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The Effect of Armed Conflict on Modern
Contraceptive Utilisation –
the Case of Colombia

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The Effect of Armed Conflict on Modern Contraceptive Utilisation – the Case of Colombia

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Abstract:

This MA Thesis explores the effect of the armed conflict on modern contraceptive utilisation in Colombia, using a departmental random-effects logistic regression model on novel cross-sectional data from the Uppsala Peace and Conflict Database Georeferenced Event Data and the Colombian Demographic and Health Surveys from 2000, 2005 and 2010. Reproductive health and rights has enormous consequences for women's lives, but their relationship to conflict in Colombia has barely been analysed. Exploring how armed conflict as context shape individual life choices such as family planning, the results showed that women in departments where conflict had occurred recently had significantly higher odds of using modern contraception on average than women in non-conflict. Women are likely more careful to avoid unwanted pregnancy because of increased impoverishment, insecurity, and emotional and physical stress of armed conflict. Conflict may also have reduced or more firmly decided their demand for children. Adding an interaction term between conflict and type of place of residence revealed that rural women in conflict departments were driving this finding, possibly due to the lack of access to abortion and post-abortion care in rural areas in Colombia.

1. Introduction

During the fall of 2016 the peace process of the Colombian armed conflict captured the attention of the international community and media all across the world. A crucial part to the negotiations between left-wing guerrilla FARC¹ and the Colombian government in Havana was women's involvement², which is a perspective usually unheard in peace and reconciliation processes. However, to this date the effects of the conflict for women have scarcely been assessed quantitatively in research, including effects on reproductive health and rights. This is an area largely neglected and untheorised in conflict research (Iqbal, 2010, 75; Urdal & Chi, 2013, 490; Østby et al., 2015, 7), but nonetheless it has immense ramifications for women's lives.

Women's access to and decisions regarding family planning is a story about female emancipation, since it is concerns body rights and reproductive choice. This has both an intrinsic value, and economic benefits for individuals and whole societies. For example, contraceptive use decreases maternal mortality and morbidity by preventing high-risk pregnancies and the unwanted pregnancies that would have ended in unsafe abortions. Preventing unintended pregnancy also enables young women to complete school and participate in the labour market. Family planning is therefore an excellent economic and health investment in women (Cleland et al., 2012; Darroch et al., 2016). This is especially true in Latin America where some of the world's most restrictive abortion legislations can be found (Díaz Amado et al., 2010).

A case study of Colombia is interesting because it is a replacement-level fertility setting where contraceptive prevalence is generally high and the unmet need for family planning is mostly low (Sedgh & Hussain, 2014). Colombia has consequently fulfilled international goals on reproductive health and rights relatively well, when it comes to family planning utilisation. Still, safe and legal abortion is close to non-existent, so the respect for reproductive health and rights and female autonomy continues to be lacking. Even so, the case of Colombia contributes to knowledge about how conflict affects modern contraceptive use in contexts where family planning is generally quite available. What also differentiates Colombia from other contexts of war is its longevity of more than half a century, during which time the country has suffered extremely high mortality levels directly and indirectly related to the conflict (Franco, 2006; Garfield & Llantén Morales, 2004).

According to Ansley Coale's (1973) contraception paradigm, women have to be ready, willing and able to use contraception for family planning to happen. But reproductive autonomy, including both decisions regarding and access to family planning, may be influenced by contextual factors such as the extensive violence in Colombia since the mid-20th century.

¹ *Las Fuerzas Armadas Revolucionarias de Colombia-Ejército del Pueblo* (The Revolutionary Armed Forces of Colombia).

² This was done in accordance with the United Nations resolution 1325 about women, peace and security (UNSC, 2000; UN Women, 2015).

Building on a theoretical framework based on Coale's contraception paradigm, this MA thesis explores how armed conflict affects the propensity to use modern contraceptive in Colombia by applying a department random-effects logistic regression model to novel data from the Uppsala Peace and Conflict Database Georeferenced Event Data on violent conflict at the regional level and the Colombian Demographic and Health Surveys from 2000, 2005 and 2010.

The research questions guiding the analysis are: how has armed conflict at the departmental level affected modern contraceptive utilisation? In other words; how does armed conflict as context shape individual life choices and opportunities such as family planning? How does this effect change when controlling for general period effects and individual socio-economic and family characteristics? In what way has the effect of conflict intersected with socio-economic categories?

