



RESEARCH PROPOSAL

CHILD HEALTH, POVERTY AND THE ROLE OF SOCIAL POLICIES

Client:

**THE LATIN AMERICAN RESEARCH
NETWORK PROJECT (IDB)**

Date:

March 24, 2003

AP. 4227 Tegucigalpa, M.D.C., Honduras, C.A.
Tels. (504) 238-8570/71; Fax: (504) 238-8572
Email: esa@esa.hn; Web Page: www.esa.hn

TABLE OF CONTENTS

1	INTRODUCTION	3
1.1	ANTECEDENTS.....	4
1.2	OBJECTIVES OF THE CONSULTANCY.....	4
2	SPECIFIC POINTS TO BE ANALYZED	4
3	DATA	5
4	METHODOLOGY TO BE APPLIED	5
4.1	INITIAL PHASE.....	5
4.2	COMPLEMENTARY SURVEY.....	5
4.3	REVIEW OF THE DATA BASES.....	6
4.4	HYPOTHESIS AND VARIABLES FOR THE MODEL AND ANALYSIS.....	6
4.4.1	<i>Hypothesis</i>	6
4.4.2	<i>Model</i>	6
4.4.3	<i>Model variables</i>	7
4.4.4	<i>Comments on selected variables</i>	8
4.5	REPORTS.....	11
5	RESEARCHERS INVOLVED	12
6	PROGRAMMING OF ACTIVITIES	14
7	BIBLIOGRAPHY	15
	APPENDIX 1	17
	CURRICULA VITAE OF THE PROPOSED TEAM.....	21

1 Introduction

ESA Consultants is pleased to present a research proposal aimed at increasing knowledge about the effects of investment in the human capital of children. The Central American countries have initiated a series of programs based on the premise that investment in improving access to health services and education for all children is beneficial for a country. These programs seek to expand the public education system and to improve children's nutritional levels and health, with a special focus on those children belonging to the poorest strata of society. They are often implemented under the assumption that the benefits always outweigh the costs. Although evaluations are carried out regarding their effectiveness, efficiency and impact, the determinants of the effects on health and education are often not clear. In Honduras, in addition to the interventions undertaken by the Ministries of Education and Health, there are government programs, such as the Honduran Social Investment Fund (Fondo Hondureño de Inversión Social - FHIS) and the Program of Family Provision (Programa de Asignación Familiar - PRAF), which were specifically designed to improve the condition of the poorest citizens. A further goal was to break the cycle of poverty by ensuring that children have access to health and education services. In Nicaragua there are similar programs, such as the Social Investment Fund (Fondo de Inversión Social - FIS) and the Program of Assistance to Nicaraguan Children (Programa de Asistencia a la Niñez Nicaragüense - PAININ). ESA Consultants has had the opportunity to support these programs through numerous consultancies. Some of these include:

- Generation of indicators for the allocation of the FHIS budget
- Impact evaluation of the first phase of FHIS, and
- Construction of the base line for the monitoring and evaluation systems of PRAF and PAININ.

This has allowed ESA Consultants to form a clear picture of the Honduran and Nicaraguan socioeconomic reality, as well as the execution characteristics of these programs. As a result it has access to the database of the standard of living in Honduras (PRAF survey) and the database of standard of living in Nicaragua (LMSN, INEC survey) to be used in a research project regarding the determinants of infant health in these countries. In conclusion, ESA Consultants is in a position to carry out research about *Determinants of Infant Health* for Honduras and another parallel study for Nicaragua because:

- It has access to the data bases that measure the standard of living in Honduras and Nicaragua
- It is very familiar with the content of the data bases
- It knows the Honduran and Nicaraguan environment since it has worked extensively in the Central American region
- It has undertaken projects of a similar nature¹

The consultancy will consist of two separate research projects with their respective directors in charge – one for Honduras and the other for Nicaragua. Nonetheless, with the proposed team, there would be permanent and constructive interaction between the two projects.

¹ ESA has conducted regression analyses to assess the impact of social investments funds' interventions on poverty reduction.

1.1 Antecedents

It is well known that investment in raising the human capital of children contributes to improving their general well being and increases their opportunities to overcome poverty. Numerous studies have shown that higher levels of education correspond to higher levels of income and well being. In a similar fashion, other research suggests that productivity improves if good health conditions are maintained. Based on these premises, the governments have established public education and health programs for the whole population. Going even farther, they have initiated programs whose objective is to increase poor families' demand for public education and health services. However, it is still not clear whether the improvement in the children's' health is due to direct transfers of money made by these programs or the food supplements that they provide to the children through schools or public health centers. Another issue of interest to this research is the question of whether the targeting of these programs is effective or not.

1.2 Objectives of the consultancy

The consultancy's principal objective is to examine the public and private determinants of investment in households, specifically in the form of human capital, in Honduras and Nicaragua. When children's health is affected by malnutrition in the early stages of life, it can lead to a failure to grow with regards to standard international benchmarks, diminished resistance to infections, increased infant morbidity and reduced mental development and cognitive skills².

The specific project objectives are to identify.

- The public and private determinants of infant health.
- To what degree the public and private determinants interact and whether those interactions suggest substitution or a complementary relationship.
- To what degree the determinants of infant health vary according to the age and gender of the child; and
- The kinds of programs and interventions, which are associated with the improvement of infant health.

The education level of the parents, especially that of mothers, is an important factor³ for successful protection and improvement of children's' health. The interaction between public infant health care programs and the education level of parents can demonstrate the most significant characteristics with the greatest impact on infant health.

2 Specific points to be analyzed

The principal dependent variables to be considered in the analysis are the relation weight-for-height and height-for-age. Public or private interventions that impact children's health welfare should be reflected in these dependent variables. It is also desired to analyze the impact of these interventions and others on infant morbidity, birth weight and infant mortality.

The model's independent variables will be directly related with the child (age, gender...), the household (parents' education level, government assistance,), family income and the community (access to potable water, excreta elimination and primary health and education services).

² Taken from the objectives established for this consultancy in the in terms of reference.

³ Empirical research suggests that this affirmation is true.

3 Data

These analyses (one for Honduras and the other for Nicaragua) will be carried out with the general methodology proposed by *The Latin American Research Network Project*, using two databases:

The survey of measurement of Spending and means of Living (La Encuesta de mediciones de Gastos y medios de Vida). The Family Assistance Program (**PRAF**) undertook this survey in the western part of Honduras⁴ in 2002. It compiled data about the socioeconomic profile of households in order to provide PRAF with information about the country's poorest families. Through an analysis of the information acquired, PRAF must determine the most appropriate interventions to improve family welfare and, especially, that of children. ESA Consultants has access to this database since it participated in its elaboration.

The 2001 National Household Survey on Measuring the Standard of Living (La Encuesta Nacional de Hogares sobre Medición de Nivel de Vida del 2001). In Nicaragua this survey was carried out as part of the MECOVI project of the National Institute of Statistics and Censuses (**INEC**). It had coverage on a national level and compiled data regarding the characteristics of the house and the household, breastfeeding, economic activities, women's health and mortality, household consumption measured through spending and the education level of people over seven. The variables that can be analyzed from the survey are similar to those of the PRAF survey in Honduras.

In addition, in the case of Honduras a complementary survey will be carried out in order to obtain information regarding some aspects of the quality of care and the existence of other interventions undertaken in the survey areas.

4 Methodology to be applied

The research will include 5 stages;

- The first is a review of pertinent literature related to the variables that have been defined in the model, as well as a review of the instruments for the collection of data complementary to the data bases.
- The second involves collection of secondary information in health centers.
- The third is a review of the databases of the surveys on spending and standard of living carried out in Honduras and Nicaragua.
- The fourth is the analysis and running of the regression model to determine the correlation levels of the different variables, and
- The fifth is the writing of the final report.

4.1 Initial phase

The study will begin with a review of the existing literature regarding the importance of the variables proposed for this analysis. In a parallel fashion, an instrument will be designed for collection of data regarding the services that the state delivers to the population. This information will be complementary to the database on spending and measurement of standards of living in Honduras. An economist and a public health specialist will carry out these tasks.

4.2 Complementary survey

⁴ The western part of Honduras is one of the most rural in the country with the highest poverty levels, which makes it important for the study the behavior of social variables.

Attributes of the Complementary Survey

Two categories of information related to child health will be investigated through institution-based surveys, and will complement the data obtained from the PRAF community survey in Honduras. Knowing the sampling framework from the community survey, we can determine the health institutions and the municipal divisions corresponding to the areas covered by the survey. After assessing the availability of relevant information in a short pilot phase, interviews of key informants and review of registers will thus enable us to look at:

- Programs and projects related to health, nutrition, water and sanitation, income generation or improvement, education and so on, implemented in the survey areas during the period corresponding to (or just before) the survey
- Attributes of health services in the health facilities during the time of the survey: including availability of trained staff per category, availability of a set of marker drugs, etc.

These results will then be applied to all households members of the served communities, as cluster (community) variables.

A junior consultant will be in charge of carrying out the information survey to complement the PRAF database. Compiling this information will take approximately three weeks.

4.3 Review of the data bases

Once the field information is processed, the Honduran database will be complemented with this new information, and the two databases (Honduran and Nicaraguan) will be reviewed in order to adjust them to the format used for the model regression. A statistician from ESA Consultants, who has extensive experience on regression processing, will carry out this task.

4.4 Hypothesis and Variables for the model and analysis

The choice of variables for this model is based on the technical methodology proposed in the terms of reference and the relevant variables that can be obtained from the data bases about spending and measuring standard of living in Honduras and Nicaragua.

