

Transnational Issues in Women's Health and Well-being

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ABSTRACT

**TIA MARIA PALERMO: Transnational Issues in Women's Health and Well-being
Public Policy
(Under the direction of Krista Perreira)**

This dissertation investigates aspects of women's health and well-being in two countries. The first paper looks at the effect of a conditional cash transfer program on women's leisure time in Mexico. Whether polarization of abortion opinions is apparent across regions and has increased over time in Mexico are investigated in the second paper. The third paper involves primary data collection among recent Latina immigrants in North Carolina and investigates the dissemination of information on available reproductive health services as well as reproductive health practices among this population.

To my grandparents, Betty and Donald Jackson.

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TABLE OF CONTENTS

LIST OF TABLES	vii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS.....	x
Chapter	
1. INTRODUCTION	1
References	5
2. GENDER-SPECIFIC EFFECTS ON LEISURE OF A CONDITIONAL CASH TRANSFER PROGRAM	7
Introduction	7
Background	8
Methods	15
Results	25
Discussion	31
References	37
3. OPINIONS ON ABORTION IN MEXICO: HOW ARE THEY CHANGING AND HAS POLARIZATION OCCURRED ACROSS TIME AND REGIONS?	54
Introduction	54
Background	56

Theoretical Framework	64
Methods	69
Results	74
Discussion	79
References	86
 4. MEXICAN IMMIGRANT WOMEN’S EXPERIENCES WITH PREGNANCY, CONTRACEPTION, AND ABORTION IN NORTH CAROLINA.....	104
Introduction	104
Background	105
Theoretical Framework	116
Methods	119
Results	122
Discussion	141
References	149
APPENDICES	159

LIST OF TABLES

Table

2.1 Household Characteristics	42
2.2 Logit regression of household participation in Oportunidades.....	43
2.3 Descriptive statistics, females	44
2.4 Descriptive statistics, males	45
2.5 Number of hours spent weekly on activity, females.....	46
2.6 Number of hours spent weekly on activity, males	47
2.7 Propensity score matching, effects of Oportunidades on weekly time use.....	48
2.8 OLS regressions of female time use	49
2.9 OLS regressions of male time use	50
2.10 Average time spent per activity at each wave, by gender.....	51
2.11 Difference-in-difference estimates, females	52
2.12 Difference-in-difference estimates, males	53
3.1 Summary table of Monte Carlo simulations	93
3.2 Support for abortion, by year	94
3.3 Sample characteristics.....	95

3.4 Support for abortion rights by circumstance.....	96
3.5 Region-year interaction.....	99
3.6 Effects of maternal mortality rates, 2006.....	100
3.7 Effects of restrictive laws, 2006.....	101
3.8 Support for abortion rights in fetal deformity circumstance.....	102
3.9 Region-time interaction coefficients.....	103
4.1 Key question prompts	157

LIST OF FIGURES

Figure

4.1 Theoretical Framework.....	158
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LIST OF ABBREVIATIONS

CHIPRA	Children's Health Insurance Reauthorization Act
CONAPO	Consejo Nacional De Población (National Advisory on Population; Mexico)
D.F.	Distrito Federal (Mexico's Federal District; used interchangeably with Mexico City)
DHS	Demographic and Health Surveys
ENCASEH	Encuesta de características socioeconómicas de los Hogares (Survey of socioeconomic characteristics of households)
ENCEH	Encuesta Evaluación de los Hogares (Evaluation Survey of Households)
GIRE	Grupo de Información en Reproducción Elegida (Information Group on Reproductive Choice)
HIV	Human Immunodeficiency Virus
ICPD	International Conference on Population and Development
INEGI	Instituto Nacional de Estadística y Geografía
INSP	Instituto Nacional de Salud Pública (National Institute of Public Health [Mexico])
IPV	Intimate partner violence
IUD	Intrauterine device
LBW	Low birth weight
MDG	Millennium Development Goals
MMR	Maternal mortality ratio
MxFLS	Mexican Family Life Survey
NC	North Carolina
OLS	Ordinary least squares
PAN	Partido Acción Nacional (National Action Party [Mexico])

PRB	Population Reference Bureau
PRD	Partido de la Revolución Democrática (Party of the Democratic Revolution [Mexico])
PRI	Partido Revolucionario Institucional (Institutional Revolutionary Party [Mexico])
PROGRESA	Programa de Educación, Salud y Alimentación (Education, Health and Nutrition Program [Mexico])
PRWORA	Personal Responsibility and Work Opportunity Act
SGA	Small for gestational age
SSI	Supplemental Security Income
STI	Sexually-transmitted infection
TANF	Temporary Aid to Needy Families
UN	United Nations
US	United States
USAID	US Agency for International Development
WHO	World Health Organization
WIC	Women, Infants, and Children

CHAPTER 1: INTRODUCTION

International attention to women's health and well-being has been increasing over the past 15 years. In 1994, government delegations from 179 countries and representatives of civil society organizations met in Cairo, Egypt to hold the International Conference on Population and Development (ICPD). Participants developed a 20-year Programme of Action to invest in people and meet their health and development needs (Catino 1999). This Programme of Action has a rights-based focus and calls for sexual and reproductive health care to be available to all by 2015. It applies human rights principles to population policies and programs and states that gender equity and equality are essential for sustainable development. Then in 2000, world leaders met in New York to adopt the United Nations Millennium Development Declaration, which commits their nations to reduce extreme poverty and outlines eight Millennium Development Goals (MDGs) to achieve this aim (UN 2000). Two of these goals are specifically targeted at women, including Goal 3: Promote gender equality and empower women and Goal 5: Improve maternal health.

Both ICPD and the MDGs recognize that addressing gender equity is essential to development and reducing poverty. Contraceptive technology, the broadening of availability of contraceptives to unmarried women and adolescents, and increased liberalization of abortion laws have given women worldwide more control of their reproductive lives over the past 40 years. These advances and the increased control over family size that they afford are not equally available to all women. Stigmatizing opinions regarding women's reproductive health and lack

of information, resources, and access to health care impede many women from equally enjoying these gains and making decisions about their reproductive health.

This dissertation, consisting of three distinct essays, examines issues of gender equality and women's health and well-being in an effort to bring to light areas of concern and inform programs and policies to address these disparities. These topics are studied in two settings: Mexico and among the Mexican immigrant population in North Carolina. The essays focus on inequitable effects of an anti-poverty program, opinions on topics related to women's reproductive health and rights, and access to health care and health care behaviors among a vulnerable population.

Increasing gender equity is a secondary goal of Oportunidades, a conditional cash transfer program in Mexico intended to break the inter-generational cycle of poverty. However, program requirements impose costs on women not shared with men, which works in opposition to the program's stated goal. The first paper of this dissertation investigates the gender-specific effects of Oportunidades on leisure and other time-use activities. I perform this analysis using propensity score matching to develop a comparison group in order to determine program effects. I then perform longitudinal analysis to determine the effects of the program over time.

In Mexico abortion laws are highly restrictive in most states. Laws in Mexico generally only allow for abortion in cases of rape and when the woman's life is in danger. Even under circumstances in which exceptions to the prohibition of abortion exist, most women are unable to access safe, legal abortion because of lack of information, health care professionals' unwillingness to perform the procedure due to fear of legal action or due to their own personal beliefs, and complicated legal procedures required for gaining permission in the case of rape. Legal abortion was rarely practiced in Mexico prior to April 2007, and legal abortions are now

concentrated in Mexico City, the only federal entity in Mexico where abortion is legal without restriction as to reason during the first 12 weeks gestation. Clandestine abortion is widely practiced in Mexico, and these procedures often occur in unsafe¹ conditions. This situation not only contributes to an environment of secrecy and shame surrounding women's reproductive health in Mexico (Garcia et al. 2004), but may also contribute to Mexican immigrants' clandestine practices after migrating to the United States. The second essay examines opinions in Mexico regarding abortion and whether polarization of opinions regarding this topic has occurred over time. I look at individual and state-level factors affecting Mexicans' views on abortion. I perform this analysis using a nationally representative dataset, to which I have merged additional state-level variables, including maternal mortality ratios and a ranking of states' restrictions on abortion. This paper uses a heteroskedastic ordered probit model to evaluate correlates with abortion support, determine whether polarization has occurred across time, and examine whether some political and religious groups and regions are more polarized than others.

The final essay in this dissertation describes the dissemination of information about reproductive health care among Latina immigrants, in an effort to increase the flow of such information through informing program and policy initiatives. By conducting qualitative interviews with this population, I study how such information is disseminated among Latinas in North Carolina and describe reproductive health practices regarding pregnancy, contraception, and abortion in this community. Hispanics² are the fastest growing population in the US, and

¹ Unsafe abortion refers to the termination of an unintended pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards, or both (WHO definition).

² In this paper, I use the terms Hispanic and Latino interchangeably, giving preference to the term used by the original authors when citing other sources.

North Carolina has had a large influx of Hispanic immigrants over the past 19 years.

Preliminary research has identified issues of concern and difficulties facing recent Hispanic immigrants in North Carolina, a non-traditional immigrant receiving community. These include higher rates of unintended pregnancy and birth rates than non-Hispanic women, high rates of sexually transmitted infections, high rates of adolescent pregnancy, low rates of cervical and breast cancer screenings, self-medication of regulated drugs, and the suspicion that clandestine abortion is occurring among this population despite availability of the procedure in health clinics (Buescher 2003; Finer and Henshaw 2006; Koval, Aleman Riganti and Long Foley 2006; Martin et al. 2007; Martinez and Bazan Manson 2004; North Carolina Department of Health and Human Services 2004; Silberman et al. 2003; Talmi et al. 2005). Low rates of insurance, immigration restrictions on public insurance, language barriers, barriers to transportation, lack of knowledge, and cultural norms are factors that limit Hispanic immigrants' access to health care, including reproductive health care (Herrick and Gizlice 2004, Silberman et al. 2003, Talmi et al. 2005). Hispanic immigrants' lower rates of accessing available health care may either be a function of poverty and/or lack of awareness of services available, or it may be a function of attitudes and previous practices such as widespread self-medication, which is common in Mexico due to increased availability of medications without prescriptions, before moving to the US.

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CHAPTER 2: GENDER-SPECIFIC EFFECTS ON LEISURE OF A CONDITIONAL CASH TRANSFER PROGRAM

1. INTRODUCTION

Oportunidades (formerly known as PROGRESA, *Programa de Educación, Salud y Alimentación* (Education, Health and Nutrition Program)) is a targeted conditional cash transfer program in Mexico intended to break the cycle of inter-generational poverty by investing in health, nutrition, and education. While studies have shown that Oportunidades/PROGRESA has led to positive outcomes such as increased school enrollment, increased nutrition, decreased labor market participation among children, increased use of prenatal care, and increased knowledge and use of family planning methods among women with their partners (Parker, Todd and Wolpin 2006; Lamadrid-Figueroa et al. 2008; Berhman and Hoddinott 2005; Behrman et al. 2005; Parker, Behrman and Todd 2005; Hernandez Prado et al. 2005; Schultz 2004; Huerta and Hernandez 2000; Behrman et al. 2005; Schultz 2001; Gomez de Leon and Parker 2000; Parker and Skoufias 2000), some argue that Oportunidades may have unintended, negative effects on women or may not do enough to empower them (Molyneaux 2006; Adato et al. 2003)). This paper aims to estimate the effects of participation in Oportunidades on women's leisure and other time allocation using data from the Mexican Family Life Survey (MxFLS). Whether the program has inequitable costs or effects on leisure time for women but not men has implications, as the program purports to increase gender equity. I utilize propensity-score matching to

construct a comparison group for analysis of program effects on a cross-section and determine difference-in-difference estimates to analyze effects over time.

2. BACKGROUND

2.1 OPORTUNIDADES/PROGRESA

Oportunidades/PROGRESA was implemented to improve health, nutrition, and education among the poorest groups in Mexico. The program addresses these three areas together in an effort to combat intergenerational transmission of poverty. In doing so, the program recognizes that poverty is a multidimensional issue and that addressing all three issues simultaneously has greater social returns than addressing them each individually (Molyneaux 2006; Skoufias 2005). The program began in 1997 in rural areas under the name PROGRESA (*Programa de Educación, Salud y Alimentación* [Education, Health and Nutrition Program]). In 2000 the program was renamed Oportunidades and was extended to semi-urban areas in 2001 and to urban areas in 2002. By 2005, the program included over 5 million families and 25 million people in all of Mexico's 31 federal entities. Eligibility for participation in the program is determined according to a marginality index, which is designed to identify the poorest families within each community (Berhman, Sengupta, Todd 2005). Each household receives a discriminant score based on household characteristics such as household head's age, occupation, and education; family assets; characteristics of the dwelling such as crowding, floor and wall characteristics, water access, and lavatory; number of school-age children; and number of children. Then households are determined eligible for the program based on where their score falls relative to a cutoff on the marginality index, and cutoffs vary by region.

The program includes educational benefits and a health and nutrition component. The educational benefits consist of educational grants and monetary support for purchasing school materials. The health and nutrition component includes a basic package of primary health care services, nutrition and health education training for families and communities, improved supply of health services, and nutrition supplements for pregnant and lactating women and young children.

Bi-monthly cash transfers are disbursed to female heads-of-household, contingent on children being enrolled in school, families attending regular health visits, and women's attendance at monthly health promotion seminars. Mothers must also visit the clinics at least once a month to pick up supplements for targeted households members, and these visits are more frequent if they are pregnant or have small children (Skoufias 2005). Households headed by individuals without school-age children are also eligible for benefits, but these are lower as they do not include the education benefits (Skoufias 2005). The amount of the transfers depend on number and gender of the children, as payments are higher for girls and increase with increasing grade levels, due to higher opportunity costs of keeping older children and girls in school. The program's cash benefits are equivalent to approximately one-fifth of households' pre-program expenditures (Skoufias 2005). Mothers are required to attend health education seminars (*pláticas*) on topics such as prevention of health risks, malnutrition, immunizations, family planning, prenatal care, caring for newborns, breast and cervical cancer prevention, STI and HIV prevention, treatment during menopause, and treatment for infertility. They are also required to take their children in for regular health check-ups. Failure to comply with these requirements disqualifies families from receiving benefits. These health education seminars are intended to empower individuals and communities to have control over their own health.

In addition to expanding coverage to metropolitan areas, changes made when PROGRESA was converted to Oportunidades in 2000 include expanding the school scholarship program to include the preparatory level (upper secondary school). The program is described in more detail elsewhere (Skoufias and Di Maro 2008; Lamadrid-Figueroa 2008; Behrman and Skoufias 2006; Molyneaux 2006; Skoufias 2005; Behrman, Sengupta, and Todd 2005; Schultz 2004; Adato et al. 2003; Parker and Skoufias 2000).

Rigorous evaluation, encouraged by the program through systematic data collection, has shown Oportunidades/PROGRESA to have many successes. Contraceptive knowledge and use of family planning methods has increased among women with their partners (Lamadrid-Figueroa et al. 2008; Hernandez Prado et al. 2005; Huerta and Hernandez 2000), as has use of prenatal care in rural areas (Hernandez Prado et al. 2005). Additionally, the program has had a positive impact on children's school attendance and nutrition (Parker, Todd and Wolpin 2006; Behrman and Hoddinott 2005; Behrman et al. 2005; Schultz 2001; Handa et al. 2001; Gomez de leon and Parker 2000; Parker and Skoufias 2000) and a negative effect on children's labor market participation (Parker and Skoufias 2000). However, Molyneaux (2006) argues that the program "exemplifies the maternalism at the heart of many of the new anti-poverty programmes being established in Latin America... and such programmes in effect reinforce the social divisions through which gender asymmetries are reproduced" (pp. 437-8). Eligibility is conditional on "good motherhood" and "no effort is made to promote the principle that men and women might share responsibility for meeting project goals" (Molyneux 2006; p. 438). While building mothers' capacities and empowerment and gender equity are secondary goals of Oportunidades/PROGRESA, how these goals are operationalized and implemented is dependent on local authorities and therefore varies greatly. Co-responsibility is an important factor in the

program in an effort to move beyond the paternalism inherent in previous welfare systems. In this manner, the community assumes responsibility for health and education. However, Molyneux argues, this responsibility in practice is “devolved to mothers who are those designated as being primarily responsible for securing the Programme’s outcomes” (Molyneux 2006; p. 434). These responsibilities include ensuring their children’s school attendance, attending health workshops, and contributing work hours to the program through activities such as cleaning buildings and clearing trash.

Though Adato et al. (2003) found evidence that Progresa had positive effects on women’s bargaining power (i.e., men were less likely to report being the sole decision makers on health care, children’s schooling, and household items), the authors also report that women enrolled in the program expressed an interest in learning additional skills that would empower them, such as reading and writing, which are not currently taught to adults under the program.

A study that looked at another aspect of women’s empowerment, the ability or willingness to dissolve unions as a result of participation in Oportunidades/PROGRESA, found that families eligible for transfers experienced a small increase in separation rates as compared to non-eligible families and that single women with low educational attainment experienced increased cohabitation rates (Bobonis 2008). The former effect might be a result of women’s greater empowerment and options outside of the current marriage, but alternatively it could be a result of increased conflict over control of benefits given to women. A Nash-bargaining model in economic theory suggests that the “threat point” or “outside option” of each individual in a marriage determines bargaining power (Gitter and Barham 2008; Doss 2003; Stratton 2003). Cash transfers to women increase their outside options, assuming that they would be able to

continue to receive these transfers were a marriage or union to be dissolved (and in this program they are).

In this paper, I investigate whether the costs of program participation, particularly the effects on leisure time, are shared unequally between men and women. Although increased leisure time for participants is not a goal of this anti-poverty program, if the costs of program participation (in the form of decreased leisure) are solely borne by women, then this would counteract the program's goal of increasing gender equity.

2.2 Definitions of leisure

Leisure or free time is important for mental and physical well-being, as it provides individuals with time to relax and refresh after performing market and household work and has a positive effect on health (Mattingly and Bianchi 2003; Bird and Fremont 1991).

The simplest definition of leisure classifies all time not spent in marketplace employment as leisure. Alternative definitions of leisure subtract out an additional category for work in the home (Stratton 2003), and some go even further to distinguish between leisure and “pure leisure” (Mattingly and Bianchi 2003; Bittman and Wajcman 2000). The latter category refers to leisure time that is not contaminated by other tasks, such as when there is a simultaneous, secondary activity that is not classified as leisure. It may also be classified as “active” and “passive,” where active leisure includes recreational activities requiring physical and mental exertion such as sports and board games, while “passive” leisure includes watching television, talking, and reading (Bird and Fremont 1991; Juster and Stafford 1985). In the current analysis, I define leisure as time spent in activities such as reading, watching television, using the internet, and entertainment activities outside of the home (i.e., a sporting event, movie, or visiting

friends/family). My data do not allow for a distinction between primary and secondary activities, so time spent watching television where a parent is also keeping an eye on small children is classified as leisure.

2.3 Gender differences in leisure and time allocation

Oportunidades/PROGRESA benefits are not affected by work decisions or income levels of the participating households (Skoufias and Di Maro 2008). Studies have found no evidence that PROGRESA/Oportunidades affects labor force participation decisions for adults (Skoufias and Di Maro 2008; Parker and Skoufias 2000).

Studies using data from the time module included in the Oportunidades Evaluation data from 1999 found no significant effects of PROGRESA on women's leisure time (Skoufias and Di Maro 2008; Parker and Skoufias 2000). One of these studies found leisure time of girls to have been reduced under PROGRESA, but found no effect for boys (Parker and Skoufias 2000).

In the US, after women began participating in the labor force in larger numbers, women's and men's time use became more similar between 1965 and 1998; however women spend more time in total work (unpaid plus paid) activities than men. While men have increased unpaid work such as cooking and childcare, women have decreased time in housework. However women still spend more time in total work and unpaid work activities than men, and the resulting inequity is evident in leisure. For both men and women in the US, leisure increased from 1965 to 1975, and then decreased between 1975 and 1998, with women showing a sharper decline. Women have less leisure time than men, with one study concluding they spend on average 90 percent as much time as men in leisure activities (Sayer 2005; Mattingly and Bianchi 2003). Characteristics that decrease free time for women include marriage, presence of preschoolers,

and hours of market work, while only the last two have a negative effect on men's free time (Mattingly and Bianchi 2003).

Bittman and Wajcman (2000) compare women's and men's leisure time and find that there is a weekly gender gap in free time of one hour and 26 minutes overall for ten developed countries. In these countries, men have more free time, and among married men and women employed full-time, the weekly gap increases to two hours and 41 minutes. Restricting their analysis to Australia because of higher data quality, they find that men enjoy higher-quality leisure (i.e., pure leisure) with fewer interruptions than women, and more of women's leisure time is contaminated with unpaid work. Mattingly and Bianchi (2003) extended this analysis to the US and found men to not only have more hours of free time, but also more hours of "adult" free time and "pure" free time. Married men were found to have similar amounts of leisure time to unmarried men, while married women have less leisure time than their unmarried counterparts.

Studies from rural, agricultural regions in developing countries also show that women work longer hours than men and have less leisure (Horrell and Mosley 2008). Poor infrastructure, such as increased distance to water sources, has been found to decrease women's leisure time (Ilahi and Grimard 2000). Kaur and Sharma (1991) found that 60 percent of rural women studied had no leisure time and worked from early in the morning until late at night.

A study conducted in Medellin, Colombia found women to have more free time than men (Bolaño 1996). However, time use for both genders was reported by women only, so the reporting of men's activities may be biased. The study showed that 45% of women interviewed never engaged in any leisure activities outside of the home, and of those, reasons included household duties, lack of money, lack of time, and lack of husband's permission.

Economic policies often affect men and women differently, and ignoring gender dimensions hides costs to women (Horrell and Mosley 2008; Siddiqui 2007; Floro 1995). For example, an increase in women's employment without a simultaneous decrease in their unpaid housework necessarily decreases their leisure time. In Africa, structural adjustment and crisis have led to variation in gender allocation of agriculture, but men have not increased time spent in domestic chores. In Uganda specifically, women have become increasingly burdened with tasks and responsibilities (Horrell and Mosley 2008). Siddiqui (2007) investigated the effects of economic reforms on leisure time of men and women in Pakistan. Currently in that country, men spend on average 17 percentage points more of their daily time on leisure activities than women. Simulations representing various trade liberalization policies such as tariff reductions on imports showed leisure increasing more for men than for women, or in cases where leisure decreased for both sexes, it decreased less for men.

This analysis will look at gender-specific effects of the widespread anti-poverty program, Oportunidades, on leisure time and other time uses in an effort to bring to light costs to women.

3. METHODS

3.1 Theoretical framework

Time use allocation is determined through the household production function, where households allocate time and goods to produce market and non-market commodities (Strauss and Thomas 1995; Behrman and Deolalikar 1988; Becker 1965). In this framework, households maximize utility (a function of leisure time and a composite consumption good) subject to budget, time and technology constraints. Demand for time allocation can be mapped to exogenous inputs (individual, household, and community-level) using reduced form equations,

which are recovered by maximizing utility subject to constraints. The reduced-form time demand for an activity is a function of prices, wages, total time available, and unearned income. Beegle (2005) models time demand for individual woman i in activity j as follows:

$$T_i^j = T_i^j(p_m, p_a, w_i, T_{hh}, Y_{hh}, V_i, v_{hh} | Z),$$

Where T_i^j is total time spent in activity j , p_m is a vector of prices for market goods, p_a is a vector of prices for home-grown (or produced) commodities, T_{hh} is the total stock of household time, w_i is the wage rate, Y_{hh} is nonlabor income, and v_i and v_{hh} are unobservable individual and household-level specific variables. The Oportunidades program could potentially enter in the reduced form equation through several pathways. It enters directly through Y_{hh} , as participating households receive monthly cash transfers. Oportunidades has a fixed time cost and reduces T_{hh} by the amount of time it takes to fulfill program requirements. This in turn decreases available time for other activities. Oportunidades may also enter through w_i if decreases in child labor supply affect adult wages. Finally, Oportunidades may also have an effect on unobservables such as preferences for health and schooling, captured in v_{hh} . This may occur if the program-required health seminars that women attend change habits and preferences regarding nutrition, breastfeeding, or family planning.

Cash transfers may affect labor supply decisions. Income effects may induce individuals receiving transfers to demand more leisure, as it is a normal good³. However, eligibility requirements impose additional time costs on participating families, specifically mothers. These include the aforementioned health seminars, children's doctor appointments, and traveling to locations to pick up benefit checks. Therefore the expected effect of Oportunidades on women's leisure is ambiguous.

³ A normal good is one for which demand increases as income increases.

Conditional cash transfers targeted to women with low levels of bargaining power within the household may cause an increase in welfare for men in those households if the women are not able to keep the whole transfer and men use some of the money to increase their own personal expenditures and leisure time (Gitter and Barham 2008; Dasgupta 2001); however in an analysis of the Red de Proteccion Social program (modeled after PROGRESA) in Nicaragua, Gitter and Barham (2008) found that targeting transfers to women increased key welfare outcomes even in households with greater male power. Cases where men demand the transfers from their wives in Oportunidades do occur, but in general women say they control the benefits, and many spend the money during their trips to collect benefits, which may entail one or two hours travel time from their home (Lopez Rivera 2003).

3.2 Econometric methodology

Households receiving Oportunidades benefits are generally poorer than the rest of the population. In order to estimate a program effect, a comparison group consisting of individuals with similar characteristics yet not participating in Oportunidades is required. To construct a comparison group, I utilize propensity score matching. Because households were determined eligible for program participation based on a determinant score on the marginality index, some households fell just above the cutoff and therefore have been ineligible for benefits. We expect these households to be very similar in characteristics that determine eligibility to those just under the cutoff. Due to data constraints, I cannot perform regression discontinuity analysis (though it has been done using Evaluation Surveys of PROGRESA (ENCEL) (Buddelmeyer and Skoufias 2004). However, the similarity between program households and some non-program households allows for creation of a reliable comparison group using propensity score matching.

Skoufias and Di Maro (2008) and Parker and Skoufias (2000) studied program effects on leisure time using ENCEL, which asked about time use for only the previous day, whereas the MxFLS surveys used in the present study ask about time use for a week prior to the interview. The former runs a higher risk of the reference period (one day) being atypical. However, the advantage that those two studies have over the current analysis is that they utilize the experimental design of the early years of PROGRESA to evaluate program effects using difference-in-difference techniques. This is no longer possible, since control localities have been integrated into the program. Additionally, the previous studies construct leisure as a residual (the difference between 24 hours and all reported activities), while the present study constructs leisure time by summing reported hours spent in various leisure activities. Finally, data used in the previous studies is from a time period (1997-1999) when only rural households were included in PROGRESA, while the current study analyzes the program effects on leisure and other time allocations using more current data (2002-2005), which includes both rural and urban households.

In order to evaluate program effects in the absence of an experimental design, propensity score matching estimates a counterfactual by matching participants with non-participants based on the degree of similarity of likelihood of participating in the program (Smith and Todd 2005). This likelihood is estimated using a probit or logit equation, and the predicted probability is called the “propensity score.” After the propensity score is predicted, individuals may be matched using pairwise matching or other matching methods, such as kernel and local linear matching estimators which use multiple non-participants to construct the estimated counterfactual outcome, which reduces the asymptotic mean squared error (Smith and Todd 2005).

Critiques of propensity score matching methodology in evaluating program effects are that if the following conditions for the treatment and comparison groups are not met there will be bias in the estimators:

- 1) same data sources are used;
- 2) participants and non-participants reside in same labor market [when looking at labor outcomes];
- 3) data contain a rich set of variables that affect both participation and outcomes; and
- 4) selection into the program is entirely on observables.

(Handa and Maluccio 2008; Smith and Todd 2005; Heckman et al. 1998; Heckman, Ichimura and Todd 1997). In the present study, comparison and treatment groups are contained in the same dataset, the data contain a rich set of variables that affect both participation in the program and time use, and program participation is virtually universal conditional on eligibility (i.e., it is not a decision, which would entail selection based on unobservables); therefore this analysis is a good candidate for propensity score matching.

3.3 Data

While the Oportunidades program does provide official data for evaluation purposes, the data used in this analysis comes from a separate survey, the Mexican Family Life Survey (MxFLS)⁴. Selected years from the official Oportunidades Evaluation data do have information

⁴ The first wave of the Mexican Family Life Survey (MxFLS-1) was a collaborative effort between researchers and officials from Universidad Iberoamericana, AC (UIA), *Centro de Investigación y Docencia Económicas (CIDE)*, the Mexican National Bureau of Statistics (INEGI) and the Mexican National Institute of Perinatology (INPer). Funding for MxFLS-1 activities was provided by the Mexican Council for Science and Technology (CONACYT), the Mexican Ministry for Development (SEDESOL), the Mexican Social Security Institute (IMSS), the Ford Foundation, the University of California Institute for Mexico and the United States (UC-Mexus) and UIA. The Second Wave of the Mexican Family Life Survey (MxFLS-2) is a collaborative effort among researchers from UIA, CIDE, the Mexican National Institute of

on time use (rural datasets in 1999 and 2003 and urban datasets in 2002, 2003, and 2004).

However the questions asked on time use are inconsistent across years and in urban versus rural areas. Most importantly, leisure activities are only reported in two of the aforementioned datasets (neither of which are from rural areas, where Oportunidades has a greater reach), and the leisure activities addressed are limited to watching television and reading. The MxFLS data ask consistent time use questions in all areas and both waves and include additional questions on entertainment activities performed outside the home and use of the internet. Since the MxFLS dataset has more extensive information on leisure activities and ask the same questions across regions and time, I have chosen to use this dataset for the present analysis.

The data used in this analysis are from Waves I and II of the Mexican Family Life Survey (MxFLS), which is a longitudinal, nationally, representative database initiated to better understand the social, economic, demographic and health transitions occurring in Mexico (Rubalcava and Teruel 2006). The study is expected to continue for at least 10 years from the start date. Wave I (MxFLS-1) was collected in 2002 and the data were made available publicly in 2004. Wave II (MxFLS-2) was collected in 2005 and 2006 and the data were released in 2008. The baseline survey is a stratified, multi-stage sample of dwellings in Mexico.

