

Female Reproductive Autonomy in Honduras:

An Interdisciplinary Analysis of Associated Factors in the Early 21st Century

By Grace Nelson

The presence of female reproductive autonomy, or the ability for a woman to make a well-informed decision, independently or with limited input from partners, about the number, spacing and timing of her children is a key determinant of female empowerment and independence. Understanding the intensity of a woman's reproductive role, and the entrenched social, physical and mental implications that underlie it, is key to bringing about gender equity. This study utilizes Demographic and Health Surveys (DHS) collected between 2005-2006 and 2011-2012 to draw attention to the factors associated with reproductive autonomy as they relate specifically to women in Honduras. Results from the longitudinal analysis, using logistic regression tests, reveal the predicted association between reproductive resources such as sexual education and contraceptives as well as social autonomy. Ultimately, higher rates of formal education are likely associated with key reproductive autonomy indicators such as desire for last birth, knowledge of the fertility period and independent decision-making around contraceptive use. Sexual health programs can coincide with increasing formal education resources. Implementing such programs in the later years of primary schools can facilitate an increase in sexual autonomy and health knowledge outcomes such as fertility knowledge.

Introduction

Reproductive autonomy is a fundamental precondition for gender equality, healthy well-being and socio-economic opportunities for women. (For clarity and brevity this paper employs gender binary diction. The terms woman and female are used interchangeably to describe individuals with female reproductive organs. The subject population is assumed cis-gender and heterosexual). The rights that correspond with these freedoms were globally recognized for the first time in the 1994 Programme of Action of the International Conference on Population and Development. This United Nations Programme marked a turning point in international standards of reproductive rights by prioritizing the necessity of a woman's informed right to family planning information and resources.

Nearly two decades later, in 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development. The agenda implicitly critiqued global economic structures, citing extreme poverty and

gender inequality as the undeniable consequences of flawed power systems. A persisting theme of the proposed solutions, which generally illuminate the necessary pathways to promoting equality among people, is female empowerment and reproductive health.

Formal research empirically confirms these convictions through analysis of women in environments with abundant reproductive resources, or the lack thereof. For instance, globally there is a decreasing trend in unintended pregnancies, but less prominently in areas with limited access to general health and reproductive resources. For women in lower-income countries where access to these essential resources is limited, pregnancy intention outcomes are not as easily achieved.¹ Past studies have linked reproductive autonomy with lower infant mortality, improved health and education outcomes for children and adolescents; while unintended pregnancy has been linked to higher instances of miscarriage, abortion and poor child health outcomes.² Not only can reproductive autonomy foster better health outcomes for women and their families, but it also is positively associated with empowerment indicators such as financial and decision-making autonomy.³

The term reproductive autonomy referenced in this paper pulls from concepts expressed in public health and decision-making research. Using concepts from the 1968 UN General Assembly, as well as the 2010 USAID Contraceptive Security report, reproductive autonomy is used to describe the point at which people— women in particular— are able to choose, access and knowledgeably use family planning resources to achieve their specific goals for family size and birth timing. For women especially, achieving this state requires sufficient knowledge of their reproductive cycles as well as other key health indicators.

Ultimately, the intense biological and social responsibilities that come with a woman's reproductive role significantly impact her financial security, mental and physical well-being, social status and those of her future generations.⁴ Acknowledging such responsibilities and providing tools to alleviate their burden, by means of resources such as contraceptives and reproductive health information, facilitates informed choice around pregnancy and childrearing.

In order to achieve high levels of female empowerment and participation among formal decision-making institutions, women must have the resources, opportunities and abilities to plan and time pregnancy, childbirth and childrearing.⁵ The steep decline in global fertility rates over the last twenty years signals a promising evolution in the resources and responsibilities of women everywhere. However, the core problem lies in the need for more data analysis on contraceptive usage, intentions, and barriers. Programs such as those created by the UN's Agenda for Sustainable Development, will likely fall short of intended purposes due to lack of empirical evidence. By investigating the factors which contribute to reproductive autonomy, countries and international institutions can work towards delivering location-specific programs for female empowerment and autonomy. This study aims to analyze the state of female reproductive autonomy in Honduras and its associated factors in the early 21st century.

1 Jonathan Bearak, Anna Popinchalk, Bela Ganatra, Ann-Beth Moller, Özge Tunçalp, Cynthia Beavin, Lorraine Kwok, and Leontine Alkema. "Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990–2019." *The Lancet Global Health* 8, no. 9 (2020): e1152-e1161.

2 Emily C. Hendrick, and Leticia Marteleto, "Maternal Household Decision-Making Autonomy and Adolescent Education in Honduras." *Population Research and Policy Review* 36, no. 3 (2017): 415-439; Anne Sebert Kuhlmann, Thembekile Shato, Qiang Fu, and Manuel Sierra. "Intimate Partner Violence, Pregnancy Intention and Contraceptive Use in Honduras." *Contraception* 100, no. 2 (2019): 137-141; Janine Barden-O'Fallon, and Ilene Speizer. "What Differentiates Method Switchers from Discontinuers? An Examination of Contraceptive Discontinuation and Switching among Honduran women." *International perspectives on sexual and reproductive health* 37, no.1 (2011): 16.

3 Ndola Prata, Ashley Fraser, Megan J. Huchko, Jessica D. Gipson, Mellissa Withers, Shayna Lewis, Erica J. Ciaraldi, and Ushma D. Upadhyay. "Women's Empowerment and Family Planning: A Review of the Literature." *Journal of biosocial science* 49, no. 6 (2017): 713-743.

4 Mahama Saaka, "Women's Decision-Making Autonomy and its Relationship with Child Feeding Practices and Postnatal Growth." *Journal of Nutritional Science* 9 (2020); Kasey S. Buckles, "Maternal Socio-Economic Status and the Well-Being of the Next Generation(s)." In *The Oxford Handbook of Women and the Economy*. New York: Oxford University Press, 2017; Priyadarshini Tripathy, "A Public Health Approach to Perinatal Mental Health: Improving Health and Wellbeing of Mothers and Babies." *Journal of gynecology obstetrics and human reproduction* (2020): 101747.

5 Bocong Yuan, Jiannan Li, and Zhaoguo Wang. "The Development of Global Women's Rights and Improvements in Reproductive Health Intervention Access of Females with Different Socio-Economic Status." *International journal of environmental research and public health* 16, no. 23 (2019): 4783.

Background

An investigation of the economic and socio-ecological factors that underlie a Honduran woman's reproductive autonomy, requires a contextualization of the country's social and political character. According to the World Bank in 2020, despite being the third poorest country in the Western Hemisphere, Honduras has experienced significant economic growth in recent years at a pace "well above the average in Latin America and the Caribbean".⁶ The per capita GDP of the nation averages around 2,500 USD, placing Honduras in the Lower Middle-Income Country (LMIC) economic category.⁷ With its strategic geographical position between two oceans, trade opportunities, growing industrial presence, and relatively young population (average age 23 years old), Honduras is ripe with economic potential.⁸ However, even with recent economic strides, the history of violence and volatility threatens Honduras' burgeoning as a developing nation.

Political Violence and Gender Inequity

The prominence of political instability in modern Honduras dates back to the late 19th and early 20th centuries when American fruit companies dominated the economy of the nation and contributed to ongoing internal conflict.⁹ The most dramatic political event in recent history occurred in 2009 when a military coup ousted the democratically elected Honduran president, Manuel Zelaya.¹⁰ Though originally elected as a more right-wing politician, Zelaya's regime eventually progressed to more leftist policies and was known for "promoting and implementing more socially minded initiatives".¹¹ Then legal changes implemented by the de facto regime "threatened progress in a number of areas relating to social development equality and the protection of women's rights".¹² Emergency contraceptive resources, commonly known as the 'morning-after pill' were fully banned after the regime took power and a subsequent rise in teenage pregnancies followed shortly thereafter.¹³ Since the ban in 2009, Honduras is still the only country in Latin America where these kinds of emergency contraceptive resources are outlawed.¹⁴ These ongoing threats to the safety of Hondurans severely limit the collection of survey data in the country. In 2012 the United States Peace Corps program withdrew all Honduran volunteers over safety concerns due to the high rates of violence.¹⁵ The compounding impacts of high poverty rates along with limited access to contraceptives disproportionately limits the resources available for women in Honduras.

In addition to the ongoing political instability of the last century, Honduras also has one of the highest homicide rates in the world and violence against women persists. Following the 2009 military coup, Honduras saw a 60 percent increase in the number of homicides compared to the month before.¹⁶ The turmoil caused by the coup diverted resources away from social and medical efforts which were receiving increasing attention prior to the political instability but were then funneled into government and policing. Rondoeros' 2011 paper showed how the most notable example of this for women in particular was the diversion of funds intended for investigating the homicides of females that were instead put towards policing an increase in street crime.¹⁷ Although rates of

6 World Bank, "The World Bank in Honduras" Where We Work. Honduras Overview <https://www.worldbank.org/en/country/honduras/overview> (2020).

7 Ibid

8 Ibid

9 Scott, Peter Dale, and Jonathan Marshall. "3. Bananas, Cocaine, and Military Plots in Honduras." In *Cocaine Politics*, pp. 51-64. University of California Press, 1991.

10 Ruhl, J. Mark. "Trouble in Central America: Honduras Unravels." *Journal of Democracy* 21, no. 2 (2010): 93-107.

11 Filho, Cunha, Clayton M., André Luiz Coelho, and Fidel I. Pérez Flores. "A Right-to-Left Policy Switch? An Analysis of the Honduran Case Under Manuel Zelaya." *International Political Science Review* 34, no. 5 (2013): 519-542.

12 Katherine Ronderos, "Poverty Reduction, Political Violence and Women's Rights in Honduras." *Community development journal* 46, no. 3 (2011): 315-326.

13 Lakhani, Nina. "Honduras Urged to Put an End to Birth Control Myths." *The Guardian*, 24 (2019).

14 Ibid

15 Curt Tarnoff, "The Peace Corps: Current Issues." (2016).

16 Katherine Ronderos, "Poverty Reduction, Political Violence and Women's Rights in Honduras." *Community development journal* 46, no. 3 (2011): 315-326.

17 Katherine Ronderos, "Poverty Reduction, Political Violence and Women's Rights in Honduras." *Community development journal* 46, no. 3 (2011): 315-326.

homicide have subsided since 2009, petty crime and gang activity still permeate the nation.¹⁸ The chaos instigated by the 2009 military coup exemplifies the diversion of resources away from the necessary infrastructure for women's safety and independence. These resources are often instead allocated towards militaristic authoritarian control, jeopardizing the safety and security of women across the country.¹⁹

Economic, Demographic, and Literacy Distribution

As of 2018, 48 percent of Hondurans live below the national poverty line, and the dominance of monoculture fruit exports makes the country particularly vulnerable to catastrophic natural disasters and global climate change.²⁰ The Gini index of the country—a data point which reflects inequality based on income distribution—is currently estimated at 48.2, surpassing that of most other countries around the world.²¹ This fact is also reinforced by data that show poverty rates to be more pronounced in rural parts of the country compared to urban areas.²² Despite such high rates of poverty, the nation boasts rising literacy rates. From 2001 to 2018 the proportion of literate individuals rose from 80 to 87 percent.²³ The distribution of individuals in the formal workforce has historically been gendered with 71 percent of men participating in the formal market compared to just 27 percent of women.²⁴ Honduras is predominantly mestizo although the nation formally recognizes eight different ethnic groups.²⁵

Fertility Rates and Contraceptives

Fertility rates in Honduras closely follow trends of other Latin American countries with significant decreases in the last 20 years. In 2000, the fertility rate was about 4.2 children per woman whereas more recent data suggests these rates are now slightly above replacement at 2.5.²⁶ Although these rates correlate with an overall increase in modern contraceptive usage Honduran women still face severe limitations when accessing reproductive resources.²⁷ They are among the 41 percent of women worldwide who live under strict abortion laws.²⁸ Despite decreasing fertility rates and increasing contraceptive uptake in Honduras, the correlation between these trends and non-contraceptive related efforts within the country is vital to understanding how various factors impact female bodily autonomy.

Literature Review

A scrutiny of contraceptive usage and its barriers in Honduras evaluates the present research gaps this paper seeks to address. This literature review addresses the main findings related to the research questions and exposes where more empirical evidence is necessary. The review also brings to light a need for an analysis of the decision-making process of contraceptive use and discontinuation.

