27	1.5	1.7	1.6
60+	28	46	74	1.4	1.9	1.7
Total	227	294	521	1.7	1.9	1.8

2. **Persons with a communication disability.** People were categorized into this group if he/she has difficulty understanding what other people said or being understood by other persons. The number of persons identified in this group was 351, or 1 percent of the study population, which was similar to the hearing-impaired group (data not shown). No difference was found between men and women. The leading causes of the problem were hearing loss and some pathology in the brain such as brain damage and mental retardation. Most of this impairment occurred at a young age from unknown/undiagnosed diseases that caused damage in the speech area of the brain. Old age was also found to relate to communication impairment.

However, when looking in detail, there were only 196 persons who had both hearing and communication problems. People who had only a hearing problem were 196 persons while there were only 154 persons with a communication problem (data not shown).

12.3 Summary

This study on persons with disabilities covered the population aged 15 and over who resided in the study area in Kanchanaburi province during the period of data collection. Disabilities were categorized into 3 types: physical disability, visual disability, and hearing and communication disability. The result of the study revealed that about 8 percent of the study population had one or more disabilities. This study yielded a higher prevalence rate than the rates from national surveys conducted by the National Statistical Office. This finding could be mainly explained by the difference in definition employed in this census. The definition of persons with disabilities in the national surveys focus on impairment aspect of the persons while this survey focused on functional aspects as recommended in the WHO and UN guidelines. Physical disability was the most prominent problem in this study population. The main cause of this disability was from chronic health conditions related to musculo-skeletal condition. The second most prevalent problem was visual disability. However, most of those with visual disability had some sight, and only a few persons were completely blind. Most of the conditions that caused this disability were preventable or curable if early diagnosis and treatment were provided. Hearing and communication disabilities affected only 1 percent of the study population, with most people in this group having only one condition, either hearing impairment or communication impairment.

It was unexpected to find that disability rate in the age group of 45 – 49 years old was about 10 percent, which was higher than that found for the oldest group. The reason might be related to the methodology of data collection used in this census. The data was collected from persons who resided in the area during the data collection period. Research about migration has found differences in characteristics between people who migrate and people who stay. Migrants are usually healthier than those who stay. Another reason might be that the questions asked were self-assessment about health-related conditions, thus many elderly people could view these conditions as part of the aging process and were not considered as an abnormality.

This study had some limitations. One was the coverage of population, which included only the population aged 15 years and over. The second limitation was that only some types of disabilities were covered. Persons with mental disability and intellectual disability were not included because these two types of disabilities were difficult to identify. The screening questions need to be seriously tested for validity before they are employed in order to minimize error.

13. Experiences and Perceptions Towards the Care and Support of the Elderly

Yupin Vorasiriamorn

There is an increasing trend for Thai elderly to be separated from their families due to rapid changes in socio-economic development and population structure. The objectives of this study are to explore the relationships within the family between the elderly and family members, to describe the characteristics of caregivers, and to explore their experiences and perceptions towards care and support of the elderly.

The questions used for this study were included in the individual questionnaire of the Kanchanaburi DSS and responses were obtained from every individual aged 15 and over who had experience in providing care and support for an elderly person within the 5 years from the year 2000-2004.

The elderly refers to the population aged 60 and over. Based on the relationship between elderly and their caregiver, the elderly in this study includes 3 groups : elderly parents, closely related elderly and all other elderly.

13.1 Socio-economic and demographic characteristics of caregivers

The census data reveal that 5,106 respondents (about 18 percent) of the total individual respondents of 28,873* had experienced providing care and support to elderly within the previous 5 years. About 75 percent of them provided care and

support for one elderly person, 24 percent provided care and support of two elderly persons and only one percent took care of three elderly. The proportion of caregivers who care for more than one elderly person was high in the Rice stratum (Table 13.1).

Table 13.1 Percentage distribution of caregivers classified by number of elderly provided with care and support and strata

Number of cared Elderly	Urban / Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
1 person	75.4	71.0	77.5	77.6	73.6	75.0
2 persons	23.8	27.0	21.7	21.3	25.4	23.9
3 persons	0.8	2.0	0.7	1.1	1.0	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	1,303	818	837	964	1,184	5,106

A higher proportion of caregivers were female than male (about 58 percent female and 42 percent male) in the Rice and Urban/semi-urban strata. In the Uplands stratum, there were more males than females providing care to the elderly. About two-thirds of caregivers were aged 30-49 (66 percent) which was similar in all strata (Table 13.2).

* this number included the respondents whose their parents were died and those respondents who had parents aged less than 60 years old.

Table 13.2 Percentage distribution of caregivers classified by sex, age, marital status, educational attainment and strata

Characteristics of Caregivers	Urban / Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Sex						
Male	40.7	37.5	44.3	45.1	43.9	42.4
Female	59.3	62.5	55.7	54.9	56.1	57.6
Age						
15-19	3.9	3.7	3.1	3.6	3.0	3.5
20-24	4.8	4.2	3.8	6.1	5.1	4.9
25-29	8.5	9.9	10.0	10.6	8.8	9.4
30-34	14.7	14.9	14.2	17.3	14.4	15.1
35-39	18.6	18.5	18.4	18.2	18.6	18.4
40-44	18.8	19.4	19.7	18.0	18.7	18.9
45-49	14.4	12.8	15.7	13.2	13.8	14.0
50-54	9.4	8.7	9.0	7.2	9.8	8.9
55-59	4.2	4.3	3.1	3.7	4.5	4.0
60+	2.8	3.7	3.0	2.1	3.4	3.0
Marital status						
Single	21.9	22.9	12.9	12.9	17.1	17.8
Married	67.4	66.7	79.1	79.1	74.9	73.2
Widowed	4.1	4.8	3.2	3.0	3.1	3.6
Divorced	2.2	0.5	0.5	0.6	0.7	1.0
Separate	4.3	5.1	4.3	4.4	4.1	4.4
Number of family members in a household						
1-3 persons	25.4	18.5	25.3	23.4	25.1	23.8
4-6 persons	51.0	55.7	56.6	52.3	50.0	52.7
7-9 persons	16.9	20.0	15.8	17.9	20.0	18.1
10-23 persons	6.8	5.7	2.3	6.3	4.9	5.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Most caregivers were married (about 73 percent) with the proportion highest in the Plantation, Uplands and Mixed economy strata. Single caregivers comprised about 18 percent of the caregiver population, with the levels highest in the Rice and Urban/semi-urban strata (about 23 and 22 percent).

Most of the caregivers (53 percent) lived in families of 4-6 people, while 24 percent lived in families of 1-3 persons (Table 13.2).

The educational background of caregivers shows that about 56 percent finished primary school, while only 15 percent had completed secondary school and 8 percent had a bachelors degree. Educational levels of caregivers were lowest in the Rice and Plantation strata and highest in the Urban/semi-urban stratum. Almost 19 percent of caregivers in the Uplands stratum had no formal education and a further 10 percent had only a non-formal education (Table 13.3).

Table 13.3 Percentage distribution of caregivers classified by education and strata

Educational Level	Urban / Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
No education	2.6	5.1	11.5	18.7	4.6	8.0
Primary school	41.3	69.4	65.4	50.6	61.1	56.1
Secondary school	25.0	11.2	9.1	8.4	16.9	15.2
Diploma/Occupational	4.7	0.6	1.4	1.1	2.8	2.4
Bachelor degree	17.3	3.3	2.5	8.4	6.2	8.4
Master	0.9	0.0	0.0	0.0	0.4	0.3
Ph.D.	0.1	0.0	0.0	0.0	0.0	0.0
Religious	0.1	0.0	0.2	0.1	0.1	0.1
Non-Formal education	5.6	8.1	8.4	10.5	5.7	7.4
Studying	2.5	2.2	1.6	2.2	2.2	2.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	**1,303**	**818**	**837**	**964**	**1,184**	**5,106**

Almost 90 percent of caregivers were employed, with the majority working in agriculture (54 percent) and as traders (13 percent). Seven percent were housewives. Among strata, caregivers in the Rice, Plantation and Uplands strata were most likely to be working in agriculture, while those caregivers in the Urban/semi-urban stratum were most likely to be working as traders (Table 13.4).

Table 13.4 Percentage distribution of caregivers classified by working status, occupation and strata

Characteristics of Caregivers	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Working Status						
Employed	85.8	90.0	90.7	86.9	87.4	87.9
Looking for a job	1.7	0.6	0.6	0.8	0.7	0.9
Studying/Occupational training	2.4	2.1	1.3	1.2	1.9	1.8
Housewife (no income)	7.4	4.9	4.5	9.4	6.9	6.8
Not working	2.8	2.4	2.9	1.6	3.1	2.6
Occupation						
Professional, academic and related field	14.1	2.0	2.4	9.2	4.8	7.1
Administration and management	1.6	0.8	1.1	1.0	0.6	1.0
Clerk	4.7	0.7	3.3	1.1	3.3	2.8
Trader	23.6	8.8	7.6	8.7	12.8	13.2
Services	8.9	2.2	4.6	5.1	4.3	5.3
Agriculture	23.0	71.9	68.6	64.4	55.3	53.9
Transportation	3.5	1.1	1.3	1.3	3.6	2.3
Specialists, production and workers	18.5	11.8	9.4	4.5	13.3	12.1
Others	2.1	0.7	1.7	4.7	2.0	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	**1,303**	**818**	**837**	**964**	**1,184**	**5,106**

Table 13.5 Percentage distribution of caregivers classified by income and strata

Income per year (Baht)	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
500-10,000	1.4	3.4	3.6	8.2	3.8	3.9
10,001-50,000	22.1	29.2	34.5	28.8	31.1	28.7
50,001-100,000	21.6	11.8	13.4	11.3	16.5	15.5
100,001-200,000	14.1	4.0	5.5	8.2	7.1	8.3
200,001-300,000	7.2	1.7	1.3	1.9	3.3	3.4
300,001-400,000	1.8	0.4	0.4	0.6	0.6	0.8
400,001-500,000	0.9	0.3	0.1	0.2	0.4	0.4
500,001+	2.1	0.7	0.6	0.5	0.9	1.0
No income	25.3	45.8	37.2	38.6	32.6	34.8
Not working	3.1	2.6	3.1	1.8	3.5	2.9
No answer	0.4	0.1	0.4	0.0	0.3	0.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	**1,303**	**818**	**837**	**964**	**1,184**	**5,106**

The distribution of the annual income of caregivers of the elderly is shown in Table 13.5. About 35 percent stated that they had no income (this included all who worked as unpaid family workers), with the highest proportion found in the Rice stratum. The highest levels of income were found for caregivers in the Urban/semi-urban stratum, with the annual income of almost 22 percent in the range of 10,001-50,000 baht and 14 percent earning between 100,000 and 200,000 baht per year.

13.2 Characteristics of the elderly

There were more female than male elderly who received care (about 61 percent and 39 percent respectively) especially in the Urban/semi-urban and Plantation strata (Table 13.6).

Approximately 71 percent of caregivers were caring for their parents, 15 percent were caring for parents of spouse and about 10 percent were caring for their grandparents.

Table 13.6 Percentage distribution of elderly who received care classified by sex, relationship with caregiver and strata

Elderly	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Sex						
Male	36.9	40.0	37.9	40.5	38.7	38.7
Female	63.1	60.0	62.1	59.5	61.3	61.3
Relationship with Caregivers						
Parents	74.4	72.7	69.0	69.5	69.1	71.1
Parents of spouse	11.6	15.6	16.9	16.8	15.6	15.0
Uncle/Aunt	2.0	1.8	1.5	1.9	1.4	1.7
Grandparents	9.9	7.9	10.5	9.3	12.2	10.1
Brother/sister	0.6	0.9	0.3	0.3	0.3	0.5
Other cousins	1.2	1.1	1.7	1.9	1.3	1.4
Neighbor	0.3	0.0	0.2	0.3	0.1	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	**1,635**	**1,071**	**1,031**	**1,191**	**1,509**	**6,437**

13.3 Living arrangement and type of services received from caregivers

Almost one-half (47 percent) of the elderly were living in the same house with their caregivers. This proportion was highest in the Rice stratum. About 16 percent of elderly lived in a house next to the caregivers. Ten percent of the elderly lived in the same village with the caregivers.

