

FINAL REPORT

MITIGATION, PREPAREDNESS AND  
RESPONSE PROGRAMMATIC RESEARCH ON  
DISASTERS & REPRODUCTIVE HEALTH

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## TABLE OF CONTENTS

Acknowledgments	iii
Executive Summary	iv
Introduction	1
Methods	5
Results/Discussion	8
Differences in Respondent Characteristics by Sampling Procedure	8
Demographic Characteristics of Respondents	9
Results from Random Selection Technique – Farm Sites	10
Results from Qualitative Data Collection Methods	29
Results from Non-Random Selection Technique – Clinic Sites	31
Conclusions/Recommendations	50
References	52
Appendix A – Belize Health Profile	53
Appendix B – Map of Stann Creek District, Belize	66
Appendix C – English Version of Survey Questionnaire	67
Appendix D – Spanish Version of Survey Questionnaire	70

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## EXECUTIVE SUMMARY

Disasters mean displaced persons and refugees. Once the immediate acute phase is over, the nature of emergency changes. Health services are needed that will change from casualty and acute care management to the provision of primary health services, maternal, pediatric and basic health services. Basic health services are now understood to include reproductive health care.

### **Purpose/Objectives**

The purpose of the study was to carry out a multi-step evaluation, research, and application work on the key thematic areas in reproductive health and disasters outlined by the United Nations Fund for Population Activities and the United Nations High Commission for Refugees including 1) violence; 2) HIV/AIDS and other sexually transmitted diseases; 3) Safe Motherhood; and 4) family planning.

To assess the needs of displaced persons and to identify ways to provide or standardize reproductive health services benefiting displaced individuals, several study objectives were outlined. The study objectives were as follows.

- To compile information, literature, and data from different agencies and institutions on the thematic areas about actual type of programs carried out on different disasters and emergency situations in order to create a useful repository of information, literature, and database on disasters and reproductive health, and network with national and international agencies.
- To explore different locations of recent disasters in order to choose one to carry out needed quantitative and qualitative research, longitudinal surveys, feasible surveillance, and accordingly implement recovery actions and programs, and adapt and modify survey and guidelines to be readily available, e.g. standardized questionnaires that can be quickly modified for each disaster in order to make data collection more prompt and efficient.
- To develop programmatic training and steps in order to establish the availability of field teams, ready on short notice, to carry out the emergency surveillance, data collection, guidelines and orientation related to the areas

mentioned at the moment of disaster occurrence, and the possibility of identifying characteristics of professionals or workers who could serve as reproductive health coordinators to facilitate mitigation and response actions in disasters.

## **Methods**

After compiling literature, agency and institution data, networking with national and international agencies, and exploring post-disaster locations in Venezuela, Haiti and Belize, the southern region of the Republic of Belize, the Stann Creek District, was identified as a suitable location. This location seemed suitable because of increased displacement from neighboring populations due to recent hurricanes and floods, and increased risk of HIV/AIDS from high incidence border countries. Therefore, surveillance and data collection was carried out in the Stann Creek District of southern Belize. A 49-item survey, adapted from a suggested list of questions and guidelines developed by the World Health Organization Reproductive Health for Refugees Consortium, was administered to a sample of 202 individuals. The survey was administered face-to-face by a team of three physicians fluent in Spanish, who obtained verbal informed consent prior to administering the survey. Displaced persons were sampled using both random and non-random sampling techniques, and separate results are presented for each group due to statistically significant differences between the two groups. In addition, non-randomized qualitative data were also collected from 18 subjects using a single in-depth question on the reasons for displacement. Quantitative data were analyzed using the SAS statistical software package, and qualitative data were analyzed using the EZ-TEXT software distributed by the Centers for Disease Control and Prevention.

## Results

The time range of respondent displacement was very wide, ranging from months to years. Nevertheless, all displaced persons were still suffering from the consequences of the disaster that forced them to displace. Although many respondents had inhabited the banana camp for more than six months, individuals facing both short and long-term displacement experienced significant gaps in reproductive health services related to pregnancy care, family planning, HIV/AIDS, and sexual/gender-based violence (see the following section for specific recommendations). Yet still, it appears that health services in Belize are often better and more accessible than health services in many of the displaced persons' original countries, a surprising finding given the literature findings of services in displaced camps. Belize with its universal coverage in health and MCH care is an unusual case. Most of the displaced pregnant women not only had adequate prenatal and postnatal care, but after each delivery they received a monetary stipend.

In fact, because two different sampling techniques were employed in the present study including random sampling of displaced persons from work sites and convenience sampling of displaced persons visiting a health clinic, the unique opportunity to compare the effectiveness of health services offered in Belize became possible. Results showed that individuals sampled from the health clinic (those receiving health services) had much greater knowledge related to family planning methods, had greater past and present utilization rates of family planning methods, and had more correct knowledge related to HIV transmission, as compared to those sampled from work sites. These findings highlight the positive outcomes health

services have on the reproductive lives of displaced persons and serve as validation for the need to increase availability of preventive services in locations where displaced persons reside.

### **Conclusions/Recommendations**

Based on results from quantitative survey data, the following recommendations were made to improve the reproductive health lives of displaced persons living in Belize.

1. Improved availability of skilled assistance during delivery to identify pregnancy complications, provide immediate first aid, and know when and where to refer women for additional care;
2. Improved promotion of exclusive breastfeeding to decrease unnecessary infant exposure to infectious pathogens that may lead to infant diarrhea;
3. Improved promotion of condom use and distribution among displaced persons to prevent unwanted pregnancies and transmission of sexually transmitted diseases;
4. Improved availability of screening and treatment services for sexually transmitted diseases;
5. Increased sensitivity of cultural differences related to family planning method preference and utilization;
6. Increased availability of low-cost family planning services to improve utilization rates;
7. Increased educational efforts to educate displaced persons on the modes of HIV transmission including dispelling of myths;
8. Increased preventive measures to protect displaced persons from sexual violence.
9. Improved community education on sexual and gender-based violence; and
10. Improved provision of private and confidential health services for victims of sexual violence.

Results highlighted the need for health services to promote HIV knowledge, family planning, Safe Motherhood services, and the education and detection of domestic violence. It is thus imperative to capitalize on the successes to further promote and protect the reproductive lives of displaced persons, regardless of whether the displacement is short or long-term.

Future developments should include identifying characteristics of and providing training for local individuals with proper attitudes and knowledge that enable them to coordinate the needed actions and enterprises to serve as reproductive health coordinators as recommended by WHO. They will promote health education and prevention services throughout the banana camps, safeguard hospitals and clinic structures against flood and other disaster damage, and further refine survey instruments to simplify data collection and make the process more prompt and efficient.

## INTRODUCTION

Hazard events cannot be prevented from occurring, but their impact on people and property can be reduced if advanced action is taken to mitigate risks and minimize vulnerability. Of the four stages of disasters including 1) mitigation; 2) preparedness; 3) response; and 4) recovery, mitigation is the phase that has proactive actions and at the same time has an effect on the actual impact of the disaster.

A measure of civilization progress in this millennium will be the degree to which the world community uses science and technology to improve the quality of life and mitigate disaster outcomes. In the immediate acute emergency phase of a disaster, provision of food, water, shelter, treating immediate casualties, and keeping the population alive are the emergency considerations. Soon afterwards, the patterns of health care needs will change from casualty and acute care management to the *provision of primary health services including maternal, pediatric, and basic health services*.

Proactive mitigation actions including previous implementation to safeguard hospitals or clinic structures, and implementation of facilities or equipment and instrumentation, should have, in advance, taken care of some of these necessities. But there are other socio-behavioral aspects frequently not taken into consideration. The splitting of families because of disasters implies the loss of women in the role of support and the loss of women participating in the recovery process which may affect children and elderly persons.

*Basic health services are now understood to include reproductive health care.* Disasters do not impact women and men in uniform ways. Women are vulnerable not because of a supposedly inherent weak physical nature, but because of societal arrangements resulting in poverty, marginalization, lack of mobility, and because of their usual role in protecting children.

*We sustain that major disasters result in displaced persons and refugees, even without the conformation of camps.* Once the immediate acute phase is over, the nature of emergency changes. Health services are needed not only for pregnant women, but also for non-pregnant women, single women, and children. At this time, sexual activity often increases due to promiscuity or boredom. Sexually transmitted diseases could become rampant. Abortions and pregnancy related difficulties arise along with other gynecologic diseases. HIV/AIDS could have the potential to spread if efforts of prevention and control are not carried out. Sexual and gender-based violence increases, mainly in situations where established social structures and values have been disrupted by conflict and displacement. The necessity arises to also prevent unwanted pregnancies.

As stated by the World Health Organization:

Implementing comprehensive reproductive health care for a population is never a simple matter, but emergencies and displacement pose a special challenge for delivering this kind of care. Refugees and displaced persons have the same reproductive health needs as non-displaced people. The factors that forced them to flee also render them extremely vulnerable to reproductive as well as other health problems. Forcibly displaced persons have left behind the support of traditional values, extended families, and familiar ways of life. They have often lost their loved ones, their possessions, their livelihoods, their social status and even their human dignity. The changes wrought by displacement – a lack of traditional support and role models, different cultural pressures to reproduce lost members of the community and changing roles and

identities of men and women along with their roles in society – are major barriers to implementing adequate reproductive health programmes. In emergencies, mortality and morbidity from reproductive causes may increase, life transitions such as the one from adolescence to adulthood are made more difficult, and important aspects of reproductive health programmes such as the integration of men are major challenges (Doedens & Burns, 2001).

The United Nations Fund for Population Activities (UNFPA) and the United Nations High Commission for Refugees (UNHCR) have identified thematic areas in reproductive health and disasters including 1) violence; 2) HIV/AIDS and other sexually transmitted diseases; 3) Safe Motherhood; and 4) family planning, as cross-cutting issues. Emphasis on developing appropriate responses and needs assessment strategies in order to minimize long-term disability and damage also characterize each thematic area. Public health surveillance, cross-sectional studies, and longitudinal follow-up were mentioned as useful methods to estimate the strength of associations between particular disaster exposures and specific health outcomes in disasters. In accordance with these general guidelines, we have carried out a multi-step evaluation, research, and application of these thematic areas identified in successive phases.

The specific objectives of the study were to:

1. To compile information and data from different agencies and institutions, on the three thematic areas, about actual type of programs carried out on different disasters and emergency situations in order to create a useful repository of information, literature, and database on disasters and reproductive health.
2. To network with national and international agencies to obtain not only necessary information on disasters and emergencies, but look for the feasibility of carrying collaborative epidemiological and cross-sectional research, particularly in the priority thematic areas described.

3. To explore one to three locations of recent disasters to carry out needed quantitative and qualitative research, longitudinal surveys, feasible surveillance, and accordingly implement recovery actions and programs.
4. To adapt, modify, or develop necessary instruments, tables, guidelines, to be readily available, e.g. standardized questionnaires that can be quickly modified for each disaster in order to make data collection more prompt and efficient.
5. To develop programmatic training and steps in order to establish the availability of field team, ready on short notice, to carry out the emergency surveillance, data collection, guidelines and orientation related to the areas mentioned at the moment of disaster occurrence.
6. To explore the possibility of training and identifying available professionals, who could serve as reproductive health coordinators to facilitate mitigation and response actions in disasters.

In the first phase, promotion of research and compilation of information, data, and networking was completed. The second phase explored three locations of disasters with frontiers impacted by displaced populations giving consideration to the feasibility for quantitative and qualitative research and longitudinal surveys. The floods in the northern part of Venezuela around Caracas displaced a large group of young individuals to other locations, but the displacement was widespread and difficult to follow. The Haitian border with the Dominican Republic endures a chronic flux of displaced families and workers conditioned not only by disasters but perhaps more by unequal country situations. The third location explored, the Stann Creek District of the southern region of the Republic of Belize (see Appendix A for a health profile of the Republic of Belize) was chosen as the best study location due to an influx of displaced persons from Honduras and other Central American countries due to several flood disasters and conflicts in the region. See Appendix B for map of

the Stann Creek District. HIV/AIDS incidence in Honduran San Pedro Sula, not far from the Belize border, is supposedly very high. Data presented at a previous Orlando Seminar (2000) by two speakers financed by this project showed striking data of a yearly increase from two to sixteen deaths in Belize due to HIV/AIDS. The third phase of the project consisted of survey data collection and qualitative in-depth questioning.

## **METHODS**

Survey data collection occurred in the Stann Creek District of the southern region of the Republic of Belize under the supervision of Dr. Peter Allen, Stann Creek District Office Director. Two sampling procedures were employed including random and non-random sampling techniques. For random sampling, the sampling unit was Banana Growers Association and Working Station Farm numbers. A total of 121 individuals were interviewed using random sampling technique. The individuals that were selected using non-random techniques resulted from a convenience sample of persons visiting the health clinic offices of physicians. A total of 81 individuals completed the survey based on non-random sampling techniques. Table 1 summarizes the number of individuals who participated in the interview by sampling technique employed. In all, a total of 202 individuals across 15 sites completed the 49-item interviewer-administered survey during the data collection period.

**Table 1. Summary of Sample Sizes Among Completed Surveys.**

	<b><i>N</i></b>
Total	202
Randomly Selected – Farm Sites	121
Non-Randomly Selected – Clinic Sites	81

In addition, non-randomized qualitative data were also collected from eighteen subjects from the farm sites using a single in-depth question on the reasons of displacement. Most displaced persons were illiterate or functionally illiterate, undocumented, or illegal with fears and thus had to be soothed in order to conduct the interviews.

The survey consisted of 49 items covering a range of topics including antenatal and delivery care, family planning knowledge and utilization, knowledge of HIV transmission, and prevalence of sexual and gender-based violence. The items were adapted from a suggested list of questions and guidelines developed by the World Health Organization Reproductive Health for Refugees Consortium (1995) and were administered by a team of interviewers. The interview team consisted of three Cuban physicians working in Belize. The survey was intended to be administered in English, however because most displaced persons were of Hispanic descent and did not speak English, the survey was first translated into Spanish and administered accordingly. See Appendix C for the English version of the questionnaire and Appendix D for the Spanish version.

The project received Institutional Review Board (IRB) approval from the University of South Florida, protocol number 5846. Informed consent was

submitted and approved in English, however after arriving in the Stann Creek District and realizing that all displaced persons were of Hispanic origin and did not speak English, the informed consent document was translated in Spanish and resubmitted for IRB approval. Most respondents were illegal and functionally illiterate, and did not want to sign or document their names on any paperwork including the informed consent forms. As a result, verbal consent was obtained from the displaced persons and the District Office Director provided signed assisted consent.

Survey data were analyzed using the SAS statistical software package version 8.01 (Cary, NC). A combination of univariate, bivariate, and multivariate analyses were conducted. Frequency distribution tables were generated to provide descriptive statistics on sample demographics and prevalence of certain behaviors. Chi-square tests of independence and independent sample t-tests were performed to assess differences among individuals randomly selected versus those non-randomly selected. Finally, logistic regression models were built to identify any significant predictors of family planning knowledge or utilization.

The qualitative data were collected using a single in-depth question which read in English, "What catastrophic disaster forced you to be displaced and in what ways were you affected or how did it impact you (Spanish translation – Que catastrofe lo obligó a Ud. a desplazarse y de que manera lo afectó)? To analyze qualitative data, the EZ-TEXT software distributed by the Centers for Disease

Control and Prevention was used. Key categories related to reasons for displacement were identified and text was coded accordingly.

