INTEGRATED POPULATION PROGRAM
KOREAN COUNTRY REPORT

Submitted
to

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

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by

Kong-Kyun Ro,

Principal Investigator

and

Byong Woo Lee,

Researcher,

Korea Advanced Institute
of Science and Technology

Jong Kun Kim,

Project Administrator and
co-investigator

and

Moon Ho Chung,

Senior Researcher and
Field Director

School of Public Health,
Seoul National University

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Kong-Kyun Ro

Principal Investigator

and

Jong-Kun Kim

Project Administrator and co-investigator

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Chapter I: INTRODUCTION

1.1 THE OBJECTIVE AND BACKGROUND OF THE STUDY:

This study has two components. One is the action component and the other the evaluation, research and analysis. For the action part, we have established a model integrated program of basic health services and birth control in Chunseong Gun, Kangwon-do, Korea. For the research part, we analyze the impacts of the integrated program in comparison with the traditional and segmented programs on the following: (1) the selected indices of health status and fertility; (2) cost-effectiveness where costs are analyzed separately for each function and effectiveness are measured by the impacts on the above indices and the type and amount of services delivered; and finally (3) community participation which are measured by local community and government inputs as well as the coverage of the services provided under the program.

A national family planning program in Korea was initiated and organized by the Ministry of Health and Social Affairs in 1962. Its goal was to reduce population growth rate as a means of accelerating economic development. Although there have been many changes in the program since its inception, the goal still remains the same, as restated by the successive Five-Year Plans.

In the development of Korea's population programs, the first half of 1960s was called the "clinical era" as most programs were clinically oriented. During this period, there was no substructure under the Gun (county) for providing contraceptive services and information. Population programs played a passive role as clients had to come to program centers.

The second half of 1960s was called the "field era" as the program structure was expanded into Eup (town) and Myon (township) level. During

this period, family planning services were taken to clients in the field as field workers were posted in every Eup and mobile service clinics were organized in 1964 to take contraceptive services to remote areas.

The first half of 1970s may be called as the "expansion era" as existing programs were expanded in width and in depth. During this period, as family planning services were taken to the field in an increasing coverage and expanded in the scope of service, an ever increasing resources were expended for population programs.

The second half of the 1970s may be called the "reorientation era." It was during this era that there was a growing awareness of the shortcomings of doing more of the same things. Policies designed to increase contraceptive efficiency and coverage and those designed to improve public information were thought to have reached a point of rapidly diminishing return. Fresh approaches designed to alter fertility behavior were felt to be called for. New channels, such as taxation, housing priority, tuition incentive systems, were used to change fertility behavior patterns. Meaningful integration of different programs, however, made little progress and it still remains today in an experimental development stage.

The major experiements of integrating family planning programs with health programs were those conducted in Yongin Gun, Kyonggi Province under sponsorship of the Ministry of Health and Social Affairs and World Health Organization, and those carried out by Korea Health Development Institute before it was merged into Korean Institute for Population and Health. As for integrating family planning program with economic development program, in 1972, family planning program was included in the New Village Movement (NVM). The NVM was organized with the aim of enlisting local participants

in infrastructural development and income supplement programs. However, an effective integration of family planning program with the NVM was not achieved, with family planning given one percent in the total NVM activities achievement index for rural communities.

At the end of the expansion era, Korea's population program led to an emergence of numerous organizations involved in the programs. In recognition of the need to coordinate all population programs, Population Policy Coordinators Committee (PPCC) was established in 1976. The PPCC is a cabinet level population committee chaired by Deputy Prime Minister—cum-Minister of Economic Planning Board (EPB). This committee is an outgrowth of the Population Policy Section established in the EPB in 1974 to coordinate the ministry's activities in the population field. In addition, the Population Policy Secretariat (PPS) was established in the Korean Development Institute in 1976. The PPCC never met, however, after its first organizing meeting, and the PPS has not been overly active in recent years.

If population prgrams in Korea were to achieve a breakthrough in their total effectiveness, beyond organizational coordination and beyond family planning, the population programs should be integrated with health and development programs. In this sense, 1980s ought to be the integration era. The objective of this study is to play a part in ushering Korea into this new era by a successful implementation of an experimental action and research project of an integrated population program.

We offer an approach which integrates (1) basic personal health services, (2) health and sanitary education, and (3) the dissemination of information on contraceptive methods and the distribution of contraceptive devices. This approach has the following advantages. First, by

coordinating and integrating the three components of this program, we aim at improving the efficiency of the health care delivery system in terms of increasing the effectiveness or "output" for given resources spent or mininizing the resources spent for given effectiveness.

Second, the program aims at reducing the birth rate without directly attacking the popular concept of the ideal family size. This can be done by decreasing infant mortality rate, and thereby, reducing the need for any extra children to insure the desired number of surviving children. Third, it aims at improving the quality of population by increasing the investment in the health component of human capital. This will tend to raise the per capita income, thus, encouraging the changes in living conditions conducive to the desired change in the value system of people.

1.2 REVIEW OF LITERATURE AND GENERAL BACKGROUND INFORMATION:

Family planning in Korea has often been cited as a success story. This is because it has received a main credit for the reduction of total fertility rate from 43.0 per 1,000 in 1960 to 32.1 in 1970 and then to 23.4 per thousand in 1980.[2] It should, however, be pointed out that during the same period, Korea has experienced a rapid economic growth and urbanization, which are known to have contributed to the decline in the birth rates of more developed countries in the past.

Today the family planning in Korea is at the crossroads. The biological approach in the 60's and more recently the media approach seem to have reached the stage of rapidly diminishing returns. A fresh look at the family planning and more broadly at the whole relationship between population, health and economic development is called for.

The basic premise of family planning is that population growth impedes economic growth by unfavorably affecting the resource-people ratio. Although the intuitively appealing notion that the population growth automatically lowers per capita income in less developed countries has lost ground, the unfavorable effects of population growth in LDC's continue to occupy much of the attention of those involved in family planning and economic development. The future role of family planning in Korea should be examined in the context of the complex relationship between population, health and economic development.

In this context, the concept of human capital provides a useful starting point.[3] In the literature of economic growth and development, the explanation for the so-called residual factor, named for the difference between the total measured growth of inputs and of outputs, has increasingly been sought in the improvement in human capital or the quality of labor[4] rather than in technical changes.[5] Thus, we have seen a shift of emphasis from the investment in physical capital to the investment in human capital in the methodology of economic planning and a movement toward "generalized capital accumulation theory," which deals with all forms of capital.[6]

Concurrently, there has been a trend away from the population-resources ratio and dependency ratio approaches to the quality of population and inducement approach in dealing with the problem of population growth and economic development. Kunzets[7] has presented a balanced look at the effects of population growth on economic development and Jorgenson[8] discredited the contention that the most economy of LDC's is caught in a Malthusian trap. Note that the concept of optimum population is a static one based on the assumption of fixed resources and technology.

In appraising the effects of population growth on economic development, the critical areas to examine are its effects on the aggregate savings and labor productivity. Population growth could unfavorably affect both aggregate savings and labor productivity, the former by increasing dependency ratio and the latter by lowering capital-labor ratio. It should be pointed out, however, that it also could have a favorable effect on aggregate savings by increasing the propensity to save and that it could increase both aggregate savings and labor productivity by the so-caled replacement effect.

According to the life-cycle theory of saving, people save in young ages and dissave in old ages.[9] Thus, the aggregate saving-income ratio will increase with population growth, if it results in a change in age composition of the population, making young savers proportionately more numerous than old dissavers. According to the theory of replacement effect, a rapid growth in population will result in a higher aggregate investment and labor productivity because the younger generation in general receives higher per capita investment in health and education.[10]

Even if we ignore the above mentioned favorable effects of population growth on economic development, the amount of investment needed to offset the unfavorable effects of population growth appears to be relatively small. An estimate has it that an increase of a little more than 1.5 percentage points in the fraction of GNP invested is needed to offset the effects of a rise of 1 percent point in the rate of population growth.[11]

As for the increase in labor productivity needed to offset the unfavorable effect of population growth, few empirical studies have been done. For an economy with a capital-output ratio of 3 to 1, one source estimates that an increase of 4.6 percent in output per worker is required

to maintain per capita income, if life expectancy is to increase from 50 to 60 years with relatively constant fertility rate of 43 per 1,000.[12] Since the assumption of the fertility rate remaining constant at the rate of 43 per 1,000 is unrealistic for most LDC's, the increase in worker productivity required would be much less than 4.6 percent.

In addition to its effects on investment, there are two circumstances under which population growth would again exert a positive effect on per capital income. They are:

i) The economy is operating in the increasing returns-to-scale stage.

ii) Technical progress is accelerated by an increase in population, that is, knowledge is subject to increasing return to scale.

There is no study on these points in Korea. It seems, however, reasonable to conject that there are certainly a few industries where there are increasing returns to scale both in production and knowledge.

Recently, development strategists have increasingly turned to non-economic factors. Attitudes and incentives have been emphasized as the essential ingredients of development. In this context, investment in health plays an important role. For example, it can be argued that a decline in the mortality rate will change the general outlook of life of a population which will, in turn readjust its consumption-savings and work-leisure patterns.

In fact, a healthy population could be considered as a candidate for primum mobile of economic development. For, the state of being healthy may well be an ingredient necessary to induce the attitudes, value systems and motivations which not only lower birth rates but also favor the emergence of the activities and personalities required for development.[13] For those

who are "resource" oriented rather than "inducement" oriented, a healthy population could claim to spur economic growth because it is likely to include proportionately a greater number of individuals who are "growth agents," entrepreneurs, innovators, and disseminators of ideas.[14]

For the Korean economy during the sixties, it is not unrealistic to assume that investment in health contributed to her rapid rate of economic growth not only by decreasing debility and disability but also by decreasing mortality rate. Among various factors affecting the parameters of the relationsip between per capital income and population growth, observe the following features of Korean economy. (1) The development of an open dual economy with continuous migration of population from the rural-agricultural sector to the urban-industrial sector; (2) a relatively favorable output-labor ratio; (3) a rapidly expanding export sector; (4) an excellent literacy rate and a relatively high skill level of the labor force; (5) a drain on manpower by maintaining a 600,000 man armed forces. It is in this context that we are proposing an experimental program to improve human capital and (thereby) reduce fertility rate by offering an integrated health services and fertility control in a rural area.

The basic assumption behind this study is that the relationship between the population growth and economic development in Korea today is tenuous at best. However, it is postulated that the investment in human capital would accelerate the economic growth in Korea and would also have an effect of reducing fertility. And the cost effective way of improving human capital and (thereby) reducing fertility rate is a integrated program of delivering health and family planning services where integration is achieved in organization, function and administration.

1.3 HYPOTHESES FOR THE STUDY

There are three central hypotheses for this study. They are:

A. Compared with non-integrated approach, an integrated program of delivering health and family planning services is more effective in improving the health status and in reducing fertility rates.

B. Compared with non-integrated approach, an integrated program of delivering health and family planning services is more efficient in cost-effectiveness, that is, it involves less expenses for given output or effectiveness.

C. Compared with non-integrated approach, an integrated program of delivering health and family planning services induces a greater degree of community participation by acting as a focal point merging diverse interests.

The conceptual model of analysis behind these hypotheses may be presented by the following diagram (see Figure 1.1).

There are several assumptions behind these hypotheses. The most important one is that activities for an improvement of health is functionally related to those for fertility control. This premise views that similar inputs can be used to produce a joint product called health and fertility control. Manpower qualified and materials and facilities suited to provide preventive and therapeutic health care are also qualified and suited to provide fertility control advices and devices with little or no additional training or modifications. This is a case where division of labor may lead to a lower productivity due to the indivisibility of production process.

The second major assumption is that the final outputs--health and fertility control--are interelated so that an absence of one without the

Figure 1.1: Conceptual Model of Hypothesis

Inputs	Modes of Delivery	Providers and Recipients Relationship	Intermediate outputs	Final/ ~~Intermediate~~ outputs
Manpower, materials, and facilities (e.g. Labor and Capital)	Integrated: Multiple functions for each individual VS Segmented: Separate function for each individual	More contacts, interaction community participation and provider involvement compared with segmented mode of delivery	Better and cost-effective utilization of resources for preventive and therapeutic care for health and fertility control compared with segmented approach	Better health and lower fertility for given resources used compared with segmented mode of delivery

other may decrease the value or effectiveness of the other. For example, a decline in infant mortality through maternal and child health care enhances the effectiveness of the family planning services.[15] Going one step further, it can be argued that a joint production of health and fertility control has a synergetic effect.

The third assumption is that an integrated approach tends to view all aspects of welfare of individual families as closely interrelated. Health, control over the size of family and economic welfare are interrelated and viewed as such by individual families. If health care and family planning services are offered together, families will be apt to appreciate more the value of such services leading to a greater participation of recipients and a greater sense of personal involvement by providers.

Finally, an assumption is made that an integrated approach lead to more efficient use of resources. If parallel agencies are set up to administer health care and family planning separately, this would lead to a duplication of manpower and facility to handle similar interrelated activities. Duplication tends to lead to a conflict of interests andwasteful rivalry.

1.4 Methodology and Implementation

1.4.1 Selection of the Experimental Site:

This study relies on the existing facility of Chunseong Gun Health Center located in Chunseong Gun, Kangwon Province. Under an agreement reached between the Seoul National University and the Provincial government of Kangwon Do, a health center was established at the above site in 1971.

The original purpose of the center was to serve as a field study site for public health and medical students. The center was designed to provide

an opportunity for the trainees to learn at first hand the problems involved in public health and medical practice in rural areas. In addition, the staff of the center was to gather the data on the health indicators of the residents under the direction of the faculty of the school and offer the data to the provincial government. The faculty of the school is also offering consulting services to the provincial government.

Four Myons (townships) within Chunseong Gun (county) are selected as experimental sites because of their compatibility in several key variables and because they are separated from each other by Chuncheon si (city). Of these, Shindong Myon is chosen as the primary study or treatment area and the Pogok Myon the secondary study area. The other two are selected as the control areas. Table 1-1 shows the program inputs of each area. The study areas have an integrated program where "multipurpose worker" offers primary health care and family planning service concurrently.

1.4.2 Methods and Procedure:

Baseline survey of the households in the four Myons selected was conducted in the summer of 1980. Concurrently, multi-purpose workers were trained and assigned to Shindong and Pagok Myon. "Post-treatment" household survey was undertaken in the fall of 1981. The number of respondents and response rate in both surveys for each of the four Myons selected are shown in Table 1-2.

Data have been collected on "impact variables" and control variables. The impact variables are those variables which represent:

a) the intermediate output in health status and fertility control, i.e., the utilization of health care for curative and/or preventive purposes and that of family planning services;

Table 1.1: Program Inputs by Area

Classification	Area	Program Input*
Study Area 1	Shindong Myon	B, C, D
Study Area 2	Pogok Myon	C
Control Area 1	Moonmak Myon	A
Control Area 2	Seo Myon	A, B

High Integr.
Light Integr
Non-Integr.

*A. Existing Government Program (Single Worker)

B. Health Insurance

C. Multipurpose Worker

D. Mothers' Club

Table 1.2: Sample Households and Universe

Area	Total*			Selected		No. of Hds. Surveyed (%)	
	Pop.	No. of EDs	No. of Hds	No. of EDs	No. of Hds	1980	1981
Shindong Myon	10,989	28	2,134	4	321	300 (93.5)	297 (99.0)*
Pogok Myon	10,577	30	1,945	4	332	299 (90.1)	272 (90.7)
Moonmak Myon	11,563	29	2,264	4	352	317 (90.1)	290 (96.7)
Seo Myon	8,297	20	1,535	4	368	300 (81.5)	284 (96.7)
Total	41,426	107	7,878	16	1,373	1,216 (88.6)	1,143 (92.3)

ED: Enumeration District

Hd: Household

Source: Statistical Yearbook, 1980, (census year) Economic Planning Board, Republic of Korea.

* For the 1981 survey, the targeted number of households to be interviewed is 300 for each Myon.

b) the use or non-use of contraceptives;

c) the community participation variables; and

d) cost-effectiveness variables such as expenses per service provided and patient's medical expenses per service.

Control variables are demographic and socioeconomic variables of respondents selected on the basis of preliminary analyses of national data, theories, previous studies, and a priori reasoning as those likely to influence the dependent variables significantly.

Basically, three types of data analyses have been undertaken. First, comparisons of key variables between Myons, i.e., the study areas vs. control areas are undertaken by frequency distribution diagrams for 1980 data and 1982 data separately. Then, an examination is made to see if and in what direction the inter-Myon differences in the key variables changed between 1980 and 1981.

Secondly, cross-tabulations of key variables by Myons are run to see if there exist statistically significant differences between Myons in the selected key variables. Then, the differences between Myons as compared between 1980 and 1981 to ascertain if and in what direction the differences changed between the two surveys.

Finally, multiple regression analyses have been conducted inserting various "impact variables" as the dependent variables and Myons and control variables as independent variables. Two sets of regressions are run—one with 1980 data and another with 1981 data. Myon variables are inserted as dummy variables to see if there exist statistically significant differences between Myons in their effect on the selected dependent variables after taking account of the effects on the dependent variables of control variables inserted.

Then, the b-coefficients of Myon dummy variables in the first set of regressions with the baseline data are compared with those in the second set of regressions with the post-treatment data. The comparisons are done by t tests to see if there exist statistically significant differences between the two sets of b-coefficients. If the results show that such differences exist, the hypotheses about the impacts of integrated program on the selected dependent variables are supported.

1.5 Summary of Findings and Policy Implications

Three major hypotheses are tested in this study. They are:

I. Compared with a segmented program, an integrated program leads to a better health and fertility control;

II. Compared with a segmented program, an integrated program leads to a more active community participation; and

III. Compared with a segmented program, an integrated program leads to a more efficient program performance.[4] Hypothesis I is supported with a varying degree of statistical confidence level where the variation depends on the surrogate variable chosen to represent health and fertility and also on the sample population selected. Hyopthesis II is supported with a statistically satisfactory level of confidence. However, only one variable is used to represent community participation. Hypothesis III is suppoorted so far as the available data indicate. However, the paucity of data preclude any conclusion with a statistically satisfactory level of confidence.

As mentioned before, due to the shortness of the period during which different program inputs are expected to exert influence on the performance variables, health status is represented by the utilization of health

services and fertility control by whether family planning is practiced or not. Multiple regression analysis show that the hypothesis I on health is unequivocally supported, when the use of health service is represented by health workers' home visits. Whereas Shindong Myon (the high integration area) had less visits than all other three Myons in 1980, in 1981, the reverse was the case. The difference between Myons in the inter-year changes are largely statistically significant.

When the number of visits to health facilities is used to represent the intensity of the utilization of health care, the hypothesis (I) on health is refuted for the visits for curative care. Shindong Myon residents reduced their visits to health facilities for curative care between the survey years, whereas the residents of Seo Myon (the control area I) and Pogok Myon (the light integration area) increased the visits. Accordingly, multiple regression analyses show that, after taking account of the effects of the control variables, the differences between Myons in the inter-year changes are statistically significant for Shindong vs. these two Myons, but insignificant for Shindong Myon vs. Moonmak Myon (the control area II).

This is due to the fact that Shindong Myon residents shifted their reliance on health facilities from curative visits to preventive visits between 1980 and 1981. Whereas Shindong Myon residents significantly reduced the curative visits in comparison with others between 1980 and 1981, they increased the preventive visits more than the residents of the three other Myons. To the extent to which the selected control variables did their jobs, integrated program proved to have an effect of inducing the target population to favor preventive care over curative care.

The result of multivariate analyses also supports the hypothesis (I) on fertility control. When fertility control is represented by the acceptance rate of family planning, the data analyses show that the acceptance rate increased among Shindong Myon residents statistically significantly more than among the residents of Pogok Myon and those of Moonmak Myon between 1980 and 1981. The inter-Myon difference in the inter-year changes is not statistically significant between Shindong Myon and Seo Myon.

The result of multiple regression analysis generally supports the hypothesis II on community participation when it is represented by the attendance rate at mothers' club meetings. Established in 1974, the club has been a focal point of community activities about health, sanitation, and family planning. The data analysis show that, between 1980 and 1981, Shindong Myon housewives increased their attendance rate more than those residing in the three other Myons. The difference between Myons in the inter-year changes are statistically significant for Shindong Myon vs. Seo Myon and Shindong Myon vs. Moonmak Myon, but insignificant for Shindong Myon vs Pogok Myon.

The hypothesis III on performance efficiency is supported by a comparative analysis of data on the cost per service. The cost per service figures are obtained by dividing health centers' monthly budget by the number of visits to the centers and that of health workers' home visits. The cost per service for Shindong Myon declined much more than for other Myons between the survey years. This is because the volume of service increased for Shindong Myon a great deal more than for other Myons. Thus, to the extent to which Shindong Myon's volume increase is due to the integrated program and to the extent to which a greater utilization of the program services indicate the program efficiency, the hypothesis III on program efficiency is supported. It is to be noted here that, due to data limitations, no statistical tests are conducted.

In summary, all the three central hypotheses are generally supported except when the use of health care is represented by the visits to health facilties for curative purpose. A question which remains to be answered is whether it is reasonable and legitimate to represent health status and fertility control by the use of health care and the acceptance rate of

family planning respectively. Related to this question is that a greater use of health care by the residents of the high integration area may simply indicate a greater amount of attention given to them than others, without significantly improving health status of the residents of the study area. This is a question which could be answered with further studies. It is noted here, however, that so-called "Hawthorne Effect"[16] may not be important here because integration involves a different mode of delivery and not the delivery of a greater volume of service.

In the course of testing the above hypotheses, it has become clear that there is significant interdependence among the three performance variables selected, namely, program performance—health and fertility, community involvment and program efficiency. For example, the data analysis conducted for this study shows that community involvement, as represented by the attendance rate at mothers' club meetings, improve program performance.

On the other hand, related to all three indices of performance used in this study is the commitment to integration by policy makers, staff and community members. Commitment by these people improve the program performance and vice versa. Integrated population program is at an experimental stage in Korea. Further experiments under different settings would demonstrate the merit of integrated approach to policy makers, staff and community members. Such demonstrations would improve the commitment to integration by these people, and this would, in turn, improve the program performance. Thus, this process would bring about a cumulative chain reaction leading to a nationwide acceptance of integrated approach.

In the context of Korea's national population program, policy implications gathered from this study are as follows. Commitment to

integration by policy makers at all levels is essential. Second, a formal training program and a licensing procedure for the staff to be employed in integrated program should be established at a national level by the Ministry of Health and Social Affairs. Third, an evaluation and monitoring system should be instituted to discover the weakness and strength of each integrated program so that an improvement can continually be made to fit each program to the need of each community. Finally, to enhance community involvement from the start of integrated program, the field staff should be recruited from the community members as a matter of program guideline.

An appropriate organization through which the initial implementation of the above recommendations can be made, is the New Village Movement (NVM). The NVM is a national organization established to enlist local participation in infrastructures development and income supplement programs. In 1972, family planning program was included in the NVM. However, an effective integration of family planning program with the NVM activities has not been achieved.

The new administration proclaimed the establishment of a democrative welfare society as a national goal for 1980s. With a greater priority given to social and welfare aspects of development, health and family programs are given a greater emphasis in the total NVM activities. This time of expanding the role of health and family planning programs in rural development is opportune time to work toward an introduction of integrated program on a nationwide basis. It is hoped that this study plays a part in the process of persuading policy makers of the merit of the integrated approach and, therefore, it plays a part in initiating integrated population program nationwide in 1980s.

Footnotes

[1] The "clinical era" and "field era" are phrases borrowed from existing publications. The "expansion era" and "re-orientation era" are our own phrases.

Information presented in this Section 1.1, Chapter I is based on the materials presented in the following publications: Sawong Hong, Population Status Report: Korea (Seoul: Korea Development Institute, 1978); Planned Parenthood Federation of Korea, Ten-Year History of Family Planning in Korea (Seoul, 1975); and Taek-Il Kim, et al., The Korean National Family Planning Program (New York: The Population Council, 1972).

[2] National Bureau of Statistics, Economic Planning Board, Republic of Korea, 1981.

[3] The birth of the human capital concept can be traced to T.W. Schults, "Capital Formation by Education", The J. of Political Economy, Vol. 68, No. 6 (Dec. 1960), pp. 571-83.

[4] D.W. Jorgenson and Z. Griliches, "The Explanation of Productivity Change", The Review of Economic Studies, Vol. 34 (3), No. 99, (July 1972)

[5] See R. M. Solow, "Technical Change and the Aggregate Production Function" Review of Economics and Statistics, Vol. 39, No. 3, pp. 312-20.

[6] H.G. Johnson, "Toward a Generalized Capital Accumulation Approach to Economic Development", Residual Factors and Economic Growth, Paris, O.E.C.D., 1964, pp. 219-25.

[7] Simon Kuznets, "Population and Economic Growth", in Proceedings of American Philosophical Society, Vol. III, No. 3, June 1967, pp. 170-93. For his quantitative analysis, see Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations: 1. Economic Development and Cultural Change, Vol. V., 1 (Oct. 1956) For the theoretical presentation of his view, see Simon Kuznets, "Population Change and Aggregate Output" in Demographic and Economic Change in Developed Countries, op. cit.

[8] D.W. Johnson, "Testing Alternative Theories of the Development of a Dual Economy", in I. Adelman and E. Thorbecks, eds., The Theory and Design of Economic Development, Baltimore, Johns Hopkins Press, 1966.

[9] Franco Modigliani and Richard Brumberg, "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Date", in Kenneth K. Krihara, Ed., Post Keynesian Economic, (Rutgers University, 1954), pp. 388-436. Also see James Tobin, Life Cycle Saving and Balanced Growth", in William Fellner, et al., Ten Economic Studies in Tradition of Irving Fisher, John Wiley, 1967.

[10] Harvey Leibernstein, "The Impact of Population Growth on Economic Welfare-Nontraditional Elements", in Rapid Population Growth, John Hopkins Press, 1971.

[11]Paul M. Sommers and Daniel S. Suits, "A Cross-Section Model of Economic Growth", The Review of Economic and Statistics, Vol. III, No. 2, (May 1971), pp. 121-28. The equation used for this estimate is r-G (GCF/GNP, dn/N) which expresses the rate of growth (r) of GNP per capita as a function of the GNP invested and the rate of population growth. N-67 countries in 1966.

[12]P.E. Enterline and W.H. Stewart, "Health Program Requirements to Offset on Level of Living", American Journal of Public Health, Vol. 52, No. 3, 1962, pp. 401-09. See Table 3, p. 406. This estimate is based on John H. Power's full-employment growth model:

$$g.c. = s.p$$

where g is the annual percentage increment to the labor supply, c is the optimum capital-labor ratio, s is the ratio of net national product at full employment and p is average labor productivity.
Economic Journal Vol. LXVIII, No. 269, March 1958, pp. 34-50.

[13]See Albert O. Hirshman, The Strategy of Economic Development, New Haven, Yale University Press, 1958, Chapter 1.

[14]Carl E. Taylor and Marie-Francoise Hall, "Health, Population, and Economic Development, Science, Vol. 157 (August 11, 1967), pp. 651-57.

[15]See Howard C. Taylor and Bernard Berelson, "Comprehensive Family Planning Based on Maternal/Child Health Services: A Feasibility Study for the World," Studies in Family Planning 2, 2 (February 1971); and Johnston and Meyers, "Nutrition, Health and Population," and Bruce F. Johnston, "Food, Health and Population in Development," Journal of Economic Literature 15, 3 (September 1977), pp. 879-907.

Estimates of the elasticity of completed fertility with respect to the infant mortality rate range from .18 to .40; although this broad a range points up the measurement problems, the figures serve to suggest that a reduction in the infant mortality rate would have had a significant impact on fertility. Estimates presented in William P. McGreevey, The Policy Relevance of Recent Social Research on Fertility, Occasional Monograph Series, no. 2, An ICP Staff Report, Interdisciplinary Communications Program, Smithsonian Institution, Washington, D.C., 1974, pp. 30-31.

[16]United Nations' Funds for Population Activities, On Integration of Family Planning with Rural Development, Policy Development Studies, No. 1, UNFPA, New York, 1979.

CHAPTER II: COUNTRY REVIEW

2.1 Population and Socioeconomic Development Review and Rationales for the Selection of Control Variables

Korea's economic development and social progress during the last two decades have been called remarkable and well-known. Since 1960, Korea has developed from one of the poorest countries to a middle income, newly industrializing country. Between 1960 and 1980, real per capita income increased four times and the manufacturing sector's share of GNP increased from 11 to 34 percent, as the agricultural sector's share declined from 40 to 18 percent. Impressive social gains have also been made. Health, education, housing and public services have improved significantly.

This section describes the historical trends in population and socioeconomic characteristics, most of which have been selected as the control variables. The demographic and socioeconomic characteristics presented are (1) urbanization, (2) education, (3) industrialization, and (4) investment in health. Preliminary analyses of the relationship between these characteristics and fertility are also presented to justify the selection of them as the control variables for this study.

2.1.1 Urbanization

Two remarkable features of demographic development in South Korea in recent years have been rapid urbanization and declining fertility rate. Like other developing countries, the Republic of Korea witnessed a rapidly increasing rate of population growth after the World War II as her mortality rate declined while her birth rate remained stable. (See Table 2-1). The intercensal growth rate of population reached the peak at 2.7 percent per annum during the five-year period after the Korean War between 1955 and 1960. The mid-year estimates of 1979 show that the recent rate of

Table 2-1. Population and Intercensal Growth Rates: All Korea, 1925-44, and Republic of Korea, 1945-79

Year	Population	Intercensal Growth Rate (Per Cent)
All Korea		
1925 (October 1)	19,020,030	1.4
1930 (October 1)	20,438,108	1.7
1935 (October 1)	22,208,102	1.2
1940 (October 1)	23,547,465	1.4
1944 (May 1)	25,120,174	
Republic of Korea		
1949 (May 1)	20,166,756	1.2
1955 (September 1)	21,502,386	2.7[a]
1960 (December 1)	24,954,290	2.5[a]
1966 (October 1)	29,159,640	2.1[a]
1970 (October 1)	31,438,768	2.1[b]
1975 (October 1)	34,678,972	2.1[b]
1979 (October 1)	37,605,000	

a) Preliminary estimates by Lee Jay Cho, (Source: Republic of Korea, Economic Planning Board(1971: 37, Table 10). and "Korean Population: Recent Trends and Future Prospects." Paper presented at a meeting of the International Liaison Committee for Research on Korea, Daejeon, Republic of Korea, 1972: 13. Table 1.

b) Republic of Korea, Economic Planning Board, mid-year estimates.

population growth in the Republic of Korea has been about 2.1 percent per annum.

The Republic of Korea government and other agencies, domestic and international, launched an active campaign to reduce the birth rate in early 1960's. According to estimates based on censuses, crude birth rate declined from 42.9 per 1,000 population in 1960 to 29.0 per 1,000 in 1970. The 1970 birth rate is, thus, about 67.6 percent of the 1960 birth rate (see Table 2-2). The preliminary result of 1980 census shows that it declined further to 23.4.

Censuses taken since 1955 show that population of metropolitan areas—Seoul and Busan—increased by about 256 percent between 1955 and 1975 (see Table 2-3). There is also a considerable movement into other cities (Shi's) recording about a 181 percent increase in population of Shi's between 1955 and 1975. Whereas the rate of migration into Shi's accelerated, however, that into metropolitan areas declined in the recent years. The intercensal increase in population between 1970 and 1975 was about 49 percent for Shi's compared with that of about 24 percent for metropolitan areas. The results of rural-urban migration of such magnitude is that the rural population of Korea in 1975 is a bare majority of about 52 percent contrasted with the fact that over 75 percent of people lived in rural areas in 1955.

The demographic importance of rural-urban migration of such magnitude may be found in its possible effect on fertility rate. Table 2-4 shows the difference in total fertility rate between women in rural area and those in urban area from 1960 to 1975. Although fertility rate declined for women in both rural and urban areas, the rural-urban difference in fertility remains essentially unchanged.

Table 2-2. Crude Birth Rates: All Korea, 1924-44, and Republic of Korea, 1945-79

Year	Crude birth rate	
	Estimated	Based on Registration[a]
All Korea		
1925 (October 1)	45.4[b]	37.5
1930 (October 1)	45.3[b]	30.9
1935 (October 1)	43.5[b]	32.6
1940 (October 1)	41.0[b]	35.3
1944 (May 1)		
Republic of Korea		
1949 (May 1)	u	23.9
1955 (September 1)	43.3[c]	31.2
1960 (December 1)	42.9[c] 35.8[c]	42.6
1966 (October 1)	33.7[c] 30.0[c]	
1970 (October 1)	29.0[c]	
1975 (October 1)	24.3[d]	
1980 (October 1)	23.4[d]	

u) Unavailable

a) See Republic of Korea, Economic Planning Board (1970:30, Tables 2-5).

b) Estimates by Taebin Im, "Population Projections for the Republic of Korea, 1960-80." Monthly Statistics of Korea (Seoul), 5(11-12):5-47, (1963:12, Table 4;15., Table 7).

c) Preliminary estimates by Cho, op. cit., 1972:13 Table 1. Preliminary estimates based on a new procedure using incomplete birth registration statistics and the census.

d) 1975 Census and 1980 Census preliminary result, Republic of Korea, Economic Planning Board.

Table 2-3 Population Growth Rate in and Distribution among Metropolitan Areas (Seoul, Pusan), Cities, and Rural Areas.

	Metropolitan Areas (Seoul, Pusan)		Cities		Rural Areas		Total	
	pop. (1,000 persons)	distri-bution (%)	pop.	distri-bution	pop.	distri-bution	pop.	distri-bution
1955	2,624	12.2	2,657	12.3	16,221	75.5	21,502	100.0
1960	3,609	14.4	3,592	14.4	17,753	71.2	24,954	100.0
1966	5,219	17.9	4,761	16.3	19,456	65.8	29,436	100.0
1970	7,673	23.8	5,191	16.1	19,377	60.0	32,241	100.0
1975	9,491	26.9	7,515	21.3	18,275	51.8	35,281	100.0

	Population Growth Rates (%)				
	1955-1960	1960-1966	1966-1970	1970-1975	1955-1975
Metropolitan Areas (Seoul, Pusan)	+ 37.5	+ 44.6	+ 47.0	+ 23.7	+ 255.7
Cities	+ 35.2	+ 32.5	+ 9.0	+ 44.8	+ 181.3
Rural Areas	+ 9.2	+ 8.0	- 0.4	- 5.7	+ 10.1

Source: E.P.B., Population and Housing Census Report 1955, '60,'66,'70,'75

Table 2-4 Fertility Rate in Cities and Rural Areas (1960-1975)

	Total	Cities	Rural Areas
1960	6.13	5.37	6.76
1962	5.51	4.79	6.19
1964	4.89	4.16	5.58
1965	4.82	3.34	5.55
1968	4.46	3.38	5.14
1970	3.94	3.15	4.42
1975	3.24	2.73	4.02

Source: 1. 1960-1970: Cho, Lee-Jay, "The Demographic Situation in the Republic of Korea", Internation Laison Committee for Research on Korea, 1973.

2. E.P.B., Population and Housing Census Report, 1975.

A cross-tabulation of Shi-gun data show that those areas with a higher percent of farming households in the total households have a higher rate of fertility rate and out-migration (see Table 2-5). Nationwide data, therefore, support the selection of farming vs. non-farming household as a control variable for this study.