2. Population policy and the fertility transition in Colombia

The history of family planning and the fertility transition in Colombia is largely a history about its IPPF³ Member Associate, Profamilia. When unsafe abortion became a policy concern as a leading cause of maternal mortality during the early 1960s, family planning initiatives arose throughout Latin America. As politicians feared repercussions from the Catholic Church, such initiatives were small and private, often funded from abroad.

Profamilia was founded in Bogotá in 1965 by the obstetrician and gynaecologist Dr Fernando Tamayo, who immediately after opening his practice became overwhelmed by the enormous latent demand for contraception. The organisation grew to national coverage during 1965–1975 after large donations from IPPF, UNFPA and USAID, enabling women to postpone their first birth and reduce fertility as well as accumulate human capital by completing their education (Bonneuil & Medina, 2009; Miller, 2010; Vernon et al., 1988).

The fertility rate of Colombia started to fall in the mid-1960s, from 6.0 children on average per woman⁴. Simultaneously, Colombia faced a massive urbanisation process, as both a symptom and a consequence of rural way of life being undermined. Extensive societal violence may also have magnified the effects of modernisation and family planning on fertility reduction, as it provoked massive periphery-to-core migrations during 1948–1964, when an estimated 100,000 to 200,000 lives were lost to violence (Potter et al., 1976).

³ The International Planned Parenthood Federation, a global non-governmental organisation with the goal of promoting sexual and reproductive health and rights.

⁴ The number of children varied greatly depending on level of education and place of residence before the transition, as highly educated urban women had 3.35 children per woman, while low-educated rural women had 7.97 children.

To this date, Profamilia continues to promote family planning in Colombia and remains one of its central distributors. By 1986, contraceptive knowledge was virtually universal in Colombia (Prada & Ojeda, 1987). As of 2010, Colombia had the lowest level of unmet need for contraception⁵ among married women in Latin America and the Caribbean, representing only 9 percent of women aged 15–49 (Sedgh & Hussain, 2014), and the total fertility rate had dropped to the replacement level of 2.1 children per woman (Population Council, 2010). Colombia is therefore a low-fertility setting, although reproductive behaviour is stratified across e.g. type of place of residence, education and wealth.

In 2010 the total fertility rate ranged from 2.8 children among rural women and 2.0 children among urban women, while the difference between women without education and those with higher education was almost 3 children. The interval between births has increased over time to 48 months by year 2010, and was bigger for women in urban areas as well as for women with higher education compared to other groups. The mean age at first birth was 21.6 on average, with two years difference between rural and urban areas (age 20 and 22 respectively), 2.6 years difference from low to high education (age 18.8 and 21.4 respectively), and 5.2 years difference based on household wealth (19.6 and 24.8 respectively). The adolescent fertility rate for women under age 20 increased from 70 births per 1,000 women in 1990 to 90 per 1,000 in year 2005, and then decreased to 84 births per 1,000 women in year 2010. Every fifth adolescent woman had ever been pregnant and 16 percent were mothers in 2010 (DHS, 2010, 104-16).

Recent decades have brought substantial demographic, social, and health improvements to Colombia. In the Programme of Action of the International Conference on Population and Development in Cairo 1994, reproductive health and rights, increased female participation, and gender equality were identified as central goals of international population policy. According to the Programme, women have the right to control their sexuality and reproduction and make autonomous decisions free from violence, discrimination and coercion. The Programme was ratified by Colombia in 1995, and was thereby incorporated into the Colombian Constitution (Alzate, 2008; Díaz Amado et al., 2010).

Representing the most controversial element of reproductive health and rights as well as population policy, abortion is completely or partly prohibited in most of Latin America. Unsafe abortion is a large contributor to maternal deaths globally. According to the WHO (2011), 47,000 women die each year due to unsafe abortion. These deaths represent 13 percent of the global maternal mortality per annum.

