

Equity, Access to Health Care Services and Expenditures on Health in Nicaragua

Diego Angel-Urdinola, Rafael Cortez and Kimie Tanabe

May 2008



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Health, Nutrition and Population (HNP) Discussion Paper

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Abstract

Nicaragua has embarked on an ambitious health sector program, which has contributed to significant progress in the health sector over the past decade. Health indicators show gradual but steady improvements: access to basic services such as clean water and sanitation facilities has improved, as have other related performance indicators such as life expectancy, infant/child mortality, immunization rates, and child nutrition among others. Despite these achievements, there are still large inequities in access and quality of health services across socio-economic groups and regions. Poor individuals living in rural areas (especially in the Central and Atlantic regions), the indigenous population, and individuals living in households engaged in agriculture have below-average access to health care services and preventive care. The lack of risk mitigation mechanisms such as insurance and social security is causing users in Nicaragua to spend, out-of-pocket, a significant share of their income on health care, especially to buy medications and other non-consultation items such as medical tests. Long distances, lack of medicines, and high costs and other demand-side factors (such as self-prescription) constitute the main constraints causing poor and sick individuals to seek informal care or not to seek care at all.

Keywords: health, equity, access, expenditures, poverty

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1. INTRODUCTION

Nicaragua has been able to improve its health outcomes with a relatively efficient use of resources as compared to other countries in Central America. Nevertheless, the health sector in Nicaragua faces several challenges and constraints in terms of equity, effectiveness and efficiency. While public resources are mainly used to maintain a large stock of doctors, hospitals, and clinics, and to provide low-cost consultations, the cost of other non-consultation items such as medicines and tests are essentially paid out-of-pocket. There is a deficiency in access to health care facilities by the rural poor, especially in the Central and Atlantic regions. Per capita allocation of resources is concentrated in richer regions, such as Managua and Pacific. This set of access and affordability constraints causes poor users to utilize health care services less than non-poor users when ill.

In 2004 the Ministry of Health (MOH) established a ten-year national health plan to promote the decentralization of health service delivery. This plan has been supported by various donor-financing modalities, through a sector-wide approach with a reasonable level of donor harmonization and coordination of strategic support in key interventions. The new legislation will empower local health providers with decision-making authority, especially in relation to resource management and allocation. The MOH's fundamental five year plan goal is to improve access to health care services among the poor and more vulnerable sectors of the population, especially in the areas of maternal and child health care.

Despite important reform efforts in the health sector in Nicaragua, poor individuals living in rural areas (especially in the Central and Atlantic regions), vulnerable population groups (such as indigenous and individuals living in households engaged in agriculture) and poor urban households have lesser access to health care services and preventive care. Long distances, lack of medicines, and high costs and other demand-side factors constitute the main constraints causing poor and sick individuals to seek informal care or not to seek care at all. Due to limited access to social insurance and social security, most of the private expenditures on health in Nicaragua are paid out-of-pocket. Medicines are by far the main health-related expenditure, especially among the poor.

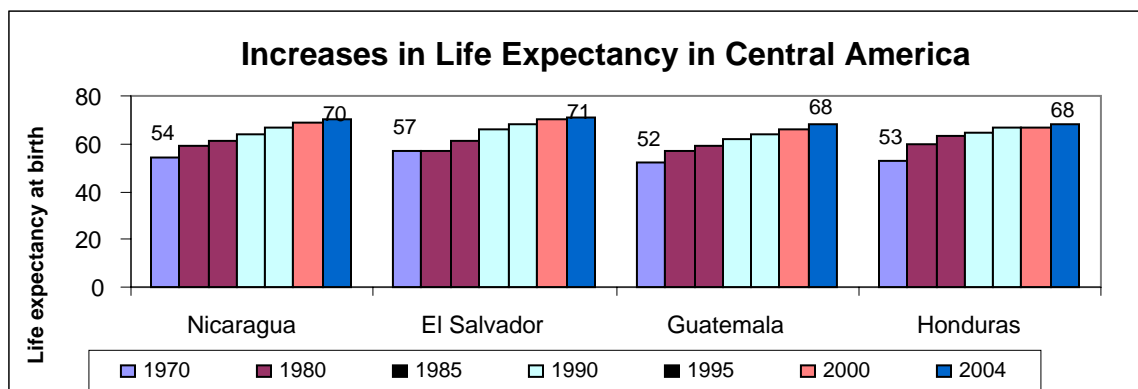
This paper analyzes the constraints on utilization of health services (mainly in relation to access and affordability) that adversely affect the poor, and is structured as follows: Part 2 summarizes the overall health outcomes in the past decade in the Central and Latin American context, analyzes progress achieved in relation to infant mortality and maternal health; and presents the morbidity profile of Nicaragua using recent data from PAHO, WHO, and the 2005 EMNV (*Encuesta Nacional de Hogares sobre Medición de Nivel de Vida*); Part 3 presents the trend of health expenditures and the resources available in the health sector; and Part 4 analyzes inequities in access, utilization, and health insurance coverage across socio-economic groups and regions as well as demand by type of providers and existing affordability constraints. A brief conclusion follows.

2. OVERALL HEALTH OUTCOMES

2.1. HEALTH OUTCOMES

The performance of the health sector in Nicaragua has improved steadily over the past 10 years, in line with other Central American economies. Nicaragua has embarked on ambitious reforms in key social sectors in the past decade, and as a result of these reforms, health indicators show gradual but steady improvements: access to basic services such as cleaner water and sanitation facilities (which is related to illnesses such as diarrhea) has improved, as have performance indicators including life expectancy, infant/child mortality, immunization rates, and child nutrition among others. In particular, in the last three decades life expectancy at birth (see Figure 1) has increased by more than 10 years in Nicaragua. Nicaragua's improvement in life expectancy is in line with that achieved by its neighboring countries. Under-five and maternal mortality rates have fallen steeply, as shown in Figure 2.¹

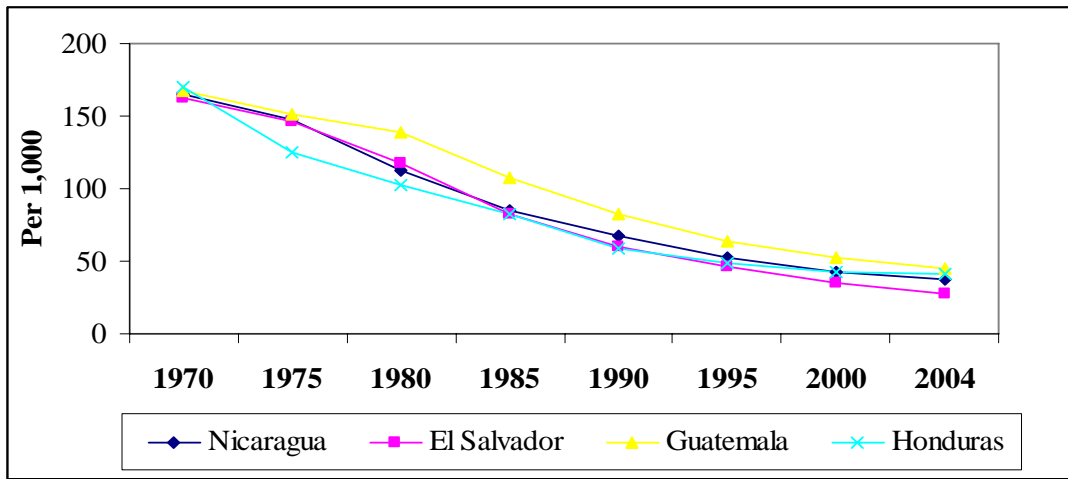
Figure 1: Progress in life expectancy in Nicaragua since the 1970s is comparable to that achieved by other Central American economies



Sources: Authors using WDI Central Database: Social Indicators 2007

¹ Among the four Central American countries, the highest infant mortality rate is found in Guatemala (33 per 1,000 live births) and the lowest in El Salvador (24 per 1,000 live births). Honduras and Nicaragua both have the same rate of 31 per 1,000 live births.

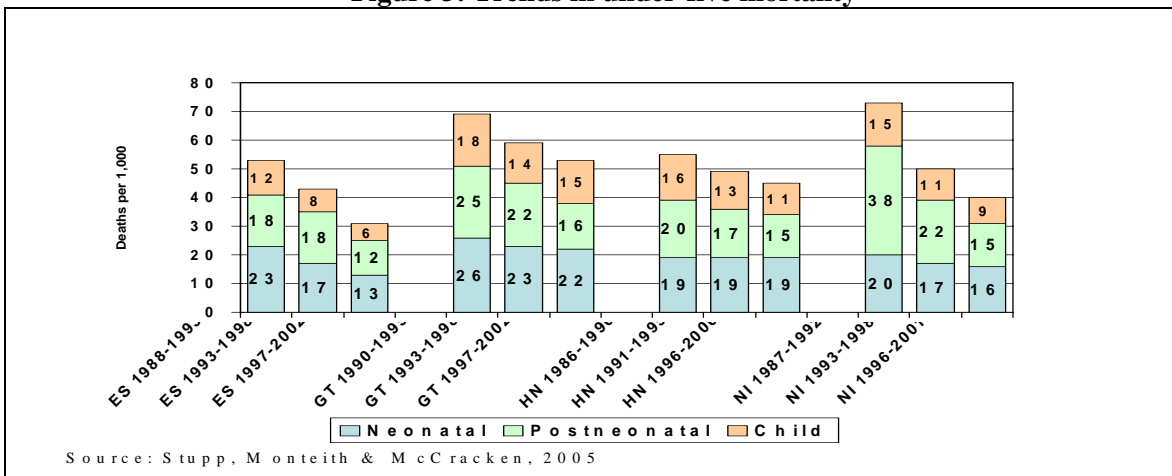
Figure 2: Under-five infant mortality in Nicaragua has fallen from approximately 160 in the 1970s to 31 children per 1,000 births in 2004



Source: Authors using WDI Central Database: Social Indicators 2007

Despite significant progress in the last decades, 31 of every 1,000 children born alive die each year in Nicaragua, half of whom die within the first 28 days of life. In 2004, infant mortality in Nicaragua was 31 per 1,000 live births. The vast majority of the cases could easily have been prevented by a combination of good care, nutrition, and medical treatment. Figure 3 displays average infant mortality rates in Nicaragua vs. other Central American economies, disaggregated into neonatal (the probability of dying within the first 28 days of life), post-neonatal (the probability of dying between the 28th day of life and the first birthday), and under-five (the probability of dying in the first 5 years of life) rates. Estimates indicate that infant mortality rates have declined in Nicaragua mainly due to important progress in post-neonatal health since the 1980s, while neonatal mortality rates have declined only slightly in the same period. While post-neonatal mortality rates were higher than neonatal mortality rates in the late 1980s, the opposite was true in the early 2000s. This same phenomenon appears in other Central American economies such as El Salvador, Guatemala and Honduras.

Figure 3: Trends in under-five mortality



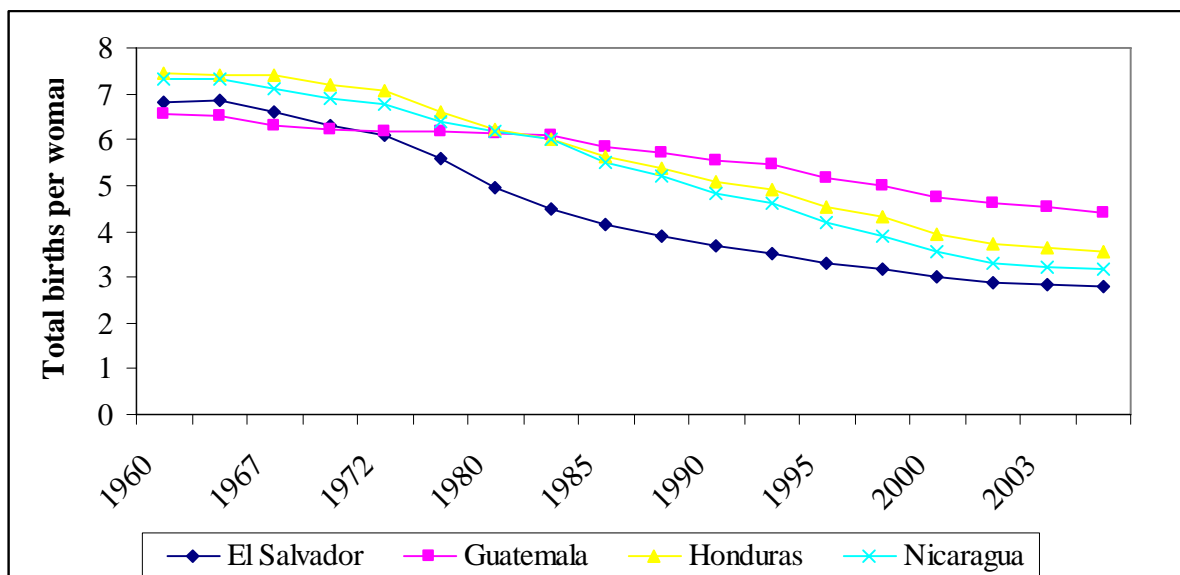
Source: Stupp, Monteith & McCracken, 2005

Source: Stupp et al. (2005)

Although immunization coverage remains at generally high levels (close to 90 percent), it has dropped since 2004. Childhood immunization offsets the detrimental effects of poverty, including low educational attainment. Hence, the promotion of immunization coverage as a strategic component of poverty reduction is indispensable for Nicaragua. Immunization rates for polio, measles, diphtheria, pertussis and tetanus, and tuberculosis dropped from 90 percent in the late 1990s to 80, 84, 79 and 88 percent respectively in 2004. Incomplete vaccinations can reflect flawed service delivery and inefficient logistical systems, as well as a lack of health services and budget allocation especially in remote areas.