4.4.1 Hypothesis

The underlying question in this research is *to what extent do the variables related to the child, to the household and to the community influence the health status of children?* Our hypothesis is that *the variables investigated in the model have a relative influence on child Health.* A second hypothesis is that *the social programs, designed to offset the existing disparities among households in poor communities, do have an impact on improving child health.*

4.4.2 Model

Households may be assumed to choose child health H , leisure L , consumption of goods and services C , as if they are maximizing a household welfare function subject to the health production function constraint and budget constraint (see appendix 1). Preferences are assumed to be characterized by the utility function:

$$U = U(H, L, C; X_h)$$

Where X_h is a vector of household characteristics including the education level of the household head and his spouse. Child health is generated by a production function.

$$H = F(Y, X_i, X_h, X_c, i)$$

Where Y is a vector of health inputs, X_i is a vector of child characteristics, X_c is a vector of environmental factors that may have a direct impact on child health and η_i is a vector summarizing all unobservable characteristics. In addition, the choices of households are assumed to be limited by their full income constraint.

$$P_c C + W L + P_y Y = FI$$

Where P_c, W, P_y are the price vectors of consumption goods, leisure and health inputs, respectively, and FI is total household income.

4.4.3 Model variables

The variables chosen for analysis in this model are the product of research reports and others recognized by the literature as determinants of infant health.

The research is expected to provide estimates for H Using a regression function, such as:

$$H_i = \alpha + \beta_1 X_i + \hat{\alpha}_2 X_n + \hat{\alpha}_3 FI + \gamma X_c + \delta(X_n * X_c) + \eta_i$$

1. Health dependent variable (H_i):

Principal Indicators

- Weight-for-height
- Height-for-age

Other

- Birth weight
- Morbidity
 - a. Attention for diarrhea
 - b. Attention for respiratory diseases (IRAs)
 - c. Attention or a combination of diarrhea and IRAs
- Probability of being malnourished
- Hemoglobin level
- Infant mortality (only in the case of Nicaragua)

2. Child variables (X_i)

- Age
- Gender
- Relationship with head of household
- Lives with mother
- Lives with father
- Is appropriately vaccinated for his/her age
- Received vitamin A during the last 6 months
- The age difference between target child and the next in the family (birth interval)

3. Household Variables (X_n)

- Father's education level
- Mother's education level
- Mothers age for the different risk groups
 - a. Less than 18
 - b. Between 18 and 34
 - c. Over 34

- The relationship between the mother and the household head
 - a. She is the household head
 - b. She is the wife of the household head
 - c. Other relationship
- The age difference between father and mother
- The household head is self employed
- The household receives the PRAF mother/child vouchers (“bono materno infantil”)
- The household receives the nutrition and health voucher
- The household receives food aid from other organizations
- The household receives aid in the form of medicines and vitamin supplements from other organizations
- The household has a system for disposing of excreta
 - a. Toilets
 - b. Latrines
- The household has running water
- The household has electricity.

4. Income variable (FI)

- Total monthly household consumption (food + goods and services) as an approximation of real income

5. Variables related to the community or cluster-specific (X_c)

- Proportion of households in the community with excreta disposal systems (toilets + latrines)
- The proportion of households in the community with running water.
- Travel time to nearest health center.
- Type of trash removal.
- Has the community received health and nutrition support from some other organization?
 - a. Percentage of the community that received food aid
 - b. Percentage of the community that received aid in the form of medicines or vitamin supplements.
- Aspects related to quality of care at health institutions:
 - a. Waiting time to be attended by doctor or a nurse.
 - b. Consultation time with a doctor or nurse.
 - c. Availability of medicines.

4.4.4 Comments on selected variables

Dependent variables

Quantitative measurement of health poses methodological problems, which have not yet been fully resolved. One approach starts with measuring child growth and development and continues through the measure of physiological indices of physical functions. Another approach is concerned with measures showing lack of health, ending with mortality statistics (WHO, 1987). A number of questionnaires and increasingly complex scales have been developed to assess those several aspects of health, including recently the Years of Life Lost (YLL) and Disability Adjusted Life Years (DALY), introducing aspects related to quality of life and self-perception of discomfort and disability (World Bank, 1993; Murray and Lopez, 1997).

However, the application of complex measurement scales is more difficult when related to children (where the information depends on a caretaker) and is rarely included in non-specific surveys or studies. The measurement of the end point of illness, that is, infant and child mortality, is now more

systematically a part of nation-wide epidemiology and demographic studies, but often lacks the case-control approach that would allow a more detailed evaluation of the relative importance of biological, social, environmental and illness management related factors in the occurrence of early infant and child death.

As mentioned in the terms of reference, self reporting of disease episodes and disease burden at the household level is often tainted by biases, linked to the perceived severity of illness and the ability to express feelings and sufferings, the socially-determined perception of disease, the assumed access or lack of access to health services that may have the potential to cure the disease and the possible discrimination of some family members in terms of access to health care.

Anthropometrics indicators of nutritional status are thus often used as proxy indicators for health, especially in children. Indeed, malnutrition is now considered not as just a clinical problem or the lack of any specific nutrient, but as a state in which the physical function of an individual is impaired to the point where he or she can no longer maintain an adequate level of performance of such things as physical work, resisting or recovering from the effects of disease, maintaining an adequate level of growth, or the processes of pregnancy or lactation (Biswas, 1985). In this process, the physiological characteristics of an individual are so entwined with his or her environment in terms of burden of disease or socio-economic context that the fight against malnutrition is commonly described as moving from the vicious cycle of poverty, malnutrition and disease to make it a virtuous cycle of wealth, growth and health. Changes in malnutrition levels in developing countries through different type of interventions have been associated with corresponding changes in child survival (Pelletier, 2003). In Honduras, the Atención Integral al Niño (AIN) process emphasizes the detection of growth faltering, the investigation of possible causes and the definition of solutions adapted to the individual children and his or her environment by trained community members and groups of mothers as a main strategy to reduce infant and child mortality rates (BASICS, 2002)

Two anthropometrical indicators will be used in this study (WHO Global Database):

- **Weight for height:** is usually associated with acute malnutrition (or wasting): recent and severe process of weight loss, often linked to acute starvation and/or severe disease. An increase in prevalence of wasting >5% is often associated with parallel increase in mortality
- **Height for age:** the stunting reflects a process of failure to reach linear growth potential as a result of sub-optimal health and/or nutritional conditions. Often starts after 3 months, slows down after three years (thus the distinction between failing to grow in the first years of life vs. having failed to grow later on).

Nutritional status indicators will be expressed as Z-scores (that is, the observed value of the parameter minus the median value in the reference population over the standard deviation value in the reference population), a measure that allows the use of summary statistics such as means and standard deviation. In addition to these continuous variables, nutritional status parameters can also be expressed as a dichotomous (1,0) variable that can show the probability of being malnourished (wasting or stunting), that is, if the weight for height or height for age Z-score, respectively, is below a defined cut-off point - usually set up at $-2SD$.

Other indicators may reflect the health of children and some of them are found and measured in surveys used for this study:

- **Birth weight:** the relation between birth weight and survival has been recognized a long time ago (Loeb, 1965; Puffer and Serrano, 1987). Indeed, birth weight as a marker of events occurred during the prenatal period has been shown to be a main determinant of nutritional status and linear growth during the early period of life (Schmidt, 2002). However, this influence decreases as the child grows older. In addition, in countries where birth is not universally institutional, the availability and quality of data on birth weight is often problematic and must rely on gross estimates in pounds made by the mother, a relative or a traditional birth attendant.

- *Hemoglobin levels* in blood also reflect the nutritional status of children and mothers and are now more consistently included in health-related surveys. Iron deficiency is the most commonly recognized form of nutritional deficiency in developing countries. It particularly affects infants and young children because rapid growth imposes large iron needs and because most infant diets contain a marginal supply of iron (INACG, 1979)
- *Episodes of disease and care-seeking*: as mentioned earlier, the use of morbidity patterns in assessing the health of children can be subject to recall or perception biases, the former often limited by the time frame of the survey questions (last month or last two weeks) or the use of episodes that generated an active care-seeking process. Yet, this indicator is commonly used for studies of demand and utilization of health services (Bitran, 1993), including those conducted by the authors of this proposal in Nicaragua and Honduras in 1995-6. As both surveys considered in this proposal include the relevant information, the results obtained from this set of variable can be compared to those related to nutritional status.
- *Child mortality*: the Nicaragua survey identifies death of family members occurred during the previous year but does not include specific information on the health of persons who died before they died. However, the probability for a household, or for eligible children, within the household, of having an infant or child sibling dying in the previous year could be used as a dependent health variable, as the risk of dying for this index child is indeed affected by socio-economic and care-related variables pertaining to that household.

Independent variables

- *Age, sex, relationship to household head*

Those factors can affect the access to health promoting conditions or contribute to over exposure to health-damaging situation, through dependency on others to access food or health care, in the case of young children, or through discrimination in the intra-family allocation of resources and attention to the girl child or the child not directly related to the head of household/bread winner (PAHO, 2001)

- *Having adequate immunization schedule; attending growth monitoring sessions; having received Vitamin A supplements*

Those indicators are related to the care usually provided to the child and would witness, if positive, a regular contact with a source of information and care that would act towards a better outcome in terms of nutrition and health, in addition to reflecting the concerns of the caretakers for the well being of the child.

