1. **Abstract**
2. **Introduction**

Unmet need for contraceptives has been used as indicator of family planning for decades. Unmet need describes women who do not want to become pregnant, but are not using contraceptives to prevent or space pregnancies. Unmet need has gained more attention since it was included in the Millennium Development Goals in 2008 and the subsequent Sustainable Development Goals. (DHS Revising Unmet, 1) (SDGs 3 & 5). To improve prenatal, maternal, infant, and child mortality outcomes, it is important to target the first part of the health pipeline: women’s use of contraceptives and unmet need for family planning.

Although unmet need for family planning has improved dramatically and is now at a global average of 12%, least-developed countries remain behind in meeting this health need. In least-developed countries an estimated 21% of women have an unmet need for contraceptives in 2019. Unmet need for contraceptives is concentrated in low-income countries and especially in sub-Saharan Africa. (UNFPA pub 2019, 152).

The DHS (Demographic and Health Surveys) has used unmet need as one of their indicators in household-level surveys for decades, and it has undergone three stages of refinements in definition. Based on responses to 15 survey questions, women are currently categorized as follows: (DHS flowchart)

I chose to examine the unmet need for contraceptives in Haiti because Haiti currently has the highest rate of unmet need in the Americas, and in the world (Sedgh 156). As compared to the rest of the Americas, Haiti has a high prevalence rate of HIV, a high maternal mortality rate, and has experienced severe health crises due to natural disasters like the 2010 earthquake (PAHO). Seventy-six percent of Haitian women used no form of contraceptive in 2015 (DHS, Haiti 2015).

I found that women with an unmet need **were younger, more likely to live in a rural area, less literate, less likely to be working, and were less likely to have been visited by a health fieldworker in the past 12 months.** I also found that a fear of side effects/ health concerns, not being married, or not having sex were the three most common reasons for not using contraceptives. The connection between intimate partner violence (IPV) and use of contraceptives or utilizing health facilities was not found to be statistically significant. I believe this is due to a lack of data on concurrent IPV events and contraceptive use.

The intention of this investigation was to answer the following questions:

1. What are the reasons women are not using contraceptives?
2. Who has an unmet need for contraceptives in Haiti?
3. Does intimate partner violence play a role in women’s use of health facilities?

Source: DHS, Individual Recode, Haiti 2015

1. **Theory**

In examining women’s health, it is helpful to analyze this issue through a rights-based development approach. As characterized by Nobel Prize-winning economist Amartya Sen, development is the process of expanding “substantial freedoms”. Sen describes the opposite of freedom as “unfreedoms”, such processes that inhibit the freedom of people to live the kind of lives they chose. (Sen, Development as Freedom, 10). These unfreedoms can be state tyranny, poverty, a lack of economic opportunities, or, in the context of this investigation, violence and an inability to determine healthcare outcomes.

A complementary theoretical approach that builds on Sen’s work is Martha Nussbaum’s capabilities approach to development. Nussbaum uses the term “combined capabilities” to describe a person’s internal, inherent ability, plus the social/economic/political context (Nussbaum, Creating Capabilities, 22). A person’s outcome is mediated by their individual context, and development is measured by the freedom that one has to choose a certain path. Nussbaum lists the “central capabilities” she believes everyone is entitled to, including bodily health and bodily integrity: “to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction” (Nussbaum, 33).

Both author’s approaches are concerned with entrenched social inequality and answering the question of how freedoms can be expanded so people can exercise self-determination. The right to fulfill reproductive desires and determine one’s future is an expansion of both freedom and capabilities. It is, therefore, useful to determine who is experiencing “unfreedom” through an unmet need for contraceptives as it is mediated by the social and economic context of each woman.

The relationship between IPV and the use of contraceptives can be summarized as: “IPV is associated with a reduction in women’s use of contraception; women who experience IPV are less likely to report using condoms with their male partners. Family planning and HIV prevention programs should consider women’s experiences of IPV.” (Maxwell 2015, 2).