Fertility rates in Nicaragua declined by roughly 50 percent in the past two decades, yet there is significant regional variation. As illustrated in Figure 4, fertility rates (which proxy the average number of children that women have during their life cycle) dropped dramatically from 6 in 1985 to 3.1 in 2004. Since monetary welfare is often measured by per-capita income/consumption, a decrease in fertility rates (which usually pushes down the average number of members in the household) is beneficial for poverty reduction. Also, declining fertility rates may be a proxy for successful family planning and contraception campaigns.² Fertility rates in Nicaragua and El Salvador have declined faster than in Guatemala; among the four Central American countries included in this analysis, El Salvador has the lowest fertility rate (2.8 children per woman), followed closely by Nicaragua (3.1), Honduras (3.6), and Guatemala (4.3).

Figure 4: Fertility rates in Nicaragua have declined at pace with those in other Central American economies

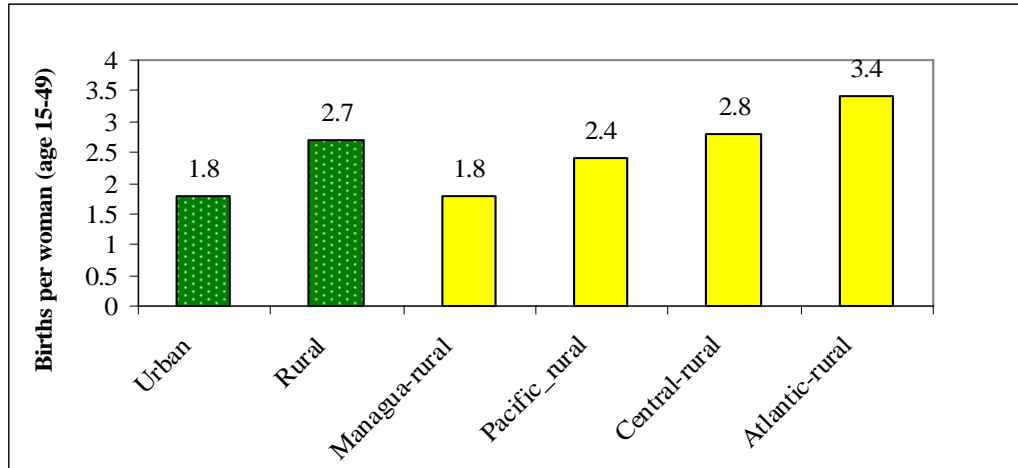


Source: Authors using WDI Central Database: Social Indicators 2007

² Fertility rates are related to the mother’s educational level. As expected, the total fertility rate of women with less formal education exceeds that of women with more formal education, by a difference of more than four children between the lowest and highest levels of education in Nicaragua and Guatemala. In all these countries, the desired total fertility rate is lower than the observed fertility rate, which clearly indicates that women are not meeting their reproductive needs.

Survey estimates indicate large differences in fertility rates by region: poorer regions display higher fertility rates. Estimates from the 2005 EMNV suggest that in 2005 total fertility rates nationally were at 2.2 (1.8 in urban areas vs. 2.7 in rural areas). As shown in Figure 5 below, rural fertility rates vary significantly by region, in particular from 1.8 in Managua to 3.4 in the Atlantic region.

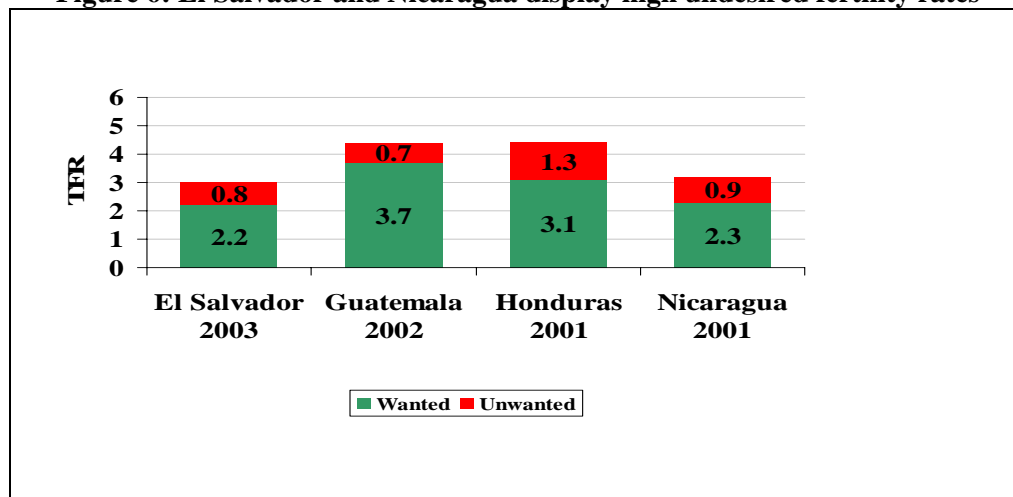
Figure 5: Fertility rates are significantly higher in rural areas



Source: Authors using the 2005 Nicaragua EMNV.

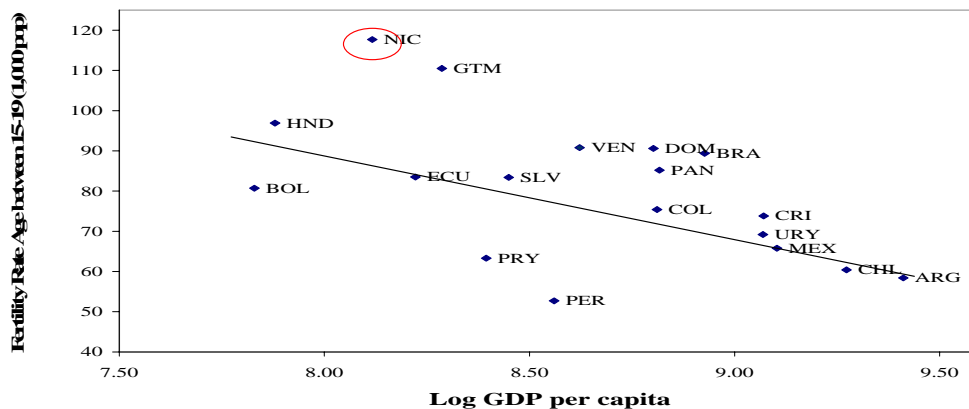
Roughly 1 out of every 3 children born in Nicaragua is unwanted/not planned: this rate is high by Latin American Standards. The desired fertility rate reflects the number of children women want, while the observed total fertility rate (TFR) is the number of children they actually have. Figure 6 displays observed and desired total fertility rates for years 2001 to 2003 in Nicaragua, Honduras, Guatemala and El Salvador. Fertility rates of unwanted or mistimed births in Nicaragua is a little more than one third, suggesting that only 2 out of every 3 children born are wanted by their mothers while the remaining is unwanted or unplanned.

Figure 6: El Salvador and Nicaragua display high undesired fertility rates



Source: Stupp, Monteith and Mc Craken, 2005

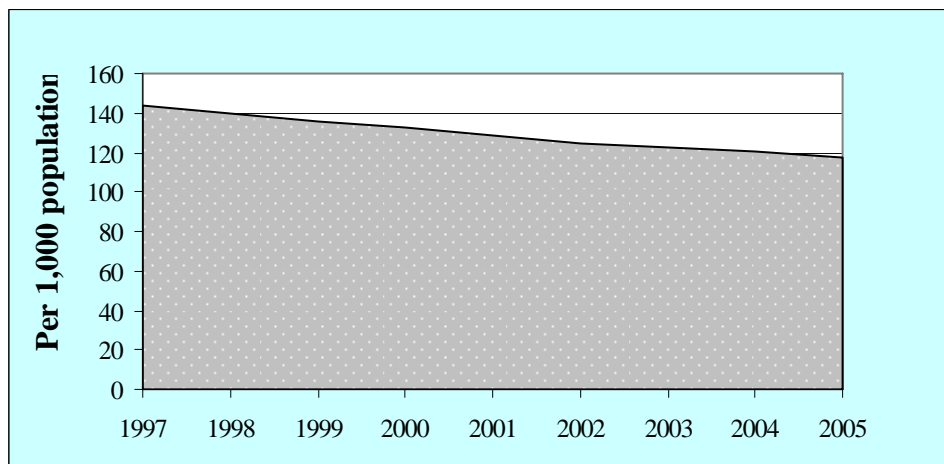
Figure 7: About 117 of every 1,000 young women between 15 and 19 years old in Nicaragua has at least one child; this indicator is the highest in all LAC



Source: Authors using WHO, PAHO Core Health Data System 2007

Although Nicaragua has the highest share of young women (15 to 19 years old) with children in Latin America, the share of young mothers has been decreasing steadily in the past decade. Teen pregnancy is closely linked to a number of other critical issues, including overall child poverty and family well-being. Needless to say, teen mothers are less likely to complete primary or secondary education, itself necessary to qualify for better employment opportunities. Continuing to reduce teenage pregnancy will help sustain the recent decreases in poverty, especially persistent child poverty, in Nicaragua.

Figure 8: The share of young mothers (between 15 and 19 years old) in Nicaragua has declined from 142 young mothers per 1,000 people in 1997 to 117 in 2004



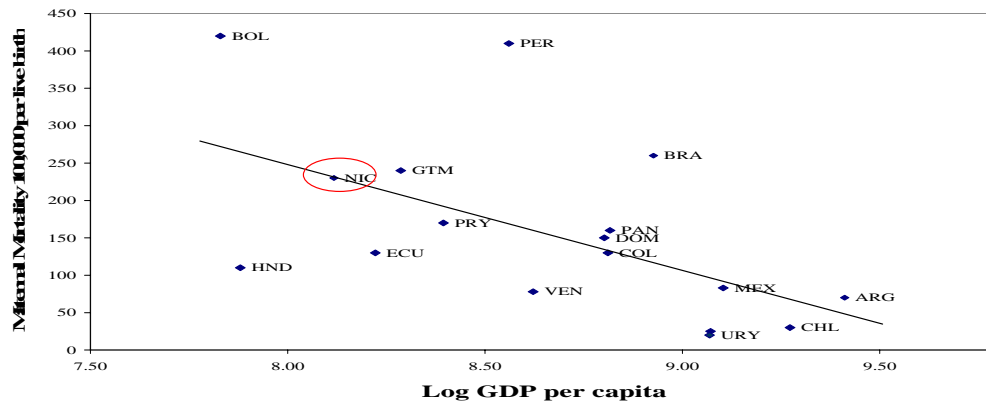
Source: Authors using WHO, PAHO Core Health Data System 2007

2.2. MATERNAL HEALTH

In the last ten years the government of Nicaragua has made great advances in maternal health policy. In 2004 Nicaragua updated its National Health Policy (2004 to 2015), paying special attention to issues related to maternal health. The promotion of healthy mothers and children needs effective (cross-cutting) interventions and policies, such as the improvement of women and children's social and economic status, social programs with families and communities, education for all, universal access to basic health care, access to family planning services, ensuring skilled medical assistance during childbirth, adequate neonatal and child healthcare, and freedom from domestic violence, among others. As such, the country has developed laws in relation to child and adolescent health promotion, breast-feeding, delivery and pre/post-natal care, this in addition to regulations preventing non-traditional professionals from participating in deliveries, and safeguarding relations between parents and children.

In the LAC context, maternal mortality rates in Nicaragua are aligned with the country's level of development. The maternal mortality ratio (per 100,000 live births) in Nicaragua was 230 in 2000. As indicated in Figure 9, Nicaragua is at the Latin American average given its level of economic development. According to the Ministry of Health, of all maternal deaths in 2004 11 percent were due to homicide (69 percent of which were linked to the mother's suicide, mainly among adolescent mothers). Physical and sexual violence against young mothers has serious consequences for the physical and mental health of both mothers and children, and has become a major public health issue in Nicaragua. A recent study in the city of Leon indicates that physical and sexual aggression against mothers (either before or during pregnancy) substantially increases the risk of child mortality until the age of five (Asling-Monemi, Pena, Ellsberg and Persson, 2003).