2.1.2 Education

In 1960s, the Republic of Korea has been known to have a higher level of educational attainment compared with countries with similar socioeconomic indices. The level of education improved further in 1970s. Table 2-6 shows that the biggest improvement is in the rate of advancement from primary to middle school. In 1965, 54 percent of those who graduated from primary schools (1st to 6th grade) went on to enroll in middle schools (7th to 9th grade). The figure increased to 90 percent in 1978. In 1978, there is almost a universal enrollment in primary schools at 97.6 percent of children of primary school age (6 to 11 years).

The result of preliminary analysis, as shown in Table 2-7, indicates that Shi-Guns with a higher rate of advancement from middle to high schools have a lower rate of fertility. This relationship supports the selection of the educational level of the head and wife of a household as a control variable for this study.

2.1.3 Industrialization and Per Capita Income

Since industrialization is usually accompanied by sectorial change in the share of GNP, we present data on this in Table 2-8. The data show that the growth rate of the manufacturing and mining sector increased from 9.2 in 1960 to 18.2 percent in 1970, whereas that of the agriculture, forest and fishery sector witnessed a decline from 0.1 to minus 0.9 during the

Table 2-5 Relationship Between per cent of Farming Households, Migration Efficiency and Fertility Rate (1978)

Unit: City and County

Migration Efficiency+	per cent of Farming Households	Fertility Rate*							Total
		0.2 and less	0.2 - 0.6	0.6 - 1.0	1.0 - 1.4	1.4 - 1.8	1.8 - 2.2	2.2 and over	
0.6 - 0.9	10 and less	4	4	3	1				12
	10 - 30		1	1					2
	30 - 50				1				1
	50 - 70				1				1
	70 and over								
0.9 - 1.2	10 and less			5	1				6
	10 - 30			4	2				6
	30 - 50			4	2				6
	50 - 70				4				4
	70 and over								
1.2 - 1.5	10 and less								
	10 - 30								
	30 - 50			1	1	1			3
	50 - 70				10	3			13
	70 and over				4	6			10
1.5 - 1.8	10 and less								
	10 - 30								
	30 - 50				1	1			2
	50 - 70				4	7	1		12
	70 and over				1	5	3		9
1.8 - 2.1	10 and less								
	10 - 30								
	30 - 50								
	50 - 70					2	3		5
	70 and over					8	6	1	15
2.1 and over	10 and less								
	10 - 30								
	30 - 50								
	50 - 70					2	1		3
	70 and over					1	5	3	9
Total		4	5	18	33	36	19	4	119

*) Fertility Rate = $\frac{\text{No. of births ('78)}}{\text{No. of women aged 19-45}} \times 10$

+ Migration Efficiency = $\frac{\text{out-migrants}}{\text{in-migrants}}$

Table 2-6 Primary School Enrollment Rate And Middle and High School Advancement Rate

	Primary School Enrollment Rate	Middle School Advancement Rate	High School Advancement Rate
1965	95.1	54.3	69.1
1970	97.0	66.0	70.1
1975	97.2	77.2	74.7
1978		89.7	79.3

Source: Ministry of Education, Education Statistical Yearbook, (1979)

Table 2-7 Relationship Between Educational Level and Fertility (1978)

No. of High sch. students / No. of Middle sch. students	Fertility Rate*							
	0.2 and under	0.2 - 0.6	0.6 - 1.0	1.0 - 1.4	1.4 - 1.8	1.8 - 2.2	2.2 and Over	Total
0.2 and under					1	2	5	8
0.2 - 0.3				5	5	11	1	22
0.3 - 0.4		1	1	5	21	7		35
0.4 - 0.5			1	21	8		1	31
0.5 - 0.6			2	13	4			19
0.6 - 0.7		1	13	3				17
0.7 - 0.8	2	4	5	1				12
0.8 - 0.9	3	10	2					15
0.9 - 1.0	7	5	2					14
Total	12	21	26	48	39	20	7	173

$$x^2 = 367.25 > x^2(0.99,48) = 74.61$$

*) Fertility Rate = $\frac{\text{No. of births ('78)}}{\text{No. of women aged 19-45}} \times 10$

same ten-year period. With a slow down in economic growth, the growth rate of "industrial sector" declined to 10.2 percent in 1979. Nevertheless, this sector now accounts for 28.5 percent of the GNP compared with 12.1 percent in 1960.

Industrialization is reflected in the changes in the per capita GNP. In developing countries, it is usually recognized that as the per capita GNP increases, the fertility rate and population growth rate decline. This observation turns out to be correct for Korea. Table 2-9 shows that as the per capita GNP in 1975 U.S. dollars increased from $241 in 1961 to $776 in 1978, the population growth rate declined from 2.5 to 2.1 percent.

A cross-tabulation of the per capita income as measured by the per capita tax revenue and fertility show a negative correlation, which is proved to be statistically significant by Chi-square test (see Table 2-10). This gives a justification for selecting household income as a control variable for this study.

2.1.4 Investment in Health Facilities and Personnel

Trends in the availability of health facilities and personnel are discussed below because the utilization of health service is one of the impact variables chosen for this study. The relationship between the above health variable and fertility is also discussed here because the child-survival hypothesis has often been cited as a rationale for population integration program. The child-survival hypothesis argues that infant mortality is negatively related to acceptance and practice of fertility-limiting behavior.[1]

The national data indicate that the availability and utilization of health services improved steadily. As Table 2-11 shows, the greatest

Table 2-8 Production by Industry

	1960	1965	1970	1972	1975	1979
Agriculture, forest & fishery						
Growth Rate (%)	0.1	- 1.9	- 0.9	1.7	5.3	5.2
Per Cent of GNP	41.3	39.4	28.0	28.3	24.9	20.6
Mining & Manufacturing						
Growth Rate (%)	9.2	18.7	18.2	15.0	12.6	10.2
Per Cent of GNP	12.1	15.5	22.8	24.4	28.0	28.5

Source: Bank of Korea, Statistical Year Book, 1979

Table 2-9 Per Capita GNP in 1975 Constant U.S. dollars -- 1961-1978

year \ Per Capita GNP	Quantity ($)	Annual Rate of Increase (%)
1961	241	—
1965	280	3.9
1970	408	8.3
1975	574	7.1
1978	776	10.6

Source: E.P.B., (Economic Planning Board,) Korean Statistical Yearbook, 1979.

Table 2-10 Relationship Between Income and Fertility Rate (1978)

Per Capita tax revenue	Fertility Rate*							Total
	0.2 and under	0.2 - 0.6	0.6 - 1.0	1.0 - 1.4	1.4 - 1.8	1.8 - 2.2	2.2 and over	
2,000 and under						1	5	6
2,000 - 4,000			1	1	6	13	1	22
4,000 - 6,000		1		8	23	4		36
6,000 - 8,000			3	21	8	2		34
8,000 - 10,000		2	3	14	2			21
10,000 - 12,000		2	6	4			1	13
12,000 - 14,000			10					10
14,000 - 16,000	1	5	1					7
16,000 - 18,000	1	9	2					12
18,000 - 20,000	4	1						5
20,000 and over	6	1						7
Total	12	21	26	48	39	20	7	173

$$x^2 = 505.34 > x^2(0.99,60) = 88.38$$

$$\text{Fertility Rate} = \frac{\text{No. of birth ('78)}}{\text{No. of women aged 19-45}} \times 10$$

improvement has been achieved for physicians. In 1961, there were about three thousand persons per medical doctor. In 1978, the figure was sixteen hundred. The availability of hospital beds per population also increased from 0.34 beds per 1,000 in 1961 to 0.78 in 1978. During the same period, the infant mortality rate declined from 72 per thousand in 1966 to 37 in 1978-79 (see Table 2-12). Life expectancy has also improved from 51.1 years for males and 53.7 years for females in 1955-60 to 63 and 69 years in 1978-79.

A preliminary analysis shows a negative correlaion between the availability of doctors and fertility rate. Table 2-13 indicates that this relationship as reflected in cross-tabulation is statistically significant. This by no means proves the validity of the child-survival theory. The relationship between the availability of physicians and infant mortality rate is loose at best. However, the relationship revealed gives a rationale for selecting the utilization of health care as one of the impact variables.

2.2 Review of Korea's Population Programs

Population policy and programs in Korea have two major objectives. One is to make geographical distribution of population less concentrated in cities. Another is to decrease fertility. Only population policies and programs formulated to lower fertility are discussed here.[2]

As in other countries, policies designated to decrease fertility in Korea may be divided into two broad categories: (1) those designed to encourage couples to desire smaller families; and (2) those designed to facilitate couples' realization of that desire. In the first category, altering the social and economic environment that fosters son preference

Table 2-11 Trend in Health Facilities and Personnel: 1961-1978

	No. of Medical Facilities*	No. of Hospital Beds per 100,000*	Utilization Rate*	person per physician**
1961	210	34.9	52.8	3,034
1970	245	51.3	58.4	1,773
1975	178	60.2	64.5	1,801
1978	301	77.9	62.2	1,614

* including General Hospitals: Hospitals, and special Hospitals

** including Herb doctors (Oriental Dr.)

Source: Ministry of Health and Social Affairs, Statistical Yearbook, 1979.

Table 2-12 Life Expectancy and Infant Mortality 1955-1979

Life expectancy at birth	1955-1960	1966	1971	1978-79
Male[a)]	51.1	59.7	61.9	63[d)]
Female[b)]	53.7	64.1	66.8	69[d)]
Infant mortality rate	–	0.072[c)]	0.045[c)]	0.037[d)]

a & b) E.P.B., "Country Monograph," 1973

c) D. Lee, "An Estimation of Infant Mortality Rate in Korea," mimeographed, 1974.

d) Estimates based on E.P.B. made life table.

Table 2-13 Relationship Between the Number of Physicians and Fertility (1978)

No. of MD / pop. 100,000	Fertility*							Total
	0.2 and under	0.2-0.6	0.6-1.0	1.0-1.4	1.4-1.8	1.8-2.2	2.2 and over	
5 and under						2	4	6
5- 9			1	1	4	13	2	21
9-13			1	4	19	3		27
13-17		1	2	8	12	2		25
17-21		1	4	19	2		1	27
21-25				14	1			15
25-29			2	2				4
29-33		1	4		1			6
33-37		1	10					11
37-41		3	2					5
41-45		8						8
45-49	1							1
49-54	3	5						8
54 and over	8	1						9
Total	12	21	26	48	39	20	7	173

$x^2 = 508.62 \quad x^2(0.95,78) \doteq 99.63$

*) $\text{Fertility} = \dfrac{\text{No. of Birth}}{\text{No. of women aged 19-45}} \times 10$

was a major policy objective in the 1970s. In the second category, the most cost-effective method of increasing contraceptive efficiency was the goal of those engaged in family planning programs.

2.2.1. Policies to Alter Son Preference

Various studies have shown that Korean families strongly prefer a son over a daughter.[3] A son is viewed as an investment good in that he is expected to provide old age security for his parents; a daughter is viewed as a consumption good. Son preference is considered by researchers to be a major cause of large family size in Korea.[4] To reduce fertility, therefore, it is necessary to reduce the economic value of a son relative to that of a daughter. One way to accomplish this is to provide an alternative means of old age security through pension programs.[14]

For some years now, the government has been preparing to implement a comprehensive social security and old age pension system. The 1973 National Welfare Pension Law requires all employers to provide a retirement pension for employees over 60 years of age. So far, however, only civil servants, military personnel, and public school teachers have had pension programs. Others have continued to receive severance pay only, with the amount determined by the length of employment.

Enforcement of the 1973 pension law has been postponed because researchers and policymakers fear it will have adverse effects on the economy. Financing a large-scale pension scheme would increase the unit cost of labor and, thus, accelerate the rate of inflation. The increase in labor cost would not only cut into Korea's comparative advantage in international trade but also lower the output elasticity of employment. A

slower growth rate in employment is considered highly undesirable at Korea's current stage of economic and social development.

A second method for reducing son preference is to reduce the gap between males' and females' potential earnings.[15] Higher earnings for women also may reduce fertility by raising the opportunity cost of children.[16] More broadly, and as an objective in its own right, officials in government are studying various measures to enhance the status of women. There is an urgent need for legal reform that would enable a woman to inherit her family's assets. There is a long way to go before equal economic opportunity for women becomes a reality.

The Korean government has also attempted to reduce son preference directly through its "information-education-communications" program. The well-known slogan of the program is "raise well no more than two children regardless of their sex." The message has been disseminated sporadically with varying degrees of intensity. It is our opinion that the program has not significantly altered son preference among Korean families.

2.2.2 Incentive System to Lower Fertility

Various incentive systems have been adopted to change behavior and to increase contraceptive adoption. For many years, incentives for contraceptive adoption have been provided because available foreign funds often come earmarked for that purpose--that is, for the free distribution of contraceptives and information about how to use them.

Among incentives to change behavior, lower tax rates for smaller families, higher priority for public housing for smaller families, and cash payment for acceptance of a vasectomy or tubal ligation have been adopted. For example, in December 1976, the income tax law was amended to limit the

maximum allowable personal exemption for children to two. A higher priority for public housing was given to families with no more than two children, one of the parents sterilized, and the female head of household less than 40 years of age. Before 1977, acceptors of a vasectomy or tubal ligation were compensated for the days' income lost because of the operation. From 1977 to 1978, the government, mostly through the Korean Institute for Family Planning, offered 6,000 won for acceptance of a vasectomy and 15,000 won (about US$30) for that of tubal ligation. These monies were paid to the accpetors, and the operation costs were paid directly by the government to the doctors who performed the operation. The success of this incentive system is reflected in the jump in the number of sterilizations from 81,000 in 1976 to 235,000 and 232,000 in 1977 and 1978.[8]

We believe that these incentive systems are workable and, therefore, can fruitfully be used for fertility reduction in the future. On the other hand, the free or subsidized distribution of contraceptives has become less and less effective in lowering fertility in Korea. The price elasticity of demand for contraceptives is believed to be low, and free distribution as a means of expanding knowledge and acceptability of fertility control appeared by the early 1970s to be reaching rapidly diminishing returns.

2.2.3 Health Policy for Population Programs

As mentioned before, the child-survival hypothesis, supported by past research, suggests that a decrease in mortality rates in general and in infant mortality rates in particular has a fertility depressing effect.[9] Although policies designed to lower child mortality are pursued in their own right, reduction of the positive effects of son preference on fertility is an acknowledged secondary objective of health policy of Korea. However,

there has never been meaningful integration of health programs with population programs in a large scale.

The health policy of Korea has followed a three-pronged strategy: to improve the supply and quality of health services by increasing health manpower and facilities; to improve access to health services by introducing health insurance programs; and to improve sanitary conditions, with emphasis on improving the water supply. Among the accomplishments of this policy are the following: between 1970 and 1978 the number of physicians increased by about 34 percent, that of nurses by 103 percent. As a result, the population-physician ratio was reduced from 1,773 in 1970 to 1,614 in 1978, and the population-nurse ratio from 1.795 to 459 (see Table 2-11). A compulsory health insurance program for firms with more than 500 employees, civil servants, and school teachers has recently been implemented more rigorously. By 1981, one-fifth of the population is expected to be covered by this program.

It is impossible to isolate the impact of this health policy on the infant mortality rate;[10] however, judging from available data, Korea's achievement in reducing her infant mortality rate is impressive. The data on infant mortality are scarce and less reliable than other demographic data published by the Korean government. Nevertheless, they indicate a remarkable decline in the infant mortality rate, from about 72 per thousand in 1966 to about 37 in 1978-79 (see Table 2-12). Estimates of the elasticity of completed fertility with respect to the infant mortality rate range from .18 to .40; although this broad a range points up the measurement problems, the figures serve to suggest that the 50 percent reduction in the infant mortality rate between 1966 and 1978-79 would have had a significant impact on fertility.[11] This indicates that a national

policy integrating health and population programs would have had more impacts not only on health but also fertility than the record shows.

2.3 Structure of Population Policy Making and Implementation in Korea--It's Past Development and Current Status

Since World War II until 1961, there has been little or no interest on the part of the Korean government in family planning.[12] Even the importation of contraceptive devices had been planned in the fifties. The turning point came in 1961 when the Supreme Council for National Reconstruction initiated government's participation in family planning. In the following year, the Ministry of Health and Social Affairs (MOHSA) organized a national family planning program. The goal of the national population control program was to reduce the population growth rate as a means of maximizing economic development. This goal, as restated in the successive Five-Year Plans, still remains the major objective of governmental programs of population control.

As the population control programs expanded, the number of government and non-government agencies involved also increased. For example, the implementation of national programs at local level has been made through the Ministry of Home Affairs (MOHA). Population education has been conducted through the Ministry of Education (MOE). In carrying out incentive and disencentive programs for population policies, Economic Planning Board (EPB) is responsible for formulation of tax exemption system, but MOHA is responsible for implementing it. In assigning public housing priorities for population policies, the Ministry of Construction (MOC) and MOHA are both involved. Table 2-14 shows the historical

Table 2-14: Fertility Control Program in Korea

Policy Measure	Programs	Sponsoring Agencies
Family Planning Program	Contraceptive services (1962) Information and Education (1962)	MOHSA
Strengthening of Family Planning Program	Expansion of delivery system (1971) Legalization of Induced Abortion (1973) Adoption of Menstural Regulation (1974)	MOHSA
Population Education	Formal School Education (1974) Nonformal Adult Education (1977)	MOE
Institutionalization of Incentive and Disincentive Programs	Income tax exemption for the small family (1976) Public housing priorities to the sterilized family (1977)	MOHSA

Source: Sawon Hong, Population Status Report: Korea, (Seoul: Korea Development Institute, 1978), p. 46.

MOHSA: Minsitry of Health and Social Affairs.

MOE: Ministry of Education.

development of population growth control programs and their sponsoring agencies.

The first half of the 1960s was called as the "clinical era"[13] as most of the population programs were clinically oriented. During this period, there was no substructure under the gun (county) for providing contraceptive services and information. Population programs played a passive role as clients have to come to program centers.

The second half of the 1960s was called the "field era" as the program structure was expanded into Eup (town) and Myon (township) levels. During this period, family planning services were taken to clients in the field as field workers were posted in every Eup and Myon and mobile service clinics were organized in 1964 to take contraceptive services to remote areas.

The first half of the 1970s may be called as the "expansion era" as existing programs were expanded in width and in depth. During this period, as family planning services were taken to the field in an increasing coverage and expanded in the scope of service, an ever increasing resorce was expended for various population programs. It was at the initial stage of the expansion era that government officials and major donor agencies began to express an interest in and recognize a need for systemative and effective program management.

Responding to this interest and need, the National Family Planning Center was established in 1970 to perform evaluation, research and training functions. In the following year, 1971, the Center was reorganized into the Korean Institute for Family Planning (KIFP). In 1981, KIFP merged with Korean Health Development Institute (KHDI) to become the Korean Institute

for Population and Health (KIPH). KIPH combines the twin functions of research evaluation and training in family planing with those in health.

The emergence of the KIPH is significant in that it comes at the end of an era, the second half of the 1970s, which may be called the "reorientation era". It was during this era that there was a growing awareness of the shortcomings of doing more of the same things. Policies designed to increase contraceptive efficiency and coverage and those designed to improved public information were thought to have reached a point of rapidly diminishing return. Fresh approaches desinged to alter fertility behavior were felt to be called for. New channels, such as taxation, housing priority, tuition incentive systems, were used to change fertility behavior pattern. Meaningful integration of different programs, however, made little programs and it still remains today in an experimental development stage.

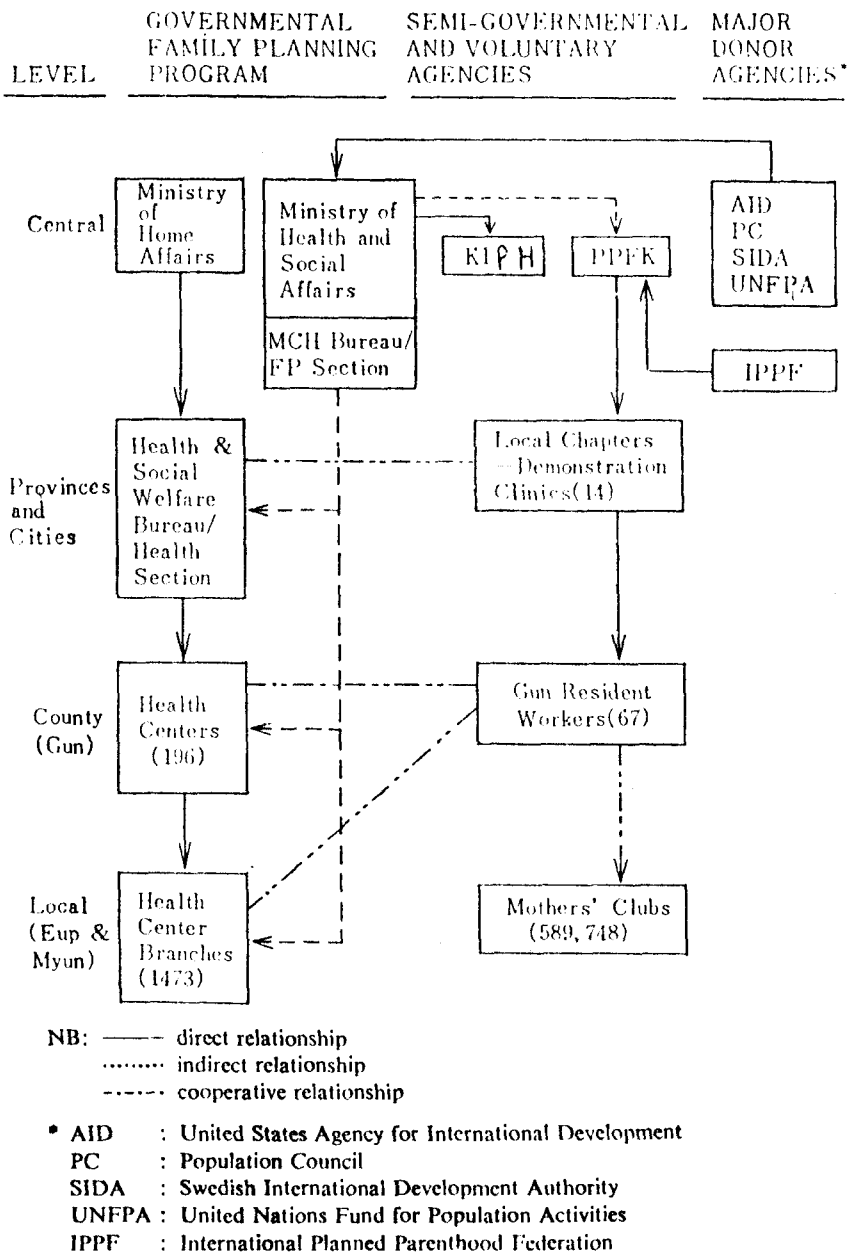
The major experiments of integrating family planning programs with health programs were those conducted in Yongingun, Kyonggi Province under sponsorship of the Ministry of Health and Social Affairs (MOHSA) and the World Health Organization (WHO) and those carried out by KHDI before its merger with KIFP in the last years of the 1970s. As for integrating family planning program with economic development programs, in 1972, family planning program was included in the New Village Movements (NVM). The NVM was organized with the aim of enlisting local participation in infrastructural development and income supplement programs. Effective integration of family planning program with NVM was not achieved, with family planning given one percent in the total NVM activities achievement index for rural communities.

Figure 2-1 presents the organizational structure of family planning systems as existed in 1978. Since this chart was made, the role of foreign and international donors diminished a great deal. This organization chart is inadequate because those programs which go beyond family planning are left out. Policies designed to alter fertility behavior through economic incentive and disincentive systems and those designed to be implemented in coordination with programs other than fertility control programs are not included in the organizational structure as perceived in Figure 2-1.

There were so many organizations involved in the population and other related programs in the "reorientation era" that need to coordinate all population activities and to develop a comprehensive national population policy was widely recognized. In response to this recognized need, Population Policy Coordinators Committee (PPCC) was established in 1976. The PPCC is a cabinet level population committee chaired by Deputy Prime Minister--cum-Minister of EPB. This committee is an outgrowth of the Population Policy Section established in the EPB in 1974 to coordinate the ministry's activities in the population field. In addition, to ensure that demographic variables and population policy be incorporated into development planning, the Population Policy Secretariate (PPS) was established in the Korean Development Institute (KDI) in 1976. Figure 2-2 illustrates the functional relationship between the PPCC, PPS and other ministries.

The PPCC never met, however, after its first organizing meeting, and its role fell de facto to the Population Policy Secretariat (PPS) of the Korean Development Institute (KDI). Since the KDI is the research arm of the EPB and plays a significant role in the economic planning of the Republic of Korea, locating the PPS in the KDI is a logical development.

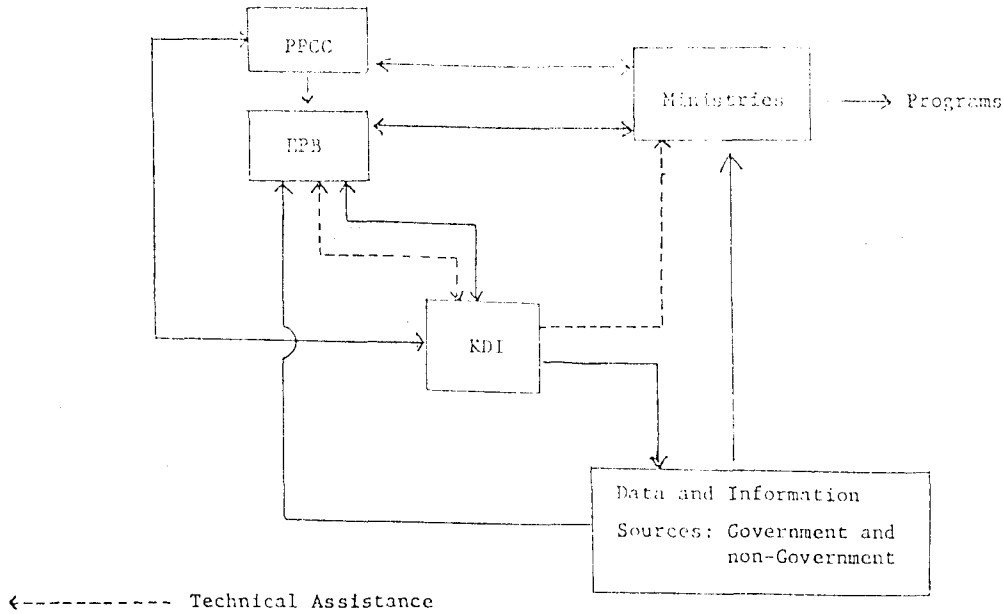
Figure 2-1 *Organization Chart of Family Planning System*



Reproduced from Sawon Hong, Population Status Report: Korea (Seoul: Korea Development Institute, 1978), p. 50.

Figure 2-2

Organizational Chart for Implementing Korea's Population Policy



PPCC: Population Policy Coordinating Committee

EPB: Economic Planning Board

KDI: Korea Development Institute

Ministries: Ministry of Health and Social Affairs, Ministry of Home Affairs, Ministry of Education, Ministry of Construction, and Ministry of Agriculture.

Reproduced from Sawon Hong, "Population Policy Formulation in Korea," paper presented at the Summer Seminar on Population, at Korea Development Institute, July 14-15, 1977, Seoul, Korea.

So far, however, it is difficult to discern a substantial increase in the use of demographic parameters in development planning attributable to the contribution of the PPS. In fact, the PPS has not been overly active in recent years. We believe that coordination has not been carried out to the extent to bring about a meaningful result because there emerged no consensus as to the method of coordination and the objectives of coordination. Beyond coordination, what is needed in the 1980s is an emerging consensus on the need for integration based on a recognition of the nature of interrelationship between various programs inputs in population and development and that of the relationship between their outcomes. Such consensus would make 1980s "integration era" during which fertility control programs are integrated with health programs, and population-health programs are integrated with development programs in policy formulation and implementation.

Footnotes

[1]UNFPA, "A Report on UNFPA/EWPI Technical Working Group Meeting on Integration of Family Planning with Rural Development," East-West Center, Honolulu, Hawaii, 15-18 February 1978. UNFPA, New York, 1979.

[2]Much of the following materials presented in 2.2 is from the principal investigator's article, D.W. Nam and K.-K. Ro, "Population Research and Population Policy in Korea in the 1970s," Population and Development Review, Vol. 7, No. 4, December 1981.

[3]For a recent and comprehensive study, see Sung Jin Lee and Jung-Oh Kim, The Value of Children: A Cross-National Study-Korea. (Honolulu: East-West Population Institute, East-West Center and Seoul: Korean Institute for Research in the Behavioral Sciences, 1979).

[4]Research on son preference as a determinant of fertility is summarized in William P. McGreevey, The Policy Relevance of Recent Social Research on Fertility. Occasional Monograph Series, no. 2, An ICP Staff Report, Interdisciplinary Communications Program, Smithsonian Institute, Washington, D.C., 1974, pp. 30-31.

[5]The most recent series of studies on the relationship between fertility and pension have been conducted by the Population Studies Center of the University of Michigan. Its research reports include: Barbara Entwisel, and C.R. Winegarden, "Fertility and Pension Interrelationship in Developing Countries: Econometric Evidence," Research Report no. 8109. April 1981; and Barbara Entwisle, and K.A. Bollen, "Pension Programs in LDCs: An Indirect Means of Fertility Reduction?" Research Report no. 81-8, April 1981.

[6]For a summary of studies on fertility-female employment relationship, see McGreevey, cited in note 4, pp. 20-23.

[7]For studies of the relationship between fertility and women's earnings, see McGreevey, cited in note 4.

[8]In Dorothy Nortman and Ellen Hofstatter, Population and Family Planning Programs, 10th ed. (New York: The Population Council, 1980).

[9]Examples: Heer's analysis of data on 41 countries for the 1950s indicated a significant correlation ($r = +0.7$) between fertility and infant mortality, and a partial correlation coefficient of +0.37 (significant at .05 level). See David M. Heer, "Economic development and fertility." Demography, 3, no. 2 (1966): 423-444.

[10]For statistical studies of the factors affecting mortality, see Richard Auster et al., "The Production of Health: An Explanatory Study," The Journal of Human Resources, 4 (Fall 1969): 412-36; and Mary L. Larmore, "An Inquiry into an Econometric Production Function for Health in the U.S.," unpublished Ph.D. Dissertation, Northwestern University, 1967.

[11]Data are from McGreevey, cited in note 4.

[12]Data for the materials presented in Section 2.3, Chapter II have mostly been collected from the following publications:

Sawon Hong, Population Status Report: Korea, Korea Development Institute, (Seoul, 1978);

Taek-Il Kim, et al., The Korean National Family Planning Program. (New York: The Population Council, 1972);

Planned Parenthood Federation of Korea, Ten-Year History of Family Planning in Korea. (Seoul: 1975); and

Dae Woo Han, An Outline and Evaluation of the Family Planning Program. (Seoul: Korean Institute for Family Planning, 1977).

[13]The "clinical" and "field" era are phrases borrowed from previous publications and the expansion and reorientation era are my own phrases.

APPENDIX TO CHAPTER II
SURVEY QUESTIONNAIRE FORM

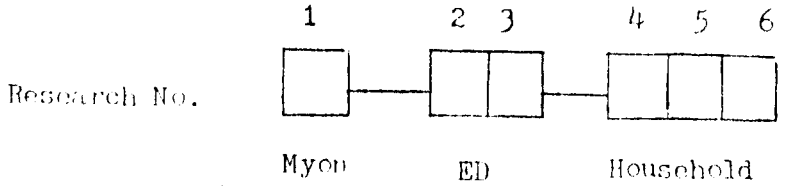
INTEGRATED PROGRAM

OF

BASIC HEALTH SERVICES

AND

FERTILITY CONTROL



Interview

Date: _____

Starting Time: _____

Completion Time: _____

Attempt: 1st, 2nd, 3rd, or 4th
(circle one)

Institute of Health & Environmental Sciences
School of Public Health, Seoul National University

CONTENTS

1. Demographic and Socio-economic status.

1. Characteristics of family member

Family number	Name	Relation-ship	Sex	Date of birth	Age(yrs)	Education	Occupa-tion	Religion	Marital status	Remarks
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										

1. Unit is household (house-), 2. If the date of official registration is not correct, take true one. 3. Classification of educational levels; preschool, illiteracy, able to read korean, attending elementary sch., elementary sch. dropout, attending middle sch., middle school dropout, attending high sch., attending college, college dropout, college graduate. 4. Classification of occupation is based on Korean standard of occupation 5. Classification of marital status; single, married, divorced, widow or widower 6. Remarks: travel for long time, marriage, death, and others necessary 7. Old parents and long term employees are regarded as family members.

II. Health (for housewife only)

1. During the last month, how many visits have you made to medical facilities (hospital, private clinic, health center)?

(1) 0
(2) 1 time
(3) 2 times
(4) 3 times
(5) 4 times
(6) 5 times
(7) more than 5 times

2. If one or more, where did you visit?

(1) Private clinic or hospital
(2) Provincial or city hospital
(3) University hospital
(4) Doctor's visit
(5) Dental clinic
(6) Pharmacy
(7) Health center
(8) Herb clinic or herb pharmacy

3. Then, what was the purpose of your visiting?

(1) Family planning
(2) MCH
(3) Vaccination
(4) Tuberculosis control
(5) Environmental sanitation
(6) Clinical treatment
(7) Chronic disease

4. How many times received visity from health workers?

(1) 0
(2) 1 time
(3) 2 times
(4) 3 times
(5) 4 times
(6) 5 times
(7) more than 5 times

5. If one or more, what was the purpose of health worker visity?
   (1) Family planning
   (2) MCH
   (3) Vaccination
   (4) Tuberculosis control
   (5) Environmental sanitation
   (6) Clinical treatment
   (7) Chronic disease

6. If when you become ill, where would you go first?
   (1) Private clinic or hospital
   (2) Provincial or city hospital
   (3) University hospital
   (4) Doctor's visit
   (5) Dental clinic
   (6) Pharmacy
   (7) Health center
   (8) Herb clinic or herb pharmacy

7. Are you covered by some type of Medical Insurance?
   (1) Yes
   (2) No ——→ go to Q. 9

8. What do you think about medical insurance fee?
   (1) Expensive
   (2) Reasonable
   (3) Inexpensive
   (4) D.K.

9. Why didn't you join any kind of medical insurance?
   (1) Not available
   (2) Fee is too high
   (3) Do not know about any medical insurance
   (4) Do not believe in the value of medical insurance

10. During the last month, how many times visit a medical facility for consultation or health examination about health for your family before they become ill?

(1) o
(2) 1 time
(3) 2 times
(4) 3 times
(5) 4 times
(6) 5 and more

III. Fertility: (15-44 yrs. eligible women only)

1. We want to get a complete record of all babies you have actually given birth to during your life time. First of all, do you have any children of your own now living with you ?

Yes ☐ How many of your children are living with you? _____pers.

No ☐

2. Do you have any children of your own who are living elsewhere?

Yes ☐ How many children are living elsewhere? _____pers.