1. **Data**

The data I used to investigate the issue of unmet need for contraceptives was compiled by the DHS (Demographic and Health Surveys), which periodically collects household surveys in over 90 countries (insert footnotes and link). I used data from the “Individual Recode” datasets from Haiti from the 2012-2013 and 2016 survey. For instructions on how to access this data, a data dictionary, and Stata do files, see: **Insert link here**

1. **Model**

*Question 1: What are the reasons women are not using contraceptives?*

To answer this question I summarized the answers women gave to the corresponding DHS survey questions (v3a08a - v3a08z in the DHS datasets.)

*Question 2: Who has an unmet need for contraceptives in Haiti?*

To determine the characteristics of women who have an unmet need for contracepetives in Haiti, I created a binomial variable where 1= unmet need for spacing or limiting births and 0= using contraceptives for spacing or limiting births. I then added variables in in four different rounds to explore different explanatory relationships. I used a logit model and odds ratios to determine which variables were significantly associated with an unmet need. In interpreting the odds ratios, an odds ratio value of 1.00 is interpreted as an equally likely chance between women with an unmet and met need.

Unmet Need = C + Betademographic  + Beducation +Beconomic + B IPV

*Question 3: Does intimate partner violence play a role in women’s use of health facilities?*

I explored women’s use of health facilities to investigate whether or not intimate partner violence might play a role in women’s access to healthcare services, and therefore contraceptives. To answer this question, I used a binomial variable where 1= respondent had visited a health facility in the last 12 months and 0 = respondent had not. I compared the results of an OLS, logit, and probit model to examine differences between models.

Visited health facility = C +Bdemographic + Beducation + Bchildren + Bbarriers +BIPV

1. **Results and Discussion**

*Question 1: What are the reasons women are not using contraceptives?*

Source: DHS, Individual Recode, Haiti 2012 & 2015

Based on the responses to the DHS survey questions, the 5 most common reasons for not using contraceptives were:

1. Fear of side effects/ health concerns
2. Not married
3. Not having sex
4. Infrequent sex
5. Respondent opposed

These results contrasted with my prior expectations that cost, lack of access, or availability might be more popular reasons for not using contraceptives. Instead, a fear of side effects and health concerns from using contraceptives was a more popular response. This implies that programs and policies might be more successful if they target education or the type of contraceptives offered to better meet women’s health preferences.

*Question 2: Who has an unmet need for contraceptives in Haiti?*

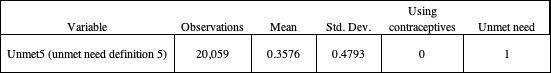
For a summary of results based on a series of logit models testing for specific characteristics – standard demographic identifiers, education, wealth, and intimate partner violence – see table #. For a detailed description of variables used, see the data dictionary in supplemental materials.

In comparing women with an unmet need to women who used contraceptives, women with an unmet need **were younger, more likely to live in a rural area, less literate, less likely to be working, and were less likely to have been visited by a health fieldworker in the past 12 months.** Before adding in the variables for intimate partner violence, Protestant women were also more likely to have an unmet need for contraceptives. Women who were unable to ask their partner was also a significant predictor of an unmet need for contraceptives.

In evaluating who should be the targeted for family planning programs, it would be wise to target women who met these characteristics – rural, not working, illiterate, and younger as they appear to have the greatest need. These results also imply that visits from health fieldworkers have a meaningful impact on women’s use of contraceptives.

The fact that many of these relationships decrease in significance when intimate partner violence variables are added implies that there may be interactions between intimate partner violence and other variables. More research, and perhaps a larger sample size, might clarify this relationship.

I was surprised to see that almost none of the IPV variables were significant. I believe that this is due to the fact that the survey questions about experiencing violence were worded so that a respondent was asked if they had *ever* experienced those forms of violence, not if they had recently or were currently experiencing IPV. Time series data might reveal the timing of this relationship more clearly.