18 UNODC, “World Drug Report” <https://www.unodc.org/wdr2018/> (2018).

19 Ibid

20 World Bank, “The World Bank in Honduras” Where We Work. Honduras Overview. <https://www.worldbank.org/en/country/honduras/overview> (2020).

21 World Bank. “Gini Index (World Bank Estimate)” <https://data.worldbank.org/indicator/SI.POV.GINI> (2019).

22 World Bank, “The World Bank in Honduras” Where We Work. Honduras Overview <https://www.worldbank.org/en/country/honduras/overview> (2020).

23 UNESCO, “Honduras Education and Literacy” <http://uis.unesco.org/en/country/hn?theme=education-and-literacy> (2019).

24 Global Health Data Exchange, “National Institute of Statistics Honduras” <https://ghdx.healthdata.org/organizations/national-institute-statistics-honduras> (2010).

25 Juan Luis Bermúdez-Madriz, María del Rocío Sáenz, Jorine Muiser, and Mónica Acosta. “The Health System of Honduras.” *Salud publica de Mexico* 53 (2011): s209-s219.

26 World Bank, “The World Bank in Honduras” Where We Work. Honduras Overview <https://www.worldbank.org/en/country/honduras/overview> (2020).

27 Family Planning 2020. “Honduras” FP2020 Core Indicator Summary Sheet <https://www.familyplanning2020.org/honduras> (2020).

28 Center for Reproductive Rights. “Honduras Reinforces Total Abortion Ban” <https://www.reproductiverights.org/press-room/honduras-reinforces-total-abortion-ban> (2017).

Contextualizing Non-Use

In an investigation into the knowledge and utilization of contraception for women living in the five poorest regions of Mesoamerican countries, researchers Rios-Zertuche et al. concluded that when compared to the four other countries, women in Honduras were the least knowledgeable about the point in their menstrual cycle at which they are most fertile.²⁹ Their study also found that women in the poorest areas had little information regarding available resources for family planning. Moreover, the main reason cited for non-use was health concerns about side-effects. Similarly, Moreira et. al. found that about 20% of Honduran women say health concerns are their main reason for not using modern contraceptive methods.³⁰ While many of these concerns may stem from lack of information around the long-term impacts of contraceptive use, misinformation and lack of general education and sex education also contribute to apprehension towards use and misuse. For example, user error is common for short-acting contraceptive users especially for women who use the birth control pill and cannot keep track of the days or read the directions.³¹ The difficulties surrounding contraceptive use are clearly reinforced by the capabilities and resources available for women.

Economics and Discontinuation

With low rates of health insurance and few programs that cover or subsidize contraceptives, 75% of all family planning expenditures are out-of-pocket expenses for Honduran women.³² This heavy reliance upon personal financing, characterizes just one of many obstacles the population faces in achieving reproductive autonomy. Challenges are further exacerbated for women who live in rural communities and experience higher rates of poverty compared to their urban counterparts. In their 2013 investigation into the main barriers to access for rural Honduran women, Hall et al. found that economic factors were both the desire and barrier to contraception. They attributed this to the high cost of raising children which drives women to want to use contraceptives but the high cost of these methods inhibits their access to them. Additionally, they found that partner disapproval was among the most common reasons why women refrain from contraceptive usage.³³ The rural women in the study also cited transportation limitations and concerns for personal safety as main factors inhibiting access and usage. In a similar examination of contraceptive use and discontinuation among Honduran women, Barden-O'Fallon and Speizer concluded that those living in rural areas were more likely to stop their modern contraceptive method when dissatisfied with it, compared to urban women in the study who were more likely to switch when dissatisfied.³⁴ The researchers also found that women were 'significantly influenced' by conversations with their partners before making a decision about discontinuation.

Identity and Gender Roles

In addition to the difficulty accessing physical resources for reproductive autonomy — like the birth control pill — attitudes about social groups and gender can exacerbate these limitations as well. Despite the increase in modern method usage among Latin American women in recent decades, and an especially significant rise

29 Diego Rios-Zertuche, Laura C. Blanco, Paola Zúñiga-Brenes, Erin B. Palmisano, Danny V. Colombara, Ali H. Mokdad, and Emma Iriarte. "Contraceptive knowledge and use among women living in the poorest areas of five Mesoamerican countries." *Contraception* 95, no. 6 (2017): 549-557.

30 Laísa Rodrigues Moreira, Fernanda Ewerling, Aluisio JD Barros, and Mariangela Freitas Silveira. "Reasons for Nonuse of Contraceptive Methods by Women with Demand for Contraception Not Satisfied: An Assessment of Low and Middle-Income Countries Using Demographic and Health Surveys." *Reproductive health* 16, no. 1 (2019): 1-15.

31 Leevan Tibaijuka, Robert Odongo, Emma Welikhe, Wilber Mukisa, Lilian Kugonza, Imelda Busingye, Phelomena Nabukalu, Joseph Ngonzi, Stephen B. Asiimwe, and Francis Bajunirwe. "Factors Influencing Use of Long-Acting Versus Short-Acting Contraceptive Methods Among Reproductive-Age Women in a Resource-Limited Setting." *BMC women's health* 17, no. 1 (2017): 1-13.

32 Thomas Fagan, Arin Dutta, James Rosen, Agathe Olivetti, and Kate Klein. "Family Planning in the Context of Latin America's Universal Health Coverage Agenda." *Global Health: Science and Practice* 5, no. 3 (2017): 382-398.

33 Marissa G. Hall, Jenna J. Garrett, and Clare Barrington. "La Situación Económica: Social Determinants of Contraceptive Use in Rural Honduras." *Global public health* 9, no. 4 (2014): 455-468.

34 Janine Barden-O'Fallon, and Ilene Speizer. "What Differentiates Method Switchers from Discontinuers? An Examination of Contraceptive Discontinuation and Switching among Honduran women." *International perspectives on sexual and reproductive health* 37, no.1 (2011): 16.

in usage among Honduran women, “substantial disparities in access for marginalized groups remain”.³⁵ Price and Asgary’s findings in their 2011 paper support this statement as they found that despite having substantial knowledge of modern methods, indigenous women use these contraceptives at a significantly lower rate than the national average.³⁶ One contributor to this issue might be the grave reality that “in Honduras, ethnicity is not usually evaluated in national statistics of poverty and health”.³⁷ Without relevant interventions to alleviate such inequities, specific groups can often be ignored in national and local programs.

Similarly, interventions that do not specifically address evident differences in experiences based on gender, overlook the unique challenges faced by women. An analysis of 2001 national surveys show how the power imbalances between men and women in Honduras negatively affect a woman’s ability to meet her fertility desires. Because couples often disagree about contraceptive usage and fertility preferences, a woman’s desires and future takes less precedence. The research noted that this is especially evident in rural areas where it is vital that health programs encourage men to communicate with their partners openly about reproductive decision-making.

The increase in female education rates and labor force participation within the country in the late 20th century, has been closely associated with the simultaneous increase in modern contraceptive use. Specifically, between 1996 and 2001 there was a decrease in the proportion of women “reporting that husbands alone should make family planning decisions”.³⁸ Finally, in line with much research on gender disparities in the country the study found that “women living in less urban areas with less than a secondary education or were of medium or low socioeconomic status had elevated odds both of believing that men alone should make reproductive decisions and of living in a household in which the man made those decisions”.³⁹ Additionally, women who report any kind of intimate partner violence were less likely to have wanted their last child at time of birth.⁴⁰

Few studies directly investigated socio-economic demographic factors associated with reproductive autonomy for women in Honduras using a longitudinal approach. Consequently, this paper seeks to fill these gaps by incorporating surveys from two different points in time to see how trends change over the five-year period between the last two available DHS datasets. The research also takes a macro approach of investigating the subject population as a whole for all women both urban and rural who have had births and range between the ages of 15-49.

Theoretical Framework

Interdisciplinary reproductive autonomy research allows for a broad analysis of the relationship between access to health resources and external determinants of contraceptive usage and pregnancy. The framework for this study incorporates academic theories from the fields of public health, sociology and demography.

Demographic Transition Theory

The evolution of population demographics as seen through changes in birth and death rates over time shapes the particular opportunities and challenges present within a country. This theory, coined the Demographic Transition Model (DTM) by demographer Warren Thompson, suggests specific changes in population dynamics cycle through various stages of transition.⁴¹ Each stage is characterized by changes in the status of birth and death rates.

For example, in stage three—the stage that most developing countries currently occupy and that which is closely related to changes in reproductive autonomy—is characterized by continuing population growth with low death rates and decreasing birth rates. In their overview of the model, Grover describes how this stage evolves

35 Thomas Fagan, Arin Dutta, James Rosen, Agathe Olivetti, and Kate Klein. “Family Planning in the Context of Latin America’s Universal Health Coverage Agenda.” *Global Health: Science and Practice* 5, no. 3 (2017): 382-398.

36 Joan Price and Ramin Asgary, “Women’s Health Disparities in Honduras: Indicators and Determinants.” *Journal of Women’s Health* 20, no. 12 (2011): 1935.

37 Ibid

38 Willard, Kendra. “Gendered Attitudes and Family Planning Decision-Making in Honduras.” (2007).

39 Ibid

40 Kuhlmann, Anne Sebert, Thembekile Shato, Qiang Fu, and Manuel Sierra. “Intimate Partner Violence, Pregnancy Intention and Contraceptive Use in Honduras.” *Contraception* 100, no. 2 (2019): 137-141.

41 Bryson Thomas Bassett, “The Theory of the Demographic Transition and Its Cultural Implications.” PhD diss., 2019.

often “as a result of improved economic conditions, an increase in women’s status and education, and access to contraception.”⁴² Advancements in economic and technological resources signal significant overall development within a country and generally correspond with an increase in educational attainment and health resources. The stabilization of population growth within a country offers a key opportunity for economic advancement and depends heavily upon contraceptive access and female empowerment which make up a significant part of reproductive autonomy.⁴³

Honduras currently falls within the third stage of demographic transition as its population is rapidly changing due to falling fertility rates and a decline in overall mortality. Largely in part due to a significant decrease in infant mortality, Honduras has seen an increase in life expectancy at birth of over 30 years since 1950.⁴⁴ While the current mortality rate remains relatively high compared to other similarly developing nations due to high homicide rates linked to violence, the falling fertility rates in the last several decades signal a significant change in population demographics. Garcia-Guerrero, Giorguli-Saucedo & Masferrer predict that the population will continue to grow until stabilization is reached in approximately 2050 when fertility rates will likely dip below replacement levels as rates begin averaging below 2 children per woman.⁴⁵

Honduras currently has one of the youngest populations in Central America. Over the next several decades the country will witness key changes in the demographics as fertility rates are projected to continue declining as the country overall transitions into a more mature population. Like many of its neighboring countries, large disparities in fertility trends across the country continue to dominate across the country, limiting other key development advancements.⁴⁶

Socio-Ecological Model

The socio-ecological model of health, first outlined by psychologist Urie Bronfenbrenner, is a framework used to understand human development as it stems from social and structural health determinants.⁴⁷ Researcher and nurse Jill Kilanowski articulates how this model forms an understanding of the “multifaceted and interactive effects of personal and environmental factors” upon an individual’s health by characterizing the extent of various social and institutional influences.⁴⁸ The framework begins by analyzing the closest contributors of health in an individual’s immediate surroundings, recognizing that the knowledge and beliefs of an individual form the base of decision-making.

For reproductive autonomy, this underscores the embedded link between family planning and the personal beliefs of the individual around family size and contraception. The model then broadens to include the “negative and positive interactive forces on the individual such as community contexts and social networks”.⁴⁹ In the case of Honduran social mores, this includes patriarchal family dynamics and local inhibitions about contraceptive use. Institutionalized gender roles and “societal, religious, and cultural values and influences” evince the historical dominance of the male voice in dictating how women express and carry out their fertility desires.⁵⁰

This framework is helpful when evaluating the key determinants of reproductive autonomy as they associate with the interpersonal, community and structural level influences present in an individual’s life. Evidently, “households are not simple units of consumption, production, reproduction and decision making: they are sites of power containing both cooperation and conflict, pooling and separation; their boundaries may be flexible and fluctuate”.⁵¹ Understanding these boundaries, and the social mores that belie them, is crucial to properly applying this model to the study. When viewing reproductive autonomy in Honduras through this framework it is essential

42 Drew Grover, “What is the Demographic Transition Model?” PopEd Blog 13 (2014).

43 Drew Grover, “What is the Demographic Transition Model?” PopEd Blog 13 (2014).

44 V. Garcia-Guerrero, S. Giorguli Saucedo, and C. Masferrer. “Emerging Demographic Challenges and Persistent Trends in Mexico and the Northern Triangle of Central America.” *Governance in an Emerging World* 418 (2018): 6-15.