- *Feeding practices*

It has been shown recently that feeding practices, analyzed through a composite index, had a strong association with height for age Z-scores and could be used to define vulnerable groups that could be targeted for nutrition education and behavior change interventions (Ruel, 2002)

- *Birth interval*

The impact of short birth intervals on the health and survival of both children (discontinuation of breastfeeding for the older child, and decrease in mother's reserves - the "maternal depletion syndrome" - leading to low birth weight for the younger one, and lower levels of attention by mothers for both) has been one of the main rationale for the implementation of family planning program (Maine, 1981) and is one of the most important prenatal factors to consider

- *Maternal stature*

Maternal height is related to child growth and may explain some patterns of child height, both as a genetic factor and as a reflect of maternal nutrition.

- *Maternal education*

In addition to the well known effect of maternal education on the well being of the children and the improvement of his/her nutritional status through directly transferred health knowledge in the formal education system, enhanced capacity to diagnose and treat child's health problems and increased familiarity with modern society and health care resources (Glewwe, 1999), an important factor may relate to the shared knowledge present in the community and obtained from some of its members (Alderman, 2001; Christiaensen, 2001). The ability to find in the existing survey data a set of community-level variables that would reflect this shared knowledge is however limited.

- *Food consumption*

Although increases in nutrient intakes has not been proven to have a significant impact on health (Behrman, 1988), and the actual intake by the subject child from the household overall consumption may be affected by intra-family distribution factors, the level of food consumption, as assessed by food purchases over the recent period, should be considered as one of the variables of interest in the definition of determinants of child health, along with the respective prices of food items, and taking into consideration the overall family income.

- *Distance from health services*

Lack of primary health facilities often generates a problem of access to health care, limiting the options available for care-seeking, in particular in rural, disperse areas. However, it has also been shown that, even in those settings, people are sensitive to the quality of care provided in a way that would affect the use of these facilities (Noorali, 1999; Collier, 2002). This community-based perception of quality of care may vary according to places and culture and may related to waiting time or to availability of drugs. The existing databases will allow to investigate the distance from the closest health center, as well as the waiting time for the last attention received. These also are aspects that the complementary investigations considered in this proposal will look at in more details.

4.5 Reports

The preliminary findings will be discussed with other ESA Consultants who also have experience on the field. With this internal feedback, a rough draft will be prepared for the commentary and suggestions of the client.

5 Researchers involved

Vincent David (Director of research in Nicaragua)

Dr. Vincent David, a pediatrician and public health physician, has twenty years of experience in project management and technical assistance in the area of maternal and child health, program planning and evaluation, diagnostic studies, and development of support systems. As an MCH Advisor to the Honduran MOH with Management Sciences for Health, Dr. David coordinated a nation-wide survey on Mortality of Women in Reproductive Age and Maternal Mortality (1989-1990), which triggered the re-orientation and strengthening of activities aimed at decreasing maternal mortality in Honduras (the survey won the first prize at the 1990 Latin American Congress of Obstetrics and Gynecology in Montevideo).

In 1995-96, Dr. David led the design and analysis of a nation wide survey of Demand for Health Services in Honduras, including aspects related to willingness to pay for services, the results of which were used to inform the 15-year Master Plan for the Health Sector, developed by Systems Science Consultants and Management Sciences for Health, under JICA funding. At the same time, Dr. David coordinated the design and analysis of a similar, national, study of Demand for, and Supply of, Health Services in Nicaragua, under Component III of the MINSA-IDB Project. More recently, he participated with ESA Consultores in the design and analysis of the Evaluation System and corresponding baseline survey for the PAININ II Program in Nicaragua, as well as the evaluation of the Social Fund for Development in the Republic of Yemen.

Dr. David has worked on long-term assignments in Yemen, Honduras, Ethiopia and Uganda and completed various consultancies in Honduras, Nicaragua, El Salvador, the Dominican Republic, Bolivia and other countries. He holds his MD degree and Certificate in Pediatrics from Université René Descartes in Paris and his MPH from Harvard School of Public Health.

Social projects –Marco Moncada (Director of research for Honduras)

Mr. Marco Moncada has a master's in economics with a major in economic development, labor economics from Virginia Polytechnic Institute. He also has an interdisciplinary base in engineering and project evaluation.

The principal focus of his research, as a consultant for World Bank and UNDP projects, has been in the area of poverty reduction programs in the Central American region. He has ample experience in project monitoring and evaluation, designing indicators for the measurement of social projects, poverty reduction, evaluation and analysis of social spending and economic and financial analysis of programs and social policies.

In 2001 he was a member of the team that designed the national system of indicators for poverty reduction in Nicaragua for the Technical Secretariat of the Government of Nicaragua with funds from the Inter-American Development Bank (IDB). In addition, he carried out a consultancy involving the identification of a portfolio of poverty reduction projects that could potentially be financed through FETS in Honduras, Nicaragua, El Salvador and Costa Rica. In 2000 he worked as a Poverty Reduction Specialist, a member of the ESA Consultants team that developed the Proposal of the Poverty Reduction Strategy and as an economic and financial analyst in the Evaluation of Public Spending in Honduras, vertically monitoring the public sector in the areas of health and education. He has done similar work for the World Bank.

In 2000 he worked as an economist in the consultancy of Monitoring and Evaluation of the performance of FHIS, both as an institution and for project execution in the establishment of monitoring and evaluation indicators. He was also the consultant in charge of quantifying the financial needs of Honduran Social Investment Fund (FHIS) in the education sector for the fourth financing of the institution with foreign funds. In 1999 he was responsible for undertaking a detailed study of the total costs of projects executed by FHIS in order to determine their spending efficiency.

This study was supported with World Bank funds. Since 1994 he has participated in the preparation of base documents for the financing of FHIS by credit organizations. Currently is a member of the team for development of the design of a system of the indicators for poverty reduction in Honduras (SIERP) with IDB funds and the preparation of an alternative analysis and cost projections for poverty reduction in secondary education in Honduras with USAID funds.

Statistician / Sampler – Fidel Ordóñez

Mr. Ordóñez is the ESA Consultants coordinator in the area of statistics. He is a mathematician with a master's in statistics from the University of Chile in Santiago and a master's in Population Studies from the National Autonomous University of Honduras. He is specialized in the design and analysis of surveys, including econometric analysis using multivariate logistical regressions and similar techniques. He has been an adviser to the DGEC multiple purpose household survey and of the National Survey of Epidemiology and Family Health. He was a Technical Adviser to the last National Population Census carried out in 1988 and the National Survey of Income and Spending (1998-99). In 2000 he was Statistician of the Survey of the Base Line in 5,600 of the Poorest Households in Honduras and the Family Census in 7 Departments and 40 Municipalities of Honduras.

Saul Morris/Researcher (peer reviewer)

Mr. Morris has a bachelor degree in Economics, a MSc. in Medical Demography and a PhD from The London School of Hygiene and Tropical Medicine, UK. His thesis was about The analysis of longitudinal studies of common diseases of childhood. Lately, he has been involved in the following research projects in which he has worked in the analysis of regressions similar to the ones proposed in this model:

Family Allowance Program, Honduras – evaluation, monitoring, and program design (Co-Investigator). This project involves working closely with program staff in Honduras to reorient a \$50m program from a traditional cash handout to the Government's flagship program for the creation of human capital. The team has worked on redesigning the targeting system, on establishing appropriate levels of incentives for households, health centers, and schools, and on setting up the monitoring and evaluation systems. Participatory planning methods, such as the logical framework, have proved highly effective in achieving broad political support for the redesigned program. The entire program has been set up as a community randomized trial, with demand-side interventions, supply-side interventions, and combined interventions, as well as a control group, and the three-year, \$7m evaluation will address the relative effectiveness of government expenditure channeled directly to households and that spent on service provision. Outcomes include child and maternal nutrition and health, and educational achievement.

Impact evaluation of the Bolsa Alimentação food voucher program – Brazil (Co-Investigator). This program, worth \$320m per annum, is a major component of the Brazilian government's attempt to reduce poverty, inequality and child mortality. Cash transfers are made directly to women in families with children up to six years of age or pregnant women, on condition that they keep up-to-date with a pre-determined list of preventive health care measures. I work with the implementing team in the Brazilian Federal government to assess the impact of this intervention on household expenditure patterns, child growth, uptake of preventive health care, and women's status. An ex-post only quasi-experimental design is being used, based on the identification of families who did not receive program benefits due to errors in the processing of electronic information. In addition, the targeting of a number of Federal programs is being assessed based on cross-sectional surveys of approximately 80 municipalities.

6 Programming of activities

16 weeks will be necessary to carry out the research. Three of these will be destined to field work and the rest to the preparation of the tools for information collection, data processing and review and data analysis.

ESA Consultants

CHILD HEALTH, POVERTY AND THE ROLE OF SOCIAL POLICIES

Chronogram* and Task Analysis

Cod.Task	responsible party	Work weeks to complete the consultancy :																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
0 Sign contract	HC	B																
1 Initial stage																		
1.1 Review of relevant additional literature	MM, VD																	
1.2 Review and preparation of instruments for collection of field data	MM, VD, FO, EB																	
1.3 Programming of fieldwork	MM,SL,EB																	
2 Fieldwork data collection																		
2.1 Visits to the regional health divisions	EB																	
3 Data Processing and review of the data bases/ Preliminary model design																		
3.1 Data input (fieldwork)	EB, MM, VD																	
3.2 Data analysis	EB, FO																	
3.3 Review of the data bases of the PRAF survey in Honduras	FO																	
3.4 Review of the data bases of the MECOV survey in Nicaragua	FO																	
4 Analysis																		
4.1 First runs of the model	FO																	
4.2 Analysis of the results	MM,VD, FO																	
4.3 Review of the results	SM																	
4.4 Analysis of model sensitivity	MM, VD																	
4.5 Analysis of results	MM, VD																	
5 Final report																		
5.1 Draft report	MM, VD																	
5.2 Comments on draft report	MM, VD																	
5.3 Incorporation of comments and suggestions	MM,VD																	
5.4 Final reports (Honduras and Nicaragua)	MM, VD																	

R: At the end of the sixth week a revised version of the proposal will be produced

*: This chronogram can be altered by a few weeks but is still compatible with the datelines proposed in the Terms of Reference.

