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Viet Nam: Population, Health and Nutrition Sector Review

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CURRENCY EQUIVALENTS

The Vietnamese currency is the Dong (D). A currency reform in 1985 replaced ten old dong with one new dong.

December 1990
US\$1.00 = D 6,835
D 1,000 = US\$0.15

Fiscal Year

January 1 - December 31

Weights and Measures

Metric System

ACRONYMS

ARI	-	Acute Respiratory Infections
CIDSE	-	International Cooperation for Development and Solidarity
CBR	-	Crude Birth Rate
CDD	-	Control of Diarrheal Diseases
CPCC	-	Committee for Protection and Care of Children
CDR	-	Crude Death Rate
CPR	-	Contraceptive Prevalence Rate
DRC	-	Domestic Resource Cost
DRV	-	Democratic Republic of Viet Nam
EPI	-	Expanded Program of Immunization
GDP	-	Gross Domestic Product
GNS	-	General Nutrition Survey
GNP	-	Gross National Product
GSO	-	General Statistical Office
IEC	-	Information, Education and Communication
IMR	-	Infant Mortality Rate
IUD	-	Intrauterine Device
MCC	-	Menonites Central Committee
MCH/FP	-	Maternal and Child Health/Family Planning
MERUFA	-	Medical Rubber Factory
MIS	-	Management Information System
MOH	-	Ministry of Health
MOP	-	Manpower Development Plan
NCPFP	-	National Committee for Population and Family Planning
NGO	-	Non-Governmental Organization
NIHE	-	National Institute of Hygiene and Epidemiology
NIN	-	National Institute Nutrition
PATH	-	Program for Appropriate Technology in Health
PHN	-	Population, Health and Nutrition Sector
PIACT	-	Program for the Introduction and Adaptation of Contraceptive Technology
SCERFC	-	State Committee for Economic Relations with Foreign Countries
SCF	-	Save the Children Fund
SIDA	-	Swedish International Development Agency
SRV	-	Socialist Republic of Viet Nam
TFR	-	Total Fertility Rate
UNICEF	-	United Nations
UNIDO	-	United Nations International Development Organization
UNFPA	-	United Nations Population Fund
USNCHS	-	United States National Center for Health Statistics
VAC	-	Vaon (garden), Ao (Pond) and Chan nuoi (animal husbandry)
VACVINA	-	Organization of Retired Horticulturalists
VIMEDIMEX	-	Viet Nam Medical Import Export
VINAPHA	-	Viet Nam Pharmaceutical United Enterprise
VNDHS	-	Viet Nam Demographic Health Survey
VINAFPA	-	Viet Nam Family Planning Association
WFP	-	World Food Program
WHO	-	World Health Organization

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VIET NAM

POPULATION, HEALTH AND NUTRITION SECTOR REVIEW

SUMMARY AND CONCLUSIONS

A. Introduction

i. Viet Nam's record on most social indicators is far better than that of most other countries at its income level, but a few other indicators range from average to below average. For example, the 1989 Census placed its infant mortality at 45 deaths per 1,000 live births -- a rate comparable to the average for middle income developing countries. The Census estimated average life expectancy at birth to be 65 years -- 63 years for males and 67½ years for females. Viet Nam's population growth rate of 2.1% per annum places it close to the average population growth rate of the group of low-income countries. The Census estimate of a total fertility rate of 3.8 is also close to what would be expected at Viet Nam's level of per capita income. But levels of child malnutrition in Viet Nam are high compared to other Asian countries. Thus, Viet Nam's performance on health indicators is far better than that of countries at its income level, while its performance on population and fertility is about average and on nutrition, below average. These and other incongruencies in social indicators demonstrate the exceptional gains of the PHN sector as well as the effects of poverty and an uneven performance in service delivery.

ii. Nonetheless, Viet Nam's record on fertility *decline* and health *improvement* during the last three decades has been impressive and matched by few low-income countries. For instance, the infant mortality rate was roughly halved from about 156 per 1,000 live births in 1960 to around 83 in 1979, and was then approximately halved again during the next ten years. The total fertility rate, which was 5.1 children in 1979, fell by over 25% between 1979 and 1989. A number of factors jointly contributed to the health gains achieved by Viet Nam: establishment of a vast network of primary health facilities throughout the country; implementation of a number of very effective categorical health programs to deal with preventable health problems, such as malaria, diarrheal diseases, and immunizable diseases; and high rates of adult literacy, especially among women. A strong political commitment to health resulted in a generous allocation of resources to the health sector in the past.

iii. However, beginning with reunification in 1975, a number of problems arose. Among these problems were the burden of improving the poor health infrastructure of the South, the emigration of skilled health workers from the South, sharply diminished external assistance to the population, health and nutrition (PHN) sector since 1979, acute macroeconomic instability and a deepening fiscal crisis in the mid-1980s. The political imperative traditionally accorded the health sector probably also began to ebb around the same time. Under these circumstances, inputs to the health sector -- drugs, equipment, medical supplies, maintenance -- began declining. The quality of care offered by the primary health facilities slipped as did utilization rates. Thus, a well-functioning health service system has been breaking down as a result of a number of factors, including the difficult transition from a centrally-planned economy to a market economy.

iv. As a result of these developments, the gains in health and fertility achieved over the last three decades are currently threatened. Indeed, although the evidence is sketchy and far from reliable, a few health and nutrition indicators are already beginning to show signs of reversal. There has been a major resurgence of malaria in the mountainous regions of the North and in areas bordering Cambodia, caused by scaling back of communicable disease control programs. Malnutrition rates in Viet Nam are significantly higher than those to be expected. Using conventional WHO standards, Viet Nam had a higher proportion of underweight (25%) and stunted children (56.5%) from 1987 to 1989 than almost any other low-income country in South and Southeast Asia, excepting Bangladesh and possibly Myanmar. For infants, there is evidence of recent increases in malnutrition rates.

v. There is also evidence to suggest that the health gains in the past have been distributed unevenly. There are wide disparities in PHN indicators across regions and provinces and between urban and rural areas. For example, the total fertility rate has a large variance, ranging from 2.2 children in TP Ho Chi Minh to 6.8 in Lai Chau. The infant mortality rate ranges from a low of 26 in Thai Phong to a high of 78.5 in the province of Gia Lai-Kong Tum in the Central Highlands. The proportion of children under 5 years of age that are stunted varies from 28.4% in the cities of Ho Chi Minh and Hanoi to 64.6% in the Red River Delta, a chronic food deficit area. In general, the mountainous areas of the North and the Central Highlands have the highest levels of infant mortality and fertility, while the deltas of the Red River and the Mekong River have the lowest.

B. Population and Family Planning

vi. Fertility rates have declined in Viet Nam, in part because of a sharp decline in total infant mortality and due to the density of public service providers (see Annex A for details of the statistical analysis). Strong governmental commitment to the family planning program should get a large share of the credit for lower fertility rates. The Government has recognized that rapid population growth is a serious constraint to economic development, and has consequently committed itself to a long-term family planning program. In spite of its low share in the national budget, the program now appears to be better funded than other government programs, and enjoys support at the highest levels of government.

vii. The success of the Government's effort is apparent in the very high levels of contraceptive awareness in the country, and thus further reductions in fertility may be a problem of supply rather than demand. Available evidence suggests that there is already a large latent demand for fertility regulation and birth control among Vietnamese couples; actual usage of modern contraception is constrained, in some part, by the inadequate supply of contraceptives and the virtual absence of contraceptive method choice.

viii. Population Indicators. The age pyramid in Viet Nam has a very wide base and a narrow top (especially starting with the age group 35 years), reflecting the influence of wars during the 35 years, 1945 to 1979. As a result, the proportion of children aged 14 years and lower is exceptionally high, at 39%, and the median age of the population is low (20.2 years in 1989). A consequence of the youth-heavy population structure is that birth rates, although falling, will remain high for some time. Given the population

growth momentum, the addition of some 30 million people to the Vietnamese population during the next 25 years is almost inevitable. This growth in population to 100 million people may well have serious repercussions on the economy, environment, and health care system.

ix. Another unique characteristic of Viet Nam is its extraordinarily low sex ratio (i.e., the number of males per 100 females), reflecting the loss of males due to war and the large-scale migration that followed. In 1989, the sex ratio was 92, with lower ratios in most of the prime reproductive ages. It is possible that the birth rate fell sharply in recent decades because a large cohort of women were either separated from their husbands or widowed. As the sex ratio increases, it is plausible that the decline in birth rates may slow down or even stall. It is therefore imperative for the Government to sustain the progress achieved by the family planning program in the past.

x. Contraceptive Prevalence and Methods. With 53.8% of the married women aged 15-49 years reporting use of contraceptives in the 1988 Demographic and Health Survey, the contraceptive prevalence rate (CPR) is high. However, a large proportion of the women (28.5%) use traditional, less-effective methods like withdrawal and natural rhythm. A CPR of 54% for 1988 is quite similar to the CPRs in other Asian countries, such as Thailand (68%) and Indonesia (46%), that began family planning programs about the same time as Viet Nam and have roughly comparable age and nuptiality structures.

xi. A peculiarity of contraceptive use in Viet Nam is the lop-sided distribution of modern contraceptive methods, with an overwhelming 87% of contracepting women relying on the intrauterine device (IUD), and methods such as sterilization, condoms, and pills being rarely used. The IUD has been the main method of choice because of its low cost, the provision of free supplies from the Eastern European countries, the non-availability of imported supplies of pills and condoms due to lack of foreign exchange, and its appeal among health workers because of its durability of protection and easier monitoring. In addition, the low usage of sterilization in Viet Nam is puzzling, because sterilization is a physician-intensive contraceptive method and there is no dearth of such health workers in the country. Perhaps, the long exposure to war and the consequent death of many young men has made Vietnamese women less enthusiastic about a permanent method like sterilization. Another possible reason for the lack of popularity of sterilization is that, the training, surgical equipment and facilities for such operations are simply lacking at most health centers.

xii. Another outcome of the shortage of contraceptives is the practice of menstrual regulation and induced abortion. Owing to the sheer lack of alternatives and the Government's laissez-faire attitude, menstrual regulation and induced abortion have become popular according to survey results, and their use has increased sharply in recent years. However, the Government, in cooperation with the UNFPA, is planning for a 50% reduction in the rate of induced abortions by the year 2000.

xiii. Unmet Need for Family Planning. According to the 1988 Demographic and Health Survey, the unmet need for contraception -- that is, the proportion of couples who reportedly wish to regulate their fertility but are not using any contraceptives -- is very large (almost 41% of the women surveyed). The same survey showed that the total wanted fertility for women aged 15-44 was

2.5 children, but that their actual total fertility rate was 4.5 children. In rural areas, total wanted fertility was 2.6 children, whereas actual fertility was 5 children. The sheer magnitude of the difference between wanted and actual fertility suggests a very large unmet need for family planning in Viet Nam. A third of the surveyed women cited possible health risks and cultural factors as reasons for not using contraception. It is not clear what proportion of the unmet need for family planning methods is due to the lack of availability of contraceptives, but casual empiricism suggests that it is likely to be large.

xiv. Supply of Family Planning Services. Since the provision of family planning information and services is integrated with the provision of basic health care services in Viet Nam, many of the issues relating to the reform of the health care system are relevant to the family planning program as well. For example, a more rational management information system and retraining of health workers in newer family planning methods are needed to improve productivity in the family planning sector. In addition, this sector review suggests the need to expand the supply and distribution of contraceptives and to increase the variety of contraceptive methods available to couples. The evidence from other countries suggests that pills and condoms are the preferred birth control methods, especially among newly-married and younger women interested in delaying their first pregnancy or spacing their children.

xv. In order to alleviate supply constraints and improve the mix of contraceptive methods, the donor community may have to take on the responsibility of providing Viet Nam with oral contraceptives, condoms, IUDs, injectables and implants as required, until such time as the Government is able to allocate the necessary foreign exchange to import these supplies. Additionally, private traders could be encouraged to purchase those supplies that are in short supply or that cannot be provided by the official program. The evidence indicates that the incipient private sector is already playing an important role in the provision of oral contraceptives and condoms, especially in the South. In order to promote more effective availability, assistance will also be needed to improve the procurement, storage and distribution system.

xvi. Information, Education and Communication (IEC). Although population education has made significant strides in the country, the fact that more than one-third of the married women in their reproductive ages not using contraceptives cited potential health risks for not using contraceptives indicates the need for greater information and education. The present coverage of IEC campaigns is not wide because of lack of materials, maintenance of media equipment and retraining of IEC staff. The Government is fully aware of this situation and the National Committee on Population and Family Planning allocated 25% of its budget to IEC activities in 1991. However, greater technical assistance in developing messages, IEC training, and procuring materials and equipment for media is needed.

xvii. Family Planning Expenditure. Although real family planning expenditure appears to have been maintained during the period of macroeconomic instability and economic reform, Viet Nam currently spends a much smaller share of total government expenditure on family planning than other Asian

countries at its income level (such as Bangladesh and Nepal).^{1/} A disturbing trend is the evolving composition of family planning expenditures. The share of contraceptive supplies in the total family planning budget has been falling, as has the share of total family planning expenditure spent on salaries of service delivery personnel, while that spent on administrator salaries has been either flat or increasing. Medical equipment has shown the sharpest increase in expenditure share. Insofar as service delivery personnel have the greatest influence on the quality of services dispensed to clients, the trend of its declining expenditure share needs to be addressed in order to improve the quality of family planning services.

C. Nutrition

xviii. Malnutrition rates among children are very high in Viet Nam. Most recent estimates put the proportion of children malnourished at 45% by weight-for-age and 56.5% by height-for-age -- rates that are comparable to those observed in Bangladesh. Further, although the evidence is sketchy and far from completely reliable, it appears that malnutrition, especially among infants under one year of age, may have increased between 1986-87 and 1987-89. Viet Nam's major child nutrition problem appears to be stunting from longer-term, chronic undernutrition rather than wasting from short-term, acute food deficits. Malnourishment for a significant proportion of children begins in the first year of life. Reasons for this may be low-birth weights (20% of the infants born in 1990 were estimated to weigh less than 2,500 grams at birth), compounded by inadequate breast-feeding and complementary feeding practices.

xix. Food Production and Distribution. The cause for high rates of malnutrition cannot be found in inadequate food production in the country. Indeed, there has been an impressive increase in agricultural and food production during the last decade. However, despite the improvement in overall food availability, the poor system of food procurement, transportation, storage and distribution, combined with the existence of major agricultural productivity differences across regions, has meant that the population in some parts of the country continues to be prone to chronic undernutrition. The Government's past encouragement of rice self-sufficiency in each region retarded development of the food distribution system. In addition, this preoccupation with rice self-sufficiency resulted in the neglect of other subsidiary food crops, which are important in increasing dietary balance and variety. As a result, micronutrient deficiencies, especially of Vitamin A, iron and iodine, are pervasive in the country.

xx. The problem of food availability in the food-deficit areas will not disappear overnight, since consumers in these areas do not have the purchasing power to bid up the price paid for foodgrains from the surplus regions. In fact, at present, it is financially more rewarding to export rice outside Viet Nam than to transfer it to the deficit regions within the country. Indeed, as private-sector grain trade expands, the availability of food in the deficit regions may initially decline before it improves, pointing to the need for public policy interventions. Major improvements in the food

^{1/} Of course, these countries have significantly higher levels of total fertility. Also, the effectiveness of funds spent is often more important than the amount spent.

procurement, storage, transportation and distribution system will need to be undertaken, so that food can move from surplus to deficit areas efficiently and quickly.

xxi. In the long run, however, the only sustainable means of improving food security in the deficit regions will be by letting them exploit their comparative advantage in crops other than rice. There is substantial scope for increasing agricultural production in the deficit areas. Better supply of fertilizer and other inputs in the food deficit areas, combined with official financing of research and extension work targeted on their crops and farming systems, will allow the food-deficit areas to increase production of crops in which they can specialize. As personal incomes increase in Viet Nam, the demand for crops other than rice is likely to increase.

xxii. Role of Economic Growth in Reducing Malnutrition. Food insecurity is often more closely linked to personal incomes and consumer purchasing power than to food availability in a monetized economy. Survey data for 1987-89 indicate positive associations between indicators of socioeconomic status (such as presence of a bathroom or availability of running water in a house) and child nutritional status. Energy intake also appears to be responsive to household socioeconomic status. If these results are accurate, the economic growth that Viet Nam has experienced since 1989 should help alleviate some of its malnutrition problems. However, since food subsidies were also abolished after 1989, it is not clear whether the purchasing power of households (especially, employee households that were the major beneficiaries of food subsidies) has diminished or increased during the last 2-3 years. Furthermore, evidence from other countries indicates that income growth alone can take an inordinately long time to eradicate undernutrition. Consequently, shorter-term measures are needed to avert or reverse growth faltering in children below 3 years of age through a combination of behavioral and health interventions, as well as targeted food supplementation programs.

xxiii. Nutrition Education. Overall household food insecurity is a proximate cause of malnutrition, but its effects can be compounded by poor breastfeeding and weaning behavior and the impact of infection, diarrheal and other diseases. The journey into child stunting can begin with low birth weight which in turn may originate partly from the mother's malnutrition as an adolescent. There are two cultural practices in Viet Nam that may exacerbate child malnutrition. First, breastfeeding is generally initiated 3-4 days after birth, largely because of an incorrect perception that colostrum is an inferior food. Second, although the mean duration of breastfeeding is 12-14 months, exclusive breastfeeding is not common, and infants are introduced to supplementary foods as early as 2-3 months of age. Since infant formula is not available widely, breastfeeding is not supplemented with bottle-feeding but instead with solid foods. The premature introduction of supplemental foods greatly increases the risk of infection in small infants.

xxiv. Another social-behavioral problem is that the typical Vietnamese diet -- dominated by rice -- is inadequate for older children and pregnant and lactating women. The caloric density of rice is very low, with the result that young children and pregnant/lactating women are often unable to obtain enough calories from rice to meet their special energy needs. In addition, rice does not contain several important nutrients, such as iron, thiamine, Vitamin A and fats (lipids). As a result, women and young children on an

exclusive rice diet are vulnerable to diseases associated with these deficiencies, such as anemia, beriberi and xerophthalmia (which can lead to blindness). The combination of low overall calorie intake and little variety in the diet create a fragile nutritional balance for the most vulnerable groups.

xxv. There appears to be an important role for providing nutrition education, especially on infant nutrition, breastfeeding and dietary variety, to pregnant women and mothers of young infants. While the National Institute of Nutrition (NIN) has been developing educational material to help mothers improve the nutritional status and health of their children, there is no institutional mechanism or program for widely disseminating such materials. The Government urgently needs to designate an agency to take the lead in improving family nutrition behavior and to promote development of a strategy and program to do so.

xxvi. A National Nutrition Program. Indeed, given the high rates of child malnutrition, a strong case might be made for a national child nutrition program that would include growth monitoring, selective short-term supplementation, and nutrition education. Such a program could be implemented through the primary health care system. In order to contain costs, the nutrition intervention program could be area-targeted (to regions having the highest child malnutrition rates), age-targeted (concentrating exclusively on children 6-36 months of age and pregnant and lactating women), and need-targeted. Targeting by need could be achieved by monitoring the weights of all children 6-36 months old in the project communes, and enrolling only those children whose weight gain over a certain period falls below standard. Those children would be singled out for special health monitoring, food supplementation and intensive nutrition education for their families. In designing such a program, Viet Nam might be able to derive lessons from the experience of other developing countries that have experimented with such integrated nutrition programs.

xxvii. Whether the NIN can take on this broader role given its current staffing and more limited responsibilities is unclear but needs to be determined. The absence of a national nutrition strategy and program, training programs, and an effective mechanism for intersectoral coordination on nutrition underscores the need for establishing a nodal point within government for nutrition coordination and leadership.

D. Health

xxviii. Morbidity and Mortality Patterns. Although Viet Nam has a low infant mortality rate and high average life expectancy in relation to other developing countries, it resembles a typical low-income country in its disease profile, with preventable communicable diseases being the leading causes of mortality and morbidity among adults and children. Malaria, followed by diarrhea and respiratory infections, account for the majority of reported illnesses, while tuberculosis, malaria and diarrhea are the leading causes of mortality.

xxix. Recent Policy Reforms. Since 1989, the Government has implemented a number of bold measures designed to liberalize the health sector and

mobilize new resources for the sector. These include introduction of user fees for health care in all facilities except commune health centers, legalization of private practice, sale of drugs and medicines in the open market, and liberalization of the pharmaceutical industry. These measures place Viet Nam in the forefront of socialist economies attempting to restructure their health care systems.

xxx. Population Coverage of Health Services. The socialist policies of the past were successful in establishing a network of basic health services that reached out to the majority of the population. In fact, official statistics show health services coverage to be 100% in urban areas and 75% in rural areas. Viet Nam has more primary health care centers and hospital beds per 1,000 persons than most low- and middle-income countries in Asia. There is thus little need for expanding the total number of health facilities in the country. Of course, access to health facilities is not uniformly good across the country; because of low population densities in the mountainous provinces of the North and the Center, average distances to health facilities are still quite large in these provinces. But coverage in terms of existing facilities cannot be equated to coverage with services (see below).

xxxii. Quality and Utilization of Health Services. Quality of public health facilities and services in Viet Nam is low. Many commune health centers are simply housed in the homes of health workers, in the quarters of the People's Committee, or in very inadequate structures. Many district hospitals have very inadequate or no kitchens, laundry units, boilers, linen, or furniture. Medical and surgical equipment is sparse, antiquated, and barely functional in many cases. A significant proportion of commune health centers have virtually no drugs or injections to dispense. A survey of health facilities in three provinces found that only 49.3% of rural commune health centers had a functioning sterilizer and only 58.4% had a usable weighing scale for infants. Low salaries of public health personnel also contribute to poor quality of services. The problem of inadequate quality is worse in remote mountainous areas, where many commune health centers are essentially nonfunctional. Not surprisingly, utilization rates of basic health services are very low in the country. Bed occupancy rates for hospitals average less than 50%. Annual per capita contact rates with the health services average between 0.3 and 0.5 for the overall population, with wide variations across provinces and regions. Therefore, an important goal of restructuring the primary health care system should be to improve quality and thereby raise utilization rates significantly.

xxxiii. Salaries of Government Health Workers: Wages of health workers in the public health facilities are not only extremely low, but they have been falling precipitously in real terms during the last few years. On the other hand, physicians in the incipient private sector typically earn monthly incomes that are 3-4 times the public-sector salaries, and government health workers themselves can often double or treble their monthly salaries by practicing privately on the side. The low public-sector salaries, therefore, create severe incentive problems, and engender absenteeism, low productivity, and low morale among government health workers. The problem is most acute in rural areas, where a large number of health workers also engage in farming to augment their earnings. The productivity of public-sector health workers is also much lower than that of private-sector workers. For example, the survey of health users and providers showed a typical commune health center with a

staff of about 5 health workers seeing an average of only 6 patients per day. In contrast, a single private physician or traditional healer was observed to examine the same number of patients in a day.

xxxiii. Public Health Expenditures. There are three observations to be made regarding government health expenditure. First, per capita government expenditure on health, which was 5,664 dong (US\$0.83) in 1990, is considerably lower than that of any other country in Asia, including Nepal and Bangladesh. However, its health spending relative to its per capita GNP and total government spending is not unusually low; for instance, Viet Nam spends roughly the same proportions of its per capita GNP (0.8%) and total government expenditure (4.4%) on health as Indonesia and Thailand. Second, the available evidence appears to indicate that real health expenditure over time remained fairly stable between 1984 and 1990. This is impressive in itself, considering that Viet Nam was experiencing hyperinflation, acute macroeconomic instability, and a sharp drop in total external aid during this period. Third, there are enormous disparities in government health expenditures across provinces. These patterns indicate that Viet Nam will need to raise public revenues to finance public expenditures generally, including health, while taking steps to reduce regional disparities in health expenditure.

E. Major Issues and Strategic Directions

xxxiv. The picture that comes across from this review is of a once-vibrant health sector that has been in a process of decline -- for lack of funds, morale and political imperative -- for number of years. Clearly, rebuilding the entire public health sector is out of question. The Government has neither the resources nor the political imperative to restore the public health sector to its past level. Further, it is not at all clear that this would represent an efficient use of scarce resources. But, at the same time, it is important to arrest the erosion of past achievements in health that appears to have already begun. Maintaining the health indicators at their generally good levels is much less difficult than restoring them from significantly deteriorated levels. The strategy for the Government in the future should be to focus on a few key interventions that it can do well, and permit the emerging private sector to increasingly shoulder a larger share of the responsibility for curative health care.

xxxv. Risk Reduction at the Community Level. The highest priority should be interventions at the level of the community that significantly reduce the risk of infection among individuals. Such interventions typically have a high impact on health outcomes at low cost. In this regard, the supply of safe water and sanitation is one of the most cost-effective community-based health interventions. Although the mortality and morbidity profile in Viet Nam is characterized heavily by diseases that are linked to water supply and sanitation, such as gastroenteritis, dysentery, typhoid, cholera, viral hepatitis, and malaria, only about one-half of the urban population and one-third of the rural population in Viet Nam have access to safe drinking water.

xxxvi. The focus should be on assisting communities with implementing simple water and sanitation technologies. The UNICEF Rural Water Supply Project and the UNICEF Sanitation Project are useful examples of low-cost water and sanitation projects that rely on substantial community involvement

water and sanitation projects that rely on substantial community involvement and maintenance. An appropriate level of water coverage for Viet Nam would be one well or tap for 100-150 people within a maximum distance of 250 metres, which would require nearly 400,000 additional wells or taps to be constructed by the year 2000. External resources would be needed to meet this target, in spite of substantial community involvement in the construction of the wells. Likewise, external donors could support pilot programs that seek to provide incentives and subsidies to families to invest in appropriate sanitation technologies, such as the gulabh latrine.

xxxvii. Public Health Programs in Selected Regions. At the same time, the Government should selectively rehabilitate and better coordinate the existing categorical programs built around specific and well-defined interventions. The national child nutrition program proposed in para xxvi above is an example of a well-focused, categorical program. In addition, categorical programs addressing diarrhea, malaria, and acute respiratory infections (ARI) have been among the most extensive of health interventions in Viet Nam. These programs should be continued and substantially upgraded. However, their management and organization need to be changed. Currently, many of the categorical programs operate independently of each other. Some of them rely too much on a hierarchical (vertical) top-down management system. For long-run sustainability, greater community support and participation will be essential in all such programs. In addition, substantial economies of scale could be reaped by integrating these programs into a strong basic health care system. The cost-effectiveness of the categorical programs could be further enhanced by targeting them to those regions having generally poor health indicators and high prevalence of specific diseases, such as malaria and ARI. For effective targeting, however, a comprehensive geographical mapping of the country's disease profile is needed.

xxxviii. Privatization of Health Services. By all indications, private health services have grown significantly as a result of recent reforms, so that private expenditure for health now accounts for about two-thirds of total health expenditure. In this rapidly evolving system, it is inevitable that the public sector health service structure will need to adapt to a more limited role. Some shift of resources out of the public sector would be desirable for two reasons: first it would significantly reduce the financial burden on public resources while freeing up the health budget to address salary shortfalls, maintenance needs, and other recurrent operational improvements; second, it would allow a more manageable public service to improve quality and compete with the growing private sector, which by all evidence is operating at a higher level of productivity and quality.

xxxix. The public sector role in Viet Nam will be different from the one it is playing at present. The Government would have a regulatory function to assure service standards in private and public facilities, and it could provide the private sector with trained manpower. In addition, the Government would still be involved in the provision of basic health services, targeted to women and children, vulnerable and underserved groups, the poor and directed for the most part to control of communicable diseases. This entails a strong service delivery function for the public sector with some inevitable overlaps with the private sector.

xl. Reforming the Primary Health Care Sector. What is needed to revitalize the primary health sector is a package of options, some of which would increase costs and others that would offset these cost increases. It is unlikely that such a package would be expenditure-neutral, but the budgetary implications of this package would be relatively modest. Among some of the elements of the package would be a retrenchment of government health workers, an increase in the wages of remaining government health-sector employees, selective refurbishing and reequipping of primary health facilities, and greater cost recovery in government health services. Government health workers could be allowed to move to the private sector. Public facilities that are not needed to deliver priority health services could be leased or sold to the private sector, thus easing the financial burden on government budgets.

xli. Cost Recovery in Health Services. Even if the Government downsizes the public health sector, it will have to raise user fees in order to finance salary increases for government health workers and refurbishing of government health facilities. The prospects for cost recovery appear good for a number of reasons. First, survey data show that individuals are already paying considerable more than officially-established user fees at government health facilities. By increasing official user fees, the Government health sector could tap into this revenue stream. Second, the same survey data show individuals paying nearly two times as much for private health care as for health care from commune health centers and intercommunal polyclinics. Hence, at least the better-off individuals in the country have the capacity to pay significantly higher fees for public health care. Finally, the limited empirical analysis undertaken here with facility-based survey data suggests that the demand for government health facilities is not responsive to price (with a price elasticity of -0.23). The fact that the estimated price elasticity is less than one suggests that an increase in user fees will raise total revenues.

xlii. However, there are two qualifications to the proposal to increase user fees. First, user fees should be increased only for curative services for which there is typically private willingness to pay. Preventive services, typically provided through the categorical programs discussed earlier, have a strong public-goods character, and should continue to be provided free of charge by the Government. Second, there should be a mechanism for protecting the poor from user fee increases. Although there is already such a mechanism in place in Viet Nam, the system of exempting the indigent from user fees is not working in practice.

xliii. Before instituting full-cost user fees for high-cost items, such as hospital inpatient care, the Government will have to cover a large segment of the population in risk-sharing, insurance schemes. A number of developing countries have successfully experimented with health insurance and other risk coverage schemes. Survey results in Viet Nam indicate considerable receptivity among the rural population to health insurance and village-chemist schemes. It would be important for the Ministry of Health to launch pilot schemes to explore the viability of community risk-sharing arrangements, such as health insurance and drug-revolving funds.

xliv. Greater reliance on the private sector for curative health care also needs to be accompanied by greater cost recovery in medical education and

training. While it may still be efficient for the Government to supply trained manpower to a heavily-privatized health sector in Viet Nam, it would be imprudent to continue subsidizing the medical education and training of private-sector health workers. Tuition fees would need to be set and collected, so that public subsidies for medical training could be significantly reduced or eliminated.

xliv. Institutional Capacity Building in the Health Sector. The PHN sector in Viet Nam currently lacks an institutional capacity to monitor, manage and evaluate programs and interventions. This problem is most visible at the level of the district where primary health services should be managed. The district should have the managerial, administrative and technical capabilities to make medium-term health plans and efficiently allocate resources, including staff, equipment, and drug supplies, for their implementation; to identify projects, evaluate their feasibility, and execute them; and to monitor and evaluate national health programs operating in the district. Planning and budgeting for efficient resource use in the sector, especially at the lower administrative levels, should be strengthened.

xlvi. Limited information that would be useful for monitoring, evaluation and management purposes does exist, but it is poorly organized and difficult to retrieve. In place of the separate registers maintained by the categorical disease control programs, it would make sense to move to a simplified and integrated system of record-keeping that is individual- or child-based. In addition, there is no system of regularly collected information on the time spent by health workers in various activities and on worker performance and productivity. Such information is essential not only for better overall management but also in formulating wide-ranging policies on attrition and redeployment of the country's health manpower. Finally, to make the record-keeping at commune health centers useful, there should be a mechanism for the data to be transmitted to the higher levels of decision-making for evaluating the impact of alternative health interventions.

xlvii. Internal Efficiency of Government Health Expenditure. Efforts for improvement in internal efficiency through compositional shifts in recurrent budget should be continued. For example, since preventive services are public goods, it would be more efficient for the Government to subsidize preventive services and either leave the provision of some curative services to the private sector or sharply increase user fees for these services. Another area in which the internal efficiency of government expenditure could be improved is in the manpower mix. The ratio of 3.5 nurses to each physician is comparable to ratios observed in developed countries, where the heavily curative-based systems of health care require relatively intense use of physician services. Since the leading causes of morbidity and mortality in Viet Nam are preventable diseases (primarily, infectious and parasitic), which typically do not need physician-intensity, there may be scope for substantial cost saving by changing the personnel mix toward community health workers, nurses, midwives and assistant doctors. Another example of internal inefficiency is the wide disparity in provincial government health expenditures. A strategy of redistributing government health expenditure from richer to poorer provinces will not only promote equity goals but will also bring about a larger aggregate decline in the infant mortality rate.

xlvi. External Resources for the Health Sector. Without enhanced foreign aid flows, the Government's intended health sector development goals probably will not be feasible. Increased domestic resource mobilization may be impaired by inadequate private savings. However, equally important is the effective utilization of external aid flows in the long run. Improvements in the choice of core investments to be financed within capital budget, procurement, the use of technical assistance, and staffing of project entities need immediate attention. Critical problems like salary, equipment, medical and contraceptive supplies, manpower training, information/education/communication (IEC) should be tackled first in externally supported projects. For instance, although the salary issue cannot be resolved except at the macro level, the provision of better equipment, improved supplies, and manpower retraining within an individual project will have a positive impact on raising the morale and productivity of health and family planning workers.

xlix. Implications for PHN of Economic Growth, Income Distribution and Poverty. An important issue is the effect of economic growth and liberalization on health and nutritional status in Viet Nam. There are several indications that economic liberalization and the consequent emergence and growth of the private sector have widened income disparities in the country. At the same time as entrepreneurs and individuals working in the incipient private sector have experienced rapidly growing incomes, public-sector employees and other salaried persons have found their real purchasing power eroded, as their salaries have failed to keep up with inflation and the food subsidies that benefited them have ended. The widening disparity in income is a relatively new phenomenon for Viet Nam (particularly, the North), and has important implications for the population, health and nutrition of the poor. In other countries the combination of worsening income distribution and price decontrol (resulting in higher prices for food, health care and contraceptives) has reduced food consumption of the poor and their utilization of health and family planning services. Unfortunately, little information is available on the growth of income disparities, poverty, and consumption in Viet Nam. This is an area in which further research would have high payoffs, especially in helping the Government find ways of cushioning the poor and other disadvantaged groups from the sharp price increases associated with increased liberalization and greater cost recovery in the government health sector.

1. Emerging Environmental Problems. Another issue that will become increasingly important in the future is the impact of worsening environmental and ecological conditions on health. Crowding, pollution, stress and occupational hazards are already beginning to adversely affect the environment and the quality of life in Viet Nam. Hazardous solid wastes from industry and agriculture are usually collected jointly with other common wastes, and the most common methods for waste disposal are open dumping and open burning, both of which produce health hazards, air pollution, and sanitary discomfort. Pesticides and other chemical insecticides are becoming increasingly common in agriculture, resulting in contamination of rain, surface and underground water and contamination of the food chain. In addition, increasing population pressure, combined with a housing stock that is expanding very slowly, is resulting in overcrowding and unsanitary living conditions. With an average of 3.1 persons for every room, Ho Chi Minh City already ranks as a city with one of the scantiest living spaces per capita in the world. The addition of another 30 million or so people to the Vietnamese population over the next 2-3 decades may put a severe strain on environmental health.

li. Development of the Pharmaceutical Industry. The Government has listed the development of the domestic pharmaceutical industry as a high priority. A detailed examination of whether Viet Nam has a comparative advantage in the production of pharmaceuticals is beyond the scope of this study. However, it is clear that, the country is severely deprived of financial resources for investment in new plant and equipment, licensing of internationally-available technologies, R&D activities, and imports of raw materials and spare parts. Indeed, owing to these problems, local factories are producing at only 40% of capacity. Unless the factors affecting capacity underutilization are resolved, it may be premature for the Government to make major investments in new pharmaceutical enterprises.

lii. While the Government should continue to seek technical and financial support as well as joint ventures for upgrading existing factories to facilitate increased production, there is a need for an in-depth evaluation of the pharmaceutical sector that would address such issues as future trends in the demand for drugs induced by the changing age structure of the population, the pattern of disease vector and morbidity rates, alternative procurement of drugs and supplies, and the costs, institutional and manpower requirements of domestic pharmaceutical production. Such feasibility studies might form the bases for possible donor involvement in assisting selected pharmaceutical enterprises in expansion and upgrading.

F. Concluding Remarks

liii. It is important to preserve the impressive gains in health that have been made during the last three decades in Viet Nam. While the problems facing the health sector are daunting, the country is fortunate in having an abundant supply of human resources and an extensive network of health facilities. The population is highly literate, which means that responsible family planning, good preventive and curative health care practices, and better nutrition can easily be stimulated. Much of this potential demand for services is currently constrained by supply and quality problems, but when the supply constraints eventually ease in the future, further improvements in health and nutritional status and a decline in fertility could be swift.

I. INTRODUCTION

A. Importance of Investments in Population, Health and Nutrition

1.1 The health and nutritional status of a population are important indicators of overall well-being in a society. In addition, they represent a significant source of a country's human capital. A number of recent studies in such varied settings as Sierra Leone, Sri Lanka, India and the Philippines, have convincingly demonstrated the large agricultural productivity gains from health and nutritional improvements among rural households.^{1/}

1.2 The effects of chronic malnutrition and infection on children are even worse, since they are more lasting. Intestinal infections severely reduce the absorption of nutrients in the body, thereby causing malnutrition. Malnutrition adversely affects cognitive development and schooling performance, both of which in turn depress future economic productivity and well being. Chronic conditions account for a great deal of absentism, productivity loss and high cost medical care. All of these effects have been well documented in the literature.

1.3 Health interventions in the form of maternal and child health and infectious disease control can reduce significantly the risks of dying early and greatly increase life expectancy. In turn, the impact of increased longevity and reduced morbidity on productivity can be substantial. One pioneering study for India concluded that declines in mortality during the 1960s -- achieved largely via an impressive malaria eradication program -- accounted for almost one-third of the increase in aggregate productivity in Indian agriculture.^{2/} Thus, even from an economic perspective, health and nutritional improvements deserve to be high on the list of policy goals.

^{1/} See John Strauss, 1986, "Does Better Nutrition Raise Farm Productivity?" *Journal of Political Economy* 94 (2): 297-320; Anil Deolalikar, 1988, "Nutrition and Labor Productivity in Agriculture: Wage Equation and Farm Production Function Estimates for Rural India," *The Review of Economics and Statistics* 70(3), August; and David Sahn and Harold Alderman, 1988, "The Effect of Human Capital on Wages, and the Determinants of Labor Supply in a Developing Country," *Journal of Development Economics*.

^{2/} Another non-nutritional consequence of the overemphasis on local self-sufficiency is that the country has been unable to exploit regional comparative advantage. Hence, although agricultural production has been increasing impressively, it remains well below the country's full potential.

B. The Country Setting

1.4 The major benefits of the socialist system in Viet Nam, established in the North after the departure of the French in 1954 and extended to the South after reunification in 1975, have been in the social sectors. There was a rapid expansion of educational opportunities and a dramatic decline in illiteracy. The 1989 Census indicated that 81.8% of the women and 88.5% of the men over 10 years of age are literate. The political imperative to health resulted in a generous allocation of resources to the health sector. The generous allocation of resources was apparent in the establishment of a vast network of primary health facilities throughout the country after 1954, but particularly after 1968. The expansion greatly increased people's access to primary health facilities, except in a few provinces (mostly in the remote mountainous regions of the country). In addition to this network of health facilities, the country invested considerable resources in developing a number of very effective categorical health programs to deal with priority health problems, such as malaria, diarrheal diseases, and immunizable diseases. An important consequence of the basic health infrastructure and the categorical health interventions was a fall in infant mortality rates and an increase in average life expectancy to levels that are unusual for a country at such a low level of per capita income. The socialist policies of the past have also prompted the socioeconomic status of women, so that women participate equally in all economic and political activities.

C. Recent Trends

1.5 The impressive gains of the last three decades, however, are currently under threat in part because of a severe fiscal crisis facing the health sector in the last 6 years and in part because of structural changes. The shortage of funds to the health sector is so acute that it is unclear where the grass-roots facilities are going to find the inputs to continue functioning in the future. While the government has shifted the burden of financing health to the lower administrative levels (viz., provinces, districts and communes), the revenues collected by these administrative units are inadequate to even maintain current levels of spending, let alone increase them. As a result, there are severe shortages of drugs, medicines and contraceptives in the health facilities. In addition, with health worker salaries falling in real terms -- and health personnel receiving their monthly wages several months late in many cases -- the morale of health workers is low. There has been a major resurgence of malaria in the mountainous regions of the North and in areas bordering Cambodia, as communicable disease control programs have been neglected. Finally, the sketchy evidence that exists suggests that malnutrition, especially among infants, and the proportion of low birth weight babies may have increased in recent years.

D. Objectives of the Sector Review

1.6 There is an urgent need, therefore, to take a comprehensive look at the health sector in Viet Nam with a view to identifying the cause of the current problems in the sector and the policy priorities that will revitalize the sector. This sector review, which is the first comprehensive evaluation of the population, health and nutrition sector in Viet Nam, attempts to fulfill this need. The objectives of the review are to (a) take stock of the country's past achievements and historical trends in health, population and

nutrition; (b) define the major sector issues; (c) catalog activities and areas in population, health and nutrition having the greatest need for external assistance, and (d) identify policy reforms and investment strategies that will make the Vietnamese health-care system and the family planning program more responsive to the needs of the population, more cost-effective, and more financially independent.

**E. Recent Macroeconomic Policy Reforms and Implications
for the Health Sector**

1.7 The Government of Viet Nam initiated a wide-ranging economic reform program, known as doi moi, in 1986. The initial reforms included a return to household-based farming in agriculture, removal of restrictions on private-sector activities in commerce and industry, and decentralization of decision-making to managers of state-owned enterprises. Initial progress on the reforms was slow, with many of the comprehensive macroeconomic reforms being adopted forcefully only in 1989. The 1989 reforms included a devaluation of the official exchange rate to the parallel market rate, decontrol of prices, and an increase in real interest rates to positive levels.

1.8 Many of these reforms applied directly to the health sector. Price decontrol included the introduction of user fees for health care, especially at the level of hospitals. The removal of restrictions on private-sector activities included legalization of private medical practice and the commercial sale of medicines, drugs and contraceptives. The decree on decentralized decision-making for state-owned enterprises extended to the enterprises manufacturing pharmaceutical and condoms.

1.9 Several of these reforms have the potential of influencing population, health and nutrition trends in Viet Nam, although the full scope of their effects may not be known for several years (because of the typically long time lags involved in the relationship between health outcomes and health inputs). The policy reforms in agriculture resulted in a dramatic increase in agricultural production, which in turn expanded per capita food and energy availability in the country. However, because the food procurement, storage, and distribution systems in the country are still rudimentary, the increase in food availability has not yet manifested itself in the form of reduced levels of malnutrition in the food-deficit areas of the country. The introduction of user fees has dramatically raised the cost of health care for most people. Even though commune health centers were excluded from cost recovery measures, a recent facility-based survey undertaken by the Ministry of Health found more than 80% of the patients visiting commune health centers paying for health care (presumably, drugs). It is widely alleged that the user fees have reduced utilization of health services and bed occupancy rates in state hospitals. Finally, the legalization of private medical practice has resulted in a mushrooming of private health services. Private physicians and traditional healers have been doing brisk business, even in the rural areas, in the last two years. Many observers have claimed, often without any firm evidence, that policy reforms permitting physicians in government health facilities to practice privately after hours have resulted in deterioration of services in commune health centers and government hospitals.

F. Unique Features of Viet Nam that have a Bearing on the Health Sector

1.10 There are several historical, demographic and other characteristics of Viet Nam that have a bearing on the health sector. First, it is a country that has been at war over a long period of time. The war of independence with the French, the war with the United States, and finally the war with China all came on each other's heels. The long period of conflict has left a demographic scar; Viet Nam has one of the lowest sex ratios (that is, the number of males per 100 females) of any country in the world. The sex ratio is particularly low in the age groups above 35, reflecting the loss of males due to the war and the large-scale migration that followed. A falling sex ratio has probably contributed in some measure to fertility decline, although it is difficult to know exactly what proportion of the fertility decline can be attributed to this factor.

1.11 The second feature of Viet Nam that distinguishes it from other countries at roughly its income level is its abundant supply of human resources. Viet Nam has a highly literate population. There are more physicians per capita in Viet Nam than in most other low- or middle-income countries. The abundant supply of health professionals probably has something to do with the favorable health status (relative to income) achieved in the country. But, more recently, these health professionals represent an underutilized resource, because they have few medicines, medical supplies, and equipment to work with and because they are vastly underpaid. The high levels of literacy have favored the demand for birth control, preventive health care, prompt curative health care, and good nutrition. Many of these demands are currently constrained by supply shortages, but, when the supply constraints eventually ease in the future, further improvements in health and nutritional status and decline in fertility could be rapid.

1.12 Third, Viet Nam has developed an extensive network of health services that provide good access to basic health care for the vast majority of its population. There are over 10,000 commune health centers in the country, each serving approximately 2,-10,000 persons. Except in the remote mountainous regions of the country, the health centers are within easy reach of most people. While the quality of care available at the commune health centers has been deteriorating in recent years, largely because of the lack of medical supplies and equipment, the availability of these facilities in every community in the country represents a potentially important resource.

1.13 The fourth feature of Viet Nam that distinguishes it from many other low-income countries and that also has a bearing on the health sector is that it is currently in the midst of a critical transition from being a centrally-planned socialist economy to becoming a market-based system with decentralized decision-making. Indeed, Viet Nam's bold and far-reaching economic reforms put it in the forefront of socialist economies attempting to revitalize their economic systems. The problems of transition have been compounded by the external shock of a large decline in commodity aid from the Soviet Union. Since the external shock and the policy reforms have affected all sectors of the economy in major ways, many of the trends and problems observed currently in the health sector may be problems that are common to countries undergoing rapid structural changes. However, the changes that Viet Nam is going through are so fundamental that many of the institutions and management styles that worked well in the past may not perform as adeptly in the future.

II. POPULATION AND FAMILY PLANNING

A. Population Outcomes

Population Count and Growth Rates

2.1 Current Population. On April 1, 1989, the Government of the Socialist Republic of Viet Nam undertook a population census. A manual count was completed on June 15, 1989, which showed a total of 64,412,000 persons residing in Viet Nam, making it the second most populous nation in Southeast Asia (after Indonesia) and thirteenth most populous country in the world. About 80% of the entire population is rural. The distribution of population between the North and the South is almost identical; 32.21 million reside in the North, while the South has 31.16 million inhabitants. There is a heavy concentration of the population in the two fertile, rice-growing deltas of the Red River (North) and Mekong River (South); each of these areas accounts for about 21-22% of the national population.

Year	Population (in million)	Growth Rate (%)
1921	15.584	
1926	17.100	1.86
1931	17.702	0.69
1936	18.972	1.39
1939	19.600	1.09
1943	22.150	3.06
1951	23.061	0.50
1954	23.835	1.10
1960	30.172	3.93
1965	34.929	2.93
1970	41.063	3.24
1976	49.160	3.00
1979	52.742	2.16
1989	64.412	2.10

Source: General Statistical Office, Viet Nam Population Census 1989: Detailed Analysis of Sample Results, Hanoi, 1991

2.2 Historical Trends in Population Growth. The last seventy years of Viet Nam's population growth can be divided into five distinct growth periods. The first period (1921-51) was characterized by large fluctuations in the rate of population growth, largely induced by catastrophic events, such as the global economic depression, the suppression of peasant uprisings by the French, and the famine of 1945 (which was responsible for two million deaths)

(Table 2.1). The second period, covering the pre-war years of political normalcy and economic prosperity (1954-60), stands out for its high population growth of 3.9% per year. The third period (1960-76), covering the years of political turbulence and the war with the United States, witnessed a somewhat slower (but still high by absolute standards) annual growth rate of 3.1%. The fourth period, covering the years immediately after the war and reunification, saw a sharp decline in the population growth rate to 2.16%, induced in part by the economic devastation and large-scale outmigration related to the war but also by falling fertility. The final period is the decade of the 1980s (1979-89) -- a period of political normalcy -- which was characterized by a continuing drop in fertility and an annual population growth rate of 2.1%.

2.3 Figure 2.1, which plots the crude birth rates (CBR) and the crude death rates (CDR) for the last four decades, shows that the source of natural population increase in Viet Nam has been a sharply falling death rate -- not an increasing birth rate. Indeed, the crude birth rate has been falling secularly since 1950. There is little doubt, therefore, that Viet Nam is well past the point of demographic transition.^{3/}

2.4 Comparison with Other Countries. The most recent growth estimate of 2.1% per year places Viet Nam close to the average population growth rate of the group of low-income countries.^{4/} Viet Nam's growth rate is also similar to that of many other Asian countries. For example, the populations of Thailand, Indonesia, Myanmar, and the Philippines grew at annual rates of 1.9, 2.1, 2.1, and 2.5, respectively, over the period 1980-88. However, Viet Nam's growth rate is much higher than that of China (1.3%) and Sri Lanka (1.5%) -- countries that have roughly comparable levels of female literacy.

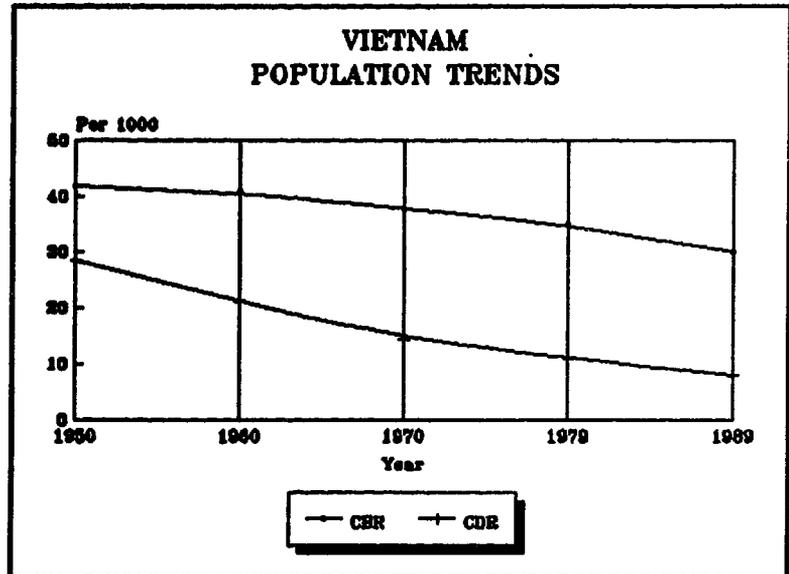


Figure 2.1

^{3/} A country is regarded as having undergone a demographic transition when its birth rate, which often lags behind the death rate, starts falling. Once the demographic transition has occurred, the country's population growth, although still positive, continues to diminish over time.

^{4/} World Bank, World Development Report 1990, Oxford University Press, New York, 1990.

the North as well, growth rates were quite high (an average 2.9%). The provinces having very high growth rates (e.g., Dac Lac, Lam Dong, and Gia Lai-Kon Tum) have been attracting migrants because of the establishment of new economic zones and major construction sites. Many of these migrants have come from provinces in the Central Coast, which experienced some of the lowest population growth rates in the country during 1979-89.

