

## SMALL SCALE POPULATION STUDIES AND THEIR VALUE FOR FLANNING: A CASE STUDY FROM RURAL TAIWAN

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### ABSTRACT

The historical trend of population in an agricultural village during a 30 year period shows an initial large increase which tapers off and finally becomes a decrease. The decrease in population as revealed in the household registers is tested against a field census conducted by the author in 1978. The decrease is shown to be much greater than official records indicate. Some of the problems of keeping demographic statistics current and the importance of the accuracy of these statistics are reviewed. Finally, some suggestions are made for periodic small-scale studies which would reveal any deviance from recorded figures.

#### Purpose of the Study

Data collected in mid-year 1978 is used to illustrate some historical trends in the population of a small village in southern Taiwan over a 30 year period. The accuracy of the 1978 figures is tested and some of the problems of keeping demographic statistics current are reviewed. Finally, some suggestions are made for periodic small-scale studies which would reveal any deviance from recorded statistics.

#### Importance of Demographic Information

Demographic information is constantly being collected by governments because of its critical role in planning. There is a perpetual need for accurate, up-to-date knowledge and specialists at all levels work full-time collecting and disseminating population figures. These figures are of interest not only to government planners, but to economic specialists, businessmen, sociologists, and historians. They help to predict such things as housing

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needs, school enrollments, demand on social services, and consumer interests. In planning economic policy it is essential to know the number of people engaged in different kinds of work, as well as the birth rate and educational levels. Without such figures it is not possible to assess the current economic situation accurately, nor can realistic plans be devised for the future. Erroneous figures will disguise problems or show difficulties that, in fact, do not exist.

### The Collection of Demographic Information in Taiwan

Demographic information in Taiwan has an enviable historical depth. The first census was in 1905, the next in 1915, with censuses every five years thereafter until 1940. Since the end of World War II, nation-wide censuses have been conducted in 1956, 1966, 1970, and 1975. In addition, a household registration system was set up under the Japanese in order to strengthen their administrative ability, and the registration system is still in operation today. It collects such data as household size and composition, educational levels, marriages, births, deaths, and moves. The censuses and household registers provide the basic data for population figures. Therefore, their accuracy is critical for the successful operation of the many plans using them.

In a period when residence is stable, the household registration system would presumably contain figures faithfully reflecting the demographic situation. A number of studies have tested the accuracy of the data, mainly in cities and towns (Liu 1967; Speare 1971, 1975). These studies found a high degree of accuracy for population characteristics, but varying degrees of accuracy in total counts and migration records. In general, many areas other than Taipei were found over registered to a small extent. Speare noted that if the level of migration changes rapidly records can become misleading (Speare 1975:40). In addition he found educational levels to be recorded too low and occupational information not up-to-date. In terms of the latter, 17% more people were recorded as employed in agriculture than were actually engaged in it (Speare 1975:73).

Officials are aware that the system is not 100% accurate. The lack of current information on occupational and educational changes is something mentioned as a problem, together with the under reporting of infant deaths (Taiwan Provincial Government 1966).

In an industrializing economy, the movement of population from rural to urban areas is part of a general process in which labor moves from the agricultural to the industrial sector of the economy. The rapid rate at which Taiwan has been industrializing has created a strong pull on rural populations who have responded by migrating out to new occupations in urban areas. Knowing this, it naturally follows that statistics may give false impressions, unless they are absolutely up-to-date.

### Case Study of A Rural Village

The following information is the result of a census conducted during research for my

doctoral dissertation in Anthropology at the University of Hawaii in 1978<sup>1</sup>. Because of my interest in the impact of migration on rural areas, I was especially interested in knowing the exact number of people actually present in the village being studied. Also, I wanted to know the number of people living and eating together in each household. Of those who had migrated out, I asked their destination and occupation, making sure it was clear where all family members were located. Although there are a number of categories of people who are absent but who remain on the official household registers as part of the village population, such as soldiers, and students living in dormitories, I did not include them as current residents in my census. Military service is a long-standing institution and therefore there will always be a number of young men absent. Older students often live outside the village and may also be subtracted for a more realistic count. In addition, there are many young people who are living and working in other parts of Taiwan who are still registered as resident. Since they are not available to participate in the social and economic activities of the village, I did not list them as residents either. The removal of a number of people such as these will give a far more accurate assessment of the characteristics of the population actually living in the village. Therefore it is important to keep in mind that my 1978 census does not include all the categories of people counted by household registration statistics, because of the emphasis on those physically present.