No ☐

3. How many of your children have died?

_____pers.

4. How many times have you had spontaneous abortions?

_____times

5. How many times have you had induced abortions?

_____ times

6. Are you pregnant now?

Yes ☐ No ☐ D.K. ☐

7. Would you prefer to have a boy or girl?

1) Boy ☐

2) Girl ☐

3) Either ☐

4) Other (specify:)

8. You have had _____pregnancies, Is that right?
(sum of 1 to 5)

1) Yes ☐

2) No ☐ (Probe and correct as needed)

9. Now I want to ask you some questions about each of your _____ (sum) children, starting with the first child you have had.

Preg. order	Pregnant yr. month	End of gestation month day	Result of pregnancy	Sex	Twin	Date of death yr/mon./day

IV. Knowledge of contraception and usage (15-44 yrs. eligible women only)

1. Now I want to talk about a somewhat different topic, As you know, there are many ways that a couple can delay the next pregnancy or avoid it altogether.
Have you ever used these contraceptive method?

Contraceptive methods	Yes	No
1) Intrauterine Device	(1) ☐	(2) ☐
2) Oral pill	(1) ☐	(2) ☐
3) Condom	(1) ☐	(2) ☐
4) Vasectomy	(1) ☐	(2) ☐
5) Tubuligation	(1) ☐	(2) ☐
6) Others	(1) ☐	(2) ☐

2. What was your contraceptive method when you used one at the first time?
Method: _____
(Choose code of contraceptive methods)

3. When did you use contraceptive at the first time?

1) Before 1972 ☐

2) 1973 ☐ 3) 1974 ☐

4) 1975 ☐ 5) 1976 ☐

6) 1977 ☐ 7) 1978 ☐ 8) 1979 ☐ 9) 1980 ☐

4. When did you have the first contraceptive method?

After _____pregnancies

5. How many babies did you have when you used the contraceptive first time?

Boy : _____pers.

Girl: _____pers.

Both: _____pers.

6. Have you ever experienced accidental pregnancies while you used contraceptive methods?

1) No

2) Yes

7. Who is using the contraceptive method you or your husband?

1) No (go to q. 8)

2) Yes (1) IUD

(2) OP

(3) Condom

(4) Vasectomy

(5) Tubulligation

(6) Other..

8. If your answer to Q. 7 is no, why don't you use contraceptive method?

1) Not necessary

2) Don't know how to use

3) Because of side-effects

4) Not interested

5) Others (specify _____)

9. If your answer to Q. 7 is no, do you want to use contraceptive methods in the future?

1) Yes

2) Only when necessary

3) No

4) Not necessary

5) N/A (in use)

V. Mortality and morbidity

1. Mortality :

1) Have you experienced a death in your family during the last year (1979. 1. 1.-12. 31)?

(1) No (Stop here)

(2) Yes _____pers.

2) I want to ask you somewhat about them

Family No.	Date of death	Date of birth of the death	Place of death*	Cause of death**
	1979. . .	19 . . .		
	1979. . .	19 . . .		
	1979. . .	19 . . .		
	1979. . .	19 . . .		

* Place of death: 1. Own home
2. Clinic or hospital
3. Others (where:)

**Cause of death: 1. If he/she was diagnosed by physician, write down the name of the disease as diagnosed.
2. If not, write down the major symptoms and signs of the disease or the name of disease before he/she died.

. Morbidity :

1) During the last week, did you or a member of your family become ill?

(1) No (Stop here)

(2) Yes

2) If so, how many persons are ill? (write family No.)

3) I want to ask you about each member of family who was ill during the last week. (please write individual morbidity record respectively)

Individual morbidity record

Family No. [ ][ ]

Time of onset : 1980. . . Treatment : 1. Yes 2. No

Name of disease		Results of treatment	Date of :
General symptoms (depend on disease progress)	1. 2. 3.	1. Cure 4. No effect 2. In-treatment 5. Death 3. Improvement 6. D.K.	1. Cure . . 2. Death . .

Why not seek treatment: 1. Economic reason 2. Wait till the need a rises 3. Not severe enough to seek a treatment
4. No facilities available 5. No effects are expected
6. Others(specify_____)

Types of care	No. of treatment days	Price of care	No. of bed days
1st treatment:			
2nd treatment:			
3rd treatment:			
Total :			

0: Private clinic or hospital (Ambulatory)
1: Provincial or city hospital (Ambulatory)
2: University hospital (Ambulatory)
3: Doctor's visit
4: Private clinic or hospital (In-patient)
5: Provincial or city hospital (In-patient)
6: University hospital (In-patient)
7: Dental clinic
8: Pharmacy
9: Health center
X: Herb clinic or herb pharmacy
Y: Folk medicine or superstitution

1: Clinical Examinations:

(Put (+) if sign present, ( ) if sign absent)

1. Hair :
   - ( ) Dyspigmentation
   - ( ) Thin sparace
   - ( ) Easily pluckable

2. Eye :
   - ( ) Pale conjunction
   - ( ) Bitot spot
   - ( ) Keratomalacia
   - ( ) Infection

3. Face :
   - ( ) Moon face
   - ( ) Nasolabial seborrhea

4. Lip :
   - ( ) Angular stomatitis, active
   - ( ) Angular stomatitis, scar
   - ( ) Cheilosis

5. Tongue :
   - ( ) Papillary atrophy
   - ( ) Glossitis
   - ( ) Magenta tongue

6. Gums :
   - ( ) Bleeding
   - ( ) Swollen red papillae

7. Thyroid:
   - ( ) Thriod enlargement

8. Skin :
   - ( ) Follicular keratitis arm, back, leg
   - ( ) Pellagramatous dermatitis
   - ( ) Dyspigmentation, diffuse local

9. Muscle wasting :
   - ( ) Arm
   - ( ) Buttock
   - ( ) Leg

10. Leg :
   - ( ) Bilateral edema
   - ( ) Bow leg
   - ( ) Epiphyseal enlargement
   - ( ) Nickety rosary
   - ( ) Knee jerk
   - ( ) Ankle jerk

11. Mental condition :
   - ( ) Apathetic
   - ( ) Irritable
   - ( ) Mentatally deficient

12. Teeth :
   - ( ) No. of carries
   - ( ) No. of missing

13. Other finding (specify)

_____

_____

II. Physical Measurements:

1. Height : _____inch (_____cm)
2. Weight : _____LB. (_____kg)
3. Head girth : _____inch (_____cm)
4. Chest girth : _____inch (_____cm)
5. Upper arm girth :
   Flexion _____inch (_____Cm)
   Extention _____inch (_____cm)
   Difference _____inch (_____cm)
6. Sitting height : _____inc (_____cm)
7. Relative weight : _____
8. Relative chest girth : _____
9. Relative sitting height : _____
10. Roher index : _____
11. Kaup index : _____
12. Various Nutritional Indicies

    Vervaeck index : _____
    Pelidisi index : _____
    Oppenheimer index : _____
    Kondo index : _____
    Messerli index : _____

III. Measurement of Skin-fold Thickness:

1. Triceps : _____ mm

2. Abdomen : _____ mm

3. Lumbar : _____ mm

4. Subscapular : _____ mm

_____

_____

_____

_____

IV. Hematology, Urinalysis and Others:

1. Blood tests

1) Hemglobin : _____ gm%
2) Hematocrit : _____ %
3) MCHC : _____
4) Blood biochemistry:
   (1) Serum protein _____ gm%
   (2) Serum albumin _____ gm%
   (3) A/G ratio _____
   (4) Serum iron _____ Ug%
   (5) Serum TIBC _____ Ug%
   (6) Blood smear _____
   (7) Other _____

_____

2. Urinalysis

1) Urinary Urea-N : _____ gm/L
2) Urinary creatinine-N : _____ gm/L
3) Urea-N/ Creatinine-N : _____

3. Stool Test

1) EPG(Ascariasis) _____
2) Egg count(Hook worm) _____
3) Culture(Hook worm) _____

4. IW. CS Skin tests _____

5. Indirect X-ray _____

6. Others _____

CHAPTER III: OVERVIEW OF PROGRAM UNDER STUDY

3.1 Description of the Project Under Study

The integrated population project was introduced into Choonseng Gun and incorporated into Chonseong Gun Community health Service Program of Seoul National University. In order to describe the integrated population project under study, Section 3.1.1 presents the historical background of Choonseong Gun Community Health Program. In Section 3.1.2, population and geographical characteristics of the experimental sites chosen are presented. Administrative structure of the project is discussed in Chapter V through the aid of Figure 5-1: Organizational Interaction Chart Among Government, Seoul National University and Community for the High Integration Area.

3.1.1 Historical Background of Choonseong Gun Community Health Program

Chunseong Gun Community Health Service Program was established by the School of Public Health, Seoul National University in collaboration with the Kangwon Provincial Government in 1972. The process of determining mutual goals of these two organizations for the program is described below.

In May 1971, the school and the health authority of the Kangwon Province verbally agreed that a demonstration and training station should be set up in the Chunseong Gun area. As the plan progressed, the following questions were raised. What should be the size of the base population to be served? How comprehensive should the services be? What are the prospects for community participation? As the best site for providing answers to these questions, after numerous site visits were made, Singondong Myon, one of the eight Myons of Chunseong Gun, was selected.

The school, then, purchased a building in the area to serve as the dormitory for the faculty, students, and trainees during field training. Remodeling was completed in July 1972.

The first student training program was conducted for six weeks, beginning July 16, 1972. Fifty-two graduate students participated under the supervision of faculty members. All basic information necessary for community diagnosis was obtained from the eastern half of Shindong Myon. The data was then recorded in each family chart, and analyzed in a usable form as part of the training program.

The community health service station opened on October 1, 1972 in a building provided by the Gun government. The station carried out the duties of a regular substation of the Gun Health Department as well as participating in the demonstration, training, and research activities for both the School of Public Health and the local health authorities. The major activities assigned to the field station were (1) to provide public health services including maternal and child health, environmental sanitation, family planning, tuberculosis and communicable disease control, recording of vital statistics, public health nursing service, school health services and health education, and (2) also to actively participate in and assist the faculty with field training and research activities in the area.

The station was staffed with three health workers dispatched from the school including one sanitarian and two public health nurses; three from the local government, including one midwife and two nurse aides; and one U.S. Peace Corp volunteer working in tuberculosis control. A few additional workers from the medical insurance program were later added to the original staff. On January 6, 1973, an official contract was signed by the heads of the two collaborating organizations, the School of Public

Health, Seoul National University and Kangwon Provincial Government. Although this service was forthcoming, a strong desire to have its own medical care system was eventually voiced by both the community members and the school staff. Both groups finally reached the conclusion that a medical insurance system should be adopted. The school team consistently supported the philosophy that the system should stand on a firm basis of community participation and financial independence.

In March of 1973, in order to explore the feasibility of a medical insurance system suitable for the local area, the school began gathering materials on insurance systems in Korea and foreign countries, surveyed the community opinion, consulted with appropriate officials of the central government, and conducted a pilot medical clinic service. An application, was submitted to the Ministry of Health and Social Affairs. Following several revisions of the articles, official approval was granted on June 16, 1974.

Funds of operating the program came from three sources: membership premium, and assistance from the central and local governments.

Policy decisions concerning the health insurance plan were made by the Board of Community Health Insurance composed of community leaders and governmental officials. The school staff played an advisory and consultant role. The Provincial Hospital became the referral hospital for the health insurance program.

Opening of a regular medical clinic in the station on June 18, 1974 signaled the completion of the total setting for the community health service program.

In Singond Myon, the insurance program initially recruited 675 families (3,900 people), which increased to 802 families (4,755 people) by

the end of 1974. The insurance program expands to include three other Myons of Chunseong Gun in 1975.

Chunseong Gun Community Health Service Program had three initial objectives: (1) to provide field training for students, (2) to provide a demonstration model for comprehensive health services, and (3) to explore answers to specific health problems through research. These goals remained unchanged until 1980.

In 1980, the integrated population program introduced into Shindong Myon and Pagok Myon. The main feature of this program is an introduction of multi-purpose workers who are trained to provide family planning servie and primary health care concurrently on an integrated basis. An emphasis is placed on giving information and services for family planning and primary health as a joint, interrelated service, even if only family planning service or primary health care is sought by the residents.

3.1.2: Population and Geographic Characteristics of Experimental Sites

Figures 3-1 to 3-6 and Tables 3-1 to 3-4 present geographical and demographic characteristics of four Myons selected—Shindong Myon (Study Area I, high integration area), Seo Myon (Control Area I), Pagok Myon (Study Area II, light integration area) and Moonmak Myon (Control Area II). These figures and tables are self-explanatory. A few observations are, however, made for the readers' attention.

Pagok Myon stands out as a highly populated and non-farming area compared with the three other Myons (see Tables 3-1 and 3-2). Population density of Pagok Myon—247 per km^2— is more than four times that of Seo Myon and about twice as much as those of Moonmak Myon and Shindong Myon. Compared with other Myons, Pagok Myon is a compact village and only 37

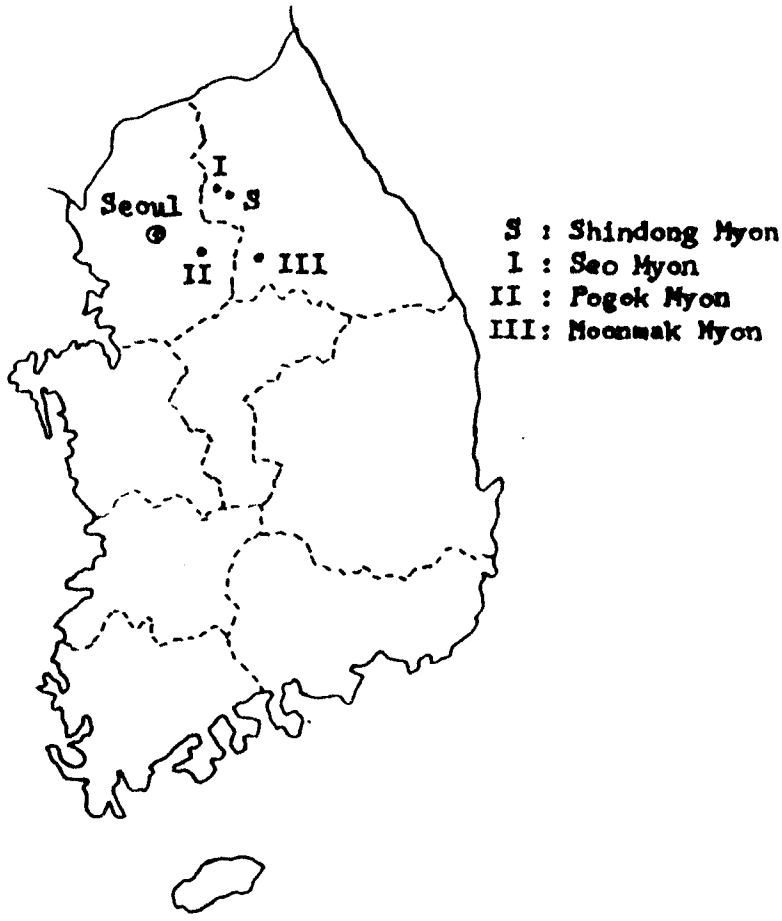


Fig.3-1 Location of Survey Areas

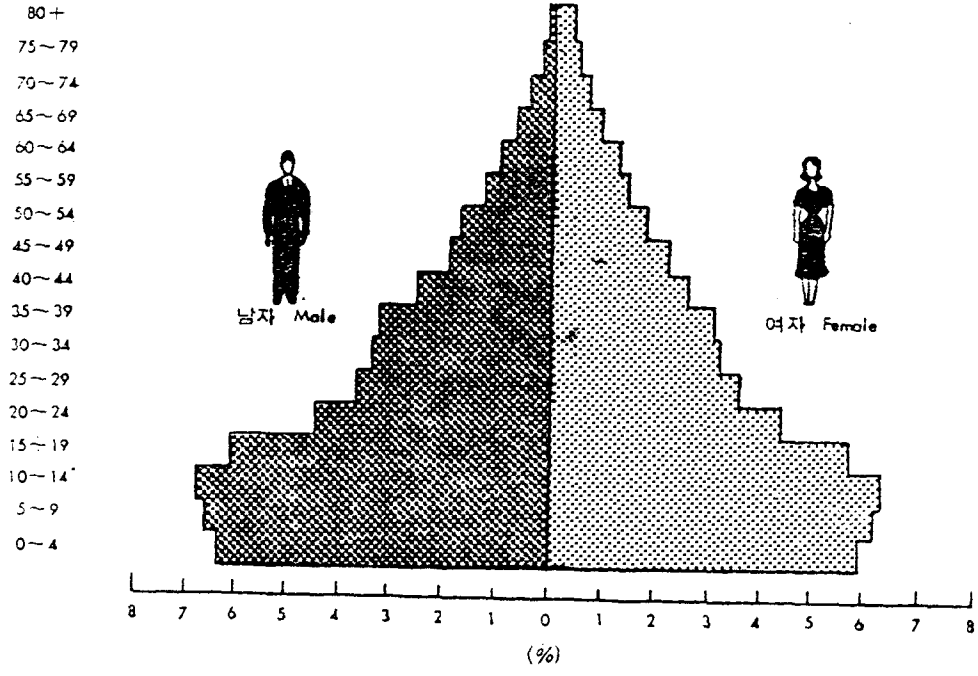


Fig.3-2 Population Composition by Sex and Age Group, Korea

percent of its residents are engaged in farming, whereas, in other Myons, 63 to 93 percent are farmers. Thus, cultivated land per household is about the same for all four Myongs.

Population pyramids presented in Figures 3-2 through 3-6 reveal marked difference between the experimental sites and the rest of Korea. Whereas the age composition of all Korea (Figure 3-2) shows the typical shape of a growing population bulging at the under 20 age group. All four Myons chosen for the project reveal a narrow "waist line" at the 25-29 age group and, to a less extent, at the 30-34 age group. The narrowness of the "waist line" at the 25-29 age group is most prominent for Seo Myon and Shindong Myon. The overall impression one gets from these population pyramids is that young adults are leaving the experimental sites for big cities en masse.

Compared with the rest of the country, all the four Myons have relatively large young age dependency ratios (the number of people under 15 years old per 100 people aged 15-64) and relatively small old age dependency ratios (65 plus per 100 15-64 age group). (See Table 3-3.) This must be due to the exodus of young people from the Myons to Seoul and other big cities. Among the four Myons, the most compact village, Pagok Myon, has the smallest young and old age dependency ratio.

As for the relative size of target population for family planning, Table 3-4 iidicates that population program should be directed mainly toward women under 25 years old. In Pagok Myon, more than a half of fecund women are under 25 age group. Even in Moonmak Myon, which has the older age group, 38 percent of eligible women are under 25. In fact, the proportion of under 25 years old fecund women would have been higher if the 45-49 years old women are not included among the eligible people.

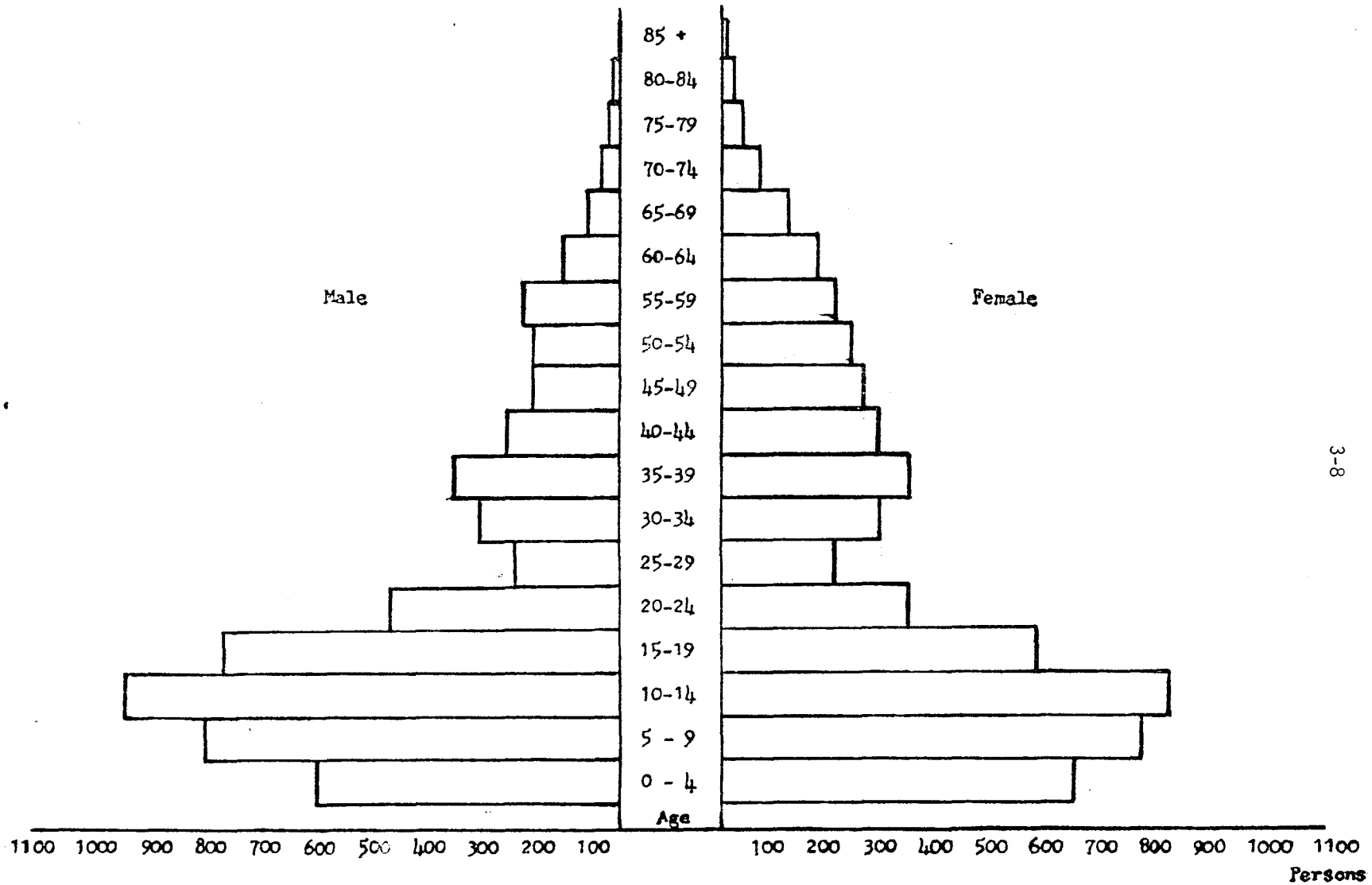


Fig. 3-3 Population Composition by Sex and Age Group, Shindong Myon

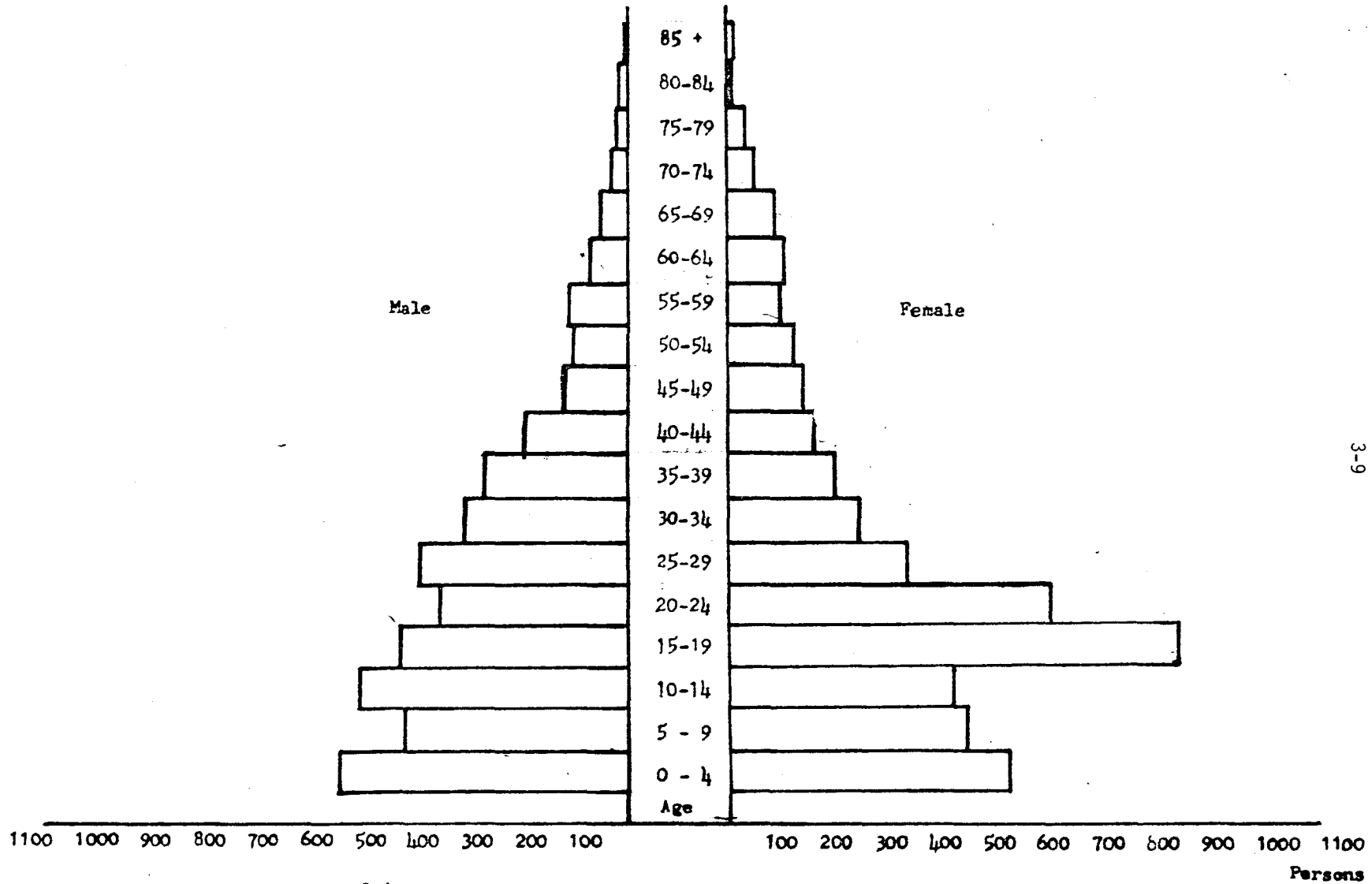


Fig. 3-4 Population Composition by Sex and Age Group, Pogok Myon

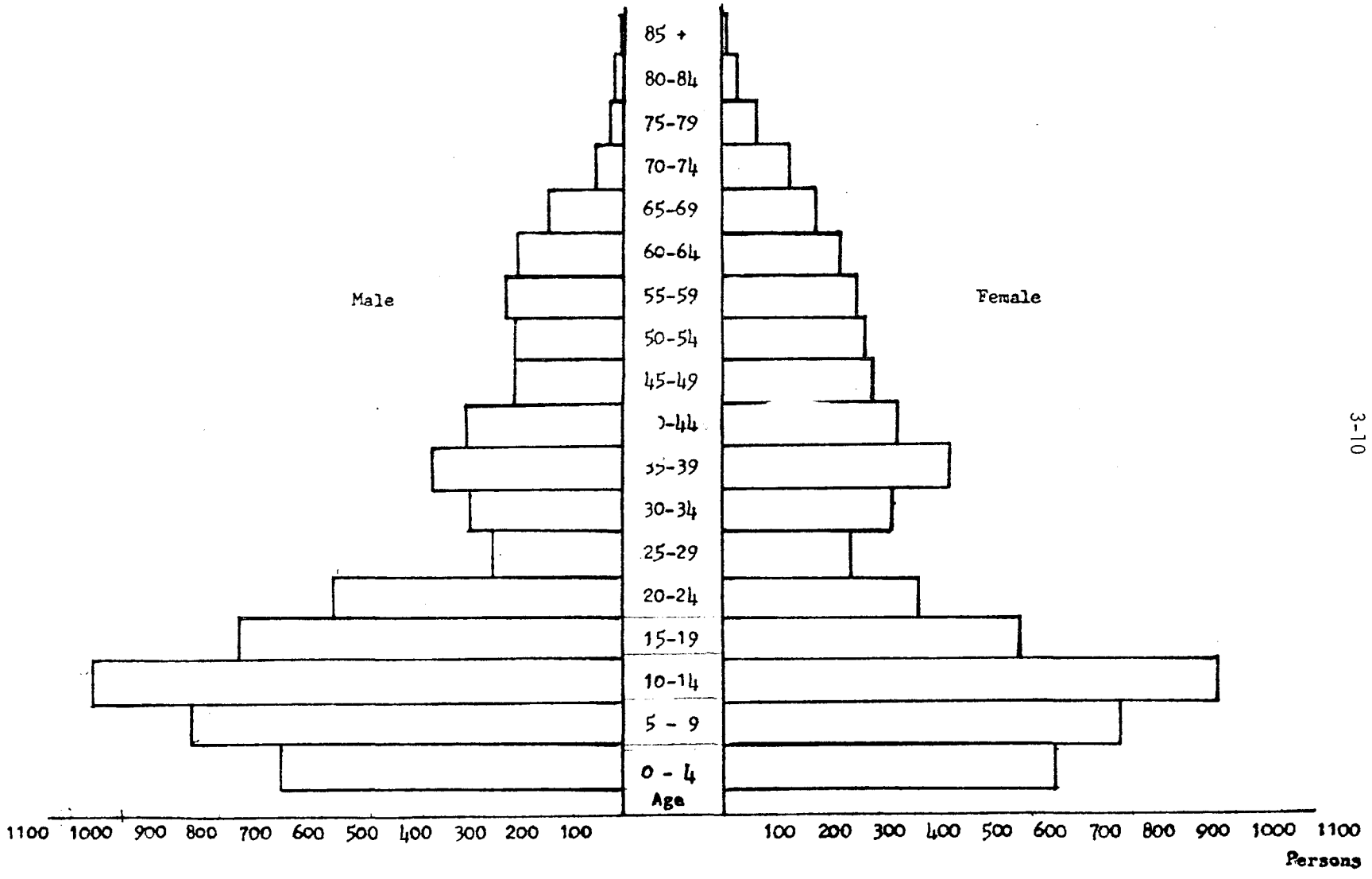


Fig. 3-5 Population Composition by Sex and Age Group, Moonmak Myon

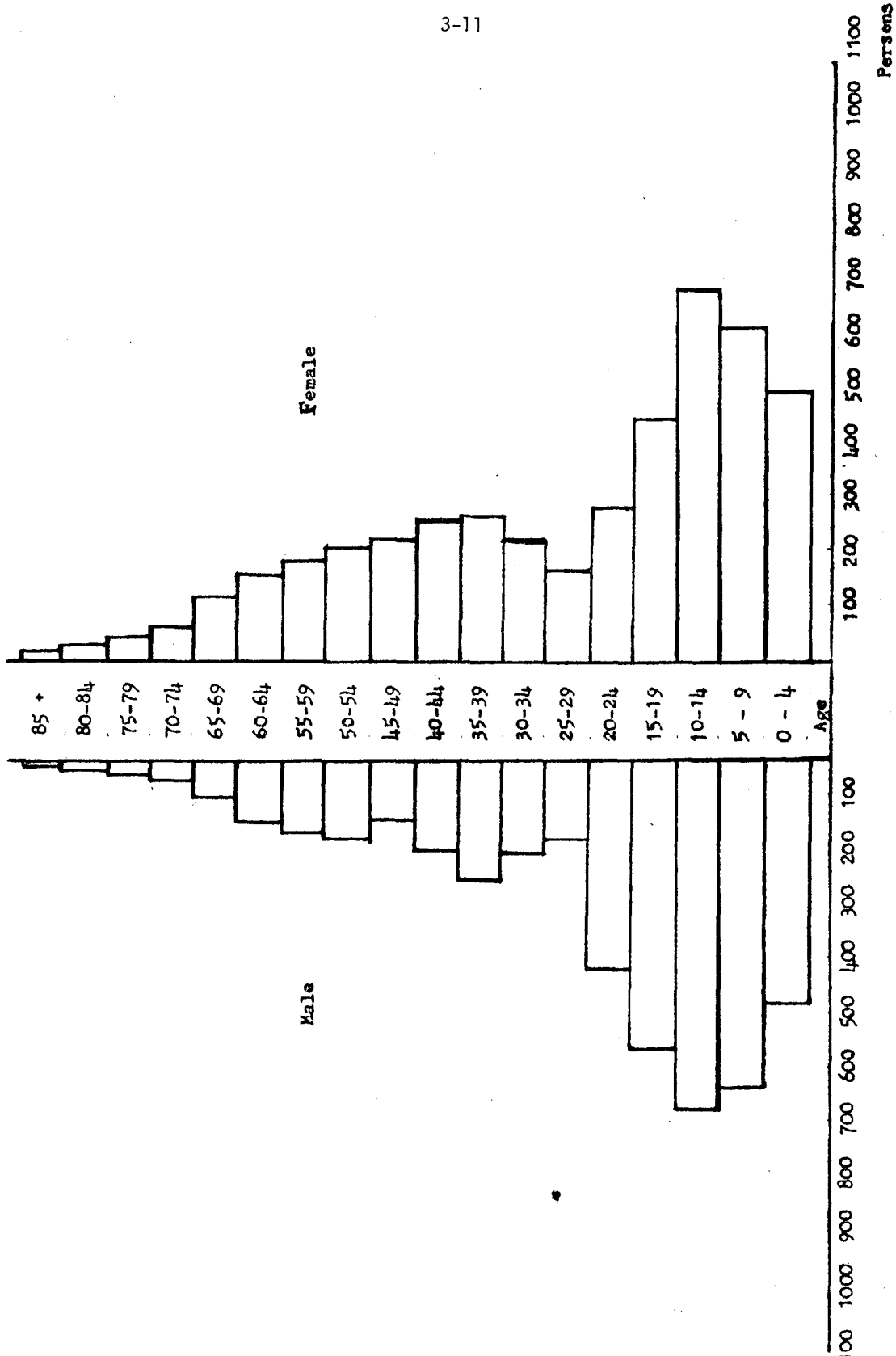


Fig. 3-6 Population Composition by Sex and Age Group, Seo Myon

Table 3-1 Regional Characteristics by Area

Items / Myon	Shindong Myon	Seo Myon	Pogok Myon	Moonmak Myon
Topology	Semi-mountainous, or Piedmont	Mountainous	Plane	Semi-mountainous
Plains	Relatively Wide, Eroded Plain	Wide	Wide	Narrow
Transportation	Convenient	Inconvenient	Relatively Inconvenient	Inconvenient
Village Type	Simi-compact vi village	Non-compact village	Compact village	Non-Compact village
Farm House-Hold Rate %	74.7	92.5	37.2	63.2
Rice-Paddy Ratio	35.0	35.0	62.0	45.9
Population Density (per Km^2)	130.8	59.7	247.0	106.3

Table 3-2 Comparison of Farm Population and Cultivated Land by Myon

Myon	Farm House-Hold Rate (%)	Cultivated Land per Farm House-Hold (ha)	Population Density(per Km^2)	Rice-Paddy Ratio (%)	Vegetable Land Ratio (%)
Shindong	74.7	1.2	130.8	35.0	26.1
Seo	92.5	1.2	59.7	35.0	26.1
Pogok	37.2	1.1	247.0	62.0	36.2
Moonmak	63.2	1.5	106.3	45.9	29.9

Table 3-3 Population Composition and Dependency Ratio

Area	Population Composition Ratio			Old Age Index	Dependency Ratio		
	0 - 14	15 - 64	65 -		Total	Young Population	Old Population
Shindong	40.5	54.9	4.6	11.4	82.2	73.8	8.4
Seo	39.8	55.4	4.8	12.1	80.5	71.8	8.7
Pogok	33.8	62.7	3.5	10.4	59.5	53.9	5.6
Moonmak	39.3	55.0	5.7	14.5	81.9	71.5	10.4

Table 3-4 Age Composition of Fecund Women by Myon

Myon	No. Fecund Women	Age Composition (%)						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
Shindong Myon	2408 (100.0)	24.1	14.7	9.4	12.6	15.4	12.6	11.2
Seo Myon	1839 (100.0)	24.0	14.7	9.2	11.6	14.3	14.2	12.0
Pogok Myon	2584 (100.0)	32.3	23.3	13.2	9.8	7.8	7.1	6.5
Moonmak Myon	2517 (100.0)	22.8	15.3	9.4	12.6	16.2	12.3	11.4

3.2 The Integrated Population Program under the study in Relation to National Population Program

There are numerous governmental and non-governmental agencies involved in the national population programs in Korea. At the ministerial level, the Ministry of Health and Social Affairs (MOHSA) and the Ministry of Home Affairs (HOHA) are directly involved in providing family planning services. The Ministry of Education (MOE) is responsible for population education. The Ministry of Finance (MOF) is involved in the incentive and disincentive systems for population programs. The Ministry of Construction (MOC) is involved in housing priority assignment for population incentive system. The Economic Planning Board (EPB) is involved indirectly in all phases of the national population programs because it oversees the allocation of all government budget. Figure 3-7 below presents an organizational chart of national population programs.

