Demographic Differentials in a Rapidly Changing Mixed Ethnic Population in Northwestern Thailand

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M A P

ABSTRACT

Strong differences in demographic rates appear when data from a rapidly changing area in northwestern Thailand are disaggregated by ethnicity and ecological type of community. Birth and death rates in the small district Town resemble urban rates in developed countries, in association with widespread use of contraception and control of infectious diseases. Vital rates have recently fallen rapidly in mixed ethnic Suburbs and Lowland Rural Northern Thai and Skaw Karen communities, but remain high in Highland communities.

Large numbers of migrants to Town and Suburbs come from diverse origins. Migration rates are lower to Rural communities where most migrants come from similar nearby communities.

These demographic differences and changes seem strongly influenced by ethnic background (e.g., ideals of marriage and household composition), convenience factors (access to family planning and health facilities) and socioeconomic modernization (education and nonagricultural occupations).

I. Introduction

The purpose of this paper is to suggest the importance of disaggregating census data in terms of appropriate sociocultural categories, in order to discover and understand demographic differentials, especially in heterogeneous and rapidly changing populations. Data discussed here are from an ethnically mixed and ecologically varied part of northwestern Thailand, which has been changing rapidly over the past two decades.

This paper is written from the viewpoint of an anthropologist, not a demographer, but it considers a topic of mutual interest to both disciplines: interactions between cultural, socioeconomic, and demographic variables. It fits into the category of "micro-demographic" studies, which have been recognized by Caldwell (1982A; 1982B; 1983) and others (Caldwell et al. n.d.) as a valuable addition to the conventional use of censuses and large scale national surveys. Micro-demographic studies are characterized by an examination of population behavior in communities which are studied intensively and longitudinally, so that the details of their socioeconomic structure, cultural norms and history are known, and can serve as a basis for understanding demographic change. The anthropological method of controlled comparison (Eggan: 1954) is a valuable adjunct to micro-demographic studies, in that it seeks to study variation while controlling a number of relevant variables at the community or sociocultural levels. In this study we are able to look at both the demographic correlates of ethnicity (by comparing different ethnic groups living in the same community) and the correlates of socioeconomic conditions and changes (by looking at the same ethnic group in different types of communities).

Many population studies, including this one, attempt to describe and understand the transition from high to low fertility and mortality, and the relationships between these demographic transitions and socioeconomic development. The careful demographic-historical work at Princeton and elsewhere (e.g., Coale et al. 1979; Knodel 1974) has shown that transitional demographic changes and their associations with socioeconomic changes may vary significantly between and within countries, even in the West. The causal chain leading from socioeconomic development to decline in mortality, and the chain leading

from socioeconomic development to decline in mortality, and thence to decline in fertility, is not as straightforward as it once seemed in the original model of the demographic transition (Davis 1949; Notestein 1945; cf. World Bank 1983: 11-13ff, 31). When looked at in detail, even in Europe, the paths of socioeconomic and demographic transition, in terms of fertility and mortality levels, rates of change and sequence in which the changes take place, are variable. Reasons for this variability are not yet completely understood.

More or less independent diffusion of public health, medical and contraceptive technology, of modernized production systems, of attitudes and values (including the desire to limit numbers of children), and even of socioeconomic organization (in terms of participation in modern market economies) are important in transitions which are now occurring. It is not necessary for each population or each community to reinvent the methods of mortality and fertility control, nor the attitudes which go with them. The Western historical experience may be a poor guide for policy in developing countries. It is now clearly possible for populations in rural areas to become modernized and urbanized in many important respects without living in urban places, and it is also possible for some aspects of modernization to diffuse without others. Understanding these processes is of fundamental interest to anthropology, demography, and other academic disciplines, and also to the applied fields of health and economic development.

Demographic variability is extreme in the research area, which is only a small portion of a single province. Fertility and mortality are very low in Town, and very high in some of the Highland communities, with annual natural increase ranging from 8/1000 in Town to 35 and 61/1000 in different types of Highland communities. It appears that both ethnic factors (or cultural norms) and the basic socioeconomic type of community affect the path of the demographic transition. Aggregating the data, even though they all come from two adjacent districts in the same province, would obscure significant differences in levels of demographic rates, rates of change, and the sequence in which the demographic and socioeconomic changes take place.

In what follows, we first discuss the data sources and the characteristics of the research area. We then describe transitions in mortality, fertility and migration in the different types of

communities.[1/]

II. Materials and Methods

Data were gathered during the course of ethnographic fieldwork between 1963 and 1982. Large socioeconomic-demographic surveys were conducted in the late 1960s, covering about 10,000 people in 30 communities, with three major ethnic groups (Northern Thai, Skaw Karen and Lua') representing three distinct language families. Communities included the district Town and its surrounding Suburbs, several Lowland Rural villages, and a number of Rural Highland ("hill tribe") villages. In 1981-82 we resurveyed the same communities, plus several more representing two additional highland minority ethnic groups (Po Karen, Hmong) (Table 1). We conducted detailed studies of household economics in one Lua' Highland village in 1980, and in Town, in a predominantly Northern Thai Suburb, among Suburban Skaw Karen households, and in two Highland Skaw Karen communities in 1982. We also did post-enumeration verification of the census and studied changes in household composition over a one year period in these communities.

We selected the surveyed communities to represent a sociocultural and ecological range which we had recognized in our ethnographic fieldwork, and also to allow control of ethnicity and community type in the comparisons which we planned to make. We surveyed entire communities, rather than sample households, because of the logistic problems in establishing a sampling list and conducting surveys in a large number of dispersed communities. This also allowed us to limit the amount of community-level variation. In general we used native speakers of the dominant language of the community as interviewers. In some cases, where native speakers of the local dialect were not available as interviewers, we used school teachers from the local schools. Data from the 1981-82 surveys are still being processed, and what we present here are preliminary results.

III. Description of the Study Area

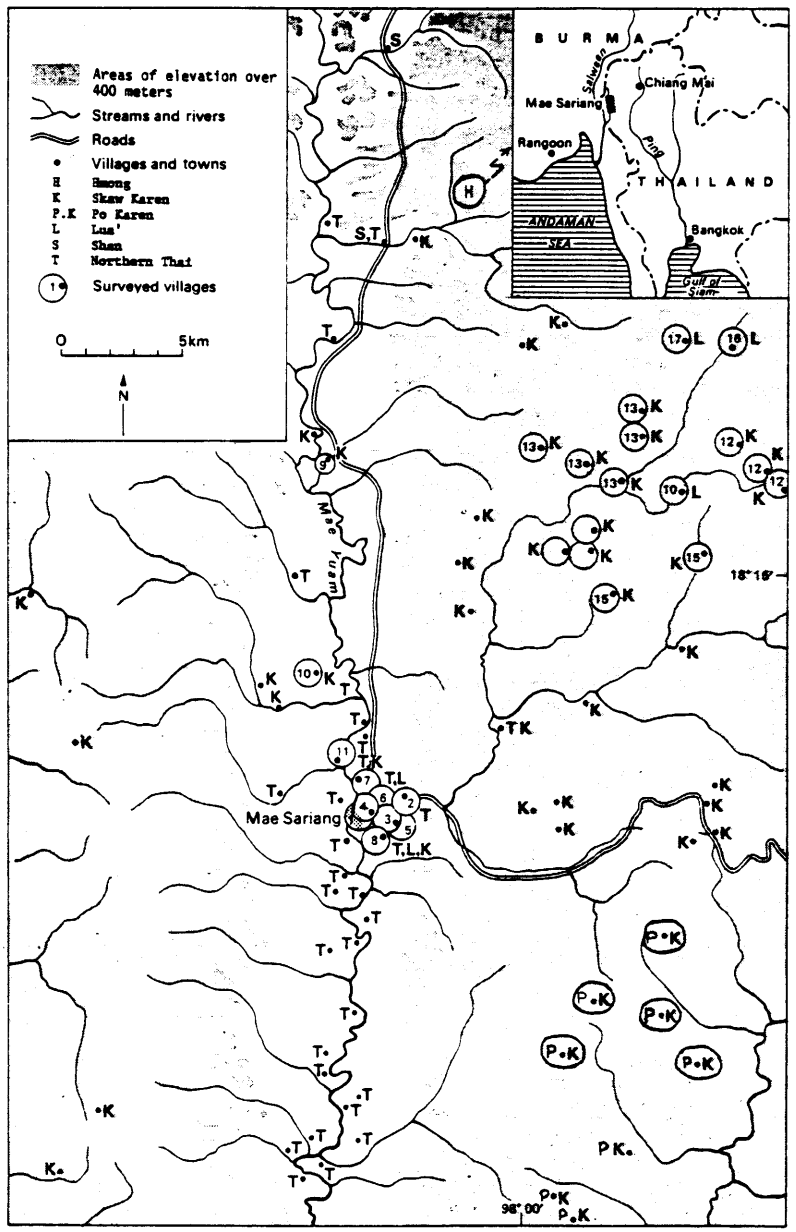
The research was conducted in Mae Hongson Province, in the northwestern corner of Thailand, close to the Burma border (Map 1). The