## **RESULTS/DISCUSSION**

### **Differences in Respondent Characteristics by Sampling Procedure**

To assess differences among individuals who were randomly selected versus those non-randomly selected across classification variables, a series of chi-square tests of independence were conducted. Independent samples t-tests were conducted to assess differences among individuals randomly selected versus those non-randomly selected across continuous variables. Results from the analyses revealed that significant differences did exist between the two groups of individuals and thus results will be reported separately depending on method of sampling utilized in the survey process. Results from both groups, those sampled from farm sites and those sampled from clinic sites, will be presented in the same lexical orientation to facilitate comparison of results. The below results summarize the significant findings from chi-square tests and independent samples t-tests.

- More individuals from the *clinics* reported 'ever heard of the pill' in comparison to individuals from the farms ( $X^2=17.83$ ,  $df=1$ ,  $p<.0001$ ).
- More individuals from the *clinics* reported 'ever heard of injectables' in comparison to individuals from the farms ( $X^2=10.52$ ,  $df=1$ ,  $p<.01$ ).
- More individuals from the *clinics* reported 'ever heard of a condom' in comparison to individuals from the farms ( $X^2=14.02$ ,  $df=1$ ,  $p<.01$ ).

- More individuals from the *clinics* reported 'ever heard of female sterilization' in comparison to individuals from the farms ( $X^2=125.59$ ,  $df=1$ ,  $p<.0001$ ).
- More individuals from the *clinics* reported 'ever heard of retiro (withdrawal)' in comparison to individuals from the farms ( $X^2=5.35$ ,  $df=1$ ,  $p<.05$ ).
- More individuals from the *clinics* reported 'ever used any family planning methods' in comparison to individuals from the farms ( $X^2=44.04$ ,  $df=1$ ,  $p<.0001$ ).
- More individuals from the *clinics* reported 'use of family planning services now' in comparison to individual from the farms ( $X^2=8.19$ ,  $df=1$ ,  $p<.01$ ).
- More individuals from the *farms* reported that 'one can get HIV from hugging a person with HIV/AIDS in comparison to individuals from the clinics ( $X^2=38.35$ ,  $df=2$ ,  $p<.0001$ ).
- More individuals from the *clinics* reported that 'one can get HIV from sharing needles' in comparison to individuals from the farms ( $X^2=12.65$ ,  $df=2$ ,  $p<.01$ ).
- More individuals from the *clinics* reported that 'a woman with HIV/AIDS can give AIDS to her baby when she is pregnant' in comparison to individuals from the farms ( $X^2=30.80$ ,  $df=2$ ,  $p<.0001$ ).
- More individuals from the *clinics* reported that 'women or girls trade sex for necessities in the camp' in comparison to individuals from the farms ( $X^2=41.69$ ,  $df=2$ ,  $p<.0001$ ).
- More individuals from the *clinics* reported that 'men or boys trade sex for necessities in the camp' in comparison to individuals from the farms ( $X^2=11.54$ ,  $df=2$ ,  $p<.01$ ).

From the above results, it is apparent that individuals who were not randomly selected (sampled from the health clinics) had 1) much greater knowledge related to family planning methods; 2) greater past and present utilization rates of family planning methods; 3) more correct knowledge related to the transmission

of HIV; and 4) increased awareness of sex trading for necessities in the camp, as compared to individuals who were randomly selected (sampled from the farms).

### **Demographic Characteristics of Respondents**

The below table summarizes the demographic characteristics of individuals sampled from both farm and clinic sites. No significant differences were detected between the two groups related to gender, ethnicity, age, education, or time spent in camp.

**Table 2. Demographic Characteristics of Respondents**

	<i><b>Farm Sites N=121</b></i>	<i><b>Clinic Sites N=81</b></i>
Gender		
Male	55.37%	54.32%
Female	44.63%	45.68%
Ethnicity		
Honduran	52.10%	46.91%
Nicaraguan	3.52%	4.94%
Mexican	1.68%	1.23%
Other Central American	43.70%	46.91%
Age (mean)	28.75	29.23
Years of Education (mean)	3.99	4.04
Years Spent in Camp (mean)	5.11	7.25

Although the original intention of the study was to include only those displaced persons who had been living in the banana camp for less than six months, it became apparent that including individuals of both short and long term displacement provided worthwhile and meaningful data.

### **Results from Random Selection Technique – Farm Sites**

### *Family & Pregnancy Related Variables*

Among individuals sampled from farm sites, the average number of children respondents had ever had was 2.35. Of the 81 who had ever had children, 55.81% had children with them at the camp. The average number of children respondents had with them at the camp was 2.3 children. Thus, more than half of displaced persons continued to care for children following relocation. The responsibility of caretaking may be particularly burdensome for women who no longer have the support of spouses or family members.

Displaced persons have the same reproductive health needs as non-displaced persons including services to reduce the numbers of deaths and illnesses resulting from complications of pregnancy and childbirth. Often in disaster situations, priority is given to acute care. However, survey results indicated that most displaced women received antenatal care services, and in fact, women who gave birth during their last pregnancy in the present camp were more likely to deliver with health services than women who gave birth in their original countries or while in transition to the camp.

For example, only 11 (21.57%) women were pregnant at the time of interview. Of those women, the majority (72.73%) had seen a health provider. When asked 'Did you see anyone during your last pregnancy,' of the 25 women who responded, all (100%) answered yes. The average number of visits to a health provider reported was 5.08. Most women received prenatal care services.

Furthermore, of the 35 women who responded to the question "Where did you go during your last pregnancy," the majority (88.57%) went to government

services. The remaining 11.43% of respondents sought care elsewhere. Most women (86.49%) received tetanus toxoid injections during their last pregnancy, and almost two-thirds (60.53%) took iron or folic acid supplements. It is important for women to receive proper care during and around the time of childbirth as a result of the increased risk of maternal mortality experienced by women in displaced settings. These increased risks include malnourishment and anemia that may have occurred during the exodus, increased risk of infectious diseases, and exposure to physical and psychological stress. Survey results revealed that not only were government services available to displaced women, but also a large majority utilized these services including tetanus toxoid injections and nutritional supplements.

Furthermore, it appears that increased health services during delivery were available to women in the banana camp versus the women who gave birth in their country of origin. More than half (55.88%) of the women who responded to the question “Where did you deliver during your last pregnancy,” reported giving birth in the present camp. Nearly two-fifths (38.23%) gave birth in their original countries and 5.88% gave birth while in transition from their original country to the banana camp. Of the 19 women who gave birth in the present camp, all but one (94.74%) delivered in a town with health services. Of the 13 women who delivered in their original countries, more than two-thirds (69.23) delivered with health services. Half of the women who delivered while in transition from their original country to the banana camp delivered with health services.

All of the 35 respondents reported that someone was there to assist with delivery during their last pregnancy. Most of the women (76.47) reported the presence of a doctor, 11.76% reported the presence of a nurse, 5.88% reported the presence of a trained TBA, and 5.88% reported the presence of a non-trained person. None of the women reported having a problem during labor or delivery that made them seek help. In addition, all of the women reported giving birth to live infants. It has been reported that most maternal deaths are due to the lack of available skilled help in time for delivery complications. Survey results indicated that the majority of women were assisted by a trained individual, either a doctor, nurse, or TBA, during delivery.

All of the 35 respondents reported breastfeeding their infants. One-quarter (26.47%) gave only breast milk for the first six months, and the remainder 73.53% gave breast milk in addition to other food products. The average length of time women breastfed their infants was 7.5 months. Breastfeeding remains particularly important in disaster situations due to the increased risk of diarrhea and other infectious diseases at camps. Nearly three-quarters of displaced women reported giving breast milk in addition to other food products, which increases the risk of introducing pathogens due to poor hygiene and crowded situations of the camp. Increased efforts should promote exclusive breastfeeding practices among women to reduce the infant's exposure to infectious diseases. Exclusive breastfeeding may also promote a strong attachment between mother and child, which may be particularly important in disaster situations where

another warm, nurturing and caring relationship may not exist for either mother or child.

Of the 33 women who answered the question “Have you ever had a cesarean section to give birth,” most (84.85%) women responded no. Only 12.12% had ever had a cesarean section, and 3.03% were unsure. Furthermore, when asked whether or not they wanted to have more children in the future, more than half (58.06%) did not know, 29.03% responded no, and 12.90% reported yes.

### *Family Planning Variables*

Family planning is a basic health right of individuals, and displaced persons should be able to decide freely the number and spacing of their children. Family planning is also important in disaster situations to protect against sexually transmitted diseases including HIV. Before a system of family planning services can be implemented in a camp, first a needs assessment is necessary.

To understand better the needs of displaced persons living in the camp, respondents were asked to report what family planning methods they had ever heard of, had ever used, and were currently using. Respondents were not prompted by interviewers nor presented with a list of family planning methods. Instead, interviewers recorded only those family planning methods mentioned by respondents on their own. Of the 121 individuals who completed the survey, only 22.69% had reported ever using any family planning methods. On the contrary however, 30.51% reported current use of some method of family planning, indicating some level of discomfort and underreporting of family planning related

questions. The following table summarizes the results of knowledge, previous use, and current use of family planning methods.

**Table 3. Knowledge and Use of Family Planning Methods**

	<b>Ever Heard Of N=101 (% yes)</b>	<b>Ever Used N=27 (% yes)</b>	<b>Using Now N=36 (% yes)</b>
Pill	67.33	40.74	25.00
IUD	16.83	3.70	2.78
Injectables	54.46	48.15	36.11
Implant	0.99	0	--
Condom	47.52	37.04	30.56
Condom with Spermicide	0	0	0
Abortion	2.97	0	0
Diaphragm	0.99	0	0
Male Sterilization	4.95	0	0
Female Sterilization	10.89	3.70	5.56
Rhythm Method	0.99	0	0
Lactation Method	0.99	0	0
Retiro (Withdrawal)	0.99	0	0
Traditional Methods	0	0	0
Other Methods	0.99	0	0

Survey results indicated that without prompting, the most commonly reported methods of family planning reported by displaced persons included the pill, injectables, condom, IUD and female sterilization. The three family planning methods most likely to have been used previously by respondents included injectables, the pill, and condom. The three family planning methods most likely to have been used currently by respondents included injectables, condom, and the pill.

One important consideration when establishing high-quality family planning services in a camp is to enable displaced persons to continue use of a family planning method that was used prior to displacement. It is thus important to provide a wide range of safe and effective methods of contraception for displaced persons to select a method that is culturally acceptable. Based on the above table, there does not appear to be a mismatch between the most popular

family planning methods previously used by displaced persons and those currently being used. In both instances, the top methods included injectables, condom, and the pill. However, only 30.56% of respondents reported currently using condoms. Given the increased risk of sexually transmitted diseases in disaster situations, promotion of widespread condom distribution and utilization is crucial to protect the reproductive health of both men and women living in the camp.

When asked reasons for not currently using family planning methods, very few individuals responded. Field notes submitted by the interviewers who conducted the surveys with respondents recorded a discomfort with this type of question. Of the 11 individuals who did respond, reasons included current pregnancy and religion. Furthermore, when asked “Would you like to use family planning some time in the future,” over two-thirds (67.65%) said that they did not know, 16.18% said yes, and 16.18% said no. Once again, failure of most respondents to indicate whether or not they would like to use family planning some time in the future indicates a level of discomfort for this type of question.

Of the 45 respondents who answered the question “Do you feel like you could ask your partner to use a condom,” the majority (75.56%) said no, 20% said yes, and 4.44% said that they did not know. Condoms are the best protection against sexually transmitted diseases including HIV infection, and efforts should focus on improving self-efficacy related to communication skills to increase the number of individuals who feel comfortable asking their partner to use a condom. Furthermore, when asked “Were you ever treated for a sexual

infection,” most respondents (80%) answered no and 20% answered yes. It is unclear whether this finding is due to a lack of services for sexually transmitted disease screening and treatment, or a lack of utilization of these services. Regardless, due to the increased promiscuity and sexual violence often reported during disaster situations, improved screening and treatment services for sexually transmitted diseases are warranted.

To further understand and determine any significant predictors related to family planning method knowledge and use, a series of logistic regression models were computed. Independent variables included in the models consisted of gender, ethnicity, age, education, and time spent in camp. Significant findings at the  $p < .05$  level are reported below.

#### HAVE YOU EVER HEARD OF THE PILL? (N=98)

- Women are more likely to have heard of the pill than men (OR=8.67, CI=2.75, 27.34).
- Respondents with more education are more likely to have heard of the pill than those with less education (OR=1.27, CI=1.04, 1.56).
- Respondents who have spent a greater amount of time in the camp are less likely to have heard of the pill than those who have spent less time in the camp (OR=0.91, CI=0.83, 0.99).

#### HAVE YOU EVER HEARD OF THE IUD? (N=98)

- Women are more likely to have heard of the IUD than men (OR=8.75, CI=1.37, 56.09).
- Respondents with more education are more likely to have heard of the IUD than those with less education (OR=2.85, CI=1.61, 5.07).

#### HAVE YOU EVER HEARD OF INJECTABLES? (N=98)

- Women are more likely to have heard of injectables than men (OR=8.79, CI=1.09, 1.64).

- Respondents with more education are more likely to have heard of injectables than those with less education (OR=1.34, CI=1.09, 1.64).

HAVE YOU EVER HEARD OF CONDOMS? (N=98)

- Men are more likely to have heard of condoms than women (OR=6.21, CI=2.48, 15.63).

HAVE YOU EVER USED ANY FAMILY PLANNING METHODS? (N=116)

- Women are more likely to have ever used any family planning methods than men (OR=4.61, CI=1.52, 13.07).
- Hondurans are less likely to have ever used any family planning methods than other Central Americans (OR=0.23, CI=0.08, 0.69).
- Respondents with more education are more likely to have ever used any family planning methods than those with less education (OR=1.45, CI=1.16, 1.81).

ARE YOU USING ANY FAMILY PLANNING METHODS NOW? (N=115)

- Women are more likely to report current use of any family planning methods than men (OR=5.19, CI=1.87, 14.45).
- Respondents who are older in age are more likely to report current use of any family planning methods than those who are younger in age (OR=1.06, CI=1.01, 1.12).
- Respondents with more education are more likely to report current use of any family planning methods than those with less education (OR=1.75, CI=1.35, 2.26).
- Respondents who have spent a greater amount of time in the camp are less likely to report current use of any family planning methods than those who have spent less time in the camp (OR=0.89, CI=0.80, 0.99).

Results from logistic regression analyses revealed that women are more likely to report ever hearing of female-utilized methods of family planning including the pill, IUD, and injectables, and that men are more likely to report

ever hearing of male-utilized family planning, the condom. Furthermore, the more education respondents had completed, the more likely they were to have heard of certain methods of family planning including the pill, IUD, and injectables. These findings are not surprising.

More distinct of displaced persons living in the banana camp included a decreased likelihood of the pill being reported as method of family planning by persons who have spent a greater amount of time in the camp. Respondents who had spent less time in the camp were more likely to report the pill as a method of family planning they had ever heard of. Although reasons for this finding are not certain, it is hypothesized that the pill is not as readily available in the banana camp and subsequently those persons who have been in the camp for longer periods of time are less likely to report it as a method when asked to recall all methods they have ever heard about.

In addition, Hondurans were less likely to have ever used any family planning methods than other Central Americans indicating a cultural or religious difference related to family planning acceptability and utilization. This is important to know and understand when developing and implementing a system of culturally acceptable reproductive health services. Lastly, survey results indicated that displaced persons who have spent a greater amount of time in the camp were less likely to report current use of family planning methods. This may indicate a lack of available and culturally appropriate family planning services.

