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Ethnicity and the Use of Health Services in Belize

by

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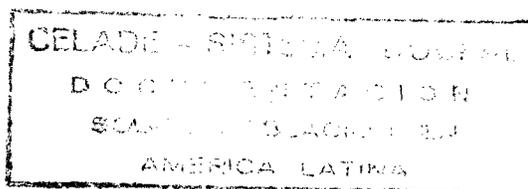
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INTRODUCTION

Data from a survey conducted in Belize in 1991 show differentials in the use of maternal and child health and family planning services by the various ethnic groups found in Belize. These groups differ from one to the other with regard to place of residence, educational attainment, religious affiliation, socioeconomic status, country of birth, principal language spoken in the household, and parity. The purpose of our analysis is to determine whether ethnic group differentials in the use of health services really exist or are artifacts of the characteristics of these groups. Our hypothesis is that, although Belizeans have diverse cultural backgrounds, ethnicity will not be a strong determinant in the use of health care services, after controlling for other relevant characteristics. In addition to presenting cross-tabulations and frequencies, logistic regression will be used to estimate multivariate models of the probabilities that women use specific health services. It is our hypothesis that when other background variables are controlled for, the coefficients on the ethnic variables will not be significant. Health services to be considered include postpartum, newborn, and family planning services. Place of delivery of last live birth will also be examined.

ETHNICITY IN BELIZE

Although small in size, Belize is rather unique within Central America because of its ethnic diversity. Formerly British Honduras, Belize obtained its independence from Great

Britain in 1981. It has a current population just under 200,000 people and is comprised of four major ethnic groups: Creoles, Mestizos, Garifuna, and Maya/Ketchi. The Creoles are of mixed African and European ancestry, descendants of the relations between eighteenth- and early nineteenth-century British settlers and African slaves as well as later African immigrants (Bolland 1986:53-55). The Mestizos, primarily a mixture of Spanish settlers and Native Americans (Grant 1976:16), have immigrated to Belize over the past two centuries. A large number of Mestizos have immigrated to Belize during the past twenty years as a result of civil conflicts in neighboring Central American countries (McCommon 1989:93-94; Everitt 1984; Bolland 1986). The earlier Mestizo immigrants have become integrated into the economy and occupy a class position similar to that of the Creoles. However, Mestizos who came to Belize within the past 20 years are primarily agricultural workers or unskilled laborers (McCommon 1989:94).

The immigration of Mestizos to Belize has been accompanied by an emigration of Creoles to the United States. These trends have contributed to the Latinization of Belize; however, the lengthier historical influence of the Creoles is still evident as the Creoles largely control Belize via their influence in urban occupations and government jobs (Everitt 1984:320; McCommon, 1989; Bolland 1986:53).

The Garifuna, or Black Carib, are a mixture of African and Carib Indians. They started out in St. Vincent but were

transported forcibly by the British in 1796 to Roatan, an island off the coast of Belize (Kerns 1985:19). From there, the Garifuna settled in both Honduras and Belize. Today the Garifuna of Belize live in towns and are primarily involved in fishing and teaching.

The various native American groups which we will refer to interchangeably as Mayas or Maya/Ketchi have been on Belizean soil the longest--as early as 1500 B.C. The Maya were devastated by conflicts and disease brought to the New World by Spanish explorers in the 16th century and more recently by British logcutters several hundred years later (Bolland 1977:17-24). Today, the term "Maya" actually refers to several groups of Indians. One is the Mopan Maya, some of whom migrated from Guatemala, and the Ketchi Indians who also migrated from Guatemala. Currently, the Maya/Ketchis live mostly in the rural areas of Belize and are involved in farming. The Maya/Ketchis marry primarily within their own communities (Dobson 1973: 252-255), as do the Mestizos.

The official language of Belize is English, which is taught in all public schools. However, each ethnic group speaks its own native language. The Creoles speak Creole, the Garifuna speak Garifuna, the Mestizos speak Spanish and the Maya/Ketchi speak Maya/Ketchi. The Maya/Ketchis and the Mestizos are less likely than the Creoles and Garifuna to speak English and Creole, the two principal languages of commerce in the country.

DATA

The results described here are from the national maternal/child health and family planning survey that was conducted in Belize in 1991. The survey was conducted by the Central Statistical Office of the Ministry of Finance with technical assistance provided by the Division of Reproductive Health, Centers for Disease Control, and funding from the United States Agency for International Development (AID).