The elderly in the Uplands stratum were the most likely to live apart, but within the same village, from their caregivers. A relatively high proportion of the elderly in the Urban/semi-urban and Mixed economy strata lived in the same district as their caregivers but in different villages.

The most frequent activities stated in providing care and support to the elderly were giving food (72 percent), providing money (69 percent), taking them to see a doctor when they were sick (33 percent) and visiting them (30 percent) (Table 13.7).

13.4 Current pattern of caregiving

About 80 percent of elderly in each area still received care from their caregivers. An additional 12 percent of elderly who had received care within the past five years had died by the time of the survey. Among those two percent of elderly who were alive but were not now receiving any care from their caregivers the ceassation of case was due to their moving to stay with other relatives (47 percent), stay with another son/daughter (32 percent) and about 9 percent of those not receiving care had moved out to stay alone due to personal problems (Table 13.8).

Table 13.7 Percent of elderly classified by living arrangements, pattern of care and strata

Elderly	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Living arrangement of elderly						
Same house with caregivers	48.9	61.4	36.3	37.3	48.8	46.8
House next to caregivers	10.6	19.6	20.0	14.4	16.9	15.8
Same village	5.5	7.6	11.8	16.9	9.0	9.8
Same district	11.0	5.5	7.4	7.1	9.2	8.4
Same province	9.6	3.5	7.4	9.4	5.6	7.2
Same region	8.2	2.0	9.2	5.7	5.7	6.3
Different region	6.1	0.4	7.5	8.0	4.0	5.2
Home for the elderly	0.0	0.1	0.0	0.3	0.0	0.1
Abroad /other country	0.1	0.0	0.4	1.0	0.9	0.5
Pattern of Care giving to elderly (can provide more than 1 answer)						
Give them money	68.6	69.7	69.5	78.7	60.0	68.8
Give them Food	69.4	84.4	68.3	69.6	70.2	71.9
Give them clothes	31.4	37.1	28.1	46.4	25.2	33.2
See doctor when they get sick	60.7	69.8	50.2	58.6	57.5	59.4
Visit	34.0	16.3	31.2	39.8	25.8	29.8
Hired someone to look after	0.6	0.2	0.2	0.1	0.5	0.4
Give daily care to them	4.1	4.2	4.6	1.2	6.9	4.3
No answer	0.4	0.0	0.7	0.0	0.0	0.2
N	**1,635**	**1,071**	**1,031**	**1,191**	**1,509**	**6,437**

Table 13.8 Percentage distribution of elderly classified by pattern of care received, period of receiving care, reason for not receiving care and strata

Pattern of elderly care	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Status of current care for elderly						
Still received care	88.5	85.7	86.6	86.0	84.2	86.3
Passed away	10.5	12.5	12.2	11.3	13.7	12.0
Not receive any care	0.7	1.6	1.2	2.6	1.9	1.6
No answer	0.2	0.2	0.0	0.1	0.3	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	**1,635**	**1,071**	**1,031**	**1,191**	**1,509**	**6,437**
(Still receive care) Period of receiving care						
0-4 year	19.2	20.4	20.7	28.0	24.6	22.5
5-9 year	24.0	22.7	22.7	22.9	23.5	23.2
10-14 year	20.4	20.9	20.6	17.8	18.4	19.6
15-19 year	16.8	18.7	16.9	16.1	11.7	15.9
20-24 year	8.9	8.6	7.4	7.6	9.8	8.6
25-29 year	5.6	5.2	5.3	4.1	5.5	5.2
30-34 year	2.2	1.1	2.0	1.1	3.6	2.1
35-39 year	1.3	0.7	0.9	0.6	0.9	0.9
40 year and over	0.4	0.2	0.5	0.5	0.6	0.4
No answer	1.3	1.5	3.0	1.4	1.4	1.7
Total	**100.0**	**16.5**	**16.1**	**18.4**	**22.9**	**100.0**
N	**1,447**	**918**	**893**	**1,024**	**1,270**	**5,552**
Reasons of not receiving care						
Stay with other relative of elderly	50.0	17.7	33.3	58.1	57.1	47.0
Stay with other son/daughter	25.0	82.4	25.0	25.8	14.3	32.0
Personal problems	8.3	0.0	25.0	3.2	14.3	9.0
Split to a new household	0.0	0.0	0.0	9.7	10.7	6.0
Elderly go for a monk hood/nun	8.3	0.0	0.0	0.0	3.6	2.0
No income	8.3	0.0	0.0	0.0	0.0	1.0
No answer	0.0	0.0	16.7	3.2	0.0	3.0

Total	100.0	100.0	100.0	100.0	100.0	100.0
N	12	17	12	31	28	100

Only a small proportion of the elderly who remained alive at the time of the survey were not receiving care from the former caregiver. Two reasons dominate the reasons for discontinuing care, the main reason for moving out was to stay with other relatives. This was most common in the Uplands stratum. Others had moved to stay with another son/daughter, with this reason being cited more often in the Rice stratum. The proportions who moved out because of personal conflicts or unexplained reasons were highest in the Plantation and Mixed economy strata.

For those providing care to the elderly at the time of the survey, the period the caregivers had provided care varied from 23 percent who had cared for their elderly for 5-9 years, another 23 percent for 0-4 years, 20 percent for 10-14 years, 16 percent for 15-19 years and 9 percent for 20-24 years.

13.5 Perceptions towards providing care to the elderly

Table 13.9 Percentage of elderly classified by intention of caregivers in providing care to the elderly and strata

Intention of giving care	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Period of time will provide care to elderly						
1 – 20 years	0.2	0.0	0.3	0.1	0.4	0.2
Until they died	99.6	99.7	99.2	99.6	99.0	99.4
Can not specify	0.0	0.2	0.0	0.0	0.2	0.1
No answer	0.3	0.1	0.5	0.3	0.5	0.3
Attitude towards giving care to elderly						
A burden	1.5	1.0	2.8	3.5	2.2	2.1
Not a burden	98.2	98.9	97.2	96.3	97.7	97.7

No answer	0.4	0.1	0.0	0.2	0.1	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	**1,447**	**918**	**893**	**1,024**	**1,270**	**5,552**

Table 13.9 Continued

Intention of giving care	Urban/ **Semi-urban**	**Rice**	**Plantation**	**Uplands**	**Mixed Economy**	**Total**
Burden in what aspects (can provide more than 1)						
Economic (money)	57.1	88.9	32.0	52.8	57.1	52.9
Health care (curing)	14.3	0.0	8.0	19.4	10.7	12.6
Living arrangement	0.0	0.0	0.0	0.0	3.6	0.8
Preparing food	19.1	44.4	12.0	11.1	7.1	14.3
Clothes	0.0	0.0	4.0	0.0	0.0	0.8
Transportation	0.0	0.0	8.0	2.8	0.0	2.5
Care due to disability of elderly	4.8	0.0	4.0	5.6	50.0	15.1
Lack of time	14.3	0.0	8.0	8.3	3.6	7.6
No answer	4.8	0.0	24.0	11.1	17.9	13.5
Total	**17.7**	**7.6**	**21.0**	**30.3**	**23.5**	**100.0**
N	**21**	**9**	**25**	**36**	**28**	**119**

Almost all caregivers (99 percent) intended to continue their support until the elderly persons they cared for, or they themselves, died (Table 13.9).

Ninety-eight percent of the caregivers thought that taking care of their elderly was not a burden on them. Of the small proportion who thought that caring for the elderly was a burden, the main aspect of the burden was economic. This reason was provided by 89 percent in the Rice stratum who reported that caring for the elderly was a burden. Physical care was reported to be a burden by 50 percent of the respondents in the Mixed economy stratum who viewed care for the elderly as a burden. Lack of time was cited as a burden by 14 percent of the caregivers in the Urban/semi-urban stratum (Table 13.9).

13.6 Summary

Eighteen percent of the respondents aged 15 and over interviewed in the Kanchanaburi DSS (28,873 respondents) had experience in providing care and support to the elderly. Most caregivers were in the working ages (35-44 years), which suggests that not only did they have to care for the elderly, but they were also responsible for caring for their own children. However, even in this situation less than 2 percent felt that caring for the elderly was a burden to them. From a social, moral and policy perspective this is a very encouraging finding of the study. Even though the proportion of elderly in the Thai population is increasing, the elderly are provided care and are happily supported by their families.

14. Commuting Patterns

Sureeporn Punpuing

In the analysis reported upon in this chapter, commuting is defined as a daily trip to work or school. The round trip needs to be completed within one day to be considered as commuting.

Commuting time refers to the time taken for one-way travel from home to the destination. It includes pick-up or drop-off times (e.g. drop-off children, buy breakfast along the way, etc.). Commuting cost includes all costs incurred for the trip to and from the destination. It is measured in terms of expenditure in a month. In case of uncertainty about the amount, the respondent was requested to estimate costs per month. The main mode of transportation is defined according to the respondent's perception. In case that they could not identify the main mode, then the mode that the respondents used for the longest proportion of time when commuting was taken as the main mode. Commuting destinations are categorized into workplace and school. The workplace includes locations for agriculture such as rice fields, fruit orchards, animal husbandry, and locations of non-agricultural work, such as a factory, company, bank, hospital, and government offices. Schools include day care, nursery and vocational training centers.

There are two separate sets of analysis based on two data sets. The first set is commuting patterns of the population age 4-14 years. The household head provided the responses for these family members. The other set of data is for the

the population age 15-59, where the respondents provided information on their own commuting patterns.

14.1 General characteristics

Table 14.1 Percentage distribution of household members aged 4-14 years and individuals aged 15-59 years by occupational status and strata, Round 4 (2003)

Age	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
4-14						
- Student	98.8	98.1	94.9	96.3	96.3	96.8
- Working	1.2	1.9	5.1	3.7	3.7	3.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	1,839	1,719	1,961	3,392	2,213	10,924
15-59						
- Student	10.5	8.4	5.4	4.0	6.8	7.0
- Working	89.5	91.6	94.6	96.0	93.2	93.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	4,523	3,579	3,490	5,041	4,697	21,330

Those aged 4-14 years are generally considered as being in school ages, however a small proportion of the population in this age group were working. In the Urban/semi-urban stratum, the highest proportion (97 percent) of the population aged 4-14 years were students. In contrast, 93 percent of the population aged 15-59 were working. There were three percent who were studying, which may be at the tertiary level or in the non-formal education system. The proportion of the population working was highest in the Uplands stratum and lowest in the Urban/semi-urban stratum.

14.2 Places of work/school

Approximately 98 percent of those aged 4-14 commuted to school and more than half of population aged 15-59 commuted to work in agriculture workplaces such as rice fields or plantations. Seventy percent of the population in the Plantation and Uplands commuted to agricultural workplaces. While 73 percent of Urban/semi-urban population aged 15-59 commuted to non-agriculture workplaces such as factories, government offices and private companies.

Table 14.2 Percentage distribution of household members aged 4-14 years and aged 15-59 years by destination of commuting and strata, Round 4 (2003)

Destination	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
4-14						
- School	99.4	99.0	97.1	97.4	97.8	98.0
- Agriculture workplaces	0.1	0.9	2.8	2.2	1.7	1.6
- Non-agriculture workplaces	0.6	0.1	0.1	0.3	0.5	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number *	1,621	1,457	1,484	2,779	1,877	9,218
15-59						
- School	10.3	8.4	5.4	3.9	6.7	6.9
- Agriculture workplaces	17.1	62.5	71.1	69.8	55.0	54.4
- Non-agriculture workplaces	72.6	29.1	23.5	26.2	38.2	38.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number *	4,519	3,579	3,490	5,040	4,697	21,325

* Number of cases is not equal to that of Table 14.1 because of the 'doesn't know/don't answer' that was given by other household family members/respondents.

14.3 Commuting time

The average time spent commuting to schools/workplaces by those aged 4-14 was 16 minutes. Children in Urban/semi-urban stratum had the shortest commuting time (14 minutes). This is probably because of the high level of access to schools in urban area, and parents or children could choose the nearest schools for their children to study. Both boys and girls have similar average commuting times in every study area (Table 14.3).