Table 1. Characteristics of Different Types of Communities

	Lowland				Highland			
	Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Number of communities surveyed, 1981-1982	1	8	1	2	18	6	3	1
Population on date of survey	1326	7876	670	1158	3058	197	1563	197
Basic local economy	commerce, civil service, wage	wage work, farming, civil service, commerce	wet rice farming	wet rice farming	swidden and wet rice farming	swidden and wet rice farming	wet rice and swidden farming	swidden maize and opium farming
Ethnicity (%) (see Table 2. for details)	N. Thai 82 C. Thai 9 Shan 4	N. Thai 65 Skaw Karen 13 Lua' 10	N. Thai 94 Skaw Karen 2 P. Karen 2	S. Karen 96 N. Thai 3 Lua' 2	Skaw Karen 100	Po Karen 100	Lua' 99	Hmong 100
Distance to a district town (km)	0	0 - 2	10	10±	20 - 25	15 - 20	20 - 25	20
Shortest travel time to district town (hours)								
dry season*	0.0	0.0 - 0.2	0.4	0.4 - 0.5	2.5 - 6.0	1.5 - 2.0	2.0 - 3.0	6.0
rainy season	0.0	0.0 - 0.2	0.4	0.4 - 0.5	5.0 -10.0	4.0 - 6.0	5.0 - 8.0	10.0

* Assumes motorized transportation is available if roads are passable.

Map 1. Location of Study Area and Surveyed Villages
(After Kunstadter 1972)



district Town of Mae Sariang is located in the narrow, intensively cultivated valley of the Yuam River, at an elevation of about 300 meters, about 190 kilometers southwest of Chiang Mai. The town was the westernmost Thai frontier post on a traditional trading route between Chiang Mai and Burma, which lies beyond a low range of mountains, and across the Salween River, about 25 km to the west of the town. Small Rural Lowland Northern Thai and Skaw Karen villages, surrounded by irrigated rice fields, lie in the valley of the Yuam and its major tributaries, above, below, and to the east of the town. The low hills east and west of the valley are covered with deciduous dipterocarp and teak forests, and are empty of settlements, but are occasionally used by lowlanders for swidden (slash and burn) fields. Some of the Northern Thai Lowland villages were once ethnically Lua', but the people have "become Thai" within the past three or four generations. Minority group ("hill tribe") Highland villages of Lua' and Skaw Karens are found in the higher mountains to the northeast of Mae Sariang, at elevations ranging from about 700 to 1200 meters. Po Karen villages and a few Lua' villages are in the mountains to the southeast of Mae Sariang. All of these villages have been established for many generations. Starting about 1960, Hmong have established a few villages at elevations above 1,000 meters in or near the study area.

Highland Lua', Po Karen, and Skaw Karen villages are generally located in hilly areas covered by second growth mixed deciduous forests in various stages of regrowth following swidden cultivation. Local subsistence economies in these villages are based on a mixture of swidden and irrigated rice farming. Swiddening has followed a regular rotation system with cultivation for a single season, and 7-11 years of fallow before returning to cultivate the same field. Some of these villages have had irrigated fields for 50 years or more, and there has been a considerable expansion of the very small highland irrigation systems and their terraced fields since the early 1970s, apparently in response to population pressure (Kunstadter in press). Within the past decade or so the balance of production in some of these villages has shifted from swidden to wet rice.

Lua' villagers, especially young men, for several generations have earned cash to supplement their subsistence production by migrating temporarily, usually seasonally, to work for lowland employers as

farm laborers, or in mines. Individuals and households unable to make a living in the highlands, or expelled from their villages for violations of taboos, have moved to the lowlands, to settle near Mae Sariang town. This type of movement has been going on at least since the early 1920s, and the total number of Highland Lua' and their descendants living near town is now substantial (Table 2). Karen men, especially since the Second World War, have earned cash by working with elephants in the lumbering industry. A few Skaw Karens have moved from highland villages to the lowlands, but in general they have settled in Karen communities and retained their identity as Karens, rather than becoming Northern Thai, as have many of the second and third generations of Lua' migrants.

Po Karens in this area are very hard pressed economically, as indicated by shortening swidden cycles and low farm productivity. They began moving into the lowlands to seek wage work only in about 1969. A number of Po Karen households have now settled in the Suburbs, but some of these are actually transhumant, returning to their original villages during the rainy season in order to cut swiddens, and moving to the valley for wage work in the dry season after harvest.

Government development projects beginning in the mid 1970s in many of these hill villages have been directed at improving communication and transportation by building a network of dry season roads, upgrading schools, improving farm productivity by building or expanding small irrigation systems, and improving health services by building and staffing health stations. These projects have also provided wage work opportunities during the dry season without requiring migration.

Unlike the other Highlanders in this area, Hmong villages are only temporary aggregates of households. Households, or parts of households may leave or join the settlement in search of land, or the whole settlement may split up and move to a new location when soil resources are exhausted. Their economy is based on a mixture of subsistence cropping of maize (much of which they feed to pigs), and rice (when their land is suitable) plus opium as a cash crop. They cultivate intensively, completely clearing their fields of trees, and as a result the forest regenerates very slowly when they abandon their fields because of soil exhaustion or overgrowth of grassy weeds.

Table 2. Ethnicity (First Language Spoken) by Community Type

(Unit: %)

First language spoken by community residents	Lowland				Highland			
	Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Northern Thai	81.9	65.4	94.4	2.5	0.1	0.0	0.1	0.0
Central Thai	9.2	3.5	0.6	0.0	0.0	0.0	0.0	0.0
Shan	3.9	1.5	0.2	0.1	0.0	0.0	0.0	0.0
Northeastern Thai	0.7	0.3	0.2	0.0	0.0	0.0	0.0	0.0
Chinese	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
"Indian"	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Burmese	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Skaw Karen	0.7	12.8	2.3	95.6	99.8	0.2	0.6	0.0
N. Thai + Skaw karen	0.0	0.8	0.0*	0.0	0.0	0.0	0.0	0.0
Po Karen	0.0*	0.3	2.3	0.1	0.0*	99.8	0.0	0.0
N. Thai + Po karen	0.0	0.5	0.0*	0.0	0.0	0.0	0.0	0.0
Lua'	0.0*	10.3	0.0	1.6	0.0	0.0	99.0	0.0
N. Thai + Lua'	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Hmong	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.5
Other	0.5	3.1	0.0	0.0	0.0*	0.0	0.4	0.0

* less than 0.05%

Hmong have not moved into the lowlands in search of wagework of farm land in the study area. Instead they hire Karen and Lua' workers and may locate new settlements in places where they can purchase rice and hire laborers to work in their opium fields.