Table 2.2: Demographic Indicators By Province, 1989

	Total Population (in '000)		Pop.growth rate (%)	Area (kms.) 1989	Population Density 1989	TFR 1989	IMR (Per 1000) 1989
	1989	1979					
Entire country	64,412	52,742	2.1	329,841	195.2	4.00	45.00
Urban	20.1%	19.2%				2.50	34.00
Rural	79.9%	80.8%				4.40	47.00
Mountain and Mid-land	10,068	7,700	2.9				
Ha Tuyen	1,026	774	3.0	13,684	74.98	4.90	52.80
Cao Bang	565	471	1.9	8,447	66.89	5.00	61.60
Lang Son	611	478	2.6	8,140	75.06	4.90	56.50
Lai Chau	438	316	3.5	16,480	26.58	6.80	66.10
Hoang Lien Son	1,032	771	3.1	14,746	69.99	5.20	56.30
Bac Thai	1,030	809	2.6	6,495	158.58	3.90	45.00
Son La	682	482	3.7	14,216	47.97	6.00	54.50
Quang Ninh	813	661	2.2	5,943	136.80	3.40	35.00
Vinh Phu	1,807	1,376	2.9	4,573	395.15	3.50	33.10
Ha Bac	2,064	1,562	3.0	4,611	447.63	3.50	36.30
Red River Delta	13,576	10,968	2.3				
Ha Noi	3,056	2,456	2.3	2,142	1426.70	2.80	40.00
Hai Phong	1,447	1,150	2.4	1,503	962.74	2.90	26.00
Ha Son Binh	1,839	1,426	2.7	5,787	317.78	4.00	47.90
Hai Hung	2,445	1,959	2.4	2,552	958.07	2.90	38.00
Thai Binh	1,632	1,382	1.8	1,553	1050.87	2.60	31.60
Ha Nam Ninh	3,157	2,595	2.1	3,798	831.23	3.30	34.90
Central Coast Northland	8,573	6,977	2.2				
Thanh Hoa	2,993	2,348	2.6	11,162	268.14	4.10	36.20
Nghê Tinh	3,583	2,870	2.4	22,525	159.07	4.60	53.30
Quang Binh	647	530	2.1	7,788	83.08	4.80	49.90
Quang Tri	459	433	0.6	4,867	94.31	4.80	49.00
Thua Thien Hue	891	796	1.2	4,948	180.07	4.80	50.00
Central Coast Southland	6,655	5,537	2.0				
Quang Nam Da-Nang	1,738	1,458	1.9	11,994	144.91	3.80	47.10
Quang Ngai	1,042	900	1.6	5,852	178.06	4.60	51.50
Binh Dinh	1,245	1,085	1.5	6,050	205.79	4.25	51.50
Phu Yen	642	517	2.3	5,070	126.63	4.20	44.80
Khanh Hoa	818	660	2.3	4,706	173.82	4.70	44.80
Thuan Hai	1,170	917	2.6	11,470	102.01	5.10	43.90
Central Highland	2,491	1,455	5.8				
Gia Lai-Kon Tum	876	585	4.3	25,670	34.13	6.50	78.50
Dac Lac	976	482	7.7	19,875	49.11	6.20	44.90
Lam Dong	639	388	5.4	10,146	62.98	5.00	43.70
North-East Southland	7,797	6,004	2.8				
TP Ho Chi Minh	3,924	3,293	1.9	2,089	1878.41	2.20	30.10
Song Be	938	651	3.9	9,582	97.89	4.40	45.70
Tay Ninh	793	676	1.7	4,019	197.31	4.40	39.10
Dong Nai	2,007	1,292	4.7	7,572	265.06	4.80	33.80
Vung Tau-Con Dao	135	92	4.1	237	569.62	2.80	32.40
Mekong River Delta	14,171	11,811	1.9				
Long An	1,120	949	1.8	4,344	257.83	4.20	42.30
Dong Thap	1,337	1,173	1.4	3,277	408.00	4.00	48.90
An Giang	1,774	1,475	2.0	3,423	518.26	3.90	50.52
Tien Giang	1,483	1,258	1.7	2,338	634.30	4.00	30.00
Ben Tre	1,214	1,034	1.7	2,248	540.04	3.90	41.10
Cuu Long	1,809	1,497	2.0	3,855	469.26	4.00	40.50
Hau Giang	2,681	2,226	2.0	6,165	434.87	4.20	45.40
Kien Giang	1,198	986	2.1	6,243	191.89	5.40	53.80
Minh Hai	1,555	1,213	2.6	7,656	203.11	4.60	44.40

Sources: Population Census, 1979 and 1989.

Population Structure

2.6 Age and Sex Composition. The age pyramid in Viet Nam is typical of that observed in most less-developed countries, with a very wide base and a narrow top (Table 2.1 in the Statistical Annex). In Viet Nam, the top, especially starting with the age group 35, is especially narrow, reflecting in large part the influence of wars during the 35 years, 1945-79. As a result, the proportion of children aged 14 years and lower is exceptionally high, at 39%, and the median age of the population is low (20.2 years in 1989). With the likely exception of Cambodia, these statistics put Viet Nam at the top of the list of Southeast Asian countries (after Laos and the Philippines) in terms of the proportion of children aged 0-14 in the total population.

2.7 However, there was a noticeable aging of the Vietnamese population between 1979 and 1989, caused by declining fertility rates. The median age increased by almost two years (from a level of 18.3 in 1979). The aging of the population will continue in the future as the fertility decline continues -- a fact that should be taken into account in planning for the health care system.

2.8 A consequence of the youth-heavy population structure is that birth rates, although falling, will remain high for some time. With mortality declining rapidly, the size of the surviving parental cohort will be larger than the preceding ones, and will be the main determinant of the size of the birth cohort. Until this parental cohort completes its childbearing years, overall birth rates will remain high even if actual family size is small. The present age structure also implies a continuing increase in the absolute number of young people entering the labor force over the next twenty years. Thus, even if fertility were to fall to replacement levels -- an unlikely proposition for the near future -- growth momentum will make the stationary population 1.5 times the current size.

2.9 The fact that the addition of some 30 million people to the Vietnamese population during the next 25 years is unavoidable given the present age structure is cause for concern. Unless managed adeptly, this growth in population may have serious repercussions on the economy, the environment, and the health care system.

2.10 Sex Ratio. A unique demographic characteristic of Viet Nam is its sex ratio, which is extraordinarily low in comparison to that of other developing countries. The sex ratio (or the number of males per 100 females) in Viet Nam has been below 100 since 1931, but fell continuously between 1931 and 1979. It further decreased from a level of 94.2 males per 100 females in 1979 to a level of 92 in 1989 (Table 2.1 in the Statistical Annex). At 92, Viet Nam's sex ratio is considerably below that of many Asian countries, particularly China and the countries of South Asia, where the sex ratio is above 100 and often reflects excess female infant mortality caused by parental neglect of daughters in the provision of health care and nutrition. Viet Nam's low sex ratio can be ascribed to three factors: (i) excess male mortality (particularly, in the middle age groups) attributable to war, (ii) large-scale emigration of males, and (iii) little or no discrimination against women in access to health care and nutrition.

2.11 Further increases in the sex ratio are likely in the future. The effects of an improving sex ratio on birth rates have not been fully

recognized in Viet Nam. It is possible that the birth rate fell sharply in recent decades because the risk of conception was unusually low for women who were separated from their husbands or widowed. It is not unusual to find over 10% of the female population widowed (and therefore at lower risk of conception) in some Southern provinces. The Demographic and Health Survey found that 5.1% of all ever-married women in the South were widowed.^{5/} Such high rates of widowhood are unlikely to be sustained as the sex ratio improves. Therefore, it is possible that the decline in birth rates may slow down (or even stall) in the future in the absence of continued government intervention in family planning.

Fertility

2.12 Trends. The 1989 Population Census obtained an estimate of total fertility rate (TFR) in Viet Nam of 3.8 children per woman -- considerably lower than the estimate of 5.1 provided by the 1979 Census. Corroborative evidence of declining fertility is provided by the Demographic and Health Survey of 1988, which estimated the TFR to be 4.5 for the period 1983-87 and 3.9 in 1987. Age-specific fertility schedules for two periods confirm the unambiguous decline in fertility for women of all ages (Figure 2.2).

2.13 Using reverse survival methods, the 1989 Census suggests that fertility rates were flat between 1965 and 1974, but declined steeply after that. The reverse survival-estimated TFR fell from 5.9 in 1970-74 to 3.9 in 1985-89 -- a remarkable decline of over 33% in 15 years. The decline in fertility between 1955 and 1989 can be divided into four periods. In the first period (1955-69), fertility rates were high, but declining -- albeit at a slow pace of about 1% per year. The second period (1969-79), which covers the war,

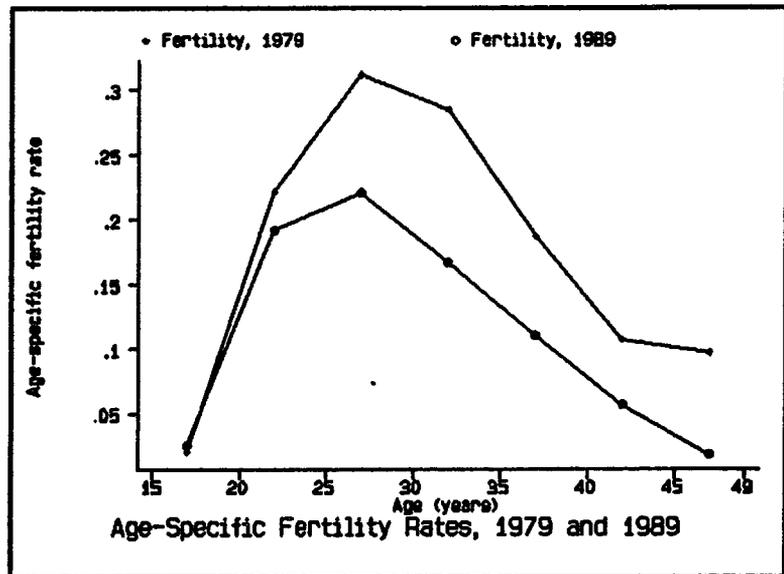


Figure 2.2

reunification, and mass emigration, saw a rapid fertility decline (of about 2.1% per year). The fertility decline slowed down in the third period (1980-84). Ordinarily, most prolonged wars are followed by a "baby boom," but the fact that this did not occur in Viet Nam indicates the success of the family planning program, which had been in effect in the North since the 1950s and was extended to the South after reunification. There was an acceleration in the rate of fertility decline in the fourth period (1985-89), again in large part due to the continued penetration and success of the family planning program.

^{5/} The rate of widowhood was 8.7% and 12.4% for ever-married women aged 35-39 and 40-44 years, respectively.

2.14 Comparison with Other Countries. Unlike its infant mortality rate, which is very low relative to its income, Viet Nam does not have a much lower TFR than would be expected at its level of per capita income. This is observed in Figure 2.3, which plots the relationship between TFR and per-capita GNP for 14 Asian countries. Viet Nam is observed to be almost on the TFR regression line, unlike China, Sri Lanka and Thailand, which are clear outliers.

2.15 Another way to view Viet Nam's TFR is in relation to its infant mortality rate (IMR). Empirically, a strong relationship between fertility levels and infant mortality rates is observed across countries. Again, the basis of comparison could be the 14 countries of Asia. Figure 2.4, which plots the regression line between TFR and IMR for this group of countries, clearly shows that the TFR in Viet Nam is higher than would be expected given the normal relationship between TFR and IMR observed in Asia.

2.16 Regional Differences. There are wide disparities in fertility across rural-urban areas and across provinces. The age-specific fertility schedules indicate that urban fertility is significantly lower than rural fertility for women of all ages. The 1989 Census estimate of TFR in urban areas (viz., 2.2) is almost one-half of the estimate of TFR in rural areas (4.3). The urban-rural disparity in fertility levels might be the result of differential income levels, literacy rates, and infant mortality rates between urban and rural areas. There may therefore be considerable scope for large reductions in fertility in the rural areas of the country.

2.17 Fertility rates also vary a great deal across provinces. Provinces in the Red River and the Mekong River Delta areas have the lowest fertility rates in the country. On the other hand, highland provinces, such as Gia Lai-Kon Tum, Dac Lac, and Lam Dong in the Center and Son La, Lai Chau, Ha Tuyen and Cao Bang in the North, have very high fertility rates (Table 2.2). The latter provinces are also characterized by some of the highest infant mortality rates in the country. This positive association between fertility and infant mortality has been observed in most developing countries (see Annex A).

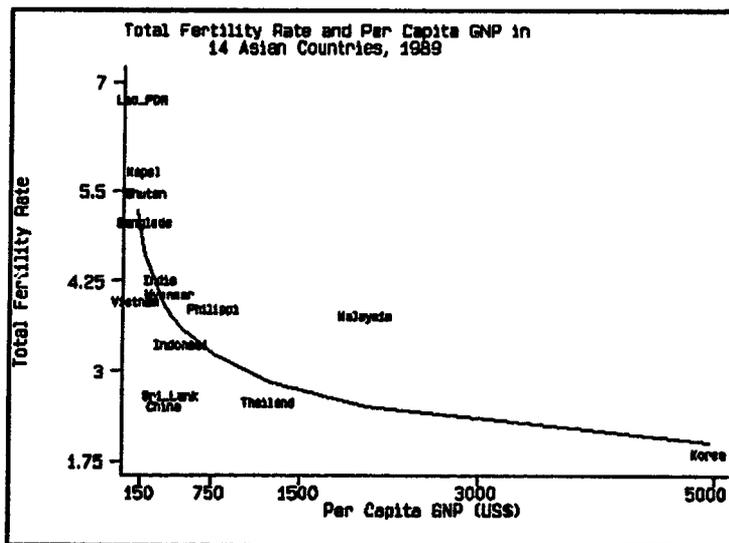


Figure 2.3

B. Family Planning Policy

Historical Review

2.18 Viet Nam has had a longstanding policy commitment to reduce population growth through a national population policy and family planning program. The Government policy to control population growth was first articulated in 1963, with the Ministry of Health of North Viet Nam as the main agency for administering and delivering family planning services.^{6/}

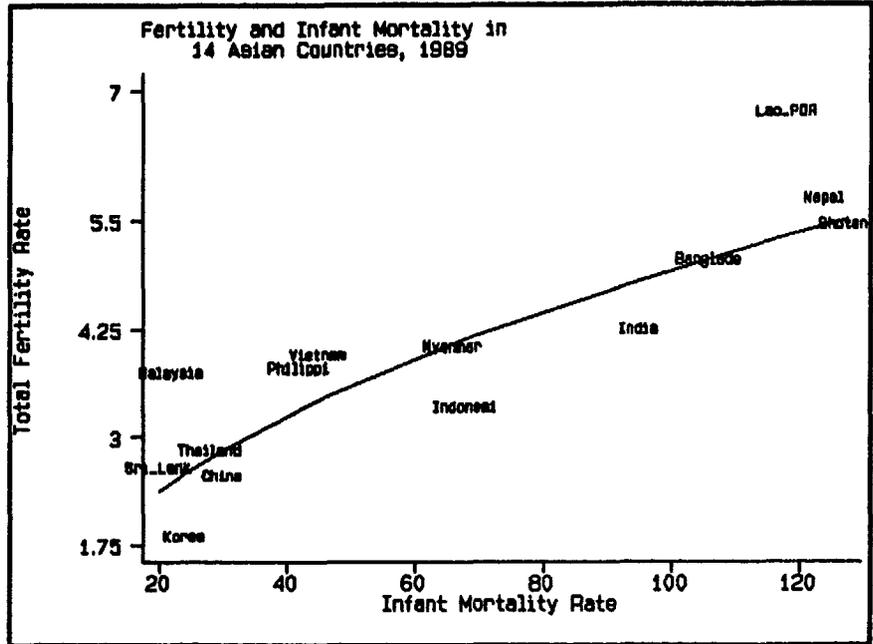


Figure 2.4

2.19 Since then, the program has evolved through a number of stages. During its first decade, despite repeated commitment to reducing the rate of population growth and achieving a more regionally balanced distribution of the population, the program vacillated in terms of intensity and manner of implementation. The main reasons were the war with the United States and subsequent hostilities with China. After the reunification of Viet Nam in 1976, overriding priority was given to post-war reconstruction, and consequently the population programs were not given enough attention. In 1981, however, the Council of Ministers at the Fourth Congress reiterated the importance of family planning as a part of national population policy and also recognized this as a social movement to improve further the quality of life of the population. To promote family planning more strongly throughout the country, the Council of Ministers listed three specific guidelines: (a) each couple should have only two children; (b) the two children should be spaced at least five years apart; and (c) a woman should be at least 22 years old before marrying and having a child. With increasing political and financial commitment, following the Sixth Party Congress in 1986, population and family planning program became the second highest priority, after food production. It was in this Congress that a range of quantitative targets on vital rates was set, including a reduction of the annual rate of natural growth to 1.7% by the end of 1990, which would allow a replacement-level fertility by the year 2005.

^{6/} The Government of South Viet Nam launched its family planning program in 1968, but the program could not succeed due to the exigency of a 1933 French colonial law which forbade the advocacy of birth control.

2.20 The period 1988-90 witnessed essentially a progressive consolidation of the program in terms of renewed political support, budgets and infrastructure. The baby "bulge" that resulted from high levels of fertility combined with sharply declining mortality during the 1960s was entering child-bearing ages in large numbers, and caused a growing concern about rapid population growth in the future among policy makers. In anticipation of a heavy burden on social services and long-term economic development by this large cohort of post-war births, the Government, at the recommendation of the Council of Ministers on October 8, 1988, broadened the dimension of the family planning by (a) integrating the program with maternal and child health services -- an important component of improving women's status and family welfare, and (b) recognizing the program as a strategic measure for poverty alleviation and successful development.

Current Objectives

2.21 The 1988 population policy paper begins by reiterating the goal of achieving an annual rate of population growth of 1.7% by the year 2000. To attain that target the paper emphasized the following norms:

- (a) Practicing family planning would be the responsibility of the whole society, male as well as female citizens.
- (b) Most Vietnamese families were expected to have no more than two children. Families of ethnic minorities could have a maximum of three children. Special exemptions would be granted to couples with children of previous marriages, couples having twins or triplets, and couples having handicapped children.
- (c) City dwellers were expected to abstain from having children until the wife was at least 22 years of age and the husband was at least 24 years of age.
- (d) The second child was expected to be spaced 3 to 5 years after the first, unless the first child was born to a mother past 30 years of age, in which case the second child could be spaced 2 to 3 years after the first.
- (e) Each couple of childbearing age would be required to register with their local administration, which was expected to keep abreast of the couple's specific situation concerning the implementation of family planning guidelines and new births. In turn, the local administration would be required to report regularly on the situation to the next higher level of government.
- (f) Efforts would be intensified to provide widespread information, education, and communication (IEC) on all aspects of family planning to the population at large.
- (g) Every agency was expected to put a cadre in charge of population and family planning activities. The meeting of family planning targets would be considered as a criterion of success for such agencies.

- (i) All levels of government, from the Ministry of Finance to the commune-level People's Committees, would be required to provide appropriate funding to the population committee at their level, so that an adequate supply of equipment, implements, drugs, and specialized public health cadres would be available to meet the needs for gynecological examinations and family planning services.
- (j) A system of incentives and disincentives would be adopted to encourage compliance with these norms.
- (k) Contraceptive devices would be supplied free of charge to cadres, manual workers, civil servants, members of the armed forces, and the poor. The widespread sale of birth control devices would be permitted in order to facilitate their use by anyone needing them.

2.22 The policy announced in October 1988 was formally incorporated into the Law of People's Health Protection which was promulgated on July 11, 1989.

2.23 There is an incongruity between the family planning policy enunciated above and the actual fertility situation in the country. The official policy is typical of that observed in most low-income countries, and is based on the premise that Vietnamese couples are resistant to further fertility decline. This is certainly not the case, as there is a large unmet need for family planning in the country (see section C below). Indeed, the available evidence suggests that further improvements in contraceptive use, and thereby further fertility decline, are constrained not by high levels of fertility demand among Vietnamese couples but instead by the inadequate supply of contraceptives and the virtual absence of contraceptive method choice. Official family planning policy should take account of the uniqueness of the Vietnamese situation, viz., the fact that the potential demand for small families is not only already present but possibly quite large in Viet Nam in relation to other countries at its per-capita income level.

Program Organization and Management

2.24 To improve the Government's capacity to manage and implement the population programs, the Council of Ministers created the National Committee for Population and Family Planning (NCPFP) in April 1984 as an advisory body. The status of the NCPFP was further elevated in 1989, when the Council of Ministers broadened its role as the sole body in advising the Government on policy formulation, program development and intersectoral coordination in the implementation of family planning programs of various Ministries, agencies, levels of government, and mass organizations. The NCPFP also undertakes field surveys and prepares policy studies and briefs to carry out these functions.

2.25 A vice-chairman of the Council of Ministers acts as Chairman of the NCPFP. He is aided by a standing vice-chairman, three coordinating vice-chairmen who are appointed by the Ministry of Health, Ministry of Finance and the State Planning Committee, and a Minister in charge of population and family planning. In addition, the NCPFP has institutional members drawn from various ministries and mass organizations, including the Ministry of Education and Training; Ministry of Labor, War Invalids and Social Welfare; Ministry of

Culture, Information, Sports and Tourism; General Statistics Office; the Confederation of Trade Union; the Youth Union's Central Committee; the Women's Union's Central Committee; and the Central Committee of the Peasants' Association. The NCPFP's Secretariat has five subcommittees, responsible respectively for (a) Demography; (b) Planning and Implementation; (c) Mother and Child Health Care; (d) Provision of Technical Services for Contraceptives; and (e) Education and Information. Since its creation, the NCPFP has had a separate budget, as if it were a Ministry.

2.26 The national committee is paralleled by committees for population and family planning at each of lower levels of government (province, city, district, and commune). The NCPFP sets targets for birth rates for each province; each province then sets targets for the districts; and the districts set targets for the communes.^{7/} The targets are based on indicators such as the proportion of women in childbearing age, the number of acceptors of family planning, the number of births in the previous year, and the birth rate in the previous year. The vital statistics and other related important information are reviewed with local authorities before targets are officially established.

C. Demand For Family Planning Services

2.27 In this section, information from the 1988 Viet Nam Demographic and Health Survey (VNDHS) -- the first nationally representative demographic survey ever undertaken in Viet Nam ^{8/} -- will be utilized to analyze the levels and patterns of contraceptive use and the demand for family planning services.

Current and Past Patterns

2.28 Contraceptive Awareness. The 1988 VNDHS suggests a high degree of contraceptive awareness in Viet Nam. An overwhelming 94% of the women surveyed knew about at least one method, with 91.8% knowing about the intrauterine device (IUD), which is the single most common contraception method used in the country. The surprising finding is that contraceptive awareness does not vary much across rural and urban areas, between the North and the South, and among women with different levels of education. The single exception is illiterate women (comprising only 6.4% of the total sample), among whom only 74% were aware of the IUD and 81% were aware of any method. Thus, knowledge about contraception appears to be very widely diffused in the Vietnamese population.

2.29 Contraceptive Use. The percentage of currently married women aged 15-49 years using contraceptives currently was estimated to be 53.2% by the

^{7/} Officials of each commune's Statistics Office, the Health Service, and the Legal Service meet once a month to compare data on vital statistics and to prepare a report submitted to the district authorities. Similar reports are sent at regular intervals from each district to the provincial authorities, and from each province to the national authorities.

^{8/} The VNDHS received substantial technical and financial support from the UNFPA.

VNDHS. Although the 1988 VNDHS was the first national family planning survey in Viet Nam, the commune health centers in the country maintain statistics on the number and type of contraceptives dispensed as well as on the number of eligible women residing in the commune who are not yet contracepting. Since these data are transmitted to successively higher levels of the family planning administration (viz., the district, province and Center), the MOH has available contraceptive use rates, including the contraceptive method mix, going back to 1975. Although it is not clear how complete and reliable these data are or how comparable they are to the estimates provided by the VNDHS, they are the only information available on the change in contraceptive use over time in Viet Nam. The MOH data indicate a dramatic increase in the contraceptive prevalence rate (CPR) from 8% in 1975 to 34% in 1985. A CPR of 53.2% reported by the VNDHS for 1988 is not strictly comparable to the earlier data, since the VNDHS included non-modern methods, such as withdrawal and calendar rhythm, as contraceptive choices. If only the modern methods are considered, a CPR of 38% is obtained for 1988.

2.30 A CPR of 53% is broadly similar to that observed in other Asian countries that began family planning programs about the same time as Viet Nam did and have similar age and nuptiality structures (Table 2.3). For example, the CPRs in Indonesia and Thailand were estimated to be 46% and 68%, respectively, in 1987. However, if the service statistics are to be believed, the annual percent growth in contraceptive use in Viet Nam has far exceeded that of most other Asian countries. Of course, this phenomenal growth reflects the fact that Viet Nam started with an unusually low contraceptive prevalence rate relative to other Asian countries.

2.31 Contraceptive Method Mix. The 1988 VNDHS shows a predominance of IUDs in the method mix in Viet Nam. Nearly 87% of married women aged 15-49 currently using modern contraceptives rely on IUDs. The next most common method is sterilization (7.8%), followed by condoms (3.1%) and pills (1.1%).

2.32 Table 2.4 shows the distribution of contraception users by method for the period 1975 to 1988. The method mix data from the 1988 VNDHS have been adjusted, so that the individual percentages in Table 2.4 add up to the number of married women 15-49 currently using *modern* (as opposed to all) contraceptives. Table 2.4 shows a massive shift from pills and condoms to IUDs, particularly during the 1980s. While there also was a large increase (from extremely low initial levels) in sterilization as a method, the latter remained a relatively underutilized method even in 1988. In large part, the prevailing method mix reflects the supply constraints for other contraceptives and the preference of health and family planning workers. The IUD has been the main method of choice because of its low cost, the limited availability of imported supplies of pills and condoms, and its appeal among health workers because of its durability of protection and easier monitoring. Although the Government maintains that the family planning program is based on a free choice of contraceptive methods, in practice choice is restricted by the shortage of supplies and equipment. A "cafeteria" approach that provides a variety of contraceptive methods in the family planning delivery system could

significantly improve both the coverage and the effectiveness of family planning interventions.^{2/}

Table 2.3: Contraceptive Prevalence Rates, Selected Asian Countries			
Country	Year	% of married women 15-49 currently using contraceptives (CPR)	% annual change in CPR
China	1975	71	1.4
	1985	74	
Thailand ^a	1970	19	15.2
	1987	68	
Indonesia	1976	18	15.2
	1987	48	
Philippines ^b	1968	15	4.3
	1988	36	
Sri Lanka	1975	34	6.9
	1987	62	
Viet Nam	1975	8	28.8
	1988	53 ^c	

Notes: ^a Beginning value of CPR based on Indonesia Family Planning Perspectives in the 1990s, World Bank, Washington D.C., 1990, p. 107, Table 2.5.

^b Based on 1968 & 1988 National Demographic Surveys.

^c 38% with modern contraceptives only.

Source: World Bank Asia Population Discussion Note July 2, 1990, based upon (1) "Levels and Trends of Contraceptive Use as assessed in 1988," Population Studies Series, No. 110, United Nations, N.Y., 1989; and (2) Family Planning and Child Survival: 100 Developing Countries, Center for Population and Family Health, Columbia University, 1988.

^{2/} The Government has in fact accepted the cafeteria approach during the latest UNFPA cycle of assistance. Whereas the IUD was almost the only method available before, access to both pills and condoms has improved somewhat recently. However, there is considerable scope to further broaden the contraceptive method mix.

Table 2.4: Trends in Contraceptive Prevalence and Use of Contraceptive Methods, 1975-1988

Method	1975	1980	1981	1982	1983	1984	1985	1988 a/
Percentage of married women aged 15-49 using modern contraceptives (CPR b/):								
	8	18	20	23	26	30	34	38
Percentage distribution of methods among users of modern methods:								
IUD	72	36	33	36	43	52	56	87
Condom	1	47	50	49	46	43	37	3
Pills	1	15	16	14	9	3	5	1
Sterilization	0.1	2	1	1	2	2	2	8
Others	25	NA	NA	NA	NA	NA	NA	1
All methods	100	100	100	100	100	100	100	100

Notes: CPR by program methods was 45.2% in 1988.

a/ Data from the 1988 Viet Nam Demographic and Health Survey have been adjusted to reflect use of *modern* contraceptives only.

b/ Mission Estimates, except 1975 and 1981.

Sources: MOH and VNDHS 1988

2.33 Another pattern that seems to be unique to Viet Nam is the wide practice of menstrual regulation and induced abortion, even though these are not considered as contraceptive methods by the Government. Induced abortion has been legal since the late 1960s. It used to be performed only in district

and provincial hospitals, although the service is now provided even in commune health centers.^{10/} Today, owing to the limited availability of alternatives, menstrual regulation and induced abortion have become popular and their use has increased sharply. According to the 1988 Demographic Survey, about 7% of the married women in the reproductive age groups had sought recourse to either abortion or menstrual regulation. Based on casual empiricism and anecdotal evidence, it appears that this rate itself may be an underestimate, and that menstrual regulation may be even more prevalent.

2.34 How does the method mix in Viet Nam compare with that observed in other developing countries? In Table 2.5, which reports the percentage distribution of contraceptive methods among currently contracepting married women in Viet Nam, Indonesia, and the Philippines, Viet Nam stands out for its high relative use of IUDs. While IUD use has been increasing over time in both Indonesia and the Philippines, it accounts for only 30.5% and 6.6%, respectively, of total contraceptive use in the two countries. In contrast, it accounts for 62.3% of total use in Viet Nam. Sterilization, which is very common in the Philippines and Thailand, does not appear to be a popular choice among Vietnamese (and Indonesian) couples. The low rate of sterilization use in Viet Nam is puzzling, since sterilization is a physician-intensive contraceptive method and there is no shortage of health workers in the country. While the lingering Catholic influence in the South might be expected to increase the resistance of couples there to use sterilization, the data in fact show greater reliance on sterilization in the South than in the North (Table 2.6). Perhaps, the long exposure to war and the consequent death of many young men have made Vietnamese women less enthusiastic about a permanent method like sterilization. Another possible reason for the lack of popularity of sterilization is that, although there are plenty of health workers in the commune health centers and intercommunal polyclinics who are competent in performing sterilizations, the surgical equipment and facilities and training for such operations are simply lacking at most health centers. At any rate, what is important to note is that, although there is no single acceptable distribution of contraceptive methods from country to country, most countries typically have a range of methods that are used by contracepting couples. In Viet Nam, on the other hand, there is effectively no choice, as seventh-eighths of all married women currently using modern contraceptives use IUDs.

^{10/} Within 15 days from the time a woman has missed a menstrual period, she may seek help from the health post to "regulate menstruation." If more than 15 days, but fewer than twelve weeks, have elapsed, a woman can obtain an abortion if she makes a written request. Thereafter, abortion is normally not permitted, although exceptions are made when medically recommended, particularly for women with kidney or heart disease.

Table 2.5: Percentage Distribution of Contraceptive Use in Selected Asian Countries							
Method	Indonesia		Philippines		Thailand		Viet Nam
	1976	1987	1978	1988	1978	1984	1988
<u>Modern</u>							
Pill	56.7	31.4	13.2	19.2	41.0	30.7	0.8
IUD	21.3	30.5	5.3	6.6	7.5	7.6	62.3
Female sterilization	1.1	6.9	13.2	30.5	24.3	36.4	5.0
Male sterilization	0.0	0.4	0.0	1.1	6.6	6.8	0.6
Other	0.8	21.8	0.0	0.6	12.9	14.6	0.6
% modern	79.9	91.0	31.6	57.9	92.3	96.0	71.5
Other traditional	20.1	9.0	68.4	42.1	7.7	4.0	28.5
Total	100	100	100	100	100	100	100
Sources: Indonesia Family Planning Perspectives in the 1990s, World Bank, Washington D.C., 1990, p. 90, Table 1.8; Philippines Family Planning Sector Report 1991, Annex 2, Table 2.3; Institute for Population and Social Research, Mahidol University, National Family Planning Program, University, National Family Planning Program, Ministry of Public Health, Research Center of the National Institute of Development Administration, <u>Thailand: Third Contraception Prevalence Survey, Survey Report, April 1985, Bangkok; Viet Nam Demographic and Health Survey 1988.</u>							

Demographic and Socioeconomic Differences in Contraceptive Use

2.35 Contraceptive Use By Age. The VNDHS data show an anticipated increase in the use of contraception with age. The use of contraception in the age group 20-24 is low, with only 31.7% of married women in this age group using contraception (and 19.7% using modern contraceptives) (Table 2.6). It is likely that contraceptive use in this age group would have been substantially higher if access to reversible and easily-usable methods, such as the pill and the condom, were readily available.

2.36 Contraceptive Use by Socioeconomic Status. Only two socioeconomic variables, female education and urban/rural residence, were included in the 1988 VNDHS. Table 2.6 shows that more schooled women are more likely to use contraceptives. However, interestingly, the relative use of "modern" methods is lowest (viz., 66.7% of total) among users with the highest education (secondary schooling or more). Women with secondary schooling appear to rely much more on the natural rhythm method than women with less schooling, since education presumably makes it easier to keep a track of menstrual cycles.

Table 2.6: Contraceptive Use and Method Mix, by Age, Urban/Rural Residence, Region, and Education, 1988

	Any Methods	IUD	Pill	Condom	Female Steril	Male Steril	Rhythm	With-draw	Other	Not Using	Total
AGE											
15-19	5.26	3.51	0.00	1.75	0.00	0.00	1.75	0.00	0.00	94.74	100
20-24	31.72	19.09	0.16	0.49	0.00	0.00	4.85	6.96	0.00	68.28	100
25-29	52.17	34.34	0.10	1.21	0.50	0.20	7.75	7.65	0.40	47.83	100
30-34	59.84	37.81	0.34	1.90	2.35	0.11	9.62	7.49	0.22	40.16	100
35-39	68.85	41.42	0.88	0.88	6.02	0.71	10.09	7.96	0.35	31.15	100
40-44	65.43	38.30	0.53	1.60	5.59	0.80	11.17	6.65	0.80	34.57	100
45-49	47.07	29.01	1.02	0.25	5.85	0.51	5.60	4.33	0.51	52.93	100
Urban	67.17	29.20	0.76	4.08	6.81	0.76	17.85	7.72	0.00	32.68	100
Rural	50.25	33.96	0.37	0.56	1.82	0.22	6.03	6.86	0.43	49.72	100
North	58.68	47.17	0.19	0.72	0.72	0.00	4.45	5.12	0.29	41.37	100
South	46.83	17.29	0.71	1.59	4.87	0.66	12.14	9.14	0.44	53.01	100
Illiter	28.63	18.80	0.00	0.00	1.71	0.00	3.85	3.85	0.43	70.94	100
Read/Write	45.55	26.34	0.64	0.64	3.44	0.25	7.51	5.98	0.76	54.33	100
Primary	55.42	36.21	0.48	0.88	2.47	0.35	6.92	7.80	0.31	44.54	100
Second. & above	63.76	35.91	0.33	3.13	2.80	0.33	14.66	6.59	0.00	36.41	100
Total	53.10	33.15	0.44	1.13	2.67	0.28	8.06	7.03	0.36	46.77	100

Source: Viet Nam Demographic and Health Survey, 1988.

2.37 Contraceptive use varies significantly by region. A much larger percentage of married women aged 15-49 use contraception in urban areas (67.2%) than in rural areas (50.3%). However, much, although not all, of this increase comes about because of the greater use of the natural rhythm method among urban women (who are generally more educated than rural women). Urban women also tend to rely more on female sterilization and condoms than rural women. Finally, there are important differences between the North and the South in both contraceptive use and the method mix. The percentage of married women aged 15-49 using any contraceptive method is significantly higher in the North (67.2%) than in the South (50.3%). Furthermore, the method mix differs even more across the two regions; the predominance of IUDs in the method mix is observed to be mostly a Northern phenomenon. While 80.4% of contracepting women in the North rely on IUDs, only 36.9% of contracepting women in the South rely on this method. Almost one-half of the contracepting women in the South appear to rely on the natural rhythm and withdrawal methods. The source of the large North-South difference in the method mix is not clear. It is likely that IUDs are not as widely available in the South as in the North. In addition, since people have historically relied much less on the health system for their family planning needs in the South, they have had to depend to a greater extent on traditional contraceptive methods than couples in the North.

Potential Demand for Family Planning

2.38 It is possible that the use of modern contraceptives is relatively low in Viet Nam because couples desire larger families. The desire for larger families may be driven by economic factors, such as the economic contribution of children to the household, or cultural considerations, such as a preference for sons. If this is the case, a family planning program is likely to have

limited success unless it alters the structure of social and economic incentives associated with high fertility. On the other hand, it is also possible that, even when the social and economic conditions in a country favor smaller families, couples continue to have excess fertility because of lack of contraceptive awareness and poor access to contraceptive methods. "Unmet need" is defined in family planning as the proportion of couples who desire to regulate their fertility but are not using any contraceptives. Subject to the usual caveat of interpreting data on expressed fertility preferences,^{11/} the analysis on unmet need is of value in designing future family planning strategies, since it helps to identify both the future potential as well as the target groups of contraceptive use.^{12/}

2.39 In the 1988 VNDHS, women who said they did not want additional children were assumed to want fertility regulation. Unmet need is then the percentage of women who did not want additional children, yet were not using any contraceptives. Table 2.7 shows the magnitude of unmet need for family planning to limit births. The unmet need is substantial;^{13/} almost 41% of the women surveyed who said their actual number of children was greater than their desired number and who did not want additional children^{14/} were not using contraceptives. To the extent that contraceptives are used not merely for limiting fertility but also for spacing births, the estimate of unmet need is likely to be an underestimate. The VNDHS report does not provide information on the use of contraception for spacing purposes.^{15/}

^{11/} Survey questions on fertility preferences are subject to controversy, because women in developing countries normally do not plan their family sizes or are not informed about how to affect the number of births they will eventually have. Socio-cultural factors and attitudes of husbands are important, but those are not accounted for.

^{12/} In most countries, women respond fairly consistently to the first question, and their replies generally turn out to be good predictors of contraceptive use and of future fertility norms. For further evidence, see Bryan Boulier, "Unmet Need for Contraception: Evaluation of Estimates for Thirty-six Developing Countries," World Bank Staff Working Paper, No. 678, Washington D.C.

^{13/} Since unmet need is not necessarily equal to demand, these measures are only indicative of potential users.

^{14/} In the VNDHS, the desired number of children was not broken down by the desired sex distribution. Hence, a woman who already had the desired number of children but not the desired number of, say, sons could still want more children.

^{15/} As a result, the method of estimating total unmet need proposed by Bongaarts cannot be applied to the VNDHS data. See J. Bongaarts, "The Measurement of Wanted Fertility," Population and Development Review 16 (3), September 1990.

Table 2.7 Percentage of Currently Married Women Aged 15-49 Using Contraceptive Methods by Their Actual Number of Children and Desired Number of Children

<u>Group</u>	<u>Want More</u>		<u>Want No More</u>	
	<u>Using</u>	<u>Not Using</u>	<u>Using</u>	<u>Not Using</u>
A > D	29.41	70.59	59.06	40.94
A = D	73.33	26.67	71.66	28.34
A < D	39.47	60.53	37.45	62.55

Notes: A = Actual Number of Children
D = Desired Number of Children

Source: Viet Nam Demographic and Health Survey, 1988.

2.40 Table 2.8 reports information on unmet need by age group. Over one-half of the married women in the 20-24 years age group not wanting additional children were not using any contraceptives.

2.41 Another way to assess the unmet need for contraception is to compare the difference between total wanted fertility and the actual fertility rate. Total wanted fertility is inferred from the information on whether a live birth was wanted or not. In principle, total wanted fertility measures desired fertility if all unwanted births are prevented. Two countervailing arguments concerning this measure are worth pointing out here. One argument argues that this measure has the advantage of being more realistic as it takes into account the fact that low fecundity prevents some women from having wanted births and from attaining their desired family size. The other argument maintains that the measure is vulnerable to transitory influences on the level of recent fertility.^{16/} Subject to these qualifications, Table 2.9 shows that the total wanted fertility for women aged 15-44 was 2.5 children, but that their actual total fertility rate was 4.5 children. The difference between these two numbers is even greater in rural areas, where the total wanted fertility rate was 2.6 and the actual fertility was 5.0. Even if one is skeptical about the exact value of the wanted fertility rate, the sheer magnitude of the difference between wanted and actual fertility in the VNDHS sample suggests a very large unmet potential demand for family planning in Viet Nam. Interestingly, the average wanted fertility rate for the VNDHS sample of women (2.5) is close to the Government's stated two-child norm, which raises the possibility that survey respondents may have been influenced by government norms.

^{16/} See, for instance, J. Bongaarts and R. Potter, Fertility, Biology and Behavior, 1983, Academic Press, New York, and J. Bongaarts, "The Measurement of Wanted Fertility," Population and Development Review 16 (3), September 1990.

Table 2.8: Percentage of Currently Married Women Aged 15-49 Using Contraceptive Methods by Their Age and Their Future Birth Plan, 1988

Age Group	<u>Want More</u>		<u>Want No More</u>	
	Using	Not Using	Using	Not Using
15-19	6.12	93.88	0.00	100.00
20-24	28.23	71.77	48.15	51.85
25-29	44.92	55.08	59.91	40.09
30-34	49.39	50.61	64.87	35.13
35-39	40.66	59.34	74.67	25.33
40-44	30.77	69.23	69.59	30.41
45-49	17.65	82.35	48.66	51.34

Source: Viet Nam Demographic and Health Survey, 1988.

2.42 The question naturally arises as to why almost one-half of the married women in their reproductive ages who wish to have no more additional children are not contracepting? The 1988 VNDHS asked married (but currently not pregnant) women aged 15-49 who did not want any additional children, yet were not using contraceptives or abstaining from intercourse, why they were not using contraceptives. The most common reason (given by 37.8% of the women) for not using a contraceptive was that they were breastfeeding. Another 19.1% of the women cited "health reasons" for not using contraceptives, while 31.1% of the responses fall under the category "other reasons." Only 1.44% of the women cited unavailability of the desired method as a factor in not using any method.

2.43 The fact that a large proportion of women cited potential health risks in using contraceptives indicates an important role for contraceptive information and education. Although the proportion of women citing unavailability of the desired method as a reason for not using contraceptives is relatively small, the experience of other countries suggests that more couples desiring to regulate their fertility will use contraception once they have ready access to a variety of easy contraceptive methods, such as pills and condoms.

**Table 2.9: Total Wanted Fertility and Total Fertility Rates
for Women Aged 15-44, 1988**

	Total Wanted Fertility Rate	Total Actual Fertility Rate
<hr/>		
<u>Urban-rural Residence</u>		
Urban	1.97	2.59
Rural	2.61	5.05
<u>Region</u>		
North	2.58	4.65
South	2.35	4.44
Total sample	2.47	4.52

Source: Viet Nam Demographic and Health Survey, 1988.

Demand Projections

2.44 The current rate of population growth and the total fertility rate in Viet Nam is appreciably higher than the Government's goal. It is also much higher than the fertility level desired by most couples. The demand for contraception will continue to expand in the coming decades, as the cohort of women entering reproductive ages increases. It is critical that such demand not be constrained by an inadequate supply of contraceptives. Otherwise, an important opportunity to significantly reduce population growth will have been squandered.

2.45 If the Government's goal of lowering the total fertility rate to 2.8 by the year 2000 (from about 3.7 in 1990) is to be met, the supply of contraceptives will have to almost double from current levels. The UNFPA has estimated that an additional 4.6 million users will be needed between 1991 and 2000 (implying an increase in the contraceptive prevalence rate from 55.9% to 68.8%) to reach the Government's fertility rate target (Table 2.10).^{17/} The UNFPA demand projections assume that, over the next 8 years, there will be a shift to a more balanced method mix -- one that will also include male contraceptive methods, and that the rate of induced abortions will fall by 50% by the year 2000 (Table 2.11).

^{17/} UNFPA, "Programme Review and Strategy Development Report: Viet Nam," New York, 1991.

Table 2.10: Projected Number of Users (of all Contraceptive Methods) and Contraceptive Prevalence Rate, 1989-2000		
Year	No. of Users (in '000)	Contraceptive Prevalence Rate (%)
1989	5,670.7	53.2
1990	5,973.9	54.5
1991	6,296.7	55.9
1992	6,640.4	57.3
1993	7,006.7	58.7
1994	7,397.0	60.2
1995	7,733.7	61.4
1996	8,088.7	62.6
1997	8,463.3	63.7
1998	8,858.7	64.9
1999	9,276.3	66.1
2000	10,906.2	68.8

Source: UNFPA, "Programme Review and Strategy Development Report: Viet Nam", Hanoi, 1991, Table 1, p. 78.

Table 2.11: Proposed Shift in Contraceptive Method Mix, 1989 to 2000		
Method	1989	2000
Male Sterilization	0.6	3.0
Female Sterilization	5.0	6.0
Injectables	0.0	10.0
IUD	62.4	30.0
Pills	0.8	20.0
Other	29.0	6.0
Condom	2.2	20.0
Implants	0.0	5.0
Total	100.0	100.0

Source: UNFPA, "Programme Review and Strategy Development Report: Viet Nam," New York, 1991, Table 2, p. 79.

D. Supply Of Family Planning Services

Delivery System

2.46 The provision of family planning information and services is integrated with the provision of basic health care services. Most of the family planning services in the country are provided through the network of 10,000 commune health centers, although not all of the commune health centers or intercommunal polyclinics provide family planning services. Currently, there are a total of 2,678 government facilities that dispense family planning services in the country. Few of these facilities, however, offer a range of contraceptive methods to potential users. For instance, it is estimated that only about 500 of the family planning facilities carry any supply of pills. Fewer than 50 facilities nationwide offer injectables, while implants are handled by only 3 facilities in the entire country.

2.47 These centers were originally developed to provide basic health services; with the introduction of family planning program, these centers were used as a convenient delivery facility. In addition to their regular health care functions, commune health center staff provide information and counseling, including premarital counseling, on various methods of family planning, and attempt to motivate the couples to accept and practice family planning. In addition, the health staff distribute condoms and contraceptive pills (when available), perform menstrual regulation, follow up regularly on those women who have agreed to practice family planning, and provide prenatal pregnancy care and delivery of babies. Abortions, sterilizations (tubal ligations or vasectomies) and IUD insertion are normally provided at the secondary or tertiary level of the health care system (at intercommunal polyclinics and the district or provincial hospitals). The higher-level establishments also offer the same basic family planning services provided at the commune level. Since the higher levels usually are better provided with facilities, equipment, supplies and trained staff than the lower levels, people are more likely to go first to a higher-level facility if one is available nearby.

2.48 Mobile units are sometimes used to deliver family planning services in rural areas, particularly in the slack agricultural season. Services provided by these units include gynecological examinations, IUD insertions, and the distribution of condoms and pills. The mobile units are capable of performing menstrual regulation, abortion and sterilizations as well. Equipped with audiovisual aids and generators (for areas where no electricity is available), mobile units are also engaged in the Information, Education and Communication (IEC) activities. The use of the mobile units was more common during the 1970s, when the health network was less well-developed. Their use has declined in the recent past because virtually every one of the district hospitals now has a complete family planning unit. They might, however, still have a role in disseminating knowledge about newly-introduced family planning methods, creating awareness among youth, and reaching remote villages, especially in the mountainous and highland regions of the North and the Center.

Supply, Pricing, and Availability of Contraceptives

2.49 Sources of Supply. The Government health sector is the major -- and, until recently, the exclusive -- provider of contraceptives in Viet Nam. The 1988 VNDHS indicated that 45% of the women who had ever used contraception had obtained their supplies (or received clinical services) from commune health centers. Another 37 and 12%, respectively, listed intercommunal polyclinics and district hospitals as their sources of supply (Table 2.12). Recently, the private sector has begun to play an important role in supplying certain types of contraceptives; 31% of the pill users and 17% of the condom users in the VNDHS survey reported obtaining their supplies from commercial sources. Of course, since these methods account for a very small fraction of total contraceptive usage, the role of the private sector in terms of the total extent of contraceptive coverage provided is insignificant. However, these results indicate that there may be substantial scope for expanding the use of pills and condoms by encouraging their distribution through commercial retail outlets.

Table 2.12: Distribution of Sources of Domestic Supply of Contraceptives by Current Users (Women aged 15-49 years), 1988

Source	-----Supply Methods-----			-----Clinic Methods-----					
	Pill	Condom	Sub Total	IUD	Female Steri	Male Steri	MR	Abortion	Sub Total
Commune HC	14.7	22.0	18.8	54.0	5.4		14.5	3.6	44.9
District PC	23.9	24.8	24.4	33.1	22.1	22.3	57.7	74.1	36.8
Province H	20.0	12.5	15.7	8.3	57.8	33.1	18.9	18.3	12.3
Central H	2.4	1.8	2.0	2.4	18.4	20.0	4.4	4.1	3.6
Other H Inst	4.6	19.7	13.1	1.8	0.6	3.1	1.4		1.6
Private Mrk	31.8	16.8	23.3	0.1			0.9		0.1
Other	0.8		0.4	0.1			0.9		0.1
Don't Know	1.3	1.3	1.3		1.1	5.4			0.1
Total	100	100	100	100	100	100	100	100	100

Source: 1988 VNDHS

2.50 Pricing. Although family planning services are free throughout Viet Nam, the sale of birth control devices is permitted. In some provinces, hospitals have begun charging token fees for certain services since May 1989. For instance, the provincial health services of Ho Chi Minh City has introduced a system of incentives and disincentives to users. In 1990, incentives included (a) a payment of 5,000 dong per woman for IUD insertion, and (b) a payment of 20,000 dong per acceptor for vasectomies and tubal ligations. Disincentives included: (a) no salary supplements for workers having more than two children, (b) a charge of 3,000 dong for each delivery beyond the second; (c) all families, regardless of size, now receive 35 square meters of living space.

2.51 Imports. At present, most contraceptives are imported by the UNFPA at the request of the Government. Table 2.13 shows the quantities of pills, condoms and IUDs imported by the UNFPA during the last seven years. Two points need to be made about these figures. First, contraceptive supplies by the UNFPA have fluctuated considerably from year to year. There were no

IUDs received in 1988 and 1989 and no pills received in 1988.^{18/} Second, since the UNFPA assisted the government in setting up local condom manufacturing facilities in 1987 (see para 2.52 below), it discontinued importing condoms for the government from 1988 onwards.

Year	IUD (pieces)	Pill (cycles)	Condoms (gross)
1984	186	200	110
1985	1,305	1	
1986	1,171	300	15
1987	339	1,168	55
1988			
1989		500	
1990	1,000	1,800	
1991	550	3,500	

Source: UNFPA, Hanoi

2.52 Production. The Government, with assistance from the UNFPA, started the domestic production of condoms in 1987. The Medical Rubber Factory (MERUFA), located in Ho Chi Minh City, has a capacity of producing 90 million condoms a year. Initially, the imported raw materials, packaging materials and quality control equipment were supplied by the UNFPA with co-financing from Australia. The factory was to be supported by the Government after receiving operating support from the UNFPA for the first two years after its establishment. However, the Government's 1989 directive that state enterprises be financially independent put MERUFA in some difficulty, and the enterprise cut back on quality control and switched to domestic sources of raw materials and packaging. As a result, quality of condoms produced by MERUFA suffered. More recently, however, the enterprise has been able to improve the quality of locally-produced condoms substantially. Indeed, recent independent tests show that not only do MERUFA condoms meet international quality standards, but that they are as popular among users as imported condoms.

2.53 In the past, MERUFA has generally operated well below its potential capacity (in 1990, 60 million condoms were produced) because of difficulties in materials, distribution and quality. While there has been a significant improvement in the quality of MERUFA condoms in recent years, there has also been a major change recently in the way condoms are procured by the government, and this may create new distribution problems for MERUFA.

^{18/} These interruptions in supply must surely have affected the population's access to contraceptives. However, it is not clear how the supply disruptions affected the contraceptive prevalence rate estimates obtained by the 1988 Demographic and Health Survey.

Until 1992, the MOH purchased condoms from MERUFA for distribution in the different provinces. Since 1992, the central government has delegated the condom procurement decision to the provinces, which means that MERUFA will now have to deal with 53 separate clients instead of one major client.