Figure 9: Maternal mortality ratio in the year 2000 (per 100,000 live births)

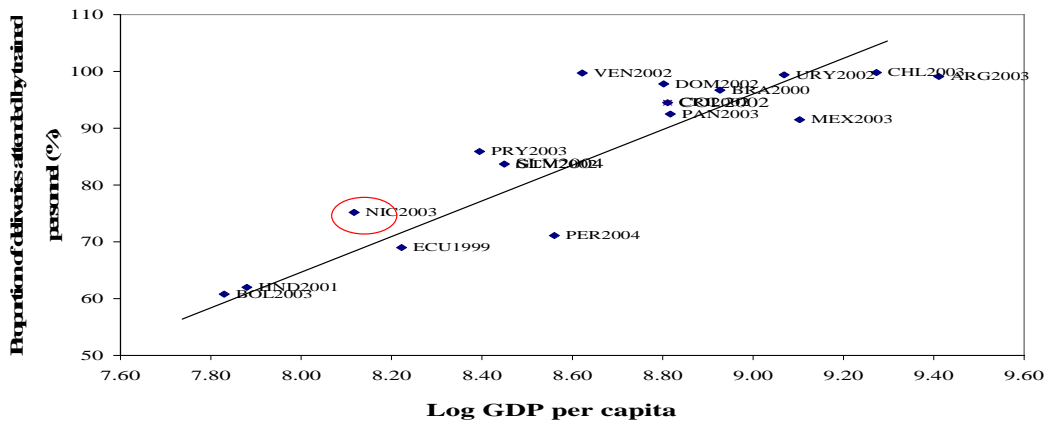


Source: Authors using WHO Core Health Indicators 2007

While the share of deliveries attended by trained personnel in Nicaragua is slightly above Latin American standards, there are large disparities across socio-economic groups and regions. While 95 percent of all deliveries in the richest quintile are attended by a trained doctor, the equivalent rate is only 56 percent among poor women (the remaining deliveries are assisted by midwives). While the proportion of births attended by a doctor in Managua is as high as 97 percent, the equivalent rate is at 87, 72, and 46 percent in the Pacific, Central and Atlantic regions respectively. While in rural Managua the proportion of deliveries attended by doctors exceeds 90 percent, the equivalent proportion in the rural areas of the Atlantic region (the poorest region of the country) is 33 percent. As expected, the opposite occurs for the proportion of deliveries attended by midwives: while less than 10 percent of deliveries in rural Managua are attended by midwives, more

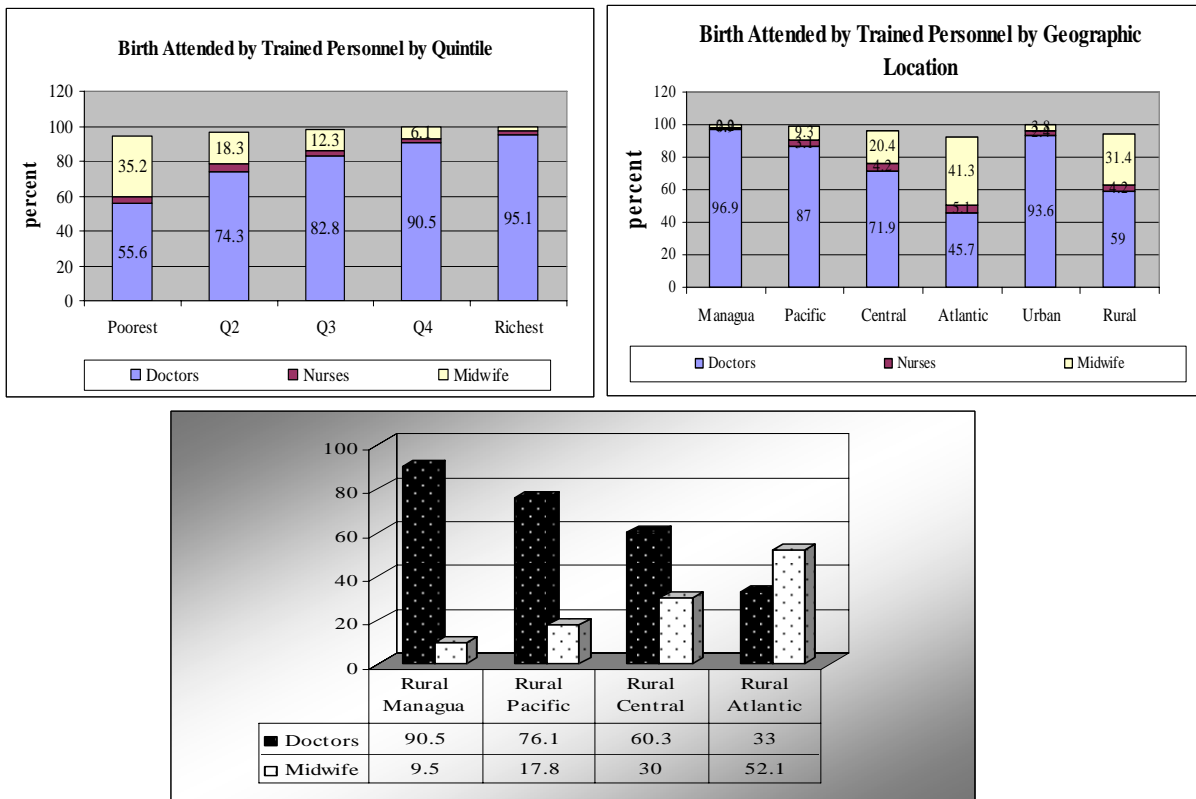
than half of all deliveries in rural Atlantic are attended by midwives. The insufficient performance of the public health system in improving the maternal and child health outcomes of the poorest families, has led the Government of Nicaragua to implementing new approaches and innovative health interventions. These include an increase the maternal and child health services provided by doctors to rural and distant areas, and consideration of other cost-effective approaches through the utilization of trained nurses and doctor-led mobile brigades in rural areas.

Figure 10: Proportion of deliveries attended by trained personnel in LAC



Source: Authors using WHO, PAHO Core Health Data 2007

Figure 11: Births attended by trained personnel, by quintile and region

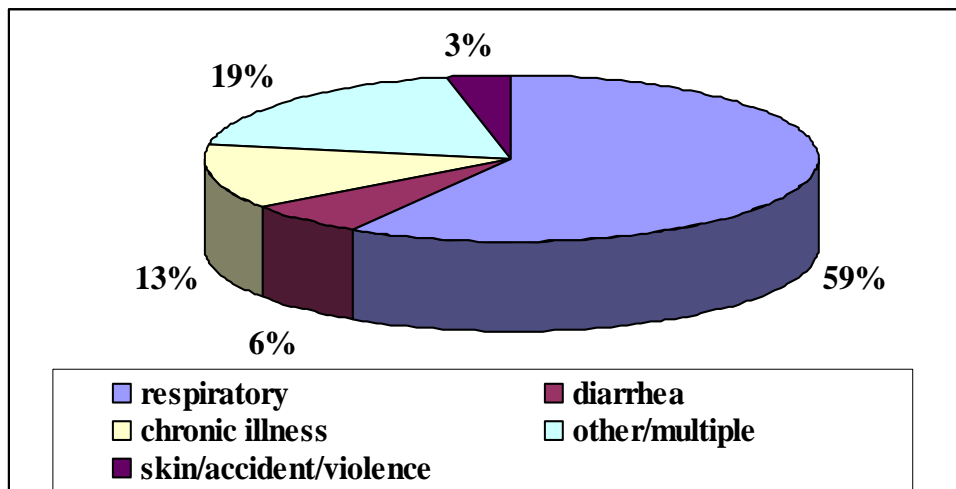


Source: Authors using the 2005 Nicaragua EMNV

2.3. MORBIDITY

Overall, respiratory illnesses are the most common disease in Nicaragua, followed by chronic illnesses and diarrhea (see Figure 12 below). About 59 percent of all individuals claiming to have been sick in the four weeks previous to the 2005 EMNV survey claim to have suffered from respiratory illnesses. Chronic and other multiple diseases account for about 32 percent of all illnesses reported by those individuals claiming to have been sick. While respiratory diseases are relatively more common among individuals in the poorest quintiles, chronic illnesses are more common among individuals in the richest quintile. Not surprisingly, Indigenous people and individuals living in agricultural households are more vulnerable to diarrhea and other multiple types of illness.

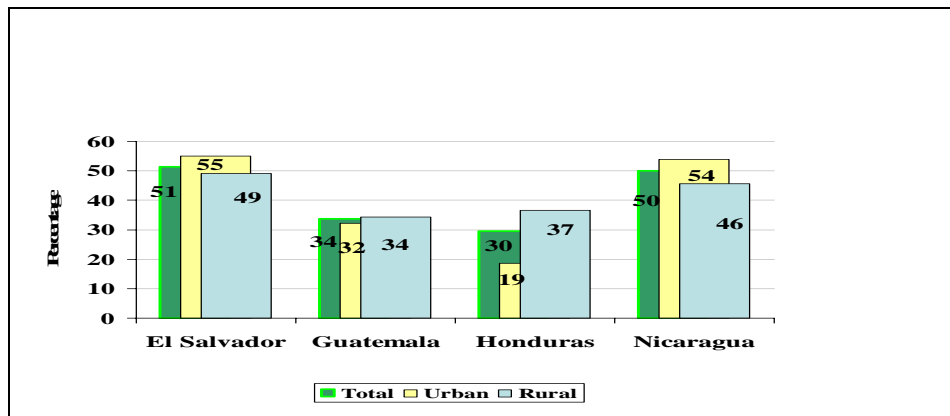
Figure 12: Morbidity in Nicaragua 2005



Source: Authors using the 2005 Nicaragua EMNV

Respiratory infections and diarrhea are the primary causes of infant and child morbidity and mortality in Nicaragua. The prevalence of diarrhea and acute respiratory infections (ARI) is high among children, especially in rural areas. Prevalence rates are highest among children aged 12 to 23 months, reflecting in part the protective effect of breastfeeding for babies less than one year old. As older babies begin to be exposed to other foods, the prevalence of diarrhea begins to increase between 6 and 11 months. Between 41 and 50 percent of all mothers with children who suffered a recent episode of diarrhea consulted someone about the disease; not surprisingly, urban mothers were more likely to seek consultation than rural mothers. As shown in Figure 13 below, in Nicaragua and in El Salvador the highest percentage of children with diarrhea who were treated with oral rehydration salts (ORS) reside in urban areas: 54 vs. 50 percent in Nicaragua and 55 vs. 51 percent in El Salvador. In Guatemala and Honduras, the opposite is true.

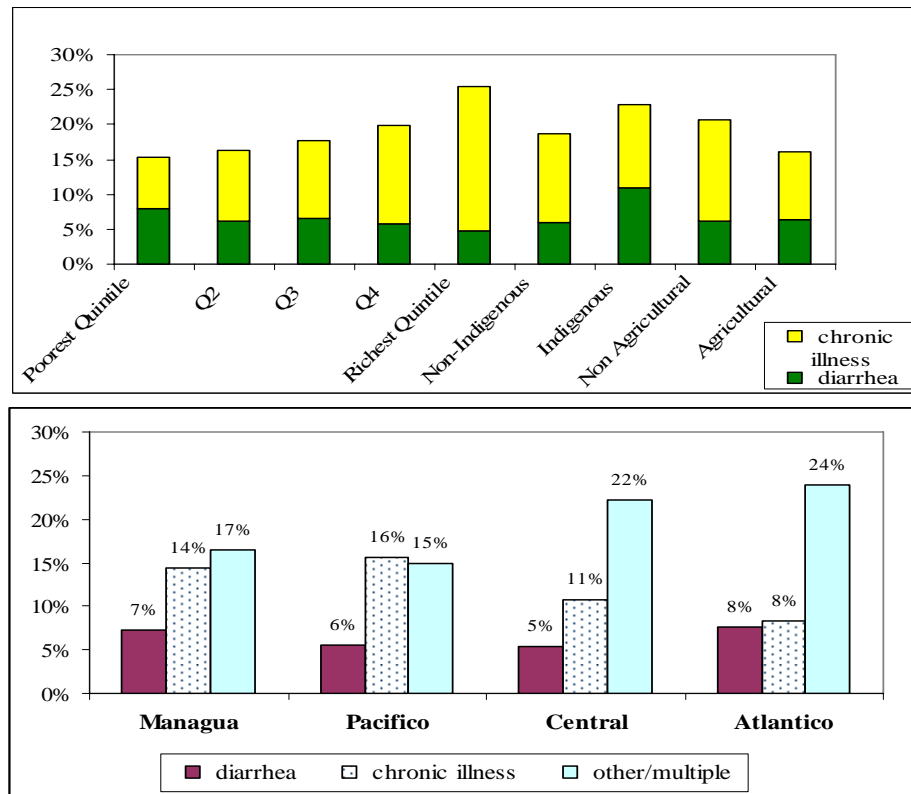
Figure 13: About half of all children under five years old in Nicaragua are treated with oral rehydration salts



Source: Stupp, Monteith and McCracken, 2005

Managua and the Pacific region, along with some urban areas, display a larger than average share of the population suffering from chronic illnesses. The Central and Atlantic regions display a larger share of the population suffering from multiple illnesses. Diarrhea and respiratory diseases are more popular among males, while chronic and multiple illnesses are more common to females.