Approximately 8,440 households and over 35,000 individuals were interviewed at Wave I. All household members ages 15 and above were interviewed, and proxy interviews for children under the age of 15 were conducted with their parents (Rubalcava and Teruel 2006). I utilize data from both available waves. Information on whether households participate in Oportunidades is not provided at Wave II, and I assume that participation did not change

Public Health (INSP), and the California Center for Population Research (CCPR) at the University of California, Los Angeles (UCLA).

between 2002 and 2005, since in 2002 urban areas were the last areas to be incorporated into the program. Wave I includes information on 8,441 households. The sample used in this analysis is limited to households with at least one child age 18 or younger at Wave I (n=6,051). The sample is further limited to only households with non-missing values for all variables used in the logit regression to determine propensity scores (n=5,692). At the individual level, all males and females with at least one child age 18 or younger living in the same household are included. For females, this includes 5,659 individuals. For men, the sample includes 3,871 individuals. My reason for limiting the sample to only those individuals with at least one of their own children in the household is that families must have school age children to qualify for Oportunidades benefits, and if an individual lives in a participating household but has no children of his or her own, then that individual would not generally be the person responsible for fulfilling Oportunidades requirements.

3.4 Measures

Covariates in this analysis include household- and individual-level variables. Household variables include household head's highest completed level of education (classified as none, elementary, secondary, preparatory, and college), household head's age, total number of children in the household age 18 or under, ratio of children to adults, a crowding index (total number of people in the household divided by total number of rooms used exclusively for sleeping), material used in the floor (made of dirt v. other) and ceiling (made of cardboard, bamboo, palm v. other), whether the dwelling has electricity, and whether the dwelling is in a rural area. Rural is defined as communities with populations below 2,500 for purposes of this analysis.

Individual-level variables include number of own children in the household, age, marital status (married, consensual union, separated/divorced/widowed, single), whether the individual speaks an indigenous language, education (none, elementary, secondary, preparatory, college), whether the individual lives in a rural area, and region of residence (Pacific North, North Central Gulf, Bajio, Central region and Mexico City, Southeast).

In the first regression at the household level to predict participation in Oportunidades, the dependent variable is equal to one if the household participates in the program and zero otherwise. In the propensity score matching, individuals are matched on each outcome variable separately, including weekly hours spent in leisure, cooking, cleaning, caring for children or elderly, helping with homework, collecting firewood, collecting water, and working. The only variable measured on a daily basis is sleeping. Finally, in the OLS regressions, the dependent variables are number of hours spent in each activity (leisure, cooking, caring for children/elderly, helping with homework, collecting firewood, collecting water, cleaning or washing clothes, and working) per week and daily sleep.

3.5 Propensity score equation

To predict the probability of participation in Oportunidades, I estimate a logit regression. Covariates in the logit regression include household head's education, household head's age, total number of children in the household under the age of 18, ratio of children to adults, the crowding index, material used in floor and ceiling, whether the dwelling has electricity, and whether the dwelling is in a rural area. I also include the squared term of the dependency ratio and the following interactions: crowding times household head's preparatory level of education and dirt floor times the dependency ratio. The aforementioned covariates are likely to affect both the probability of participating in the program and the time use outcomes being evaluated but are

unlikely to have been greatly influenced by program participation, conditions which are necessary for the technique to be valid (Handa and Maluccio 2008; Todd 2008; Smith and Todd 2005; Heckman and Navarro-Lozano 2004). After running the logit regression, I predict the odds-ratio, or probability of participating, for each household. I then perform balancing tests to ensure that mean propensity scores and mean values of the covariates are “balanced” (i.e., not statistically different) within deciles of the propensity score between treatment and comparison group households (Handa and Maluccio 2008; Todd 2008).

3.6 Common support

In the propensity score matching, I consider only observations that lie on the common support. To impose common support, I retain those households from both distributions (participating and non-participating households) that have propensity scores above the larger of the minimum propensity scores for the two distributions and below the smaller of the maximum propensity scores.

3.7 Propensity score matching method

I match on the log odds-ratio for each outcome variable of interest using the nearest-neighbor method (Abadie and Imbens 2006). In this method of matching, the set of covariates on which matching is performed is determined from the estimation and balancing of the propensity score relation for the sample (Abadie and Imbens 2006; Handa and Maluccio 2008). Statistical significance of differences in the outcome means between the treatment and comparison groups are evaluated using t-tests to determine if there is a program effect. Since pre-program data on time use is not available for either group (program participants were enrolled prior to 2002), the assumption implicit in this cross-sectional analysis is that time use

of program participants before entry into the program was the same as that of the comparison group.

3.8 OLS regressions

Next, I run ordinary least squares (OLS) regressions on the matched sample to account for any potential, additional differences due to individual characteristics that the matching did not take care of. In these regressions, I use a dummy variable for program participation and control for individual- and community-level characteristics, including number of own children in the household, age, marital status, whether the individual speaks an indigenous language, level of education, urbanicity, and region of residence. Standard errors are corrected for clustering at the locality level.

3.9 Longitudinal analysis

In the final step, I merge in information for men and women at Wave II and compare mean changes in leisure time by program participation status using t-tests. I then perform a difference-in-difference analysis, which takes the change over time and differences out any fixed effects due to unobserved heterogeneity between treatment and comparison groups as follows:

$$T_i^j = \beta_0 + \beta_1 D_i + \beta_2 D_i + \beta_3 D_i * t + XB$$

where T_i^j is time spent in activity j by individual i , D_i is equal to one if the individual participates in Oportunidades and zero otherwise, t is equal to zero in 2002 and one in 2005, and X is a vector of other time-varying covariates. The difference-in-difference estimate of the program impact is equal to β_3 .

4. RESULTS

4.1 Household results

The mean age of household heads was 43, and 46 percent of household head's had completed elementary education. Seventeen percent of households were headed by females, and the average number of children age 18 and under per household was 2.5. Virtually all households had piped water and electricity, while 13 percent had dirt floors and 10 percent had ceilings made out of cardboard, bamboo, or palm. Forty-one percent of households were located in rural areas.

In the logit regression, increasing levels of education of the household head were negatively correlated with participation in Oportunidades. The total number of children under 18, the dependency ratio, the crowding index, having a dirt floor or ceiling made out of cardboard, bamboo, and palm, and living in a rural area all increased the probability of participation. The interaction between dirt floor and the dependency ratio was significant and negative. Twenty-one households were dropped (18 non-Oportunidades households and two Oportunidades households) because they were outside the common support, resulting in a final sample size of 5,671 households on which propensity score matching was performed at the individual-level.

4.2 Individual descriptive statistics

There are 35,677 individuals in the dataset and 19,749 individuals with information on time use. Of these, there are 5,535 women and 3,793 men with children under the age of 18 and non-missing values for all of the explanatory variables. The non-Oportunidades, matched

sample includes 585 women and 424 men, while the Oportunidades sample includes 1,039 women and 723 men. The total number of women with information at both waves and therefore included in the longitudinal analysis is 1,376 (478 in the comparison group and 898 in the treatment group).

Female characteristics vary across the samples. In the overall sample, the average number of children that each female has is 2.3, but as we move right in Table 2.3, we see that the matched sample (Column 4) resembles the treatment group (Column 5) more closely than the non-matched sample (Columns 2 and 3). For example, the average Oportunidades woman has 2.92 children, while the average woman in the comparison group has 2.69 children; both are higher than in the unmatched sample. Age and marital status are similar across the columns. Education is another characteristic where means across columns vary, and the matched sample more closely resembles the Oportunidades sample than does the non-matched sample (5% of the unmatched sample has no education, while 13% and 18% of the matched and treatment samples, respectively, have no education). One covariate that stands out as being different between the treatment and comparison groups is whether the person speaks an indigenous language (11% and 24%, respectively).

For men, characteristics among the comparison and treatment groups are also similar as compared to the non-matched sample (Table 2.4). Similarly to the female sample, speaking an indigenous language stands out as the most dissimilar covariate between the comparison and treatment groups (11% and 27%, respectively).

In the overall sample, females spend the most time caring for children/elderly (21.43 hours) and in leisure activities (13.71 hours), while males spend the most time working (43.52 hours) and in leisure activities (13 hours) (Tables 2.5 and 2.6). However, in the comparison and

treatment groups, women spent more time cooking (12.78 and 13.10 hours, respectively) and cleaning (13.01 and 12.94 hours, respectively) than they did in leisure activities (12.78 and 9.18 hours, respectively). As for males, work and leisure were the main activities in all groups. In general, men spend the least amount of their time in activities such as collecting firewood and water, helping with homework, cooking, and cleaning. Females spend the least amount of their time helping with homework and collecting water and firewood.

4.3 Propensity score matching

Results from the propensity score matching show that women participating in Oportunidades spent on average 2.58 fewer hours per week on leisure activities than women in the comparison group (Table 2.7). This translates to 11 hours per month. Of the other outcomes analyzed, daily sleep and hours per week spent collecting water and firewood were significantly different between Oportunidades participants and the comparison group.

In the men's analysis, only hours spent collecting firewood was significantly different between the treatment and comparison groups (2.74 and 1.27 hours, respectively).

4.4 OLS regressions

After controlling for additional characteristics the program effect on leisure attenuated slightly, but women in Oportunidades still spent on average 2.38 hours less per week in leisure activities than the comparison group (Table 2.8). Of the other activities that were significantly different in the propensity score matching, only hours spent caring for children remained significantly different among program participants and the comparison group.

Hours spent in leisure activities were also negatively correlated with age, speaking an indigenous language, being in a consensual union or separated/widowed/divorced (as compared to being married), and living in a rural area. Increasing levels of education had a positive effect on leisure time. Regional differences were also observed, as women in the Pacific North and North Central Gulf regions had significantly more leisure time than women in other regions.

For men, the effect of Oportunidades on time spent collecting firewood attenuated after adding additional controls (Table 2.9). Program participants spent on average 0.86 more hours per week in this activity than men in the comparison group. Program participation was not correlated with any of the other outcomes of interest.

While there was no program effect, other covariates that were negatively correlated with leisure time for men include number of own children living in the household, age, having no education, and living in a rural area. Increasing levels of education were positively correlated with leisure time. Similarly to women, men in the North Central Gulf region also had significantly more leisure time than men in other regions.

For women, characteristics consistently correlated with other time use activities included number of own children in the household, age, speaking an indigenous language, education and living in a rural area. Other characteristics correlated with time use to a lesser extent were marital status and regions of residence. For men, marital status and speaking an indigenous language were correlated with time allocation in fewer activities than they were for women. However, number of own children in the household, levels of education, and region of residence were consistently correlated with time use.

4.5 Longitudinal analysis

In the analysis comparing mean changes in time use activities between treatment and comparison groups over time (2002-2005) using t-tests, differences were significant for women for leisure only (results not shown). Program women have increased amounts of leisure, while comparison women have decreased leisure. Nevertheless, levels of leisure time are lower for program women at both points in time (Table 2.10), implying a continued time cost of program participation. Program women have on average 9.32 hours of leisure time per week at Wave I and 9.93 hours at Wave II, while comparison women have on average 12.65 hours at Wave I and 11.13 hours at Wave II. For men, t-tests show that, as compared to the comparison group, program participants are spending less time collecting firewood and more time sleeping (results not shown).

The difference-in-difference estimates show that over time for women there is a positive treatment effect on leisure time (Table 2.11). Program women's leisure time is increasing by 2.09 hours per week on average as compared to the comparison group. However, both points in time are post-program enrolment, so the estimates only show the changes over time in the program effect, not the total effect of the program. Leisure is the only activity with a significant program effect for women. This analysis also shows that an increasing number of own children in the household decreases leisure and sleep, but significantly increases time spent in every other activity, with the exception of working. Increasing age has a significant negative effect on leisure, caring for children or elderly, helping with homework, and sleep, while it has a positive (but small) effect on time spent collecting firewood. Marital status has varying effects on time use. Women in a consensual union spend less time caring for children (-3.05 hours) and elderly

and cleaning or washing clothes (-2.89 hours); however they spend on average 17.66 more hours per week working than do married women. Single women also work significantly more hours (19.02) and spend less time (-3.56 hours) cleaning or washing clothes than married women. Separated women spend less time in leisure activities (-1.60 hours) and helping children with homework (-0.51 hours) per week than married women.

For men, daily sleep and collecting firewood are the only outcomes that show evidence of a treatment effect in the difference-in-difference analysis. Treatment men still spend more time collecting firewood than comparison men, but time spent in this activity is becoming more similar over time among the groups. Over time, the treatment men are getting more sleep and spending less time collecting firewood compared to the comparison group. The fact that time spent collecting firewood is decreasing and it was the one activity that showed significant difference between the treatment and comparison groups in the cross-section analysis could reflect the increased efficiency that Oportunidades households show over time at managing program costs.

4.6 Extensions to analysis

As an extension to this analysis, I restrict possible matches in the propensity score matching to only other individuals residing in the same region in order to control for unobservable differences between regions and increase the similarity of the matched pairs (Appendices 1A through 1G). I then perform OLS regressions on this cross-section using data from Wave I only.

For females in the propensity score matching extension, sleep was no longer significantly different between the treatment and comparison groups, but hours worked per week were;

program participants spent 2.83 fewer hours per week working. Hours spent in leisure and collecting firewood and water remained significantly different. Oportunidades women spent on average 2.79 fewer hours in leisure activities. They also spent 0.84 and 0.45 hours more per week collecting firewood and water. After controlling for other covariates in the OLS regressions, the effect on leisure remained, but the program effect on hours worked and other significant outcomes disappeared. However, in the OLS regression, there was a negative program effect on hours spent caring for children and hourly, which did not show up in the propensity score matching. These results are consistent with the original analysis.

For men, hours spent in leisure, collecting firewood, and caring for children/elderly were significantly different between treatment and comparison groups in the propensity score matching. According to this analysis, men spent on average 1.3 hours less per week in leisure activities if they participated in Oportunidades. However, after controlling for additional covariates, the program effect on leisure time disappeared for men. It did, however, remain for caring for children/elderly and collecting firewood. Program participants spent 1.17 hours per week less caring for children/elderly and 0.69 hours more per week collecting firewood. No other outcome showed evidence of a program effect. This extension supported the previous results that Oportunidades negatively affects women's leisure time, but not men's and has few effects on other time use activities.

5. DISCUSSION

It might be argued that the program effect on leisure found in this analysis was not a real program effect, but rather resulted from the fact that the matching was not sufficient and program participants were poorer than the comparison group. However, because there was a significant

program effect on leisure for women, but no effect for men, this suggests that the finding is due to time requirements imposed by Oportunidades on women. If the effect were simply a result of poorer program participants consuming less leisure, then we would expect to see a result for both men and women participating in Oportunidades.

Estimates in the difference-in-difference analysis suggest that that program women are becoming more efficient at managing program responsibilities over time, but there is still a time cost to participation in the program. Overall levels of leisure time for program women are still lower at both waves for program women as compared to comparison women, but the time gap in leisure is becoming smaller. The effect on caring for children (the only other significant, negative program effect in the cross-sectional analysis) was also positive in the longitudinal analysis, but was only significant at the .06 level. However, this evidence also supports the hypothesis that women are becoming more efficient over time at managing program responsibilities.

There was no program effect on hours worked per week for men or women in either the propensity score matching analysis or the OLS regressions. This finding is supported by previous studies that found no effects of Oportunidades on labor supply (Skoufias and Di Maro 2008; Parker and Skoufias 2000).

Why female program participants might spend significantly less time caring for children and elderly people is unclear. Lopez Rivera (2003) reports that women often have to travel one or two hours to sites where they receive their benefits and then may have to wait another two hours in line. During this time, they often ask someone to watch their young children, so this may be one reason why they spend less time on average caring for their children. It is also possible that this result is due to the fact that Oportunidades positively affects school attendance

among children (Schultz 2004), and the children of program participants are in school, causing the mothers to spend fewer hours watching them; however this is beyond the scope of the current analysis.

The correlation between program participation and time use among men existed only for one activity, collecting firewood, and the effect was small (0.86 hours per week). For all other outcomes (with the exception of caring for children/elderly in the extension analysis), there were no effects of program participation, suggesting that Oportunidades has little to no effect on men's daily lives.

Anecdotal evidence suggests that women resent having to fulfill a variety of program requirements to receive cash transfers for Oportunidades, while other social programs targeted toward men, such as Procampo (a program that provides direct support to subsistence farmers), simply give benefits to men if they are eligible without requiring them to perform any tasks (personal communication with Veronica Cruz Sanchez, January 2008).

Oportunidades lists increasing gender equity as one of its secondary goals. While the primary purpose of giving the transfers to women as opposed to men is because payments received by women tend to have greater effects on improving children's health and schooling (Gitter and Barham 2008; Kanbur and Haddad 1994; Haddad, Hoddinott and Alderman 1997; Schultz 1990; Thomas 1990), it is seen as an added benefit that this scheme should also empower women. However, the structure of program requirements reinforces the stereotype that women are the caregivers and are primarily responsible for children's care. Therefore while increasing women's well-being in one way (i.e., increased household decision-making relative to males through control over cash transfers), the program hinders future advancements in gender equity and does nothing to change attitudes toward gender roles for adults currently in the program. In

fact, it promotes the idea that a woman's role is to care for her family and does not recognize that she has individual needs of her own (Tepichín Valle 2005).

There may however be long term advances in gender equality for children currently enrolled in the program, as this may occur naturally with their increased educational attainment. As these girls graduate with higher levels of education, their future options for work will increase. Higher educational attainment may also increase participating females' marriage options and should increase their bargaining power within marriage.

5.1 Limitations

The weekly measurement of time use in this study is superior to studies that measure time use for only one day. However, all time use survey instruments have limitations. In this study, respondents were asked to summarize their time spent in a list of activities over the previous week. Some domestic activities are performed while socializing or listening to the radio, so a strict demarcation between work and leisure may not exist (Sagrario Floro 1995). Multitasking decreases the ability of quantitative surveys to fully capture individuals' time use, but the effect is greater for women than men because women spend more time in childcare and other activities where multitasking is more common (Mattingly and Bianchi 2003; Bittman and Wajcman 2000).

Additionally, all time use is self-reported, which is subject to recall bias, though this bias is minimized since respondents report only on activities for the previous week. However, studies have shown that recall can be highly inaccurate, even for events in the past two days (Klumb and Perrez 2004; Engle and Lumpkin 1992), and reporting on an entire week versus one day increases the likelihood of recall bias. Individuals may also misreport information based on

social desirability and expectations about gender roles (i.e., men may underreport unpaid work) (Klumb and Perrez 2004; Press and Tonsley 1998).

Previous studies looking at the effects of Oportunidades/PROGRESA on women's time use have exploited the experimental design of the early years of PROGRESA (1997-1999) (Skoufias and Di Maro 2008; Parker and Skoufias 2000). The present study relies on the inferior method of propensity score matching to construct a comparison group, since an experimental design with control groups does not exist for more recent years. However, while limitations in the use of propensity score matching are recognized, the data used for matching in the present study minimize these recognized problems, and this study provides a more current analysis of time use and includes urban areas, which the previous studies were unable to do.

5.2 Implications for future program iterations

Oportunidades is an innovative program that works on a large scale to combat poverty in the short- and long-terms. Its dedication to providing data for external evaluation is commendable, and the program has progressed toward several of its goals. However, this analysis provides evidence that women's leisure time is affected by participation in the Oportunidades program, yet men's leisure time is not affected. Policymakers may believe a 2.38 hours per week loss in leisure time for women is an acceptable cost for a program that has proven benefits in a range of human capital outcomes such as health, nutrition, and education. However, average leisure per week among treatment and comparison groups are only 9.32 and 12.65 hours per week, respectively (at Wave I). Therefore this loss of leisure is approximately one-fifth of total leisure time prior to program participation. Secondary objectives of the program include building mothers' capacities and empowerment and gender equity. Program

costs to women that are not shared equally with men work to exacerbate gender inequity, in direct opposition to the program's stated goals.

Future iterations of program requirements should include more responsibilities shared equally between men and women and provide women the opportunity to learn skills such as reading and writing, in an effort to recognize their own needs and empower them beyond household financial decisions about children's health and schooling. In addition, efforts could be made to save women's time by encouraging the use of bank accounts and directly depositing the transfers, as long as it can be ensured that women will control the deposits.

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Table 2.1 Household characteristics (N=5,692)

Variable	Mean	S.D.
Household head's education		
None	0.10	0.31
Elementary	0.46	0.50
Secondary	0.23	0.42
Preparatory	0.11	0.32
College	0.09	0.29
Household head's age	42.63	12.64
Female household head	0.17	0.38
Total number of children 18 and under	2.49	1.40
Dependency ratio	1.21	0.85
Crowding index	2.76	1.46
Dirt floor	0.13	0.33
Ceiling (cardboard, bamboo, palm)	0.10	0.30
Piped water	1.00	0.07
Electricity	0.99	0.12
Rural	0.41	0.49

Table 2.2 Logit regression of household participation in Oportunidades (N=5,692)

Variable	Coefficient
Household head's education (ref=secondary)	
None	1.13** (0.17)
Elementary	0.81** (0.12)
Preparatory	-0.52 (0.45)
College	-0.93* (0.36)
Household head's age	0.00 0.00
Female household head	-0.07 (0.12)
Total number of children 18 and under	0.20** (0.05)
Dependency ratio	0.36* (0.14)
Crowding index	0.13** (0.03)
Dirt floor	0.95** (0.18)
Ceiling (cardboard, bamboo, palm)	0.29* (0.11)
Piped water	0.16 (0.48)
Electricity	0.29 (0.28)
Rural	2.32** (0.11)
Crowding*preparatory	0.04 (0.13)
Dependency^2	-0.04 (0.02)
Dirt floor*dependency	-0.29** (0.10)
Constant	-5.38** (0.60)

(standard errors in parenthesis)

* significant at .05 level; ** significant at .01 level

Table2.3 Descriptive statistics, females

	(1)		(2)		(3)		(4)		(5)		(6)
	Full sample (N=5535)		Non- Oportunidades, non-matched (N=3908)		Non- Oportunidades, non-matched, bottom 30% wealth dist. (N=789)		Non- Oportunidades, matched (N=585)		Oportunidades (N=1039)		p-value of differences between treatment & comparison
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
No. of own children in household	2.30	1.30	2.07	1.09	2.64	1.39	2.69	1.48	2.92	1.60	0.00
Age	35.44	9.48	35.10	9.40	34.51	9.64	36.50	9.54	36.10	9.63	0.41
Marital status											
Married	0.71	0.46	0.70	0.46	0.64	0.48	0.71	0.46	0.72	0.45	0.72
Consual union	0.15	0.36	0.14	0.35	0.18	0.39	0.17	0.37	0.16	0.37	0.76
Separated, widowed, divorced	0.09	0.28	0.09	0.29	0.10	0.29	0.08	0.27	0.08	0.28	0.81
Single	0.06	0.23	0.06	0.24	0.08	0.27	0.04	0.21	0.04	0.19	0.56
Speaks indigenous language	0.08	0.28	0.04	0.19	0.08	0.27	0.11	0.31	0.24	0.43	0.00
Education											
No education	0.08	0.28	0.05	0.22	0.11	0.32	0.13	0.33	0.18	0.38	0.01
Elementary	0.46	0.50	0.40	0.49	0.55	0.50	0.60	0.49	0.62	0.49	0.50
Seconday	0.29	0.45	0.34	0.47	0.26	0.44	0.21	0.41	0.16	0.37	0.02
Preparatory	0.11	0.31	0.13	0.34	0.06	0.24	0.05	0.21	0.03	0.18	0.16
College	0.06	0.24	0.08	0.28	0.02	0.12	0.02	0.12	0.01	0.08	0.05
Rural	0.42	0.49	0.24	0.43	0.34	0.47	0.81	0.39	0.87	0.34	0.00
Region											
Pacific North	0.20	0.40	0.21	0.41	0.15	0.36	0.19	0.40	0.17	0.38	0.34
N. Central Gulf	0.20	0.40	0.22	0.41	0.19	0.40	0.19	0.39	0.11	0.32	0.00
Bajío	0.20	0.40	0.20	0.40	0.25	0.43	0.22	0.41	0.19	0.40	0.31
Central and Mexico City	0.29	0.45	0.27	0.45	0.33	0.47	0.29	0.46	0.34	0.47	0.07
Southeast	0.11	0.32	0.09	0.29	0.08	0.27	0.11	0.31	0.18	0.38	0.00

Table 2.4 Descriptive statistics, males

	(1)		(2)		(3)		(4)		(5)		(6)
	Full sample (N=3793)		Non- Oportunidades, non-matched (N=2646)		Non- Oportunidades, non-matched, bottom 30% wealth (N=517)		Non- Oportunidades, matched (N=424)		Oportunidades (N=723)		p-value of differences between treatment & comparison
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
No. of own children in household	2.34	1.30	2.10	1.09	2.70	1.37	2.72	1.51	2.99	1.58	0.00
Age	39.27	10.60	38.61	10.50	39.19	11.08	40.52	10.87	40.92	10.58	0.52
Marital status											
Married	0.83	0.38	0.83	0.38	0.78	0.41	0.82	0.39	0.81	0.39	0.94
Consual union	0.16	0.36	0.15	0.36	0.21	0.41	0.17	0.38	0.17	0.37	0.93
Separated, widowed, divorced	0.02	0.12	0.02	0.13	0.01	0.10	0.01	0.10	0.01	0.12	0.77
Single	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.05	0.00	0.06	0.62
Speaks indigenous language	0.10	0.30	0.05	0.22	0.09	0.28	0.11	0.31	0.27	0.44	0.00
Education											
No education	0.07	0.25	0.04	0.19	0.08	0.28	0.10	0.30	0.15	0.36	0.01
Elementary	0.44	0.50	0.35	0.48	0.53	0.50	0.65	0.48	0.64	0.48	0.93
Seconday	0.26	0.44	0.30	0.46	0.27	0.44	0.19	0.39	0.15	0.36	0.10
Preparatory	0.13	0.33	0.16	0.37	0.08	0.27	0.03	0.18	0.04	0.19	0.79
College	0.10	0.31	0.14	0.35	0.04	0.21	0.03	0.18	0.01	0.11	0.02
Rural	0.43	0.49	0.24	0.43	0.36	0.48	0.83	0.38	0.88	0.33	0.01
Region											
Pacific North	0.20	0.40	0.20	0.40	0.12	0.33	0.23	0.42	0.19	0.39	0.16
N. Central Gulf	0.20	0.40	0.23	0.42	0.22	0.41	0.20	0.40	0.11	0.31	0.00
Bajio	0.19	0.39	0.19	0.39	0.25	0.43	0.16	0.36	0.20	0.40	0.06
Central and Mexico City	0.29	0.46	0.28	0.45	0.33	0.47	0.33	0.47	0.34	0.47	0.84
Southeast	0.11	0.32	0.10	0.30	0.08	0.27	0.09	0.29	0.16	0.37	0.00

Table 2.5 Number of hours spent weekly on activity, females

	(1)		(2)		(3)		(4)		(5)	
	Full sample (N=5535)		Non- Oportunidades, non-matched (N=3908)		Non- Oportunidades, non-matched, bottom 30% wealth (N=789)		Non- Oportunidades, matched (N=585)		Oportunidades (N=1039)	
Activity	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Leisure	13.71	11.87	15.07	12.14	12.26	11.10	12.78	11.93	9.18	9.35
Cooking	12.56	8.61	12.38	8.62	12.19	8.70	12.78	8.41	13.10	8.71
Cleaning	12.87	10.27	12.83	10.60	12.65	10.40	13.01	9.16	12.94	9.56
Caring for children/elderly	21.43	25.31	22.25	25.91	22.27	25.17	21.24	25.54	18.50	22.59
Helping with homework	2.57	5.08	2.80	5.10	2.29	4.47	2.42	6.66	1.82	3.70
Collecting firewood	0.48	2.39	0.14	1.26	0.40	2.17	0.81	2.84	1.59	4.28
Collecting water	0.38	2.27	0.18	1.42	0.45	2.35	0.55	2.49	1.03	3.98
Sleeping (daily)	7.73	1.28	7.67	1.28	7.85	1.32	7.80	1.29	7.93	1.28
Working	12.62	20.71	14.38	21.54	11.05	20.21	9.21	18.29	7.97	17.65

Table 2.6 Number of hours spent weekly on activity, males

	(1)		(2)		(3)		(4)		(5)	
	Full sample (N=3793)		Non- Oportunidades, non-matched (N=2646)		Non- Oportunidades, non-matched, bottom 30% wealth (N=517)		Non- Oportunidades, matched (N=424)		Oportunidades (N=723)	
Activity	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Leisure	13.00	11.23	14.64	11.76	11.16	10.06	9.68	9.20	8.95	8.52
Cooking	0.83	2.97	0.93	3.02	0.56	2.49	0.71	3.22	0.53	2.56
Cleaning	0.81	3.10	0.92	3.28	0.44	1.85	0.56	2.54	0.55	2.68
Caring for children/elderly	3.36	8.94	3.93	9.64	2.69	7.31	2.71	8.61	1.66	5.62
Helping with homework	1.26	3.14	1.39	3.26	1.04	3.17	1.05	2.98	0.94	2.75
Collecting firewood	0.91	3.33	0.39	2.20	1.01	3.55	1.03	2.79	2.74	5.63
Collecting water	0.40	2.11	0.23	1.59	0.59	2.72	0.65	2.89	0.90	2.98
Sleeping (daily)	7.45	1.36	7.41	1.35	7.57	1.35	7.61	1.44	7.53	1.35
Working	43.52	20.96	43.94	20.86	42.60	20.93	41.95	22.19	42.91	20.55

Table 2.7 Propensity score matching, effects of Oportunidades on weekly time use†