7 Bibliography

Abelin T., Brzezinski Z.J., Carstairs V.D.L. Measurement in Health Promotion and Protection. World Health Organization, 1987

Alderman H., Hentschel J., Sabates R. Policy Research Working Paper No. WPS 2627. The World Bank, June 2001.

Behrman J.R., Deolalikar A.B., Wolfe B.L. Nutrients: Impacts and Determinants. The World Bank Economic Review, Vol. 2, No. 3; 299-320, 1988

Biswas M., Pinststrup-Andersen P. Nutrition and Development, Oxford Medical Publications, 1985

Bitran R.A., McInnes D.K. The Demand for Health Care in Latin America. Lessons from the Dominican Republic and El Salvador. EDI Seminar Paper No. 46. The World Bank, 1993.

Christiaensen L., Alderman H. Child malnutrition in Ethiopia: Can maternal knowledge augment the role of income? Africa Region Working Paper Series Number 22. The World Bank, October 2001

Collier P., Dercon S., Mackinnon J. Density vs Quality in Health Care Provision: Using household data to make budgetary choices in Ethiopia. The World Bank Economic Review, Vol. 16, No. 3, 425-448, 2002

Glewwe P. Why does mother's schooling raise child health in developing countries: Evidence from Morocco. Journal of Human Resources, 34-1, 124-159, 1999

International Nutritional Anemia Consultative group (INACG). Iron Deficiency in Childhood, The Nutrition Foundation, New York, September 1979

Loeb J. Weight at birth and survival of newborn by age of mother and total birth order: United States, early 1950. National Centre for Health Statistics, Series 21, No. 5. U.S. Department of Health, Education and Welfare, Washington DC, 1965.

Maine D. Family Planning: its impact on the Health of Women and Children. The Center for Population and Family Health, Faculty of Medicine, Columbia University, New York, 1981

Murray C.J.L., Lopez A.D. The utility of DALYs for public health policy and research: a reply. Bulletin of the World Health Organization, 1997, 75:377-381

Noorali R., Luby S., Rahbar M.H. Does use of government service depend on distance from health facility? Health Policy and Planning, Vol. 14, No. 2:191-197, June 1999

Pan American Health Organization. Fact Sheet of the Program on Women, Health and Development. December 2001

Pelletier D.L., Frongillo E.A. Changes in child survival are strongly associated with changes in malnutrition in developing countries. J. Nutr. 133:107-119, January 2003

Puffer R.R., Serrano C.V. Patterns of Birthweights, PAHO Scientific Publication No. 504, 1987

Ruel M.T., Menon P. Child Feeding Practices are associated with child nutritional status in Latin America: Innovative uses of the Demographic and Health Surveys. J. Nutr. 132:1180-1187, 2002

Schmidt M.K, Muslimatun S., West C.E. & al. Nutritional status and linear growth of Indonesian infants in West Java determined more by prenatal environment than by post natal factors. J. Nutr.132:2202-2207, 2002.

World Development Report, World Bank, 1993

World Health Organization. WHO Global Database on Child Growth and Nutrition (<http://www.who.int/nutgrowthdb>).

Other Related Literature:

- . Female Education and Child Mortality in Indonesia. By Millington, N. & Cameron, L. (RePEc:melbec:693)
- . Developing and Distributing Essential Medicine to Poor Countries: The DEFEND Proposal. By Ganslandt, M. & Maskus, K.E. & Wong, E.V. L. (RePEc:fth:iniesr:552)
- . Health, Inequality, and Economic Development. By Deaton, A. (RePEc:fth:priwds:200)
- . Public Policy and Anthropometrics Outcomes in the Cote d'Ivoire. By Thomas, D & Lavy, V & Strauss, J (RePEc:fth:randrs:96-19)
- . Child Health and its Determinants in Developing Countries. A Cross Country Comparison. By Ray, R. (RePEc:fth:tasman:1998-02)
- . The Effect of the Food Stamp Program on Nutrient Intake. By Butler, J.S. & Raymond, J. (RePEc:fth:vander:95-w01)
- . Child Mortality and Public Spending on Health. How Much Does Money Matter? By Filmer, D. & Pritchett, L. (RePEc:fth:wobaco:1864)
- . EARNINGS EFFECTS OF HOUSEHOLD INVESTMENT IN HEALTH IN COLOMBIA. By Ribero, R. (RePEc:fth:yorkca:99-23)
- . The Value of Life and the WTP for an Increased Life Expectancy at an Advanced Age. By Johannesson, Magnus & Johansson, Per-Olov & O'Connor, Richard M. (RePEc:hhs:hastef:0103)
- . Consumption and Nutrition: Age-Intake Profiles for Czechoslovakia 1989-1992. By Miquel, R. & Laisney, F. (RePEc:fth:ceeuer:00-63)

APPENDIX 1

THE LATIN AMERICAN AND CARIBBEAN RESEARCH NETWORK PROJECT Call for Research Proposals Child Health, Poverty and the Role of Social Policies

Methodology

Households may be assumed to choose child health H , leisure L , consumption of goods and services C , as if they are maximizing a household welfare function subject to the health production function constraint and budget constraint. Preferences are assumed to be characterized by the utility function.

$$U = U (H, L, C; X_h) \quad (1)$$

Where X_h is a vector of household characteristics including the education level of the household head and his spouse. Child health is generated by a production function.

$$H = F (Y, X_i, X_h, X_C, \dot{\iota}), \quad (2)$$

Where Y is a vector of health inputs such as nutrient intake, health care practices (immunization), time spent by parents taking care of children, an disease incidence, X_i is a vector of child characteristics such as age and gender, X_C is a vector of environmental factors that may have a direct impact on child health and $\dot{\iota}$ is a vector summarizing all unobservable characteristics of the child, parents, household, and the community that affect child health. In addition, the choices of households are assumed to be limited by their full income constraint.

$$P_c C + W L + P_y Y = F I \quad (3)$$

Where P_c , W , P_y , are the price vectors of consumption goods, leisure and health inputs, respectively, and $F I$ is full income including the value of the time endowment of the household and non-labor income. In this framework, the reduced form function for child health is.

$$H = \Phi (X_i, X_h, X_C, F I, P_c, W, P_y \dot{\iota}), \quad (4)$$

Whereby the particular functional form of the function $\Phi (.)$ depends on the underlying functions characterizing household preferences and the health production function.

The Research Network studies selected are expected to provide estimates of the reduced form (4) using a regression function (or variant) such as.

$$H_i = a + B_1 X_i + B_2 X_h + B_3 F_i + B_4 X_C + \delta (X_h \wedge X_C) \epsilon_i \quad (5)$$

Where subscript i indexes children, and the vector X_c is expanded to include prices and wages, i.e. $\wedge X_C = \{X_c, P_c, W, P_y\}$.

One of the main objectives of this project is to study the extent to which the parameter δ summarizes whether there are any interactions between household socioeconomic characteristics and community level variables. For example, suppose that X_h is the level of mother's education and X_c denotes the availability of an information program for mothers regarding child nutrition. A significantly negative value for δ would then suggest that mother's education is a substitute for such a program so that children of less educated mothers derive greater benefits from the program.

VARIABLES TO BE USED IN REGRESSIONS

Dependent variable:

In equation (5) the dependent variable H denotes the health of a child. Given that health status is multidimensional and context sensitive, no single variable is likely to capture the health status of an individual fully. Nevertheless, Research Network participants are encouraged to steer away from using self-reported measures or morbidity as these may be prone to error and related to information, in contrast, such as height-for-age and weight-for-height are thought to be more objective indicators of health. Whereas height-for-age reflects the accumulation of past outcomes, weight-for-height is thought to be a good shorter-run measure of health status (Falkner and Tanner, 1986). Although these indicators actually reflect the nutritional status of children, in a poor environment nutritional status and health are likely to be correlated.

Specifically, for infants and young children (generally 0-5 years old, though considering older children also would be possible) health is to be measured by height-for age and weight-for-height Z-scores (or standard deviation units from the reference mean), often used by nutritionists as indicators of long-run and short-run nutritional status. The Z-scores can be constructed using the World Health Organization/National

Center For Health Statistics/Center for Disease Control (WHO/NCHS/CDC) International Growth Reference as the standard for well-nourished children.³ For example, the weight-for example, the weight-for-age Z-score for a child *i* in age and gender group *c* can be constructed as $Z_{ic} = (W_{ic} - \text{Median } W_c) / \text{Where } W_{ic}$ is the measured weight of the child, Median W_c and are the age-and gender-specific median weights and standard deviation of weights, respectively, of well nourished children.⁴

In addition it may be of interest to consider the following:

Other indicators of child health such as clinical measures or reported morbidity (subject to the caveat above) for comparison.

The use of birth weight as an indicator of child health

The determinants of the probability of being substantially undernourished (i.e., stunted). In this case the dependent variable in equation (5) may be a binary variable taking the value of 1 if the height-for-age or weight-for-height Z-score is less than -2 , and 0 otherwise.