Figure 14: Indigenous people and individuals living in agricultural households are more vulnerable to from diarrhea

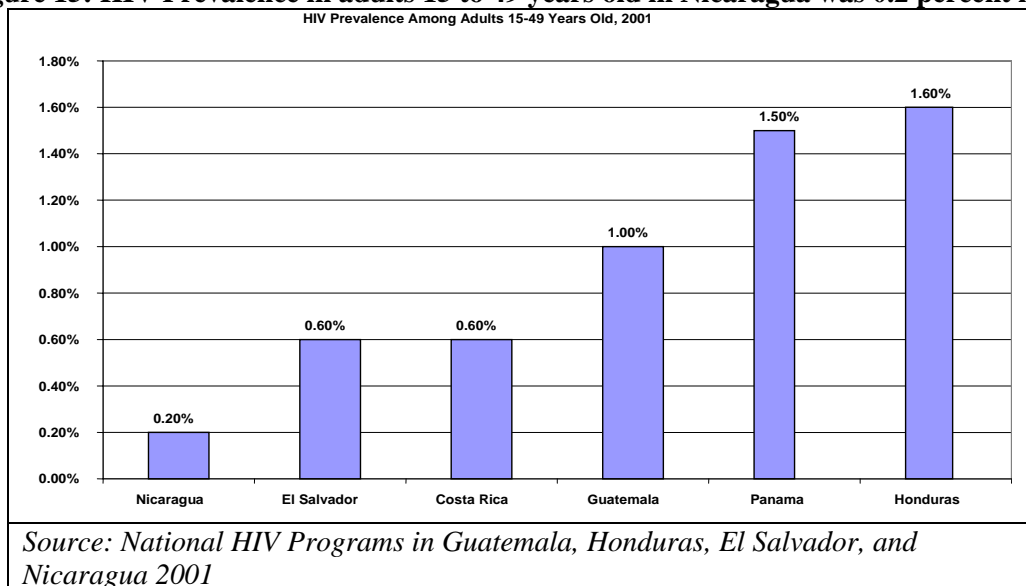


Source: Authors using the 2005 Nicaragua EMNV

About one in three children between 12 and 59 months old in Nicaragua is expected to suffer from Anemia. Iron-deficiency anemia in children is associated with impaired cognitive performance, motor development, coordination, language development and scholastic achievement. Anemia also increases morbidity from infectious diseases, because it adversely affects several immune mechanisms. Among other factors, nutritional deficiency due to a lack of dietary iron is a major cause of anemia in Central America. If anemia remains undiagnosed, it can lead to infertility in women of child-bearing age and to premature delivery among pregnant women. The percentage of children aged 12-59 months with anemia in Nicaragua is 28.4 percent, and the prevalence is higher in rural areas than in urban areas. Anemia prevalence also varies somewhat among income quintiles, and both the age of the children and the mother's educational level seem to be negatively correlated with the incidence of anemia. In other words as the children's age increases, the percentage who have anemia decreases; and the higher the mother's level of education, the less likely her children are to have anemia.³

Nicaragua has the lowest rate of HIV prevalence in Central America. It is estimated that 191,000 people are living with HIV/AIDS in Central America, and the majority of the HIV-positive population lives in Honduras and Guatemala (see Figure 15). In an effort to prioritize promotion and prevention of the disease, Nicaragua has implemented campaigns to promote the use of condoms, to discourage early sexual relations, and to identify the symptoms of AIDS in both urban and rural areas. Similar to what occurs in the Caribbean and South America, the HIV epidemic is mostly concentrated in the urban/commercial areas and transmission is primarily through heterosexual contact. The illness is more common among men than women, however the gender gap is shrinking, including in Nicaragua. In spite of efforts made by the government in response to the epidemic, there are still important challenges to face: there remains a need, for instance, to disseminate information and knowledge about this deadly infectious disease, especially among women and the rural and Indigenous population.

Figure 15: HIV Prevalence in adults 15 to 49 years old in Nicaragua was 0.2 percent in 2001

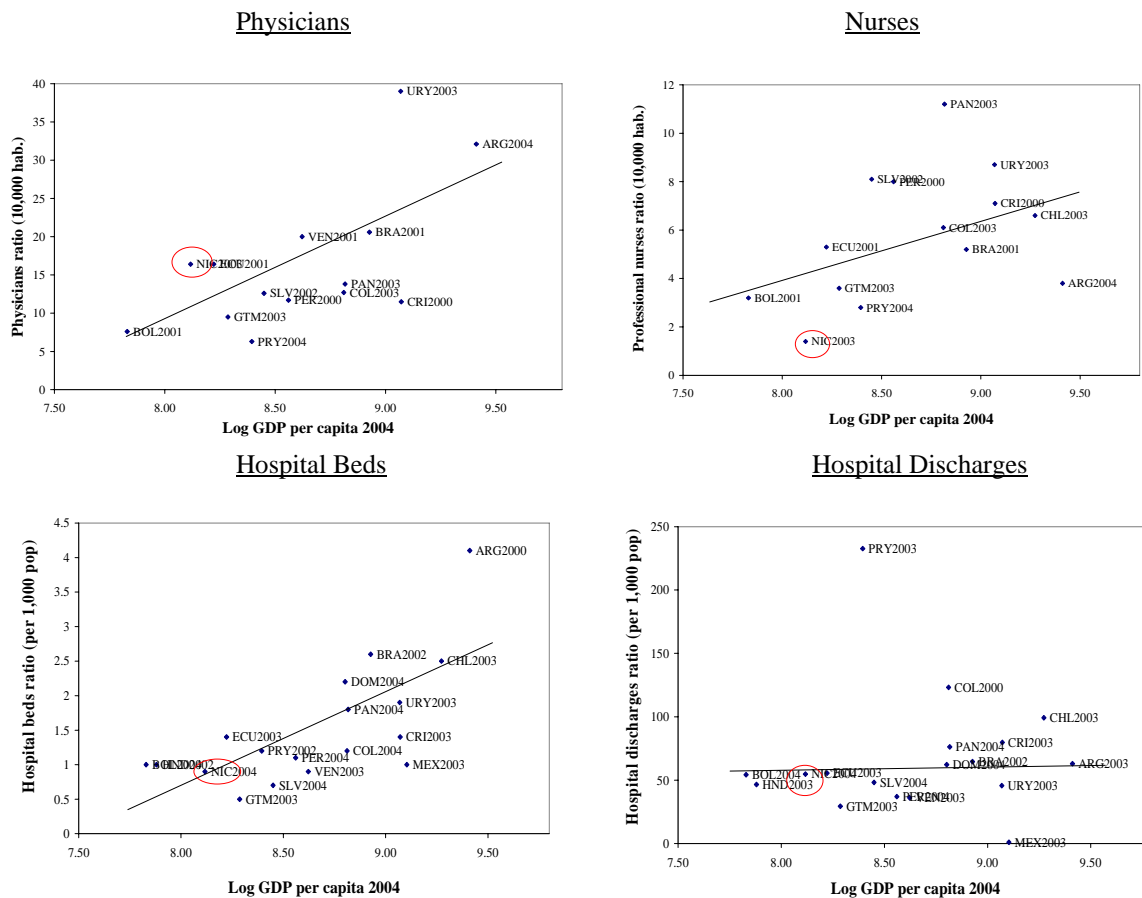


³ The World Bank: Key Issues in Central America Health Reforms: Diagnosis and Strategic Implication, p. 33.

3. HEALTH SECTOR EXPENDITURES AND RESOURCES

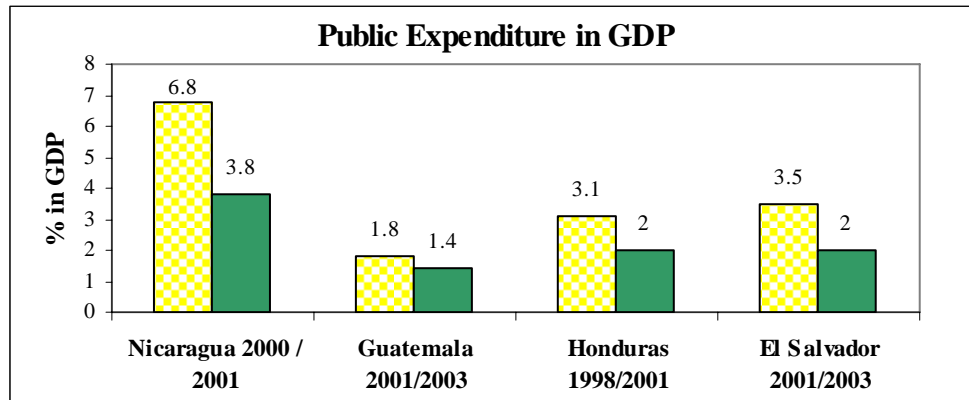
Although overall health outcomes and resources indicators in Nicaragua are in line with those of other Central American economies, Nicaragua spends relatively more of its public resources on health. Public health expenditure in Nicaragua, as a percentage of GDP, is the highest among the neighboring countries of Central America. In 2000, it was 6.8 percent of GDP. Similarly to three other Central American countries, the percentage declined to 3.8 percent between 2000 and 2001. Despite this drop, Nicaragua still spends significantly more on health than its neighbor countries (and in regional context) given its level of development (see Figures 17A and 17B). Yet while Nicaragua spends more of its public budget on health, basic health outcomes (as described above) and sector resources do not surpass those of neighboring countries. Nicaragua's health system thus has physical and human resources in line with its level of development in the Latin American context, but at higher levels of expenditure. While the number of physicians per 10,000 inhabitants is high given Nicaragua's level of development, the corresponding number of nurses is low; the number of hospital beds and hospital discharges per 1,000 inhabitants is in line with its level of development. The sector as a whole may not be spending resources as efficiently as those of other countries: Nicaragua is achieving similar outcomes to some of its neighbors who are paying half as much.

Figure 16: Human and physical resources in Nicaragua vs. Latin America



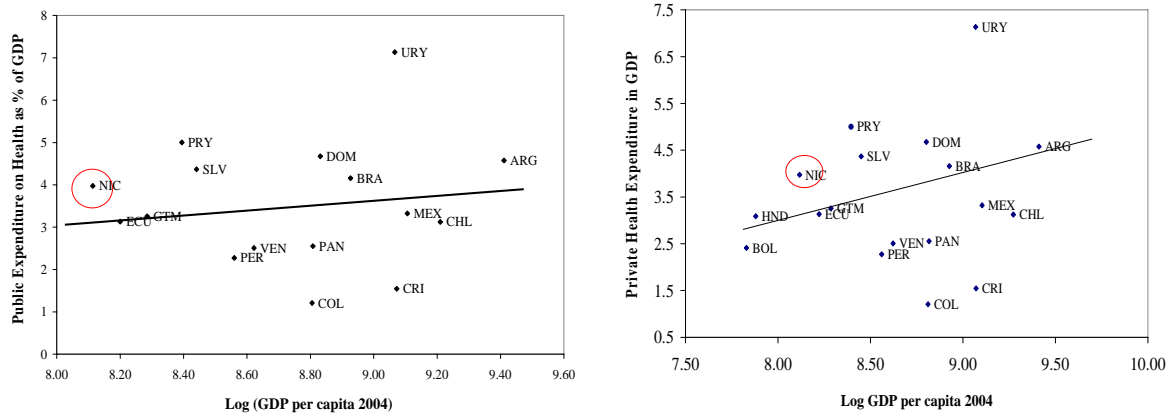
Source: Authors using WHO, PAHO Basic Health Indicator Database, and the World Bank, WDI Central

Figure 17A: Although investments in health have decreased since 2000, Nicaragua still spends roughly twice as much as its neighbors



Source: Authors using WHO, PAHO Basic Health Indicator Database

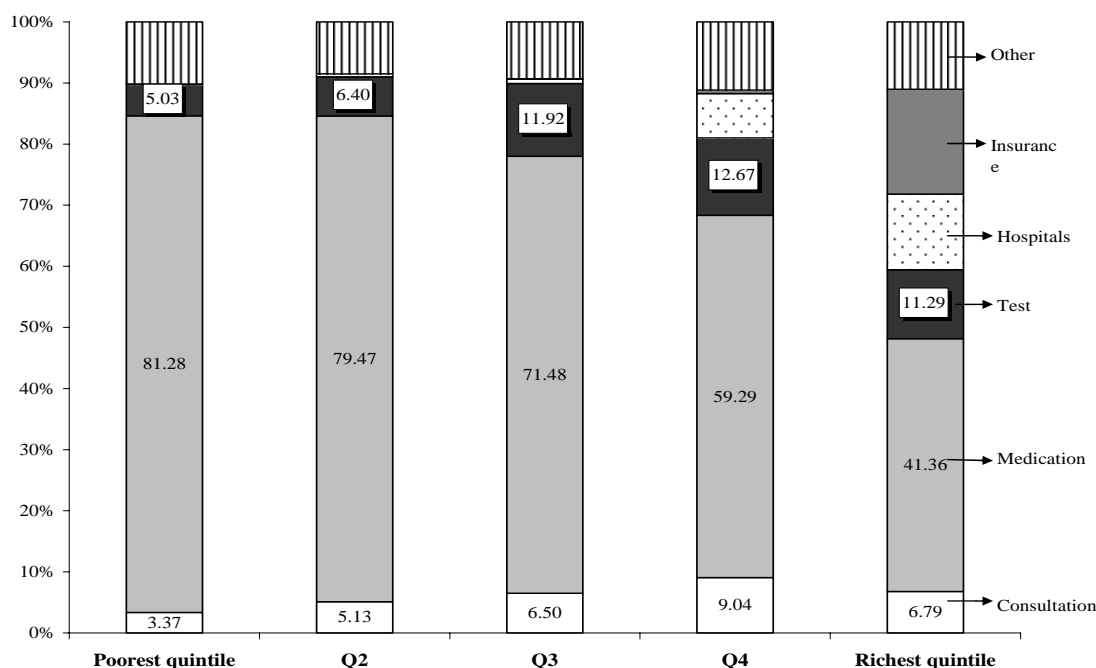
Figure 17B: Public and private expenditure on health as a percentage of GDP



Source: Authors using WHO, PAHO Basic Health Indicator Database, and the World Bank, WDI Central

Medicines constitute the main out-of-pocket expenditure on health, especially among the poor. Decompositions of average monthly per capita expenses for health in Nicaragua indicate the following distribution of expenses nationally: expenditures on consultations, 7 percent of total monthly expenses on health; medications, 55 percent (the highest among all other expenses); medical tests (including x-rays and other diagnostic tests), 11 percent; hospitalization, 8 percent; medical insurance, 8 percent; and other health care-related expenses, 11 percent. Although medicines are the main expenditure on health at all quintiles, poor households spend relatively more on them (80 percent in the bottom quintiles vs. 41 percent in the highest quintile). Consultations account for a small share of overall expenditures on health at all income quintiles (between 3 and 7 percent); this result derives from the fact that medical consultations are heavily subsidized in Nicaragua. Not surprisingly, users from non-poor households spend more on items related to better quality services, such as insurance, tests, and hospitalization. Expenditures on insurance are only a significant fraction of overall expenditures on health (about 17 percent) among households in the highest quintile.