	Females			Males		
	Treatment	Comparison	Difference	Treatment	Comparison	Difference
Leisure	9.18	11.76	-2.58**	8.95	8.63	0.32
Cooking	13.10	13.25	-0.15	0.53	0.53	0.00
Caring for children/elderly	18.50	20.34	-1.84	1.66	2.66	-1.01
Helping with homework	1.82	2.35	-0.52	0.94	0.94	0.00
Daily sleep	7.93	7.76	0.16*	7.53	7.64	-0.11
Collecting firewood	1.59	1.19	0.40*	2.74	1.27	1.47**
Collecting water	1.03	0.64	0.39*	0.90	0.79	0.11
Cleaning/washing clothes	12.94	12.60	0.34	0.55	0.45	0.10
Working	7.97	9.90	-1.93	42.91	42.07	0.84

†With exception of sleep, which is measured daily

*Significant at .05 level; **significant at .01 level

Table 2.8 OLS regressions of female time use (hours per each activity weekly)

Variable	Leisure (n=1596)	Cooking (n=2607)	Caring for children/eld erly (n=1547)	Helping child with homework (n=1603)	Daily sleep (n=1608)	Collecting firewood (n=1604)	Collecting water (n=1608)	Cleaning/ washing clothes (n=1602)	Working (n=1609)
Oportunidades	-2.38** (0.55)	0.29 (0.49)	-3.51** (1.15)	-0.45 (0.29)	0.05 (0.07)	0.21 (0.19)	0.04 (0.17)	-0.12 (0.63)	-0.76 (0.96)
No. of own children in houshold	-0.26 (0.14)	0.67** (0.18)	1.75** (0.40)	0.34** (0.11)	-0.04 (0.02)	0.27** (0.09)	-0.04 (0.05)	0.54** (0.13)	-0.39 (0.28)
Age	-0.18** (0.03)	0.10** (0.02)	-0.85** (0.07)	-0.04** (0.01)	-0.02** (0.00)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.03)	0.01 (0.05)
Marital status (ref=married)									
Consual union	-1.99* (0.78)	0.23 (0.73)	-0.90 (1.77)	-0.75* (0.37)	0.06 (0.09)	0.19 (0.33)	-0.02 (0.27)	-1.97** (0.65)	-0.54 (1.09)
Separated, widowed, divorced	-2.07* (0.87)	-1.72 (0.89)	-5.17** (1.27)	-0.59* (0.27)	0.05 (0.14)	0.36 (0.40)	-0.31 (0.17)	-3.41** (0.70)	16.69** (2.20)
Single	-1.15 (1.34)	-4.34** (0.97)	-5.70* (2.56)	-0.32 (0.60)	-0.17 (0.21)	-0.04 (0.35)	1.57 (1.12)	-3.38** (1.11)	16.50** (3.37)
Speaks indigenous language	-3.24** (0.77)	1.35 (0.84)	0.51 (1.78)	-0.77** (0.22)	0.18 (0.09)	1.36** (0.46)	2.14** (0.69)	-1.93* (0.79)	-1.03 (1.77)
Education (ref=primary)									
No education	-1.29 (0.69)	-0.50 (0.65)	-0.47 (1.82)	-1.00** (0.19)	0.11 (0.09)	1.67** (0.49)	0.53 (0.41)	-1.35 (0.74)	-0.33 (1.61)
Seconday	2.08* (1.00)	0.75 (0.54)	3.79* (1.64)	1.86** (0.44)	-0.23* (0.09)	-0.22 (0.22)	-0.09 (0.24)	0.81 (0.72)	2.41* (1.15)
Preparatory	0.39 (1.26)	-0.71 (0.85)	1.02 (2.90)	0.52 (0.51)	-0.41* (0.18)	-0.46** (0.17)	-0.19 (0.26)	0.33 (1.45)	1.14 (2.25)
College	2.86 (2.10)	-5.09** (1.47)	-5.40 (5.45)	0.78 (1.08)	-0.45 (0.50)	-0.45 (0.33)	-0.45 (0.35)	-3.04 (2.72)	9.67 (5.82)
Rural	-3.39** (0.91)	1.08 (0.61)	-4.71 (2.37)	-0.78* (0.37)	0.24* (0.09)	0.92* (0.35)	0.68** (0.25)	1.20 (0.89)	-0.56 (1.27)
Region (ref=central&federal district)									
Pacific North	2.75** (0.87)	2.92** (0.76)	-1.84 (2.60)	-0.21 (0.32)	0.00 (0.12)	-0.96** (0.23)	-0.70** (0.24)	-0.76 (0.91)	2.36 (1.95)
N. Central Gulf	5.01** (1.27)	3.51** (1.10)	-3.02 (2.80)	0.02 (0.52)	-0.07 (0.12)	-0.54* (0.27)	-0.40 (0.26)	-2.85* (1.08)	-2.33 (1.93)
Bajio	0.74 (0.94)	-0.31 (0.75)	-4.72* (1.93)	-0.51 (0.41)	0.11 (0.10)	-0.38 (0.55)	-0.11 (0.45)	-0.74 (1.10)	0.24 (1.66)
Southeast	-1.04 (1.00)	0.19 (1.11)	-4.78* (2.40)	-0.27 (0.24)	-0.08 (0.09)	1.32 (0.83)	0.37 (0.82)	-1.16 (1.13)	0.33 (1.92)
Constant	21.83** (1.65)	5.50** (1.31)	54.54** (3.90)	3.84** (0.93)	8.66** (0.22)	-0.34 (0.61)	0.41 (0.56)	12.93** (1.40)	7.49** (2.10)
R-squared	0.17	0.08	0.17	0.07	0.04	0.14	0.10	0.05	0.12

Robust standard errors in parentheses

* significant at .05; ** significant at .01

Table 2.9 OLS regressions of male time use (hours per each activity weekly)

Variable	Leisure		Caring for children/elderly		Helping child with homework		Daily sleep		Collecting firewood		Collecting water		Cleaning/washing clothes		Working	
	(n=1121)	(n=1121)	(n=1135)	(n=1135)	(n=1136)	(n=1136)	(n=1137)	(n=1137)	(n=1137)	(n=1137)	(n=1137)	(n=1137)	(n=1136)	(n=1136)	(n=1139)	(n=1139)
Oportunidades	0.41 (0.68)	-0.17 (0.18)	-1.12 (0.64)	-0.08 (0.16)	-0.14 (0.08)	0.86** (0.21)	-0.11 (0.17)	0.04 (0.17)	0.91 (1.40)							
No. of own children in household	-0.41** (0.12)	0.00 (0.05)	0.07 (0.14)	0.16** (0.05)	0.00 (0.03)	0.27* (0.12)	0.13* (0.06)	-0.03 (0.03)	1.12** (0.41)							
Age	-0.06* (0.03)	0.00 (0.01)	-0.09** (0.02)	-0.02** (0.01)	-0.02** (0.00)	0.02 (0.01)	-0.01 (0.01)	0.01 (0.01)	-0.28** (0.07)							
Marital status (ref=married)																
Consual union	-0.78 (0.70)	0.23 (0.29)	-0.05 (0.59)	-0.24 (0.22)	-0.07 (0.11)	0.62 (0.36)	-0.30* (0.15)	0.03 (0.25)	-2.12 (1.94)							
Separated, widowed, divorced	-1.14 (1.99)	2.85 (1.57)	0.26 (1.40)	-0.14 (0.37)	0.20 (0.33)	-0.52 (0.49)	0.58 (0.82)	0.78 (0.76)	4.92 (7.26)							
Single	13.48 (7.10)	-0.52 (0.32)	-1.83 (0.95)	-0.78** (0.26)	0.01 (0.53)	-0.86 (0.81)	-0.62 (0.62)	-0.37 (0.20)	-16.25 (9.06)							
Speaks indigenous language	-1.70* (0.84)	0.27 (0.39)	-0.19 (0.53)	-0.11 (0.24)	0.18 (0.14)	1.78** (0.60)	1.23 (0.78)	-0.17 (0.23)	-0.47 (1.87)							
Education (ref=primary)																
No education	-1.99** (0.65)	0.10 (0.37)	-0.33 (0.52)	-0.67** (0.11)	-0.09 (0.13)	0.57 (0.36)	0.27 (0.20)	0.31 (0.34)	-0.92 (1.90)							
Seconday	3.75** (1.00)	-0.09 (0.22)	-0.09 (0.44)	0.52* (0.23)	-0.08 (0.12)	-0.55 (0.29)	-0.22 (0.27)	0.28 (0.18)	1.90 (1.72)							
Preparatory	3.62* (1.39)	-0.06 (0.23)	1.35 (2.07)	2.23* (0.97)	-0.28 (0.22)	-1.30* (0.49)	0.05 (0.42)	1.15 (0.94)	-4.11 (4.22)							
College	9.46** (3.07)	-0.01 (0.31)	4.02 (3.57)	1.52* (0.60)	-0.15 (0.29)	-0.92* (0.42)	-0.26 (0.26)	1.64 (1.21)	-3.86 (3.01)							
Rural	-1.85* (0.79)	-0.35 (0.26)	-0.20 (0.75)	-0.37 (0.26)	0.28* (0.11)	1.86** (0.38)	0.60* (0.26)	-0.45 (0.33)	-3.07 (2.31)							
Region (ref=central&federal district)																
Pacific North	0.47 (0.91)	0.72 (0.38)	-0.57 (0.67)	-0.20 (0.22)	0.10 (0.10)	-1.33** (0.36)	-0.70** (0.25)	0.09 (0.30)	-2.80 (2.43)							
N. Central Gulf	2.91** (0.91)	0.66* (0.27)	-0.48 (0.93)	0.10 (0.29)	-0.07 (0.12)	-1.26** (0.35)	-0.66* (0.29)	-0.17 (0.33)	-5.20* (2.01)							
Bajio	1.87 (1.06)	0.15 (0.21)	-0.05 (0.80)	-0.41* (0.18)	0.14 (0.15)	0.26 (0.68)	0.30 (0.84)	-0.33 (0.27)	-5.87* (2.23)							
Southeast	-0.81 (1.02)	0.16 (0.26)	1.48 (0.79)	0.70 (0.36)	-0.01 (0.12)	1.95* (0.82)	-0.24 (0.60)	0.13 (0.27)	-3.49 (2.71)							
Constant	13.35** (1.33)	0.66 (0.59)	6.26** (1.32)	1.65** (0.47)	8.16** (0.21)	-1.86** (0.66)	0.39 (0.46)	0.63 (0.39)	55.97** (3.31)							
R-squared	0.14	0.03	0.04	0.07	0.03	0.16	0.07	0.03	0.05							

Robust standard errors in parentheses

* significant at .05; ** significant at .01

Table 2.10 Average time spent per activity at each wave, by gender

	Females (n=1376)				Males (n=831)			
	Wave 1		Wave 2		Wave 1		Wave 2	
	Treatment	Comparison	Treatment	Comparison	Treatment	Comparison	Treatment	Comparison
Leisure	9.32	12.65	9.93	11.13	8.87	9.84	8.76	10.24
Cooking	13.12	12.63	12.35	13.02	0.41	0.74	0.47	0.76
Cleaning	13.07	13.48	10.24	11.13	0.54	0.46	0.29	0.58
Caring for children/elderly	19.00	22.48	12.80	12.94	1.87	2.32	1.05	2.13
Helping with homework	1.92	2.60	0.90	1.78	1.00	1.18	0.42	0.62
Collecting firewood	1.55	0.81	0.93	0.62	2.92	1.05	1.87	1.15
Collecting water	0.93	0.54	0.53	0.47	1.01	0.75	0.80	0.37
Sleeping (daily)	7.91	7.80	7.93	7.76	7.53	7.63	7.70	7.45
Working	7.42	8.84	7.68	8.88	42.75	43.12	40.91	42.44

Table 2.11 Difference-in-difference estimates, females

Variable	Leisure (n=2738)	Cooking (n=2745)	Caring for children/el derly (n=2659)	Helping child with homework (n=2743)	Daily sleep (n=2746)	Collecting firewood (=2746)	Collecting water (n=2746)	Cleaning/w ashing clothes (n=2742)	Working (n=2751)
Year=2005	-0.99 (0.62)	0.23 (0.56)	-6.55** (1.40)	-0.60* (0.29)	0.02 (0.08)	-0.24 (0.22)	-0.05 (0.18)	-2.16** (0.59)	-0.38 (1.09)
Oportunidades	-3.13** (0.54)	0.36 (0.49)	-3.65** (1.22)	-0.70** (0.25)	0.13 (0.07)	0.67** (0.19)	0.37* (0.16)	-0.52 (0.52)	-1.02 (0.94)
Oportunidades*2005 (β_3)	2.09** (0.76)	-1.13 (0.69)	3.23 (1.71)	-0.20 (0.36)	0.05 (0.10)	-0.41 (0.27)	-0.33 (0.23)	-0.49 (0.73)	0.35 (1.33)
No. of own children in household	-0.74** (0.12)	0.24* (0.11)	1.30** (0.27)	0.12* (0.06)	-0.05** (0.02)	0.24** (0.04)	0.10** (0.04)	0.29** (0.11)	-0.34 (0.21)
Age	-0.20** (0.02)	0.07** (0.02)	-0.79** (0.05)	-0.06** (0.01)	-0.02** (0.00)	0.03** (0.01)	0.00 (0.01)	-0.03 (0.02)	0.00 (0.04)
Marital status (ref=married)									
Consual union	-1.02 (0.67)	-1.91** (0.62)	-3.05* (1.52)	-0.25 (0.32)	0.00 (0.09)	0.07 (0.24)	-0.15 (0.20)	-2.89** (0.65)	17.66** (1.18)
Separated, widowed, divorced	-1.60** (0.53)	0.16 (0.49)	-0.25 (1.20)	-0.51* (0.25)	0.02 (0.07)	0.25 (0.19)	-0.21 (0.16)	-0.50 (0.51)	0.06 (0.93)
Single	-0.22 (0.94)	-4.96** (0.86)	-3.67 (2.10)	0.09 (0.44)	-0.06 (0.12)	-0.37 (0.34)	-0.10 (0.28)	-3.56** (0.90)	19.02** (1.65)
Constant	22.23** (0.94)	9.83** (0.86)	47.45** (2.12)	4.58** (0.44)	8.57** (0.12)	-0.83* (0.34)	0.26 (0.28)	14.09** (0.90)	7.58** (1.65)
R-squared	0.06	0.03	0.14	0.04	0.02	0.03	0.01	0.04	0.12

Standard errors in parentheses

* significant at .05 level; ** significant at .01 level

Table 2.12 Difference-in-difference estimates, males

Variable	Leisure (n=1649)	Cooking (n=1655)	Caring for children/e lderly (n=1659)	Helping child with homework (n=1656)	Daily sleep (n=1659)	Collecting firewood (n=1657)	Collecting water (n=1659)	Cleaning/ washing clothes (n=1657)	Working (n=1661)
Year=2005	0.66 (0.73)	-0.02 (0.25)	0.01 (0.50)	-0.47* (0.21)	-0.13 (0.11)	-0.02 (0.35)	-0.40 (0.24)	0.10 (0.19)	0.16 (1.77)
Oportunidades	-0.73 (0.64)	-0.33 (0.22)	-0.39 (0.44)	-0.16 (0.18)	-0.09 (0.09)	1.73** (0.31)	0.21 (0.21)	0.08 (0.17)	-0.13 (1.54)
Oportunidades*2005 (β_3)	-0.58 (0.90)	0.09 (0.31)	-0.53 (0.62)	0.00 (0.25)	0.34** (0.13)	-1.10* (0.43)	0.20 (0.30)	-0.34 (0.24)	-1.29 (2.17)
No. of own children in household	-0.65** (0.14)	0.04 (0.05)	0.09 (0.10)	0.04 (0.04)	0.01 (0.02)	0.40** (0.07)	0.20** (0.05)	-0.02 (0.04)	0.04 (0.34)
Age	-0.12** (0.02)	-0.01 (0.01)	-0.08** (0.01)	-0.03** (0.01)	-0.01** (0.00)	0.06** (0.01)	0.01 (0.01)	0.00 (0.01)	-0.24** (0.05)
Marital status (ref=married)									
Consual union	0.22 (1.91)	2.77** (0.65)	5.81** (1.33)	1.22* (0.54)	-0.05 (0.28)	0.22 (0.92)	0.50 (0.64)	1.81** (0.50)	-1.83 (4.64)
Separated, widowed, divorced	-0.25 (0.61)	-0.01 (0.21)	0.62 (0.42)	0.09 (0.17)	0.10 (0.09)	0.18 (0.29)	-0.43* (0.20)	0.08 (0.16)	-1.52 (1.47)
Single	5.81 (3.28)	1.21 (1.13)	-0.61 (2.28)	-0.78 (0.93)	-0.36 (0.48)	-1.36 (1.59)	-0.62 (1.10)	-0.44 (0.87)	1.26 (7.99)
Constant	16.49** (1.09)	0.90* (0.37)	5.26** (0.75)	2.20** (0.31)	8.11** (0.16)	-2.30** (0.52)	-0.14 (0.36)	0.59* (0.29)	52.95** (2.63)
R-squared	0.04	0.01	0.04	0.03	0.02	0.07	0.02	0.01	0.02

Standar errors in parenthesis

* significant at .05 level; ** significant at .01 level

CHAPTER 3: OPINIONS ON ABORTION IN MEXICO: HOW ARE THEY CHANGING AND IS POLARIZATION EVIDENT ACROSS REGIONS AND TIME?

1. INTRODUCTION

Unsafe abortion, fueled by restrictive laws that encourage clandestine abortion, is a threat to public health in Mexico. It is the fourth leading cause of maternal mortality in the country (Zúñiga, Zubieta, Araya 2000), and causes 5.7 of every 1,000 women aged 15 to 44 to be hospitalized from complications each year (Juarez et al. 2008). Public opinion may play an important role in determining policy on the issue of abortion; however opinions on abortion are thought to be highly polarized. This polarization of public opinion is sometimes exaggerated in the media. Studying public opinion on abortion can inform public policy and more accurately describe the situation in a country where abortion laws are restrictive and the public is often thought to not support abortion rights, but where approximately 875,000 abortions are induced annually (Juarez et al. 2008).

The definition of polarization can refer to a state, as in “the extent to which opinions on an issue are opposed in relation to some theoretical maximum.” Polarization as a process has been defined as “the increase in such opposition over time” (DiMaggio, Evans, and Bryson 1996, p. 693). On the abortion issue, groups are thought to concentrate around the positions of complete opposition to abortion and complete support of a woman’s right to choose along what is sometimes thought of as a linear scale. Studies from the US have found that polarization does not exist to the extent that is typically believed and that findings of polarization may be an artifact of inappropriate statistical analysis or poor questionnaire design (Mouw and Sobel 2001;

Bumpass 1997; Alvarez and Brehm 1995; Cook, Jelen, and Wilcox 1993). In this analysis, I look at circumstances under which a woman may want to have an abortion (i.e., risk to the woman's life, pregnancy resulting from rape, if the woman is single, etc.) separately and analyze characteristics correlated with support for abortion and polarization in each of these circumstances. I operationalize support for abortion using a Likert scale, where one represents "strongly disagrees with a woman's right to abortion" and five represents "strongly agrees with a woman's right to abortion." Responses are given for each of nine circumstances separately, so an individual may strongly agree with a woman's right to abortion when a pregnancy results from rape, but strongly oppose abortion when the pregnancy results from contraceptive failure. I also look at how average levels of support and polarization have changed over time and whether some regions of Mexico are more polarized than others.

Mexican states make their own laws on abortion, and laws vary considerably over the 31 states and the Federal District (also known as Mexico City). In April 2007, the Federal District decriminalized⁵ abortion during the first 12 weeks of pregnancy. This historic change in abortion policy has the potential to affect abortion practices throughout Mexico, and women from other states travel to the Federal District to obtain legal abortions (personal communication with Hospital Director, Hospital General de Ticomán, May 2008).

This paper investigates whether opinions regarding abortion have polarized between 2000 and 2006 in Mexico and whether some regions are more polarized than others using a heteroskedastic ordered probit model and controlling for individual, group, and state characteristics. Studying polarization is important because polarization may affect policy

⁵ The law change in Mexico City did not "legalize" abortion, but rather removed it from the penal code as an activity that is criminalized.

outcomes. For example, when polarization is strong, even when average levels of support for abortion rights are increasing, a majority consensus on the issue does not exist. Under these circumstances, policymakers may fear political fallout from abortion opponents and be reluctant to support changes in abortion policy. Alternatively, when higher average levels of support are paired with an increasing consensus (i.e., less polarization) on the issue, policymakers may believe that liberalization of abortion laws is politically viable. The time period studied here was immediately prior to liberalization of abortion laws in the Federal District. Nationally representative opinion data post-legalization is not available.

2. BACKGROUND

2.1 Abortion laws, states' characteristics, and the abortion debate in Mexico

Each of the 31 Mexican states, plus the Federal District, makes its own laws on abortion. In the Federal District, abortion is permitted without restriction as to reason during the first 12 weeks of pregnancy. All 31 states permit abortion in the circumstance of rape. Twenty-eight states allow abortion when the woman's life is at risk, 10 allow the procedure when the woman's health is at risk, and 13 allow it in circumstances of fetal deformity. One state, Yucatán, allows abortion for economic reasons if the woman already has three children and can prove economic hardship. In the circumstances of artificial insemination without consent and miscarriage resulting from an accident, abortion is allowed in 10 and 29 states, respectively (Harvard School of Public Health; GIRE).

States within Mexico vary greatly according to socioeconomic and demographic characteristics. For example, the percentage of the state population that is illiterate ranges from 3 percent in the Federal District to 23 percent in Guerrero (CONAPO 2000). Additionally,

maternal mortality ratios range from 9.6 per 100,000 live births in Colima to 128.2 in Guerrero (Tapia, Garrido, and Gómez 2006). Mexico ranks as a “high human development” country according to the UN’s Human Development Index (53 out of 177)⁶. Despite this achievement, disparities exist within the country, and some of Mexico’s states rank much lower. For example if each Mexican state were ranked individually and compared to other nations, the Federal District would rank between the Czech Republic (30) and Barbados (31), while Chiapas would rank between Cabo Verde (106) and Syria (107) (Lemareshquier and Peral 2007). These disparities among Mexican states may cause differences in public opinion on abortion due to varying characteristics that influence opinion, such as maternal mortality and cultural norms related to motherhood and women’s status.

Individuals’ opinions may be influenced by group affiliations, experiences to which they have been exposed, and debates played out in the media. Reproductive health issues have garnered national attention in Mexico over the past decade. Two examples in addition to the abortion debate are emergency contraception and problems caused by complicated legal processes required to obtain a legal abortion in the circumstance of rape. In 2004, the Official Mexican Norms for Family Planning (NOM-005-SSA2-1993) were modified so that all public health services in the country had to offer and provide emergency contraception and female condoms in addition to counseling on these methods (Secretaria de Salud 1/21/04; ANDAR). A national debate on abortion occurred in the run-up to the 2000 presidential elections, and in 2006, Patricia Mercado, a candidate for the Social Democratic and Peasant Alternative Party, ran on a platform supporting the right to abortion (Mexican Presidential 2006). In Mexico, the main

⁶ The Human Development Index (HDI) measures development by combining indicators of life expectancy, educational attainment and income into a composite score, which measures both social and economic development. For more information see <http://hdr.undp.org/en/humandev/hdi/>.

three political parties are Institutional Revolutionary Party (PRI), Democratic Revolution Party (PRD), and Institutional Action Party (PAN). Of these political parties, the PRD supports abortion rights, the PAN opposes abortion rights, and the PRI is divided on the issue (Kendrick 2003). Civil society organizations have also engendered discussion on sexual and reproductive rights (for more information see <http://www.andar.org.mx>). This debate continued in 2007, when Mexico City decriminalized abortion and then in 2008, when the federal Supreme Court upheld the constitutionality of this law. To date there are no national studies that look at whether this debate had any effect on public opinion on abortion, but a study conducted in Mexico City found that levels of support for abortion increased after the law change, as compared to immediately before April 2007 (Garcia et al. 2008).

2.2 Effects of study design on conclusions about abortion opinions and polarization

The framing of the abortion debate as either pro-choice or anti-abortion can be misleading because the majority opinion usually lies somewhere in between, with people supporting abortion under specific circumstances. Studies conducted in the US have shown that asking respondents about their opinion on abortion in specific circumstances gives a more accurate description of abortion opinion than does asking them whether they disagree or agree with a woman's decision to have an abortion (Bumpass 1997; Cook, Jelen, and Wilcox 1993). General questions allowing only two or three responses overstate the proportion of the population at the extreme ends of the abortion debate (Adamek 1994; Cook, Jelen, and Wilcox 1993). This in turn increases the perception that the population is overly polarized on the abortion issue. By analyzing data from survey questions allowing for respondents' opinions on various circumstances that would justify an abortion, Cook et al. found that the public is not as

polarized as previously thought and that there is “substantial middle ground for a political compromise on abortion” (Cook, Jelen, and Wilcox 1993, p. 145).

2.3 Levels of support for abortion in Latin America

In Latin America, as in the US, individuals rarely completely support or are completely against abortion rights. Rather, opinions lie somewhere in the middle, and individuals condition their support for abortion rights based on circumstances (Yam, Garcia, and Dries-Daffner 2006; Cook, Jelen, and Wilcox 1993; Blake and Del Pinal 1981). Often the issue of blame or culpability is considered when people form their opinions on abortion. For example, an individual may be more likely to support a women’s right to abortion in the circumstance of rape or fetal deformity, both of which are situations over which the pregnant woman has no control. Circumstances under which abortion has the most support in Latin America include rape and risk to the woman’s life (Garcia, Lara, and Goldman 2003; Becker, Garcia, and Larsen 2002; Alves Duarte et al. 2002; Gonzales de Leon Aguirre and Billings 2002; Duarte Osis et al. 1994). Majority support for the right to abortion is also found in circumstances of fetal deformity (Garcia, Lara, and Goldman 2003; Duarte Alves 2002; Gonzales de Leon Aguirre and Billings 2002; Carnevale et al. 1998; Duarte Osis et al. 1994). A study conducted in Brazil showed that, among respondents who thought abortion should always be prohibited, half had had an abortion themselves or their partner had (Faúndes et al. 2004). This finding suggests that people (including men with their partners) may be willing to have an abortion themselves when faced with an unwanted pregnancy, but in the abstract they are against abortion.

Some individuals are less inclined to support a woman’s right to abortion in circumstances where they believe the pregnancy results from a lack of responsibility (i.e., the

woman is a minor, failure of a contraceptive method, the woman is single). One unpublished study from Mexico found that respondents' reasons for not supporting the right to abortion were phrased more in terms of punishment for irresponsibility than rights of the fetus (Palermo et al. unpublished). For these reasons, we may expect to see differences in opinions based on the circumstances or reasons for abortion, and the variety of questions and range of responses provided in the opinion survey are used to assess these opinions.

2.4 Gender, socioeconomic status, religion, and their influence on public opinion on abortion

The abortion opinion literature on Latin America is mostly limited to analyses consisting of frequency statistics or bivariate analysis (Faúndes et al. 2004; Garcia, Lara, and Goldman 2003; Gogna et al. 2002; Alves Duarte et al. 2002; Gonzalez de Leon Aguirre and Billings 2001; Carnevale et al. 1998; Casanueva et al. 1997; Lesa et al. 1995; Núñez-Fernández, Shrader-Cox, and Benson 1994), with few multivariate analyses (Garcia et al. 2004; Bailey et al. 2003; Becker, Garcia, and Larsen 2002; Cesar et al. 1997; Duarte Osis et al. 1994). To my knowledge, there are no peer-reviewed studies that compare national opinions over time in any Latin American country, such as have been done with US data (Shaw 2003; Strickler and Danigelis 2002; Mouw and Sobel 2001; Bumpass 1997; DiMaggio, Evans, and Bryson 1996).

In the existing literature on Latin America, increased levels of education, increasing socio-economic status, paid employment, and no religious affiliation have been found to be correlated with increased support for a woman's right to be able to access an abortion (Garcia et al. 2004; Bailey et al. 2003; Becker, Garcia, and Larsen 2002; Alves Duarte et al. 2002; Cesar et al. 1997; Casanueva et al. 1997; Núñez-Fernández, Shrader-Cox, and Benson 1994; Duarte Osis et al. 1994). Characteristics found to be correlated with decreased support for abortion rights

include religious affiliation, frequent religious service attendance, living in a rural area, and increasing parity (Garcia et al. 2004; Becker, Garcia, and Laresen 2002; Gogna et al. 2002; Duarte Osis et al. 1994; Casanueva et al. 1997). Evidence from the region on age is mixed (Garcia et al. 2004; Bailey et al. 2003; Alves Duarte et al. 2002; Gogna et al. 2002; Alves Duarte et al. 2002; Cesar et al. 1997; Casanueva et al. 1997; Núñez-Fernández, Shrader-Cox, and Benson 1993), as is evidence on the relationship between gender and abortion support (Garcia et al. 2004; Gogna et al. 2002). Two studies conducted in Mexico found opinion differences by geographic region (Garcia et al. 2004; Becker, Garcia, and Larsen 2002).

Opinions regarding abortion have been studied more extensively in the US than in Mexico and research from the US may provide insight into what factors will influence public opinion in Mexico. Whether polarization of opinions regarding abortion has increased over time has been studied in the US using data from the National Election Study (NES) and the General Social Survey (GSS). Studies show that a majority of Americans hold moderate views on abortion, neither supporting the right to abortion in all circumstances nor a total ban on abortion in all circumstances (Cook, Jelen, and Wilcox 1993; Blake and Del Pinal 1981). One study found that polarization occurred between 1972 and 1994 (Di Maggio, Evans, and Bryson 1996), while another using the same data but different statistical methods found no polarization to have occurred (Mouw and Sobel 2001). Average levels of abortion support in the US remained relatively stable between 1975 and 2000 (Bolzendahl and Myers 2004; Jelen, Damore, and Lamatsch 2002; Bumpass 1997).