The Town and its surrounding suburbs have expanded rapidly since an all-weather road was completed from Chiang Mai to Mae Sariang in 1965. The Town and most of the Suburbs now have electricity, paved streets, and piped water. There are two cinemas, two hospitals, a high school and a number of grade schools in addition to a full range of government offices, and there is frequent bus service to other parts of Thailand. There is cable television, and stores in Town provide a full range of modern manufactured goods for purchase. Thus in terms of infrastructural services and material conditions people in the Town and Suburbs are living in an urban environment, and most of them have urban occupations (merchants, civil servants, wage workers).

Within the past few years the Rural Lowland communities have begun to benefit directly from developments which were centered in town. An irrigation system which was begun in about 1969 now provides water for dry season farming for many of the farmers, all-weather roads now connect many of these villages with town, electric lines have reached many of them within the past two or three years, and many now have local water systems.

IV. General Demographic Characteristics in the Study Area

In Thailand as a whole, mortality declined rapidly following the Second World War, as a number of infectious diseases, particularly smallpox and malaria, were controlled (Chamratrithirong 1981; Knodel and Chamratrithirong 1978). Family planning, using modern methods, began early in the 1960s, and has been very successful in reducing fertility (Kamnuasilpa, Chamratrithirong and Knodel 1982). Family planning services have been particularly successful in the North, around Chiang Mai, with the result that natural population increase has been slowed, and in some parts of the North, virtually stopped. At the same time, the volume and distance of migration within Thailand has increased. The study area has participated in all of these processes, but as we shall see, the different kinds of communities have participated in very different ways.

Our analysis of current demographic characteristics is not yet complete but it is apparent that the surveyed communities represent a range in the degree to which they have accomplished a demographic transition from high to low mortality and fertility (Table 3).

Mortality now appears to be well controlled in all types of Lowland communities (crude death rate range from 2.6-4.5/1000) and in Highland Skaw Karen communities where the rate is apparently much lower than in the late 1960s (Kunstadter 1971; 1983A: Table 1.4). Mortality is three times as high in Po Karen (13.5) Hmong (15.2) and Lua' (19.2) Highland communities. These rates appear to be somewhat lower than our mortality estimates based on age distributions from surveys conducted in the mid-1970s (Kunstadter 1983A: Table 1.4), and there has probably been a decline in mortality in these communities as well as in other less remote parts of Thailand. The differential in mortality between Skaw Karen and other Highland groups which we observed in the late 1960s apparently has increased, as mortality has dropped more rapidly among them than among the other groups. This may be due to the fact that in general the Skaw Karen communities we studied were slightly less isolated from Lowland society, socioculturally, than the Po Karen and Hmong communities.

Fertility is well controlled in Town (crude birth rate 12.8/1000), less well controlled in the other Lowland communities (range 19.4-24.6), and remains high in the Highland Lua' (29.4) Skaw Karen (39.3) and Po Karen (40.5) communities. If these figures are comparable to those we reconstructed from fertility estimates based on age distributions of the populations studied in the late 1960s (Kunstadter 1983A: Table 1.4) there has been a rapid decline in Suburbs and Rural Karen communities, but only a slight drop in fertility over the past decade in Highland Skaw Karen villages. The extremely high rate for the one small Hmong community in our study area (76.1) is consistent with the rate estimated from age distributions of Hmong communities studied by others (cf. Kunstadter 1983A: Table 1.4)

The resulting natural increase rates are low in Town (8.3/1000), moderate in other types of Lowland communities (range 14.9-20.7), high among Highland Po Karen (27.0), still higher among Highland Skaw Karen (35.0), and truly explosively high among Hmong (60.9). The relatively low rate among Lua' (10.2) is at least partially the result of 8 deaths due to an epidemic of a measles-like disease in the 12 months

Table 3. Population Characteristics of Different Types of Communities

Population characteristics 1981-1982 surveys	Lowland				Highland			
	Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Age composition (%)								
under age 15	25.11	33.24	30.00	40.50	45.91	40.89	44.47	51.78
age 65 and over	5.35	3.57	3.58	3.02	2.36	2.75	2.94	0.51
Dependency*	43.8	58.3	50.6	77.1	93.3	77.4	90.15	109.6
Vital rates (per 1000)								
Crude birth rate	12.8	24.6	19.4	23.3	39.3	40.5	29.4	76.1
Crude death rate	4.5	3.8	4.5	2.6	4.3	13.5	19.2	15.2
Death rate standardized to "Town" age distribution	4.5	4.2	4.2	2.1	3.3	9.0	13.7	9.6
Crude natural increase	8.3	20.8	14.9	20.7	35.0	27.0	10.2	60.9
Child/woman ratio**	0.296	0.420	0.348	0.618	0.767	0.750	75.4	1.350
General fertility rate	49.0	94.4	73.0	103.1	187.0	175.0	134.9	375.0
Percent of currently married women age ≤50 currently using contraception	64.3	55.7	76.4	60.8	17.6	3.8	25.8	0.0
Female singulate mean age at marriage (SMAM) (years)								
1968-70 data	24.7	21.6	n.a.	19.4	20.2	n.a.	19.4	n.a.
1981-82 data	23.9	21.5	20.5	20.8	20.1	22.0	20.4	16.8

* $\frac{\text{(people under 15) + (people 65 and older)}}{\text{(people 15-64)}} \times 100$

** $\frac{\text{children age 0-4}}{\text{women age 15-49}}$

prior to the survey.

Although there have been some recent declines in vital rates, the age compositions of populations in the different types of communities suggest that the relative differences in rates have persisted for a long time. Proportions under age 15, for example, range from 25 percent in Town to 52 percent in the Hmong community, while proportions age 65 and above vary inversely, from 5.4 percent in Town to 0.5 percent among the Hmong. The result is an extreme range in the conventionally defined dependency ratios (ratio of persons age 0-14 plus persons age 65 and above to persons age 15-64). The range is from 43.8 in Town to 109.6 in the Hmong community, as shown in Table 3.

Most of the dependents in all of these communities are children. Education is now compulsory in Thailand through the sixth primary grade (roughly age 12), but our survey of household economics showed that children in Town and Suburbs are likely to be dependent (as students) to an older age, while in the agricultural communities, especially in the Highlands, children are more likely to discontinue their schooling and begin contributing to the household economy at an earlier age (Kunstadter 1982A; 1982B; 1983B). The exact point at which children switch from an economic liability to an economic asset is not clear. Young adults appear to work the hardest, but they also eat more than do older, productive adults in the farming communities (Kunstadter 1978A). In the rural communities old people generally continue working as long as they are physically able to do so, while in Town and Suburbs civil servants retire at age 60 (but continue to contribute to the household with their retirement pensions). These factors suggest the importance of interpreting data on dependency in terms of the actual socioeconomic conditions within the community and within the household.

V. Mortality Causes and Rates

Mortality is a consequence of the interaction of a population with its environment. In a situation with as great a range of environments and socioeconomic situations as represented in the study area it is not surprising to find a range in mortality which parallels these environmental differences. The data we discuss here suggest that patterns of mortality by cause were significantly different in

the past, and continue to vary between the different types of communities, although the overall rates are declining.