Figure 18: Expenditures on insurance and hospitalization are a significant fraction of overall expenditures on health among households in the upper quintiles



Source: Authors using the 2005 Nicaragua EMNV. Sample: Households with positive expenditures on health.

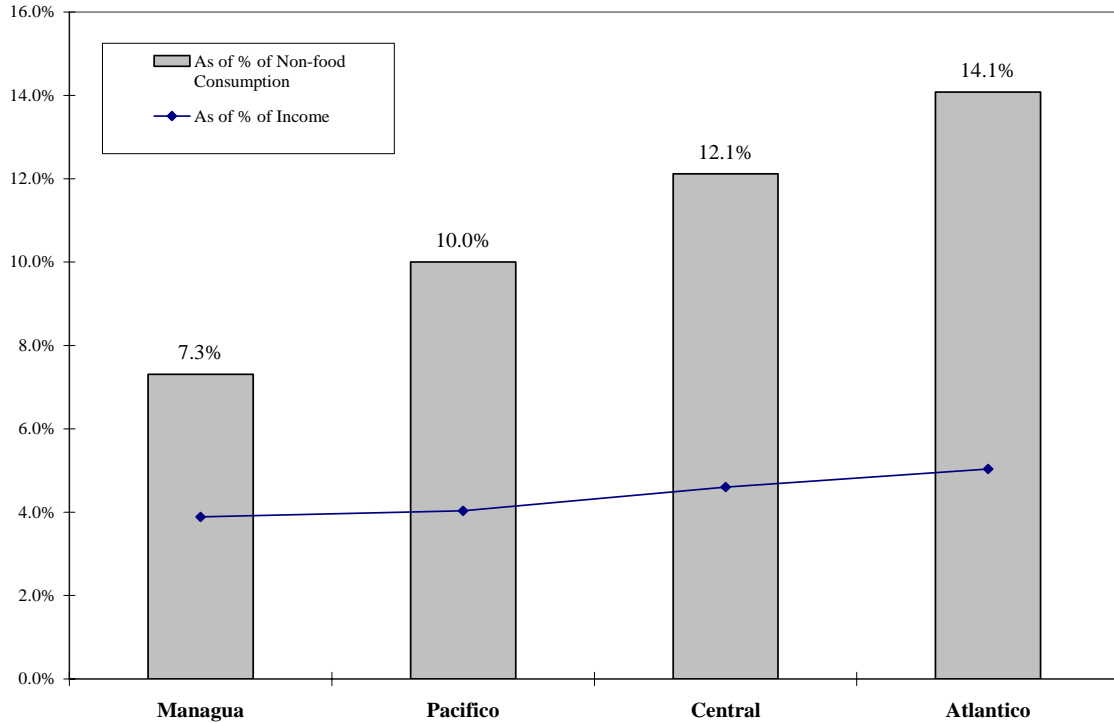
Expenditures on health account for 16 to 19 percent of overall non-food expenditures. Table 1 presents statistics on expenditures on health as a share of income and food consumption (in per capita per month) among households with positive expenditures on health. The results suggest that while richer households spend more of their income on health than poorer ones (10 percent in the highest quintile vs. 4 percent in the lowest quintile), the share of non-food consumption allocated to health is rather similar (19 percent in the highest quintile vs. 16 percent in the lowest quintile). Medicines are more expensive for the poor relative to their non-food consumption: results in Table 1 suggest that while 8 percent of overall non-food consumption among households in the richest quintile is used to pay for medicines, the same share is 14 percent for households in the poorest quintile. Finally, Figure 19 suggests that expenditures on medicines are relatively more costly in the Atlantic and Central Regions.

Table 1: Medicines are more expensive for the poor relative to their non-food consumption

	Poorest Quintile	Q2	Q3	Q4	Richest Quintile
	<i>Total health Expenditures</i>				
As % of total income	3.8%	4.6%	6.7%	8.2%	10.1%
As % of total non-food consumption	16.06%	15.16%	17.37%	17.84%	19.33%
	<i>Medicines</i>				
As % of total income	3.22%	3.76%	4.97%	5.06%	4.40%
As % of total non-food consumption	13.65%	12.41%	12.81%	10.98%	8.39%

Source: Authors using the 2005 Nicaragua EMNV. Sample: Households with positive expenditures on health

Figure 19: Expenditure on medicine is relatively higher in the Atlantic and Central Regions



Source: Authors using the 2005 Nicaragua EMNV. Sample: Households with positive expenditures on health.

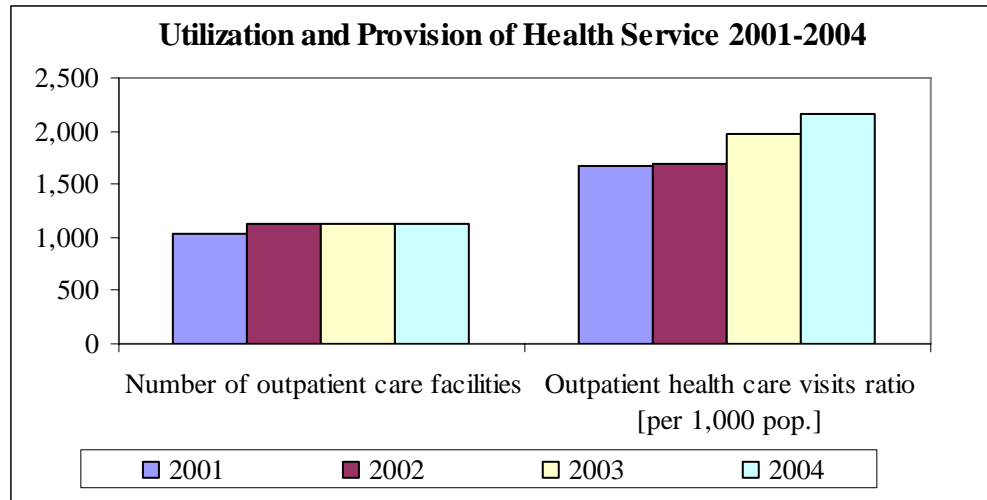
4. ACCESS TO HEALTHCARE

4.1. Health care utilization

The Nicaraguan Ministry of Health (MOH) provides health care through its network of more than 1,000 facilities, including 33 hospitals, 177 health centers, and 872 health posts; the MOH administers the system through 18 departmental offices (SILAIS). The Nicaraguan Social Security Institute (INSS) is the second most important health care provider: about 19 percent of all people between 20 and 39 years old went to the INSS for consultations. The INSS purchases a defined package of services from 48 health provider organizations called *Empresas Medicas Previsionales* (EMPS; see PAHO, 2002). Used by 43 percent of the population, health centers are the most common type of medical facility used in Nicaragua followed by private clinics (16 percent), public and private hospitals (13 percent), the INSS (11 percent), health posts (9 percent), and other facilities (8 percent). These results were obtained using estimates from the 2005 EMNV. In 2005, about half of the poor population received consultations in a health center, 13 percent in health posts and 12 percent in public hospitals. Non-poor individuals (generally users in the 4th and 5th quintile and those living in urban Managua and/or the Pacific region) are more likely to use private clinics and the INSS (besides health centers) for consultation.

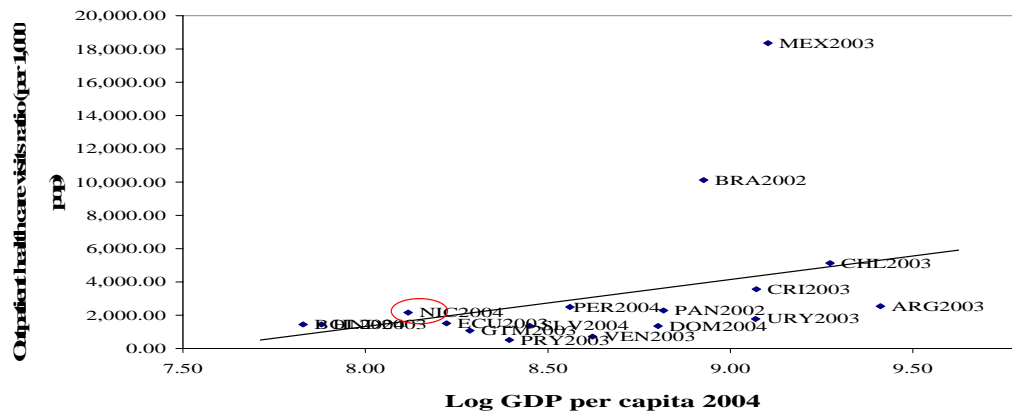
About half of all individuals who get sick seek or receive medical treatment. In 2005, according to the EMNV, approximately half of all individuals (50 percent of non-poor and 40 percent of the poor) who claim to have been sick four weeks prior to the survey received some type of consultations or medical treatments. At the national level health care utilization (as measured by outpatient health care visits per 1,000 people) had increased, from 1,674 to 2,153 between 2001 and 2004. Despite this large increase in utilization, outpatient care facilities have decreased slightly in number from 1,129 in 2002 to 1,122 in 2004 (see Figure 20). By 2004 (see Figure 21) outpatient visits per 1,000 people in Nicaragua were slightly above Latin American standards, given the country's level of development.

Figure 20: Despite increasing use since 2001, the number of health facilities has remained unchanged



Source: Authors using WHO, PAHO Basic Health Indicator Database

Figure 21: Outpatient care visits in Nicaragua are slightly above Latin American standards given its level of development



Source: Authors using WHO, PAHO Basic Health Indicator Database, and the World Bank, WDI Central

Utilization rates among the non-poor are about 13.2 percent higher than among the poor. Table 2 presents health care utilization rates among individuals who claim to have been sick 4 weeks prior to the survey. Results indicate that utilization rates vary significantly across socio-economic groups,

regions, and strata. In particular, while utilization among non-poor users is 50.6 percent, utilization among the poorest is 36.5 percent. Utilization rates among vulnerable users such as indigenous population and households engaged in agriculture activities are 40 and 49 percent respectively. Utilization rates are higher among women than among men (48 vs. 43 percent), and higher among the elderly and children below one year old (46.6 and 74.5 percent respectively). Utilization is lower among the youth (30 to 52 percent).

Level of education, access to medical insurance, socio-economic group, distance to health facility, and region are important determinants of health care utilization in Nicaragua.

Regression analysis (using a probit model) is useful to quantify the main determinants of healthcare utilization, conditional on a set of individual and households characteristics (for full regression results see the Annex 1). Estimates from the 2005 EMNV suggest that education level of the household head and spouse, size of household, region, insurance coverage, and distance to health care facilities are significant factors for utilization of health care services and preventive medical treatment:

Type of illness and age group: Patients in the 20 to 39 age group are 15 percent less likely to seek medical consultation than those under 20 years old. Patients in the 50 to 59, 60 to 69 and over 70 age groups are 17, 31 and 56 percent more likely, respectively, to receive treatment when sick than those under 20 years old. Patients with respiratory diseases are 55 percent less likely to receive medical treatment when ill than individuals suffering from accidents or skin problems; those with diarrhea are 100 percent *more* likely to receive treatment, relative to the same group.

Socio-economic group and education level: Individuals living in a household with a head/spouse who completed primary and secondary education are 6 and 9 percent more likely respectively to receive medical treatment when sick, as compared to individuals in a household with a head/spouse with no education. The higher the income quintiles, the greater the likelihood of seeking medical consultations: individuals whose incomes are in Q2, Q3, Q4 and Q5 have an 11, 20, 23 and 32 percent higher probability respectively to receive treatment than individuals in the poorest quintile.

Insurance and distance to health facility: Individuals with health insurance are 56 percent more likely to get medical treatment when sick than individuals with no insurance coverage. The greater the distance to the nearest health facility, the less likely users are to seek medical consultations. For every additional kilometer away from a consultation facility, the probability of an individual seeking a consultation decreases by 0.2 percent.

Strata and Region: Individuals living in the Pacific and Central regions (and in urban areas) have a 3 to 5 percent higher probability of receiving medical consultations than individuals living in the Atlantic region.