Characteristics correlated with support for the right to abortion in the US include higher levels of education, living in an urban environment, higher income, no religious affiliation, and believing in the acceptability of premarital sex (Bolzendahl and Myers 2004; Strickler and

Danigelis 2002; Jelen, Damore, Lamatsch 2002; Hertel and Russel 1999; Hildreth and Dran 1994). Among Latinos in the US, characteristics correlated with increased support for abortion rights include increasing income, being female, increasing education, and the belief that women are better off if they have careers (Bolks et al. 2000).

Characteristics correlated with less support for or opposition to the right to abortion in the US include increasing frequency of religious attendance, affiliation with an Evangelical or conservative Protestant denomination, being Catholic, living in the South, and increasing family size ideals (Hoffman and Mills Johnson 2005; Wang and Buffalo 2004; Bolzendahl and Myers 2004; Strickler and Danigelis 2002; Jelen, Damore, and Lamatsch 2002; Petersen 2001; Bolks et al. 2000; Bumpass 1997).

The evidence on gender is mixed and has been shown to depend on marital and employment status (Bolzendahl and Myers 2004; Jelen and Wilcox 2003; Jelen, Damore, Lamatsch 2002; Strickler and Danigelis 2002; Bolks et al. 2000; Hertel and Russel 1999; Bumpass 1997; Alvarez and Brehm 1995). Employed women have been found to have higher average levels of support for abortion than men or unemployed women (Jelen, Damore, Lamatsch 2002; Bumpass 1997). Strickler and Danigelis (2002) found that females were more supportive of abortion rights only when additional political views were controlled for, but otherwise no relationship was evident. Hertel and Russel (1999) found that overall, men had higher support for abortion rights than women, but after controlling for marital and employment status, the effect was reversed.

While religion is a significant predictor of abortion support, studies have found that Catholics and Evangelicals have become more dispersed or polarized over time (Evans 2002; Hoffmann and Miller 1998; Hoffmann and Miller 1997). Additionally, the negative effect of

identifying with Catholicism on support for abortion rights has attenuated in the US over time (Strickler and Danigelis 2002; Hoffmann and Miller 1997). The religious composition of Mexico has been changing and this change may affect opinions on abortion. While Mexico remains a predominantly Catholic nation, the proportion of the population that is Catholic has decreased from 96% in 1970 to 88% in 2000 (INEGI 2000). It is unclear how increases in the non-Catholic population will affect opinion. In the US, for example, Evangelicals are associated with opposition to abortion in the public debate (Hoffman and Mills Johnson 2005). However Gallagher (2004) found that over half of Evangelicals surveyed think abortion should be legal in at least some circumstances. Differences do appear at the extremes, as Evangelicals are more likely to be against abortion in all circumstances than other religious groups (Hoffman and Mills Johnson 2005; Gallagher 2004). The increase in the non-Catholic population in Mexico is not only attributable to increasing numbers of Protestants and Evangelicals (7.2% in 2000), but also to an increase in those who classify themselves as non-religious (3.5% in 2000); affiliation with other religions is negligible (less than 1% in 2000) (INEGI 2000).

The influence of the Catholic Church in Mexico is a determinant of opinion on abortion, but a previous study found that a majority of respondents thought that the opinion of the Catholic Church should not be taken into account when legislating abortion (Garcia et al. 2004). This reflects the secular culture that exists in Mexico (Blancarte 2001). Dobbelaere (1993) argues that a decline of religious beliefs and practices and a weakening of the Church's authority in the daily lives of believers both contribute to secularism. She argues that people now choose which beliefs and practices to adhere to, as opposed to the "set menu" that was more common historically. In this way, Dobbelaere argues, people may compartmentalize religion. Because of the history of separation of church and state, Mexican Catholics may still support ideas such as

divorce, the use of contraceptives, and abortion, all of which they may consider to fall under the civic realm.

This analysis will be one of the first to look at attitudes over time using nationally representative surveys of a Latin American nation. It will examine polarization across regions and time. Furthermore, this analysis will look at regional differences in individuals' opinion. Studies on Latin America are generally smaller in scale, interviewing people in isolated geographic areas. Finally, this paper is especially timely, as Mexico City liberalized its abortion laws in April 2007 and other states are considering changes to their penal codes after the Supreme Court upheld the constitutionality of Mexico City's abortion law in 2008 (E. Troncoso, personal communication, January 5, 2009).

3. THEORETICAL FRAMEWORK

In this analysis I use the framework of opinion change and polarization proposed in Zaller (1992), where individuals' opinions are not fixed over time and a variety of factors may affect polarization. Zaller (1992) proposes the Reception-Acceptance Model (RAM) of attitude change. This model explains how individuals acquire information from the environment and form opinion statements. An individuals' increased political awareness increases the level of exposure to messages from groups representing the dominant and countervailing sides of an issue, and it also influences the ability to process messages and evaluate them based on predispositions. Within the abortion debate, the pro-life and pro-choice groups offer countervailing messages to the public.

In modeling opinion changes over time and polarization, I assume that opinions are not fixed. Zaller hypothesized that individuals "do not typically possess 'true attitudes' on issues" but rather a series of attitudes, that may even be inconsistent (Zaller 1992, p 93). What an

individual expresses as an opinion at any point in time depends on salient attitudes in his or her mind from which he or she samples at the time of the interview. The balance of considerations in an individual's mind at the time depends on the intensity of both sides' messages, informational flows in the political environment, and the individual's political awareness (Zaller 1992, p 52). For example, in the present analysis, the salient messages from which individuals will depend on their predispositions such as religious beliefs as well as the content and quantity of messages that reach them from the pro-life and pro-choice camps. Environmental factors will affect the content and quantity of messages because states across Mexico vary in characteristics such as socio-demographics, media sources, and dominant political parties. Not only do the political parties differ with regard to their positions on abortion rights, as mentioned in the Background section, but the predominant newspapers in Mexico also differ in their ideology and/or target audiences. For example, the Jornada is liberal, El Universal is more centrist, and La Reforma is more conservative (Lawson 2002).

According to Zaller's model, the following can cause attitude change: rapid change in elite positions on the issue, change in the intensity of the dominant message, or change in the intensity of the countervailing message. The term "elite" is used because individuals are dependent upon elites such as politicians, journalists, clergy, activists, and policy specialists for information on any given issue (Zaller 1992; Lippman 1922/1946). Zaller states that attitude change can occur if the relative prevalence of one side's messages increases. If the quantity of pro-life messages remain constant, even if they outnumber pro-choice messages, an increase in the quantity of the latter may produce a movement in public opinion toward pro-choice attitudes.

The environment will affect what messages an individual receives, but individual characteristics will affect how a person evaluates them and the likeliness they will accept each

message. More politically aware individuals on the pro-choice side have a larger store of existing pro-choice considerations or messages and therefore exhibit more inertial resistance to pro-life messages (and vice versa for more politically aware pro-life individuals). More aware individuals are also more likely to recognize messages from the opposing side as being inconsistent with their own predispositions and are therefore less likely to accept those messages; this resistance is called partisan resistance (Zaller 1992, p. 121-122).

Zaller states that when elites as well as their communications are evenly divided between the two sides of an issue, “the effect of political awareness is to promote the polarization of attitude reports as more aware liberals gravitate more reliably to the liberal position and more aware conservatives gravitate more reliably to the conservative position” (Zaller 1992, p101-102). For polarization to have occurred over the time period studied in the current analysis, pro-choice individuals would have had to gravitate more to the pro-choice position and pro-life individuals would have had to gravitate more to the pro-life position. However, if the quantity of pro-choice messages increased relative to the pro-life message, then overall public opinion would move toward the pro-choice position according to Zaller’s model.

In the present analysis, I model individual opinions as a function of individual characteristics (gender, occupation, age, civil status), affiliations (religion, frequency of religious service attendance, political party affiliation), and environmental characteristics (region, level of state law restrictiveness on abortion, and state maternal mortality rates). Based on the model and existing literature, I form three primary hypotheses. First, respondents from 2006 will be more polarized than those in 2000. After changes in the law in Mexico City in 2000, the intensity of messages on both sides of the abortion issue increased, and this increased intensity of messages are expected to lead to polarization.

Second, respondents from the Federal District will be more polarized on the issue of abortion than respondents living in other regions of Mexico. Mexico City is more heterogeneous than other regions of Mexico with respect to socio-demographic characteristics of the population. Variance in public opinion, or the polarization of public opinion, reflects not only the level of individual and community characteristics but also reflects the variance of these characteristics within a community; therefore more polarization will be observed in Mexico City. Additionally, while the intensity of messages on both sides of the debate increased throughout Mexico, it did so more in Mexico City, which was the only region directly affected by these law changes.

Third, I hypothesize that individual- and state-level characteristics will be correlated with opinions on abortion. At the individual level, I expect to find differences in abortion support between those of all religions who attend church more often and those who do not attend or do so less often. As mentioned in the background section, some individuals may be more willing to choose which teachings of their church to adhere to, and individuals who attend church more often may be less willing to do so. Theory suggests that employment status, as it directly affects worldviews, would have an effect on support for abortion among women. Luker (1984) argues that abortion opinion is polarized, allowing little room for compromise or dialogue between the two camps because each holds a worldview that conflicts with the other. According to Luker's analysis, those who oppose abortion believe that motherhood is the most important role for women and that delaying motherhood for career purposes lowers the importance of this role in society. However, Luker's analysis was US-based; therefore her conclusions may not apply in the Mexican context. With respect to religion, Dobbelaere (1993) argues that working women are more likely to believe that they have control of their world and are more willing to pick and choose which beliefs from their religion they will adhere to, while housewives are less willing to

do so. This has consequences for opinion on abortion if working women are Catholic but are willing to ignore the Church's prohibitions on contraceptives and abortion. Thus I expect to see a difference in support for abortion between working women and homemakers.

At the state level, I hypothesize that maternal mortality ratios affect individuals' opinions on abortion. In another field of research on public opinion and policy, opinions regarding environmental policy were found to be associated with environmental conditions where the respondent lives (Johnson, Brace, and Arceneaux 2005). People who live in more polluted areas were found to be more supportive of environmental protection policies. An interpretation of this through Zaller's model would be that regions with pollution problems have a higher intensity of messages on the side of environmental protection. Similarly, people who live in areas with higher maternal mortality may be more exposed to messages regarding maternal mortality, of which unsafe abortion is the fourth leading cause in Mexico (Zúñiga, Zubieta, Araya 2000). Furthermore, these individuals may be more predisposed to make abortion safe and accessible so that women will not risk their lives to make reproductive health decisions.

Additionally, I hypothesize that a state's level of restrictiveness on laws concerning abortion will influence respondents' support for abortion. In the US, an argument could be made that in states where public opinion is less supportive of abortion rights, laws are enacted to hinder access to abortion (parental consent or notification laws and mandatory waiting periods). Thus, laws are enacted as a response to public opinion. However, in Mexico, the same laws have been in place since the 1930s, and have only been liberalized very recently in Mexico City. Given the length of time in which restrictive laws have been in place, it is more likely in Mexico that state laws affect public opinion, and not vice versa. People may see the status quo in their state as normal or acceptable and judge more liberal laws negatively. Based on the

aforementioned theory, I propose the hypothesis that the following characteristics influence an individual's existing considerations and likelihood of accepting new messages and therefore levels of support for abortion rights:

- (a) socio-demographic characteristics – gender, education, marital status, employment status;
- (b) affiliations – religion, political party; and
- (c) state characteristics – maternal mortality ratios, restrictive laws.

4. METHODS

4.1 Data

The data used in this analysis was obtained from the country office in Mexico of the Population Council, an international, nonprofit, nongovernmental organization that conducts biomedical, social science, and public health research. This organization conducted nationally representative surveys of Mexican men and women aged 15 to 65 in 2000 and again 2006, to obtain information about the respondents' knowledge and opinions on several issues, including current problems in Mexico, sex before marriage, access to contraceptives, sex education, emergency contraception, abortion rights, and current abortion laws. The samples consisted of 3,500 individuals in 2006 and 3,000 in 2000. The same individuals were not interviewed at both points in time. For further information on study design, see Garcia et al. (2004) and Becker, Garcia, and Larsen (2002).

I collected data on circumstances in which abortion is not penalized in each state from states' penal codes, as listed on the Harvard School of Public Health's website (<http://www.hsph.harvard.edu/population/abortion/abortionlaws.htm>) and from the Grupo de Información en Reproducción Elegida (GIRE), a Mexican non-profit, non-governmental

organization that provides and distributes information on reproductive rights (GIRE 2007). The following are the seven possible circumstances under which abortion may be legal in Mexican states: rape, risk to the women's life, endangerment of the woman's health, genetic or congenital deformity of the fetus, artificial insemination without consent, economic reasons, and accidental miscarriage. I created a variable indicating each state's order in a ranking of restrictive laws on abortion (ranges from 1=most restrictive to 3=least restrictive) (Appendix II). I also look at maternal mortality ratios, and I merged this measure and states' level of restrictive laws into the Population Council's original dataset for 2006. Information on respondents' residence in 2000 is only provided by region, not state. Therefore I am unable to look at the effects of restrictive laws and maternal mortality ratios on individuals' opinions in 2000. Due to dissimilarity of laws and maternal mortality ratios in neighboring states and within regions, I am not able to construct regional variables for the 2000 data representing regional restrictiveness or regional maternal mortality. Thus, the effects of state-level characteristics (maternal mortality rates and level of restrictiveness of laws) are evaluated using only the 2006 data.

4.2 Estimation

In the literature on US abortion attitudes, various measures of polarization have been used, including linear trend in mean difference, linear trend in kurtosis, mean difference between groups, F test for equality of variances between groups, difference in variance at two points in time, and linear trend in variance, (Evans 2002; Mouw and Sobel 2001; Hoffman and Miller 1998; Hoffmann and Miller 1997; DiMaggio, Evans, and Bryson 1996; Gay, Ellison, and Powers 1996). The dependent variables in this analysis are latent variables, where what matters is the ordering of responses, and not the values assigned to each response. Since the intervals between

responses may not be the same, the numbering is arbitrary, and calculating the mean or variance using values from the Likert scale has no meaning.

Therefore in this analysis I use a heteroskedastic ordered probit model allowing for variable cutpoints is estimated using maximum likelihood. The model is specified as follows:

$$y_i^* = x_i\beta + \varepsilon_i$$

$$y_i = \begin{cases} 1 & \text{if } y_i^* < \tau_1(x; \theta) \\ 2 & \text{if } \tau_1(x; \theta) < y_i^* \leq \tau_2(x; \theta) \\ 3 & \text{if } \tau_2(x; \theta) < y_i^* \leq \tau_3(x; \theta) \\ 4 & \text{if } \tau_3(x; \theta) \leq y_i^* \end{cases}$$

where y represents an individual's latent opinion on abortion; τ_1, τ_2, τ_3 refer to the cutpoints; x is a set of covariates; and θ is a vector of parameters to be estimated. The dependent variable, y , is latent support for abortion, and the observed y is the category of an individual's response on the Likert scale. The observed category changes when latent opinion (y^*) crosses a cutpoint (Long and Freese 2006). This model differs from the conventional ordered probit model because it estimates the variance and normalizes τ_1 and τ_2 to -1 and 0, respectively, whereas the usual ordered probit model normalizes σ and τ_1 to 1 and 0, respectively. Normalization is necessary because different combinations of the parameter values can lead to the same log likelihood value, which leads to an identification problem (Verbeek 2000). In addition, the conventional ordered probit model assumes that neither the cutpoints nor the variance depends on x , whereas in this model they do (for further information on this model see Mouw and Sobel 2001; Sobel 1998). In this model, variances are not identified, but fixing the cutpoints identifies the scale and allows comparison of the relative size of the variance across years (Mouw and Sobel 2001).

Monte Carlo simulations were used to evaluate how robust models were to changes in the number of response categories in the outcome variable (a Likert scale). While the survey in

2006 provided 5 categories of responses for respondents to choose from, the survey in 2000 did not include the middle category (3) and therefore only has 4 response categories. I hypothesize that this difference in the surveys across years will not affect estimates of variance, and thus polarization. To test this hypothesis, I ran Monte Carlo simulations and randomly assigned all values of the middle category (neither agreed nor disagreed) in 2006 to either the category directly above (agreed) or below (disagreed) so that data from 2006 had the same number of categories as the data from 2000. I then ran the model on this altered data and compared estimates from both the 3-cutpoint and 4-cutpoint models. Results from the Monte Carlo simulations showed that the model used in this analysis is robust to changes in the number of response categories in the outcome variables. Using a 3-cutpoint model provided parameter estimates similar to the 4-cutpoint model (Table 3.1), thus I conclude that differences in the number of response categories for the Likert scales between data from 2000 and 2006 had no effect on estimates of the underlying latent variable's variance. Slight differences were seen in the variance and mean coefficient parameter estimates, but significance levels and direction of the signs were unchanged. The final analysis is run using the 3-cutpoint model and all responses of "3" from 2006 were randomized to either "2" or "4," representing "agrees" or "disagrees" because, had they not been given that middle option of "neither agrees nor disagrees" in 2006, they would have been forced to choose between these two categories.

4.3 Measures

Support for the right to an abortion, the dependent variable in this analysis, is measured using a Likert scale, where respondents were given a list of the hypothetical circumstances for which a woman may wish to obtain an abortion. Respondents were asked whether they strongly

agreed, agreed, disagreed, strongly disagreed, or had no opinion on whether abortion should be allowed in each of nine circumstances (rape, endangerment of her life, risk to the woman's health, fetal deformity, lack of economic resources, when the woman is a minor, when the woman is single, pregnancy due to contraceptive failure, and whenever the woman decides). On the Likert scale, 1 is "strongly disagrees," 2 is "disagrees," 3 is "neither agrees nor disagrees," 4 is "agrees," and 5 is "strongly agrees." I analyze each circumstance separately and the dependent variable ranges from 1 (strongly disagrees) to 5 (strongly agrees), and 3 (neutral) is randomized to either 2 or 4 as described above. Then for estimation of the model, responses of 4 were recoded to 3, and 5 was recoded to 4, so the analysis was run on a scale of 1 through 4. However, in the state characteristics analysis run only on data from 2006, I keep the original values (including 3) and use the 4-cutpoint model.

Controls in the multivariate analysis include gender, age, education, civil status, religion, church attendance, occupation, political party affiliation, and geographic region. Education is represented by three dummy variables (less than secondary school, complete secondary school and/or technical/professional school, and college degree or higher). Age is measured in years and respondents are grouped into three categories (ages 15-24, 25-40, and 41-65). Marital status is represented by a series of dummy variables (married/in union, divorced/separated/widow, and single). Occupation is categorized as employed, homemaker, and unemployed/student/retired, and a dummy variable was created for each category. Religion is measured by three dummy variables (Catholic, non-religious, other religion). Frequency of religious service attendance is also measured by three dummy variables (attends weekly, attends monthly, attends only on special occasions or never). Political party affiliation is grouped into four categories and a dummy variable is created for each (PAN, PRI, PRD, and other party). The variable indicating

states' maternal mortality ratios is continuous, where the maternal mortality ratio is the number of maternal deaths per 100,000 live births. The variable measuring a state's level of restrictiveness regarding abortion laws ranges from one to three, indicating most restrictive to least restrictive. Most restrictive is defined as permitting abortion in less than four circumstances, moderately restrictive is defined as permitting abortion in exactly four circumstances, and least restrictive is defined as permitting abortion in more than four circumstances.

5. RESULTS

5.1 Descriptive

The number of observations with non-missing values for all variables included in the current analysis is 2,805 in 2000 and 3,243 in 2006. Differences by year in the sample characteristics were statistically significant for several characteristics (Table 3.3).

The percentage of respondents that “strongly disagreed” with support for the right to abortion decreased from 2000 to 2006 in all circumstances (Table 3.2). The percentage of those that “strongly agreed” also decreased over time in seven of the nine circumstances. The percentage that “agreed” with the right to abortion increased in each circumstance, and the results show that respondents tended to be more in the middle than at the extremes as time passed. In both 2000 and 2006, the percentage that “agreed” with the right to abortion was higher in four circumstances and lower than the percentage that “disagreed” in five. However in 2006, those that disagreed with the right to abortion tended to moderate their views, as they were less likely than those in 2000 to “strongly disagree” as opposed to just “disagree.” This shows that respondents are moving toward more supportive views and are less polarized (i.e., no longer at the extremes).

5.2 Multivariate analysis

Tables are presented for individual regressions with all controls (Table 3.4) and a summary table showing a model run with just the year dummy, and coefficients on the year dummy after adding additional controls (Appendix 3C).

5.2.1 Effects of time

Time had a positive effect on average levels of support for abortion rights in six of the nine circumstances (fetal deformity, economic reasons, woman is single, woman is minor, failure of contraceptive method, and whenever the woman decides) and a negative effect in two circumstances (danger to woman's life and health). Respondents in 2006 were less polarized (i.e., had negative variance coefficients) in all nine circumstances than respondents in 2000.

5.2.2 Demographic Characteristics

Women supported the right to abortion more than men in only one circumstance (fetal deformity), but were more polarized in two circumstances (rape and fetal deformity). Individuals with children were more supportive of abortion rights in one circumstance (failure of contraceptive method) and less polarized in two (economic reasons and failure of contraceptive method).

As compared to respondents in the 25 to 40 age range, those aged 15 to 24 were more supportive of abortion rights in one circumstance (woman is single), while those aged 41 to 65 were less supportive in one circumstance (economic reasons). This age group was more polarized in cases of rape, health of the woman, and when the woman is a minor.

The effects of education were significant, as those with medium levels of education were more supportive of abortion rights than the low education group in six circumstances (rape, life of woman, health of woman, fetal deformity, woman is a minor, whenever the woman decides)

and those with high education were more supportive in three circumstances (rape, health of woman, fetal deformity). Respondents with high education were less supportive of abortion rights than those with low education levels when the woman is single and were significantly more polarized in five circumstances. Respondents with medium levels of education were less polarized in three circumstances (rape, life of the woman, health of the woman). The interaction term between men and high education was significant and negative in one circumstance each—the mean (rape) and variance (whenever a woman decides).

Marital status had some effect on polarization and little effect on average levels of support for abortion. Single respondents supported abortion at higher levels in one more circumstance than married respondents, and separated, divorced, or widowed respondents had less support for abortion in one circumstance. The latter category was more polarized than married respondents in three circumstances.

Employment status had little effect on support for abortion. Homemakers were less supportive of abortion rights in two circumstances (life of the woman, fetal deformity) and less polarized in the same two.

5.2.3 Individual Affiliations

Religion had significant effects on support for abortion rights, and political party identification had small effects. Compared to Catholics, respondents identifying with another religion were less supportive of abortion rights in five circumstances. There were no differences in polarization between the two groups. Respondents who did not identify with a religion were more supportive than Catholics in two circumstances and more polarized in one circumstance.

While religious affiliation was significantly correlated with abortion opinions, frequency of religious service attendance was a better predictor of abortion opinions and polarization.

Respondents of a religion other than Catholic were less supportive of abortion rights in five circumstances (rape, life of woman, health of woman, fetal deformity, woman is a minor). There were no differences in polarization between Catholics and members of other religions. Non-religious respondents were more supportive of abortion rights in one circumstance (woman is a minor) and more polarized in one (failure of contraceptive method).

Those who attend church once a month were more supportive of abortion rights than those who attend weekly or more in four (rape, life of woman, health of woman, fetal deformity), were less supportive in one circumstance (whenever the woman decides), and were more polarized in one circumstance (whenever the woman decides). Those who attend on special occasions only or never had more support for abortion rights in six circumstances (rape, life of woman, health of woman, fetal deformity, economic reasons, whenever the woman decides), were less polarized in one (health of woman), and were more polarized in two (failure of contraceptive method and whenever woman decides).

Respondents who identified with the Institutional Revolutionary Party (PRI) were more polarized on the issue of abortion rights than respondents who identified with the conservative PAN in one circumstance (fetal deformity). There were no other significant differences between the three major parties (PAN, PRI, PRD). Members of other political parties (not including PRI and PRD) were less supportive of abortion rights than members of PAN in four circumstances (rape, life of mother, health of mother, economic reasons) and more polarized in two (rape, fetal deformity).

5.2.4 Regional effects

Individuals in regions outside of the Federal District were less supportive of abortion rights and were less polarized in these opinions (Table 3.5). Respondents in the Pacific North,

North Central, Bajio, Central region, and the Southeast were less supportive of abortion rights in nine, six, six, one, and five circumstances, respectively. They were also less polarized in two, four, six, one, and six circumstances respectively. In only one circumstance (woman is single) were respondents from the Central and Southeast regions more supportive of abortion rights than those respondents in Mexico City. Both of these regions were also less polarized in this circumstance.

The interaction term between year=2006 and the Federal District was not significant for the variance coefficient, but was negative and significant in four circumstances for the mean coefficient, indicating less support over time in the Federal District but no change in polarization.

5.2.5 State characteristics (2006 only)

States' maternal mortality ratios (MMR) had small effects on both polarization and support for abortion (Table 3.6). Higher maternal mortality ratios had a significant positive effect on polarization in four circumstances and a significant positive effect on support for abortion in six circumstances.

States' higher level of restrictiveness in their abortion laws had a significant negative effect on support for abortion and a significant negative effect on polarization (Table 3.7). Respondents from moderately restrictive states had less support for abortion than those in the least restrictive states in four circumstances, while respondents in the most restrictive states had less support in five circumstances. Respondents from the moderately restrictive and most restrictive states were less polarized in four and five circumstances, respectively.

5.2.6 Extensions

As an extension to this analysis, I look at the circumstance of fetal deformity, where females are more polarized. I run three models to determine what drives this polarization and

whether it attenuates after controlling for additional variables. I run the model first with year and gender only, then add education, and finally, all the control variables (Table 3.8). Running the model with year and gender only suggests that females are more supportive of the right to abortion in the circumstance of fetal deformity but also more polarized than males. After adding education to the model, we see the effect of gender attenuates slightly. Finally, when we add other controls to the regression, we see that the effect of gender on the mean coefficient was biased downward in the absence of these other controls. After controlling for additional variables, we also see that the effect of gender on polarization is greater.

As an additional extension, I run the regional analysis over time with an interaction for each region times the year dummy to see whether respondents in each region have become more polarized or supportive over time (Table 3.9). Generally there are few significant changes in polarization over time within specific regions, with the exception of the Southeast, which did become more polarized in the circumstances of rape and danger to woman's life. The region became less polarized under economic reasons. In all three of these circumstances as well as fetal deformity, support for abortion rights increased in the region over time. Other regions that showed increases in average levels of support include the Pacific North (when there is a contraceptive failure), North Central Gulf (fetal deformity), and Bajio (economic reasons). Regions where average levels of support decreased include the Pacific North (rape), Bajio (danger to woman's life), and the Central region (rape and risk to woman's life).

6. DISCUSSION

Groups that were more consistently polarized include respondents in 2000, residents of the Federal District, respondents with high levels of education, those that attend religious services monthly or on special occasions/never, females, respondents aged 41 to 65, and

separated/widowed/divorced respondents. Significant predictors of support for abortion rights include age, education, religion, frequency of religious attendance, and geographic region.

The hypothesis that respondents in 2006 would be more polarized was rejected. This analysis shows how individuals have become less polarized nationwide on this issue over time and more supportive of abortion rights. According to Zaller's theory, movement towards the pro-choice side of the issue would have occurred if the quantity of pro-choice messages increased relative to pro-life messages. Respondents in 2006 had higher levels of support for abortion rights in eight of the nine circumstances on which respondents were surveyed.

In the circumstance of pregnancy due to contraceptive failure, respondents with children had higher levels of support for abortion. This support may be related to their own experience with unplanned pregnancy.

Given previous evidence, it is not surprising that the results presented here do not show consistent patterns along gender lines (Bolzendahl and Myers 2004; Garcia et al. 2004; Gogna et al. 2002; Jelen, Damore, Lamatsch 2002; Strickler and Danigelis 2002; Petersen 2001; Bolks et al. 2000; Hertel and Russel 1999; Alvarez and Brehm 1995). However, women were more polarized and this could be due to division among women who work and those that stay home. There was some evidence for the hypothesis that women who stay home have less support for abortion rights and are less polarized on the issue than women who work or study.

The hypothesis that increasing levels of education are correlated with higher support for abortion rights was supported, as found in previous studies in the US (Bolzendahl and Myers; Strickler and Danigelis 2002; Bolks et al. 2000) and Latin America (Garcia et al. 2004; Bailey et al. 2003; Becker, Garcia, and Larsen 2002; Alves Duarte et al. 2002; Cesar et al. 1997; Duarte Osis et al. 1994; Núñez-Fernández, Shrader-Cox, and Benson 1994). This education effect may

be due to individuals' own experiences and preferences to delay childbearing in order to complete higher levels of education. Alternatively, this education effect could be due to increased knowledge about early pregnancy and the abortion process.

In the US, opinions on abortion tend to be correlated with political party affiliation. This tendency does not appear to be present in Mexico. There were statistically significant differences among party lines in five of the nine circumstances, but in the majority of these, it was only those of "other" political parties (i.e., not PRD or PRI) having lower levels of support for abortion rights than PAN respondents. While two of the three main political parties in Mexico (PAN and PRD) have official positions on the issue of abortion rights (against and for, respectively) differences on opinions were not seen along these lines.

Lower levels of support were found among those who attend church more frequently and who indicate an affiliation with Protestant denominations. These findings are supported by studies in the US (Bolzendahl and Myers 2004; Strickler and Danigelis 2002; Bolks et al. 2000; Bumpass 1997). More frequent church-goers may adhere more strictly to their church's positions on abortion and be less willing to pick and choose which aspects to adhere to, as suggested by Dobbelaere (1993).