45 Ibid

46 Ibid

47 Jill F. Kilanowski, “Breadth of the Socio-Ecological Model.” (2017): 295-297.

48 Ibid (295)

49 Ibid

50 Ibid

51 Harrison, Elizabeth. “Anthropology and Impact Evaluation: a Critical Commentary.” *Journal of Development Effectiveness* 7, no. 2 (2015): 146-159.

to consider the fact that abortion is a criminal offense in the country. These practices exemplify the relationship between limited feminists' policies— or legislation which fails to acknowledge the differences in life-course experienced by women — and public health structures.

Without access to sufficient reproductive services and resources related to successful reproductive outcomes, women are often forced to seek out clandestine abortions which put them in jeopardy of legal persecution.⁵² Even if abortion were legalized in Honduras prevailing social stigma may play a role in inhibiting utilization of the resource. In any context, recognizing the social and political environment of a region and community and its impact on individuals is necessary to observe how resources are made available and then used by people.

Capabilities Approach

The capabilities approach, popularized by economist Amartya Sen, provides an important framework for analyzing the determinants of bodily autonomy and contraceptive utilization. It specifically emphasizes pathways to freedom beyond commonly analyzed mechanisms like income and material resources. Sen criticized development evaluations that focused solely on material resources because they provide a limited view of the factors which influence decision-making of an individual. This framework suggests that in order for individuals to act on desires they must have formal freedoms, such as politically recognized access to contraceptives, along with opportunities, like realistically accessible contraceptives. These factors in combination with personal beliefs and desires allow individuals to pursue and achieve such desires.⁵³ In this sense, a “woman’s geographic and occupational mobility is constrained by family and child-rearing responsibilities,” which the capabilities approach helps further contextualize.⁵⁴ Specifically, it frames the way pregnancy physically changes mobility, along with periods and bringing children along when trying to go places, let alone getting the education that is required to have occupational opportunities beyond the home.

Before analyzing the specific conditions of the individual it is important to note that inequalities in achievement of desires are first significantly caused by differences in resource equality.⁵⁵ This can be seen through differences in access to contraceptives for women around the world where abortion and emergency contraceptive bans exist in various countries. The broader context of resources and general influence is a key determinant of capability because whether someone can actually convert available resources into their desired outcomes significantly depends on the “sociopolitical, and environmental conditions.”⁵⁶ In addition to the broader conditions it is important to note that on both a global and community scale, “people differ in their abilities to convert these resources into capabilities.”⁵⁷ Even at the individual level capabilities are realized differently based on a variety of factors such as personal biases and concerns. Material resources in conjunction with reliable information and structurally recognized freedoms all contribute to the extent an individual is capable of exercising personal autonomy. This is particularly important when considering reproductive autonomy as it is dictated by the proximity and availability of family planning information and contraceptive resources along with various spheres of information which influence personal choice and decision-making.

Conceptual Map

This study adopts a framework for reproductive autonomy that acknowledges how available resources contribute to actions of personal agency which in turn lead to pregnancy and fertility outcomes.

52 Center for Reproductive Rights, “The World’s Abortion Laws” <https://reproductiverights.org/worldabortionlaws> (2020).

53 Ingrid Robeyns and Morten Fibieger Byskov, “The Capability Approach. The Stanford Encyclopedia of Philosophy.” <http://plato.stanford.edu/entries/capability-approach> (Winter 2020 Edition).

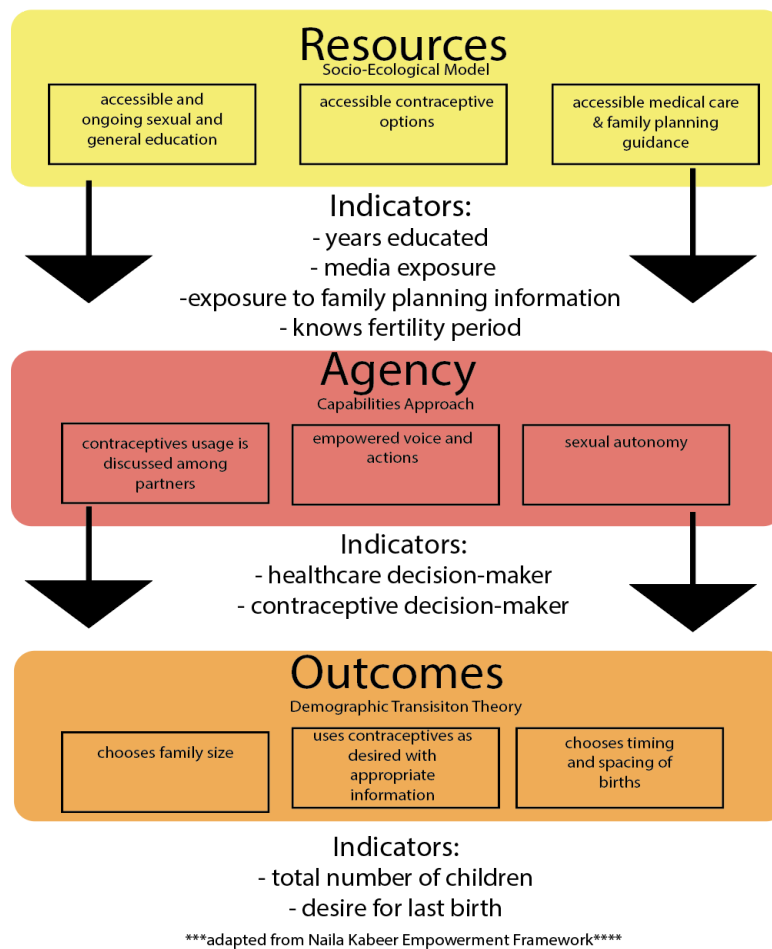
54 Valentine M. Moghadam, “The ‘Feminization of Poverty’ and Women’s Human Rights.” Gender Equality and Development Section, Division of Human Rights, Social and Human Services Sector, United Nations Economic, Social and Cultural Organization (2005).

55 Ingrid Robeyns, “Sen’s Capability Approach and Gender Inequality: Selecting Relevant Capabilities.” *Feminist economics*9, no. 2-3 (2003): 61-92.

56 Ingrid Robeyns and Morten Fibieger Byskov, “The Capability Approach. The Stanford Encyclopedia of Philosophy.” <http://plato.stanford.edu/entries/capability-approach> (Winter 2020 Edition).

57 Ingrid Robeyns, “Sen’s Capability Approach and Gender Inequality: Selecting Relevant Capabilities.” *Feminist economics*9, no. 2-3 (2003): 63.

For research organizational purposes of this study, variables are categorized into groups which correspond with the theoretical framework. Examples are shown in the indicators section of the conceptual map.



Hypotheses

Drawing from the primitives highlighted in the theoretical framework and conceptual map, this study analyzes empirical data according to three core hypotheses.

Hypothesis 1 - Higher levels of education will be associated with higher levels of reproductive autonomy.

As viewed through the various frameworks, the connection between education and contraceptive use as it relates to fertility outcomes has considerable impacts on country development and access to opportunities for women. Access to education can facilitate improved job opportunities and while education does not inherently guarantee a reduced likelihood of experiencing poverty, increases in education can bring about higher rates of autonomy through access to money and other important resources for personal life-course autonomy. Education often delays the time at which a woman has her first child and exposes her to greater knowledge about family planning and contraception.⁵⁸

Academic literature supports these claims showing the correlation between education and reproductive autonomy. Shapiro and Tambashe found a correlation between higher rates of education and contraceptive uptake among women in a developing setting.⁵⁹ A 2009 paper reviewing both male and female partner education rates

⁵⁸ Grover, Drew. "What is the Demographic Transition Model?" PopEd Blog 13 (2014).

⁵⁹ David Shapiro, and B. Oleko Tambashe. "The Impact of Women's Employment and Education on Contraceptive Use and Abortion in Kinshasa, Zaire." *Studies in family planning* (1994): 96-110.

and their impacts of reproductive autonomy, using data similar to that analyzed in this study, specifically found that increased levels of education are associated with achieving desired fertility outcomes.⁶⁰ Finally, in their meta-analysis of over 35 scientific papers Psaki et. al show that “schooling may have positive ripple effects for sexual and reproductive health in some circumstances”.⁶¹ This hypothesis seeks to evaluate whether these findings are consistent with the population under investigation.

Hypothesis 2 - Higher levels of personal agency will be associated with higher levels of reproductive autonomy.

The second hypothesis expands beyond formal resources like education by examining the association between personal autonomy indicators and reproductive autonomy. This hypothesis draws primarily from theories within the Capabilities Approach. When applying the approach to reproductive autonomy concepts emerge suggesting that women must have both beliefs around desired family size and a desire to exercise these beliefs in combination with reasonably obtainable and accessible resources.

In their study on family planning attitudes and practices in Ethiopia in 2013, Tilahun et al. describe how the “mere physical access (proximity to clinics for family planning) and awareness of contraceptives are not sufficient to ensure that contraceptive needs are met”.⁶² This conclusion reinforces the importance of observing the extent of personal autonomy in general health and life-course decision-making when investigating the factors associated with reproductive autonomy.

Although material factors such as wealth status and resource utilization are influential to evaluating reproductive autonomy, they should be investigated along with the experience of agency within an individual’s life in order to holistically portray the process of desired outcome achievement. For example, Hanmer and Klugman find that among women in multiple developing countries, agency on the household level is associated with a higher likelihood of sexual autonomy and that while the level of agency is higher for those in higher socioeconomic groups this is only a slight difference.⁶³ Similarly, in their review of the literature on women’s decision-making autonomy around healthcare, Osamor and Grady conclude “autonomy that supports health care decision-making is associated with better health outcomes”.⁶⁴ The research they compile and scrutinize corroborates this hypothesis that decision-making autonomy and personal agency are indicators of reproductive autonomy.

Hypothesis 3 - Higher levels of information resource exposure will be associated with higher levels of reproductive autonomy.

Finally, hypothesis number three originates in theories presented in the socio-ecological health model and capabilities approach theories which combined suggest that the spheres of influence and access to resources dictate how personal freedoms are expressed among individuals.

This hypothesis seeks to investigate the extent of family planning information exposure and general information and media exposure and the subsequent association with reproductive autonomy. Indicators for this hypothesis include hearing about family planning from a formal health worker and the radio and frequency of general media exposure which includes watching tv reading the news and listening to the radio. Whether or not family planning information is distributed (by whom and how) and to what extent women are exposed to general information, are key to investigating the extent of female reproductive autonomy. Formal research in other developing countries around mass media and reproductive autonomy “found [it] to be a strong predictor

60 Saleem, Azhar, and G. R. Pasha. “Women’s Reproductive Autonomy and Barriers to Contraceptive use in Pakistan.” *The European Journal of Contraception & Reproductive Health Care* 13, no. 1 (2008): 83-89.

61 Stephanie R. Psaki, Erica K. Chuang, Andrea J. Melnikas, David B. Wilson, and Barbara S. Mensch. “Causal Effects of Education on Sexual and Reproductive Health in Low and Middle-Income Countries: A Systematic Review and Meta-Analysis.” *SSM-population health* 8 (2019): 100386.

62 Tilahun, Tizta, Gily Coene, Stanley Luchters, Wondwosen Kassahun, Els Leye, Marleen Temmerman, and Olivier Degomme. “Family Planning Knowledge, Attitude and Practice Among Married Couples in Jimma Zone, Ethiopia.” *PloS one* 8, no. 4 (2013) 1.

63 Lucia Hanmer, and Jeni Klugman. “Exploring Women’s Agency and Empowerment in Developing Countries: Where Do We Stand?.” *Feminist Economics* 22, no. 1 (2016): 237-263.