Table 14.3 Average commuting time (minutes) of children aged age 4-14 years by sex and strata, Round 4 (2003)

Sex	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Male	14.0	16.1	16.7	16.7	16.2	16.0
(Number) *	841	698	765	1437	899	4640
Female	13.8	15.9	16.9	16.5	16.2	16.0
(Number) *	772	755	713	1325	957	4,522

* Number of cases is not equal to that of Table 14.1 because of the 'doesn't know/don't answer' that was given by other household family members/respondents.

Males aged 15-59 years on average had commuting time that were 2 minutes longer than those of females. Both males and females in the Uplands spent about 24 minutes for commuting, which is the highest mean commuting time. The average commuting time for females in the Urban/semi-urban stratum was 15 minutes, which is lower than that of males in the same stratum as well as females in other strata (Table 14. 4)

Table 14.4 Average commuting time (minutes) of respondents aged 15-59 years by sex and strata, Round 4 (2003)

Sex	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Male	19.2	19.1	17.4	24.0	17.7	19.8
(Number) *	1,918	1,560	1,617	2,583	2,175	9,853
Female	15.5	18.8	15.8	23.5	16.2	18.1
(Number) *	1,869	1,675	1,628	2,036	1,997	9,205

* Number of cases is not equal to that of Table 14.1 because of the 'doesn't know/don't answer' that was given by other household family members/respondents.

14.4 Commuting cost

The average commuting cost was calculated from only the respondents who paid for commuting. There were some who did not pay for commuting, such as those who walked to work/schools or those who commuted with others but did not pay.

The average monthly commuting costs were 217 and 215 Baht for male and female children respectively. Children in the urban/semi-urban paid higher costs than those of other strata. However, it was found that children in the urban/semi-urban stratum also had the shortest commuted time. It is likely that these children used private vehicles for commuting, and hence the costs are higher than for those who use public transportation (Table 14.5).

The average monthly commuting costs were 233 Baht for boys and 231 Baht for girls in the Mixed economy stratum. The lowest commuting cost for children was reported in the Uplands stratum. It is important to note that in the Urban/semi-urban stratum, the average monthly commuting cost for boys was 100 Baht higher than that of boys in the Uplands stratum, while the girls' average monthly

commuting cost in the Urban/semi-urban was 90 Baht higher than that for girls in the Uplands stratum (Table 14.5).

Table 14.5 Average monthly commuting costs for those age 4-14 years by sex and strata, Round 4 (2003)

Sex	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Male	260.8	219.0	195.2	161.7	233.2	217.0
(Number) *	466	301	369	370	467	1,973
Female	251.9	206.3	204.1	162.8	231.6	215.3
(Number) *	454	356	382	354	572	2,118

* Number of cases is not equal to that of Table 14.1 because of the 'doesn't know/don't answer' that was given by other household family members/respondents.

For persons aged (15-59 years), there was a substantial difference in the average monthly commuting cost for males and females. The male commuting cost was about two times higher than that of females, with males paying an average of 330 Baht per month while females paid an average of 160 Baht per month. The differences by sex were found in every study areas, particularly in the Uplands where males on average paid 4 times more than did females (Table 14.6)

Table 14.6 Average monthly commuting costs of respondents aged 15-59 years by sex and strata, Round 4 (2003)

Sex	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Male	439.1	358.8	248.6	226.8	393.9	332.3
(Number) *	2,361	1,761	1,787	2,856	2,460	11,225
Female	245.6	186.4	147.3	59.6	177.6	160.4
(Number) *	2,927	2,186	2,067	3,259	2,876	13,315

* Number of cases is not equal to that of Table 14.1 because of the 'doesn't know/don't answer' that was given by other household family members/respondents.

The highest commuting costs for males and females of working age (15-59) were found in the Urban/semi-urban stratum. While the working age population in the Uplands had the lowest commuting cost. The average monthly commuting costs for males and females in the Urban/semi-urban stratum were about 2 times and 4 times higher than those of males and females in the Uplands stratum respectively.

In the Mixed economy stratum, males paid about 400 Baht per month, which is followed by the Rice, Plantation and Uplands strata. Females in the Rice stratum paid about 186 Baht per month, which is also followed by the Mixed economy, Plantation and Uplands respectively (Table 14.6).

14.5 Commuting modes

There was little difference between the main mode of commuting to schools/ workplaces of boys and girls aged 4-14. The main mode was private motorcycle. The motorcycle may belong to others but the respondents did not pay rent (the motorcycle may belong to his/her family, parents or relatives). It is observed that normally the parents used a motorcycle as the main transport mode to drop off or pick up their children from schools. This is because the cost of a motorcycle is not high, so many families can afford a motorcycle, which can be used with any road conditions, and which is quick and convenient. The proportion of boys commuting by motorcycle was highest in the Urban/semi-urban stratum. This was followed by those in the Mixed economy, Plantation, Rice and Uplands strata respectively (Table 14.7)

Another commuting mode for school age children was arranged vehicles, which may be arranged by the school, a company or community members. The arranged vehicles have a regular schedule and passengers may pay monthly or weekly. This form of transport is popular in places where there is limited public transportation. The proportion (29 percent) of boys commuting by arranged vehicle was highest in the Plantation stratum, followed by the Mixed economy, Rice, Urban/semi-urban and Uplands strata respectively (Table 14.7). The bicycle also plays an important role as a commuting mode, particularly for boys living in the Rice stratum. Twenty-seven percent commuted to schools/ workplaces by bicycle, a level that was higher than any other strata (Table 14.7).

A regular bus service was mentioned by only a small proportion of respondents in each stratum. Few people reported that school age children commuted to schools/workplaces by hired motorcycles or private vehicle. It is important to note that more than half (55 percent) of boys in the Uplands walked to schools/workplaces, while only 10 percent of boys in the Urban/semi-urban and Mixed economy strata walked to schools/workplaces (table 14.7).

The main mode of commuting for working age males was by motorcycle (35 percent). About 44 percent of males in the Urban/semi-urban stratum commuted to work/school by motorcycle. This can be compared to only 23 percent of males in Uplands who used a motorcycle as the main mode of commuting (Table 14.8).

Table 14.7 Percentage distribution of commuting modes of those age 4-14 years by sex and strata, Round 4 (2003)

Sex	Urban/Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Male						
Walk	9.9	15.6	16.6	54.8	9.2	25.6
Bicycle	10.9	27.1	19.0	7.7	18.2	15.1
Motorcycle						
- Own	43.5	28.8	29.7	15.3	39.7	29.6
- Hired	0.5	0.1	0.1	0.6	0.3	0.4
Bus	5.8	2.6	3.1	0.8	2.4	2.7
Arranged vehicles	19.4	24.0	28.6	18.9	24.2	22.4
Private vehicles	9.9	1.6	2.3	0.7	5.3	3.7
Other	0.2	0.1	0.5	1.1	0.4	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number *	842	697	767	1436	899	4,641
Female						
Walk	9.3	15.9	15.4	56.3	8.6	25.0
Bicycle	8.9	22.8	16.7	5.4	12.4	12.2
Motorcycle						
- Own	44.8	28.2	32.4	15.4	41.1	30.7
- Hired	0.4	0.4	0.3	0.4	0.3	0.4
Bus	5.7	2.6	3.2	1.1	2.5	2.8
Arranged vehicles	19.8	28.2	29.3	19.1	30.3	24.7
Private vehicles	10.6	2.0	1.7	1.4	4.6	3.8
Other	0.4	0.0	1.0	0.9	0.2	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number *	772	756	713	1322	958	4,521

* Number of cases is not equal to that of Table 14.1 because of the 'doesn't know/don't answer' that was given by other household family members/respondents.

Private vehicles were used as the main commuting mode for 11 percent of the working age males. In the Urban/semi-urban stratum, about 18 percent commuted by private vehicles, while in the Uplands only 5 percent commuted by private vehicles. Arranged vehicles were an important mode of commuting for males in every stratum except the Urban/semi-urban stratum. In that stratum, a bus was more often cited as a commuting mode than in other strata. Only a few of the males in the working age population commuted to work/school by bicycles or hired motorcycles (Table 14.8).

Overall, approximately 36 percent of males of working age walked to work/school. More than half (55 percent) of the population in the Uplands walked to work/school, while only 22 percent in the Urban/semi-urban stratum used walking as a commuting mode.

Commuting modes of males and females of working age are different. The motorcycle is a main commuting mode for about 33 percent of females of working age. Females were more likely to use arranged buses than were men and were less likely to use private vehicles. However, in the Urban/semi-urban stratum, 16 and 10 percent of females commuted by private vehicles and arranged vehicles respectively. The proportion of females of working age in the Plantation and Uplands who commuted in private or arranged vehicles was lower than that observed for other strata (Table 14.8).

In the study area, 38 percent of working age females (15-59) walked to work/school, which is slightly higher than the proportion recorded for males. More than half (56 percent) of females of working age in the Uplands walked to work/school, while only 26 of those in the Urban/semi-urban stratum walked to work/school (Table 14.8).

Table 14.8 Percentage distribution of commuting modes for respondents age 15-59 years by sex and strata, Round 4 (2003)

Sex	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Male						
Walk	22.1	25.9	35.8	53.1	37.3	36.4
Bicycle	3.3	1.1	0.7	1.0	1.0	1.4
Motorcycle						
- Own	43.9	39.8	34.2	23.3	38.2	35.0
- Hired	0.2	0.1	0.1	0.0	0.1	0.1
Bus	6.5	2.8	1.2	1.1	2.2	2.7
Arranged vehicles	3.9	12.6	14.4	7.5	7.3	8.7
Private vehicles	17.6	12.9	9.5	4.9	11.7	10.9
Other	2.5	4.8	4.0	9.2	2.2	4.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number *	1,947	1,593	1,645	2,612	2,235	10,032
Female						
Walk	26.4	27.9	38.2	56.0	40.2	38.3
Bicycle	3.6	2.6	0.6	0.7	1.2	1.7
Motorcycle						
- Own	37.9	35.8	31.5	23.3	35.8	32.7
- Hired	0.5	0.0	0.1	0.0	0.1	0.2
Bus	10.2	3.8	1.1	1.2	3.8	4.1
Arranged vehicles	5.3	17.2	17.5	8.6	9.0	11.1
Private vehicles	15.7	10.1	8.3	3.2	9.2	9.2
Other	0.3	2.5	2.8	7.0	0.7	2.7
Total *	100.0	100.0	100.0	100.0	100.0	100.0
Number*	1,887	1,694	1,656	2,050	2,032	9,319

* Number of cases is not equal to that of Table 14.1 because of the 'doesn't know/don't answer' that was given by other household family members/respondents.

14.6 Summary

Commuting patterns differ according to the age and sex of population. In the study area, about 98 percent of school age (4-14) children commuted to schools, and 88 percent of the working age (15-59) population commuted to workplaces. The average commuting time of school age children living in the Plantation and Uplands was 17 minutes, which is higher than for children living in other strata. Both males and females of working age (15-59) in the Uplands stratum had the highest commuting time (24 minutes). On average, the duration of commuting of males was 2 minutes longer than for females.

There was little difference in commuting costs between boys and girls. However, there is an obvious difference in commuting costs among strata. The average monthly commuting cost of school age boys living in the Urban/semi-urban was about 100 Baht higher than that for boys in the Uplands stratum. And the average monthly commuting cost of school age girls living in the Urban/semi-urban stratum was about 90 Baht higher than that for girls living in the Uplands stratum.

The average monthly commuting cost of males of working age was about 2 times higher than that of females (330 and 160 Baht for males and females respectively). The cost of commuting for females in the Urban/semi-urban stratum was about 4 times higher than that of females in the Uplands stratum (246 and 60 Baht respectively).

Apart from walking to school/work, the main commuting mode for every age group was motorcycle. There were only slight differences in the proportions of the population using other commuting modes. The second most popular mode for school age children (4-14 years) was an arranged vehicle, while it was a private vehicle for males of working age (15-59 years). The population in the Uplands had the lowest proportion of the population who used non-motorized modes for commuting.