The integrated population program under this study is administratively linked with the national population program through MOHSA, MOHA and MOE. Seoul National University belongs to MOE and Kanwon-do Provincial government participates in the program in cooperation and under the direction of MOHSA and MOHA.

The integrated approach to population program in Korea is still in an experimental stage. Therefore, the part which this integrated population project plays in the national population program is that of a pioneer project.

As mentioned in Chapter II, a major program of integrating fammily planning service with health care was carried out on an experimental basis in Yongin Jun, Kyonggi Province under the sponsorship of MOHSA and the World Health Organization. Korea Health Development Institute, before it

Figure 3-7: Organizational Chart of National Population Program

Program areas \ Agencies	Economic Planning Board					non-governmental	
	MOHSA	MOHA	MOF	MOE	MOC	domestic	foreign
	local government					central and local government	
Contraceptive services	*	*				*	
Induced abortion	*	*				*	
Information, education and communication	*	*				*	
Population education				*		*	
Tax incentive and disincentive system			*				
Public housing priorities					*		
Tuition incentive and disincentive program				*			

Note: MOHSA: Ministry of Health and Social Affairs
MOHA: Ministry of Home Affairs
MOF: Ministry of Finance
MOE: Ministry of Education
MOC: Ministry of Construction

merged into the Korean Institute for Popuation and Health, conducted integrated population health experiments in three sites in 1978. Our project under this study will provide additional information on and new insight into the desirability of population-health integration program for national population policy makers.

Chapter IV: IMPLEMENTATION OF THE STUDY

4.1 Questionnaire Making

In making questionnaires for this study, researchers held meetings to decide on (1) what information is needed, (2) which is the best way to get the needed information, and (3) how to organize the questionnaires to facilitate the coding of information obtained. It is agreed that, at the minimum, information on the following are needed: (1) impact variables, (2) integration variables, and (3) control variables.

Additions and subtractions of questions are decided on the basis of the importance of information sought and the marginal costs or marginal savings of adding or subtracting a question. Marginal costs include the likelihood of a declining cooperation of interviewees due to the length of questionnaire, which might result in a decline of response rate and that in the accuracy of information obtained.

A pretest was made of 32 households, 8 from each of the four Myon selected. Two researchers visited these households together. The pretest serves several purposes. One is to revise and finalize the questionnaires. Second, it enables one to evaluate and ascertain the wisdom of sample selection. Third, it helps one to formulate the strategy for interview. Finally, it provides an input needed for training interviewers.

At the end of the pretest, a meeting was held to finalize the questionnaires. Table 4-1 summarizes the process and time table of the baseline survey conducted in the summer of 1980. For the post-treatment conducted in the summer of 1981, a similar process was undertaken except that the same questionnaires were used and there was no pretest. A copy of the finalized questionnaire is shown in the appendix to this chapter.

Table 4-1: Time Table and Process of Data Collection (Baseline Survey)

Schedule	July, 1980				August, 1980				Remarks
WK	1	2	3	4	5	1	2	3	4th	
Questionnaire Construction	←	→								
Pre-test			←	→						
Revision of Questionnaire				←	→					
Training of Interviewers					←	→				
Main Survey						←	→			
Data Editing							←	→		
Recording on Pre-coding Sheet								←	→	

4.2 Sample Selection

As mentioned in the introductory chapter, Choonseong-gun (county) is selected as the experimental site because it is the location of Choonseong-gun Health Center operated by the School of Public Health, Seoul National University. Two Myons (twonships) in the Choonseong-gun are selected as study areas and two other as control areas.

Shindong-Myon is selected as the high integration area and Pagok Myon as the light integration areas (see Table 1-1). This is because Shindong-Myon has a mothers' club office and health insurance program in addition to multi-purpose health workers. Pagok Myon has multi-purpose workers only. Mothers' club meetings serve as conduits for community participation in health, fertility control and economic activities of each Myon. Health insurance program is introduced in some parts of rural area as an experiment by the central government and the expenses are subidized by it. Moommak Myon is selected as control area I because it has only government programs. At present, local governments under the direction of the central government conduct three separate programs administered by separate agencies. They are tuberculosis eradication program, family planning program (mainly distribution of contraceptives), and maternal and child health program. Seo Myon which has a health insurance program, in addition to the government programs mentioned above, is chosen as control area II.

A 100 percent sampling of the households residing in four Enumeration Districts (ED) from each of the four Myons selected was undertaken. Four EDs from each Myon constitute about 13 to 20 percent samples because each of the four Myons selected contains from 20 to 30 EDs within its boundary (see Table 1-2). The Enumeration Districts as designated by the 1980

Census consitute the smallest and most homogeneous communities, which are similar to census tracks in the U.S.A. Based on the preliminary results of 1980 Census, an effort has been made to select four EDs from each Myon so that the diversity and similarity of residents of each Myon may be represented by the four EDs. The second criterion of the ED selection is made on the basis of accessibility as determined by the experience of health workers there.

This sample selection method is tied to our strategy of interview and data collection. By concentrating on one ED at one time, we are able to use a saturation tactic. Several interviewers went to one ED at the same time and tried to interview the ladies of all households within an ED. This strategy is thought to improve cooperation and response rate because the housewives know that all their neighbors are also being interviewed. Moreover, by concetrating on an ED at a time, we are able to go to a specific ED at at time on a day when the ladies of household, are likely to be home. This method has also facilitated the follow-up interviews of those who had been absent.

4.3 The Surveys

Both the base-line and post-treatment surveys were conducted by 16 local college students during their summer vacations of 1980 and 1981. They were students of sociology at Gangwon National University and nursing students at Chuncheon Nursing College, who were selected and trained for interviewing after the pre-test was conducted in 1980. These local students are chosen because they are the most educated and motivated people available for the surveys and also because, being students, they would

lessen any suspicions the interviewees might have about the nature and objectives of the surveys.

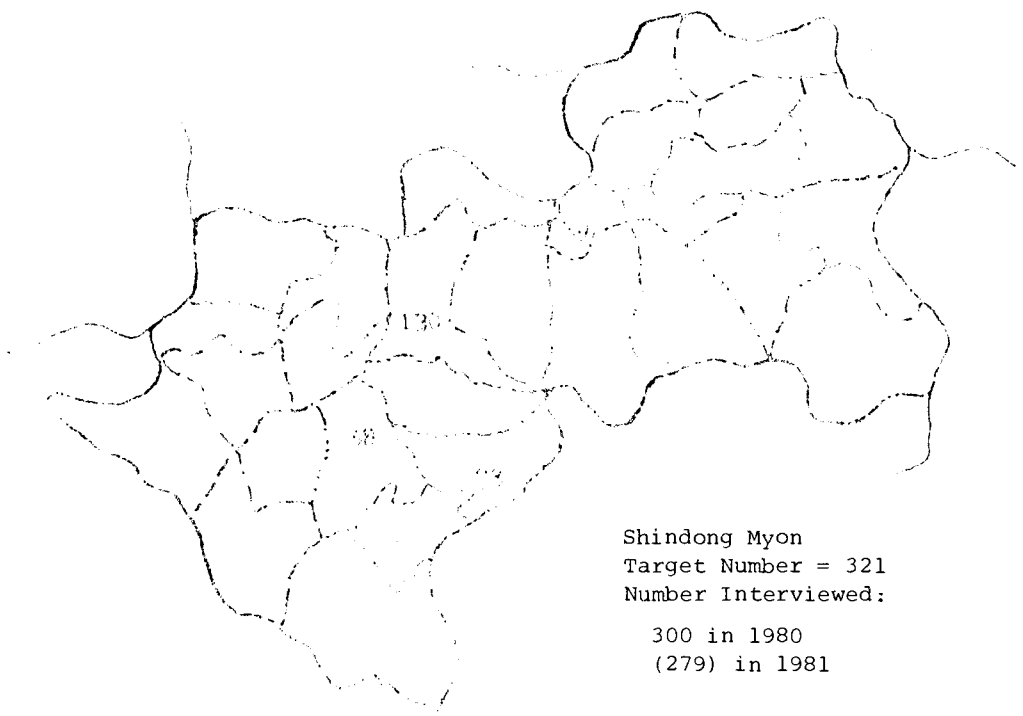
As shown in Table 1-2 of Chapter I, on the average, these students succeeded in getting about 89 percent response rate for the base-line survey and about 82 percent for the post-treatment survey. Figures 4-1 and 4-2 show the number and location of residents interviewed during the two surveys.

Since summertime is a busy season for farmers, the iterviewers had to schedule their times of visits to coincide with the times of day when housewives prepare meals to take to the field. This is the reason, as mentioned before, why the strategy of concentrating on one ED at a time was chosen. There were additional problems for the second survey. As shown in Figures 4-1 and 4-2, the response rate for the second survey was less than that for the first survey because some of the households interviewed during the base-line survey moved and also because some of the student interviewers were not the same students who had conducted interviews during the base-line survey.

4.4: Method of Analysis

If we are to summarize the objective of the data collection and analysis, it is to seek an answer to the following question: Other things being equal, is there statistically significant differences between the study areas and the control areas in the three impacts variables, which can be attributed to the inter-Myon differences in the program inputs? The impacts variables are the utilization of health and family planning services, community participation, and cost-effectiveness. Since this study cannot be conducted in a laboratory, multivariate analyses are

Figure 4-1: Number and the Location of Households Interviewed in the Four Enumeration Districts in Study Area I and II.



Shindong Myon
Target Number = 321
Number Interviewed:

300 in 1980
(279) in 1981

Pagok Myon
Taget Number = 332
Number Interviewed:

299 in 1980
(272) in 1981

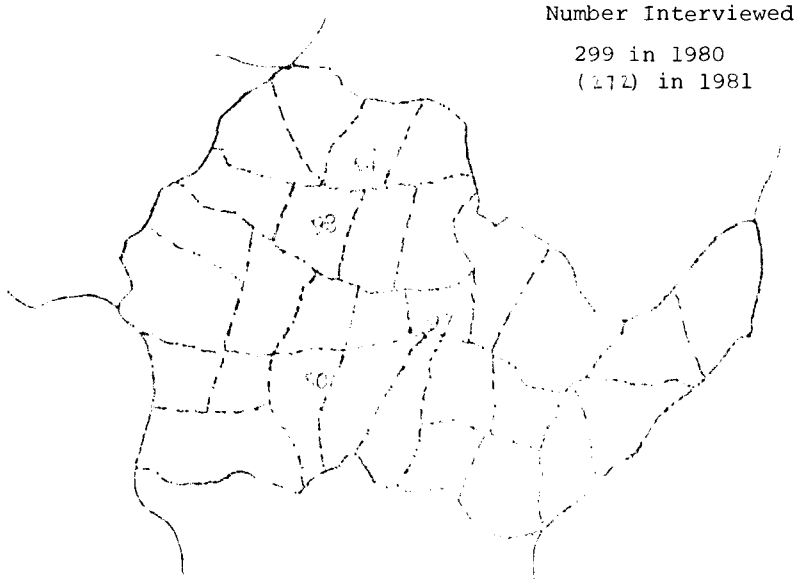
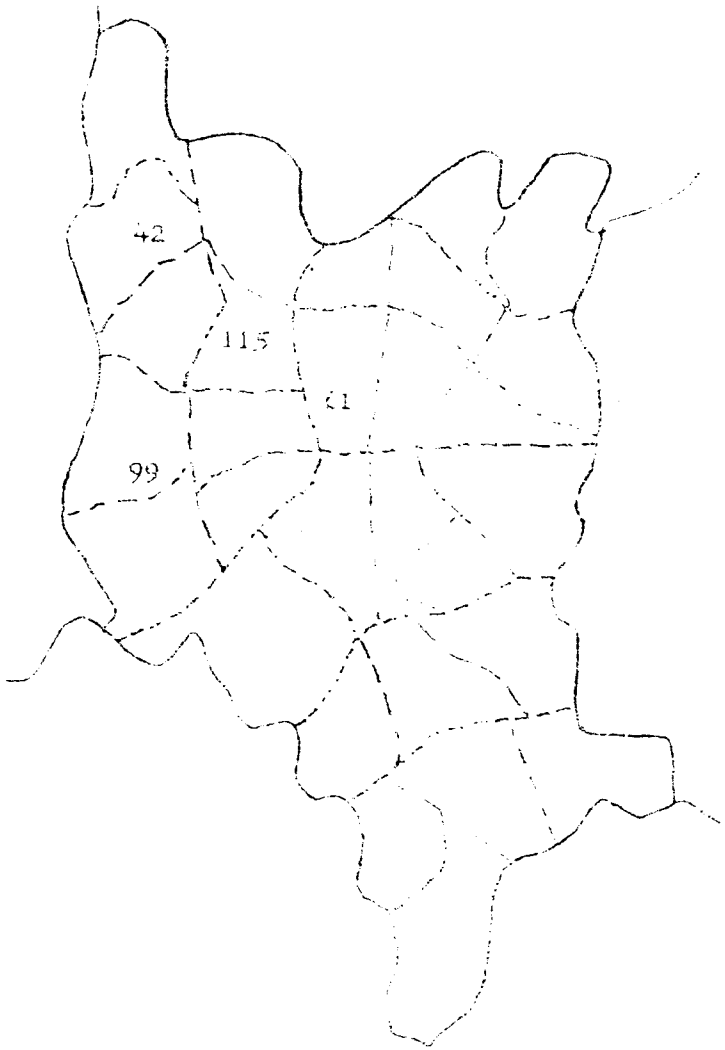


Figure 4-2: Numbering and the Location of Households Interviewed in their Four Enumeration Districts in Control Area I and II.

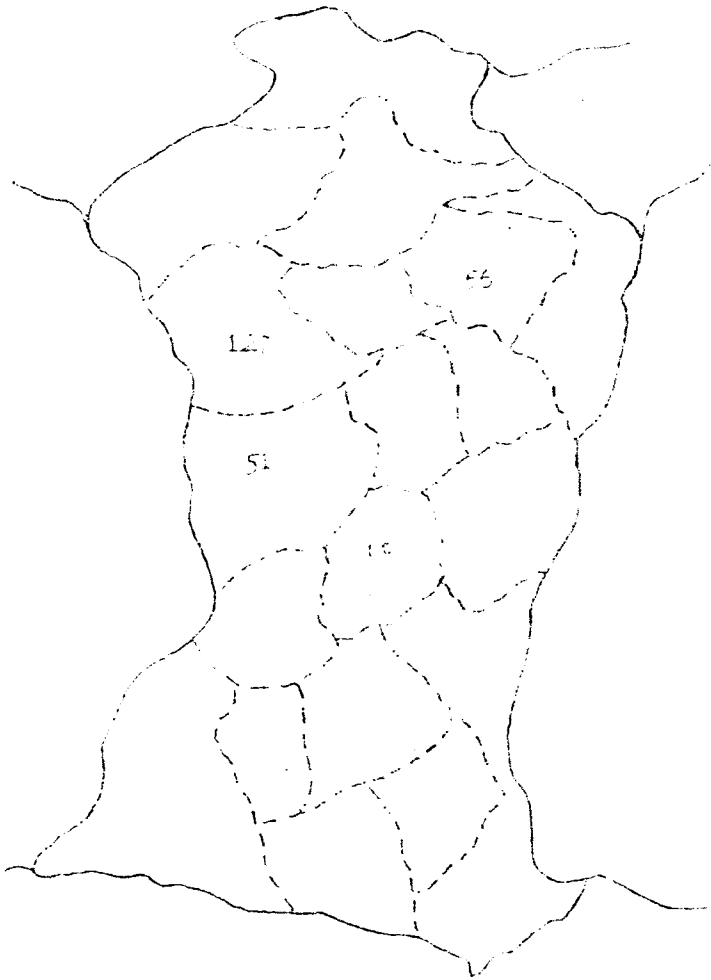
Moomak Myon
Target Number = 352
Number Interviewed:

317 in 1980
(290) in 1981



Seo Myon
Target Number = 268
Number Interviewed:

300 in 1980
(284) in 1981



conducted to hold, as much as possible, the effects on the impacts variables of the factors other than the program inputs. The multivariate analyses chosen for this study are those of multiple regressions where the impact variables are dependent variables and the control variables and Myon dummy variables are independent variables.

The following multiple regression represents the types of least-squares analyses undertaken:

$$\log Y_i = \log a + \sum_{i=1}^{n} b_i X_i \log X_i + C_2D_2 + C_3D_3 + C_4D_4 + \log e \quad . \quad . \quad . \quad (4\text{-}1)$$

where Y_i represents i^{th} variable among the impact variable, X_1, X_2 . . . X_n represent control variables and D_s are Myon dummy variables. All non-categorical variables are converted into logarithms to transform the regressions from linear additive into log linear additive or multiplicative forms. A multiplicative form standardizes the units of measurement, thus making the relationship revealed more meaningful and it also improves the fitness of the model, i.e., R^2.

Myon dummy variables are inserted as follows:

	Shindong	Pagok	Moonmak	Seo-Myon
D_1	1	0	0	0
D_2	0	1	0	0
D_3	0	0	1	0
D_4	0	0	0	1

D_1, the dummy variable for Shindong Myon, is not inserted into regressions so that C_2, C_3 and C_4 would show the difference in the impact variables between Shindong Myon and other Myons.

The control variables chosen are demographic, socio-economic and attitudinal/cultural variables which are hypothesized to exert a varying degree of effects on the impact variables. The selection of the control variables is made on the basis of preliminary analyses of national data, theories, previous studies and a priori reasoning (see Chapter II). To the extent to which these control variables do their jobs, the b-coefficients of Myon dummy variables indicate the inter-Myon differential effects of program inputs on the impact variables. In other words, the control variables are inserted to hold "other things" equal so that one may observe the "pure" effect of program inputs on the impact variables.

Two sets of regressions are run—one with the 1980 baseline survey data and the other with the 1981 post-treatment survey data. Then, the b-coefficients of Myon dummy variables obtained with the 1980 data are compared with those obtained with the 1981 data. If there exist statistically significant differences between the b-coefficients of 1980 data and those of 1981 data, then, one may conclude that, within the confidence level specified by the statistical (t) tests, the program inputs put into the study areas vs. the control areas have had different effects on the impact variables between 1980 and 1981. Since the only difference in program inputs beteen 1980 and 1981 is the integrated program introduced into the study area, to the extent to which the control variables did their jobs, a significant difference revealed in the b-coefficient of Myon dummy variables between 1980 and 1981 may be interpreted as supporting the hypothesis of this study.

The method of analysis adopted for this study has the following advantages. First, it recognizes and takes account of the fact that many things affect the impact variables in addition to the program inputs. The method also takes account of the fact that these things change over the time of this study and that the way these things affect the impact

variables also changes. Finally, recognizing the fact that one year iterval is not long enough to show any significant effects of the integrated program on some of the impact variable impact, itermediate output measures, i.e., the utilization of health and family planning services is used as the impact variables in lieu of health status and fertility variables. Justification for this lies in the assumption that a greater degree of utilization of these services leads to an improvement in health and fertility control.

Before the above multivariate analyses are undertaken, the following types of preliminary analyses are also undertaken. First, frequency distributions of the impact variables and control variable candidates are constructed for each Myon for 1980 and 1981. Then, inter-Myon differences in these variables are compared between 1980 and 1981. Secondly, cross tabulations of the impact and control variables by Myons are constructed for 1980 and 1981. Then, the relationships revealed between these variables and Myons are compared between 1980 and 1981.

Finally, correlation matrices of all variables chosen are made for 1980 and 1981. Then, the 1980 matrix is compared with the 1981 matrix. This is done to examine if the relationships revealed between variables have changed between 1980 and 1981. An examination of these matrices has also alerted us to the extent to which regressions with these data may have the problem of multicollinearity.

CHAPTER V: DEFINITION AND SELECTION OF VARIABLES

5.1 Impact Variables

To recapitulate, the central hypothesis of this study is that, compared with segmented program, an integrated population program leads to a better utilization of health and family planning services, a greater degree of community participation and a more cost-effective performance. These, in turn, would bring about an improvement in health status and fertility control. Since a one year period is too short for us to observe a significant change in the final output variables, i.e., health status and fertility control, we have chosen the above three as the impact or, if you will, program performance variables.

The impact variables of this study may be presented as follows:

(A) Service utilization variables:

1. Number of health worker's home visit/month.
2. Number of visits to hospital, pharmacy, Health Center, herb doctor for preventive and curative services/month.
3. Number of visits to hospital, pharmacy, Health Center, herb doctor for curative services.
4. Number of visits to hospital or Health Center for preventive services/month.
5. Number of visits to individual hosptial for preventive or curative services/month.
6. Number of visits to general hospital (city, provincial, teaching) for preventive or curative services/month.
7. Number of visits to pharmacy/month.
8. Number of visits to Health Center/month.

9. Weighted number of visits to hospital (individual, city, provincial, general teaching) pharmacy, Health Center, herb doctor for preventive or curative service/month.
10. Dummy variable indicating whether the wife is currently using a contraceptive or not.

The above preventive and curative services include not only health care but also family planning services. The utilization of services as presented above is measured for all population interviewed, and then, for those who have had at least one incidence of illness during the one month period prior to the time of interview.

(B) Community Participation Variables:

1. Number of attendance at mothers' club/month
2. Weighted index of interviewers' involvement in the program.

Community participation is mainly a qualitative variable. In order to come up with quantitative variables representing the degree of community participation so that they may be used in regression analyses, the above two have been chosen.

(C) Cost-effectiveness variables:

1. A patient's medical expenditure/day
2. Cost per health and family planning service given.

A patient's medical expenditure per day is an index of costs to the recipients of care, whereas cost per service include all costs involved in providing the service in question. The record of a patient's medical expenditures has not been kept by all interviewees. Thus, interviewers have to rely on the memory of interviewees and, in some cases, they were able to cross check it with a hospital's, clinic's or health center's record.

As for cost per service, hospitals, clinics and health centers do not have a refined accounting method by which expenses are accurately allocated, say, between patient care, general operating costs and hotel-type services. By necessity, therefore, all expenditures are treated as those involved in providing services. Since general operating costs are fixed expenditures, cost per service may decline not as the result of cost-effectiveness but due to a higher rate of utilization of facilities and manpower.

5.2 Integration Variables

There are many definitions of integration in population programs.[1] "In its most general sense, an integrated program is a program that brings together family planning activity and other specialized and differenct services, and integrate these activities into a sngle or more co-ordinate set of activities.[2] Within this broad definition of integration, an integration may be made on the basis of organization, management or operation of a program. For this study, we define the degree of interaction with an aid of the following table.

As shown in Table 5-1, this study defines the intensity of integration by four criteria: progam inputs, organizations which administer or participate in the programs and the model of delivery of services.

The high integration area, Shindong Myon, has more program inputs than any other areas in the sample not only in terms of health and family planning services provided but also it has mothers' club office. Mothers' club has been organized by the local people with the encouragement and under the guidance of Seoul National University Health Center staff and students. Mothers' club is the focal point of housewives' activities about

Table 5-1: Definition of Integration Variable

	High Integration (Study Area I)	Light Integration (Study Area II)	No Integration (Control Area I)	No Integration with Health Insurance (Control Area II)
Program Inputs	B, C, D	C	A	A, B
Organization	SNU + LG	SNU + LG	LG	LG
Mode of Delivery of Services	Diverse service by one individual	Diverse services by one individual	Health care function separated from family planning service	Health care function separated from family planning service

Program inputs: A = existing government program (i.e., T.B., family planning and MCH program)

B = government subsidized health insurance program

C = multipurpose workers providing preventive and curative health care and family planning services

D = mothers' club office operating

Organization: SNU = Seoul National University

LG = local government

health care, family planning and economic activites. In addition, in the high integration area, health and family planning services are delivered on an integrated approach by multipurpose workers under a joint sponsorship of Seoul National University and Chunseong Gun government.

The light integration area, Pagok Myon, has no more program inputs than the non-integration area, control area I. It has less program inputs than the non-intergration, control area II in that the latter has the government subsidized health insurance program. The light integration area differs from non-integrated areas in theat health and family planing services are delivered by multipurpose workers, on an integrated basis under a joint sponsorship of SNU and local government.

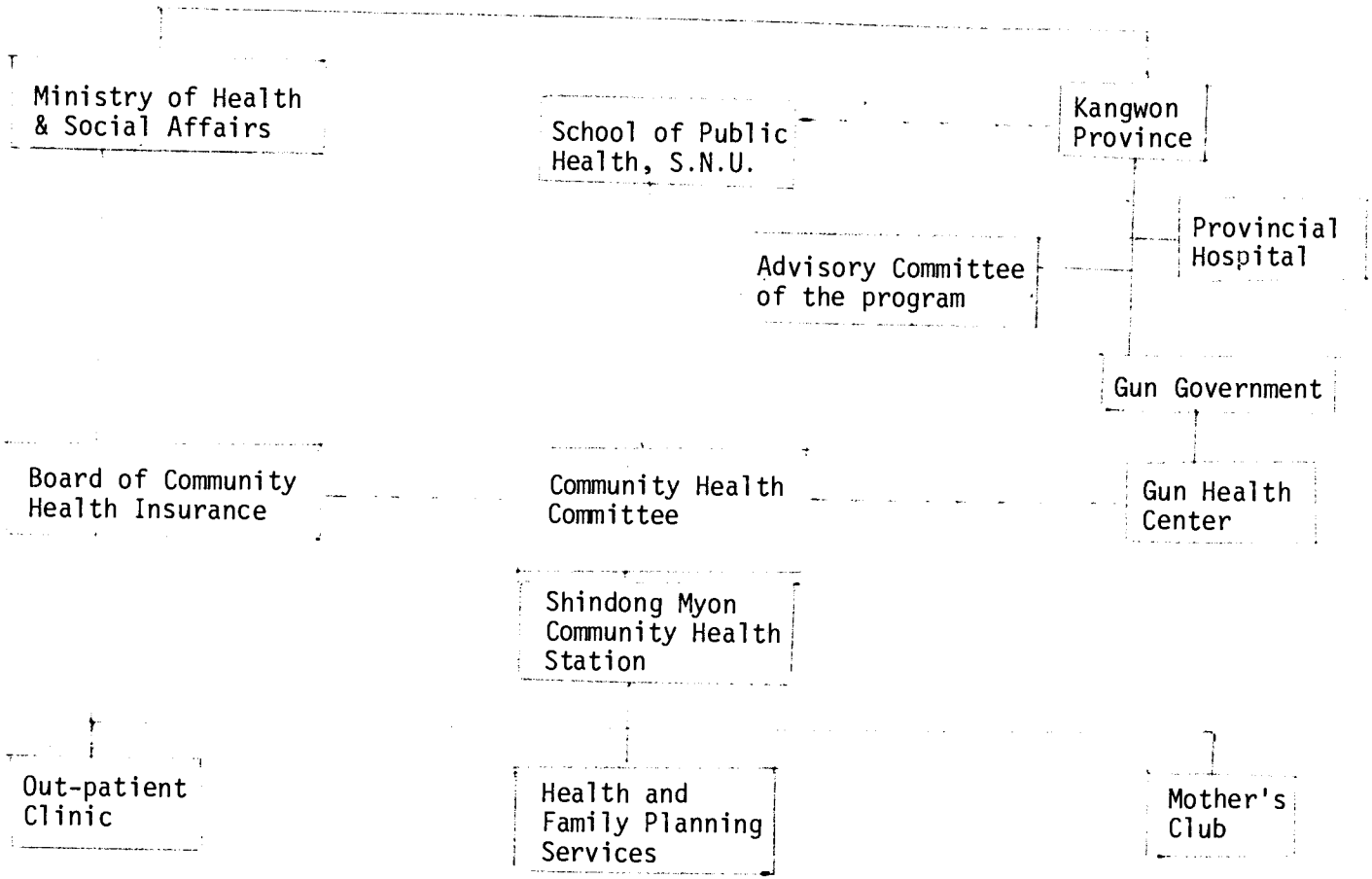
As mentioned above, differences within the two non-integrated areas lies in that control area II has health insurance program. Presumably, the presence of health insurance program improves the local residents' ability to pay for health and family planning services.

The extend of interaction under a varying degree of integration and non-integration on organizational, operational and functional bases are shown below with the aim of diagrams. Figure 5-1 shows organizational interactions.

Figure 5-1: Organizational Interaction Chart Among Government, Seoul National University and Community, for the High Integration Area.

The Advisory Committee plays an important role in coordinating each unit at all levels of planning and implementing the program. The committee, chaired by the Governor of Kangwon Province, consist of 11 members: five community representatives, five staff members from the school and one staff member from the Ministry of Health and Social Affairs.

Figure 5-1: Organizational Interaction Chart among Government, Seoul National University and Community for the High Integration Area.



The Community Health Committee is made up of nine school staff appointed by the dean of the school. Its function includes planning and supervising the program and coordinating the research and training activities of the staff in the area.

The Board of Community Health Insurance is the decision-making body for the insurance program, and provides the major portion of community participation in the overall program. It has fifteen members; ten of which elected by the community, and five of which are appointed by the local government in order to facilitiate coordination with the government.

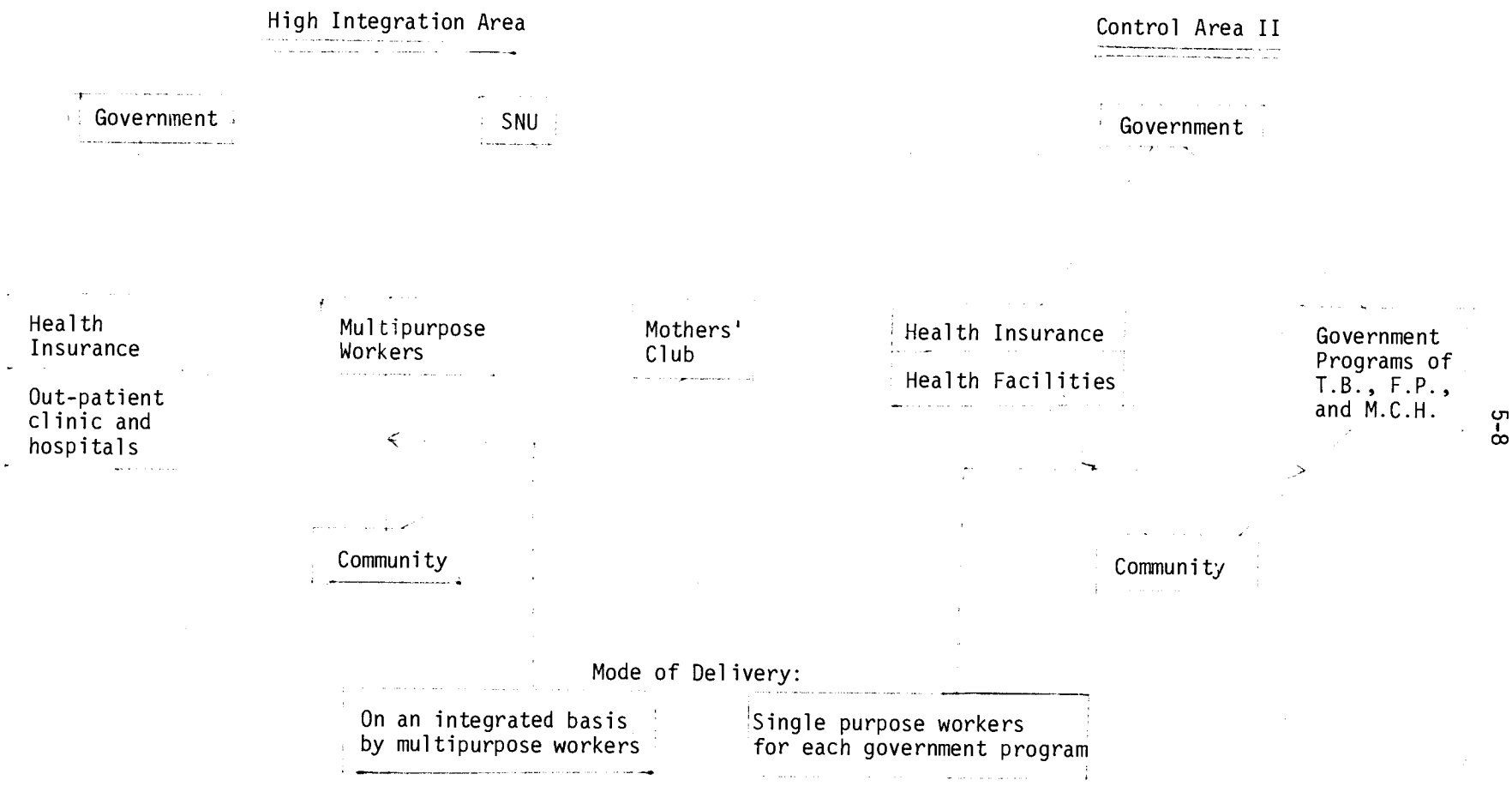
For the light integration area, health and family planning services are delivered through Pagok Myon health substation. Note that Pagok Myon has no health insurance program. As for non-integrated area I, e.g., Moonmak Myon, there is no direct involvement by Seoul National University and it has only government programs of T.B. eradication, family planning and M.C.H.

Figure 5-2 shows operational interactions among government, SNU and community for integrated vs. non-integrated area. Note that mothers' club in the high integration area serves as the channel through which community participates in the integrated program.