We have tabulated reported causes of death of children born to women living in the censused populations in the late 1960s (Table 4). This gives a rough summary of patterns of mortality by cause in those communities during three or four decades before that survey. The proportion of deaths which were probably due to infectious and parasitic causes (including malaria) increased consistently with distance from Town (where about 65 percent of the deaths were probably due to infectious diseases) to Suburbs (75 percent), Rural Lowland Skaw Karen (88 percent) and to Highland Skaw Karen (92 percent). Proportions of deaths attributed to neoplasms and to external causes showed a consistent decline with distance from town. These patterns suggest that the transition in causes of death (from high to low proportions due to infectious diseases, and from low to high proportions due to degenerative diseases and external causes) is recent in the study area and that as of the end of the 1960s it was more advanced in Town and other Lowland communities than in the Highland communities.

We can compare these results with similar data regarding deaths of children, collected from women in the 1981-82 surveys (Table 5). The total proportion of infectious disease reported as cause of death is lowest (63.5 percent) for children born to women living in the Town community; the proportion of deaths due to degenerative diseases is highest for children of Town mothers (12.2 percent), lower in Suburban (6.6 percent) and other Lowland communities, and less than 2 percent in all types of Highland communities. External causes are also most common for children of Town (10.8 percent) and Suburban (6.2 percent) mothers.

Data on causes of deaths of household members of all ages in the year prior to survey in 1981-82 (Table 6) suggest that the transition has been rapid and fairly complete in Town. There were no deaths in the Urban community attributed to infectious causes, no maternal or neonatal deaths. All deaths were attributed to degenerative (60 percent) or external causes (40 percent). Most deaths in Suburban and Rural Northern Thai communities were also due to degenerative or external causes. This contrasts with the preponderance of infectious causes in the Lowland Rural Skaw Karen and all Highland

Table 4. Causes of Death of Children of All Ages Ever Born to Women in the Surveyed Communities Reported in 1968-1970 Surveys

(Unit: %)

Reported cause	Lowland				Highland			
	Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Infectious (total)*	64.9	74.6	n.a.	87.5	92.3	n.a.	89.4	n.a.
Neonatal	2.2	4.9	n.a.	2.7	0.0	n.a.	1.2	n.a.
Maternal**	0.0	0.8	n.a.	0.0	0.0	n.a.	0.0	n.a.
Neoplasms	2.2	0.1	n.a.	0.0	0.0	n.a.	0.0	n.a.
Accidents and other external causes	21.6	12.9	n.a.	5.1	1.5	n.a.	4.7	n.a.
Other***	9.0	6.7	n.a.	4.7	6.2	n.a.	4.7	n.a.
Total deaths (N)	158	906	n.a.	270	690	n.a.	387	n.a.
Classified by cause	134	761	n.a.	256	65	n.a.	85	n.a.

* Includes deaths attributed to fever, typhoid, other gastrointestinal, malaria, measles, pertusis, smallpox, syphilis, skin infections and other infectious diseases.

** Maternal deaths related to childbirth.

*** All other diseases and symptoms not otherwise classified.

Table 5. Causes of Death of Children of All Ages Ever Born to Women in the Surveyed Communities Reported in 1981-1982 Surveys

(Unit: %)

Reported cause	Lowland				Highland			
	Town	Suburban	Rural Northern Thai	Rural Skaw karen	Skaw Skaw Karen	Po Karen	Lua'	Hmong
Infectious (total)	63.5	87.1	89.4	86.3	83.0	83.8	85.2	89.5
gastrointestinal	17.6	18.1	25.9	27.5	38.5	34.1	26.8	47.4
malaria	6.8	1.5	21.2	8.1	18.4	20.0	5.7	21.1
respiratory	1.4	4.1	7.1	8.1	8.8	4.3	7.4	5.3
skin	0.0	0.4	0.0	1.3	0.7	0.0	1.3	0.0
other site, systemic	6.8	19.5	8.2	3.8	4.1	9.7	16.8	5.3
probably infectious*	31.1	34.8	27.1	37.5	12.4	15.7	27.2	10.5
Neonatal	13.5	8.0	5.9	3.8	12.4	10.8	12.8	5.3
Maternal	0.0	0.8	1.2	0.6	0.1	1.6	0.3	0.0
Degenerative (total)	12.2	6.6	1.2	7.5	1.9	1.1	1.3	0.0
cancer	2.7	0.4	0.0	0.0	0.9	0.0	0.0	0.0
cardiovasc., cerebrovasc.	4.1	1.6	0.0	3.1	0.4	0.0	0.0	0.0
other degenerative	5.4	4.6	1.2	4.4	0.6	1.1	1.3	0.0
External (total)	10.8	6.2	1.2	1.9	2.5	2.7	0.3	5.3
accident	4.1	4.5	1.2	1.9	0.9	1.1	0.3	5.3
suicide	1.4	0.5	0.0	0.0	1.5	1.1	0.0	0.0
homicide	5.4	1.2	1.2	0.0	0.2	0.5	0.0	0.0
Unclassified (total)	14.9	17.6	11.8	5.0	7.9	16.8	22.1	21.1
unclassified symptoms	10.8	12.9	11.8	5.0	4.8	5.4	9.7	21.1
symptoms not reported	4.1	4.7	0.0	0.0	3.1	11.4	12.4	0.0
Total deaths (N)	85	869	95	168	737	216	364	23
classified by cause	74	739	85	160	683	185	298	19

* Symptoms include fever.

Table 6. Causes of Death at All Ages in 12 Months Prior to Survey

(Unit: %)

Reported cause	Lowland				Highland			
	Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Infectious (total)	0.0	26.9	0.0	100.0	83.3	72.7	82.1	100.0
gastrointestinal	0.0	0.0	0.0	33.1	58.3	54.5	25.0	33.3
malaria	0.0	7.7	0.0	0.0	25.0	9.1	3.6	0.0
respiratory	0.0	7.7	0.0	33.3	0.0	0.0	3.6	33.3
skin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
other site, systemic	0.0	0.0	0.0	0.0	0.0	0.0	50.0	33.3
probably infectious*	0.0	11.5	0.0	33.3	0.0	9.1	0.0	0.0
Neonatal	0.0	0.0	33.3	0.0	16.7	0.0	10.7	0.0
Maternal	0.0	0.0	0.0	0.0	0.0	18.2	0.0	0.0
Degenerative (total)	60.0	53.9	0.0	0.0	0.0	0.0	7.1	0.0
cancer	20.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0
cardiovasc., cerebrovasc.	20.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0
other degenerative	20.0	30.8	0.0	0.0	0.0	0.0	7.1	0.0
External (total)	40.0	19.2	66.7	0.0	0.0	0.0	0.0	0.0
accident	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0
suicide	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
homicide	40.0	3.8	66.7	0.0	0.0	0.0	0.0	0.0
Unclassified (total)	20.0	15.4	0.0	0.0	8.3	36.4	7.1	0.0
unclassified symptoms	20.0	15.4	0.0	0.0	8.3	9.1	7.1	0.0
symptoms not reported	0.0	0.0	0.0	0.0	0.0	27.3	0.0	0.0
Total deaths (N)	6	30	3	3	13	14	30	3
classified by cause	5	26	3	3	12	11	28	3

* Symptoms include fever.

communities, where the transition in cause of death appears to have been slow or negligible.

Although we are dealing only with small numbers, and the data are not of exactly the same type as we are considering for the late 1960s, the picture is quite consistent. The distribution of deaths by cause varies significantly in the different types of communities. The differences remain significant when we look at the causes in more detail. It is interesting and important to note that in the 12 months prior to the survey there was only one neonatal death (4/1000 livebirths) in all the Lowland communities, and no maternal deaths out of a total of 251 births in the Lowlands, as compared with 3 neonatal deaths (17/1000 livebirths and 2 maternal deaths 11/1000 deliveries) out of 177 births in the Highland communities (data from Table 6). These results represent a change in the Lowlands since previous generations probably associated with a major increase in access to hospital care and in proportion of births in hospital in the lowlands. Almost none of the Highlanders come to hospitals for delivery, and almost all of their children are born with the assistance of traditional methods.