#### History of Population Change in the Village

The site of my research was a small village on the Chianan Plain, a flat heavily agricultural area. This area was first settled by Chinese immigrants from southern Fukien in the late 1600's. Towns grew up along the rivers, and later along the railroad line. Today the village is bordered on one side by a highway connecting it to a number of towns and cities. However, it is at least one hour by bus to any major urban center, and so needs are met by short trips into a nearby town. Because of its distant location in relation to industrial areas, the village has retained its agricultural character and commuting to factory jobs is not common.

In earlier times under the Japanese colonial administration, the village was one of nine *pao* (保) and these nine units made up one large village. After the Japanese left, the nine *pao* were broken up into six *li* (里) or villages. Today the village is at the administrative level of a *li* and is made up of nine *lin* (鄰) or neighborhoods. Because of its earlier classification as part of a larger administrative level, separate records do not exist for this village prior to 1947. In reviewing the history of its population it is necessary to begin with 1947 for the earliest figures.

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<sup>1</sup>The census was administered to each family in the village with the help of three college students as research assistants: Li-Hua Wang, Yuan-Yuan Ong, Su-Jiuann Hsu. Their help is gratefully acknowledged.

1947

According to the official 1947 household registration statistics, at that time the village contained a total number of 801 residents in 113 households. Of these, 359 were males and 406 were females, indicating 47 more females than males. These figures give us an average of 7 people per household which was high compared to the national average of 6 per household shown on the 1940 census (Hsieh 1964:206). Looking at the number of children, there were 115 males age 0-9 and 118 females.

1957

Using these figures as a baseline, the next ten years saw increases in almost all categories. It was, evidently, a period of uninterrupted population growth. According to the records for 1957, the village contained 1,016 residents in 159 households. There were 509 males and 507 females (see Table 1). This means there were 215 more people, or an increase of 27% over the ten year period. The number of households had increased at an even greater rate: 41% (see Table 2). This greater percentage increase in the number of households than in the total number of residents dropped the average number of residents per household to 6.4 (a decrease of .6 person per household). The sex ratio had also changed from 97 in 1947 to 100 indicating a balance of the sexes. By looking at the figures we can see that the number of males grew slightly faster than the number of females: 29% vs. 25%. The population pyramids for these two periods made these trends even more evident (see Figure 1).

TABLE 1

YEAR	HOUSEHOLDS	REGISTERED POPULATION	MALE	FEMALE
1947	113	801	395	406
1957	159	1,016	509	507
1967	184	1,085	562	523
1977	184	966	506	460

TABLE 2

YEAR	HOUSEHOLDS	REGISTERED POPULATION	MALE	FEMALE
1947	—	—	—	—



1957	+41%	+27%	+29%	+25%
1967	+16%	+7%	+10%	+3%
1977	0	-11%	-10%	-12%

The records indicate that the rising population was due to an increasing number of children between the ages of 0-9 (52%). The number of older residents was increasing also, although not nearly as fast as the children. There were 33% more people age 50 and above than there were in 1947. The number of older men was increasing at a faster rate (46%) than the number of older women (23%).

It would seem that survival chances had increased for young and old during this period. There was an increase of 1/3 in the number of residents age 50 and above. Higher fertility and lower mortality, then, are largely responsible for the changes of this decade.

### 1967

Ten years later, in 1967, the figures in the household registers were up again. The population had increased to 1,085 and the number of households was at 184. Closer examination shows that the rate of increase was less than 1/2 of the rate in the previous decade. The population had increased 7% and the number of households 16%. The cause of this change in rate becomes clearer if we look at the figures for children under ten. This is strong evidence that the birth rate had dropped and the high rate of increase, which could not go on for long, had indeed peaked. The number of children in this cohort dropped 17% during this period. The decrease was greater for males than females: 21% vs. 13%. On the other hand, the number of residents age 50 and above was increasing, although at a slower rate. There were 31% more older males, while the number of older females had risen by 21%.

The total number of male residents stood at 562 in 1967. This was an increase of only 10% over 1957. The total number of females had increased even less, however. There were 523, a growth of only 3%. In 1967 the sex ratio stood at 107, continuing the trend of greater male increase (see Table 3). The average number of residents per household in this period had also declined to 5.9 (see Table 4).