2.54 The Government was seeking UNFPA assistance for setting up a local IUD production facility. But this project was eventually not undertaken, as it was decided that UNFPA would continue to import IUDs on behalf of the Government. The Government also has plans for the local production of contraceptive pills. However, these plans are as yet uncertain and contingent upon the availability of external financing.

E. Family Planning Expenditure

2.55 Table 2.14 shows the trends in real government family planning expenditure between 1984 and 1990 (with Tables 2.2, 2.3 and 2.4 in the Statistical Annex containing the details). Before analyzing these data, it is important to note that budgetary data are perhaps the least reliable of the statistics collected and reported by the Government. In 1985, for example, Viet Nam was experiencing hyperinflation, and the Government attempted a disastrous ten-for-one currency swap, introducing the "new dong." Reported government expenditure in all categories is much higher in 1985 than in neighboring years. Hence, the precipitous fall in real family planning expenditure from 1985 to 1987 is probably a statistical artifact.

Indeed, what is surprising is the sharp increase (of over 100%) in real family planning expenditure between 1987 and 1990 (Figure 2.5). Again, these numbers cannot be taken at face value, since the method of paying all government workers changed in 1989, with monetary remuneration increasing and payments in kind (mostly rice) decreasing. Since pre-1989 government expenditure data did not include the implicit value of in-kind payments to government employees, it is likely that post-1989 government expenditures are artificially inflated.

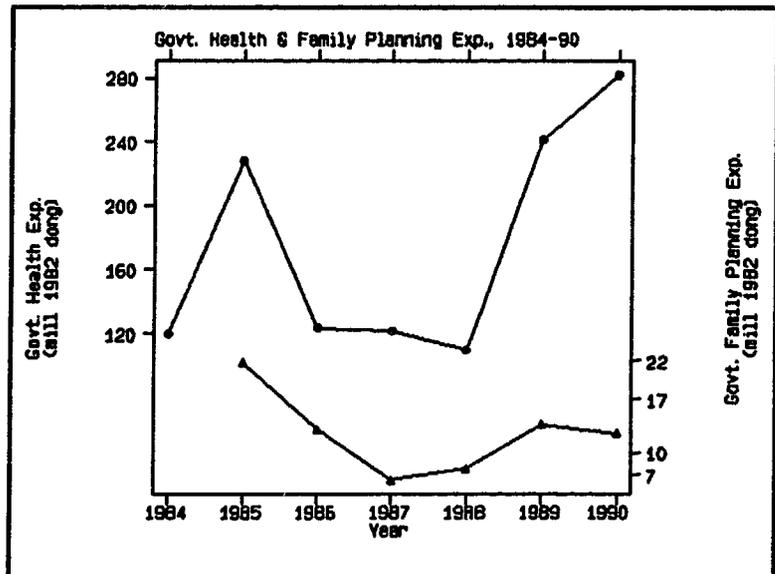


Figure 2.5

2.56 The most likely possibility is that real family planning expenditure per capita (adjusted for the fact that rice subsidies for public employees were replaced by wage increases) did not change much between 1985 and 1990. But, if true, this trend is in itself laudatory, since Viet Nam was experiencing hyperinflation, acute macroeconomic instability, and a sharp drop in total external aid during this period. While there was a large decline in

total external aid after 1989, most of that aid was from the Eastern bloc and included little for the family planning sector. The modest resumption of Western aid in recent years, however, has included a large component for the social sectors and for family planning in particular. Therefore, it is possible that the Government of Viet Nam has been able to maintain family planning expenditure largely because of external assistance from Western donors and the international agencies.

Variable	1985	1986	1987	1988	1989	1990
As % of GDP	0.03	0.05	0.02	0.03	0.04	0.04
As % of Total Govt. Expenditure	0.41	0.40	0.18	0.15	0.19	0.21
Real Per Capita exp. (1982 dong)	0.36	0.21	0.10	0.12	0.21	0.19

Source: Statistical Annex Tables 2.2, 2.3 and 2.4

2.57 The overall structure and evolution of family planning expenditure are shown in Tables 2.1, 2.2 and 2.3 in the Statistical Annex. There are three observations that follow from these data: first, government expenditure on family planning in Viet Nam is modest as compared with other Asian countries at similar stages of development. For instance, in Bangladesh and Nepal -- countries that have roughly comparable income and contraceptive prevalence levels -- family planning accounted for nearly 2% of total government expenditure over the period 1985-88. In Viet Nam, it accounted for between 0.15 and 0.41% of total government expenditure over the same period.^{19/} Second, the share of total family planning expenditure spent on salaries of service delivery personnel has been falling over time, while that spent on administrator salaries has been either flat or increasing. Insofar as service delivery personnel have the greatest influence on the quality of services dispensed to clients, the declining allocation to delivery personnel salaries is likely to have adverse effects on the quality of family planning services. Third and finally, the share of contraceptive procurement and supplies in the family planning budget has been falling over time. Only 5.8% of the family planning budget was devoted to contraceptive supplies in 1990 -- down from a high of 15% in 1988. Reduced budgetary allocation to contraceptive procurement has coincided with the severe shortage of contraceptive supplies being experienced throughout the country. Because there is a large unmet demand for contraceptives in Viet Nam, the shortage of pills, condoms and other safe birth control methods has forced women to resort to induced abortion and menstrual regulation. Also, disruption in the supply of oral contraceptives and condoms has contributed to an excessive reliance on IUDs. Indeed, a deceleration in key demographic parameters, such as the contraceptive prevalence rate (CPR), the volume of new family planning acceptors,

^{19/} Of course, what is more important than the amount spent on family planning is the effectiveness of funds spent. It is difficult, if not impossible, to compare this variable across countries.

and the rate of continuation of use, in recent years provides additional evidence that reduced expenditure on contraceptive procurement and supplies has had undesirable consequences.

F. External Assistance

2.58 . UNFPA. UNFPA has been the main external donor agency assisting the family planning program in Viet Nam since its inception. From 1978 to 1991, its three country programs (1978-83, 1984-87, and 1988-91) have amounted to a total of more than US\$50 million in aid. The level of assistance will be increased sharply in the Fourth Country Program (1992-95), for which UNFPA has already committed itself to providing US\$25 million from its own resources and to raising another US\$11 million from other bilateral sources. Already in 1992, more than 1.7 million IUDs and 4.5 million pill-cycles have been either supplied or ordered by UNFPA. These numbers represent a sizeable increase over UNFPA contraceptive supplies in previous years. In addition, UNFPA will be providing equipment and health-worker training for sterilizations.

2.59 UNFPA's assistance to Viet Nam has primarily been in three areas:

- (a) Maternal and Child Health Care and Family Planning (MCH/FP) has accounted for more than one-half of the total resources spent by the UNFPA in Viet Nam. Supported projects include the training of health workers, improving and strengthening the delivery of MCH/FP services, financing the production of contraceptives (mainly, condoms), the importation and distribution of contraceptives and drugs, and research in human reproduction.
- (b) Information, Education and Communication (IEC) Projects have accounted for about 15% of the total UNFPA support in the third country program. Supported projects include population education, family life and sex education, education of the parents of kindergarten children, and programs for the Vietnamese Women's Union and the Vietnamese Youth Union.
- (c) Basic Data Collection accounted for about 19% of total UNFPA support. The two most successful data collection projects were the 1989 Census on Population and Housing and the 1988 nationally-representative Demographic and Health Sample Survey. The UNFPA is financing three projects related to the Census, various demographic research projects, and the establishment of a system to provide the Government with intercensal information on population.

2.60 Although some of the UNFPA-assisted activities are national in scope, those with a regional focus are being carried out in eight target

provinces which together account for about 25% of the population of Viet Nam.^{20/} The eight provinces are characterized by high birth rates and are mostly rural.

2.61 Other Bilateral and NGOs. Viet Nam also receives financial assistance for family planning activities from other donors. The Australian government has provided some support for the condom manufacturing factory (jointly with the UNFPA). Several NGOs are also active in the family planning area. For example, the International Planned Parenthood Federation contributes US\$200,000 annually in equipment and contraceptives to its local affiliate, the Viet Nam Family Planning Association (VINAFFPA).

2.62 UNFPA uses external NGOs for the execution of several of its projects. The Program for the Introduction and Adaptation of Contraceptive Technology (PIACT) has assisted in retraining 12,000 health workers in IUD insertion, including the production of appropriate IEC materials. The Program for Appropriate Technology in Health (PATH) has provided the technical and managerial support to some UNFPA-supported projects. The Australian National University is the executing agency for a UNFPA project with the Institute of Sociology to strengthen social science and demographic research. JOICFP is executing a UNFPA-supported integrated family planning project.

2.63 In the next cycle of projects, beginning in 1992, UNFPA hopes to call on various NGOs to assist with social marketing, IEC, community based programs, contraceptive supply, and health-worker training in demography. It continues cooperating with the increasing number of NGOs (the Population Council, International Family Planning Association, the Population Crisis Committee, etc.) who have been sending missions to Viet Nam since the end of 1988 to explore project development and collaboration.

G. Issues and Recommendations

2.64 Viet Nam has experienced a remarkable decline in fertility, in part because of a sharp fall in infant mortality but also in part to a strong governmental commitment to the family planning program. Interprovincial analysis of total fertility rates in 1979 and 1989 suggest that low fertility rates are strongly associated with low infant mortality rates and high levels of per-capita provincial domestic product and female literacy (Annex A). These are the factors that drive the demand for smaller families. But the same analysis shows that provinces that provide better access to health facilities and that generally have higher levels of public spending on health and family planning tend to have significantly lower fertility rates. These results are important, since they suggest that further declines in fertility can be achieved best by a combination of policies that seek to increase the demand for smaller families among married couples and, at the same time, improve the supply of family planning services. These include policies that emphasize and promote economic growth, general improvements in health (that result in a further reduction in infant mortality rates) and education (viz.,

^{20/} During the third cycle of assistance, UNFPA provided support to eight provinces. However, according to the new division of provinces in Viet Nam (which results in the country having 53 -- instead of 44 -- provinces), UNFPA has been providing support to ten provinces.

female literacy), and specific improvement in the access to and delivery of family planning services.

2.65 A great deal of the credit for falling fertility rates goes to the Government, which has greatly reduced illiteracy and has established an extensive and comprehensive family planning program. Although analysis of government expenditure in Viet Nam over time is fraught with methodological problems, it appears that in recent years the Government has maintained the level of real family planning expenditure despite a deepening macroeconomic crisis. The success of the Government's effort is apparent in the very high levels of contraceptive awareness in the country and in the large numbers of women who would like to regulate their fertility. In fact, the Government has been slow to realize its own accomplishments and the magnitude of the fertility transition that has taken place in Viet Nam in recent years. The pronouncements of the Government's family planning program continue to be based on the premise that Vietnamese couples can experience further fertility declines but will have to be goaded into birth control. The reality is otherwise. Available evidence suggests that there is already a large latent demand for fertility regulation and birth control among Vietnamese couples; this demand is currently constrained by the inadequate supply of contraceptives and the virtual absence of contraceptive method choice. The Viet Nam Demographic and Health Survey found a significant proportion (over one-half in some cases) of married women, especially in younger age groups and in rural areas, expressing a desire to control births were not using contraceptives. It is important that this extraordinarily high level of unmet need for family planning not be restricted much longer.

2.66 Since the provision of family planning information and services is integrated with the provision of basic health services in Viet Nam, many of the issues relating to the reform of the health care system -- discussed in Chapters IV and V -- are relevant to the family planning program as well. In addition, the discussion in this chapter suggests the need to: (a) rationalize government expenditure on family planning, (b) expand the supply and improve the distribution of contraceptives, (c) increase the variety of contraceptive methods available to couples, (d) enlarge information, education and communication activities related to family planning, (e) retrain health workers in newer family planning methods as these methods become available in the country, and (f) develop a management information system for collecting and monitoring the progress of the family planning program.

2.67 Family Planning Expenditure. The share of family planning in total government expenditure appears to be significantly smaller in Viet Nam than in some other countries at its income level (such as Bangladesh and Nepal).^{21/} Of course, the effectiveness of funds spent is more important to program success than the amount spent, but it is unlikely that Vietnamese family planning expenditure is significantly more effective than that of, say, Bangladesh. An even more disturbing trend is the evolving composition of family planning expenditures. The share of contraceptive supplies in the total family planning budget has been falling, which in turn may be aggravating the shortage of contraceptive supplies in the country. In

^{21/} Of course, these countries have significantly higher levels of total fertility.

addition, the share of total family planning expenditure spent on salaries of service delivery personnel has been falling relative to administrator salaries. Insofar as service delivery personnel have the greatest influence on the quality of services dispensed to clients, the latter trend does not bode well for improving the quality of family planning services.

2.68 Contraceptive Method Mix. Although Viet Nam subscribes to a cafeteria approach, supply constraints for other contraceptives and the preference of health and family planning workers for the IUD (because of its durability of protection and easier monitoring) have made IUDs the only method available to couples, with menstrual regulation as a backup in the event of method failure. A true cafeteria approach that provides a variety of contraceptive methods in the family planning delivery system, including male contraceptive methods, could significantly improve both the coverage and the effectiveness of family planning interventions. Evidence from other countries suggests that the preferred birth control methods would be pills and condoms, especially for newly-married and younger women interested in delaying their first pregnancy or spacing their children.

2.69 In order to alleviate supply constraints and improve the mix of contraceptive methods, the donor community may have to take on the responsibility of providing Viet Nam with oral contraceptives, condoms, IUDs, injectables and implants as required, until such time as the Government is able to allocate the necessary foreign exchange to import these supplies. Currently, UNFPA is the only donor agency providing contraceptives to Viet Nam. In addition, private traders could be encouraged to purchase those methods that are in short supply or that cannot be provided by the official program. The evidence indicates that the incipient private sector is already playing an important role in the provision of oral contraceptives and condoms, especially in the South.

2.70 Current practices of contraceptive procurement, storage and distribution in the country are far from adequate. Technical assistance from donors, as well as substantial investments for upgrading warehouse, equipment and transport, may be needed to design better logistics for delivering contraceptives nationally. The participation of the private sector and NGOs could ease the financial burden of developing the delivery system to a reasonable extent. In this respect, the NCPFP needs to establish a strategic approach to social marketing policy that would provide guidance on how contraceptives would be promoted and sold in the private sector. Obviously, the number of couples able or willing to pay commercial prices will be limited, so pilot efforts to test the effects of subsidized and non-subsidized prices could provide useful insights into prospects for expanding the commercial sector.

2.71 Information, Education and Communication (IEC). In Viet Nam, population education has made significant strides. But the fact that more than one-third of the married women in their reproductive ages not using contraceptives cited potential health risks for not using contraceptives indicates the need for greater information and education. The present coverage of IEC campaigns is not wide because of lack of materials, maintenance of media equipment and retraining of IEC staff. The Government is fully aware of this situation and despite the fact that the NCPFP has allocated 25% of its budget to IEC activities in 1991, family planning

motivation still poses a serious challenge to the policy makers. Although the UNFPA provided assistance in the past, the funds were limited, with the result that the IEC program could not be expanded beyond eight provinces. Further technical assistance in developing messages, IEC training, procuring materials and equipment for media might be required.

2.72 Training. Budgetary support for training in MCH/FP activities dropped steeply during 1985-87 and its share with respect to the total budget remained low (Chapter V). The recently completed Report, "Health Manpower Development Plan -- Viet Nam, 1996-2005," prepared by the MOH, identifies "refresher training" needs for 25,000 workers in MCH/FP and outlines a training plan. At the commune level, the current training curriculum for midwives and nurses needs further reviews, so that they can have added skills in providing better ante-natal care, family planning services, child care and the like. Likewise, with each curriculum, appropriate teaching materials should be designed in tune with the working conditions of Viet Nam (diverse ethnicity, languages, dialects, etc). To conform with the national standard, these materials could be prepared centrally and distributed through secondary medical schools to all trainees.

2.73 Consistent with the Manpower Development Plan of the MOH, the external donors should aim at providing institutional support for the Training Department in the MOH in order to (a) improve planning for MCH/FP manpower development, (b) develop a retraining system, (c) upgrade pedagogical skills of trainers, (d) prepare curricula with changing demand, and (e) enhance printing and distributing training materials. The Swedish International Development Agency (SIDA) is planning to provide a senior long-term resident adviser on training to the MOH, who will help the training unit of the Ministry in preparing curricula, a training plan, and materials. UNFPA and UNICEF are also working with SIDA revising training materials and curriculum for MCH/FP training. To complement this, the following modes of support from other active and potential donors will be relevant: provision of equipment, including transport to support MCH/FP training programs in the districts and communes, reprographic equipment, video facilities, short overseas training for main MCH/FP personnel, and financial support for training activities carried out by other training institutes.

2.74 Management Information System (MIS). The current system organizes the collection and analysis of service data from communes, districts and provinces needed by managers to make decisions. But feedbacks from managers to lower levels are slow and managers cannot respond better to local needs. Commune health centers maintain statistics on the number of users and type of contraceptives used, the characteristics (e.g., age, parity, education, etc) of the users, and also the eligible women in the commune who are not using any contraceptives. This information is transmitted to the district level and then onto the provincial and central levels. While such information and its transmittal is potentially useful, it is not employed effectively, as the higher levels often lack the capacity to analyze the data in a functional way.

2.75 An important lacuna in the data collection system is the lack of a mechanism to regularly collect information on the time spent by MCH/FP workers in various activities and on worker performance and productivity. Such statistics, which could be obtained from time-and-motion studies, are essential for better overall management of the family planning program, since they would enable managers to swiftly reassign health workers and reallocate staff time and resources in response to changing demand conditions. They would also allow managers to make decisions on salary, incentives or compensation based on worker productivity.

2.76 Broadly, the management information system should be streamlined according to the following steps in order to make better use of information and have timely decisions from managers. First, there should be "standard" register books on (a) continuing users and their characteristics, (b) eligible couples not using contraceptives and their characteristics, (c) maternal child health (e.g., EPI, oral rehydration, etc.), (d) births and deaths, and (e) inventory of contraceptives and equipment. Second, performance indicators should be developed jointly by workers and managers for measuring and reporting performance in accordance with achievements of pre-determined objectives. Third, there should be a systematic mechanism for monthly transmission of such reports to the next hierarchy. Fourth, each supervisory level should have the capacity to analyze and interpret such reports, and make decisions on performance. Fifth, there should be a mechanism for feedback of comments, including support for resolving problems, from managers at each level to workers at the next lower level.

2.77 Strengthening the system nationwide will be a complex task, and its benefits in terms of raising operational efficiency take some time to materialize. Nevertheless, immediate action in this area is warranted, and the eventual payoff will justify the initial investment.

III. NUTRITION

A. Child and Maternal Nutritional Outcomes

3.1 Malnutrition Among Children. Child malnutrition rates in Viet Nam are high relative to its infant mortality rate. Results from the recently analyzed General Nutrition Survey (GNS) data show that, among children under six years of age, the percentages of moderately and severely malnourished children are 45% for weight-for-age, over 56.5% for height-for-age, and 9.4% for weight-for-height (Table 3.1).^{22/} Malnutrition rates are much lower in the first year of life (viz., 24.5% for weight, 41.3% for height, and 5.7% for weight-for-height), but increase sharply in the second year of life, after which they remain more or less constant.^{23/} Data also suggest that urban children are better nourished than rural counterparts. A strong seasonal pattern to malnourishment exists in rural areas, where substantial numbers of children are hospitalized with severe malnutrition from May to October. This is when the old crop has been consumed but the new crop not yet harvested. However, Vietnam's major child nutrition problem appears to be stunting from longer-term, chronic undernutrition rather than wasting from short-term, acute food deficits. Malnourishment for a significant proportion of children begins in the first year of life. Reasons for this may be low-birth weights (20% of the infants born in 1990 were estimated to weigh less than 2,500 grams at birth), sustained and nurtured by inadequate breast-feeding and complementary feeding practices. For many children malnutrition sets in during weaning when breast milk intakes decline sharply and adequate complementary feeding is crucial for growth. That problem may be further complicated by premature introduction of weaning foods.

3.2 International Comparisons. If the results from the 1987-89 GNS accurately represent the nutritional situation in the country, Viet Nam has a higher proportion of underweight and stunted children than almost any other country in South and Southeast Asia, excepting Bangladesh and possibly Myanmar (Table 3.1). Surprisingly, the magnitude of wasting is low -- comparable to levels observed in Thailand and the Philippines.

^{22/} The reference that is used for malnutrition here (as in most other studies) is the United States National Center for Health Statistics (NCHS). The percentage of children whose anthropometric indicators are more than minus two standard deviations from the NCHS mean level are considered malnourished.

^{23/} These trends are similar to those found in malnourished children elsewhere (WHO, 1986) although height-for-age usually levels off after 3 years.

Table 3.1: Magnitude of Malnutrition in Selected Asian Countries			
	Percentage of Children (1980-87) suffering from:		
Country	moderate and severe underweight (0-4 years)^a	moderate and severe wasting (12-23 months)^b	moderate and severe stunting (24-59 months)^c
Myanmar	38	17	75
Indonesia	51	17	..
Bangladesh	60	17	59
Philippines	33	7	42
Sri Lanka	38	19	34
Thailand	26	10	28
Viet Nam ^d	45.0	9.4	56.5

Notes:

^a Percentage of children with greater than minus two standard deviations from the 50th percentile of the weight-for-age reference population (US NCHS).

^b Percentage of children with greater than minus two standard deviations from the 50th percentile of the weight-for-height reference population (US NCHS).

^c Percentage of children with greater than minus two standard deviations from the 50th percentile of the height-for-age reference population (US NCHS).

^d Data are from the General Survey of Nutrition and refer to the period 1987-89.

Source: UNICEF, The State of the World's Children 1990, Oxford University Press, New York, 1990.

3.3 Time Trends. Various household surveys undertaken by the National Institute of Nutrition (NIN) allow us to trace the magnitude of malnutrition over time. Weight-for-age of young children appears to have improved between 1982-85 and 1986-87, with the improvement being more marked in the 12-35 month ages (Table 3.2). Between 1986-87 and 1987-89, however, both weight-for-age and height-for-age of younger children (0-11 months) deteriorated significantly, while the malnutrition rates of older children did not change appreciably. A parallel increase in low-birth weights is also indicated at this time (see discussion below). Reasons for the apparent retrogression in the nutritional status of younger children warrant further investigation. The downturn may reflect the fact that data from the third NIN survey are not strictly comparable to earlier data. In addition, 1987-88 was an exception year because of a poor crop and overall lower distribution of rice by the Government. But it is also possible that the deepening macroeconomic crisis during the 1984-88 period may have contributed to the deterioration in nutritional status. Without additional information, it is difficult to substantiate the downturn in nutritional status since 1986-87.

Table 3.2: Percentage of Children under 5 years of age malnourished, 1982-89^a

Age group (months)	1982-85				1986-87				1987-89			
	No. of children	% malnourished			No. of children	% malnourished			No. of children	% malnourished		
		Weight -for- age	Height -for- age	Weight -for- height		Weight -for- age	Height -for- age	Weight -for- height		Weight -for- age	Height -for- age	Weight -for- height
0-11	1,955	21.7	21.5	3.9	2,978	19.6	28.2	7.3	1,153	24.5	41.3	5.7
12-23	2,737	59.0	61.3	11.7	2,782	45.3	50.0	10.1	1,297	43.8	57.9	10.9
24-35	2,297	62.0	64.7	8.5	2,888	50.4	55.4	9.9	1,454	51.4	55.1	9.7
36-47	2,288	56.9	68.3	4.4	3,012	46.9	56.8	8.9	1,557	49.8	60.0	9.5
48-59	2,532	55.0	71.8	5.2	3,213	47.1	55.6	7.6	1,583	50.3	64.5	10.5
0-59	11,809	52.2	59.7	7.0	14,873	41.8	49.1	8.7	7,044	45.0	56.5	9.4

^{/a} Figures in the table are percentages of children with-for-age, height-for-age, and weight-for-height below two standard deviations as compared to the NCHS reference cohort.

Source: NIN, various surveys.

3.4 Low Birth Weight. Despite the crucial role women play in agriculture, women had no real status in the village and the family prior to 1954. After the Communist party assumed power, women could, for the first time, hold land in their own names and were elected to leadership posts during the land reform period. However, the gains that women have made under socialism may be threatened by the new contracted system. In addition, a seriously unbalanced sex ratio from years of war and extensive male migration has increased the economic burden on women. The necessity to manage full time work and child care may have compromised women's health under the new system.^{24/}

3.5 A measure of maternal nutritional status is the prevalence of low birth weights, viz., the proportion of infants born with a weight under 2500 gms. The Government of Viet Nam reported in 1982 that about 8% of the babies

^{24/} C. P. White, *Socialist Transformation of Agriculture and Gender Relations: The Vietnamese Case*, *IDS Bulletin* 13 (4): 44-51.

were born with low birth weight.^{25/} In 1985 and 1987, the MOH estimated the proportion of low birth weight infants to be 18 and 14 percent, respectively. Birth reports a figure of 20% in 1990.^{26/} If the proportion of low birth weight babies has indeed increased, as the various estimates suggest, it represents a serious decline in the health status of women. This may also explain the increase in malnutrition among infants between 1986-87 and 1987-89 (noted earlier). The GSO does report an attrition in health services directed to mothers and children during 1988-89.^{27/}

3.6 Other evidence also suggests that Viet Nam has a high ratio of low birth weight babies relative to its infant mortality and other indicators. A review of birth weights in Hanoi from 1976 to 1986 showed that about 21.7% of the infants were born with low birth weight.^{28/} Estimates from two hospitals in Ho Chi Minh City indicate the proportion of low birth weight babies to be 7.8% and 21.6% of all births.^{29/}

3.7 Regional Differences. Table 3.3 presents data on some of the key indicators associated with child nutritional status in 1987-89 for the eight ecological regions of Viet Nam. The data show substantial differences in average weights and heights of children under 5 years and the magnitude of malnutrition among children across ecoregions. Generally, the Red River Delta, Central Coast of Northlands, Central Coast of Southlands, and the Central Highlands show the highest rates of malnutrition, while the Mekong River Delta and the cities of Ho Chi Minh and Hanoi show the lowest rates. Surprisingly, the North Mountain and Midlands appear to be better off than many other regions in terms of malnutrition rates. The low malnutrition in the mountainous areas of the North is counter intuitive, since this region has among the lowest agricultural productivity and per capita incomes and the highest infant mortality rates in the country.

3.8 There might be three explanations for the low malnutrition rates in the North Mountain and Midlands. First, that the NIN survey in the mountainous areas of the North selectively sampled the more accessible households close to main roads -- a fact acknowledged by the National Institute of Nutrition.^{30/} Since households residing in the accessible

^{25/} T. Brun, "Food Consumption and Nutritional Status in the Socialist Republic of Viet Nam," Nutrition Consultant's Report Series 82, FAO, Rome, 1990 (mimeo).

^{26/} C. Birt, "Establishment of Primary Health Care in Viet Nam," British Journal of General Practice 40: 341-344.

^{27/} General Statistical Office, Statistical Data of the Socialist Republic of Viet Nam 1976-1990, Hanoi, 1991, p. 159.

^{28/} Brun, op. cit.

^{29/} Brun, op. cit., p. 37.

^{30/} Other than agriculture, households in the mountainous regions are involved in trade, both legal and illegal, of wood and other products across the border with China.

areas of the mountain regions generally are better off than those in the remote areas, the estimates of food consumption and malnutrition recorded for this selected sub-sample may not be representative of the entire ecoregion. The second plausible reason for the discrepancy between malnutrition and production is the existence of illegal rice trade on the mountain borders between Viet Nam and China. It is likely that actual food production is higher than that "registered" with the Government. Underregistration enables the mountainous provinces to obtain greater rice allocation from Government security stocks. In addition, some of the unregistered produce is smuggled across the borders to China where it fetches a higher cash value. This may increase cash income among the mountain populace, which may be yet another explanation for a relatively better diet and lower rates of malnutrition in the mountain areas. A third hypothesis is the existence of lower prices for food and other consumables in these areas than prevail elsewhere in rural Viet Nam, thus permitting poor families to obtain more nutrition with their incomes.

3.9 Socioeconomic Differences. Data on income are not available. The following analyses use food expenditure as a proxy for socioeconomic status. An attempt was also made to construct a wealth/asset index as an alternate proxy for socioeconomic status. Information on the price of rice in each of the areas surveyed was also available, but the reliability of these data is suspect. Table 3.4 presents mean values of key indicators for children by food expenditure quartiles. The percentage of children above minus two standard deviations of weight-for-age (NCHS standards) (i.e., the proportion of well-nourished children) increases gradually as we move from the lowest to the highest food expenditure quartile. Differences between the third and the fourth quartile are much less than those between the second and the third quartile. Differences in height-for-age follow a similar pattern. If food expenditure is a reliable proxy for income, these data suggest that income growth has a greater impact on reducing malnutrition at lower income levels than at higher income levels.

3.10 Determinants. Analysis of individual-level data from the General Nutrition Survey indicates that the existence of a bathroom in the house -- reflecting the level of environmental hygiene and income in the household -- is positively associated with weight (Annex B). After controlling for age and sex, children residing in houses with bathrooms are 157 gms heavier than those without bathrooms. Another indicator of household socioeconomic status is a household's participation in the 5% land scheme -- a program aimed at improving household food security by making available 5% of the commune land to individual families for cultivation. The empirical results show an inverse association between a household's participation in the 5% land scheme and child weights. Although *prima facie* this evidence seems counter-intuitive, in fact it indicates a positive association between child weights and household socioeconomic status, since the 5% land scheme is targeted to the needy. But, more importantly, this evidence indicates that the gap between the nutritional need of children and the supply of nutrition is not being adequately bridged by the supplementation (of food security/cash income) from the 5% land.

3.11 Another important finding is that, even after controlling for household socioeconomic status and child age and sex, there are significant differences in child weights across ethnic groups and ecoregions. Children

belonging to the Viet ethnic group have lower weights than other children. Children in the Central Highlands, the Central Coast of Southland, and those in the Red River Delta have lower weights than children in Hanoi and Ho Chi Minh cities. Children in the Mekong River Delta are observed to have the highest weights, followed by children in the North East of Southland, the Central Coast of Southland, and the North Mountain Midlands, in that order. It is useful to note here that this ordering of ecoregions in terms of weight-for-age is somewhat different from the unadjusted order presented in Table 3.3.31/

3.12 Analysis of data on child heights shows broadly similar results (Annex B). The presence of a bathroom, ownership of a pig, and availability of running water in the house are all positively associated with heights of young children. Participation in the 5% land scheme is again negatively associated with child heights. Energy intakes and food expenditure do not show an association with height. The latter result is not surprising, and merely reflects the fact that height is influenced cumulatively by past food intakes. Another explanation is that energy intakes (and quite probably food expenditure as well) in a predominantly rural country like Viet Nam vary considerably during different times of the year, and that measurement of energy intakes at a single point in time is unlikely to be related to measures of long-term nutritional status.

3.13 As in the case of child weights, children belonging to the Viet ethnic group are likely to have lower heights than those belonging to non-Viet ethnic groups. Children in the North-east of Northlands tend to be the tallest, followed by those in the Central Highlands, North Mountain and Midlands, and the Mekong River Delta, respectively. Children in the Red River Delta have the shortest stature, followed by those residing in the Central Coast of Northland and the Central Coast of Southland.

31/ In the data presented in Table 4.3, there are no controls for age, gender, participation in the 5% land scheme, etc.

Table 3.3: Key Indicators for Children 0-59 months old by Eco-Region

INDICATORS	ECO-REGIONS*							
	1	2	3	4	5	6	7	8
1. Calorie Intake	727	806	792	874	...	817	818	944
0-59 Months								
0-11 Months	585	687	707	756	...	786	743	791
12-24 Months	693	781	750	842	...	783	755	888
25-59 Months	767	840	828	907	...	833	849	985
2. Mean Food Expenses	292	68	398	278	...	648	430	2117
3. Mean Price of Rice	618	206	611	403	...	499	574	638
4. Mean weight (Kg)	10.54	10.24	10.20	10.69	10.17	11.06	11.33	11.24
5. Mean height (Cm)	81.9	80.8	80.4	80.9	80.96	84.6	82.6	85.8
6. Mean age (Months)	30.7	31.4	30.2	31.9	29.3	32.9	30.7	33.8
7. % children above -2SD weight-for-age	59.8	48.6	48.7	53.0	54.1	65.0	70.9	70.9
8. % children above -2SD height-for-age	49.0	35.4	38.6	46.8	45.9	56.4	52.1	71.6
9. % children above -2SD wt-for-height	91.1	90.2	86.6	88.2	91.8	93.6	94.5	94.5
10.% children non-Viet ethnic group	42.14	0.00	0.00	0.26	90.67	7.67	19.48	0.00

* Eco-Region Code: 1 = North Mountain & mid-lands 2 = Red river delta
 3 = Central coast of northlands 4 = Central coast of southlands
 5 = Central Highlands 6 = NorthEast of southlands
 7 = Mekong river delta 8 = Hanoi & Ho Chi Minh cities

Source: MIN, General Nutrition Survey, 1987-89

Table 3.4: Key Indicators for Children (0-59 months) by Food-Expenditure Quartile

<u>INDICATOR</u>	<u>FOOD-EXPENDITURE QUARTILE</u>			
	<u>FIRST QUARTILE</u>	<u>SECOND QUARTILE</u>	<u>THIRD QUARTILE</u>	<u>FOURTH QUARTILE</u>
1. Mean weight (Kg)	10.38	10.34	10.73	10.87
2. Mean height (Cm)	81.3	80.9	82.4	82.7
3. % children above - 2SD weight-for-age	52.07	54.85	58.87	59.97
4. % children above - 2SD height-for-age	37.86	42.17	47.03	50.72
5. % children above - 2SD weight/height	91.05	90.57	90.32	91.88
6. Mean Calorie Intake	805	773	828	837
7. Mean Food Expenses	13.29	56.76	75.39	93.33
8. Mean value of "asset index"	82.24	124.87	145.30	141.20
9. Mean age (Months)	31.65	30.76	31.20	31.66

Source: MIN, General Nutrition Survey, 1991.

B. Nutritional Inputs

Food Consumption and Energy Intakes

3.14 Diet Composition. The Vietnamese diet is dominated by rice, which supplies 80-85% of total intake of calories (Table 3.5). Carbohydrates contribute between 71-83% of total energy intakes of adults and between 62-83% of energy intakes of children under five in different ecoregions. Consumption of milk and milk products is minimal even among young children. Fish and aquatic foods substantially add to dietary quality, except in the north-mountain midlands and the central highland regions. Mean per capita consumption of meats is also high, though standard deviations around the mean are large, implying large differences in individual intakes. Fat consumption is low, averaging less than half of the 18% of total energy intake recommended by the National Institute of Nutrition (NIN).

3.15 The predominance of rice in the Vietnamese diet is of particular concern, especially in the case of young children and pregnant and breastfeeding women, since the caloric density of rice is very low and these individuals may thus be unable to consume enough calories to meet their special energy needs. Additionally, since rice alone is deficient in several important nutrients, such as iron, thiamine, Vitamin A and fats (lipids), women and young children are especially susceptible to diseases associated with these deficiencies, such as anemia, beriberi, and xerophthalmia (which can ultimately lead to blindness).

3.16 Adult Energy Intakes. Mean daily rice consumption per capita is 452 grams, with the mean value for each region being above 400 grams. Average daily energy intakes for adults are 1,928 calories. However, once again, these mean values mask substantial interhousehold as well as intrahousehold variations in food availability. According to one estimate, between 6-41% of households surveyed in different ecoregions had daily per capita energy intakes of less than 1,800 calories.^{32/} More recent data from the NIN General Survey Report indicate that in 1987-90, adults in nearly 9% of the sample households were consuming less than 1,500 calories, while adults in over 25% of households had energy intakes below 1,800 calories per day. Interregional comparisons suggest that the North Mountains and Midlands as well as the Central Highlands have the most equitable distribution of calories with about 12-15% of the adults consuming 1,800 Calories or less in these regions. On the other hand, the proportion of adults consuming fewer than 1,800 calories was about 24% in the Mekong River Delta and 35% in Hanoi and Ho Chi Minh cities. Figures for other regions ranged between 25 and 30 percent.

^{32/} Tu Giay, "General Survey on Food Consumption and Nutritional Status in Viet Nam," National Institute of Nutrition, 1989 (mimeo).

3.17 Regional Differences. There are substantial differences in mean adult energy intakes across ecoregions. While the Central Coast of Southlands has a mean adult energy intake of 1,861 calories per day, adults in the North-Mountain Midlands and the Central Highland regions consume more than 2,000 calories per day (Table 3.6). Interestingly, the mountain areas also show lower rates of child malnutrition than most other ecoregions in Viet Nam. The high average energy intakes are inconsistent with the generally low agricultural productivity and low incomes in the mountain areas. There are several possible explanations of this inconsistency in the data. As noted earlier, this discrepancy between production and consumption might arise because the NIN sample may be non-representative of the "true" mountain population, since the NIN sampled the more accessible and better-off households. A second hypothesis is the existence of lower prices for food and other consumption goods in these areas than prevail in other rural areas, thereby enabling poor families to obtain more nutrition with their incomes. Alternatively, the inconsistency between food intake and food production may be explained by the existence of illicit trade on the mountain borders between Viet Nam and China and the additional unreported incomes from it. The latter explanation would imply that households in the mountain areas of the North produce more rice and earn higher incomes than generally believed. While this hypothesis does not seem plausible in the face of all the evidence that shows the mountainous regions to be poorer, conclusive evidence to resolve this issue can only be obtained through surveys covering the remote mountain areas.33/

3.18 Child Energy Intakes. Energy intakes of young children under six (Table 3.3) are estimated at 827 calories per day (excluding breast-milk intakes). Figures for the North-Mountain Midlands are the lowest (727 calories), while those for the cities are the highest (944 calories).34/ These figures, if representative, suggest that energy intakes of young children do not parallel those of adults in the eight ecoregions. In fact, there seems to be an almost inverse relationship between adult and young child energy intakes. Awareness about the nutritional needs of young children may be one of the factors that may explain this differential. The inverse relationship may imply re-distribution in intra-family food distribution wherein children's food allocation is increased at the cost of adults.

33/ The National Institute of Nutrition is currently investigating this issue by undertaking more representative surveys in the mountainous regions.

34/ Figures for the Central highlands are not available.

Table 3.5: Average Daily Food Consumption per capita and per child under 5 years, 1987-89				
Food	Daily per capita consumption (grams)		Daily per capita consumption among children under 5 (grams)	
	Mean	Std. Dev.	Mean	Std. Dev.
Rice	451.6	4.0	188.3	34.94
Other cereals	6.21	10.79	4.25	10.70
Tubers	37.6	37.3	6.56	13.34
Beans & peas	2.79	5.77	1.06	2.98
Tofu	6.80	7.44	2.45	6.27
Nuts & sesame	3.79	5.22	0.85	2.75
Veg. leaves	124.8	35.5	16.48	15.76
Veg. tubers	46.53	27.53	4.87	9.40
Fruit	4.09	7.45	9.49	13.32
Sugar	0.76	1.82	3.09	6.22
Sauces	24.73	10.73	4.66	6.09
Fats & oil	3.01	2.68	0.61	1.52
Meats	24.41	14.39	13.01	10.42
Eggs & milk	2.93	3.65	13.30	13.96
Fish	42.1	16.6	35.32	22.33
Other seafood	7.85	8.03	3.45	6.48

Source: NHN, General Nutrition Survey, 1991.

3.19 Determinants of Child Energy Intakes. Analysis of data on child (0-5 years of age) energy intakes from the General Nutrition Survey indicate that the availability of running water in the child's house is the most important factor associated with energy intake (Annex B). As noted earlier, this variable may be a proxy for income or for general environmental hygiene in the household. Interestingly, neither food expenditure nor affiliation to the Viet ethnic group is significantly associated with energy intake.

3.20 Micronutrient Intakes. Iron and Vitamin A intakes for adults and young children are listed in Table 3.7 by ecoregion. Intakes of iron, iodine and vitamin A are generally low throughout Viet Nam. The daily per capita intake of iron is only about 10 mg, much of which is in the unabsorbable form (non-heme iron). This is particularly problematic for pregnant women who need to absorb at least 6.3 mg/day in the last two trimesters.^{35/} This equates to 120 mg/day for women eating foods containing only non-heme iron or 60 mg/day for women eating foods containing some heme iron.^{36/} In hospitals in Hanoi, 40% of children under the age of 15 years of age, and 64-70% of children 1-18 months of age, are observed to be anemic. Typically, children under 2 years of age are anemic from iron deficiency alone, while anemia in those 3-7 years of age may also be due to parasitic and other infections.^{37/}

3.21 Iodine deficiency is a problem, especially at high elevations where iodine-depleted soils prevail. Up to 2.5% of the population in some mountainous areas have cretinism (the most severe form of deficiency) (Due, et al, 1989) with primarily young children being affected.^{38/} Vitamin A deficiency is also a problem. According to the WHO, there is a public health problem when more than 0.5% of children exhibit clinical signs of vitamin A deficiency.^{39/} All geographical areas in Viet Nam, with the exception of the Southeast and Hanoi City, report clinical signs above .5 percent. The North Mountain Midlands, Red River Delta, Mekong River Delta, and Ho Chi Minh City all report the highest rates of vitamin A deficiency. These high rates of vitamin A deficiency do not correspond with per capita retinol consumption for the general population. In the North Mountain Midlands, where vitamin A deficiency is highest, per capita consumption of retinol is also the highest. This probably means that children are not being fed foods containing vitamin A (or vitamin A activity).

^{35/} E. M. DeMaeyer, "Preventing and Controlling Iron Deficiency Anaemia Through Primary Health Care," W.H.O., Geneva, 1989.

^{36/} H. Levin, E. Pollitt, R. Galloway, and J. McGuire, "Micronutrient Deficiency Disorders," in D. Jamison and H. Mosley, eds., Health Sector Priorities Review, The World Bank, 1991 (draft).

^{37/} Brun, op. cit., p. 11.

^{38/} D. T. Due, L. Mv, and J. Dricot, "Viet Nam," IDD Newsletter 5(2): 23-24.

^{39/} Levin, et al., op. cit.

Table 3.6: Key Nutrition Indicators by Eco-Region, 1987-89

INDICATORS	ECO-REGIONS*							
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Mean Adult Calorie intake/capita/day	2107	1878	1880	1861	2059	1924	1891	1886
2. % energy from carbohydrates	80.1	82.6	79.9	76.2	81.3	77.8	80.9	71.0
3. % of families with adults consuming < 1800 calories/day	11.8	27.2	30.4	30.1	15.0	27.1	25.3	35.1

* Eco-Region Code: 1 = North Mountain & mid-lands
 2 = Red river delta
 3 = Central coast of northlands
 4 = Central coast of southlands
 5 = Central Highlands
 6 = NorthEast of southlands
 7 = Mekong river delta
 8 = Hanoi & Ho Chi Minh cities

Source: NIN, General Nutrition Survey, 1987-89

Table 3.7: Micro-Nutrient Intakes by Eco-region, 1987-89

INDICATORS	ECO-REGION*							
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Mean Iron intakes (adults)	10.31	9.60	9.81	8.79	9.01	9.64	8.91	10.08
2. Mean Iron intakes (0-6 years)	3.10	3.67	3.35	3.96	...	4.10	4.17	4.76
3. Mean Vit A intakes (adults)	0.01	0.01	0.01	0.04	0.01	0.03	0.02	0.13
4. Mean Carotene intake (adults)	2.78	3.32	2.07	1.44	3.53	2.26	1.61	2.41
5. Mean Vit A intakes (0-6 years)	0.05	0.07	0.02	0.03	...	0.04	0.02	0.20
6. Mean Carotene intake (0-6 years)	0.25	0.61	0.17	0.16	...	0.60	0.12	0.93

* Eco-Region Code: 1 = North Mountain & mid-lands
 2 = Red river delta
 3 = Central coast of northlands
 4 = Central coast of southlands
 5 = Central Highlands
 6 = NorthEast of southlands
 7 = Mekong river delta
 8 = Hanoi & Ho Chi Minh cities

Source: NIN, General Nutrition Survey, 1987-89

Breastfeeding Patterns

3.22 Breast-feeding is almost universal in Viet Nam, with between 97-99% mothers breast-feeding. Mothers over thirty years of age, those living in rural areas, those working in the agriculture sector, and those from the northern regions are slightly more likely to breast-feed than others (Table 3.8). However, differences between these groups are small. The NIN reports a small (but steady) decline between 1987 and 1989 in the percentage of mothers breast-feeding at 9 and 12 months of age. The mean duration of breast-feeding is 14.5 months, with rural mothers and those working in the agricultural sector breast-feeding for a little over one month longer than urban mothers (Table 3.8). Basic literacy is associated with a longer period of breast-feeding, an advantage that seems to be lost with higher education (due to a concurrent shift in work patterns away from agriculture). The Vietnamese government allows maternity leave for 180 days, a factor which promotes breast-feeding among urban mothers. The most common reasons for discontinuation of breast-feeding among mothers (NIN data) are maternal perception of lack of milk and the mother's return to work.

3.23 A study on 2,579 infants aged 0-23 months from lowland and mountainous provinces of the North and the South reported 100% breast-feeding between 1984-1989.^{40/} Duration of breast-feeding ranged from 18-21 months. Major reasons for discontinuing breastfeeding in urban areas were maternal employment, and, in rural areas, maternal perception that the "child had grown up". Rooming-in after birth was more common in rural areas, but not in urban areas. Over 81% of urban-born infants were separated from their mothers at birth, and prelacteal feeds were common among 49-78% of newborns.

3.24 According to one NIN study, in the third month of lactation, only 21% mothers produce 600 ml or more of breast-milk, with 56% mothers producing between 240-500 ml. However, another NIN study on 35 mothers (origin not known) concludes that "the average milk secretion during the first three months varies at 500-600 ml per day ...".^{41/} There has been extensive research on the sufficiency of breastmilk with conclusions that some women have insufficient milk because of poor nutrition or because they work.^{42/} It is more likely that these women are not breastfeeding their children exclusively, so that milk production is low and intake inadequate. In addition, premature introduction of supplemental foods greatly increases the risk of infection in the small infant.

^{40/} Nhan Nguyen Thu, Hofvander, et al. "Breastfeeding and Weaning Practices," NIN, Hanoi, 1990, mimeo.

^{41/} Kim Nguyen Thi, "Nutritive Composition of Breastmilk of Vietnamese Mothers," NIN, undated (mimeo).

^{42/} Brun, op. cit.

Table 3.8: Mean Duration of Breastfeeding, by Selected background Characteristics, 1988		
Background Characteristic	Duration of Breastfeeding (in months)	Weighted Number of Births
<u>Age</u>		
Under 30 years	14.1	672
30 years or older	14.8	916
<u>Urban/Rural Residence</u>		
Urban	13.4	252
Rural	14.8	1333
<u>Region</u>		
North	14.8	824
South	14.2	767
<u>Education</u>		
Illiterate	14.6	92
Can Read or Write	15.7	288
Primary	14.5	960
Secondary	13.4	248
<u>Profession</u>		
Agriculture	14.9	1138
Other production		
Nonproduction sector	13.7	276
TOTAL	14.5	1588
Source: Viet Nam Demographic and Health Survey (VNDHS), 1988		

3.25 Since over 90% of births in Viet Nam take place at health facilities, hospital and institutional practices play an important role in the promotion of breast-feeding. According to a breastfeeding and fertility survey in the district of Uong Bi in Quang Ninh Province, breast-feeding was initiated after 72 hours for 35% of the infants.^{43/} Among others, it was delayed for 1-3 days after birth. Almost 99% of the mothers waited until 36 hours after birth before they initiated breastfeeding, presumably because of an incorrect perception that colostrum is an inferior food. Direct information on exclusive breastfeeding was not given, but it was reported that 90% of infants were receiving supplementary food by 4 months of age. (Mean duration of breastfeeding was observed to 13.3 months.) Bottle-feeding was not generally practiced because formula was not available; instead mothers supplemented with solid foods.

^{43/} N. T. Nga and P. Weissner, "Breastfeeding and Young Child Nutrition in Uong bi, Quang Ninh Province, Viet Nam," Journal of Tropical Pediatrics 32 (3): 137-139, 1986.

Supplementary Feeding of Infants

3.26 Information on duration of exclusive breast-feeding is limited. The VNDHS estimated the mean duration of breastfeeding nationally to be 14.5 months. According to the breastfeeding and fertility survey in Uong Bi, complementary feeding of infants is started at 3 months. Age at starting supplementary feeding in four provinces studied by the NIN is listed below:

3.27 Another study in the Central province shows that weaning foods are introduced early at 2.8 months, while breast-feeding is prolonged until 16.3 months.^{44/}

Hanoi (North)	3.4 - 4.2 months
Tien Giang (South)	4.9 - 5.4 months
Ha Na Minh (North)	3.0 - 4.2 months
Lang San (Mountain)	0.7 - 2.3 months

(Source: NIN)

3.28 Traditional beliefs proscribe the feeding of vegetables and meats to infants before one to two years of age. Use of fats and oils is believed to lead to diarrhea. The most common supplementary food for infants is rice gruel (prepared with rice flour and salt, with small amounts of meat, fish, mung beans or meat added at times), commonly given after 4 months of age. Cow milk is usually not given to infants. Use of commercial infant formula is limited to urban areas where up to 48% of the infants of factory workers are bottle-fed. Viet Nam has yet to implement the International Code for Marketing of Infant Foods. One small NIN study found a significant difference in diarrhea incidence between supplemented and non-supplemented infants aged 0-3 months and 4-24 months.

3.29 A weaning food consisting of rice flour, germinated "mung bean" and salt/sugar is manufactured by a government-owned, UNICEF-assisted factory close to Hanoi. The low-cost weaning food with a shelf-life of four months is packaged and sold in 200 gm plastic bags. Plans are under way to substitute some of the World Food Programme rations (given to lactating mothers) with this weaning food.

Feeding in Child-Care Facilities

3.30 Since a large proportion of urban and rural mothers work, child-care facilities are crucial in determining breast-feeding patterns. The creche system and the formal nursery schools were integrated in 1987 and are now administered by the Department for Children's Protection and Education. The system now covers all pre-school children. These creches are financed either by the state-run cooperatives, or by communes/parents themselves, with marginal support from government budgets. In 1988-89, 28,122 creches were functional, providing service to just about 15% of the total 0-3 age population, this figure being 5% less than that for 1987-88. A majority of these (80 percent) are located in urban areas and in the northern part of Viet Nam. Much of the need for child-care facilities is met by "unregistered" or

^{44/} Khan Nguyen Cong, Thin Duc Hoang, and An Quoc Tran, "Recent Observations on Breastfeeding Practices at Three Communes of the Central Provinces," NIN, Hanoi, 1990 (mimeo).

informal family-run creches housed in cramped private homes. The exact numbers of such creches are not known, but they are fairly common, especially in urban areas. In rural areas, many of these creches are set up to meet seasonal demands such as during harvest time.

3.31 In one typical creche visited in Quat Dong commune, mothers leave their infants (0-36 months) at the creche early morning before they leave for work, return once during the day to breast-feed, and pick up their children at the end of the day when returning from agricultural work. Mothers leave food for the infants, and contribute towards the cost of the creche services. Infants are fed rice-soup during the day on demand. Opportunities for breast-feeding during the day are obviously severely curtailed. Interestingly, surveys indicate that creche facilities are availed as a second resort when family support is not available, and girls are more likely to be left in a creche than boys.^{45/}

3.32 In conclusion, breast-feeding in Viet Nam is initiated late, supplementary foods are low in energy and inappropriate, and a majority of the mothers (especially in rural areas) return to work soon after child-birth, leaving infants in the care of older siblings, grand-mothers, or in some cases, creches. Opportunities for breast-feeding infants in creches are limited, so that many infants survive on rice-soup as a substitute for breast-milk through the day. The reduced opportunities for suckling suppresses breast-milk production, thereby promoting the cycle of inadequate infant-feeding. The Government is still considering implementation of the International Code for Marketing of Breast-milk substitutes.