Epidemiological data suggest important differences between community types associated with different kinds of infectious diseases and their modes of transmission. Previous work demonstrated that distribution of morbidity by cause (e.g., due to measles and arboviruses) varies between the different types of communities, and is associated with differences in their migration patterns (Kunstadter 1972: 317-318). The control of some diseases in the Lowlands, especially smallpox, reduced the incidence in the Highlands through "herd immunity", even though relatively few Highlanders were vaccinated. There was an epidemic of an infectious childhood disease, probably measles, in some of the Highland villages in 1980, with some fatalities. This shows that some immunizable diseases which are well controlled in the lowlands (for example through school health programs) are still life-threatening in the more remote highland villages which are less well covered with public health services.

Resurgence of malaria associated with insecticide resistant mosquitos and in some cases highly virulent falciparum plasmodia is evident in many parts of Thailand. Prior to the mid-1950s, when malaria control began (using residual insecticides and presumptive

treatment of fever cases with antimalarial drugs), annual death rates of 5/1000 from malaria were reported from this area (data from Chiang Mai Malaria Control Office). Because of the vectors involved, malaria in Thailand is largely a rural valley and foothill disease. In the late 1960s it was well controlled; but it has now reappeared as a cause of death among people living in the Suburbs and in Highland Skaw and Po Karen (1981-82 survey data), and in Lowland Rural Skaw Karen communities as a cause of morbidity (Jacobs et al. 1983). Assuming the reports are accurate, malaria is probably associated (as it has been in the past) with temporary migration to the foothill forests for wage work (Karens customarily take jobs in the lumbering industry during the rainy season).

Turning to food- and water-borne diseases, there was only one death of a Lowland community member (2.4 percent of all deaths in the Lowlands) due to gastrointestinal complaints, while these were the leading cause of death in the Highlands (45 percent of all deaths). Lowland communities generally have protected water supplies, while in the Highlands, water sources are generally unprotected.

These disease-specific examples suggest that the neonatal and maternal deaths and infectious and parasitic diseases will remain as major causes of death in the more remote Highland villages as compared with the Town and more easily accessible parts of the Lowlands. This seems likely both because of the nature of the diseases and their modes of transmission, and the degree and rate of provision of health and other infrastructural services to the more remote villages. The percentage of infectious diseases as cause of death of children in different cohorts is shown in Table 7. The proportion declines dramatically in Town after 1950, and less rapidly in Suburban, Lowland Northern Thai, and Highland Lua' communities. The change seems slow and inconsistent in Lowland Skaw Karen and the other Highland communities.

Evidence for this lag is also found in comparisons of proportions of different cohorts of children surviving to various ages in the various types of communities (Table 8). Children born to Highland mothers in the 1970s generally experienced higher rates of infant and child mortality than the children born to Town mothers 40 and more years earlier.

Table 7. Number of Deaths of Children Age 0-4 Which were Classified by Cause in Different Cohorts, and Percentage of Deaths Due to Infectious Diseases in These Cohorts

	Lowland				Highland			
Birth date	Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Number of deaths of children age 0-4 classified by cause								
Before 1951	24	159	11	31	120	25	58	7
1951 - 1960	16	177	13	46	149	21	38	1
1961 - 1970	7	128	21	38	170	42	54	3
1971 - 1975	2	49	11	12	75	22	46	2
1976 - 1980	2	23	2	10	38	25	40	4
Percentage of deaths of children age 0-4 due to infectious diseases								
Before 1951	83.3	89.9	100.0	93.5	82.5	80.0	96.6	n.a.
1951 - 1960	75.0	80.2	92.3	91.3	82.6	90.5	86.8	n.a.
1961 - 1970	71.4	79.7	95.2	81.6	87.1	78.6	85.2	n.a.
1971 - 1975	0.0	83.7	90.1	100.0	82.7	90.1	80.4	n.a.
1976 - 1980	0.0	73.9	50.0	90.0	76.3	84.0	60.0	n.a.

n.a. Number of reported deaths too small for calculation of meaningful rates.

Table 8. Fetal Death Rates and Proportions of Children Liveborn in Different Years Surviving to Exact Age One, Five and Ten Years in Different Types of Communities

Birth date	Number live-born	Fetal death rate*	Proportion Surviving One year	Five years	Ten years
Lowland Communities					
Urban					
Before 1931	34	235.3	.911	.853	.853
1931 - 1940	68	29.4	.912	.868	.868
1941 - 1950	138	50.7	.971	.928	.928
1951 - 1955	132	75.8	.955	.932	.924
1956 - 1960	145	75.9	.972	.959	.952
1961 - 1965	102	107.8	.971	.960	.951
1966 - 1970	94	85.1	.989	.989	.957
1971 - 1975	85	94.1	.965	.965	.965
1976 - 1980	111	99.1	.973	--	--
Suburban					
Before 1931	96	93.8	.938	.917	.885
1931 - 1940	309	45.3	.890	.825	.796
1941 - 1950	718	96.1	.904	.816	.787
1951 - 1955	702	65.5	.910	.859	.843
1956 - 1960	897	51.3	.921	.883	.870
1961 - 1965	988	46.6	.931	.910	.899
1966 - 1970	887	75.5	.953	.936	.923
1971 - 1975	872	81.4	.946	.928	.923
1976 - 1980	891	84.2	.969	--	--
Rural Northern Thai					
Before 1931	15	0.0	1.000	.867	.800
1931 - 1940	43	23.3	1.000	.953	.907
1941 - 1950	43	0.0	.907	.837	.837
1951 - 1955	48	20.8	.938	.896	.854
1956 - 1960	83	36.1	.922	.900	.844
1961 - 1965	90	22.2	.956	.911	.911
1966 - 1970	88	45.5	.864	.796	.773
1971 - 1975	76	65.8	.803	.803	.803
1976 - 1980	66	0.0	.985	--	--
Rural Skaw Karen					
Before 1931	8	0.0	1.000	1.000	.875
1931 - 1940	34	88.2	.853	.765	.765
1941 - 1950	98	51.0	.847	.745	.724
1951 - 1955	101	59.4	.772	.723	.713
1956 - 1960	113	70.8	.903	.823	.814
1961 - 1965	151	33.1	.894	.854	.854
1966 - 1970	171	23.4	.936	.889	.871
1971 - 1975	164	42.7	.927	.921	.915
1976 - 1980	171	35.1	.953	--	--

Table 8. (continued)

Birth date	Number live-born	Fetal death rate*	Proportion Surviving One year	Five years	Ten years
		Highland Communities			
		Highland Skaw Karen			
Before 1931	54	37.0	.907	.741	.611
1931 - 1940	144	34.6	.854	.806	.764
1941 - 1950	298	43.6	.852	.725	.691
1951 - 1955	277	46.9	.863	.733	.700
1956 - 1960	361	69.3	.886	.762	.740
1961 - 1965	458	65.5	.873	.786	.764
1966 - 1970	518	48.5	.911	.837	.821
1971 - 1975	535	46.7	.920	.849	.845
1976 - 1980	537	35.4	.933	--	--
		Po Karen			
Before 1931	8	0.0	1.000	1.000	1.000
1931 - 1940	29	172.4	.897	.793	.759
1941 - 1950	102	107.8	.922	.784	.775
1951 - 1955	88	34.1	.852	.784	.739
1956 - 1960	114	52.6	.904	.877	.860
1961 - 1965	126	23.8	.873	.817	.794
1966 - 1970	147	34.0	.871	.796	.796
1971 - 1975	157	12.7	.887	.824	.811
1976 - 1980	207	38.6	.884	--	--
		Lua'			
Before 1931	55	18.2	.964	.836	.782
1931 - 1940	72	83.3	.903	.792	.708
1941 - 1950	150	80.0	.820	.667	.627
1951 - 1955	112	53.6	.848	.777	.741
1956 - 1960	146	47.9	.890	.836	.815
1961 - 1965	183	43.7	.902	.842	.831
1966 - 1970	234	46.6	.915	.850	.825
1971 - 1975	285	73.7	.912	.821	.796
1976 - 1980	301	29.9	.907	--	--
		Hmong			
Before 1931	0	--	--	--	--
1931 - 1965	75	93.3	.960	.880	.853
1966 - 1975	50	107.1	.960	.900	.900
1976 - 1980	59	84.7	.983	--	--