64 Osamor, Pauline E., and Christine Grady. “Women’s autonomy in health care decision-making in developing countries: a synthesis of the literature.” *International journal of women’s health* 8 (2016): 191.

of reproductive health service utilization in developing countries”.⁶⁵ Such research underlies the importance of information autonomy that this hypothesis seeks to address.

Methodology

Data

Data from the two most recent Demographic and Health Surveys collected in Honduras are used in this study. The DHS program, established by the United States Agency for International Development’s (USAID), gathers nationally representative survey data within primarily developing countries around the world. The main goal of these surveys is to advance “global understanding of health and population trends in developing countries”.⁶⁶ The research in this thesis aligns with DHS goals of analyzing population and health data to facilitate the use of data for planning and policy purposes.

Survey data is collected by USAID trained interviewers who speak the national language of each country and are completed in the home of the respondents. Interviewers obtain consent to collect data and are trained to maintain consistency in data collection by asking all questions in the same manner for every respondent and maintain confidentiality. In most cases, interviewers are of the same genders as the respondents they are interviewing, and interviews are conducted privately with respondents or under otherwise confidential circumstances.

The specific datasets used in this primary analysis are from DHS data collection Phase V and VI. One phase of data is collected every five years. Data file number one, named by the DHS: HNK52FL, is the Children’s Recode Survey data gathered in Honduras by the DHS program between 2005 and 2006 and is represented in this study as ‘05/06.’ This sample size for this survey is $n=10,800$ and includes women of reproductive ages, from 16-49, who have had a birth prior to the interview. Data file number two, named HNK62FL, consists of the same questions, with a few variations in questions or wording, within the same population but gathered between 2011 and 2012. This survey includes a sample size of $n=10,888$ and is represented in this study as ‘11/12.’ The sample size for the combined datasets used is $n=21,688$.

Once data is collected from the representative sample of households, the DHS transforms the data from individual respondents into a standardized recode dataset. The original coding system employed by the DHS was first used in this study to identify relevant variables and reveal descriptive statistics. Then a unique coding system was developed to recode and categorize these variables. Responses that were originally characterized by DHS as ‘missing, don’t know, unsure or not applicable’ were omitted from the recoding and thus are not included in this study. Dependent variables were chosen by applying the utilized definition of reproductive autonomy along with the research framework, map and hypothesis. The dependent variables *knows fertility*, *last birth* and *decision-maker for contraceptive use* aim to reveal the factors associated with reproductive autonomy while the variables *total children per woman (total children)* and *contraceptive use* provide context about factors associated with demographic trends among the population.

Variables

The first dichotomous variable presented in the data is contraceptive use. This variable is coded by the DHS into separate categories (see table 1). The variable was then re-coded for use in this study as either 0 not using or 1 using modern or traditional method. This is coded as such to acknowledge the importance of validity of traditional and modern methods as they both facilitate control over reproductive desires. This variable is used to contextualize factors associated with contraceptives.

The dependent variable associated with total children ever born referred to here as *Total Children* is the only continuous dependent variable in this study because it is answered by respondents in numeric terms. The original coding of this variable created by the DHS was used in the statistical analysis as it reflects the number of children born to each respondent. Similar to contraceptive use this variable is employed to contextualize the factors associated with birth trends among the population.

⁶⁵ Mosiur Rahman, Keiko Nakamura, Kaoruko Seino, and Masashi Kizuki. “Intimate partner violence and use of reproductive health services among married women: evidence from a national Bangladeshi sample.” BMC public health 12, no. 1 (2012): 1-12.

⁶⁶ DHS Program “Who We Are” <https://dhsprogram.com/who-we-are/About-Us.cfm>

The decision maker for contraceptive use is the third dependent variable used in this iteration and is categorized as *Decision Maker*. This variable falls under the agency category of the conceptual map (Fig.1) as communication with partners around contraceptive use as well as agency for a woman to either decide for herself or in cooperation is an essential part of reproductive autonomy. Because this variable includes a specific sub-population— only women who are using modern contraceptives methods— are asked this question. Therefore, the number of observations for this dependent variable are lower than the other DVs. Responses were coded as either 0- she is not the main decision-maker for her own contraceptive use or 1- she is the main decision-maker for her own contraceptive use.

The feelings towards last birth, characterized here as *Last Birth*, is used as a primary dependent variable. This variable provides key information about the association between socioeconomic and ecological factors and opinion on Last Birth because responses are categorized in three ways. The variation in possible answers allows closer analysis of the specific association between independent variables upon Last Birth. This variable falls in the outcome section of the theoretical framework (Fig.1) because it reveals the respondent's feelings towards birth timing and family size outcomes. Responses for this variable were coded in a binary format either 0- wanted last birth at time of birth or 1- wanted later or not all.

The variable coded here as *Knows Fertility* asks respondents at what point in their menstrual cycle, they are most fertile, or most likely to become pregnant. Respondents were given a number of options to choose from which categorize different points in the cycle either such as 'during her period' 'after period ended' 'middle of the cycle.' These responses were then recoded in binary terms to reflect those who either answered the question incorrectly coded as 0 and 1 coded as correctly stating 'middle of the cycle.'

Independent variables were placed into 4 different models corresponding to the outlined theories of resources and agency or functioned as demographic controls. Some variables were dropped due to their inclusion within other variables or for multicollinearity. For example, the primary variable for wealth includes a conglomerate of other variables within it and thus associated variables were dropped as necessary. The DHS guide describes how, "the wealth index is calculated using data on a household's ownership of selected assets," and includes data from questions such as "the household's ownership of a number of consumer items such as a television and car[...]flooring material; type of drinking water source; toilet facilities; and other characteristics that related to wealth status." Inclusion criteria centered around appropriate numbers of observations as some variables were dropped due to lack of responses, therefore the research is limited to those variables with relatively high response rates.

Study Design

This study employs a quantitative design based on outlined theories to test existing survey data. A non-experimental longitudinal analysis is primarily utilized to identify and investigate the factors associated with higher levels of reproductive autonomy between the two surveys. This longitudinal design utilizes repeated measurements by the DHS on the same population to reveal patterns over time. Survey data is mostly analyzed with both the 05/06 and 11/12 surveys combined. For the dependent variable with the most differences in associated independent variables the datasets are analyzed independently in a comparative cross-sectional manner (see tables 6.0-6.2 for the variable with the most differences observed between the surveys and appendix for expanded longitudinal results of other variables).

Statistical models were calculated with Stata 16.1 statistical analysis software for primary analysis (StataCorp, College Station, TX licensed to UC Berkeley). Binary logistic regression tests are primarily utilized to predict the relationship between independent variables and dichotomous outcome variables that are statistically significant. These regression models estimate the likelihood of association between the variables. One linear regression test is used on the continuous dependent variable referred to as *Total Children*. The first statistical model assesses bivariate relationships between variables and years educated. The second model includes family planning information access and health care decision-maker variables. Models 3 and 4 include control variables for household characteristics, birth history and family size preferences.

Results

Descriptive statistics for social and economic as well as reproductive and contraceptive use outcomes are first evaluated in Table 1. Bivariate correlation tests for independent variables showing collinearity — to verify necessary omission from multivariate tests — are available in Appendix A. Due to the low number of observed differences in OR results between the two datasets, all but one dependent variable (*decision-maker*) are presented with both datasets combined. This allows for succinct analysis of results. Tables 2-5 shows the results of logistic regression tests with combined datasets. Results tables for the logistic regression tests on isolated datasets can be found in Appendix B. Results for *decision-maker* are shown with datasets separated to reflect the differences in outcomes are shown in tables 6.0 and 6.1. The table showing *decision-maker* results with datasets combined can be found in Appendix C. Note that the sample population for *decision-maker* deviates significantly from the other tests due to the sup-population that it includes; only women who are using contraceptives. Statistically significant outcomes (where $p \leq 0.05$) are signified with asterisks (*) and are bolded in tables.

Keys at the bottom of each table reflect the correspondence between the number of asterisks and associated p-value. Odds ratios (OR) that are greater than 1 have a likely association with an increase in dependent variable outcomes and odds ratios that are less than 1 have a less likely association. Table 3 shows the results for linear regression tests on the variable *Total Children*. Linear regression tests produce coefficient results however results from this specific test have been transformed into OR format for consistency among tests and analytic preference. Therefore these results are interpreted in line with OR results as previously mentioned.

Table 1 - Descriptive Statistics

Table 1 shows the significant increase in modern contraceptive usage when moving from data collected in 06 to data from 12 with an overall increasing change of 12.5 percent. Literacy rates also increase when moving from the older dataset to the new one, shown through a 6.6 percent decrease in respondents who cannot read at all. Additionally, there is an increase in the number of women who are the primary decision-maker for contraceptive use when moving chronologically, increasing from 693 to 1075 women who make the decision alone. There is also a clear increase in the number of partners who know that respondents are using contraction when analyzing chronologically, increasing 2,105 over the five-year period. There is an increase in the number of women who desired their last child at the time of birth, with a total increase of 8.3 percent citing desired last birth at time of actual birth. Finally, we also see an increase in the number of women who access contraceptives from a local government facility, growing from 3,043 to 4,343.

The average age of a respondent at first birth between both datasets is 19.1 years old and the average number of children born per respondent averages between datasets at 3.3 children, with a significant drop observed in the five years under observation with movement from 3.6 in 05/06 to 2.97 in 11/12. The majority of respondents live in rural areas at 67.7 percent. This majority is a bit higher than the national average of people living in rural areas. At the time of data collection which was 50.76 percent in 2006 and 46.8 percent in 2012. The four most commonly cited reasons for contraceptive non-use when looking at the surveys combined, were not married, respondent opposed, husband opposed or fear of side effects. The 11/12 survey was the only one that asked questions about religion and in terms of reason for non use religious prohibition was cited as the third most common reason for contraceptive non-use. There was only a slight increase in women who were knowledgeable about their fertility window from the earlier survey compared to the later one and overall less than 10% of respondents correctly answered this question.

Table 1 - Descriptive Statistics (*FP = family planning*)

<u>Variable name and code</u>	<u>Dataset #1: 2006</u>	<u>Dataset #2: 2012</u>	<u>Combined Datasets</u>
# of total observations	10,800	10,888	21,688
Highest education is primary(v106)	7,775 (72%)	6,936 (63.7%)	14,711 (67.8%)
Women living rural (v025)	7,481 (69.3%)	7,207 (66.2%)	14,688 (67.7%)
Religion (v130)	—	4,792 catholic 4,807 Evangelical/ protestant (88.2% total religious)	—
Head of house (is male) (v151)	8,887 (82.2%)	8,682 (79.7%)	17,569 (81%)
Avg number of children (v201)	3.6 per woman	2.97 per woman	3.3 per woman
Age at 1st birth (v212)	19.0 yrs. old	19.18 yrs. old	19.1 yrs old
Ever terminated a preg; yes(v228)	1,740 (16%)	1,624 (14.2%)	3,364 (15.5%)
Literacy/ cannot read at all (v155)	1,904 (17.6%)	1,194 (11%)	3,098 (14.3%)
Using modern FP method (v313)	4,857 (45%)	6,259 (57.5%)	11,116 (51.3%)
Wanted last child at time of birth (v367)	4,834 (44.8%)	5,781 (53.1%)	10,615 (48.9%)
Avg age at first marriage (11/12 defines it as first cohabitation w partner) (v511)	17.79 yrs old	18.04 yrs old	17.92 yrs old
Agree men must accept more responsibility for family planning/support fp efforts	10,313 (95.5%)	10,364 (95.2%)	20,677 (95.3%)