³ Many find it difficult to accept the fact that children of different ethnicity have the potential to achieve similar levels of growth attainment in the first few years of life. In defense of this practice one can point to research that has shown that ethnic differences become established at puberty rather than at early childhood. Habicht et al. (1974), for example, concluded from their study of well nourished children from different backgrounds that nutrition has a much greater effect on growth attainment in the first few years of life than does ethnicity.

⁴ Specifically, one may use the ANTHRO software program provided by Centers for Disease Control (CDC). The International Growth Reference used by ANTHRO is based on the WHO/NCHS/CDC Growth Curves, NCHS Series 11-165 (1977). Other software's are also available.

The determinants of the probability of being substantially overweight. In this case the dependent variable in equation (5) may be a binary variable taking the value of 1 if the weight for height Z score is greater than 2, and 0 otherwise.

Child specific variables:

These may include dummies for age, gender, relationship to household head, birth order etc.

Parent and household-specific variables:

This set of variables may include parental schooling, the age of the mother, and variables describing the relation of the child's mother to the head of the household and age differences between the parents to account for potential differences in the control of, or access to, resources in the household. Ideally one should also control for the height or weight of the parents of the child. There is evidence (Barrera, 1990), for example, that the contribution of maternal education to child health may be significantly overestimated if maternal education to child health may be significantly overestimated if maternal endowments are not controlled.

In place of household full income (FI) it would be preferable to use (the logarithm of) monthly per capita household expenditures defined as the sum of expenditures on food, and miscellaneous goods and services divided by the total number of household members. Given that household income is subject to seasonal fluctuations and households are likely to smooth consumption expenditures, consumption expenditures of the household provide a better measure of long-run resource availability. An alternative would be to construct an index of household assets. Filmer and Pritchett (2001), for example, illustrate such a method using assets in the Demographic Health Surveys (DHS) which have neither income nor consumption data.

Community or cluster-specific variables:

One of the main objectives of this project is to identify community-specific policy-affected variables that can be matched to each sample cluster included in the household survey analyzed. Each proposal is expected to identify community-level policy variables that have the potential of being significant determinants of child health outcomes, that vary substantially across localities, and that could be modified by program interventions.

Examples of policy-affected community-level variables, include: The prevalent household (hh) sources of water in the community, the sufficiency of water for hh uses in the community, prevalent type of toilet in community, travel time or distance to nearest health facility with child outpatient services, absence of excreta in the environs of community, the number of nurses present, the number of support personnel, availability of antibiotics, aspirin, quinine etc., the availability of child birth facilities, immunization services, growth monitoring programs, number of usable beds in health facility, number of working vehicles in the facility, etc.

To the extent possible it would also be useful to utilize data about the types of health programs that are in operation in the community. Examples of the "types" of programs include complementary feeding programs for young children, programs aimed at helping, training or educating pregnant and lactating women on how to properly feed and better care for their infants and children, providing micronutrient rich supplementary foods and drinks, training and information programs for staff at primary health centers, food coupon schemes and other cash or in-kind programs aimed at increasing food coupon schemes and other cash or in-kind programs aimed at increasing food availability to poor households, for pregnant and lactating women and/or families with young children.

It is also important to merge in information at the community level on prices of key commodities and wages for the main types of labor (such as wages for adult males and females in agricultural activities or for unskilled labor, etc.), climate, rainfall, altitude, distance from major urban centers, etc.

As a means of helping potential applicants for the Research Network initiate their search for appropriate data bases, the table below provides a list of the World Bank LSMS surveys in LAC countries with anthropometrics measures on children. Studies proposing to analyze new data sets other than the LSMS surveys are most welcome. Additional data sets containing anthropometrics

measures on children (and their mothers along with some other household characteristics) are the Demographic and Health Surveys.

CURRICULA VITAE OF THE PROPOSED TEAM

CURRICULA VITAE

VICENT J. DAVID

KEY QUALIFICATIONS

Dr. Vincent David, a pediatrician and public health physician, has twenty years of experience in project management and technical assistance in the area of maternal and child health, program planning and evaluation, diagnostic studies, and development of support systems. As an MCH Advisor to the Honduran MOH with Management Sciences for Health, Dr. David coordinated a nation-wide survey on Mortality of Women in Reproductive Age and Maternal Mortality (1989-1990), which triggered the re-orientation and strengthening of activities aimed at decreasing maternal mortality in Honduras (the survey won the first prize at the 1990 Latin American Congress of Obstetrics and Gynecology in Montevideo).

In 1995-96, Dr. David led the design and analysis of a nation wide survey of Demand for Health Services in Honduras, including aspects related to willingness to pay for services, the results of which were used to inform the 15-year Master Plan for the Health Sector, developed by Systems Science Consultants and Management Sciences for Health, under JICA funding. At the same time, Dr. David coordinated the design and analysis of a similar, national, study of Demand for, and Supply of, Health Services in Nicaragua, under Component III of the MINSA-IDB Project. More recently, he participated with ESA Consultores in the design and analysis of the Evaluation System and corresponding baseline survey for the PAININ II Program in Nicaragua, as well as the evaluation of the Social Fund for Development in the Republic of Yemen.

Dr. David has worked on long-term assignments in Yemen, Honduras, Ethiopia and Uganda and completed various consultancies in Honduras, Nicaragua, El Salvador, the Dominican Republic, Bolivia and other countries. He holds his MD degree and Certificate in Pediatrics from Université René Descartes in Paris and his MPH from Harvard School of Public Health.

EDUCATIONATIONAL BACKGROUND

- Master of Public Health, International Health, Harvard School of Public Health, 1984.
- Medical Doctorate, Université René Descartes, Paris-V, 1979

Additional Coursework

- Certificate in Pediatrics, following the residency program, Paris-V, 1983.
- Certificate of Medicine Worldwide & Emergency Relief, Paris-VI, 1979.

WORK EXPERIENCE:

Health Management/Quality Assurance Advisor, Management Sciences for Health (MSH), Delivery of Improved Services for Health (DISH) II Project, Kampala, Uganda, December 1999 to present. Leads the Management/QA component of this USAID-funded Project aimed at improving demand for, and availability and quality of, reproductive and child health services in 12 districts of Uganda. Oversees the development of a computerized HMIS and sentinel sites system aimed at improving data utilization and analysis at district and sub-district levels; support to improvements in drugs and contraceptive logistics system; participated in the development and dissemination of National Supervision Guidelines. Leads and implements a joint Project/MOH Quality of Care Initiative aimed at improving quality of services through monitoring of quality standards and reward system for performing facilities. Liaises with central MOH technical Divisions (Health Planning, Resource Center, Quality Assurance) to ensure that DISH's successful interventions are disseminated at national level.

Principal Program Associate, MSH, Honduras, November 98 to November 1999. Short-term consultancies and participation in project proposal writing.

Health Policy Advisor/Chief of Party, BASICS/Essential Services for Health in Ethiopia (ESHE) Project, MSH, Addis-Abeba, January 1997 to October 1998. **Led resident team in this project aimed at strengthening the delivery of Child Survival and other health services in the Southern Nations and Nationalities People Region (SNNPR). Coordinated project planning and monitored the achievements of benchmarks; assisted in the implementation of the national reform agenda and the preparation of the Health Sector Development Program. Responsible for elaboration of annual workplans and budgets, supervision of expatriate and local technical and administrative staff, and overseeing of all resources for the BASICS contract. Coordinated with other agencies and NGOs working in the SNNPR. Organized and conducted two national-level management courses.**

Health Services Specialist, MSH, Honduras, January 1995 to August 1996. Worked with Systems Science Consultants, Tokyo, and national counterparts, in the JICA-funded Study of Plans and Strategies to upgrade Health Status in Honduras, to produce a 1995-2010 Master Health Plan for Honduras Health sector. Specific tasks included planning for curative health services, overall coordination of health services delivery sections and design and analysis of household, exit interview and facility diagnosis surveys on demand for health services and willingness to pay for them.

Coordinator, Demand Study, MSH, Nicaragua, January 1995 to August 1996. Within IDB-financed MINSA/BID Project, coordinated the study of demand for health services in Nicaragua, including review of service offer and previous performance of health services; design and analysis of a 7,500-household survey on demand for services and willingness to pay.

Principal Program Associate, MSH, Honduras, July to December 1994. Short-term consultancies and participation in project proposal writing.

Senior Public Health Management Advisor/Chief of Party, MSH, Rwanda Integrated Maternal and Child Health Project, February to July 1994. Project aimed at improving comprehensive reproductive health services and management skills in four regions of the country. Project was canceled due to the civil war situation in the country.

Maternal and Child Health/Child Survival Advisor, MSH, Honduras, Health Sector I and II Projects, August to December 1998, January 1989 to December 1993. Under these AID-funded projects, collaborated in design, implementation and supervision of MCH. Specific outputs included: a nation-wide survey on mortality among women of reproductive age and maternal mortality; support systems for maternal health and family planning activities (information system, material and drugs logistics, supervision); a survey on "lost opportunities" for family planning; revision of MOH standards of care for reproductive and child health; training in ARI/DD-cholera case management; testing of a community-based strategy for pneumonia management; testing of a growth & development monitoring strategy, seen as a path towards "integrated child care". Served as Acting Chief of Party on several occasions.

Health System Advisor, MSH, Yemen Arab Republic, Tihama Primary Health Care Project, December 1985 to April 1988. Helped develop primary health care system for the rural areas of the Hodeidah Governorate through training PHC workers, establishing 70 PHC units and developing support systems. Specific tasks included the development of health information system, supervision manual, training program on PHC activities; and analysis of the financial implications of project activities. During the last six months of assignment, assumed the functions of Chief of Party.