Source: DHS, Individual Recode, Haiti 2012 & 2015

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | (I) | (II) | (III) | (IV) |
|  |  | **Unmet Need** | **Unmet Need** | **Unmet Need** | **Unmet Need** |
|  |  | **Odds Ratios:** |  |  |  |
| *Demographics* | age | 0.856\*\*\* | 0.873\*\*\* | 0.8753\*\*\* | 0.880\*\* |
|  |  | -0.0196 | (0.028) | (0.028) | (0.044) |
|  |  |  |  |  |  |
|  | age² | 1.002\*\*\* | 1.002\*\*\* | 1.002\*\*\* | 1.001\*\* |
|  |  | -0.0003 | (0.0004) | (0.0004) | (0.0007) |
|  |  |  |  |  |  |
|  | age at first birth | 1.020\*\*\* | 1.014 | 1.013 | 1.005 |
|  |  | (-0.00643) | (0.009) | (0.009) | (0.013) |
|  |  |  |  |  |  |
|  | urban | -0.0833 | 0.855\*\* | .846\*\* | 0.788\*\* |
|  |  | -0.006 | (0.067) | (0.067) | (0.094) |
|  | religion |  |  |  |  |
|  | no religion | 0 | 0 | 0 | 0 |
|  |  | (.) | (.) | (.) | (.) |
|  |  |  |  |  |  |
|  | catholic | 1.05 | 1.136 | 1.128 | 1.070 |
|  |  | (0.095) | (0.137) | (0.137) | (0.191) |
|  |  |  |  |  |  |
|  | protestant | 1.194\* | 1.287\*\* | 1.277\*\* | 1.261 |
|  |  | (0.108) | (0.156) | (0.155) | (0.225) |
|  |  |  |  |  |  |
|  | vaudousant | 0.748 | 0.930 | 0.9468 | 0.744 |
|  |  | (0.171) | (0.261) | (0.261) | (0.294) |
|  |  |  |  |  |  |
| *Education* | literacy | 0.891\*\*\* | 0.883\*\* | 0.884\*\* | -0.0469 |
|  |  | (0.033) | (0.048) | (0.048) | (-0.0811) |
|  |  |  |  |  |  |
|  | education in years | 0.987 | 0.992 | 0.992 | 0.954 |
|  |  | (0.008) | (0.014) | (0.014) | (0.077) |
|  | **year of interview** |  |  |  |  |
|  | 2012 | 0 | 0 | 0 | 0 |
|  |  | (.) | (.) | (.) | (.) |
|  |  |  |  |  |  |
|  | 2016 | 0.840\*\* | 0 | 0 | 0 |
|  |  | (.063) | (.) | (.) | (.) |
|  |  |  |  |  |  |
|  | 2017 | 1.239\*\*\* | 1.239\*\*\* | 1.440\*\*\* | 1.318\*\* |
|  |  | (0.061) | (0.061) | (01.440) | (0.161) |
| *Wealth* | **wealth quintile** |  |  |  |  |
|  | poorest |  | 0 | 0 | 0 |
|  |  |  | (.) | (.) | (.) |
|  |  |  |  |  |  |
|  | poorer |  | 0.909 | 0.904 | 0.863 |
|  |  |  | (0.086) | (0.085) | (0.116) |
|  |  |  |  |  |  |
|  | middle |  | 0.938 | 0.931 | 0.830 |
|  |  |  | (.093) | (0.092) | (0.118) |
|  |  |  |  |  |  |
|  | richer |  | 0.856 | 0.853 | 0.844 |
|  |  |  | (0.090) | (.090) | (0.131) |
|  |  |  |  |  |  |
|  | richest |  | 0.867 | 0.853 | 0.861 |
|  |  |  | (.101) | (0.100) | (0.152) |
|  |  |  |  |  |  |
|  | working |  | 0.640\*\*\* | 0.641\*\*\* | 0.707\*\*\* |
|  |  |  | (0.043) | (0.043) | (0.068) |
|  |  |  |  |  |  |
| *Health Access* | visit by fieldworker |  |  | 0.707\*\*\* | 0.785 |
|  |  |  |  | (0.075) | (0.120) |
|  |  |  |  |  |  |
|  | visited health facility |  |  | 1.031 | 0.906 |
|  |  |  |  | (0.071) | (0.091) |
|  |  |  |  |  |  |
| *Intimate Partner* | ask partner to use condom |  |  |  | 0.848\*\* |
|  |  |  |  |  | (0.063) |
|  |  |  |  |  |  |
|  | control issues total |  |  |  | 0.991 |
|  |  |  |  |  | (0.033) |
|  |  |  |  |  |  |
|  | emotional violence |  |  |  | 0.938 |
|  |  |  |  |  | (0.124) |
|  |  |  |  |  |  |
|  | less severe violence |  |  |  | 1.056 |
|  |  |  |  |  | (0.181) |
|  |  |  |  |  |  |
|  | severe violence |  |  |  | 0.991 |
|  |  |  |  |  | (0.232) |
|  |  |  |  |  |  |
|  | sexual violence |  |  |  | 1.256 |
|  |  |  |  |  | (0.213) |
|  |  |  |  |  |  |
|  | constant | 9.064\*\*\* | 7.336\*\*\* | 7.337\*\*\* | 11.293\*\*\* |
|  |  | (3.281) | (3.768) | (3.776) | (9.321) |
| *Observations* |  | 11521 | 5839 | 5839 | 2755 |
|  | Standard errors in parentheses |  |  |  |  |
|  | \* p<0.10, \*\* p<0.05, \*\*\* p<0.01 |  |  |  |  |