Table 2: Utilization of health services in Nicaragua

Utilization of health services in Nicaragua in 2005 among those reported to have been sick (past four weeks)	Ordinary consultation	Emergency Consultation	No consultation
	%	%	%
Socio economic group			
Non-Poor	50.59	5.18	44.23
Poor	40.41	2.23	57.36
Poorest Quintile	36.48	2.37	61.15
Q3	46.87	2.75	50.37
Richest Quintile	53.85	5.88	40.27

Vulnerable group			
Indigenous	48.78	3.45	47.77
Agricultural producer	40.31	2.53	57.16
Strata			
Rural	41.90	2.55	55.55
Urban	49.53	4.97	45.50
Managua	48.18	6.86	44.95
Pacific	48.88	3.19	47.93
Central	44.29	3.04	52.67
Atlantic	41.03	2.09	56.88
Gender			
Female	48.44	3.81	47.75
Male	43.15	3.90	52.96
Age group			
age 0-1	74.47	6.55	18.97
age 2-12	52.26	3.62	44.13
age 13-19	30.01	2.63	67.36
age 20-29	38.05	3.60	58.35
age 30-39	39.93	3.16	56.91
age 40-49	47.27	4.16	48.57
age 50-59	45.00	4.40	50.60
age 60-69	46.98	3.95	49.08
age 70-79	49.91	4.42	45.67
age 80-97	48.68	7.12	44.20

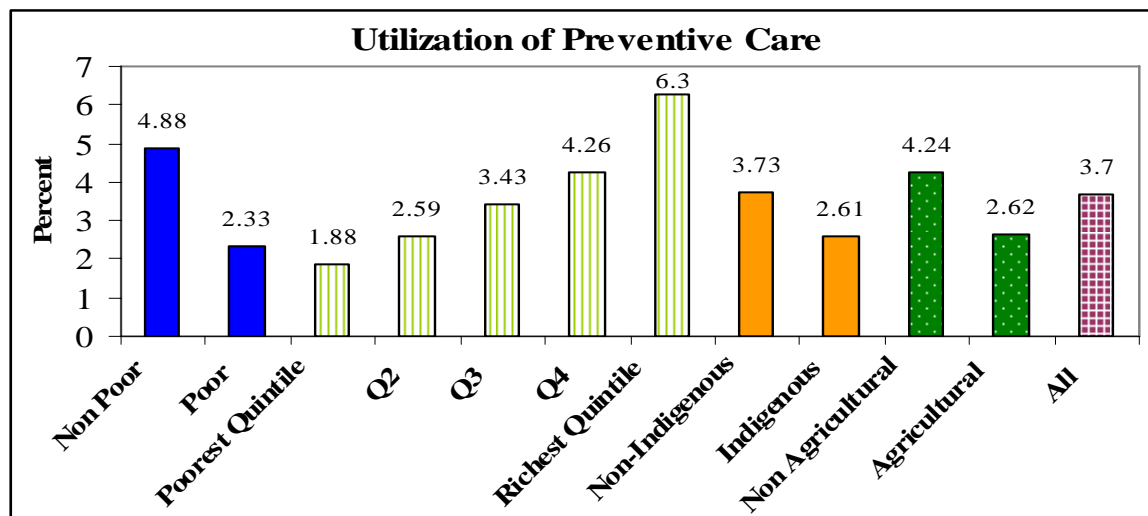
Source: Authors using the 2005 Nicaragua EMNV

Only 3.7 percent of all individuals seek preventive health care in Nicaragua (see Figure 22). As expected, urban households as well as those in the highest consumption quintiles utilize more preventive care services. As life expectancy in Nicaragua has been increasing year by year, the population gets to live longer and in some cases with one or more chronic conditions. This trend places new, long-term demands on health care systems. Not only are chronic conditions projected to be the leading cause of disability (if they are not successfully prevented and/or managed) but they may also become the most expensive challenge faced by Nicaragua's health systems in the near future. Many diseases can be prevented, yet current health care systems in Nicaragua do not make the best use of their available resources to support this process.⁴

Given that many conditions are preventable, every health care interaction should include prevention support. When patients are systematically provided with information and skills to reduce health risks, they are more likely to reduce substance use, to stop using tobacco products, to eat a healthy and balanced diet, to maintain their mental and spiritual well-being, and to engage in physical activity. These risk-reducing behaviors can dramatically reduce the long-term burden and health care demands of chronic conditions. To promote prevention in health care, investments in awareness-building are key to promote a change in thinking and to stimulate commitment and action among patients and families, health care teams, communities and policy-makers.

⁴ According to WHO, most current health care systems are based on responding to acute problems, urgent needs of patients, and pressing concerns. Testing, diagnosing, relieving symptoms, and expecting a cure are hallmarks of contemporary health care. While these functions are appropriate for acute and episodic health problems, a notable disparity occurs when applying this model of care to the prevention and management of chronic conditions, since preventive health care is inherently different from health care for acute problems, and in this regard current health care systems fall remarkably short

Figure 22: Preventive care utilization among individuals in the highest quintile is up to 300 percent higher than among individuals in the bottom quintile



Source: Authors using the 2005 Nicaragua EMNV

Level of education of the household head and spouse, gender, household size, region, and socio-economic condition are characteristics that influence the probability of individuals seeking preventive care. The findings of a probit regression (for full regression results see Annex 2) suggest that education level of household head and spouse, size of the household, region, level of income, and gender are significant factors of preventive care. Individuals living in a household with a head who completed primary and secondary education are 8 and 2 percent more likely respectively to receive preventive care than individuals living in a household with a head with no education. Moreover, individuals living in a household with a spouse who completed primary, secondary and tertiary education have a 12, 16 and 23 percent higher probability respectively to receive preventive care than individuals living with a spouse with no education. Individuals living in Managua, Pacific and Central region are 30, 36 and 12 percent more likely respectively to receive preventive medical care than individuals living in the Atlantic region. Controlling for other factors, consumption levels do appear to be a significant determinant of preventive healthcare utilization: with respect to individuals in the poorest quintile, individuals in the third, fourth, and fifth quintile are 17, 16 and 19 percent more likely respectively to receive preventive medical treatment. Finally, estimates indicate that with respect to the female population, male individuals are 6.2 percent less likely to seek preventive medical care.

4.2. Type of providers

Health centers are the most popular type of facility in Nicaragua (see Table 3). Health posts, health centers, public and private hospitals, the Social Security Institute (INSS), and private clinics are the main providers of health services in Nicaragua. Health posts are more commonly used in rural areas, and in the Central and Atlantic regions. Private clinics, usually associated with better quality of service delivery, and INSS are more used by patients in urban areas and in the Managua and Pacific regions. Health centers and health posts are the main health providers among the poor (about 71 percent of all poor patients rely on these facilities when sick). About 16 percent of all poor patients use health posts when sick; these facilities are not well-equipped, and provide very basic services (generally in rural areas and small towns). Only about 10 percent of the poor use INSS or private clinics to get service. On the contrary, about 4 of every 10 non-poor patients use INSS or private

clinics when sick: the richer the patients, the more likely they are to use private clinics and INSS facilities, and the less likely they are to use health posts.

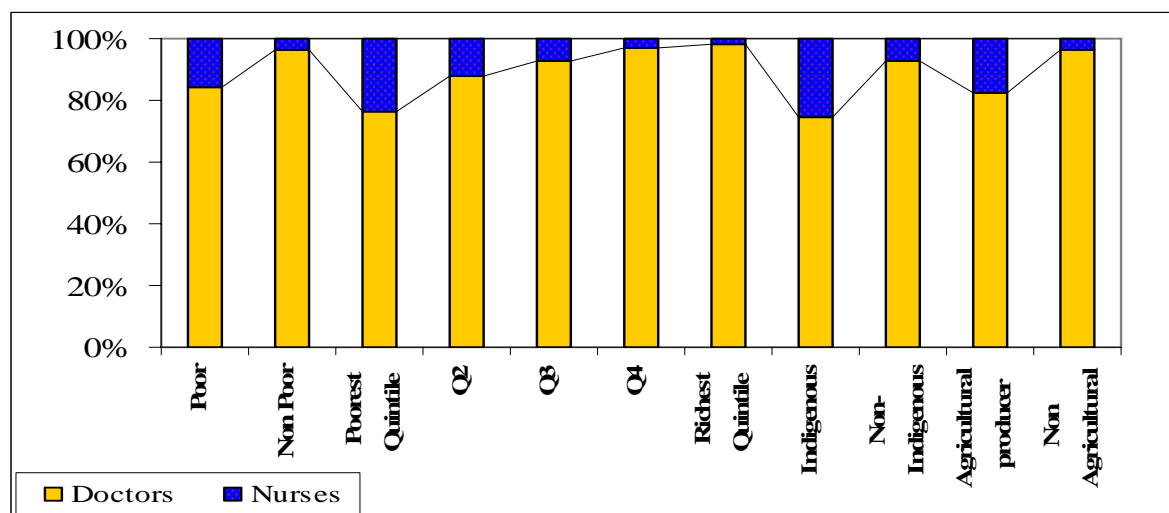
Table 3: Poor households generally use health posts and health centers when sick

<u>Sample</u> : those reported to have received consultations (past four weeks)	<i>Health post</i>	<i>Health center</i>	<i>Public or private hospital</i>	<i>INSS</i>	<i>Private clinic</i>	<i>Other</i>
Socioeconomic group						
Non-Poor	4.33	33.76	15.68	14.67	23.9	7.66
Poor	15.72	55.51	10.16	4.01	5.54	9.06
Poorest Quintile	19.78	56.24	8.31	0.71	3.5	11.46
Q2	14.04	54.95	10.89	6.6	6.33	7.2
Q3	7.5	50.49	14.6	7.8	12.19	7.42
Q4	5.39	34.08	16.06	16.49	20.3	7.67
Richest Quintile	1.88	23.97	15.57	16.52	34	8.05
Vulnerable group						
Indigenous	27.61	26.8	18.89	6.01	11.63	9.06
Agric. household	16.86	47.14	10.51	1.84	13.71	9.94
Strata						
Rural	16.79	47.9	10.28	3.03	12.32	9.68
Urban	3.06	38.1	15.85	15.85	19.99	7.16
Managua	3.63	29.79	14.83	23.81	20.29	7.65
Pacific	2.93	47.91	13.72	9.84	17.43	8.17
Central	10.44	51.32	12.24	3.43	15.55	7.03
Atlantic	27.81	31.88	13.8	2.72	11.55	12.25

Source: Authors using the 2005 Nicaragua EMNV

The majority of the population receives medical treatment from trained health professionals when sick. Yet between 17 and 25 percent of all individuals in the poorest quintile, as well as those from vulnerable sectors of the population (such as Indigenous groups and those living in agricultural producer households) receive medical treatment from nurses rather than doctors for ordinary (emergency) consultations. While receiving care from nurses is not necessarily a signal of lower quality for ordinary consultations (i.e. when symptoms/pathologies are mild), in cases of life-threatening emergencies (or for more complicated pathologies that require prescriptions) receiving medical care from nurses is less than desirable. As expected, the share of consultations by nurses is higher in the poor regions and in rural areas.

Figure 23: About 27 percent of all Indigenous patients receive medical care from nurses when sick



Source: Authors using the 2005 Nicaragua EMNV

Table 4: Poor individuals residing in rural areas are less likely to receive care from doctors, even in emergency cases

Sample: those reported to have received consultations (past four weeks)	Ordinary consultation by doctors	Ordinary consultation by nurses	Emergency consultation by doctors	Emergency consultation by nurses
Socioeconomic group				
Poor	77.67	14.92	89.97	7.45
Non-Poor	91.73	3.82	97.93	1.67
Poorest Quintile	67.90	22.11	88.53	5.86
Q3	82.86	11.61	88.63	11.37
Richest Quintile	87.71	6.76	92.52	7.18
Vulnerable group				
Indigenous	67.13	24.49	82.42	9.96
Agric. household	74.91	16.79	89.72	6.92
Strata				
Urban	93.40	2.74	97.86	1.97
Rural	76.22	15.72	91.31	5.90
Managua	95.14	1.02	97.62	2.38
Pacific	91.97	3.42	97.13	1.81
Central	81.01	13.61	95.11	3.70
Atlantic	69.00	19.21	85.47	9.46