Respondents in the Federal District were consistently more polarized than other regions, but further analysis showed that polarization did not increase in that region over the time period studied. With a population of close to 20 million, Mexico City is home to one-fifth of Mexico's entire population and there exist great disparities in education and wealth, which are both factors that influence opinion. This may explain why Mexico City is more polarized than other regions, which may be more homogenous with respect to demographic characteristics that have been shown to influence opinions on abortion. While results in this study suggest levels of support for

abortion have decreased over time in the Federal District, a new, unpublished study suggests that levels of support for abortion actually increased between 2006 and 2007 in the Federal District (García et al. 2008); this result may be due to increased support or the tendency to state true attitudes when a behavior is legal.

Respondents living in states with higher maternal mortality ratios had increased levels of support for abortion when controlling for other characteristics. This result could be because people who know of women dying from pregnancy-related causes have more accepting attitudes toward making abortion safe and legal in an effort to prevent such deaths. Restrictive state laws on abortion were correlated with lower levels of support for abortion rights. Respondents in these states may have more homogenous, pro-life views, which are consistent with their laws. However, abortion rates are high throughout Mexico as compared to other countries (Juarez et al. 2008; Sedgh et al. 2007), indicating that while public opinion may be anti-abortion, women still practice abortion when faced with an unwanted pregnancy. This mismatch between policy, opinion, and actual practices has negative effects on public health, causing easily preventable injuries and at times even deaths (Zúñiga, Zubieta, Araya 2000; Schiavon et al. 2007).

6.1 Limitations

There are several limitations worth mentioning. Support for abortion is an abstract idea, and it is impossible to measure accurately and perfectly across individuals. Additionally, studies have shown that individuals can be quite inconsistent in their answers on abortion opinions, which brings into question the validity of survey instruments on abortion (Carlson 2008).

It is not probable that such large shifts in the religious make-up of Mexico occurred over a six-year period as suggested by the summary statistics; therefore this result is most likely due

to questionnaire design. In 2000 respondents were first asked if they practice a religion, and then, if they answered yes to the first question, were asked to elaborate in a second question regarding which religion. However, in 2006, respondents were simply asked to which religion they belong. This modification may have prompted those who rarely or never attend church to say that they did not “practice” a religion in 2000, whereas in 2006, those who are nominally religious may have selected a religious category even though they may not have considered themselves to be “practicing,” had they been asked directly.

Another difference in the survey design between the two years was the structure of the response categories for the Likert scales. However, Monte Carlo simulations show that this difference in the response categories of the observed outcome variables does not affect variance or mean parameter estimates.

A final limitation in this study is the fact that weights were provided with the data for 2006 but not 2000, and so I do not use weights in the current analysis. To determine the effect this has on the results, I ran the analyses separately on the 2006 data only, using weights. In regressions for each of the nine circumstances, there were approximately two to five variables with differences in significance levels for the variance coefficients between the weighted and unweighted regressions and approximately three to five variables with differences in significance levels for the mean coefficients. Additionally, I was not able to correct standard errors for clustering because a variable identifying primary sampling units was not provided with the 2000 data.

Finally, as mentioned in the methods section, respondents’ state of residence was only identified in 2006, and therefore the effects of state-level characteristics were only analyzed for that year. While opinions have changed over this time period, state-level characteristics such as

maternal mortality rates would not have changed very much, and rankings of restrictiveness of state abortion laws would not have changed at all.

6.2 Policy Implications

Abortion is an issue that has attracted increasing national attention in Mexico over the past decade. Laws in Mexico City have been liberalized in two separate moves, and the issue has been widely discussed in the nation's two most recent presidential elections. In 2008, the federal Supreme Court reviewed the constitutionality of the Federal District's 2007 law permitting elective abortion up to 12 weeks gestation and upheld this law. Understanding the public's attitude and polarization on this issue can help us understand potential changes in abortion laws in other Mexican states in the future. Legislators in other Mexican states may be interested in how opinions have changed in Mexico City, especially if they are considering introducing liberalized abortion laws in their own states. Changes to Mexico City's laws first occurred in 2000, the first year of data analyzed in this study. Attitudes in the Federal District did not become more polarized over the six-year period that followed, although average levels of support did decrease. These findings could forecast the public's sentiment in other states if similar legislative changes are to occur, which could have implications for further reforms. For example, if legislators in other states know that general public opinion on abortion has been increasing and the public is less polarized, they may be more inclined to liberalize abortion laws in their own states. Others may be wary, since support for abortion rights in the Federal District did decrease in four of the nine circumstances between 2000 and 2006, the time period between district's liberalization of abortion laws and complete legalization up to twelve weeks of pregnancy. However, accountability to the public has not been at the forefront of abortion reforms in Mexico, as reforms in the Federal District were not motivated by public support for

abortion rights. Furthermore, changes in levels of overall opinions and polarization of opinions in the Federal District may not be a good indicator of changes in public opinion in other states due to the former's greater heterogeneity.

The results in this study may be generalized to other Latin American countries due to similar cultural norms and restrictive laws on abortion. Mexico is home to the second largest Catholic population in the world, and the Vatican sees the country as a critical site for spreading orthodox belief and as an important battleground for the debate on abortion worldwide. Church officials and anti-abortion activists believe that changes in Mexico could lead to changes throughout the region (Kulczycki 2007). To the extent that my results can be generalized, this analysis could be useful in predicting decreases in polarization of public opinion once discussion is opened up and laws are passed in other Latin American countries.

However, Mexico is unique in ways that may defy generalizing these results to its neighbors. For example, Mexican states have the ability to control their own abortion laws, which is not the case in many Latin American countries, where laws are made at the federal level and regions or departments have less autonomy. In addition, Mexico has a long history of secularism, and for many years the Catholic Church did not have diplomatic relations with the Mexican government. Finally, Mexico has a strong civil society movement working on sexual and reproductive rights, which has been both vocal and effective, and the Federal District specifically has a progressive government. For these reasons Mexico (or some states within Mexico) may be more likely to pass laws in opposition to the Church's teachings than other countries in the region. Therefore the results from this analysis are primarily useful for predicting what might happen in other states within Mexico if liberalized abortion laws were to be passed.

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Table 3.1 Summary table of Monte Carlo simulations*

Dependent variable (Likert scale)	Variance		Mean	
	5-category	4-category	5-category	4-category
Rape	2.25 **	1.92 **	1.74	1.32 **
Danger to life of woman	2.08 **	1.71 **	2.56 **	1.96 **
Danger to health of woman	1.92 **	1.53 **	1.97 **	1.45 **
Fetal deformity	1.80 **	1.47 **	0.83 **	0.55 **
Economic reasons	0.78 **	0.49 **	-1.20 **	-1.17 **
Woman is single	0.67 **	0.38 **	-1.46 **	-1.40 **
Woman is a minor	1.01 **	0.74 **	-1.12 **	-1.11 **
Failure of contraceptive method	0.81 **	0.56 **	-1.50 **	-1.44 **
Whenever a woman decides	1.27 **	1.00 **	-1.41 **	-1.36 **

**Significant at .01 level

Table 3.2 Support for abortion, by year

	2000					Before randomization					After randomization				
	2000					2006					2006				
	Strongly disagrees	Disagrees	Agrees	Strongly agrees		Strongly disagrees	Disagrees	Neither agrees nor disagrees	Agrees	Strongly agrees	Strongly disagrees	Disagrees	Agrees	Strongly agrees	
Supports abortion in case of:	n	Percentage				n	Percentage				Percentage				
Rape	2805	25.03	10.66	17.22	47.09	3243	13.01	8.94	7.96	26.43	43.66	13.01	11.53	31.79	43.66
Danger to life of woman	2795	11.72	6.69	17.61	63.98	3227	8.97	8.78	8.53	30.18	43.54	8.97	11.80	35.69	43.54
Danger to health of woman	2800	14.96	8.82	21.70	54.52	3203	10.32	10.13	9.88	29.62	40.04	10.32	13.81	35.83	40.04
Fetal deformity	2773	32.64	14.24	17.10	36.01	3192	13.57	13.64	10.43	23.72	38.65	13.57	17.45	30.33	38.65
Economic reasons	2804	65.26	17.28	9.90	7.57	3219	45.78	30.05	11.35	7.82	5.00	45.78	34.71	14.51	5.00
Woman is single	2804	74.79	14.27	6.35	4.59	3219	52.35	29.58	9.19	6.00	2.88	52.35	33.33	11.44	2.88
Woman is a minor	2790	62.57	16.50	10.88	10.05	3187	43.82	27.30	10.30	11.41	7.17	43.82	31.69	17.31	7.17
Failure of contraceptive method	2795	75.02	13.26	6.76	4.96	3187	52.31	28.10	8.60	6.86	4.14	52.31	31.64	11.92	4.14
Whenever a woman decides	2796	68.44	11.25	7.62	12.69	3184	49.62	25.33	9.49	8.03	7.53	49.62	29.06	13.79	7.53

Table 3.3 Sample characteristics, unweighted

Variable	2000		2006		
	N	Prop.	N	Prop.	
Female	2805	0.58	3243	0.55	*
Has children	2805	0.65	3243	0.66	
Age					
15 to 24	2805	0.31	3243	0.31	
25 to 40	2805	0.40	3243	0.37	*
41 to 65	2805	0.29	3243	0.33	*
Education					
Low	2805	0.35	3243	0.34	
Medium	2805	0.50	3243	0.58	*
High	2805	0.15	3243	0.08	*
Civil Status					
Married or civil union	2805	0.60	3243	0.60	
Separated, Divorced, Widowed	2805	0.06	3243	0.07	
Single	2805	0.34	3243	0.33	
Religion					
Catholic	2805	0.78	3243	0.82	*
None	2805	0.14	3243	0.05	*
Other religion	2805	0.08	3243	0.12	*
Church attendance					
Weekly	2805	0.47	3243	0.42	*
Monthly	2805	0.16	3243	0.14	*
Special occasions only or never	2805	0.37	3243	0.42	*
Occupation					
Homemaker	2805	0.44	3243	0.31	*
Employed	2805	0.45	3243	0.46	
Employed* female	2805	0.15	3243	0.15	
Political party affiliation					
PAN	2805	0.36	3243	0.17	*
PRI	2805	0.24	3243	0.16	*
PRD	2805	0.08	3243	0.13	*
Other party or none	2805	0.22	3243	0.54	*
Region					
Pacific North (1)	2805	0.09	3243	0.09	
N. Central Gulf (2)	2805	0.17	3243	0.18	
Bajío (3)	2805	0.17	3243	0.17	
Central (4)	2805	0.17	3243	0.18	
Mexico City (5)	2805	0.19	3243	0.20	
Southeast (6)	2805	0.20	3243	0.18	

* Difference is significant at .05 level

Table 3.4 Support for abortion rights by circumstance, heteroskedastic ordered probit regression results

Variable	Rape (N=6048)		Life of woman (N=6022)		Health of woman (N=6003)	
	Variance	Mean	Variance	Mean	Variance	Mean
Year=2006	-1.04** (0.09)	0.12 (0.09)	-1.15** (0.09)	-1.33** (0.12)	-0.98** (0.08)	-0.70** (0.08)
Female	0.29* (0.13)	0.00 (0.13)	0.19 (0.13)	-0.02 (0.14)	0.17 (0.12)	0.04 (0.12)
Has children	0.06 (0.13)	0.09 (0.13)	-0.21 (0.13)	0.04 (0.13)	-0.07 (0.12)	0.04 (0.11)
Age (ref=25 to 40)						
15 to 24	0.07 (0.11)	0.06 (0.11)	-0.08 (0.11)	0.01 (0.10)	0.02 (0.10)	0.12 (0.09)
41 to 65	0.24** (0.09)	0.01 (0.09)	0.16 (0.09)	0.05 (0.09)	0.19* (0.09)	0.09 (0.08)
Education (ref=low)						
Medium	-0.22** (0.08)	0.66** (0.08)	-0.34** (0.08)	0.31** (0.08)	-0.27** (0.08)	0.35** (0.07)
High	0.33 (0.22)	1.93** (0.31)	-0.10 (0.18)	0.57 (0.21)	0.00 (0.18)	0.65** (0.19)
Male*high education	-0.35 (0.28)	-0.71* (0.35)	-0.20 (0.24)	0.00 (0.26)	-0.11 (0.24)	0.15 (0.24)
Civil Status (ref=married/union)						
Separated, Divorced, Widowed	-0.01 (0.16)	0.00 (0.15)	-0.09 (0.14)	-0.29* (0.13)	-0.01 (0.14)	-0.17 (0.13)
Single	0.13 (0.13)	0.32** (0.13)	0.05 (0.13)	0.16 (0.12)	0.06 (0.12)	0.06 (0.11)
Occupation						
Employed	-0.01 (0.13)	-0.07 (0.12)	-0.12 (0.13)	-0.19 (0.13)	-0.12 (0.12)	-0.18 (0.11)
Employed* female	0.01 (0.18)	0.16 (0.18)	-0.20 (0.17)	0.12 (0.18)	-0.06 (0.17)	0.21 (0.16)
Homemaker	-0.18 (0.13)	-0.12 (0.13)	-0.25* (0.12)	-0.29* (0.14)	-0.22 (0.12)	-0.22 (0.12)
Religion (ref=Catholic)						
Other religion	-0.08 (0.11)	-0.37** (0.11)	-0.07 (0.11)	-0.31** (0.10)	-0.04 (0.11)	-0.28** (0.10)
None	0.03 (0.14)	0.19 (0.16)	0.16 (0.15)	0.25 (0.18)	0.07 (0.14)	0.08 (0.14)
Church attendance (ref=weekly)						
Monthly	-0.04 (0.11)	0.60** (0.11)	-0.04 (0.11)	0.51** (0.11)	-0.10 (0.10)	0.29** (0.09)
Special occasions only or never	-0.04 (0.08)	0.46** (0.08)	-0.08 (0.08)	0.41** (0.08)	-0.15* (0.08)	0.33** (0.07)
Political party affiliation (ref=PAN)						
PRI	0.04 (0.11)	-0.13 (0.10)	0.10 (0.11)	0.05 (0.11)	0.13 (0.10)	0.04 (0.10)
PRD	0.16 (0.14)	0.24 (0.14)	0.03 (0.13)	0.17 (0.13)	0.03 (0.13)	0.22 (0.11)
Other party or none	0.25** (0.09)	-0.28** (0.09)	0.12 (0.09)	-0.24** (0.09)	0.12 (0.09)	-0.21** (0.08)
Region (ref=Mexico City)						
Pacific North (1)	-0.05 (0.15)	-1.18** (0.16)	-0.24 (0.14)	-0.53** (0.14)	-0.13 (0.14)	-0.38** (0.13)
N. Central Gulf (2)	-0.06 (0.13)	-0.84** (0.13)	-0.21 (0.12)	-0.65** (0.12)	-0.15 (0.11)	-0.53** (0.11)
Bajío (3)	-0.29* (0.13)	-1.15** (0.13)	-0.15 (0.12)	-0.60** (0.13)	-0.19 (0.12)	-0.53** (0.11)
Central (4)	0.16 (0.13)	-0.17 (0.15)	-0.05 (0.12)	-0.12 (0.13)	-0.09 (0.12)	-0.14 (0.11)
Southeast (6)	-0.21 (0.12)	-1.07** (0.13)	-0.18 (0.11)	-0.70** (0.12)	-0.16 (0.11)	-0.66** (0.11)
Constant	2.15** (0.23)	1.14** (0.24)	2.74** (0.23)	2.93** (0.26)	2.27** (0.22)	1.90** (0.21)
log(cutpoint 3)	0.48** (0.04)		0.55** (0.05)		0.47** (0.04)	

* significant at .05 level; ** significant at .01 level.

Table 3.4 (cont.) Support for abortion rights by circumstance, heteroskedastic ordered probit regression results

Variable	Fetal deformity (N=5965)		Economic reasons (N=6023)		Woman is single (N=6023)	
	Variance	Mean	Variance	Mean	Variance	Mean
Year=2006	-1.09** (0.08)	0.55** (0.07)	-1.03** (0.08)	0.83** (0.06)	-1.10** (0.09)	1.12** (0.08)
Female	0.26* (0.12)	0.27** (0.10)	0.06 (0.13)	-0.09 (0.08)	0.01 (0.13)	-0.07 (0.08)
Has children	0.06 (0.12)	0.11 (0.10)	-0.26* (0.12)	-0.02 (0.07)	-0.22 (0.12)	0.09 (0.07)
Age (ref=25 to 40)						
15 to 24	-0.13 (0.10)	-0.04 (0.08)	-0.12 (0.10)	0.01 (0.06)	-0.09 (0.10)	0.12* (0.06)
41 to 65	0.14 (0.09)	-0.04 (0.07)	0.03 (0.09)	-0.11* (0.05)	0.08 (0.09)	-0.10 (0.05)
Education (ref=low)						
Medium	-0.07 (0.08)	0.35** (0.06)	0.03 (0.08)	0.05 (0.04)	0.01 (0.08)	0.05 (0.05)
High	0.44* (0.20)	0.91** (0.20)	0.45* (0.19)	-0.08 (0.14)	0.56** (0.21)	-0.35* (0.17)
Male*high education	-0.28 (0.25)	-0.37 (0.23)	-0.16 (0.24)	-0.03 (0.17)	-0.23 (0.26)	0.21 (0.21)
Civil Status (ref=married/union)						
Separated, Divorced, Widowed	0.11 (0.15)	0.10 (0.12)	0.17 (0.14)	-0.06 (0.09)	0.36* (0.15)	-0.13 (0.10)
Single	0.05 (0.12)	0.05 (0.09)	-0.04 (0.12)	0.02 (0.07)	0.11 (0.12)	0.00 (0.07)
Occupation						
Employed	-0.14 (0.12)	0.00 (0.09)	0.06 (0.12)	0.02 (0.07)	0.08 (0.13)	0.06 (0.07)
Employed* female	-0.13 (0.17)	-0.02 (0.13)	0.00 (0.17)	-0.10 (0.10)	0.05 (0.18)	-0.14 (0.11)
Homemaker	-0.32** (0.12)	-0.34** (0.10)	-0.14 (0.12)	0.01 (0.07)	-0.04 (0.12)	0.06 (0.08)
Religion (ref=Catholic)						
Other religion	0.06 (0.11)	-0.20* (0.09)	-0.12 (0.11)	-0.03 (0.06)	0.01 (0.12)	-0.06 (0.07)
None	0.14 (0.14)	0.23 (0.12)	0.05 (0.13)	0.08 (0.09)	0.16 (0.14)	0.08 (0.10)
Church attendance (ref=weekly)						
Monthly	0.10 (0.10)	0.19* (0.08)	-0.09 (0.10)	0.04 (0.06)	0.20 (0.11)	-0.08 (0.07)
Special occasions only or never	0.06 (0.08)	0.38** (0.06)	0.14 (0.08)	0.10* (0.05)	0.12 (0.08)	0.05 (0.05)
Political party affiliation (ref=PAN)						
PRI	0.22* (0.10)	0.00 (0.08)	-0.10 (0.10)	-0.03 (0.06)	-0.10 (0.11)	0.07 (0.07)
PRD	0.25 (0.13)	0.12 (0.10)	0.14 (0.12)	0.03 (0.08)	0.05 (0.12)	0.04 (0.08)
Other party or none	0.25** (0.09)	-0.10 (0.07)	-0.05 (0.09)	-0.13** (0.05)	-0.04 (0.09)	-0.07 (0.06)
Region (ref=Mexico City)						
Pacific North (1)	-0.29* (0.14)	-0.53** (0.11)	-0.05 (0.15)	-0.48** (0.10)	-0.15 (0.16)	-0.37** (0.11)
N. Central Gulf (2)	-0.31** (0.12)	-0.60** (0.10)	0.01 (0.11)	-0.10 (0.07)	-0.32** (0.12)	0.00 (0.07)
Bajío (3)	-0.17 (0.12)	-0.92** (0.10)	-0.54** (0.11)	-0.12 (0.06)	-0.67** (0.12)	0.10 (0.07)
Central (4)	0.07 (0.12)	-0.33** (0.11)	-0.05 (0.11)	0.05 (0.07)	-0.23* (0.12)	0.16* (0.07)
Southeast (6)	-0.42** (0.11)	-0.69** (0.09)	-0.32** (0.11)	-0.02 (0.06)	-0.42** (0.11)	0.17** (0.07)
Constant	1.88** (0.22)	0.20 (0.18)	1.34** (0.21)	-1.54** (0.13)	1.27** (0.22)	-2.27** (0.14)
log(cutpoint 3)	0.16** (0.04)		-0.17** (0.04)		-0.21** (0.05)	

* significant at .05 level; ** significant at .01 level.

Table 3.4 (cont.) Support for abortion rights by circumstance, heteroskedastic ordered probit regression results

Variable	Woman is a minor (N=5977)		Failure of contraceptive method (N=5982)		Whenever a woman decides (N=5980)	
	Variance	Mean	Variance	Mean	Variance	Mean
Year=2006	-1.08** (0.08)	0.87** (0.07)	-0.97** (0.10)	1.15** (0.08)	-1.53** (0.10)	1.32** (0.10)
Female	0.16 (0.13)	-0.11 (0.09)	0.14 (0.14)	-0.14 (0.09)	0.08 (0.14)	-0.05 (0.10)
Has children	-0.19 (0.12)	0.09 (0.08)	-0.33** (0.13)	0.16* (0.08)	-0.18 (0.13)	0.08 (0.09)
Age (ref=25 to 40)						
15 to 24	-0.12 (0.10)	0.07 (0.06)	-0.13 (0.11)	0.06 (0.07)	-0.06 (0.11)	0.02 (0.08)
41 to 65	0.24** (0.09)	-0.08 (0.06)	0.17 (0.09)	-0.08 (0.06)	0.01 (0.10)	-0.07 (0.06)
Education (ref=low)						
Medium	0.08 (0.08)	0.16** (0.05)	-0.07 (0.09)	0.10 (0.05)	0.07 (0.09)	0.24** (0.06)
High	0.54** (0.19)	0.01 (0.16)	0.70** (0.22)	-0.30 (0.21)	0.86** (0.22)	-0.10 (0.21)
Male*high education	-0.29 (0.24)	0.16 (0.19)	-0.52 (0.27)	0.24 (0.24)	-0.64* (0.27)	0.26 (0.25)
Civil Status (ref=married/union)						
Separated, Divorced, Widowed	0.20 (0.15)	-0.10 (0.11)	0.46** (0.17)	-0.23 (0.12)	0.38* (0.17)	-0.18 (0.13)
Single	-0.01 (0.12)	0.13 (0.08)	0.04 (0.13)	0.15* (0.08)	-0.03 (0.13)	0.08 (0.09)
Occupation						
Employed	-0.01 (0.12)	0.13 (0.07)	0.20 (0.13)	0.09 (0.07)	0.00 (0.13)	-0.01 (0.08)
Employed* female	0.01 (0.17)	-0.04 (0.11)	-0.07 (0.18)	-0.06 (0.12)	-0.09 (0.19)	0.03 (0.13)
Homemaker	-0.21 (0.12)	0.09 (0.08)	-0.11 (0.13)	0.11 (0.09)	-0.06 (0.13)	-0.02 (0.10)
Religion (ref=Catholic)						
Other religion	0.09 (0.12)	-0.16* (0.08)	0.03 (0.12)	-0.03 (0.07)	-0.01 (0.12)	-0.07 (0.08)
None	-0.09 (0.13)	0.19* (0.09)	0.32* (0.14)	0.06 (0.11)	0.16 (0.15)	0.04 (0.12)
Church attendance (ref=weekly)						
Monthly	0.18 (0.10)	-0.07 (0.07)	0.25* (0.11)	-0.10 (0.07)	0.36** (0.12)	-0.25** (0.09)
Special occasions only or never	0.17* (0.08)	0.05 (0.05)	0.22** (0.08)	0.02 (0.05)	0.18* (0.09)	0.13* (0.06)
Political party affiliation (ref=PAN)						
PRI	0.00 (0.10)	-0.03 (0.07)	-0.12 (0.11)	0.11 (0.07)	-0.09 (0.11)	-0.04 (0.08)
PRD	0.00 (0.12)	0.06 (0.08)	0.07 (0.13)	0.08 (0.09)	0.09 (0.14)	-0.02 (0.10)
Other party or none	0.09 (0.09)	-0.11 (0.06)	-0.04 (0.10)	-0.05 (0.06)	-0.01 (0.10)	-0.13 (0.07)
Region (ref=Mexico City)						
Pacific North (1)	-0.23 (0.15)	-0.48** (0.10)	0.03 (0.17)	-0.57** (0.12)	-0.12 (0.17)	-0.69** (0.13)
N. Central Gulf (2)	-0.30** (0.11)	-0.2705563 (0.08)	-0.31** (0.12)	-0.15* (0.08)	-0.12 (0.12)	-0.19* (0.09)
Bajío (3)	-0.58** (0.11)	-0.19* (0.07)	-0.59** (0.12)	-0.08 (0.07)	-0.60** (0.12)	-0.26** (0.08)
Central (4)	-0.11 (0.11)	-0.10 (0.08)	-0.14 (0.12)	-0.03 (0.08)	-0.03 (0.12)	-0.11 (0.09)
Southeast (6)	-0.24** (0.11)	-0.11 (0.07)	-0.24* (0.11)	-0.07 (0.07)	-0.31** (0.12)	-0.23** (0.08)
Constant	1.43** (0.21)	-1.69** (0.14)	1.24** (0.23)	-2.28** (0.15)	2.00** (0.23)	-2.20** (0.18)
log(cutpoint 3)	-0.08* (0.04)		-0.17** (0.05)		-0.19** (0.05)	

* significant at .05 level; ** significant at .01 level.

Table 3.5 Region*year interaction

Effect of region*year interaction on variance coefficient

Variable	Rape (N=6048) Variance	Life of woman (N=6022) Variance	Health of woman (N=6003) Variance	Fetal deformity (N=5965) Variance	Economic reasons (N=6023) Variance	Woman is single (N=6023) Variance	Woman is a minor (N=5977) Variance	Failure of contr. method (N=5982) Variance	Whenever a woman decides (N=5980) Variance
Year=2006	-1.07 ** (0.09)	-1.20 ** (0.09)	-1.02 ** (0.09)	-1.14 ** (0.09)	-1.06 ** (0.09)	-1.09 ** (0.10)	-1.13 ** (0.09)	-1.00 ** (0.11)	-1.54 ** (0.11)
Region=Federal District	0.21 (0.18)	-0.03 (0.19)	0.03 (0.17)	0.28 (0.17)	0.15 (0.17)	0.34 (0.19)	0.01 (0.17)	0.02 (0.18)	0.24 (0.20)
(2006)*(Federal District)	0.02 (0.21)	0.30 (0.21)	0.20 (0.19)	0.18 (0.19)	0.12 (0.18)	-0.02 (0.21)	0.26 (0.19)	0.15 (0.20)	-0.01 0.22

Effect of region*year interaction on mean coefficient

Variable	Rape (N=6048) Mean	Life of woman (N=6022) Mean	Health of woman (N=6003) Mean	Fetal deformity (N=5965) Mean	Economic reasons (N=6023) Mean	Woman is single (N=6023) Mean	Woman is a minor (N=5977) Mean	Failure of contr. method (N=5982) Mean	Whenever a woman decides (N=5980) Mean
Year=2006	0.20 * (0.10)	-1.36 ** (0.50)	-0.71 ** (0.09)	0.61 ** (0.08)	0.91 ** (0.07)	1.16 ** (0.08)	0.95 ** (0.07)	1.25 ** (0.09)	1.40 ** (0.12)
Region=Federal District	1.51 ** (0.25)	0.50 (0.27)	0.58 ** (0.20)	0.97 ** (0.16)	0.40 ** (0.13)	0.13 (0.17)	0.44 ** (0.14)	0.53 ** (0.16)	0.62 ** (0.22)
(2006)*(Federal District)	-0.56 * (0.26)	0.23 (0.28)	0.09 (0.21)	-0.37 * (0.18)	-0.45 ** (0.13)	-0.33 (0.18)	-0.40 ** (0.15)	-0.53 ** (0.17)	0.22 (0.23)

Note: Federal District dummy and interaction term added to baseline model in Table 3.4

* significant at .05 level; ** significant at .01 level

Table 3.6 Effects of maternal mortality ratios , Year 2006

Effect of maternal mortality ratio on variance coefficient

Variable	Rape (N=6048) Variance	Life of woman (N=6022) Variance	Health of woman (N=6003) Variance	Fetal deformity (N=5965) Variance	Economic reasons (N=6023) Variance	Woman is single (N=6023) Variance	Woman is a minor (N=5977) Variance	Failure of contr. method (N=5982) Variance	Whenever a woman decides (N=5980) Variance
State's MMR	0.001 (0.003)	-0.003 (0.002)	-0.002 (0.002)	0.001 (0.002)	0.007 ** (0.002)	0 .005 (0.003)	0.009 ** (0.002)	0.006 * (0.003)	0.010 ** (0.002)

Effect of maternal mortality ratio on mean coefficient

Variable	Rape (N=6048) Mean	Life of woman (N=6022) Mean	Health of woman (N=6003) Mean	Fetal deformity (N=5965) Mean	Economic reasons (N=6023) Mean	Woman is single (N=6023) Mean	Woman is a minor (N=5977) Mean	Failure of contr. method (N=5982) Mean	Whenever a woman decides (N=5980) Mean
State's MMR	0.021 ** (0.003)	0 .007 * (0.003)	0 .005 * (0.002)	0.01 ** (0.002)	0 .007 * (0.001)	0 .003 (0.001)	0.005 ** (0.002)	0.001 (0.001)	0 .003 (0.002)

Note: variables added to baseline model in Table 3.4; regional dummies are excluded.