Source: DHS, Individual Recode, Haiti 2012 & 2015.

*Question 3: Does intimate partner violence play a role in women’s use of health facilities?*

Based on the results from a series of models examining women’s use of health facilities in the last 12 months, several focus variables seem to increase a woman’s use of health facilities. Education, higher wealth, and breast feeding are all positively and significantly correlated with using health facilities.

When examining the different models, I was inclined to use the logit model and include intimate partner violence variables. There does not appear to be a large difference between the OLS, logit, and probit models. The significant variables, and their signs, are nearly all the same. If I were to use this model to examine *who* has used a health facility, I would be inclined to use an OLS model or a logit with odds ratios because of they are more interpretable.

Overall, the results of this model were disappointing and not particularly informative. They do, however, validate the results from *Question 1,* that access to contraceptives in not one of the main reasons women do not use contraceptives.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | (V) | (VI) | (VII) | (VIII) |
|  | **Health Facility visited in last 12 months:** | **OLS** | **Logit** | **Probit** | **Logit without IPV** |
| *Demographic* | age | -0.00338\* | -0.0144\* | -0.0087 | 0.0298\*\*\* |
|  |  | (-2.06) | (-1.97) | (-1.94) | (-5.13) |
|  |  |  |  |  |  |
|  | urban | 0.0119 | 0.052 | 0.0347 | -0.0298 |
|  |  | (-0.4) | (-0.38) | (-0.42) | (-0.29) |
|  |  |  |  |  |  |
|  | region | 0.00508 | 0.0236 | 0.0147 | 0.0143 |
|  |  | (-1.42) | (-1.43) | (-1.47) | (-1.01) |
|  |  |  |  |  |  |
|  | education | 0.0180\*\*\* | 0.0816\*\*\* | 0.0495\*\*\* | 0.110\*\*\* |
|  |  | (-6.02) | (-6.06) | (-6.03) | (-9.54) |
|  |  |  |  |  |  |
|  | total children | 0.00489 | 0.0215 | 0.0128 | 0.0664\* |
|  |  | (-0.83) | (-0.82) | (-0.8) | (-2.53) |
|  |  |  |  |  |  |
| *Wealth* | **wealth quintile** |  |  |  |  |
|  | poorest | 0 | 0 | 0 | 0 |
|  |  | (.) | (.) | (.) | (.) |
|  |  |  |  |  |  |
|  | poorer | 0.0108 | 0.0503 | 0.0315 | 0.0239 |
|  |  | (-0.37) | (-0.39) | (-0.39) | (-0.22) |
|  |  |  |  |  |  |
|  | middle | 0.0360 | 0.163 | 0.104 | 0.0638 |
|  |  | (-1.18) | (-1.2) | (-1.25) | (-0.55) |
|  |  |  |  |  |  |
|  | richer | 0.0761\* | 0.349\* | 0.220\* | 0.107 |
|  |  | (-2.15) | (-2.19) | (-2.24) | (-0.82) |
|  |  |  |  |  |  |
|  | richest | 0.0944\* | 0.435\* | 0.267\* | 0.296\* |
|  |  | (-2.21) | (-2.22) | (-2.25) | (-2.04) |
|  |  |  |  |  |  |
|  | working | -0.0158 | -0.0774 | -0.0493 | 0.201\*\* |
|  |  | (-0.82) | (-0.88) | (-0.92) | (-2.6) |
|  |  |  |  |  |  |
| *Health Access* | visited by field worker | 0.0319 | 0.146 | 0.0899 | 0.248 |
|  |  | -1.01 | -0.95 | -0.98 | -1.87 |
|  |  |  |  |  |  |
|  | currently breastfeeding | 0.213\*\*\* | 1.061\*\*\* | 0.644\*\*\* | 1.682\*\*\* |
|  |  | (-10.42) | (-9.32) | (-9.61) | (-16.41) |
|  |  |  |  |  |  |
|  | medical permission | -0.00885 | -0.0504 | -0.0297 | -0.093 |
|  |  | (-0.24) | (-0.29) | (-0.28) | (-0.74) |
|  |  |  |  |  |  |
|  | medical money | -0.0135 | -0.0643 | -0.0368 | 0.0309 |
|  |  | (-0.51) | (-0.52) | (-0.50) | -0.32 |
|  |  |  |  |  |  |
|  | medical distance | 0.0170 | 0.0772 | 0.046 | -0.0191 |
|  |  | (-0.7) | (-0.7) | (-0.68 | (-0.22) |
|  |  |  |  |  |  |
|  | medical alone | 0.0124 | 0.0523 | 0.0333 | 0.203 |
|  |  | (-0.43) | (-0.4) | (-0.41) | (-1.8) |
|  |  |  |  |  |  |
| *Intimate Partner Violence* | control issues total | 0.00856 | 0.0397 | 0.024 |  |
|  |  | (-1.21) | (-1.21) | (-1.21) |  |
|  |  |  |  |  |  |
|  | emotional violence | -0.0144 | -0.0689 | -0.0426 |  |
|  |  | (-0.48) | (-0.49) | (-0.50) |  |
|  |  |  |  |  |  |
|  | less severe violence | -0.0168 | -0.0747 | -0.0396 |  |
|  |  | (-0.46) | (-0.44) | (-0.39) |  |
|  |  |  |  |  |  |
|  | more severe violence | -0.0108 | -0.0465 | -0.0348 |  |
|  |  | (-0.24) | (-0.24) | (-0.29) |  |
|  |  |  |  |  |  |
|  | sexual violence | 0.0249 | 0.108 | 0.0646 |  |
|  |  | (-0.76) | (-0.72) | (-0.71) |  |
|  |  |  |  |  |  |
|  | constant | 0.483\*\*\* | -0.0962 | -0.0673 | -2.333\*\*\* |
|  |  | (-5.06) | (-0.22) | (-0.25) | (-7.76) |
| Observations |  | 4322 | 4322 | 4322 | 6321 |
|  |  |  |  |  |  |
|  |  | t statistics in parentheses |  |  |  |
|  |  | \* p<0.05, \*\* p<0.01, \*\*\* p<0.001 |  |  |  |