5.3 Control Variables—Demographic, Socioeconomic and Other Variables Affecting Program Performance

Since the major method of data analysis for this study is multivariate analysis, a particular attention is paid for the selection of control variables. On the basis of an analysis of the national data (as presented in Chapter II), previous studies, theories and *a priori* reasonsing, variables hypothesized as those most likely to influence the impact

Figure 5-2: Operational Interaction Among Government, SNU and Community for the High Integration and Non-Integration Area.



variables are chosen. They are for convenience grouped into four categories as shown below:

(1) Demographic Variables:

(a) age

(b) sex

(c) marital status

(d) no. of sons

(e) no. of daughters

(f) no. of children living with

(g) no. of children living separately

(h) total no. of people living together

(2) Socioeconomic Variables:

(a) education of head of household

(b) education of housewife

(c) occupation of head of household

(d) occupation of housewife

(e) income status

(f) modernization index such as television, refrigerator, magazines, etc.

(g) housing standard

(3) Attitudinal/Cultural Variables:

(a) religion

(b) son preference

(c) attitude toward the use of contraceptives

(d) attitude toward seeking medical treatement

(e) attitude toward taking vaccinations

(f) attitude toward sanitation

(4) Medical and Other Variables:

(a) no. of induced abortions

(b) no. of spontaneous abortions

(c) no. of children died

(d) no. of still births

(e) major illnesses experienced

(f) whether enrolled in health insurance

Data on all the above variables are collected. However, only those variables, which have revealed one kind or another relationship with the impact variables in the preliminary analyses, are used in principal data analyses.

Footnotes

[1]Ness, Gayl D., in UNFPA, *On Integration of Family Planning with Rural Development*, Policy Development Studies, No. 1, UNFPA, New York, 1979.

[2]ESCAP, *Activating Inter-Related Links in Population, Food and Nutrition Programs: Theory and Practice*, Population Research Lead No. 7, ESCAP, Bangkok, 1980.

CHAPTER VI: Analysis of Data

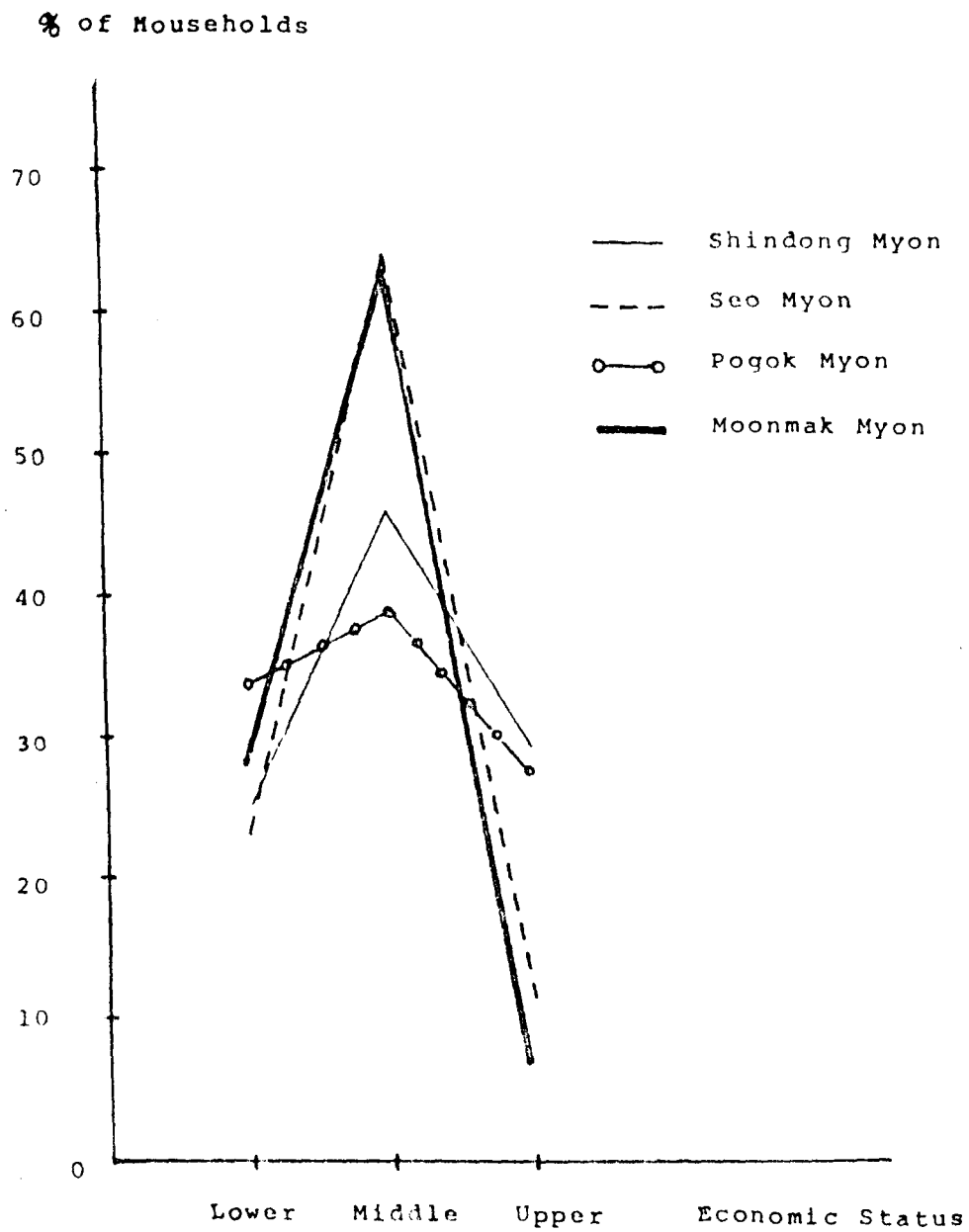
6.1 Descriptive Analysis of Control Variables

Inter-Myon differences in socioeconomic variables are examined through frequency distributions. Figures 6-1 through 6-4 present the frequency distribution of households of each Myon of economic status, income, occupation and schooling based on the 1980 survey data. The 1981 survey data on socioeconomic variables are not presented here because they are not significantly different from the 1980 data on these variables.

Economic status of each household is divided into three categories by interviewers according to their assessment of each household's living standard during their visits. Figure 6-1 shows that Shingdon Myon and Pagok Myon—Study Areas I and II--have more uneven economic status compared with Seo Myon and Moomak Myon—Control Areas I and II; whereas, about 65 percent of households in control areas are classified as middle economic status group, about 40 percent of households in study areas are so classified.

When household incomes of each Myon are examined, Shindong Myon and Pagok Myon have more households with higher incomes--6 million to 7 million won per year range (about 700 won equals one U.S. dollar), than Seo Myon and Moonmak Myon, the control areas (see Figure 6-2). In looking at occupational distribution of households, the difference between study areas and control areas is blurred. Shindong Myon, Study Area I, and Moonmak Myon, Control Area II, have a greater number of workers on salary compared with Pagok Myon, Study Area II, and Seo Myon, Control Area I (see Figure 6-3). Whereas, more than 80 percent of households in Seo Myon are farmers, only about 40 percent of Shindong Myon's households are farmers.

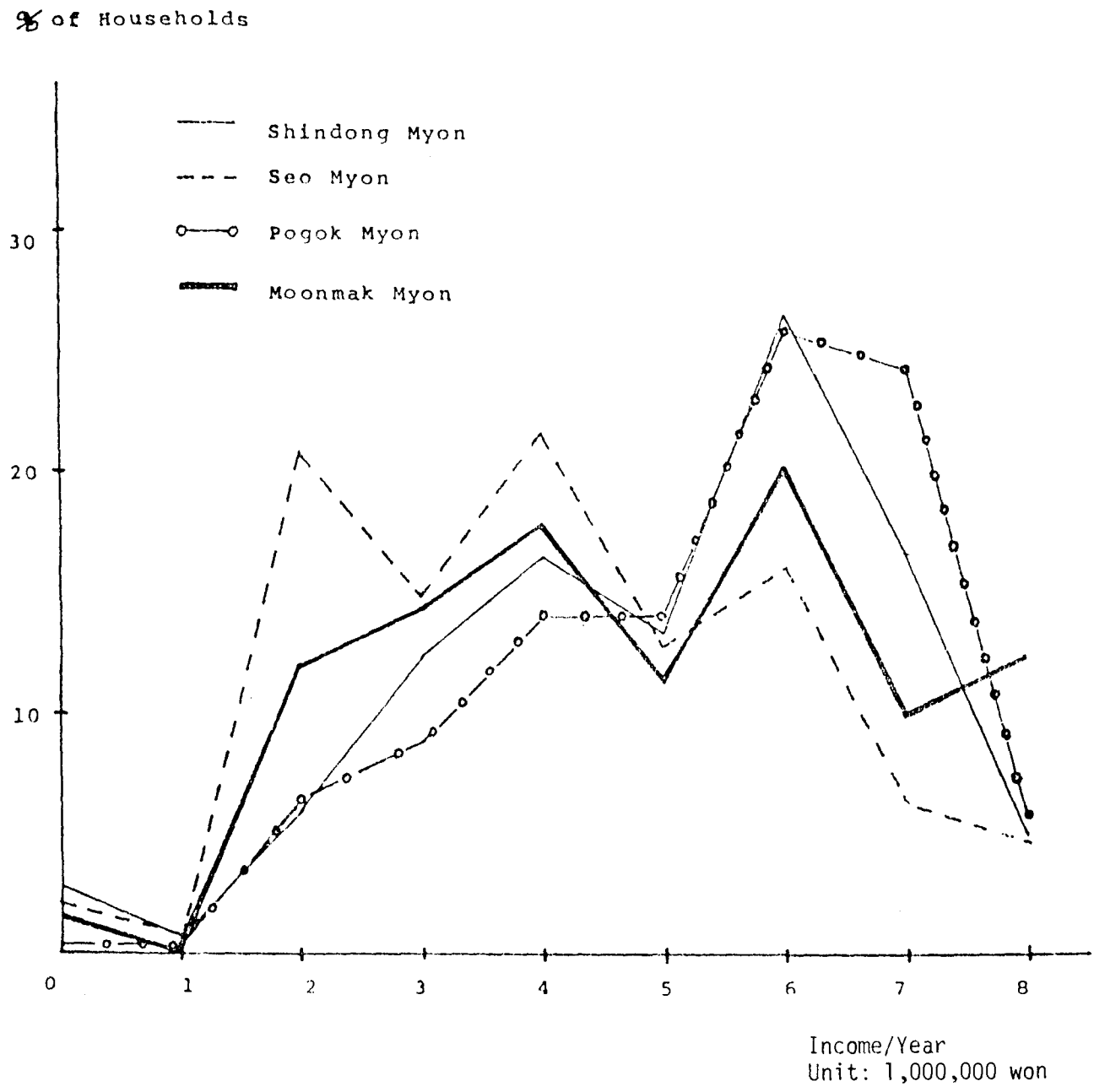
Figure 6-1



Frequency Distribution of Households by Economic Status for Each Myon.

1980 Data

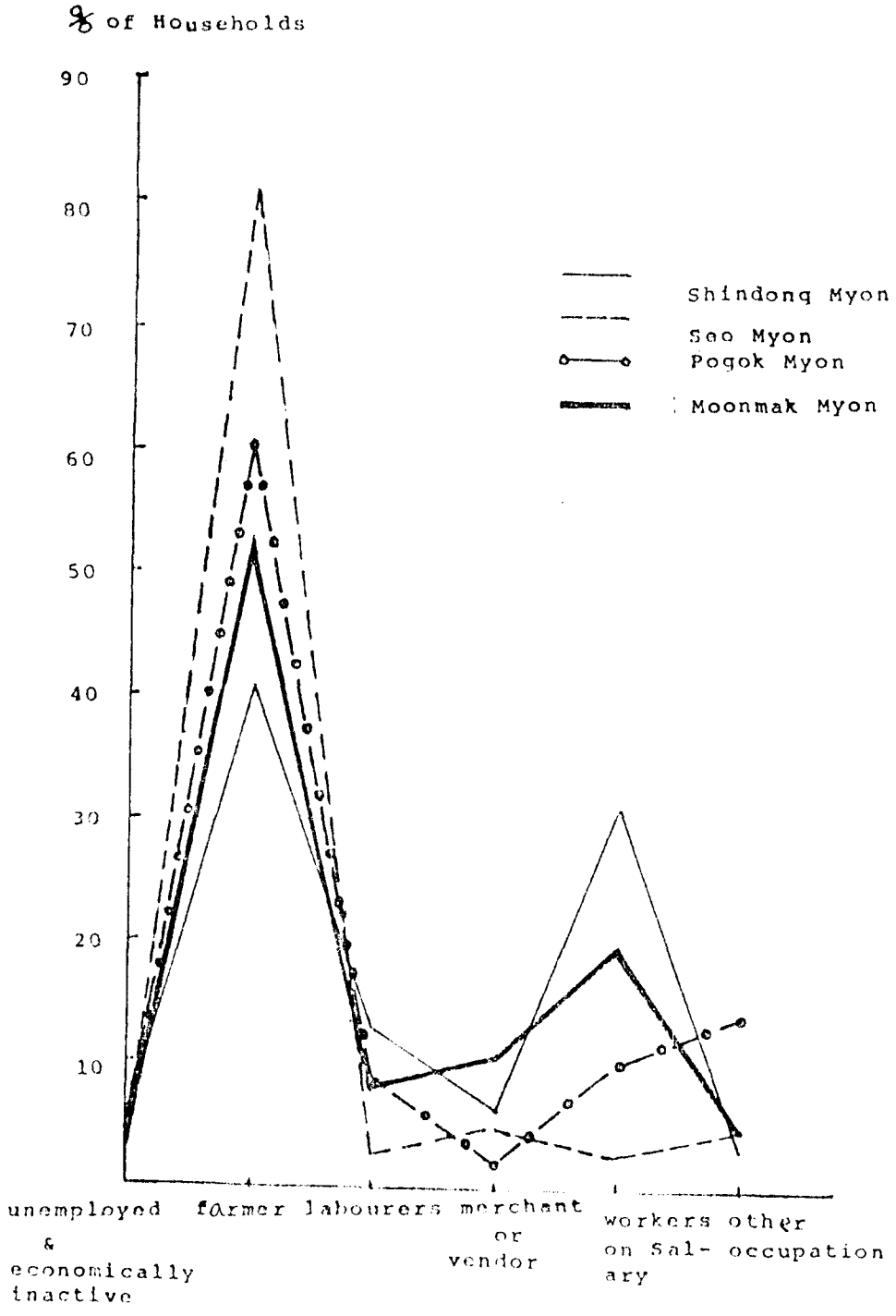
Figure 6-2



Frequency Distribution of Households by Money Income for Each Myon.

1980 Data

Figure 6-3



Frequency Distribution of Household Heads by Occupation for Each Myon.
1980 Data

The frequency distribution chart of households by occupation as presented in Figure 6-3 may be misleading in that occupation is a categorical variable. To make the chart legible, occupational categories are also limited to six. A histogram would have been more appropriate. To supplement the chart, the frequency distribution of households by all categories of occupation is presented in a tabular form in Table 6-1.

Reflecting the occupational distribution, a greater number of household heads in Sindong Myon and Moonmak Myon have schooling beyond the Primary School, i.e., 6 years of schooling, than Seo Myon and Pagok Myon (see Figure 6-4). In summary, one may rank study areas above control areas in economic status and annual household income. In education and occupation, Shindong Myon and Moonmak Myon ranks higher than Pagok Myon and Seo Myon.

6.2 Comparative Analysis of Impact Variables Between 1980 and 1981

6.2.1 Frequency Distribution Charts

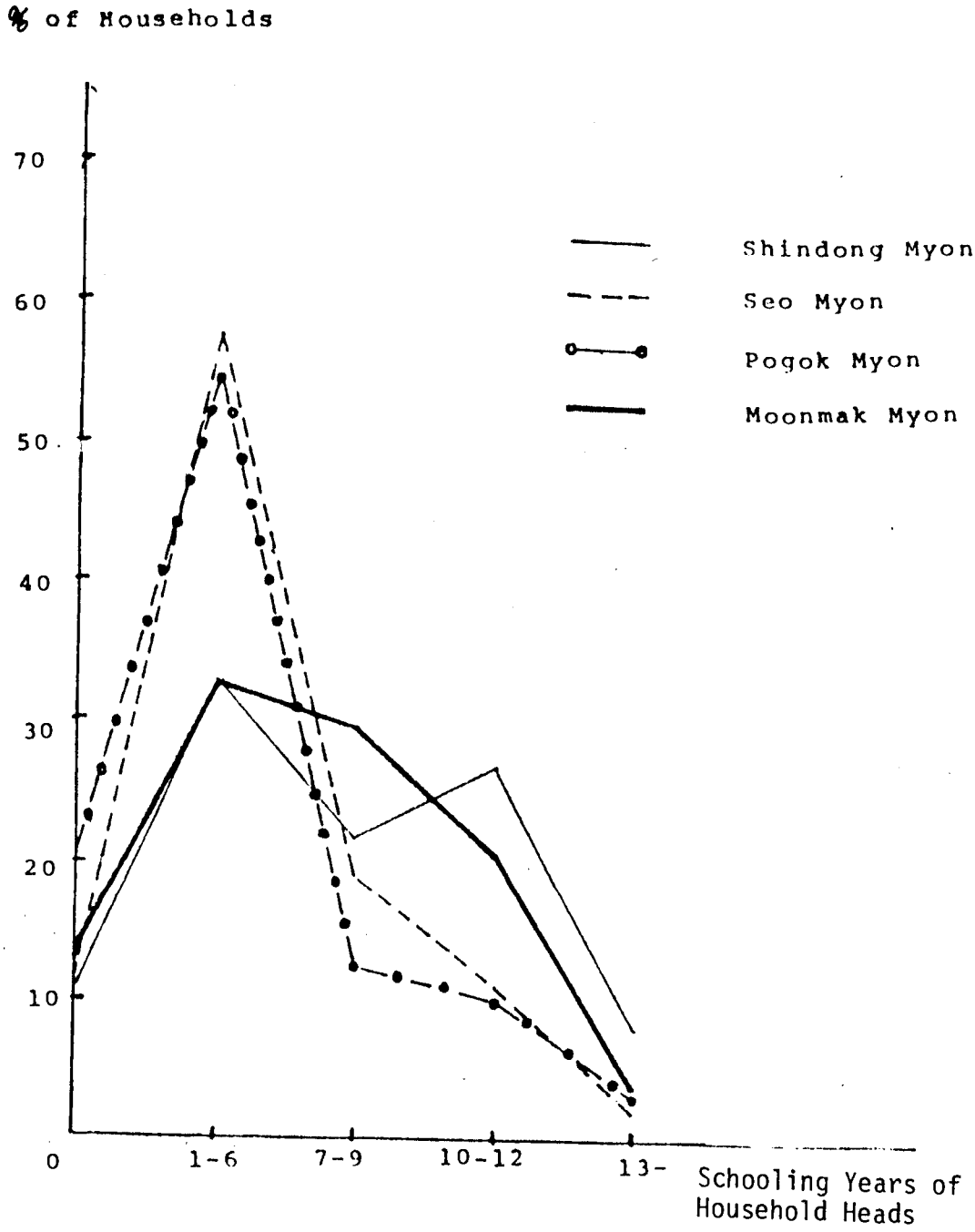
Inter-Myon differences in the impact variables are compared between those based on the 1980 baseline survey data and those from the 1981 post-treatment data. A visual inspection of Figure 6-5a and 6-5b indicates that, whereas in 1980, Moonmak Myon residents had a greater number of visits to one kind or another health facility for curative services than the residents of the othe three Myons, in 1981, the difference mostly disappeared except that Shindong Myon residents had the smallest number of visits for curative services.

When the inter-year change in the inter-Myon difference is examined for preventive visits, the change is more noticeable. In 1980, the residents of Moonmak Myon definitely had more visits to hospitals and health centers than the three other Myons and, among the three Myons, there

Table 6-1: Distribution of Household Heads by Occupational Categories for Each Myon, 1980.

Myon	Shindong Myon	Seo Myon	Pogok Myon	Moonmak Myon
Occupation	Relative Fre.	Relative Fre.	Relative Fre.	Relative Fre.
Farmer	40.7	80.5	6.20	54.3
Labourer	11.2	2.8	7.9	8.0
Official	12.2	2.1	0.8	9.7
Merchant	6.4	4.3	1.9	9.0
Unemployment	3.4	3.5	3.8	3.8
Technician	4.7	0	6.0	1.4
Businessman	5.8	0.4	2.3	2.8
Soldier	6.4	0	.4	0.3
Housewife	3.7	1.4	1.1	1.7
Engineer	0.3	0	0	1.7
Labourer Who Works in Foreign Land	0.7	0.7	0	2.1
Student	1.0	0.4	0	0
Others	3.4	3.9	13.9	5.2

Figure 6-4



Frequency Distribution of Household Heads by Schooling Years for Each Myon.

1980 Data

Figure 6-5a: Distribution of Households by the Number of Visits to Health Facilities for Curative Service for Each Myon in 1980.

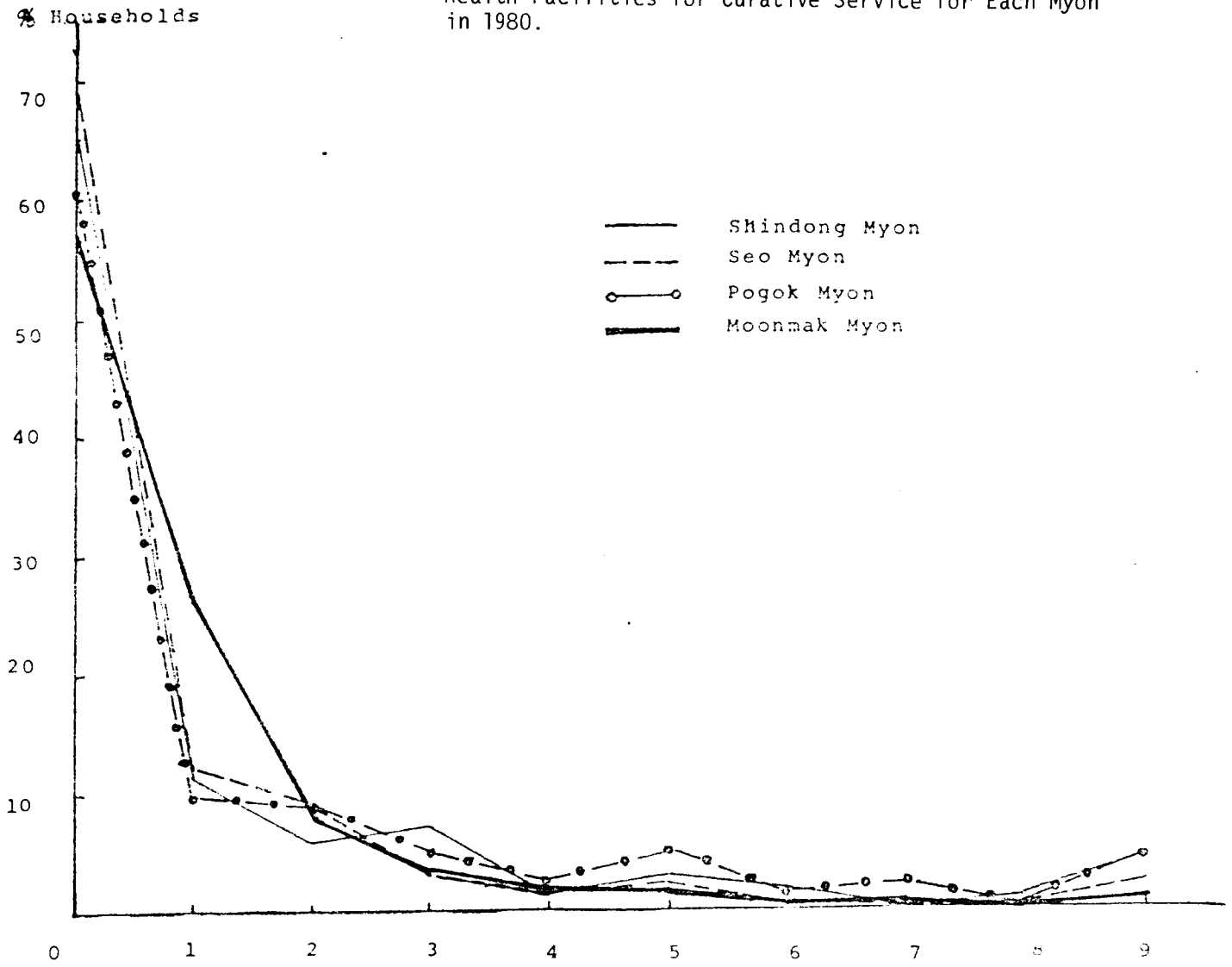
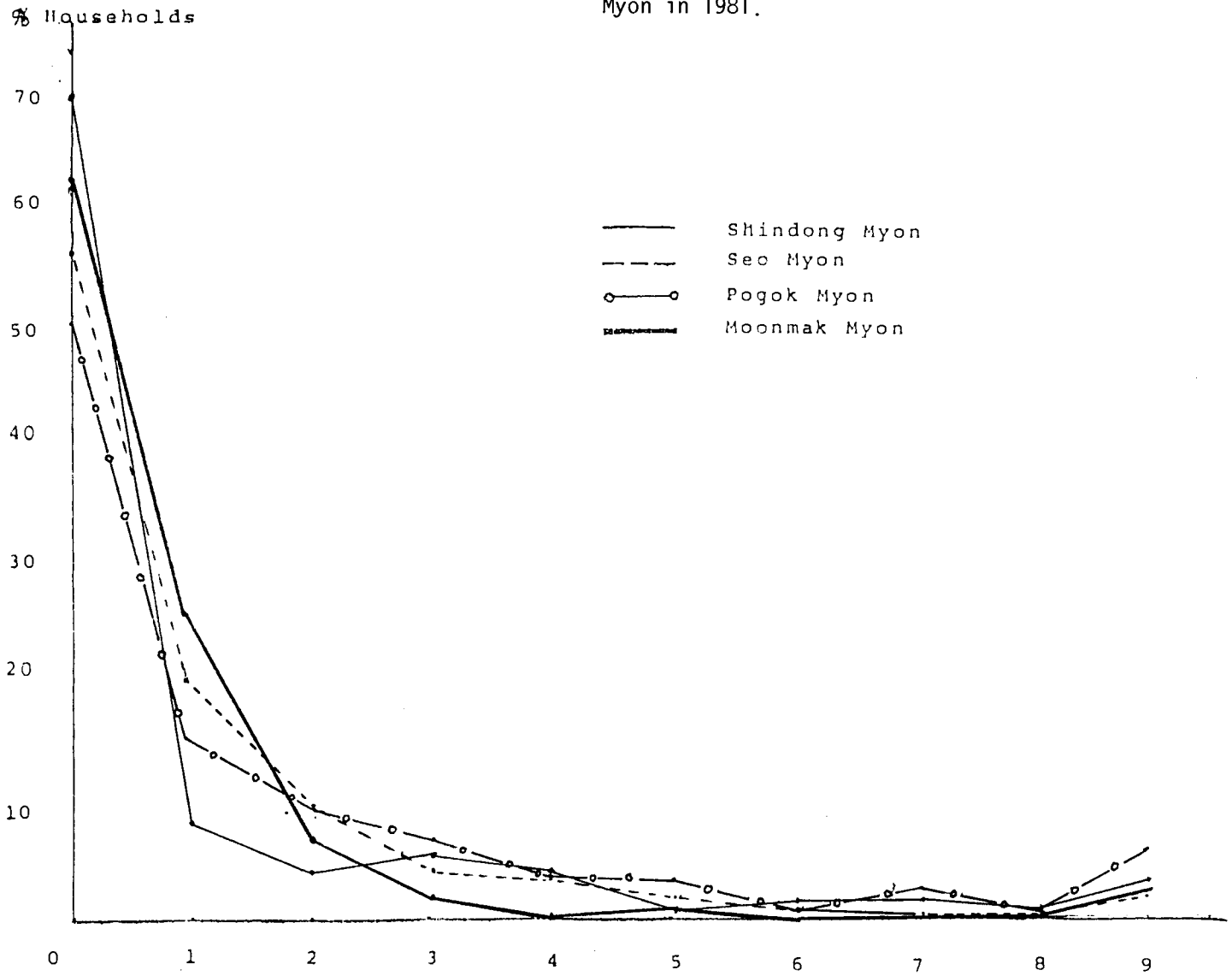


Figure 6-5b: Distribution of Households by the Number of Visits to Health Facilities for Curative Service for Each Myon in 1981.



was no noticeable difference. In 1981, Moonmak Myon residents still had more visits than the three other Myons for preventive service, but Shindong Myon definitely had more visits than the two Myons, namely Seo Myon and Pagok Myon (see Figures 6-6a and 6-6b). Although inferences on the effect of the program inputs should be postponed until multivariate analyses are completed, these frequency distributions indicate that Sindong Myon residents sought out preventive care more than the residents of other Myons in 1981 compared with 1980.

Inter-year changes in the utilization of health care among Myons are most prominent in health workers' home visits. Wheareas in 1980, inter-Myon difference was noticeable between Pagok and Moonmak Myons on one side and Shindong and Seo Myons on the other, in 1981, the difference between the two groups disappeared. Instead, Shindong Myon appeared as the area which definitely had more visits than all the three other Myons (see Figure 6-7a and 6-7b). Health workers' visits may be looked at as a program input rather than as an impact variable. Nevertheless, a relative increase in the visits in Study Area I between 1980 and 1981 is significant to observe.

A similar inter-year change is noticed in the frequency of attendance at mothers' club, an index representing community participation. Whereas there was no noticeable difference in the attendance among Myons in 1980, the attendance in Shindong and Seo Myons was definitely higher than the two other areas in 1981 (see Figures 6-8a and 6-8b). To the extent to which the attendance at mothers' club signifies the degree of community participation, housewives in Shindong and Seo Myons participated in community affairs to a greater extent than those in the two other areas in 1981 in comparison to 1980.

Figure 6-6a: Distribution of Households by the Number of Visits to Health Facilities for Each Myon in 1980.

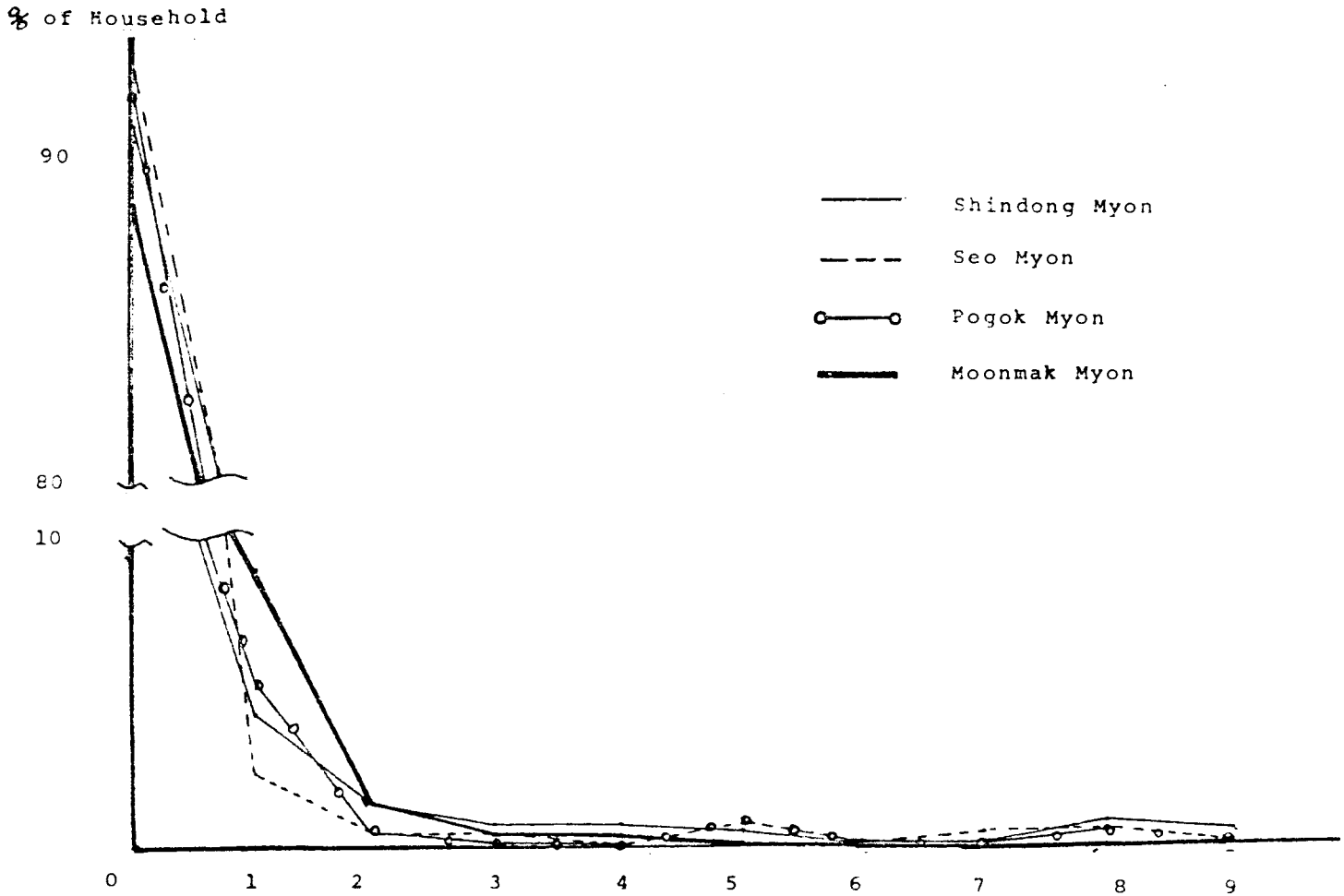


Figure 6-6b: Distribution of Households by the Number of Visits to Health Facilities for Each Myon in 1981.