* Fetal deaths per 1000 livebirths

VI. Marriage and Fertility

Analysis of reproductive histories from the late 1960s suggested that Town dwellers had controlled their fertility for many years, long before modern contraceptives were available in this area (beginning in the mid-1960s). Apparently they did this both by delay in marriage, and by use of traditional contraception. Singulate mean age at marriage (SMAM) at that time was 24.7 years for Town women, three years greater than their neighbors across the street in the Suburbs (21.6), more than 5 years greater than in Lowland Karen communities (19.4) and 4.5 years greater than among Highland Skaw Karens (20.2). Although nuptiality was very high in all these community types, the proportion of women who never married was greatest (1.6 percent) in Town, and much lower in Suburbs (0.5 percent) Lowland Skaw Karen (0.3 percent), and Highland Skaw Karen (0.2 percent) communities. Marital interruption (divorce, separation, widowhood) was, and continues to be, higher in Town than in other types of communities.

Singulate mean age at marriage (SMAM) levels in 1981-82 were similar to those based on the 1968-70 surveys. The stability of SMAMs over time suggests that fertility changes, where they have occurred, were associated with changes in contraception, not changes in nuptiality since the late 1960s.

In the late 1960s 22 percent of the ever-married Town women age 15-44 were using contraceptives or had been sterilized, as compared with 15 percent of the Suburban women, 9 percent of the Lowland Rural Skaw Karen women and only 2 percent of the Highland Skaw Karen women.

Our data from the 1981-82 surveys on use of contraception and reproductive histories are not completely analysed, but it appears that use of contraception has increased markedly in the Lowland communities. Among Town married women age 50 or younger, 64.3 percent were using contraceptives or had been sterilized, as compared with 55.7 percent of Suburban women, 76.4 percent of Lowland Rural Northern Thai, and 60.8 percent of Lowland Rural Skaw Karen women. Among Highland women, Lua' had the greatest use (25.8 percent), compared with 17.6 percent for Highland Skaw Karen, 3.8 percent for Highland Po Karen, and 0.0 percent for Hmong. The high rates of contraceptive use in all types of Lowland communities has been associated both with a decline in birth rates, and with a reduction in the fertility differ-

entials between Lowland Rural, Suburban, and Town women.

Another factor which may be involved in reducing fertility among Town and Suburban women is non-coresidential marriage (spouses not regularly living together, but not considering themselves to be divorced). This marriage pattern is usually associated with job transfers or other economic opportunities, and is occurring with increasing frequency in Town and Suburbs, but not in Rural Lowland or Highland communities (Kunstadter 1983B; 1983C; 1984).

Ethnic differences in use of contraceptives observed at the end of the 1960s apparently continue. Among Skaw Karens, the overall proportions using contraception was lower than for the Thai-speaking groups, and varied inversely with degree of remoteness from Town. The similarity in 1981 of crude birth rates for Suburban (24.9/1000) and Rural Lowland Skaw Karen communities (23.3) is consistent with the high rate of contraceptive use among Lowland Skaw Karens. Birth rates remain high among Highland Skaw Karens, and other Highland groups, among whom there is little use of contraception. The fact that Skaw Karens living in the Lowlands have apparently lowered their fertility suggests that the continuing high fertility among Highland Skaw Karens may be due to lack of regular access to family planning facilities, rather than sociocultural factors. Many of the Highland Skaw Karen villages in the survey area have been visited by mobile family planning teams, but this seems to have had little effect on fertility. When contraceptives are available in the Highlands on a daily basis, however, they are used. We found, for example, in one Highland Lua' village, where contraceptives were distributed by a resident health worker, about half the eligible women had ever used them, but the continuation rate was low.

Contraceptives are easily and regularly available only in the Lowlands. In the Lowland Rural Northern Thai community, contraceptive use was anecdotally reported to have risen rapidly, and fertility declined almost to the level found in town, shortly after a road to Town was completed about two years before the survey. The anecdotal report is supported by survey data showing that over three-quarters of the eligible women in the community were using contraception at the time of the 1982 survey.

As indicated above, use of contraception seems to be related in general to the type of community. Use is, however, not very clearly

related to individual expectations and aspirations of parents for their children. This is consistent with the hypothesis that accessibility is more important than socioeconomic modernization of individuals. It gives no support to the hypothesis that parents use contraceptives to control the future costs of children, in order to achieve educational and occupational goals for their children on the basis of some clearly conceived economic rationality.

In the late 1960s we asked about amount of education desired for children, and occupation desired for sons, and found no consistent or significant relationships between users and nonusers of contraception within any one community. There was, however, a consistent trend for increased desires for higher education and for more skilled or professional occupations when comparing Highland Lua' and Karen communities, Lowland Rural Karen, Suburban and Town communities. This paralleled the increased proportions of use of contraception in Town, vs. Suburban, vs. Rural Lowland and Highland communities (Kunstadter 1970).

We looked at responses to similar questions in one Highland Lua' community in 1980, and in one Suburban community in 1981, and again found no association between parental aspirations for their children and use of contraception.

Information on mortality suggests that low level of mortality on a community basis, *or on an individual household basis is neither* necessary nor sufficient to bring about fertility decline. Town dwellers reduced their fertility before infectious diseases were well controlled, and Highland Skaw Karens have not significantly reduced their fertility, although their mortality has fallen to roughly the same level as that of Skaw Karens in the Lowlands.

VII. Remarkably High Fertility Among the Hmong

Hmong fertility appears to be extremely high (CBR 76/1000) in our small study population (197 people). Data from other sources and larger samples support our impression that Hmong are at the upper limits of human reproductive capacity. Median age in three Hmong villages with a total population of 1,167 in adjacent Mae Chaem District, Chiang Mai Province was just over 12 years; median age at marriage for women in these villages was about 16 years (data from

Ministry of Public Health surveys 1981-82). Data from surveys conducted by the Tribal Research Centre, Chiang Mai, in the mid-1970s gave rather similar results (Kunstadter 1983A). Likewise, Hmong refugees from Laos to the United States have the reputation for marrying very early, and having very high fertility.

Marriage for Hmong women living under traditional conditions is apparently virtually universal throughout their reproductive years. The high rate of marriage is apparently accomplished through the practice of remarriage of widows and divorcees, and polygyny assures that no Hmong women need stay unmarried even in small villages where the sex ratio is unbalanced during marriageable ages (cf. Kunstadter 1978B; 1983A). Because of the interest in the demographic aspects of natural fertility, as well as in understanding the socioeconomic and cultural supports for high fertility, the Hmong population deserves more intensive study.