### *Service Utilization Variables*

As previously noted, family planning is a key component of reproductive health services for men, women, and families. Availability of family planning services in camps helps preserve the lives of women, men and children by preventing untimely and unwanted pregnancies and by reducing women's exposure to health risks of childbirth and abortion. Survey results indicate that family planning services are available in the banana camp. Of the 36 individuals who reported currently using some method of family planning, 94.59% had received the family planning method or supply since arriving at the camp. Only two individuals (5.41%) had not received any family planning methods or supplies since arriving at the camp.

Of those who had received family planning supplies since camp arrival, several sources were indicated as the location where supplies were obtained. In many cases, individuals reported more than one source. When asked "Where did you get your method or supplies the last time," 65.71% reported from a traditional source, 25.71% received the method from a store pharmacy, 14.29% received the method from government services, 8.57% received the method from non-governmental services, and 5.71% reported receiving the method from some other source. All (100%) respondents reported paying for these services.

Although the majority of current users of family planning reported receiving supplies since arriving at the camp, most did not receive the supplies from governmental services. The most commonly reported sources of family planning supplies included traditional sources and store pharmacies, and all respondents

had to pay for services. Loss of income is a severe obstacle facing displaced persons and may inhibit use of family planning methods if payment is necessary. Recall that less than one-third of survey respondents reported current use of family planning indicating a need to improve rates of utilization. Low rates of utilization in the camp may relate to cost or lack of available government services.

#### *Unwanted Pregnancy/Abortion Related Variables*

Once again, reproductive health is a basic right of individuals. Family planning services can prevent unwanted pregnancies and avoid unnecessary complications related to abortion. These rights also apply to displaced persons.

Survey results indicated that unwanted pregnancy is a problem experienced by women in the camp. When asked “Do you know of any girls or women here who have been pregnant but did not want to be,” over half (59.66%) responded no, 38.66% responded yes, and 1.68% reported that they did not know. Of those who reported that they did know of a girl or woman in the camp who had been pregnant and did not want to be, 84.78% said that the woman did nothing about the unwanted pregnancy and continued through the pregnancy. The remaining 15.22% reported that the woman had an abortion. Although the majority of women who experienced an unwanted pregnancy did nothing to disrupt the pregnancy, 15.22% sought an abortion posing increased health risks. Substantial rates of unwanted pregnancy and increased health risk related to abortion complications can be avoided through family planning services. These situations may also be more difficult for displaced women to deal with

considering that many of the women have lost or left behind pre-existing family support networks and may be socially isolated.

When asked “Where would you advise a woman to go for health problems due to an abortion,” several locations were indicated. In many cases, respondents indicated more than one location and thus totals do not equal one hundred percent. Most individuals reported advising a woman to seek help for problems associated with an abortion at Hospital A (73.91%) followed by Health Center A (41.30%) and Hospital B (2.17%). Of the respondents, only 2 (4.55%) reported ever going to someone or doing something to stop an unwanted pregnancy. The remaining 95.45% reported no. Once again, field notes submitted by the interviewers indicated uneasiness about answering questions related to abortion due to its illegal status in Belize.

#### *HIV Related Variables*

It has been documented that sexually transmitted diseases including HIV spread fastest in situations where there is poverty, powerlessness, and social instability. This is the situation of camps housing displaced persons. Community ties and norms have been disrupted, and women and young boys are often forced into sexual relations to obtain necessities such as food, money, security, and shelter. Thus it is important to ascertain the level of knowledge and safe-sex practices among displaced persons to reduce the rampant transmission of the disease and to protect the reproductive lives of all displaced persons. As a result, survey respondents were asked if they had ever heard of a disease called HIV and also asked questions related to the transmission of HIV to ascertain

knowledge levels of individuals living in the camp. Unfortunately, a great deal of missing data resulted from these questions.

Of the 43 individuals who responded to the question “Have you ever heard of a disease called HIV,” the majority (93.02%) said yes. Only two individuals (4.65%) said no and one respondent (2.33%) reported that they did not know. When asked about various potential methods of HIV transmission including via mosquitoes, sexual contact, blood transfusions, hugging, sharing needles, and from mother to infant during childbirth, varying levels of correct knowledge were indicated.

For example, only one-third (33.33%) of 18 respondents correctly indicated that one cannot get HIV from mosquitoes versus 4 (22.22%) who incorrectly reported yes and 8 (44.44%) who reported that they did not know. All (100%) respondents correctly identified sexual contact as a means of HIV transmission. When asked if one can get HIV through a blood transfusion, the majority (88.89%) of 36 respondents correctly said yes versus 4 (11.11%) who reported that they did not know. Over half (58.06%) of 31 respondents incorrectly indicated that one can get HIV from hugging a person with HIV in comparison to 9 (29.03%) who did not know and 4 (12.90%) who correctly reported no. When asked if HIV can be transmitted from sharing needles, almost half (45.45%) correctly responded yes and 54.55% reported that they did not know. Lastly, less than one-third (29.17%) of individuals correctly responded that a woman with HIV could give HIV to her baby during pregnancy. The remaining 70.83% reported that they did not know. These results highlight an extreme

amount of incorrect knowledge related to HIV transmission and a grave need for educational interventions to educate displaced persons on the correct modes of HIV transmission. Furthermore, because all respondents correctly identified sexual contact as a means of HIV transmission, further emphasis should be placed on the use of condoms to provide protection against the disease including widespread distribution of condoms in the camp

Respondents were also asked a series of questions related to what a person could do to avoid getting HIV. Table 4 summarizes these results.

**Table 4. What Can a Person Do To Avoid Getting HIV? N=106**

	<b>% yes</b>
Refrain from sexual relations	61.32
Use a condom	50.94
Refrain from using or sharing injectables	46.23
Refrain from sexual relations outside of marriage	38.68
Look for healthy partners	18.87
Other	0
There is nothing one can do to avoid getting HIV	11.32

Once again, the above table highlights the need for increased health education programs to educate displaced persons on ways to avoid HIV infection. In addition to focusing on the importance of using condoms and refraining from using shared needles, efforts need to dispel the ideas that one can do nothing to avoid getting HIV and that one can successfully avoid HIV infection by looking for healthy partners. These are not acceptable means of protecting oneself from getting HIV. Due to the increased breakdown of stable relationships among displaced persons, the need for further education and programs to prevent HIV infection is warranted.

When asked “Do you worry that you could get HIV,” of the 104 respondents, 62.50% said that they worry somewhat, 33.65% said that they worry a lot, 2.88% said no and 0.96% reported that they did not know.

Respondents were also asked a series of open-ended questions related to HIV prevalence and treatment. When asked how common they believe HIV to be in the community, over half (65.66%) said that they did not know, 20.20% reported ‘many people’, 11.11% reported anywhere from 10-60 percent, and 3.03% reported HIV not to be common in the community. When asked ‘Do you know anyone with AIDS,’ 66.04% said no, 23.58% said yes, and 10.38% reported that they did not know. The majority (94.34%) of respondents reported that they would go to the hospital to find out if they had HIV, versus 2.83% who said they would go to the health center and 2.83% who did not know where they would go. Although less than one-quarter of respondents reported knowing an individual with HIV and only about one-fifth believed HIV to be a problem in the camp, the majority knew where to go to be tested for HIV. The perceived prevalence of HIV in the banana camp among displaced persons may or may not be accurate, however it is important to communicate the severity of HIV and the potential high prevalence of HIV due to poverty, instability, and powerlessness.

#### *Violence Related Variables*

It has been recognized that sexual and gender-based violence increases in disaster situations due to displacement, uprootedness, loss of community structures, and the need to exchange sex for material goods and protection. These types of violence can have severe physical and psychological effects

including unwanted pregnancies, unsafe and complicated abortions, transmission of HIV and other sexually transmitted diseases, anxiety, post-traumatic stress disorder, depression, and suicide. It is important to ascertain the level of sexual and gender-based violence occurring in camps and not simply assume that it is not occurring due to cultural taboos against discussing such issues in public.

To understand the level of sexual and gender-based violence occurring in the camp, respondents were asked whether or not girls or women are forced to have sex against their will in the camp. Of the 121 respondents, 37.19% said yes, 59.50 said no, and 3.31% said that they did not know. Of the 45 individuals who reported that girls or women are forced to have sex against their will in the camp, various individuals were indicated as the persons most likely to force sexual relations on females. Table 5 summarizes these results. Thus, it appears that respondents are aware of forced sexual violence against women in the camp, although the majority reported that 'no one in particular' is usually the assailant, followed by the woman's husband or friend. Forced sexual encounters increase the likelihood of unwanted pregnancy, need for abortion, and transmission of sexually transmitted diseases including HIV.

In addition, respondents were asked whether or not girls or women trade sex in the camp to get food, protection or other necessities. Over half (52.89%) of individuals responded no, 42.98% reported yes, and 4.13% said that they did not know. When females were asked if they themselves worry about being forced to have sex against their will, 38.89% said they worry a little, 29.63% said they worry a lot, 25.93% have already traded sex for necessities, and 5.56% said

no. Nearly half of respondents reported awareness of women trading sex for necessities in the camp to survive, and a large percentage of women have either already traded sex for necessities or worry about being forced to have sex against their will. These results highlight the occurrence of forced sexual violence against women in the banana camp and underscore the need to employ protective measures to ensure the safety and security of women. Preventive measures may include careful design and layout of camps including providing adequate lighting and security patrols. Community education and provision of private and confidential health services for women may also reduce the negative effects of such violence against women.

**Table 5. Which Men Are Most Likely to Force Women to Have Sex? N=45**

	<b>% yes</b>
Husband/Friend	33.33
Someone in the Family	13.33
Other Displaced Person	6.67
No One in Particular	64.44
Other	0
Don't Know	0

Women and girls are not the only victims of sexual violence in displaced situations, but instead boys and men are also vulnerable. To ascertain the level of sexual violence occurring against boys and men, respondents were asked whether or not boys or men are forced to have sex against their will in the camp. Of the 120 respondents, 6.67% said yes, 83.33 said no, and 10.00% said that they did not know. Among a smaller sample of 46 respondents, 80.43% did not know if 'men having sex with men' was a problem in the camp versus 15.22% who said no and 4.35% who said yes. Results indicate that sexual violence

against boys or men appears to be less prevalent, however one should be cautious when interpreting these findings. It could be that acknowledging male-to-male sexual contact, either in a forced situation or not, is culturally taboo for discussion. Due to the risk of sexually transmitted diseases resulting from forced sexual contact with boys or men, it is prudent to consider its possible prevalence in the camp.

In addition, respondents were asked whether or not boys or men trade sex in the camp to get food, protection or other necessities. The majority (84.17%) of individuals responded no, 3.33% reported yes, and 12.50% said that they did not know. When males were asked if they themselves worry about being forced to have sex against their will, 84.62% said they worry a little, 9.23% said they worry a lot, 3.08% have already traded sex for necessities, and 3.08% said no. Despite a small percentage of respondents reporting that boys or men trade sex in the camp to obtain necessities, 97% of men have either worry about being forced to have sex against their will or have already traded sex for necessities, indicating that it is indeed an issue facing male displaced persons. Preventive measures, community education, and provision of health services are needed to reduce the occurrence of sexual violence occurring against men and to reduce the negative effects of such violence.

Lastly, respondents were also asked if their husband/partner or other household member had hit them since arriving to the camp. Of the 113 respondents, the majority (86.73%) reported no and 15 (13.27) reported yes. Of

those who had been struck since arriving at the camp, various individuals were indicated as the perpetrators of violence. Table 6 summarizes these results.

**Table 6. Who Has Hit You Since Arriving to the Camp? N=11**

	<b>% yes</b>
Husband	60
Father	20
Mother	0
Other Family Member	30
Friend	0
Stranger	0

Domestic violence is also prevalent in disaster situations. Disruption of support networks and changing gender roles for both men and women may put a woman at increased risk for domestic violence. The perpetrators most likely to have been reported by victims of domestic violence in the camp were the woman’s husband, other family member, or father. Community education and preventive measures are needed to counteract the occurrence of domestic violence.

**Results from Qualitative Data Collection Methods**

The following table summarizes the key categories related to reasons for displacement as reported by the 18 individuals who participated in in-depth interviews. The categories were used to develop a codebook to facilitate qualitative data analysis using the EZ-TEXT software.

**Table 7. EZ-TEXT Codebook Utilized for Qualitative Data Analysis.**

<b>Code</b>	<b>Code Definition</b>
ECONO	Poverty/Poor Economic Situation
FAMLOST	Children or Relatives Lost or Death
FOODLAC	No Food or Lack of Sustenance
HEALTHC	Damage or Absence of Health Services
HURRIC	Suffered from Hurricane
MEDLAC	Lack of medicines and Medical Support
RAPE	Rape of Assault of Children or Women
VIOLH	Domestic Violence – Husband Treat Badly
VIOLW	War-Street Guerilla Violence

The following represent two textual examples of displaced persons' responses to the in-depth questioning regarding reasons for displacement.

*“The hurricane which went through Honduras and its flooding harmed severely health services. Because of it, I would not obtain medical attention. I lost a baby when five months pregnant and my sister lost one at two months.”* [Spanish translation – *El huracan que paso por Honduras dejo inindaciones que afectaron seriamente los servicios de salud y por no tener atencion medica perdi un embarazo de 5 meses y mihermana perdio su bebe de dos meses.*]

*“The violence in my country Guatemala made me suffer the lost of my husband and the rape of my daughter of 14 years.”* [Spanish translation – *La violencia que existe en mi pais Guatemala, ya que tuve que sufrir la perdida de mi esposo y la violación de mi hija de 14 anos.*]

## **Results from Non-Random Selection Technique – Clinic Sites**

### *Family & Pregnancy Related Variables*

Among individuals sampled from clinic sites, the average number of children respondents had ever had was 2.63. Of the 64 who had ever had children, 62.50% had children with them at the camp. The average number of children respondents had with them at the camp was 2.6. Thus, nearly two-thirds of displaced persons continued to care for children following relocation. The responsibility of caretaking may be particularly burdensome for women who no longer have the support of spouses or family members. Displaced persons have the same reproductive health needs as non-displaced persons including services to reduce the numbers of deaths and illnesses resulting from complications of pregnancy and childbirth. Often in disaster situations, priority is given to acute care and little attention is given to reproductive health needs of women. However, survey results indicated that most displaced women received antenatal and delivery care services.

For example, although only 8 (21.62%) women were pregnant at the time of interview, the majority (85.71%) had seen a health provider. When asked ‘Did you see anyone during your last pregnancy,’ of the 21 women who responded, all (100%) answered yes. The average number of visits to a health provider reported was 4. Thus, most women reported receiving prenatal care services.

Furthermore, of the 26 women who responded to the question “Where did you go during your last pregnancy,” the majority (84.62%) went to government services. Of the remaining respondents, 11.54% sought care at non-government

services, and 3.85% saw a traditional birth attendant (TBA). Most women (75%) received tetanus toxoid injections during their last pregnancy, and the majority (85.71%) took iron or folic acid supplements. It is important for women to receive proper care during and around the time of childbirth as a result of the increased risk of maternal mortality experienced by women in displaced settings. Survey results revealed that not only were government services available to displaced women, but also a large majority utilized these services including tetanus toxoid injections and nutritional supplements.