Abortion was partially liberalised in Colombia by the Constitutional Court in 2006 from a total prohibition to only be permitted the case of rape or incest that has been duly reported to the authorities, or when a doctor certifies foetal malformations or that the life of the woman is threatened. In Colombia and elsewhere, prohibiting legislation does not reduce the practice of induced abortion, but rather leads to a black market where unsafe,

⁵ Unmet need for family planning has been criticised by scholars for being a biased measure. See e.g. Bradley & Casterline (2014) and Cottingham et al. (2012) for a discussion on potential improvements to the indicator.

clandestine abortions pose a great threat to women's health and lives. The consequences of abortion prohibitions are stratified; rich women oftentimes have better means to pay for travelling to places where abortion is safe and legal, or to pay skilled physicians to perform a clandestine but safe abortion. Poor women are more often left in the mercy of unskilled practitioners, and many try to provoke abortions themselves without proper equipment or knowledge. Even in the few cases when abortion may be legal, the access to safe and legal abortion services is highly restricted because of protracted bureaucratic processes (Díaz Amado et al., 2010) and the widespread practice of conscientious objection among health care professionals (Fink et al., 2016).

Producing research on the topic is difficult, but an estimated 400,400 illegal abortions occurs annually in Colombia (Prada et al., 2011). The abortion rate per year has remained fairly constant; in 1989 the number of abortions per 1,000 women of reproductive age was 36 and in 2008 the rate was 39. The regional variation is big, as the abortion rate ranges from 66 per 1,000 women in Bogotá to 18 per 1,000 women in Oriental, probably reflecting regional differences in the strength of women's motivation to avoid childbearing. The ratio of abortions to live births was 52 per 100 in 2008, compared to 35 per 100 in 1989, representing a substantial increase. An estimated 44 percent of unplanned pregnancies result in abortion in Colombia per year (ibid.), despite the high knowledge and prevalence of contraception previously mentioned. Because of the lack of safe and legal abortion in Colombia, this poses a great threat to women's health and lives.

3. The stratification of family planning in Colombia

Colombia adopted the national Millennium Development Goal of improving maternal health (MDG5) in 2005, including the target of reaching a modern contraceptive prevalence rate of 75 percent by 2015. The target was met ahead of time, but inequalities persist (González, 2012; González et al., 2010). The determinants of family planning in Colombia have been previously explored by several scholars and will be briefly presented below.

Women with less than primary education did not meet the 75 percent prevalence target of the Millennium Development Goals, neither in urban nor in rural areas. Household wealth is generally a more important determinant of family planning outcomes in rural than in urban areas, meaning that being poor in rural settings will restrict contraceptive use more than being poor in cities. Ethnic composition of municipalities also affects contraception prevalence. The lack of electricity and sewage is related to lower contraceptive prevalence, possibly working as a proxy for access to other public goods, such as health services (González, 2012; González et al., 2010).

Discontinuation of contraceptive use is a large contributor to unwanted pregnancies in populations such as Colombia's where contraceptive incidence is generally high, oftentimes due to concerns for health and side effects. The consequences are stratified, as women with higher levels of education in urban areas are more likely to know of and thus

switch to another method when dissatisfied. This explains at least in part why unintended childbearing is almost always more common among less-educated, rural, and poor populations, who become at risk of pregnancy when ceasing contraceptive use without switching to another method (Ali & Cleland, 2010a; 2010b). This is extremely problematic in settings like Colombia where access to safe and legal abortion is close to non-existent, resulting in high and stratified maternal mortality.

Age influences contraceptive utilisation from a life-course perspective, as women will likely experience certain events at a certain point in life – such as sexual debut – that will introduce a necessity to use family planning. Age is also a proxy for generation, as young women have become sexually active at younger ages in Colombia which may influence the contraceptive prevalence (Ali et al., 2003).

Women in better socioeconomic positions, living in urban areas, with higher levels of education, and whose partner have a higher level of education are more successful in avoiding unintended pregnancy. Education shapes women's preferences, as women with higher levels of education generally want fewer children, for example due to higher opportunity costs (Forero & Gamboa, 2009).

However, fertility preferences might change in times of armed conflict, which is why high prevalence of violence may affect decisions regarding family planning. The stratification of contraceptive access and decisions has been previously explored as presented above, but not including the effect of armed conflict.

4. Health consequences of the Colombian armed conflict

The Colombian armed conflict began in 1964 and involves the government, paramilitary groups, organised crime groups, and left-wing guerrillas such as *las Fuerzas Armadas Revolucionarias de Colombia-Ejército del Pueblo* (FARC, The Revolutionary Armed Forces of Colombia) and *el Ejército de Liberación Nacional* (ELN, The National Liberation Army).