C. Food Production and Security

3.33 Food Production and Exports: Per capita food production in Viet Nam has been increasing almost continuously since the mid-1970s (Figure 3.1). Since 1987, rice production -- indeed, total cereal production -- has been increasing even more rapidly (although there was a small dip in 1990), in part because of far-reaching policy reforms in the agricultural sector (Figure 3.2). The increase in rice production is attributable primarily to an increase in the total area under cultivation rather than to an increase in rice yields.^{46/} Rice exports have increased dramatically between 1985 and 1990 (though recent reports indicate a drop in exports for 1991 as a consequence of lower production).

3.34 Food balance sheets prepared by the FAO show that average daily availability of calories and protein per capita, which fell dramatically during the 1970s, have been increasing secularly during the 1980s. At present, energy availability is estimated to be more than 2,250 calories per day (Figure 3.3). This figure is higher than the recommended level of energy intake for a moderate activity adult in Viet Nam. Therefore, undernutrition

^{45/} Stewart H. Fraser, "Viet Nam: Maternal Child Health and Education -- Notes, Aspects and Prospects," Population Education Studies, La Trobe University, Victoria, 1990 (mimeo).

^{46/} Tu Giay, "A decade of Food and Nutrition Development in Viet Nam: 1980-89," NIN, Hanoi, 1991 (mimeo).

in Viet Nam is not a problem of inadequate food production, but instead one of distribution and demand. A poor procurement, storage and transportation system continues to hinder the efficient distribution of food grains from the food-surplus to the food-deficit areas within the country. Indeed, government encouragement of regional self-sufficiency in rice in the past has prevented development of storage, transportation and distribution systems. In addition, in recent years, the removal of price controls and abolition of food subsidies and rice allocation to public employees may have adversely affected the demand for food, and consequently nutritional outcomes, among the poor.

3.35 Without detailed information on issues such as regional rice production, food transport systems, the regions from where rice exports originate, and seasonal variations in nutritional status, it is difficult to say whether the dramatic increase in rice exports in recent years -- a policy actively encouraged by the Government -- has had any repercussions on the nutritional status of the population. For example, if rice exports are being channelled from rice-surplus areas, as appears to be the case, the adverse effects on nutrition are likely to be minimal,

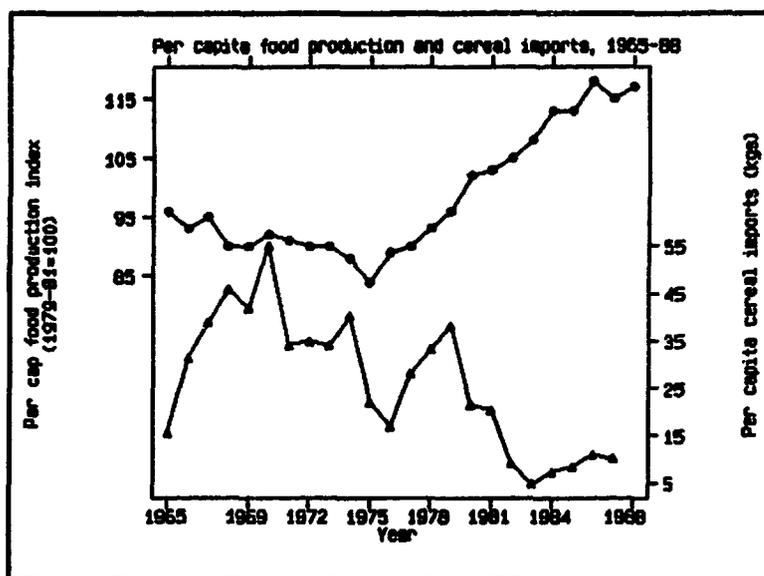


Figure 3.1

since a poor transportation system in any case did not allow for re-distribution of this surplus rice to rice-deficient areas (though it is not clear how rice stores are being mobilized for export despite inadequate transportation facilities). More information is required on where the exported rice originates, how it is transported, and changes in food availability (both at macro and micro-levels) and consumption in these areas between 1989 and 1990.^{47/} Reports for 1991 indicate that rice exports from Viet Nam may be lower than those in 1990 as a consequence of lower production in this year. It is

^{47/} A food and nutrition surveillance system (FNSS) assisted by UNICEF and managed by an inter-agency committee composed of the State Planning Committee, General Statistics Office and the National Institute of Nutrition has been set up by the Government. The system is intended to monitor the food and nutrition situation in 15 food-deficit provinces. Reports on the food and nutrition situation are done semi-annually and reported to FNSS committees at the national and provincial levels. In 1991, the report of the national FNSS committee to the Council of Ministers called attention to the impending deterioration of nutrition indicators in the food-deficit provinces. As a result, a policy decision was taken to drastically reduce rice exports, increase the volume of rice distributed from the southern provinces to the food-deficit provinces, and impose price controls on selected food commodities.

unclear whether this is a reflection of governmental sensitivity to the food-security situation, or whether the decreased exports simply reflect the Government's inability to procure adequate quantities of rice for export.

3.36 Exports of frozen sea products and coffee have more than quadrupled since 1980, while others like eggs and tea have registered more modest improvements. Exports of fruit have declined dramatically, though it is not evident whether this is related to decreased production or to increased local consumption.

3.37 Data show that production and consumption of foods other than rice have remained almost static over the decade. Diversification in food production and consumption may be one of the keys to enhanced food-security in Viet Nam.

3.38 Regional Differences in Food Production and Potential. In the past, most regions within Viet Nam, with the exception of the Mekong River Delta, ran large food deficits (Table 3.9). Because transportation systems within the country are poor, the Government developed a policy of regional self-sufficiency in rice.

This discouraged the transfer of rice from surplus areas to deficit areas. Since 1989, rice production is sufficient to support the population in all regions; but it is not clear how these new surpluses have affected malnutrition. (The latest data on nutrition from the NIN cover the period 1987-89).

3.39 The North's Red River Delta, known as the "heartland of Viet Nam," has a large population relative to the amount of arable land available and the food produced. Historically, there has always been an "open

border" policy with the South to encourage redistribution of the population. The Red River Delta houses 26% of the total population of the country, but has only 13% of the country's cultivated land and produces only 19.9% of its food (in rice-equivalents). Because of overpopulation, this area has suffered from soil erosion and general soil deterioration which in turn exacerbates the low productive capacity of the land. The potential for yield improvements does exist, primarily through greater input (especially fertilizer) use and, in the longer term, through rehabilitation of existing irrigation facilities and new small-scale irrigation development in minor watershed areas. Nonetheless, because of the small average size of farms (0.3 hectares on average) and projected growth in population, the Northern region will continue to be food deficit for the foreseeable future.

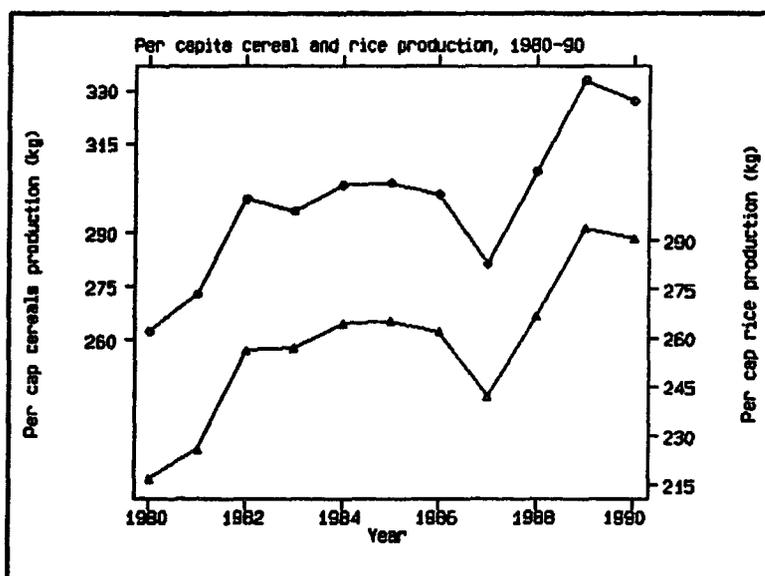


Figure 3.2

3.40 The South's Mekong River Delta, where food surpluses abound, provides Viet Nam with 38% of its cultivated land and 42% of its food crops (in rice equivalents), but houses only 22% of its total population. Possibilities for increasing production in the South are good. Limiting factors are the acid sulphate soils, defoliation due to years of war causing drainage problems, and water shortages during certain times of the year.^{48/}

3.41 The mountains are considered unproductive areas, and many parts have been heavily deforested. However, the sparsely populated highlands and the more densely populated coastal areas both have high development potential. Together, these two areas contain 55% of the country's total population, 51% of its cultivated land, but only provide 38% of the country's food crops. Both these areas suffer from lack of agricultural services, since the benefits of agricultural extension and research accrue disproportionately to the Red River and Mekong River Deltas.

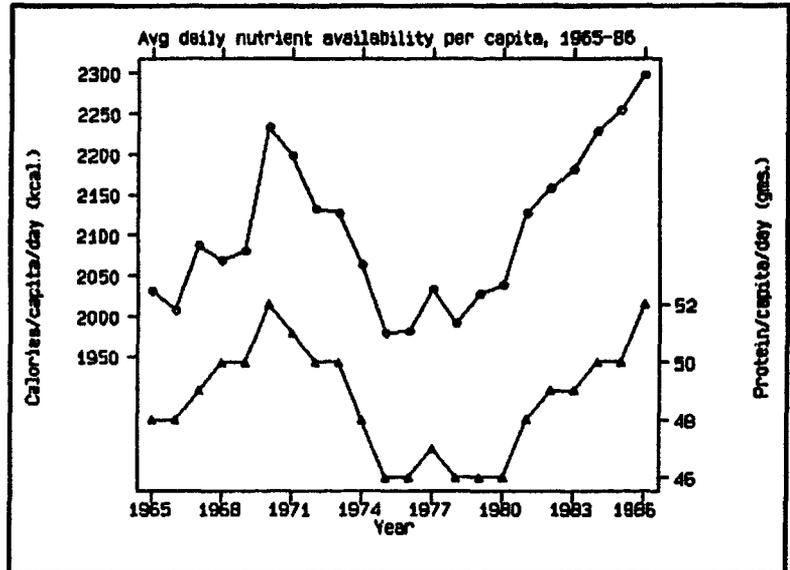


Figure 3.3

3.42 The major potential for reclamation is in the Central Highlands (upland food and cash crops), where both food and labor shortages are real constraints to future development. This area has also not received the research and extension attention it requires to increase productivity. In addition, the country's past policies of emphasizing regional self-sufficiency in rice forced these areas to neglect alternative food crops that were easier to grow and could be important sources of food for the people there.

3.43 Another particular feature of several regions in Viet Nam, particularly in the North and the Center, that has a bearing on food security is their susceptibility to natural calamities, especially typhoons. The typhoons typically result in large crop losses and disruptions in transport and supplies. There is, therefore, a large variance in agricultural production in these regions from year to year, which, in the absence of smooth interregional flows of food grains, results in a large variance in nutrient intakes and incidence of malnutrition.

3.44 Agricultural Policy. Agriculture is the most important sector in Viet Nam. It currently accounts for 38% of the country's total output value, 49% of national income, and employs about 62% of the national labor force. At

^{48/} M. Beresford, "Viet Nam: Socialist Agriculture in Transition," Journal of Contemporary Asia, 20 (4): 466-486.

19 percent, agriculture (including irrigation) takes up a significant share of total government expenditures.

3.45 Although agricultural production has been increasing secularly during the 1980s, it is not impressive when compared to other countries in the region. Growth rates in agricultural production are below those gained two decades earlier by most other South and Southeast Asian countries. The average paddy rice yield in Viet Nam is 2.8 tons per hectare, while the yields in the neighboring Chinese province of Guangxi are 3.9 tons per hectare.^{49/}

3.46 Agricultural production suffered from government policy immediately after the war. In an effort to gain more control over agriculture production and ensure food security, the Government created farming collectives. This extended a policy developed in the mid-1960s in North Viet Nam when, after bombing by the United States government, per capita food supplies fell to near subsistence levels requiring the Government to become dependent on food imports.^{50/} The Government forced procurement of rice at low prices to ensure food security for the urban industrial sector but this resulted in profound disincentives to farmers. One of the policy reforms Viet Nam has instituted in the last couple of years has been to reduce its control over agricultural production and input prices so that market pricing now predominates.

3.47 After 1981, when it was clear collectivism was not working, the Government broadened its policy so that land could be distributed to individuals under a contract system. After 1989 this policy was further broadened to give 15 years of tenure security to farming families. Decentralization of production and marketing decisions to households is virtually complete (except for certain industrial crops). In addition, collectives, which were the primary distributors of inputs and services in the past, have been disbanded in the South and converted to cooperatives in the North. There is recognition within the Government that the farming family unit will be developed further in the future. The VAC^{51/} system, which integrates agriculture, livestock and fish production, is currently being promoted to further strengthen family-sized plots, particularly in the North.

3.48 The effect of these reforms has paid off. Agriculture yields and production increased slowly but steadily from 1981 to 1985 (approximately 5% per year). After 1987, there has been a dramatic increase. In 1989, Viet Nam became the world's third largest rice exporter.

3.49 Despite productivity level below potential under the collective system, increased production has resulted from land reclamation that increased

^{49/} World Bank, "Viet Nam: Stabilization and Structural Reforms: An Economic Report," Country Operations Division, Country Department II, 1990.

^{50/} A. Fforde, "Specific Aspects of Collectivisation of Wet Rice Cultivation: Reflections of Vietnamese Experience," Discussion Paper No. 159, Department of Economics, Birkbeck College, University of London, 1984.

^{51/} VAC stands for Vaon (garden), Ao (pond), and Chan nuoi (animal husbandry).

the amount of cultivated land by 19% (to 5.6 million hectares). Most of this land was planted with industrial or tree crops. Future increases in production will probably come from further land reclamation and increased use of fertilizers and high-yielding varieties.

3.50 Until recently, the objective of regional self-sufficiency in rice took precedence over that of improvements in per capita food consumption or nutrition.^{52/} The policy of promoting self-sufficiency in rice within each region was meant to mitigate the need for transporting rice between food surplus and deficit areas. Even then, the magnitude of government-managed rice flows was not inconsequential. Prior to 1989, when national rice production averaged about 16.0 million tons in paddy equivalent (nearly 10 million tons of rice), the Government imported about 300,000 tons of rice and shipped about the same amount from the South to the North. During this period (1984-88), with an annual national foodgrain production of 18.3 million tons, the Government procured an average of 3.8 million tons and distributed 2.7 million tons of foodgrains per year. Detailed information on non-governmental flows is not available. In early 1991, amidst forecasts of a poor winter-spring, the Government tripled the volume of rice it shipped from the South to the North.

3.51 In late 1990, overcommitted rice exports accompanied by speculative rice stocking and criminal disappearance of government security stocks drove up prices to such an extent that prices in Ho Chi Minh City were even higher than those in Hanoi. This unprecedented situation even saw some private-sector movement of rice from the North to the South for a very brief period. During this same period, "over-exportation" of maize at the expense of domestic consumption also took place, largely because of the extreme pressure to earn foreign exchange.

3.52 The FAO reports that the Government's 1995 projections for agricultural production would improve per capita food consumption by 20 percent.^{53/} In turn, energy intake would increase to a level of more than 2,400 kcal. per day -- a gain sufficient to reduce malnutrition in a significant proportion of the population (assuming a population growth rate of under 2% and attenuated post-harvest losses). The projections for agriculture production imply a 1985-95 trend growth rate of per capita farm incomes as high as 7.7% per annum.^{54/} China achieved similar growth during 1978-87. However, as personal incomes increase and the demand for higher quality food-stuffs increases concomitantly (as it usually does with increasing incomes), it is likely that the country's existing crop mix, which is dominated by rice, will not adequately serve increasing consumer preference for food variety. While the increasing demand for foods other than rice could be met through imports, it may also make sense for the rice-deficit regions in the country to exploit their comparative advantage in crops other than rice.

^{52/} Regional food self-sufficiency is no longer pursued as a priority policy (and has not been vigorously enforced for some years) by the Government.

^{53/} Food and Agriculture Organization, "Viet Nam: Agricultural and Food Production Sector Review," UNDP, FAO and The World Bank, 1989.

^{54/} FAO, op. cit.

3.53 Food Subsidies. As of 1989, food subsidies in urban areas have been discontinued to accommodate unified pricing. Increases in food prices have been compensated for by increasing the wages of most urban dwellers, although there is little information on the effect of the subsidy removal on the ultra poor who may not have benefitted from increased wages. Speculation is that the urban unemployed and upland farmers have benefitted less than lowland farmers from the liberalization of prices, especially for rice. Information on the nutritional status of landless wage laborers and individuals working in the informal sector is not available.

D. Nutritional Policy and Strategy

3.54 Vietnam does not have a clearly-articulated national nutrition policy or strategy. Perhaps because regional food self-sufficiency was a paramount objective of government policy in the past, improvements in per capita food consumption or nutritional status were secondary goals. However, a significant effort to fill the strategy gap took place through a recent UNICEF/NIN national seminar which drafted recommendations towards a plan of action to achieve improvements in nutritional standards by the year 2000. Participants in the seminar included representatives of the State Committees of Science and Planning, the Ministries of Health, Agriculture and Food, Industry, and Education; the General Statistical Office, and organizations representing farmers, VACVINA, women's groups and academic institutions. The ten objectives of the plan of action were:

- (a) Improvement of weight gain of mothers during pregnancy from 8 to 10 kilograms;
- (b) Reduction in the prevalence of low birth weights from existing 15-20% to 10 percent;
- (c) Reduction in the incidence of malnutrition (weight-for-age below two standard deviations of the NCHS standard) from more than 50% to 25-30 percent;
- (d) Reduction in the incidence of nutritional anemia among women (15-49 yrs) from 50-60% to 35-40 percent;
- (e) Eradication of Vitamin A deficiency and Xerophthalmia in areas where the program is implemented;
- (f) Promotion of breastfeeding and adequate child feeding practices;
- (g) Reduction in the prevalence of goiter in the mountain areas by 50 percent;
- (h) Promotion of growth monitoring;
- (i) Extension of the family VAC program to cover 50% of households; and
- (j) An increase in average daily energy intakes per capita to more than 2,100 Calories in all regions, with fewer than 70% of the calories derived from cereals.

3.55 The seminar also proposed that the plan of action be developed through an intersectoral nutrition focal point to be set up in the Government. The plan of action would be included in the State plan for general economic and social development, and reflected in grass-roots sectoral plans for agriculture, health, child care, and family planning. To that end, a national "Programme of Action for the Survival, Protection and Development of Children" was adopted by the Government in late 1991. The Council of Ministers is responsible for general oversight of the program and will carry out formal progress reviews in 1993 and 1995. A national Committee for the Protection and Care of Children (CPC), whose chairman is the vice-chairman of the Council of Ministers, will monitor overall progress and promote implementation through a network of CPC committees down to grassroots levels. The program document implies that financial rather than operational limitations pose the greatest constraint to successful execution. However, implementation capacity and coordination among concerned agencies clearly are key factors in determining the degree to which those ambitious nutrition goals will be met. Whether strategic issues of planning, design, coordination, program efficiency, management capacity and resource allocation for nutrition should be considered by the Council of Ministers, the CPC or the State Planning Committee (SPC) remains to be determined. Nevertheless, it is clear that some national focal point for nutrition policy and strategy formulation and promotion remains to be established.

E. Current Nutrition Interventions

3.56 Viet Nam's interventions generally have tended to center on three sets of activities: promoting the VAC ecosystem, correcting micronutrient deficiencies, and supplementary feeding. Some nutrition education efforts also have taken place through the Ministries of Education and Health. However, few of the interventions have been national in scope.

3.57 The VAC Ecosystem. The VAC ecosystem is probably the single most important nutritional intervention promoted by the Government. The concept of VAC, which was promoted by Ho Chi Minh and is rooted deeply in national traditions, is based on the strategy of renewing solar energy and reusing all kinds of waste. Under the program, rural households, communities and cooperatives are encouraged to set up an interlocking and interdependent system of gardening (*vuon*), aqua culture (*ao*), and animal husbandry (*chan nuoi*). The end-products derived from the three activities, such as vegetables, pulses, tubers, fruit, poultry, eggs, pigs, fish, etc.) are used for human consumption, while the by-products are recirculated among the activities. For example, fodder from gardening is fed to household animals and fish. Animal waste is used as organic fertilizer for the garden and feed for the fish. The pond is used for watering plants, and so on.

Table 3.9: Regional Differences in Population, Cultivated Land, and Food Production, 1991							
	Mountain & Midlands	Red River Delta	Central Coast Northland	Central Coast Southland	Central Highland	North-east Southland	Mekong River Delta
1986 Population (000)	10,068	13,576	8,573	6,655	2,490	7,797	14,172
(%)	15.9%	21.4%	13.5%	10.5%	3.9%	12.3%	22.4%
Annual Paddy Production (000 tons)	1,969	3,743	1,563	1,606	396	836	8,883
Annual per capita Rice Production (kgs.)	195	276	182	241	159	107	627
% of Total Food Crop Production (rice equivalent)	12.0%	19.9%	9.0%	8.8%	2.8%	4.9%	41.9%
% of total pigs production	24.5%	23.0%	16.5%	11.4%	4.7%	4.8%	15.0%
Source: GSO (1991)							

3.58 Thanks to the efforts of VACVINA, a semi-private organization of retired horticulturists, the VAC ecosystem is widespread in the country. In certain rural communities, it is estimated that as much as one-half to three-quarters of total household income is generated from VAC activities (Tu Giay and Duong Hong Dat 1988). One of the reasons for the VAC system's popularity is that it builds upon an age-old Vietnamese tradition. In addition to its income supplementation objective, the VAC system also seeks to increase the availability of food at the household level and enrich the diet of rural households. In particular, by encouraging the consumption of animal proteins and vegetables, it seeks to introduce greater variety in the otherwise monotonous and rice-dominated Vietnamese diet. Since 1988, UNICEF has provided support for the promotion of the VAC system among poor families, especially those with malnourished children and pregnant women. As of 1992, UNICEF has provided VAC-related assistance to about 500 communes in the country. Other NGOs are developing pilot projects in health and sanitation with the VACVINA as executing agency.

3.59 Micronutrient Supplementation. The Government also has had a number of micronutrient supplementation programs. Goiter surveys and planning for control programs began in 1971. In 1976 a salt iodination program was introduced in 11 provinces, covering 3 million people.^{55/} The prevalence of goiter in Hasn Binh Province was reduced from 63% to 25% after iodized salt, which was continuously supplied, was introduced.^{56/} A similar reduction was experienced in Ha Tuyen Province where goiter prevalence dropped from 80% to 40 percent. In 1986 a renewed strategy of IDD control was initiated by the Government with the help of CEMUBAC, a Belgium NGO, and UNICEF. The main objective is to prevent new cases of cretinism and to reduce goiter prevalence to below 10% in 7-15 years old. Plans were to iodize 45,000 tons of iodized salt for 8 million people and give 1 million people injections of iodized oil. While some salt is iodized at the provincial level,^{57/} much of the salt is iodized at the village level using simple equipment. With the help of a parallel educational program, the campaign has been well accepted by the population and goiter prevalence has been reduced considerably. Some communes have been selected to monitor the progress of the program. In 1989 the State Committee for Science and Technology has investigated designing iodination equipment to fit local needs more closely.

3.60 Control of vitamin A deficiency has also been given attention, although programmatic activities have been sporadic. UNICEF has proposed a program to help the Government with prevalence surveys, seminars, training, nutrition education, and universal distribution of vitamin A capsules to children under 3 years of age and lactating women.^{58/} Also planned is a household food production project to increase the production and use of foods high in vitamin A activity. FAO is considering a similar food production program to increase the availability of foods high in vitamin A.

3.61 Supplementary Feeding. The World Food Programme (WFP) project 2651 was primarily a feeding project initiated in 1984 which has since been substituted by a follow-up project (WFP 3844). The original WFP project was largely a nutrition supplementation project, providing supplemental foods (viz., flour, sugar, dried skimmed milk, fish powder, and oil) to women in their last trimester of pregnancy, women in their first three months of lactation, children under 3 years of age at creches, and hospitalized children under 15 years of age who need rehabilitation. The project covered only 11 of the 44 provinces in the country, and only a limited number of communes in each province. As such, the WFP intervention, although useful, has been basically on a pilot basis. The new project (3844) attempts to link nutrition services to primary health care at the commune level by utilizing food commodities as

^{55/} T. Ma and T. Z. Lu, "Iodine Deficiency Disorders in the Western Pacific Region, in B. S. Hetzel, J. Dunn and J. Stanbury, eds., The Prevention and Control of IDD, Elsevier Press, North Holland, 1987.

^{56/} Due, et al., op. cit.

^{57/} UNICEF has assisted six provincial governments in setting up salt iodization plants.

^{58/} In 1991, for instance, UNICEF assistance provided for the distribution of some 3.6 million capsules in 36 provinces.

incentives for pregnant women and families with malnourished children under three to regularly visit commune health centers.

3.62 In addition, the FAO is supporting a Nutrition Improvement/Vitamin A control project in selected areas. UNICEF is playing an active role in health-oriented programs implemented through the existing primary health care infrastructure. Other intervention efforts are limited to small-scale experiments by non-governmental organizations, such as Save the Children Fund, the Mennonites (MCC), and CIDSE (Cooperation Internationale pour le Développement et la Solidarité). There is a need to review the collective experience of all national, international and bilateral agencies as well as the NGOs in the field of nutrition so as to draw lessons for future plans. Such a review may also facilitate a convergence of development activities initiated by different agencies so as to promote a coordinated approach towards health and nutrition improvements in Viet Nam.

F. Institutional Arrangements

3.63 No strong focal point for nutrition advocacy or nutrition planning, strategy formulation or personnel development exists at present in Viet Nam. Programs of Ministries like Health, Education and Food touch, but do not focus, on nutrition. The national planning process has yet to recognize nutritional improvement as an explicit human resource development objective. The National Institute of Nutrition (NIN), which was set up in 1980 as a central specialty institute under the Ministry of Health, has been the key institution for implementing nutrition-relevant actions in the country. The NIN played a key role in the implementation of the World Food Programme supplementary feeding project. However, the NIN's role seems to be less significant in the follow-up project. In addition, the NIN has been developing educational materials to help mothers improve the nutritional status and health of their children. The NIN sees itself principally as a technical resource focusing on nutrition and food research, food quality and hygiene, and training cadres for community food and nutrition responsibilities. Training programs in community nutrition are extremely limited. Efforts are being made to include nutrition training in the medical curriculum by setting up a Department of Nutrition in the Hanoi Medical College. No training or research programs in applied or community nutrition are yet in place in Viet Nam.

3.64 The General Statistical Office (GSO) is another institutional resource for nutrition-related activities. The GSO currently has primary responsibility for the large UNICEF-assisted nutrition-surveillance system set up in 1990. The surveillance system is guided by the State Planning Committee and the Ministry of Health.

G. Issues and Recommendations

3.65 There has been an impressive increase in agricultural and food production in Viet Nam during the last decade. Consequently, Viet Nam is now self-sufficient in food; in other words, domestic food production is adequate to meet the energy needs of the population. However, food self-sufficiency does not mean imply an adequate level of food intake for everybody in the

country. Indeed, there is compelling evidence that a significant proportion of the adult population -- anywhere from 11 to 35%, depending upon the region -- may be consuming fewer than 1,800 calories per day. The magnitude of child and maternal malnutrition is also surprisingly high in comparison with the infant mortality rate. Most recent estimates put the proportion of children malnourished at 45% by weight-for-age and 56.5% by height-for-age. These high rates are comparable to those observed in Bangladesh. Further, although the evidence is not conclusive, it appears that malnutrition, especially among infants under one year of age, may have increased in the late 1980s.

3.66 The high rates of malnutrition, especially among children, arise for a number of reasons: a poor food transportation, storage and distribution system that cannot redress the regional imbalances in food supply and demand; the susceptibility of many regions in the country, especially in the Center, to natural calamities (viz., typhoons) that cause crop loss and food shortages; a worsening distribution of income that results in lack of food purchasing power amongst the poor; relatively high rates of fertility; poor maternal health and nutrition that result in low birth weight babies; suboptimal breastfeeding and weaning behavior; and a high incidence of diarrheal and other infections among children, caused in part by poor sanitation and lack of health care.

3.67 The fact that child malnutrition rates in Viet Nam are so high, especially in relation to the infant mortality rate, suggests that the country has concentrated more on quantity rather than the quality of life in its health achievements. The large numbers of children who survive infancy face a bleak future of malnutrition and deprivation. It goes without saying that this imbalance between quantity and quality needs to be redressed urgently.

3.68 Agricultural Policies. The cause for high rates of malnutrition cannot be found in inadequate food production in the country. Rather, the problem lies in the poor food procurement, transportation, storage and distribution system in the country. Indeed, the Government's encouragement of regional food self-sufficiency in the past retarded development of the food distribution system. A poor distribution system combined with the existence of major agricultural productivity differences across ecoregions has resulted in the population in some parts of the country being prone to chronic undernutrition. In addition, the preoccupation with rice self-sufficiency resulted in the neglect of other subsidiary food crops, which are important in increasing dietary balance and variety. As a result, micronutrient deficiencies are pervasive in the entire country.^{59/}

3.69 Major improvements in the food procurement, storage, transportation and distribution system will need to be undertaken, so that food can move from surplus to deficit areas efficiently and quickly. These improvements may

^{59/} Another important efficiency implication of the past emphasis on local self-sufficiency was the country's inability to exploit regional comparative advantage. Hence, although agricultural production has increased impressively, it remains well below the country's full potential.

require large initial investments in transportation and storage infrastructure. After having made these infrastructural investments, however, it may be best to rely on private-sector foodgrain flows to reduce interregional variations in food availability. Of course, since private-sector flows typically respond to price incentives, the problem of food availability in the food-deficit areas will not disappear overnight, since consumers in these areas do not have the purchasing power to bid up the price paid for foodgrains from the surplus regions. In fact, at present, it is financially more rewarding to export rice outside Viet Nam than to transfer it to the deficit regions within the country. Indeed, as private-sector grain trade expands, the availability of food in the deficit regions may initially decline before it improves.

3.70 In the long run, however, the only sustainable means of improving food security in the deficit regions will be by letting them exploit their comparative advantage in crops other than rice. There is substantial scope for increasing agricultural production in the deficit areas. Greater geographical equity of supply of fertilizer and other inputs, combined with official financing of research and extension work targeted on the crops and farming systems of the poor areas (which currently cannot afford to "buy" the attention of the research system), will allow the food-deficit areas to increase production of crops in which they specialize and thereby exploit their comparative advantage. As personal incomes increase in Viet Nam, the demand for crops other than rice is likely to increase. The rice-deficit regions in the country would be well positioned to serve this demand. As noted earlier, diet diversification is likely to have important nutritional benefits as well.

3.71 Role of Economic Growth in Reducing Malnutrition. Food insecurity is often more closely linked to personal incomes and consumer purchasing power than to food availability in a monetized economy. The 1987-89 General Survey of Nutrition shows positive associations between indicators of socioeconomic status (such as presence of a bathroom or availability of running water in a house) and child nutritional status. Energy intake also appears to be responsive to household socioeconomic status. If these results are accurate, the economic growth that Viet Nam has experienced since 1989 (and will most likely experience in the future) may improve average nutrient intakes. However, it is not clear this will necessarily translate into lower rates of malnutrition for three reasons. First, the evidence from other countries indicates that income growth alone can take an inordinately long time to eradicate undernutrition.^{60/} Second, since food subsidies were also abolished after 1989, the purchasing power of households (especially, employee households that were the major beneficiaries of food subsidies) may not have improved -- and, in fact, may have worsened -- despite rising money incomes. Third, there is some indication that economic liberalization and the resulting emergence of the private sector in Viet Nam have widened income disparities substantially. As a result, the growth in average per capita income that Viet Nam has been experiencing in the last few years may be masking a decline in absolute incomes and an increase in poverty in a section of the population.

^{60/} See Jere R. Behrman, Anil B. Deolalikar, and Barbara L. Wolfe, "Nutrients: Impacts and Determinants," The World Bank Economic Review 1(7), September 1988.

If this is indeed the case, nutrient intakes may be falling, and the incidence of malnutrition worsening, among this group of households.

3.72 Consequently, general economic growth alone cannot be relied on to alleviate the problem of malnutrition. Shorter-term measures are needed to avert or reverse growth faltering in children below 3 years of age through a combination of behavioral and health interventions, as well as targeted food supplementation designed to optimize the use of available food supplies.

3.73 Nutrition Education. Overall household food insecurity is a proximate cause of malnutrition, but its effects can be compounded by suboptimal breastfeeding and weaning behavior and the impact of infection, diarrheal and other diseases. The journey into child stunting can begin with low birth weight which in turn may originate partly from the mother's malnutrition as an adolescent. There are two cultural practices in Viet Nam that may exacerbate child malnutrition. First, breastfeeding is generally initiated 3-4 days after birth, largely because of an incorrect perception that colostrum is an inferior food. Second, although the mean duration of breastfeeding is 12-14 months, exclusive breastfeeding is not common, and infants are introduced to supplementary foods as early as 2-3 months of age. Since infant formula is not available widely, breastfeeding is not supplemented with bottle-feeding but instead with solid foods. The premature introduction of supplemental foods greatly increases the risk of infection in small infants.

3.74 Another social-behavioral problem is that the typical Vietnamese diet -- dominated by rice -- is inadequate for older children and pregnant and lactating women. The caloric density of rice is very low, with the result that young children and pregnant/lactating women are often unable to obtain enough calories from rice to meet their special energy needs. In addition, rice does not contain several important nutrients, such as iron, thiamine, Vitamin A and fats (lipids). As a result, women and young children on an exclusive rice diet are vulnerable to diseases associated with these deficiencies, such as anemia, beriberi and xerophthalmia (which can lead to blindness). The combination of low overall calorie intake and little variety in the diet create a fragile nutritional balance for the most vulnerable groups.

3.75 There thus appears to be an important role for providing nutrition education, especially on infant nutrition, breastfeeding and dietary variety, to pregnant women and mothers of young infants. While the National Institute of Nutrition has been developing educational materials to help mothers improve the nutritional status and health of their children, there is no institutional mechanism or program for widely disseminating such materials. The Government urgently needs to designate an agency to take the national lead in improving family nutrition behavior and to promote development of a strategy and program to do so.

3.76 A National Nutrition Program. Indeed, given the high rates of child malnutrition, a strong case might be made for a national child nutrition program that would include growth monitoring, selective short-term supplementation, and nutrition education. Such a program could be implemented by the primary health care system. To some extent, the World Food Programme Project 3844 attempts to do, although on a pilot basis. At present, few of

the commune health centers in the country perform child growth monitoring on a regular basis.

3.77 In order to contain costs, the nutrition intervention program could be area-targeted (to regions having the highest child malnutrition rates), age-targeted (concentrating exclusively on children 6-36 months of age and pregnant and lactating women), and need-targeted. Targeting by need could be achieved by monitoring the weights of all children 6-36 months old in the project communes, and enrolling only those children whose weight gain over a certain period falls below standard. Those children would be singled out for special health monitoring, food supplementation and intensive nutrition education for their families. It would be important to enroll children in the nutrition supplementation program only for the duration of time that there is a lapse in their weight gain, so that long-term dependence of the beneficiaries on nutrition supplementation is discouraged. The linking of health and nutrition services would be a critical element of the program. Children who do not respond to nutrition supplementation could be provided health services, including check-ups and referrals, treatment of diarrhea, deworming, and immunization. These services should also be available to pregnant and lactating women. In addition, the program could include intensive counseling of mothers in nutrition and hygiene education. In designing such a program, Viet Nam might be able to derive lessons from the experience of other developing countries that have experimented with such integrated nutrition programs, often with the assistance of the World Bank.^{61/}

3.78 Institutional Arrangements. Adoption of the "Programme of Action for the Survival, Protection and Development of Children" (see para 3.55) underscores the need to establish a focal point within the Government for formulation, coordination and oversight of a national nutrition strategy and program. Institutional arrangements for nutrition advocacy, to promote more efficient and effective program implementation and for training particularly in community nutrition also need to be strengthened from national to local levels. Careful consideration should be given to possibly incorporating these functions into the role of the State Planning Committee.

^{61/} See Alan Berg, Malnutrition: What Can Be Done? Lessons from the World Bank Experience, Baltimore: Johns Hopkins, 1987.

IV. HEALTH

A. Health Status: Achievements and Current Status

Infant and Child Mortality

4.1 National Estimates. Although there is no unanimity on estimates of crude death rates, infant mortality, and average life expectancy in Viet Nam,^{62/} there is little doubt that Viet Nam has experienced considerable improvements in all of these indicators during the last three decades. Figure 4.1 shows that by 1989 the crude death rate had fallen to less than one-third of its level in 1950. The infant mortality rate was roughly halved from about 156 per 1,000 live births in 1960 to around 83 in 1979, and was then approximately halved again during the next ten years (to a level of 45 in 1989). The 1990 Census estimated average life expectancy at birth to be 65 years -- 63 years for males and 67½ years for females. This was up from a rate of about 34 in 1936 (for North Viet Nam), 50 in 1970 (for North Viet Nam), and 60 in 1978.^{63/}

4.2 Little is known about the under-five mortality rate. The Institute for the Protection of Child Health has estimated this rate to be

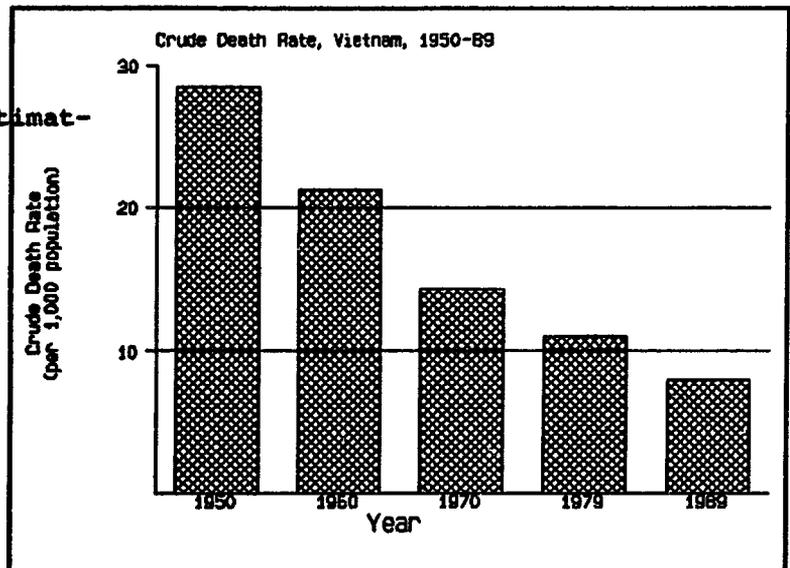


Figure 4.1

^{62/} The two competing estimates of infant mortality are from the 1989 Population Census and the Viet Nam Demographic Health Survey (VNDHS). The two estimates differ, since the former uses information on birth history of women and the Brass method to indirectly estimate infant mortality, while the latter utilizes direct survey data on mortality of children. The VNDHS comes up with an infant mortality rate of 33.5 for the period 1983-88, which is significantly lower than the estimate of 45 provided by the Census. Since the VNDHS sample size is very small in comparison with the size of the 1989 Census Sample, the sampling error of the VNDHS estimate is likely to be greater than that of the Census estimate. Unless otherwise noted, the Population Census estimates of infant mortality will be used in the remainder of this report.

^{63/} Ministry of Health of the Socialist Republic of Viet Nam, "Health Service in the Socialist Republic of Viet Nam," Hanoi: Ministry of Health, 1981, mimeo.

108 in 1987 and 98 in 1988. An under-five mortality rate of around 100 is high in relation to an infant mortality of 45. If correct, it would corroborate the evidence on high levels of malnutrition among children aged 2-5 discussed in Chapter III.

4.3 Causes of Infant

Deaths: The Institute for the Protection of Child Health reports that, of all the perinatal deaths during the first month of life, 25% occur due to prematurity, 18% due to respiratory infections, 8% due to tetanus, and 6% due to congenital anomalies. However, since these data are compiled on the basis of referral cases seen at the Institute (and which typically are complicated cases), they may not be indicative of the situation in the country.

Nevertheless, these data suggest that premature births and neonatal tetanus, both of which are generally preventable by good antenatal care, are important, if not major, causes of infant deaths in Viet Nam.

4.4 Regional

Differences: An average infant mortality rate of 45 for Viet Nam is misleading in view of the wide mortality variations across regions and between rural and urban areas. The disparity in infant mortality rates between rural and urban areas is of the order of 38%. The

variation across regions is also considerable; for example, while the average infant mortality rate for the Central Highland region is 56.4, that for the Northeast Southland (which includes TP Ho Chi Minh) is merely 33.9 (Statistical Annex Table 4.1). There are provinces in the Mountain and Midland Region of the North and in the Central Highland Region that have infant mortality rates exceeding 60, while the provinces of Hai Phong, Tien Giang and TP Ho Chi Minh have infant mortality rates of 30 and below.

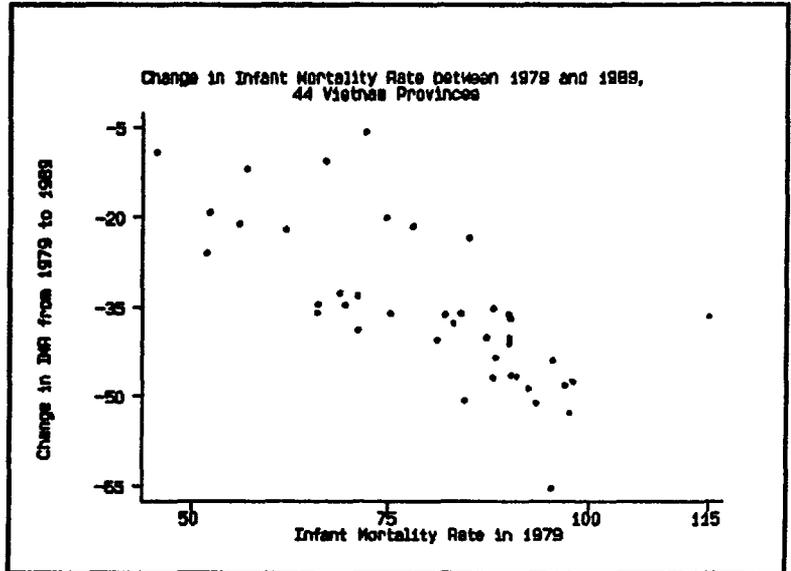


Figure 4.2

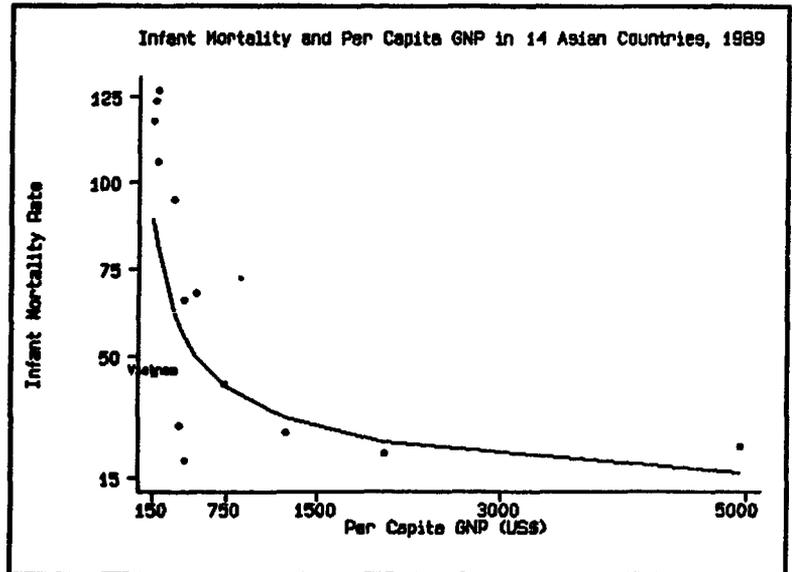


Figure 4.3

4.5 Further, the data indicate that the infant mortality rate fell unevenly across regions and provinces during the 1980s (Statistical Annex Table 4.1). The relative decline in the North-East Southland Region was the greatest (53.5%), while that in the Mountain and Midland Region was smallest (27.5%). The province of Lai Chau in the Mountain and Midland Region, which had a high infant mortality rate of 72 in 1979, experienced a decline in infant mortality rate of merely 8.2% between 1979 and 1989. On the other hand, TP Ho Chi Minh, which had a relatively low infant mortality rate to begin with (viz., 60), experienced a steep decline of 54.4% over the same period. However, Figure 4.2 shows that provinces that had high infant mortality rate in 1979 did have larger *absolute* declines in infant mortality rate over the next ten years as compared with provinces having low infant mortality rates in 1979. These results imply a narrowing of interprovincial disparities in the infant mortality rate during the 1980s.

4.6 Comparison with Other Countries: Viet Nam's infant mortality rate and life expectancy are impressive even when compared with the health indicators for countries having considerably higher per capita income. Figure 4.3, which plots the infant mortality rates of 14 Asian countries against their respective per capita GNPs in 1989, shows Viet Nam to be a significant (negative) outlier. Viet Nam has an infant mortality rate that is one-half of the infant mortality rate predicted for its income level, given the estimated relationship between infant mortality rate and per capita income across Asian countries. The same finding is observed in Figure 4.4, which presents a scatter plot of average life expectancy against per capita income. Viet Nam is observed to have an average expectancy of life that is significantly greater than the average life expectancy predicted for its income level.

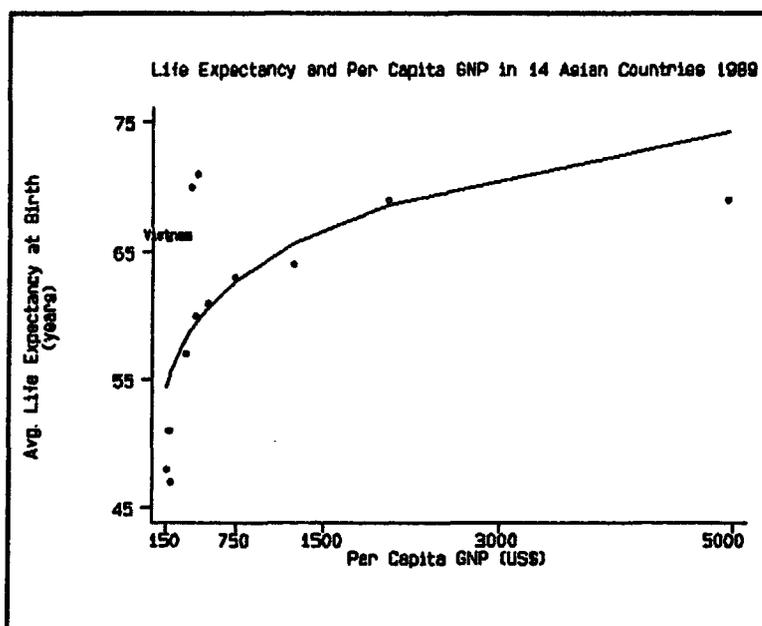


Figure 4.4

Adult and Maternal Mortality

4.7 National Estimates. Unfortunately, there is no authoritative source on estimates of the maternal mortality rate. The official MOH statistics, given in Table 4.1 below, suggest a sharp increase in maternal mortality between 1975 and 1980 but a steady decline since 1980. The maternal mortality rate is estimated by the MOH to be 1.1 deaths per 1,000 deliveries. However, these estimates are contested by the MOH's own Institute for Protection of the

Mother and Newborn, which reported an average rate of 5.76 per 1,000 deliveries from a 1985 hospital survey of seven provinces.^{64/}

Table 4.1: Maternal Mortality, 1975-90	
Year	Maternal Mortality Rate (Per 1,000 deliveries)
1975	0.9
1980	2.0
1985	1.4
1989	1.2
1990	1.07

Source: Ministry of Health, 1990

Table 4.2: Maternal Mortality by Region, 1990	
Region	Maternal Mortality Rate (Per 1,000 deliveries)
Mountain and Midland	1.5
Red River Delta	0.5
Central Coast Northland	1.2
Central Coast Southland	1.2
Central Highland	1.8
North East Southland	0.9
Mekong River Delta	1.0
Average for all of Viet Nam	1.07

Source: Ministry of Health, 1990

4.8 Causes of Maternal Deaths. The study undertaken by the Institute for Protection of the Mother and Newborn in seven provinces and Hanoi in 1985 cited earlier found that 32% of the mothers had died because of infection, 21% because of severe anemia, 11% owing to post-partum or post-abortion hemorrhage, 7% on account of kidney failure as a result of toxemia, and the remaining 9% because of other complications. Many of these conditions are likely to be caused or exacerbated by inadequate or incompetent antenatal care

^{64/} UNICEF, "Situation Analysis, Socialist Republic of Viet Nam," October 1987 (mimeo).

and improper use of contraceptives. It is estimated by UNICEF that only 7% of pregnant women in 1988 had received complete anti-tetanus vaccinations.

4.9 Regional Differences. The figures for the national average again mask substantial regional variation in maternal mortality. As in the case of infant mortality, official Ministry of Health (MOH) statistics show maternal mortality in 1990 to be highest in the Central Highland (1.8) and Mountain and Midland regions (1.5), and lowest in the North East Southland (0.9) and the Red River Delta regions (0.5) (Table 4.2). The hospital survey of seven provinces undertaken by the Institute for Protection of the Mother and Newborn in 1985 found maternal mortality rates as high as 9 deaths per 1,000 deliveries in some of the provinces.^{65/} Of course, these unusually high rates reflect the fact that a large number of women with high risk pregnancies are referred to hospitals for having their deliveries.

Morbidity

4.10 Mortality, being an extreme manifestation of poor health, occurs relatively rarely in a population. General morbidity -- viz., illness episodes, infections and outbreaks of preventable diseases -- is a much more common consequence of poor health, and accounts for a great deal of absenteeism and productivity loss in the labor market. Unfortunately, not even any rough estimates are available of how many annual illness episodes occur on average in individuals belonging to different age groups.

4.11 Patterns of Diseases. The data on leading causes of mortality and morbidity indicate that vector-borne diseases -- in particular, malaria, followed by diarrhea and respiratory diseases -- account for the majority of reported illnesses in 1988 (Table 4.3). A WHO report suggests an even steeper increase in the number of malaria deaths than is indicated in the above table -- from a rate of 1.67 per 100,000 persons in 1985 to 5.37 in 1989, an increase of over 200% in five years (Statistical Annex Table 4.2)^{66/} The same report estimates that the actual number of deaths due to malaria are 10 to 20 times greater than the number reported. Within malaria, the chloroquine-resistant *P. falciparum* strain has become widespread, especially in the South. The resurgence of malaria has occurred due to several reasons: resistance of the parasite to chloroquine, reduction in insecticide spraying programs, and the return of infected troops from Cambodia in recent years. The revival of malaria has coincided with an increase in dengue fever. Indeed, a serious outbreak of hemorrhagic dengue fever, which has a four-year seasonal recurrence, can be expected in 1992 if appropriate mosquito control measures and community mobilization are not promoted soon.

4.12 In a 1991 MOH survey of public and private health providers in three provinces, acute respiratory infections and diarrhea were found to be the leading causes of patient visits. Almost 27% and 10.4% of the patients attended by the health providers during the two weeks preceding the survey had been treated for acute respiratory infections and diarrheal infections, respectively. Other important diseases for which patients had sought treat-

^{65/} UNICEF, 1987, *ibid.*, p. 99.