15. Economic Security and Health Insurance

Kusol Soonthorndhada

Thailand will become a demographically aged population over the next 10-15 years due to a fertility rate that has been low for several decades and health care developments that prolong people's lives. The elderly require security in several areas, such as sufficient income, social services, especially health services, and housing. Income sufficiency results from long-term savings and employment opportunities. Poor elderly living without a caregiver might receive a small monthly pension or social welfare from the government or private sector. For basic health care, the government has included every citizen in the health insurance program or "the 30-baht inclusive health program", and the poor elderly get free medical services. A study of economic and health security should be conducted throughout the whole population, especially the working age population (15 years old and above) who have to prepare themselves before they reach old age. The Kanchanaburi Demographic Surveillance Survey, Round 4 (2003) covered both the study of economic security and health insurance concerning the access and use of the 30 baht health card.

15.1 Economic security

Economic security means the possession of assets or property for the use in present or in the future i.e. land, house, life and health insurance coverage, savings, funeral aid and other assets for use in the case of emergency.

The study of the population aged 15 years and over in the 100 sampled communities found that only 15 percent had some form of assets, 18 percent had no assets, and 67 percent were not even aware of the word "security". Geographically, the population in the Urban/semi-urban area had the highest rate of those who had economic security (about 25 percent), followed by those in the Rice, Mixed economy and Plantation strata, respectively. The lowest rate belonged to those in the Uplands (7 percent). (*See Table 15.1)*

Table 15.1 Percentage distribution of the population aged 15 years and above according to the security and strata, round 4 (2003)

Securities	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Having at least one form	25.3	17.3	12.1	6.9	15.9	15.4
Having none	28.7	15.3	12.7	13.0	17.5	17.8
Knowing none	46.0	67.4	74.2	80.1	66.6	66.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Numbers	6,085	4,746	4,488	6,997	6,236	28,552

When the assets were asked by item, the assets that the respondent usually had for use at present were permanent assets such as house (62 percent) and land (45 percent). Security for the future was in the form of savings (41 percent), cooperative shares with dividends (20 percent), funeral aid (47 percent), life insurance (22 percent) and private health insurance (10 percent).

It was also found that the proportion with a house as economic security was highest in every stratum (62 percent), except in the Urban/semi-urban stratum where more than half had savings. The proportion with land ownership was high in the Rice and Plantation strata (55 percent and 50 percent, respectively). Life

insurance was most common in the Urban/semi-urban area and Rice areas (30 percent and 28 percent, respectively). The population in the Uplands had the lowest level of private health insurance (5 percent). The proportion with funeral aid was high in rural areas such as Rice (66 percent), Plantation (57 percent), Uplands (51 percent) and Mixed economy strata (42 percent), respectively. (See Table 15.2)

Table 15.2 Percentage distribution of the population aged 15 years and above classified by asset type and strata, round 4 (2003)

Securities	Urban/ Semi-urban	Rice fields	Plantation	Uplands	Mixed Economy	Total
Own land	38.2	54.7	50.4	38.1	46.1	44.6
Own house	47.9	65.0	71.3	68.0	61.6	62.3
Life insurance	30.4	28.4	22.5	8.4	21.7	21.5
Health insurance	13.3	9.71	11.1	5.1	10.6	9.7
Savings	51.7	51.7	31.4	32.7	36.5	40.6
Funeral aid	27.0	65.5	57.2	51.2	42.0	47.4
Cooperative shares	17.1	25.8	26.2	17.6	18.5	19.8
Numbers	6,085	4,746	4,488	6,997	6,236	28,552

The proportion with economic security was slightly higher for females (8 percent for female and 7 percent for male), and there was no clear distinction between sexes in each category of assets, except that the proportion of women who had savings was 5 percent higher than for men. (See Table 15.3)

The population aged 40 years and over had a higher level of economic security, particularly land, house and funeral aid, compared to the younger population. But

the proportion possessing life insurance, private health insurance, savings and cooperative shares, decreased at ages 60 and above. (See Table 15.4)

Table 15.3 Percentage distribution of the population aged 15 years and above, classified by asset type and sex, round 4 (2003)

Securities	Male	Female	Total
Own land	44.6	44.6	44.6
Own house	62.9	61.7	62.3
Insurance	22.5	20.7	21.5
Health insurance	10.3	9.3	9.7
Savings	37.9	42.9	40.6
Funeral aid	46.9	47.7	47.4
Cooperative shares	21.4	18.5	19.8
Numbers	13,029	15,523	28,552

Table 15.4 Percentage distribution of the population aged 15 years and above, classified by asset type and age, round 4 (2003)

Securities	Under 40 years	40-49 years	50-59 years	60 years and over	Total
Own land	27.3	57.9	65.3	64.9	44.6
Own house	46.0	76.2	81.0	79.8	62.3
Life insurance	17.1	26.9	28.9	22.1	21.5
Health insurance	10.2	10.8	9.3	7.5	9.7
Savings	37.4	44.9	43.4	35.9	40.6
Funeral aid	37.9	53.9	58.2	59.8	47.4
Cooperative shares	14.6	28.4	27.9	17.8	19.8
Numbers	14,352	6,536	3,693	3,917	28,552

Higher levels of education were associated with higher proportions with life insurance, private health insurance and savings. About 70 percent of those who had a primary school level of education and lower had their own house and 52 percent of those who had a primary school level of education had funeral aid. However, owning land or cooperative shares were not clearly related to education level. (See Table 15.5)

Table 15.5 Percentage distribution of the population aged 15 years and above, classified by asset type and education

Securities	Under Grade 6	Primary Grade 6	Secondary school	Bachelor degree and higher	Total
Own land	40.3	52.7	35.9	47.0	44.6
Own house	70.1	69.5	46.9	50.6	62.3
Life insurance	10.9	20.3	23.5	48.5	21.5
Health insurance	4.4	7.9	11.9	23.2	9.7
Savings	24.9	40.1	47.8	75.3	40.6
Funeral aid	44.5	52.3	40.4	44.0	47.4
Cooperative shares	10.6	21.3	18.0	40.6	19.8
Numbers	6,612	13,673	3,520	1,781	25,586*

Note: *Respondents with non-formal education and those with no answer are not included.

The level of economic security was also associated with personal income, with the proportion of those having their own land, life insurance, private health insurance, savings, and cooperative shares increasing with income. But the proportion of residents with houses and funeral aid were not clearly associated with level of income. (See Table 15.6)

Table 15.6 Percentage distribution of the population aged 15 years and above, classified by asset type and annual personal income

Securities	Income (baht/year)			
	Under 50,000	50,000-99,999	100,000 and above	Total
Own land	39.7	40.6	61.7	44.6
Own house	63.2	54.3	67.6	62.3
Life insurance	12.4	25.0	52.2	21.5
Health insurance	6.1	87.9	78.0	9.7
Savings	32.2	48.7	71.2	40.6
Funeral aid	45.2	41.9	56.1	47.4
Cooperative shares	15.4	21.8	48.7	19.8
Numbers	7,790	3,009	2,016	12,815*

Note: *Respondents unable to separate their personal income from household income and those who did not know or answer were not included.

15.2 Health insurance

Thailand implemented the 30-baht inclusive health program in 2001 as one of the current government's major policies to establish equal access to health services for the Thai people. Data from the Kanchanaburi DSS, Round 4 (2003) found that three-fourths of the field site population had a 30-baht health card, and the proportion of those with a card was higher for those living in rural areas such as the Rice, Plantation, Uplands and Mixed economy strata compared to the Urban/semi-urban stratum. (See Table 15.7)

Table 15.7 Percentage distribution of the population aged 15 years and above, with 30-baht inclusive health card, classified by strata

Having the health card?	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Yes	62.6	82.7	86.4	73.5	78.1	75.7
No	37.4	17.3	13.6	26.5	21.9	24.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Numbers	6,198	4,820	4,516	7,053	6,283	28,870

The lowest proportion possessing a 30-baht health card were those with a bachelors or higher level of education and those in the highest income group (more than 100,000 baht per year). Many of these are government officers or work in the private sector, and are covered by other schemes, for example, civil servants are covered by the civil servant medical benefits scheme and employees in many private sector firms are covered by the social security scheme. There was little variation by age and sex in the proportions with a 30-baht health card, although the elderly were less likely than those in other age groups to have a card. *(See Table 15.8)*

Table 15.8 Percentage distribution of the population aged 15 years and above with the 30-baht health card classified by sex, age, education and income

Characteristics	Yes	No	Numbers
Sex			
Male	74.6	25.4	13,187
Female	76.6	23.4	15,683
Total	75.7	24.3	28,870
Age			
15-39 years	76.7	23.3	14,501
40-49 years	76.6	23.4	6,610
50-59 years	77.4	22.6	3,735
60 and over	68.9	31.1	4,024
Total	75.7	24.3	28,870
Education			
Lower than primary	71.4	28.6	6,677
Primary (Grade 6)	83.2	16.8	13,811
Secondary	69.7	30.3	3,573
Bachelor degree and above	35.3	64.7	1,807
Total	64.9	35.1	25,868*
Income (per year)			
Under 50,000 baht	76.8	23.2	7,861
50,000-99,999 baht	63.2	36.8	3,048
100,000 and above	41.3	58.7	2,044
Total	**60.4**	**39.6**	**12,953****

Note: * 1,444 persons with non-formal education or no answer were not included.
** Respondents unable to separate their personal income from household income and those who did not know or answer were not included.

Those who lived in rural areas were more likely to use the 30 baht card than those in urban area (*See Table 15.9*). Many people with the card did not make use of it

because they did not get sick or they normally received medical care from other health care facilities (*See Table 15.10*). For those who had ever used the card, the majority went to district hospitals (55 percent), followed by health centers (36 percent) and higher medical services such as the provincial hospital (8 percent). The population in the Urban/semi-urban stratum mainly used district and provincial hospitals, but those living in rural areas mainly used district hospitals and health centers. *(See Table 15.11)*

Moreover, the utilization of services was differentiated by sex, age, education and income. Women were more likely to use the card than men, and the elderly used the service more than other age groups. Residents with a university level of education were less likely than others to use the program. And those who earned 50,000 baht/year and over ever used the services less than those with lower incomes. *(See Table15.12)*

Table 15.9 Percentage distribution of the population aged 15 years and above with the 30-baht health card, classified by the use of the card and strata

Make use of the card	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Yes	27.4	45.2	49.2	51.6	43.4	43.9
No	72.6	54.8	50.8	48.4	56.6	56.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Numbers	3,875	3,983	3,898	5,186	4,901	21,843

Table 15.10 Percentage distribution of the population aged 15 years and above with the 30-baht health card, classified by reasons of non-use and strata

Reasons	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Not get sick	75.7	89.8	85.6	92.5	83.9	85.1
Inconvenience of commute	.1	0.6	1.1	1.5	.9	.9
Always use other facilities	11.7	4.6	4.7	1.5	6.5	6.0
Not want to wait	1.1	0.4	0.7	0.1	0.7	0.6
Move out	1.0	0.7	1.9	1.9	2.0	1.5
Emergency	0.5	0.0	0.3	0.2	0.1	0.2
Have other card	6.9	2.5	4.1	1.6	3.3	3.8
Other	3.0	1.6	1.6	0.7	2.6	1.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Numbers	2,795	2,172	1,959	2,476	2,732	12,134*

Note: * Persons who did not know or answer were not included.

Table 15.11 Percentage distribution of the population aged 15 years and above who ever used the card, classified by type of health care facilities and strata

Health facilities	Urban/ Semi-urban	Rice field	Plantation	Uplands	Mixed Economy	Total
Health centers	11.3	52.4	42.6	37.5	26.7	36.0
District hospitals	65.5	41.9	46.6	59.1	65.4	55.4
Provincial hospitals	22.0	5.4	10.2	2.9	7.6	8.0
Private hospitals	0.3	0.1	0.1	0.2	0.1	0.2
Other	0.9	0.2	0.5	0.3	0.2	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Numbers	1,039	1,777	1,894	2,657	2,093	9,460*

Note: * Respondents who did not know or answer were not included.