Respondents reported delivering their last pregnancy in their original country, in the present camp, and while in transition from the original country to the banana camp. More than half (51.85%) of the women who responded to the question “Where did you deliver during your last pregnancy,” reporting giving birth in their original countries. Two-fifths (40.74%) gave birth in the present camp and 7.41% gave birth while in transition from their original country to the banana camp. Of the 14 women who delivered in their original countries, most (71.43%) delivered with health services. Of the 11 women who gave birth in the present camp, nearly two-thirds (63.63%) delivered in a town with health services. All of the women who delivered while in transition from their original country to the banana camp delivered with health services. Thus it appears that for women sampled at clinic sites, increased health services were available at time of delivery for women who gave birth in their home countries as compared to the banana camp or while in transition to the camp. This finding elucidates greater need for availability of health services during time of delivery.

All of the 26 respondents reported that someone was there to assist with delivery during their last pregnancy. Nearly one-third (30.77) reported the presence of a doctor, 23.08% reported the presence of a nurse, 19.23% reported the presence of a trained TBA, 11.54% reported the presence of a non-trained person, and 15.38% reported some other person. It has been reported that most maternal deaths are due to the lack of available skilled help in time for delivery complications. Survey results indicated that nearly one-third of respondents did not have a trained individual present at time of last delivery to assist. Once again, this finding highlights the need for increased availability of trained persons at time of delivery to identify complications of pregnancy and ensure proper management and referral in the banana camps.

Six women reported having a problem during labor or delivery that made them seek help. Of those women, two-thirds (66.67%) reported prolonged labor lasting more than 12 hours, 16.67% reported an infection with fever, and 16.67% reported an incomplete abortion. Furthermore, when asked “Where did you get the help,” half (50%) reported in the hospital, one-third (33.33%) reported being attended in their homes, and 16.67% reported in a health center. Lastly, all but one of the six women (83.33%) reported giving birth to live infants.

Exclusive breastfeeding remains particularly important in disaster situations due to the increased risk of diarrhea and other infectious diseases at displaced camps. Survey results revealed that although all but one of the 24 respondents (95.83%) reported breastfeeding their infants, few (13.64%) women gave only breast milk for the first six months, while the majority (86.36%) gave

breast milk in addition to other food products. The average length of time women breastfed their infants was 8.09 months. While most women reported some breastfeeding, a very small percentage practiced exclusive breastfeeding. Giving infants food products other than breast milk during infancy increases the risk of introducing infectious pathogens due to poor hygiene and crowded situations of the camps. Efforts should be made in the camp to further promote exclusive breastfeeding to decrease the infant's exposure to infectious diseases, and also to promote a strong maternal-infant bond. This bond may be particularly important in disaster situations where other warm, nurturing and caring relationships may not exist for either mother or baby.

Of the 26 women who answered the question "Have you ever had a cesarean section to give birth," most (92.31%) women responded no. Only 3.85% had ever had a cesarean section, and 3.85% were unsure. Furthermore, when asked whether or not they wanted to have more children in the future, 38.46% reported yes, 38.46% reported no, and 23.08% did not know.

### *Family Planning Variables*

Family planning is a basic health right of individuals, and displaced persons should be able to decide freely the number and spacing of their children. Family planning is also important in disaster situations to protect against sexually transmitted diseases including HIV. Before a system of family planning services can be implemented in a camp, first a needs assessment is necessary.

To better understand the needs of displaced persons living in the camp, respondents were asked to report what family planning methods they had ever

heard of, had ever used, and were currently using. Respondents were not prompted by interviewers nor presented with a list of family planning methods. Instead, interviewers recorded only those family planning methods mentioned by respondents on their own. Of the 81 individuals who completed the survey, most (70%) had reported ever using any family planning methods and 50.62% reported current use of some method of family planning. The following table summarizes the results of knowledge, previous use, and current use of family planning methods.

**Table 8. Knowledge and Use of Family Planning Methods**

	<b>Ever Heard Of N=101 (% yes)</b>	<b>Ever Used N=56 (% yes)</b>	<b>Using Now N=41 (% yes)</b>
Pill	93.51	52.73	26.83
IUD	27.27	10.71	4.88
Injectables	77.92	28.57	12.20
Implant	0	0	--
Condom	75.32	42.86	46.34
Condom with Spermicide	1.30	0	0
Abortion	9.09	0	0
Diaphragm	0	0	0
Male Sterilization	6.49	0	0
Female Sterilization	44.16	7.14	9.76
Rhythm Method	5.19	3.57	0
Lactation Method	2.60	0	0
Retiro (Withdrawal)	7.79	3.57	0
Traditional Methods	0	0	0
Other Methods	0	0	0

Survey results indicated that without prompting, the most commonly reported methods of family planning reported by displaced persons included the pill, injectables, condom, female sterilization, and IUD. The four family planning methods most likely to have been used previously by respondents included the

pill, condom, injectables, and IUD. The four family planning methods most likely to have been currently used by respondents included the condom, pill, injectables, and female sterilization.

One important consideration when establishing high-quality family planning services in a camp is to enable displaced persons to continue use of a family planning method that was used prior to displacement. It is thus important to provide a wide range of safe and effective methods of contraception for displaced persons to select a method that is culturally acceptable. Based on the above table, there does appear to be a slight mismatch between the most popular family planning methods previously used by displaced persons and those currently being used. More specifically, although the IUD ranked fourth as the most popular method previously used by displaced persons, it is replaced by female sterilization as one of the most popular methods currently being used. This may result from an unavailability of the IUD as a family planning option, or simply reflect the changing needs of the population to a more permanent method of contraception.

When asked reasons for not currently using family planning methods, very few individuals responded. Field notes submitted by the interviewers who conducted the surveys with respondents recorded a discomfort with this type of question. Of the 14 individuals who did respond, reasons included current pregnancy, desire to have a child, unmarried status, and religion. Furthermore, when asked “Would you like to use family planning some time in the future,” over half (51.28%) responded yes, 43.59% responded no, and 5.13 said that they did

not know. Thus, there is an expressed desire for family planning services in the future.

Of the 68 respondents who answered the question “Do you feel like you could ask your partner to use a condom,” the majority (73.53%) said yes, 20.59% said no, and 5.88% said that they did not know. Condoms are the best protection against sexually transmitted diseases including HIV infection and survey results indicated that the majority of displaced persons feel comfortable communicating with their partner about condom use. Furthermore, when asked “Were you ever treated for a sexual infection,” most respondents (82.61%) answered no, 8.70% answered yes, and 8.70% answered that they did not know. It is unclear whether this finding is due to a lack in services for sexually transmitted disease screening and treatment, or a lack of utilization of these services. Regardless, due to the increased promiscuity and sexual violence often reported during disaster situations, improved screening and treatment services for sexually transmitted diseases are warranted.

To further understand and determine any significant predictors related to family planning method knowledge and use, a series of logistic regression models were computed. Independent variables included in the models consisted of gender, ethnicity, age, education, and time spent in camp. Significant findings at the  $p < .05$  level are reported below.

#### HAVE YOU EVER HEARD OF INJECTABLES? (N=75)

- Respondents with more education are more likely to have heard of injectables than those with less education (OR=1.26, CI=1.01, 1.58).

HAVE YOU EVER HEARD OF CONDOMS? (N=75)

- Respondents with more education are more likely to have heard of condoms than those with less education (OR=1.54, CI=1.17, 2.04).

HAVE YOU EVER HEARD OF MALE STERILIZATION? (N=75)

- Respondents with more education are more likely to have heard of male sterilization than those with less education (OR=1.63, CI=1.03, 2.57).

HAVE YOU EVER HEARD OF FEMALE STERILIZATION? (N=75)

- Women are more likely to have heard of female sterilization than males (OR= 1.79, CI=0.53, 5.95).
- Respondents who are older in age are more likely to have heard of female sterilization than those who are younger in age (OR=1.10, CI=1.02, 1.19).
- Respondents with more education are more likely to have heard of female sterilization than those with less education (OR=1.61, CI=1.25, 2.06).
- Respondents who have spent a greater amount of time in the camp are less likely to have ever heard of female sterilization than those who have spent less time in the camp (OR=0.92, CI=0.85, 0.99).

HAVE YOU EVER USED ANY FAMILY PLANNING METHODS? (N=78)

- Respondents who have spent a greater amount of time in the camp are less likely to have ever used any family planning methods than those who have spent less time in the camp (OR=0.92, CI=0.86, 0.98).

ARE YOU USING ANY FAMILY PLANNING METHODS NOW? (N=79)

- Respondents with more education are more likely to report current use of any family planning methods than those with less education (OR=0.78, CI=0.65, 0.95).
- Respondents who have spent a greater amount of time in the camp are less likely to report current use of any family planning methods than those who have spent less time in the camp (OR=0.91, CI=0.85, 0.98).

Results from logistic regression analyses revealed that women are more likely to report ever hearing of female-utilized methods of family planning including female sterilization. Furthermore, the more education respondents had completed, the more likely they were to have heard of certain methods of family planning including injectables, condoms, female sterilization, and male sterilization. Those with more education were also more likely to be current users of some type of family planning. These findings are not surprising.

More distinct of displaced persons living in the banana camp included a decreased likelihood of ever using any family planning method and a decreased likelihood of currently using any family planning method among respondents who had spent a greater amount of time in the camp. This may indicate a lack of available services, cultural differences in displaced populations related to family planning acceptability, or a decreased need for contraceptive services after settling into the camp. Regardless of reason, low utilization of family planning methods among respondents who have spent a greater amount of time in the camp is unacceptable. Rates of unwanted pregnancies and the transmission of sexually transmitted diseases are too high in disaster situations to ignore the grave need of family planning services in camps.

#### *Service Utilization Variables*

As previously noted, family planning is a key component of reproductive health services for men, women, and families. Availability of family planning services in displaced camps helps preserve the lives of women, men and children by preventing untimely and unwanted pregnancies and by reducing

women's exposure to health risks of childbirth and abortion. Survey results indicate that family planning services are largely available in the banana camp. Of the 41 individuals who reported currently using some method of family planning, 77.97% had received the family planning method or supply since arriving at the camp. One-fifth (22.03%) had not received any family planning methods or supplies since arriving at the camp. Although a majority of respondents had received family planning supplies since arriving at the camp, one-fifth had not received any thus elucidating a need for increased availability of safe, effective, and culturally appropriate methods of family planning.

Of those who had received family planning supplies since camp arrival, several sources were indicated as the location where supplies were obtained. In many cases, individuals reported more than one source. When asked "Where did you get your method or supplies the last time," 58.70% reported from non-governmental services, 36.96% received the method from a store pharmacy, 17.39% received the method from government services, and 6.52% reported receiving the method from some other source. All but one respondent (96.88%) reported paying for these services. Although a large majority of current users of family planning reported receiving supplies since arriving at the camp, most did not receive the supplies from governmental services. Non-governmental services and store pharmacies were most often reported as the location where supplies were obtained, and all but one respondent reported paying for these supplies. Loss of income is a severe obstacle facing displaced persons and may inhibit use of family planning methods if payment is necessary. Recall that only

half of respondents reported current use of family planning indicating a need to improve rates of utilization to prevent unwanted pregnancies and the transmission of sexually transmitted diseases. Low rates of utilization in the camp may relate to cost or lack of available government services.

### *Unwanted Pregnancy/Abortion Related Variables*

Once again, reproductive health is a basic right of individuals. Family planning services can prevent unwanted pregnancies and avoid unnecessary complications related to abortion. These rights also apply to displaced persons.

Survey results indicated that unwanted pregnancy is a problem experienced by women in the camp. When asked “Do you know of any girls or women here who have been pregnant but did not want to be,” nearly two-thirds (64.20%) responded yes, 30.86% responded no, and 4.94% reported that they did not know. Of those who reported that they did know of a girl or woman in the camp who had been pregnant and did not want to be, 80.39% said that the woman did nothing about the unwanted pregnancy and continued through the pregnancy. The remaining 19.61% reported that the woman had an abortion. Although the majority of women who experienced an unwanted pregnancy did nothing to disrupt the pregnancy, nearly one-fifth sought an abortion posing increased health risks. Substantial rates of unwanted pregnancy and increased health risks related to abortion complications can be avoided through family planning services. These situations may also be more difficult for displaced women to deal with considering that many of the women have lost or left behind pre-existing family support networks and may be socially isolated.

When asked “Where would you advise a woman to go for health problems due to an abortion,” several locations were indicated. In many cases, respondents indicated more than one location and thus totals do not equal one hundred percent. Most individuals reported advising a woman to seek help for problems associated with an abortion at Hospital A (64.71%) followed by Health Center A (33.33%) and Hospital B (7.84%). Of the respondents, only 2 (3.92%) reported ever going to someone or doing something to stop an unwanted pregnancy. The remaining 96.08% reported no. Once again, field notes submitted by the interviewers indicated uneasiness about answering questions related to abortion due to its illegal status in Belize.

#### *HIV Related Variables*

It has been documented that sexually transmitted diseases including HIV spread fastest in situations where there is poverty, powerlessness, and social instability. This is the situation of displaced person living in camps. Communities and norms have been disrupted, and women and young boys are often forced into sexual relations to obtain necessities such as food, money, security, and shelter. Thus it is important to ascertain the level of knowledge and safe-sex practices among displaced persons to reduce the rampant transmission of the disease and to protect the reproductive lives of all displaced individuals. As a result, survey respondents were asked if they had ever heard of a disease called HIV and also asked questions related to the transmission of HIV to ascertain knowledge levels of individuals living in the camp. Unfortunately, a great deal of missing data resulted from these questions.

Of the 73 individuals who responded to the question “Have you ever heard of a disease called HIV,” the majority (95.89%) said yes. Only three individuals (4.11%) said no. When asked about various potential methods of HIV transmission including via mosquitoes, sexual contact, blood transfusions, hugging, sharing needles, and from mother to infant during childbirth, the majority of respondents had moderate to high levels of correct knowledge.

For example, half (50.00%) of 72 respondents correctly indicated that one cannot get HIV from mosquitoes versus 8 (11.11%) who incorrectly reported yes and 28 (38.89%) who reported that they did not know. All (100%) respondents correctly identified sexual contact as a means of HIV transmission. When asked if one can get HIV through a blood transfusion, the majority (88.89%) of 72 respondents correctly said yes versus 48 (11.11%) who reported that they did not know. Over half (62.86%) of 70 respondents correctly indicated that one cannot get HIV from hugging a person with HIV in comparison to 22 (31.43%) who did not know and 4 (5.71%) who incorrectly reported yes. When asked if HIV can be transmitted from sharing needles, the majority (87.32%) correctly responded yes, 11.27% reported that they did not know, and 1.41% incorrectly reported no. Lastly, two-thirds (68.42%) of individuals correctly responded that a woman with HIV could give HIV to her baby during pregnancy. Nearly one-third (28.95%) reported that they did not know and 2.63% incorrectly reported no. Although respondents from the clinic sites had much greater knowledge related to HIV transmission than respondents sampled from the work sites, there is still a need for further education related to modes of HIV transmission among displaced

persons. Furthermore, because all respondents correctly identified sexual contact as a means of HIV transmission, further emphasis should be placed on the use of condoms to provide protection against the disease including widespread distribution of condoms in the camp

Respondents were also asked a series of questions related to what a person could do to avoid getting HIV. Table 9 summarizes these results.

**Table 9. What Can a Person Do To Avoid Getting HIV? N=76**

	<b>% yes</b>
Refrain from sexual relations	15.79
Use a condom	51.32
Refrain from using or sharing injectables	22.37
Refrain from sexual relations outside of marriage	44.74
Look for healthy partners	46.05
Other	0
There is nothing one can do to avoid getting HIV	0

Once again, the above table highlights the need for increased health education programs to educate displaced persons on ways to avoid HIV infection. In addition to emphasizing the importance of using condoms and refraining from using shared needles, efforts are needed to dispel the myth that one can avoid HIV infection by looking for healthy partners. It is also not completely safe to refrain from sexual relations outside of marriage unless both partners are monogamous. Due to the increased breakdown of stable relationships among displaced persons, the need for further education and programs to prevent HIV infection is warranted.