Primary Health Care Advisor, United Nations High Commission for Refugees (UNHCR), Sudan, November 1984 to May 1985. Supervised and coordinated the health services offered in refugee sites in Eastern Sudan (population about 400,000). Development of information systems, epidemiological surveillance and investigations, standardization of services at a level compatible with the situation of local population,

development and standardization of curricula for CHWs and medical guidelines, development of referral system.

Resident in Pediatrics, University René Descartes, Paris, October 1977 to April 1980, then October 1981 to April 1983. **Seven semesters in Pediatrics, including two in neonatology, one in**

Obstetrics.

Medical Coordinator, Médecins Sans Frontières (MSF), Somalia, April 1981 to September 1981. Directed MSF team in Gedo's Burdhubo camp (10,000 persons), including OPD, TB control, supplementary feeding centers, immunizations, in-patient dpt.. Supervised field training of CHW.

Medical Coordinator, MSF, Thailand, April 1980 to January 1981. Directed MSF team in the Mairut Holding Center (12,000 people), including definition of health services and manpower needs, coordination between authorities and NGOs; guidelines and supervision of services offered by the hospital and several clinics (OPD, immunization and FP services, TB control). Training programs for the staff and CHW.

CONSULTANCIES

MSH, Honduras, September-November 1999. Team leader, Preliminary design of Health Sector III Project for USAID.

BASICS Project, El Salvador, March-May 1999. Development of M&E System for the Management Contracts passed between the Sistemas Sanitarios and the Ministry of Health within the context of decentralization and health sector reform. Preparation of relevant training manuals.

EuroHealth, Mali, October-November 1996. Team leader, Evaluation of the EU-financed component of the Project Santé, Population et Hydraulique Rurale (PSPHR); review of support to national drug policy, training of staff in district-level health centers, and elaboration of report.

EuroHealth, Dominican Republic, September 1996. Team Leader, Evaluation of the EU-financed Programa Integrado de Salud en el Sur-Oeste (PRISA).

BASICS Project, Bolivia, May 1996. Review of M&E aspects of BASICS and Community Child Health Project; recommendations about key child survival and related indicators, consistent with the strategic framework of USAID/Bolivia.

Family Planning Management Dvpt (FPMD) Project, MSH, El Salvador, August – September, 1994. Evaluation of the management of the MOH's Family Planning program (planning, information system, training, logistics and monitoring/evaluation). Identification of relevant training needs.

BASICS Project, Honduras, June 1994. Definition of MOH's needs for short-term technical assistance in the areas of ARI and Diarrheal Diseases Control and Growth monitoring.

Management Training Office, MSH/Boston, May - June 1988, June - July 1989. Participated in development and teaching of a four-week course on “Maternal and Perinatal Health Care: A Management Approach”, for health professionals of third-world countries. In the second year, coordinated course preparation and directed instruction.

Enfants Réfugiés du Monde, Belize, October 1985. Evaluated the training program for refugee and local Health Promoters in the Orange Walk region and prepared for the transfer of supervision from the expatriate agency to the Belizean Public Health staff.

Enfants Réfugiés du Monde, Lebanon, July 1982. Organized mobile clinics among displaced civilian population in Western Beyrouth, in cooperation with UNICEF, Red Crescent and Lebanese Red Cross.

PUBLICATIONS

Castellanos, M., Ochoa Vasquez J.C., David V. Mortalidad de mujeres en edad reproductiva y mortalidad materna - Honduras 1990. Tegucigalpa, 1990. [This investigation was awarded the first rank in the 1990 Latin American Congress of Obstetrics and Gynecology.]

David V., Meléndez J.H. Las enfermedades diarreicas en Honduras. Serie de Diagnósticos No. 10. Organización Panamericana de la Salud. Tegucigalpa, 1993.

Meléndez J.H., David V. Las infecciones respiratorias agudas en Honduras. Serie de Diagnósticos No. 13. Organización Panamericana de la Salud. Tegucigalpa, 1994.

Management Sciences for Health – Ministerio de Salud (MINSa) – Banco InterAmericano de Desarrollo (BID). Estudio de Demanda de Servicios de Salud – Nicaragua, 1996

LANGUAGES

French: Native
English: Fluent
Spanish: Fluent

COMPUTER SKILLS

Microsoft Office, EPI Info, SPSS, Project Manager
Tegucigalpa, March , 2003

CURRICULUM VITAE**MARCO MONCADA FLORES****ECONOMIST**

Address: Col. Castaño Sur, paseo Virgilio Zelaya, No. 2703
Tegucigalpa, Honduras

Telephone number: 221-4290

Nationality: Honduran

Mr. Marco Moncada has a master's in economics with a major in economic development, labor economics from Virginia Polytechnic Institute. He also has an interdisciplinary base in engineering and project evaluation.

The principal focus of his research, as a consultant for World Bank and UNDP projects, has been in the area of poverty reduction programs in the Central American region. He has ample experience in project monitoring and evaluation, designing indicators for the measurement of social projects, poverty reduction, evaluation and analysis of social spending and economic and financial analysis of programs and social policies.

In 2001 he was a member of the team that designed the national system of indicators for poverty reduction in Nicaragua for the Technical Secretariat of the Government of Nicaragua with funds from the Inter-American Development Bank (IDB). In addition, he carried out a consultancy involving the identification of a portfolio of poverty reduction projects that could potentially be financed through FETS in Honduras, Nicaragua, El Salvador and Costa Rica. In 2000 he worked as a Poverty Reduction Specialist, a member of the ESA Consultants team that developed the Proposal of the Poverty Reduction Strategy and as an economic and financial analyst in the Evaluation of Public Spending in Honduras, vertically monitoring the public sector in the areas of health and education. He has done similar work for the World Bank.

In 2000 he worked as an economist in the consultancy of Monitoring and Evaluation of the performance of FHIS, both as an institution and for project execution in the establishment of monitoring and evaluation indicators. He was also the consultant in charge of quantifying the financial needs of Honduran Social Investment Fund (FHIS) in the education sector for the fourth financing of the institution with foreign funds. In 1999 he was responsible for undertaking a detailed study of the total costs of projects executed by FHIS in order to determine their spending efficiency. This study was supported with World Bank funds. Since 1994 he has participated in the preparation of base documents for the financing of FHIS by credit organizations.

Currently is a member of the team for development of the design of a system of the indicators for poverty reduction in Honduras (SIERP) with IDB funds and the preparation of an alternative analysis and cost projections for poverty reduction in secondary education in Honduras with USAID funds.

PROFESSIONAL EXPERIENCE

1999 to Present at ESA Consultores.

Evaluation of the cost of reaching Poverty Reduction Strategy goals for secondary education coverage, USAID 2002.

Design of the system of indicators for tracking the Nicaraguan Poverty Reduction Strategy. Govt. of Nicaragua / Interamerican Development Bank (2002)

Design of the system of indicators for tracking the Honduran Poverty Reduction Strategy. . Govt of Honduras / Interamerican Development Bank (2002)

Economic Analysis for the Implementation Completion Report of the Honduras Basic Education Project. World Bank. 2002.

Project Evaluation Specialist and Economist in the Social Sector for an External Evaluation for Honduras Projects financed by the Swiss Confederation. 2001

Poverty reduction specialist, member of the ESA team which is developing the Poverty Reduction Strategy Proposal. Client: World Bank. 2000.

Monitoring and Evaluation System for the Honduran Social Investment Fund. Client. World Bank. 2000.

Survey analysis on the Quality and Basic Abilities in Reproductive Health Services Survey for the Women Integral Assistance Program. Client: German Cooperation Agency (GTZ). 2000.

Team leader for the Cost Efficiency Analysis for the Honduran Social Investment Fund (FHIS). World Bank, 1999.

Economist on the World Bank Team preparing the Fourth Honduran Social Investment Loan (1998)

Preparation of the Human Development Report for Honduras (1997). UNDP.

Long term consultant to *RUTA Social* (Regional Unit of Technical Assistance of the Social Sectors. Field office sponsored by the World Bank and the Inter-American Bank, 1995-97)

Economist on the FHIS-World Bank Team preparing the Third Honduran Social Investment Loan (1994).

Professor at the National Autonomous University of Honduras (UNAH). 1982 to present.

Technical Assistance

- Participated in a team of the Office of Planning of Chile for the social evaluation of line 2 of the subway system of Santiago (1988)
- Provided technical assistance for the introduction of appropriate technologies for small rural enterprises in Honduras, working as a consultant for the Industrial Development Center of Honduras. The main objective of the rural technologies project was to improve productivity as a means of improving quality of life for the rural poor (1980-82).

EDUCATION

Virginia Polytechnic Institute, Blacksburg, VA. USA (1991-1993)

M.Sc. in economics and completion of doctoral courses in economics

Catholic University of Chile, Santiago, Chile (1988)

Postgraduate Certificate in Social and Economic Project Evaluation

University of Iowa, Iowa City, IA. USA (1984-1986)

M.Sc. in Industrial and Management Engineering

Universidad Nacional Autónoma de Honduras, Tegucigalpa Honduras (1975-1979)

B.S. in Mechanical and Industrial Engineering.