The conflict has its roots in the period of extensive violence known as *La Violencia* in 1948, when the liberal presidential candidate Jorge Eliécer Gaitán was murdered. After half a decade of war for power and landownership between the Liberal and Conservative parties, a military junta overthrew the government. In 1958, the two parties formed a coalition government excluding other political views, which is why several rural left-wing guerrilla groups were created during the 1960s. In the 1970s drug trafficking emerged as an economic alternative to rising poverty, political corruption, and insufficient public services. Drug trafficking soon became another source of violence. Left-wing guerrillas turned to drug trafficking, extortion and kidnapping for economic and political purposes, after which large landowners and drug traffickers created their own armed forces of auto-defence in the 1980s, forming right-wing paramilitary groups. Most of these groups were included under the umbrella of *las Autodefensas Unidas de*

Colombia (AUC, The United Self-Defence Forces of Colombia), which disbanded in 2006.

Due to the diversity of the actors involved, the armed conflict has grown ever more complex throughout the decades, fuelled by lack of legitimacy and corruption of the state, chronic deficiency in political, social and economic stability and tolerance, a judicial climate of impunity, and the widespread drug trafficking and weapons smuggling. The various forms of violence have grown to unprecedented levels; homicides, disappearances, forced displacements⁶, use of antipersonnel mines, and kidnapping have seriously affected the quality of life of the Colombian people (Alzate, 2008; Franco et al., 2006).

The magnitude of the violence is vast. Colombia has the highest mortality level in the Western Hemisphere due to direct and indirect consequences of the armed conflict, which has been present in 1,000 of 1,097 municipalities and varying in intensity over time (Garfield & Llanten Morales, 2004). 554,008 homicides were committed in Colombia between 1975 and 2004, representing a mean of one homicide every half an hour and 10–15 percent of the total mortality rate. Homicide rates vary significantly across the regions of the country, which according to Franco et al. (2006, 352) well represents “the dynamics of the conflict and the stronger or weaker response of the society and of the State on regional level”. The conflict is present everywhere, but produces different effects on various segments of society. The health sector itself has increasingly become a direct victim of the various actors of the conflict, as it has interfered with funding, the access to health service, and the ability for health care professionals to perform their medical activities (ibid.). The countryside has been disproportionately affected by conflict compared to the cities in Colombia (Betancourt, 2016; Moloney, 2016).

The Colombian armed conflict has taken a great toll on women’s reproductive autonomy, health and rights, although the consequences are not well explored by research. Women’s sexuality and reproduction is severely compromised by war as evidence suggests from various contexts, including Bosnia, Colombia, the Democratic Republic of the Congo, Guatemala, Kosovo, Liberia, Rwanda, and Vietnam (El Jack, 2003; Elveborg Lindskog, 2016a; Farwell, 2004; Milillo, 2006). In the Colombian war as well as in others, women’s bodies have constituted a battlefield within armed conflict as rape has been used systematically both as a weapon war and a crime of opportunity (Amnesty International, 2011; Chaparro González et al., 2015, 26–8). Further, testimonies from girls and women tell of forced contraception, abortion, adoption and sterilisation as the bargain to fight alongside male *guerrilleros* in the ranks of FARC. Joining the guerrillas has often been women’s way of breaking free from the macho culture that has pervaded rural areas, but it has come at the price of strict control of their reproductive lives (Brodzinsky, 2016; Chaparro González et al., 2015, 22).

In conclusion, regarding health, life and well-being, the Colombian people are clearly the losers of the internal armed conflict that has marked the country since 1964. The extreme

⁶ More than 3,600,000 Colombians are estimated to have been made victims of forced displacement due to violence during 1985–2005, roughly half of which were younger than 18 years (Franco et al., 2006).

mortality, physical and psycho-emotional morbidity, limitations to the delivery and access to health care, as well as the extremely high human, economic, demographic and social costs emphasises the main public health problem present in Colombia today: the violence.

5. Perspectives on contraceptive use in conflict

According to Iqbal, the public health outcomes of armed conflict are largely neglected in research, even though “[t]he real costs of violent conflict cannot be understood completely without a clearer comprehension of the mechanisms through which war affects the individuals in a society” (2010, 75).