Table 15.12 Percentage distribution of the population aged 15 years and above, classified by ever or never use of the 30-baht health card, sex, age, education and income

Characteristics	Ever use	Never use	Total	Numbers
Sex				
Male	34.3	65.7	100.0	9,831
Female	51.7	48.3	100.0	12,012
Age				
Less than 40 years	41.3	58.7	100.0	11,123
40-49 years	42.7	57.3	100.0	5,061
50-59 years	46.4	53.6	100.0	2,889
60 and over	53.4	46.6	100.0	2,770
Education*				
Lower than primary	48.3	51.7	100.0	4,768
Primary (Grade 6)	45.8	54.2	100.0	11,487
Secondary level	35.7	64.3	100.0	2,488
Bachelor degree and above	28.5	71.5	100.0	638
Income**				
Under 50,000	45.6	54.4	100.0	6,035
50,000-99,999	33.0	67.0	100.0	1,925
100,000 and above	31.9	68.1	100.0	844

Note: * Respondents with non-formal education or no answer were not included.
** Respondents unable to separate their personal income from household income and those who did not know or answer were not included.

15.3 Summary

The study of economic security of the population aged 15 years and above, using the data from the Kanchanaburi Demographic Surveillance Survey, Round 4 (2003), found that the proportion of those who had one or more forms of assets was low (only 15 percent). This resulted from the fact that two-thirds of the population did not understand the meaning and significance of "economic security", especially residents of rural areas.

The main forms of economic security were a house (62 percent) and land ownership (45 percent). The main forms of security for the future were funeral aid (47 percent), savings (41 percent) and insurance (22 percent). The forms of economic security possessed did not vary by sex (except that a higher proportion of women than men had savings), but was associated with age, education and income. The proportion with assets generally increased with age until ages 60 and above, when there was a decline, especially for savings, insurance and cooperative shares. The less educated (less than a primary school level of education) were more likely than the more highly educated to have a house, land and funeral aid as economic security, while the proportion with life insurance, savings and cooperative shares was the highest among the most highly educated. The proportion owning land, life insurance, health insurance, savings, and cooperative shares increased with increasing income.

Three-quarters of the population in the KDSS had a 30-Baht health card and the remainder were probably covered by the civil servant medical scheme or a social security scheme. Possession of a 30-baht health card was not related to sex and age, but was differentiated by education and income. Possession of a 30-Baht

health card was least likely for those with higher education and higher income. Health card utilization was associated with sex, age, education and income. More women than men used the card for health services, the elderly were more likely to use the card than were other age groups, and a lower proportion of those with a university education or high income (100,000 baht /year and above) used the card compared to those with lower education or income.

16. People's Knowledge and Participation in the Village and Urban Community Development Fund in Kanchanaburi

Boonlert Leoprapai

16.1 Introduction

The policy to establish the one million baht village and community development fund is one of the eleven important and urgent policies or quality of life-poverty reduction strategies promulgated by the Police Lieutenant Colonel Thaksin Shinawatra government. The fund aims to be source of working capital for people's business undertakings, to relieve disasters, and to strengthen the community.

The Thaksin government's populist policy was criticized by a majority of academics, especially economists, as being merely a means for creating political popularity. Their reasoning is that the lack of solid economic principles may lead to economic bankruptcies such as those that have occurred in some countries. It should be noted that beneficiaries of the policy are 8.2 million rural and urban poor or 13 percent of the total population in 2001[1]; the allocated amount of 75,600 million baht, with one million baht for each of the 75,600 funds that

[1] The "poor" are those with income below the poverty line (in 2001, it was equivalent to 916 baht per person per month). The indicator is calculated from the standard and minimum needs in food and goods of an individual. See, National and Economic Social Development Board. 2002. "The Poor: A New Opportunity Towards Self-reliance." A background paper of the meeting on Well-being of the Thai: New Opportunities Towards Self-reliance. Friday, 21 June 2002. Impact Meeting and Exhibition Center, Muang Thong Thani, Nonthaburi (in Thai).

accounted for only 8.3 percent of the total budget in fiscal year 2001[2], and money allocated to village and urban community development fund is a 'revolving fund."[3] When all the above facts are taken into account, it can be stated objectively that the establishment of village and community development fund is an economic and social management innovation which no previous Thai government under the democratic regime has ever thought of or had the courage to implement.

With a view to assessing the extent of Kanchanaburi people's knowledge of the fund, whether they have participated in the fund and in what aspects, 4 questions were included in the government policy section of the household questionnaire of the Round 4 (2003) census, they were:

Does this village have one million baht fund project?;

If yes, have you or any member of your household participated in the fund?;

If yes, what are the types of your participation (multiple types allowed)?, and;

If the type of participation is borrowing money, what is the amount of loan and outstanding debt?[4]

The Kanchanaburi Project's Round 3 census (2002) collected data on demographic, social, economic and health characteristics at the individual, household and village levels in the study areas of 100 villages/census blocks. The number of village census block was increased to 102 in the 2003 census. The study areas were stratified into 5 strata: the Urban/semi-urban, Rice, Plantations,

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[2] The 2001 fiscal year budget equaled 910,000 million baht. See National Statistical Office, Ministry of Information Technology and Communication. 2003. **Statistical Yearbook of Thailand.** Volume 49, 2002.

[3] See "Regulations of the National Committee on Village and Community Fund on the Establishment and Management of Village and Urban Community Fund, B.E.2544" **Royal Gazette**, Volume 118 Special Section No.48 ngor, dated 30 May, B.E.2544 (2001).

[4] See details of data collected by household questionnaire in the appendix of the baseline report of every round of the field site census.

Uplands and Mixed economy[5]. For the sake of readers of only chapter 16, characteristics of each stratum will be briefly described below.

- The Urban/semiurban stratum covers the municipal areas that have been categorized into census blocks by the National Statistical Office or villages where a majority of labour forced is employed in nonagricultural sector.
- The Rice growing stratum comprises villages located in the lowland where the main occupation is rice cultivation.
- The Plantation stratum contains villages in the lowland where a majority of the population grows crops such as sugar cane or cassava.
- The Upland stratum is characterized by upland topography where a majority of the areas are in preserved forests.
- The Mixed economy stratum contains villages which can not be classified into the above 4 categories.[5]

16.2 Results of analysis

One of the 11 functions of the Office of the National Committee on Village and Urban Community Development Fund is to publicize the Fund's establishment, policies and modes of operation.[6] The period between the promulgation of the above Regulations in the Royal Gazette on March 30, 2001 and the data collection of the Round 3 (2002) census from July 1 to August 15, 2002 was about 15 months. In principle, almost all people should have been informed about the affairs affecting them. It is disappointing, however, that only 87 percent of

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[5] Kanchanaburi Project. 2002. Report of Baseline Survey Round 3 (2002) Nakhon Pathom: Institute for Population and Social Research, Mahidol University, pp.5-6.

respondents in the study areas of the Round 3 (2002) census responded that there is a one million baht village fund project in their respective villages/communities, about 2 percent responded "there is none" and about 12 percent responded "not sure." The difference in percentage of respondents with knowledge of the fund is statistically significant between study areas. The study areas with the first and second highest percentage of respondents having knowledge about the fund are the Rice and Plantation strata, followed by the Mixed economy, the Urban/semi-urban and the Uplands strata, with the uplands stratum showing the lowest percentage.

Patterns of knowledge about the fund reported in the 2003 census were similar to those of the 2002 census. There is also a statistically significant difference in the levels of knowledge between the study areas.

When comparing the levels of knowledge of respondents in the study areas of the 2002 and 2003 censuses, it is found that the percentage of respondents with knowledge of the fund in the 2003 census was higher than in the 2002 census. The difference in knowledge about the fund of each stratum is very small except the Uplands stratum where the percentage of respondents having knowledge changed from 75.8 percent in the 2002 census to 87.4 percent in the 2003 census. This is due primarily to the decline in the percentage of those responding "not sure," decreasing from 22.7 percent in the 2002 census to 5.3 percent in the 2003 census, while those responding "there is none" increased from 1.5 to 7.3 percent. Without exception there are statistically significant differences between each and all study areas in the knowledge about the fund in the 2002 and 2003 censuses (Table 16.1)

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[6] **Royal Gazette.** Volume 118 Special Section 30 ngor dated 30 March, B.E. 2544.

Table 16.1 Percentage of respondents knowing that there is a one million baht in village/community fund classified by years of census and strata

Census year and knowledge on whether there is a fund	Study areas						df	X^2
	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	All		
Year 2002								
Yes, there is	76.7	98.8	97.3	75.8	93.6	86.7		
No, there isn't	5.5	0.2	0.1	1.5	0.3	1.7	8	976.166***
Not sure	17.8	1.0	2.5	22.7	6.1	11.6		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
Number	2,662	2,550	1,985	3,398	2,607	12,672		
Year 2003								
Yes, there is	76.7	99	95.7	87.4	95.8	90.2		
No, there isn't	12.4	0.5	2.1	7.3	2.2	5.3	8	976.166***
Not sure	10.9	0.5	2.2	5.3	2.0	4.5		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
Number	2,550	1,985	1,976	3,235	2,610	12,356		
Df	2	2	2	2	2	2		
X^2	113.134***	6.941*	36.437***	507.701***	92.866***	636.566***		

Level of statistical significance *** = .001 * = .05

Participation of respondents having knowledge on the fund is similar to that of knowing there is a fund. There are differences in the percentage of participation between study areas in the same census year and differences between each and all study areas in different census years.

Percentages of respondents stating that they have participated in the fund are in the same direction as those of having knowledge. For the study areas with a high/low proportion of respondents having knowledge, the proportion of respondents having participated in the fund is similarly high/low. For example, the Urban/semi-urban stratum, having the lowest proportion of respondents with knowledge, or about 77 percent, also have the lowest proportion of participation, about 29-31 percent. The Rice stratum with the highest percentage of respondents having knowledge shows the highest percentage of participation, about 60-63 percent.

Patterns of participation are similar to those of having knowledge. Only in the Rice and Plantation strata, differences between study areas of 2002 and 2003 censuses are statistically significant. For the 2003 census, the percentages of participation of Urban/semi-urban increased slightly while that of the Uplands stratum decreased slightly, but the differences are not statistically significant (Table 16.2)

Table 16.2 Participation of respondents or members of respondent households who stated that there is a million baht village fund classified by years of census and study areas

Census year and Participation	Study areas						df	X^2
	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	All		
Year 2002								
Yes	29.2	59.7	54.7	46.5	47.9	47.4		
No	70.4	40.2	45.2	53.5	52.0	52.5	8	976.166***
Not sure	0.4	0.1	0.1	0.0	0.1	0.1		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
Number	2,040	1,994	1,929	2,575	2,441	10,979		
Year 2003								
Yes	30.7	63.1	61.0	45.5	51.2	49.9		
No	69.2	36.9	38.8	54.4	48.7	50.0	8	976.166***
Not sure	0.1	0.0	0.2	0.1	0.1	0.1		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
Number	1,957	1,967	1,891	2,829	2,501	11,145		
df	2	2	2	2	2	2		
X^2	4.309	6.666*	16.118***	3.215	5.349	13.813**		

Level of statistical significance *** = .001 ** = .01 * = .05

For the 2003 census, if respondents stated that they or members of their households have participated in the fund they were asked about the type of their participation. Respondents could mention one or more types of participation such

as being committee member and/or member, share holder and/or pledged depositor, depositor and/or borrower.[7]

From data presented in Table 16.3 below, it can be seen that percentages participating in the fund in one capacity or another vary by type of participation. The highest rate of participation is found for being a member of the fund, followed by being a borrower, having pledged saving account, having a saving account and being a committee member. The proportions participating in each type vary by study areas. The Rice stratum that has the highest percent of respondents knowing that there is a fund and has the highest rate of participation also exhibits the highest participation rate in each type of participation, to be followed by the Plantation and the Mixed economy strata. The Urban/semi-urban has the lowest participation rate in each type of participation. In each study area, being a member of the fund and borrower from the fund exhibit the first and second highest rate of participation, except the Rice stratum, where being a share holder/having pledged deposit account has the highest rate of participation (Table 16.3)

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[7] Classification of type of participation is based on Clause No.3 of the "Regulations of the National Committee on Village and Urban Community Fund on the Establishment Management Fund, B.E.2544," Royal Gazette, Volume 18, Special Section No.48 ngor, dated 30 May, B.E. 2544.