The 1991 survey was an area probability survey with two stages of selection. The sampling frame for the survey was the quick count of all households in the country that was conducted in 1990 by the Central Statistical Office in preparation for the 1991 census. Two strata or domains were sampled independently--urban areas and rural areas. In the first stage of selection, a systematic sample with a random start was used to select enumeration districts in the domain with probability of selection proportional to the number of households in each district. In order to have a geographically self-weighting sample, 3,106 urban households and 1,871 rural households were selected, for a total of 4,977 households.

Only one woman aged 15-44 per household was selected to be interviewed so that each respondent's probability of selection was inversely proportional to the number of eligible women in the household. Weighting factors have been computed for each women to compensate for this unequal probability of selection. In the tables presented here, proportions and means are based on the

weighted number of cases, but the unweighted numbers are shown.

During fieldwork, which was conducted January 15 to February 19, 1991, a total of 4,566 households were visited. Overall, 7 percent of the households were found to be vacant and less than 3 percent of the households refused to be interviewed. Of the households contacted, 55 percent included at least one woman aged 15-44. Complete interviews were obtained in 94 percent of the households that had an eligible respondent, for a total of 2,656 interviews. Interview completion rates did not vary by residence.

CHARACTERISTICS OF THE RESPONDENTS

Table 1 summarizes the characteristics of the 1,672 currently married respondents aged 15-44, by ethnic group. In this and subsequent tables, language refers to the language usually spoken in the household. The linguistic diversity of the ethnic groups is important and varies on a homogeneity-diversity continuum with the Creoles and Mestizos being the most homogenous and the Garifuna and the Maya/Ketchi being the most diverse. For example, Creoles primarily speak Creole in their households and Mestizos speak Spanish. In contrast, almost an equal percentage of Garifunas and Maya/Ketchis speak the language native to their ethnic group or another language. While Creole is the second most spoken language of the Garifunas, Spanish is the second most spoken language of the Maya/Ketchi. Since most health services in Belize are provided by English or Creole speakers, Mestizos

and the Maya/Ketchi may have the greatest difficulty in obtaining health care. If language is a factor, then the Garifuna and the Creoles should be similar in terms of their use of health services as should the Mestizos and the Maya/Ketchi.

Area of residence can also be a factor in obtaining health services. The tropical terrain and lack of roads, especially all-weather roads, in rural areas may act as obstacles to rural women in obtaining health care. The majority of the Maya/Ketchi (79 percent) live in the rural areas of Belize. In addition, almost half (45 percent) of the Mestizos live in rural areas. Eighty-three percent of the Creoles and nearly three-fourths of the Garifuna live in urban areas. Thus, if residence is a barrier to obtaining health care in Belize, then this would affect the Maya/Ketchi the most and the Mestizo population to a somewhat lesser extent.

The Creole are the most educated of all the ethnic groups, with 88 percent having more than eight years of formal education. They are followed by the Garifuna, of which 85 percent have achieved eight or more years of education. In contrast, only 48 percent of the Mestizos and 38 percent of the Maya/Ketchi reported having eight or more years of education. Since education is positively correlated with the utilization of MCH services, the Mestizos and the Maya/Ketchi again may be at the greatest disadvantage in terms of utilization.

Being born outside of Belize may also be an obstacle to obtaining health care, especially if the immigrant does not

understand how the government health system works or if the immigrant is an illegal alien who fears possible reprisal if he/she is discovered. Thirty-one percent of the Mestizos and nearly 10 percent of the Maya/Ketchi reported that they were born outside of Belize. The survey did not determine their legal status in Belize or how recently they had immigrated. Guatemala and El Salvador were the principal countries of birth among the Mestizos who were born outside of Belize, while Guatemala and Mexico were the principal countries of birth among the Maya/Ketchi.

Working for cash or payments in kind is typically associated with greater use of health services. Two to three times as many of the Creole and Garifuna women who were interviewed reported that they have jobs for which they are paid in cash or in kind compared to Mestizos and the Maya/Ketchi. Thus, if work status is a factor in health care utilization, one would expect higher use rates by the Creoles and the Garifuna.

The majority of Mestizos and Garifuna and 54 percent of the Maya/Ketchi reported that they were Catholic. In contrast, more than six out of ten Creoles stated that they were Protestant. Thus, if Catholicism is a factor in deterring the use of contraceptives in Belize, one would expect lower contraceptive prevalence among the Mestizos, Garifuna, and the Maya/Ketchi.