Ministry of health should develop more programs for FP (s824d/ 12=s824a3)	10,096 (93.5%)	10,249 (94.13%)	20,345 (93.8%)
Last word on use of FP (s823f)	1,096 respondent alone	—	—
Last word on # of children (s823e)	903 respondent alone	—	—
Fertility preference, (v602)	5,101 no more (47.2%)	4,265 no more (39.2%)	9,366 no more (43.2%)
Ideal number of children (=3) (v614)	3,265 (30.2%)	3,466 (31.8%)	6,731 (31%)
V621 husbands desire for children	4,456 same as respondents 1,641 more 879 less	4,064 same 1,802 More 826 Less	8,520 same 3,443 More 1,705 Less
V632 decision maker for contraception	693 mainly her 400 mainly partner 4,303 joint	1,075 mainly her 704 mainly partner 4,790 joint	1,768 mainly her 1,104 mainly partner 9,093 joint /12,025 responses
V634 husband knows respondent is taking contraceptive- yes	4,348 (40.26%)	6,453 (59.26%)	10,801(49.8%)
V626a unmet need for contraception	Spacing 1,159 (10.73%) Timing 1,298 (12.02%)	Spacing 764 (7.02%) Timing 484 (4.45%)	Unmet need for: Spacing 840 (7.71%) Limiting 519 (4.77%)
(v225) Current pregnancy wanted at current time	266 out of 758	256 out of 628	522 out of 1386
(v362) Does not intend to use contraceptive	842 (17.06%)	361 (9.82%)	1,203 (5.5%)
(V384) heard family on radio last few months- Yes	6,446 (59.6%)	4,947 (45.43%)	11,393 (52.53%)
V327- source for last method-	3,043 gov clinic/ pharm 1,084 private clinic	4,343gov clinic/ pharm 637 private clinic	7,386 gov clinic

V312-Contraceptive use and method	Not using 4,935 Pill 945 IUD 486 Injections 1,847 Condoms 301 Female sterilization 1,238 Male sterilization 5 Periodic Abstinence 319 Withdrawal 672 Other 9 Lactational amenorrhea 35 Fixed days 8	Not using 3,676 Pill 994 IUD 602 Injections 2,679 Condoms 484 Female sterilization 1,489 Male sterilization 7 Periodic Abstinence 237 Withdrawal 695 Other 16 Implants/Norplant 1 Lactational amenorrhea 3 Fixed days 5	Not using 8,611 Pill 1,939 IUD 1,088 Injections 4,526 Condoms 785 Female sterilization 2,727 Male sterilization 12 Periodic Abstinence 556 Withdrawal 1,367 Other 25 Implants/Norplant 1 Lactational amenorrhea 38 Other modern method/Fixed days 13
V 313 Contraceptive method by type	No method- 4,935 (45.7%) Folkloric – 9 (0.0008%) Traditional – 999 (9.25%) Modern - 4,857 (44.97 %)	No method - 3,676 (33.76%) Folkloric – 16 (0.001%) Traditional – 937 (8.6%) Modern - 6,259 (57.48%)	No method - 8,611 (39.7%) Folkloric - 25 (0.12%) Traditional - 1,936 (8.93 %) Modern - 11,116 (51.25%)
V217 Knows the point in her cycle she is most likely to get pregnant v=3 (knows fertility)	Doesn't know or wrong answer 9,923 (92.01%) Knows correct answer (between periods) 862 (7.98%)	Doesn't know or wrong answer 9,801 (90%) Knows correct answer (between periods) 1,087 (9.9%)	Doesn't know or wrong answer (19,739) (91.1%) Knows correct answer (between periods) 1,949 (8.99%)

V376 Reason for non-use	Respondent opposed 212 (17.17%)	Not married 86 (18.07%)	Not married 231 (13.5%)
	Not married 145 (11.74%)	Respondent opposed 65 (13.66%)	Respondent opposed 277 (16.19%)
	Fear side effects 118 (9.55%)	Religious Prohibition 52 (10.92%)	Husband opposed 152 (8.8%)
	Husband opposed 116 (9.39%)	Fear of side effects 43 (9.03%)	Fear side effects 161 (9.41%)

Table 2 - Logistic regression model predicting contraceptive use association (surveys combined)

The data displayed odds ratios for factors associated with contraceptive use (modern or traditional type). The chances of contraceptive use were high for individuals with more years of education. Similarly, the odds of contraceptive usage was positively associated with hearing about family planning on the radio or television.

Additionally, the data describe low association of chances of contraceptive with women who talked to a health worker in the last 12 months, live in more rural areas, are less wealthy, were relatively older at the time of their first birth, had an ideal number of children, and who gave birth in the last five years or one year.

Independent Variables	(1) CPT_use	(2) CPT_use	(3) CPT_use	(4) CPT_use
Years educated	1.088*** (0.005)	1.089*** (0.006)	1.050*** (0.007)	1.048*** (0.007)
makes independent decision about accessing healthcare		0.931 (0.040)	0.920 (0.040)	0.891** (0.040)
Health worker talked about FP		0.864*** (0.032)	0.885** (0.034)	0.922* (0.036)
Heard FP on radio		1.102** (0.041)	1.119** (0.044)	1.118** (0.044)
Sex of household head			0.521*** (0.030)	0.503*** (0.029)
Age of household head			0.994** (0.002)	0.993*** (0.002)
Relationship to household head			0.984 (0.031)	0.997 (0.032)
Lowest wealth status (compared to highest wealth)			0.734** (0.075)	0.769* (0.080)
2 nd lowest wealth			0.915 (0.088)	0.921 (0.090)
3 rd lowest wealth			0.980 (0.088)	0.970 (0.088)
4 th lowest wealth			0.946 (0.081)	0.928 (0.080)
Frequency of News			1.042 (0.028)	1.042 (0.029)
Frequency of Radio			0.939* (0.024)	0.944* (0.025)

Frequency of TV			1.234***	1.218***
			(0.033)	(0.033)
Place of residence rural			0.850**	0.870*
			(0.048)	(0.050)
Respondents Age			1.019***	1.020***
			(0.004)	(0.004)
Age at first cohabitation or marriage			0.996	1.036***
			(0.006)	(0.011)
Seen health worker in last 12 mo			1.123	1.139
			(0.081)	(0.083)
Family planning covered by insurance			1.063	1.060
			(0.102)	(0.103)
Births in last 5 yrs				0.932*
				(0.030)
Births in last 1yr				0.613***
				(0.025)
Age at first birth				0.952***
				(0.010)
Respondents Ideal # of Children				0.908***
				(0.013)
Constant	1.431***	1.469***	1.740***	3.946***
	(0.045)	(0.060)	(0.282)	(0.711)
Observations	14,397	14,397	14,396	14,396

Standard error in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Table 3 Regression model predicting Total Children association (combined surveys)

The data displayed odds ratios for factors associated with total number of children. The chances of having more children were lower for women with high levels of education and those who talked to a health worker about family planning.

In the second model, it is evident that the odds of having a high number of children is less likely associated with hearing family planning information on the radio or television, being a female head of household, giving birth at an older age, and having births in both the last five years or one year.

Across all of the models those in the three lowest wealth status categories, compared to the highest wealth category, were likely associated with having more children. The fourth lowest wealth status category was only likely associated in the first model with this variable, model 3.

Higher rates of total children were less likely associated with women when they had their first birth at an older age and when they first cohabitated with a partner at an older age. Having health insurance that covered family planning resources was only statistically significant for this variable in the third model and was less likely associated with total children. Older women and those who have a higher ideal number of children were more likely to have more total children.

	(1)	(2)	(3)	(4)
Independent Variables	Total children	Total children	Total Children	Total Children
Years educated	0.783***	0.784***	0.940***	0.973***
	(0.004)	(0.004)	(0.003)	(0.003)

makes independent decision about healthcare	1.073 (0.045)	1.009 (0.024)	1.007 (0.019)
Health worker talked about FP	1.086* (0.040)	1.136*** (0.024)	1.067*** (0.018)
Heard FP on radio	1.618*** (0.059)	1.026 (0.022)	1.007 (0.017)
Sex of household head		0.923* (0.030)	0.978 (0.025)
Age of household head		1.003** (0.001)	1.003*** (0.001)
Relationship to household head		0.976 (0.017)	1.010 (0.014)
Lowest Wealth status (compared to highest wealth)		2.006*** (0.108)	1.490*** (0.062)
2nd lowest wealth		1.482*** (0.074)	1.274*** (0.049)
3rd lowest wealth		1.290*** (0.058)	1.141*** (0.040)
4th lowest wealth		1.100* (0.046)	1.044 (0.034)
Frequency of News		1.016 (0.015)	1.018 (0.011)
Frequency of Radio		0.992 (0.014)	1.016 (0.011)
Frequency of TV		0.855*** (0.013)	0.907*** (0.011)
Place of residence rural		0.939* (0.028)	0.971 (0.023)
Age of Respondent		1.326*** (0.003)	1.345*** (0.002)
Age at first cohabitation or marriage		0.785*** (0.002)	0.945*** (0.004)
seen health worker in last 12 mo		1.047 (0.042)	1.031 (0.032)
Family planning covered by insurance		0.891* (0.041)	0.964 (0.035)
Births in last 5 yrs			2.593*** (0.036)
Births in last 1yr			1.218*** (0.021)
Age at first birth			0.790*** (0.003)
Respondents Ideal # of Children			1.070*** (0.007)
Constant	111.084*** (3.570)	80.843*** (3.304)	0.860 (0.075)
Observations	14,397	14,397	14,396
R-squared	0.159	0.170	0.839

Standard error in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Table 4 Logistic regression model predicting Desire for Last Birth association (combined surveys)

Beginning with the main explanatory variable, the data shows more years educated is likely associated with a desire for the last birth. Women who make independent decisions about accessing healthcare, aren't the head or wife of the head of their household and live in rural areas were less likely associated with desiring their last birth.

Additionally, those who had health insurance that covered family planning resources and those who were older during their first cohabitation were both likely associated with desire for last birth but only in the third model. Women who said they had a high frequency of watching television, were relatively older, and saw a health worker in the previous year were likely associated with this indicator as well.

Although a birth in the last year was likely associated with desire for their last child at the time of birth, those with births in the last five years were significantly less likely associated with claiming this desire. Finally, those who had their first child at an older age or had a higher ideal number of children overall were likely associated with a desire for their last child.

Independent Variables	(1) Last Birth	(2) Last Birth	(3) Last Birth	(4) Last Birth
Years educated	1.044*** (0.005)	1.047*** (0.005)	1.019** (0.006)	1.001 (0.006)
makes independent decision about accessing healthcare		0.792*** (0.031)	0.797*** (0.032)	0.814*** (0.034)
Health worker talked about FP		0.978 (0.033)	0.968 (0.034)	0.990 (0.036)
Heard FP on radio		0.978 (0.033)	1.002 (0.036)	1.033 (0.039)
Sex of household head			1.032 (0.056)	0.999 (0.056)
Age of household head			0.999 (0.002)	0.999 (0.002)
Relationship to household head			0.932* (0.027)	0.899*** (0.027)
Lowest wealth status (compared to highest wealth)			0.895 (0.079)	1.020 (0.095)
2 nd lowest wealth			0.862 (0.071)	0.899 (0.077)
3 rd lowest wealth			0.989 (0.074)	1.053 (0.082)
4 th lowest wealth			0.981 (0.068)	1.000 (0.072)
Frequency of News			0.992 (0.024)	0.985 (0.025)
Frequency of Radio			1.033 (0.024)	1.007 (0.024)
Frequency of TV			1.155*** (0.028)	1.128*** (0.029)
Place of residence rural			1.296*** (0.064)	1.205*** (0.062)

Respondents Age				0.977*** (0.003)	0.960*** (0.003)
Age at first cohabitation or marriage				1.042*** (0.005)	0.989 (0.009)
Seen health worker in last 12 mo				1.142* (0.076)	1.170* (0.082)
Family planning covered by insurance				1.188* (0.092)	1.136 (0.091)
Births in last 5 yrs					0.351*** (0.012)
Births in last 1yr					1.343*** (0.053)
Age at first birth					1.084*** (0.011)
Respondents Ideal # of Children					1.185*** (0.017)
Constant	0.835*** (0.025)	0.888** (0.034)	0.774 (0.111)		2.135*** (0.355)
Observations	14,397	14,397	14,396		14,396

Standard Error in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Table 5 Logistic regression model predicting Knowledge of Fertility association (combined surveys)

The data in table five reflects the factors that are associated with those respondents who knew the point in a woman's menstrual cycle when they are most fertile. Evidently, those with more years in formal education and those who made decisions about their own access to healthcare were likely to have this knowledge.

Women in the lowest, 3rd lowest and 4th lowest wealth categories when compared to the highest wealth category were less likely associated with having this fertility knowledge. A respondent was likely associated with this indicator when she cited watching television frequently, lived in a rural area, or had births in the last 5 years or 1 year.