^{66/} Molineaux, "Report of Duty Travel to Viet Nam," November 1990 (WHO report).

ment were skin infections (4%), accident-related injuries and burns (3.6%), malaria (2.6%), and tuberculosis (2.5%). Since the survey had been conducted during March and April -- months in which malaria is not a major problem -- the number of malaria cases are most likely understated.

4.13 Viet Nam has higher morbidity rates associated with vaccine preventable childhood diseases, such as measles, diphtheria, and pertussis, than other large countries in the region, including India, Thailand, Myanmar, Indonesia and Bangladesh. The morbidity rate associated with tetanus has actually been increased between 1984 and 1988.^{67/}

Table 4.3: Causes of Mortality and Morbidity (per 100,000 population)				
Ailment	Mortality		Morbidity	
	1978	1988	1978	1988
Tuberculosis	5.0	3.7	138	106
Malaria	7.0	2.7	1,241	2,166
Watery diarrhea		1.9	835	1,132
Bloody diarrhea			410	337
Heart diseases		1.4		
Dengue fever	1.0	1.2	218	196
Bloody dysentery	2.0	1.2		
Tetanus	0.8	1.0		
Pneumonia		0.9	77	88
Rabies		0.8		
Nutritional disorders		0.8		44
Eye infections				140
Peptic ulcers		0.2		73
Respiratory infections			119	257

UNICEF, Viet Nam: The Situation of Children and Women, UNICEF, Hanoi, 1990, p. 73.

B. Government Health Policy

4.14 Because of its international isolation and severe resource limitations, Viet Nam adopted a health strategy that emphasized self-reliance and austerity from early on. The basic tenets of this strategy included preventive services, use of traditional drugs and medicine in conjunction with

^{67/} UNICEF, Situation of Children and Women, Hanoi, 1990, p. 74.

modern methods, community-based health delivery systems, and self-reliance in the production of pharmaceuticals.

Recent Measures

4.15 In March and April 1989, the Council of Ministers promulgated a series of bold measures designed to liberalize the health sector and mobilize new resources for the sector. These new measures included the following:

- (a) Introduction of user fees for health care: Basic health care was formerly free for all, regardless of a patient's ability to pay some or all of the cost of care. On May 1, 1989, a fee system was introduced in the three higher (district, provincial and national) levels of the health-care delivery system,^{68/} requiring those patients who are able to do so to pay at least a minimal part of their health care. The handicapped, families of health personnel, and individuals able to produce certification of indigency from their neighborhood or village People's Committee are still treated free of charge.
- (b) Legalization of private practice: When health care was free for all, health providers were forbidden to practice privately, and everyone was expected to use the public health system. Since 1989, doctors are allowed to practice privately (i.e., charge fees) after office hours in the public health facilities. There are also a growing number of physicians and traditional healers who engage in full-time private practice.
- (c) Sale of drugs and medicines on the open market: Drugs and medicines were formerly dispensed free, through the public health network, to all patients. In July 1989, the Government began to allow pharmaceutical factories to open retail pharmacies and sell drugs and medicines to individuals, hospitals and health centers directly. Patients able to produce a certificate of indigency can still receive medicines free.
- (d) Liberalization of the pharmaceutical industry: Until April 1989, pharmaceutical factories, like all other industrial units in Viet Nam, had little control over decisions involving production and financial matters; production, input procurement and pricing (including employee wage levels), sale and pricing of outputs were all determined by state planners. In practice, pharmaceutical factories sold drugs and medicines to public hospitals and health centers at subsidized prices fixed by the state. In April 1989, pharmaceutical factories (and factories producing or repairing medical equipment) were given the freedom to make their own decisions concerning: (a) use of inputs, including wage levels; (b) production levels; and (c) selling prices of drugs and medicines. Pharmaceutical factories were also informed that they could no longer rely on government subsidies.

^{68/} Primary health care at commune health centers continues to be free (again in theory), but fees are paid at intercommunal polyclinics.

4.16 These decisions place Viet Nam in the forefront of socialist economies attempting to restructure their health care systems.

Current Policy Priorities

4.17 Current government health policy, as outlined in the document, "Strategy for Socioeconomic Stabilization and Development up to the year 2000," identifies the following six priorities for the health sector:

- strengthening prevention and control of infectious diseases
- improvement of the basic health services network at the grassroots level
- reduction of the population growth rate to 1.8% by the year 2000
- development of self-sufficiency in essential drugs
- promotion of traditional medicine within the framework of primary health care, and
- increased access to safe water and environmental sanitation.

4.18 These policy statements establish a clear framework for goal setting and action programming. The Government has also identified six national health programs, described below, as having the highest priorities and has included them in the National Plan of the Council of Ministers.^{69/} Two of these health programs are directed at improving the health services network, and the remaining four are personal health interventions directed to target populations, namely, mothers and children and people living in malaria-affected areas. The six programs are:^{70/}

- Consolidation of health services at the village and district levels to implement the ten elements of Primary Health Care^{71/};
- Provision of maternal and child health (MCH) care, including: i) family planning; ii) control of diarrheal diseases (CDD); iii) malnutrition control; iv) acute respiratory infections control (ARI);
- Strengthening of basic health services, including: i) expansion of diagnostic and treatment services; ii) raising the quality of first aid; iii) combining modern with traditional medicine; and iv) promoting non-drug therapy;
- Malaria control;

^{69/} Ministry of Health, "Program of Action of the Health Services for the 1989-1990 period," February 1989.

^{70/} See Annex C for a complete description of these programs.

^{71/} Viet Nam has added the following two elements to the eight ones promoted by the Alma Ata Declaration on Primary Health Care: i) integration of modern and traditional medicine; and ii) sustaining the efficiency of the public health network. The other eight elements are: 1) promotion of health education; 2) food supply and proper nutrition; 3) adequate water supply and sanitation; 4) maternal and child health (MCH) and family planning; 5) immunizations; 6) prevention and control of endemic diseases; 7) appropriate care of common diseases and injuries; and 8) provision of essential drugs.

- The Expanded Program of Immunization (EPI); and
- Essential drugs and materials.

4.19 Although the need for improving human resources has not been separately listed in this policy statement, it has been considered in a separate proposed Health Manpower Development Plan for the period 1990-2005 (see Annex D). Similarly, while financing policies are not highlighted in the policy statement, the Government has included the following measures as part of health services strengthening: improved collection of reasonable medical and hospital user fees for establishing village and district health and welfare funds; the opening of private maternity homes; the establishment of private clinics; the opening of private drug stores under specific regulations; and the promotion of health and accident insurance schemes. Also, the MOH has requested tax exemptions on imported drugs, medical equipment and other medical supplies from the Government, and has promoted a cost-accounting system for the local production of drugs by autonomous government factories.

C. Structure of the Health Care System

4.20 Health services in Viet Nam are organized along a four-tiered pyramid. At the top of the pyramid is the Ministry of Health, which is the main national authority in the health sector and, together with the Provincial and District Health Bureaus and the Commune People's Committees, formulates and executes the health policy and programs for the country. The Ministry manufactures and distributes pharmaceutical, trains doctors, coordinates medical research, and is ultimately responsible for the provision of all curative and preventive health services in the country. The Minister of Health, a member of the Council of Ministers, is assisted by two vice ministers, one located in Hanoi and the other in Ho Chi Minh City.

4.21 The Ministry is assisted in its activities by a number of central specialty institutes, which function as tertiary care referral centers and professional training and medical research hubs. Among these are the Institute for Protection of Mothers and Newborn, the Institute for Hygiene and Epidemiology, the National Institute of Nutrition, and a number of other institutes responsible for research, training and patient care in the areas of cancer, pediatrics, tuberculosis, otorhinolaryngology, traditional medicine, pharmacy, surgery and ophthalmology.

4.22 The Ministry of Health operates at the provincial level (and in Hanoi, Haiphong and Hoc Chi Minh City) through a Provincial Health Services Department, funded by the central government, which coordinates treatment and prevention activities, trains assistant doctors, manufactures pharmaceutical, and provides referral facilities (including laboratories for hygiene and epidemiology) to the districts. In each province, there is also at least one general hospital with 500-1,000 beds that typically has all seven departments: internal medicine, obstetrics and gynecology, surgery, pediatrics, infectious diseases, traditional medicine, and an emergency ward. The provincial hospitals are intended to be referral centers only, but the fact is that the referral system does not work in practice. Few of the patients cared for at these hospitals are referred from outer communities; the vast majority reside in the general vicinity of the hospitals. In addition to the general hospital, each province may also have one or more specialized centers or hospitals

(e.g., oncological hospitals, cardiology centers, psychiatric hospitals, or centers of traditional medicine).

4.23 In each district there is a district general hospital, including a laboratory and a post for hygiene, epidemiology and malariology. Typically, a unit for MCH care and family planning is attached to the district general hospital. District hospitals are supposed to serve as referral institutions for all intercommunal polyclinics in the district. They also provide training facilities for health staff working in intercommunal polyclinics and commune health centers in the district. Each district also has (i) brigades of hygiene and epidemiology, commanded by the regional branches of the central (national) specialty institutes, which move around the district providing support to categorical health programs, and (ii) two or more intercommunal polyclinics, which are commune health centers that have been upgraded with selected laboratory and surgical equipment and 4-5 specialist doctors (usually an ophthalmologist, otorhinolaryngologist, dentist, internist, and clinical laboratory specialist). Intercommunal polyclinics are located strategically in relation to the commune health centers they serve. The Government's goal is to supplement the network of commune health centers with one intercommunal polyclinic for every 4-5 commune health centers. To reach this goal, over 1,900 intercommunal polyclinics would be needed in addition to the 700 existing ones. Each intercommunal polyclinic currently serves an average of 92,000 people; at the desired level of coverage, each would serve about 34,000 people.

4.24 At the bottom of the pyramid are the commune health centers. Each of the approximately 9,800 commune health centers in Viet Nam is responsible for providing primary health care, including preventive, ambulatory and inpatient services, to between 2,000 and 10,000 persons, and for referring complicated cases to upper levels of care. The commune health center is supposed to be staffed by a team of one assistant doctor in charge of administering the center and training the staff; another assistant doctor trained in pediatrics and obstetrics/gynecology; and one pharmacist responsible for dispensing drugs. Sometimes this team is complemented with an assistant doctor in traditional medicine, a health worker responsible for immunizations and sanitation, and an auxiliary nurse. In exceptional cases, a full physician is also part of the health center staff. Commune health centers are expected to implement the national programs of MCH and family planning, ARI, EPI, and CDD.^{72/} They are assisted in this effort by a Hygiene and Epidemiology Brigade worker from the district health services who is supposed to visit the commune for several days each month.

D. Health Care Inputs

Public Facilities

4.25 Numbers of Facilities of Different Types. Although there has been a rapid expansion of health facilities in Viet Nam since 1968, Table 4.4, which shows the number of health facilities in relation to the population, shows that the per capita availability of hospitals and health centers

^{72/} But the lack of logistical support and well-trained staff reduce all program efforts to perfunctory activities.

actually fell sharply after 1975 (the year of reunification), largely because of the lower per capita supply of health facilities in the South. Yet the figure of 166.7 (commune and urban) health centers per million population in 1989 for Viet Nam is considerably higher than the corresponding figures for Indonesia (32), China (63), and Thailand (141).^{73/}

4.26 Data on the number of beds available, indicating inpatient care capacity in the country, indicates one inpatient bed per 389 persons (representing an average of one hospital bed per 628 people and one confinement bed per 1,019 people). These hospital bed/population ratios are much better than those prevailing in other low-income Asian countries, such as China (1/465), Philippines (1/647), Thailand (1/665), India (1/1,489), and Indonesia (1/1,743).^{74/} In fact, Viet Nam has one of the most favorable hospital bed ratios in Asia and in the entire developing world. The trend in overall beds/population ratio has, however, remained flat over the last decade.

4.27 Thus, potential population coverage by basic health facilities (ambulatory and hospital) in Viet Nam is almost complete. The official figure of health services coverage is 100% in urban areas and 75% in rural areas. These figures do not indicate a need for additional expansion in the total number of health facilities in the country. Indeed, in view of the very low occupancy rates at district hospitals (see discussion below), there might even be scope for reducing the ratio of district hospital beds to population by as much as 50% without any deterioration in the population's access to inpatient care.

4.28 Regional Disparities. The national averages for Viet Nam do, however, conceal wide provincial differences in the average number and spatial distribution of health facilities. At first glance, the mountainous provinces in the North and the Central Highland provinces appear to be favored over provinces in the Red River and Mekong River Delta. For example, while approximately 48,000-55,000 persons share a hospital in the three Central Highland provinces, a hospital in most provinces in the Mekong River Delta serves well over 100,000 persons (Statistical Annex Table 4.3). However, since population densities are so much lower in the highland regions than in the Red/Mekong River Delta, the average person lives at a greater distance from a health facility in the highlands despite the greater per capita provision of health facilities.

4.29 Statistical Annex Table 4.3, which also reports the average radius of the service area of hospitals and polyclinics, shows that access to health facilities is considerably worse in the central highland and northern mountainous provinces (e.g., Son La and Gia Lai-Kon Tum) than in the Red River and

^{73/} World Bank, "Indonesia: Poverty Assessment and Strategy Report," Report No. 8034-IND, Country Department V, Asia Region, Washington, D.C., 26 December 1988; and World Bank, "Indonesia: Issues in Health Planning and Budgeting," Report of Country Department V, Asia Region, Washington, D.C. 12 June 1989.

^{74/} The statistics, which are for the mid-1980s, are taken from Charles C. Griffin, "Health Sector Financing in Asia," Internal Discussion Paper, Asia Regional Series, Report No. IDP 68, The World Bank, August 1990, p. 76.

Mekong River Delta. For instance, a person living in Lai Chau would have to travel an average of 25.6 kms to reach a hospital, while in Hai Phong (s)he would have to travel only 5.3 kms. Furthermore, the average distance figures understate the problem of access to health facilities in the mountainous and highland regions, where the terrain is difficult and the means of transportation limited.

4.30 Thus, with the exception of the remote mountainous and highland areas of the North and the Center, the overall availability of health facilities as well as their spatial distribution appear to be adequate in Viet Nam. In part, access to health centers is generally good because communities have a say on their location through the Commune Council. The remote areas are, however, poorly served, with average distances to health facilities being extremely large in some provinces.

Table 4.4: Health Facilities in Viet Nam, 1945-1989					
Year	Total no. of hospitals	No. of hospitals per million population	Total no. of health centers	No. of health centers per mill. pop.	No. of hospital beds per 10,000 population
1945	47	5.1	--	--	1
1955	57	4.2	200	14.6	11
1965	252	13.8	5,463	299.2	16
1975	437	20.1	5,786	266.8	28
1976	--		--	--	20
1980	676	12.7	9,886	185.4	25
1983	689	--	--	--	24
1985	729	12.2	9,890	165	24
1986	757	12.4	10,573	173	24
1987	765	12.3	10,732	171.2	24
1988	767	12.0	10,716	167.5	24
1989	762	11.9	10,683	166.7	24

Notes: Data for 1945-75 are for the Democratic Republic of Viet Nam (i.e., North Viet Nam).

Source: Data for 1945-1975 and 1983 are taken from Ulrich Vogel, "The Whole of Viet Nam can be Considered as One Well-Designed Project: Some Reflections on Primary Health Care Experiences in Viet Nam," unpublished master's thesis at the University College of Swansea Center for Development Studies, University of Wales, 1987, p. 24. Data for 1976, 1980, and 1985-89 were obtained from the Ministry of Health.

4.31 The 1991 MOH survey of health facility users provides an indication of the distance that health facility users had to travel in each of the three sampled provinces. This survey indicates that, on average, users had to travel just over 2 kms. to the nearest intercommunal polyclinic and under 2 kms. to the nearest commune health center. However, these figures are likely to significantly underestimate the true proximity of health facilities for the population, since they represent averages over the sample of individuals actually using health facilities. To the extent that individuals do not use health facilities that are located too far away, a sample including users and nonusers would most likely have indicated poorer proximity to health facilities.

4.32 The provincial distribution of beds in hospital and in basic health care centers, shown in Statistical Annex Table 4.4, also indicates a wide variance in the size of the population served by a hospital bed. In 1989 the hospital bed:population ratio varied from a low of 1:375 (in Hai Phong) to 1:1,100 (in Thua Thien Hue).

4.33 Quality of Health Services. The data on the number of health facilities in Viet Nam are impressive but misleading. For instance, although there are supposed to be over 10,000 commune health centers -- one for each commune -- field visits reveal that some commune health centers are simply housed in the homes of health workers, in the quarters of the People's Committee, or in very inadequate structures. Further, since allocation of funds is related to the number of beds an institution has, beds are kept on the books even when they are rarely, if ever, used. The problem of poor quality is worse in remote mountainous areas. In these areas, the health centers are often essentially nonfunctional. The problem is compounded by the fact that, since there is no comprehensive system of supervision, monitoring or evaluation of grass-roots medical facilities in the health sector, no one at the planning levels, including the MOH or the provincial health services, knows how many of the 10,000 commune health centers in the country are operative in the sense of being able to offer even the most basic of health care.

4.34 In the 1991 MOH survey of health providers in three provinces, the overwhelming majority (91.1%) of providers cited low salaries, inadequate equipment (87.6% of providers), and inadequate drugs and medical supplies (82.6%) as problems affecting the quality of the health services they dispensed.^{75/} In contrast, 33.7% of providers believed the staffing at the health facility to be deficient, while only 15.7% felt that their problem was they were seeing too many patients. These survey results are useful in directing attention to the most important causes of poor quality of health services in the country, viz., low salaries, poor or nonfunctioning equipment, and inadequate (and, in many cases, nonexistent) medical supplies and drugs.

Medical Equipment

4.35 Overall Viet Nam has a serious shortage and obsolescence of medical equipment. This problem is compounded by the lack of maintenance, which

^{75/} It should be emphasized that this survey is not necessarily representative of all health providers in the country.

causes premature wear-and-tear on equipment and renders much of it unusable. In the 1991 MOH survey of health providers, only 49.3 and 58.4%, respectively, of rural commune health centers reported having a usable sterilizer and a usable weighing scale for infants (Table 4.5).^{76/} The corresponding figures for intercommunal polyclinics and for commune health centers in urban areas were somewhat higher. With no proper equipment with which to sterilize needles, the risk of spreading hepatitis infection and AIDS via injectable vaccinations is considerable. Similarly, it is unclear what, if any, type of child growth monitoring can take place at commune health centers if nearly 42% of them in the rural areas do not even have a usable weighing scale for infants.

4.36 The same survey shows that health providers are deeply aware of this problem. Nearly 40% of the staff of rural commune health centers reported the lack of medical equipment as a very severe problem -- second only to the problem of low salaries -- in the delivery of quality health services.

4.37 The physical deterioration of equipment is in large measure a result of inadequate maintenance. There is only one institute in the entire country that trains medical equipment maintenance technicians. The institute opened in 1973 and has graduated a total of only 1,000 trainees to date. Almost all of these graduates are employed by national and provincial hospitals, with none reserved for the district or lower levels of health services. Further, since the graduates of the maintenance training institute are not trained with sophisticated medical equipment, they are rarely capable of maintaining such equipment. The repair and upkeep of more complex equipment throughout the country is handled by only two repair workshops situated in Hanoi and Ho Chi Minh City. The workshop in HCM City has no vehicles, so the repair technicians have to use public transportation to reach the provinces and districts. This can take up to several days in many cases.

Table 4.5: Proportion of Public Health Facilities having Usable Medical Equipment				
Type of Medical Equipment	Commune Health Center		Intercommunal Polyclinic	
	Rural	Urban	Rural	Urban
Weighing scale for adults	45.6	54.3	63.0	52.2
Weighing scale - infants	58.4	73.6	75.9	56.5
Blood pressure gauge	72.3	74.1	93.7	87.0
Sterilizer	49.3	60.9	56.3	71.0

Source: MOH Survey of Health Providers, 1991

^{76/} These numbers are not necessarily representative of the situation in the country.

4.38 Maintenance expenditures are severely underfunded in the national and provincial health budgets. The problem is compounded by the fact that external donors often fund the purchase and import of new medical equipment but not its upkeep and maintenance. In many cases, the equipment does not even come with appropriate manuals.

Health Manpower

4.39 Categories of Health Workers. The lowest level of health manpower are the Red Cross volunteers. They have been trained by commune health station staff and provide, on a part-time basis, simple first aid treatment and family planning advice. The next level up is the elementary level. This group include nurses, midwives, pharmacists and certain types of technicians, and typically receives training for 3, 6, 9 months at the district level. Certain categories of elementary health workers, such as brigade nurses attached to cooperatives and other state work units, have virtually disappeared during the last 3-4 years, as the funds available to pay these workers have dried up. Secondary level (technician) health workers include nurses, midwives, pharmacists, assistant doctors and various types of technicians. They are typically trained for 2½-3 years at provincial secondary medical schools, after which they are assigned to commune health stations or to district or provincial hospitals. Finally, professional health staff include physicians and pharmacists, who are trained at a University Faculty of Medicine or Faculty of Pharmacy. Their training typically lasts for six years. This group of health workers almost exclusively work in district or provincial hospitals. Postgraduate specialization is also available, generally requiring five years of experience.

4.40 Supply and Mix of Health Manpower. Table 4.6 shows that the population:physician ratio in Viet Nam has been declining secularly since 1945, with the exception of the period immediately after reunification (1975-80) when the ratio increased slightly. However, the per capita availability of all other health personnel -- particularly, assistant doctors -- decreased since 1975, most probably owing to the poor supply of health workers in the South. In 1989 each physician on average served 2,694 persons, while each nurse served 760 persons.

4.41 The trend that is of concern in Table 4.6 is the falling ratio of all paramedical personnel to doctors over time. Thus, while there were 5.9 nurses to each doctor in 1980, the nurse:doctor ratio was merely 3.5 in 1990. The ratio of midwives to doctors fell from 1.08 to .59. The increasing intensity of physicians in the health personnel mix is not only expensive (since the cost of training physicians is much larger than the cost of training nurses or midwives) but also inappropriate, since the disease pattern in Viet Nam does not call for a heavily intense use of physician services. Indeed, for the type of infectious and parasitic diseases that are endemic to (and leading causes of mortality and morbidity in) Viet Nam, a relatively more intensive use of paramedical personnel inputs would be more relevant.

Table 4.6: Availability of health personnel, 1945-90				
Year	Population per			
	Doctor	Ass't. Doctor	Nurse	Midwife
1945	180,000	60,395	7,482	42,698
1955	126,685	24,302	1,334	6,737
1965	11,973	2,270	469	1,227
1975	3,816	907	512	2,547
1980	4,122	1,835	698	3,834
1983	3,572	1,711	713	4,079
1985	3,137	1,509	721	4,053
1990	2,694	1,381	760	4,568

Notes: Data for 1945-1975 are for the Democratic Republic of Viet Nam (i.e., North Viet Nam).

Source: Data for 1945-1975 and 1983 are taken from Ulrich Vogel, "The Whole of Viet Nam can be Considered as One Well-Designed Project: Some Reflections on Primary Health Care Experiences in Viet Nam," unpublished master's thesis at the University College of Swansea Center for Development Studies, University of Wales, 1987, p. 34. Data for 1980, 1985 and 1990 were obtained from the Ministry of Health.

4.42 Comparison with Other Countries. At 2,694 persons to a doctor, the population:physician ratio is lower in Viet Nam than in most Asian countries (with the exception of Korea, Malaysia, China and India.) With a ratio of one nurse for 760 persons, Viet Nam surpasses all Asian countries, with the exception of Thailand and Korea, in the per capita supply of nurses (Table 4.7).

Table 4.7: Population per physician and nurse, Asia, 1984			
Country	Population per physician	Population per nurse	Nurses to physicians
Bangladesh	6,730	8,980	0.7
China	1,000	1,700	0.6
India	2,520	1,700	1.5
Indonesia	9,460	1,260	5.4
Korea	1,170	590	2.0
Malaysia	1,930	1,010	2.0
Myanmar	3,740	900	4.2
Nepal	32,710	4,680	7.0
Papua New Guinea	6,160	890	7.0
Philippines	6,700	2,740	2.4
Sri Lanka	5,520	1,290	4.3
Thailand	6,290	710	8.9
Viet Nam	2,694*	760*	3.5*

Notes: *Data are for 1990

Source: Charles C. Griffin, "Health Sector Financing in Asia," Internal Discussion Paper, Asia Regional Series, Report No. IDP 68, The World Bank, August 1990, p. 33.

4.43 Table 4.7 shows that Viet Nam also has a better mix of nurses and physicians relative to most Asian countries. However, at 3.5 nurses to each physician, Viet Nam's nurse:physician ratio is comparable to ratios observed in developed countries, where the heavily curative-based systems of health care require relatively intense use of physician services. Since the leading causes of morbidity and mortality in Viet Nam are preventable diseases (primarily, infectious and parasitic), which typically do not need physician-intensity, there may be scope for substantial cost saving by relying more on a personnel mix with heavier emphasis in community health workers, nurses, midwives and assistant doctors.

4.44 Provincial Distribution of Health Personnel: As in the case of health facilities, there is substantial disparity in the allocation of health personnel across provinces. The population:physician and population:nurse ratio tends to be much smaller in the North, particularly in the Red River Delta provinces, and significantly higher in the South (particularly, the Mekong Delta provinces) (Statistical Annex Table 4.5).

4.45 The relatively low supply of health personnel in the South is not a post-reunification phenomenon, although it is likely that large-scale out-migration of health professionals immediately after reunification in 1975 exacerbated the shortage of health care personnel. As early as 1964, an American study enumerated 6,000 physicians practicing in the North and only 750 physicians in the South, with most of the latter practicing in Saigon.^{77/} About the same time, another report noted that South Viet Nam had "one of the most severe doctor shortages in Southeast Asia. Of approximately 800 practicing physicians, some 500 serve in the army, and another 150 are in private practice in Saigon. Thus about 150 doctors, or 1 for about every 100,000 persons are available for the rest of the country."^{78/}

4.46 Training. There are eight medical schools in the country: four in the north, two in the center, and two in the South. About two-thirds of all Vietnamese doctors have been trained at the Hanoi Medical School, the oldest and most prestigious in the country. In 1991, only 200 of the 4,250 applicants who applied to the School were admitted to the medical training program.

4.47 The six-year undergraduate curriculum has four modules: basic sciences (10% of total curriculum hours), medical sciences (30%), clinical medicine (45%), and social medicine (15%). The first two years are devoted to basic and medical sciences (e.g., biochemistry, statistics, physics, anatomy, microbiology, and pathology); the remaining four years are devoted to clinical medicine and social medicine. The clinical medicine curriculum includes semiology and clinical practice, whereas the social medicine curriculum includes public health and health sector organization. Postgraduate studies consist of master, specialty, and doctorate programs. Typically 5-10% of those graduating from medical school pursue a 3-year master's degree program; another 15% pursue specialty studies (first-degree specialty is a four-year program in any one of the four basic specialties; the second-degree specialty is an additional two-year program to obtain a sub-specialty). About 10 to 20 students per year enter the four-year doctorate program of the Hanoi Medical School. Public health is a specialty of four years, but very few students apply due to its low status.

4.48 The Hanoi Medical School has a staff of 960 persons, of whom only one-half are full-time. There are 60 full professors in the School. The faculty/student ratio of one to two is remarkably favorable, but the total annual budget per pupil of the School was merely US\$80 in 1991 -- 30% less than in 1990. This budget includes a US\$36 subsidy (scholarship) given to 80% of the students. The other 20% of the students pay a US\$24 annual tuition. The basic annual salary for a full-time faculty member in the School is

^{77/} Walter Reed Army Institute of Research, "Democratic Republic of Viet Nam, North Viet Nam," Walter Reed Army Medical Center, Washington, D.C.: Health Data Publications, October 1966; and Walter Reed Army Institute of Research, "Democratic Republic of Viet Nam, South Viet Nam," Walter Reed Army Medical Center, Washington, D.C.: Health Data Publications, January 1966.

^{78/} H. H. Smith, et al., Area Handbook for South Viet Nam, Washington, D.C.: U.S. Government Printing Office, 1967, p. 129.

US\$156; in addition, faculty members receive a bonus of US\$48 and a housing subsidy. The food subsidy of 15 kgs. of rice and one-half kg. of meat per month was suspended in 1989. Full-time faculty members are not allowed to have private practice. The MOH sets the salary scale and pension requirements.

4.49 There are two schools of traditional medicine, one in Hanoi and one in Ho Chi Minh City, both of which train assistant doctors. The faculty of the Ho Chi Minh school constitutes 5 full professors, 10 teachers with post-graduate training; 10 university graduates, and 10 assistant doctors; in 1991 there were 300 applications, 100 admittances and a total student population of 1,200 students. In 1990, it graduated 50 doctors, 100 assistant doctors, and 200 traditional practitioners. The training periods are 6 years for traditional medicine doctors and 3 years for assistant doctors and traditional practitioners. After 5 years of practice, an assistant doctor can apply for three additional years of training to become a traditional medicine doctor. Provinces send their candidates and pay the student tuition (US\$20 annually) and board (US\$10 per year). A full-time professor has an annual base salary of US\$120 plus a bonus of US\$0.40 per hour of teaching. An instructor earns US\$60 annually and a US\$0.10 bonus per hour of teaching. Faculty members are allowed to have private practice.

4.50 Until recently, there were no schools of public health in Viet Nam, reflecting the low priority given to training in public health and community medicine in the country. Now, there are two schools of public health, one in Hanoi and the other one in Ho Chi Minh City. There are English training centers incorporated to these schools that are supported by the World Health Organization (WHO). Both schools are underfunded, and require substantial support to increase the number of post-graduate trainees.

4.51 A generalized problem in the training of health auxiliaries, technicians, and professionals is the serious weakness in health management, community mobilization, and screening for health. Epidemiological approaches to confront health problems in a community are strongly needed in all health training programs.

4.52 Remuneration and Productivity of Health Workers. Health workers are employed by the state immediately after graduation, and are placed into a 3-5 year mandatory practice at a site selected by the MOH in consultation with state health facilities, agencies, bureaus, and factories. Only those completing the mandatory practice can take a residency entrance examination, the successful completion of which is required before entering a residency program. Only 10-12% of graduating students are selected into residency programs. Typically, about 10% of students completing post-graduate training are selected for teaching positions.

4.53 Most health workers typically stay in the same job for their entire careers because of difficulties in obtaining transfers, glut of physicians in the public sector, and an incipient private health sector. Emerging economic changes and greater autonomy in setting wage policies may lead to a greater liberalization of the job market and less retention on the same job.

4.54 Basic salary scales for different health workers are set by the MOH. A new directive (numbered 923) established that all staff working at

grassroots level will be paid by the district, which has the choice of increasing the salary level. Despite this directive, salaries of health workers are abysmally low, even by Vietnamese standards. In the 1991 MOH survey of health providers, physicians at commune health centers reported earning an average monthly salary of 57,500 dong (about US\$7.50 in April 1991) (Table 4.8). Assistant physicians reported an average monthly salary of 38,000 dong (US\$5.00). Given the average daily hours of work reported (and assuming a six-day work week and a 25-day work month), the hourly wage rate of doctors and assistant doctors works out to be 263 dong (US\$0.04) and 154 dong (US\$0.02), respectively. Staff at commune health centers who reported having a private medical practice (approximately one-third of the physicians and one-fourth of the assistant doctors) reported earning an hourly wage rate in this practice that was 2½ - 4 times greater than their public-sector wage. Physicians and assistant physicians in private health clinics also reported earning monthly incomes that are 3-4 times the public-sector salaries, viz., an average monthly income of 271,240 dong (US\$36.20) for physicians and 103,850 dong (US\$13.80) for assistant physicians.

4.55 The statistics on numbers of health personnel in Viet Nam, like those on the number of health facilities, can be misleading since little information is available on how much time health workers actually put in delivering health services. Since salaries for health staff have been falling during the last 3-4 years, many health workers have to hold second and third jobs in order to make a living. The problem is most acute in rural areas, where a large number of health workers also engage in farming to augment their earnings.

4.56 In the 1991 MOH survey, all categories of health workers at public health facilities reported long hours of daily work. On average, doctors at commune health centers reported working 8.4 hours per day, while midwives reported working over 10½ hours per day. At the same time, about one-third of the surveyed physicians and one-fourth of the assistant physicians at commune health centers reported spending more than two hours each day in supplementary private medical practice (Table 4.8). Since most health workers also hold other (in many cases, full-time) jobs outside the health sector, the data on average daily hours of work at the public health facilities are likely to be grossly overstated. The MOH survey of health facility users showed each commune health center with a staff of about 5 health workers seeing an average of only 6 patients a day ^{79/} (Table 4.9). Such a low daily case load is at variance with the 8-9 hours of work reported by the providers.

^{79/} In contrast, private physicians and traditional healers, operating essentially by themselves, reported attending to more than 6 patients each day.

Table 4.8: Average working hours, number of patients examined, monthly salary, and time in private practice, by type of health provider and type of clinic, 1991

COMMUNE HEALTH CENTERS					
<u>Variable</u>	<u>Doctors</u>	<u>Ass't Doctors</u>	<u>Nurses</u>	<u>Midwives</u>	<u>Traditional Healers</u>
Average daily working hours	8.40	9.50	9.17	10.50	7.18
Number of patients seen in a week	55.32	44.68	35.60	27.99	33.22
Avg. no. of patients seen per hour of work	1.10	0.78	0.65	0.44	0.77
Monthly salary ('000 dong)	57.52	38.13	30.38	32.81	39.25
Avg. hourly wage rate (dong)	263.44	154.40	127.42	120.24	210.34
% having private practice	33.3%	24.5%	17.4%	20.5%	57.1%
Private practice:					
No. of patients in a week	15.10	10.55	8.37	7.37	12.56
Avg. daily working hours	2.00	2.42	1.94	2.30	2.75
Avg. no. of patients seen per hour of work	1.26	0.73	.72	0.53	0.76
Monthly income from practice ('000 dong)	32.22	40.38	19.67	27.12	43.67
Avg. rate charged per patient (dong)	492.41	883.43	542.54	849.57	802.20
Avg. hourly wage rate (dong)	619.62	640.49	390.75	452.96	610.77
Sample size	31	449	187	157	32

INTERCOMMUNAL POLYCLINICS					
<u>Variable</u>	<u>Doctors</u>	<u>Ass't Doctors</u>	<u>Nurses</u>	<u>Midwives</u>	<u>Traditional Healers</u>
Average daily working hours	9.06	9.25	9.10	10.56	9.08
Number of patients seen in a week	45.54	38.90	39.38	55.20	42.46
Avg. no. of patients seen per hour of work	0.84	0.70	0.72	0.87	0.78
Monthly salary ('000 dong)	51.03	42.97	37.09	38.16	39.00
Avg. hourly wage rate (dong)	216.68	178.72	156.78	138.99	165.25
% having private practice	41.7%	23.1%	12.6%	10.4%	36.4%
Private practice:					
No. of patients in a week	12.97	8.49	8.21	7.20	16.00
Avg. daily working hours	2.30	2.01	1.42	1.75	4.50
Avg. no. of patients seen per hour of work	0.94	0.70	0.97	0.69	0.59
Monthly income from practice ('000 dong)	35.73	21.31	23.50	28.00	60.00
Avg. rate charged per patient (dong)	635.66	579.17	660.20	897.44	865.39
Avg. hourly wage rate (dong)	597.49	407.95	638.01	615.39	512.82
Sample size	87	263	124	50	13

PRIVATE HEALTH PROVIDERS				
<u>Variable</u>	<u>Doctors</u>	<u>Ass't Doctors</u>	<u>Traditional Healers</u>	
Average daily working hours	7.18	8.08	9.45	
Number of patients seen in a week	49.93	33.73	55.89	
Avg. no. of patients seen per hour of work	1.16	0.70	0.99	
Monthly income from practice ('000 dong)	271.24	103.85	119.17	
Avg. rate charged per patient (dong)	1,253.52	710.44	492.08	
Avg. hourly wage rate (dong)	1,452.67	494.21	484.98	
Sample size	46	15	62	

Notes: A six-day work week and a 25-day work month have been assumed in calculating productivity and hourly wage variables.

Source: MOH Survey of Health Users and Providers, 1991

4.57 Frequent absenteeism from jobs, low morale and low productivity are some of the consequences of low wages in the public sector. Health workers in public facilities openly report low salaries as a serious problem in the

delivery of health services. In the 1991 MOH survey of providers, for instance, 54.5% of the health workers in commune health centers and 65.8% of the workers in polyclinics reported inadequate salaries as a "very severe" problem in the delivery of health services. No other problem, including that of inadequate drugs and supplies and of nonfunctional equipment -- received such a high rating. However, in spite of the low salaries, Viet Nam has not yet experienced the serious attrition in health staff at primary health centers that China experienced during its reform of the health sector. For example, owing largely to the withdrawal of local funding for their positions, particularly in the poorer regions of the country, the number of barefoot doctors in China decreased from 1.8 to 1.2 million between 1978 and 1982 -- the first years of economic reform in China.^{80/}

4.58 Private Sector Health Providers. By all indications, private health services, although still incipient, have been multiplying rapidly in recent years. The 1991 MOH survey of health providers found a relatively large proportion of public-sector physicians (one-third of those in commune health centers and nearly 42% of those in polyclinics) engaged in private practice for an average of 2-2½ hours per day. In addition, the survey discovered a large number of full-time private physicians and traditional healers operating in both rural and urban areas. These practitioners were doing brisk business, as evidenced by the number of patients they examined during the three days they were observed by the MOH survey team (Table 4.9). Since the staffing at private health facilities was meager (with only slightly more than one staff member per facility), the average daily number of patients examined by a private health worker was over five times as large in the public facilities.

4.59 The MOH survey of health facility users can be used to examine the socioeconomic and demographic profile of patients using private health providers. The latter tend to be older and have more schooling and higher incomes than users of public health services. For example, patients visiting private physicians had incomes that were more than 25% higher than those of patients using commune health centers (Table 4.10). About 4.5% of the patients using private physician services had college education; in contrast, the corresponding figure for commune health centers was merely 1.3%. The public health facilities attended to more pregnant women than the private facilities, indicating that people tend to obtain preventive care (in particular, prenatal checkups) at public health facilities, and use private health services generally for curative care. In terms of occupational backgrounds, users of public health facilities typically were farmers (both cooperative and private), while private farmers, professionals, factory workers, housewives, and students figured prominently among users of private facilities. Finally, the fact that patients traveled two times as far and paid over two times as much for a private health care visit as for a visit to a public health facility implies that they must perceive the quality of private health providers to be significantly better than that of public health providers.

^{80/} Joan Kaufman and Gita Sen, "Population, Health, and Gender in Viet Nam: Social Policies under the Economic Reforms," Center for Population Studies, Harvard University, 8 September 1991, p. 25.

Type of facility	Average number of patients examined per day	Average number of health workers
Commune health center	5.8	4.6
Intercommunal polyclinic	7.8	7.2
Private physician	6.3	1.1
Traditional healer	6.3	1.2

Source: MOH survey of health facility users and providers, 1991

Traditional Medicine

4.60 The Vietnamese government has placed strong emphasis on the use of traditional medicine. In part, this emphasis has arisen out of necessity. The international isolation and severe resource crunch that Viet Nam experienced forced it to accord an important status to traditional medicine, which makes good use of the abundant supplies of local herbs and flora. Unlike the situation in other countries, where traditional medicine is merely part of the folklore, traditional medicine is fully integrated within the health system in Viet Nam and is placed on an equal footing with Western medicine. For example, all medical and health personnel receive training in traditional medicine; in addition, all practicing assistant doctors at commune health centers receive continuing education in traditional medicine; traditional doctors or healers are included on the staff in national, provincial and district hospitals; and the Institute for Traditional Medicine is one of the central specialty institutes financed by the MOH. As a result, traditional medicine is actively practiced in the country. Indeed, integrated treatment using both Vietnamese and Western medicine is the rule, rather than the exception, in most health facilities.

Safe Water and Sanitation

4.61 Health Consequences. The mortality and morbidity profile in Viet Nam is characterized heavily by diseases that are linked to water supply and sanitation. For example, malaria and dengue fever are among the important causes of mortality, while malaria is a leading cause of morbidity as well. Both of these diseases are spread by mosquitoes that breed in stagnant water ponds and inadequately covered water tanks. Excreta-related and water-borne diseases, such as gastroenteritis, dysentery, typhoid, cholera, and viral hepatitis, are also important sources of morbidity, especially among children. Almost 60% of the total reported diarrheal cases in 1986 in Viet Nam occurred in children under 5 years of age.^{81/} An examination of clinic records at commune health centers in Yen Phung district revealed that 41% of all treatments offered were for diarrhea. Thus, any attempts to improve health

^{81/} World Health Organisation, "Programme for Control of Diarrhoeal Diseases, Sixth Programme Report, 1986-87," Geneva, 1988, p. 5.

conditions in Viet Nam, especially those of children, should necessarily include forceful interventions in the supply of safe water and sanitation.

Table 4.10: Characteristics of Patients Using Public and Private Health Services, Viet Nam, 1991

<u>Variable</u>	<u>Entire Sample</u>	<u>Commune health centers</u>	<u>Intercommunal polyclinics</u>	<u>Private physicians</u>	<u>Traditional healers</u>
Number of observations	7,294	3,393	1,941	1,165	795
Household size	5.127	5.145	4.878	5.379	5.285
Total household income (dong)	213,434	204,301	198,467	257,316	225,646
Age of patient (years)	29.759	29.048	27.529	30.154	37.644
<u>Proportion of individuals who have completed:</u>					
primary school	0.494	0.495	0.538	0.453	0.436
secondary school	0.203	0.176	0.178	0.310	0.219
college	0.020	0.013	0.016	0.045	0.024
<u>Proportion of individuals who are:</u>					
cooperative farmer	0.222	0.273	0.246	0.103	0.116
private farmer	0.297	0.301	0.359	0.211	0.255
factory worker	0.062	0.050	0.057	0.090	0.083
teacher	0.034	0.029	0.043	0.042	0.021
professional	0.024	0.018	0.024	0.034	0.040
artisan	0.029	0.030	0.018	0.040	0.035
construction worker	0.010	0.009	0.007	0.009	0.020
housewife	0.043	0.041	0.018	0.067	0.081
student	0.061	0.054	0.060	0.102	0.035
driver	0.009	0.008	0.004	0.015	0.021
unemployed	0.041	0.043	0.020	0.064	0.055
<u>Proportion of individuals who are:</u>					
male	0.410	0.401	0.417	0.439	0.393
pregnant women	0.082	0.095	0.112	0.037	0.023
nursing mothers	0.042	0.046	0.040	0.045	0.025
Distance traveled (kms.)	3.085	1.452	2.382	5.914	7.603
Payment for visit (VND)	4,830	3,403	4,279	7,897	7,772

Source: MOH Survey of Users, 1991.

4.62 Population Coverage. Although the Government has waged mass campaigns to encourage construction and utilization of wells, rainwater tanks, latrines and bathrooms over the last 35 years, a significant majority of the Vietnamese population remains without access to safe water and sanitation. It is estimated that only about 54% of the urban population has access to safe drinking water.^{82/} The remainder obtain drinking water from shallow wells that are typically unprotected and highly contaminated, rainwater catchment tanks, rivers and ponds. Even in the towns having access to piped water, the facilities are poorly maintained and in a state of disrepair. In Hanoi and Ho Chi Minh City, water treatment facilities are adequate, but water is sometimes distributed untreated. Lack of chlorination, excessive leakage (approaching nearly 50%), and problems with sewage disposal, among other things, make the delivery of water in urban areas unsafe.

^{82/} United Nations Development Programme, "Report on the Economy of Viet Nam," December 1990, p. 188.

4.63 According to the MOH, 33% of rural households have a well or rainwater collection tank.^{83/} Only 40% of these facilities, however, meet the MOH's quality standards. Furthermore, it is not clear whether the wells can be considered as safe supplies of water. Typically, they are shallow and easily prone to contamination. The rainwater collection tanks do supply clean water, but only in such small quantities that it can be used for drinking and cooking alone. Water for personal use and washing is generally obtained from contaminated sources.

4.64 The official statistics on water and sanitation show virtually no increase in the proportion of housing units with safe water and sanitation during the last 15 years. The percentage of housing units without safe water supply has hovered around 60% in urban areas and 30% in rural areas since 1976. In urban areas the proportion of housing units without sanitation facilities is small (around 2%), but in rural areas this figure has remained around 40% since 1976.^{84/}

4.65 Administration and Organization. One of the problems with the supply of drinking water and sanitation in Viet Nam is that no single agency has authority over this subject. Among the four ministries that have jurisdiction over water and sanitation are (i) the Ministry of Construction, which is responsible for designing and implementing urban water supply and sanitation systems, (ii) the Ministry of Health, which is responsible for implementation of rural sanitation programs and quality control of drinking water in urban and rural areas, (iii) Ministry of Water Resources, which looks after the development and management of surface water resources (typically flood control and irrigation), and (iv) the Ministry of Labor, Social Welfare and Invalids, which coordinates implementation of rural water supply projects (financed by UNICEF). The dispersion of responsibility, combined with the lack of coordination, among the various agencies makes it difficult to develop a coherent plan for improving water quality and sanitation.

Pharmaceutical and Other Medical Supplies

4.66 Viet Nam has produced some drugs and medicines since colonial times; however, the domestic pharmaceutical sector in Viet Nam is unable to meet domestic demand. Most essential drugs (e.g., antibiotics and drugs against tuberculosis, infectious diseases, malaria, and parasites) are imported. One of the main objectives of the Government's Development Plan for 1990-2000 is to expand the domestic production of drugs and pharmaceutical and has established a goal of eventual self-sufficiency, at least in essential drugs. Viet Nam produces vaccines such as BCG and DPT; nevertheless, it still relies on UNICEF for a large part of its supply of these vaccines. Positive factors conducive to an expansion of domestic production of pharmaceutical

^{83/} Of course, this is a big improvement over the situation in 1955, when fewer than one percent of rural households in the country had a well or rainwater storage facilities. See UNICEF, Viet Nam: The Situation of Children and Women, UNICEF, Hanoi, 1990.

^{84/} National Centre for Social Sciences of Viet Nam and Centre for Women's Studies, Selected Indicators on Women Status in Viet Nam 1975-1989, Statistical Publishing House, Hanoi, pp. 109-111.

include (a) the country's wealth of vegetation which can be used in the production of traditional drugs and medicines, (b) a cheap labor supply, and (c) in the late 1990s, when several large hydroelectric projects will be completed, an abundant source of relatively cheap energy.

4.67 Growth and Production. Viet Nam's pharmaceutical industry consists of 12 manufacturing units producing traditional Vietnamese medicines and a total of 54 manufacturing units producing western drugs. Of these, 46 are provincial and 20 are national units.

4.68 The total output of western medicine in Viet Nam in 1989 amounted to 3,107 million dong (3.3 million dong at constant 1982 prices) (Statistical Annex Table 4.6). This was a mere 1.5% of the corresponding output in 1980. There was a sharp decline in the output of pharmaceutical products during the 1980s, primarily due to a general lack of financial resources and the consequent inability to import raw materials and spare parts for equipment. It is estimated that, at the present time, domestic pharmaceutical factories are producing at only about 40% of capacity.

4.69 Four important characteristics have shaped the growth of pharmaceutical in the past and will continue to shape it in the near future. First, the availability of root plants and extremely cheap labor; second, acquisition of spare parts and equipment; third, the pricing and promotional policies for setting up local manufacturing facilities; and, fourth, government policy toward joint ventures. In the past, the establishment of packaging and dosage formulation facilities in the North (Hanoi), Central (Quang Nam Danang) and South (Ho Chi Minh City) has been carried out with varying degrees of success. But, owing to heavy reliance on foreign technology and imports of some raw materials, the savings in cost and foreign exchange are lower than might be expected. Most essential drugs, e.g. antibiotics and drugs against tuberculosis, infectious diseases, malaria and parasites, are currently imported.

4.70 Institutional Framework. Viet Nam has a relatively few number of agencies involved in the pharmaceutical subsector. Responsibility for overseeing the pharmaceutical industry is shared by the MOH and Viet Nam Pharmaceutical United Enterprise (VINAPHA). The MOH has jurisdiction over formulation of policies regulating drug use and administration, quality control, supervision, license and registration. The VINAPHA, which was created in 1982 by the MOH, is directly responsible for all aspects of production, supply, exports and imports and R&D activities. With its head office in Hanoi and branch office in Ho Chi Minh City, VINAPHA oversees all national and provincial pharmaceutical enterprises.

4.71 Of the 54 pharmaceutical units in the country, 46 are provincial. Thus each province controls and manages at least one pharmaceutical factory. In addition to producing drugs and medicines themselves, the provincial companies supply inputs to the national enterprises and distribute drugs produced by the national enterprises in their respective provinces. The 20 national enterprises include 10 pharmaceutical factories controlled directly by VINAPHA, three trading companies specializing in medical supplies, two pharmaceutical wholesale companies, one transportation and distribution company for imported drugs, medicines, and medical supplies, one

pharmaceutical import-export company (VIMEDIMEX), and three plantations producing medicinal plants and herbs.

4.72 Consumption and Distribution. No detailed statistics on consumption of pharmaceutical by main therapeutic groups are available. At present, the per capita consumption of pharmaceutical products amounts to roughly US\$1.00. These rates are too low, and reflect the widespread unavailability of pharmaceutical products in the country. In addition to inadequate levels of production and imports, the distribution system for drugs is also weak and is hampered by the lack of proper transportation between the central storage and district hospitals, poor refrigeration facilities, improper warehousing, and inadequate management of drug inventories. The situation is worse in the remote mountainous regions, where the difficult terrain and isolation hinder distribution of drugs. Realizing this, the Government has initiated the Program of Price Support on Essential Drugs for Mountainous Villages, covering some 2 million persons, in 1992. Under this program, the Government pays the transportation costs for drugs, so that drugs can be available to consumers in these regions at the same prices as in the plains.

4.73 Sales, Imports and Exports of Drugs. Since July 1989, the Government began to allow pharmaceutical factories to open retail pharmacies and sell drugs and medicines to individuals, hospitals and commune health centers directly. Commercial sales have increased in 1990, with individuals who can afford to buying drugs at market prices and those unable to do so receiving them free through the public sector. Also, patients who can provide a certificate from their commune People's Committee that they are too poor to pay for drugs and medicines still receive them free. The introduction of this system has enabled the pharmaceutical factories to recover some portions of costs of production and has reduced the drain on the Government subsidy to the factories. Imports of medicine and drugs amounted to US\$44 million in 1989 and fell to US\$41 million in 1990 mainly due to the shortages of foreign exchange and drop in supplies from non-convertible countries at concessional prices. Viet Nam exports some pharmaceutical products to China and East European countries. But exports fell steeply from US\$10 million in 1989 to US\$6 million in 1990 due to the recent economic and political changes in the East European countries. Enterprises which finance their exports themselves are allowed to retain the foreign exchange earned from exports. Foreign exchange is retained by the Government if it finances the exports and pays an equivalent amount to the enterprise in local currency.

4.74 Recent Policy Reforms. The Government recently introduced two reforms having a major impact on the pharmaceutical industry. The first reform, introduced in April 1989, gave pharmaceutical factories the freedom to decide on the levels of input use, output, and sale prices of drugs and medicines. Pharmaceutical factories were also informed that they would have to cover costs or else close down (i.e., they could no longer rely on government subsidies). Initially, most firms had a difficult time. In an ideological context in which for years workers had been guaranteed employment, it was virtually impossible for enterprises to discharge the large numbers of redundant workers. Yet, in the same month as the reform was introduced, some 400 workers in the pharmaceutical industry were induced to take early retirement. All received a lump sum of 1-1.5 million dong (then US\$250-400) from VINAPHA and a guaranteed monthly pension from the Ministry of Labor averaging

about 70% of their monthly salary. During the period immediately after the reform, most of the pharmaceutical enterprises also raised prices for their products. The prices initially set by the enterprises, which simply reflected the high production costs, were too high, and it was difficult for the enterprises to find buyers for their products.