Urdal & Chi (2013) and Østby et al. (2015) argue that the relationship between armed conflict and reproductive health and rights has not been sufficiently theorised, so the exact mechanisms between the two concepts are yet to be fully understood. Nevertheless, it is clear that armed conflict affects health outcomes, stratified across gender. Men are more likely to suffer directly from war, through mortality and morbidity in direct conflict events. Women, on the other hand, are more vulnerable to the indirect health consequences of conflict.

Ansley Coale (1973) provides a good starting point for understanding the link between conflict and contraceptive use. Coale and colleagues conducted a twenty-year research project at Princeton University called the European Fertility Project, documenting and analysing the almost universal decline in fertility in all 700 provinces of Europe. The findings suggest that there are three prerequisites for a sustained reduction in fertility caused by use of contraception in order to space births: 1) fertility control must be viewed as morally and socially acceptable; 2) reduced fertility must be seen as advantageous; and 3) effective techniques of fertility reduction must be available.

According to this contraception paradigm, women must be ready, willing and able in order for family planning to occur. The readiness is likely not affected by conflict, as contraceptive knowledge is virtually universal in Colombia and utilisation is generally socially accepted. Knowledge and norms are thereby not expected to fluctuate from year to year. Still, the willingness and ability to use modern contraception may be affected by conflict in two directions: negatively or positively.

5.1 Conflict reduces modern contraceptive utilisation

Conflict may reduce modern contraceptive use through three main mechanisms relating to Coale’s contraception paradigm: access (ability), female empowerment and autonomy (ability), and demand for children (willingness).

Access and ability

A reduction in the ability to access modern contraception may occur in conflict due to a number of individual, sociocultural, political and health system factors.

Health systems in conflict and post-conflict become fragmented when facing challenges such as damaged infrastructure, limited human resources, weak management, and a rise in poorly coordinated non-governmental organisations (Chi et al., 2015a; Chi et al., 2015b). On the national level, health services are undermined by conflict as governmental resources are relocated to military expenses (Elveborg Lindskog, 2016b).

On the community level, physical infrastructure such as roads and water systems are negatively affected. Health care facilities are destroyed and health care staff is lost due to fatalities and migration (ibid.). Armed conflict may also have a negative effect on the ability of states and NGOs to engage in widespread contraceptive provision in communities (Iqbal, 2010, 81–2).

On a household and individual level, women are less likely to have the economic opportunities that may enable them to make reproductive choices (ibid.). Socio-economic deterioration, death and injuries, and limited access to health care including family planning may affect women's access to modern contraceptive utilisation negatively (Elveborg Lindskog, 2016b).

Female empowerment, reproductive autonomy and ability

Gender-based violence, which is highly prevalent in Colombia, may translate into a reduction in ability to make autonomous reproductive choices and consequently worsened reproductive health outcomes.

Nearly half of Colombian women who have been or are married are victims to intimate partner violence. Domestic violence is strongly associated to marital control behaviour and reproductive issues, such as contraceptive discontinuation, unwanted pregnancy, spontaneous or induced abortion, parity progression, and non-access to antenatal health care (Kishor & Johnson, 2004). Living in a municipality with high rates of patriarchal control and intimate partner violence severely increases the risk of unintended pregnancy, including for non-abused women (Pallitto & O'Campo, 2004). Patriarchal structures may further impair family planning utilisation if there is a strong male-partner opposition and hinder women from accessing health care due to a heavy burden of domestic chores (Chi et al., 2015b, 7).

Feminist scholars argue that gender related violence in armed conflict builds on pre-existing, patriarchal gender relations that subordinate women to men. During armed conflict, these relations intensify and grow into extreme forms, such as systematic mass rape to subjugate and humiliate 'the enemy' (El Jack, 2003; Farwell, 2004; Milillo, 2006). Young women in Colombia who have experienced sexual violence show higher levels of unintended pregnancy and lower levels of current modern contraceptive use. This relationship can be explained by rape being a disempowering experience – especially to young women. It results in difficulties negotiating contraceptive use and

elevated risks of unintended pregnancy, illegal and unsafe abortion, and sexually transmitted infections (STIs) (Gomez, 2011). According to Gomez (2011, 1350), "... although contraceptive use is generally high and unmet need is falling among Colombian female youth, the scourge of violence against women may inhibit further reductions and contribute to thousands of unintended pregnancies each year". Due to the lack of access to safe and legal abortion for Colombian women, this is a major health concern.