Table 2 shows the mean number of living children per woman, by ethnic group and age of respondent. Mean parity is substantially higher at every age among the Maya/Ketchi than

among the other ethnic groups. In contrast, Creoles reported the lowest parity at every age. Mean parity for women aged 40-44 (an estimate of completed fertility) is highest among the Maya/Ketchi (8.8 children per woman) and the lowest among the Creoles (5.4 children).

Use of maternal/child health and family planning services varies according to the type of service (Table 3). Five services are considered: family planning, place of delivery, postpartum checkup, newborn checkup, and immunization. Percent using family planning, i.e., currently using contraception, is for currently married women aged 15-44. Originally, prenatal care was analyzed, but it was dropped since the overall utilization rate was 96 percent. The percent using other MCH services refers to the most recently born child for women who have had children within the past five years, regardless of current marital status. Place of delivery is whether the last live birth was delivered in a medical facility. Percent of children completely immunized is for last born children aged 9 months to 59 months.

Overall, 47 percent of married/in union women aged 15-44 were using contraceptive methods at the time of the survey. The most prevalent method used by married women in Belize is female sterilization (19 percent) followed by oral contraceptives (15 percent), and injectables (4 percent). Creole women reported the highest prevalence (53 percent) followed by Garifuna (49 percent) and Mestizo (46 percent) while the Maya/Ketchi reported the lowest prevalence (25 percent). About two-thirds of current

users of each ethnic group were using a contraceptive method to limit family size.

Nearly 94 percent of Creole women and 89 percent of Garifuna women delivered their last child in a hospital compared to 77 percent of Mestizo women and 54 percent of Maya/Ketchi women. Overall, 18 percent of last borns were delivered at their own or a friend's/relative's home. This percentage is 45 percent and 22 percent, respectively, for the Maya/Ketchi and the Mestizos.

Creole women and Garifuna women were the most likely to report that they received a postpartum check following their last delivery and a newborn check for their last child. In contrast, Mestizo women and Maya/Ketchi women were the least likely to use these services.

During the survey, questions were asked on the number of doses of vaccine received against tuberculosis (BCG), poliomyelitis, diphtheria-tetanus-pertussis (DPT), and measles for children less than 5 years of age who were born to the respondent. The far right panel of Table 3 focuses on the percentage of last born children aged 9 to 59 months of age who were completely immunized against all of the vaccine preventable diseases discussed above. As seen in Table 3, the immunization status of children did not vary appreciably according to ethnicity, and ranged from 78 percent for Maya/Ketchi children to 89 percent for Garifuna children.

In summary, Creoles and the Garifuna exhibit about the same pattern of use of MCH and family planning services, while the

Mestizos and the Maya/Ketchi can generally be ranked in third and fourth place, respectively, in the use of these services.

LOGISTIC REGRESSION

We use logistic regression models to estimate differentials in the utilization of MCH services for the different ethnic groups, while simultaneously controlling for other measurable factors that are known or suspected to also be associated with utilization of these services. The logistic regression model estimates a linear model of the form:

$$\ln (p_i/(1-p_i)) = b_0 + b_i X_i, \quad (1)$$

where p_i is the estimated probability of a particular event occurring to an individual with a given set of characteristics, X_i ; b_0 is a constant that defines the probability, p_0 , for an individual with all X_i set to zero, and b_i are the estimated coefficients. The ratio, $(p_i/(1-p_i))$, is the odds ratio of women with the given set of characteristics utilizing versus not utilizing a given service.

The estimate of b_i for a particular covariate X_i is interpreted as the difference in the predicted log odds between those who fall within that category of the characteristic and those who fall within the reference or omitted category for that characteristic. If each estimated b_i is exponentiated, $(\exp(b_i))$ the result can be interpreted as giving the relative odds of utilizing the MCH service for those individuals with characteristic X_i relative to those individuals in the reference

group. All results of multivariate models presented in the next section will be given as the exponentiated coefficients.