### 1977

This brings us to the figures for the final period ending in 1977. These official statistics show a leveling-off in the number of households and a decrease of 11% in the total population. In other words, from 1947 forward, the rapid increase changed to a

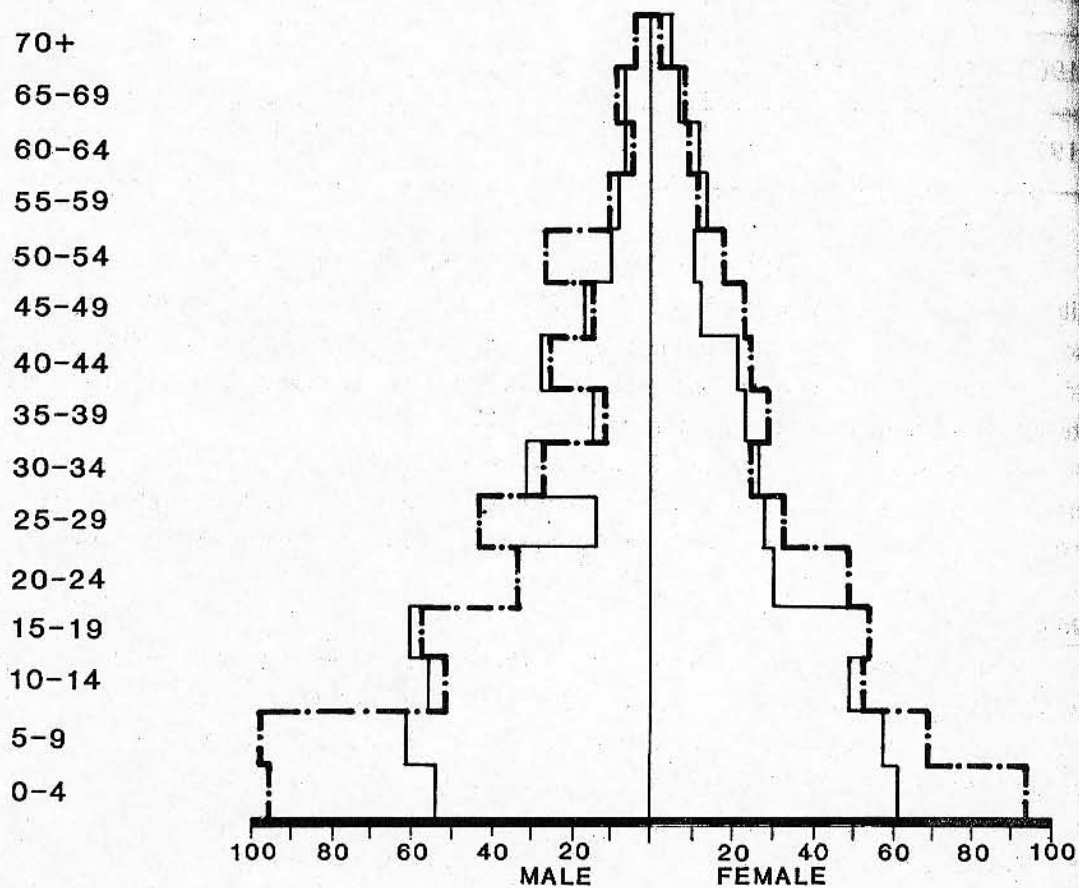


FIG. 1: COMPARISON OF 1947 AND 1957  
POPULATION PYRAMIDS



POPULATION PYRAMID FOR 1947



POPULATION PYRAMID FOR 1957

small increase, then by 1977 to a small decrease.

TABLE 3  
SEX RATIO

1947	1957	1967	1977
97	100	107	110

TABLE 4  
HOUSEHOLD SIZE

1947	1957	1967	1977
7	6.4	5.9	5.2

The total population stood at 966 of which 506 were male and 460 were female. This is a decrease of 10% for the males and 12% for the females. Again, the sex ratio continued to favor males. In 1977 it was 110. The size of each household had also decreased from 5.9 in 1967 to 5.2 in 1977.

Two other trends are evident in this period 1967-77. First, a decrease in the birth rate. The number of males under ten decreased 45% and the number of females diminished by 38%. Second, the number of older residents was increasing, but only for females (27%).