Source: DHS, Individual Recode, Haiti 2012 & 2015

1. **Conclusion**

The results of my findings are confirmed in family planning research by Sedgh and Hussain (2014) that focused on the reasons women were not using contraceptives around the world. They drew similar conclusions about Haiti, and found that globally, the reasons for not using contraceptives are varied. Access may be a more significant barrier in other countries than it is in Haiti.

Women’s worries about side effects have serious programmatic implications for family planning interventions. A qualitative assessment of women’s attitudes towards contraceptives and their preferences would help design family planning initiatives to better meet their needs and improve satisfaction with birth control methods. Outreach, especially from health field workers, may be a particularly useful way to counter misinformation.

Although I was not able to draw conclusions about the role of intimate partner violence in the use of contraceptives, I was pleased with the practicality of a logit model assessing who is likely to have an unmet need for contraceptives. It seems particularly useful for allocating program resources and designing effective family planning interventions that target the most at-risk women. Chandra-Mouli et al (2014) confirms that adolescents in particular are likely to have an unmet need and should be a focus of interventions that are tailored to their needs.

Further research could focus on contraceptive preferences. The same models I have examined here could be applied to different countries and results could be compared with those of Haiti. Time series data or a more concurrent measure of intimate partner violence and contraceptive use could be used to clarify the relationship between the two.

1. **Sources**
2. **See the Appendix for the following documents:**
3. **Work flow**
4. **Data dictionary**
5. **Naming protocol**
6. **Data Management Plan (with instructions for accessing data)**
7. **Link to google drive with codes and additional documentation**