VIII. Migration

Volume, origins, motivations, and consequences of migration have varied markedly in the different community types. The Town and Suburbs contain high proportions of lifetime migrants (43.8 percent and 47.4 percent respectively), as does the Hmong community (46.7 percent) (Table 9), but the nature of the migrants varies with the type of destination community. Most of the migrants to Town (66.3 percent) are from other provinces, and almost half (46.4 percent) were born in the more urban muang districts (Table 10). About three quarters of the men (73.8 percent) aged 29-39 who moved to Town did so for reasons relating to work (job transfer, looking for work, etc.), while only one fifth (19.7 percent) moved for reasons relating to family (moved in with spouse, moved with parents, etc.) (Table 11). Only about one third (37.6 percent) of the migrants to the Suburbs come from other provinces, and only a fifth (19.1 percent) come from muang districts. A little over half of the men (56.0 percent) have come for reasons relating to work, while two fifths come for family reasons. Migration has evidently accounted for a large proportion of the population growth in the Town and Suburban communities since the late 1960s (cf. Kunstadter 1972: Table 16.3).

Other community types have very different migration patterns, and

Table 10. Birthplace of Migrants to Different Types of Communities, 1981-1982 Surveys

(Unit: %)

Birthplace of lifetime migrants	Lowland				Highland			
	Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Same province	29.4	61.1	34.6	85.0	93.5	99.0	95.7	25.0
Different province	66.3	37.6	65.0	15.0	5.4	1.0	4.3	59.8
Different country	4.3	1.3	0.4	0.0	1.1	0.0	0.0	15.2
From muang districts*	46.4	19.0	7.6	9.3	2.2	0.0	0.0	0.0
Total lifetime migrants (N)	581	3625	214	107	372	191	23	92

* A muang district is the district in which the province capital is located, and is generally the most urban district in the province.

Table 11. Proportions of Migrants Age 20-39 Moving for Different Reasons, by Type of Community of Destination and Sex, 1981-1982 Surveys

(Unit: %)

Reason for move		Lowland				Highland			
		Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Work*	Male	73.8	56.0	55.6	15.2	9.4	19.0	0.0	10.0
	Female	32.8	12.0	25.0	23.5	8.2	0.0	0.0	0.0
Family**	Male	19.7	39.3	40.0	81.8	88.2	76.2	82.5	90.0
	Female	63.9	83.5	75.0	76.5	88.5	100.0	100.0	100.0
Other***	Male	6.5	4.7	4.4	3.0	2.4	4.8	12.5	0.0
	Female	3.3	4.5	0.0	0.0	3.3	0.0	0.0	0.0

* Looking for work, job transfer, etc.

** Move at time of marriage or divorce, move with household head or parents, adopted, etc.

*** Move to school, move to temple, move to new house, fleeing from war or police, fleeing from illness, seeking medical care, etc.

Table 9. Proportions of Migrants in Different Types of Communities, by Sex, 1981-1982 Surveys

(Unit: %)

		Lowland				Highland			
		Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Lifetime migration									
Nonmigrants	Male	52.3	49.4	78.2	88.0	83.4	82.1	98.1	54.6
	Female	55.8	53.3	78.2	92.0	91.5	80.1	95.4	52.0
	Total	54.1	51.3	78.2	90.3	87.4	81.2	96.7	53.3
Return migrants	Male	2.2	1.2	1.7	0.2	0.6	1.1	1.2	0.0
	Female	2.0	1.4	0.0	0.7	0.1	0.2	2.4	0.0
	Total	2.1	1.3	0.9	0.4	0.4	0.7	1.8	0.0
Lifetime migrants	Male	45.4	49.3	20.1	11.8	16.0	16.8	0.6	45.4
	Female	42.2	45.3	21.5	6.7	8.3	19.7	2.2	48.0
	Total	43.8	47.4	20.7	9.2	12.2	18.2	1.5	46.7
Total number (N)		1326	7876	670	1158	3054	1052	1557	197
Temporary migration									
Away at school	Male	5.5	1.2	2.0	1.6	1.7	0.0	1.3	3.1
	Female	3.0	1.8	0.6	0.5	0.6	0.0	0.3	0.0
Away at work	Male	1.2	2.2	1.7	1.0	0.3	0.0	0.2	0.0
	Female	0.5	0.8	0.0	0.0	0.0	0.0	0.0	0.0
In jail	Male	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total temporarily away	Male	7.1	3.6	3.7	2.6	2.0	0.0	1.7	3.1
	Female	3.5	2.6	0.6	0.5	0.6	0.0	0.2	0.0

until recently the consequence of migration to and from Rural communities was to preserve, rather than alter their characteristics. People who violated taboos or people who were otherwise unable to keep up with local social standards were forced out; migrants to these villages were usually selected for conformity to local ideals (especially as marriage partners). Except for the Hmong community, which was established by migrants from other areas looking for farm land about 20 years before the 1981 survey, the other community types have relatively few migrants (Table 9). The other types of Rural villages resemble what has been called "closed corporate communities" (Wolf 1957) in which access to farm land has traditionally been transferred primarily by descent from one of the family members, or by marriage into family of descendents from founding families.

Except for the Lowland Rural Northern Thai and Hmong communities, most migrants to Rural communities have moved only within the same province, and almost all have been members of the dominant ethnic group or the community into which they moved. Except for the Rural Northern Thai community, to which a few migrants from other parts of Thailand have come recently looking for land or work, most movers to these community types come for family reasons.

The different proportions of lifetime migrants by sex are related to ethnic preferences with regard to postmarital residence (Tables 9, 12). Skaw Karens prescribe postmarital residence of the husband with the wife's family, at least for a short time after marriage, and about twice as many men as women are lifetime migrants into both Lowland and Highland Skaw Karen communities. Among the normally patrilocal Highland Lua', only four men moved to a new village at the time of their marriage, as compared with 17 women who had moved between villages. The small sex difference in proportion of migrants to the Po Karen and Rural Northern Thai communities is consistent with the lack of strong postmarital residence preferences in these groups.

In some cases the ideal postmarital residence patterns have been violated. A Skaw Karen bride may move to her husband's village (not household) if the husband has better access to farm land than the wife, and in Town and Suburban areas, especially among Christian (as contrasted with animist) households, the ethnic norms of postmarital residence are occasionally violated (Kunstadter 1983C; 1984). Nonetheless, adherence to cultural norms of migration in Rural communities

Table 12. Type of Migrant Age 20-29 Living in Different Community Types by Sex, 1981-1982 Surveys

(Unit: %)

Type of migrant		Lowland				Highland			
		Town	Suburban	Rural Northern Thai	Rural Skaw Karen	Skaw Karen	Po Karen	Lua'	Hmong
Nonmigrants and return migrants	Male	47.5	36.8	65.7	80.7	66.1	73.5	99.3	0.0
	Female	47.6	42.5	68.5	90.1	81.8	71.1	97.8	3.7
Lifetime migrants	Male	52.5	63.2	34.5	19.3	33.9	26.5	2.0	100.0
	Female	52.4	57.5	31.5	9.9	19.2	28.9	5.6	96.3

is very consistent.

In general, migrants from more urban places (muang) districts go to Town (or Suburban) destinations, and moves related to work are more frequently directed toward those destinations. Movers to the Rural Lowland and Highland communities are almost always from rural origins, and generally they move for family reasons (although secondarily these moves may be associated with access to farm land).

The consequences of the migration patterns are to produce ethnically and socially diverse populations in Town and in the Suburbs (Table 2), where substantial amounts of ethnic mixture take place, both in the community and within the households. Town and Suburbs have long attracted migrants from nearby Rural Lowland and Highland communities, but the volume and diversity of migrants to these destinations increased in recent years in association with the economic development which followed the completion of the highway in 1965.