When asked “Do you worry that you could get HIV,” of the 76 respondents, 77.63% said that they worry a lot, 10.53% said that they worry somewhat, 9.21% said no and 2.63% reported that they did not know.

Respondents were also asked a series of open-ended questions related to HIV prevalence and treatment. When asked how common they believe HIV to be in the community, over half (53.25%) said that they did not know, 31.17% reported ‘many people’, and 15.58% reported HIV not to be common in the community. When asked ‘Do you know anyone with AIDS,” 59.74% said no, 32.47% said yes, and 7.79% reported that they did not know. The majority (84.62%) of respondents reported that they would go to the hospital to find out if they had HIV, versus 121.82% who said they would go to the health center and 2.56% who did not know where they would go. Although less than one-third of respondents reported knowing an individual with HIV and only about one-third believed HIV to be a problem in the camp, the majority knew where to go to be tested for HIV. The perceived prevalence of HIV in the camp among displaced persons may or may not be accurate, however it is important to communicate the severity of HIV and the potential high prevalence of HIV due to poverty, instability, and powerlessness.

#### *Violence Related Variables*

It has been recognized that sexual and gender-based violence increases in disaster situations due to displacement, uprootedness, loss of community structures and the need to exchange sex for material goods and protection. These types of violence can have severe physical and psychological effects

including unwanted pregnancies, unsafe and complicated abortions, transmission of HIV and other sexually transmitted diseases, anxiety, post-traumatic stress disorder, depression, and suicide. It is important to ascertain the level the sexual and gender-based violence occurring in the camps and not simply assume that it is not occurring due to cultural taboos against discussing such issues in public.

To understand the level of sexual and gender-based violence occurring in the camp, respondents were asked whether or not girls or women are forced to have sex against their will in the camp. Of the 81 respondents, 51.85% said yes, 45.68 said no, and 2.47% said that they did not know. Of the 42 individuals who reported that girls or women are forced to have sex against their will in the camp, various individuals were indicated as the persons most likely to force sexual relations on females. Table 10 summarizes these results. Thus, it appears that respondents are aware of forced sexual violence against women in the camp, and that the woman's husband or friend or other family member are most often the perpetrators of such violence. Forced sexual encounters increase the likelihood of unwanted pregnancy, need for abortion, and transmission of sexually transmitted diseases including HIV.

In addition, respondents were asked whether or not girls or women trade sex in the camp to get food, protection or other necessities. The majority (86.42%) of individuals responded yes and 13.58% said no. When females were asked if they themselves worry about being forced to have sex against their will, 43.24% said they worry a little, 35.14% said they worry a lot, 8.11% have already traded sex for necessities, and 13.51% said no. Over three-quarters of

respondents reported awareness of women trading sex for necessities in the camp to survive, and a large percentage of women have either already traded sex for necessities or worry about being forced to have sex against their will. These results highlight the occurrence of forced sexual violence against women in the banana camp and underscore the need to employ protective measures to ensure the safety and security of women. Preventive measures may include careful design and layout of camps including providing adequate lighting and security patrols. Community education and provision of private and confidential health services for women may also reduce the negative effects of such violence against women.

**Table 10. Which Men Are Most Likely to Force Women to Have Sex? N=42**

	<b>% yes</b>
Husband/Friend	80.49
Someone in the Family	51.22
Other Displaced Person	4.88
No One in Particular	26.83
Other	0
Don't Know	2.44

Women and girls are not the only victims of sexual violence in displaced situations, but instead boys and men are also vulnerable. To ascertain the level of sexual violence occurring against boys and men, respondents were asked whether or not boys or men are forced to have sex against their will in the camp. Of the 79 respondents, 8.86% said yes, 81.01 said no, and 10.13% said that they did not know. Among a smaller sample of 52 respondents, 75% reported that 'men having sex with men' was not a problem in the camp versus 11.54% who said yes and 13.46% who did not know. Results indicated that sexual violence

against boys or men appears to be less prevalent than sexual violence against girls or women, however one should be cautious when interpreting these findings. It could be that acknowledging male-to-male sexual contact, either in a forced situation or not, is culturally taboo for discussion. Due to the risk of sexually transmitted diseases resulting from forced sexual contact with boys or men, it is prudent to consider its possible prevalence in the camp.

In addition, respondents were asked whether or not boys or men trade sex in the camp to get food, protection or other necessities. The majority (72.84%) of individuals responded no, 18.52% reported yes, and 8.64% said that they did not know. When males were asked if they themselves worry about being forced to have sex against their will, 80.49% said no, 7.32% said they worry a little, and 12.20% said they worry a lot. Although most male respondents reported that they do not worry about being forced to have sex against their will, nearly one-fifth knew of instances where boys or men traded sex for necessities in the camp and another one-fifth worried either a little or a lot that they would be forced to have sex against their will. These findings indicate that sexual violence against boys or men is indeed an issue facing male displaced persons. Preventive measures, community education, and provision of health services are needed to reduce the occurrence of sexual violence occurring against men and to reduce the negative effects of such violence.

Lastly, respondents were also asked if their husband/partner or other household member had hit them since arriving to the camp. Of the 72 respondents, the majority (81.94%) reported no and 13 (18.06%) reported yes.

Of those who had been struck since arriving at the camp, various individuals were indicated as the perpetrators of violence. Table 11 summarizes these results.

**Table 11. Who Has Hit You Since Arriving to the Camp? N=9**

	<b>% yes</b>
Husband	100
Father	22.22
Mother	0
Other Family Member	55.56
Friend	11.11
Stranger	0

Domestic violence is also prevalent in disaster situations. Disruption of support networks and changing gender roles for both men and women may put a woman at increased risk for domestic violence. The perpetrators most likely to have been reported by victims of domestic violence in the camp were the woman's husband, other family member, father, or friend. Community education and preventive measures are needed to counteract the occurrence of domestic violence.

## CONCLUSIONS / RECOMMENDATIONS

As stated in the introduction, we confirm some of our initial hypotheses including that disasters mean displaced persons, and that even after a long period of displacement, they need appropriate education and services on the thematic areas identified by WHO-UNHCR, because of persistent myths and lack of knowledge. The following are general recommendations resulting from the literature as well as research findings that may be pinpointed in disaster situations after the most immediate emergency.

1. Improved availability of skilled assistance during delivery to identify pregnancy complications, provide immediate first aid, and know when and where to refer women for additional care.
2. Improved promotion of exclusive breastfeeding to decrease unnecessary infant exposure to infectious pathogens that may lead to infant diarrhea.
3. Improved promotion of condom use and distribution among displaced persons to prevent unwanted pregnancies and transmission of sexually transmitted diseases.
4. Improved availability of screening and treatment services for sexually transmitted diseases.
5. Increased sensitivity of cultural differences related to family planning method preference and utilization.
6. Increased availability of low-cost family planning services to improve utilization rates.
7. Increased educational efforts to educate displaced persons on the modes of HIV transmission including dispelling of myths.
8. Increased preventive measures to protect displaced persons from sexual violence.
9. Improved community education on sexual and gender-based violence.

10. Improved provision of private and confidential health services for victims of sexual violence.

Future developments should also include identifying characteristics of and providing training for local individuals with proper attitudes and knowledge that enable them to coordinate the needed actions and enterprises to serve as reproductive health coordinators as recommended by WHO. They will promote health education and prevention services throughout the banana camps, safeguard hospitals and clinic structures against flood and other disaster damage, and further refine survey instruments to simplify data collection and make the process more prompt and efficient.

## References

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## Appendix A Belize Health Profile

### Demographic Indicators

<u>Estimated population (thousands)</u>	<u>230</u>
<u>Urban population (%)</u>	<u>46.5</u>
<u>Estimated crude birth rate (per 1.000 population)</u>	<u>30.9</u>
<u>Annual population growth rate (%)</u>	<u>2.5</u>
<u>Dependency ratio(%)</u>	<u>81.3</u>
<u>Life expectancy at birth (years)</u>	
<u>Male</u>	<u>74.8</u>
<u>Female</u>	<u>73.5</u>
	<u>76.2</u>
<u>Literacy rate (%)</u>	<u>75</u>
<u>Male</u>	<u>75</u>
<u>Female</u>	<u>75</u>
<u>Population with access to services of drinking water(%)</u>	<u>84</u>
<u>Urban</u>	<u>100</u>
<u>Rural</u>	<u>69</u>
<u>Population with access to services of excretal de disposal (%)</u>	
<u>Urban</u>	<u>39</u>
<u>Rural</u>	<u>59</u>
	<u>22</u>

### Socioeconomic Indicators

<u>Gross domestic product (US\$)</u>	
<u>Current value</u>	<u>2,700</u>
<u>PPP value</u>	<u>3,289.9</u>
<u>Population living in poverty (%)</u>	<u>33.0</u>
<u>Ratio of 20% highest / 20% lowest income</u>	<u>2.0</u>
<u>National health expenditure per capita (US\$)</u>	<u>106</u>
<u>National health expenditure as percent of Gross National Product (%)</u>	<u>3.9</u>

### Health Risks Indicators

<u>Infant mortality (per 1.000 live births)</u>	<u>26.0</u>
<u>Mortality under 5 years of age (per 1.000 live births)</u>	<u>31.1</u>
<u>Maternal mortality (per 1.000 live births)</u>	<u>139.0</u>
<u>Estimated to communicable diseases (per 100.000 population, adjusted by age)</u>	<u>...</u>
<u>Estimated to neoplasms (per 100.000 population, adjusted by age)</u>	<u>...</u>
<u>Estimated to diseases of the circulatory system (per 100.000 population, adjusted by age)</u>	<u>...</u>
<u>Estimated from external causes (per 100.000 population, adjusted by age)</u>	<u>...</u>

**Indicators of resources, access, and coverage**

<a href="#">Underregistration of mortality (%)</a>	<a href="#">12.3</a>
<a href="#">Ill-defined deaths (%)</a>	<a href="#">...</a>
<a href="#">Physicians per 10.000 population</a>	<a href="#">5.31</a>
<a href="#">Hospital beds per 1.000 population</a>	<a href="#">23.98</a>
Immunization coverage in infants under 1 year old (%)	
<a href="#">DPT</a>	<a href="#">86</a>
<a href="#">OPV3</a>	<a href="#">85</a>
<a href="#">BCG</a>	<a href="#">90</a>
<a href="#">Measles</a>	<a href="#">81</a>
<a href="#">Birth deliveries attended by trained personnel (%)</a>	<a href="#">79</a>

**GENERAL SITUATION AND TRENDS****SOCIECONOMIC, POLITAL, AND DEMOGRAPHIC OVERVIEW**

Belize has a land area of 22,700 km<sup>2</sup> and is the only English-speaking country in Central America, although Spanish is also widely spoken. It is more similar to Caribbean countries in culture, politics, and economy. Belize is governed by a parliamentary democracy based on the British system. The Prime Minister and Cabinet constitute the executive branch, and a 29-member elected House of Representatives and an 8-member appointed Senate form the bicameral legislature. The Cabinet members are appointed by the Governor General on the advice of the Prime Minister. The country is divided into six administrative districts: Corozal, Orange Walk, Belize, Cayo, Stann Creek, and Toledo. A locally elected board administers each district, and a mayor and village council govern at the village level. Although the capital was moved to Belmopan in 1981, Belize City remains the commercial center with almost a quarter of the population.

The 1991 census estimated the population at 189,392 while the estimate for 1996 is 222,000. Over 42% of residents are under the age of 15, and 61% under 25 years, with similar proportions of women and men. In 1991, the rural population surpassed the urban due to an influx of immigrants. The Office of the United Nations High Commissioner for Refugees estimates the migrant population at approximately 30,000, (14% of the total); the 1995 National Survey conducted by the Central Statistics Office indicated immigrants comprise 12% of the population. According to the census, the Mestizo ethnic group represented 44% and the Creole 30% of the population. Other ethnic groups include the Maya (12%), Garífuna (7%), East Indian (4%), and other smaller groups. In 1996, Belizeans of Asian origin comprised 2.5% of the population. The annual population growth rate was 2.5% in 1996 and 2.6% in 1991. The total fertility rate was estimated at 4.6 children per woman, showing a steady downward trend from 7 children per woman in the 1960s. In 1991, estimated life expectancy at birth was 69.9 years for males and 74.1 years for females. In 1996, the crude death rate was estimated at 4.3 deaths per 1,000 population.

The country has an economy primarily based on agriculture and services. The 1996 per capita income was US\$ 2,308 compared to US\$ 1,664 in 1989, a growth of 39%. The gross domestic product (GDP) increased by 67% from US\$ 306 million in 1989 to US\$ 512 million in 1996, while the population grew by 21%. The GDP had a real

growth rate of 1.5% in 1996 and 3.8% in 1995. Although inflation is low, it increased in 1996. The consumer price index was 2.8% in 1995 and 6.4% in 1996, averaging 3.2% the previous five years.

The economy is dominated by agricultural exports including sugar cane, citrus concentrate, bananas, and marine products, which made up 77% of exports in 1996. Belize also relies on forestry, fishing, and mining, which, combined with agriculture, account for 22% of the GDP. The Government has not succeeded in generating the resources needed to expand the infrastructure base and reduced spending has resulted in cuts in health services for rural communities and curtailed services in health posts and mobile clinics. The Government is reorganizing its tax structure, which will affect the poor. The Social Investment Fund, containing US\$ 10 million, was created to promote productive and social interventions in highly underprivileged population groups, and should help to alleviate poverty.

A 1995 Poverty Assessment Report concluded that 33% of Belizeans were poor (unable to meet expenditures on basic food and non-food items), while 13% were very poor (unable to meet expenses on basic food items). Of heads of households, 24% of males and 31% of females were considered poor. In Toledo District, where a majority of the Maya live, 58% of the population was poor; 41% in Cayo District, and 25% of Orange Walk, Corozal, Belize, and Stann Creek Districts were classified as poor.

The 1991 census indicated that the majority of households consist of five or more persons. The 1996 Labour Force Survey showed a drop to 4.5 persons per household. Over 20% of households in the country had less than two persons. Average household size in rural areas was larger than in urban areas. Nationwide, 22% of households were headed by females, except in Belize District (33%). The census also indicated that 63% of houses had two or fewer bedrooms. Approximately 66% of all houses were either owned or being bought, while over 20% were rented. Houses were more often owned in the rural than in urban areas. Of the estimated 1996 population, the survey indicated that 65,025 persons were employed and 10,425 unemployed, an unemployment rate of 13.8%, a 1.3% increase from 1995. Unskilled labor made up 63% of the workers in 1996. Of the employed force, 22% had not completed primary school, 47% had a primary school education, and 15% had completed high school. Mennonites had the highest employment rate (99.3%) and the Garifuna had the lowest (75.7%). The Creole and Mestizo comprised 75% of the unemployed force. Around 71% of the employed were males. In the 14–19-year-old age group, 32.2% of males and 45.5% of females were unemployed.

It is estimated that 100% of the urban and 69% of the rural population had a safe and adequate water supply. Belize District had the highest coverage levels (91%) and Toledo, the lowest (71%). The other districts have coverage levels between 82%–85%. Nationwide, 39% of the population had adequate sanitation facilities with 59% in urban and 22% in rural areas. Solid waste management is a problem throughout Belize; this is exacerbated by drainage problems in Belize District.