4.75 The situation has improved since July 1989, when the Government introduced the second reform having a major impact on the pharmaceutical industry, viz., pharmaceutical factories were allowed to open retail pharmacies and sell drugs and medicines directly to hospitals, health centers, and private individuals, rather than through government-dictated contracts. The introduction of this measure has allowed pharmaceutical factories to recover their costs of production; firms have become more efficient, costs and prices have declined, and sales have increased. Faced with competition, both from other firms and from the imported drugs now flowing into the country, domestic firms have also improved the quality of their products. Although redundant labor is still a problem, most firms appear to be adapting well to the new economic context.

4.76 Medical Equipment, Supplies, and Instruments. Medical equipment and supplies are produced in government enterprises grouped together in an agency similar to VINAPHA -- The General Company for Medical Equipment and Sanitary Construction -- which is also a subsidiary of the Ministry of Health. This agency consists of seven national factories, including a factory producing metal and steel medical instruments, located near Hanoi; a repair factory for medical equipment, also located in Hanoi; a condom factory, located in Ho Chi Minh City; a Hanoi-based Center for Research in Medical Instruments (also used for technician training); two companies, located in Hanoi and Ho Chi Minh City, producing medical equipment and laboratory chemicals; and a company for sanitary construction (i.e., construction of hospitals and other facilities belonging to the central government network).

4.77 The medical instruments factory was built with assistance from China and began production in 1975. Most of the equipment in use in the factory was imported from China in the early 1970s; all of the equipment is very old and needs to be replaced. The factory employs about 1,000 staff in ten separate workshops. It is the only factory in Viet Nam to produce medical equipment from steel and other metals. The product line includes basic instruments used for primary health care as well as more sophisticated instruments used for specialized health care, e.g., kits for obstetrical, gynecological, and otorhinolaryngological examinations and treatment. Instruments are produced not from stainless steel but instead from normal steel plated with nickel or chrome. As a result, the instruments are hard to sterilize (especially in a tropical climate), rust easily, and are uneconomical in the long run. The factory has begun to produce, on a pilot basis, a very small output of instruments made with stainless steel.

4.78 The experiences of the medical equipment factories with respect to the policy reforms, particularly involving redundant workers, have been similar to those of the pharmaceutical factories: the services of some 300 redundant workers were temporarily terminated immediately after April 1989, but 120 of these workers have since been rehired. The situation of the factories is still difficult but steadily improving. Market competition, particularly from imports, has forced them to improve the quality of their

products, such that they now are meeting international standards, and they hope soon to begin exporting simple medical instruments.

E. Utilization of Health Services

4.79 While the provision of primary health services may well be a necessary condition for improved health status of a population, it is not sufficient. For the health care system to have an impact on health, individuals and households need to utilize health services effectively. A rough measure of overall utilization that is often used is the annual number of per capita contacts with the health services.

4.80 An adequate level of annual health contacts per capita depends on the age and sex distribution of the population as well as on incidence of morbidity and access to the health system. However, it is thought that an average of three to four annual contacts with the health services are adequate in achieving basic preventive health care goals. For instance, this level of contact with mothers and children would assure a high level of immunization of the child population and proper monitoring of pregnancies and deliveries. A few developing countries, such as China, Tanzania and Sri Lanka, average 4-5 contacts per year.^{85/}

Annual Per Capita Contact Rates

4.81 The calculation of per-capita contact rates requires information not only on the number of individuals visiting, say, health centers and private physicians, but also on the total number of all eligible users, viz., the entire population of the catchment area served by the health providers. Unfortunately, few countries, including Viet Nam, collect statistics on overall health services utilization that relate to an area-wide population base. Using the data on the total number of medical consultations that the MOH reports, a rate of about 1.22 consultations per person per annum is obtained for 1989 (Statistical Annex Table 4.7). This contact rate is observed to be down sharply from rates exceeding 2 during the period 1980-87. However, it is not at all clear how reliable the national data on number of consultations are in view of the fact that Viet Nam has no organized system of monitoring and evaluating the activities of commune health centers.

4.82 The survey of health facility users and providers undertaken by the MOH in three provinces in 1991 suggest outpatient contact rates with the primary health facilities to be very low -- in the range of 0.3 - 0.5 annual contacts per capita. Another survey of 3,502 women in seven provinces undertaken by the Center for Human Resources (MOH) in 1990 found 50.8% of the women reporting no contacts with the health services for any of their family members. In the mountainous northern province of Lang Son, 74.5% of the mothers reported no medical contacts. These rates of contact are

^{85/} Oscar Gish, 1989, "Some Links Between Successful Implementation of Primary Health Care Interventions and the Overall Utilization of Health Services," *Social Science and Medicine* 30 (4): 401-405.

significantly lower than those observed for some other developing countries,^{86/} and lower than the 3-4 annual contacts with the health services that are thought to be necessary to achieve basic preventive health care goals. Indeed, given the unequal distribution of service contacts in a developing country, an average annual contact rate of 0.3 - 0.5 implies that a significant majority of the Vietnamese population is effectively outside the formal health care system.

Bed Occupancy Rates

4.83 The utilization of hospital health services in Viet Nam also appears to be low. Average occupancy rates for hospitals and primary health care centers (viz., commune and urban health stations) for 1979 and 1989 reported by the MOH are shown in Statistical Annex Table 4.8. The bed occupancy rate for hospitals ranges between 40 and 60% in most provinces. The rates for commune health centers and polyclinics are even lower. Further, while there was a modest increase in the occupancy rate for hospital beds between 1979 and 1989, there was a decrease in the rate for basic health centers. The provincial differences are striking; while TP Ho Chi Minh had an average occupancy rate for hospital beds of 79.9% in 1989, the Central Coast Northland province of Thanh Hoa had an occupancy rate of only 39.2%. The bed occupancy rate for basic health centers ranges from 4.4% to 57.5% among the provinces.

4.84 Interestingly, the data in Statistical Annex Table 4.8 suggests an inverse relationship between the occupancy rate in hospitals and that in basic health centers. For example, TP Ho Chi Minh, which has one of the highest hospital bed occupancy rates in the country, has the lowest bed occupancy rate for its basic health centers (only 4.4% in 1989). These statistics reflect the poor performance of the referral system (as well as of primary health centers), since they show that individuals residing in provinces having high quality hospitals typically bypass the primary health centers and admit themselves directly into hospitals. Another reason for the very low bed occupancy rates of basic health centers across the board has to do with logistical support and the way funds are allocated to health facilities. Since the allocation of funds is related to the number of beds an institution has, beds are sometimes kept on the books even when they are not effectively available for use.

4.85 In view of the facts that bed occupancy rates at inpatient facilities are very low and that Viet Nam already has one of the highest ratios of hospital beds to population, there might be scope for a sharp reduction in the number of hospital beds, especially those in a serious state of disrepair and rarely used.

^{86/} For example, surveys in Sri Lanka and in the Sichuan province of China indicate average outpatient contact rates per capita per year of 2.1 and 13.4 visits, respectively. Tanzanians average about four to five contacts with the health services per year. See World Bank, "Indonesia: Poverty Assessment and Strategy Report," Report No. 8034-IND, Country Department V, Asia Region, Washington, D.C., 26 December 1988; and World Bank, "Indonesia: Issues in Health Planning and Budgeting," Report of Country Department V, Asia Region, Washington, D.C. 12 June 1989.

Utilization by Women

4.86 A women's health survey conducted by the Swedish International Development Agency (SIDA) in 1989 in Vinh Phu and Ha Tuyen provinces (in the mountainous region of the North) found that 70% of the farming women and 40% of women working in forestry had not sought a treatment the last time they were ill. More than two-thirds of the surveyed women indicated they had to travel more than one hour for ante-natal care. Although the MOH reports 80-90% of the deliveries in Viet Nam taking place in health facilities under the supervision of a trained health professional, the SIDA survey found that one-half of the deliveries during the past five years had taken place at home. In only 6% of all births was there a nurse or assistant doctor present. The remaining births were attended either by midwives, traditional birth attendants or relatives of the woman.

4.87 Another survey of 3,502 women in seven provinces conducted by the Center for Human Resources (MOH) in 1990 came up with several startling findings. Among these were:

- About 56% of the surveyed women reported that their families had never been visited by a commune health worker. Another 14% reported being visited only once during the six months preceding the survey.
- Only 2% of the women said that the commune health center would be their provider of choice in the event of an illness. Another 28% said they would go to the intercommunal polyclinic, and fewer than 1% expressed the district hospital as the provider of choice.
- Nearly 30% of the women said they had obtained no antenatal care, and 65% said they had not been immunized against tetanus before their delivery. In the province of Lang Son in the mountainous region of the North, the percentage of women not seeking antenatal care was as high as 71% and the percentage not receiving a tetanus immunization was 94.1%.
- Nearly 82% of the surveyed mothers reported that their children had not been weighed at the commune health center. An identical number reported not having any growth charts for their children.
- Only 58% of the mothers were aware of the diseases that can be prevented by immunization. About 55% of the women were not aware of oral rehydration therapy, and 44% could not identify the symptoms of acute respiratory infection.

The generally low utilization of antenatal health services, including anti-tetanus immunization, is at variance with the low officially-reported maternal mortality rates.

Utilization by Children

4.88 The official data from MOH, reported below in Table 4.11, indicate over 80% of all children under one year being fully immunized since 1989. Such high rates of immunization coverage are generally incongruous with the high (relative to other countries) morbidity rates associated with immunizable diseases in Viet Nam. The incongruity may be the result of ineffective biological quality of vaccines used (due to problems of production and cold chain), an increased death rate among children above the age of one year due to inadequate health care, and/or overestimated immunization coverage rates. There is strong support for the last possibility. In a survey conducted by the MOH in eight communes of Yendung District in Habac Province in 1991, only 25% of the 1,782 surveyed infants under one year of age had been fully vaccinated. Another 18.8% had been partially vaccinated, while the majority (56.2%) had not been vaccinated at all. In another MOH survey of 3,502 mothers conducted in seven provinces in 1990, while 72.8% of all surveyed mothers said their children had received adequate immunization, 35.6% could not tell what an adequate level of immunization was. The survey also indicated wide provincial differences in the mother-reported rate of immunization coverage. Only 47.4 and 57.1% of the mothers reported adequate immunization of their children in the mountainous Northern province of Lang Son and in the Central Highland province of Lam Dong, respectively. These results cast serious doubt on the officially-reported figure of immunization coverage, and are consistent with the relatively high rates of morbidity associated with vaccine preventable diseases in Viet Nam relative to other Asian countries.

Table 4.11: Percentage of Infants Reported to be Fully Immunized, 1985 and 1989		
Vaccine Protection against:	Coverage (%)	
	1985	1989
Diphtheria/whooping cough/tetanus	42.1	88.7
Polio	62.1	87.3
Measles	19.2	88.7
Tuberculosis	50.0	93.6

Source: MOH, 1988, 1990.

Determinants of Utilization and Provider Choice

4.89 If utilization rates of primary health services are to be improved, it is important to know the factors associated with low utilization. Analysis of interprovincial data on bed occupancy rates at basic health centers shows occupancy rates being inversely associated with average distance to health facilities (Annex E). Thus, provinces having more health facilities per capita and per unit of area (and thus having smaller average distances to health facilities) appear to have significantly higher occupancy rates than provinces having fewer health facilities. Bed occupancy rates also appear to

be higher in provinces that have well-staffed facilities. However, when the average number of health workers per facility is separated into two components -- the number of physicians and the number of other health personnel -- the results indicate that it is the staffing of facilities by nonphysician personnel -- not physicians -- that is associated with higher occupancy rates. The implication of this finding is that the mix of health personnel needs to be shifted to a higher proportion of non-physicians to improve utilization performance. This in turn implies that programs for training community health workers need to be expanded.

4.90 The Viet Nam Demographic and Health Survey (VNDHS) shows a very clear relationship between the educational level of women and their propensity to seek adequate prenatal care (Table 4.12). In 1987-88, for example, nearly two-thirds of the women with secondary schooling -- as opposed to only 21% of illiterate women -- had sought adequate prenatal care during their pregnancies. Not surprisingly, infant and under-5 mortality rates for illiterate women are significantly higher than those for women with at least secondary schooling.

Table 4.12 : Mortality and Prenatal Care during 1978-88, by Mother's Education, Viet Nam				
Mother's Educational Level	Mortality Rate (per 1,000 live births)			percent of births with adequate pre- natal care
	Infant	Child	Under-5	
Illiterate	59.6	12.8	71.7	21.0
Read/write	41.9	11.4	52.8	40.0
Primary	32.9	12.5	44.9	54.0
Secondary and higher	25.3	6.3	31.5	61.0

Source: Viet Nam Demographic and Health Survey, 1988

4.91 Analysis of data from the 1991 MOH survey of health facility users of public and private health services in three provinces, which can be used to analyze the choice of health providers by individuals,^{87/} shows high-income

^{87/} However, since the survey sampled only individuals utilizing health services (and excluded nonusers), it cannot be used to analyze the factors determining utilization. In addition, since the sample was not a random, representative sample of the entire population of the three provinces, the exercise should be treated as illustrative.

and better-schooled individuals relying much more on private providers for their health care needs than individuals with low income and low schooling (Annex F). These results imply that improvements and investments in commune health centers and intercommunal polyclinics will be automatically targeted to low-income, poorly-schooled individuals. The same analysis indicates that the demand for health care from commune health centers and polyclinics is not very responsive to the price that is charged at these facilities. Indeed, the results suggest that the shift in demand from public to private health services associated with an increase in user fees at public health facilities will be small enough,^{88/} so that total revenues at public health facilities will increase. Thus, there may be substantial scope for increasing user fees at health centers and polyclinics associated with improvements in quality.^{89/}

F. Health Inputs and Health Outcomes

4.92 So far the discussion has focused almost exclusively on the factors determining the utilization of health services. But insofar as the ultimate goal of health policy is to improve health status and reduce mortality -- and not merely to increase the utilization of health services per se -- it is more instructive to analyze the determinants of health outcomes. The link between health status and the utilization of health services is likely to be complex, since the latter is only one of several (possibly substitutable) inputs in the determination and maintenance of health status. For example, adequate provision of safe drinking water and sanitation can substitute, to some extent, for a poor health care system in maintaining the health status of a population.

4.93 Analysis of interprovincial data on infant mortality rates for 1979 and 1989 reveals the importance of access to health facilities and average health expenditures per facility in lowering infant mortality (Annex G). Access to health facilities, as measured by the average distance to a public health facility, is observed to significantly reduce the infant mortality rate in a province. In addition, average government health expenditure per facility is inversely associated with the infant mortality rate in a province. Since higher expenditure per facility is generally synonymous with a better supply of consumables, these results reinforce the importance of drugs, medicines and useable equipment in improving health outcomes. Finally, female literacy has a strong ameliorating effect on infant mortality.

4.94 The strong association of literacy with low infant and child mortality rates is also observed in the Viet Nam DHS data shown in Table 4.12 above. Numerous studies for Africa, Asia and Latin America have documented the immensely beneficial effects of maternal literacy on child morbidity and

^{88/} The price elasticity for demand is estimated to be -0.23.

^{89/} This point is discussed in more detail in the section on cost recovery in Chapter V.

survival outcomes.^{90/} Viet Nam is fortunate in having high levels of female literacy relative to other countries at its income level. The 1989 Census enumerated 81.8% of the women over the age of 10 as literate. These high rates of literacy are the direct result of the Government's strong commitment to women's education and literacy. Universal primary education was established as early as 1958 in North Viet Nam (and in 1978 in the South). Furthermore, unlike many other countries in Asia, there is no gender discrimination in access to schooling, education or the labor force. Women participate actively in the work force, and there are no formal or informal barriers to the participation of women in the political and administrative structures.

G. Health Expenditure

4.95 In Viet Nam, the public health budget contains four fiscal transactions by levels of government: the central and the three levels of local governments: provincial, district and commune. Since communes do not report their budgets to the Ministry of Health, a comprehensive database which aggregates the four level transactions into a consolidated account of sectoral expenditure is lacking.^{91/} However, central, provincial and district governments account for about 90% of the national budget.

4.96 The provinces normally do not receive budgetary support from the central government except under special cases when some provinces need central financing for high-priority programs like malaria control, expanded program of immunization, or literacy campaigns. Districts receive most of their support from the provinces, although they have their own revenue sources. Since the communes are expected to be basically self-sufficient, they are excluded from the integrated national budget. But the neediest communes may receive some contributions from district governments.

4.97 Each year the provinces submit their budgets for approval to the Council of Ministers. The Ministry of Finance negotiates with the provincial governments on the proportion of revenues to be retained by the provinces.^{92/} After approval from the Council of Ministers, each province is provided with targets for total local revenues (excluding surpluses from previous year), total local expenditures (investment and recurrent), the

^{90/} S. H. Cochrane, D.J. O'Hara and J. Leslie, "The Effect of Education on Health," World Bank Staff Working Paper Number 405, Washington D.C., 1980; and J. C. Caldwell, "Education as a Factor in Mortality Decline: An Examination of Nigerian Data," Population Studies 33 (3), 1979, pp. 395-413.

^{91/} The health services of the commune typically are paid for by the commune itself. Commune health center staff are trained at government expense in secondary medical schools, but the health posts are built by the commune and the small staff salaries are supplemented with food rations from communal production.

^{92/} Virtually all revenue is collected by provinces on behalf of the central government.

proportion of central revenue to be retained, and any grants to be received from the central government. The allocation of revenues to districts and communes is largely under the jurisdiction of the provincial governments.

4.98 Cross-Country Comparisons. In 1990, per capita government expenditure on health was 5,664 dong (US\$0.83), constituting about 4.4% of total government expenditure and 0.8% of GNP. While Viet Nam's per capita health expenditure of US\$0.83 is considerably lower than that of any other country in Asia, including Nepal and Bangladesh (Table 4.13), its health spending relative to its per capita GNP and total government spending is not unusually low; for instance, Viet Nam spends roughly the same proportions of its per capita GNP and total government expenditure on health as Indonesia and Thailand. These facts indicate that Vietnam is devoting a fair share of national resources to health care, but that its revenue generation performance is generally weak. Therefore, additional health expenditures will have to either be financed through higher general revenues, user fees, or foreign assistance.

Table 4.13: Government Health Expenditures in Asia, 1989

Country	Government Health Expenditures in 1989		
	US\$ (per capita)	as % of total govt. exp.	as % of GNP
Bangladesh	1.26	4.5	0.7
Bhutan	2.23	2.6	1.2
China	2.88	4.2	0.8
India	5.04	6.7	1.6
Indonesia	4.51	3.8	0.9
Korea	29.74	2.2	0.6
Lao PDR	3.03	4.9	2.0
Malaysia	55.41	6.8	2.7
Myanmar	4.40	6.8	1.1
Nepal	1.33	4.3	0.8
Philippines	4.42	3.3	0.6
Papua New Guinea	30.14	10.0	3.4
Sri Lanka	5.37	4.5	1.3
Thailand	13.64	6.1	1.1
Viet Nam	0.83	3.3	0.7

Source: World Bank data files

4.99 Time Trends. Table 4.14 shows the trends in real government health expenditure between 1984 and 1990 (with Tables 4.9 to 4.11 in the Statistical Annex containing the details). Before analyzing these data, it is important to note again (see para. 2.55) that budgetary data are perhaps the least reliable of the statistics collected and reported by the Government. In 1985, for example, Viet Nam was experiencing hyperinflation, and the Government attempted a disastrous ten-for-one currency swap, introducing the "new dong." Reported government expenditure in all categories is much higher in 1985 than in neighboring years. Hence, the sharp decline in real health expenditure from 1985 to 1987 is probably a statistical artifact. Indeed, what is surprising is the sharp increase (of over 125%) in real health expenditure between 1987 and 1990

(Figure 4.5). Again, these numbers have to be interpreted with caution, since the method of paying all government workers changed in 1989, with monetary remuneration increasing and payments in kind (mostly rice) decreasing. Since pre-1989 government expenditure data did not include the implicit value of in-kind payments to government employees, it is likely that post-1989 government expenditures are artificially inflated.

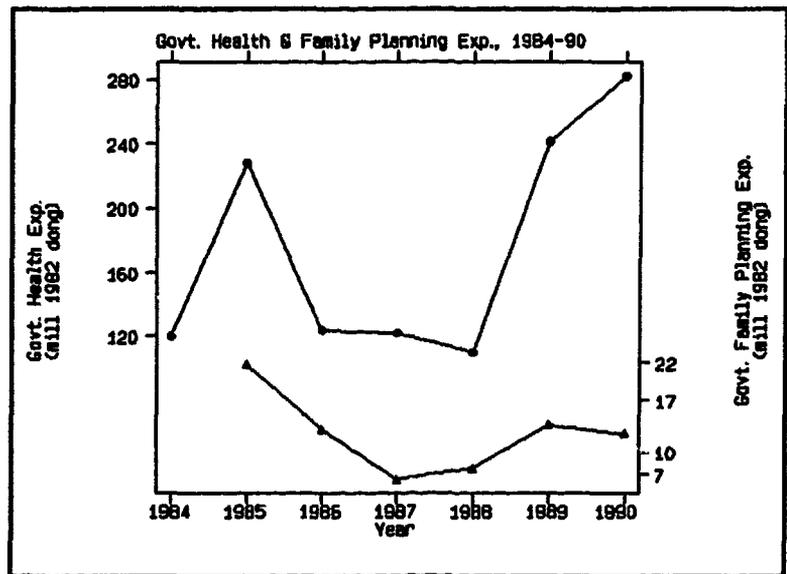


Figure 4.5

4.100 The most likely scenario is that real health expenditure (adjusted for the change in method of compensating public employees) remained fairly stable between 1985 and 1990. But this stability in health expenditure is impressive, considering that Viet Nam was experiencing hyperinflation, acute macroeconomic instability, and a sharp drop in total external aid during this period. Of course, most of the external assistance that was cut sharply was from the Eastern bloc and included little for the health sector. The modest resumption of Western aid in recent years has included a large component for the social sectors and for health in particular. Therefore, it is possible that the Government of Viet Nam has been able to maintain health expenditure largely because of external assistance from Western donors and the international agencies.

4.101 Regional Disparities. Data are available for 1979 and 1989 on provincial government health expenditures. These indicate enormous disparity in the distribution of provincial public health expenditures. TP Ho Chi Minh City had a per-capita provincial government health expenditure of 15,505 dong, while Gia Lai-Kon Tum had a per-capita health expenditure of merely 71 dong (Table 4.12 in Statistical Annex). Indeed, the interprovincial variance in government health expenditure is much greater than the variance in total

government expenditure and in GDP.^{93/} Further, the interprovincial variance in government health expenditure was virtually unchanged between 1979 and 1989.

4.102 Composition of Expenditure. Table 4.11 in the Statistical Annex reports the composition of government health expenditure from 1984 to 1990. Three revealing observations can be made from these data. First, recurrent expenditure accounts for a large share of total health expenditure, with investment expenditure having a meager share. For instance, with the exception of 1985, investment accounted for merely 5-7% of total public health expenditure. Within investment expenditure, most of the spending was on equipment and civil works, with hardly anything being spent on manpower training. While the share of investment in total health expenditure has begun to improve since 1988, largely because of increased bilateral external assistance in the form of medical equipment, training continues to be underfunded.

4.103 Second, the share of salaries in total recurrent health expenditure is very low in Viet Nam relative to low-income Asian standards. For example, in 1988, salaries constituted only 15.7% of total recurrent health expenditure in Viet Nam.^{94/} The corresponding figures for other countries in Asia were: 24.3% for China, 37.5% for Lao PDR, 44.6% for Myanmar, 52% for Indonesia, and 69% for Bangladesh. The low share of salaries in total recurrent health expenditure combined with the high intensity of physicians simply reflects the extremely low salaries of health workers in Viet Nam.

4.104 Third, the ratio of expenditure on curative to that on preventive health services is very high. Until 1988, this ratio ranged between 4 and 5. The expenditure data thus confirm the strongly curative bias of the health sector observed in the number of patients examined at primary health facilities for preventive versus curative care. Again, the data in Statistical Annex Table 4.11 suggest that the ratio of curative to preventive health expenditure has decreased since 1989, although the decrease is most likely the result of an increase in external assistance tied to preventive health interventions.

^{93/} The coefficients of variation for provincial health expenditure, total expenditure, and gross domestic product for 1989 are 233, 81 and 163, respectively.

^{94/} Of course, the ratio of salaries to total recurrent costs was exceptionally low in 1988. But between 1984 and 1990, it did not average more than 19-20 percent.

Variable	1984	1985	1986	1987	1988	1989	1990
As % of GDP	0.82	0.24	0.46	0.44	0.38	0.69	0.79
As % of Total Govt. Expenditure	3.2	4.0	3.5	3.2	2.0	3.3	4.4
Real Per Capita exp. (1982 dong)	2.0	3.8	2.0	2.0	1.7	3.7	4.4

Source: Statistical Annex Tables 4.9, 4.10, and 4.11

4.105 Private Expenditure on Health. All of the discussion so far has referred to government health expenditure. There are very few estimates of private (household) expenditure on health. Since it was only after 1989 that user fees in public health facilities were introduced, private medical practice was legalized, and medicines and drugs could be sold by the private sector, it is useful to examine private health expenditure only after 1989. There are two sources that provide some information on private health spending. A survey of 3,502 mothers conducted by the MOH in seven provinces in 1990 obtained data on household expenditures on medical care and on medicines during the six months preceding the survey. Average household expenditure on medical care was reported to be 880 dong (or 1,760 dong annually), while expenditure on drugs and medicines was much higher, viz., 67,780 dong.^{95/} If one extrapolates these sample averages to the national population, one obtains an estimate of total private health (including health care and drugs) expenditure of 828.19 billion dong for 1990. Table 4.9 in the Statistical Annex shows that total government health expenditure was 364.80 billion dong in 1990. Thus, assuming that the sample of the MOH maternal survey is representative of the entire population, private health expenditure in Viet Nam may be over two times as large as government health expenditure (thus constituting over two-thirds of total health expenditure).

4.106 The other source is a household expenditure survey conducted by the General Statistical Office (GSO) in Hanoi City and in the provinces of Haiphong, Tiengiang, and Nghe Tinh. For 1989, this survey indicates that private household expenditure on health averaged slightly under 2% of total household expenditure. This budget share of private health expenditure is roughly similar to that observed in a number of low- and middle-income Asian countries.^{96/} Extrapolating the per-capita health expenditure observed in this sample to the national population, a figure of 325.10 billion dong is obtained for private health expenditure in 1989. Since government health

^{95/} Average household size in the MOH sample was 5.34 persons.

^{96/} For example, the budget shares of private health expenditure were reported to be 2.5% in Bangladesh (IBA survey 1988), 1.7 percent in the Philippines (NSO survey 1988), 3.1 percent in Sri Lanka (Central Bank survey 1988), and 2.2 percent in Peru (2.2%, ECIEL survey 1985).

expenditure was 226.56 billion dong during that year, private health expenditure is estimated to account for 59% of total health expenditure.

4.107 As Table 4.15 below shows, while Viet Nam's ratio of private to total health expenditure is not unusually high in comparison with the share of private health expenditure in the other low- and middle-income countries of Asia, Viet Nam appears to be more like the Philippines, Thailand or Indonesia than China or Sri Lanka in this respect.

4.108 Another important observation is that, according to the MOH maternal survey, 97.5% of household health expenditure is on drugs and medicines, reflecting the paucity -- in many cases, the non-availability -- of medicines in the primary health facilities.

Table 4.15: Private as a Percentage of Total Health Expenditure, Selected Asian Countries		
Country	Year	Percentage *
Bangladesh	1987	60
China	1987	32
India	1987	59
Indonesia	1986	60
S. Korea	1987	66
Philippines	1987	69
Sri Lanka	1986	41
Thailand	1987	69
Viet Nam	1989/90	59-69
Source: Charles Griffin, "Health Sector Financing in Asia" Asia Regional Series 1990, P.168. The World Bank		
* Excludes insurance		

H. Health Financing

4.109 Sources of Health Financing. Table 4.16 shows the sources of financing in health and family planning since 1981. The domestic sources of financing include government budget (central, provincial and district) and user charges since 1989. The external sources include bilateral and multilateral grants. The Government mainly finances health expenditure through non-tax revenues, such as its operating surplus and transfers from state enterprises, although a small proportion of tax revenues, mainly from agricultural and municipality taxes, are also used to finance health activities.

4.110 There are three trends that are apparent from Table 4.16. First, external grants and assistance have financed about 13% of total government health expenditure over the 1981-90 decade. However, this share has been highly variable, ranging from a low of 5.5% to a high of 17 percent. In fact, the share of external grants in financing health expenditure have been increasing sharply since 1987, when external sources financed only 5.5% of total expenditure. In contrast, the share of external sources was as high as 17% and 16.2% in 1989 and 1990, respectively. The increase in external resources to the health sector is attributable to the re-entry of a number of bilateral donors into the country as a result of an improved economic and political climate. Second, after 1985, the burden of financing health services has increasingly fallen on provincial and district governments, thanks to the policy of fiscal decentralization and the deterioration in central government revenues induced by a sharp drop in external grant assistance. As external donors have increased their contribution since 1989, the fiscal burden on provinces and districts has come down from about 75% of the total to around 66%.

Table 4.16: Distribution Of Sources Of Financing Health Expenditure, 1981-90

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Health										
Domestic Sources	85.0	92.8	92.9	83.2	76.5	92.0	94.5	87.8	86.6	89.0
Central Govt	19.0	21.8	26.0	22.5	24.2	15.7	16.3	13.6	19.8	18.0
Provinces and Districts	66.0	71.0	66.9	60.7	52.3	76.3	78.2	74.2	63.2	65.8
User Fees*									3.6	5.2
External Grants	15.0	7.2	7.1	16.8	23.5	8.0	5.5	12.2	17.0	16.2
Family Planning										
Domestic Sources					94.3	93.5	97.0	89.0	83.4	79.4
Central Govt					40.4	42.3	30.3	27.8	28.2	20.4
Provinces and Districts					53.9	51.2	66.7	61.2	55.2	59.0
External Grants					5.7	6.5	3.0	11.0	16.6	20.6

Sources: MOH and NCPFP

Third, user fees, introduced in the health sector only since 1989, account for a small share of total health expenditure. Between 1989 and 1990, the share of user fees in total expenditure increased sharply (from 3.6 to 5.2%), but it is too early to know whether this reflects a long-term trend. At present, revenues from user charges are said to be primarily used for maintenance of equipment and medical supplies, although given the fungibility of resources it is not clear how this fact can be established.

4.111 Current Cost Recovery Ratio. We have already noted that the provision of adequate health services has been compromised by the severe scarcity of fiscal resources in Viet Nam. Greater cost recovery through user fees may be an option to offset the decline in budgetary revenues. At present, only about 5% of total health expenditure (equivalent to about 6% of recurrent health expenditure) is financed from user fees. This ratio is not exceptionally low in comparison with the cost recovery ratios in other low- and middle-income Asian countries. For example, the share of total health expenditure financed out of user fees was 0.6% in Sri Lanka, 1.5% in Pakistan,

and 6.4% in the Philippines in the early 1980s (de Ferranti 1985). However, it was much higher in Indonesia (12.9%) -- a country that has committed itself to improving cost recovery in health and other social programs.

4.112 The cost recovery ratio of 5% in Viet Nam is somewhat misleading in view of the fact that since the Government health sector faces a severe shortage of medicines, drugs and medical supplies, individuals often have to obtain prescription drugs and medical supplies (such as bandages and injectables) on their own in the open market. These purchases are quite substantial in magnitude. Indeed, as was noted earlier, there is evidence to suggest that private health expenditure in Viet Nam (mainly comprising expenditure on medicines, drugs and medical supplies) far exceeds government health expenditure. If the Government health sector were dispensing such medical supplies and charging market prices for them, the cost recovery ratio would be significantly higher than the current estimate of 5%.

4.113 User Fee Structure. A system of fees for health care was introduced on May 1, 1989. The basic fee per consultation is 300 dong at district hospitals, 500 dong at provincial hospitals, and 1,000 dong at central hospitals. Primary health care at commune health centers continues to be free, but fees are paid at intercommunal polyclinics. This basic structure, established by the MOH, is apparently applied differently in different parts of the country. Local health workers have the discretion to waive fees for people able to produce certification from their neighborhood or village People's Committee that they are too poor to pay. The handicapped and medical personnel themselves are also exempted from the user fees. Conversely, hospitals can (and most do) charge supplementary fees depending on the services provided and the drugs or other supplies consumed. A maternity, for example, costs 5,000 dong (the basic fee of 3,000 dong plus a supplementary fee of 2,000 dong) for the first and the second child; each additional child costs 10,000 dong (deliberately higher as a disincentive to having more than two children). An appendectomy costs 13,000 dong, which includes a 3,000 dong basic fee plus a supplement of 10,000 dong. However, these charges still represent heavy government subsidies to hospitals. For example, patients at a government hospital are typically charged 50,000 dong for a gastrectomy, which in fact costs 1.5 million dong. Thus, the extent of the subsidy for this operative procedure is about 97%.

4.114 Even commune health centers, which are supposed to offer their services free of charge, are not really free. In the 1991 MOH survey of health facility users, on average, 81.1% of all patients reported having to pay for treatment (presumably drugs and supplies) at commune health centers; they paid an average of 4,194 dong for each visit (Table 4.17). The average payment for a visit to an intercommunal polyclinic was 5,078 dong. (Of course, these fees were considerably lower than the 9,090 dong and 8,056 dong that patients reported paying for each visit to a traditional healer and a private physician, respectively.)

Table 4.17: Average prices paid per visit to health providers, 1991			
Variable	All Areas	Rural Areas	Urban Areas
Average household size	5.1	5.0	5.3
Average monthly household income	213,434	199,377	240,040
Average monthly household income per capita	43,491	41,459	47,331
<u>Average price paid per visit to:</u>			
Commune health center	4,194	3,966	5,054
Intercommunal polyclinic	5,078	4,784	6,292
Private doctor	8,056	4,857	9,447
Traditional healer	9,090	4,184	11,727
<u>% of households obtaining waiver from user fee at:</u>			
Commune health center	18.9%	14.0%	33.1%
Intercommunal polyclinic	15.7%	15.7%	15.7%
Notes: Averages computed only over individuals making a payment.			
Source: MOH Survey of Users, 1991.			

4.115 Scope for Improving Cost Recovery. The scope for increasing cost recovery in the health sector depends on three important factors. First, it depends on how much of the burden of total health expenditure is already being borne by individuals and households. In countries where the overwhelming share of health spending is shouldered by the Government and very little by households, there may be substantial scope for transferring some share of the responsibility for health expenses to the private sector. However, the available evidence suggests that in Viet Nam, unlike in other socialist economies, households are already taking on responsibility for a significant share of total health expenditure. Indeed, total private health expenditure in Viet Nam most likely exceeds government health expenditure by a significant margin. Much of the private health expenditure is on medicines and drugs, medical supplies (such as injectables, bandages, etc.), and contraceptives, although some of it is on health care itself. For instance, the 1991 MOH survey of health facility users indicates that individuals are paying amounts that are not inconsequential (approximately, 3,403 dong per visit) for health care from commune health centers, which are supposed to offer their services free of charge. Given the already significant extent of cost sharing by the public, it is not clear what scope there is for recovering a much larger share of health costs in the future from user fees.

4.116 Second, the financial ability of individuals to pay higher prices for good care also determines the scope for improving cost recovery in the Government health sector. Financial ability can be inferred from how much individuals are paying currently for private health care. Here, the evidence is positive; data from the 1991 MOH survey of health facility users shows individuals paying nearly two times as much for private health care as for health care from commune health centers and intercommunal polyclinics.

However, it is likely that government health facilities will have to significantly improve the quality of services they dispense before raising their fees to private-sector levels.

4.117 Third, the scope for improving cost recovery depends on the price elasticity of demand for health services. Here, the evidence is mixed. Many local health officials, hospital administrators, and health care workers in Viet Nam contend -- without providing much concrete evidence -- that the user fees that were introduced in 1989 have significantly reduced occupancy rates in district and provincial hospitals. However, the empirical analysis undertaken with the 1991 MOH survey data on health facility users suggests that the choice of government health facilities over private health care is not very responsive to price (with a price elasticity of -0.23) (See Annex F). Thus, an increase in user fees at these facilities will result in an increase in total revenues.^{97/}

4.118 Protection of the Poor from User Fee Increases. Thus, there would appear to be some scope for increasing revenues from higher user fees. If user fees are increased, it is important to have a mechanism for protecting the poor from these increases. In Viet Nam, there is already such a mechanism in place; in principle, user fees are waived for people able to produce a certification of indigency from their neighborhood or village People's Committee. However, the MOH survey of users shows that there is little relationship between an individual's income and the average price (s)he had to pay for a visit to a commune health center or polyclinic (Table 4.18). Indeed, somewhat surprisingly, the proportion of patients for whom a user fee was waived is also not strongly related to patient income. For instance, while 19% of the poorest 25% of individuals (on the basis of monthly household income per capita) were waived from user fees at commune health centers, as many as 22.1% of individuals in the third income quartile were waived from user fees. Of course, a smaller proportion of patients in the top income quartile (as compared with the bottom quartile) obtained waivers, but Table 4.18 shows evidence of rampant leakage of benefits to those not needing them. The leakage necessarily hurts the poor, who have to pay high prices. For example, the data in Table 4.18 suggest that, while an individual in the bottom income quartile would have to spend 4.6% of his annual income on two annual visits to a commune health center, an individual in the top income quartile would spend merely 0.9% of his income for the same level of care. An increase in user fees will thus be highly regressive unless better mechanisms to cushion the poor from these increases are put in place. The survey data clearly show that the system of exempting the indigent from user fees is not working in practice.

^{97/} Since the MOH data are facility-based and are not representative of the entire population of health facility users and nonusers, they relate only to the shift between public and private sources of health care; no inference can be drawn about how many people will stop seeking medical care altogether as a result of increased user fees. This information is critical to determine whether user fee increases will have an adverse impact on health outcomes.

Variable	Bottom Quartile	Sec'd Quartile	Third Quartile	Top Quartile
Average household size	5.5	5.1	5.0	4.8
Average monthly household income	86,853	139,381	204,954	443,820
Average monthly household income per capita	14,870	27,222	41,460	94,790
<u>Average payment per visit to:^b</u>				
Commune health center	4,130	3,685	4,290	4,657
Intercommunal polyclinic	4,831	6,296	4,369	4,924
Private doctor	7,168	7,383	7,024	10,622
Traditional healer	4,601	8,963	9,129	13,206
<u>% of individual obtaining waiver from user fee:</u>				
Commune health center	19.0%	19.7%	22.1%	13.3%
Intercommunal polyclinic	16.8%	17.5%	15.7%	11.7%
Notes: ^a Quartiles calculated on the basis of monthly household income per capita. Thus, the bottom quartile includes the poorest 25% of individuals in the sample. ^b Average calculated only over individuals making a payment.				

I. External Assistance and Non-governmental Organizations

Levels and Sources of External Support

4.119 The State Committee for Economic Relations with Foreign Countries (SCERFC) is responsible for the coordination of external assistance to Viet Nam. Specific specialized donor agencies are assigned to ministries or special committees which work closely with them in carrying out their mission. For example, UNICEF's health activities are conducted in conjunction with the Ministry of Health.

4.120 In the past, a significant share of the bilateral assistance to Viet Nam came from the Soviet Union, which was the single largest donor. Other important donors were Sweden (contributing around US\$55 million annually), the German Democratic Republic (US\$23 million annually), and Finland. During 1987 total development assistance (bilateral and multilateral) from noncommunist countries amounted to US\$148.3. The greater part of this amount, US\$60.7 million, was directed towards capital assistance, followed by technical and program assistance (US\$55.5 million) and humanitarian assistance (US\$32.2 million). The USSR provided a very large amount of foreign aid but no official data are available on this flow. About 63% of the total known assistance came from bilateral donors, 31% from the United Nations agencies, and 6% from non-governmental organizations (NGOs). Industry generally accounts for the single largest share of foreign assistance (26%), followed by natural resources (16%), humanitarian aid (14%), health (13%), agriculture (12%), welfare and

social programs (6%), and transport, population and science and technology (receiving 2% each).

4.121 In 1988 total external assistance to the health sector was estimated at approximately US\$25 million, of which US\$8 million was from UNICEF, US\$5 million from UNFPA, and US\$10 million from the Swedish International Development Authority (SIDA). Much of the external assistance is channelled through the Central government but some gets to the provincial level. At US\$25 million, external assistance constitutes between 15 - 17.5% of the total health budget.

4.122 One source of external assistance that is generally overlooked is overseas Vietnamese, who send remittances amounting to approximately US\$100 million annually. This is a substantial sum, amounting to almost two-thirds of all the other aid coming from noncommunist countries. A large part of these remittances are sent in the form of medications.

Major Donor Projects

4.123 Most of the donor activity in the health sector was initiated in 1982, when WHO and UNICEF launched the Expanded Program of Immunization (EPI) and the program for the Control of Diarrheal Diseases (CDD). Both of these programs have received the full support and promotion of the Government, and have trickled down to the lowest levels of the health services in the country. The National Institute of Hygiene and Epidemiology (NIHE) is the branch of the MOH that is ultimately responsible for EPI. There is a strict vertical hierarchy in the implementation of the program: the NIHE in Hanoi, the Regional Institutes of Hygiene and Epidemiology in the provinces, the Hygiene and Epidemiology Brigade at the district level, and the Hygiene and Epidemiology extension worker in the communes.

4.124 The EPI has included social mobilization, including organized mass propaganda campaigns to educate the public about immunization; refresher training of health workers at all levels; and major investments (largely made by UNICEF) in the "cold chain" (viz., refrigerators, freezers, vehicles, sterilization instruments, and injectables). The results of these campaigns have been impressive; the percentage of children under one immunized with measles, DPT, and OPV vaccines increased from around 4-5% in 1984 to 40-50% in 1987 (Pond and Johnson: 82). However, the geographical coverage of EPI is limited, especially in the highland provinces, where the costs of coverage are high owing to low population densities and difficult terrain. Although on average 40-60% of the communes in the country are covered by EPI, the coverage in the highland provinces is only about 20-30%.

4.125 Another major program supported by external assistance is the Control for Diarrheal Disease (CDD), which is also a categorical program directed by the NIHE in Hanoi and funded largely by UNICEF and WHO. Like the EPI, the CDD program has been promoted vigorously with training courses for health workers and widespread informational campaigns for the public. But the bulk of the resources in the program are spent on distributing ORS packets. The CDD program, which was initiated in four provinces in 1982, now covers 80% of all children under five nationwide. However, these statistics are somewhat misleading, since the entire population in a commune is assumed to have access to ORS once ORS packets are distributed to the commune health center.

4.126 The national ARI program was initiated in 1983, again with the support of UNICEF and WHO. The program is directed by the National Institute of Tuberculosis and Respiratory Disease and the Communicable Disease Control Committee. The program includes the training of health workers, the supply of appropriate drugs, the standardization of case management in the lower-level health facilities, and, to a small extent, community health education. Unlike the EPI and CDD, progress in the ARI program was initially slow. In 1988 it covered only one percent of children under five years of age. Total coverage was 5% in 1989 and 10% in 1990. However, since then, coverage in the program has increased significantly. As of December 1991, the program covers 40 provinces, 250 districts, 3,395 communes and a total of about 3.3 million children (implying about 30% coverage). One reason why the ARI program has not expanded as rapidly as the other programs is that it involves imported relatively expensive drugs (viz., benzathin, procain penicillin, cotrimexazole, chloramphenicol, ampicillin and amoxycillin). It is estimated that a nationwide childhood ARI program would cost upwards of US\$5.5 million annually in drugs alone.^{98/}

4.127 UNICEF has been the major external donor in the water and sanitation area. The UNICEF-supported rural water supply project, initiated in 1981 in three southern provinces, was gradually extended to a total of 27 provinces by 1990. It involves construction of wells using simple low-cost Bangladesh design hand pumps that are locally made in cast iron. Over 40,000 wells are now in operation.^{99/} UNICEF has estimated that a total of 120,000 wells will be needed by the year 2000 to assure a supply of one well for 350-500 individuals (or 50-100 households) within a maximum distance of 500 meters. Some 400,000 wells will be required to assure better access to drinking water, viz., a well for 100-150 individuals within a distance of 250 meters.

Nongovernmental Organizations

4.128 There are a number of NGOs, almost all foreign, operating in the health sector in Viet Nam. Among the major ones are CIDSE (International Cooperation for Development and Solidarity), the Mennonite Central Committee (MCC), Oxfam/UK, Save the Children Foundation, World Vision, and Medicine Sans Frontière. The MOH estimates that the total financial assistance to the health sector from external NGOs amounted to US\$7.9 million, with NGOs from the United States, which has no bilateral aid program to Viet Nam, contributing US\$5.2 million. The situation is changing rapidly, however, as increasing numbers of NGOs get involved. For example, World Vision's budget for 1991 was over US\$1.1 million, up from less than US\$600,000 in 1990.

4.129 The case of CIDSE's involvement in the health sector deserves special attention, since, in addition to being the first NGO with a resident representative in Hanoi, CIDSE has given high priority to health issues. Based on an internal assessment of the health sector in Viet Nam, CIDSE worked with the People's Committee and health authorities in Bac Thai province to

^{98/} Robert S. Pond and Bekki Johnson, "Health in Viet Nam: A Report to CIDSE," 15 November 1988, (mimeo) p. 97.

^{99/} UNICEF, Viet Nam: The Situation of Children and Women, UNICEF, Hanoi, 1990.

prepare a district level primary health care project, which was later (November 1990) funded. Activities to date have included qualitative research to determine community health needs and problems of the health care delivery system, training of health workers in primary health care (PHC) concepts and interventions, plans for upgrading selected commune and district health centers, and a baseline survey to establish key health, demographic and development indicators. Particular attention during the first year has focused on improving immunization coverage, especially in three isolated communes that had no immunization coverage up until September 1990.

4.130 Save the Children Fund (SCF/USA) has been working in four of the poorest communes in Than Hoa Province, with a total population of about 20,000. The focus of the project has been on developing an integrated PHC and community-based, low-cost income-generating model which can be later extended to other communes. Besides having a strong element of community involvement, the project has concentrated on developing a management information system that can be used to evaluate the impact of activities.

Aid Commitments for the Future

4.131 Commitments to the Ministry of Health already made by external donors for the next four years suggest that external flows will be nearly 50% higher than the \$20 million that have been flowing to the health sector annually during the last 3-4 years. However, all indications are that even this level of support will be inadequate to undertake the major investments that are needed to restructure the health sector. The Government will most likely incur large financial gaps, unless its fiscal situation improves and external donors come up with substantial additional commitments. Nevertheless, it is important to note that fiscal problems could be ameliorated to a significant extent by improved domestic resource mobilization, better aid-coordination, and better targeting of health expenditure to poorer provinces.

V. MAJOR ISSUES AND STRATEGIC DIRECTIONS FOR THE HEALTH SECTOR

A. Vietnam's Health Sector in Historical Perspective

5.1 There is a mystery in the details on the health sector in Viet Nam presented in this review. On the one hand, all the evidence points to a health sector that is languishing. Health facilities are suffering from a severe shortage of medical supplies and equipment; the morale of health workers is down; and the utilization of primary health services is extremely low. On the other hand, Viet Nam has made impressive gains in reducing infant mortality and fertility during the last 2-3 decades. Even countries that have much higher levels of per capita income do not have infant mortality rates as low as Viet Nam's. How could a country with such poorly equipped and under-utilized primary health facilities improve health outcomes so dramatically?

5.2 One can only conjecture on what happened to the health sector in the past, since there is very little historical information on the functioning of the health system. Most likely, a number of factors jointly contributed to the dramatic health gains achieved by Viet Nam. The most important factor was, of course, political resolve and imperative. From the very beginning, the country's leaders had decided that the development of social sectors -- in particular, literacy, education, poverty, health and female emancipation -- would have the highest priority in development. In this sense, Viet Nam was not very different from other centrally-planned, socialist economies, most of which perceived health as a basic human right and as a political imperative. This resulted in the allocation of considerable commitment and resources to the health sector.

5.3 The generous allocation of resources was apparent in the establishment of a vast network of primary health facilities throughout the country after 1954, but particularly after 1968. The expansion greatly increased people's access to primary health facilities, except in a few provinces (mostly in the remote mountainous regions of the country). Within provinces, health centers were generally well-located, since people had a say in the location of health centers via their Commune Councils. Unfortunately, since there are no empirical surveys or studies on the functioning of typical commune health centers under the old DRV (Democratic Republic of Viet Nam) system, we do not know how well the health centers were staffed, what type of useable equipment they had, whether they had adequate supplies of medicines and drugs, and how well they were utilized by the community. However, casual empiricism and anecdotal evidence suggests that even though many of the problems afflicting the health sector today may have been present since early times, they were relatively minor during the 1960s and early 1970s, and became much more acute only during the 1980s.

5.4 In addition to the vast network of health facilities, the country invested considerable resources in developing a number of very effective categorical health programs to deal with priority health problems, such as malaria, diarrheal diseases, and immunizable diseases. Despite the fact that officially primary health care was the dominant slogan, the categorical health programs, many of which were vertically organized and not integrated into a primary health system, were central to the country's health strategy. Again,

Viet Nam was not unusual in following this strategy. Other centrally-planned, socialist countries, including China, have emphasized categorical interventions for priority health problems despite the rhetoric on primary health care.

5.5 The network of primary health facilities and the categorical health programs cannot by themselves account for all of Viet Nam's success. In addition to these factors, Viet Nam has the advantage of a highly literate population. Of course, near universal literacy and promotion of education, especially among women, are themselves an achievement of the DRV system. Because of the high literacy rates, the receptivity of the population to health messages and health campaigns is much greater than in other low-income countries.

5.6 Finally, the importance of contextual factors cannot be discounted. During the period when the health sector achieved its most impressive gains, Viet Nam was continuously at war. It was easy to mobilize the health cadres, and indeed the entire population, in that political milieu.

5.7 By the mid to late 1970s, Viet Nam had already realized most of the achievements in health that it was to accomplish. After that time, a number of events occurred that adversely affected the health sector. The first of these was reunification. After reunification, the Government of the Socialist Republic of Viet Nam (SRV) attempted to bring the level of health services coverage that existed in the North to the South. Since the South had a significantly poor network of primary health facilities, the extension of health facilities to the South was an enormous task that placed a big burden on the health budget. Health resources had to be spread more thinly, and it is likely that nonsalary, recurrent items in the health budget, such as supplies and maintenance, were cut back during this time. The expenditure cutback may have set in motion the process of deteriorating quality of health services and decay of physical infrastructure.

5.8 Reunification also brought about with it an enormous loss of skilled health manpower in the South. Because the SRV disallowed private practice, a large number of physicians and highly trained health workers emigrated out of the country in 1975. The combination of poor health infrastructure and greatly reduced numbers of health workers worsened health conditions in the South immediately after 1975.

5.9 At the same time, the flow of external resources into Viet Nam, especially to the health sector, began dwindling. After 1979, much of the multilateral aid that Viet Nam received was cut off. While the external assistance from the Eastern bloc continued, much of it was directed to sectors other than health. The decline of Western aid and Viet Nam's political isolation coincided with a period of hyperinflation and acute macroeconomic instability in Viet Nam during the 1980s. The combination of sharply reduced multilateral assistance to the health sector and a deepening macroeconomic crisis must have adversely affected the flow of resources to the health sector.

5.10 The 1980s also marked the end of external hostilities after nearly three decades. In the absence of war, it was difficult for the Government to engender the same degree of enthusiasm and morale among health workers.