Differences in social origin and in motivations for moves suggest that Town and Suburbs will become more differentiated socially as well as ethnically, if the current pattern of economic development continues. At least the Highland Rural communities will remain more homogeneous in ethnic and social composition. However, the patterns of migration to the Lowland Rural communities are now changing. In the past, most migrants were from one to another nearby community of similar ethnicity. Lowland Rural Northern Thai and Skaw Karen communities are now receiving migrants from the nearby Highlands, and the Northern Thai community is also receiving migrants from more distant provinces, including both men or whole families looking for land, and women, brought back as wives of village men who have been away at work.

IX. Summary and Conclusions

Demographic conditions measured by surveys in the late 1960s and early 1980s in an ethnically and ecologically diverse area of northwestern Thailand have been shown to cover a range from high to low mortality and fertility, representing different points in demographic transitions of the subpopulations. We have given a brief summary of socioeconomic conditions and cultural norms in several kinds of communities, and have discussed the interaction of these parameters with

the demographic variables.

Fertility has been shown to vary in association with community type and ethnicity. Fertility has been well controlled in the district Town for over two decades, and apparently is declining rapidly to low levels in Suburban and nearby Rural Lowland villages. Apparently it has fallen lower and faster in Northern Thai than in Skaw Karen communities of the same socioeconomic type, and at similar distances from family planning facilities. Fertility in Highland Skaw and Po Karen and Lua' communities remains high, and is extremely high in the Hmong community. Highland communities in general have less access to family planning services than do Lowland communities, although mobile teams have visited a number of the surveyed Skaw Karen communities, and village health workers are stationed in some of the Highland Lua' and Skaw Karen communities. These results suggest that both accessibility and cultural factors may be important in determining the use of modern contraceptives.

Preliminary analysis suggests no clear relationship at the individual level between "modern" occupations (wage work vs. farming), use of contraception, and parents' plan for their children's future education or occupation. There is an association between degree of modernization of the community as a whole and the average of both parental aspirations and family planning use. These findings suggest that at this stage of development, access to family planning services may be important in meeting already existing "latent" demands for family planning, but that use of contraception is not necessarily based on cost of children and plans for the future. Basic socioeconomic transformation at the individual level (such as conversion from subsistence farming to cash cropping or wage work) does not seem to be essential for use of contraception and for lowering fertility; the amount of decline in fertility which will be achieved by improved access to family planning services seems to be related to as yet unidentified ethnic normative differences.

Singulate mean age at marriage (SMAM) seems to vary with basic local socioeconomic type and ethnicity. SMAM seems to have been relatively stable in the various communities, irrespective of rapid socioeconomic change during the interval between surveys. The apparent stability of SMAM in various community types may be a result of the method which summarizes the history of marriages over the past

three decades. More detailed analysis of variation in age at first marriage by cohort may reveal changes in association with recent socioeconomic development. The reduced fertility of Town women observed in the late 1960s clearly did not require use of modern contraceptives, however the recent declines in fertility in Lowland communities is strongly associated with the availability and use of modern contraceptives. Availability seems more important than cultural norms or individual level of modernization in determining rates of contraceptive use.

We discussed the mortality transition in terms of the level of mortality and in terms of general and specific causes of mortality. Mortality has fallen to very low levels in Town, Suburban, Lowland Rural and Highland Skaw Karen communities, but remains high in Po Karen, Hmong and Lua' communities. Data on reported cause of death suggest that deaths due to infectious disease, neonatal and maternal causes are well controlled in the Lowlands, but remain important problems in the Highlands. This is probably because of improved access to modern public health, obstetrical and other medical facilities in the lowlands. Highland communities have not yet benefitted from these aspects of modernization, and deaths from gastrointestinal and other infectious diseases and from neonatal and maternal causes are still important in the Highlands. These differences and trends are very clear in the small numbers of deaths reported for the year prior to the survey, and in data on child deaths reported in reproductive histories.

A transition in migration can be detected in Lowland, but not in Highland communities. Migration to the Highland communities is almost always by members of the dominant ethnic group in the community of destination, who come from nearby similar communities. Patterns of migration are significantly different between the different ethnicities in terms of sex (related to the ethnic norms of postmarital residence) and in terms of age and kin grouping of movers (related to norms of access to land). Except for Hmong, who relocate households and villages in search of better land, migrants to Highland villages in the study area usually move for family reasons, most often at time of marriage.

Volume of migration has increased, and sources of migration have become more diverse, especially in the Town and Suburbs, which, as a

result, now have quite heterogeneous populations, in contrast with the Rural Lowland and Highland communities which are ethnically homogeneous. Town and Suburbs receive substantial proportions of their migrants from urban rather than rural districts, and migrants often move for work rather than family reasons. Lowland Rural Northern Thai and Skaw Karen communities are now receiving migrants from Highland minority villages (who generally come for economic reasons). The Rural Northern Thai community is also beginning to receive migrants from other rural lowland areas in Northern Thailand. This is a pattern which seems to have begun about 15 years earlier in the Suburbs, shortly after the completion of an all-weather road.

Taken together, these results indicate that transitions from high to low mortality and fertility, and changes in the pattern of migration are proceeding at different rates, and starting at different times in the various communities represented in our study area. Some of these differences seem clearly related to the timing of access, as a result of road building or the provision of public health and medical services. Other aspects of the variation, including the *levels which are reached and the speed with which these levels* are achieved, seem to be related to the ethnicity and cultural norms of the community members and the particular nature of the community's environment.

The data suggest that relatively small differences in ethnicity (e.g., between closely related Po and Skaw Karen, or between Central and Northern Thais) living in the same community or in similar types of communities may be associated with important demographic differences. Likewise, the demographic variations between communities of different type, especially Town vs. Suburban, are significant, even though communities of these types are located across the street from one another. The interaction between the various parameters (ethnicity, socioeconomic conditions, and demographic conditions) also seems to vary with ethnicity and community type. In other words, no single model of the demographic transition applies to all of them. I believe these examples, based on intensive ethnographic fieldwork combined with extensive sociodemographic surveys, shows the value of the micro-demographic approach in discovering and understanding demographic variability.

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Note

1/ Vital rates for some of the groups may appear to be extreme in comparison with national aggregate figures. There are three possible explanations: a. errors in reporting births, deaths and ages; b. sampling errors in small populations; c. real differences between the characteristics of small, relatively homogeneous subgroups and national aggregates, including differences in age distributions.

We believe that the reported differences are unlikely to be the result of reporting errors. Our post-enumeration survey, one year after the original survey, suggested that the numbers of errors in the original survey were very small, and made no change in the rates reported here. Both the numbers of people in the household, and numbers of births and deaths in the period between the original and the post-enumeration survey were consistent with rates reported on the basis of the original survey.

Sampling error may play an important role in these small population groups, for example with respect to the extremely low crude death rate (2.6 percent) reported for Rural Lowland Skaw Karen. Follow-up research which we have planned in these same communities several years after the original surveys will indicate the extent to which the rates we have reported are relatively stable or are subject to important swings over time. Sampling error will always be an important problem in dealing with statistics from small groups. Because the interest is in the small groups themselves, perhaps the best way of dealing with the question is through longitudinal studies which would increase the number of person-years in the calculations of rates.

The strong association of birth rates with proportions of women using contraceptives is supporting evidence that the birth rates are reasonably accurate. The extremely high birth rate (76.1 percent) reported for the small Hmong group (197 people) may be due to sampling error but the features of this community are consistent with very early and universal marriage, very young age structure, and non-use of contraception (all reported independently for other Hmong populations). These factors suggest Hmong communities do have very high birth rates even though the value of the rate for this community may have been affected by sampling error. As noted later in the text, the birth rate for this community, which was calculated on the basis of births in the year prior to survey, is consistent with estimates based on age composition of other Hmong communities.

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