* significant at .05 level; ** significant at .01 level

Table 3.7 Effect of restrictive laws, Year 2006

Effective of restrictive laws on variance coefficient

Variable	Rape (N=6048) Variance	Life of woman (N=6022) Variance	Health of woman (N=6003) Variance	Fetal deformity (N=5965) Variance	Economic reasons (N=6023) Variance	Woman is single (N=6023) Variance	Woman is a minor (N=5977) Variance	Failure of contr. method (N=5982) Variance	Whenever a woman decides (N=5980) Variance
Level of restrictiveness (ref=least)									
Moderate	-0.47 ** (0.11)	-0.33 ** (0.11)	-0.26 * (0.10)	-0.38 ** (0.10)	0.033 (0.10)	-0.19 (0.10)	-0.15 (0.10)	-0.20 (0.11)	0.12 (0.11)
Most restrictive	-0.29 * (0.14)	-0.29 * (0.13)	-0.16 (0.12)	-0.37 ** (0.13)	-0.11 (0.12)	-0.07 (0.13)	-0.36 ** (0.13)	-0.32 * (0.13)	-0.18 (0.14)

Effect of restrictive laws on mean coefficient

Variable	Rape (N=6048) Mean	Life of woman (N=6022) Mean	Health of woman (N=6003) Mean	Fetal deformity (N=5965) Mean	Economic reasons (N=6023) Mean	Woman is single (N=6023) Mean	Woman is a minor (N=5977) Mean	Failure of contr. method (N=5982) Mean	Whenever a woman decides (N=5980) Mean
Level of restrictiveness (ref=least)									
Moderately restrictive	-0.95 ** (0.16)	-0.91 ** (0.14)	-0.84 ** (0.12)	-0.58 ** (0.11)	0.07 (0.06)	0.08 (0.06)	0.01 (0.07)	0.07 (0.07)	-0.01 (0.07)
Most restrictive	-1.62 ** (0.20)	-1.08 ** (0.16)	-0.94 ** (0.14)	-0.74 ** (0.13)	-0.03 (0.07)	-0.05 (0.08)	-0.26 ** (0.08)	-0.00 (0.08)	-0.15 (0.09)

Note: variables added to baseline model in Table 3.4; regional dummies are excluded.

* significant at .05 level; ** significant at .01 level

Table 3.8 Support for abortion rights in fetal deformity circumstance (N=5965)

Variable	Model 1		Model 2		Model 3 (all controls)	
	Variance	Mean	Variance	Mean	Variance	Mean
Year=2006	-1.07** (0.07)	0.51** (0.07)	-1.02** (0.07)	0.55** (0.07)	-1.09** (0.08)	0.55** (0.07)
Female	0.20** (0.07)	0.01 (0.05)	0.17* (0.07)	0.04 (0.05)	0.26* (0.12)	0.27** (0.10)
Education (ref=low)						
Medium			-0.13 (0.07)	0.46** (0.06)	-0.070011 (0.08)	0.35** (0.06)
High			.29* (0.13)	0.92** (0.12)	0.44* (0.20)	0.91** (0.20)

* significant at .05 level; ** significant at .01 level.

Table 3.9 Region*time interactions coefficients

Circumstance	Region 1*2006		Region 2*2006		Region 3*2006		Region 4*2006		Region 6*2006	
	Variance	Mean	Variance	Mean	Variance	Mean	Variance	Mean	Variance	Mean
Rape	-0.79**	-0.98*	-0.44*	0.48	-0.02	0.02	-0.50*	-0.91*	0.87**	0.81**
Danger to life of woman	-0.37	-0.96	-0.33	0.18	-0.12	-.79*	-0.66**	-1.17*	0.71**	1.18**
Danger to health of woman	-0.01	-0.26	0.16	-0.03	0.08	-0.14	-0.28	0.13	0.30	0.06
Fetal deformity	-0.35	-0.26	-0.58**	0.74**	0.01	-0.14	-0.14	-0.11	0.52**	-0.02
Economic reasons	-0.52	0.41	0.36	0.43*	-0.61**	0.61**	-0.27	0.08	0.50**	-0.46**
Woman is single	-0.54	0.58	0.03	0.48	0.03	0.20	-0.16	0.22	0.26	-0.53**
Woman is a minor	-0.28	0.23	-0.03	0.03	0.34	0.32	-0.06	-0.10	-0.06	0.08
Failure of contraceptive method	-1.27**	2.10*	-0.20	0.37	-0.03	0.28	0.41	-0.29	0.02	-0.09
Whenever a woman decides	-0.59	1.99*	0.34	0.01	-0.10	0.33	-0.27	-0.27	0.12	-0.16

* significant at .05 level; ** significant at .01 level.

CHAPTER 4: MEXICAN IMMIGRANT WOMEN'S EXPERIENCES WITH PREGNANCY, CONTRACEPTION, AND ABORTION IN NORTH CAROLINA

1. INTRODUCTION

After the surge in North Carolina's Latino population between 1990 and 2000, state and county health officials and health providers have noted issues of concern regarding reproductive health among Latinas. These include high rates of teenage pregnancy, self-medication, possible clandestine abortion, delayed access of prenatal care, and low rates of preventive care such as mammograms and cervical cancer screening (Talmi et al. 2005; Koval, Aleman Riganti and Long Foley 2006; Martinez and Bazan Manson 2004; North Carolina Department of Health and Human Services 2004; Buescher 2003; Silberman et al. 2003).

While many barriers to care for Latino immigrants have been documented in the literature, studies rarely focus on women's reproductive health care needs in particular. The study presented here is a pilot study that specifically focuses on women of reproductive age and their needs and experiences regarding family planning, prenatal care, pregnancy, and abortion in North Carolina. I investigate how women find information about contraceptives, pregnancy care, and abortion in North Carolina; what behaviors they engage in; where they seek care; and what they perceive as barriers to accessing health care. I describe how these women understand differences in accessing contraceptives, laws regarding abortion, and health care services quality between North Carolina and Mexico.

The results from this pilot study provide possible explanations for harmful behaviors as well as describe structural barriers that can inform programs and providers and help them to combat these harmful behaviors and reduce barriers. They also provide a basis for further research, as this is a small, qualitative study that touches on several reproductive health topics and therefore does not attempt to provide definitive conclusions on all relative issues.

2. BACKGROUND

2.1 Mexican Immigration to North Carolina and immigrant health

With continued immigration and natural increase in the existing population, the Latino population of North Carolina increased by almost 400 percent between 1990 and 2000 (Silberman 2003). Hispanics make up 6.7 percent of North Carolina's 8,869,861 total population, and of the Hispanics, 65.6 percent are of Mexican origin⁷. Health care providers and institutions have had to accommodate these large numbers of recent immigrants, who are more likely to be uninsured and face language and cultural barriers to care (Cristancho et al. 2008; Kaiser Commission 2006; Faulkes et al. 2005; Friedman et al. 2005; Talmi et al. 2005; Flores et al. 2002; Flores et al. 2000). While health outcomes for Latinos such as adult and infant mortality rates and birth outcomes are often favorable when compared with other racial and ethnic groups in the US (Lara et al. 2005; Silberman et al. 2003), providers and public health researchers in North Carolina have noted various negative health outcomes among this population that need to be addressed, including those mentioned in the introduction.

Acculturation diminishes some of the aforementioned positive health outcomes among Latinas, such as lower incidence of infant mortality and low birth weight, as well as lower rates

⁷ These percentages were calculated by the author using data from the US Census Bureau's 2005-2007 American Community Survey 3-Year Estimates available at www.factfinder.census.gov.

of substance abuse. Diet also worsens with acculturation. On the other hand, acculturation positively affects access to care, health insurance coverage, use of mental health services, and use of preventive health services (Lara et al. 2005; Miville and Constantine 2006).

2.2 Barriers to care

Barriers to care for immigrant women include high costs and lack of insurance, language difficulties, gender bias, an absence of social support networks, transportation, child care needs, fear of discovery of undocumented status, and not knowing where services are located (Cristancho et al. 2008; Deeb-Sossa and Bickham Mendez 2008; Quandt et al. 2006; Foulkes et al. 2005; Tilson et al. 2004; Silberman et al. 2003; Flores et al. 2002; Wilson 1995). In addition, within Latino culture there is sometimes a reluctance to use health care systems and a tendency to self-medicate even when health care services may be available (Morales et al. 2008; Talmi et al. 2005; Bonkowsky et al. 2002; Padilla et al. 2001; Rosing and Archbald 2000; Burk, Wieser and Keegan 1995). Some immigrants may not seek care due to past negative experiences with health care in the US or because they distrust doctors here, who they feel do not spend enough time with their patients or care about having “positive personal interactions” (Cristancho et al. 2008, p. 642; Clark 2002; Larkey et al. 2001).

One major barrier is that over half of Latinos living in North Carolina are uninsured, compared to 15 percent of non-Latinos (Holmes 2006; Silberman et al. 2003). Being uninsured may discourage seeking care if excessive out-of-pocket costs are anticipated (Tilson et al. 2004). Many recent immigrants do not speak English very well, and problems related to translators, such as lack of privacy, long waits, and inaccurate translation by untrained staff when medical interpreters are unavailable can discourage seeking care or result in negative experiences

(Cristancho et al. 2008; Erwin et al. 2005; Foulkes et al. 2005; Friedman et al. 2005; Flores et al. 2002; Bender et al. 2001; Flores et al. 2000). Women sometimes bring their children along as interpreters to medical visits, and this can be awkward when women are in need of sexual and reproductive health care, compromising the quality of the care and information received (Foulkes et al. 2005; Forrest and Frost 1996). Latinos may also be more likely to want family members present during doctor visits (Berger 1998; Blackhall et al. 1995), which may impede women from speaking freely about reproductive health issues.

Transportation is a barrier for immigrant women because many do not have cars or licenses, and many rely on men to give them rides. The REAL ID Act of 2005 (contained in Public Law 109-13) requires states to require valid documentation of lawful admittance into the US before issuing a driver's license or identification card. Undocumented immigrants that arrived after this legislation was enacted do not have access to driver's licenses. Therefore many Latinos either do not drive or may drive without a license. Road checkpoints and routine traffic stops could potentially lead to deportation. Local law enforcement across North Carolina have recently increased the number of checkpoints, often targeting undocumented immigrants (Ahearn 2008; DeOrnellas 2007). Therefore it is not only a physical lack of transportation that restricts mobility, but also fear of deportation (Deeb-Sossa and Bickham 2008).

Among Latinos, fear of discrimination has also been identified as a barrier to accessing health care in North Carolina (Tilson et al. 2004). Some Latina mothers delay care for their children because of fear of discrimination and health care staff's attitudes (Flores et al. 2000; Lewis et al. 1994). A study conducted in Durham County, North Carolina found evidence of perceived discrimination in health care among Latinos (Friedman et al. 2005).

2.3 Health care policies towards immigrants in North Carolina

Medicaid and NC Health Choice (a free or reduced price comprehensive health care program for children of families that earn too much to qualify for Medicaid) restrictions prohibit undocumented immigrants as well as some lawful recent immigrants from receiving benefits. Federal legislation passed in 1996, the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), prohibited legal immigrants from receiving means-tested benefits (such as Medicaid, NC Health Choice, Food Stamps, or SSI) for a period of five years. In February 2009, the federal government passed the Children's Health Insurance Program Reauthorization (CHIPRA), which removed the five-year ban for pregnant women and children who are legal immigrants. Now states have the option to provide benefits to this group but are not required to do so (Kaiser Commission 2009). So far, there have been no announcements from the State of North Carolina as to whether it will extend benefits to new legal immigrants. Some states provide substitute Temporary Assistance to Needy Families (TANF) programs to newly-arrived, legal immigrants, but North Carolina is not among them. Nor does North Carolina permit new immigrants eligibility for Medicare. The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 does provide some funding to reimburse hospitals for emergency services for undocumented immigrants (CMS 2004, Martinez and Bazan Manson 2004). The combined effect of these policies is to discourage use of preventive care and encourage the use of emergency rooms as primary care for many undocumented immigrants. In November 2004, a Medicaid family planning waiver was approved, and this extended Medicaid income eligibility to 185 percent of the federal poverty level for family planning services (Martinez and Bazan Manson 2004). This decreases cost barriers for legal immigrants who have been in the US for more than five years, however more recent immigrants are still not eligible.

Prenatal care and delivery are other health services that the government may help pay for through Medicaid, though it does not cover both of these services equally. Medicaid provides coverage for newborn delivery costs regardless of mother's immigrant status, but restrictions apply for prenatal care. Because of these differences in coverage, there is a large discrepancy for Latinas in North Carolina between having prenatal care costs covered and delivery services covered. According to the North Carolina Pregnancy Risk Assessment Monitoring System survey of new mothers, 86 percent of Spanish-speaking Hispanic women who gave birth between 1996 and 2001 in North Carolina had their delivery costs paid for by Medicaid, while only 43 percent had prenatal care covered by Medicaid (Herrick and Gizlice 2004).

2.4 Latino health care practices

Latinos are less likely to use preventive care services than are whites and often delay care until a situation becomes serious (Mohanty et al. 2005). At this point, their first contact with health care professionals is often at the emergency room. While emergency department expenditures are higher for immigrants than non-immigrant counterparts, Mohanty et al. (2005) refutes the assumption that immigrants represent a disproportionate burden on health care costs in the US, as health care expenditures for uninsured or publicly insured immigrants are only half those of their US-born counterparts. Still, encouraging the use of preventive and timelier care could decrease health care costs for Latinos as well as to the state of North Carolina; costs to the state for health care for this group in 2004 were approximately \$299 million. However much of these costs are offset by direct and indirect tax contributions by Hispanics; the difference in Hispanics' estimated major tax contributions and estimated major public costs (including the aforementioned health costs) is only \$61 million (Kasarda and Johnson 2006).

Latinas have lower rates of cervical cancer screenings and mammograms (Fernandez and Morales 2007; Koval, Aleman Riganti and Long Foley 2006; Shah et al. 2006; Erwin et al. 2005), and this extends to community effects, as individuals in high-concentration Hispanic countries are less likely to have mammograms (Benjamins, Kirby, Bond Huie 2004). Latinas over the age of 40 are less likely than white women in the same age group to have had a mammogram within the past two years (Peek and Han 2004). They are also more likely than white women to have never had a Pap smear in their lifetime (Napoles-Springer, Perez-Stable and Washington 2003; Koval, Aleman Riganti and Long Foley 2006). A study conducted in Winston-Salem, North Carolina found that only 60 percent of Latina respondents had had a cervical cancer screening in the past year and that women in need of interpreters were less likely to receive breast cancer screening (Koval, Aleman Riganti and Long Foley 2006). These low rates of cervical cancer screening are problematic, as Latinas have an increased incidence rate of cervical cancer and a higher mortality rate from cervical cancer (North Carolina Department of Health and Human Services 2004).

Many prescription drugs are obtained by Latino immigrants at *tiendas* (Latino-run general stores geared specifically toward other Latinos) without a prescription (Cimino and Coto 2005; Talmi et al. 2005; Silberman et al. 2003). Drugs such as antibiotics are often brought from Latin America, where prescriptions are generally not required, and then sold in these stores. Some of these drugs may require prescriptions, while others may be herbal remedies or over-the-counter drugs. One study conducted in Utah found that 35 percent of Spanish- and Portuguese-speaking patients interviewed had been using metamizole,⁸ a drug withdrawn from US market in

⁸ Metamizole is a pyrazolone nonsteroidal antiinflammatory agent prohibited in the US because of the risk of agranulocytosis, an acute blood disorder.

1979 (Bonkowsky et al. 2002). Providers were unaware of this use and many were unfamiliar with the drug or did not know to ask patients about its use, since the drug was withdrawn from the US market so long ago.

Another problem related to the issue of unregulated drug use is the belief among some Latinos that injected medications are more effective than ingested ones. Both antibiotics and vitamins are commonly injected in the Latino immigrant community, and this practice may lead to an increased likelihood of contracting HIV from dirty needles (Doyle and Faucher 2002).

Misoprostol is a drug available in pharmacies throughout Latin America without a prescription and is registered for the treatment of gastric ulcers and some gynecological and obstetric indications, such as the treatment of post-partum hemorrhage. This drug is also highly effective in inducing abortion (Tang et al. 2002; von Hertzen et al. 2007), and because of restrictive laws in Latin America regarding abortion, is used to terminate pregnancies by many women there. There is evidence that immigrants from these regions may continue to use misoprostol after coming to the US (Morales et al. 2008; Rosing and Archbald 2000). While abortion is legal in the US and misoprostol is part of a combined medical abortion regimen used commonly by abortion providers in the US, self-medicating with misoprostol to induce one is illegal in every US state.

Some Latina women may not know where to go for health care, and this may be a reason for self-medicating using drugs available at *tiendas*. Others may be unaccustomed to going to clinics and hospitals due to the common practice of self-medication in their home countries, where drugs may be easily obtained without a prescription at pharmacies. This issue often arises when Latina immigrants want to obtain contraceptives, which are readily available without a

prescription in many Latin American countries. Women arriving in North Carolina may be unaware that they need to see a doctor to obtain a prescription for contraceptives.

Within Mexican-American families, medical information is passed down from mothers to daughters, and the woman is the primary health care provider for the family (Reinert 1986). If a family member becomes ill, the woman may consult family members or a traditional healer before taking the family member to a clinic or doctor's office. Once it is determined that the illness is more serious, the decision to take the family member to a clinic or hospital generally requires consultation with the male head of the household (Reinert 1986). Because of the common practices of self-medication and consulting traditional healers within the Latino immigrant community, seeking professional medical attention is often delayed. Latinos are more likely to attribute healing to prayer and God than are whites, and they are also more likely to attribute illness to God's will or see it as an expected amount of suffering that should be endured (Berger 1998). This may partially explain delays to accessing care within this community.

Consulting *curanderos* (traditional healers), *yerberos* (herbalist), or *sobadoras* (masseuses) is also a common practice among some Latinos in the US (Padilla et al. 2001; Reinert 1986). Many Mexican immigrants do not consult traditional healers at all, and practices vary, depending on region of origin, background, socio-economic status, and belief systems. *Curanderos* use both spiritual and medicinal healing techniques and may recommend unregulated drugs that are available at *tiendas*. These may include herbal remedies or drugs that normally require prescriptions but are made available at the *tiendas*. Use of health care facilities does not preclude Latinas from going to *curanderos* and other traditional healers. A study conducted in Colorado found that twenty-nine percent of Hispanic patients in an outpatient primary and urgent care clinic had also sought the services of a *curandero* in the past (Padilla et

al. 2001). Hispanic mothers often treat their children's illnesses with folk remedies (Berger 1998). While some herbal teas and homemade remedies may be harmless, others can be harmful or even fatal (Flores et al. 2002). Mexican-Americans often do not tell their practitioners about alternative practitioners that they are seeing (Berger 1998).

2.5 Risk factors for unintended pregnancy and abortion practices

Latinas have higher rates of unintended pregnancies than whites (54% of all pregnancies versus 40%) (Finer and Henshaw 2006). Hispanic women in the US have lower rates of current contraceptive use than white women (59% versus 64.5%). They are also less likely than white women to have used a contraceptive method at their first premarital intercourse (46% versus 67%) (Mosher et al. 2004). Furthermore, Mexican immigrant women in the US are less likely than Mexican-American women to use contraception prior to a first birth (Wilson 2008). Contraceptive use among Latinas is positively correlated with women's perceptions of it in their social networks and with increased self-efficacy of contraceptive use. Barriers to contraceptive use among this population include partner objections and the beliefs that contraception is a woman's responsibility or that sex is more romantic without contraception (Unger and Molina 1998).

Immigrating may put women in a situation of increased risk of sexual and physical abuse (Deeb-Sossa and Bickam Mendez 2008; Triantafillou 2003). Immigration often makes women reliant on their male partners or family members for housing, transport, and economic support. This limits their physical mobility and makes them fearful of reporting abuses when they occur (Deeb-Sossa and Bickam Mendez 2008). At the same time, immigration can have an empowering effect. Some women feel they are less likely to experience domestic abuse in the

US because police respond to calls about domestic abuse, while they are reluctant to do so in Mexico (Hirsch 1999). Additionally, if abused women's partners are undocumented, they may fear deportation if the police become involved. Women who have immigrated may also feel empowered beyond issues of domestic violence. They often have increased freedom to leave the home and participate in the workforce or other activities than they would have in their country of origin (Hirsch 1999). Unmarried women may have greater freedom to stay out later or spend the night with a boyfriend, and gay men and women may have greater freedom to express their sexuality (Morales et al. 2008). A study conducted in the US with women from El Salvador found that women who immigrated reported a sense of empowerment, newfound freedom, and self-confidence as they negotiate gender roles in a new social and cultural context (Zentgraf 2002).

The aforementioned factors, including high rates of unintended pregnancy, low rates of contraceptive use, and increased risk of sexual abuse, underscore immigrant women's need for information about and access to safe abortion services. Lack of information on the legality or availability of abortion services is not the only barrier for these women; many towns in the state do not have an abortion provider within an accessible distance. Eighty-three percent of counties in North Carolina did not have an abortion provider as of 2005, and 21 percent of women who had an abortion in the state traveled at least 50 miles to get one (Guttmacher Institute 2008). Women in rural areas are at a particular disadvantage when it comes to abortion services, and migrant farm workers may live and work in even more remote areas. The issue of clandestine abortion within the Latino community in North Carolina was brought to light in a report conducted by Ipas. Respondents interviewed for the report reported that *curanderos* are providing illegal abortions, which sometimes lead to complications. However prevalence of this

practice cannot be determined from the study, as it consisted of in-depth interviews with key informants and community health workers (Talmi et al. 2005). It is possible that recent immigrants are unaware of the differences in abortion laws between the US and their countries of origin, where abortion is generally prohibited. Reasons for clandestine abortion practices among the Latina population are complex. Whether it is due to the culture of self-medication, fear of high costs, or because they believe abortion is equally restricted here, Latinas may resort to *curanderos* or self-medicate with drugs such as misoprostol to procure abortions. In addition to these reasons, some Latin American women see the use of misoprostol or medical abortion as “regulating” or “bringing on” their periods, which they view as more acceptable than abortion (Lafaurie et al. 2005; Rosing and Archbald 2000).

Abortion laws vary greatly between Mexico and North Carolina. As in all US states, abortion is permitted under law in North Carolina without restriction as to reason. However, individual US states have the power to legislate mandatory waiting periods and parental consent or notification laws. North Carolina requires parental consent for minors’ abortions and prohibits public funding for abortions for women eligible for state medical assistance for general health care unless the procedure is necessary to preserve the woman’s life, or if the pregnancy is the result of rape or incest (Department of Health and Human Services 1999; NARAL 2009). These laws and regulations work to restrict access to abortion for minors and low-income women, which in turn may encourage clandestine abortion.

In Mexico, there are 31 states and a Federal District, and each of these federal entities regulates its own laws on abortion. In all of these 32 federal entities, abortion is legal in the case of pregnancy resulting from rape, and its legality under other circumstances such as risk to woman’s life or health, incest, or fetal deformity varies, although in practice legal abortions are

rare. Only in the Federal District (Mexico City) is abortion legal for any reason up to twelve weeks gestation (Harvard School of Public Health; GIRE). After emigrating from Mexico, where abortion is highly restricted, women may not be aware that abortion is legal in the US. This lack of knowledge of actual laws in the US may also encourage clandestine abortion within the Latina population.

This paper helps fill gaps in the literature on access to reproductive health care and reproductive health care practices among Latinas in North Carolina. It contributes to understanding on this topic by asking individual women about their motivations for health care behaviors, how they find out about available services, and what they see as barriers to reproductive health care access. Understanding these issues within the context of North Carolina can help health workers formulate programs that will promote increased access to reproductive health care services as well as educate women on the dangers of using unregulated drugs or services. Other studies have documented barriers to care and unhealthy behaviors, but this study contributes to the literature because it specifically focuses on reproductive and sexual health topics among female immigrants in a new immigrant-receiving community. These themes have not been dealt with as extensively in the literature on immigrant health disparities and barriers to care.

3. THEORETICAL FRAMEWORK

Various models have been used to explain health and health-seeking behaviors. The Behavioral Model was developed to help explain why people use health services and postulates that use of services is a function of predispositions to use said services, factors that enable or impede use, and need for care (Andersen 1995; Andersen 1968). Since that model was developed, it has been adapted and has influenced the development of new models to explain use

of health services (see for example Gelberg, Andersen, Leake 2000; Aday and Awe 1997; Andersen 1995). An alternative to this type of model is that of planned or reasoned behavior (Ajzen 1991; Ajzen and Fishbein 1975; Montano 1986). In these types of models, individuals are assumed to be rational and make systematic use of information available to them. Behavior is determined by beliefs regarding consequences, beliefs about whether relevant individuals will approve of the behavior, and motivations to comply with those individuals (Montano 1986). The most important predictor of behavior in these type of models is intent (Ajzen 1991; Ajzen and Fishbein 1975). For the present analysis, I utilize a combination of the models in Ajzen (1991) and Andersen (1995) and adapt the models for the context of Latina immigrant women in North Carolina (Figure 4.1). From Andersen (1995), I utilize the framework where individual characteristics, health system factors, and environmental factors influence health behaviors, while from Ajzen (1991) I utilize the framework where attitudes, subjective norms, and behavioral control perceptions influence intent, which is an important predictor of behavior.

Within the model, individual, environmental, and health care system factors indirectly influence health care behaviors through their effects on attitudes toward accessing care, subjective norms, and perceived behavioral control, all of which influence intentions, and finally, outcomes.

Individual characteristics that affect a woman's attitudes toward accessing care, subjective norms, and behavioral control beliefs (ability to access care) include age, marital status, income, insurance, English language skills, length of time in US or North Carolina, and her employment status. Immigration status will affect which services are available to women for various reasons. Women with illegal status may be discouraged from attending public health clinics or emergency rooms for fear of having their status revealed to authorities. They may also

be more inclined to use emergency room services, where they are sure to be attended, as opposed to other types of services that they may not be able to afford. Immigration status affects an individual's employment opportunities, which in turn has an effect on whether she is eligible for health insurance; this directly influences use of services. English ability may influence perceived behavioral control. For example, women with fewer English skills may fear discrimination if they use services or they may be unaware of translation services.

Environmental or social support actors that provide information about services to the woman include family, her partner, friends, neighbors, and co-workers. A woman who works may have access to a larger network of acquaintances or friends, which increases the flow of information to her. Churches and community groups are other examples of social support networks available to immigrants. Social support networks work to decrease costs and barriers, as Mexican immigrants help one another with transportation, child care, and other needs (Ornelas et al. 2009; Donato 1993). This may in turn increase perceived behavioral control if women who rely on support networks believe they are more able to access services.

Environmental influences also include media sources, which may include both private advertisements for available services and announcements for public programs and services offering health care to vulnerable populations. Other environmental factors include not-for-profit centers dedicated to serving local Latino populations. Local centers geared toward immigrants may provide information on available services and help people understand the process of accessing them.

Health care system factors that affect available information on services include the supply of public clinics, private clinics, and existing community programs that raise awareness of services and teach people how to navigate them.

Within the Latino population in North Carolina, attitudes toward accessing care may include attitudes toward potential outcomes of treatment, fear of discrimination due to ethnicity or language abilities, fear of revealing immigration status, and level of trust in medical professionals. Subjective norms affecting intentions include beliefs regarding the acceptability of accessing care and beliefs regarding when it is appropriate to access care. Acceptability may be determined by anticipated approval or disapproval of the behavior by a referent individual, such as a husband or mother-in-law, when the woman seeking care is motivated to meet those expectations (Montaño, Kasprzyk, Taplin 1997; Ajzen 1991). Perceived behavioral control beliefs are those regarding the presence or absence of requisite resources and opportunities (Ajzen 1991). These are influenced by past experiences and second-hand information from friends and acquaintances. Women perceive their own ability to seek care based on factors including time, money, transportation, availability of childcare, and the availability of translators in the clinics.

Attitudes, subjective norms, and perceived behavioral control reinforce each other and influence intentions, which in turn determine behavior outcomes (seek professional care, seek care from a traditional healer, or do not seek care/self-medicate).

4. METHODS

In-depth interviews allow me to investigate how cultural norms and worldviews affect how information is disseminated and accessed in this population and why certain reproductive health behaviors are performed. The interviews were semi-structured to allow for new hypotheses and research questions as they emerged. Between November 2007 and August 2008, I conducted qualitative interviews with Latina women throughout North Carolina. I conducted 12 interviews, at which point I reached the point of saturation, or the point at which no more new

themes were observed in the data. The University of North Carolina Institutional Review Board approved this study in June 2007 and renewal approval in May 2008.

4.1 Participants

I recruited female immigrants from Mexico, ages 18 to 35, who had been living in the US for up to ten years. Eleven of the women were of Mexican origin and one was from Guatemala but lived in Mexico 10 years before immigrating to the US.

Participants were recruited at two county health clinics (one rural and one urban), one private clinic that receives public funding (urban), and two women's support groups (one rural and one urban). One of the women's groups was held in a health clinic and the other was held in a community center. Some respondents at the women's group not affiliated with a health clinic said they were referred to the group by a doctor after having mentioned issues with depression or domestic violence. I recruited at multiple locations in an effort to obtain a broader cross-section of the recent immigrant population. The purpose of including a recruiting site outside of health clinics (one of the women's groups) was to gain access to women that were potentially not currently using professional health services.

The women interviewed for this study ranged in age from 22 to 35 years and had been living in North Carolina from less than one year to almost ten years. All of the women were currently working or had worked at some point while living in North Carolina. The common places of employment were restaurants and factories. Of the women who were not working, two currently stayed home full-time to take care of children, one quit work recently due to a pregnancy, and two others in one rural area were unemployed due to recent plant closures. All but one woman had children. Six of the women lived in rural areas, and six lived in urban areas.

4.2 Interviews

All interviews were conducted in Spanish. My fluency in Spanish, gender, and familiarity with Latino culture, gained from living, studying, and working in Latin America, as well as volunteering with Latino groups in New York and North Carolina, facilitated the development of a rapport with the women I interviewed. Interviews lasted approximately one hour and were conducted in participants' homes and in a community center. Women were given the choice of location, and all chose their home except for the women from one of the community groups, who preferred to be interviewed at the time and location where the group meetings held (but in a private area). Pseudonyms were used to maintain the privacy of participants. All interviews were recorded using a digital tape recorder after obtaining informed consent. Participants were given a small cash gift in appreciation of their time. Key question prompts covered the topics of contraception, pregnancy, and abortion (Table 1).