Primary school attendance is free and compulsory up to age 14, but approximately 36% of children do not complete it. Literacy is defined as those who completed up to standard five or beyond of the formal education system. Based on census data, the basic literacy rate was 70%. In 1996, the Central Statistics Office added a literacy survey module to the Labour Force Survey to assess functional literacy (measured by specific reading and comprehension skills) as well as basic literacy nationwide. The

survey found basic literacy to be 75.1%, but only 42.4% of the population 10–65 years old were functionally literate.

Only a few statistics are available that provide a profile of the status of women in the society. Women are classified as poorer than men are. A woman holds one of 29 seats in the House of Representatives. Only 2.4% of females complete pre-university education. Senior management positions are held by 1.9% of women; 22% are employed in unskilled jobs, and 18% are unemployed. In 1995, 51.7% of pregnant women attending health clinics were found to be anemic. Since the passage of the Domestic Violence Act in 1993, the number of protection orders granted has increased by over 300%.

### **Morbidity and Mortality Profile**

Life expectancy at birth increased from 68.4 years in 1980 to 71.8 years in 1991. In 1980, females had 2.2 more years of life expectancy than males (69.8 vs. 67.6), a gap that widened to 4.8 years by 1991 (74.7 vs. 69.9). Infant mortality showed a decreasing trend, from 31.5 per 1,000 live births in 1993 to 26.0 in 1996. Maternal mortality fluctuated from 16.1 in 1993 (10 deaths) to 8.2 (5 deaths) in 1995, increasing to 13.9 (9 deaths) in 1996. The leading causes of maternal deaths were hemorrhage, pulmonary embolism, eclampsia, and abortion.

The crude mortality rate remained around 4 per 1,000 population from 1993 to 1996 (4.0, 3.6, 4.3, and 4.0 for those years, respectively). The mean mortality rate among males (4.6) was 40% higher than that of females (3.4). Belize District had the highest rate (6.0), while Cayo had the lowest (2.5). Mortality was dominated by noncommunicable and chronic causes during the 1992–1996 period. Heart diseases were the leading cause for both males and females. An average of 20% of deaths was due to heart diseases, with a decreasing trend from 22% in 1993 to 16% in 1996. Respiratory diseases were the second cause (10%–14% of deaths), except in 1994 when it ranked fourth (7%). Cerebrovascular diseases and malignant neoplasms accounted for 7%–9% of deaths, but neoplasms caused more deaths among females (8%–11%). External causes (excluding road traffic accidents, homicides, and suicides) accounted for 4%–5% of deaths, ranking fifth. Among males, motor vehicle accidents were an increasing cause of death, but not among females.

The leading causes of morbidity, based on the number of hospitalizations, were respiratory diseases, particularly in males. The second cause in males was intestinal disease. Among females, complications of pregnancy ranked first, respiratory diseases, second, and abortion, third. Orange Walk, Stann Creek, and Toledo districts reported respiratory diseases as leading causes of hospital morbidity during the period. In contrast, Cayo District reported complications of pregnancy as the leading cause, followed by respiratory diseases. In Orange Walk District, "other injuries" was the second cause of morbidity in males, while complications of pregnancy ranked second in females. In Belize District, abortion was the second cause of hospital morbidity in females, while "other injuries" ranked second in males in 1993 and 1996. Malaria ranked among the five leading causes of hospital morbidity in Stann Creek District.

## **SPECIFIC HEALTH PROBLEMS**

### **Analysis by Population Group**

Infant mortality decreased by 20% from 31.5 per 1,000 live births in 1993 to 26 in 1996. Corozal and Cayo Districts had the lowest rates (13.8 and 17.9), while Orange Walk, Stann Creek, and Toledo Districts had the highest (32.6, 33.2, and 30.1, respectively). The decreasing trend observed nationally was seen in Corozal, Cayo, and Stann Creek Districts. The rate increased in Toledo from 29.4 in 1993 to 52.1 in 1994, and decreased to 30.1 in 1996. It increased in Belize District in 1995 and 1996. More males (62.1%) than females died during this period. The main cause of infant mortality during the 1993–1996 was conditions originating during the perinatal period (36% of deaths), increasing from 29% in 1993 to 39% in 1996. Of these deaths, the most important causes were asphyxia (32%), low birthweight (28%), and infections (11%). Nearly 62% of perinatal deaths occurred in males; 68% of asphyxia cases were males. The second cause of infant mortality was infectious diseases (24% of deaths); respiratory diseases were responsible for 12% of deaths. Congenital diseases caused 10% of deaths in 1993–1996, decreasing from 16% in 1994 to 9% in 1996.

Infectious disease morbidity among infants accounted for 50% of hospitalizations in 1993–1996; 57% were males. Infectious disease admissions decreased from 64% in 1993 to 40% in 1996. Respiratory and intestinal diseases were responsible for 63% and 32% of admissions, respectively. Nationally, hospitalizations per 1,000 live births increased from 104 in 1993 to 216 in 1994, and remained stable thereafter. Rates were highest in Toledo (289) and in Belize District (261); Corozal had the lowest (74). Around 46% of babies were exclusively breast-fed to four months of age, with no change in trend.

Among children in the 1–4-year age group, mortality increased from 9.0 per 10,000 persons in 1993 to 12.1 in 1996. External causes, including road traffic accidents, accounted for the highest proportion of deaths (24%). The second leading cause was infectious diseases, 22% of deaths; respiratory diseases accounted for 65% of these deaths. Males and females were equally effected. Morbidity based on hospitalizations showed that 35% were due to respiratory diseases, 18% to intestinal diseases, and 12% to external causes. No sex differences were found in hospitalization due to these causes.

Undernutrition measured by weight-for-age deficit occurred in 6% of children attending health clinics in 1992 at the national level, more than twice the number expected. In Toledo, a survey showed that 16% of children were undernourished in 1992 and 18% in 1994. The study suggested that undernutrition was caused by poor weaning practices related to food quality and quantity.

Children in the 5–9-year-old group had the lowest mortality of all age groups, 3.3 per 10,000 persons over 1993–1995, with an increase to 5.5 in 1996. Rates were higher in males (4.4) than in females (3.0). External causes accounted for 43% of deaths. More males (62%) died from these causes than females. Respiratory diseases were the leading cause of morbidity in this period for both males and females, with 21% of all hospitalizations. Second in rank were external causes (12%).

Data from a national census showed that the prevalence of growth retardation (low height-for-age) in schoolchildren in 1996 was 15%–18% in males and 13% in

females. This prevalence was much higher in rural areas (23%) than in urban areas (7%) and in Mayan children (45%) than in Mestizo and other ethnic groups (18%). With the exception of Belize District (4% prevalence), the districts with the highest levels of poverty also had the highest level of growth retardation (Toledo District, 39% prevalence). The ethnic group most affected was the Maya (45%), and the least affected, the Creole (4%). Maya children had four times more growth retardation in Toledo District (52%) than in Belize District (12%).

Mortality among adolescents 10-19 years old over the period averaged 6.2 per 10,000 persons. Mortality in males was twice as high (8.7) as females (3.6), accounting for 72% of all deaths. External causes were the leading cause of death (37%); 80% of these deaths were in males. Belize District had the highest number of deaths due to external causes, followed by Orange Walk; Toledo District had the lowest percentage (6%). Complications of pregnancy were the leading cause of hospitalization for adolescents in 1993–1996 (17%), followed by injuries and poisoning (16%). Females represented 60% of all admissions. Complications of pregnancy accounted for 42% of female admissions, while injuries and poisoning accounted for 31% of males. Fractures accounted for 37% of all injuries and poisoning, with males hospitalized in 78% of cases. Of the complications of pregnancies, abortion and early labor each accounted for 19% of admissions and cesarean section 7%.

Among adults 20–49 years old, mortality was stable over the period, with an average rate of 2.3 per 10,000 persons. Mortality rates in males were higher (2.7) than in females (1.4). External causes were the leading cause, with 24% of deaths, followed by heart and respiratory diseases (12% and 7%, respectively). Males had 69% of all deaths in this age group. Of the deaths from external causes, road traffic accidents comprised 51%; 88% involved males. Death from heart diseases was higher in females (17%) than males (9%). Complications of pregnancy were the leading cause of hospitalization in 1993–1996 in this age group (29%) and digestive disorders (8%). Females in this age group comprised 69% of hospital admissions. Complications of pregnancy were responsible for 42% of female admissions of all ages, and 37% of these cases were related to abortion. Injuries and poisoning were the leading causes of hospitalization for males (29%).

Adults 50 years and over had a mortality rate in 1993–1996 of 20 per 10,000 persons. Rates were higher in males (20.8) than females (18.4). Heart, respiratory, cerebrovascular diseases, and neoplasms were the leading causes, with more than 50% of all deaths. Respiratory, heart, and digestive system diseases and diabetes were the leading causes of hospitalization in this age group. Males and females had similar hospitalization patterns.

## **Analysis by Type of Disease**

### ***Communicable Diseases***

Malaria continued to be a major public health problem in Belize. The number of cases, the rise in the number of positive localities, the number of cases due to *Plasmodium falciparum*, and the percentage of cases occurring among children increased during 1992–1994. A study in 1995 showed that, in Toledo, 56% of cases occurred among children under 14 years of age. In other districts, most cases occurred in young adult males. There were 9,413 cases diagnosed in 1995, a 10% decrease from 1994. Cases decreased by approximately 50% in Orange Walk and Corozal Districts. Almost 95% of cases in 1995 were due to *P. vivax*. Of the *P.*

*falciparum* cases, 86% occurred in Stann Creek and Cayo. Cayo was the most affected district, with 40% of all cases, while Toledo reported 23% and Stann Creek, 18%. In 1996, there were 6,605 reported cases, a reduction of 30% from 1995.

No cases of dengue were reported between 1991-1993. In 1994, 14 cases were detected and in 1995, 107 suspected cases were registered, 9 confirmed by laboratory. No cases were reported for 1996.

Cholera appeared in Belize in January 1992; 159 cases were reported in 1992 (mainly in Toledo District), 135 in 1993, and 26 in 1996. Four deaths occurred during 1992, followed by two deaths in 1993 and two in 1996. Hospitalizations due to intestinal diseases decreased from 913 in 1994 to 593 in 1996, particularly in children 1–4 years old.

Mortality rates due to tuberculosis were 2.0 per 10,000 persons in 1993, 4.3 in 1994, 2.8 in 1995, and 5.4 in 1996. During the period, 232 new cases of tuberculosis were diagnosed.

Respiratory diseases accounted for 12% of all hospital admissions in 1993-1996. The most common diagnoses were chronic obstructive lung disease (45%), which includes asthma, and pneumonia and influenza (29%). Males and females were hospitalized in equal numbers. Respiratory disease was the second leading cause of death (11%). Pneumonia was the diagnosis in 69% of these deaths.

Since the detection of the first AIDS case in 1986, 195 cases were reported through December 1996. There were 18 cases of AIDS in 1994, 28 in 1995, and 38 in 1996. The majority (80%) was in the 20–44 year age group. AIDS mortality was over 90%; life expectancy after developing the disease is between 18 and 24 months. Through the end of 1996, 486 cases of HIV infection were reported by the Central Medical Laboratory, the number increasing from 60 in 1994 to 78 in 1996. The male-to-female ratio of reported HIV cases declined from 13:1 in 1989 to 1.6:1 in 1996. Transmission occurs mostly through heterosexual contact, although 27 persons with AIDS reported homosexual and bisexual activities. Eight pediatric cases have been reported, five attributed to perinatal transmission and three to blood transfusion. In 1995, the Sentinel Surveillance project showed 0.96% HIV prevalence in women attending prenatal clinics, and 0.8% prevalence in cord blood. Although the epidemic affected the entire country, Belize and Stann Creek districts reported 78% of the cases (61% and 17%, respectively). The number of HIV cases also diagnosed with tuberculosis increased to nine in 1996, compared to an average of three cases per year in the preceding period.

### ***Noncommunicable Diseases and Other Health-Related Problems***

Nutritional problems range from deficiency to obesity. Deficiencies in weight and height for age, as well as in serum iron and vitamin A in preschool children were present in all ethnic groups in Toledo, and in rural populations of the Maya and Mestizo in the other districts. A study conducted among adults in 1995 indicated that obesity was a problem. Food supply in Belize is highly dependent on imports, and it is necessary to monitor imported food for iodized and fluorinated salt.

Cardiovascular diseases accounted for 30% of deaths in 1993–1996. Mortality varied from 125.8 per 100,000 inhabitants in 1993 to 113.5 in 1996. Heart diseases were the leading cause of death for males and females, with 67% of cardiovascular deaths. The highest death rate occurred in Belize District (183.0), followed by Stann

Creek District (141.3); the lowest death rate was in Toledo (64.0). Heart disease caused 10% of all hospitalizations in adults aged 50 and over. However, it did not appear among the leading causes of hospitalization in other groups. There were no sex differences in hospitalization due to heart disease. The districts with the highest hospitalizations due to heart diseases were Corozal and Belize, each with 13%, and the lowest was Cayo (6%).

Malignant neoplasms were among the leading causes of mortality during the period, particularly in the group 50 and older. Mortality remained stable at 34.7 per 100,000 persons. No sex differences were observed. The districts with the highest number of deaths due to neoplasms in this age group were Cayo and Orange Walk, each registering 17%; the lowest was in Toledo (7%). Neoplasms caused 5% of the hospitalizations in this age group.

Diabetes was among the 10 leading causes of mortality only in the group aged 50 and over (88% of all diabetes deaths). The annual average number of diabetes-related deaths per year was less than 25, 2% of reported deaths in this age group. On average, slightly more females (28) died from diabetes annually than males (21) of this age group. Hospitalizations due to diabetes decreased from 308 in 1993 to 235 in 1996, with women accounting for 67% of these. Five of six amputations in Belize are due to diabetes, and 9% of cases of blindness are related to diabetic retinopathy.

External causes were among the leading causes of mortality with 9% of the deaths in 1993–1996; 79% were males. Motor vehicle accidents caused 41% of deaths in this category and had an increasing rate from 10.7 per 100,000 population in 1993 to 16.7 in 1996. In men, the rate increased from 14.4 to 26.1 per 100,000 between 1993 and 1996, while in females it increased from 6.9 to 7.2. Deaths from suicide increased from 1 death in 1994, to 11 in 1995, and 8 in 1996; almost all suicides were males. Nearly half occurred in Corozal; 75% were in the group aged 20–49.

Some deaths due to abortion were probably reported as a complication of pregnancy. A total of 2,603 abortions were reported. While hospitalizations due to abortion decreased from 7% in 1993 to 5% in 1996, abortion ranked fourth as a cause of hospitalization. Twenty percent of hospitalizations related to abortion occurred in the group aged 10–19, a decrease from 21% in 1993 to 17% in 1996.

Oral health improved among schoolchildren, with a reduction in dental decay and gum disease. However, a recent study of 3–4-year-olds showed that 43% had dental caries and 15% had rampant caries. The risk of caries in 4-years-old was 1.5 times higher than in 3-year-olds. Increased fluoride use by children from 1993-1995 was associated with a decrease in the demand of dental services. The index for decayed, missing, and filled teeth (DMFT) in 1989 ranged from 3.4 in Orange Walk to 4.7 in Cayo in schoolchildren from 6-12 years of age. For 12 year-olds, the index was 4.3 for the districts included in the study. There were no differences by sex. Among adults, an increased request for dental fillings, prophylaxis, and bacterial plaque removal was noted.