Table 16.3 Percentage of respondents or members of respondent households stating that they/their household members participated in the fund by type of participation and strata, Round 4 (2003)

Type of participation*	Study areas					
	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	All
Be committee member in the village and urban community fund	4.2	8.9	7.7	6.3	6.0	6.6
Be a member of the fund	27.8	55.4	56.2	41.3	46.3	45.1
Be a share holder/having pledged deposit account	23.7	57.3	45.9	33.4	35.9	38.6
Have a deposit account with the fund	5.0	14.2	6.3	7.1	3.5	7.0
Be a borrower of the fund	24.5	55.2	52.2	36.9	41.9	41.7
Total	1,957	1,967	1,891	2,829	2,501	11,145

* Percentage in this table in the "percent" of participation in each type. For example, for 100 persons in urban/semiurban stratum, there will be about 4 persons who participated as members of the fund committee.

The proportion of respondents who participated as borrowers from the fund was about 42 percent, being the second highest next to participation as members of the fund. About 59 percent borrowed less than 20,000 baht. Clause No.31 of the Regulations of the National Committee on Village and Community Fund on the Establishment and Management of Village and Urban Community Fund, B.E. 2544 specified that each loan shall not exceed 20,000 baht. In case the fund committee deems it necessary for approving a loan of a higher amount, the committee has to seek the "approval" at the general assembly of the members and the amount shall not exceed 50,000 baht. From data presented in Table 16.4, about 59 percent of borrowers borrowed under 20,000 baht, and about 39 percent borrowed between 20,000 and 49,999 baht. Despite the upper limit set by the

Regulations, it was found that about 1.5 percent of borrowers borrowed more than 50,000 baht. The average loan for all study areas was 16,330 baht, with range of 15,318 to 17,775 baht across strata. (Table 16.4)

Table 16.4 Percentage of participation as borrowers of the fund classified by class of loan and the average amount of loan by strata, Round 4 (2003)

Class of loan (Baht)	Study areas					
	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	All
Less than 10,000	14.7	12.1	12.8	17.8	9.9	13.3
10,000 – 19,999	53.7	47.4	39.6	41.0	51.6	45.9
20,000 – 29,999	28.9	33.2	38.2	34.3	33.1	34.1
30,000 – 39,999	0.6	4.4	3.7	3.7	2.5	3.3
40,000 – 49,999	0.4	1.8	3.0	2.6	1.1	2.0
50,000 or more	1.7	1.1	2.6	0.7	1.7	1.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Average amount of loan (Baht)	**15,318**	**16,290**	**17,755**	**15,664**	**16,151**	**16,330**
N	**477**	**1,066**	**987**	**1,042**	**1,044**	**4,616**

Respondents who reported that they participated as borrowers of the fund were further asked about the amount of loan. Responses on the amount of loan were used to calculate the average amount of loan of each and all study areas as shown in Table 16.4 above. Respondents were also asked if they still owe the fund money. If the answer was "yes," they were further asked about the amount that they still owe. Data in Table 16.5 show that the patterns of distribution of loans where money is still owed, classified by class of debt, are very similar with the average amount of loan. That the average amount of debt is slightly lower than the average amount of loan indicates the plausibility of the responses although they may not be the real averages. The number of respondents who still owed the fund was about 97.4 percent of those reported borrowing from the fund.

Table 16.5 Percentage of participation as borrowers of the fund who still owe classified by class of debt and the average amount of debt by strata, Round 4 (2003)

Class of debt (Baht)	Study areas					
	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed Economy	All
Less than 10,000	17.2	12.4	12.8	18.1	10.1	13.8
10,000 – 19,000	53.2	47.1	39.6	41.4	50.8	45.6
20,000 – 29,999	27.6	33.1	38.2	33.4	33.8	33.9
30,000 – 39,999	0.6	4.5	3.7	3.8	2.5	3.3
40,000 – 49,999	0.2	1.8	3.1	2.6	1.2	2.0
50,000 or more	1.1	1.1	2.7	0.7	1.5	1.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Average amount of debt (Baht)	**14,529**	**16,144**	**17,768**	**15,586**	**15,822**	**16,133**
N	**464**	**1,048**	**977**	**1,017**	**988**	**4,494**

Another way for determining the plausibility of the average amount of loan obtained the 2003 Round 3 census is to take the average amount of 16,330 baht multiplied by 50,810 households which equal to 829,727,300 baht or about 84 percent of the amount of fund allocated to Kanchanaburi.[8]

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[8] The amount of 16,330 baht is from Table 16.4 and the number of 50,810 households comes from the Kanchanaburi National Statistical Office's Report of 2002 Survey of Village Level Data multiplied by 41.7 percent of respondents who reported that they borrowed money from the fund. The 84 percent is obtained by 829,727,300 baht divided by 987,100,000 million baht allocated to Kanchanaburi. The last item of data is taken from Data for Rural Development "presented by Poonsakdi Thongyai, Kanchanaburi Province Community Development Officer.

Differences between the proportions of respondents' having knowledge about the fund obtained by the Round 3 (2002) census, which was 86.7 percent and 98.9 percent of people aged 20 years and over know about the village and urban community fund, and only 1.1 percent had no knowledge obtained by Kanchanaburi Statistical Office's 2002 survey[9] may be due to the difference in the method of selection of sample, sample size and sample distribution.[10] Only in the Rice stratum did 98.8 of respondents reported that they know about the fund. Another difference is the "percentage of membership." Percentage of membership found in the Kanchanaburi Statistical Office's Survey was 67.0 percent, while that of the Round 3 census was only 45.1 percent, with the Urban/semi-urban stratum displaying the lowest percentage of membership of 27.8 percent. It has to be mentioned here that differences in knowledge and membership of two sources of data described above are not the important issues of the analysis.

From the analysis, it should be noted that the Urban/semiurban stratum exhibits the lowest percentage with knowledge about and participation in the fund both in terms of each stratum and all strata. The average amount of a loan and of debt was also the lowest. This is probably due to the fact there are few urban/semiurban areas in Kanchanaburi that have the qualifications specified by The National Committee on Village and Urban Community Fund.

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[9] See Kanchanaburi Statistical Office's Summary of 2002 Survey of People Opinion on Village and Urban Community Fund, p.3

[10] Sample size of Kanchanaburi Statistical Office was 800 households and was part of a national survey. Stratified Three-stage Sampling with each of the 76 provinces as a primary stratum, each stratum is divided into two sub-strata : housing blocks in the municipal areas and village outside the municipal area. Villages are primary sampling unit, household are the secondary and people aged 20 years are the tertiary sampling unit (see footnote 9 above). For the Round 3 (2002) census, data were collected from 12,680 households in study areas of 100 villages/census blocks.

If data from Round 3 (2002) and Round 4 (2003) censuses are reviewed, it may be concluded that the fund had at least attained its principal and most important objective of "being a source of working capital available in the villages and urban communities." Distribution by class of loan shows that 98.5 percent of loans were under 50,000 baht, with about 60 percent under 20,000 baht. The amount provided per loan was 16,330 baht. Distribution by class of debt is similar to that of distribution of loan by class. It can be stated that nearly half of the people in villages and urban communities in Kanchanaburi are beneficiaries of the fund since about 42 percent of respondents stated they were borrowers of the fund. It is not possible to determine whether the loan obtained by people meets the stated objectives of the fund by adding only 4 questions in the three types of questionnaires (village, household and individual) containing several hundred questions. If we wish to determine whether the fund had attained a number of objectives such as occupational development, job creation, income generation and self-reliance promotion, a separate study using both quantitative and qualitative methods is needed. Such a study could be undertaken in 5-10 villages and communities.

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17. The Government Policy on the One Tambon One Product Project

***J**irakit Boonchaiwatthana*

Research on the government policy on *the One Tambon One Product project (OTOP)* is important to understand how national policies are integrated into village life and to examine the utilization of local wisdom and resources. OTOP aims to bring prosperity to communities and to raise their living standards by encouraging them to manage local resources and produce unique, quality products marketable both in and outside the country. The products mean not only goods, but also local services, natural resources conservation, Thai wisdom preservation, tourism, art and culture, and customs.

This chapter is based on analysis of the data obtained from the village questionnaires answered by village key informants in 89 villages. The data was collected by conducting group interviews with at least three village key informants, such as village headman, assistant village headman, member of village committees, members of the Tambon Administrative Organization, learned/senior villagers, Buddhist monks, teachers and village volunteers, in each of the 89 villages in the field site. The analysis focused on seven different aspects, namely participation in the OTOP project, the manner of participation, type of OTOP products, problems faced after the participation, problems that need addressing, reasons for not participating in the project and interest in participation in the future. The 89 villages are categorized into five strata:

1. Semi-urban stratum	7 villages
2. Rice stratum	21 villages
3. Plantation stratum	20 villages
4. Uplands stratum	21 villages
5. Mixed economy stratum	20 villages

17.1 Participation in the OTOP project

Only 32 of the 89 villages participated in the OTOP project. The Uplands stratum had the greatest number of participating villages (10 villages), followed by the Mixed economy, Plantation (7 villages each) and Rice strata (5 villages). For the Semi/urban stratum, with only seven villages, almost half of the villages participated in the project (Table 17.1)

Table 17.1 Number of villages participation in OTOP project by strata

Participation in OTOP project	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Participation	3	5	7	10	7	32
Not Participation	4	16	13	11	13	57
Total	**7**	**21**	**20**	**21**	**20**	**89**

17.2 Manner of participation

The 32 villages participated in the OTOP project in many different ways. As shown in Table 17.2, most of these villages took part by contributing their labour to the production of products (18 villages), followed by co-investing (12 villages), being nominal members on the OTOP project committee (9 villages), cooperating in securing markets (8 villages), and co-managing the project (5 villages). Most of the participating villages in the Semi-urban and the Rice strata took part by co-investing. Among the participating villages in the Plantation and Uplands strata, labour contribution to the production of OTOP goods was the most popular way to participate, whereas the most popular way for the participating villages in the Mixed economy stratum was being nominal members on OTOP project committees.

The villages that contributed their labour were 8 in the Uplands, 5 in the Plantation, 3 in the Mixed economy, and 2 in the Rice strata. Co-investment in the project was undertaken by 4 villages in the Rice and 2 each in the Semi-urban, Plantation, Uplands and Mixed economy strata. Four villages in the Mixed economy stratum undertook the option of being a nominal committee member, followed by the Plantation stratum (2 villages), and one village each in the Semi-urban, the Rice and Uplands strata.

Eight villages, three each in the Rice and Uplands strata and 2 in the Plantation stratum, cooperated in the search for markets. However, none of the participating villages in the Semi-urban and the Mixed economy strata joined forces in this form of cooperation.

The joint management of the OTOP project was carried out by only five villages; three in the Uplands and one each in the Semi-urban and Plantation strata. None of the villages in the Rice and the Mixed economy strata participated in the management of the project.

Table 17.2 Number of villages that participated in OTOP project by manner of participation and strata (multiple responses)

Manners of participation	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
1. Nominal member on OTOP committee	1	1	2	1	4	9
2. Co-management	1	0	1	3	0	5
3. Co-investment	2	4	2	2	2	12
4. Cooperative in securing markets	0	3	2	3	0	8
5. Contributing labour	0	2	5	8	3	18

The study found that the eight villages that cooperated to secure markets/sell products mostly directly sold the products, followed by distributing them through middlemen and state agencies, respectively. Three villages each in the Rice and Uplands strata carried out direct sale, while two villages in the Plantation stratum did the same. One village each in the Plantation and Uplands strata distributed goods through middlemen while only one village in the Uplands stratum distributed through state agencies (Table 17.3)

Table 17.3 Number of villages which cooperated to secure market by type of selling of products and strata (multiple response)

Type of selling the products	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Direct sell	-	3	2	3	-	8
Middlemen	-	0	1	1	-	2
State agencies	-	0	0	1	-	1

Of the 18 labour-contributing villages, most (10 villages) carried out production all year round, while five and two produced goods seasonally and on a made-to-order basis, respectively. The all-year-round production villages were located mostly in the Uplands, followed by Mixed economy and Rice strata (5 villages, 3 villages and 2 villages respectively). Seasonal production was mostly carried out in the Plantation stratum (3 villages), followed by the Uplands stratum (2 villages). Made-to-order production was implemented in one village each in the Plantation and Uplands strata (Table 17.4).