4.3 Data analysis

All interviews were transcribed in Spanish and then transferred to ATLAS.ti (version 5.2) to code interviews and help identify the frequency of common themes. I analyzed the interviews in Spanish and then translated key quotations for inclusion in this manuscript, while ensuring consistent meaning across languages. Prior to data collection, I developed general codes from the interview guide that I hoped to employ. I analyzed the interviews throughout the data collection stage, which allowed me to revise my codes and develop new ones as they emerged from the interviews (Miles and Huberman 1994). In my analytic process, I identified recurrent themes and compared and contrasted experiences reported by the women interviewed (Tesch 1990; Omery 1983). Conclusions were based on repeated readings of the transcribed interviews,

identifying and confirming these recurrent themes. To verify my conclusions, I looked for outliers and negative cases that contradicted my conclusions.

5. RESULTS

5.1 Environmental factors and social support

The social networks that the women in this study could draw upon for support or information on available services varied greatly. Two of the women interviewed said they had only their husband and their kids, while others had family such as brothers, sisters, or cousins in North Carolina. Other women that had no family in the state relied on partners, friends, or neighbors for information, rides to doctor's appointments, and child care. Norma described how she relied on her social support network to interact with pharmacists:

I've never gone to the pharmacy because maybe they speak Spanish but some don't. I don't understand them and they don't understand me. So when I need something, I ask my friend's husband.

Additional environmental factors such as places where women interacted with others were limited to work for most, a few attended church, and approximately half attended women's support groups for parenting, depression, or domestic violence. However this is not representative of all Mexican women in North Carolina, as participants for the study were recruited at two such groups.

When asked with whom they would speak if they were sick and wanted to know what to do, answers ranged from their partner, mothers back in Mexico, or aunts, siblings, and cousins in North Carolina. Family members were the most common source of information on health services, especially on introducing women to clinics where they could get prenatal care or take

young children when they were sick. Family members also explained how Medicaid and Women, Infants, and Children (WIC) benefits worked and how to apply for them.

Most of the women were assigned social workers during their pregnancy, but the help they received was most often limited to applying for emergency Medicaid, which covers delivery costs for undocumented immigrant women, but not prenatal care. They also received help applying for WIC, which helps buy food during their pregnancy. Some of the social workers were Latina, while others were not and spoke limited Spanish. Maritza described her interactions with the social worker:

She spoke a little Spanish because I didn't speak much English. She would grab a book and look up words and I helped her and she'd tell me and I understood. Not much, but I understood her Spanish.

Described in more detail below, Martiza was also able to get help for another problem by asking her social worker. Providers and social workers also recommended women to support groups.

5.2 Health system factors

Health system factors influenced the level of available information and women's ability to access services. In these communities, health care facilities included county health clinics, private family planning clinics, and hospitals and emergency rooms. In rural areas, existing services generally consisted of a county health clinic. In cities, women tended to also use county health clinics, but some switched to private family planning clinics if they were dissatisfied with services at the county clinics. Marta said:

I go to [the private family planning clinic] because at [the community clinic] you waste a whole day. Wasting time there, waiting.

Emergency rooms were utilized for issues ranging from the flu to care after a miscarriage. Through the county health clinics, women learned about support groups, which many of them joined. These support groups, while not always being strictly focused on health, increased the flow of information regarding health care. For example, after I finished conducting an interview at one of these support groups, which was not health-focused, the women told me they were cancelling the meeting the following week because several of the group members were going together to a mobile mammogram clinic.

5.3 Information on available services

Upon arriving to North Carolina, several of the women did not know where services were located and a few even believed that services would not be available to them as immigrants. One woman expressed her hesitation to access services after she found out she was pregnant in the following way:

I'm not from here, so I thought, 'well they're not going to want to attend to me.' But no, my friend explained to me that they would. And so I went and they attended me well.

Female friends, neighbors, and sisters-in-law were most commonly cited as sources of information on available services. Many of the women had their first interaction with professional health care in North Carolina after becoming pregnant. At that point a friend would tell them where to go or accompany them on their first visit for prenatal services and show them where to apply for Medicaid. Three women described this process of dissemination of knowledge on available services:

An immigrant arrives without knowing where [clinics] are, ...how to find a clinic where there is information. Well that's what happened to me because I never knew where there was a clinic.

Then [after she got pregnant]...my friend took me. –Maria

Well I don't know hardly anyone, so I went to the place where my friend took me...She took me, she explained how everything works and told me I could go there. And other women that go to the clinic, they explained it to me, that it's not so difficult, to go to the clinic and ask for help there...One feels supported by the people here and the doctors because well here...they take care of you. –Norma

What happened is that when I arrived here, I was already pregnant. And since my sister was already here, she was the one that told me I could go [to a health clinic] and all that. –Marta

In the cases cited above, the women relied on their social networks to find out about services. As Norma's quote shows, navigating North Carolina's public health system is not always a negative or trying experience for immigrant women; she felt supported by the clinic staff.

The majority of the women in this study described their knowledge of pregnancy prevention before their first pregnancy (whether in the US or in Mexico) as extremely limited. Some of the women would have liked more information while others were ready to get pregnant upon getting married and started using contraceptives only after a first birth. After giving birth in the US, women were offered information and options for family planning.

Maritza complained that after she had her first baby in North Carolina she did not receive any information on family planning and it was only after her second baby that she was able to get a method. When asked whether she had wanted information after the first baby, she replied:

Yes. I wanted them to explain to me how...but it wasn't very good, they didn't have, how do you say, trust with people, and like I said, I don't have any family here, no one, just the father of my children, and them and me.

Rosa described how Mexican women may want to limit their family size but may not always have the necessary information:

...We lack information more than anything for women...I always try to talk with my co-workers...about family planning. Because I say, oh sometimes what we Hispanic people do is...to have children, have children, have children, and have children. I tell them, you don't even worry about yourself. So If I have two kids, I'm going to have more time for myself, I'm going to work less, I'm going to enjoy life with my partner. But if you have one, two, three, four, five, or six kids, you don't have any time left for yourself. You have to cook for them, you have to go the school, you have to clean, the kids fight, a kid falls down or whatever, you get stuck in home life, and the woman never has time for herself.

Marta explained that she did not know about where to access family planning services until after her first pregnancy in the US and how being an immigrant makes accessing information even more difficult.

...I didn't know where to go to a clinic for family planning. Because when people arrive from other countries, immigrants from our country...you come with little information. You think you don't have access to health services. You think you don't have access to schools. You come with such little information and the same people that helped us come here and that are already here, they don't tell you....When I gave birth to my girl, in the hospital they tell you about the pill, or whatever for contraceptives and they give you options.

5.4 Quality of care

Several of the results in this study speak to the quality of care, including perceptions of trust and relations with doctors and waiting time. While one of the women in this study mentioned she lacked trust in health care providers here, the remaining women were generally satisfied with the care they received from doctors and nurses and said the providers treated people with respect and helped them. All complaints regarding discrimination and disrespect in

the health care system referred to other employees such as translators and receptionists, but not a single respondent described a doctor or nurse as treating them with disrespect. While most of the women preferred health services in Mexico to those in the US because of increased ability to communicate in their native language and lower costs, other women thought that the quality of care was better in the US. Two women noted what they considered a higher quality of prenatal care in the US, where doctors run more tests on the baby and give women more information on their pregnancy.

Experiences differ not only among clinics, but also among women. Some women preferred services in Mexico because they are able to communicate in their own language, but others prefer the services provided in the US because they deem them to be of higher quality. As cited in the “Information and available services” section, Norma said she felt supported by clinic staff in North Carolina.

Laura said that differences in quality of care between Mexico and the US were not many, but doctors in Mexico “give us more certain answers, or answers more directed to us [Hispanics].” She felt this translated into higher quality of services in Mexico than those provided in North Carolina.

Rosa explained that she thought the care received was better in the US than in Mexico:

[In the US] they treat you like a person. Sometimes in Mexico it’s hard because they treat people really poorly.

Maritza voiced her dislike of having to provide so much personal information before she could get services.

....what I don’t like is when you go to the clinic, they ask you everything. How many boyfriends have you had? How many

times did you have sex, what does [your partner] do, and well all those questions.

She said she no longer goes to the clinic so her provider can check her intrauterine device (IUD) because she does not want to answer all the questions. She also did not reapply for Medicaid for her two young children because of her disapproval of so many socio-economic questions about other household members, who do not necessarily help support the children.

Maritza said she had mixed experiences and that she experienced discrimination from staff at a health center. However, when she gives her example, she admits that she did not understand what the staff were saying. She interpreted it to be negative comments toward her, but in fact it may not have been an incidence of discrimination at all. Her description was the following:

There were no doctors or something...they didn't tell me anything but I saw that they were talking and the only thing I understand was 'hi, be quiet' or sometimes they say, 'crazy' because 'she's crazy' or things like that. So I didn't know what they were saying to me and it was something very ugly. Pretty much at the hospital if you don't have papers [you don't get treated well]. All of us, we have rights like everyone [even if] you come here as an immigrant...There is a lot of racism. But there are lots of American people that are good. I've run into good people and I've run into bad people.

5.5 Subjective norms

Some of the women in this study felt comfortable self-medicating for certain needs, such as colds or even birth control. Laura was dissatisfied with previous experiences with health care providers because they would not provide her with antibiotics when she wanted them, so she bought a book to diagnose her own illnesses.

However, regarding most reproductive health related behaviors, women believed in the need to access professional care. Even the women who did not access prenatal care early in their pregnancy thought they should have. Their reasons for not doing so were related to transportation, referent individuals denying them access (a partner in one woman's case), or not knowing where to go.

As for contraception, one woman said she only used the rhythm method and although she was not looking to have another child soon, she was not interested in using other contraceptive methods. Another woman said she did not seek out information on family planning after she got married because she and her husband were ready to have children. These attitudes on contraception fall within the traditional Catholic belief system, which is the dominant religion in Mexico. The Church's position is that only natural family planning methods are acceptable and children should be welcomed upon marriage. However, most of the women in this study (several of whom were Catholic) used modern methods of contraception, and some were even accepting of abortion.

When talking about abortion, subjective norms were evident as women either showed great discomfort talking about abortion or discussed it in terms that clearly showed their disapproval. The majority of the women expressed their disapproval of abortion in ways such as,

...To me it would be murder, if they told me they wanted to have an abortion.

Lourdes spoke about abortion in mixed terms, saying :

I don't think I would do something like [have an abortion]. I wouldn't do something like that but sometimes you say 'I wouldn't do that' but when you're in that position, you want to do it. For example if I were in that situation and I got pregnant now and I decided I wanted to get rid of the baby, I think I would talk with one of the girls that have already had abortions, the ones that

know.

She then went on to explain the different ways of thinking about abortion between people in Mexico and the US:

[In Mexico] they don't dare to touch that topic because if you got pregnant, now you're going to have it. It doesn't matter if you want to or not. Most of the time it's like that. They get pregnant and in their heads it's, if they get pregnant, they have to have it. There isn't that option that if you're pregnant, you can get an abortion...Here [in the US] you have the freedom to decide if you want to have it or you don't want to have it. If you want to have it, that's fine, and if not, well it's your decision, and you can have an abortion, no problem.

This reflects increased opportunities for making decisions regarding reproductive health after migrating. Lourdes is speaking about an increased freedom, which supports findings from previous studies that report increased empowerment among immigrant women living in the US (Morales 2008; Zentgraf 2002; Hirsch 1999).

Gladys described how when she found out she was pregnant her friends had different opinions on abortion:

Some of my friends told me if I was pregnant, I had to have it and others told me, "no, why do you want more children?"

In the end she said she decided to have the baby because of "a mother's love."

Laura described how back in Mexico she had been given an IUD. At the time, they asked her when her last period had been, and she said she lied because she had irregular periods and they would not have given her an IUD if she told the truth. It turned out she was pregnant at the time, but says she did not know. The IUD caused a miscarriage and she justified this event by saying she did not know she was pregnant. However, she went on to voice disapproval for women who knowingly induce an abortion.

In Spanish, as in English, the medical term “abortion” refers to both induced and spontaneous abortion. However the difference in the common use of this term between the two languages is that in Spanish, “*aborto*” is used to refer to both spontaneous and induced abortion, whereas in English, “abortion” it is most commonly understood to refer to induced abortion, and the term “miscarriage” is used to refer to spontaneous abortions in daily language. In Mexican culture, where abortion is stigmatized and access to legal services is highly restricted, this ambiguity of the word’s meaning can be protective. One study described women’s tendency in a Mexican hospital to use management strategies to avoid stigma and blame in discussions regarding their abortions by claiming to have accidentally fallen or trying to prove that an abortion was spontaneous by claiming to have already accepted the unplanned pregnancy and therefore they would have no reason to terminate it (Erviti, Castro, and Collado 2004).

One woman in the present study began speaking about her miscarriage (referring to it only as the general term *aborto* in Spanish) as follows:

Ah well first, I don’t agree with abortion, ok? I wouldn’t justify it for anything. I had that abortion because there was something wrong with my baby, that I didn’t provoke, and it hurt me a lot to lose my baby. It was already a baby and it had life.

When asked if she knew of any friends here in North Carolina that had had an abortion, another woman went on to clarify that they didn’t “provoke” it, which reveals the stigma women feel surrounding the issue of abortion. She said:

Well yes I’ve heard [of friends having abortions], but the majority that I know of, there were about four of them, it was because there was something wrong with the baby. They didn’t provoke them.

5.6 Perceived behavioral control

Barriers to care as perceived by the women in this study included language difficulties, discrimination, high costs, and lack of means of transportation.

5.6.1 Language

Many of the women said that while some of their doctors, nurses, and social workers spoke Spanish, not all of them spoke fluently and they often had a difficult time understanding each other. In some cases, interpreters were not used when the health care provider spoke Spanish, but it appears the providers' Spanish abilities were overestimated in some of these cases and interpreters could have increased the quality of care provided. Several women said that when they do not understand what the doctor is telling them, they do not feel comfortable asking for clarification and often leave with their questions unanswered. Marta described this situation in the following way:

Sometimes they talk to you in English and if there is no one else that can understand you, you're left with what you wanted to ask because they're not going to understand you.

Elena said,

Here many doctors and nurses do speak Spanish, but sometimes I feel like they don't understand me.

When asked why she would not feel comfortable asking for clarification if she didn't understand what the doctor was telling her, Laura responded in the following way:

Because sometimes...they tell me the same thing again anyway and I get mad. It's better not to ask. It's better I look it up myself.

Unlike Marta, Laura and Elena, Maria said she did feel comfortable asking for clarification.

...I ask again what [health care providers] are telling me and they repeat it to me, but more slowly, because they don't speak much Spanish, because it's hard for them, the same as it is for us to speak English, so they repeat it to me again.

5.6.2 Transportation

Transportation was a major barrier for the women in the rural areas. Most of them did not have cars and distances to health care facilities were far. One woman described how she used to walk long distances to get to her prenatal care visits. In urban areas, women made use of buses and taxis, but women living in further out from city centers did not always have access to public transportation. These women had to rely on friends and partners for rides, and some scheduled their appointments in the evenings when their partner could take them. The situation has become more difficult, with driver's licenses no longer being offered to undocumented immigrants, and checkpoints on roads are also becoming more common according to the women interviewed. Not only is this lack of transportation a barrier to accessing health services, but it is a difficult adjustment for people immigrating from Mexico, where public transportation is more common and accessible.

...In Mexico there's transportation all day long, all the time, and you just go out on the corner and get on a bus, or something for transportation. But not here. Here transportation is one of the biggest obstacles for people. You have to find someone to take you, and if that person has time, they can take you, and if not, well, you wait.

Gladys complained that finding transportation to the clinic was very difficult for her and the last time she went, she got a prescription for contraceptive pills. When she went to the

pharmacy located in the clinic, she paid for three months worth of pills but they only gave her a one-month supply. When she asked why they had not given her all three-months worth, they said they could only give her one month's worth and she would have to come back for the next month's. She explained,

I never went back [for pills]...getting transportation is very difficult and sometimes there's no ride and then when I went back I said I wanted them to change it, to give me an injection.

Gladys then went to an appointment for the injection (i.e., Depo-Provera®). She said she was there from 8 am until 12 pm and was still not attended to. At that point she left and says she is currently not using any family planning method. When asked what she will do if she gets pregnant now, she replied, "Ay no, God forbid."

5.6.3 Costs

The women interviewed spoke of high costs as barriers to care. Stephany said she had Medicaid to pay for her delivery, but she stopped going for check-ups afterwards:

Going for care is scary. Sometimes you don't go when you should for fear of the bills that you can't pay. They're very high...I didn't go for my check-up after my pregnancy. They told me to go for a check-up but I didn't. Now they're sending me bills from the delivery. I told them I couldn't pay for it and that [Medicaid] was paying...So I told them and they haven't sent me any documents, but I had bills for several months.

5.7 Outcomes

All of the women in this study had accessed professional health care services in North Carolina at some point, and most continued to access services. Some depended on traditional and self care upon arrival, while others continue to complement these methods of care with

professional health services. Still others relied exclusively on professional services and had never used traditional services.

5.7.1 Traditional Healers

The only type of traditional healer mentioned by women in this study was *sobadoras* (traditional masseuses). The use of *sobadoras* did not preclude the use of professional health services. A couple of women described going to *sobadoras* during their pregnancy to either position the baby or relieve pain and discomfort. Most of the women who responded that they had not been to see a *sobadora* had friends or family that had. The women who did see a *sobadora* also attended regular prenatal care visits and did not view one as a substitute for the other in the case of prenatal care. However one woman stated that people in her community often go to a *sobadora* for conditions such as sprained ankles and other minor injuries and only if the *sobadora* is not able to cure the ailment, will they seek professional care. In this case *sobadoras* appear to be a substitute for professional health care, but this was not the case with prenatal care.

5.7.2 Self- medicating

Several of the women interviewed said they self-medicated with drugs not available over-the-counter. Medications used without provider supervision included vitamin injections, birth control pills, and antibiotics. Women obtained these drugs through a variety of sources, including asking relatives back in Mexico to send them through the mail, buying them at *tiendas*, and obtaining leftover prescriptions from other Latino friends or relatives here in North Carolina.

Gladys reported that she got pregnant with her youngest while using birth control pills given to her by a friend. Only after becoming pregnant did she read the label and realize that the pills had expired.

5.7.3 Prenatal Care

While three of the women admitted to accessing prenatal care late into their pregnancy (four, five, and six months), none said they obtained no prenatal care. Reasons for not obtaining care earlier ranged from lack of information on where services were located, lack of understanding that services were available to immigrants, lack of transportation, and impeding behaviors by referent individuals, as evidenced in the following exchange about why the respondent accessed care for the first time five months into her first pregnancy in the US:

I lived with my partner but I think that he didn't really believe that I was pregnant. Or I don't know why... Maybe he did, but it's like he didn't really care about taking me and since I don't know how to drive, it makes it more difficult for me.

Maritza described how she missed at least ten prenatal care visits and did not get care for a six-month period during her pregnancy because of “problems with her partner.” She said:

...I felt depressed, with low self-esteem, and I wasn't excited about having my baby. In the end I felt like, I don't know, dying.

For Maritza, prenatal care was a gateway to accessing help with domestic violence. She said that due to abuse from her partner, she had excessive bleeding during her pregnancy and she finally told the social worker that was assigned to her to help fill out the Medicaid application that she “had a lot of problems” and wanted help. The social worker put her in touch with a local support group for domestic violence and Maritza said that now her ex-partner is in jail and that even though his family still “will not leave her alone,” she no longer suffers and “is now a different

person, happy and relaxed with her children” because she has “freed [her]self from the darkness.”

5.7.4 Contraception

The most common method of modern contraceptives used among the study participants was an IUD. Some of the women had tried other methods and complained that they forgot to take the pills or disliked side effects. One woman used only the rhythm method. As mentioned in the section on information, many of the women only started using contraceptives after a first birth in the US. They were either unfamiliar with methods prior to that event or did not know where to access services. Many of them first learned about the different methods from nurses after their babies were born.

Rosa had used several contraceptive methods and recalled her experience with them as follows:

I got the Depro injection for three months, but those three months weren't very good. The hormonal changes were drastic. One minute I'm calm and then suddenly I'm depressed and my whole body is hot. And the doctor tells me it's the hormonal change in my body. So now I opted for the patch, but I think I'll only use it for one month. This month, and then I get a Pap test, and I think I'll use an IUD. Because for the problem I had [a molar pregnancy] they said I can't get pregnant for a year or two years.

Elena had also used various methods and gave her reasons for choosing the IUD as follows:

Well I didn't have any alternative. After my miscarriage, I preferred that. Because pills don't work for me. I forget to take them, and the injection, I did use it, but then the IUD. And there was no problema with the injection, it's just that I prefer the IUD.

In one of the urban communities, some women first attended public community health clinics for family planning and then were informed by friends of a private, low-cost clinic for family planning. Asked why she switched to the private clinic, one woman said, “They told me it was faster, that they attend you more quickly. And [in the public clinics] you have to wait a long time for an appointment.” She also said she preferred the private clinic to the public one because of the service provided and because the staff were friendlier.

5.7.5 Abortion

Maritza discussed how she was deeply depressed and in an abusive relationship where her partner did not want the baby and she was not sure if she was going to continue her pregnancy. In the end, she decided to continue the pregnancy and explained her thought process:

I decided that I was going to have it and that if he loved me, he would love me with his child because if not, well then he could leave me because I was going to have my baby. I’ve never known abortion and that’s why I was going to have it...I had the desire to have my baby and I had faith in God that my baby was going to be born and everything would be alright.

Rosa said she had an abortion here in North Carolina because her partner at the time did not want to “take responsibility,” because she already had one child, and because she was starting a new job at the time.

One of the respondents said that when she became pregnant after already having other young children, an acquaintance offered to help her have an abortion, but she refused. When probed about methods that the woman uses, the respondent said she did not know, but that this woman had helped others have abortions.

5.7.5a Knowledge of laws on abortion

Not a single woman in this study accurately described Mexican abortion laws. Some of the women thought it was completely legal for any reason in Mexico while others thought that it was not legal for any reason. Several of the women mentioned recent changes to abortion laws in Mexico, but mistakenly believed that the liberalization of Mexico City's laws in 2007 applied to the whole country or the state of Mexico, which is separate from Mexico City and therefore not covered by its laws.

Other women reflected how stigmatized this topic is in their culture by giving short answers when asked about the legal status of abortion in Mexico and North Carolina such as “Really I don’t know” or “I don’t know about that.” Through their body language and manners when responding to questions on abortion, it was apparent that many women were uncomfortable speaking about abortion, even in the abstract or in terms of legality. Their refusal to talk about the topic may have been a way for them to convey the message to me that they would never consider inducing an abortion. In Mexico, women have developed ways of discussing abortion that deflect blame (even when the abortions are in fact induced) due to stigma surrounding the topic and expected roles concerning the desirability of motherhood and a woman's responsibility for planning her pregnancies (Erviti, Castro and Collado 2004).

Rosa had accurate knowledge that an abortion law was passed in 2007 in Mexico. She said, “They opted for the law that a woman has the right to decide about her body,” but she mistakenly reported that the law applies to the entire country.

On abortion laws in the US, most of the women were similarly misinformed. Some thought that the same laws were in place in both Mexico and the US, while others said they did not know anything about the laws here. A few of the women knew that abortion was legal

without restriction as to reason. One woman thought they were close to approving a law in the US to make abortion legal, according to what she saw on television.

5.7.5b Accessing abortion services

When asked how women accessed abortion in Mexico, most women described clandestine clinics or taking pills or teas at home that will cause abortions. Laura described abortion practices in Mexico:

I've heard that...people inject themselves, there are people that go and insert something inside, I don't know what it is...and it starts the bleeding. Then they go to the clinic with the bleeding and they have to attend them.

A few women simply said they did not know anything about “that” and were uncomfortable discussing the topic.

Norma thought that abortion services are more difficult to access in the US than in Mexico because she had heard that in the US, “you have to get a prescription to be able to buy the medications [to have an abortion].”

Rosa described how if you have a lot of money, you can go to a clandestine clinic in Mexico, but

They don't take responsibility if a woman starts hemorrhaging and many women die because of that. Because [the women] don't tell their parents or their family and they bleed to death.

The majority had no knowledge of where a woman could access abortion services in North Carolina. Women who were recruited for this study from an urban, private clinic affiliated with another clinic that performs abortions were aware of this service, and another woman recruited separately in a rural area also knew of the services and identified the clinic by name.

At the women's group where some of the interviews were conducted, one woman came up to the interviewer after being given information on emergency contraception and asked if it could cause an abortion if taken in higher doses. She said she had a friend that was pregnant and did not want to continue the pregnancy, but her friend did not know where to access abortion services.

6. DISCUSSION

Reproductive health disparities are often more complex and harder to address than general health disparities. Many reproductive health issues are specific to women, and although many women experience a process of empowerment after migrating (Morales 2008; Hirsch 1999; Zentgraf 2002), others may face intensified barriers due to increased dependence on male partners (Deeb-Sossa and Bickham Mendez 2008). When women are able to overcome the cost and transportation barriers, reproductive health issues may be difficult to discuss, especially for women who communicate to their providers through family members or professional translators. For women without a large social network, it may be difficult for them to ask someone that they do not know well, such as a neighbor, where they can go for family planning. Even women who do have a social network may find it difficult to discuss abortion with their friends and family due to stigma surrounding the issue.

The results of this study show that women are lacking information on family planning methods and where to access them prior to a first pregnancy in the US. Results also point to a need for increased access to prenatal care among this population. Previously documented barriers such as transportation, costs, and language were reinforced in these interviews.

Stereotypes often exist in the US of Latinas having many children and not practicing family planning. While Mexican-origin women in the US do have a higher fertility rate (107.7 births per 1,000 women ages 15-44) than all Hispanic women (99.4) and non-Hispanic women in the US (60.4), the total fertility rate in Mexico is now 2.3, compared to 2.1 in the US (Population Reference Bureau 2008; Martin et al. 2007). This means that family size preferences between women in Mexico and women in the US are similar. However the total fertility rate for Mexican women in the US is 3.1 (Martin et al. 2007), which is higher than overall rates in both Mexico and the US, as well as the total fertility rate for all women of Hispanic origin in the US (2.89) (Martin et al. 2007). This could be due to several factors, including the lack of access to services in the US, immigrants' geographic region of origin within Mexico (where fertility may be higher than the national average, reflecting norms and preferences), and other demographic characteristics that affect fertility. One theme that emerged throughout these interviews was that many women wanted to practice family planning prior to a first birth in the US but were unable to due to a variety of factors (lack of information on services and methods and lack of transportation). This led to several unplanned pregnancies among the women interviewed. While it may be hard to target these women before they access services, greater efforts need to be made to get information on family planning out into the community. A few of the women mentioned getting advice on health through local radio programs geared to the Latino community. This is one means of communication that could be utilized to explain methods of family planning and where to access them. Rosa said that Latinas might not pay attention to information on the radio and that *promotoras*, or lay community health workers, going door-to-door in the evenings with information on family planning might be more effective and acceptable to Mexican immigrant women, especially since this practice is common in Mexico. A director at

one private clinic told me that they were successful in increasing the number of Latina women accessing family planning services after they gave out information about their clinic at a large Latino supermarket in the neighborhood.

Access to prenatal care was generally good, but a quarter of the women had their first visit more than four months into their pregnancies. Once women became pregnant, they learned of available services and their ability to access them through friends and family. However, many of the women could have benefited from access to reproductive health care services prior to a pregnancy. The results presented here also highlight that during prenatal care visits, it is important for providers to screen for signs of abuse and intimate partner violence (IPV). Some women in this study described their own experiences with IPV, and while past reports have shown that Hispanics account for a disproportionate amount of abuse in the US and that rates of abuse are significantly greater than among non-Hispanics (Bureau of Justice Statistics 2000), new reports from the Bureau of Justice Statistics show similar rates of intimate partner victimization rates between Hispanic and non-Hispanic females (4.3 v. 4.2 per 1,000 persons ages 12 and older) (Catalano 2007). Studies conducted in Mexico have found abuse prevalence rates during pregnancy ranging from 8 percent to 34 percent and that, while pregnancy may not be correlated with an onset of abuse, increases in severity of abuse commonly occur during pregnancy (Diaz-Olavarrieta et al. 2007; Castro, Peek-Asa and Ruiz 2003; Valdez-Santiago and Sanin-Aguirre 1996). One US study found that Hispanic women were more likely to experience or perpetrate violence and abuse during pregnancy than white mothers. Additionally, recent immigrants (≤ 5 years in US) were more likely to continue in violent relationships post-partum than were their US counterparts (Charles and Perreira 2007).

The results from this study are inconclusive on whether clandestine abortion is a widespread problem in North Carolina; however there was limited evidence that it is indeed occurring, and this is supported by reports in Talmi et al. (2005). Possible reasons for this practice of clandestine abortion in a legal context could be lack of knowledge on abortion laws coupled with well-documented barriers to accessing health services in general. This study reveals how limited Mexican immigrants' knowledge is regarding abortion laws in North Carolina and how to access services if a woman decides to have an abortion. The fact that most women did not know where to access abortion services was not surprising, especially in the rural areas. For both rural areas where interviews were conducted, the nearest listed abortion providers were a 50 minute drive away, a significant distance for communities where many of the women reported they did not have access to a car and public transportation is limited or nonexistent. This barrier may encourage women to make use of clandestine abortion services or self-medicate to induce an abortion, especially within the context of a culture that views these options as the norm.

6.1 Limitations

Response bias may be an issue in this study, as women may not have been completely truthful when talking about reproductive health practices, especially stigmatized themes such as unwanted pregnancy and abortion. In addition, all of the information was self-reported and may be subject to recall bias. Another limitation of this study is the sample size, which was limited by cost and the time-intensive nature of qualitative interviewing. Due to the small number of respondents and the convenience sampling methods, these results may not reflect the viewpoints of all Mexican immigrant females in North Carolina. However they do provide insight on

women's perceptions of barriers to care, rationale for behaviors identified in previous studies as areas of concern, and views on health care in general.