Independent Variables	(1) Knows Fertility	(2) Knows Fertility	(3) Knows Fertility	(4) Knows Fertility
Years educated	1.186***	1.183***	1.142***	1.137***
	(0.008)	(0.008)	(0.011)	(0.011)
makes independent decision about accessing healthcare		1.187**	1.147*	1.137*
		(0.076)	(0.075)	(0.074)
Health worker talked about FP		0.967	0.987	1.009
		(0.058)	(0.060)	(0.062)
Heard FP on radio		1.101	1.044	1.044
		(0.065)	(0.065)	(0.065)
Sex of household head			1.037	1.025
			(0.091)	(0.090)
Age of household head			1.000	1.000
			(0.003)	(0.003)
Relationship to household head			1.043	1.044

			(0.051)	(0.051)
Lowest wealth status (compared to highest wealth)			0.628**	0.654**
			(0.091)	(0.096)
2 nd lowest wealth			0.815	0.829
			(0.102)	(0.104)
3rd lowest wealth			0.721**	0.730**
			(0.080)	(0.081)
4th lowest wealth			0.764**	0.768**
			(0.073)	(0.074)
Frequency of News			1.063	1.062
			(0.040)	(0.040)
Frequency of Radio			1.047	1.046
			(0.043)	(0.043)
Frequency of TV			1.202***	1.188***
			(0.056)	(0.055)
Place of residence rural			1.267**	1.270**
			(0.101)	(0.102)
Respondents Age			1.030***	1.026***
			(0.006)	(0.006)
Age at first cohabitation or marriage			1.008	0.987
			(0.009)	(0.015)
Seen health worker in last 12 mo			1.127	1.137
			(0.133)	(0.135)
Family planning covered by insurance			1.161	1.151
			(0.116)	(0.116)
Births in last 5 yrs				0.885*
				(0.050)
Births in last 1yr				0.792***
				(0.054)
Age at first birth				1.028
				(0.016)
Respondents Ideal # of Children				0.982
				(0.025)
Constant	0.033***	0.031***	0.011***	0.015***
	(0.002)	(0.002)	(0.003)	(0.004)
Observations	14,397	14,397	14,396	14,396

Standard Error in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Table 6.0 and 6.1 Logistic Regression Models Predicting Decision Maker Association (05/06 and 11/12 datasets)

Tables 6.0 and 6.1 are shown side by side for comparison of the variance between the probability of association for the dependent variable *decision-maker*. Having more formal education was only associated with being the primary decision maker for contraceptive use in the 05/06 survey. Also for the 05/06 survey in isolation, the data reveals that hearing about family planning information on the radio was less likely associated with being the decision-maker. The 11/12 dataset shows that respondents who lived in households headed by females were likely to be their own decision makers. Among the latter dataset women who lived in rural areas and had births in the last one year were both less likely to be associated with being their own decision maker. Finally, in the isolated survey those who cited frequently listening to the radio were less likely to be their own decision maker.

The variables that had the same results between both surveys when they were isolated included findings such as higher age and being one's own decision maker for health is likely associated with also being their own

contraceptive decision maker. Conversely, women who first cohabitated with a partner at an older age or had their first birth at an older age were less likely associated with being the decision maker. Those who had a birth in the last five years showed a likely association with being the independent decision maker for use. Finally, those who had a higher ideal number of children were less likely to be associated with the *decision-maker* variable.

Table 6.0
(05/06)
dataset

VARIABLES	(1) dec_mkr	(2) dec_mkr	(3) dec_mkr	(4) dec_mkr
Years educated	0.964** (0.013)	0.954*** (0.013)	0.983 (0.019)	0.988 (0.019)
makes independent decision about accessing healthcare		1.713*** (0.173)	(0.175)	(0.169)
Health worker talked about FP		0.955 (0.093)	0.974 (0.097)	0.988 (0.099)
Heard FP on radio		0.801* (0.078)	0.798* (0.082)	0.790* (0.081)
Sex of household head			0.974 (0.168)	0.968 (0.168)
Age of household head			1.001 (0.005)	1.002 (0.005)
Relationship to household head			1.109 (0.097)	1.116 (0.098)
Lowest Socioeconomic wealth status (compared to highest)			0.883 (0.236)	0.825 (0.222)
2 nd lowest wealth			1.015 (0.249)	0.953 (0.235)
3 rd lowest wealth			1.183 (0.246)	1.103 (0.230)
4 th lowest wealth			1.198 (0.227)	1.148 (0.217)

Table 6.1
(11/12)
dataset

VARIABLES	(1) dec_mkr	(2) dec_mkr	(3) dec_mkr	(4) dec_mkr
Years educated	1.001 (0.009)	0.988 (0.009)	0.981 (0.012)	0.987 (0.012)
makes independent decision about accessing healthcare		2.322*** (0.179)	2.105*** (0.166)	2.074*** (0.165)
Health worker talked about FP		0.992 (0.074)	1.010 (0.078)	1.023 (0.079)
Heard FP on radio		0.934 (0.069)	0.944 (0.074)	0.937 (0.073)
Sex of household head			1.815*** (0.198)	1.823*** (0.200)
Age of household head			1.001 (0.004)	1.001 (0.004)
Relationship to household head			0.966 (0.061)	0.972 (0.061)
Lowest Socioeconomic status (compared to highest)			0.831 (0.149)	0.817 (0.147)
2 nd lowest wealth			0.920 (0.146)	0.921 (0.147)
3 rd lowest wealth			1.004 (0.144)	0.987 (0.142)
4 th lowest wealth			0.891 (0.121)	0.889 (0.121)

Frequency of News	0.952 (0.063)	0.955 (0.064)	Frequency of News	0.949 (0.048)	0.938 (0.048)
Frequency of Radio	0.896 (0.071)	0.902 (0.072)	Frequency of Radio	0.909* (0.039)	0.917* (0.040)
Frequency of TV	0.900 (0.065)	0.887 (0.065)	Frequency of TV	0.939 (0.051)	0.942 (0.051)
Place of residence rural	0.892 (0.125)	0.963 (0.136)	Place of residence rural	0.635*** (0.061)	0.656*** (0.064)
Respondents Age			Respondents Age	1.026*** (0.007)	1.031*** (0.007)
Age at first cohabitation or marriage			Age at first cohabitation or marriage		
		0.960 (0.015)		0.972* (0.011)	1.017 (0.018)
Seen health worker in last 12 mo			Seen health worker in last 12 mo		
	1.063 (0.199)	1.020 (0.193)		0.910 (0.137)	0.921 (0.138)
Family planning covered by insurance	1.247 (0.239)	1.259 (0.242)	Family planning covered by insurance	0.889 (0.138)	0.909 (0.142)
Births in last 5 yrs		1.222* (0.098)	Births in last 5 yrs		1.242** (0.083)
Births in last 1yr		1.176 (0.124)	Births in last 1yr		0.806* (0.069)
Age at first birth		0.937* (0.027)	Age at first birth		0.939** (0.018)
Respondents Ideal # of Children			Respondents Ideal # of Children		0.934*
		(0.030)	Religious	0.963 (0.121)	0.984 (0.124)
Constant	0.165*** (0.013)	0.172*** (0.019)	Catholic	1.055 (0.084)	1.077 (0.087)
Observations	4,254	4,254			
Standard error in parentheses					(0.028)
*** p<0.001, ** p<0.01, * p<0.05			Constant	0.192*** (0.013)	0.253*** (0.081)
				0.280*** (0.101)	

5,704	5,704	5,698	5,698
Standard error in			
*** p<0.001, ** p<0.01, * p<0.05			

Discussion

This study sought to evaluate the factors associated with reproductive autonomy over a five-year period in Honduras using a variety of dependent variables. As hypothesized, education is likely associated with a number of variables that are linked to reproductive autonomy. The research reveals the intense need for more widespread sexual education as seen through the low rates of menstrual cycle knowledge in the *knows fertility* variable. While there was no observed statistically significant association between religious categories and reproductive autonomy outcomes, religious prohibition was still among the top four reasons cited for non-use in the 11/12 survey. This calls for further research into the impact of religious affiliation on reproductive autonomy overall. Results discussed here refer to odds ratios from model 4 which includes control factors.

Hypothesis	Determination
1. Higher levels of education will be associated with higher levels of reproductive autonomy.	Accepted
2. Higher levels of personal agency will be associated with higher levels of reproductive autonomy.	Accepted
3. Higher levels of information resource exposure will be associated with higher levels of reproductive autonomy.	Inconclusive Results

Hypothesis 1

Due to the likely association between education and knowing fertility, using contraceptives and desiring the last birth, hypothesis number one is accepted. The results from 05/06 indicate that women who are more educated are also more likely to also be the main decision-maker for their own use of contraceptives. Additionally, the fact that education was less likely associated with more total children per respondent suggests that women who are more educated are more likely to have less children. While directionality of these results cannot be inferred from logistic regression, external research around this subject supports the conclusion that increased education reduces fertility among women.⁶⁷ Education can facilitate occupation opportunities which often lead women to forgo childbearing in pursuit of working. As literacy and informational independence around reproductive health improve in Honduras, the capability to deliver better health care options proliferates. Adoption and implementation of this infrastructure may often require more female representation in politics and socio-cultural spheres of influence.

Hypothesis 2

Observing the agency indicator, described here as ‘makes independent decision about healthcare’ the study confirms hypothesis 2 which predicted women who are the primary decision-maker around their own access to general healthcare also likely have reproductive autonomy. Women who knew their fertility were likely also independent in this decision (OR=1.137) however those who desired their last birth were slightly less likely to be associated with this outcome (OR=0.814). Although the fertility indicator supports the conclusion, the

⁶⁷ Shireen J. Jejeebhoy, “Women’s Education, Autonomy, and Reproductive Behaviour: Experience from Developing Countries.” OUP Catalogue (1995).

differentiation with the desire for birth outcome suggests that further investigation of the driving factors behind these connections are necessary. More definite conclusions around agency would require analysis of the motivating variables behind birth desires. As expected, women who made these decisions were highly likely to also be the primary decision-maker for their own contraceptive use, even when controlling for other factors (05/06 OR= 1.638, 11/12 OR=2.074).

Hypothesis 3

A lack of statistically significant results from media and family planning information variables indicate that hypothesis three is inconclusive. While results show a likely association between more frequency of watching tv and desiring last birth and knowing fertility, the other media variables, frequency of radio and news did not produce any statistically significant results. The likely association between watching television frequently and reproductive autonomy indicators reveals a need for more information around this connection. This connection may be in part due to socioeconomic status due to the high rates of poverty in the country and low prominence of televisions within a household, however further research is necessary to validate this suggestion. There was also a surprisingly low number of dependent variables which produced statistically significant results for the explanatory variable 'Heard FP on Radio' or seeing a health worker in the last year who talked about family planning. Women who saw a health worker who talked about family planning were less likely to use contraceptive bringing to light a number of questions about these results. The variation in results from these outcomes make it difficult to compile a concrete finding around information exposure and reproductive autonomy.

Other Significant Results

The findings from demographic and economic related measures contextualize the experience of reproductive autonomy for the poorest women in Honduras. As expected, given the high rates of out-of-pocket spending and cost concerns, as discussed in the literature review, the poorest women in this study were less likely associated with contraceptive use compared to those of the highest economic category. For example, when analyzing the four poorest wealth categories, the poorer a woman is, the more likely she is associated with having more children. Similarly, there was a spectrum of likelihood for knowledge of fertility when analyzing. This means that although all the poorest categories of women were not likely to know their fertility period, the odds of having this knowledge were lower in the lowest category, second lowest in the second status category and so on. This finding also supports widespread conclusions in public health like those presented by Marmot and Allen which suggest that health outcomes occur along a gradient according to wealth status where health status worsens gradually as socioeconomic status decreases.⁶⁸ High rates of poverty in Honduras threaten the accessibility of reproductive autonomy when affordable resources and reliable information are not made easily available for women,

Regression outcomes present an interesting association between reproductive autonomy and place of residence. These findings show that women living in rural areas are likely to know their fertility and desire their last birth. This is surprising because rural women often have less access to reproductive resources that can facilitate sexual health knowledge. Outcomes regarding desire may however be more impacted by social circumstances in rural communities than access to physical resources. This outcome suggests a need for more research to contextualize where the desire originates. Ethnographic research could help contextualize whether socio-cultural expectations or other social factors influence these desires. The data also shows that women in these areas are less likely associated with using contraceptives and especially in 11/12 were less likely to be associated with being the sole decision-maker of their contraceptive usage. Much of this may have to do with the economic and mobility factors described in the literature review. Specifically, the study by Hall et al. explored these factors in their extensive qualitative interviews taken during the same time period as this study.⁶⁹

The descriptive statistics reveal that an array of contraceptive options must correspond with improvements in sexual health knowledge resources and outcomes. Dehlendorf et al. articulate how "women have diverse preferences for the characteristics of their contraceptive methods, including adherence requirements, side effects,

68 Marmot, Michael, and Jessica J. Allen. "Social Determinants of Health Equity." (2014): S517- S519.

69 Marissa G. Hall, Jenna J. Garrett, and Clare Barrington. "La Situación Económica: Social Determinants of Contraceptive Use in Rural Honduras." *Global public health* 9, no. 4 (2014): 455-468.

efficacy, and route of administration” and thus in addition to acquiring knowledge about their bodies they must also have a diverse array of options regarding contraceptives.⁷⁰ This was shown in the numerous methods cited in the descriptive statistics as well as in the highly reported fear of side effects among non-users. The prevalence of the husband opposed reasoning for non-use additionally, suggests a need for widespread gender non-specific family planning and sexual health education resources. The clear popularity of injections as a modern method calls for further research to understand if women really do prefer this method or if they would choose something else when provided with other resources. This harkens back to ideas around limitation of choice presented by Tibaijuka et al., as discussed in the literature review.⁷¹ Women who are illiterate or otherwise unable to successfully use methods that require more maintenance are significantly limited in their choice of contraceptive methods. To make independent and informed choices about contraceptive use, women need numerous choices of methods along with basic skills like reading and counting, accessible information about their own bodies, the side-effects of such options and reliable local health facilities.