PUBLICATIONS

- Guatemala, *El Gasto Social y Su Eficiencia*, RUTA Social-SEGEPLAN, Guatemala, 1996
- Nicaragua, *El Gasto Social y Su Eficiencia*, RUTA Social, Tegucigalpa, 1997
- Panama, *El Gasto Social y Su Eficiencia*, RUTA Social, Tegucigalpa, 1997
- Honduras, *El Gasto Social y Su Eficiencia*, RUTA Social-SETCO, Tegucigalpa, 1997

LANGUAGES

Spanish – native

English – fluent

Tegucigalpa, M.D.C. March, 2003

CURRICULUM VITAE

FIDEL ORDOÑEZ STATISTICIAN

KEY QUALIFICATIONS

Mr. Ordóñez is the ESA Consultants coordinator in the area of statistics. He is a mathematician with a master's in statistics from the University of Chile in Santiago and a master's in Population Studies from the National Autonomous University of Honduras. He is specialized in the design and analysis of surveys, including econometric analysis using multivariate logistical regressions and similar techniques. He has been an adviser to the DGEC multiple purpose household survey and of the National Survey of Epidemiology and Family Health. He was a Technical Adviser to the last National Population Census carried out in 1988 and the National Survey of Income and Spending (1998-99). In 2000 he was Statistician of the Survey of the Base Line in 5,600 of the Poorest Households in Honduras and the Family Census in 7 Departments and 40 Municipalities of Honduras.

PROFESSIONAL EXPERIENCE

- Section Head, Social Surveys. ESA Consultores. (1995)
- Technical Advisor to the multi-purpose household survey programme (part time), Dirección General de Estadísticas y Censos (1989-1994)
- Professor titular I, Department of Mathematics, UNAH (1992-1993)
- Professor A-III, Department of Mathematics, UNAH (1988-1991)
- Consultant to the Economic Commission for Latin America and the Caribbean for household surveys. (1988-1989)
- Professor A-I, Department of Mathematics, UNAH (1983-1987)
- Instructor A-I, Department of Mathematics, UNAH

CONSULTANCIES:

Statistician. Design of a National Tracking System Indicators for Poverty Reduction Strategy in Nicaragua. Technical Secretariat of the Nicaraguan Government. Funded by the IADB. 2002.

Statistician. Design of a Tracking System of Indicators for the Poverty Reduction Strategy. Technical Support Unit/Finance Secretariat. Funded by IADB. 2002.

Statistician. Agricultural survey for the study "Politics of rural development and sustainable use of lands in hillsides areas in Honduras", the survey was 94 communities in 192 villages in 19 municipalities (Atlántida, Colón, Yoro, Choluteca, El Paraíso, Francisco Morazán, Lempira, Copán and Santa Bárbara). Client. IFPRI/Wageningen University. 2001-2002.

Statistician. Baseline study for municipal development project, PROTIERRA2, in Nicaragua. Client. World Bank/INIFOM. June-August. 2001.

Statistician. Agricultural Survey. Land Marketing Project. ESA Consultores. Wisconsin University. 2001.

Statistician. Baseline study of 5600 households in Honduras to establish baseline data for the Impact Evaluation of the PRAF Program (including detailed anthropometrical registers related to nutritional status). Client. Honduran Family Allowance Program (PRAF). 2000.

Statistician. Revision and updating of the poverty map for the Honduran Social Investment Fund (FHIS). Client. Honduran Social Investment Fund (FHIS). 2000.

Statistician. Statistical Updating for primary and high schools. High School Transformation Project. Client. Inter-American Development Bank/Education Secretariat. 2000.

Statistician. Census of 80,000 households in poorest areas of Honduras a part of the targeting of the Honduran Family Allowance Program (PRAF). Client. Honduran Family Allowance Program (PRAF). 2000.

Statistician. Survey on the situation of primary and high school in Honduras. Client. Inter-American Development Bank.2000.

Statistician. Preparation of the Honduran Poverty Reduction Strategy Paper for the Government, on contract to the World Bank .2000.

Statistician. Efficiency Cost Analysis for the Honduran Social Investment Fund. Client. World Bank. 2000.

Statistician. Potable Water Pricing and the Poor - a Microeconomic Synthesis of 10 case studies in Latin America. ESA Consultores. Client: World Bank. June-August, 1999.

Statistician. Socio Economic Survey to the Programa de Asignación Familiar (PRAF) (Honduran Government Social Welfare Program). Client: Inter-American Development Bank (IDB) ESA Consultores. March. 1999.(underway)

Statistician. Environmental and Social Impact Assessment for a low cost housing project in Cofradía, San Pedro Sula. Client: Municipalidad de San Pedro Sula/BID. ESA Consultores. 1999.(underway)

Statistician. Economical Evaluation. Integrated Municipal Development Project of Tegucigalpa. Client: IDB. ESA Consultores. September,1998.

Statistician. Design of subsidy system to support the privatization of water and sanitation services in Panamá, including Willingness to Pay Survey,1998.

Statistician. Impact Assesment Study for the Honduran Social Investment Fund (FHIS). Client: World Bank. ESA Consultores. March,1998.

Statistician. Sample design, processing and statistical data analysis of a Baseline study for COHASA Project III in Intibucá, La Esperanza, Honduras, C.A. @ Client: COHASA (German food aid project) July-August, 1997.

Statistician. Social Assessment for a Second Low-income Barrio Improvement Project in Caracas, Venezuela. 1997. Cliente: World Bank. . ESA Consultores. June-October,1997.

Statistician. Social Assessment for Low Income Barrios Improvement Project in Guatemala city. Client. World Bank. ESA Consultores. September-November, 1997.

Data processing. Socioeconomic and cultural study in Colón, Olancho and El Paraíso. Client: Iberoamerican States Organization/Public Education Secretariat. ESA Consultores. June-August, 1997.

Statistician. A Household survey for measuring the social expenditure in Marcovia, Choluteca, Honduras@. Client: Technical Secretariat of International Cooperation (SETCO). ESA Consultores. May, 1997.

Statistician. A Market study of products and services@. Client: Honduran Family Planning Association. ESA Consultores. January -April,1997.

Statistician. Study of Demand and use of Health Services in Honduras. Client: World Bank. ESA Consultores. September, 1996-October, 1997.

Data processing. Socioeconomic Profile of poverty in Honduras in 1993.FLACSO, Costa Rica. August. 1996.

Sample designer, statistician and data base manager for the Socio Economic Evaluation (cost benefit analysis) of a water and sanitation project in the cities of Santa Ana, Sonsonate and San Miguel, El Salvador. Client: IDB/Lotti Consulting Limited.ESA Consultores. May-October, 1996.

Statistical Evaluator of the methodology and results of the Base Line Study for the Guayape model watershed project. Client: Proyecto de Desarrollo Agrícola Valle de Guayape. ESA Consultores. June, 1996

Statistician (indicators, data sources) for a three tiered consultancy with the following elements: Design of the information and monitoring system, the targeting program, and the ex-post evaluation of PRAF, a Honduran Government Social Welfare Program. Client: IDB/PRAF. ESA Consultores. January-August, 1996

Sample designer, statistician (econometric analysis), and data base manager for a household survey and social evaluation of a water and sanitation sector investment project in Managua, Nicaragua. Client: World Bank/INAA. ESA Consultores. July 1995- March, 1996.

Statistician (econometric analysis) and data base manager for the study of willingness to pay for water and sanitation services in Caracas, Mérida, Barquisimeto,Venezuela.Client: World Bank/HIDROVEN. ESA Consultores. November, 1995- April, 1996.

Sample designer, statistician (econometric analysis), and data base manager for a study of the small and micro enterprises in Honduras. Client: Fundacion Covelo. ESA Consultores. November, 1995- May, 1996.

Sample designer and data base manager for a water users= willingness to pay household survey, Honduras. Client: World Bank. ESA Consultores. February-March, 1995.

Sample designer and data base manager for a Health Sector KAP survey, Honduras. ESA Consultores. Client: JICA. ESA Consultores. July-August, 1995.

Sample designer for 1995 national household survey in health (ENESF). ESA Consultores. Client: ASHONPLAFA / AID. June-October, 1995.

Computer programmer (SPSS) and data base manager for a Maquila Sector Survey. Client: Price Waterhouse / AID. ESA Consultores. October, 1994.

Sample designer for a survey of schools in seven departments in Honduras, Client: FHIS, 1992.

Data processing using SPSS for the 1991/2 ENESF a national survey of family health. Client: ASHONPLAFA.

Sample designer for a survey of micro-enterprises in 4 cities in Honduras. Client: CEPRODH, 1992.

Sample designer for a survey of micro, small and medium sized businesses. Client: COHEP, Fortín y Asociados, S. de R.L, 1991.

Sample designer for a socioeconomic survey in San Pedro Sula, Municipality de San Pedro Sula, FNUAP, 1991.

Sample designer for a survey of customers of ASEPADE and FUNADEH. Client: Nathan Associates, 1991.

EDUCATION

Statistics and Educational Interamerican Center
University of Chile, Santiago, Chile

MA in Statistics

Researching in Population and Educational Unit
Universidad Nacional Autónoma de Honduras

Thesis pending examination. Title: *A multivariate analysis of the effect of socioeconomic factors on infant and child mortality in Honduras. Based on data from the 1988 population census.*

- **Diploma in Population and Development**
- National Autonomous University of Honduras
- **MA in Demography** (candidate)
- **Inter-American Workshop for Specialist Sampling Techniques**
- Statistics and Educational Interamerican Center
- University of Chile, Santiago, Chile
- **Graduate in Mathematics, option In Economics**
- National Autonomous University of Honduras
- **Bsc in Mathematics**
- National Autonomous University of Honduras

LANGUAGES

Spanish – native

English – good (spoken and written)

Tegucigalpa, M.D.C., January, 2003.