All this adds up to a slowly decreasing population with a lower birth rate and a greater number of old people. The cause of this decreasing population was out-migration (Fig. 2).

### The 1978 Census

The earliest migrants from the village to urban residence and employment left about 20 years ago. However, villagers identify the last ten years as the period in which migration became important. Therefore it is to be expected that this phenomenon would only affect the population statistics to any important extent after 1970. A test of the figures any time after 1970 should provide information which would allow us to conclude whether the rate of migration is being accurately reflected in the official figures. The author's field census conducted in 1978, and referred to earlier, can serve as such a test. This census revealed a total of 633 residing in 149 households. This is a difference of 34% from the figures available at the same time for the total population. The number of households also deviates by 18% (see Table 5). Since the number of residents was de-

85 +  
80-84  
75-79  
70-74  
65-69  
60-64  
55-59  
50-54  
45-49  
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30-34  
25-29  
20-24  
15-19  
10-14  
5-9  
0-4

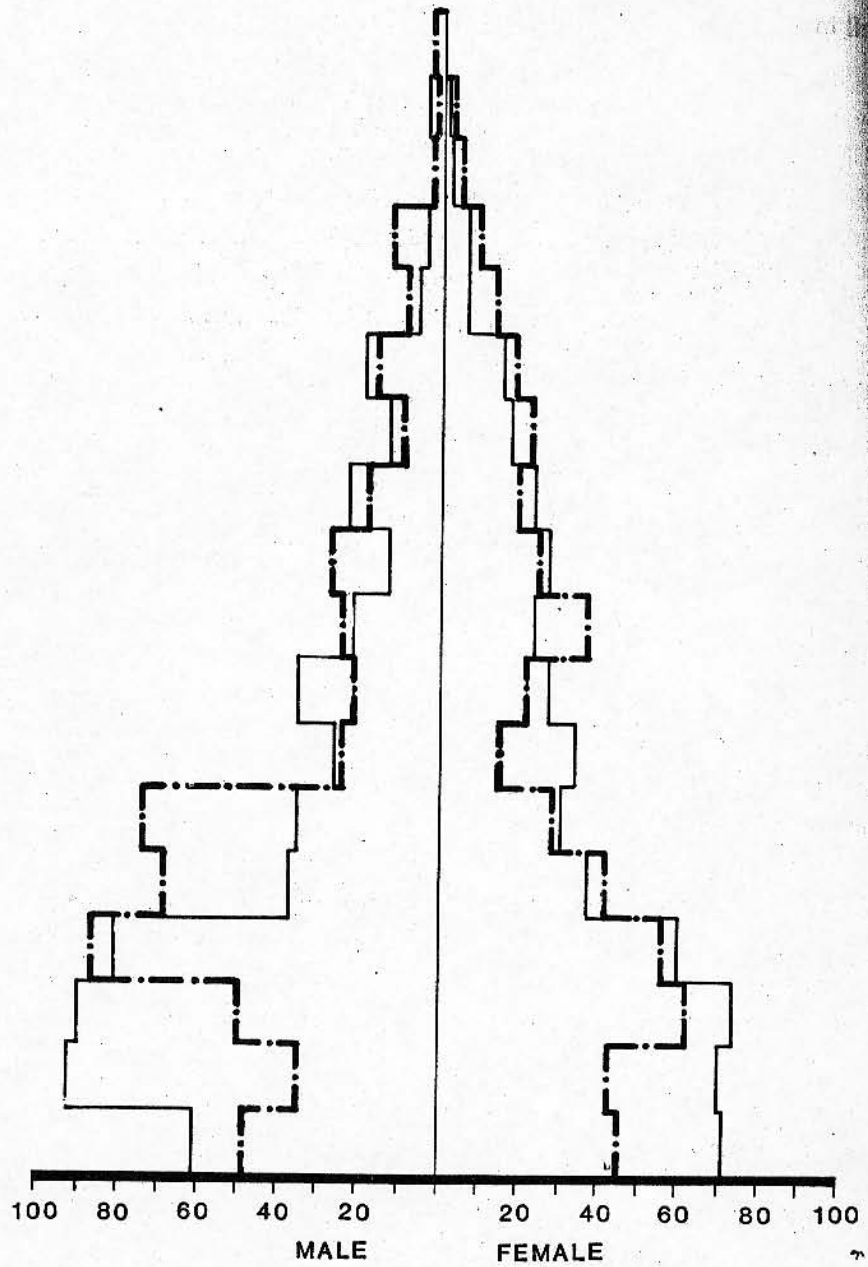




FIG. 2: COMPARISON OF 1967 AND 1977 POPULATION PYRAMIDS

 POPULATION PYRAMID FOR 1967  
 POPULATION PYRAMID FOR 1977



creasing at a faster rate than the number of households, it would seem that individual households were losing some, but not all of their members. This proved to be the case.