This study adds to previous research in the specific region and greater fields of public health and demography as it presents an organized methodology and concise results on the factors associated with reproductive autonomy for Honduran women. The significant changes in fertility rates, decreasing from 3.6 to 2.97 children per woman, in just five years may correlate with corresponding increases in education rates and increasing urbanization of the country as education and urbanization as discussed earlier, have been associated with improved resource access for women in particular. The empirical evidence found in this study represents a humanity that cannot go unacknowledged. Each data point represents a woman who has potentially suffered from a lack of equitable resources due to her own unchangeable status as the sex burdened with reproductive responsibilities.

Limitations

Conclusions drawn from this study are limited to the population and time period in which data was collected. Although this is the most recently available DHS data from Honduras, it does not speak to the current reproductive autonomy conditions in the country. The dramatic changes observed between the five years of empirical observation may suggest that significant changes have occurred in the almost decade since then. Additionally, attrition of the sample population during the five years between surveys may distort some of the combined data results as women age in and out of reproductive age.

Using a mixed methods approach was limited based on restricted access to the subject population but this could further assist in verifying the research results. The current ban on abortion within the country complicates the kind of definitive conclusions that can be drawn about terminated pregnancies. Although the surveys ask questions about terminated pregnancies, the results are impossible to differentiate between those that resulted from miscarriages or abortions.

Additionally, using pregnancy desire for last birth and evaluating birth intentions comes with underlying assumptions about a binary nature of intentions—specifically, this data modeling presumes that pregnancies are either wanted or not—when in reality these feelings are subject to far more dynamic life circumstances.⁷² Dr. Anu Manchikanti Gomez, a reproductive health researcher describes how “solely focusing on pregnancy wantedness and timing may neglect women’s expectations about how a pregnancy would impact their lives”.⁷³ While the findings of this research are not generalizable, they do provide a unique perspective into the decision-

70 Christine Dehlendorf, Reiley Reed, Edith Fox, Dominika Seidman, Cara Hall, and Jody Steinauer. “Ensuring our Research Reflects our Values: The Role of Family Planning Research in Advancing Reproductive Autonomy.” *Contraception* 98, no. 1 (2018): 5.

71 Leevan Tibaijuka, Robert Odongo, Emma Welikhe, Wilber Mukisa, Lilian Kugonza, Imelda Busingye, Phelomena Nabukalu, Joseph Ngonzi, Stephen B. Asiimwe, and Francis Bajunirwe. “Factors Influencing Use of Long-Acting Versus Short-Acting Contraceptive Methods Among Reproductive-Age Women in a Resource-Limited Setting.” *BMC women’s health* 17, no. 1 (2017): 1-13.

72 Christine Dehlendorf, Reiley Reed, Edith Fox, Dominika Seidman, Cara Hall, and Jody Steinauer. “Ensuring our Research Reflects our Values: The Role of Family Planning Research in Advancing Reproductive Autonomy.” *Contraception* 98, no. 1 (2018): 4-7.

73 Gómez, Anu Manchikanti, Bridget Freihart, Stephanie Arteaga, and Elodia Villaseñor. “Unpacking and Moving Beyond Ambivalence: A Qualitative Study of Young Couples’ Pregnancy Intentions.” In Annual meeting of the Population Association of America, Washington, DC. (2017).

making process and main contributing factors of the sampled population, and warrant a discussion of key points of improvement for increased reproductive autonomy.

Conclusions

Governmental policies must address the unique needs of women, especially those relating to reproductive autonomy such as legal access to contraceptive resources. Feminist-based research, or studies that specifically focus on the unique challenges faced by women, are necessary to advancing a woman's prominence in social, political and economic spheres of influence.

Findings from studies such as this research paper provide context for policies and programs which aim to alleviate the burden of reproductive responsibilities. For those women living in rural areas, extreme poverty, or both, these resources are essential to ensuring their upwards mobility. Scholars like Shapiro and Tambashe draw attention to the importance of educating women in such circumstances and its community-level implications, while Hanmer and Klugman offer a macro perspective, illuminating the global impact that well-defined resource programs can offer.⁷⁴ In all cases, the research compiled in this study underscores the primitive, universal, and underappreciated link between a woman and her reproductive autonomy.

The female identity is so closely tied to the responsibilities of reproduction that to continue making decisions, from the household to the bureaucratic level, without reverence for this tenant of womanhood is a disservice to all as it perpetuates a failure to ease the most basic inequality faced by all women.

In order for women to live the lives they choose, they must have institutionalized opportunities to learn about and take advantage of reproductive resources. Such resources must trickle down from powerful legislative measurement while also originating in grassroots initiatives that target inequities at the community level. Together, national policy and local relevance can uplift communities in their ubiquitous pursuit of equality and reproductive justice.

By studying and addressing the contributing factors to limited reproductive autonomy, actors in public health, politics, and community organizing can work towards dismantling prejudiced systems of power and education that closely correlate with rates of unintended pregnancy. A society's legacy is often defined by its pursuit or negligence of equality and decency -- these values, and more specifically a "commitment to gender equality and sexual liberalization proves time and again to be the most reliable indicator of how strongly that society supports principles of tolerance and egalitarianism".⁷⁵

This study leveraged empirical research to communicate the disempowerment of women as a result of their lack of informed access to reproductive resources. Science and research alone, however, only delineate the need for action. Local advocacy, social awareness, and widespread political change are required to ensure communities of women are no longer marginalized for their immutable traits.

Through these pillars of revolution, and serious implementation of policy to grant women the autonomy to acquire reproductive resources and the discretion to educate themselves about their biology, society can unlearn its standard of oppression and power imbalance.

74 Shapiro, David, and B. Oleko Tambashe. "Education, Employment, and Fertility in Kinshasa and Prospects for Changes in Reproductive Behavior." *Population Research and Policy Review* 16, no. 3 (1997): 259-287; Hanmer, Lucia, and Jeni Klugman. "Exploring Women's Agency and Empowerment in Developing Countries: Where Do We Stand?." *Feminist Economics* 22, no. 1 (2016): 237-263.

75 Ronald Inglehart, and Pippa Norris. "The True Clash of Civilizations." *Foreign Policy* (2003): 65.

Appendix

Appendix A correlation matrix

	yrs_edu	dec_hlth	wrkr_fp	hrdfrp_rdo	sex_hhhead	age_hhhead	rltshp_hhhnd
yrs_edu	1.0000						
dec_hlth	0.1325	1.0000					
wrkr_fp	-0.0305	-0.0235	1.0000				
hrdfrp_rdo	-0.0273	0.0064	0.1442	1.0000			
sex_hhhead	0.1029	0.1157	0.0042	-0.0199	1.0000		
age_hhhead	0.0230	0.0222	0.0129	0.0268	0.1922	1.0000	
rltshp_hhhnd	0.1248	0.0094	0.0132	-0.0417	0.1448	0.5940	1.0000
status1	-0.3995	-0.0996	0.0477	0.0445	-0.1003	-0.0269	-0.0626
status2	-0.1366	-0.0462	0.0298	0.0190	0.0025	0.0210	0.0097
status3	0.0389	0.0183	-0.0158	-0.0134	0.0307	0.0170	0.0257
status4	0.2414	0.0711	-0.0432	-0.0524	0.0504	-0.0103	0.0329
v157	0.3480	0.0821	-0.0212	0.0520	0.0603	0.0571	0.0768
v158	-0.0474	-0.0131	0.0379	0.2326	-0.0141	0.0336	0.0075
v159	0.4472	0.1092	-0.0546	-0.0728	0.0983	0.0061	0.0779
urb_rrl	-0.3969	-0.1485	0.0509	0.0422	-0.0788	0.0135	-0.0397
age	-0.1221	0.0112	0.0071	0.1277	-0.0861	0.1886	-0.2885
frst_chb	0.2919	0.0386	0.0101	0.0306	0.0094	0.0872	-0.0145
hlth_wrkr	-0.0613	-0.0381	0.1652	0.0771	0.0048	0.0231	0.0025
fp_ins	0.2991	0.0660	-0.0293	-0.0166	-0.0005	-0.0309	-0.0095
fveyr_brth	-0.1986	-0.0361	0.0581	0.0273	-0.0560	-0.0552	-0.0527
oneyr_brth	-0.0282	-0.0355	0.0718	-0.0127	-0.0128	-0.0285	0.0674
age_brth	0.3138	0.0393	0.0086	0.0335	0.0103	0.0804	-0.0184
idl_cld	-0.2662	-0.1028	0.0406	0.0496	-0.0812	0.0084	-0.1302

	urb_rrl	age	frst_chb	hlth_wrkr	fp_ins	fveyr_brth	oneyr_brth
urb_rrl	1.0000						
age	0.0307	1.0000					
frst_chb	-0.1339	0.3467	1.0000				
hlth_wrkr	0.0696	0.0311	-0.0149	1.0000			
fp_ins	-0.2478	0.0366	0.1635	-0.0258	1.0000		
fveyr_brth	0.1246	-0.0222	-0.0676	0.0329	-0.0934	1.0000	
oneyr_brth	0.0383	-0.1575	-0.0189	0.0187	-0.0238	0.3537	1.0000
age_brth	-0.1456	0.3434	0.8644	-0.0128	0.1723	-0.0981	-0.0258
idl_cld	0.2543	0.2607	-0.0754	0.0415	-0.1026	0.1472	0.0137

	age_brth	idl_cld
age_brth	1.0000	
idl_cld	-0.0916	1.0000

Appendix B isolated dataset binary logistic regression tests

Contraceptive Use

five and six					eleven and twelve				
	(1)	(2)	(3)	(4)		(1)	(2)	(3)	(4)
VARIABLES	cpt use	cpt use	cpt use	cpt use	VARIABLES	cpt use	cpt use	cpt use	cpt use
cpt use	.	.	.	.	cpt use	.	.	.	.
	(.)	(.)	(.)	(.)		(.)	(.)	(.)	(.)
years educated					years educated				
	(0.008)								
makes independent decision about accessing healthcare		0.923			makes independent decision about accessing healthcare			0.992	0.971
Health worker talked about FP					Health worker talked about FP				
Heard FP on radio					Heard FP on radio			1.106	1.100
Sex of household head					Sex of household head				
Age of household head					Age of household head				
Relationship to household head					Relationship to household head			0.937	0.947
Lowest					Lowest				
2nd lowest wealth					2nd lowest wealth			0.908	0.905
3rd lowest wealth					3rd lowest wealth			0.907	0.890
4th lowest wealth					4th lowest wealth			-0.118	
								0.912	0.914
Frequency of News					Frequency of News			1.097*	1.088*
Frequency of Radio					Frequency of Radio			1.030	1.038