Indeed, it could be argued that the political imperative traditionally accorded the health sector began diminishing at the same time as the external hostilities were ending, the macroeconomic environment was worsening, and external assistance to the health sector was falling. With the political imperative lessened, inputs to the health sector -- drugs, equipment, medical supplies, maintenance -- declined, thereby adversely affecting the quality of care offered by the primary health facilities. This in turn changed the perception of the population about the usefulness of the health services, and lowered utilization rates. Thus, a once well-functioning health service system has been breaking down as a result of a number of factors, including the difficult transition from a centrally-planned economy to a market economy.

5.11 The experience of the Vietnamese health sector is not unique. The same story has been unfolding in many other centrally-planned, socialist economies that are in the process of a transition to market economies. Large health structures and other priority social programs that were built up with considerable resources from the State have been left languishing as a result of fiscal crises and changes in political values.

B. Issues and Strategic Directions

5.12 The important issue in Viet Nam, as in other countries in the process of transition, is not what happened to the health sector but what to do in the future. Clearly, rebuilding the entire public health sector as the single provider of health care is out of the question. The Government has neither the resources nor the political imperative to restore the public health sector to its past eminence. Further, it is not at all clear that this would represent an efficient use of scarce resources. But, at the same time, it is important to arrest the erosion of past achievements in health that appears to have already begun. Maintaining the health indicators at their generally good levels is much less difficult than restoring them from significantly deteriorated levels. The strategy for the Government in the future should be to focus on a few key interventions that it can do well, and permit the emerging private sector to increasingly shoulder a larger share of the responsibility for curative health care.

Risk Reduction at the Community Level

5.13 Water and Sanitation. The highest priority should be interventions at the level of the community that significantly reduce the risk of infection and other preventable problems among individuals. These interventions, which have significant externalities associated with them, are ideal candidates for being publicly-provided goods.^{100/} In this regard, the supply of safe water and sanitation is one of the most cost-effective community-based health interventions. The mortality and morbidity profile in Viet Nam is character-

^{100/} This does not necessarily mean that there is a low private willingness to pay for these goods. For instance, in many developing countries, people have shown a strong willingness to pay for clean drinking water, although drinking water supply is clearly a public good.

ized heavily by diseases that are linked to water supply and sanitation, such as gastroenteritis, dysentery, typhoid, cholera, viral hepatitis, malaria, and dengue fever. Yet, only about one-half of the urban population and one-third of the rural population in Viet Nam have access to drinking water, despite mass campaigns to encourage construction and utilization of wells, rainwater tanks, latrines and bathrooms over the last 35 years. Much of the water that is available is not safe to drink. Further, the official statistics on water and sanitation show virtually no change in the proportion of housing units with safe water and sanitation during the last 15 years.

5.14 The focus should be on assisting communities with implementing simple water and sanitation technologies. The UNICEF Rural Water Supply Project and the UNICEF Sanitation Project are useful examples of low-cost water and sanitation projects that rely on substantial community involvement and maintenance. While the goal of providing each rural family with a drinking water well is unrealistic, it is important in the Vietnamese context to provide wells within a one-mile radius of most households. Since unsafe surface water is available readily everywhere, people have a strong tendency to use this contaminated water if the access to safe water is not adequate. UNICEF has estimated that 120,000 wells or taps would be needed by the year 2000 to assure a minimum of one well or tap for 350-500 people within a maximum distance of 500 metres. This goal could be achieved by 1996 if current implementation rates are maintained. However, a more appropriate level of coverage would be one well or tap for 100-150 people within a maximum distance of 250 metres. This level of coverage would require nearly 400,000 additional wells or taps to be constructed by the year 2000. External resources would be needed to meet this target, in spite of substantial community involvement in the construction of the wells. Likewise, external donors could support pilot programs that seek to provide incentives and subsidies to families to invest in appropriate sanitation technologies, such as the gulah latrine.

5.15 Integrated Child Nutrition. Another pressing problem is that of moderate and severe malnutrition, especially among infants, children and pregnant and lactating women. In addition its long-term effects on cognitive development, moderate malnutrition increases the risk of infection and disease. Severe malnutrition can result in death. Therefore, efforts to reduce the extent of malnutrition are essentially preventive interventions.

5.16 Several cultural and social factors are responsible for the relatively high levels of child malnutrition in Viet Nam. The lack of variety in the diet has several adverse effects on nutrition. At one level, the predominance of rice in the diet means that children and pregnant/lactating women are unable to consume enough calories to meet their special energy needs, since the caloric density of rice is very low. At another level, since rice alone is deficient in several important nutrients, such as iron, thiamine, Vitamin A and fats (lipids), women and young children are especially susceptible to diseases associated with these deficiencies, such as anemia, beriberi, and xerophthalmia (which can ultimately lead to blindness). Infant feeding practices in Viet Nam also exacerbate malnutrition and infection among very young children. Since breastfeeding is generally initiated 3-4 days after birth -- because of an incorrect perception that colostrum is an inferior food -- the infant begins his journey into malnutrition at birth. Viet Nam's early weaning culture results in infants being introduced to supplementary --

usually solid -- foods as early as 2-3 months of age. The premature introduction of supplemental foods greatly increases the risk of infection in small infants.

5.17 A strong case could be made for a national child nutrition program that would include growth monitoring, selective short-term supplementation, and nutrition education. To contain costs, the program would have to be tightly targeted to children (say, 6-36 months old) whose weight gain over a certain period falls below standard. These children would be singled out for special health monitoring, food supplementation, and intensive nutrition education for their families. The program could be implemented through the commune health centers. In designing such a program, Viet Nam might be able to learn much from the experience of other developing countries that have experimented with such integrated nutrition programs.

Categorical Health Programs in Selected Regions

5.18 At the same time, the Government should selectively rehabilitate some of the existing categorical programs built around specific and well-defined interventions.^{101/} Diarrhea, malaria, and acute respiratory infections (ARI) are leading causes of morbidity and mortality in the country, and categorical programs addressing these diseases have been among the most successful of health interventions in Viet Nam. These programs should be continued and even upgraded. However, their management and organization need to be changed. Currently, many of the categorical programs operate independently of each other and independently of the primary health care system. Some of them rely too much on a hierarchical (vertical) top-down management system. For long-run sustainability, greater community support and participation will be essential in all such programs. In addition, substantial economies of scale could be reaped by integrating these programs with each other and with the primary health system. The cost-effectiveness of the categorical programs could be further enhanced by targeting them to those regions having generally poor health indicators and high prevalence of specific diseases, such as malaria and acute respiratory infections. For effective targeting, however, a comprehensive geographical mapping of the country's disease profile -- something that does not yet exist -- is needed.

Privatization of Health Services

5.19 By all indications, private health services, have grown significantly as a result of recent reforms, so that private expenditure for health now accounts for about two-thirds of total health expenditure. This pattern is broadly consistent with other low income Asian countries. The public sector still possesses assets -- mainly manpower and facilities -- that were appropriate at an earlier period of the country's development when the public system accounted for a much larger share of health consumption. In this rapidly evolving system, it is inevitable that the public sector health service structure will need to adapt to a more limited role and restructure

^{101/} The nutrition program discussed in the previous section can also be viewed as a categorical intervention.

its inputs and programs accordingly. Some shift of resources out of the public sector will be appropriate in recognition of the larger private role in curative and clinical services. This would be desirable for two reasons: first, it would significantly reduce the financial burden on public resources while freeing up the health budget to address salary shortfalls, maintenance needs, and other recurrent operational improvements; second, it would allow a more manageable public service to improve quality and compete with the growing private sector, which by all evidence is operating at a higher level of productivity and quality.

5.20 The growth of the private sector in Viet Nam can play a beneficial role in the sector through improvements in service quality, increased competitive forces in the sector, and meeting the demand for specialized services the public sector is unequipped to provide. There are also risks involved in this shift to private provision in such areas as cost escalation, inequitable access to health services, and the deemphasis of critical preventive public health programs. Thus, a balance must be struck between the internal efficiency gains that accompany private sector growth, and the equity and health outcome benefits of targeted public health services. Mixed health systems everywhere face this difficult policy challenge.

5.21 Since 1989, the Government has permitted private practice in medicine, but additional reforms are needed. More active public support and regulation of the private sector must accompany the liberalizing measures taken to date. This could include contractual arrangements with the private sector to provide essential drugs, rental of government health facilities and equipment of private providers, and the introduction of private services in existing government hospitals. The public sector role in this changing system would also involve a regulatory function, which would need to be developed rapidly to assure minimum standards in private and public sector health services. The public sector would also be a source for trained health manpower. In addition, as discussed earlier, the Government would still be involved in the provision of basic health services, targetted to women and children, vulnerable and underserved groups, the poor and directed for the most part to control of communicable diseases. This entails a strong service delivery function for the public sector with some inevitable overlaps with the private sector.

Reforming the Primary Health System

5.22 Much of the evidence presented in this chapter suggests very low levels of utilization of primary health services. Annual contact rates with the health services average between 0.3 and 0.5 per capita for the overall population, with wide variations across provinces and regions. Bed occupancy rates for hospitals also appear to be less than 50%. These low levels of utilization, especially in rural areas, indicate a general dissatisfaction with commune health centers among a large segment of the population.

5.23 One does not have to look too far to locate the problems of the primary health sector in Viet Nam. The 1991 MOH survey of health providers invited 1,525 health workers in 379 public and private health facilities to list their priorities for future investment. Their responses, shown below in Table 5.1, are instructive in identifying the major problems of the sector. The highest priority for the future, as reported by health workers at commune

health centers and polyclinics, was increasing wages and salaries of health personnel, followed by expanding the supply of medical drugs/supplies and purchasing medical equipment (in that order). Expansion/renovation of the health facilities received a fairly low score, and only about 2% of the health workers at public health facilities said they would like to spend additional resources in hiring more health workers.

Table 5.1: Investment priorities of workers in health facilities				
Additional resources to be spent on:	Percentage of health workers declaring the item of expenditure as having the highest priority			
	Commune health centers	Intercommunal polyclinics	Private physicians	Traditional healers
Hiring more health workers	2.3	2.1	6.8	2.5
Paying higher salaries to workers	36.4	46.2	25.6	17.1
Buying more drugs & medical supplies	33.3	34.5	50.0	58.5
Purchasing more medical equipment	24.0	29.0	37.5	8.5
Expanding/renovating health facility	19.5	7.4	14.0	34.7
Number of health workers surveyed	860	542	61	62
Number of health facilities surveyed	191	77	57	54
Notes:	The hypothetical question that was asked of health workers was, "If your facility were to obtain additional resources, where would you like to spend these resources (in order of priority)?"			
Source:	MOH Survey of Health Providers, 1991.			

5.24 All of these priorities have significant budgetary implications. For example, a pay increase for all government health workers will result in an enormous increase in government health expenditure, as will a program of rehabilitating physical plant and equipment in commune health centers. Unless other cost-offsetting changes are introduced simultaneously, it is not clear that the above "wish-list" can be fulfilled.

5.25 What is needed to revitalize the primary health sector is a package of options, some of which would increase costs and others that would offset these cost increases. It is unlikely that such a package would be expendi-

ture-neutral, but the budgetary implications of this package would be relatively modest. Listed below are some elements of the package.

5.26 Health Worker Wages. There is no question that the wages of health workers in the public health facilities are abysmally low. Further, it appears that many health workers are paid their monthly salaries several months behind schedule. Since public health workers can often double or treble their wages in private practice, the low public-sector salaries create severe incentive problems, and engender absenteeism, low productivity, and low morale among public health workers. The problem is most acute in rural areas, where a large number of health workers also engage in farming to augment their earnings. It is clear that effective implementation of categorical health interventions and a revitalization of the primary health-care sector will require the active cooperation and support of grass-roots health workers. Wage increases and improved fringe benefits, including health insurance, for these workers should be considered a necessary -- although not sufficient -- condition of improving the quality of health services. There are reports that the Government will announce a major reform in health worker salaries in 1992-93, under which the wages of health workers will be brought in line with salaries in other sectors. If true, this would be a major step in raising the motivation of health workers and improving efficiency in the sector.

5.27 Retrenchment of Government Primary Health Workers. An increase in the wages of government health workers would almost necessarily have to be offset by a major reduction in the number of government health workers. The important question is: will this retrenchment have adverse health impacts? For a number of reasons, the answer is no. First, Viet Nam already has one of the lowest population:physician ratios in the developing world -- almost one-third of the rate in Indonesia and one-half of the rate in Sri Lanka, Thailand and the Philippines. Second, the evidence presented in this report suggests that significant improvements in the utilization of health services and in health outcomes are unlikely to be achieved by an increase in the number of clinical physicians. Low health worker wages, lack of equipment and supplies, and the generally poor quality of health services -- not health manpower -- are the real constraints to further reductions in the infant mortality rate. Third, retrenchment of government health workers need not imply a decrease in the total number of available health workers. Indeed, as pointed out earlier, a relatively painless way in which retrenchment could be undertaken would be by allowing government health workers to move to the private sector. In many cases, the workers could continue to practice in the same commune health centers in which they currently serve; the only difference would be that they would pay a rental fee for using government facilities and equipment.

5.28 Refurbishing and Re-equipping Health Facilities. It is clear that, although Viet Nam has a vast network of health centers, hospitals, and other health facilities, the physical quality of these facilities and the extent to which they are equipped is extremely poor. For instance, many district hospitals have very inadequate or no kitchens, laundry units, boilers, linen, or furniture. Medical and surgical equipment, such as weighing scales, sterilization equipment, and refrigerators, are sparse, antiquated, and barely functional in many cases. A significant proportion of commune health centers are housed in buildings that are in a state of serious disrepair, and have virtually no drugs or injections to dispense. While a major rehabilitation of the primary health facilities appears to be essential, it is not clear how it

can be financed in a resource-constrained environment. Again, selective privatization of government health services might be a sound alternative. In areas where the private sector can step in without much difficulty, the Government could pass along the burden of rehabilitating health facilities to the private sector. In areas where the potential for a vibrant private sector in health care is limited, the Government could undertake selective refurbishing of health facilities, financed in part by increased user fees.

5.29 Cost Recovery in Health Services. Even if the Government downsizes the public health sector, it is going to have to raise user fees in order to finance salary increases for government health workers and refurbishing of government health facilities. There are a number of reasons why raising user fees at health facilities is a prudent option. First, survey data show that individuals are already paying considerable amounts for treatment at commune health centers, which are supposed to offer their services free of charge. Patients using intercommunal polyclinics are also paying significantly more than officially-established user fees. It is not clear where these additional collections are going. Most likely, the "informal" user fees are not flowing into the Government health system. By increasing official user fees, the Government health sector could tap into this existing revenue stream. Second, the same survey data show individuals paying nearly two times as much for private health care as for health care from commune health centers and intercommunal polyclinics. Hence, at least the better-off individuals in the country have the capacity to pay significantly higher fees for public health care. Of course, it is unlikely that government health facilities could raise user fees to private-sector levels without significantly improving their quality of care. Third and finally, the limited empirical analysis undertaken here with facility-based survey data suggests that the demand for government health facilities is not responsive to price (with a price elasticity of -0.23). The fact that the estimated price elasticity is less than unity suggests that an increase in user fees will raise total revenues.

5.30 However, there are two qualifications to the proposal to increase user fees. First, user fees should be increased only for curative services for which there is typically private willingness to pay. Preventive services, typically provided through the categorical programs discussed earlier, have a strong public-goods character, and should continue to be provided free of charge by the Government. Second, there should be a mechanism for protecting the poor from user fee increases. Although there is already such a mechanism in place in Viet Nam, the system of exempting the indigent from user fees is not working in practice. Survey data show little relationship between a patient's income and the average price paid for treatment at a commune health center or polyclinic. In fact, at the present "informal" level of user fees, an individual in the bottom income quartile would have to spend an unacceptably high share (nearly 5%) of his annual income on merely two annual visits to a commune health center.

5.31 Risk Coverage and Insurance Schemes. Full-cost user fees cannot be introduced for high-cost items, such as hospital inpatient care, until a large segment of the population participates in risk-sharing insurance schemes. Currently, such schemes are non-existent in Viet Nam. However, a number of developing countries have successfully experimented with health insurance. In particular, China has been successful in covering the majority of its urban population, and a non-negligible proportion of its rural population, with its

risk-coverage programs. Since 1983 Thailand has introduced an innovative "health card" system in its rural areas, under which households can purchase an annual health card, typically priced at less than the average annual household health expenditure, that entitles the bearer to a fixed number of treatments and an unlimited number of visits for preventive services, such as maternal and child health care and immunizations. Evaluation surveys indicate that the health card system is very popular among rural residents. Many other developing countries have village-level drug revolving funds that are one form of local health insurance.

5.32 A survey of 3,502 mothers in 7 provinces of Viet Nam found considerable receptivity to health insurance and cooperative funding of village chemists. Over 93% of the surveyed mothers indicated that they would accept health insurance coverage. On average, survey respondents were willing to spend roughly one-third of their actual monthly expenditure on drugs and health care on health insurance premiums, with very wide variations across provinces (Table 5.2). In addition, the respondents were willing to make one-time contributions of between 2,730 and 7,450 dong for setting up a chemist in their neighborhoods. Although this sample was not nationally representative, the results are indicative of substantial interest among rural residents in participating in risk-coverage schemes. Already, with the assistance of some external NGOs, some provinces have been experimenting with village-level drug-revolving funds on a pilot basis. Some government officials also assert that a national health insurance system is being discussed at the highest policy levels in the country. It would be very important for the Ministry of Health to contribute to this discussion by launching pilot schemes nationwide to explore the viability of community risk-sharing arrangements, such as health insurance and drug-revolving funds.

	Lang Son	Hai Hung	Thua Thien	Lam Dong	Khanh Hoa	Long An	Song Be	Total
Household expenditure on health care during the last 6 months (dong)	110	30	640	2,390	1,540	900	70	880
Household expenditure on medicines during the last 6 months (dong)	10,850	12,220	32,730	71,300	49,070	24,120	20,890	33,890
Willingness to pay for opening of a chemist's store in neighborhood (dong)	3,780	2,730	7,450	4,070	4,260	3,260	3,500	3,910
Willingness to contribute monthly of a chemist's store in neighborhood (dong)	1,120	580	710	6,350	1,450	920	4,300	2,210
Source:	Ministry of Health, Center for Human Resources, <u>Survey of Health Programs in 7 Provinces, 1990.</u>							

5.33 Cost Recovery in Medical Training. Greater reliance on the private sector for curative health care needs to be accompanied by a fundamental change in the way in which physicians obtain their medical education and

training in Viet Nam. Although physicians are expensive to train, medical training is virtually free. This policy may have been practical in a government-run health care system, but it would make little sense in a heavily-privatized health sector. While it may still be efficient for the Government to supply trained manpower to the private sector, it would be imprudent for it to subsidize the medical education and training of private-sector health workers. Tuition fees would need to be set and collected, so that public subsidies for medical training could be significantly reduced or eliminated.

5.34 Manpower Retraining. In addition to the introduction of tuition fees in medical schools, there is urgent necessity for changing the medical curriculum. Despite the Government's emphasis on primary health care and preventive medicine, there is a strong curative bias in the medical curriculum. The basic approaches to modern public health management are not being taught to health personnel, with the result that the concept of primary health care is still not widespread in the medical community. The bias in the medical curriculum is reflected in the strongly curative approach to medical treatment that is adopted by most health workers at all levels. To some extent, the Manpower Development Plan of 1990-2005 does seek to address this problem by proposing to retrain and upgrade a large number of general assistant physicians in commune health centers to become specialists in public health. Also, some NGOs have supported training of public health workers in nearby countries, particularly Thailand and the Philippines, but the numbers are still far few to have a major impact.

5.35 Institutional Capacity Building in the Health Sector. The PHN sector lacks an institutional capacity to monitor, manage and evaluate its programs. Indeed, a part of the difficulty facing the MOH in assessing the performance of the health sector and in determining an appropriate strategy for the improvement of health and family planning services stems from the lack of an organized management information system encompassing health-sector activities. There is no comprehensive system of supervision, monitoring or evaluation of grass-roots medical facilities in the health sector.

5.36 This lacuna is most visible at the level of the district. One could argue that it is only through major improvements in district-level management of health services that primary health care can be upgraded. The district has to have the managerial, administrative and technical capabilities to make medium-term health plans and efficiently allocate resources, including staff, equipment, and drug supplies, for their implementation; to identify projects, evaluate their feasibility, and execute them; and to monitor and evaluate national health programs operating in the district. Planning and budgeting for efficient resource use in the sector, especially at the lower administrative levels, should be strengthened. At present, most district-level leaders lack these capabilities.

5.37 Limited information that would be useful for monitoring, evaluation and management purposes does exist, but it is poorly organized and difficult to retrieve. For instance, each of the categorical health programs, such as the Expanded Program of Immunization, Acute Respiratory Infections Program, and the Control for Diarrheal Diseases Program, requires the commune health center to maintain a separate register of participants. As a result, a single child's name is often entered in multiple registers. Not only is this method of recording data too onerous on the health workers, it makes subsequent data

retrieval for monitoring and evaluation purposes very difficult. It would make sense to move to a simplified and integrated system of record-keeping that is individual or family based.

5.38 There is also no system of regularly collecting information on the time spent by health workers in various activities and on worker performance and productivity. Such information is essential not only for better overall management but also in formulating wide-ranging policies on attrition in and redeployment of the country's health manpower.

5.39 Further, to make the record-keeping at commune health centers useful, there should be a mechanism for the data to be transmitted to the higher levels of decision-making for evaluating the impact of alternative health interventions. Currently, no mechanism of ongoing data transmittal (other than statistics on family planning) exists, with the result that the data, even when they exist at commune health centers, cannot be used for planning purposes. In addition, the district and provincial health services themselves lack the capabilities of meaningfully analyzing field data on programs for the purposes of supervising, monitoring, and evaluating program interventions.

5.40 Finally, an important limitation of existing data on the health sector is that they are based entirely on information obtained from the public sector. Admittedly, the public sector is the dominant sector in health delivery. However, since the legalization of private practice in 1989, the number of individuals seeking treatment in the private health sector is expanding rapidly. As this trend continues, an information system based only on the public sector will provide data that are increasingly inaccurate.

Internal Efficiency of Government Health Expenditure

5.41 Even with external assistance and availability of additional domestic resources, simultaneous efforts for improvement in internal efficiency through compositional shifts in recurrent budget should be continued. For example, a disproportionately large share of government health expenditure is spent on curative relative to preventive functions. Since preventive services are public goods, it would be more efficient for the Government to subsidize preventive services and either leave the provision of some curative services to the private sector or sharply increase user fees for these services. Another area in which the internal efficiency of government expenditure could be improved is in the manpower mix. Although Viet Nam has a more balanced mix of nurses and physicians relative to most Asian countries, its ratio of 3.5 nurses to each physician is comparable to ratios observed in developed countries, where the heavily curative-based systems of health care require relatively intense use of physician services. Since the leading causes of morbidity and mortality in Viet Nam are preventable diseases (primarily, infectious and parasitic), which typically do not need physician-intensity, there may be scope for substantial cost saving by changing the personnel mix with more emphasis on community health workers, nurses, midwives and assistant doctors. Additional examples of inefficient composition of expenditure are the disproportionately small share of contraceptive procurement in the family planning budget and the low ratio of family planning administrator to service delivery personnel salaries. Both of these trends are allocatively inefficient. A final example of internal inefficiency is the wide disparity in

provincial government health expenditures. Since the provinces that spend the least on health services are typically those that have highest levels of infant mortality, a strategy of redistributing government health expenditure from richer to poorer provinces will not only promote equity goals but will also bring about a larger aggregate decline in the infant mortality rate.

External Resources for the Health Sector

5.42 Without enhanced foreign aid flows, the Government's intended health sector development goals probably will not be feasible. Increased domestic resource mobilization may be impaired by inadequate private savings. More generous aid is therefore needed. However, equally important is the effective utilization of external aid flows in the long run. Although considerable improvements in foreign aid utilization can be achieved through institutional strengthening, improvements in procedural aspects, including choice of core investments to be financed within capital budget, procurement, the use of technical assistance, and staffing of project entities need immediate attention. Critical problems like salary, equipment, medical and contraceptive supplies, manpower training, information/education/communication (IEC) should be tackled first, both through program and project assistance by bilateral and international agencies. For instance, although the salary issue cannot be resolved except at the macro level, the provision of better equipment, improved supplies, and manpower retraining within an individual project will have a positive impact on raising the morale and productivity of health and family planning workers.

Economic Growth, Income Distribution and Poverty: Implications for PHN

5.43 An important issue is the effect of economic growth and liberalization on health and nutritional status in Viet Nam. There are several indications that economic liberalization and the consequent emergence and growth of the private sector have widened income disparities in the country. At the same time as entrepreneurs and individuals working in the incipient private sector have experienced rapidly growing incomes, public-sector employees and other salaried persons have found their real purchasing power eroded, as their salaries have failed to keep up with inflation and the food subsidies that benefited them have ended. The widening disparity in income is a relatively new phenomenon for Viet Nam (particularly, the North), and has important implications for the population, health and nutrition of the poor. In other countries the combination of worsening income distribution and price decontrol (resulting in higher prices for food, health care and contraceptives) has reduced the food consumption of the poor and their utilization of health and family planning services.

5.44 Unfortunately, little information is available on the growth of income disparities, poverty, and consumption in Viet Nam. This gap will be filled to a great extent by the Living Standards Measurement Survey being undertaken jointly by the World Bank and the General Statistical Office. With the availability of these data, much more research on the interactions between income, fertility, nutrition and health will need to be undertaken. This research would be useful to the Government in finding ways of cushioning the poor and other disadvantaged groups from the sharp price increases associated with increased privatization and greater cost recovery in the government health sector.

Emerging Environmental Problems

5.45 Another issue that will become increasingly important in the future is the impact of worsening environmental and ecological conditions on health. Crowding, pollution, stress and occupational hazards are already beginning to adversely affect the environment and the quality of life in Viet Nam. Hazardous solid wastes from industry and agriculture are usually collected jointly with other common wastes, and the most common methods for waste disposal are open dumping and open burning, both of which produce health hazards, air pollution, and sanitary discomfort. Pesticides and other chemical insecticides are becoming increasingly common in agriculture, resulting in contamination of rain, surface and underground water and contamination of the food chain. In addition, increasing population pressure, combined with a housing stock that is expanding very slowly, is resulting in overcrowding and unsanitary living conditions. With an average of 3.1 persons for every room, Ho Chi Minh City already ranks as a city with one of the scantiest living spaces per capita in the world. The addition of another 30 million or so people to the Vietnamese population over the next 2-3 decades may put a severe strain on environmental health.

Development of the Pharmaceutical Industry

5.46 The Government has listed the development of the domestic pharmaceutical industry as a high priority. According to the UNIDO classification, Viet Nam falls in the group of countries which have begun to repack formulated drugs and process bulk drugs into dosage forms. A detailed examination of whether Viet Nam has a comparative advantage in the production of pharmaceutical is beyond the scope of this study. However, it is clear that, for a sustained growth in domestic pharmaceutical output, the country will require a large market, a threshold level of logistics, well-qualified scientists and skilled personnel, access to cost-effective technology, existence of a chemical industry, and generous funds for R&D activities. Although labor and other material costs (e.g., energy) are extremely low, the country is severely deprived of financial resources for investment in new plant and equipment, licensing of internationally-available technologies, R&D activities, and imports of raw materials and spare parts. Indeed, owing to these problems, local factories are producing at only 40% of capacity. Unless the factors affecting capacity underutilization are resolved, it may be premature for the Government to make major investments in new pharmaceutical enterprises.

5.47 While the Government should continue to seek technical and financial support as well as joint ventures for upgrading existing factories to facilitate increased production, there is a need for an in-depth evaluation of the pharmaceutical sector that would address such issues as future trends in the demand for drugs induced by the changing age structure of the population, the pattern of disease vector and morbidity rates, alternative procurement of drugs and supplies, and the costs, institutional and manpower requirements of domestic pharmaceutical production. Such feasibility studies might form the bases for possible donor involvement in assisting selected pharmaceutical enterprises in expansion and upgradation.

ANNEX A: DETERMINANTS OF INTERPROVINCIAL FERTILITY DIFFERENTIALS

1. In order to determine the effectiveness of policy interventions in influencing fertility outcomes, an attempt was made to study the association between provincial fertility rates (available from the 1979 and 1989 Censuses) and provincial-level health infrastructure, manpower, and public expenditures. The explanatory variables in the model relate to the broader health sector rather than to the family planning sector for three reasons: (i) the provision of family planning information and services is integrated with the provision of basic health care services in Viet Nam, (ii) the 1988 VNDHS indicated that 82% of the family planning users in the country obtained their contraceptive supplies and services from commune health centers and intercommunal polyclinics, and (iii) family planning expenditures are included in the budget of the Ministry of Health.

2. Nearly 84% of the interprovincial and intertemporal variation in fertility rates can be explained by the model (Table A.1). The empirical results indicate the importance of five variables in influencing fertility. First, access to health facilities, as measured by the average distance to a public health facility, has a significant inverse association with the total fertility rate (TFR). The lower the density of health facilities per unit of area in a province (thereby implying a farther distance on average to each facility), the higher is the TFR in that province. Further, the effect of distance to health facilities on fertility outcomes appears to have increased substantially between 1979 and 1989. While the elasticity of fertility with respect to distance was 0.09 in 1979, it increased to .26 by 1989. The average size of population served by a health facility is also positively associated with fertility, but this relationship is not statistically significant. Second, average health expenditures of the provincial government per health facility have a significant negative effect on the TFR. Since higher expenditures per facility are generally synonymous with a better supply of consumables, including contraceptives, these results stress the importance of contraceptive supplies in lowering fertility. Third, higher levels of female literacy in a province are associated with low levels of fertility. Fourth, there is a strong positive association between the TFR and the level of infant mortality. In other words, even after controlling for all the other variables, provinces that have lower infant mortality also tend to have lower fertility. Since the estimated elasticity of fertility with respect to the IMR is 0.176, the fall in the IMR of about 46% between 1979 and 1989 produced an 8% ($= .176 \times 46$) decline in fertility. Since the fertility rate actually fell by about 25% between 1979 and 1989, this implies that the fall in infant mortality was responsible for roughly one-third of the decline in fertility. Finally, the empirical results indicate a strong income effect on fertility, such that a 10% increase in provincial per-capita income reduces fertility by about 1%.

Table A.1: DETERMINANTS OF TOTAL FERTILITY RATE, 44 PROVINCES OF VIET NAM, 1979 and 1989

<u>Independent Variable</u>	<u>Parameter Estimate</u>	<u>T-Ratio</u>	<u>Elasticity in 1989</u>
Intercept	1.069	1.90	
Avg distance to health facility	0.087	1.98*	
Population per health facility	0.032	1.02	
No. of health personnel per health facility	0.013	1.03	
Provincial government health expenditure per facility (x1000)	-0.032	-2.16*	
Female literacy (%)	-0.187	-1.67	
Infant mortality rate	0.176	2.16*	
Dummy variable for 1989	2.599	2.13*	
<u>Dummy for 1989 interacted with:</u>			
Avg distance to health facility	0.260	3.90*	0.347
Population per health facility	0.105	1.42	0.137
No. of health personnel per health facility	-0.051	-0.75	-0.037
Provincial government health expenditure per facility (x1000)	0.010	0.44	-0.022
Female literacy (%)	-0.294	-1.56	-0.481
Infant mortality rate	-0.148	-1.10	0.029
Per-capita provincial domestic product (GDP) (x1000)	-0.104	-2.86*	-0.104
F Ratio	32.070		
R Squared	0.839		
Number of observations	87.000		

Notes: Regression is estimated by OLS. Since all variables are in natural logs, the coefficients may be interpreted as elasticities. GDP data are available only for 1989.

* T Statistic significant at 5% level

3. Most of the empirical results discussed above are intuitive and have been widely documented for other countries and historically over time. For instance, one of the most ubiquitous empirical regularities in the literature on fertility is the inverse association between fertility and indicators of women's status (such as their literacy).^{1/} The positive association between fertility and infant mortality has also been documented widely. Under a high mortality regime, couples attempt to bear more than the desired number of children, even if none dies, as a form of insurance against subsequent deaths. They practice family planning only when they are reasonably sure about improved survivorship ("the hoarding strategy"). High infant mortality may also breed higher fertility for biological reasons. For instance, breastfeeding delays the return of regular ovulation, so the interval between a birth and the next conception becomes shorter when a baby dies.^{2/} The negative effect of income on fertility is also widely observed and may reflect the desire of parents to substitute child quality (e.g., schooling, health, nutrition) for child quantity as their incomes increase. Finally, in a situation where family planning services are provided free, the distance to a family planning clinic acts as the effective price. Hence, as distance increases, the demand for family planning services is likely to decline and fertility is likely to increase.

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- 1/ See Nancy Birdsall, "Economic Approaches to Population Growth," in Hollis Chenery and T. N. Srinivasan, eds., Handbook of Development Economics, Volume 1, North Holland: Elsevier Science Publishers, 1988. Also, see T. Paul Schultz, Economics of Population, Reading, MA.: Addison-Wesley, 1981.
- 2/ For further cross-country evidence, see Samuel Preston, "Causes and Consequences of Mortality Decline in Less Developing Countries" in Richard Easterlin, ed, Population and Economic Change In Developing Countries, National Bureau of Economic Research, 1990.

ANNEX B: DETERMINANTS OF CHILD NUTRITIONAL STATUS AND NUTRIENT INTAKES

1. Data from the General Nutrition Survey have been re-analyzed to identify factors associated with nutritional status. Tables B.1 and B.2 present results from analyses of variance, using weight and height as dependent variables. In each case, the dependent variable is first regressed on the more direct independent variables (i.e., variables that are likely to have a more direct effect on the dependent variable). Indirect variables are then added to this model. Changes in the coefficients of the direct variables indicate the possible ways in which the indirect variables affect the dependent variable.

2. Tables B.1 shows that the age and sex of a child and the existence of a bathroom in the house (a possible proxy for the level of sanitation) are positively associated with weight, i.e., as age increases by one month, the weight of a child is expected to increase by 141 gms; male children are 190 gms heavier than female children; and children with bathrooms in the house are 157 gms heavier than those without bathrooms. Participation of the child's family in the 5% land scheme is negatively associated with weight. (All of these coefficients are statistically significant at conventional levels.) The 5% land scheme aims at improving household food security by making available 5% of the commune land to individual families for cultivation. Therefore, intuitively, the negative association between this variable and child weights seems contradictory. However, further analysis shows that the distribution of 5% land is negatively associated with food expenditure. While 48% and 49% of households in the lower two food expenditure quartiles participated in the 5% land scheme, the participation rates for the next two quartiles were 38% and 19 percent, respectively. This implies two things: first, that the 5% land scheme is targeted to the needy, and, second, that the negative association between 5% land and child weights is a reflection of differences in socioeconomic status between those who participate and those who do not. These data also suggest that the gap between need and supply may not be adequately bridged by the supplementation (of food security/cash income) from the 5% land. This issue needs further investigation.

3. Addition of household calorie intake per capita and household expenditure on food to the first model increase the explanatory power of the regression model. Both household energy intake and food expenditure are positively associated with weights of sample children.

4. After controlling for the factors listed above, there were significant differences in child weights across ethnic groups and ecoregions. Children belonging to the Viet ethnic group had lower weights than other children. Children in the Central Highlands, the Central Coast of Southland, and those in the Red River Delta had lower weights as compared with children in Hanoi and Ho Chi Minh cities. Children in the Mekong River Delta were observed to have the highest weights, followed by children in the North East of Southland, the Central Coast of Southland, and the North Mountain Midlands, in that order. It is useful to note here that this ordering of ecoregions in

terms of weight-for-age is somewhat different from the unadjusted order presented in the text.^{3/}

5. When height is used as the dependent variable (Table B.2), age, sex, presence of a bathroom, ownership of a pig, and availability of running water in the house are all positively associated with heights of young children. Participation in the 5% land scheme is again negatively associated with height. Energy intakes and food expenditure do not show an association with height. The latter result is not surprising, and merely reflects the fact that height is influenced cumulatively by past food intakes. Another explanation is that energy intakes (and quite probably food expenditure as well) in a predominantly rural country like Viet Nam vary considerably during different times of the year, and that measurement of energy intakes at a single point in time is unlikely to be related to measures of long-term nutritional status.

6. Significant differences in child heights across ethnic groups and across ecoregions were observed even after controlling for the factors mentioned above. In particular, children belonging to the Viet ethnic group were likely to have lower heights than those belonging to non-Viet ethnic groups. Children in the North-east of Northlands were likely to be the tallest, followed by the Central Highlands, North Mountain and Midlands, and the Mekong River Delta, respectively. Children in the Red River delta had the shortest stature, followed by those residing in the Central Coast of Northland and the Central Coast of Southland.

7. Determinants of Child Energy Intakes. The same data have been used to identify factors associated with the energy intakes of children under 5 years of age. Table B.3 presents results from the analysis of variance using energy intake of children as the dependent variable. Energy intakes are found to be positively associated with the age of a child (but not with gender). The availability of running water in the child's house was the most important factor associated with energy intake. This may, in fact, be a proxy for income or wealth. Food expenditure as a continuous variable was not important in determining energy intakes. Dichotomous variables for food expenditure quartiles were statistically significant, but the size of the coefficients was not biologically significant. Affiliation to the Viet ethnic group was positively associated with energy intakes. But, after controlling for food expenditure (Model 2), ethnic group was no longer significantly associated with energy intake, suggesting that the effect of ethnic group is likely to be mediated through differential food expenditure.

^{3/} In the data presented in the text, there are no controls for age, gender, participation in the 5% land scheme, etc.

**Table B.1: PROXIMAL VARIABLES ASSOCIATED WITH ATTAINED WEIGHTS
OF 0-59 MONTHS OLD CHILDREN, 1987-89**

(Results from Analyses of Variance)

Dependent Variable: Weights of children (in 100's of grams)

<u>Independent Variables</u>	<u>B Coefficient</u>	<u>P-Value</u>
<u>Model 1:</u>		
Constant	+61.017	
Age (Months)	+1.412	.000*
Gender (Male)	+1.905	.000*
Participation in 5% land scheme	-1.010	.000*
Bathroom in the house	+1.570	.000*
<u>Model 2</u>		
Constant	+61.160	
Age (Months)	+1.366	.000*
Gender (Male)	+2.135	.000*
Participation in 5% land scheme scheme	-0.948	.007*
Bathroom in the house	+1.301	.001*
Total Calorie intake	+0.002	.023*
Food Expenditure	+0.002	.008*

Notes: Viet ethnic group was negatively associated with attained weights.

Compared with Hanoi & Ho Chi Minh cities, weights were positively associated with the Mekong delta(7) followed by North-east of northlands(6), Central coast of southland(4) and North mountain midland(1). Weights were lowest (negatively associated) in the Central highlands(5) followed by the Red-river delta(2) and the Central coast of southland(4).

* Significant at 5% level.

Source: NIN, General Nutrition Survey, 1991.

**Table B.2: PROXIMAL VARIABLES ASSOCIATED WITH
ATTAINED HEIGHTS OF 0-59 MONTHS OLD, 1987-89**

(Results from Analyses of Variance)

Dependent Variable: Heights of children (in mm.)

Independent Variables	B Coefficient	P-Value
Model 1:		
Constant	+610.2	
Age (Months)	+6.637	.000*
Gender (Male)	+4.302	.001*
Participation in 5% land scheme	-4.806	.000*
Source of water:		
Running water	+11.86	.000*
Container/well	- 6.01	
Pond/Lake/Other	0.0	
Family owns pig(s)	+1.531	.014*
Family has pond for pisci-culture	-1.841	.043*
Bathroom in the house	+1.570	.000*

Notes: Calorie intake and food expenditure were not statistically significant in determining heights of young children.

Ethnic group was significantly associated with height. Viet ethnic groups were likely to have lower heights as compared with non-Viet ethnic groups (p <.006).

Eco-region was significantly associated with height. As compared with urban areas, children in the North-east of northlands(6) were likely to be the tallest, followed by the Central highlands(5), North mountain-midlands(1), and the Mekong river delta(7) respectively. Children in the Red-river delta(2) were the shortest followed by the Central coast of northland(3) and the Central coast of southland(3).

* Significant at 5% level.

Source: NIN, General Nutrition Survey, 1991.

Table B.3: PROXIMAL VARIABLES ASSOCIATED WITH CALORIE INTAKE PER CHILD OF 0-59 MONTHS OLD, 1987-89

(Results from Analyses of Variance)

Dependent Variable: Calorie intake per child per day

Independent Variables	B Coefficient	P-Value
Model 1:		
Constant	+787.4	
Age (Months)	+2.468	.000*
Family has a veg/kitchen garden	-22.965	.000*
Family has pond for pisci-culture	+12.662	.024*
Source of water : Running water	+120.58	.003*
: Container/well	- 62.25	
: Pond/Lake/Other	0.0	
Model 2:		
Constant	+795.3	
Age (Months)	+2.346	.000*
Family has a veg/kitchen garden	-15.478	.013*
Family has pond for pisci-culture	+ 7.498	.255
Source of water : Running water	+121.81	.003*
: Container/well	- 59.76	
: Pond/Lake/Other	0.0	
Food expenditure quartile: 1	- 0.58	.049*
: 2	- 25.06	
: 3	+ 6.66	
: 4	0.0	

Notes: The Viet ethnic group was significantly associated with a higher calorie intake. However, the size of this difference (+20 Calories) was too small to have any biological/practical significance.

After controlling for food expenditure (Model 2), ethnic group was no longer significantly associated with Calorie intakes, indicating that the effect of ethnic group is likely to be mediated through differential food expenditure.

Analyses by eco-region were not possible because of small sample sizes within cells.

* Significant at 5% level.

ANNEX C: HEALTH PROGRAMS INCLUDED IN THE NATIONAL PLAN OF THE COUNCIL OF MINISTERS

1. After a detailed analysis of the country's main health problems and constraints, the MOH selected six national health programs which were included in the National Plan of the Council of Ministers, and further ratified by the National Assembly. Two of these health programs are directed at improving the health services network, and the remaining four are personal health interventions directed to target populations, namely, mothers and children and people living in malaria-affected areas.

A. Consolidation of village, commune, and district health services

2. This program aims at strengthening commune health centers and intercommunal polyclinics through the following actions:

- (a) village and commune health centers are entitled to collect fees for services provided, such as delivery of babies, administration of injections and acupuncture, etc., in order to set a welfare fund devoted to improve operations;
- (b) commune and village health workers will become state employees, and districts will be responsible for paying their salaries, as stated in the decision 123 of the Council of Ministers;
- (c) the MCH and family planning program (see below) will be the pivotal activity of the village, commune and district health services;
- (d) all commune health centers will have an assistant physician devoted to treatment with traditional and modern medicine;
- (e) selected commune health centers with a good performance will be upgraded to local polyclinics by additional qualified staff and equipment and lab facilities (for malaria, t.b.c., leprosy, family planning, etc.);
- (f) ward and commune drug stores will be established for public sale and to ensure permanent availability of essential drugs;
- (g) district health centers with adequate buildings and staff will be used as models for improving general management, including effective administrative guidelines, provision of two administrative assistants to the chairman of the district people's committee, and involvement of the district health director and the hospital director in the mobilization of staff to meet personnel requirements and program integration in support of primary health care; and
- (h) development of training and refresher courses on community health for directors of village, commune, district and provincial health services.

B. Provision of Maternal and Child Health

3. A detailed analysis of this program is in the Family Planning section of the main report. Here, a summary is presented. The Government has assigned top priority to the MCH and family planning program as a mechanism to expand and consolidate primary health care throughout the country. The Government's aim is to encourage small size families for facilitating better health and development. The program objectives are: (a) to reduce the total fertility rate from 3.7 in 1990 to 2.8 by the year 2,000. This implies a reduction of the birth rate by 0.6 per thousand annually, and to increase the contraceptive prevalence rate from 42% in 1990 to 50.5% in 1995; (b) to reduce the annual population growth rate to below 1.8% by the year 2,000; and (c) to strengthen information, education, and communication in family planning as well as in maternal and child health. This program has the widest coverage in the country through the extensive network of ambulatory health facilities (village stations, commune and district health centers, and family planning clinics). The Government has planned the construction of 300 additional family planning clinics in less well served provinces, and the strengthening of contraceptive distribution and supply. Also, the Government has attempted (with little success) integration of MCH and family planning with other health activities such as prevention of Vitamin A and iodine deficiency, control of diarrhea and acute respiratory infection, malaria control and immunizations.

4. The strategy to achieve program goals include: strengthening of program management; manpower training; improved service delivery and quality of care; strengthening of supply and distribution of contraceptives and essential family planning drugs; increased financial allocations; and greater involvement of line ministries and other government agencies. UNFPA has proposed a four-year (1992-95) support program equivalent to US\$36 million to implement the Government MCH/FP in eight provinces. It is expected that this strategy would remove the main causes of program inefficiency, i.e. limited availability of contraceptive methods, and less than adequate training and equipment for patient management and counseling.

C. Strengthening of basic hospital services

5. This program aims at expanding and improving the quality of diagnostic and treatment services in hospitals, and combining traditional and modern medicine in hospital therapies. This will be achieved through:

- (a) promoting the use of laboratory tests such as microbiological and x-rays tests;
- (b) consolidating key service units such as surgery, obstetrics, pediatrics, hematology, and blood transfusion, and staffing and equipping intensive care units in all hospitals;
- (c) strengthening nursing cadres with qualified nurses, especially with chief nurses.

- (d) reorganizing the hospital departments of planning, administration, and records; establishing regulations for the functioning outpatient and inpatient services; establishing hospital drug stores to serve hospital needs and to sell drugs to patients;
- (e) combining traditional and modern medicine in hospital practice;
- (f) coordinating resources among various health facilities to ensure better quality of outpatient and inpatient services. This implies the closing of hospital beds where not needed or where they are not well equipped and staffed, and transfer of staff to other facilities in support of primary health care;
- f) providing training to staff in hospital management.

Financial provisions to support these measures will be established:

- hospital cost recovery through collection of certain fees
- sale of drugs by hospital drug stores
- organization of hospital-sponsoring associations
- foreign assistance and aid
- encouraging after-hours private practice and home care
- promoting the opening of private maternity homes

D. Malaria Control

6. Although malaria is the leading cause of morbidity and mortality in Vietnam, it has received less attention than warranted. Program objectives are vaguely defined as follows: (a) limiting outbreaks of malaria; and (b) cutting down morbidity and mortality cause by malaria. The proposed strategy involves (a) expansion of detection places through provision of 4,000 microscopes; (b) training of more health workers in laboratory testing; (c) organizing mobile teams to achieve a target of 2.5 million blood tests per year; (d) ensuring timely supply of antimalarial drugs for an estimated 7.5 million patients and insecticides to protect about 6 million people in malaria infested areas; (e) coordination with the army for the control and care of malaria cases in demobilized soldiers; and e) encouragement of imports of antimalarial drugs by the private sector.

E. Expanded Program of Immunizations (EPI)

7. The main objectives of this program are: (a) to rise immunization coverage in children under one year of age to 80%. Priority will be given to those areas with a coverage of 50% or less; (b) shift to regular immunization programs in localities where coverage of 70% or more has been achieved; and (c) maintain the campaign option to be used in difficult to reach localities. The main elements of program strategy include (a) ensure adequate supply of vaccines through imports and local production. Local production of DPT and BCG would be perfected with UNICEF assistance; (b) ensure adequate supply of syringes and needles and rational use of the cold chain; (c) strengthening vaccine-control units at local and national levels; and (d) implement material incentives for those involved in vaccinations at the local level.

F. Essential Drugs and Materials

8. This program aims at ensuring adequate supply of essential drugs and equipment for basic health units. Top priority will be given to the supply of drugs against malaria, diarrhea, goiter, tuberculosis, mental diseases, trachoma and leprosy, and for family planning and first aid. Specific measures will be adopted to introduce better management and cost-accounting systems in drug and medical equipment factories. The Government also will promote factory local production through ensuring timely procurement of material supplies and more managerial autonomy, and more efficient distribution outlets by cutting intermediaries, and promoting private drug stores. The Ministry of Health will be fully responsible for international procurement of drugs and medical equipment, and should request tax exemptions on imports.

ANNEX D: THE 1990-2005 MANPOWER DEVELOPMENT PLAN

1. A 15-year (1990-2005) Manpower Development Plan (MDP) was prepared by the MOH with external assistance from SIDA and the ODA. The rationale for this plan is that there is a need for improving the quality, instead of the quantity, of health workers, since the existing staff does not seem to be overwhelmed by patient workloads or health activities, and major expansion of health facilities is not expected because current ones are not fully utilized. The following are main features of the MDP:

- (a) it assumes that the population growth rate will remain around 2% in the next 10 years, and that health policies, resources and the structure of health facilities will remain unchanged;
- (b) it is an indicative plan, thus requiring periodic reviews;
- (c) it emphasizes the improvement of quality over quantity of human resources;
- (d) it proposes levels of health personnel, by type and cadre, over the next 15 years; and
- (e) it will provide the framework for formulating health manpower policies, including training and employment programs in the health sector.

1. The two main objectives of the MDP are: first, to reduce disparities in staffing across different categories of health facilities by increasing the number of health workers, as well as strengthening their skills, at commune health centers; and, second, to increase the number of qualified health staff more rapidly in the least well-served provinces than in the better-endowed provinces. Strategies to achieve these aims include: (a) adopting policies favoring initial, in-service or upgrading training of students from less well-served provinces; (b) providing facilities for postgraduate training in centers other than Hanoi and Ho Chi Minh City; (c) reducing student intakes in Hanoi and Ho Chi Minh city and increasing intakes elsewhere; (d) making extensive revisions to the medical school curriculum that take into account regional needs; (e) limiting the hiring of new health workers in well-served provinces; and (f) providing pay differentials that favor employees in the least well-served areas.

2. Proposed changes in staffing at commune health centers: The MDP proposes the discontinuation of elementary-level health workers by upgrading them to secondary level. Specialization of a selected few categories will be promoted as well as simplification of cadres, which will be more flexible in terms of job descriptions. For instance, it is expected that by the year 2000 all general assistant physicians will be transformed into specialists in public health, traditional medicine, or MCH/FP; also, all secondary level nurses and midwives will be specialized in MCH/FP under the name of MCH/FP nurse-midwife (Table B.1). A career structure for nurses working in hospitals will be established. These manpower changes will be reflected in the cadres of commune health centers, which will be structured as follows:

- (a) a public health assistant physician, who will be the manager of the commune health center in conjunction with the commune people's committee;
- (b) an MCH/FP assistant physician or MCH/FP nurse-midwife who will be mainly responsible providing all MCH/FP services, including attendance of normal deliveries;
- (c) a traditional medicine assistant doctor who will provide curative care using both traditional and western medicine;
- (d) other second-level health workers may be employed according to needs and resources of the commune;
- (e) doctors will only be included in 2,000 selected commune health centers.

Table D.1: PROPOSED MANPOWER FOR COMMUNE HEALTH CENTERS

STAFF CATEGORIES	CURRENT	YEAR 2000
Public Health Doctors	200	2,000
Assistant Doctors		
. General	11,800	0
. Public Health	0	8,000
. MCH/FP	0	7,000
. trad.med./western	1,000	10,000
Midwives	500	0
MCH/FP Nurse-Midwives	0	3,000
TOTAL	13,500	30,000

3. **Proposed staffing for other health facilities:** The MDP also calls for strengthening the skills of health personnel in hospitals, specialized health institutes, administrative health agencies, and other health facilities. The specific proposals of the MDP in this area are:

- (a) assistant physicians will receive training to become doctors or will be redeployed as nurses. Some 600 traditional medicine assistant physicians will continue as part of hospital cadres, and 800 MCH/FP assistant physicians and 800 assistant dentists will be assigned to polyclinics;
- (b) the number of doctors will be increased by about 50%, mainly with 700 upgraded assistant physicians per year from 1991 to 1999; however the population/doctor ratio will be only slightly altered, since by year 2,000 this ratio will be 2,000 people per doctor, as compared with the present 2,708/per doctor.