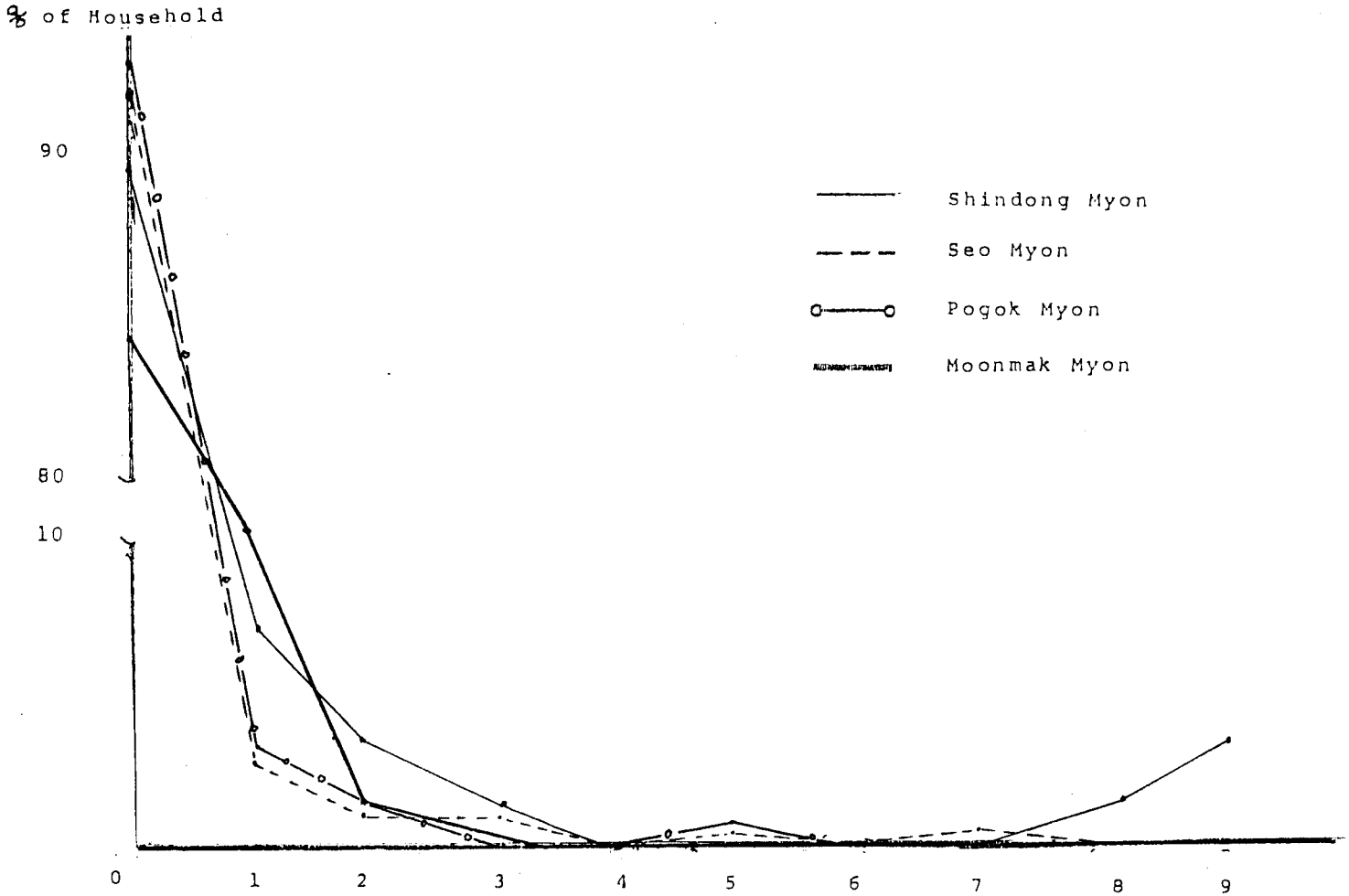


Figure 6-7a: Distribution of Households by the Number of Health Workers' Home Visits for Each Myon in 1980.

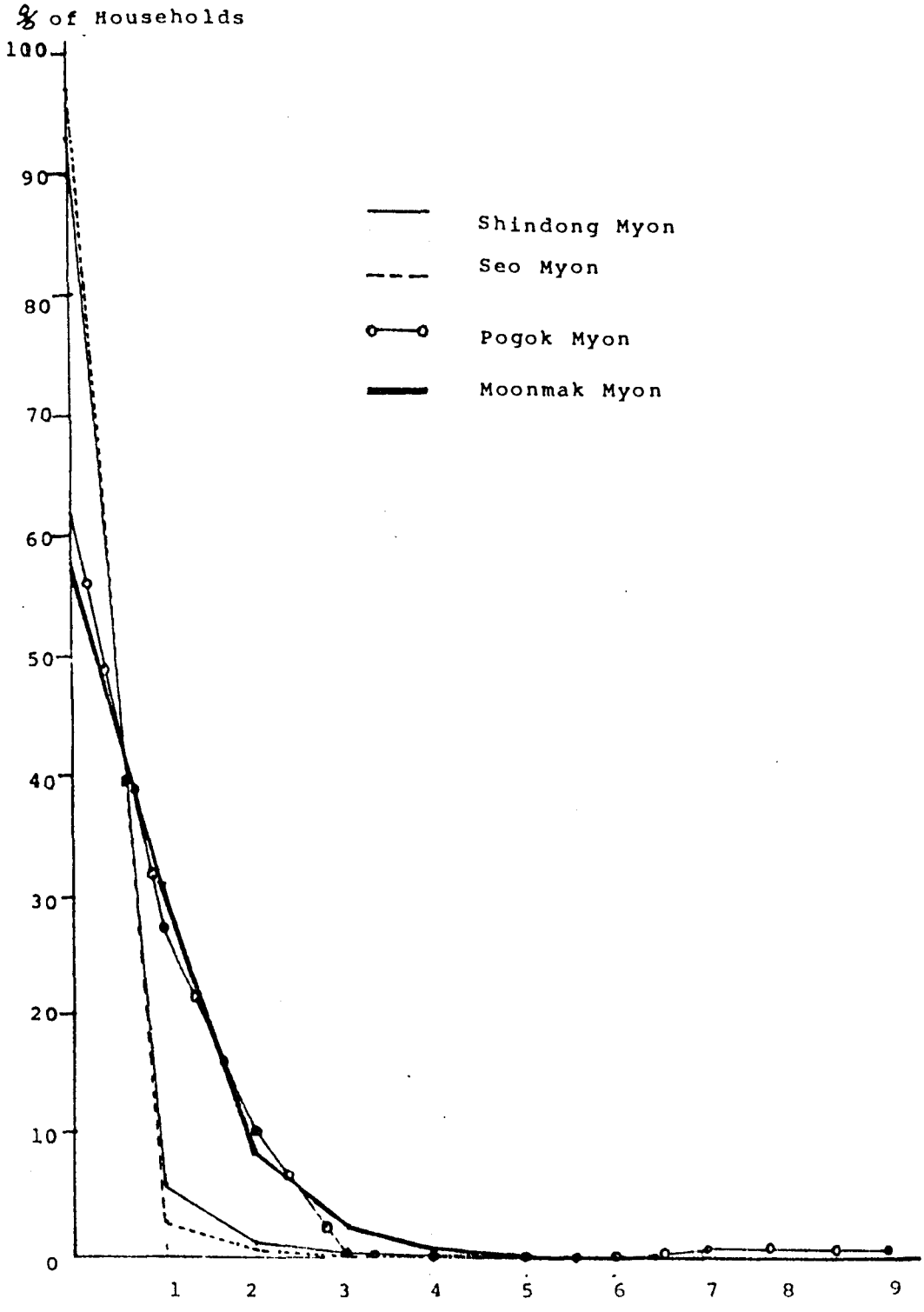


Figure 6-7b: Distribution of Households by the Number of Health Workers' Home Visits for Each Myon in 1981.

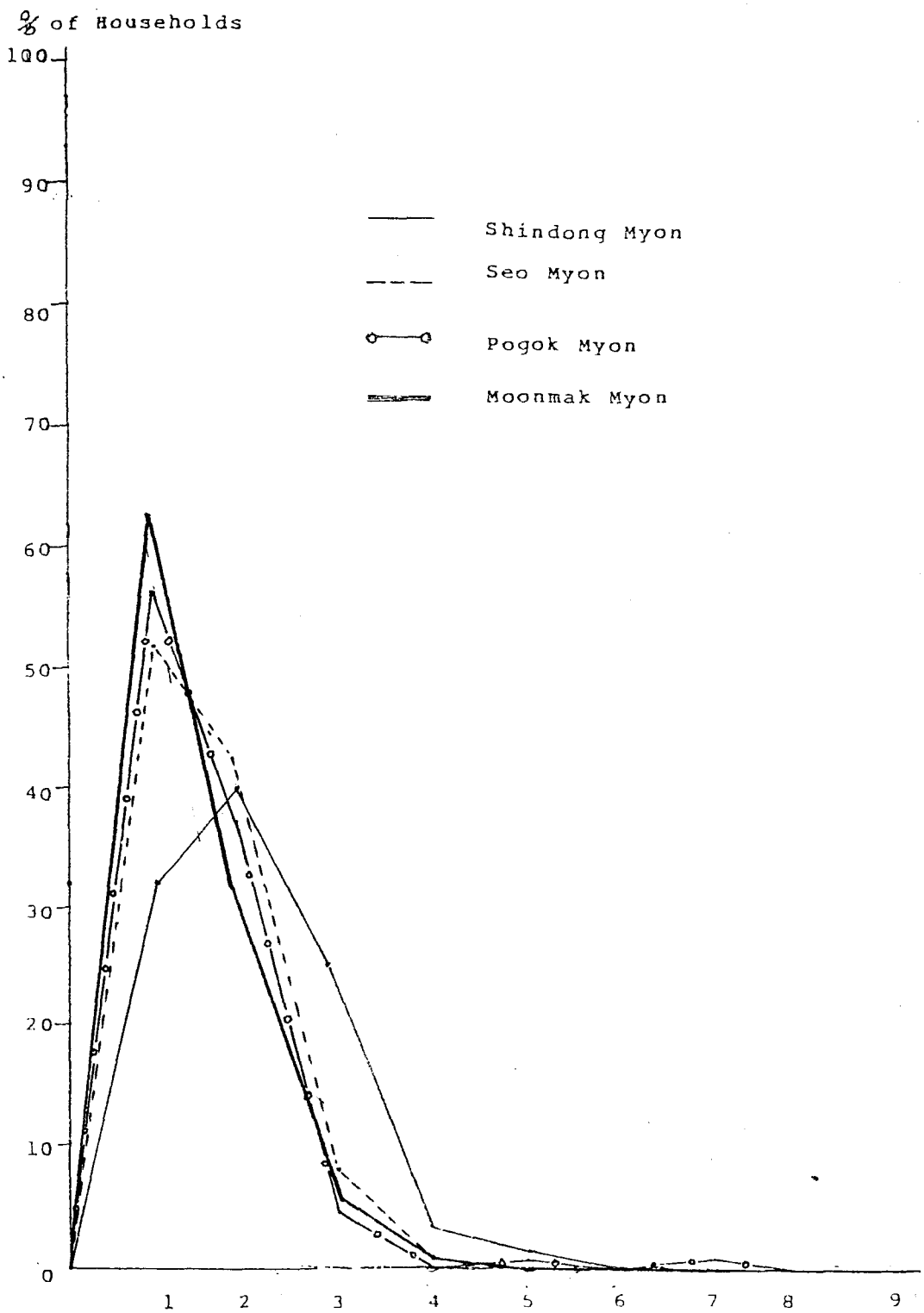


Figure 6-8a: Distribution of Households by the Attendance of Mothers' Club for Each Myon in 1980.

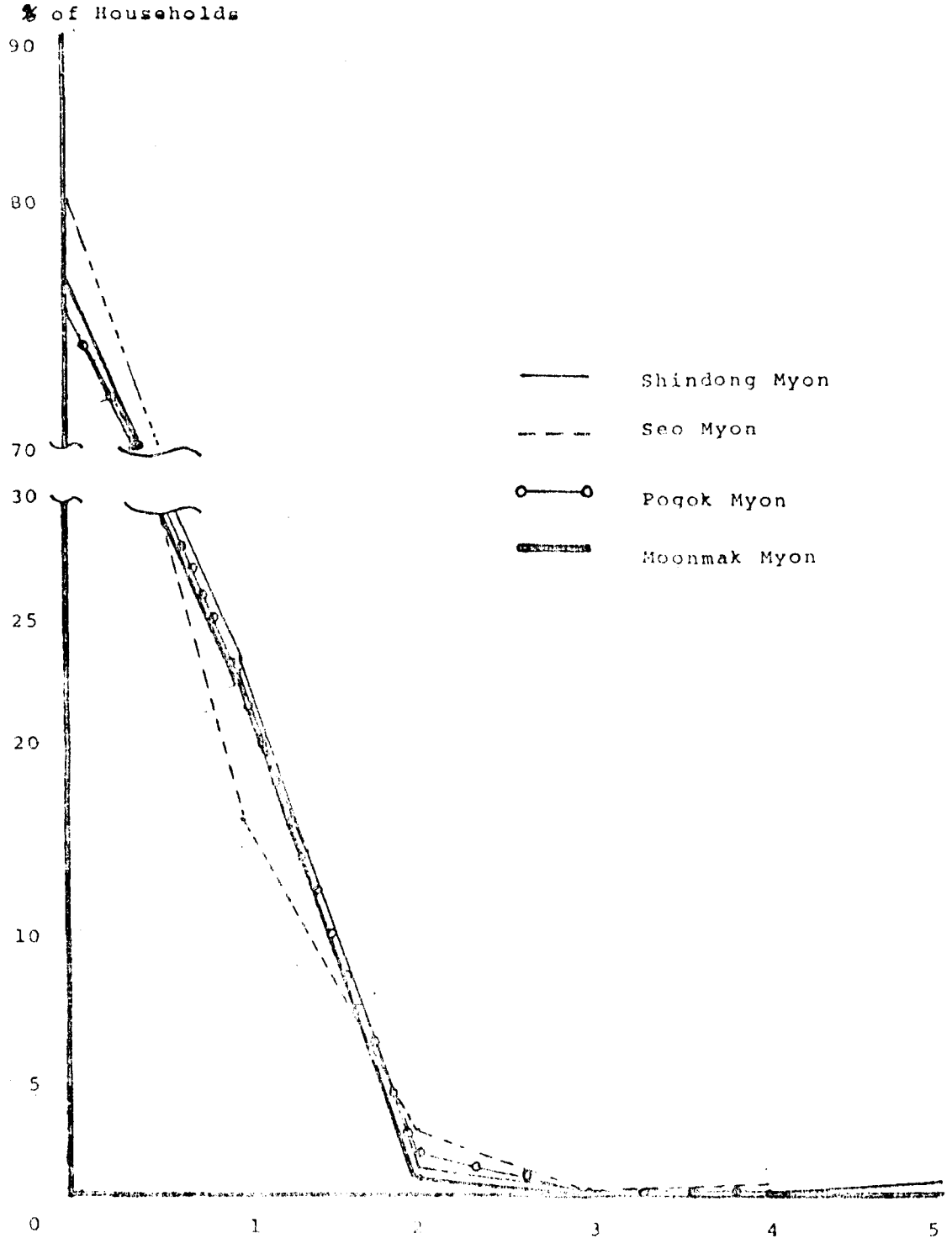
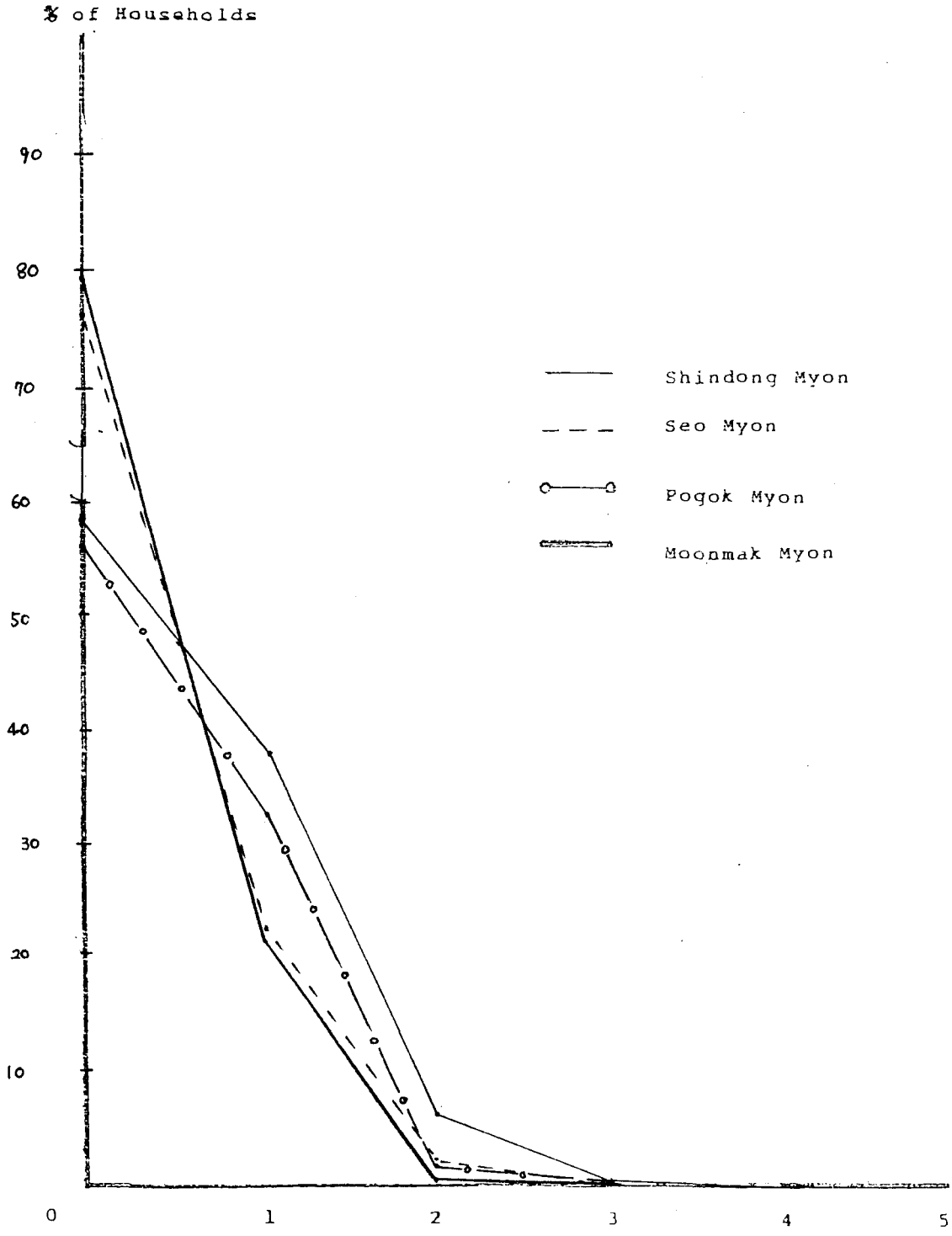


Figure 6-8b: Distribution of Households by the Attendance of Mothers' Club for Each Myon in 1981.



6.2.2 Cross Tabulations

When the inter-Myon differences in the input variables are compared between those based on the 1980 data and those from the 1981 data by comparing cross-tabulation of the 1980 data and that of the 1981 data, the results obtained from the examinations of frequency distribution charts are largely confirmed.

Table 6-2a presents a cross-tabulation of the number of visits to health facilities for curative care by Myon based on the 1980 data. Table 6-2b shows the same based on the 1981 data. As shown in the frequency distribution charts, the inter-Myon differences which existed in 1980 become smaller in 1981. Note that the significance level of the Tau tests of the inter-Myon differences decreased from .91s (1-.0889) to .70s (1-0.3048). Whereas Seo Myon had the greatest proportion of no-visitors in 1980 (69 percent), in 1981 Shindong Myon had the greatest number of no-visitors (70.4 percent). This indicates that, compared with othe Myons' residents, Shidong Myon residents decreased the curative visits between 1980 and 1981.

When the inter-Myon differences in the visits to health facilities for preventive care in 1980 are compared with those in 1981, the inter-Myon differences are less in 1981 than in 1980 (see Tables 6-3a and 6-3b). The significance levels of Tau tests decreased from .93 (1-.067) in 1980 to .83s in 1981. As shown in the frequency distribution charts, the noticeable difference between 1980 and 1981 is observed for Shindong Myon, the heavy integration area and Moonmak Myon, the Control Area I. Whereas the number of people who visited health facilities for preventive care remained the same or less in Seo Myon and Pagok Myon between 1980 and 1981, it increased significantly for Shindong Myon and Moonmak Myon. When it is

Table 6-2a

X2					
COUNT / ROW PCT / COL PCT / TOT PCT	Shindong 1.	Seo 2.	Pagok 3.	Moonmak 4.	ROW TOTAL
0	195	207	182	182	766
	25.5	27.0	23.8	23.8	63.0
	65.0	69.0	60.9	57.4	
	16.0	17.0	15.0	15.0	
1.	34	37	29	83	183
	18.6	20.2	15.8	45.4	15.0
	11.3	12.3	9.7	26.2	
	2.8	3.0	2.4	6.8	
2.	17	26	26	24	93
	18.3	28.0	28.0	25.8	7.6
	5.7	8.7	8.7	7.6	
	1.4	2.1	2.1	2.0	
3.	21	9	15	11	56
	37.5	16.1	26.8	19.6	4.6
	7.0	3.0	5.0	3.5	
	1.7	.7	1.2	.9	
4.	4	4	7	5	20
	20.0	20.0	35.0	25.0	1.6
	1.3	1.3	2.3	1.6	
	.3	.3	.6	.4	
5.	9	7	15	5	36
	25.0	19.4	41.7	13.9	3.0
	3.0	2.3	5.0	1.6	
	.7	.6	1.2	.4	
6.	5	2	4	2	13
	38.5	15.4	30.8	15.4	1.1
	1.7	.7	1.3	.6	
	.4	.2	.3	.2	
7.	0	0	7	2	9
	0	0	77.8	22.2	.7
	0	0	2.3	.6	
	0	0	.6	.2	
8.	3	1	1	0	5
	60.0	20.0	20.0	0	.4
	1.0	.3	.3	0	
	.2	.1	.1	0	
9.	12	7	13	3	35
	34.3	20.0	37.1	8.6	2.9
	4.0	2.3	4.3	.9	
	1.0	.6	1.1	.2	
COLUMN TOTAL	300	300	299	317	1216 Grand Total No.
	24.7	24.7	24.6	26.1	100.0

TAU B = .03296 SIGNIFICANCE = .0889

TAU c = .02874 SIGNIFICANCE = .0889

Cross Tabulation between Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor Curative Services during a month and Myon

1980 Data

Table 6-2b

X126 / COUNT / ROW PCT / COL PCT / TOT PCT	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	ROW TOTAL
X2 1. Shindong	209 70.4 30.6 18.3	25 8.4 12.6 2.2	13 4.4 14.3 1.1	16 5.4 29.1 1.4	13 4.4 37.1 1.1	2 .7 9.5 .2	4 1.3 40.0 .3	3 1.0 37.5 .3	2 .7 33.3 .2	10 3.4 29.4 .9	297 26.0
2. Seo	155 54.6 22.7 13.6	54 19.0 27.1 4.7	32 11.3 35.2 2.8	14 4.9 25.5 1.2	12 4.2 34.3 1.0	6 2.1 28.6 .5	4 1.4 40.0 .3	1 .4 12.5 .1	1 .4 16.7 .1	5 1.8 14.7 .4	284 24.8
3. Pagok	137 50.4 20.0 12.0	44 16.2 22.1 3.8	28 10.3 30.8 2.4	19 7.0 34.5 1.7	10 3.7 28.6 .9	11 4.0 52.4 1.0	1 .4 10.0 .1	3 1.1 37.5 .3	2 .7 33.3 .2	17 6.3 50.0 1.5	272 23.8
4. Moonmak	183 63.1 26.8 16.0	76 26.2 38.2 6.6	18 6.2 19.9 1.6	6 2.1 10.9 .5	0 0 0 0	2 .7 9.5 .2	1 .3 10.0 .1	1 .3 12.5 .1	1 .3 16.7 .1	2 .7 5.9 .2	290 25.4
COLUMN TOTAL	664 59.8	199 17.4	91 8.0	55 4.8	35 3.1	21 1.8	10 .9	8 .7	6 .5	34 3.0	1143 100.0

RAW CHI SQUARE = 104.20637 WITH 27 DEGREES OF FREEDOM. SIGNIFICANCE = .0000

TAU B = .01283 SIGNIFICANCE = .3048
TAU C = .01146 SIGNIFICANCE = .3048

Cross Tabulation between Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Curative Services during a month and Myon

1981 Data

Table 6-3a

X2 / ROW PCT / COL PCT / TOT PCT	Shindong	Seo	Pagok	Moonmak	ROW TOTAL
0	275 24.5 91.7 22.6	287 25.6 95.7 23.6	278 24.8 93.3 22.9	282 25.1 89.3 23.2	1122 92.4
1	13 28.9 4.3 1.1	7 15.6 2.3 .6	16 35.6 5.4 1.3	29 64.4 9.1 2.4	65 5.3
2	4 40.0 1.3 .3	1 10.0 .3 .1	1 10.0 .3 .1	4 40.0 1.3 .3	10 .8
3	2 50.0 .7 .2	1 25.0 .3 .1	0 0.0 0.0 0.0	1 25.0 .3 .1	4 .3
4	2 66.7 .7 .2	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 33.3 .3 .1	3 .2
5	1 20.0 .3 .1	2 40.0 .7 .2	2 40.0 .7 .2	0 0.0 0.0 0.0	5 .4
7	0 0.0 0.0 0.0	1 100.0 .3 .1	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 .1
8	2 50.0 .7 .2	1 25.0 .3 .1	1 25.0 .3 .1	0 0.0 0.0 0.0	4 .3
9	1 100.0 .3 .1	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 .1
COLUMN TOTAL	300 24.7	300 24.7	299 24.6	317 26.1	1216 100.0

TAU B= .03800 SIGNIFICANCE = .0674

TAU C= .01701 SIGNIFICANCE = .0674

Cross Tabulation between Number of Visits to Hospital,Pharmacy, Health Center or Herb Doctor for Preventive Services during a month and Myon

1980 Data

Table 6-3b

X127

X2	COUNT / ROW PCT / COL PCT / TOT PCT	0.	1.	2.	3.	4.	5.	7.	8.	9.	ROW TOTAL
1. Shindong		261	22	8	2	0	0	0	1	3	297
		87.9	7.4	2.7	.7	0	0	0	.3	1.0	26.0
		25.1	28.9	53.3	40.0	0	0	0	100.0	100.0	
		22.8	1.9	.7	.2	0	0	0	.1	.3	
2. Seo		271	7	2	2	0	1	1	0	0	284
		95.4	2.5	.7	.7	0	.4	.4	0	0	24.8
		26.1	9.2	13.3	40.0	0	50.0	100.0	0	0	
		23.7	.6	.2	.2	0	.1	.1	0	0	
3. Pagok		261	7	3	0	0	1	0	0	0	272
		96.0	2.6	1.1	0	0	.4	0	0	0	23.8
		25.1	9.2	20.0	0	0	50.0	0	0	0	
		22.8	.6	.3	0	0	.1	0	0	0	
4. Moonmak		246	40	2	1	1	0	0	0	0	290
		84.8	13.8	.7	.3	.3	0	0	0	0	25.4
		23.7	52.6	13.3	20.0	100.0	0	0	0	0	
		21.5	3.5	.2	.1	.1	0	0	0	0	
COLUMN TOTAL		1039	76	15	5	1	2	1	1	3	1143
		90.9	6.6	1.3	.4	.1	.2	.1	.1	.3	100.0

RAW CHI SQUARE = 67.29383 WITH 24 DEGREES OF FREEDOM.

SIGNIFICANCE = .0000

KENDALL'S TAU B = .02583 SIGNIFICANCE = .1671

KENDALL'S TAU C = .01226 SIGNIFICANCE = .1671

Cross Tabulation between Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for preventive Services during a month and Myon

1981 Data

remembered that the visits for curative care decreased for Shindong Myon and Moonmak Myon between the survey years, it can be inferred that Shindong and Moonmak Myon residents decided to rely more on preventive care and less on curative care for their health and family planning.

The biggest change in the utilization of health care between 1980 and 1981 occurred in the number of health workers' home visits. Although the inter-Myon differences remained highly significant both in 1980 and 1981, Shindong Myon and Seo Myon, which had less than 8 percent of their residents receiving any visit in 1980, had 67 percent and 48 percent respectively of their residents receiving a visit or more in 1981 (see Tables 6-4a and 6-4b). As mentioned before, health workers' home visits may be considered as program inputs rather than as an impact variable. Nevertheless, the reversal of the ranking of Myons in the number of the visits between the survey years is remarkable in the magnitude of the change.

To summarize, in the utilization of health facilities, the inter-Myon differences decreased between 1980 and 1981. For health workers' home visits, however, there were no statistically significant changes between the survey years. On the other hand, in the number of attendance at mothers' club meetings, the inter-Myon differences increased between 1980 and 1981. Whereas the inter-Myon differences in the attendance figures were statistically insignificant (.52s by Tau B and C tests) in 1980, they became highly significant (.99) in 1981 (See Tables 6-5a and 6-5b). This result has been brought about by noticeable increases in the attendance figures among the residents of the study areas, Shindong and Pagok Myons between 1980 and 1981. Wheareas only 25 percent of the residents of the study areas attended a mothers' club meeting during the month preceding the 1980 survey, 42 percent of Shindong Myon residents and 33 percent of Pagok

Table 6-4a

X2 COUNT / ROW PCT / COL PCT / TOT PCT	Shindong 1.	Seo 2.	Pagok 3.	Moonmak 4.	ROW TOTAL
0	279 29.7 93.0 23.0	291 31.0 97.0 24.0	189 19.7 61.9 15.2	183 19.5 57.9 15.1	938 77.2
1.	17 8.3 5.7 1.4	8 3.9 2.7 .7	81 39.7 27.1 6.7	98 48.0 31.0 8.1	204 16.8
2.	3 4.9 1.0 .2	1 1.6 .3 .1	30 49.2 10.0 2.5	27 44.3 8.5 2.2	61 5.0
3.	1 11.1 .3 .1	0 0 0 0	1 11.1 .3 .1	7 77.8 2.2 .6	9 .7
4.	0 0 0 0	0 0 0 0	0 0 0 0	1 100.0 .3 .1	1 .1
6.	0 0 0 0	0 0 0 0	1 100.0 .3 .1	0 0 0 0	1 .1
8.	0 0 0 0	0 0 0 0	1 100.0 .3 .1	0 0 0 0	1 .1
COLUMN TOTAL	300 24.7	300 24.7	292 24.0	316 26.0	1215 100.0

TAU B = .33399 SIGNIFICANCE = .0000
TAU C = .23559 SIGNIFICANCE = .0000

Cross Tabulation between Number of Health Worker's Home Visit and Myon

1980 Data

Table 6-4b

COUNT / ROW PCT / COL PCT / TOT PCT	0	1.	2.	3.	4.	6.	ROW TOTAL
X2 1. Shindong	96	120	70	7	2	0	295
	32.5	40.7	23.7	2.4	.7	0	26.0
	16.6	27.8	61.4	70.0	66.7	0	
	8.5	10.6	6.2	.6	.2	0	
2. Seo	146	116	19	1	0	0	282
	51.8	41.1	6.7	.4	0	0	24.8
	25.3	26.9	16.7	10.0	0	0	
	12.9	10.2	1.7	.1	0	0	
3. Pagok	154	103	10	0	1	1	269
	57.2	38.3	3.7	0	.4	.4	23.7
	26.7	23.9	8.8	0	33.3	100.0	
	13.6	9.1	.9	0	.1	.1	
4. Moonmak	181	92	15	2	0	0	290
	62.4	31.7	5.2	.7	0	0	25.5
	31.4	21.3	13.2	20.0	0	0	
	15.9	8.1	1.3	.2	0	0	
COLUMN TOTAL	577	431	114	10	3	1	1136
	50.8	37.9	10.0	.9	.3	.1	100.0

CHI SQUARE = 126.93533 WITH 15 DEGREES OF FREEDOM. SIGNIFICANCE = .0000

TAU B = -.22555 SIGNIFICANCE = .0000
TAU C = -.19965 SIGNIFICANCE = .0000

Cross Tabulation between Number of Health Worker's Home Visit and Myon.

1980 Data

Table 6-5a

X2	Shindong 1.	Seo 2.	Pagok 3.	Moonmak 4.	ROW TOTAL
0	227	240	226	244	937
	24.2	25.6	24.1	26.0	77.2
	75.7	80.5	75.6	77.0	
	18.7	19.8	18.6	20.1	
1.	70	49	68	70	257
	27.2	19.1	26.5	27.2	21.2
	23.3	16.4	22.7	22.1	
	5.8	4.0	5.6	5.8	
2.	3	8	5	2	18
	16.7	44.4	27.8	11.1	1.5
	1.0	2.7	1.7	.6	
	.2	.7	.4	.2	
4.	0	1	0	0	1
	0	100.0	0	0	.1
	0	.3	0	0	
	0	.1	0	0	
5.	0	0	0	1	1
	0	0	0	100.0	.1
	0	0	0	.3	
	0	0	0	.1	
COLUMN TOTAL	300	298	299	317	1214
	24.7	24.5	24.6	26.1	100.0

TAU B = .00154 SIGNIFICANCE = .4764
TAU C = .00107 SIGNIFICANCE = .4764

Cross Tabulation between Number of Attendance at Mothers' Club Meeting during the Month Preceding the Survey and Myon.

1980 Data

Table 6-5b

X2	X157	0	1.	2.	3.	ROW TOTAL
1. Shindong	COUNT	173	114	9	1	297
	ROW PCT	58.2	38.4	3.0	.3	26.0
	COL PCT	21.6	35.8	47.4	50.0	
	TOT PCT	15.1	10.0	.8	.1	
2. Seo	COUNT	217	61	5	0	283
	ROW PCT	76.7	21.6	1.8	0	24.8
	COL PCT	27.1	19.1	26.3	0	
	TOT PCT	19.0	5.3	.4	0	
3. Pagok	COUNT	181	86	4	1	272
	ROW PCT	66.5	31.6	1.5	.4	23.8
	COL PCT	22.6	26.9	21.1	50.0	
	TOT PCT	15.8	7.5	.4	.1	
4. Moonmak	COUNT	230	59	1	0	290
	ROW PCT	79.3	20.3	.3	0	25.4
	COL PCT	28.7	18.4	5.3	0	
	TOT PCT	20.1	5.2	.1	0	
COLUMN TOTAL		801	320	19	2	1142
		70.1	28.0	1.7	.2	100.0

RAW CHI SQUARE = 43.11616 WITH 9 DEGREES OF FREEDOM. SIGNIFICANCE = .000
TAU B = -.12471 SIGNIFICANCE = .0000
TAU C = -.09433 SIGNIFICANCE = .0000

Cross Tabulation between Number of Attendance at Mothers' Club Meeting during the Month preceding the survey and Myon.

1981 Data

Myon residents did so in 1981. For the residents of the control areas. Seo Myon and Moonmak Myon, the attendance figures remained virtually the same between 1980 and 1981. This appears to be a clear-cut case of statisticaly significant change in an impact variable for the residents of the study areas vis-a-vis for those of the control areas between the two survey years.

6.2.3: Chi-Squares Tests

As the third and final analysis of the impact variables, Chi-squares tests are conducted to examine the inter-year change in some of the input variables. Tables 6-6 through 6-10 present the frequency distributions of five variables and the result of Chi-squares tests in such a way as to enable us to compare the inter-year changes in these variables for the study areas with those for control areas.

In examining the utilization of health facilities, it is noteworthy that Shindong Myon residents visited health facilities for curative care in a (statistically) significantly smaller number in 1981 than in 1982, whereas the reverse is true for those who live in Seo Myon and Pagok Myon (see Table 6-6). For Moonmak Myon residents, there was no significant change between 1980 and 1981. For preventive services, the inter-year change in visits is in the opposite direction. Whereas Shindong Myon residents (statistically) significantly increased their visits to health facilities for preventive care between 1980 and 1981, there were no (statistically) significant changes for those who live in the other three Myons, although the latter also increased their visits (see Table 6-7).

As mentioned before, this indicates that in Shindong Myon, the high integration area, residents switched their emphasis from curative services to preventive care for their health and family planning need between the

Should include percentage?

Table 6-6

Number of Visits to Hospital, Pharmacy, Health Center, Herb Doctor for Curative Service/Month.