Categories of the variables used in the analysis are as follows (reference categories indicated by an *):

Ethnicity - Creole*, Mestizo, Garifuna, Maya/Ketchi
Immigrant - Yes and No*
Language - Creole*, English, Spanish, Garifuna, Mayan
Catholic - Yes, No*
Age - 15-24*, 25-34, 35-44
Education - <8 years*, 8 years, 9-12 years
Rural - Yes and No*
Currently Working - Yes and No*

RESULTS

Table 4 shows the results of a series of logistic regression models estimated with each of the health utilization variables treated as a dependent variable and categories of ethnicity as the independent variables. Each column of the table corresponds to a different model with a different dependent variable. The values given in the table are the exponentiated coefficients, with the significance level of each coefficient indicated by asterisks representing three levels: 0.10, 0.05, and 0.01. The level $0.10 < p < 0.05$ may be considered marginally significant. In Table 4, Creole is the reference ethnic group so that the values given are the odds of one of the other ethnic groups utilizing a health service relative to the odds of the Creoles utilizing the health service. For example, the estimated odds of the Mestizos using family planning is .75 times the odds of the Creoles using family planning. Thus, as the table shows, both the Mestizos and

Mayas are significantly less likely than the Creoles to utilize each of the health services except having their children immunized. Looking at the estimated coefficients, it can be seen that the differentials between the Mayas and the Creoles is greater than the differentials between the Mestizos and the Creoles. The results in this table are consistent with the results given in Table 3, which gives the proportion using health services for each of the ethnic groups.

As has been noted, interpreting differentials between ethnic groups in utilization of services is complicated by the fact that the different ethnic groups speak different languages (summarized in Table 1), which may exert an independent effect on utilization of services. Table 5 shows the results of a series of logistic regression models estimated with each of the health utilization variables treated as a dependent variable and categories of language usually spoken in the household as the independent variables. The language Creole is the reference language. Mayan language speakers are significantly less likely than Creole speakers to use each of the health services except for having their children immunized. Spanish speakers are less likely than Creole speakers to utilize any of the health services. In addition, Garifuna speakers are less likely than Creole speakers to use family planning or deliver their child in a hospital. However, English speakers are more likely than Creole speakers to go for a postpartum checkup. Again, these results confirm those given in Table 3 and provide additional information about which

differentials are significant.

Comparing Table 4 with Table 5, we see that differentials between household language groups are larger than between ethnic groups. This indicates that in trying to interpret ethnic differentials it is necessary to take into account the language usually spoken in the household.

However, because of concerns about collinearity we do not include both ethnicity and language as independent variables in the same logistic regression model. Instead, we disaggregate Mestizos into two groups--those who usually speak Spanish in their household and those who speak other languages. Similarly, the Maya/Ketchi are divided into those who usually speak a Mayan language in the household and those who speak other languages. In essence, we have identified six distinct ethnic groups: Creoles; Mestizos who usually speak Spanish; other Mestizos; Garifuna; Mayas who usually speak Mayan; and other Mayas. The assumption here is that distinguishing both ethnicity and language in the same model will help in understanding the role of language in the utilization of MCH services.

Table 6 gives the estimated relative odds of utilization of MCH services for this new categorization of ethnic/language groups. As can be seen, the Mestizos who usually speak Spanish are less likely than Creoles to utilize each of the MCH services except immunization, while other Mestizos (most of whom usually speak Creole) generally do not differ from the ethnic Creoles in their utilization of health services. In fact, the Mestizos who

usually speak a language other than Spanish are significantly more likely to use family planning than are the Creoles. However, both groups of Mayas, those who do and do not usually speak a Mayan language, continue to be significantly less likely than Creoles to utilize each of the services except immunization. It should be noted that most Mayas who do not usually speak a Mayan language report Spanish as their household language. On the whole it appears that, as far as utilization of MCH services is concerned, language plays an important role in integrating the different ethnic groups into a society in which the Creole culture dominates. The similarity of the Mayan speakers and Spanish speakers in the lower use of health services may indicate a language barrier to the use of these services for both groups.

The model presented in Table 6 does not take into account other characteristics, besides language, that may explain differentials between the ethnic groups in their use of MCH services. In Table 7, control variables have been added to see if the effects of language and ethnicity are still significant. We will discuss each of the MCH services individually, starting with postpartum and newborn services, which exhibit a similar pattern.