Table 17.4 Number of villages that participated by contributing labour in the OTOP project by frequency of production and strata

Frequency of production	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
All-year-round	-	2	-	5	3	10
Seasonally	-	-	3	2	-	5
Made-to-order	-	-	1	1	-	2
Other	-	1	-	-	-	1

17.3 Product types

This study divided OTOP products into five types: agricultural products (such as fragrant jasmine rice), industrial products (such as aromatic herbal joss sticks, fashion shoes and bottled drinking water), handicrafts (such as basketry, hammocks and cloth weaving), local food products (such as roasted banana crisps, processed fruits and shrimp-paste sauce) and others (like local tourism). Of the 32 villages participating in the OTOP project, local food products were the product type produced by the largest number of villages (11), followed by handicrafts, agriculture products and industrial goods (9 villages, 4 villages and 3 villages, respectively). There were three villages involved in local tourism (Table 17.5).

Of 11 villages producing food products, there were three each in the Rice, Plantation and Uplands strata; and the remaining two were located in the Mixed economy stratum. None of the villages in the Semi-urban stratum made these types of product.

Table 17.5 Number of villages participating in OTOP project by product type and strata

Product types	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Agricultural	-	1	1	1	1	4
Industrial	1	-	1	-	1	3
Handicraft	-	1	1	5	2	9
Local Food	-	3	3	3	2	11
Other	1	-	1	1	-	3
Total	**2**	**5**	**7**	**10**	**6**	**30***

* No answer 2 villages (one each in the semi-urban and mixed economy strata)

Among the nine handicraft-producing villages, five were in the Uplands, two in the Mixed economy stratum and one each in the Rice and Plantation strata. Of the four villages that produced agricultural products, one each was located in the Rice, Plantation, Uplands and Mixed economy strata. None of the village in the Semi-urban stratum made this kind of product.

The three villages making industrial products were in the Semi-urban, Plantation and Mixed economy strata. As for the remaining product/service types, the study reveals that local tourism was carried out in only one village each in the Semi-urban, Plantation and Uplands strata.

17.4 Problems after the participation

According to the village key informants, of 32 villages participating in OTOP, 13 villages were facing problems. These were in the Rice, Plantation, Uplands and Mixed economy strata (2 villages, 3 villages, 5 villages and 3 villages, respectively).

None of the key informants of villages in the Semi-urban stratum said that their villages faced problems after joining the OTOP project (Table 17.6).

Table 17.6 Number of villages in the OTOP project facing problems by strata

Problem	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
Yes	-	2	3	5	3	13
No	2	3	4	5	3	17
Total	**2**	**5**	**7**	**10**	**6**	**30***

* No answer 2 villages (one each in the semi-urban and mixed economy strata)

Of the problems specified by the key informants of the 13 villages, the problem most often specified was securing markets (6 villages), followed by the lack of funds (5 villages), lack of space for drying the product (1 village) and soil degradation as a result of continual use of agricultural land (1 village). The problem of securing markets occurred in three villages in the Uplands and one village each in the Rice, Plantation and Mixed economy strata. The fund shortage problem was found in a village in the Rice stratum and in two villages each in the Plantation and Uplands strata. The problems of lacking space for drying products and of soil degradation were found in one village in the Mixed economy stratum (Table 17.7)

Table 17.7 Number of villages which faced problem after participation in OTOP project by type of problem and strata

Type of problem	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
1. No funding	-	1	2	2	-	5
2. Space for drying the product	-	-	-	-	1	1
3. Secure market	-	1	1	3	1	6
4. Soil degradation	-	-	-	-	1	1

17.5 Need for the government to solve the problems after participation in OTOP project

Among the problems faced by the 13 villages, the main problem that the affected villages wanted the government to solve was securing markets for their products, followed by the need for providing funds for their production. The need for help to secure markets was stated in every strata (Table 17.8).

Table 17.8 Number of villages facing problems after participation in the OTOP project by need to solve the problems and strata (multiple responses)

Needs for the government to solve the problems	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
1. Reduce cost of production	-	1	-	-	1	2
2. Increase funds for production	-	1	2	2	1	6
3. Secure market	-	2	2	3	1	8
4. Training in production	-	1	-	-	1	2
5. Provide equipment for production	-	-	-	2	-	2
6. Border Trading (Thai – Myanmar)	-	-	-	1	-	1

17.6 Reasons for not participating in the OTOP project

The study of the reasons why 57 villages did not participate in the project reveal that the principal reason is the villagers' lack of readiness in terms of their lack of time, of production know-how and of production sites (14 villages). The secondary reasons are the lack of an outstanding local product (10 villages) and

the villages' remoteness (9 villages). The reasons of lacking the necessary coordination/cooperation and of being ill-prepared for the project membership was cited by 7 villages, while only 4 villages gave a fund shortage as their reason. However, it is noteworthy that 3 villages (2 villages in the Plantation and 1 village in the Mixed economy strata), out of the desire to exclude other villages from co-producing the products they themselves originated took the stance of reserving the right to produce such products (Table 17.9).

Table 17.9 Number of villages not participation in the OTOP project by reason for not participate and strata

Reason for not participation	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
1. Fund shortage	-	2	-	1	1	4
2. No outstanding local product	-	4	1	5	-	10
3. Lack of leader	-	3		-	-	3
4. Lack of necessary coordination/cooperation	-	1	3	-	3	7
5. Village remoteness	1	3	1	3	1	9
6. Lack of time/ of production know-how/ and production sites	3	2	4	2	3	14
7. Out of desire to exclude the other villages to join	-	-	2	-	1	3
8. Ill-prepared for the project membership/waiting for budget	-	1	2	-	4	7

The reason that villagers were not ready to engage in the project was cited by 4 villages in the Plantation stratum, 3 villages each in the Semi-urban and Mixed economy strata and by 2 villages each in the Rice and Uplands strata. The reason

of not having any outstanding local product was given by 5 villages in the Uplands, 4 villages in the Rice, and 1 village in the Plantation strata. However, this particular reason was not found in the Semi-urban and the Mixed economy strata.

The reason of the villages' remoteness was cited by 3 villages each in the Rice and Uplands strata, and 1 village each in the Semi-urban, Plantation and Mixed economy strata.

17.7 Interest in future participation in the OTOP project

The group interviews with the village key informants of the 57 non-participating villages reveal that 26 villages were interested in future participation in the project, with 2 villages being in the Semi-urban, 4 villages in the Rice, 8 in the Plantation, 7 villages in the Uplands, and 5 in the Mixed economy strata (Table 17.10).

It is notable that about one third of the 57 villages were uncertain about future participation. A key research question is what is the chief cause for such uncertainty and how to tackle this particular problem (Table 17.10).

Table 17.10 Number of villages by interested in future participation in the OTOP project by strata

Interest in future participation	Semi-Urban	Rice	Plantation	Uplands	Mix Economy	Total
Yes	2	4	8	7	5	26
No	1	5	1	1	4	12
Not sure	1	7	4	3	4	19

For the villages interested in joining the project, 2004, the year following the year of this study, was the expected entry time for most villages (14 villages), followed by 2005, 2009 and 2008 (8 villages, 2 villages and 1 village, respectively) (Table 17.11).

Table 17.11 Number of villages interested in future participation in OTOP project by year of intended participation and strata

Year	Semi-urban	Rice	Plantation	Uplands	Mixed Economy	Total
2004	2	2	3	4	3	14
2005	-	1	3	2	2	8
2006	-	-	-	1	-	1
2007	-	1	1	-	-	2

17.8 Summary

The interviews with the village key informants in 89 villages found that only 32 villages, or about one third of the study villages, participated in the OTOP project. The most popular form of participation was contributing labour to producing OTOP products, followed by co-investing in the project, and being a nominal member without any actual role on the OTOP project committee. Labour contribution was mostly for the production of local food products such as roasted banana crisps and shrimp-paste sauce, followed by the production of handicrafts, and agricultural and industrial goods and by local tourism, respectively.

Almost half of the participating villages faced problems after participating in OTOP. The most frequently mentioned problem was securing markets, followed by a shortage of production funds. Village key informants wanted the government

to solve the project problems, especially providing markets, providing funds for running the project, as well as helping reduce production costs.

As for the non-participating two thirds of the study villages, the reason for not participating that was stated most often by village key informants was the villagers lack of readiness in terms of their lack of time, of production/ management know-how and of production sites; followed by the reason of not having any outstanding local product. These reasons for not participating, therefore, reveal the concrete problems that require urgent government remedies. Approximately one-half of the non-participating villages showed an interest in participating in the OTOP project, and one third were still undecided about future participation.

18. Summary

Aree Jampaklay

The Kanchanaburi project is a longitudinal study that has monitored population changes in a designated study area since 2002. This report presents summary information from the data collected in Round 4 (2003). The population interviewed in this round includes those who moved in after the 3rd round, remained in the area after being enumerated in the 3rd round, and those born in the field site between round 3 and round 4. Those excluded are those who moved out of the study area after the 3rd round and those that died between rounds 3 and 4. The project study area includes villages/enumeration blocks in Urban/semi-urban, Rice, Plantation, Uplands, and Mixed economy strata.

Data collection involved the enumeration of every household and every household member. The list of households and individuals interviewed in previous rounds was checked and updated. The interview used a structured questionnaire for household and individual interviews. Group interviews were conducted for obtaining the village profile and used a village questionnaire. For the fieldwork, 78 interviewers and 10 supervisors were employed.

The response rate is about 77 percent for households and is 96 percent for individuals in interviewed households. The average length of an interview was 20 minutes for the household questionnaire and 14 minutes for the individual questionnaire. About 94 percent of interviewers evaluated the data quality as good or excellent.

The descriptive results of the 4th round census (2003) are as follows:

1. General Characteristics of the Study Population

There are 42,816 people from 12,356 households enumerated in Round 4 (2003), with slightly more females than males. The proportional representation of the field site population is highest in the Uplands (27 percent), and lowest in the Plantation strata (16 percent). Since the last census round the population has decreased in all strata. The age and sex structure of the population has changed little over census rounds. There are more males than females at young ages. As age increases, there are more females than males. The proportion of the population at young ages is highest in the Uplands stratum. As a consequence, the dependency ratio of population in this stratum is also the highest. The population of the Rice stratum has the highest proportion at old ages, also resulting in a high dependency ratio.

2. Social and Economic Status

Agriculture remains the sector where most of the population are employed. The exception is for the Urban/semi-urban stratum, where the largest proportion are employed in crafts/labor and sales. However, there is a decreasing level of employment in agriculture and an increasing trend in the proportion employed in crafts/labor, business/administrative, sales, and service. The second and the third highest ranked occupational categories were crafts/labor and sales categories for men, and were sales and crafts/labor categories for women. About 10 percent of men and about 26 percent of women are not in the labor force. A higher proportion of the labor force in the Urban/semi-urban strata, compared to other strata, work in professional jobs. At the same time, for men the proportion not in the labor force is higher, and has increased more rapidly, in the Urban/semi-urban stratum. The

highest proportion of women not in the labor force is found in the Uplands stratum.

Education levels differ, especially between the Urban/semi-urban and other strata. They also differ between women and women. In the Urban/semi-urban stratum, the proportion of the population never been in school is lowest and the proportion who have completed more than a secondary level of education is highest. In contrast, the Uplands stratum has the highest proportion with no schooling. There have been decreases in the proportion of those who have never been in school across strata. Women are educationally disadvantaged compared to men. The gender gap in levels of completed education is least evident in the Urban/semi-urban and most evident in the Plantation and Rice strata.

Most households in the study areas use Thai as the language of daily use. The exception is for the Uplands stratum, where less than two thirds of households speak Thai. The remaining households in the Uplands stratum are most likely to speak Karen, Karang, and Pakayaw. Other languages commonly used are Mon and Burmese.