Source: Authors using the 2005 Nicaragua EMNV

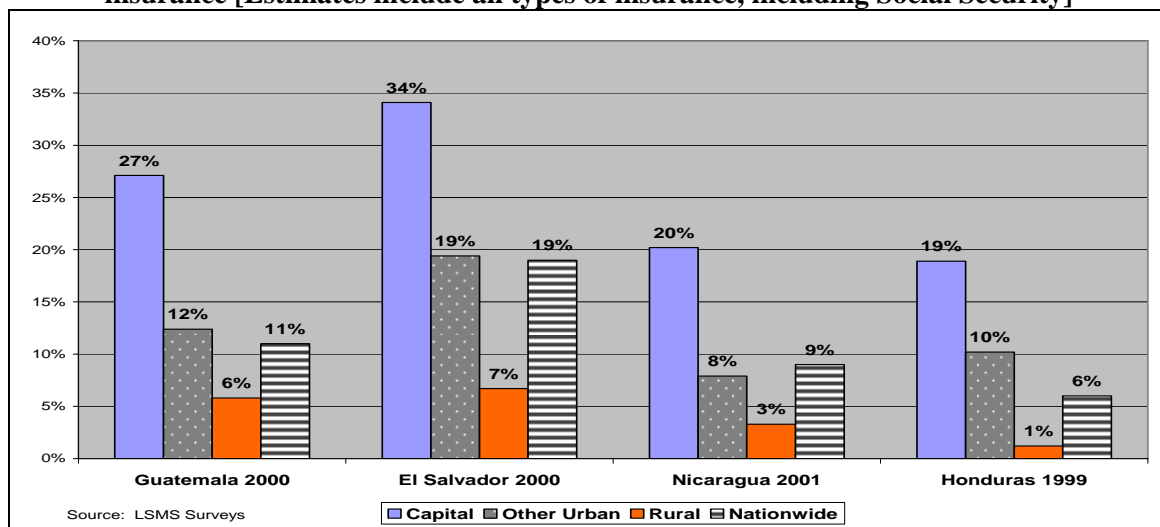
4.3. Social security

The Nicaraguan Social Security Institute (INSS) is the second most important provider in Nicaragua. It purchases a defined health service package from health maintenance organizations, and provides health service coverage to 10 percent of the total population. The INSS is an autonomous institution; its revenues come from a percentage of the payroll of public and private workers, and its financing and provision functions are separated. Provision of services is outsourced to private and public accredited institutions: 49 ‘Previsional Medical Institutions’ or PMIs. Employers, employees and government contribute to INSS, in varying percentages based on given benefit systems. The *Régimen Integral*, or full health package, receives 15 percent of its financing from the employer payroll, 6.25 percent from employees, and 0.25 percent from the government, totaling 21.50 percent. INSS pays a uniform monthly per capita fee equal to US\$ 14.4 (2005) for each affiliate, in order to provide a given package of services for him/her and his/her dependents. Coverage is not universal in terms of covered benefits, and there are dependent and age limitations to cover children (until twelve years of age). The INSS is currently faced with the challenges of increasing efficiency to reduce over-consumption of certain services, and of increasing coverage through increased spending.

In the 1990s private sector providers increased their role in the Nicaraguan health sector, as a response to increasing household incomes and changing consumer preferences. MINSA continues to be the main public provider of health care services. In addition to its provision role it has also both a stewardship and a regulatory role in the health system, which has not been fully implemented due to insufficient institutional capacity and lacking resources.

Access to health insurance in Nicaragua is low by international standards, especially in rural areas. Health insurance coverage reduces the probability that individuals will spend more than they can afford when facing health shocks, and enhances higher service utilization. The social security system in Nicaragua is the primary source of health insurance in the country. As illustrated by Figure 24, health insurance coverage in Nicaragua is low compared to El Salvador and Guatemala, especially in rural areas.

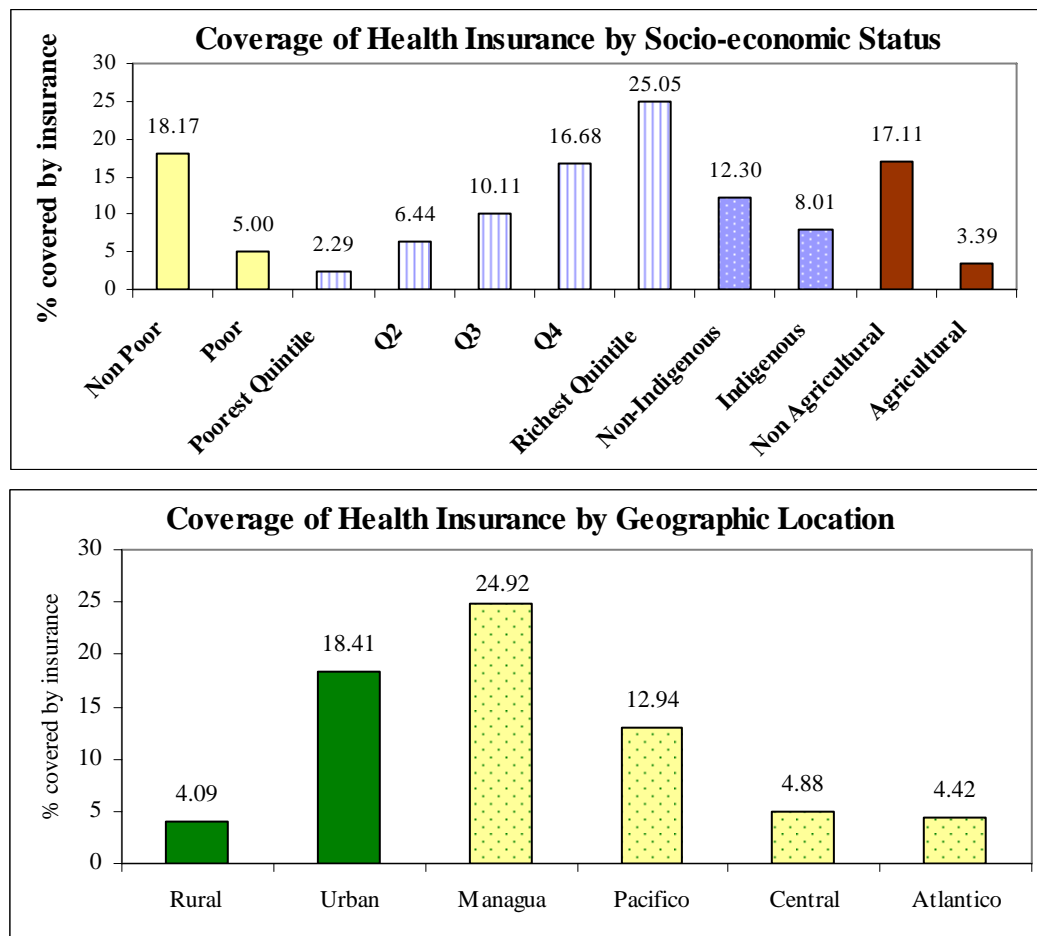
Figure 24: Only 9 out every 100 individuals in Nicaragua are covered by some type of health insurance [Estimates include all types of insurance, including Social Security]



Source: World Bank 2006a

The majority of individuals with access to health insurance live in non-poor urban households. Access to insurance is highly concentrated in urban areas and in wealthier regions. While 13 and 25 percent of the overall population living in the Pacific and Managua regions respectively have access to health insurance, the same proportion is only 4 percent in the Central and Atlantic regions (see Figure 25). The currently low coverage highlights the inadequate financial protection provided by the social security system, and creates inequity in the distribution of health service delivery in Nicaragua. The major factors that prevent the broadening of social security coverage in Nicaragua are: (i) lacking institutional presence in rural areas, where vulnerable populations such as seasonal workers, agricultural producers and Indigenous people are to be found; (ii) lacking knowledge of social security benefits among low-income workers, as well as a negative image of social security that associates high costs with fewer benefits than expected; and finally (iii) lacking political will to improve the system and expand coverage, particularly with the informal labor force. Indeed, only 5 percent of the poor population (2.3 percent in poorest quintile and 3.4 percent in rural areas) has access to insurance.

Figure 25: Access to health insurance is concentrated among the urban non-poor living in the Managua and Pacific regions

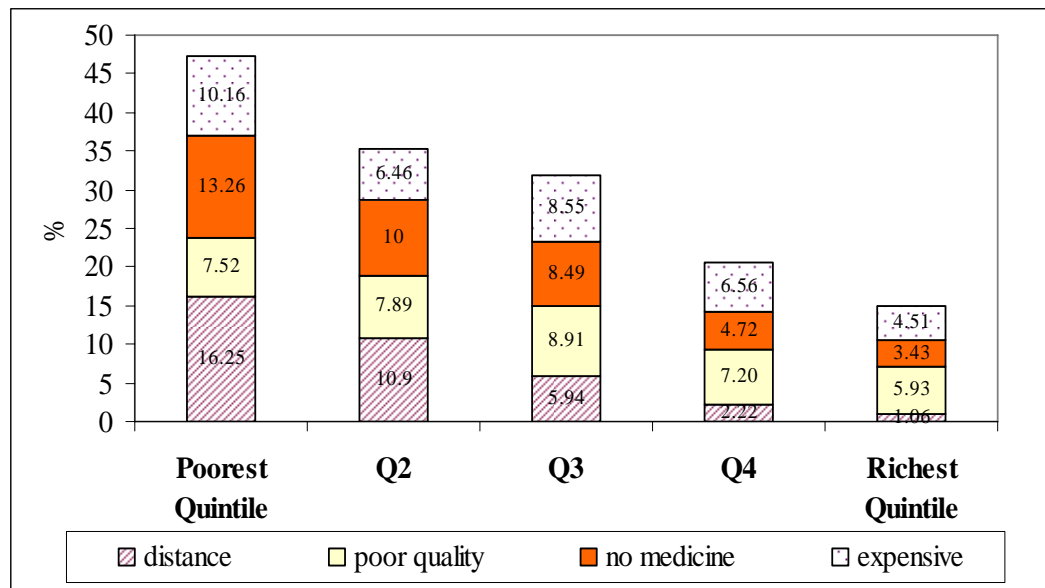


Source: Authors using the 2005 Nicaragua EMNV

4.4. Demand constraints

Long distances, lack of medicines, and high costs constitute the main reasons why poor individuals do not seek medical care when sick. Figure 26 and Table 5 present information on why individuals did not seek care when sick, by consumption quintile. The results indicate that approximately 51 percent of all patients who did not seek care when needed, in the poorest quintile, did so because their case was mild or because they opted to self-medicate (the corresponding percentage in the richest quintile was 80). Interestingly, the share of self-medication is highest among intervals in the richest quintiles, perhaps because they have more access to medicines (which are generally expensive for the poor). About 16 percent of all users in the first quintile did not seek medical care when needed because the nearest health facility was too far (these individuals probably resided in rural areas and in the Atlantic or central regions). The equivalent share was 1.0 percent among users in the richest quintile. Affordability constraints and lack of medicines, as expected, are a more important factor for non-utilization among poor users than among non-poor users. In particular, while 10.2 percent of all users who did not seek care in the bottom quintile did so because services are too expensive, the same share was at only 4.5 percent for users in the highest quintile. Finally while 13.26 percent of all users who did not seek care in the bottom quintile did so because there were no medicines available, the same share was only 3.4 percent in the highest quintile.

Figure 26: About 16 in every 100 patients in the poorest quintile do not seek health care when sick because the nearest health facility is too far



Source: Authors using the 2005 Nicaragua EMNV

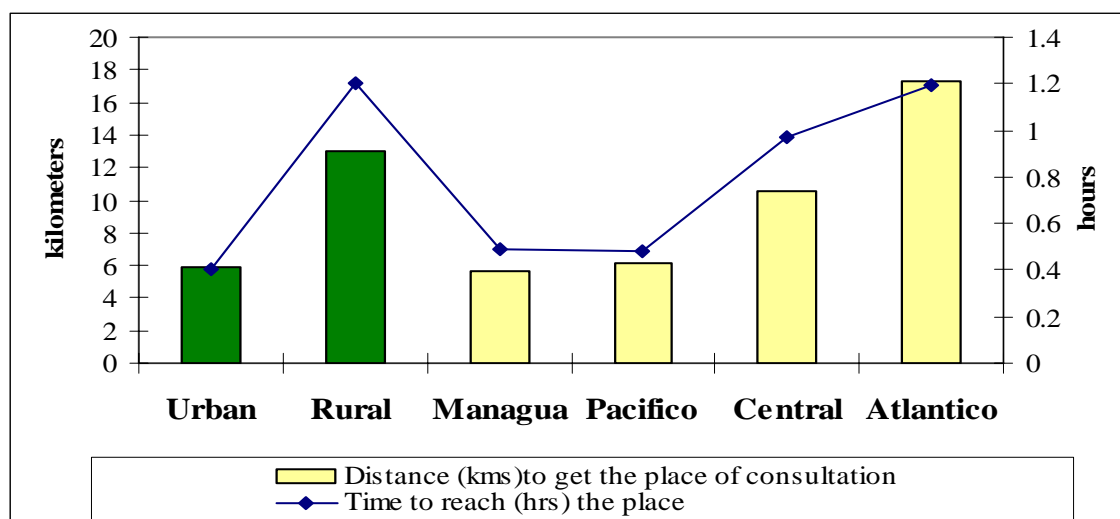
Table 5: some 6 to 8 percent of people do not seek health care when ill because of the poor quality of health care services provided

<i>Reasons Not to seek care when sick</i>	<i>Mild case</i>	<i>Distance</i>	<i>Poor quality</i>	<i>No medicine</i>	<i>Too Expensive</i>	<i>self-medicated</i>	<i>Other</i>
	%	%	%	%		%	%
Poorest Quintile	21.62	16.25	7.52	13.26	10.16	29.17	2.02
Q2	26.86	10.9	7.89	10	6.46	35.46	2.43
Q3	28.91	5.94	8.91	8.49	8.55	36.29	2.91
Q4	35.77	2.22	7.20	4.72	6.56	41.38	2.15
Richest Quintile	33.45	1.06	5.93	3.43	4.51	46.89	4.73

Source: Authors using the 2005 Nicaragua EMNV

The average distance to get to the nearest health care facility in the Atlantic region is 17.4 km; the average time taken is 1.2 hours. Poor and vulnerable individuals and especially those living in rural areas and in the poorest regions have lesser access to healthcare facilities. Poor users, especially Indigenous ones and those living in households engaged in agriculture, need to travel on average 13 to 14 km to the nearest health facility (vs. less than 6 km among the urban non-poor). The time users spend to reach the nearest health facility follows the same trend: poorer and more vulnerable individuals spend up to 1.3 hours to get to the nearest health care facility, vs. less than half an hour among the urban non-poor.