Information on ocular health is limited, most of it coming from Government clinics and the Belize Council for the Visually Impaired. As of December 1996, there were 806 recorded cases of blindness, a rate of 3.6 per 1,000 inhabitants, which is below the rate of 8 expected in developing countries according to WHO estimates. Stann Creek and Belize districts had the highest rates (5.2 and 4.6, respectively); the other district rates ranged from 2.4 to 2.8. The most common diagnoses among blind

persons were cataracts (39%), glaucoma (23%), diabetic retinopathy (9%), congenital blindness (5%), retinal blindness (5%), and others (15%). Persons age 60 and older represented 25% of all those registered as blind; by district, this age group comprised 41% of the blind in Belize, 15% in Cayo, 14% in Stann Creek, 13% in Orange Walk, 10% in Corozal, and 7% in Toledo. Hospitalizations due to eye diseases decreased from 125 in 1993 to 43 in 1996.

The most important natural hazards in Belize are hurricanes, fires, and floods. During 1995, a flood in the north required the evacuation of several villages, an event that reduced immunization coverage.

## **RESPONSE OF THE HEALTH SYSTEM**

### **National Health Plans and Policies**

In November 1996, the Prime Minister launched the National Health Plan 1996–2000 and the Ministry of Health started reorganization to implement the plan, focusing on the development of new programs and approaches, and decentralization. The policy reform project of 1993 provides policy options for implementing the National Health Plan and consolidating equity and efficiency in the health sector. The National Health Plan provides a framework to guide the Ministry of Health and others in efforts to ensure universal access to a set of comprehensive health services of acceptable quality, through primary health care. The development of the National Health Plan has been a participatory process, promoting active involvement of different sectors in identifying priority areas and proposing solutions and desired outcomes at central and local levels. The National Health Plan defined five programmatic areas for achieving its goals: environmental health; early childhood; late childhood and adolescence; early and late adulthood; and sports. Support services include information systems and epidemiology, health education and community participation, nutrition, development of a health facilities network (including a referral system, maintenance, laboratory, and drug supplies), physical education, and administration.

While State reform is under way, and consultative and participatory processes have won new supporters in recent years, change depends on the pace and direction of the reform. Decentralization is not uniformly accepted, and will require changes in culture and attitude. An environment conducive to democracy and community decision-making is necessary to ensure community participation.

### **Organization of the Health Sector**

The Government has provided health services at practically no charge over the years, including the provision of pharmaceuticals. Cost recovery mechanisms are gradually being instituted, particularly for curative care. Health care management, centralized until recently, now allows more district autonomy in the decision-making process. In April 1997, finances were decentralized to the district level, but guidelines for budget distribution and management had not yet been established. There was progress in cooperation and coordination between the preventive community-based programs and the District Medical Officers, but there were problems due to lack of management training at the community level. While both public and private sectors contribute to health care, there is no clear definition of their roles or coordination. The Ministry of Health is responsible for the design of policies and arrangements between institutions and providers, including the utilization of public hospitals by physicians and dentists for private practice.

Intersectoral cooperation is recognized as a sound approach to health and development. Multisectoral bodies such as the National Commission for Families and Children, the National Women's Commission, the Appraisal Environmental Committee, among others, exist, but their impact is compromised by a lack of effective mechanisms for intersectoral coordination and cooperation at the national level.

The Ministry of Health has embraced primary health care, and has created an infrastructure of district health teams that work toward health related goals. The teams were established to promote intersectoral and community participation in health development, but are composed mainly of health care providers. The teams have no legal authority or assigned budget with which to operate.

Although specific statutes have been approved, there have been no major changes in health legislation for nearly three decades. The laws of Belize refer to medical services and institutions, public health, food and drugs, and certification and practice of health professionals. Revision of the existing health legislation is an expected outcome of the health policy reform. There are no effective regulatory mechanisms, norms, or standards to enforce legislation.

The Ministry of Health is responsible for making regulations on health related issues. The Chief Medical Officer (Director of Health Services), is responsible for executing ordinances and recommending necessary regulations to the Minister, and in cases such as control of communicable diseases has the authority to make regulations. Regulatory bodies such as the Medical Board, the Nurses and Midwives Council, and Board of Examiners of Chemist and Druggists are responsible for registering professionals in specific areas and advising the Minister on regulations concerning those categories. Authority to prevent and control environmental pollution is contained in provisions of the Public Health Act, the Pesticide Control Act, and the Solid Waste Management Authority Act. The Environmental Protection Act of 1992 established a Department of the Environment, which is charged with enforcing provisions of the Act. Over the past five years, legislation was developed for the control of pollutants in land and water. Air quality standards for industry, traffic, and exposure to environmental tobacco smoke in public buildings are still required. Legislation on food safety and security is under development. Food standards and regulations based on regional references exist for most processed food, whether for internal or external markets. The Occupational Health and Safety Act covers occupational health and safety in diverse working environments.

### **Health Services and Resources**

The Expanded Program on Immunization increased its coverage for targeted diseases. From 1993-1995, there were major achievements in this area: the elimination of measles and the introduction of the measles, mumps and rubella vaccine. In addition, congenital rubella syndrome surveillance was initiated in 1997, and a pilot project for hepatitis B vaccination was implemented in the Stann Creek District. The Government assumed the purchase of vaccines. To ensure coverage for targeted diseases, emphasis is given to surveillance, ongoing training, maintenance of cold chains, and regular mobile clinic outreach.

The vector control program of the Ministry of Health carried out systematic spraying of houses (particularly in rural areas), identified areas of infestation, and applied treatments when required. The Public Health Bureau conducted rabies vaccination and health education campaigns to encourage individuals to vaccinate domestic

animals. The tuberculosis program runs a chest clinic for the prevention and control of tuberculosis cases. A National AIDS Program has been in place since 1987, and it has implemented two middle-term plans within the framework of the Global Program on AIDS. Since 1987, 100% of blood for transfusion has been screened for HIV, and the Government assumes its cost. In 1996, a group of organizations and individuals from the public and private sectors established a task force to develop a national strategic plan within the framework of the new AIDS program.

There are no programs for prevention and control of noncommunicable diseases, although special services are available for priority diseases such as diabetes and hypertension. Certain non-governmental organizations provide complementary care in this area, such as the Belize Council for the Visually Impaired, Belize Diabetes Association, Belize Cancer Society, the Red Cross, and the Lions Club.

The Belize Social Security Scheme provides benefits to workers and covers approximately 89% of the working population. Those not covered include people employed for less than 24 hours per week and the self-employed. The scheme does not target workers' health; rather, it provides for medical care for injuries suffered on the job only.

Responsibility for food safety is shared by the ministries of Health, of Agriculture and Fisheries, and of Trade and Industry. Laboratory facilities for a food safety program are limited and devoted mainly to water quality control. Food testing is done outside of the country.

Five Government Ministries and the Water and Sewerage Authority are involved in the water and sanitation sector, each undertaking partial control and managing fragmented resources with only minor regard for overall planning criteria. The Ministry of Health, through its Public Health Bureau, monitors water quality and implements rural sanitation programs. The Water and Sewerage Authority operates water systems in urban centers and sewerage systems in Belize City, Belmopan, and San Pedro Ambergris Key. There is still a lack of facilities in rural and urban areas.

In urban communities, refuse disposal is the responsibility of the local governments. In rural communities, refuse disposal is not organized at the community level; each household is responsible for the disposal of its solid waste. There is one hospital solid waste management system functioning in the national referral hospital; the rest of the hospitals do not have a standardized system, and bury and burn their waste in open sites.

Epidemiological surveillance systems exist for poliomyelitis and measles, and to control HIV and AIDS, malaria, cholera, tuberculosis, typhoid fever, and congenital rubella syndrome. These systems do not always coordinate with the Medical Statistics Unit of the Ministry of Health, and are more responsive to the vertical nature of existing programs. Public Health Laboratory activities are supported by the Central Medical Laboratory and the Water Quality Laboratory.

There are eight public hospitals, one in each district, with the exception of Cayo and Belize Districts, which each have two. Karl Heusner Memorial Hospital is the national referral hospital and serves the Belize District population with general and specialized services for primary, secondary, and some tertiary care. Rockview Hospital, located 22 miles from Belize City, is the national psychiatric hospital. District hospitals function as primary level care facilities and provide some secondary care. Referrals are made to neighboring countries, but no standardized protocols are in place. There

are 75 public facilities functioning as health centers (40) and rural health posts (35). Health centers provide pre- and postnatal care, immunization services, growth monitoring of children under age 5, treatment for diarrhea and minor ailments, and general health education. Some specialized clinics offer services for hypertension, diabetes, tuberculosis, sexually transmitted diseases, and AIDS, also providing referrals and follow-up. There are no standardized protocols and mechanisms for referrals to district hospitals or to the national referral hospital. Each center serves 2,000 to 4,000 persons, and most also provide a mobile clinic that visits smaller and more remote villages every six weeks, accounting for 40% of the centers' service delivery.

Specialized services in mental health, maternal and child health, and dental health are provided through this public facility network. Mental health care follows a psychiatric service delivery model based on incarceration, although outpatient clinic and psychiatric social welfare services were established and extended to the districts through monthly clinics. Today there are two psychiatrists and nine trained psychiatric nurses providing mental health care. A community-based project was initiated in 1997 to strengthen mental health care outreach services.

The Dental Health Program has been successful through specialized clinics and school-based services.

More than one-fourth of hospitalization services was for normal deliveries. The Ministry of Health does not provide contraceptives, and family planning is limited to health education during pre- and postnatal services. Belize Family Life Association is the main provider of contraceptives.

The private medical sector is limited in number of providers and in range of services. Only two private hospitals exist, a nonprofit hospital in Cayo District (20 beds) and a for-profit facility in Belize District (4 beds). In addition, there are 54 private clinics, 27 of which are in Belize City; Toledo District has one private clinic. The private sector is mostly limited to outpatient services. Secondary care is provided for maternity cases and simple surgeries.

Private health insurance is limited but increased rapidly during the 1990s. Many insurance companies are affiliates of large international firms and benefit packages are fashioned to cover expenses for medical care outside of Belize. Premium levels are high and out of reach for the average worker. Family coverage can cost as much as US\$ 100 monthly for a group medical policy.

According to the Medical Statistics Office, the total number of hospital discharges decreased from 19,480 in 1993 to 16,557 in 1996. Hospital occupancy rates decreased from 44% in 1993 to 37% in 1996. The total number of consultations decreased from 218,993 in 1993 to 178,016, while specialist consultations went from 19,364 in 1993 to 14,115 in 1996.

The Central Medical Laboratory is the hub of the public laboratory network. Except for Cayo, all district hospitals have a laboratory that is administered from the central level. Quality control of private laboratories is the responsibility of the Central Medical Laboratory. Private diagnostic facilities consist of one laboratory in Belize and a radiology unit; neither is affiliated with a patient facility. Regulation of private sector diagnostic facilities does not exist. Although the Ministry of Health has radio-image diagnosis equipment, it is underutilized due to a shortage of trained personnel. The Ministry of Health developed a Drug Formulary in 1994.

The health information system suffers from limited standards for routine reporting, late reporting, lack of feedback, and shortage of staff trained in data processing and analysis. A large amount of data is compiled and made available but not properly used for decision-making.

The number of health personnel increased by 57% from 1976-1994. The 1994 health personnel survey counted 500 health workers, 465 of whom were active. Physicians, dentists and professional nurses made up 58% of the personnel; 33% were professional nurses, 21% physicians, and 3% were dentists. Almost 75% of health personnel work in the public sector; the largest group was nurses (84%). The majority working in the private sector are physicians and dentists (58%). About 14% of health personnel work in both the public and private sectors. Fifty-five percent of physicians working in the public sector also held jobs in the private sector. Most dentists (67%) work exclusively in private service. Community health personnel include 117 midwives and 135 traditional birth attendants; 110 have undergone some training. Other Ministry of Health staff include 14 supply clerks and a supply officer, 16 public health inspectors, 68 vector control staff, 7 health educators and a network of 171 community health workers.

Belize allocates financial resources to staff the health sector at a level comparable to that of other countries, but it has one of the lowest coverage of physicians and only an average coverage of nurses. Health personnel are concentrated in the metropolitan district of Belize, where more than half of the health staff is employed (60% of physicians, 54% of practical nurses, and 63% of professionals), most in the Karl Heusner Memorial Hospital. Lack of infrastructure and available specialists result in low utilization of district inpatient facilities and a high rate of referral to the Karl Heusner Memorial Hospital.

The budget for health increased from US\$ 862,950 in 1992 to US\$ 11,035,500 in 1995. However, the health sector's share of the national budget decreased from 9% in 1992 to 8% in 1995. The relative allocation of resources showed an emphasis on curative services (74% to hospitals), and within curative services, an emphasis on secondary care (28%). Only 17% of the budget went to public health programs. The budget structure remained the same over the 1993–1996 period. Personnel costs consume three fourths of Ministry of Health expenditures and increased in recent years, while drugs and medical supplies consumed 17%. Over 60% of Ministry of Health capital expenditure is covered by foreign aid, and little funding is available for routine maintenance.

## Appendix B Map of Stann Creek District, Belize



## Appendix C English Version of Survey Questionnaire

Q1. HOW OLD ARE YOU?

Q2. HOW MANY YEARS OF SCHOOLING HAVE YOU HAD?

Q3. WHEN DID YOU LEAVE YOUR ORIGINAL HOME?

Q4. WHAT IS YOUR NATIONALITY, ETHNIC GROUP?

Q5. HOW MANY CHILDREN HAVE YOU HAD?

Q6. DO YOU HAVE ANY CHILDEN WITH YOU HERE? (IF YES, HOW MANY?)

Q7. ARE YOU PREGNANT NOW? (If male or 0 children Skip to Q21)

Q8. IF PRGNANT NOW: HAVE YOU SEEN ANYONE, INCLUDING A HEALTH PROVIDER,ABOUT THIS PREGNANCY?

IF NOT PRGNANT NOW OR DK? DID YOU SEE ANYONE INCLUDING A HEALTH CARE PROVIDER, DURING YOUR LAST PREGNANCY? If YES, HOW MANY TIMES?

Q9. WHERE DID YOU GO THE LAST TIME YOU SAW A HEALTH CARE PROVIDER DURING THIS OR YOUR LAST PREGNANCY?

Q10. DID YOU RECEIVE TETANUS TOXOID INJECTIONS DURING THIS OR YOUR LAST PREGNANCY? YES -HOW MANY TIMES

Q11. DID YOU TAKE IRON OR FOLIC ACID PILLS DURING THIS OR YOUR LAST PREGNANCY ? IF IT IS A WOMAN & PREGNANT FOR THE 1st TIME, SKIP TO Q22.

Q12. THINKING BACK TO THE LAST TIME YOU WERE PREGNANT WHERE DID YOU DELIVER?

Q13. DURING THAT DELIVERY WAS THERE ANYONE TO HELP YOU?

Q14. THINKING ABOUT THAT PREGNANCY, DID YOU HAVE A PROBLEM DURING PREGNANCY, LABOR OR DELIVERY THAT MAKE YOU SEEK HELP? IF YES WHAT WAS THE PROBLEM?

Q15. WHERE DID YOU GET THE HELP YOU NEEDED?

Q16. WAS THE BABY BORN ALIVE?

- Q17.
- a. DID YOU BREASTFED YOUR BABY?
  - b. DID YOU GIVE YOUR BABY ONLY BREAST MILK FOR THE FIRST (6)MONTHS?
  - c. WHAT DID YOU GIVE YOUR BABY?
  - d. HOW LONG DID YOU BREASTFEED THE LAST CHILD YOU WEANED?

Q18. HAVE YOU EVER HAD SURGERY IN ORDER TO GIVE BIRTH(CESAREAN SECTION)?