A limitation of my recruitment methods is that I may have missed out on women who are the least connected to their communities and have the least amount of information on services available, whether they are health-related or otherwise. Attempts to recruit women at Latino flea markets in an effort to reach women who might not use health services were unsuccessful.

Several topics were addressed in this study, but more in-depth research on each topic is still needed. This study brings to light translation issues and a lack of access to family planning prior to giving birth at a medical facility, at which point women are given information on contraceptives. However, questions remain, such as issues regarding contraceptive method choice and preferences and the best ways of communicating information on available services. On the topic of abortion, I have described how women have very little knowledge of Mexican and US abortion laws, but future research should focus on how women learn about these laws. In addition, I have highlighted the problem of late entry into prenatal care and how this problem is sometimes caused by restrictive actions of referent individuals such as spouses and other times caused by a lack of transportation. Further research is needed to understand which of these plays a greater role in restricting access to prenatal care and how policies and programs can overcome both of these barriers.

While I focus on Mexican women in this study, I do not mean to suggest that they are the most vulnerable group of Latinas in North Carolina. In fact, women from other Latin American cultures may have fewer social support networks, which in turn increases their vulnerability and barriers to accessing services. This study also does not examine the provider side of these issues, and this is an area that merits future research.

Because of the small number of respondents in this study, a larger, population-based survey is needed to estimate the true prevalence of these problems in North Carolina. To address the topic of clandestine abortion, direct methods may not be appropriate and other methods such as the confidants⁹ method might be implemented.

6.2 Policy Implications

Policies and community programs aimed at increasing access to and information about health services for Latina women can be broken into policies affecting women's decisions to use care and policies affecting the availability of care. The former should be aimed at altering unhealthy behaviors such as self-medicating or increasing willingness to access services. The latter should deal with high costs, availability of translators and bilingual providers, addressing clinic staff attitudes, transportation issues, and restricting the supply of unregulated drugs.

The major barriers to care as perceived by the women in this study were high out-of-pocket costs and a lack of transportation. Issues with language also emerged, but were not found to discourage use of health services. However language issues did diminish the quality of care received.

Most of the barriers to accessing health care uncovered here are well-documented in other studies. However results contribute to an understanding of the rationale behind concerning behaviors such as self-medicating and a lack of desire to access professional health services when other barriers can be overcome. Communication difficulties and lack of interpreters are commonly acknowledged as barriers and causes for diminished quality of care, but it may not always be acknowledged that some providers with Spanish-language abilities still may not be

⁹ The confidants method is similar to the sisterhood method for estimating maternal mortality. In the confidants method, women are asked to list their close relations and for each of them, whether they have had an induced abortion in the past five years (Rossier et al. 2006).

supplying a desired level of care if their abilities are overestimated or if women are not comfortable asking for clarification. Some of the women in this study said they did not feel comfortable asking providers for clarification when they do not understand, and this may reflect Latino culture, in which it is seen as disrespectful to question authority figures (Flores et al. 2000).

Perhaps most importantly, this study highlights the unmet need for family planning among the Mexican immigrant community in North Carolina. Women expressed the desire to limit their family sizes or increase birth intervals, but were often unsuccessful in doing so because of a lack of information and access to services. A priority for health providers and decision-makers in North Carolina should be to increase information and availability of family planning and prenatal services to this population, and innovative public health education programs will be needed to achieve this goal. These new programs could build from creative ones that have proven successful in the past in North Carolina. Some examples are a family planning clinic that conducted education and prevention programs at a large Latino supermarket and mobile mammogram clinics. Women interviewed also suggested the use of community health workers who go door-to-door to educate women or television and radio programs in Spanish.

In addition to changing harmful behaviors such as self-medication or late initiation of prenatal care, efforts to eliminate disparities in women's reproductive health for Latina immigrant women must also address structural issues. One policy that health care centers could put in place is mandatory testing and classification of providers' Spanish skills. Such a policy would decrease poor translation and communication, as long as alternative translators are available. This of course is not always the case, but counties or the state might invest in

traveling translators, and make clients aware which days translators are available in each clinic.

Clinic buses or vans that pick up clients with appointments each day for a small fee might also help decrease transportation barriers. This is especially important in rural areas and small towns, as most major cities in North Carolina already have operating bus systems.

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Table 4.1 Key Question Prompts

Contraception

- When you wanted to buy contraceptives in your country of origin, how did you obtain them?
- How have you obtained contraceptives here in the US?
- How did you find out where to go?
- What options did they give you?
- Was there a method you wanted that they didn't offer? Did you ask about that method?
- What problems have you encountered obtaining the specific contraceptives that you are interested in?
- How is the process for obtaining contraceptives different here than in your country of origin?

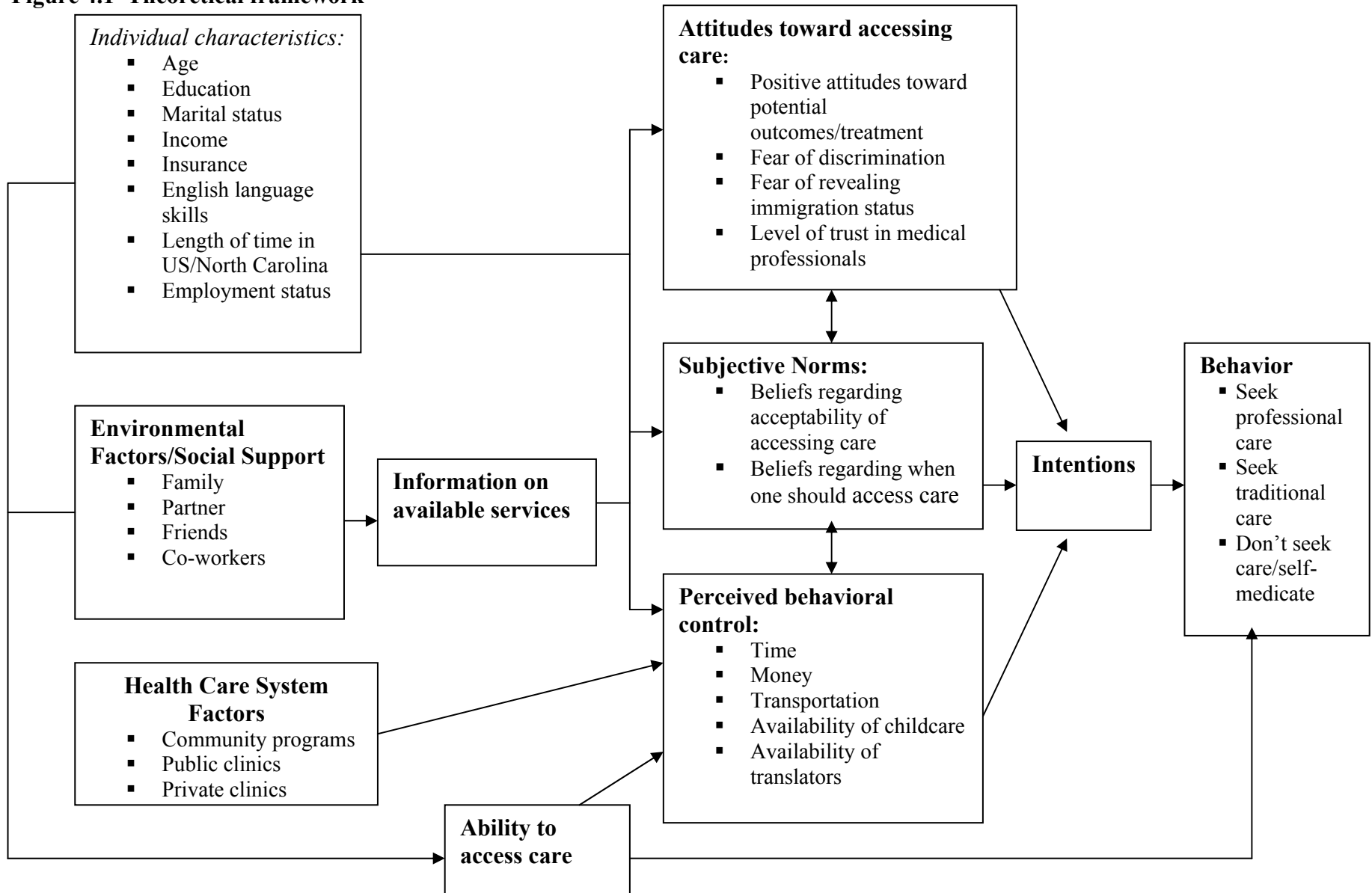
Pregnancy

- What did you know about preventing pregnancy before you got pregnant?
- What information would you have liked to have had?
- Whom did you ask about this kind of information?
- How many months pregnant were you the first time you went for care?
- At any point during your pregnancy, was there a time when you thought you should go to the doctor's but did not? Why didn't you go?
- Were you offered contraceptives at the hospital after delivery?
- Which methods were you offered?
- Was there another method you wanted that they didn't offer?
- Did you ask for that method?

Abortion

- For what reason can a woman obtain an abortion in your country of origin? What is the legal process a woman must go through?
 - For what reasons can a woman obtain an abortion in the US? What is the legal process here?
 - Have you ever heard of a friend or family member going to a doctor or health clinic in order to terminate a pregnancy? What did she do?
 - Have you ever heard of a friend or family member terminating a pregnancy in another way? What did she do?
-

Figure 4.1 Theoretical framework



APPENDICES

Appendix 2A. Descriptive statistics, females

	(1)		(2)		(3)		(4)		(5)		(6)
	Full sample (N=5535)		Non- Oportunidades, non-matched (N=3903)		Non- Oportunidades, non-matched, bottom 30% wealth dist. (N=784)		Non- Oportunidades, matched (N=590)		Oportunidades (N=1039)		p-value of differences between treatment & comparison
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
No. of own children in household	2.30	1.30	2.07	1.10	2.65	1.42	2.66	1.45	2.92	1.60	0.00
Age	35.44	9.48	35.16	9.44	34.62	9.72	36.11	9.37	36.10	9.63	0.97
Marital status											
Married	0.71	0.46	0.70	0.46	0.64	0.48	0.71	0.46	0.72	0.45	0.64
Consual union	0.15	0.36	0.15	0.35	0.18	0.38	0.16	0.37	0.16	0.37	0.96
Separated, widowed, divorced	0.09	0.28	0.09	0.28	0.10	0.29	0.09	0.29	0.08	0.28	0.51
Single	0.06	0.23	0.06	0.24	0.08	0.28	0.04	0.19	0.04	0.19	0.96
Speaks indigenous language	0.08	0.28	0.04	0.19	0.08	0.27	0.11	0.32	0.24	0.43	0.00
Education											
No education	0.08	0.28	0.05	0.22	0.11	0.31	0.14	0.34	0.18	0.38	0.02
Elementary	0.46	0.50	0.40	0.49	0.56	0.50	0.56	0.50	0.62	0.49	0.03
Seconday	0.29	0.45	0.33	0.47	0.26	0.44	0.23	0.42	0.16	0.37	0.00
Preparatory	0.11	0.31	0.13	0.34	0.06	0.24	0.06	0.23	0.03	0.18	0.03
College	0.06	0.24	0.08	0.28	0.02	0.12	0.02	0.12	0.01	0.08	0.05
Rural	0.42	0.49	0.24	0.43	0.34	0.47	0.82	0.39	0.87	0.34	0.01
Region											
Pacific North	0.20	0.40	0.21	0.41	0.15	0.36	0.19	0.40	0.17	0.38	0.34
N. Central Gulf	0.20	0.40	0.23	0.42	0.22	0.42	0.14	0.35	0.11	0.32	0.10
Bajio	0.20	0.40	0.20	0.40	0.24	0.43	0.21	0.41	0.19	0.40	0.35
Central and Mexico City	0.29	0.45	0.27	0.44	0.31	0.46	0.32	0.47	0.34	0.47	0.52
Southeast	0.11	0.32	0.09	0.29	0.07	0.26	0.13	0.34	0.18	0.38	0.01

Appendix 2B. Descriptive statistics, males

	(1)		(2)		(3)		(4)		(5)		(6)
Variable	Full sample (N=3793)		Non- Oportunidades, non-matched (N=2642)		Non- Oportunidades, non-matched, bottom 30% wealth (N=516)		Non- Oportunidades, matched (N=428)		Oportunidades (N=723)		p-value of differences between treatment & comparison
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
No. of own children in household	2.34	1.30	2.09	1.07	2.67	1.35	2.79	1.56	2.99	1.58	0.03
Age	39.27	10.60	38.76	10.48	39.50	11.04	39.55	11.10	40.92	10.58	0.04
Marital status											
Married	0.83	0.38	0.83	0.38	0.78	0.42	0.83	0.38	0.81	0.39	0.53
Consual union	0.16	0.36	0.15	0.36	0.21	0.40	0.17	0.37	0.17	0.37	0.95
Separated, widowed, divorced	0.02	0.12	0.02	0.13	0.01	0.12	0.00	0.05	0.01	0.12	0.05
Single	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.05	0.00	0.06	0.61
Speaks indigenous language	0.10	0.30	0.05	0.21	0.08	0.26	0.14	0.35	0.27	0.44	0.00
Education											
No education	0.07	0.25	0.04	0.19	0.07	0.26	0.11	0.31	0.15	0.36	0.04
Elementary	0.44	0.50	0.36	0.48	0.55	0.50	0.61	0.49	0.64	0.48	0.31
Seconday	0.26	0.44	0.30	0.46	0.26	0.44	0.21	0.41	0.15	0.36	0.02
Preparatory	0.13	0.33	0.16	0.37	0.08	0.27	0.04	0.19	0.04	0.19	0.90
College	0.10	0.31	0.14	0.35	0.05	0.21	0.03	0.17	0.01	0.11	0.03
Rural	0.43	0.49	0.24	0.43	0.37	0.48	0.82	0.38	0.88	0.33	0.01
Region											
Pacific North	0.20	0.40	0.21	0.40	0.13	0.33	0.21	0.41	0.19	0.39	0.42
N. Central Gulf	0.20	0.40	0.24	0.42	0.26	0.44	0.15	0.36	0.11	0.31	0.04
Bajio	0.19	0.39	0.18	0.39	0.22	0.41	0.20	0.40	0.20	0.40	0.91
Central and Mexico City	0.29	0.46	0.28	0.45	0.32	0.47	0.32	0.47	0.34	0.47	0.44
Southeast	0.11	0.32	0.10	0.30	0.08	0.27	0.12	0.33	0.16	0.37	0.05

Appendix 2C. Number of hours spent weekly on activity, females

	(1)		(2)		(3)		(4)		(5)	
	Full sample (N=5535)		Non- Oportunidades, non-matched (N=3903)		Non- Oportunidades, non-matched, bottom 30% wealth (N=784)		Non- Oportunidades, matched (N=590)		Oportunidades (N=1039)	
Activity	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Leisure	13.71	11.87	15.19	12.22	12.52	11.21	11.98	11.19	9.18	9.35
Cooking	12.56	8.61	12.38	8.60	12.05	8.53	12.82	8.50	13.10	8.71
Cleaning	12.87	10.27	12.84	10.57	12.37	10.08	12.95	9.44	12.94	9.56
Caring for children/elderly	21.43	25.31	22.31	26.06	22.55	25.53	20.91	24.54	18.50	22.59
Helping with homework	2.57	5.08	2.82	5.33	2.38	5.46	2.28	5.28	1.82	3.70
Collecting firewood	0.48	2.39	0.15	1.22	0.39	2.12	0.74	2.97	1.59	4.28
Collecting water	0.38	2.27	0.17	1.32	0.42	2.29	0.61	2.80	1.03	3.98
Sleeping (daily)	7.73	1.28	7.66	1.27	7.82	1.30	7.86	1.35	7.93	1.28
Working	12.62	20.71	14.13	21.32	10.59	19.76	10.88	20.29	7.97	17.65

Appendix 2D. Number of hours spent weekly on activity, males

	(1)		(2)		(3)		(4)		(5)	
	Full sample (N=3793)		Non- Oportunidades, non-matched (N=2642)		Non- Oportunidades, non-matched, bottom 30% wealth (N=516)		Non- Oportunidades, matched (N=428)		Oportunidades (N=723)	
Activity	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Leisure	13.00	11.23	14.52	11.76	11.23	10.01	10.46	9.61	8.95	8.52
Cooking	0.83	2.97	0.95	3.16	0.62	2.80	0.63	2.29	0.53	2.56
Cleaning	0.81	3.10	0.95	3.36	0.37	1.43	0.40	1.73	0.55	2.68
Caring for children/elderly	3.36	8.94	3.87	9.68	2.77	8.28	3.05	8.39	1.66	5.62
Helping with homework	1.26	3.14	1.38	3.26	1.07	3.32	1.07	3.00	0.94	2.75
Collecting firewood	0.91	3.33	0.33	1.86	0.82	2.70	1.38	3.96	2.74	5.63
Collecting water	0.40	2.11	0.18	1.32	0.50	2.46	0.91	3.57	0.90	2.98
Sleeping (daily)	7.45	1.36	7.39	1.32	7.52	1.23	7.70	1.58	7.53	1.35
Working	43.52	20.96	43.67	21.07	42.08	21.25	43.61	21.03	42.91	20.55

Appendix 2E. Propensity score matching, effects of Oportunidades on weekly[†] time use

	Females			Males		
	Treatment	Comparison	Difference	Treatment	Comparison	Difference
Leisure	9.18	11.97	-2.79**	8.95	10.25	-1.30*
Cooking	13.10	12.81	0.29	0.53	0.63	0.72
Caring for children/elderly	18.50	20.82	-2.32	1.66	3.08	-1.42**
Helping with homework	1.82	2.30	-0.48	0.94	1.05	-0.11
Daily sleep	7.93	7.87	0.06	7.53	7.70	-0.17
Collecting firewood	1.59	0.75	0.84**	2.74	1.39	1.34**
Collecting water	1.03	0.57	0.45**	0.90	0.87	0.03
Cleaning/washing clothes	12.94	12.88	0.07	0.55	0.41	0.14
Working	7.97	10.80	-2.83**	42.91	43.59	-0.68

[†]With exception of sleep, which is measured daily

*Significant at .05 level; **significant at .01 level

Appendix 2F. OLS regressions of female time use (hours per each activity weekly)

Variable	Leisure (n=1603)	Cooking (n=1613)	Caring for children/el derly (n=1557)	Helping child with homework (n=1608)	Daily sleep (n=1614)	Collecting firewood (n=1611)	Collecting water (n=1614)	Cleaning/ washing clothes (n=1610)	Working (n=1615)
Oportunidades	-1.69* (0.65)	-0.04 (0.41)	-2.60* (1.23)	-0.28 (0.26)	0.00 (0.08)	0.34 (0.20)	0.07 (0.18)	0.02 (0.60)	-2.05 (1.17)
No. of own children in household	-0.36* (0.14)	0.61** (0.17)	1.65** (0.41)	0.44** (0.12)	-0.06* (0.02)	0.25* (0.11)	-0.06 (0.05)	0.61** (0.13)	-0.37 (0.31)
Age	-0.17** (0.03)	0.07** (0.02)	-0.86** (0.07)	-0.03** (0.01)	-0.03** (0.01)	-0.01 (0.01)	-0.02 (0.01)	-0.02 (0.03)	0.07 (0.05)
Marital status (ref=married)									
Consual union	-1.13 (0.78)	-0.16 (0.75)	0.37 (1.55)	-1.01** (0.26)	-0.03 (0.10)	0.11 (0.31)	-0.10 (0.27)	-1.52* (0.61)	-1.10 (1.02)
Separated, widowed, divorced	-2.21** (0.80)	-1.68 (0.88)	-5.23** (1.24)	-0.71* (0.28)	0.06 (0.13)	0.26 (0.39)	-0.19 (0.24)	-3.44** (0.65)	16.49** (2.11)
Single	-1.91 (1.25)	-3.51** (0.97)	-2.18 (2.92)	-0.10 (0.57)	-0.03 (0.21)	-0.06 (0.37)	1.41 (1.20)	-2.79* (1.19)	17.34** (3.23)
Speaks indigenous language	-2.91** (0.78)	1.38 (0.83)	0.68 (1.79)	-0.95** (0.21)	0.19* (0.09)	1.27** (0.46)	2.07** (0.67)	-1.65* (0.74)	-0.50 (1.74)
Education (ref=primary)									
No education	-1.45* (0.70)	-0.50 (0.72)	0.37 (1.83)	-0.74** (0.24)	0.08 (0.11)	1.95** (0.54)	0.71 (0.41)	-0.72 (0.78)	-1.12 (1.55)
Seconday	2.28* (0.97)	-0.52 (0.49)	2.92 (1.77)	1.79** (0.44)	-0.25* (0.11)	-0.39* (0.19)	-0.26 (0.23)	0.93 (0.73)	2.79* (1.27)
Preparatory	4.05* (1.55)	-1.17 (0.79)	1.26 (2.75)	1.25 (0.65)	-0.60** (0.14)	-0.44** (0.16)	-0.43 (0.24)	-0.69 (1.21)	1.76 (1.95)
College	3.03 (1.76)	-7.07** (1.14)	-4.14 (4.82)	2.06* (0.94)	-0.85 (0.53)	-0.48 (0.33)	-0.55 (0.35)	-7.22** (1.38)	14.33* (6.25)
Rural	-2.06** (0.77)	0.94 (0.67)	-3.79 (2.24)	-0.36 (0.30)	0.27** (0.10)	0.87* (0.34)	0.58* (0.24)	1.00 (0.99)	-3.13* (1.55)
Region (ref=central&federal district)									
Pacific North	2.26* (0.92)	3.16** (0.75)	-1.50 (2.57)	-0.08 (0.42)	-0.05 (0.10)	-0.93** (0.22)	-0.71** (0.24)	-0.39 (0.97)	0.60 (1.80)
N. Central Gulf	4.81** (1.06)	4.53** (1.30)	-2.40 (2.60)	-0.34 (0.39)	-0.06 (0.11)	-0.46 (0.26)	-0.38 (0.27)	-1.71 (1.19)	-3.84 (2.09)
Bajio	1.04 (0.85)	0.11 (0.69)	-4.41* (2.01)	-0.85* (0.34)	0.05 (0.09)	-0.53 (0.49)	-0.08 (0.47)	-0.39 (1.09)	0.06 (1.82)
Southeast	-0.95 (1.01)	0.27 (1.15)	-5.06* (2.43)	-0.12 (0.25)	-0.16 (0.09)	1.34 (0.85)	0.28 (0.77)	-0.91 (1.12)	0.23 (1.88)
Constant	19.75** (1.49)	7.27** (1.24)	52.76** (3.88)	2.63** (0.63)	8.90** (0.26)	-0.24 (0.62)	0.74 (0.64)	12.71** (1.43)	9.57** (2.25)
R-squared	0.17	0.07	0.17	0.09	0.06	0.15	0.1	0.05	0.12

Robust standard errors in parentheses

* significant at .05; ** significant at .01

Appendix 2G. OLS regressions of male time use (hours per each activity weekly)

Variable	Leisure (n=1130)	Cooking (n=1139)	Caring for children/e		Helping child with homework (n=1143)	Daily sleep (n=1143)	Collecting firewood (n=1141)	Collecting water (n=1144)	Cleaning/w ashing clothes (n=1142)		Working (n=1146)
			lderly (n=1142)								
Oportunidades	-0.22 (0.63)	-0.09 (0.14)	-1.17* (0.52)		-0.04 (0.18)	-0.16 (0.08)	0.69** (0.24)	-0.27 (0.20)	0.14 (0.15)		-0.30 (1.36)
No. of own children in houshold	-0.54** (0.13)	0.00 (0.05)	-0.08 (0.14)		0.14** (0.05)	-0.01 (0.02)	0.29* (0.12)	0.12 (0.07)	0.00 (0.04)		1.06** (0.39)
Age	-0.06* (0.03)	0.00 (0.01)	-0.11** (0.02)		-0.02** (0.01)	-0.02** (0.00)	0.04* (0.02)	-0.01 (0.01)	0.01* (0.01)		-0.28** (0.06)
Marital status (ref=married)											
Consual union	-0.86 (0.65)	0.33 (0.30)	-0.19 (0.45)		-0.24 (0.21)	0.00 (0.14)	0.72 (0.41)	-0.19 (0.19)	-0.03 (0.21)		-3.04 (1.78)
Separated, widowed, divorced	-0.23 (2.27)	3.64 (2.12)	1.25 (1.62)		0.04 (0.40)	0.18 (0.41)	-0.78 (0.57)	0.70 (1.04)	1.14 (0.93)		1.69 (8.71)
Single	12.98 (7.21)	-0.45 (0.28)	-2.69* (1.21)		-0.85** (0.30)	-0.05 (0.54)	-0.58 (0.77)	-0.56 (0.65)	-0.23 (0.17)		-16.57 (8.87)
Speaks indigenous language	-1.37 (0.92)	0.17 (0.37)	-0.56 (0.47)		-0.11 (0.21)	0.06 (0.14)	1.98** (0.65)	1.42 (0.81)	-0.22 (0.18)		-1.48 (1.87)
Education (ref=primary)											
No education	-1.44* (0.62)	-0.10 (0.19)	0.30 (0.53)		-0.62** (0.10)	-0.11 (0.12)	0.64 (0.52)	0.38 (0.24)	0.10 (0.32)		-0.04 (2.22)
Seconday	3.67** (0.84)	0.20 (0.24)	1.09 (0.71)		0.81** (0.24)	-0.15 (0.12)	-0.37 (0.27)	-0.20 (0.25)	0.31 (0.17)		1.80 (1.80)
Preparatory	3.17* (1.30)	0.53 (0.40)	0.81 (1.23)		2.58** (0.90)	-0.40* (0.19)	-1.40** (0.38)	0.09 (0.36)	0.84 (0.76)		-3.74 (3.73)
College	6.80** (2.10)	0.00 (0.29)	3.94 (3.28)		1.93** (0.70)	-0.47 (0.32)	-0.66 (0.47)	-0.20 (0.26)	0.44 (0.34)		-5.29 (5.36)
Rural	-2.43** (0.75)	-0.34 (0.21)	-0.16 (0.64)		0.08 (0.20)	0.07 (0.10)	1.85** (0.42)	0.71** (0.26)	-0.04 (0.23)		-3.02 (1.90)
Region (ref=central&federal district)											
Pacific North	1.35 (1.02)	0.71* (0.34)	-0.73 (0.80)		-0.32 (0.26)	0.17 (0.11)	-1.10** (0.32)	-0.81** (0.25)	-0.12 (0.29)		-2.84 (2.29)
N. Central Gulf	4.54** (0.92)	0.63 (0.32)	-1.69 (0.98)		-0.28 (0.27)	-0.05 (0.12)	-1.06** (0.37)	-0.66* (0.30)	-0.35 (0.28)		-4.16 (2.33)
Bajio	1.82 (1.07)	0.35* (0.16)	-0.28 (0.79)		-0.49** (0.19)	0.24 (0.15)	0.44 (0.65)	0.18 (0.84)	-0.20 (0.24)		-6.05** (2.12)
Southeast	-0.29 (1.01)	0.15 (0.17)	0.48 (0.60)		0.46 (0.31)	-0.01 (0.14)	2.20* (0.86)	-0.19 (0.55)	0.07 (0.25)		-2.48 (2.36)
Constant	14.37** (1.40)	0.34 (0.41)	7.85** (1.26)		1.26** (0.42)	8.48** (0.21)	-2.92** (0.79)	0.39 (0.57)	-0.04 (0.33)		57.79** (3.02)
R-squared	0.15	0.04	0.06		0.08	0.04	0.16	0.08	0.01		0.05

Robust standard errors in parentheses

* significant at .05; ** significant at .01

Appendix 3A. Percentage of states that allow abortion under specific circumstances (N=31*)

Circumstance	N	Percentage
Rape	31	100
Economic reasons	1	3
Risk to woman's life	28	90
Risk to woman's health	10	32
Fetal malformation	13	42
Artificial insemination without consent	10	32
Miscarriage resulting from accident	29	91

*Does not include the Federal District

Appendix 3B. Ranking of restrictiveness in state abortion law

State	Ranking of restrictiveness
Baja California Sur	3
Campeche	1
Coahuila	2
Colima	3
Chiapas	1
Chihuahua	3
Federal District (Mexico City)	3
Durango	1
Guanajuato	1
Guerrero	2
Hidalgo	3
Jalisco	2
Estado De Mexico	2
Michoacan	2
Morelos	3
Nayarit	2
Nuevo Leon	1
Oaxaca	2
Puebla	2
Queretaro	1
Quintana Roo	2
San Luis Potosi	2
Sinaloa	1
Sonora	1
Tabasco	2
Tamaulipas	2
Tlaxcala	2
Veracruz	3
Yucatan	3
Zacatecas	2

Note: 1=state permits abortion in <4 cases; 2=state permits abortion in exactly 4 cases; 3=state permits abortion in > 4 cases (or in the case of Mexico City, without restriction as to reason)

Appendix 3C. Model comparisons

	Model coefficients (year control only)		Model coefficients (with controls)	
	Variance	Mean	Variance	Mean
Rape	-1.12**	-0.04	-1.04**	0.12
Danger to life of woman	-1.23**	-1.55**	-1.15**	-1.33**
Danger to health of woman	-0.99**	-0.78**	-0.98**	-0.70**
Fetal deformity	-1.11**	0.50**	-1.09**	0.55**
Economic reasons	-1.10**	0.85**	-1.03**	0.83**
Woman is single	-1.20**	1.16**	-1.10**	1.12**
Woman is a minor	-1.09**	0.86**	-1.08**	0.87**
Failure of contraceptive method	-1.15**	1.25**	-0.97**	1.15**
Whenever a woman decides	-1.58**	1.35**	-1.53**	1.32**

* significant at .05 level; ** significant at .01 level.