Frequency of TV			Frequency of TV		
Place of residence rural			Place of residence rural	0.860	0.876
age			religion	0.947	0.965
Age at first cohabitation or marriage			catholic	0.968	0.978
Seen health worker in last 12 mo			age		
Family planning covered by insurance			Age at first cohabitation or marriage	0.996	1.032*
Births in last 5 yrs			Seen health worker in last 12 mo	1.000	1.022
Births in last 1yr			Family planning covered by insurance	0.854	0.858
Age at first birth			Births in last 5 yrs		1.053
Respondents Ideal # of Children			Births in last 1yr		
Constant	1.083 (0.046)	1.012	Age at first birth		
			Respondents Ideal # of Children		
Observations	6,854	6,854	Constant		
seEform in parentheses					
*** p<0.001, ** p<0.01, * p<0.05					
			Observations	7,542	7,532 7,532
			seEform in parentheses		
			*** p<0.001, ** p<0.01, * p<0.05		

Desire For Last Birth

five and six					eleven and twelve				
	(1)	(2)	(3)	(4)		(1)	(2)	(3)	(4)
VARIABLES	last_ brth	last_ brth		last_ brth		last_ brth	last_ brth	last_ brth	last_ brth
last birth	.	.	.	.	last birth	.	.	.	.
	(.)	(.)	(.)	(.)		(.)	(.)	(.)	(.)
years educated				0.999	years educated	1.014*		1.001	0.987
						(0.006)	(0.006)	(0.008)	(0.008)
makes independent decision about accessing healthcare					makes			0.816***	0.835**
							(0.043)	(0.046)	(0.049)
Health worker talked about FP					Health worker talked about FP		1.060	1.027	1.067
							(0.050)	(0.050)	(0.055)
Heard FP on radio				1.049	Heard FP on radio		1.055	1.048	1.082
							(0.050)	(0.052)	(0.056)
Sex of household head				1.110	Sex of household head			0.928	0.899
								(0.069)	(0.070)
Age of household head				0.997	Age of household head			1.000	1.001
								(0.002)	(0.003)
Relationship to household head				0.925				0.911*	0.880**
								(0.036)	(0.036)
Lowest Socioeconomic wealth status (compared to highest)					Lowest			0.986	1.101
								(0.117)	(0.136)
2nd lowest wealth					2nd lowest wealth			1.024	1.002
								(0.111)	(0.113)
3rd lowest wealth				0.861	3rd lowest wealth			1.155	1.167
								(0.116)	(0.122)
4th lowest wealth				0.945	4th lowest wealth			1.025	1.005
								(0.098)	(0.100)
Frequency of News				0.940	Frequency of News			1.060	1.073*
								(0.036)	(0.038)
Frequency of Radio				1.053	Frequency of Radio			1.065*	1.036
								(0.030)	(0.031)
Frequency of TV					Frequency of TV			1.067	1.048

			(0.036)	(0.037)
Place of residence		Place of residence		
rural		rural	1.306***	1.229**
			(0.085)	(0.083)
age		religion	0.987	0.979
			(0.080)	(0.083)
Age at first cohabitation or marriage	0.994	catholic	1.000	0.949
			(0.051)	(0.050)
Seen health worker in last 12 mo	0.964	age	0.979***	0.961***
			(0.004)	(0.005)
Family planning covered by insurance	1.024	Age at first	1.038***	0.984
			(0.007)	(0.012)
		Seen health worker in last 12 mo	1.269**	1.335**
Births in last 5 yrs			(0.116)	(0.129)
		Family planning covered by insurance	1.347**	1.271*
Births in last 1yr			(0.146)	(0.143)
		Births in last 5 yrs		0.349***
Age at first birth				(0.016)
Respondents Ideal # of Children		Births in last 1yr		1.357***
				(0.074)
Constant		Age at first birth		1.087***
				(0.014)
				1.183***
Observations	6,854			(0.023)
seEform in parentheses		Constant	0.873	2.331***
*** p<0.001, ** p<0.01, * p<0.05			(0.051) (0.061) (0.179)	(0.549)
			7,542 7,542 7,532 7,532	
		seEform in parentheses		
		*** p<0.001, ** p<0.01, * p<0.05		

Knows Cyclefive and
six

	(1) knws_ fert	(2) knws_ fert	(3) knws_ fert	(4) knws_ fert
knws_fert	.	.	.	.
years educated	(.)	(.)	(.)	(.)
	(0.013)	1.225*** (0.013)	(0.020)	(0.020)
makes		1.095 (0.108)	1.114 (0.111)	1.106 (0.111)
Health worker talked about FP		0.825* (0.078)	0.831 (0.080)	0.852 (0.082)
Heard FP on radio		1.361** (0.132)		1.428*** (0.144)
Sex of household head			0.877 (0.121)	0.867 (0.120)
Age of household head			1.005 (0.005)	1.005 (0.005)
			1.081 (0.081)	1.085 (0.082)
Lowest			0.617* (0.151)	0.666 (0.164)
2nd lowest wealth			0.712 (0.153)	0.743 (0.160)
3rd lowest wealth			0.665* (0.119)	0.689* (0.124)
4th lowest wealth			0.655** (0.098)	0.656** (0.098)
Frequency of News			1.005 (0.061)	1.001 (0.061)
Frequency of Radio			0.814** (0.063)	0.808** (0.063)
Frequency of TV				1.273** (0.099)

eleven and twelve

	(1) knws_ fert	(2)	(3)	(4) knws_ fert
knws_ fert	.	.	.	.
years educated	(.)	(.)	(.)	(.)
				1.117*** (0.014)
makes				1.203* (0.106)
Health worker talked about FP		1.082	1.086	1.112 (0.090)
Heard FP on radio		0.971	0.872	0.868 (0.071)
Sex of			1.136	1.131 (0.131)
Age of			0.997	0.998 (0.004)
			0.994	0.995 (0.064)
Lowest				0.604** (0.114)
2nd lowest wealth			0.884	0.885 (0.141)
3rd lowest wealth			0.760	0.756 (0.111)
4th lowest wealth			0.868	0.874 (0.113)
				1.110* (0.055)
				1.167** (0.058)
			1.116	1.113 (0.067)

Place of residence rural			1.287 (0.172)	1.299 (0.174)	Place of residence rural			1.285* (0.131)
age			1.015 (0.009)	1.013 (0.010)	religion		1.201	1.208 (0.184)
Age at first			1.000 (0.014)	0.966 (0.026)	catholic		1.129	1.124 (0.093)
Seen health worker in last 12 mo			1.208 (0.231)	1.198 (0.229)	age			1.034*** (0.008)
Family planning covered by insurance			1.052 (0.159)	1.046 (0.158)	Age at first		1.010	1.001 (0.019)
Births in last 5 yrs				0.849 (0.074)	Seen health worker in last 12 mo		1.050	1.067 (0.162)
Births in last 1yr				0.795* (0.083)	Family planning covered by insurance		1.239	1.229 (0.169)
Age at first birth				1.043 (0.028)	Births in last 5 yrs			0.947 (0.071)
				0.961 (0.038)	Births in last 1yr			0.782** (0.070)
Constant	0.022*** (0.002)			0.024*** (0.010)	Age at first birth			1.014 (0.019)
								1.003 (0.033)
					Constant			0.010*** (0.004)

Appendix C - Combined Results for Binary Logistic Regression Tests DV *Decision-Maker*

<i>combined</i>				
VARIABLES	(1) dec_mkr	(2) dec_mkr	(3) dec_mkr	(4) dec_mkr
dec mkr	.	.	.	.
	(.)	(.)	(.)	(.)
years educated	0.994	0.982*	0.992	0.999
	(0.007)	(0.007)	(0.010)	(0.010)
makes independent decision about accessing healthcare		2.021***	1.910***	1.862***
		(0.123)	(0.119)	(0.116)
Health worker talked about FP		0.999	1.019	1.032
		(0.059)	(0.061)	(0.063)
Heard FP on radio		0.832**	0.859*	0.850**
		(0.048)	(0.053)	(0.052)
Sex of household head			1.518***	1.510***
			(0.136)	(0.136)
Age of household head			1.002	1.002
			(0.003)	(0.003)
Relationship to household head			1.006	1.013
			(0.051)	(0.051)
Lowest Socioeconomic wealth status (compared to highest)			0.956	0.937
			(0.140)	(0.137)
2nd lowest wealth			1.048	1.036
			(0.139)	(0.137)
3rd lowest wealth			1.135	1.106
			(0.133)	(0.130)
4th lowest wealth			1.044	1.021
			(0.114)	(0.112)
Frequency of News			0.921*	0.917*
			(0.037)	(0.037)
Frequency of Radio			0.872***	0.881***
			(0.032)	(0.033)
Frequency of TV			0.936	0.933
			(0.040)	(0.040)
Place of residence rural			0.706***	0.739***
			(0.056)	(0.059)
age			1.028***	1.038***
			(0.006)	(0.006)
Age at first cohabitation or marriage			0.955***	0.999
			(0.009)	(0.015)
Seen health worker in last 12 mo			0.973	0.968
			(0.114)	(0.113)
Family planning covered by insurance			0.985	1.001
			(0.118)	(0.120)
Births in last 5 yrs				1.215***
				(0.062)
Births in last 1yr				0.939
				(0.062)
Age at first birth				0.936***

Respondents Ideal # of Children				(0.015) 0.886***
Constant	0.174*** (0.009)	0.167*** (0.011)	0.240*** (0.059)	(0.020) 0.295*** (0.081)
Observations	9,959	9,959	9,958	9,958

seEform in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Appendix D- Separated Results for Linear Regression Test DV Total Children (transformed to OR for analysis consistency)

five and six					eleven and twelve				
	(1) total_ chld	(2)	(3) total_ chld	(4)	VARIABLES	(1) total_ chld	(2) total_ chld	(3) total_ chld	(4) total_ chld
total children	.	.	.	.	total children	.	.	.	.
years educated	(.)	(.)	(.)	(.)	years educated	(.)	(.)	(.)	(.)
	(0.006)		(0.006)				(0.005)		(0.003)
makes			1.033		makes		1.058	0.960	0.968
Health worker talked about FP			(0.036)		independent decision about accessing healthcare		(0.055)		(0.023)
Heard FP on radio			(0.036)		Health worker talked about FP		1.081		(0.023)
Sex of household head			0.983		Heard FP on radio		(0.049)		(0.021)
Age of household head			(0.032)				(0.068)	0.991	0.982
			0.919		Sex of household head				0.961
			(0.045)						(0.031)
			1.003		Age of household head				1.002
			(0.002)		Relationship to household head				(0.001)
			0.975					0.990	1.018
			(0.027)		Lowest Socioeconomic wealth status (compared to highest)				(0.017)
Lowest			(0.206)						(0.080)
2nd lowest wealth			(0.146)		2nd lowest wealth				(0.057)
3rd lowest wealth			(0.103)		3rd lowest wealth				1.112*
4th lowest wealth			1.135*		4th lowest wealth			1.093	1.053
Frequency of News			(0.073)						(0.043)
Frequency of Radio			0.991		Frequency of News			0.998	1.001
			(0.022)		Frequency of Radio				(0.014)
			0.952						0.974*
			(0.026)						(0.012)

Frequency of TV			Frequency of TV		
	(0.021)			(0.013)	
Place of residence rural	0.981		Place of residence rural	0.969	
	(0.047)			(0.027)	
age			religion	1.028	1.015
	(0.004)			(0.035)	
Age at first			catholic	0.983	
Seen health worker in last 12 mo	1.057			(0.021)	
	(0.065)		age		(0.003)
Family planning covered by insurance	0.951	1.011	Age at first cohabitation or marriage		
	(0.066)			(0.005)	
Births in last 5 yrs			Seen health worker in last 12 mo	1.094	1.049
				(0.040)	
Births in last 1yr			Family planning covered by insurance	0.905*	
				(0.041)	
Age at first birth			Births in last 5 yrs		
				(0.043)	
			Births in last 1yr		(0.027)
Constant	(7.893)	(0.085)	Age at first birth		(0.004)
			Respondents Ideal # of Children		
				(0.008)	
seEform in parentheses	6,854	6,854	Constant	1.010	
*** p<0.001, ** p<0.01, * p<0.05	0.156	0.764		(2.870)	(0.037)
			Observations	7,542	7,542
			seEform in parentheses	0.149	0.160
				0.712	0.830
			*** p<0.001, ** p<0.01, * p<0.05		

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