In addition, 503 males and 454 females were officially registered as residing in the village. In fact, there were 311 males and 322 females according to my census. It appears

TABLE 5  
1978 POPULATION

	REGISTERED	ACTUAL	% DIFFERENCE
TOTAL	957	633	34%
MALE	503	311	38%
FEMALE	454	322	29%
HOUSEHOLDS	181	149	18%

that fewer males are registering their moves than females. While on paper the population decline does not seem so steep, in reality there are only 71% of the registered males and 62% of the registered females actually present. This has enormous implications for the village, not the least of which is their labor supply. There are only 4.2 people per household. This means that it is more difficult to mobilize labor within the household.

The sex ratio of those actually present in the village has also dropped to a figure lower than 1947:96. This also reflects the disproportionate number of females. Figure 3 comparing the registered population of the village with those actually present in 1978 is a more graphic representation of these trends. Please note that the pyramid is based in part on figures made available six months before the author's 1978 field census, and this is responsible for a small part of the disparity. Since the difference amounted to 7 residents (3 males and 4 females), I choose to use them in order to make the overall comparison easier to visualize. The figures in the text are contemporaneous.

The household registers count 34% more people as resident in the village than were actually resident. Thus the discrepancy is marked by 1977 (see Fig. 4). However if one looks at the older age cohorts, the official figures are quite accurate. In the cohort of those age 50 and above counted in the field census, there were 66 males and 86 females. These numbers were only 7% below the figures of the household registers for males and 3% below for females. In contrast, in the lowest cohort, that for children 0-9 years, the field census revealed 63 males and 49 females, or a discrepancy of 25% for males

85+  
80-84  
75-79  
70-74  
65-69  
60-64  
55-59  
50-54  
45-49  
40-44  
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30-34  
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20-24  
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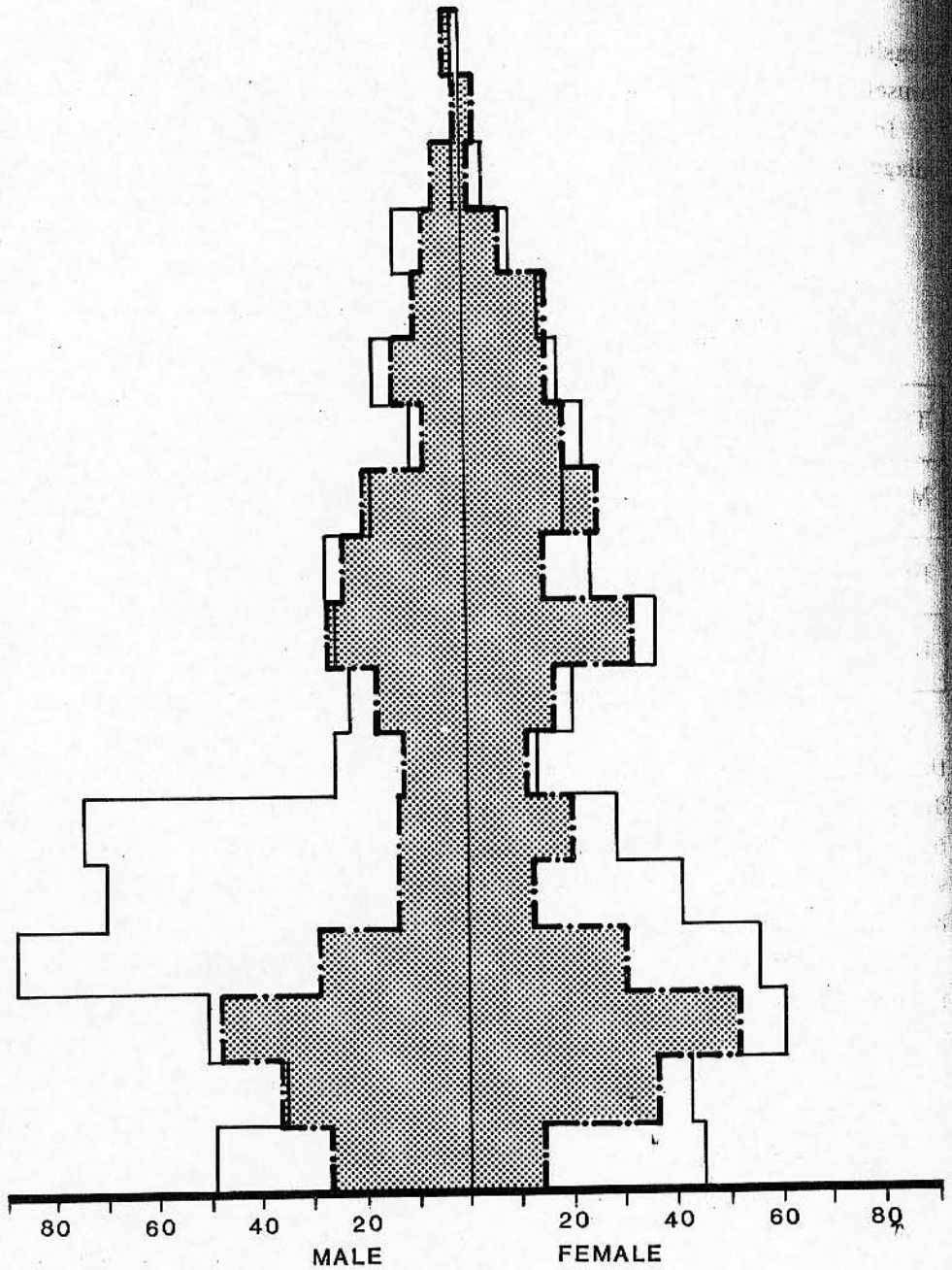