As seen in Table 7, Spanish speaking Mestizos and the non-Mayan speaking Mayas are significantly less likely to use postpartum and newborn checkups than the Creoles. Interestingly, the Mayan speaking Mayas are no longer significantly different from the Creoles in the utilization of postpartum checkups, as

they were shown to be in Table 6. Thus, it is not the language/ethnic identity that distinguishes the Mayan speaking Mayas from the Creoles with regards to postpartum checkups, but as indicated by the model, their residential and educational isolation. Although the use of newborn checkups for the Mayan speaking Mayas is still significantly less than that of the Creole, the relative odds is only marginally significant when compared to the relative odds for the non-Mayan speaking Mayas in Table 6.

On the other hand, the non-Mayan speaking Mayas (who predominately speak Spanish) are still shown in Table 7 to be significantly different from the Creoles in their use of postpartum and newborn health services. A plausible interpretation of this finding is that this group of Mayas is integrated with the Spanish speaking Mestizo community and speaking Spanish acts as a barrier in obtaining these services for both groups. Thus, ethnicity, as it is measured by the survey, is not a factor in the use of these two services, but language is.

Focusing on whether women use family planning services or not, we note that the differences in Table 6 for the Spanish speaking Mestizos and the non-Mayan speaking Mayas no longer are evident in Table 7, when other variables are controlled, such as residence, work status, age, and education. As the family planning panel in Table 7 shows, non-working, rural, younger, and less educated women are the least likely to be using

contraception. Thus, Spanish speakers and non-Mayan speaking Mayas appear to be similar to Creole speakers in the use of family planning services, when controlling for other characteristics which may differentiate between the two groups.

However, the Mayan speaking Mayas are significantly less likely to use family planning services than the Creoles, indicating that, in this case, ethnicity related to a more traditional Maya population is an important factor in the use of family planning services by the Mayan speaking Mayas. This finding is not surprising since contraceptive use among the Mayas in the Interior of Guatemala has never exceeded 5 percent in the last fourteen years (Goodwin 1991).

Interestingly, non-Spanish speaking Mestizos (who predominately speak Creole) are significantly more likely than Creoles to use contraception. The fact that their use of other MCH services is not significantly different from that of the Creoles, leaves open the question of how to interpret this finding.

Turning to place of last delivery, the same ethnic pattern emerges as was the case for family planning. The Mayan speaking Mayas are the only group significantly less likely to deliver in a hospital. If the respondent is an immigrant or resides in rural areas, she is also significantly less likely to deliver in a hospital. As seen in Table 1, a large proportion of Mestizos (31 percent) are immigrants and a very large proportion of the Maya (79 percent) live in rural areas. The loss of significance

for Spanish speakers, in going from Table 6 to Table 7, appears to be explained by migrant status and rural residence. Thus, except for the Mayan speaking Mayas, ethnicity does not appear to be a factor in delivering in a hospital.

With respect to immunization, Table 6 shows that Spanish speaking Mestizos are more likely than the Creole to have their children completely immunized and that none of the groups is significantly less likely than the Creole to have their children immunized. This may be because immunization is achieved by aggressive vaccination campaigns and rural, mobile health units, enabling all segments of the population to have access to vaccines. Table 7 shows that when controlling for other characteristics, only the Maya speaking Maya differ significantly from the Creole in having their children completely immunized. The Maya speaking Maya are marginally less likely to have their children completely immunized than are the Creole. Furthermore, Table 7 may point to the effectiveness of rural immunization campaigns, as rural women much more relatively likely to have their children completely immunized than are urban women.

DISCUSSION

Our original hypothesis was that ethnicity is not an important factor in the use of MCH and family planning services in Belize. Our findings generally support this hypothesis.

Although the data show that there are ethnic differences in the use of MCH and family planning services except immunization, many of these differentials are no longer evident when controlling for other characteristics of the population, especially residence and education.

Ethnicity does appear to be an important factor in the use of family planning services and hospital delivery for Mayan speaking Mayas, but is not a factor in their use of postpartum and newborn health services.

Our analysis shows that speaking Spanish appears to be a barrier to obtaining postpartum and newborn health services for Spanish speaking Mestizos and Spanish speaking Mayas. On the other hand, Spanish language does not appear to be a barrier to the use of family planning services and delivering in a hospital. We partially attribute the low use of postpartum, and newborn health services by the Mayan speaking Mayas to their residential and educational isolation.

In conclusion, our study shows that, for the most part, factors other than ethnicity explain the apparent ethnic differentials in the use of health services in Belize.