Demand for children and willingness

If women have a will to replace lost family members, modern contraceptive utilisation may be negatively affected due to an increase in the demand for children and a subsequent decrease in the willingness to use modern contraception (Chi et al., 2015a; Chi et al., 2015b).

5.2 Conflict increases modern contraceptive utilisation

Most of the research about reproductive health and rights in the presence of conflict point in the same direction: armed conflict has a negative effect on modern contraceptive utilisation and other individual-level reproductive outcomes.

On the other hand, based on how conflict deteriorates most aspects of society and the human condition, the contesting argument is that women in conflict will be more willing to use contraception than women in non-conflict. Women faced with conflict may be more careful to avoid unwanted pregnancy and/or reduce their demand for children due to insecurity, unsafety and uncertainty as well as loss of economic opportunities, family, social support etc. (ibid.). The choice of whether and when to have children may very well be affected by armed conflict, in the sense that women will not want children in war-time, thus increasingly choosing to use modern contraception.

5.3 Hypotheses

Based on how the ready, willing and able paradigm of Ansley Coale may be affected by conflict, two contesting hypotheses are tested:

- Hypothesis 1: The armed conflict has reduced modern contraceptive use in Colombia.
- Hypothesis 2: The armed conflict has increased modern contraceptive use in Colombia.

These will be set against the null-hypothesis of no relationship between armed conflict and modern contraceptive utilisation. However, it is important to mention that either both effects may be present at the same time, cancelling each other out, or one effect is more evident but minimised by pressure from the other direction.

6. Empirical strategy

To quantitatively examine the relationship between armed conflict on the societal level and reproductive health and rights on the individual level, one must be able to measure both the intensity of conflict and the behaviour of individual women. Since Colombia is a very regionalised and diverse country, the method used must take into account variation within and between country subdivisions, i.e. departments.

In this section, the data, method and variables of the study are presented. Descriptive statistics of the variables are displayed in Appendix 1.

6.1 Data

Two sources of data are linked in the study to assess the relationship between conflict and modern contraceptive use. The dependent variable modern contraceptive use and additional individual-level control variables are collected from the Colombian Demographic and Health Surveys [DHS]. The independent variable armed conflict on the departmental level is retrieved from the Uppsala Peace and Conflict Database Georeferenced Event Data [UPCD-GED].

Each survey round of the DHS samples a nationally representative selection of households. The survey has been conducted in Colombia every fourth or fifth year since 1986, with largely the same questions asked in each survey to enable comparisons across time and space. This study uses repeated cross-sectional data collected in years 2000 with a response rate of 92.5 percent (DHS, 2000), 2005 with a response rate of 92.4 percent (DHS, 2005) and 2010 with a response rate of 94.1 percent (DHS, 2010).

The sample population for this study is defined as 73,968 Colombian women between ages 13–49⁷ who may use modern contraception. Women who are infecund, menopausal, amenorrhoeic, sterilised or currently pregnant are excluded from the sample. A table displaying the number of cases excluded from the sample can be found in Appendix 2. Those with missing values for the selected variables were removed from the sample as they would fall out of the statistical models later on. The distribution of respondents across survey rounds is:

Variable	Frequency	Percentage
<i>Year of survey round</i>		
2000	14,028	18.96
2005	26,969	36.46
2010	32,971	44.57
Total	73,968	100.00

Table 1: Frequency table of year of survey round.

⁷ In all survey rounds, women aged 15–49 were sampled for interview, but in 2005 and 2010 women aged 13–14 were also included.

UPCD-GED offers novel data on violent conflict at the regional level in Colombia from 1989 to 2015. It measures each single event of organized violence in which it is believed that at least 1 person was killed mapped geographically and temporally, based on global newswire reporting, monitoring and translation of local news performed by the BBC, as well as secondary sources such as local media, NGO and IGO reports, field reports, books, etc. It also includes information on the number of deaths caused by each event (Croicu & Sundberg, 2015; Sundberg & Melander, 2013).