FIG. 3: COMPARISON OF OFFICIALLY REGISTERED AND ACTUAL RESIDENT POPULATION

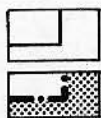

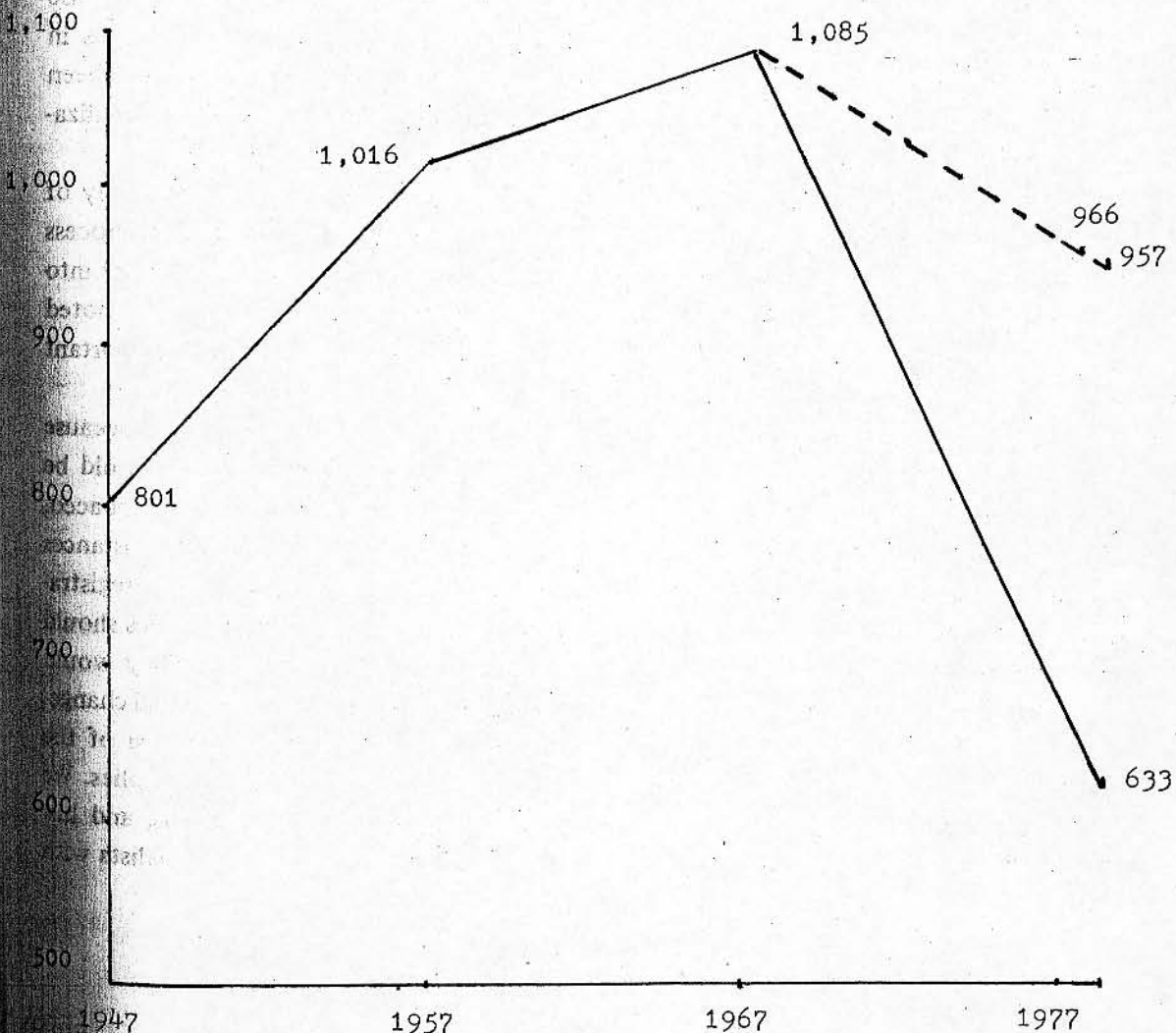
 OFFICIALLY REGISTERED POPULATION  
 ACTUAL RESIDENT POPULATION

FIG. 4: HISTORICAL TREND OF POPULATION 1947 - 1977

----- Figures from household registers  
—— Author's field census (post 1967)



and 44% for females. There are, therefore, significantly fewer children present than official statistics would indicate.

### Migration And Poulation Estimates

It is clear from the above comparison that migration has drained the village of residents, especially young residents, to a far greater extent than the records would indicate. Interviewing revealed the time period in which migration became popular and allows us to assume much greater accuracy for statistics from 1970 and earlier.

That the figures for total number of residents and for many of the cohorts are incorrect is essential information for those using these figures. It is my impression that this case study is representative of demographic changes taking place in agricultural villages in general during this period of economic development. Indeed, the changes may have been telescoped here due to the distance from urban centers, with the effects of industrialization lagging behind areas more suburban in character.

Therefore, while in terms of time depth, this study may be representative only of areas not within commuting distance of industrial centers, in terms of general process it has a far greater application. The ability of industry to pull labor from agriculture into industrial occupations, together with a rural to urban change of residence has been noted as a defining characteristic of the process of economic development. Therefore important questions include when does this process begin and at what rate it proceeds.