Figure 27: Users in rural areas spend three times more time to get to the nearest health facility than those in urban areas

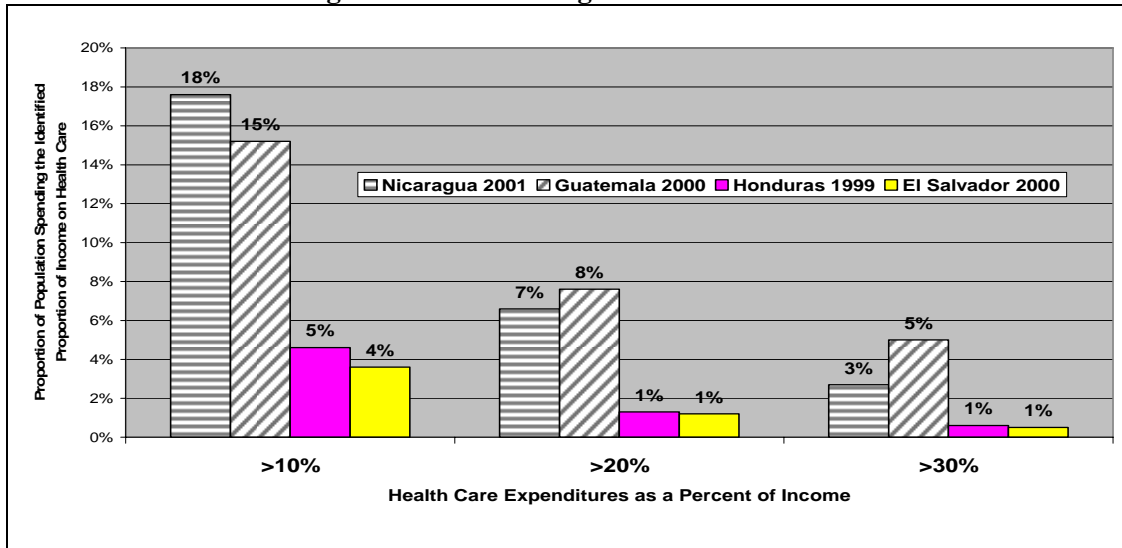


Source: Authors using the 2005 Nicaragua EMNV

About 20 percent of all individuals in Nicaragua spend more than 10 percent of their income on health care. As illustrated in Figure 28, Nicaragua displays the highest share of individuals spending more than 10 percent of their income on health care (18 percent); this share is significantly higher than that in Honduras and El Salvador (6 and 4 percent respectively). According to PAHO 2004 health indicators, about 95 percent of all private expenditures on health in Nicaragua are paid out-of-pocket, vs. 80 to 85 percent in countries with similar income levels such as Bolivia, Ecuador, Honduras, Guatemala and El Salvador. In countries with more developed insurance and social

security systems such as Colombia, Chile, and Uruguay, the same indicator is below 50 percent. All this suggests that out-of-pocket expenditures on health in Nicaragua are likely to constitute a heavier burden for households as compared to other countries in the region.

Figure 28: The share of households spending more than 10 percent of their income on health in Nicaragua is three times higher than that in Honduras or El Salvador



Source: World Bank 2006a

5. CONCLUSIONS

Nicaragua's health care system faces several main challenges that need to be addressed in order to improve the health status of its population: (i) inefficiencies in the allocation and utilization of resources, (ii) low levels of financial protection, (iii) high out-of-pocket expenses for the poor, (iv) difficulties in access to and poor utilization of health care services, and (v) an unregulated private sector and limited capacity of MINSA to perform its stewardship role to ensure pro-poor strategies and an efficient health system. Efforts to face these problems should be made within an equity framework, since the poor and Indigenous populations have not widely benefited from health gains. Even for immunization and reproductive health services, which are free of charge, there are differences in utilization between better-off and poor households. Current health disparities in Nicaragua will grow wider unless action is taken to address the needs of the most disadvantaged and vulnerable. Thus access, utilization and financing equity of essential health services should be expressed explicitly as one of the policy objectives of the Poverty Alleviation Strategy.

Nicaragua is not likely to achieve its country-specific health targets under the Millennium Development Goals, specifically in maternal and child mortality and child malnutrition. The trend of progress in health is slowing as the stage of 'easy' gains has been reached and passed. Achieving child and infant mortality goals will require more attention and resources to reduce neonatal mortality, and the delivery of the Community and Family Health Care Model (*Modelo de Salud Salud Familiar y Comunitario, MOSAFC*) therefore has the challenge of accelerating the pace of progress of key indicators, with special focused strategies for maternal and child care and nutrition under an integrated approach. Since the most effective measures for reducing neonatal mortality are also effective in reducing maternal mortality, the delivery of an integrated health care service package

with a multi-sectoral approach will be doubly beneficial. Specifically, the strategies for maternal and child care should include the following:

- Promote child and maternal health care preventive services, with a focus on earlier (first trimester) and more frequent prenatal visits (at least five), as well as broader coverage of postpartum care for women.
- Expand access to deliveries in medical institutions, as the share of women delivering in health care centers is still low for poor and rural women (especially in the Atlantic region). This will require steps on both the demand and supply sides. Nicaragua's strategy of establishing '*Casas Maternas*' has shown promising results and seems to be a good and expanding intervention.
- Prevent discontinuities in immunization coverage in CA4, particularly in the last doses of DPT and the measles vaccine. Further research will be important to identify the factors behind the discontinuities of immunization.
- Integrate key interventions into basic packages that are managed and financed by the Ministry of Health (MOH). To date, most of these key health interventions have been partially supported by donor financing, such as family planning services. It is essential that Nicaragua integrate these interventions within its MOH budgets to ensure their sustainability.

Furthermore, Nicaragua could improve health outcomes for the poor by addressing the marked inefficiencies in current health spending:

- In allocating fiscal and other resources Nicaragua should move away from historical budgeting to a system based on health needs, especially of vulnerable populations, and avoid concentrating resources in Managua and wealthier regions. More resources need to be targeted towards prioritizing primary care, prevention, and health promotion interventions. In Nicaragua, locally-driven, results-based budgeting should be strengthened to reverse the allocation process which has favored metropolitan areas and hospital care.
- Nicaragua should also move away from basing deployment of human resources on historical patterns, which has allocated few health workers to poor rural and urban areas. While Nicaragua deploys social workers based on an assessment of each region's health risks and needs, it has not yet extended this practice to health workers. As in other countries of the region, redistribution of health personnel through a centralized agency using health needs criteria has produced some promising results. This implies re-shaping the overall business model, with a set of incentives for results that rewards good performance of personnel and facilities.
- Over-reliance on physicians is another important source of inefficiency and human resource imbalances. The existing scarcity of nurses needs to be addressed by hiring more nurses and auxiliary personnel, especially for primary health care; revising the current medical education system, which emphasizes physician training and places less value on nursing; and creating greater incentives to enter the nursing profession by improving salaries, which are often less than half of physician salaries.

Since a high proportion of the population of Nicaragua remains completely uninsured, poor families are vulnerable to external shocks that take them into poverty. Even the poor, who are typically seen as

the target of government-financed actions, often opt to pay a substantial proportion of total health consultations, diagnostic services and medicines; out-of-pocket (OOP) expenses represent a high proportion of their income. Reducing the OOPs of the poor is a priority task, and requires more than a supply-side intervention. The pro-poor strategy should increase access to health care services, especially in rural and remote areas with low utilization of public health care facilities, high costs of transportation, and lacking medicines (these mainly explain why poor individuals do not seek medical care when sick). In this context, the Social Security National Institute (INSS) has to play a key role in improving health equity; the subsidies of the Government to social insurance arrangements are shown to benefit the richest groups.

Addressing all these issues will require coordinated actions on both the demand and supply side. Measures are required to increase supply, especially in poor and underserved rural areas. Alternative models of service delivery could be financed and regulated by the Government, in order to improve access for the most vulnerable populations. These modalities could include different options, with different comparative advantages, such as: purchasing subcontracting to non-governmental organizations; strengthening MOH health care centers, including flexible human and other resource management; deploying MOH mobile teams; and implementing decentralized community management models. Based on successful local experiences, Nicaragua will have to design its own strategy to reinforce supply and improve access to health and nutrition services in the poorest and most remote areas. The experiences of PROCOSAM, the *Casas Maternas*, and NGO contracting in family planning and reproductive health services are valuable. Demand-side strategies could also be implemented in achieving the objectives of the National Health Plan. For instance, conditional cash transfers (CCTs) could be implemented to overcome some financial and cultural barriers that prevent full access to services as part of the extension service coverage strategy. Existing CCTs could be used as a complementary tool to target public subsidies towards the most vulnerable populations, and as an opportunity to simultaneously improve access to nutrition and to primary health services. This intervention also requires an appropriate exit strategy, and an effective health and nutrition counseling component to promote long-term healthy behaviors.

Since the concepts of universal coverage, free services, and priority health care interventions are not necessarily matched to the current public resource allocation and health outcomes, introducing health equity dimensions into health system performance is essential. Nicaragua faces the political and organizational challenge of improving the effectiveness of the Anti-Poverty strategy in order to cover the needs of the poor and increase their health outcomes. This requires selective and effective coverage to the poor, including the promotion of social accountability schemes; technical quality; organizational improvements; availability of trained health workers and of medicines; multi-sector coordination to improve health and nutrition outcomes; targeting priority investments to less-served areas, increasing the outreach activities of core interventions; strengthening private and public partnerships to reach remote areas; improving drug management; focusing government health expenses on core services; and encouraging the private sector to invest in complementary services.

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Annex 1
Probit Estimates of Determinants of Utilization of Health Care Service

Variables	Probability of utilization of health care	Marginal effect for utilization of health care
(Dependent variable: individual received a consultation last month when he/she was sick.)		
Age Group		
age 20-39	-0.151	-0.06
age 40-49	N/S	N/S
age 50-59	<u>0.165</u>	<u>0.066</u>
age 60-69	0.314	0.124
age 70 and over	0.56	0.218
age^2	0	0
Characteristics of the Household/Head of household/Spouse		
household head w/ primary and adult education completed	N/S	N/S
household head w/ secondary education completed	N/S	N/S
household head w/ technical and tertiary education completed	N/S	N/S
spouse w/ primary and adult education completed	0.055	0.022
spouse head w/ secondary education completed	0.091	0.036
spouse head w/ technical and tertiary education completed	N/S	N/S
household head is employed	N/S	N/S
household head is not in labor force	N/S	N/S
covered by health insurance	0.555	0.216
size of household	N/S	N/S
household size^2	N/S	N/S
Geographic Location		
Managua	N/S	N/S
Pacific	0.12	0.048
central	0.13	0.052
urban	0.065	0.026
Income Quintile		
quintile 2	0.112	0.045
quintile 3	0.203	0.081
quintile 4	0.234	0.093
quintile 5	0.317	0.126
Type of Disease/distance to the consultation facility		
respiratory	-0.55	-0.217
diarrhea	0.998	0.361

chronic illness	N/S	N/S
other type of illness	N/S	N/S

Distance to the consultation facility

distance to the consultation facility (in kilometers)	-0.005	-0.002
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Source: authors' own calculations from the EHM. Reference categories: Age Group: age 0-19; Characteristics of the Household/Head of household/ Spouse: household head with no education; spouse with no education; Geographic Location: Atlantic; Income Quintile.

Annex 2. Probit Estimates of Determinants of Utilization of Preventive Care Service

Variables	Probability of utilization of preventive care	Marginal effect for utilization of preventive care
(Dependent variable: individual received a consultation last month even though he/she was not sick.)		
Age Group		
age 20-39	N/S	N/S
age 40-49	N/S	N/S
age 50-59	N/S	N/S
age 60-69	N/S	N/S
age 70 and over	N/S	N/S
age^2	N/S	N/S
Characteristics of the Household/Head of household/Spouse		
household head w/ primary and adult education completed	<u>0.078</u>	<u>0.003</u>
household head w/ secondary education completed	0.17	0.007
household head w/ technical and tertiary education completed	N/S	N/S
spouse w/ primary and adult education completed	0.123	0.005
spouse head w/ secondary education completed	0.163	0.007
spouse head w/ technical and tertiary education completed	0.234	0.011
household head is employed	N/S	N/S
household head is not in labor force	N/S	N/S
covered by health insurance	N/S	N/S
size of household	-0.475	-0.017
household size^2	0.128	0.005
Geographic Location		
Managua	0.302	0.014
Pacific	0.357	0.016
central	0.122	0.005
urban	N/S	N/S

Income Quintile		
quintile 2	N/S	N/S
quintile 3	0.174	0.007
quintile 4	0.163	0.007
quintile 5	0.194	0.008
Distance to the consultation facility		
distance to the consultation facility (in kilometers)	N/S	N/S
Gender		
male	<u>-0.062</u>	<u>-0.002</u>



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