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Table 1. Percent Distribution of Characteristics of Currently Married Women Aged 15 to 44, by Ethnic Group

Selected Characteristics	Ethnic Group			
	Creole	Mestizo	Garifuna	Maya/Ketchi
Household Language				
English	8.1	2.9	4.2	3.5
Creole*	88.1	11.3	46.4	7.5
Spanish	3.8	85.8	3.6	41.0
Garifuna	0.0	0.0	45.8	2.0
Mayan	0.0	0.0	0.0	46.0
Rural Residence				
Yes	16.9	45.5	26.2	79.5
No*	83.1	54.5	73.8	20.5
Age				
15-24*	25.7	28.1	26.2	37.0
25-34	47.4	43.5	47.6	37.0
35-44	26.9	28.3	26.2	29.0
Years of Education				
0-7*	11.7	50.7	16.7	61.0
8	41.6	33.4	51.8	34.0
9+	46.7	15.8	33.5	4.0
Immigrant				
Yes	1.7	31.1	7.7	9.5
No*	98.3	68.9	92.3	90.5
Currently Working				
Yes	36.9	15.4	35.3	11.0
No*	63.1	84.6	64.7	89.0
Roman Catholic				
Yes	38.2	65.0	85.1	54.0
No*	61.8	35.0	14.9	46.0
Total	100.0	100.0	100.0	100.0
No. of Cases (Unweighted)	(N=474)	(N=890)	(N=137)	(N=171)

*=reference category for regressions presented in Tables 4-7

Table 2. Average Number of Children Born Per Woman, by Ethnic Group and Age

Ethnic Group	Age						Total
	15-19	20-24	25-29	30-34	35-39	40-44	
Creole	0.2	1.2	2.3	3.6	4.7	5.4	2.1
Mestizo	0.3	1.5	3.0	4.1	5.3	6.3	2.8
Garifuna	0.3	1.7	2.8	4.4	4.9	6.8	2.6
Maya/Ketchi	0.4	1.9	4.0	5.5	7.1	8.8	2.9

Table 3. Use of MCH and Family Planning Services, by Ethnicity and Principal Language Spoken in the Household

	Percent Using MCH Services				
	Family Planning	Place of Delivery	Postpartum Checkup	Newborn Checkup	Immuni- zations
Ethnicity					
Creole	53.3 (474)	93.7 (286)	58.9 (286)	85.6 (285)	55.6 (288)
Mestizo	46.0 (890)	77.0 (466)	41.9 (460)	57.9 (466)	61.1 (471)
Garifuna	49.4 (137)	89.2 (83)	60.7 (84)	84.5 (84)	57.1 (84)
Maya/Ketchi	24.5 (171)	53.8 (93)	31.5 (92)	46.7 (92)	62.8 (94)
Household Language					
English	59.8 (80)	91.8 (39)	68.0 (40)	86.0 (40)	60.0 (40)
Creole	54.5 (846)	94.1 (449)	59.4 (450)	86.8 (450)	55.0 (353)
Spanish	42.5 (593)	74.3 (351)	37.7 (352)	51.6 (350)	63.1 (455)
Garifuna	43.2 (69)	81.8 (44)	56.8 (44)	81.8 (44)	56.8 (44)
Mayan	12.0 (84)	40.0 (45)	37.5 (43)	56.3 (43)	55.6 (45)

Note: Percent using family planning is for all currently married women. The percent using other MCH services refers to the most recently born child for women who have had children within the past five years, regardless of current marital status. Percent of children completely immunized is for last born children, ages 9 months to 59 months.

Table 4. Relative Odds of Utilizing Versus Not Utilizing Maternal and Child Health Services for Different Ethnic Groups

Ethnicity	MCH Services: Relative Odds Ratios				
	Family Planning	Place of Delivery	Postpartum Checkup	Newborn Checkup	Immuni- zation
Creole	1.00	1.00	1.00	1.00	1.00
Mestizo	0.75 ***	0.27 ***	0.52 ***	0.22 ***	1.25
Garifuna	0.86	0.66	1.18	0.81	1.11
Maya/Ketchi	0.28 ***	0.09 ***	0.33 ***	0.15 ***	1.22

*=0.05<p<0.10, **=0.01<p<0.05, ***=p<0.01

Note: Family Planning includes all currently married women. Other MCH services include all women who have had a child within the past five years. Service utilization pertains to respondents' most recent child.