In order to answer this, a series of case studies such as this must be done. Because differing labor requirements may speed up or inhibit the rate of migration, it would be helpful to choose villages with various crop patterns, such as rice, mixed cropping, tobacco, and so forth. Another important variable is the location. Villages at varying distances from urban areas may show entirely different rates of migration. Because an over registration in rural areas suggests an under registration in urban districts, towns and cities should not be neglected. These small case studies could serve as testing devices. They would allow a more accurate assessment of current population trends in a period of rapid change. The benefit to those involved in economic planning is obvious. A precise idea of the number of people in each cohort is essential for predicting available labor supplies. We may also see implications for geographers, businessmen, government officials, and historians. Periodic case studies may go a long way toward providing these specialists with exceedingly accurate demographic information.

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# 小規模人口研究及其在計劃上的價值： 一個台灣南部農村的個案研究

宋如安\*

## 中文摘要

在過去三十年一個村落（作者研究的村落）人口的趨勢由原來大量增加，直到頂高點之後變為減少。戶籍登記資料所顯示的此村人口數量減少的現象經由本研究實地全面調查以予查證。實地普查資料所得出的人口減少數比戶籍上所登記資料所得出的人口減少數量大。本文中對當前人口統計資料的問題及資料正確的重要性作了若干檢討。本文最後對可用為揭發與記錄人口數目的定期小型研究提出了若干建議。

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