- (c) the number of specialist doctors will be increased by 60% (from 4,000 to 10,000, including 1,500 pharmacists). Again the ratio of doctors/specialists will be slightly changed from 5.6 to 4.5 specialists per doctor in year 2000.
- (d) all provincial and district managers will receive training in public health and management of health services;
- (e) a career development plan for hospital nurses will be established, including new roles as managers of nursing hospital services; and
- (f) better trained and higher level faculty will be appointed in secondary medical schools.

The MDP is a step forward in the analysis and solution of manpower problems of Vietnam. However, its scope is somewhat narrow, since it addresses the issue of composition of cadres but does not address the larger problem of substantive improvement in manpower distribution and quality.

Table D.2: PROPOSED HEALTH MANPOWER FOR OTHER HEALTH FACILITIES

Staff Categories	Current	Year 2000
1st. Degree Specialists	4,000	10,000
<u>University Level</u>		
Doctors	18,500	27,500
Pharmacists	6,300	7,000
Nurses	40	500
Midwives	30	150
Lab. Technicians	30	150
<u>Secondary Level</u>		
Assistant Physicians		
. general	35,000	0
. traditional medicine	1,000	500
. dentists	800	800
. MCH/FP	0	800
Nurses	14,000	43,000
Midwives	4,000	4,000
Pharmacists	7,300	8,000
Lab. Technicians	6,000	7,000
TOTAL	68,100	64,100

Source: Health Manpower Development Plan. Ministry of Health. Hanoi, 1990.

ANNEX E: DETERMINANTS OF UTILIZATION OF HEALTH SERVICES

1. An attempt is made here to "explain" interprovincial differences in bed occupancy rates for basic health centers with provincial variations in access to health facilities, health staffing, provincial per capita income, and female literacy. The regression results, shown in Table E.1, indicate that the bed occupancy rates of basic health centers are highly responsive to access to health facilities. For example, average distance to health facilities has a strong negative impact on bed occupancy (elasticity of -0.23), as do higher ratios of population:facility (elasticity of -0.26). On the other hand, bed occupancy rates are significantly higher (elasticity of 0.29) in provinces that have well-staffed facilities. However, when the average number of personnel per facility is separated into two components -- the number of physicians and the number of other health personnel -- the results indicate that it is the staffing of facilities by nonphysician personnel -- not physicians -- that improves bed occupancy rates.

2. The two surprising findings are that bed occupancy rates are not significantly associated with female literacy, and are inversely related to provincial per-capita income in 1989.^{4/} The latter result might reflect two phenomena; first, that health status improves with per-capita income, so that there is less demand for health services (and therefore lower occupancy rates) at higher income levels; and, second, individuals utilize the services of higher-level (viz., district and provincial, as opposed to commune) health facilities and private providers as their incomes increase.

Table E.1: Regression analysis of bed occupancy rates for commune health centers and inter-communal polyclinics, 44 Viet Nam Provinces, 1979 and 1989

Independent Variable	Parameter Estimate	T-Ratio	Parameter Estimate	T-Ratio
Intercept	4.760	3.68*	4.285	3.42*
Average distance to facility (kms.)	-0.232	-2.21*	-0.285	-2.80*
Average population per facility	-0.262	-3.55*	-0.204	-2.43*
Average no. of all health personnel per facility	0.293	7.04*		
Average no. of physicians per facility			-0.170	-2.09*
Average no. of other health personnel per facility			0.263	2.34*
Female literacy (%)	-0.317	-1.05	-0.235	-0.80
Dummy variable for 1989	7.620	4.55*	6.670	4.09*
Per-capita provincial domestic product/ _a X dummy variable for 1989	-0.446	-4.64*	-0.387	-4.13*
F-Ratio	14.990		8.3	
R-Square	0.529		0.4267	
No. of obs.	87		87	
Mean of dependent variable	37.153		37.153	

Notes: a Since data on per-capita provincial domestic product are available only for 1989, this variable is interacted with a dummy variable for 1989. Data for 1979 and 1989 are pooled. Equation estimated by ordinary least squares. All variables are expressed in natural logarithms. The coefficients can therefore be interpreted as elasticities.

* T statistic significant at 5% level.

^{4/} Information on provincial per-capita income is available only for 1989.

3. Finally, the results also suggest that, after controlling for other factors, there has been a significant increase in utilization rates. Thus, the observed decline in bed occupancy rates between 1979 and 1989 can be attributed to the reduced availability of health facilities per capita and per unit of area and to the reduction in number of health personnel per facility between 1979 and 1989. In the absence of these changes, bed occupancy rates would most likely have increased.

4. Thus, the findings suggest that supply factors -- viz., the availability and proximity of health facilities to the population and adequate staffing of the facilities (but not necessarily by full physicians) -- contribute significantly to higher utilization of health services by the population.

ANNEX F: ESTIMATION OF CHOICE OF PROVIDER WITH DATA FROM THE SURVEY OF HEALTH FACILITY USERS AND PROVIDERS

1. Visits to various providers were aggregated into two types: public facilities (which included commune health centers and intercommunal polyclinics) and private health providers (which included private physicians and traditional healers). Since individuals reported price paid per visit only for the provider they selected, the first task was to predict prices paid for public and private providers for each individual in the sample. This was done by regressing price paid per visit on (a) individual attributes, such as age, occupation, educational level,^{5/} and whether pregnant,^{6/} (b) household characteristics, such as household income and household size, and (c) community characteristics, which included a complete set of 190 dichotomous (dummy) variables representing all the districts in the sample. The estimates of the price equation used for predicting provider prices are shown in Table F.1.

2. Since the price paid for health care reflects the quality of care obtained, it is important to purge quality variations from observed prices (or "unit values") before using them in the health care demand equations.^{7/} It is assumed here that the variation in unit values across districts (captured by the district-level dummy variables) is the only source of true variation in the price of medical care; all individual and household variation in unit values simply reflects quality variations. Therefore, public and private health care prices were predicted for each household using only the estimated coefficients on the district-level dummy variables. In other words, in predicting prices, all individual and household characteristics shown in Table F.1 were held constant at the sample mean values.

3. Once prices for private and public health care were estimated for each individual in the sample, the second-stage estimation was straightforward. The choice of a provider was defined as a dichotomous variable that assumed a value of one if a public health provider was selected and zero otherwise. As is appropriate for discrete variables, the equation was estimated by the maximum likelihood legit method (Table F.2). To allow for the possibility that response to prices and income may vary with income, interaction terms between prices and household income and a quadratic term in income were included. The price-income interactions were not significant statistically, indicating that the price response of provider choice is invariant with respect to income. However, the income squared term was highly significant, implying that the effect of income on the choice of public providers is nonlinear.

4. There are two limitations of this approach. First, since the survey sampled only individuals utilizing health services (and excluded nonusers), it cannot be used to analyze the factors determining utilization.

^{5/} For children under 15 years of age, the occupation and educational level of their father was substituted.

^{6/} This variable assumed a value of zero for all males and nonpregnant women.

^{7/} See Angus Deaton, "Quality, Quantity and Spatial Variation of Price," American Economic Review 78(3), 1988, pp. 418-430.

It can only point to variables that influence choice of public or private health provider. Second, there is probably some bias in the results due to the fact that the sample was a facility-based sample -- not a random, representative sample of the entire population of the three provinces. The results should, therefore, be treated as illustrative.

5. The results of the empirical application are informative. The characteristics of an individual, such as his or her age, educational level, occupation, and household income, are observed to be significantly associated with the choice of a public or private health provider. For example, both education and household income reduce the probability that an individual will choose a public over a private health provider. The income elasticity of demand for public (as opposed to private) providers is actually negative, indicating that public health services are viewed as inferior by the public, so that as incomes increase individuals choose private over public health facilities. The finding that the probability of choosing a public health facility is greater for young children and pregnant women reflects the fact that government health facilities are still the providers of choice for (preventive) maternal and child health care.

6. The price elasticity of demand for public health services is estimated to be -0.23 . This indicates a sizeable response to increased prices. However, it is important to remember that this number only reflects the switch from public to private health care with an increase in the price of public health care. Since the sample included only individuals who actually used health services, the estimated response does not capture the effect of increased health care prices on individuals who stopped using any health service altogether.

7. Another interesting empirical finding is that, even after controlling for differences in income and education, individuals in occupations such as farming (both cooperative and private) and teaching tend to use public health services more than private services.

Table F.1: REGRESSION ANALYSIS OF PRICES PAID BY INDIVIDUALS FOR HEALTH-CARE VISITS, MOH SURVEY OF USERS, 1991

Independent Variable	Public Health Provider		Private Health Provider	
	Estimate	T-Ratio	Estimate	T-Ratio
Intercept	3449.756	3.06*	2,169.434	0.91
Household size	59.656	0.81	-189.034	-0.98
Total household income (x 103)	0.511	0.76	8.386	4.00*
Whether completed primary school	204.620	0.51	-594.354	-0.48
Whether completed secondary school	-677.831	-1.25	-2,021.458	-1.39
Whether completed college	121.407	0.09	2,041.934	0.76
Whether cooperative farmer	833.735	1.43	-1,761.604	-0.83
Whether private farmer	-306.830	-0.57	-202.215	-0.15
Whether factory worker	1742.399	2.16*	-2,637.957	-1.49
Whether teacher	-150.369	-0.16	-631.135	-0.25
Whether professional	2364.193	1.97	-2,780.168	-1.39
Whether artisan	-504.732	-0.49	-9,362.074	-4.00*
Whether construction worker	742.158	0.42	-1,508.123	-0.39
Whether housewife	-450.598	-0.49	-783.452	-0.44
Whether student	-101.523	-0.13	-1,003.945	-0.54
Whether driver	-409.000	-0.22	10,189.010	3.08*
Whether unemployed	-735.979	-0.78	-2,475.669	-1.27
Whether male	728.256	2.21*	-123.498	-0.13
Age (years)	6.952	0.29	227.368	3.08*
Age squared	0.129	0.38	-2.640	-2.74*
Whether pregnant woman	-123.618	-0.23	6,336.265	2.64*
Whether nursing mother	2035.440	2.68*	1,713.326	0.75
F-Ratio	2.170		7.780	
-Squared	0.081		0.236	
Number of observations	5,032		1,856	

Notes: A complete set of 190 district dummy variables were also included. Their coefficients are not reported here for brevity. Equations were estimated by ordinary least squares. Dependent variable is price paid for a single visit in dong.

* T statistic significant at 5% level.

Table F.2: Maximum likelihood logit estimates of the probability of choosing a public health provider (viz., commune health center or polyclinic) over a private health provider (viz., private physician or traditional healer), MOH Survey of Users, 1991

Independent Variable	Parameter Estimate	Asymptotic T Ratio	Mean of dependent variable	Elasticity at sample mean
Intercept	2.110	14.84*		
Total household income (x 106)	-1.245	-3.46*	203,400	-0.219
Income squared (x 1012)	0.409	2.46*		
Price of public provider (x 106)	-60.951	-4.67*	3,726	-0.227
Price of private provider (x 106)	-13.912	-2.29*	6,261	-0.087
Income X Price of public provider (x 1012)	51.578	0.93		
Income X Price of private provider (x 1012)	-5.933	-0.26		
Household size	-0.023	-1.75	5.107	-0.119
Age (years)	-0.036	-7.97*	29.719	-0.549
Age squared (x 106)	300.589	4.86*	0.001	
Whether pregnant woman	1.485	9.96*	0.082	
Whether nursing mother	0.226	1.51	0.042	
Whether completed primary school	-0.325	-4.14*	0.494	
Whether completed secondary school	-0.718	-7.45*	0.203	
Whether completed college	-1.268	-6.49*	0.020	
Whether cooperative farmer	1.199	12.10*	0.222	
Whether private farmer	0.706	8.35*	0.297	
Whether factory worker	-0.099	-0.81	0.062	
Whether teacher	0.778	4.59*	0.034	
Whether professional	0.089	0.51	0.024	
Whether artisan	0.144	0.87	0.029	
Whether construction worker	-0.100	-0.38	0.010	
Whether housewife	-0.284	-2.09*	0.043	
Whether student	0.028	0.22	0.061	
Whether driver	-0.471	-1.82	0.009	
Whether unemployed	-0.237	-1.69	0.041	
Whether male	0.163	2.65*	0.408	
Log-Likelihood ratio	-3,813			
Mean of dependent variable	0.731			

* T statistic significant at 5% level.

ANNEX G: DETERMINANTS OF INTERPROVINCIAL VARIATIONS IN INFANT MORTALITY

1. Census data for 1979 and 1989 on infant mortality rates for each of Viet Nam's provinces are used here to study the correlates of health status. The empirical results indicate the importance of three variables in lowering infant mortality (Table G.1). First, access to health facilities, as measured by the average distance to a public health facility, has a significant association with infant mortality rate. The lower the density of health facilities per unit of area in a province (thereby implying a farther distance on average to each facility), the higher is the infant mortality rate in that province. The average size of population served by a health facility is also positively associated with infant mortality, but this relationship is barely significant statistically. Second, average health expenditure per health facility has a significant negative effect on the infant mortality rate. Since higher expenditure per facility is generally synonymous with a better supply of consumables, these results reinforce the importance of drugs, medicines and useable equipment in improving health outcomes. Finally, female literacy has a very strong ameliorating effect on infant mortality, but only in 1989. The dissimilar effects of female literacy on infant mortality rate in 1979 and in 1989 may reflect the fact that the relevance of female literacy for lowering infant mortality rate is greater during periods of deteriorating health infrastructure and declining quality of services (as in 1989) than in other periods.

2. The variables that are not significant in explaining inter-provincial variations in infant mortality rate are the average number of health personnel per facility and per capita provincial domestic product (proxying for per capita incomes). The latter result may be surprising, but merely indicates that higher income provinces have lower infant mortality rates because (i) they have higher rates of female literacy, (ii) they provide better access to health facilities for much of the population, and/or (iii) they allocate more resources on average to each health facility. The lack of significance of health staffing in influencing infant mortality is also an important finding, since it suggests that resources devoted to increasing the number of health personnel are unlikely to result in higher rates of infant survival.

Table G.1: Determinants of Infant Mortality Rate, 44 Provinces of Viet Nam, 1979 and 1989

Independent Variable	Parameter Estimate	T-Ratio	Elasticity in 1989
Intercept	3.719	4.49*	
Avg distance to health facility	0.199	2.73*	
Population per health facility	0.081	1.49	
No. of health personnel per health facility	-0.020	-0.89	
Provincial government health expenditure per facility (x1000)	-0.051	-2.00*	
Female literacy (%)	0.012	0.06	
Dummy variable for 1989	3.675	2.39*	
<u>Dummy for 1989 interacted with:</u>			
Avg distance to health facility	0.019	0.17	0.218
Population per health facility	-0.095	-0.72	-0.015
No. of health personnel per health facility	0.116	0.97	0.096
Provincial government health expenditure per facility (x1000)	-0.001	-0.02	-0.052
Female literacy (%)	-0.603	-1.89	-0.591
Per-capita provincial domestic product (GDP) (x1000)	-0.041	-0.64	-0.041
F Ratio	32.070		
R Squared	0.839		
Number of observations	87.000		

Notes: Regression is estimated by OLS. Since all variables are in natural logs, the coefficients may be interpreted as elasticities. GDP data are available only for 1989.

* T statistic significant at 5% level

STATISTICAL ANNEX

Table 2.1: AGE-SEX DISTRIBUTION, 1979 AND 1989 CENSUSES

Age Group	1979			1989			Sex Ratio	
	Male	Female	Total	Male	Female	Total	1979	1989
Total	100.00	100.00	100.00	100.00	100.00	100.00	94.2	94.7
0-4	15.43	14.02	14.71	14.83	13.20	13.99	104.8	106.5
5-9	15.36	14.00	14.66	14.06	12.63	13.32	104.4	105.4
10-14	14.20	12.68	13.42	12.37	11.04	11.69	106.6	106.2
15-19	11.55	11.39	11.47	10.78	10.41	10.59	96.5	98.1
20-24	8.92	9.68	9.31	9.19	9.43	9.32	87.7	92.3
25-29	6.81	7.35	7.09	8.60	8.98	8.80	88.2	90.7
30-34	4.60	4.89	4.75	7.23	7.47	7.35	89.6	91.7
35-39	3.78	4.11	3.95	4.95	5.36	5.16	87.5	87.4
40-44	3.59	4.04	3.82	3.32	3.62	3.47	84.7	86.9
45-49	3.89	4.15	4.02	2.81	3.27	3.05	89.3	81.4
50-54	3.23	3.36	3.29	2.76	3.26	3.02	91.5	80.4
55-59	2.66	2.50	2.58	2.94	3.16	3.05	101.3	88.2
60-64	2.11	2.47	2.30	2.28	2.60	2.45	81.5	83.0
65+	3.87	5.34	4.62	3.88	5.57	4.75	69.1	66.1
Total	100.00	100.00	100.00	100.00	100.00	100.00	95.2	94.7
Median Age	17.20	19.30		19.10	21.40			

Source: Population Census 1979 and 1989.

Table 2.2: FAMILY PLANNING EXPENDITURE BY FUNCTIONAL CATEGORY (MILLION DONG), 1984-90

	1985	1986	1987	1988	1989	1990
Capital Expenditure						
Physical Facilities (bldgs, vehicles, furn)	5.8	19.1	32.7	235.7	227.2	496.5
Medical Equipment	62.1	217.1	386.2	2050.6	7574.1	9548.9
Staff training	2.8	13.0	27.8	141.4	250.0	850.0
Recurrent Expenditure						
Salaries						
(a) Administrators	6.9	24.5	62.4	188.6	1100.0	1250.0
(b) Service delivery personnel	33.1	117.4	272.8	1131.4	2750.0	3000.0
Contraceptive Supplies	17.5	62.1	107.6	707.1	950.0	1000.0
Demand generation (IEC)	6.3	22.5	39.4	117.9	134.0	1080.0
Research	3.6	12.7	31.7	141.4	15.5	79.0
TOTAL	138	489	961	4,714	13,001	17,304

Note: MCH is included under FP

Sources: NCH, NCPFP and Staff Estimates

Table 2.3: FAMILY PLANNING EXPENDITURE BY FUNCTIONAL CATEGORY (MILLION DONG, 1982 PRICES), 1984-90

	1985	1986	1987	1988	1989	1990
Capital Expenditure						
Physical Facilities (bldgs, vehicles, furn)	1.0	0.6	0.2	0.4	0.2	0.4
Medical Equipment	10.6	6.3	2.8	3.6	8.1	7.4
Staff training	0.5	0.4	0.2	0.3	0.3	0.7
Recurrent Expenditure						
Salaries						
(a) Administrators	1.2	0.7	0.5	0.3	1.2	1.0
(b) Service delivery personnel	5.6	3.4	2.0	2.0	2.9	2.3
Contraceptive Supplies						
Demand generation (IEC)	3.0	1.8	0.8	1.3	1.0	0.8
Research	1.1	0.7	0.3	0.2	0.1	0.8
TOTAL	0.6	0.4	0.2	0.3	0.0	0.1
TOTAL	21.8	13.1	6.4	7.9	13.7	12.5

Note: MCH is included under FP

Sources: MOH, NCPFP and Staff Estimates

Table 2.4: Family Planning Expenditure By Functional Category (%), 1984-90

	1985	1986	1987	1988	1989	1990
Capital Expenditure						
Physical Facilities (bldgs, vehicles, furn)	4.2	3.9	3.4	5.0	1.7	2.9
Medical Equipment	45.0	44.4	40.2	43.5	58.3	55.2
Staff training	2.0	2.7	2.9	3.0	1.9	4.9
Recurrent Expenditure						
Salaries						
(a) Administrators	5.0	5.0	6.5	4.0	8.5	7.2
(b) Service delivery personnel	24.0	24.0	28.4	24.0	21.2	17.3
Contraceptive Supplies						
Demand generation (IEC)	12.7	12.7	11.2	15.0	7.3	5.8
Research	4.6	4.6	4.1	2.5	1.0	6.2
TOTAL	2.6	2.6	3.3	3.0	0.1	0.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Note: MCH is included under FP

Sources: MOH, NCPFP and Staff Estimates

Table 2.5: POPULATION AGED 15 YEARS AND ABOVE BY MARITAL STATUS, 1989

Marital Status	----Males-----		----Females----		----Total----	
	No. (000)	%	No. (000)	%	No. (000)	%
Single	7465	37.4	6982	31.3	14447	34.2
Married	11899	59.7	12495	56.0	24394	57.7
Widowed	402	2.0	2417	10.8	2819	6.7
Divorced	51	0.3	178	0.8	229	0.5
Separated	70	0.4	201	0.9	271	0.6
Not Stated	59	0.3	52	0.2	111	0.3
Total	19946	100.0	22325	100.0	42271	100.0

Source: Population Census 1989

Table 2.6: PROPORTION OF POPULATION SINGLE AND EVER MARRIED 1988 and 1989

Age Group	-----Males-----		-----Females----		----Females a/----	
	Single	Ever-Married	Single	Ever-Married	Single	Ever-Married
15-19	95.7	4.3	89.1	10.9	95.8	4.2
20-24	58.4	41.6	42.4	57.6	49.2	50.8
25-29	21.7	78.3	17.7	82.3	20.4	79.6
30-34	6.8	93.2	11.0	89.0	13.1	86.9
35-39	3.2	96.8	8.8	91.2	17.1	82.9
40-44	2.0	98.0	6.0	94.0	18.9	81.1
45-49	1.5	98.5	3.5	96.5	18.0	82.0
SHAM (Years) b/	Males	Females				
Urban	26.7	24.8				
Rural	23.3	22.7				
Vietnam	24.5	23.2				

a/ 1988 VNDH Survey

b/ Singulate Mean Age At Marriage

Source: Population Census 1989

Table 2.7: Age-Specific Fertility Rates

Women's Age Group	1979 a/	1983-87	1986-87	1988	1989
15-19	0.021	0.007	0.016	0.020	0.026
20-24	0.222	0.151	0.199	0.235	0.192
25-29	0.312	0.264	0.254	0.243	0.221
30-34	0.285	0.237	0.186	0.151	0.167
35-39	0.187	0.160	0.105	0.085	0.110
40-44	0.107	0.084	0.051	0.051	0.057
45-49	0.097	0.058	0.019	0.011	0.019
TFR					
15-49	5.0	4.80	4.15	3.98	3.98

a/ Staff Estimates with Indirect Technique

Sources: VNDH Survey 1988
Population Census 1989

Table 2.8: Mean Number of Children Ever Born Among All Women, By Age

Women's Age Group	1988			1989		
	Total	Rural	Urban	Total	Rural	Urban
15-19	0.0	0.1	0.1	0.1	0.1	0.05
20-24	0.6	0.8	0.5	0.7	0.7	0.4
25-29	1.9	2.2	1.5	1.7	1.9	1.2
30-34	3.0	3.1	2.2	2.8	3.0	2.0
35-39	3.9	4.0	2.9	3.6	3.9	2.7
40-44	4.7	4.8	3.7	4.4	4.6	3.5
45-49	5.8	5.2	4.7	4.9	5.1	4.3
All Ages	2.13	5.59	3.95	2.97		

Sources: Population Census 1989
VNDH Survey 1988

Table 2.9: Mean Preferred Number of Children For Ever Married Women, 1988

Socio-Economic Background	Current Age of Ever-Married Women							All Ages	Women Married Less Than 5 Years
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Residency									
Urban	2.78	2.38	2.47	2.75	3.08	3.31	3.49	2.84	2.34
Rural	2.45	2.76	2.99	3.46	3.74	3.95	4.12	3.37	2.70
Region									
North	2.21	2.53	2.72	3.15	3.35	3.57	3.81	3.06	2.43
South	2.79	2.97	3.18	3.47	3.90	4.01	4.27	3.53	2.83
Education									
Illiterate	2.00	3.20	3.61	4.16	4.38	4.54	4.58	4.16	3.09
Read/Write	2.98	2.99	3.45	3.80	4.08	4.05	4.26	3.86	2.94
Primary	2.51	2.74	2.91	3.28	3.56	3.77	3.77	3.18	2.64
Secondary & More	2.00	2.27	2.44	2.69	2.88	3.02	2.81	2.61	2.32
Occupation									
Agriculture	2.45	2.77	3.03	3.50	3.76	4.04	4.20	3.39	2.70
Productive Sector	3.56	2.35	2.56	2.95	3.35	3.16	3.55	2.95	2.40
Non-Productive Sector	2.38	2.51	2.63	2.88	3.31	3.59	3.53	3.00	2.47
Total									2.62

Source: VNDH Survey 1988

Table 4.1: Infant Mortality Rate, by Province, 1979 and 1989

Province	Infant Mortality rate		% change in IMR, 1979-89
	1979	1989	
Mountain and Mid-land	62.6	45.4	-27.5%
Ha Tuyen	88.0	52.8	-40.0%
Cao Bang	85.0	61.6	-27.5%
Lang Son	78.0	56.5	-27.6%
Lai Chau	72.0	66.1	-8.2%
Hoang Lien Son	67.0	56.3	-16.0%
Bac Thai	57.0	45.0	-21.1%
Son La	74.6	54.5	-26.9%
Quang Ninh	56.1	35.0	-37.6%
Vinh Phu	52.3	33.1	-36.7%
Ha Bac	45.6	36.3	-20.4%
Red River Delta	67.7	37.0	-45.3%
Ha Noi	62.0	40.0	-35.5%
Hai Phong	52.0	26.0	-50.0%
Ha Son Binh	84.0	47.9	-43.0%
Hai Hung	71.0	38.0	-46.5%
Thai Binh	66.1	31.6	-52.2%
Ha Nam Ninh	69.5	34.9	-49.8%
Central Coast Northland	83.0	46.5	-44.0%
Thanh Hoa	68.8	36.2	-47.4%
Nghe Tinh	90.2	53.3	-40.9%
Quang Binh	90.1	49.9	-44.6%
Qyang Tri	90.1	49.0	-45.6%
Thua Thien Hue	90.1	50.0	-44.5%
Central Coast Southland	90.9	47.5	-47.7%
Quan Nam Da-Nang	87.2	47.1	-46.0%
Quang Ngai	95.5	51.5	-46.1%
Binh Dinh	95.5	51.5	-46.1%
Phu Yen	88.3	44.8	-49.3%
Khanh Hoa	88.3	44.8	-49.3%
Thuan Hai	90.4	43.9	-51.4%
Central Highland	103.2	56.4	-45.4%
Gia Lai-Kon Tum	115.1	78.5	-31.8%
Dai Lai	97.6	44.9	-54.0%
Lam Dong	92.4	43.7	-52.7%
North-East Southland	72.8	33.9	-53.5%
TP Ho Chi Minh	66.0	30.1	-54.4%
Song Be	82.0	45.7	-44.3%
Tay Ninh	75.2	39.1	-48.0%
Dong Nai	84.5	33.8	-60.0%
Vung Tau-Con Dao	71.1	32.4	-54.4%
Mekong River Delta	90.0	44.1	-51.0%
Long An	93.4	42.3	-54.7%
Dong Thap	97.0	48.9	-49.6%
An Giang	98.0	50.5	-48.4%
Tien Giang	95.4	30.0	-68.6%
Ben Tre	88.0	41.1	-53.3%
Cuu Long	81.0	40.5	-50.0%
Hau Giang	83.1	45.4	-45.4%
Kien Giang	90.0	53.8	-40.2%
Minh Hai	91.0	44.4	-51.2%

Table 4.2: SEVERITY OF MALARIA, 1985-89

Year	Confirmed Cases		Severe Cases	Deaths
	Falciprum	Vivax		
1985	47,317	31,323	4,501	996
1986	40,476	47,261	4,461	954
1987	70,421	60,704	4,561	1,070
1988	97,723	54,174	10,470	2,465
1989	106,371	37,114	13,709	3,439
1989/85 Ratio	2.25		3.05	3.45

Source: Molineaux - Report of Duty Travel to Vietnam, November 1990, WHO

STATISTICAL ANNEX

Table 4.3: POPULATION COVERAGE OF AND AVERAGE DISTANCE TO HOSPITALS AND POLYCLINICS, BY PROVINCE, 1979 AND 1989

	Population per hospital		Average distance to hospital (kms.)		Population per polyclinic		Average distance to polyclinic (kms.)	
	1979	1989	1979	1989	1979	1989	1979	1989
<u>Mountain and Mid-land</u>								
Ha Tuyen	43,000	51,300	15.56	14.76	154,800	128,250	29.52	23.33
Cao Bang	36,231	40,357	14.38	13.86	29,438	47,083	12.96	14.97
Lang Son	39,833	43,643	14.69	13.60	68,286	30,550	19.24	11.38
Lai Chau	39,500	54,750	25.61	25.61	24,308	31,286	20.09	19.36
Hoang Lien Son	40,579	54,316	15.72	15.72	154,200	41,280	30.64	13.70
Bac Thai	62,231	73,571	12.61	12.15	134,833	103,000	18.56	14.38
Son La	40,167	56,833	19.42	19.42	482,000	682,000	67.27	67.27
Quang Ninh	41,313	47,824	10.87	10.55	73,444	101,625	14.50	15.38
Vinh Phu	65,524	82,136	8.33	8.13	275,200	86,048	17.06	8.33
Ha Bac	78,100	103,200	8.57	8.57	781,000	114,667	27.09	9.03
<u>Red River Delta</u>								
Ha Noi	129,263	160,842	5.99	5.99	163,733	101,867	6.74	4.77
Hai Phong	67,647	85,118	5.30	5.30	143,750	160,778	7.73	7.29
Ha Son Binh	62,000	83,591	8.95	9.15	142,600	102,167	13.57	10.12
Hai Hung	69,964	87,321	5.39	5.39	653,000	97,800	16.44	5.70
Thai Binh	76,778	90,667	5.24	5.24	230,333	102,000	9.08	5.56
Ha Nam Ninh	103,800	112,750	6.95	6.57	144,167	75,167	8.20	5.37
<u>Central Coast Northland</u>								
Thanh Hoa	86,963	93,531	11.47	10.54	782,667	136,045	34.41	12.71
Nghe Tinh	84,412	105,382	14.52	14.52	2,870,000	99,528	84.68	14.11
Quang Binh	40,769	107,833	13.81	20.33	15,143	40,438	8.42	12.45
Qyang Tri	33,308	57,375	10.92	13.92	12,371	65,571	6.65	14.88
Thua Thien Hue	61,231	111,375	11.01	14.03	22,743	52,412	6.71	9.63
<u>Central Coast Southland</u>								
Quan Nam Da-Nang	76,737	75,565	14.18	12.88	76,737	48,278	14.18	10.30
Quang Ngai	47,368	94,727	9.90	13.01	69,231	148,857	11.97	16.31
Binh Dinh	57,105	83,000	10.07	11.33		88,929		11.73
Phu Yen	47,000	71,333	12.11	13.39	47,000	64,200	12.11	12.70
Khanh Hoa		90,889		12.90		81,800		12.24
Thuan Hai	76,417	90,000	17.44	16.76	76,417	90,000	17.44	16.76

STATISTICAL ANNEX

Table 4.3 (continued)

	<u>Population per hospital</u>		<u>Average distance to hospital (kms.)</u>		<u>Population per polyclinic</u>		<u>Average distance to polyclinic (kms.)</u>	
	<u>1979</u>	<u>1989</u>	<u>1979</u>	<u>1989</u>	<u>1979</u>	<u>1989</u>	<u>1979</u>	<u>1989</u>
<u>Central Highland</u>								
Gia Lai-Kon Tum	48,750	58,400	26.09	23.34	585,000	438,000	90.39	63.92
Dai Lai	53,556	51,368	26.51	18.25	48,200	139,429	25.15	30.06
Lam Dong	55,429	63,900	21.48	17.97	129,333	319,500	32.81	40.18
<u>North-East Southland</u>								
TP Ho Chi Minh	102,906	126,581	4.56	4.63	36,589	95,707	2.72	4.03
Song Be	81,375	104,222	19.53	18.41		117,250		19.53
Tay Ninh	75,111	66,083	11.92	10.33	96,571	198,250	13.52	17.88
Dong Nai	129,200	133,800	15.52	12.68	161,500	200,700	17.36	15.52
Vung Tau-Con Dao	46,000	67,500	6.14	6.14	92,000	135,000	8.69	8.69
<u>Mekong River Delta</u>								
Long An	94,900	86,154	11.76	10.31	316,333	186,667	21.47	15.18
Dong Thap	130,333	148,556	10.77	10.77	1,173,000	111,417	32.30	9.32
An Giang	147,500	177,400	10.44	10.44	295,000	147,833	14.76	9.53
Tien Giang	139,778	164,778	9.09	9.09	89,857	211,857	7.29	10.31
Ben Tre	114,889	121,400	8.92	8.46		173,429		10.11
Cuu Long	99,800	106,412	9.04	8.50				
Hau Giang	123,667	148,944	10.44	10.44	247,333	141,105	14.77	10.16
Kien Giang	75,846	92,154	12.36	12.36	328,667	171,143	25.74	16.85
Minh Hai	101,083	129,583	14.25	14.25	404,333	62,200	28.50	9.87

Table 4.4: POPULATION PER BED IN HOSPITALS AND BASIC HEALTH CARE CENTERS, BY PROVINCE, 1979 AND 1989

Province	Population served by each hospital bed		Population served by each polyclinic bed	
	1979	1989	1979	1989
Mountain and Mid-land				
Ha Tuyen	550.89	645.60	489.56	828.49
Cao Bang	739.40	629.29	674.79	773.05
Lang Son	756.33	576.96	1157.38	2332.06
Lai Chau	574.55	658.35	549.57	756.13
Hoang Lien Son	458.93	519.85	375.55	605.22
Bac Thai	685.59	679.87	592.67	847.04
Son La	465.70	497.66	552.75	5126.32
Quang Ninh	357.30	421.19	483.19	706.87
Vinh Phu	561.63	681.70	365.86	484.32
Ha Bac	634.70	717.55	501.61	812.76
Red River Delta				
Ha Noi	649.74	662.93	967.31	1150.64
Haiphong	337.84	374.51	605.58	864.70
Ha Son Binh	573.61	699.16	378.15	587.85
Ha Hung	535.54	631.94	601.29	752.49
Thai Binh	558.84	656.94	507.71	570.41
Ha Nam Ninh	690.16	715.85	565.11	847.49
Central Coast Northland				
Thanh Hoa	686.55	740.89	422.38	504.76
Nghê Tinh	653.76	719.98	391.01	1026.53
Quang Binh	207.84	492.42	166.30	915.49
Qyang Tri	169.80	720.09	135.86	758.18
Thua Thien Hue	312.16	1,100.37	249.76	1040.02
Central Coast Southland				
Quan Nam Da-Nang	536.03	448.89	1194.10	1017.03
Quang Ngai	355.31	784.05	469.97	1063.27
Binh Dinh	428.35	474.32	566.58	1071.51
Phu Yen	298.84	548.55	429.76	1492.56
Khanh Hoa	381.50	524.04	548.63	1362.50
Thuan Hai	638.58	608.32	963.24	1343.91
Central Highland				
Gia Lai-Kon Tum	468.37	484.99	443.52	725.27
Dai Lai	471.16	543.45	477.70	1300.67
Lam Dong	406.28	468.62	1127.91	1718.28
North-East Southland				
TP Ho Chi Minh	355.19	362.16	7301.55	6595.63
Song Be	600.55	701.35	877.36	1759.29
Tay Ninh	786.05	620.42	1365.66	1708.84
Dong Nai	849.44	679.12	1711.26	2403.35
Vung Tau-Con Dao	368.00	450.00	1533.33	2700.00
Mekong River Delta				
Long An	774.69	727.88	969.36	1403.76
Dong Thap	1,130.06	979.85	2313.61	1535.59
An Giang	1,146.97	1,039.07	3248.90	1385.70
Tien Giang	882.81	910.00	1379.39	1239.18
Ben Tre	1,050.81	902.83	1509.49	1175.51
Cuu Long	795.43	652.33	1584.13	1102.99
Hau Giang	915.67	863.91	2396.12	2580.08
Kien Giang	1,202.44	908.19	3015.29	1650.00
Minh Hai	817.39	975.11	1619.49	1806.39

Table 4.5: AVERAGE SIZE OF POPULATION SERVED BY HEALTH PERSONNEL, BY PROVINCE, 1979 AND 1989

Province	1989			1979		
	Population per			Population per		
	Physician and Ass't Physician	Pharmacist and Ass't Pharmacist	Nurse and Midwife	Physician and Ass't Physician	Pharmacist and Ass't Pharmacist	Nurse and Midwife
Mountain and Mid-land						
Ha Tuyen	863	7,352	923	752	7,036	546
Coo Bang	620	5,001	789	689	5,815	746
Lang Son	765	4,526	869	696	4,686	640
Lai Chau	650	4,811	808	581	3,435	576
Hoang Lien Son	760	5,670	1,009	648	3,855	468
Bac Thai	1,050	6,358	1,144	1,213	6,524	1,052
Son La	761	2,952	918	751	2,161	405
Quang Ninh	816	5,806	837	794	3,443	613
Vinh Phu	1,094	7,958	1,326	805	5,077	625
Ha Bac	1,225	5,404	1,104	1,104	4,959	691
Red River Delta						
Ha Noi	1,053	4,548	577	1,229	4,227	660
Hai Phong	964	4,055	773	1,060	4,307	553
Ha Son Binh	1,095	4,801	890	1,026	4,133	510
Hai Hung	1,021	5,483	607	1,022	5,883	481
Thai Binh	1,005	6,231	1,298	885	6,488	824
Ha Nam Ninh	1,026	5,617	706	1,060	5,629	580
Central Coast Northland						
Thanh Hoa	1,004	7,446	1,200	929	5,841	378
Nghe Tinh	1,270	5,140	698	1,069	4,527	474
Quang Binh	4,012	7,647	2,273	357	2,637	224
Qyang Tri	676	5,527	556	292	2,154	183
Thua Thien Hue	1,397	11,282	1,326	536	3,960	337
Central Coast Southland						
Quan Nam Da-Nang	1,081	7,242	648	2,730	7,327	495
Quang Ngai	1,194	8,983	704	1,211	4,762	316
Binh Dinh	1,615	7,324	964	1,460	5,741	381
Phu Yen	1,079	8,335	898	1,124	5,385	332
Khanh Hoa	958	10,900	892	1,435	6,875	423
Thuan Hai	1,188	9,825	1,107	2,540	12,392	704
Central Highland						
Gia Lai-Kon Tum	1,159	14,119	674	2,417	10,636	404
Dai Lai	1,160	13,363	913	1,668	12,359	374
Lam Dong	929	6,030	872	2,639	6,258	1,078
North-East Southland						
TP Ho Chi Minh	1,160	3,115	669	??	??	??
Song Be	1,267	10,083	803	2,300	9,300	639
Tay Ninh	1,123	9,439	757	4,024	13,796	842
Dong Nai	1,435	13,840	1,208	4,988	17,459	1,125
Vung Tau-Con Dao	1,007	2,935	844	1,353	4,600	544
Mekong River Delta						
Long An	1,137	9,574	1,104	5,102	20,630	829
Dong Thap	1,264	11,432	623	8,146	22,558	1,602
An Giang	1,208	13,042	1,104	4,917	37,821	1,588
Tien Giang	1,129	11,237	762	3,574	17,718	1,058
Ben Tre	1,129	13,199	1,208	5,249	22,000	1,499
Cuu Long	1,295	7,865	964	6,238	26,732	1,184
Hau Giang	2,611	9,574	1,035	4,925	21,000	1,201
Kien Giang	1,011	11,630	1,198	6,847	29,879	1,590
Minh Hai	1,207	14,812	1,051	4,931	20,914	1,385

**Table 4.6: PRODUCTION AND DISTRIBUTION OF PHARMACEUTICAL PRODUCTS
(Million dong)**

	1980	1985	1986	1987	1988	1989
Current Prices:						
Production	234.5	220.5	1,937	2,171	2,825	3,107
- Central level	139.1	62.3	418	531	678	775
- Local level	95.4	158.2	1,519	1,640	2,148	2,332
Distribution	376.2	1,300	1,979	18,133	20,905	23,792
Constant Prices (1982 dong):						
Production	214.3	37.5	56.1	15.7	5.0	3.3
- Central level	119.1	10.5	12.0	3.8	1.2	0.8
- Local level	95.2	27.0	44.1	11.9	3.8	2.5
Distribution	345.1	221.0	57.3	131.2	36.9	25.3

Source: MOH

STATISTICAL ANNEX

Table 4.7: THERAPEUTIC ACTIVITIES, 1980-89
(Absolute numbers in '000)

	1980	1985	1986	1987	1989
No. of Consultations	106,903	129,726	130,487	129,718	77,893
No. of In-Patients	7,342	6,288	6,431	6,510	5,105
No. of Out-Patients	1,311	2,864	2,947	2,556	1,287
No. of Radiological Exams	1,533	1,802	1,920	2,153	2,136
No. of Radiographs	670	604	612	653	1,159
No. of Laboratory Exams	36,683	25,369	24,644	31,066	26,858
No. of Surgical Operations	202	294	295	417	357
Total No. of Treatment Days	39,856	51,423	52,616	53,444	37,591
Average Length of Stay (Days)	9.1	8.2	8.1	8.2	7.1
Average No. of Days per Month each bed is used	27.0	28.2	29.0	28.5	21.3
Average Consultations per Inhabitant	2.0	2.2	2.13	2.07	1.2

Source: Ministry of Health, 1990.

Table 4.8: OCCUPANCY RATES OF HOSPITALS AND BASIC HEALTH CARE CENTERS, BY PROVINCE, 1979 AND 1989

Province	Hospital occupancy rate		Occupancy rate of CHCs and polyclinics	
	1979	1989	1979	1989
Mountain and Mid-land	44.68	50.47	50.31	41.96
Ha Tuyen	44.52	52.49	50.09	40.90
Cao Bang	42.07	48.91	46.10	39.81
Lang Son	55.68	67.84	36.39	16.78
Lai Chau	41.95	43.15	43.86	37.57
Hoang Lien Son	43.94	50.57	53.70	43.43
Bac Thai	45.04	47.62	52.10	38.22
Son La	51.75	59.35	43.60	36.09
Quang Ninh	54.08	58.48	39.99	34.84
Vinh Phu	38.36	39.94	58.89	56.21
Ha Bac	42.32	50.81	53.55	44.86
Red River Delta	48.25	51.61	45.62	40.70
Ha Noi	57.19	59.36	38.42	34.20
Hai Phong	57.73	65.93	32.21	28.55
Ha Son Binh	37.87	42.84	57.45	50.96
Hai Hung	51.28	49.74	45.68	41.77
Thai Binh	45.59	44.09	50.17	50.78
Ha Nam Ninh	40.44	47.98	49.39	40.53
Central Coast Northland	35.59	50.18	54.74	41.94
Thanh Hoa	31.25	77.30	50.80	57.51
Nghê Tinh	36.28	55.25	60.66	38.75
Quang Binh	40.27	57.26	50.33	30.80
Qyang Tri	40.27	44.79	50.33	42.54
Thua Thien Hue	40.27	40.76	50.33	43.13
Central Coast Southland	50.77	62.04	32.42	28.53
Quan Nam Da-Nang	62.51	60.33	28.06	26.62
Quang Ngai	53.69	53.39	40.59	39.37
Binh Dinh	53.69	66.17	40.59	29.29
Phu Yen	53.18	67.43	36.93	24.78
Khanh Hoa	53.18	65.68	36.93	25.26
Thuan Hai	55.10	62.40	36.53	25.24
Central Highland	52.04	65.41	41.37	29.66
Gia Lai-Kon Tum	46.88	57.08	49.51	38.17
Dai Lai	45.83	68.12	45.21	28.46
Lam Dong	67.54	72.70	24.33	19.82
North-East Southland	75.76	75.48	16.69	13.45
TP Ho Chi Minh	86.93	79.89	4.22	4.38
Song Be	58.09	63.36	30.76	25.26
Tay Ninh	59.72	69.19	34.38	25.12
Dong Nai	64.34	74.48	31.94	21.04
Vung Tau-Con Dao	79.36	83.33	19.04	13.88
Mekong River Delta	63.44	58.28	31.52	33.32
Long An	54.03	63.17	43.18	32.75
Dong Thap	64.47	56.85	31.49	36.27
An Giang	67.51	52.28	23.83	39.20
Tien Giang	54.24	52.87	34.72	38.82
Ben Tre	58.96	53.84	41.04	41.35
Cuu Long	66.34	62.13	33.31	36.74
Hau Giang	67.27	65.12	25.70	21.80
Kien Giang	66.83	58.33	26.65	32.10
Ninh Hai	64.86	55.15	32.74	29.77

Table 4.9: PUBLIC EXPENDITURE ON HEALTH (MILLION DONG), 1984-90

	1984	1985	1986	1987	1988	1989	1990
<u>Recurrent Expenditure</u>	3,478	940	3,996	16,021	57,503	201,060	314,000
Health Services	2,445	675	2,881	11,920	43,529	142,753	226,080
Curative	2,054	547	2,276	9,894	35,694	97,072	146,952
Preventive	391	128	605	2,026	7,835	45,681	79,128
Salaries	699	172	799	3,124	8,970	39,810	66,568
Research	52	19	68	577	2,128	8,445	13,502
Others a/	282	74	248	401	2,875	10,053	7,850
<u>Investment Expenditure</u>	211	400	275	833	4,405	25,500	50,803
Civil Works	91	177	98	307	1,559	7,472	15,851
Equipment	101	182	161	500	2,687	16,320	30,990
Training	19	41	15	27	159	1,709	3,963
<u>Total Expenditure</u>	3,689	1,340	4,271	16,854	61,908	226,560	364,803
<u>As % of Total Expenditure</u>							
Recurrent	94.3	70.2	93.6	95.1	92.9	88.7	86.1
Investment	5.7	29.8	6.4	4.9	7.1	11.3	13.9

a/ Includes maintenance, repairs of equipment and buildings

Note: Includes all public expenditures (central, provincial, district) except communes

Source: MOH and Staff Estimates

Table 4.10: PUBLIC EXPENDITURE ON HEALTH (MILLION DONG, 1982 PRICES), 1984-90

	1984	1985	1986	1987	1988	1989	1990
<u>Recurrent Expenditure</u>	113	160	116	116	102	214	243
Health Services	80	115	83	86	77	152	175
Curative	67	93	66	71	63	103	113
Preventive	13	22	18	15	14	49	61
Salaries	23	29	23	23	16	42	51
Research	2	3	2	4	4	9	10
Others a/	9	13	7	3	5	11	6
<u>Investment Expenditure</u>	7	68	8	6	8	27	39
Civil Works	3	30	3	2	3	8	12
Equipment	3	31	5	4	5	17	24
Training	1	7	0	0	0	2	3
<u>Total Expenditure</u>	120	228	124	122	110	241	282
<u>As % of Total Expenditure</u>							
Recurrent	94.3	70.2	93.6	95.1	92.9	88.7	86.1
Investment	5.7	29.8	6.4	4.9	7.1	11.3	13.9

a/ Includes maintenance, repairs of equipment and buildings

Note: Includes all public expenditures (central, provincial, district) except communes

Source: MOH and Staff Estimates

Table 4.11: DISTRIBUTION OF PUBLIC HEALTH EXPENDITURE (%), 1984-90

	1984	1985	1986	1987	1988	1989	1990
Recurrent Expenditure	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Services	70.3	71.8	72.1	74.4	75.7	71.0	72.0
Curative	84.0	81.0	79.0	83.0	82.0	68.0	65.0
Preventive	16.0	19.0	21.0	17.0	18.0	32.0	35.0
Salaries	20.1	18.3	20.0	19.5	15.6	19.8	21.2
Research	1.5	2.0	1.7	3.6	3.7	4.2	4.3
Others a/	8.1	7.9	6.2	2.5	5.0	5	2.5
Investment Expenditure	100.0	100.0	100.0	100.0	100.0	100.0	200.0
Civil Works	43.1	44.2	35.8	36.8	35.4	29.3	31.2
Equipment	48.0	45.6	58.7	60.0	61.0	64.0	61.0
Training	8.9	10.2	5.5	3.2	3.6	6.7	7.8
Total Expenditure							
As % of Total Expenditure							
Curative	55.7	40.8	53.3	58.7	57.7	42.8	40.3
Preventive	10.6	9.6	14.2	12.0	12.7	20.2	21.7
Salary	19.0	12.8	18.7	18.5	14.5	17.6	18.2
Civil Works	2.5	13.2	2.3	1.8	2.5	3.3	4.3
Equipment	2.7	13.6	3.8	3.0	4.3	7.2	8.5

a/ Includes maintenance, repairs of equipment and buildings

Note: Includes all public expenditures (central, provincial, district) except communes

Source: MOH and Staff Estimates

Table 4.12: Provincial Health Expenditure, by Province, 1989

Province	Provincial Government Health Expenditure			
	Total (dong)	Per Capita (dong)	as % of provincial GDP	as % of total provincial govt. exp .
Ha Tuyen	162,663	158	0.07	0.55
Cao Bang	987,431	1,747	0.74	4.48
Lang Son	1,672,786	2,738	1.20	6.64
Lai Chau	2,863,187	6,540	2.62	13.79
Hoang Lien Son	1,031,237	999	0.37	3.10
Bac Thai	137,407	133	0.04	0.56
Son La	2,863,090	4,199	2.09	13.54
Quang Ninh	2,517,089	3,096	0.47	4.63
Vinh Phu	2,976,882	1,648	0.45	7.68
Ha Bac	2,361,353	1,144	0.36	6.69
Ha Noi	13,741,334	4,496	0.80	8.34
Hai Phong	9,940,643	6,867	1.63	22.25
Ha Son Binh	2,065,151	1,123	0.28	4.21
Hai Hung	3,490,379	1,427	0.37	5.97
Thai Binh	2,591,443	1,587	0.37	7.86
Ha Nam Ninh	2,847,717	902	0.24	4.49
Thanh Hoa	3,818,475	1,276	0.47	5.81
Nghe Tinh	1,921,486	536	0.27	1.92
Quang Binh	592,716	912	0.47	2.67
Qyang Tri	709,987	1,548	0.85	3.53
Thua Thien Hue	494,376	555	0.14	2.49
Quan Nam Da-Nang	8,131,637	4,678	1.23	16.06
Quang Ngai	2,542,241	2,440	0.81	11.97
Binh Dinh	874,783	703	0.21	3.29
Phu Yen	1,017,554	1,585	0.32	4.43
Khanh Hoa	1,382,196	1,691	0.44	5.20
Thuan Hai	926,666	793	0.22	2.91
Gia Lai-Kon Tum	61,903	71	0.03	0.19
Dai Lai	708,603	726	0.28	1.74
Lam Dong	1,832,157	2,866	1.20	8.36
TP Ho Chi Minh	60,846,455	15,505	0.75	27.72
Song Be	3,650,609	3,893	1.52	13.25
Tay Ninh	2,014,064	2,540	0.87	6.42
Dong Nai	4,229,046	2,107	0.47	8.37
Vung Tau-Con Dao	860,111	6,371	0.20	5.38
Long An	1,312,519	1,172	0.17	2.39
Dong Thap	2,338,625	1,749	0.24	3.75
An Giang	3,727,890	2,102	0.36	5.35
Tien Giang	1,881,212	1,268	0.20	3.37
Ben Tre	1,637,553	1,349	0.36	6.60
Cuu Long	2,508,635	1,387	0.24	6.41
Hau Giang	5,534,044	2,064	0.36	8.60
Kien Giang	2,554,211	2,132	0.29	5.55
Minh Hai	2,093,106	1,346	0.26	5.29