Table 5. Relative Odds of Utilizing Versus Not Utilizing Maternal and Child Health Services for Different Language Groups

Household Language	MCH Services: Relative Odds Ratios				
	Family Planning	Place of Delivery	Postpartum Checkup	Newborn Checkup	Immuni- zation
Creole	1.00	1.00	1.00	1.00	1.00
English	1.24	0.64	1.67 *	0.98	1.12
Spanish	0.62 ***	0.15 ***	0.42 ***	0.15 ***	1.32 **
Garifuna	0.63 *	0.29 ***	1.14	0.62	1.11
Maya/Ketchi	0.11 ***	0.03 ***	0.55 **	0.20 ***	0.85
	(N=1672)	(N=981)	(N=983)	(N=979)	(N=937)

*=0.05<p<0.10, **=0.01<p<0.05, ***=p<0.01

Note: Family Planning includes all currently married women. Other MCH services include all women who have had a child within the past five years. Service utilization pertains to respondents' most recent child.

Table 6. Relative Odds of Utilizing Versus Not Utilizing Maternal and Child Health Services for Different Ethnic Groups, with the Mestizos and Maya Disaggregated by Language Usually Spoken

Ethnicity/Language	MCH Services: Relative Odds Ratios				
	Family Planning	Place of Delivery	Postpartum Checkup	Newborn Checkup	Immuni- zation
Creole	1.00	1.00	1.00	1.00	1.00
Span. Speaking Mestizo	0.68 ***	0.24 ***	0.44 ***	0.18 ***	1.30 *
Non-Span. Speaking Mest.	1.36 *	0.76	1.28	1.28	0.98
Garifuna	0.86	0.66	1.18	0.81	1.11
Mayan Speaking Maya	0.12 ***	0.03 ***	0.39 ***	0.19 ***	0.85
Non-Mayan Speaking Maya	0.48 ***	0.20 ***	0.29 ***	0.12 ***	1.69
	(N=1672)	(N=981)	(N=983)	(N=979)	(N=937)

*=0.05<p<0.10, **=0.01<p<0.05, ***=p<0.01

Note: Family Planning includes all currently married women. Other MCH services include all women who have had a child within the past five years. Service utilization pertains to respondents' most recent child.

Table 7. Relative Odds of Utilizing Versus Not Utilizing Maternal and Child Health Services for Different Ethnic Groups, with the Mestizos and Maya Disaggregated by Language Usually Spoken, and Controlling for Other Factors Related to Utilization of MCH Services

Ethnicity/Language	MCH Services: Relative Odds Ratios				
	Family Planning	Place of Delivery	Postpartum Checkup	Newborn Checkup	Immunization
Creole		1.00	1.00	1.00	1.00
Span. Speaking Mestizo	1.11	0.70	0.64 ***	0.35 ***	1.24
Non-Span. Speaking Mest	1.58 **	0.72	1.37	1.35	0.96
Garifuna	0.97	0.98	1.25	1.05	1.03
Mayan Speaking Maya	0.26 ***	0.15 ***	0.71	0.55 *	0.58 *
Non-Mayan Speaking Maya	0.82	0.68	0.42 ***	0.25 ***	1.51
Native	1.00	1.00	1.00	1.00	1.00
Immigrant	0.83	0.61 **	1.31	0.96	0.64 ***
Non-Catholic	1.00	1.00	1.00	1.00	1.00
Catholic	0.91	0.87	0.97	0.96	1.10
Urban	1.00	1.00	1.00	1.00	1.00
Rural	0.58 ***	0.14 ***	0.83	0.36 ***	1.91 ***
Not Working	1.00	1.00	1.00	1.00	1.00
Currently Working	1.72 ***	1.22	1.30 *	1.26	0.81
Respondent's Age					
15-24	1.00	1.00	1.00	1.00	1.00
25-34	1.72 ***	0.63 **	1.03	0.68 **	1.18
35-44	2.24 ***	0.75	1.26	1.13	1.01
Respondent's Education					
1-7 Years	1.00	1.00	1.00	1.00	1.00
8 Years	1.29 **	1.20	1.37 **	1.08	0.92
9-12 Years	1.26	2.44 **	2.16 ***	2.41 ***	1.48 **
	(N=1664)	(N=977)	(N=979)	(N=975)	(N=934)

*=0.05<p<0.10, **=0.01<p<0.05, ***=p<0.01

Note: Family Planning includes all currently married women. Other MCH services include all women who have had a child within the past five years. Service utilization pertains to respondents' most recent child.