Myon	Sindong Myon*			Seo Myon*			Pogok Myon*			Moonmak Myon+		
Fre.	80	81	Change	80	81	Change	80	81	Change	80	81	Change
0	195	209	4	207	155	-52	182	137	-45	182	183	1
1	34	25	-9	37	54	17	29	44	15	83	76	-7
2	17	13	-4	26	32	6	26	28	2	24	18	-6
3	21	16	-5	9	14	5	15	19	4	11	6	-5
4	4	13	9	4	12	8	7	10	3	5	0	-5
5	9	2	-7	7	6	-1	15	11	-4	5	2	-3
6	5	4	-1	2	4	2	4	1	-3	2	1	-1
7.8	3	5	2	1	2	1	8	5	-3	2	2	0
9+	12	10	-2	7	5	-2	13	17	4	3	2	-1

* Inter-year difference is significant at .01 level by Chi-Squares test.

\+ Inter-year difference is not signficant at .01 level by Chi-Squares test.

Table 6-7

Number of Visits to Hospital and Health Center for Preventive Services/Month.

Myon	Sindong Myon*			Seo Myon+			Pogok Myon+			Moonmak Myon+		
Fre.	80	81	Change	80	81	Change	80	81	Change	80	81	Change
0	275	261	-14	287	271	-16	279	261	-18	282	246	-36
1	13	22	9	7	7	0	16	7	-9	29	40	11
2	4	8	4	1	2	1	1	3	2	4	2	-2
3	2	2	0	1	2	1	0	0	0	1	1	0
4	2	0	-2	0	0	0	0	0	0	1	1	0
5	1	0	-1	2	1	-1	2	1	-1	0	0	0
6+	3	4	1	2	1	-1	1	0	-1	0	0	0

* Inter-year difference is significant at .05 level by Chi-Squares test.

\+ Inter-year differences is not significant at .05 level by Chi-Squares test.

survey years. This is a desirable development. Before one can infer whether this is due to the program inputs or not, one has to take account of possible changes in other factors which may influence a resident's visit to health facilities. Multivariate analysis presented in the following section is an attempt to isolate the effects of program inputs on the impact variables.

As for health workers' home visits, the frequency of the visits increased (statistically) significantly for the residents of all the four Myons between 1980 and 1981 (see Table 6-8). However, the increase was the biggest for Shindong Myon and Seo Myon. Whereas 21 of the interviewed households in Shindon Myon received health workers' visits once or more during the month preceding the interview in 1980, in 1981, about 200 of the Shindong households interviewed received the visits once or more.

In the attendance at mothers' club meetings, both Shindong Myon and Pagok Myon (the study areas) residents differed from those who live in the control areas, i.e., Seo Myon and Moonmak Myon. Whereas, about 24 percent of Shindong Myon residents attended mothers' club meetings at least once a month in 1980, the figure increased to about 41 percent in 1981 (see Table 6-9). To a lesser extent, the attendance figure also increased for Pogok Myon, and the increase was statistically significant. For the residents of the control areas, Seo and Moonmak Myons, although the attendance figures also increased, it was statistically not significant.

As for the practice of birth control, only the residents of Shindong Myon increased the practice (statistically) significantly between 1980 and 1981. What is noteworthy about the increase in the birth control practice among Shindong Myon residents is the fact that the greatest increase was observed for vasectomies, the irreversable operations (see Table 6-10).

Table 6-8

Number of Health Worker's Home Visits/Month

Myon	Sindong Myon*			Seo Myon*			Pogok Myon*			Moonmak Myon*		
Fre.	80	81	Change	80	81	Change	80	81	Change	80	81	Change
0	279	96	-183	291	146	-145	185	154	-31	183	181	-2
1	17	120	103	8	116	108	81	103	22	98	92	-6
2+	4	79	75	1	20	19	33	12	-21	35	17	-18
Missing	0	2	2	0	0	0	0	3	3	1	0	-1

Community participation

Table 6-9

Number of Attendance at Mother's Club/Month

Myon	Sindong Myon*			Seo Myon+			Pogok Myon*			Moonmak Myon+		
Fre.	80	81	Change	80	81	Change	80	81	Change	80	81	Change
0	227	173	-54	240	217	-23	226	181	-45	244	230	-14
1	70	114	44	49	61	12	68	86	18	70	59	-11
2+	3	10	7	9	5	-4	5	5	0	3	1	-2
Missing	0	0	0	2	1	-1	0	0	0	0	0	0

* Inter-year differences is significant at .01 level by Chi-Squares test.

+ Inter-year difference is not significant at .01 level by Chi-Squares test.

Table 6-10

Practice of Birth Control

Myon	Sindong Myon*			Seo Myon+			Pogok Myon*			Moonmak Myon+		
Fre.	80	81	Change	80	81	Change	80	81	Change	80	81	Change
0	143	114	-29	139	117	-22	88	94	6	138	114	-24
1	40	40	6	28	27	-1	24	19	-5	31	26	-5
2	1	14	13	11	11	0	8	7	-1	10	9	-1
3	16	26	10	4	4	0	8	5	-3	4	7	3
4	5	5	0	6	7	1	7	9	2	3	3	0
5	44	54	10	34	42	8	57	52	-5	58	61	3
6	10	9	-1	1	5	4	12	8	-4	4	4	0
No Response	32	29	-3	77	71	-6	95	78	-17	69	66	-3

Summary Table

0	143	114	-29	139	117	-22	88	94	6	138	114	-24
1	125	154	29	84	96	12	116	100	-16	110	110	0

0 = no birth control practice
1 = loop
2 = pills
3 = vasectomy
4 = tubal ligation
5 = condom
6 = other methods

Summary Table:
0 = no birth control
1 = birth control by any method, i.e., 1-6.

Chi-Squares tests conducted with the Summary Table only.

* Inter-year difference signficant at .01 level by Chi-Squares tests.

+ Inter-year difference not significant at .01 level by Chi-Squares tests.

6.3 Multivariate Analysis of the Effects of Program Inputs on Impact Variables

As mentioned before, multiple regressions are run with the impact variables as the dependent variables and the control variables and the dummy variables representing Myons as the independent variables for our final phase of data analyses (see Section 4.4, Chapter IV). All variables are converted into logarithms, whenever possible, i.e., if a variable does not contain a zero or minus value. Two sets of regressions are run: one with the 1980 data and the other with the 1981 data. Then, the results are compared to see if there exist significant differences between 1980 and 1981 in the effects of program inputs on the impact variables, as measured by b-coefficients of Myon dummy variables.

As for the control variables, data are collected for the following categories of variables: demographic, socioeconomic and attitudinal factors (see Section 5.3, Chapter V).

Of many variables representing the demographic characteristics of a household, the following variables are selected and inserted into all regressions. The selection is done by step-wise regressions which select each variable from all the available candidates in order of their contribution to R squares. The demographic variables thus selected are: (1) family size, (2) family composition, and (3) the marital status of household trend. For socioeconomic variables, the computer selected (1) educational level of the household head, (2) economic status, (3) occupation of the household head, and (4) whether a household has medical insurance or not. Attitudinal variables are represented by a single variable indicating the housewife's attitude toward seeking medical care. All these selected variables are inserted in all the regressions run.

Tables 6-11a through 6-14c present the results of regressions run with various variables representing the intensity of utilization of one kind or another health facility. In analyzing the effects on the utilization of health facilities, at first, regressions are run with the data for those households which had at the least one case of illness in the family during the week preceding the interview. The results as shown in Tables 6-11a and 6-11b indicate that although R squares are .44 for the 1980 data and .51 for the 1981 data, only the regression run with 1980 data is statistically significant at .02 level. This may be attributable to the smallness of the number of observations (72 and 76 for 1980 and 1981 respectively) rather than to the fitness of the model.

As for the control variables, none of their b-coefficients turned out to be statistically significant except those representing health workers' home visits and the attendance at mothers' club meetings. As expected these control variables have positive b-coefficients indicating that those who receive health workers' visits more often and those who attend mothers' club meetings more often also visit health facility more often than others. The signficance of this finding is ambiguous in so much as these independent variables are also the impact variables.

Inter-Myon difference in the number of visits to a health facility is insignificant except that between Pogok Myon and Shindong Myon in 1980. Pogok Myon residents had a significantly higher number of visits than those who live in Shindong Myon. The difference, however, became insignificant in 1981.

When the inter-Myon differences, as shown by b-coefficients of Myon dummy variables in 1980, are compared with those in 1981, only that between Shindong Myon and Moonmak Myon changed (statistically) significantly

Table 6-11a

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Preventive or Curative Services/Month (Include Only Those Households Which Had at Least a Case of Illness During the Week Preceding the Survey).

n=72 1980 Data

Independent Variables	B	SE(B)	(Note)
Family size	.186	.124	
Educational level of household head	.383	.258	1. include
Economic status	-.163	.422	Civil servants,
Number of health worker's home visit	.757*	.426	company employees,
Number of attendance at mother's club	.726*	.424	skilled workers,
* Family composition			military personnels,
Older people living $ no {children / pregnant woman}	-.517	.694	workers assigned to overseas.
Children living $ no {older people / pregnant woman}	-.197	.473	
Children $ Pregnant woman living $ no {older people}	.191	1.051	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	-.197	1.155	whenever ill
Merchant or vendors	.721	.820	0=will not seek
Workers on salary 1	-.633	.692	
Labourers	-.338	.763	
Other occupations	-.631	.756	R^2= .444
Farmers 2	—	—	Adjusted R^2= .226
Mother's attitude toward medical care	.738	.943	Overall F-Significance
Medical Insurance	.175	.493	= .02
* Marital status of household head			
Unmarried	NO	case	
Separated	2.327	1.801	Coefficient signific-
Widow or Widower	-.532	1.095	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	-.371	.735	
POGOK MYON	1.426*	.807	
MOON MAK MYON	.592	.631	
CONSTANT	-.693	1.314	

Table 6-11b

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Preventive or Curative Services/Month (Include Only Those Households Which Had at Least a Case of Illness During the Week Preceding the Survey).

n=76 1981 Data

Independent Variables	B	SE(B)	(Note)
Family size	-.069	.156	
Educational level of household head	.395	.323	1. include
Economic status	.070	.451	Civil servants,
Number of health worker's home visit	.139	.439	company employees,
Number of attendance at mother's club	—	—	skilled workers,
* Family composition			military personnels,
Older people living $ no (children / pregnant woman)	-.715	.920	workers assigned to overseas.
Children living $ no (older people / pregnant woman)	-.921	.646	
Children $ Pregnant woman living $ no (older / people)	-3.040	1.950	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	.349	2.075	whenever ill
Merchant or vendors	—	—	0=will not seek
Workers on salary 1	-.105	.924	
Labourers	-.886	1.141	Multiple R = .51287
Other occupations	.577	.852	R^2= .26303
Farmers	—	—	Adjusted R^2= .03931
Mother's attitude toward medical care 2	-.722	1.241	Overall F Significance = .314
Medical Insurance	—	—	
* Marital status of household head			
Unmarried	—	—	
Separated	-1.456	2.339	Coefficient significance level
Widow or Widower	.683	2.499	
Married	—	—	*** 0.01
			** 0.05
* Myon	—	—	* 0.1
SHIN DONG MYON	.046	.913	
SEO MYON	.065	.807	
POGOK MYON	1.494	.889	
CONSTANT	3.011	2.025	

Table 6-11c

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Preventive or Curative Services/Month (Include Only Those Households Which Had at Least a Case of Illness During the Week Preceding the Survey).

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t test for difference of two b-coefficients:

let, $Y_1 = \hat{\alpha}_0 + \hat{\alpha}_1 X_1 + \ldots$ (1980 data)

$Y_2 = \hat{\beta}_0 + \hat{\beta}_1 X_1 + \ldots$ (1981 data)

Null Hypothesis (Ho): $\alpha_1 = \beta_1$

$$t = \frac{\hat{\beta}_1 - \hat{\alpha}_1}{\sqrt{VAR(\hat{\beta}_1 - \hat{\alpha}_1)}}$$ if sample size is large → Normal distribution (Z)

1) Seo Myon
observed

Z = 0.107

Ho is accepted at the 10% significance level.

2) Pagok Myon
observed

Z = -0.909

Ho is accepted at the 10% significance level.

3) Moonmak Myon
observed

Z = -1.695

Ho is rejected at the 10% significance level.

The Normal Distribution

$$Pr(X \leq \chi) = \Lambda(\chi) = \int_{-\infty}^{\chi} \frac{1}{\sqrt{2\pi}} e^{-u^2/2} du$$

* Normal Table

χ	$\Lambda(\chi)$
1.645	0.95

---

between 1980 and 1981. (For the method of computing the significance of the difference between two b-coefficients, see Table 6-11c.) Whereas in 1980, after taking account of the effects of control variables on the dependent variable, Shindong Myon (the high integration area) residents visited a health facility less often than Moonmak Myon (the Control Area II) residents in 1980; the reverse was true in 1981. This seems to indicate that the program inputs led the former to seek health care more readily than the latter, in particular for preventive care. This confirms the result of the comparative analysis of the impact variables above.

In comparing the inter-Myon differences in the visits to a health facility in 1980 with those in 1981, another set of regressions are run with the data for all the households interviewed. The results are shown in Tables 6-12a through 6-12c. Note that as the number of observations incresed from 72 to 1,216 for 1980 and from 76 to 1,117 for 1981 data, although R squares decreased a great deal, its significance increased. Both the 1980 and 1981 regressions are now significant at .000 level by $\mathcal{F}$ ratio tests. R squares of .068 and .056 are disappointingly small. However, this is mainly due to the fact that the data used are micro-data for individual families rather than due to the weakness of the model. Regressions using grouped or macro-data usually show a much higher R squares not because of the superiority of the model but because of the lack of "noise" in the data when compared with those in micro-data. (For technical explanation, see Haitorsky and Cramer.[1])

Tables 6-12a and 6-12b show that some of the socioeconomic variables have significant impacts on the dependent variable. As expected, those who had medical insurance visited a health facility for curative or preventive care more often than those who did not in 1980 and 1981. Compared with

Table 6-12a

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Curative or Preventive Services/Month.

n=1216 1980 Data

Independent Variables	B	SE(B)	(Note)
Family size	.053	.034	
Educational level of household head	.024	.071	1. include
Economic status	.097	.104	Civil servants,
Number of health worker's home visit	.278***	.102	company employees,
Number of attendance at mother's club	.557***	.126	skilled workers,
* Family composition			military personnels,
Older people living $ no{children / pregnant woman	-.261	.178	workers assigned to overseas workers
Children living $ no{older people / pregnant woman	.171	.149	
Children $ Pregnant woman living $ no{older people	.039	.328	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	.060	.327	whenever ill
Merchant or vendors	.551**	.270	0=will not seek
Workers on salary 1	.133	.217	
Labourers	.113	.243	
Other occupations	.082	.255	R^2= 068
Farmers 2	—	—	Adjusted R^2= .051
Mother's attitude toward medical care	.093	.258	Overall F Significance
Medical Insurance	.521***	.171	= .000
* Marital status of household head			
Unmarried	-.469	.677	
Separated	-.581	.483	Coefficient signific-
Widow or Widower	.122	.262	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	-.128	.187	
POGOK MYON	.347*	.196	
MOON MAK MYON	-.353*	.186	
CONSTANT	.257	.394	

Table 6-12b

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Curative or Preventive Services/Month.

n=~~1117~~ 1117 1981 Data

Independent Variables	B	SE(B)	(Note)
Family size	.024	.035	
Educational level of household head	.031	.075	1. include
Economic status	-.046	.113	Civil servants,
Number of health worker's home visit	.147	.093	company employees,
Number of attendance at mother's club	.338***	.130	skilled workers,
* Family composition			military personnels,
Older people living $ no{children / pregnant woman	-.334*	.183	workers assigned to overseas workers
Children living $ no{older people / pregnant woman	.166	.153	
Children $ Pregnant woman living $ no{older people	.292	.330	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	.032	.283	whenever ill
Merchant or vendors	.241	.290	0=will not seek
Workers on salary [1]	.118	.218	
Labourers	.203	.255	
Other occupations	.259	.273	R^2= .056
Farmers	—	—	Adjusted R^2= .038
Mother's attitude toward medical care [2]	.102	.351	Overall F Significance
Medical Insurance	.308*	.168	= .000
* Marital status of household head			
Unmarried	-.633	.578	
Separated	-.553	.507	Coefficient signific-
Widow or Widower	-.131	.268	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	.252	.194	
POGOK MYON	.699***	.199	
MOON MAK MYON	.233	.189	
CONSTANT	.589	.470	

Table 6-12c

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Preventive or Curative Services/Month.

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1) Seo Myon
observed

t (or Z) = 1.41

Ho is rejected at the 16.2% significance level.

2) Pagok Myon
observed

Z = 1.26

Ho is rejected at the 21.2% significance level.

3) Moonmak Myon
observed

Z = 0.45

Ho is accepted at the 21.2% significance level.

The Normal Distribution Table

X	N(X)
1.40	0.919
1.25	0.094

---

farmers, those classified as merchants or vendors had a significantly higher number of visits in 1980. Families with older people but without children or pregnant women visited a health facility less often than families without children and older people. The attendance at the mothers' club meetings continues to exert positive effects on the use of health facilities. This may be intepreted as that those who participate more actively in community affairs tend to seek medical care more readily than others.

When the inter-Myon differences in the dependent variable in 1980 are compared with those in 1981, they are statistically significant for Shindong Myon vs. Seo Myon and for Shindong Myon vs. Pagok Myon but it is not significant for Shindong Myon vs. Moonmak Myon. (See Tables 6-11a through 6-11c). This is a reversal of the situation when regressions are run with the data from those who had at least one case of illness in the family.

The b-coefficients of Pogok Myon and Moonmak Myon dummy variables inserted in the 1980 regression are statistically significantly different from those in 1981 regression because the residents of these Myons incresed the number of visits more than Shindong Myon residents between 1980 and 1981.

The reason why the residents living in the high integration area increased the utilization of health facilities less than those in the Control Area II (Moonmak Myon) and the light integration area (Pogok Myon), may be found when the visits to health facilities are divded into those for curative care and those for preventive care.

Tables 6-13a through 6-13c present the results of regressions run with the number of visits to health facilities for curative care as the dependent variables and Tables 6-14a through 6-14c those of the visits for preventive care. As for the curative visits, the differences in

Table 6-13a

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Curative Services/Month.

n=1216 1980 Data

Independent Variables	B	SE(B)	(Note)
Family size	.029	.032	
Educational level of household head	F. Level	Insufficient	1. include
Economic status	.075	.094	Civil servants,
Number of health worker's home visit	.131	.096	company employees,
Number of attendance at mother's club	.548***	.118	skilled workers,
* Family composition			military personnels,
Older people living $ no{children / pregnant woman	-.266	.166	workers assigned to overseas workers.
Children living $ no{older people / pregnant woman	.141	.139	
Children $ Pregnant woman living $ no{older / people	.093	.306	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	.087	.306	whenever ill
Merchant or vendors	.582**	.252	0=will not seek
Workers on salary 1	-.097	.197	
Labourers	.023	.227	
Other occupations	.057	.236	R^2= .058
Farmers	—	—	Adjusted R^2= .043
Mother's attitude toward medical care 2	F level	Insufficient	Overall F Significance
Medical Insurance	.464***	.160	= .000
* Marital status of household head			
Unmarried	-.358	.634	
Separated	-.493	.452	Coefficient significance level
Widow or Widower	.138	.243	
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	-.010	.125	
POGOK MYON	.439**	.182	
MOON MAK MYON	-.254	.174	
CONSTANT	.413	.291	
Number of visits to hospital for preventive service	-.010	.078	

Table 6-13b

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Curative Services/Month.

n=1117 Households 1981 Data

Independent Variables	B	SE(B)	(Note)
Family size	.026	.033	
Educational level of household head	−.008	.446	1. include
Economic status	−.038	.107	Civil servants,
Number of health worker's home visit	.081	.088	company employees,
Number of attendance at mother's club	.348***	.123	skilled workers,
* Family composition			military personnels,
Older people living $ no{children / pregnant woman	−.277	.174	workers assigned to overseas workers
Children living $ no{older people / pregnant woman	.090	.145	
Children $ Pregnant woman living $ no{older people	.222	.314	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	−.189	.269	whenever ill
Merchant or vendors	.251	.275	0=will not seek
Workers on salary 1	.086	.207	
Labourers	.058	.242	
Other occupations	.250	.259	R^2= .059
Farmers	—	—	Adjusted R^2= .040
Mother's attitude toward medical care 2	.047	.333	Overall F Significance
Medical Insurance	.322**	.159	= .000
* Marital status of household head			
Unmarried	−.476	.548	
Separated	−.404	.481	Coefficient signific-
Widow or Widower	−.035	.254	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON		—	
SEO MYON	.320*	.184	
POGOK MYON	.499**	.189	
MOON MAK MYON	−.207	.179	
CONSTANT	−.056	.085	

Table 6-13c

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Curative Services/Month.

---

1) Seo Myon
observed

Z = 1.294

Ho is rejected at the 20% significance level.

2) Pogok Myon
observed

Z = 1.370

Ho is rejected at the 17.8% significance level.

3) Moonmak Myon
observed

Z = 0.189

Ho is accepted at the 20% significance level.

* Normal Table

X	N(X)
1.282	0.900
1.35	0.911

b-coefficients of Myon dummy variables between 1980 and 1981 regressions indicate that Seo Myon and Pogok Myon residents incresead the visits significantly more than Shindong Myon residents. The difference in the curative visits between Shindong Myon and Moonmak Myon changed insignificantly between 1980 and 1981.

When the inter-Myon differences in 1980 are compared with those in 1981 for preventive visits, the reverse is true. (See Tables 6-14a through 6-14c.) Compared with Shindong Myon residents, Seo Myon and Pogok Myon residents decreased their preventive visits between 1980 and 1981. However, the inter-year changes in the inter-Myon differences are insignificant. Moonmak Myon residents, on the other hand, increased their preventive visits vis-a-vis Shingdon Myon residents between 1980 and 1981. But the change is again statistically insignificant at .05 level.

The above analyses based on the separation of the visits for curative care from those for preventive care indicate that Seo Myon and Pogok Myon residents increased the overall visits to health facilities significantly more than Shindong Myon residents because they went there more often for the treatment of illnesses. As for preventive care, Shindong Myon residents increased the visits more than Seo Myon and Pogok Myon residents. This confirms the result of the previous analyses of the impact variables that Shindong Myon residents decreased their curative care visits but increased their preventive care visits between 1980 and 1981. Again the significance of this is to be found in that the program inputs may have something to do with the fact that those who live in the high integration area shifted their reliance from curactive care to preventive care.

As for the effects of the control variables on the dependent variables, the division of the visits into two categories have done little to change except the followings. In 1980, families of a greater size

Table 6-14a

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Preventive Services/Month

n-1216 1980 Data

Independent Variables	B	SE(B)	(Note)
Family size	.024**	.012	
Educational level of household head	.025	.025	1. include
Economic status	.022	.037	Civil servants,
Number of health worker's home visit	.148***	.036	company employees,
Number of attendance at mother's club	.008	.044	skilled workers,
* Family composition			military personnels,
Older people living $ no children / pregnant woman	—	—	workers assigned to overseas workers.
Children living $ no older people / pregnant woman	.030	.050	
Children $ Pregnant woman living $ no older people	−.056	.115	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	−.029	.114	whenever ill
Merchant or vendors	−.030	.095	0=will not seek
Workers on salary 1	.035	.076	
Labourers	.089	.085	
Other occupations	.024	.090	R^2= .033
Farmers 2	—	—	Adjusted R^2= .017
Mother's attitude toward medical care	.071	.090	Overall F Significance
Medical Insurance	.058	.060	= .005
* Marital status of household head			
Unmarried	−.113	.237	
Separated	−.090	.169	Coefficient signific-
Widow or Widower	−.016	.092	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	−.029	.066	
POGOK MYON	−.093	.069	
MOON MAK MYON	−.099	.065	
CONSTANT	−.136	.137	

Table 6-14b

D.V.: Number of Visits to Hospital, Pharmacy, Health Center or Herb Doctor for Preventive Services/Month.

n=1117 Households 1981 Data

Independent Variables	B	SE(B)	(Note)
Family size	F level	insufficient	
Educational level of household head	.038	.023	1. include
Economic status	F level	insufficient	Civil servants,
Number of health worker's home visit	.008**	.031	company employees,
Number of attendance at mother's club	F level	insufficient	skilled workers,
* Family composition			military personnels,
Older people living $ no{children / pregnant woman	-.061	.062	workers assigned to overseas workers
Children living $ no{older people / pregnant woman	.082	.051	
Children $ Pregnant woman living $ no{older people	.079	.111	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	.235**	.094	whenever ill
Merchant or vendors	F level	insufficient	0=will not seek
Workers on salary 1	.028	.067	
Labourers	.159*	.082	
Other occupations	F level	insufficient	R^2= .037
Farmers	—	—	Adjusted R^2= .024
Mother's attitude toward medical care 2	.060	.118	Overall F Significance
Medical Insurance	F level	insufficient	= .000
* Marital status of household head			
Unmarried	-.144	.194	
Separated	-.154	.171	Coefficient signific-
Widow or Widower	-.097	.089	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon		—	* 0.1
SHIN DONG MYON			
SEO MYON	-.068	.065	
POGOK MYON	-.099	.064	
MOON MAK MYON	-.020	.062	
CONSTANT	.008	.135	

Table 6-14c

D.V.: Number of Visits to Hospital, Health Center, Pharmacy or Herb Doctor for Preventive Services/Month.

---

1) Seo Myon
observed

Z = -0.438

Ho is accepted at the 5% significance level.

2) Pogok Myon
observed

Z = 0.632

Ho is accepted at the 5% significance level.

3) Moonmak Myon
observed

Z = 0.888

Ho is accepted at the 5% significance level.

* Normal Table

X	N(X)
1.96	0.975

visited health facilities for preventive care significantly more often than those of a smaller size. Note also that those classified as unemployed or economical inactive and laborers had a significantly higher number of preventive visits than farmers in 1981, whereas there was no significant difference in 1980. The reasons for this are difficult to assess.

Regressions run with the number of health workers' home visits as the dependent variables show a better fitness of the model and a more clear-cut, consistent result on the central hypotheses of this study (see Tables 6-15a and 6-15b). R squares are now respectably .188 for 1980 and .167 for 1981. This improvement in the model is reflected in the performance of the control variables inserted. 9 control variables have significant b-coefficients in the regression run with the 1980 data and 6 in those run with the 1981 data. Households with a higher level of educational achievement and occupational categories (salary workers and other non-farmers vs. farmers) and those with a more ready attitude to seek medical care have received a greater number of home visits compared with other households.

The difference in family composition now plays a greater role in influencing the number of visits. Families with children or pregnant women received a significantly greater number of visits than those without them both in 1980 and 1981. This must be due to the fact that health workers' home visits are mainly for family planning and maternal and child health care.

When the inter-Myon differences in the home visits in 1980 are compared with those in 1981, the result unequivocally supports one of the central hypotheses of this study. Whereas Shindong Myon residents received the home visits in a significantly smaller number than the other three

Table 6-15a

D.V.: Number of Health Worker's Home Visit/Month

n=1216 1980 Data

Independent Variables	B	SE(B)	(Note)
Family size	.011	.010	
Educational level of household head	.042**	.020	1. include
Economic status	.024	.030	Civil servants,
Number of health worker's home visit	Dependent	Variable	company employees,
Number of attendance at mother's club	.080**	.036	skilled workers,
* Family composition			military personnels,
Older people living $ no (children / pregnant woman)	−.096*	.051	workers assigned to overseas workers
Children living $ no (older people / pregnant woman)	.13***	.042	
Children $ Pregnant woman living $ no (older / people)	.279***	.093	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	.109	.093	whenever ill
Merchant or vendors	.120	.017	0=will not seek
Workers on salary 1	.122**	.062	
Labourers	.049	.069	
Other occupations	.207***	.073	R^2= .188
Farmers	—	—	Adjusted R^2= .175
Mother's attitude toward medical care 2	.120*	.074	Overall F Significance
Medical Insurance	−.048	.049	= .000
* Marital status of household head			
Unmarried	−.124	.193	
Separated	−.094	.138	Coefficient signific-
Widow or Widower	−.065	.075	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	.034	.054	
POGOK MYON	.503***	.054	
MCON MAK MYON	.509***	.051	
CONSTANT	−.320***	.112	

Table 6-15b

D.V.: Number of Health Worker's Home Visit/Month

n=1117 Households 1981 Data

Independent Variables	B	SE(B)	(Note)
Family size	.013	.011	
Educational level of household head	.052**	.024	1. include
Economic status	.020	.037	Civil servants,
Number of health worker's home visit	Dependent	Variable	company employees,
Number of attendance at mother's club	.114***	.042	skilled workers,
* Family composition			military personnels,
Older people living $ no {children / pregnant woman}	−.083	.060	workers assigned to overseas workers
Children living $ no {older people / pregnant woman}	.212***	.049	
Children $ Pregnant woman living $ no {older people}	.314***	.107	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	−.120	.092	whenever ill
Merchant or vendors	.085	.094	0=will not seek
Workers on salary [1]	−.024	.071	
Labourers	−.085	.083	
Other occupations	−.320	.889	R^2= .167
Farmers	—	—	Adjusted R^2= .152
Mother's attitude toward medical care [2]	−.030	.115	Overall F Significance
Medical Insurance	.184***	.054	= .000
* Marital status of household head			
Unmarried	−.233	.188	
Separated	−.230	.165	Coefficient signific-
Widow or Widower	−.148*	.087	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	−.303***	.627	
POGOK MYON	−.329**	.064	
MOON MAK MYON	−.[illegible]**	.060	
CONSTANT	.617***	.152	

Myons' residents in 1980, in 1981 the reverse is true. Thus, when the inter-year change is examined for statistical significance, it is significant for Shindong Myon vs. Pogok Myon and Shindong Myon vs. Moonmak Myon but insignificant for Shindong Myon vs. Seo Myon. (See Table 6-15c.)

The central hypothesis of this study is that, compared with the segmented program, the integrated program exerts different effects on the impact variables on the virtue of its mode of delivery, not because of its magnitude of service delivered. Therefore, although the above result is unequivocal in its implications, to the extent to which the home visits by health workers reflect the magnitude of program inputs, the conclusion that the above regressions support one of the hypotheses of the study should be made with a great deal of caution.

So far, the impact variables or the performance variables on which the effects of the program inputs examined, are various variables representing the intensity of the utilization of health care for curative and/or preventive purpose. These performance variables are, however, not the final outcome variables, which are health stauts. As mentioned before, the intensity of the health care utilization is used in lieu of health status as the performance variable because the period between the surveys, i.e., one year, is thought to be too short for the program inputs to exert any effect on them. It is assumed that a better use of health care would lead to a better health.

Next, we examine the effects of the program inputs on another kind of performance variable, namely, fertility. Again, in consideration of the brevity of the time period during which the program inputs are expected to exert influence, the current practice of family planning is used as the

Table 6-15c

D.V.: Number of Health Worker's Home Visit/Month

---

1) Seo Myon
observed

$Z = 0.536$

Ho is accepted at the 1% significance level.

2) Pagok Myon
observed

$Z = 9.905$

Ho is rejected at the 1% significance level.

3) Moonmak Myon
observed

$Z = -1.550$

Ho is rejected at the 12.2% significance level.

* Normal Table

X	N(X)
2.60	0.995
1.55	0.939

performance variable in lieu of fertility. Tables 6-16a through 6-16c show the result of such examination.

Although R squares for the regressions with family planning practice as the dependent variables are less than those for the regressions with health workers' home visits as the dependent variables, they are greater than for all other regressions run with all sample observations. This indicates that the model used for these regressions is a relative good one compared with that used for other regressions.

When the inter-Myon differences in the family planning practice in 1980 are compared with those in 1981, for the difference between Shindong Myon and Pogok Myon and that between Shindong Myon and Moonmak Myon, the magnitude of difference increased (statistically) significantly between the years. On the other hand, the difference between Shindong Myon and Seo Myon decreased between 1980 and 1981, but the decline was statistically insignificant at .16 level. This indicates that, after taking account of the effects of the control variables on the dependent variable, the program inputs apparently have had an effect of increasing family planning acceptance rate among the residents of the high integration area (Shindong Myon) in comparison with Pogok Myon and Moonmak Myon residents. The importance of this finding may be sought in that those who had vasectomies constitute the biggest group among those Shindong Myon residents who switched from non-acceptors to acceptors in 1981 (see Table 6-10).

As for the control variables, most variables representing demographic, socioeconomic and attitudinal variables have significant b-coefficients in the regression run with the 1980 data and, to a lesser extent, in that run with the 1981 data. As expected, families of a greater size practiced family planning significantly more than those of a smaller size both in

Table 6-16a

D.V.: Practice of Family Planning

* Value Assignment { Family with Family Planning: 1
Family without Family Planning: 0

1980 Data

Independent Variables	B	SE(B)	(Note)
Family size	.031***	.010	
Educational level of household head	—	—	1. include
Economic-status	.020	.028	Civil servants,
Number of health worker's home visit	-.043	.031	company employees,
Number of attendance at mother's club	.106***	.035	skilled workers,
Family composition			military personnels,
Older people living $ no { children / pregnant woman	—	—	workers assigned to overseas workers.
Children living $ no { older people / pregnant woman	-.024	.038	
Children $ Pregnant woman living $ no { older people	-.379***	.084	
None of the above	—	—	2.
Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	-.029	.118	whenever ill
Merchant or vendors	-.016	.071	0=will not seek
Workers on salary 1	.110**	.056	
Labourers	—	—	Multiple R = .28144
Other occupations	.093	.069	R^2 = .07921
Farmers			Adjusted R^2 = .06011
Mother's attitude toward medical care 2	.095	.780	Overall F Significance
Medical Insurance	-.091**	.049	= .000
Marital status of household head			
Unmarried	.334	.264	
Separated	-.374**	.170	Coefficient significance level
Widow or Widower	-.284*	.147	
Married	—	—	*** 0.01
			** 0.05
Myon	—	—	* 0.1
SHIN DONG MYON			
SEO MYON	-.115**	.051	
POCOK MYON	-.088*	.056	
MOON MAK MYON	-.007	.051	
CONSTANT	.811	.111	

Table 6-16b

D.V.: Practice of Family Planning

* Value Assignment { Family with Family Planning: 1
Family without Family Planning: 0

1981 Data

Independent Variables	B	SE(B)	(Note)
Family size	.033**	.012	
Educational level of household head	———	———	1. include
Economic status	.068**	.034	Civil servants,
Number of health worker's home visit	.008	.029	company employees,
Number of attendance at mother's club	.028	.040	skilled workers,
* Family composition			military personnels,
Older people living $ no / children pregnant woman	-.026	.066	workers assigned to overseas workers
Children living $ no / older people pregnant woman	———	———	
Children $ Pregnant woman living $ no / older people	-.531***	.091	
None of the above	———	———	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Economically inactive	-.090	.103	whenever ill
Merchant or vendors	-.011	.087	0=will not seek
Workers on salary 1	.008	.062	
Labourers	.039	.080	
Other occupations	.101	.082	R^2=
Farmers 2	———	———	Adjusted R^2=
Mother's attitude toward medical care	-.016	.128	Overall F Significance
Medical Insurance	-.107**	.052	=
* Marital status of household head			
Unmarried	.168	.243	
Separated	-.086	.173	Coefficient significance level
Widow or Widower	-.283*	.153	
Married	———	———	*** 0.01
			** 0.05
* Myon	———	———	* 0.1
SHIN DONG MYON	-.113*	.061	
SEO MYON	-.101	.062	
POGOK MYON	-.116**	.058	
MOON MAK MYON			
CONSTANT	.674	.163	

Table 6-16c

D.V.: Number of Health Workers' Home Visits

---

1) Seo Myon

Z (or t) = .02516

Ho is accepted at the 16.2% significance level.