3. Fertility and Family Planning

The fertility level in the study area has reached the replacement level and continues to decrease. Fertility begins at appreciable levels at ages 20 – 24 and ends at ages 40-44. This pattern reflects a high level of controlled fertility. Contraceptive use, which had increased over previous study rounds, decreased slightly between Round 3 and Round 4. Sterilization remains the most frequently used contraceptive method, except in the Uplands stratum, where pills and injection are more popular. In

the field site, the second and third most used methods are pills and injection. Sterilization, pills, and injection together comprise nine tenths of all contraceptive use. More than 90 percent of currently married women in reproductive ages have ever used contraception, with 78 percent currently using contraceptive. Most women used contraceptives for the first time in order to space births. Only 18 percent used contraceptives for the first time in order to limit their fertility.

4. Marriage Patterns

The marriage patterns of the study population follow the marriage patterns of population in the Thai population. Women marry younger and are more likely than men to be widowed, divorced, or separated. Most currently married people live with their spouses. For those not currently married, a lower proportion of women intend to marry than men and a higher proportion stated that they did not intend to marry. The proportion of those who are uncertain about their marriage plans is similar for women and men. Slightly less than a half of those who are married have registered their marriage.

5. Migration

The majority of the study population (81 percent) did not migrate in the year before the field site census. The out-migration rate is higher than the in-migration rate, with a net out migration rate of about 6 per 100 persons. The migration rate is highest in the Uplands and lowest in Rice strata. Men are more likely to move than are women. Migrants are mostly aged 15-29. Most move within Kanchanaburi province.

6. Mortality

A total of 280 persons in the study area died during July 1st 2002 and June 30th 2003, an increase from Round 3 (2002). The mortality rate was about 7 per 1,000 persons. The mortality rate of men was slightly higher than of women. Regarding differences between strata, two mortality patterns can be distinguished. In the Urban/semi-urban and Rice strata, the crude death rate ranged from 8 to 10. The other group is mortality in the Plantation, Uplands, and Mixed economy strata, which was about 5-6. Mortality patterns by age were the same for women and men, and followed the J-shape observed in the Thai population. Mortality was high for infants and young children and decreased with increasing age until old age was reached, when mortality rose again. The age-specific mortality rate of women was lower than that of men in almost all age groups. Mortality patterns found in Round 4 (2003) were not very different from mortality patterns found in the previous rounds. More than 80 percent of deaths were caused by illness. About 44 percent were non-communicable, while 21 percent were from communicable diseases. Old age death was the third most prevalent cause of death (about 18 percent). The proportion of deaths resulting from accident, homicide, and suicide increased between Round 3 (2002) and Round 4 (2003). About 95 percent of deaths were registered.

7. Health Behavior

Over survey rounds, unhealthy eating behavior had tended to increase. There has also been an increase in the behavior of taking health-enhancing food and vitamins. There was also an increasing proportion of the population consuming bottled water, especially in the Urban/semi-urban stratum where the level of consumption of bottled

water was the highest. The proportion engaging in regular exercise was also increasing, with residents of the Urban/semi-urban stratum being more likely to exercise by jogging compared to residents of other strata. Across strata, the most popular type of exercise was aerobic. The proportion engaging in this form of exercise increased between Round 3 (2002) and Round 4 (2003). Compared to Round 2 (2001) and Round 3 (2002), smoking, and the consumption of alcohol and stimulant beverages had increased in Round 4 (2003).

8. Disability

About 8 percent of those aged 15 years old and over had some form of disability. Physical and movement disability was the most often type of disability found in the study areas. The main cause of physical and movement disability is chronic disease and vision disability. Disabilities were most often found in population aged 45-49 years old, among whom about 10 percent were disabled. This was higher than the level of disability found in the aged population.

9. Elderly Care

Eighteen percent of respondents aged 15 and over had experienced providing care and support to the elderly. Most caregivers were in the working ages (35-44 years), suggesting that they did not only care for the elderly, but also were responsible for caring for their own children. However, even in this situation less than 2 percent of the caregivers felt that caring for the elderly was a burden to them. From social, moral, and policy perspectives, this is a very encouraging finding of the study. Even though the proportion of elderly in the Thai population is increasing, the elderly are provided care and are happily supported by their families.

10. Commuting

Commuting patterns varied by the age and sex of the population. In the study area, about 98 percent of school age children commuted to school, and 88 percent of the working age population commuted to their workplace. The average commuting time of school age children living in the plantation and uplands was 17 minutes, which was higher than for children living in other strata. Both males and females of working age in the uplands stratum had the highest commuting time (24 minutes). On average, the duration of commuting of males was 2 minutes longer than for females.

Although there was little gender difference in commuting costs, there was a substantial difference in commuting costs among strata. The average monthly commuting cost of school age boys living in the Urban/semi-urban stratum was about 100 Baht higher than that for boys in the Uplands stratum. And the average monthly commuting cost of school age girls living in the Urban/semi-urban stratum was about 90 Baht higher than that for girls living in the Uplands stratum. The average monthly commuting cost of males of working age was about 2 times higher than that of females (330 and 160 Baht for males and females respectively). The cost of commuting for females in the Urban/semi-urban stratum was about 4 times higher than that of females in the Uplands stratum (246 and 60 Baht respectively).

The main commuting mode for every age group was motorcycle. There were only slight differences in the proportions of the population using other commuting modes. The second most popular mode for school age children was an arranged

vehicle, while it was a private vehicle for males of working age. The population in the Uplands had the lowest proportion of the population who used non-motorized modes for commuting.

11. Insurance and Health Insurance

Approximately 15 percent of the population aged 15 years old and above had at least one form of non-health insurance. The most commonly held form of insurance was house (62 percent of those with insurance), and land (45 percent). Other forms of insurance for the future included cremation fund (47 percent), bank account (41 percent), and life insurance (22 percent). About three fourths of the population hold a Gold Card (Bat Thong) for health insurance.

12. Village and Community Fund

About 90 percent of the population in the study areas in Round 4 (2003) knew about the One Million Village Fund. This represents an increase in knowledge about the fund compared to the 3rd round census. However, only one-half of the population participated in any way in the fund. Among those participating, about 45 percent were members and about 42 percent were also borrowers. This data, to some extent indicates that the operation of the fund had achieved the most important objective of the fund, which is to be an accessible local funding source for people.

13. Government Policy: One Tambol One Product (OTOP)

About one third of the study villages, participated in the OTOP project. The most frequently cited form of participation was contributing labor to producing OTOP products, followed by co-investing in the production, and being a nominal

member without any actual role on the OTOP project committee. Labor contribution was mostly for the production of local food products, followed by the production of handicrafts, and agricultural and industrial goods and local tourism.

Almost half of the participating villages faced problems with participating in OTOP. The most frequently mentioned problem was securing markets, followed by a shortage of production funds. Village key informants wanted the government to solve the project problems, especially providing markets, providing funds for running the project, as well as helping reduce production costs.

For non-participating villages, the reason for not participating that was stated most often was the lack of readiness of the village in terms of their limited time, low production/management know-how and a lack of production sites; followed by the reason of not having any outstanding local product to market under the project. These reasons for not participating suggest the need for urgent government remedies. Approximately one-half of the non-participating villages showed an interest in participating in the OTOP project, and one third were still undecided about future participation.

Appendix

Appendix 1

Additional tables

Table A2.1 Number of eligible cases, number of interview cases, response rate and average time of interview (in minute) by type of questionnaire

Questionnaire	Number eligible	Number of interviews	Response rate	Average time interview
Household	16,150	12,356	76.5	19.6
Individual	30,035	28,873	96.1	13.6

Table A2.2 Number and percent distribution of non-response by reason and type of questionnaire

Reason	Household		Individual	
	Number	Percent	Number	Percent
Refused to interview	128	3.4	187	16.1
Not available/ working	109	2.9	503	43.3
Sick/old/handicap	-	-	437	37.6
Move out	2,835	74.7	-	-
No permanent residents	248	9.4	-	-
Deserted home	161	4.2	-	-
Decease	68	1.8	-	-
Could not find	458	12.1	-	-
Could not access	7	0.2	-	-
Others	23	0.6	16	1.4
Do not know/no answer	5	0.1	19	1.6
Total	3,794	100.0	1,162	100.0

Table A2.3 Percent distribution of respondents by question and questionnaire

Question	Questionnaire	
	Household	Individual
What was the place where the interview was held like?		
Free from disturbances/ very private	60.5	57.8
There was some disturbance, but it did not affect the interview.	35.7	38.4
There was a disturbance and it affected the interview.	2.9	2.5
There was a lot of disturbance and the interview had to be stopped often/it is spoiled the atmosphere	0.6	0.5
Do not know / no answer	0.2	0.9
Total	100.0	100.0
(Number)	12,356	28,873
Were there anyone else during the interview?		
Yes, all the time.	29.2	30.9
Yes, sometimes.	13.1	14.2
No, not at all.	57.4	54.0
Do not know / no answer	0.3	0.9
Total	100.0	100.0
(Number)	12,356	28,873
If there was another person in this interview, who was it? (Can answer more than one person)		
Other family members	72.8	81.8
Friend	6.5	5.5
Neighbor	30.0	21.3
Interpreter	2.5	2.2
Others (relatives, other interviewers, etc.)	3.8	2.7
Did such person answer or give opinions for the respondent?		
Yes, a lot.	2.9	2.4
Yes, sometimes.	28.7	28.4
Yes, a little.	24.5	23.9
Not at all.	42.9	42.8
Do not know / no answer	1.1	2.5
Total	100.0	100.0
(Number)	5,262	13,275
How much cooperation did the respondent give during the interview?		
Very good	41.3	39.0
Good	53.8	55.1
Average	4.1	4.3
Little	0.5	0.6
Do not know / no answer	0.3	1.0
Total	100.0	100.0
(Number)	12,356	28,873

Table A2.3 (Continued)

Question	Questionnaire	
	Household	Individual
How did the respondent behave during the interview?		
Enjoyed answering	89.0	87.3
Indifferent	10.3	11.4
Reluctant to answer in some questions.	0.2	0.2
Showed dissatisfaction of some questions.	0.1	0.1
Do not know / no answer	0.3	1.0
Total	100.0	100.0
(Number)	12,356	28,873
In general, what is the quality of the data obtained from this interview like?		
Very good	34.2	32.1
Good	60.6	62.0
Satisfied	4.5	4.6
Not good	0.4	0.4
Do not know / no answer	0.3	0.9
Total	100.0	100.0
(Number)	12,356	28,873
Reason for low quality of interview		
Foreigner	39.1	47.8
Drunk	6.5	9.7
Very old	6.5	3.5
Brain damage ?	4.3	2.7
Do not cooperative	28.3	33.6
Sick	4.3	-
Absent minded/ too serious	4.3	2.7
Young respondent/ not know information	6.5	-
Total	100.0	100.0
(Number)	46	113

Table A7.1 Age-specific fertility rates and total fertility rates of women in reproductive age by survey round.

Age	Age-specific fertility rate			
	Round 1	Round 2	Round 3	Round 4
15-19	0.07821	0.06929	0.06466	0.06873
20-24	0.12874	0.13320	0.12644	0.14506
25-29	0.09780	0.10261	0.10561	0.09391
30-34	0.06127	0.06913	0.06515	0.06037
35-39	0.04005	0.03593	0.03199	0.02905
40-44	0.01106	0.00742	0.01051	0.00783
45-49	0.00192	0.00279	0.00179	0.00000
Total fertility rate	2.10	2.10	2.03	2.02

Table A7.2 Contraceptive prevalence rates by method and strata, round 4 (2003)

Method	Urban/ Semi-urban	Rice	Plantation	Uplands	Mixed economy	Total
Female sterilisation	36.3	28.3	27.6	20.1	33.0	28.4
Male sterilisation	2.8	1.3	1.9	1.5	2.0	1.9
Norplant	0.3	0.4	1.9	2.5	1.8	1.5
Injection	9.1	25.2	22.5	21.1	17.7	19.0
IUD	0.8	1.0	0.8	1.7	0.6	1.0
Pills	23.6	23.5	25.9	23.2	22.7	23.6
Condom	3.0	0.7	0.9	0.6	1.0	1.2
Others	3.7	0.6	1.5	1.5	1.2	1.7
Contraceptive prevalence rate	79.5	80.9	83.1	72.1	80.1	78.3

Appendix 2

Questionnaires

Appendix 3

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