CURRICULUM VITAE**SAUL SUTKOVER MORRIS**

Date of Birth: 29th December 1965
Nationality: British

EMPLOYMENT HISTORY

- 2002 - Head, Public Health Nutrition Unit,
Department of Epidemiology and Population Sciences,
London School of Hygiene and Tropical Medicine, University of London, UK
- 2001 - Senior Lecturer, Public Health Nutrition Unit,
Department of Epidemiology and Population Sciences,
London School of Hygiene and Tropical Medicine, University of London, UK
- 1999 - 2001 Research Fellow, Food Consumption and Nutrition Division,
International Food Policy Research Institute, Washington DC
- 1996 - 1999 Post-Doctoral Fellow, Food Consumption and Nutrition Division,
International Food Policy Research Institute, Washington DC
- 1995 - 1996 Visiting Lecturer, Departamento de Medicina Social,
Universidade Federal de Pelotas, Pelotas, Rio Grande do Sul, Brazil
- 1995 - 1996 Lecturer, Maternal and Child Epidemiology Unit,
Department of Epidemiology and Population Sciences,
London School of Hygiene and Tropical Medicine, University of London, UK
- 1991 - 1995 Research Fellow, Maternal and Child Epidemiology Unit,
Department of Epidemiology and Population Sciences,
London School of Hygiene and Tropical Medicine, University of London, UK
- 1990 - 1991 Statistician, Ghana Vitamin A Supplementation Trials,
Navrongo, Upper East Region, Ghana

EDUCATIONAL HISTORY*Doctoral thesis*

- 1991 - 1995 London School of Hygiene and Tropical Medicine, University of London, UK
PhD The analysis of longitudinal studies of common diseases of childhood
- Awarded the Woodruff Medal for the best PhD in clinical and tropical medicine.

Masters degree

- 1989 - 1990 London School of Hygiene and Tropical Medicine, University of London, UK
MSc Medical Demography

Undergraduate studies

- 1985 - 1989 School of Oriental and African Studies, University of London, UK
BA (Hons) Arabic and Economics - Class I

High school

1977 - 1984 William Ellis Secondary School, London, UK

CURRENT RESEARCH

Family Allowance Program, Honduras – evaluation, monitoring, and program design (Co-Investigator). This project involves working closely with program staff in Honduras to reorient a \$50m program from a traditional cash handout to the Government's flagship program for the creation of human capital. The IFPRI team has worked on redesigning the targeting system, on establishing appropriate levels of incentives for households, health centers, and schools, and on setting up the monitoring and evaluation systems. Participatory planning methods, such as the logical framework, have proved highly effective in achieving broad political support for the redesigned program. The entire program has been set up as a community randomized trial, with demand-side interventions, supply-side interventions, and combined interventions, as well as a control group, and the three-year, \$7m evaluation will address the relative effectiveness of government expenditure channeled directly to households and that spent on service provision. Outcomes include child and maternal nutrition and health, and educational achievement.

Impact evaluation of the *Bolsa Alimentação* food voucher program – Brazil (Co-Investigator). This program, worth \$320m per annum, is a major component of the Brazilian government's attempt to reduce poverty, inequality and child mortality. Cash transfers are made directly to women in families with children up to six years of age or pregnant women, on condition that they keep up-to-date with a pre-determined list of preventive health care measures. I work with the implementing team in the Brazilian Federal government to assess the impact of this intervention on household expenditure patterns, child growth, uptake of preventive health care, and women's status. An *ex-post* only quasi-experimental design is being used, based on the identification of families who did not receive program benefits due to errors in the processing of electronic information. In addition, the targeting of a number of Federal programs is being assessed based on cross-sectional surveys of approximately 80 municipalities.

Food Assistance for the Elderly, Mexico City – evaluation of a large-scale urban cash transfer program (Co-Investigator). This project is an *ex-post* comparison of elderly beneficiaries of a U.S. \$130 million per annum cash transfer program in Mexico City with non-beneficiaries living in similar areas of the contiguous urban area in the Estado de México. The study seeks to identify program impacts on individual- and household-level food security, patterns of household expenditure, and self-esteem of the elderly. Rigorous matching on neighborhood characteristics should ensure comparability of the beneficiary and non-beneficiary samples. The project will develop innovative methods for obtaining food security information from elderly respondents.

Social Protection Network, Nicaragua – evaluation of a pilot program and design of the expansion phase (Co-Investigator).

Developing improved estimates of under-5 mortality from different causes at the country level (Co-investigator).

PREVIOUS RESEARCH

Seasonal malnutrition in rural Ethiopia (Analyst and Co-author).

Prioritizing household food security in agricultural development, Western Honduras (Project leader).

Multi-country program on urban challenges to food and nutrition security (Team member). Identifying and developing dietary intervention strategies to prevent vitamin A deficiency in Ghana (Co-investigator).

Multi-center study of the impact of immunization-linked vitamin A supplementation in infancy Zinc supplementation of small-for-gestational age infants in Northeast Brazil (Co-investigator). Vitamin A and Pneumonia Study, Recife (Statistician).

Ghana Vitamin A Supplementation Trials Child Health Study (Statistician).

Development of a new international growth reference (Statistician).

TEACHING EXPERIENCE

Taught courses for Masters students at the London School of Hygiene and Tropical Medicine

Nutrition Policy and Program Planning.(five-week Study Unit) aims to enable students to develop a framework for the design of appropriate interventions to improve the nutritional status of disadvantaged populations.

Nutritional Epidemiology in Public Health. (five-week Study) Unit in Nutritional Epidemiology in Public Health.

Courses in Statistics and Epidemiology. *Design and Analysis of Epidemiological Studies* to Masters students from a variety of backgrounds *Basic Statistics* course for students of the Department of Public Health and Policy. I also taught on the Masters courses in *Basic Epidemiology*, *Statistical Methods in Epidemiology*, and *Advanced Statistical Methods in Epidemiology*.

Taught courses for Masters courses at the Federal University of Pelotas, Brazil

Biostatistics for students studying for a Masters degree in Epidemiology. I also developed and ran a course on **Multivariate Methods in Epidemiology**.

LANGUAGE SKILLS

French		<i>Fluent</i>
Portuguese	<i>Fluent</i>	
Spanish	<i>Fluent</i>	
Arabic	<i>Good</i>	

COMPUTING SKILLS

Data Management	Access; FoxPro; dBase; Epi Info
Spreadsheets	Excel, Quattro Pro
Statistical Analysis	Stata; SPSS; MLn

Professional Distinctions

2001-3	Special Research Fellow, the Leverhulme Trust
1998-2001	Honorary Lecturer, London School of Hygiene and Tropical Medicine, UK.
1996-8	Member, Editorial Advisory Board, <i>Journal of Public Health</i> , São Paulo, Brazil.

RECENT PUBLICATIONS

Articles in refereed journals

1. MORRIS SS, Wodon Q. The allocation of natural disaster relief funds: Hurricane Mitch in

Honduras. World Development, **2003**, Vol.31, No.7, **in press**.

2. MORRIS SS, Flores F. School height censuses are reliable and valid tools for small-area targeting of nutrition interventions in Honduras. Journal of Nutrition, **2002**, Vol.132, No.6, pp.1188-93.
3. MORRIS SS, Neidecker-Gonzales O, Carletto C, Munguía M, Wodon Q. Hurricane Mitch and the livelihoods of the rural poor in Honduras. World Development, **2002**, Vol.30, No.1, pp.49-60.
4. Mesoamerica Nutrition Program Targeting Study Group (*lead author*, MORRIS SS). Targeting performance of three large-scale, nutrition-oriented, social programs in Central America and Mexico. Food and Nutrition Bulletin, **2002**, Vol.23, No.2, pp.162-74.
5. Bahl R, Bhandari N, Wahed MA, Kumar GT, Bhan MK and the WHO/CHD immunization-linked vitamin A group (*including* MORRIS SS). Impact of vitamin A supplementation to women in the postpartum period and to infants linked to immunization on breast milk retinol and infant vitamin A status. Journal of Nutrition, **2002**, Vol.132, No.11, pp.3243-8.
6. MORRIS SS. Targeting urban malnutrition: a multi-city analysis of the spatial distribution of childhood nutritional status. Food Policy, **2001**, Vol.26, No.1, pp.49-64.
7. Carletto C, Masangano C, Bergeron G, MORRIS SS. Using group ratings to assess household food security: empirical evidence from Southern Africa. Development Southern Africa, **2001**, Vol.18, No.5, pp.541-52.

CONSULTANCIES

2003. INDEPTH Network. *Facilitator*, "Meeting of Health Equity working group of the INDEPTH network".
2002. World Health Organization (Child and Adolescent Health). *Facilitator*, "Capacity building workshop on child health and equity".
2001. World Health Organization (Child and Adolescent Health). *Temporary Advisor*, "Meeting of Principal Investigators and Technical Advisors for the Multi-Country Evaluation of IMCI effectiveness, cost and impact".
2001. Interamerican Development Bank. *Short-term consultant*, "Development of an evaluation strategy for the programs Bolsa Alimentação and Bolsa Escola in Brazil".
2000. World Health Organization (Child and Adolescent Health). *Short-term consultant*, site visit to determine "Feasibility of conducting an evaluation of IMCI in Morocco".
2000. World Health Organization (Child and Adolescent Health). *Technical Advisor*, "Informal Consultation on IMCI impact modeling".
1998. International Fund for Agricultural Development. *Member*, Formulation Mission. Rural Development Project for the South-West of Honduras (PROSOC).
1994. World Health Organization. *Meta-analysis of "The impact of vitamin A supplementation on pneumonia morbidity and mortality"*.
1992. World Health Organization. *Report on "Risk factors for severe or moderate dehydration in young children: a combined analysis of three studies from developing countries"*.