2) Pogok Myon

Z (or t) = 0.156

Ho is rejected at the 16.2% significance level.

3) Moonmak Myon

Z (or t) = 1.42

Ho is rejected at the 12.2% significance level.

** Normal Table

X	N(X)
1.40	0.919
1.55	0.939

1980 and 1981. It is interesting to note that unmarried household heads practiced family planning more than those who were married.

As expected, households of a higher economic status and occupational categories (in comparison with farmers) practiced family planning in a signficantly greater number than those of a lower status and farmers in 1980 and 1981. Those with a record of a higher rate of attendance at mothers' club meetings practiced family planning significantly more than those with a record of a lower rate in 1980, but in 1981, the difference became insignificant. Those with medical insurance practiced family planning in a significantly smaller number than those without it both in 1980 and 1981. This may be because those with medical insurance may rely on induced abortion as a mean of fertility control more than those without medical insurance.

The third category of performance variable, on which the effects of program inputs are examined, is community participation. As we attempted to come up with variables representing community participation which does not rely on individual perception, the only variable on which we can obtain the necessary data was the attendance at mothers' club meetings. The role of mothers' club is explained in Section 5.1, Chapter V.

Tables 6-17a through 6-17c show that when the attendance at mothers' club meeting is used to represent the intensity of community participation, one of the central hypotheses of this study is clearly supported. In 1980, after taking account of the effects of control variables on the impact variable, the attendance rate for Shindong Myon housewives was higher than that for the three other Myons. However, the difference was statistically insignificant. In 1981, the difference increased to the extent that it is now significant at .01 level for that between Shindong Myon and the two

Table 6-17a

D.V.: Number of Attendance at Mother's Club/Month

n=1216 1980 Data

Independent Variables	B	SE(B)	(Note)
Family size	.008	.008	
Educational level of household head	.026	.016	1. include Civil servants, company employees, skilled workers, military personnels, workers assigned to overseas workers
Economic status	.054**	.024	
Number of health worker's home visit	.052**	.023	
Number of attendance at mother's club	Dependent Variable		
* Family composition			
Older people living $ no (children / pregnant woman)	-.052	.041	
Children living $ no (older people / pregnant woman)	-.056*	.034	
Children $ Pregnant woman living $ no (older people)	-.177**	.076	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care whenever ill
Unemployed $ Economically inactive	-.063	.075	
Merchant or vendors	-.128**	.062	0=will not seek
Workers on salary 1	-.098**	.050	
Labourers	-.059	.056	
Other occupations	-.087	.059	R^2= .032
Farmers	—	—	Adjusted R^2= .016
Mother's attitude toward medical care 2	-.081	.060	Overall F Significance = .007
Medical Insurance	.015	.040	
* Marital status of household head			
Unmarried	.054	.156	
Separated	-.069	.111	Coefficient significance level
Widow or Widower	-.034	.060	
Married	—	—	*** 0.01
			** 0.05
* Myon	—	—	* 0.1
SHIN DONG MYON	-.044	.043	
SEO MYON	.006	.045	
POGOK MYON	-.009	.043	
MOON MAK MYON	.205**	.091	
CONSTANT			

Table 6-17b

D.V.: Number of Attendance at Mother's Club/Month

n=1117 Households 1981 Data

Independent Variables	B	SE(B)	(Note)
Family size	.009	.008	
Educational level of household head	.008	.017	1. include
Economic status	.057**	.026	Civil servants,
Number of health worker's home visit	.058***	.021	company employees,
Number of attendance at mother's club	Dependent	Variable	skilled workers,
* Family composition			military personnels,
Older people living $ no{children / pregnant woman}	-.091**	.042	workers assigned to overseas workers
Children living $ no{older people / pregnant woman}	-.030	-.035	
Children $ Pregnant woman living $ no{older people}	-.117	.077	
None of the above	—	—	2.
* Occpation of household head			1=will seek medical care
Unemployed $ Fconomically inactive	-.029	.066	whenever ill
Merchant or vendors	.109	.067	0=will not seek
Workers on salary 1	-.014	.051	
Labourers	-.021	.059	
Other occupations	-.032	.063	R^2= .084
Farmers	—	—	Adjusted R^2= .067
Mother's attitude toward medical care 2	-.146*	.081	Overall F Significance
Medical Insurance	.060	.039	= .000
* Marital status of household head			
Unmarried	-.243*	.134	
Separated	-.090	.117	Coefficient signific-
Widow or Widower	-.112*	.062	ance level
Married	—	—	*** 0.01
			** 0.05
* Myon			* 0.1
SHIN DONG MYON	—	—	
SEO MYON	-.176***	.045	
POGOK MYON	-.029	.046	
MOON MAK MYON	-.193***	.043	
CONSTANT	.375***	.108	

Table 6-17c

D.V.: Number of Attendance at Mother's Club / Month

---

1) Seo Myon
observed

Z = -2.095

Ho is rejected at the 5% significance level.

2) Pogok Myon
observed

Z = -0.365

Ho is accepted at the 5% significance level.

3) Moonmak Myon
observe d

Z = -2.905

Ho is rejected at the 5% significance level.

* Normal Table

X	N(X)
1.96	0.995

control areas, namely, Seo Myon and Moonmak Myon. The difference in the attendance rate between Shindong Myon (high integration area) and Pogok Myon (light integration area) remains insignificant.

The t tests of the difference between two sets of b-coefficients, those for 1980 and those for 1981, confirm that inter-Myon differences in the attendance rate for Shindong Myon vs. the control areas changed significantly (at .05 level) between 1980 and 1981. Therefore, to the extent to which the attendance rate at mothers' club meetings represents community participation, the hypothesis that an integrated program vis a vis a segmented program enhances community participation is clearly supported.

This conclusion is buttressed by the fact that the model used is significant at .007 level and that control variables did their jobs well. Note that among the control variables inserted, the people with a higher economic status attended the meeting significantly more often than others both in 1980 and 1981. Health workers' home visits apparently prompted housewives to attend the meetings as they influenced families to visit health facilities more readily. Both in 1980 and 1981, those who received a greater number of home visits attended the meetings significantly more often than others. Compared with farmers, those households whose heads are workers on salary and merchant or vendors attended the meetings significantly less often in 1980. The difference, however, became insignificant in 1981.

One of the central hypotheses of this study is about program efficiency. For this study, the data on costs turn out to be most difficult to collect. There are no accounting data on costs allocated on the basis of function. Only data we have been able collect are the monthly budgets for health centers, the entire amount of which is routinely spent each month.

Tables 6-18a through 6-18c show the monthly budget for each Myon and the number of health workers' home visits and that of the visits to a health center for each Myon. The budget covers the entire cost of health workers' activities and that of the halth center's operation. As shown in Table 6-18a, when the budget is divided by the number of home visits and the visits to a health center, for Shindong Myon and Seo Myon, the cost per service decreased by 7,700 wons and 6,060 wons per service and about 77 and 66 percent, respectively. (About 700 wons equal one U.S. dollar). For Pogok Myon and Moonmak Myon, it substantially increased between 1980 and 1981.

This does not necessarity lead one to conclude that program inputs into Shindong Myon and Seo Myon between 1980 and 1981 enhanced the efficiency of health and population program there in comparison with the other two Myons. An examination of Table 6-18a indicate that this is brought about by the fact that while the budgets increased by about the same proportions (about 9 percent) for all the four Myons between 1980 and 1981, the number of the visits increased more than four times for Shindong Myon and more than three times for Seo Myon. On the other hand, the volume of services received actually declined substantially for Pogok Myon and Moonmak Myon between 1980 and 1981. Therefore, to the extent to which a greater utilization of resource leads to a greater efficiency and to the extent to which this greater use is brought about by program inputs, the hypthesis of this study about efficiency is supported. On the other hand, to the extent to which the increase in the utilization is brought about by the inputs from the outside where some of its contribution is not supported by the budget, the above inference should be qualified.

Table 6-18: Analysis of Cost/Service (₩ 700 ≒ U.S. $1).

(a) N.V. = Summation of Number of Health Worker's Home Visits and Total Number of Visits to Health Center.

Year	1980			1981			Change of Cost/ Service
Myon	N.V	Budget/ Month	Cost/ Service	N.V.	Budget/ Month	Cost/ Service	
Sindong Myon	76	758,333	9,978	366	833,333	2,277	-7,701
Seo Myon	62	566,666	9,140	203	625,000	3,079	-6,061
Pogok Myon	194	533,333	2,749	153	583,333	3,813	1,064
Moonmak Myon	287	683,333	2,381	150	750,000	5,000	2,619

(b) N.V. = Total Number of Visits to Health Center.

Year	1980			1981			Change of Cost/ Service
Myon	N.V	Budget/ Month	Cost/ Service	N.V.	Budget/ Month	Cost/ Service	
Sindong Myon	44	758,333	17,235	77	833,333	10,823	-6,415
Seo Myon	52	566,666	10,897	46	625,000	13,587	2,690
Pogok Myon	44	533,333	12,121	20	583,333	29,167	17,046
Moonmak Myon	110	683,333	6,212	122	750,000	6,148	-64

(Table 6-18 continued)

(c) N.V. = Number of Health Workers Home Visits/Month

Year	1980			1981			Change of Cost/ Service
Myon	N.V	Budget/ Month	Cost/ Service	N.V.	Budget/ Month	Cost/ Service	
Sindong Myon	32	758,333	23,698	289	833,333	2,884	-20,814
Seo Myon	10	566,666	56,667	157	625,000	3,981	-52,686
Pogok Myon	150	533,333	3,556	133	583,333	4,386	830
Moonmak Myon	177	683,333	3,861	128	750,000	5,859	1,998

When the services for which the budget was spent are divided into two categories, i.e., the visits to a health center and health workers' home visits, it is shown that most of the increase in the services for Shindong Myon and all of the increases for Seo Myon occurred in health workers' home visits. In terms of the visits to a health center, the service increased for Shindong Myon and Moonmak Myon while it actually declined for Seo Myon and Pogok Myon between 1980 and 1981. Thus, the cost per service (measured by the visits to a health center) declined for the former Myons and increased for the latter Myons. In terms of health workers' home visits, as the volume of visits increased nine times for Shindong Myon and more than ten times for Seo Myon, the cost per service measured by the home visits declined accordingly for these Myons. On the other hand, for Pogok Myon and Moonmak Myon, the volume of visits declined and, therefore, the cost per service increased between 1980 and 1981. The separation of services into two categories helped us to illustrate the obvious fact, namely, the cost per the combined services declined a great deal for Shindong Myon and Seo Myon, because health workers' home visits in these Myons increased 9 to 10 times while the entire budget increased about 7 and 6 percent respectively between the two survey years.

6.4 Correlation Matrix of All Variables

As a part of selecting the impact and control variables to be used, a correlation matrix of all candidates for these variables has been constructed. After an examination of the matrix, many of the candidates are eliminated because of the lack of significant relationships between control variable candidates and the impact variable candidates and also because of the existence of close relationships between control variable

candidates. Close inter-correlations among control variables are to be avoided to alleviate the possible problems of multicollinearity. Table 6-19a presents the correlation matrix of all the variables selected to give the readers a better feel of the data.

6.5 Limitations of Data

Data problems we encountered in this study may be classified as those of conceptual and those of sampling nature. Conceptual one has to do with definitional problems. To repeat again, the objective of this study is to examine the effects on the impact variables of an integrated vs. segmented population program. In other words, we want to study the differential effects of the different modes of delivery, not those of the different volumes of services. However, there are no data that enable us to separate the effects of the difference in the mode of delivery from those in the volume of attention and services provided.

Second conceptual problem is the necessity of using the utilization of services and the practice of family planning as performance variables. Due to the shortness of the period during which the program inputs are administered, the utilization of health services and the practice of family planning are used as performance variables in lieu of health status and fertility. The relationship between the use of health care and health is not clear-cut. Also those who practice family planning this month may drop it the next month.

One sampling problem is that those who are available and respond to all questions may be atypical. The response rate problem for this study is minimal for this study because of the sampling strategy adopted for this study. As mentioned before, we adopted a method of 100

Table 6-19a

Correlation Matrix*

n=1216 1980 Data

	FS	ED	ES	HW	MC	OM	CH	CW	UE	MV	SM	LB	OJ	MA	HI	UM	SP	WD	SE	PO	MM
D. 1	.052	.080	.090	.108	.136	-.071	.065	.011	-.018	.042	.078	-.012	.025	.021	.108	-.030	-.034	-.011	-.065	.087	-.068
D. 2	.028	.052	.075	.072	.138	-.067	.051	.012	-.007	.047	.060	.018	.021	.013	.092	-.026	-.030	.005	-.063	.102	-.070
D. 3	.074	.089	.059	.119	.020	-.027	.052	-.001	-.032	-.004	.063	.014	.015	.038	.065	-.019	-.018	-.047	-.018	-.024	-.009
D. 4	.055	.100	.084	.085	.113	-.057	.063	.015	-.004	.049	.087	-.021	.012	.014	.131	.019	-.031	-.023	-.082	.023	-.043
D. 5	.066	.155	.069	.053	.045	-.044	.079	.070	-.045	.082	.078	.008	.030	-.001	.107	-.026	-.014	-.030	-.040	-.026	-.007
D. 6	0.022	.012	.104	.003	.052	-.020	-.011	-.031	.024	-.027	.071	-.040	-.036	.022	.105	-.014	-.020	.007	-.044	-.004	-.018
D. 7	-.023	-.054	.208	.031	.121	-.044	-.004	-.023	-.016	-.060	-.044	.050	.032	-.016	-.077	-.024	-.034	.044	.003	.269	-.137
D. 8	-.004	.029	-.029	.168	.050	-.053	.038	-.010	.013	.033	.045	.028	.008	.034	.096	-.001	.007	-.038	-.021	-.047	.113
D. 9	= HW																				
D. 10																					
D. 11	= MC																				
FS																					
ED	.084																				
ES	.177	.360																			
HW	-.014	.113	.035																		
MC	.062	.057	.097	.062																	
OM	.023	-.123	.107	-.097	-.022																
CH	.043	.172	-.039	.086	-.033	-.269															
CW	-.066	.121	.032	.113	-.049	-.087	-.126														
UE	-.160	-.102	-.077	-.023	-.030	.092	-.040	-.042													
MV	-.017	.084	.053	.047	-.042	-.003	.076	-.015	-.053												
SM	-.031	.385	.203	.080	-.013	-.108	.170	.111	-.092	-.110											
LB	-.095	-.063	-.257	-.018	-.031	-.044	-.022	.003	-.062	-.075	-.129										
OJ	-.029	.089	.010	.115	-.017	-.045	.042	.030	-.057	-.069	-.119	-.081									
MA	.012	.090	.080	.051	-.026	-.061	.037	-.002	-.066	.065	.055	-.077	.001								
HI	-.009	.307	.204	-.033	.009	-.019	.085	.017	.016	-.044	.484	-.038	-.015	.055							
UM	-.037	.040	-.016	-.042	.010	.036	-.037	-.018	-.019	-.023	.009	-.027	.011	-.015	-.009						
SP	-.066	.002	-.041	-.011	-.026	-.038	.020	-.026	.037	-.005	.085	.009	.015	-.201	.064	-.012					
WD	-.204	-.243	-.119	-.044	-.040	.068	-.107	-.056	.296	.026	-.120	-.010	-.011	-.051	-.079	-.025	-.036				
SE	.097	-.103	-.009	-.232	-.027	.067	-.045	-.053	-.012	-.027	-.204	-.109	-.038	-.001	-.081	.055	-.043	-.034			
PO	-.082	-.181	.010	.191	.016	.006	-.085	.043	.003	-.096	-.094	.013	.162	-.069	-.198	-.031	-.015	.119	-.324		
MM	-.082	.087	-.110	.228	.004	.013	-.019	.036	-.013	.113	.059	-.009	-.043	.042	-.013	-.034	.026	-.046	-.335	-.342	

Table 6-19b

List of variables

D_1 = Number of visits to Hospital, Pharmacy, Health Center or Herb doctor for curative or preventive services/month

D_2 = Number of visits to Hospital, Pharmacy, Health Center or Herb doctor for curative services/month

D_3 = Number of visits to Hospital, Pharmacy, Health Center or Herb doctor for preventive services/month

D_4 = Weighted number of visits to Hospital, Pharmacy, Health Center or Herb doctor for preventive or curative services/month

D_5 = Number of visits to individual Hospital for preventive or curative services/month

D_6 = Number of visits to General Hospital for preventive or curative services/month

D_7 = Number of visits to Pharmacy/month

D_8 = Number of visits to Health Center/month

D_9 = Number of Health worker's Home visits/month

D_{10} = Number of visits to Hospital, Pharmacy, Health Center or Herb doctor for preventive or curative services/month (include only those households where there was one case of illness within a week prior to survey)

D_{11} = Number of attendance at Mother's club/month

FS = Family size

ED = Education year of household Head

ES = Economic Status

HW = D_9

MC = D_{11}

OM = existence of old man or woman

CH = existence of child

CW = existence of child and pregnant woman

UE = State of unemployment

MV = Merchant or vendors

SM = Workers on salary

LB = Labourer

OJ = Other occupations

MA = Mother's attitude

MI = Medical Insurance

UM = Unmarried

SP = Separated

WD = Widow or widower

SE = Seo Myon

PO = Pogok Myon

MM = Moonmak Myon

percent sampling of Enumeration Districts selected. By saturation tactic, we succeeded in getting over 90 percent response rate both in 1980 and 1981 except for Seo Myon, which had about 82 percent response rate in 1980. Nevertheless, Shindong Myon, the high integration area, consistently had a higher rate of response than the other three Myons. So-called "Hawthorne Effect" may be at work in sampling also.[2]

Another sampling problem we had is that information on the use of health facilities, health workers' home visits, the attendance of mothers' club meetings and episodes of illness has to be confined for the occurances during one month preceding the interview. This is because interviewees' recollectin of events beyond one month is hazy. To the extent to which the month preceding the interview was less typical one for a Myon's residents than for another Myon's residents, the data may be biased.

The selection of the sample, experimental site may also pose a problem for this study. Sindong Myon which has been chosen for high integration site had been also the demonstration site for the Seoul National University Community Health Program. Thus, the reactions of its residents to the integrated program may be different from those of other Myons' residents. However, the result may also be to strengthen the validity of the conclusions reached from this study. This is because that as Shindong Myon's residents had been receiving more attention than those living in other Myons, the reactions to the integrated program may be less pronounced than those of other Myons' residents.

Finally, there may be a sampling problem in that we failed to interview in 1981 all of those interviewed in the baseline survey in 1980. To the extent to which the inter-year sampling discrepency differs among the four Myons, the inter-year analysis of data may be based on inaccurate data.

Footnotes

[1]Yoel Haitovsky, "Regression Estimation from Grouped Observations," A National Bureau of Economic Research Working Paper, (261 Madison Avenue, New York 16, N.Y., October 1967.); J.S. Cramer, "Efficient Grouping, Regression and Correlation in Engel Curve Analysis," Journal of American Statistical Association, March 1964; and Yoel Haitovsky, "A Note on the Maximization of R-Square," A National Bureau of Economic Research Working Paper, (New York, January 1968).

[2]United Nations' Funds for Population Activities, On Integration of Family Planning with Rural Development, Policy Development Studies, No. 1, UNFPA, New York, 1979.

Chapter VII MAIN FINDINGS AND POLICY IMPLICATIONS

7.1 Main Findings on Hypotheses Testings

Three major hypotheses are tested in this study. They are:

I. Compared with a segmented program, an integrated program leads to a better health and fertility control;

II. Compared with a segmented program, an integrated program leads to a more active community participation; and

III. Compared with a segmented program, an integrated program leads to a more efficient program performance. Hypothesis I is supported with a varying degree of statistical confidence level where the variation depends on the surrogate variable chosen to represent health and fertility and also on the sample population selected. Hypothesis II is supported with statistically satisfactory level of confidence. However, only one variable is used to represent community participation. Hypothesis III is supported so far as the available data indicate. However, the paucity of data preculde an conclusion with a statistically satisfactory level of confidence.

7.1.1 Result of Testing Hypothesis (I) on Health and Fertility

Comparative analyses are made of the program performance of the integrated program vs. the segmented program. The relative performances of the two types of programs are analyzed by examining the inter-temporarl changes between the baseline survey and the post-treatment survey in the inter-Myon differences in the performance variables. Due to the shortness of the period during which different program inputs are expected to exert influence on the performance variables, health status is represented by the

tilization of health services and fertility by whether family planning is practiced or not.

In order to assess the "pure" effects of program inputs, multivariate analyses are conducted. They are designed to hold constant the effects on the performance variables of factors other than program inputs. In addition, comparative analyses of the relative performance of program inputs are made through cross tabulations and Chi-square tests of frequency distributions.

The results of the above analyses generally support the hypotheses I with a varying statistical level of confidence. Table 7-1 summarizes the result of the multiple regression analyses of the hypothesis (I) on health and fertility, which are represented by the utilization of health and family planning services. When the intensity of the utilization of health and family planning services are measured by the number of health workers' home visits, the hypothesis I is supported unequivocably for Shindong Myon (high integration area) vs. Pogok Myon (the light integration area) and for Shindong Myon vs. Moonmak Myon (the control area II). For Shindong Myon vs. Seo Myon (the control area I), the inter-year change in the inter-Myon difference in the visits is not statistically signficant.

Note that in 1980, all the three Myons had more health workers' home visits than Shindong Myon and the differences were statistically signficant except for Shindong Myon vs. Seo Myon. In 1981, all the three Myons had less visits than Shindong Myon and the differences were all statistically significant. Thus, one may conclude that, after taking account of the effects of control variables, something happened between the two survey years that increased health workers' home visits in Shindong Myon (statistically) significantly more than those in other Myons. Clearly

Table 7-1: Summary of Findings of Multiple Regression Analyses with the Utilization of Health and Family Planning Service as Dependent Variables.

Performance Variables		Visits to Health Facilities for Curative and Preventive Care	Visits to Health Facilities for Curative Care	Visits to Health Facilities for Preventive Care	Health Workers' Home Visits	Practice of Family Planning
Inter-Myon Difference in 1980:	SH-SE	+ (.128)	+ (.010)	+ (.029)	- (.034)	+ (.115)**
	SH-P	- (.347)**	- (.439)***	+ (.093)*	- (.503)***	+ (.088)**
	SH-M	+ (.353)**	+ (.254)	+ (.099)*	- (.509)***	+ (.007)
Inter-Myon Difference in 1981:	SH-SE	- (.252)	- (.320)**	+ (.068)	+ (.303)***	+ (.113)**
	SH-P	- (.699)***	- (.798)***	+ (.099)*	+ (.329)***	+ (.101)**
	SH-M	+ (.233)	+ (.207)	+ (.020)	+ (.424)***	+ (.116)***
Significance of Inter-year Difference in Inter-Myon Difference, 1980 vs. 1981:	SH vs. SE	Yes*	Yes*	No	No	No
	SH vs. P	Yes*	Yes*	No	Yes**	Yes*
	SH vs. M	No	No	No	Yes*	Yes*

Explanatory Note: (1) Inter-Myon difference is as shown by b-coefficient of a dummy variable representing each Myon where that for Shindong Myon is omitted. For example, b-coefficient for Seo Myon of -.128 means that Shindong Myon has more visits than Seo Myon, i.e., SH - SE = + .128.

(2) Inter-year difference in inter-Myon difference means the difference between the 1980 b-coefficient of a Myon and 1981 b-coefficient of that Myon. Significance of "yes" means that the inter-year difference is statistically significant and "no" insignificant.

(3) SH-SE means Shindong Myon minus Seo Myon, i.e., inter-Myon difference between the two Myons. P = Pogok Myon and M = Moonmak Myon.

(4) *** indicates the difference is significant at .05 level, ** at .10 level and * at .20 level.

(5) R squares of all regressions are significant of .01 level.

known event is, of course, the introduction of the integrated program in Shindong Myon. Thus, a multivariate analysis supports the hypothesis I that compared with a segmented program, an integrated program leads to a better utilization of health and family planning services, when the services are represented by health workers' home visits. However, to the extent to which health workers' home visits represent program inputs rather than performance, this conclusion should be tempered.

When the utilization of health and family planning services is represented by the visits to health facilities for curative and preventive services, the hypothesis I is refuted for Shindong Myon vs. Seo Myon and for Shindong Myon vs. Pogok Myon. For Shindong Myon vs. Moonmak Myon, the inter-year change in the visits is statistically insignificant. Whereas Sindong Myon had more vists than Seo Myon in 1980, in 1981 the reverse was the case. Sindong Myon had less visits than Pogok Myon in 1980 but the difference decreased (statistically) significantly in 1981. Compared with Moonmak Myon, Shindong Myon had more visits in 1980, but the difference decreased insignificantly in 1981.

When the visits to health facilities are divided into two categories, namely, those for curative services and those for preventive services, the reason why Shindong Myon residents decreased the use of health facilities in comparison with the residents of the three other Myons becomes known. The reason is that Shindong Myon residents shifted the emphasis from curative visits to preventive visits between the survey years in comparison with those of the three other Myons. Whereas Shindong Myon residents significantly reduced the curative visits in comparison with others between 1980 and 1981, they increased the preventive visits more than the residents of the three other Myons.

This conclusion is supported when the inter-year differences in inter-Myon differences are examined for the use of health facilities by only those households which had at the least one case of illness in the family. Whereas Shindong Myon households with one or more illness visited health facilities less than those of Moonmak Myon in 1980, in 1981, the reverse was the case (see Tables 6-11a through 6-11c). The inter-year change is statistically significant. Shindong Myon residents with one or more illnesses also had less visits than Pogok Myon in 1980, but the difference decreased in 1981. Thus, when the sample is confined to those households which had at least one illness in the family, and when health care is represented by preventive service the Hypothesis I is supported.

When fertility control is represented by the practice of family planning, the Hypothesis I on fertility is also supported by the data analysis. After taking account of the effects of control variables on the practice of family planning, Shindong Myon residents increased family planning more than the residents of the three other Myon between 1980 and 1981. The inter-year change is statistically significant for Shindong Myon vs. Pogok Myon and Shindong Myon vs. Moonmak Myon. But it is statistically insignificant for Shindong Myon vs. Seo Myon. To the extent to which the control variables did their jobs in holding constant their effects on the dependent variable, this inter-year change may be attributed to the program inputs between the survey years. In other words, the integrated program increased the family planing acceptors significantly more than the segmented program.

7.1.2 Result of Testing Hypothesis (II) on Community Participation

When the intensity of community participation is represented by the attendance at mothers' club meetings, the Hypothesis II on community participation is accepted for Shindong Myon vs. Seo Myon and for Shindong Myon vs. Moonmak Myon at the significance level of .05 (see Tables 6-17a through 6-17c). For Shindong Myon vs. Pogok Myon (the light integration area), the difference in the inter-year change is statistically insignificant.

In 1980, after taking account of effects of control variables, Shindong Myon housewives attended mothers' club meetings more often than the residents of three other Myons. But the difference is statistically insignificant. Between 1980 and 1981, Shindong Myon housewives increased their attendance rate more than those residing in the three other Myons. The difference in the inter-year change is statistically significant for Shindong Myon vs. Seo Myon and Shindong Myon vs. Moonmak Myon.

The mothers' club was established in 1974. Since then, it has been a focal point of community activities about health, sanitation and family planning. To the extent to which Shindong Myon's increase was simply due to more attention given to its residents, the above conclusion should be qualified. It is to be noted, however, that the integrated program introduced into Shindong Myon involves a change in mode of delivery, not a change in the volume of services delivered.

7.1.3 Result of Testing Hypothesis III on Program Efficiency

The result of a comparative analysis of the "cost per service" supports the hypothesis III on program performance. The cost per service figures are obtaned by dividing the health center's monthly budget for each

Myon by the number of visits to the center and that of health workers' home visits. The cost per service for Shindong Myon (the high integration area) and that for Seo Myon (the control area I) declined by about 77 and 66 percent respectively between 1980 and 1981, while the cost per service increased slightly for Pogok Myon (the light integration area) and Moonmak Myon (the control area II). This situation is brought about by the fact that for Shindong Myon and Seo Myon, health workers' home visits increased 9 to 10 times, while the entire budget increased about 7 and 6 percent respectively between the survey years. For Pogok Myon and Moonmak Myon, the number of health workers' home visits declined slightly while the budget increased by about the same proportion, 7 percent, between 1980 and 1981. (See Tables 6-18a through 6-18c.) Thus, to the extent to which Shindong Myon's volume increase is due to the integrated program and to the extent to which a greater utilization of the program services indicate the program efficiency, the Hypothesis III on program efficiency is supported for Shindong Myon vs. Pogok and Moonmak Myons. It is to be noted here that, due to data limitations, no statistical tests are conducted.

7.2 Effects of Control Variables on the Performance Variables

When the effects of selected control variables on the performance variables are analyzed through regression analyses, the results by and large confirm those of previous studies and theoretical expectations. For example, economic status has an effect of increasing the acceptance rate of family planning and the use of health care. But its effect on the use of health care is generally insignificant. On the other hand, housewives of a higher economic status attend mothers' club meetings less often than those of a lower status.

The educational level of a household head has a positive effect on the use of health care, but except for health workers' home visits, it is statistically insignificant. Surprisingly, education has no significant effect on the acceptance rate of family planning. It has a positive effect on the attendance rate at mothers' club meetings, but the effect is statistically insignificant.

Medical insurance has an effect of significantly increasing the use of health facilities for curative care but is effects on preventive visits are statistically insignificant. On the other hand, medical insurance has an effect of reducing the acceptance rate of family planning. Those who have medical insurance attend mothers' club meeting more often than those without, but the difference is statistically insignificant.

A Mothers' favorable attitude toward seeking medical care has an effect of increasing the use of health facilities. But it is statistically insignificant. It has no significant effect on the acceptance rate of family planning but it has an effect of increasing the attendance rate at mothers' club meetings.

7.3 Implications of Findings

The integration made in this program was achieved by an introduction of multipurpose workers. Multipurpose workers are trained to provide primary health care and family planning services together. The integration made is in the mode of delivery and it does not entail an increased use of resources and personnel in the provision of services. A health worker and a family planning practitioner were replaced by two multipurpose workers.

We have learned several things from this program which can be used to strengthen the integrated program to improve program performance. First,

it involves the training and reorientation of staff. The training should be conducted at two levels. One is to improve the professional ability of the staff to perform the integrated tasks assigned. The other is to improve the staff's commitment to integration.

As for improving the professional ability of the staff, teaching two different functional skills is not enough. Providing primary health care and family plannin services should be treated as one function. A trainer should have a definite idea of the process of producing a joint product which combines health and family planning services in a manner where one cannot be provided efficiently without the other. The functional relationship between the two inputs--health and family planning services--should be taught in such a manner as to enable the staff to acquire a distinctive skill which can be used only in an integrated mode of delivery. The past method of giving health workers additional training in family planning should be replaced by a training program where each trainee is given training in the skills of providing a joint, integrated product of health and family planning from the very beginning.

To this end, it is recommended that a well-defined training program of integrated program should be established. Eventually, a licensing procedure should be set up for a new profession of integrated population-health practitioners. A task force may be established to define and elaborate on the objectives, content (including the curriculum) and end product of the training program and where the graduates may be employed in what capacity. The new training program should, in due time, be able to produce new specialists in integrated care to be licensed by the Ministry of Health and Social Affairs.

The second level of training recommended to be undertaken is on the orientation and conceptual level to improve the staff's commitment to integration. In the skill training, the close functional interrelationship between health and family planning services should be stressed. In conceptual training, the close interdependence between the end products of health and family planning should be emphasized. In the former, an integration of "production process" is to be taught. In the latter, the interdependence of the end product of health care and that of family planning services should be demonstrated to the staff so that the staff may be convinced of the desirability of the integrated method for the welfare of his clients.

For some time, it has been known for health workers in the poor neighborhood that a successful health care program for their clients is not the provision of medical care alone but an improvement in their diets and shelters, i.e., in their general living conditions. The fact that a similar relationship exists between health and fertility control should be known to the staff and clients. If and when the staff is convinced of the inseparate and synergistic nature of the effects of health and family planning services, the staff's commitment to the integration is bound to improve.

An improvement in the performance of an integrated program and an expansion of the integrated program involve three steps. First, they require a firm commitment to integration on the part of policy makers. Second, a commitment on the part of those who actually perform in the field is essential. Finally, community involvement and its belief in the desirabilty of the integrated program for its members' welfare are necessary.

Seen in this way, the first step in improving community involvement is the commitment of staff to integration. If staff is committed to integration, their enthusiasm is bound to be transmitted to their clients. Such staff-community interaction would lead to an improvement in community participation and in program performance. In the data analysis, it has been shown that community participation, as represented by the attendance at mothers' club meetings, had an effect of improving the performance as represented by the use of health care and the acceptance rate of family planning (see Tables 6-12a through 6-13b and Tables 6-16a and 6-17b). An improvement in program performance would encourage policy makers' commitment to integration and strengthen the staff's commitment. This would, in turn, further improve community participation. Thus, this process would bring about a cumulative chain reaction leading to a greater community involvement and a growing improvement in program performance.

In addition to the staff's commitment to integration, a campaign on the part of staff to convince their clients of the merit of an integrated program on the basis of interdependence between health and fertility control for the welfare of the community, would enhance community involvement. Such consumer education can be conducted without fanfare as a part of delivering service in the staff's daily contacts with community members.

In the context of Korea's national population program, policy implications gathered from this study are as follows. Commitment to integration by policy makers at all levels is essential. Second, a formal training program and a licensing procedure for the staff to be employed in integrated program should be established at a national level by the Ministry of Health and Social Affairs. Third, an evaluation and monitoring

system should be instituted to discover the weakness and strength of each integrated program so that an improvement can continually be made to fit each program to the need of each community. Finally, to enhance community involvement from the start of integrated program, the field staff should be recruited from the community members as a matter of program guideline.

An appropriate organization through which the initial implementation of the above recommendation can be made, is the New Village Movements (NVM). As mentioned in Chapter II, the NVM is a national organizaion established to enlist local participation in infrastructure development and income supplement programs. Although it was originally a rural organization, today it has a nationwide structure. In 1972, family planning program was included in the NVM. However, an effective integration of family planning program with the NVM activities has not been achieved. In 1978, family planning program was given only one percent in the total NVM activities achievement index for rural communities.

In 1980, the new administration proclaimed the establishment of a democrative welfare society as a national goal for 1980s. With a greater priority given to social and welfare aspects of development, health and family programs are given a greater emphasis in the total NVM activities. This time of expanding the role of health and family planning programs in rural development is opportune time to work toward an introduction of integrated program on a nationwide basis, preferably through the NVM.

As mentioned in Chapter II, however, integrated population program is still in an experimental stage in Korea. Before integrated program is adopted even in selected sites, more studies and experiments may be needed to convince policymakers of the desirability of integration. It is hoped that this study play a part in the process of persuading policymakers of the merit of the integrated approach.