Q19. DO YOU WANT TO HAVE MORE CHILDREN? (if pregnant AFTER THIS ONE?)

Q20. WHEN WOULD YOU LIKE TO BECOME PREGNANT?

Q21. WHAT FAMILY PLANNING(SPACING) HAVE YOU EVER HEARD OF ?

Q22. HAVE YOU EVER USED ANY FAMILY PLANNING (SPACING)METHOD?

- Q23
- a. ARE YOU USING A FAMILY PLANNING (SPACING) METHOD NOW? NO GO TO Q27b.
  - b. YES. WHICH METHODS.

Appendix C – English Version of Survey Questionnaire

Q24. I WOULD LIKE TO ASK SPECIFICALLY...DID YOU USE A CONDOM THE LAST TIME YOU HAD SEX?

Q25 a. HAVE YOU GOTTEN ANY FAMILY PLANNING (SPACING) METHOD OR SUPPLIES SINCE YOU ARRIVED IN THIS CAMP (VILLAGE)? NO ..Skip to Q26  
b. WHERE DID YOU GET YOUR METHOD OR SUPPLIES THE LAST TIME?  
c. DID YOU PAY FOR THESE SERVICES?

Q26. PEOPLE HAVE DIFFERENT REASONS FOR NOT USING FAMILY PLANNING. ..WHY IS IT THAT YOU DO NOT USE FAMILY PLANNING(SPACING) NOW?

Q27. WOULD YOU LIKE TO USE A FAMILY PLANNING (SPACING) METHOD SOME TIME IN THE FUTURE?

Now I would like to ask you about unwanted pregnancy in this community, and what girls and women do when they have an unwanted pregnancy. We want to know about this so that we can try to prevent the health problems that some girls and women experience.

Q28. A. DO YOU KNOW OF ANY GIRLS OR WOMEN HERE, WHO HAVE BEEN PREGNANT BUT DID NOT WANT TO BE ? NO, SKIP TO Q33 DK  
b. YES -WHAT DID THEY DO ABOUT THE UNWANTED PREGNANCY?

Q29. WHERE WOULD YOU ADVISE A WOMAN TO GO FOR HELP IF SHE WAS SUFFERING FROM HEALTH PROBLEMS DUE TO AN INDUCED ABORTION?

Q30. HAVE YOU, YOURSELF EVER GONE TO SOMEONE OR DONE SOMETHING TO STOP A PREGNANCY THAT YOU DID NOT WANT?

Now I would like to ask you about AIDS and other sexually transmitted diseases or infections.

Q31. HAVE YOU EVER HEARD OF A DISEASE CALLED HIV/AIDS?...IF NO Skip to Q42

Q32. AS FAR AS YOU KNOW, CAN YOU GET HIV/AIDS FROM:

- a. Mosquitos ?
- b. Sex ?
- c. Blood transfusions?
- d. Hugging person w/HIV AIDS ?
- e. Sharing needles/injections ?

Q33. CAN A WOMAN WITH HIV/AIDS GIVE AIDS TO HER BABY WHEN SHE IS PREGNANT?

Q34. DO YOU WORRY THAT YOU COULD GET HIV/AIDS?

Q35. AS FAR AS YOU KNOW WHAT CAN A PERSON DO TO AVOID GETTING HIV/AIDS? (Circle first three she/he mentions)

Q36. HOW COMMON DO YOU THINK HIV/AIDS ARE IN YOUR COMMUNITY?

Q37. DO YOU KNOW OF ANYONE WITH HIV/AIDS?

Q38. WHERE WOULD A PERSON GO TO FIND OUT IF THEY HAD HIV/AIDS?

Q39. WHAT SERVICES ARE THERE FOR PEOPLE WITH HIV/AIDS IN YOUR COMMUNITY ?

Q40. WHAT IS YOUR OPINION ON INJECTING DRUG USERS? DOES THE PROBLEM EXIST IN YOUR COMMUNITY?

Q41. MEN WHO HAVE SEX WITH OTHER MEN DO YOU THINK THAT IS A PROBLEM IN YOUR COMMUNITY?

Q42 DO YOU FEEL LIKE YOU COULD ASK YOUR PARTNER TO USE A CONDOM?

Appendix C – English Version of Survey Questionnaire

- Q43. a. WERE YOU EVER TREATED FOR A SEXUAL INFECTION?  
b. HAVE YOU BEEN TREATED FOR A SEXUAL INFECTION SINCE ARRIVING IN THIS CAMP (VILLAGE)?

Now I would like to ask you about forced sex or domestic violence in this camp ( village). We ask these questions because we want to understand the problems women and children face, so we can try to prevent them.

- Q42 a. AS FAR AS YOU KNOW, DOES IT HAPPEN IN THE CAMP (VILLAGE) THAT WOMEN OR GIRLS ARE FORCED TO HAVE SEX AGAINST THEIR WILL?  
b. DOES IT HAPPEN IN THE CAMP (VILLAGE) THAT MEN OR BOYS ARE FORCED TO HAVE SEX AGAINST THEIR WILL?

- Q43 a. AS FAR AS YOU KNOW, DOES IT HAPPEN THAT WOMEN OR GIRLS TRADE SEX IN THIS CAMP (VILLAGE) IN ORDER TO GET FOOD, PROTECTION OR OTHER THINGS THEY NEED?  
b. DOES IT ALSO HAPPEN THAT MEN OR BOYS TRADE SEX FOR FOOD, PROTECTION OR OTHER THINGS THEY NEED?

Q44. FROM THE CASES OR INSTANCES YOU HAVE HEARD ABOUT, WHICH MEN ARE MOST LIKELY TO FORCE WOMEN TO HAVE SEX AGAINST THEIR WILL?

Q45. DO YOU, YOURSELF WORRY ABOUT BEING FORCED TO HAVE SEX AGAINST YOUR WILL?

Q46. SINCE ARRIVING TO THIS CAMP (VILLAGE) HAS YOUR HUSBAND/PARTNER OR OTHER HOUSEHOLD MEMBER HIT YOU?

Q47. DO YOU KNOW OR HAVE HEARD ABOUT OTHER VIOLENCE ACTS -HUSBAND HITTING WIFE OR SIMILAR CASES?

## Appendix D Spanish Version of Survey Questionnaire

Q1. QUE EDAD TIENE UD?

Q2. CUANTOS AÑOS DE ESCUELA HA TENIDO UD?

Q3. CUANDO DEJO SU CASA O VIVIENDA ORIGINAL?

Q4. CUAL ES SU NACIONALIDAD, GRUPO ETNICO?

Q5. CUANTOS HIJOS HA TENIDO UD?

Q6. TIENE ALGUNOS DE SUS HIJOS CON UD AQUI? (SI SI, CUANTOS?)

Q7. ESTA UD. EMBARAZADA AHORA? (Si es hombre o 0 hijos salte a la pregunta 21).

Q8. SI ESTA EMBARAZADA AHORA, HA VISTO UD ALGUN MEDICO, ENFERMERA, O TRABAJADOR DE LA SALUD ACERCA DE ESTE EMBARAZO? SI NO ESTA EMBARAZADA AHORA O NO SABE, VIO UD ALGUN MEDICO ENFERMERA O TRABAJADOR DE LA SALUD EN SU ULTIMO EMBARAZO? SI SI CUANTAS VECES?

Q9. ADONDE FUE UD. A CONSULTAR UN TRABAJADOR DE LA SALUD CON ESTE O CON SU ULTIMO EMBARAZO?

Q10. RECIBIO UD. INYECCIONES DE TOXOIDE CONTRA EL TETANO EN ESTE O EN SU ULTIMO EMBARAZO? CUANTAS VECES?

Q11. TOMO UD. PILDORAS DE HIERRO O DE ACIDO FOLICO CON ESTE O CON SU ULTIMO EMBARAZO? ( Si es mujer embarazada por primera vez salte a la pregunta 22).

Q12. EN SU ULTIMO EMBARAZO DONDE TUVO SU PARTO?

Q13. DURANTE ESE PARTO QUIEN LA AYUDO O ATENDIO?

Q14. DURANTE SU SULTIMO EMBARAZO TUVO UD ALGUN PROBLEMA O EN EL PARTO O EL NACIMIENTO QUE LA HIZO BUSCAR AYUDA? SI SI CUAL FUE EL PROBLEMA?

Q15. EN DONDE LA ATENDIERON PARA ESE PROBLEMA?

Q16. EL NIÑO/A NACIO VIVO?

Q17. a) AMAMANTO UD A SU BEBE?

b) LE DIO SOLO LECHE DE SU PECHO POR LOS PRIMEROS SEIS (6) MESES?

c) QUE LE DIO A SU BEBE DE COMER?

d) CUANTO TIEMPO AMAMANTO UD A SU ULTIMO BEBE HASTA QUE LO DESTETO?

Q18. ALGUNA VEZ LE HAN HECHO CESAREA PARA EL NACIMIENTO DE UN NIÑO?

Q19. QUIERE UD TENER MAS HIJOS? ( si esta embarazada DESPUES DE ESTE?)

Q20. CUANDO LE GUSTARIA QUEDAR EMBARAZADA DE NUEVO?

Q21. HA OIDO UD HABLAR DE LA PLANIFICACION FAMILIAR ( ESPACIAR LOS HIJOS)?

Q22. HA USADO UD ALGUNA VEZ UN METODO DE PLANIFICAR O ESPACIAR LOS HIJOS?

Q23. a) ESTA UD UTILIZANDO AHORA ALGUN METODO DE PLANIFICAR? (Si NO, salte a pregunta 27b)

b) Si SI CUALES METODOS?

Q24. ESPECIFICAMENTE QUIERO PREGUNTARLE ....UTILIZO UD. UN CONDON EN LA ULTIMA RELACIONSEXUAL?

Appendix D – Spanish Version of Survey Questionnaire

- Q25. a) HA CONSEGUIDO UD. ALGUN METODO DE PLANIFICAR O SUMINISTROS PARA PLANIFICAR DESDE QUE UD LLEGO A ESTE PUEBLO (CAMPAMENTO) (si NO salte a pregunta 26)  
b) DONDE CONSIGUIO UD METODOS O SUMINISTROS PARA PLANIFICAR LA ULTIMA VEZ?  
c) PAGO UD. POR ESTOS SERVICIOS?

Q26 LA GENTE TIENE DIFERENTES RAZONES PARA NO PLANIFICAR.. CUALES SON ESAS RAZONES PARA QUE UD. NO ESTE PLANIFICANDO ( ESPACIANDO) AHORA?

Q27 LE GUSTARIA UD.USAR ALGUN METODO DE PLANIFICAR ( ESPACIAR) EN EL FUTURO?

- Q28. a) CONOCE UD. ALGUNAS NIÑAS O MUJERES AQUI QUE QUEDARON EMBARAZADAS SIN DESEARLO? ( Si No salte a la pregunta 33) DK  
b) SI SI , QUE HICIERON ELLAS RESPECTO AL EMBARAZO NO DESEADO?

Q29 ADONDE LE ACONSEJARIA UD. IR PARA QUE LA AYUDEN, A UNA MUJER QUE ESTA SUFRIENDO PROBLEMAS DE SALUD DEBIDO A UN ABORTO PROVOCADO?

Q30 ALGUNA VEZ UD HA BUSCADO AYUDA O HECHO ALGO PARA SUSPENDER UN EMBARAZO QUE UD. NO QUERIA?

Me gustaria ahora hacerle unas preguntas sobre el SIDA y otras enfermedades de transmision sexual.

Q31. HA OIDO UD.HABLAR DE LA ENFERMEDAD VIH/SIDA? (Si NO salte a pregunta 42)

Q32. HASTA DONDE UD.SABE ,UNO PUEDE INFECTARSE DE VIH/SIDA POR:

- a) Mosquitos?
- b) Sexo?
- c) Transfusiones de sangre?
- d) Abrazando a una persona que tenga VIH/SIDA?
- e) Compartiendo inyecciones/aguja ,etc.).

Q33. PUEDE UNA MUJER EMBARAZADA Y CON VIH/SIDA INFECTAR A SU BEBE ?

Q34 TIENE UD MIEDO DE QUE PUEDA INFECTARSE DE VIH/SIDA?

Q35. HASTA DONDE UD.SABE, COMO PUEDE UNA PERSONA EVITAR SER INFECTADA DE VIH/SIDA?  
( haga un circulo a los primeros tres que el/ella mencione) .

Q36. QUE TAN COMUN CREE UD.QUE ES EL VIH/SIDA EN ESTA COMUNIDAD?

Q37. CONOCE UD. A ALGUIEN INFECTADO CON VIH/SIDA?

Q38. ADONDE PUEDE IR UNA PERSONA PARA DESCUBRIR SI ESTA INFECTADA CON VIH /SIDA?

Q39. QUE SERVICIOS HAY EN SU COMUNIDAD PARA PERSONAS INFECTADAS CONVIH/SIDA?

Q40. QUE OPINA UD SOBRE LOS QUE SE INYECTAN DROGA? EXISTE ESTE PROBLEMA EN SU C COMUNIDAD?

Q41. HOMBRES QUE TIENE SEXO CON OTROS HOMBRES, ES ESTE UNPROBLEMA EN SU COMUNIDAD?

Q42. CREE UD PODER PEDIRLE A SU COMPAÑERO QUE USE UN CONDOM?

- Q43. a)ALGUNA VEZ HASIDO UD TRATADO/A PARA UNA INFECCION SEXUAL?  
b) DESDE QUE LLEGO A ESTE CAMPO (PUEBLO) HA SIDO UD TRATADO PARA UNA INFECCION SEXUAL

Quiero preguntarle ahora sobre violencia domestica o sexo forzado en este campo( pueblo) Con estas preguntas deseamos aprender cuales son los problemas que mujeres y niños sufren, para poderlos prevenir .

- Q44. a) EN LO QUE UD CONOCE O HA OIDO, SUCEDE EN ESTE CAMPO (PUEBLO) QUE MUJERES O NIÑAS SEAN FORZADAS A TENER SEXO CONTRA SU VOLUNTAD?  
b) SUCEDE EN ESTE PUEBLO (CAMPO) QUE HOMBRES O NIÑOS VARONES SEAN FORZADOS A TENER SEXO CONTRA SU VOLUNTAD?

Appendix D – Spanish Version of Survey Questionnaire

Q45. a) SABE O HA OIDO UD. DE MUJERES O NIÑAS QUE EN ESTE PUEBLO (CAMPO) HAN TENIDO RELACIONES SEXUALES A CAMBIO DE COMIDA, PROTECCION UOTRAS COSAS QUE NECESITARAN?

b) SABE UD O HA OIDO DE HOMBRESO NIÑOS VARONES QUE HAN TENIDO SEXO A CAMBIO DE COMIDA, PROTECCION U OTRAS COSAS QUE NECESITARAN?

Q46. EN LO QUE UD CONOCE O HA OIDO, QUE TIPO DE HOMBRES SON LOS QUE FORZAN A LAS MUJERES A TENER RELACIONES SEXUALES CONTRA SU VOLUNTAD?

Q47. TIENE UD. MIEDO DE QUE UD SEA FORZADA/O A TENER RELACIONES SEXUALES CONTRA SU VOLUNTAD?

Q48. DESDE QUE UD. LLEGO A ESTE PUEBLO (CAMPO) SU MARIDO O COMPAÑERO U OTRO MIEMBRO DE SU CASA LA HA GOLPEADO O ABUSADO?

Q49. EN LO QUE UD. CONOCE O HA OIDO, SABE DE OTROS ACTOS DE VIOLENCIA DE HOMBRES QUE HAYAN GOLPEADO A SUS MUJERES O CASOS SIMILARES?