6.2 Ethical considerations

Always when dealing with individual level data, the confidentiality of respondents must be guaranteed. This is particularly important in this study, as reproductive health and rights issues are highly controversial, especially in Latin America. The participation in DHS is based on informed and voluntary consent. Results are strictly confidential, including between members of the household, identified only by a series of numbers after the interview (see the DHS website). The security, anonymity and privacy of the respondents will consequently be respected carefully.

6.3 Method

A regression analysis is useful to test how much of the variance in the dependent variable (modern contraceptive use) can be attributed to variation in the independent variable (armed conflict) and whether or not this variation is due to random chance. A logistic random effects model is used to analyse hierarchical data with a binary outcome. It estimates the probability that a certain outcome (e.g. using modern contraception) will occur using a logistic function. To control for unobserved heterogeneity between departments⁸, random effects are applied, which allows for the intercept to vary and uses variation within and between departments to generate estimates.

6.4 Variables

The dependent variable is *modern contraceptive use*. The cross-sectional variable current contraception method type was recoded into a binary variable measuring whether the respondent was using modern contraception (value 1) or not (value 0) at the time of interview. Modern contraceptive methods include the pill, IUD, injections, condom, implants, foam or jelly.

The main independent variable is the dichotomous variable *armed conflict*, measuring whether or not there were any conflict events in the department where the respondent was living.

⁸ The variable department measures in which administrative and political country subdivision the respondent lived at the time of interview. Colombia consists of 32 departments and a Capital District (Bogotá).

In its original form, each observation in the UCDP-GED is an event, mapped geographically and chronologically, of organized violence in which it is believed that at least 1 person was killed.⁹ To enable a merge of the conflict data to the DHS data, the UCDP-GED was collapsed into the best estimate of number of deaths by department and year.

For this study, three cross-sectional time specifications were created to explore when conflict has the most impact on family planning, if the conflict event occurs: in the year of interview, one year before the interview, or two years before the interview.

The dataset was then merged to the DHS dataset by department and year of interview, so that each respondent is matched to the best estimate of the number of deaths in her department at three different time points. A conflict dummy variable was also created, measuring whether the respondent had experienced conflict events in her department (value 1=yes) or not (value 0=no).

The strength and direction of the bivariate relationship between modern contraception and conflict in the year of, one year before and two years before the interview was tested using the Pearson product-moment correlation coefficient (Pearson's R). It showed that conflict violence one year before interview specification related strongest to modern contraceptive use, which is why this specification was used in the models.

A number of individual background characteristics may to different extents influence the propensity to use modern contraception:

Interview year is included to control for general period effects. Some of the respondents in survey rounds 2005 and 2010 were interviewed in the last months of the year before. Hence, the years of interview were 2000, 2005, 2004, 2009 and 2010.

In the case of family planning, it is necessary to control for general period effects to capture the effect of unobserved heterogeneity relating to certain events in time that could affect contraceptive use. For example, the government of Colombia has introduced family planning programs to achieve international goals such as the Millennium Goal number 5 on improving maternal health and achieving universal access to reproductive health. This is expected to increase the contraceptive use. Likewise, economic performance may affect family planning utilisation positively or negatively, depending on the business cycles. When controlling for general period effects, we account for any shared variance related to that year that is separate from the conflict.

The variable *age* measures the respondent's chronological age at the time of interview and is grouped into 5-year categories (except for the youngest group which includes ages 13–19).

Type of place of residence measures whether the respondent lives in a rural or urban area.

Highest educational level measures if primary, secondary or higher education is the highest level of education completed by the respondent.

⁹ The dataset also contains an estimation of how many casualties there were in each event, although this information was not used in the thesis.

The household wealth index offered by the DHS data is a composite number of the household's cumulative living standard of the respondent. It is calculated using data on the household's ownership of selected assets, such as televisions and bicycles, materials used for housing construction, water access and sanitation facilities. The index is generated through a principal components analysis, which places the respondents on a continuous scale of relative wealth. The households are then separated into five wealth quintiles that enable comparisons of the influence of wealth on other indicators (DHS VI, 2013, 18), such as family planning utilisation.

The dichotomous variable *occupational status* measures whether the respondent was currently working at the time of interview (value 1) or not (value 0).

Current marital status distinguishes whether the respondent was married, living together with a partner, divorced, widowed, not living together with a partner, or had never been in a union at the time of interview. Current marital status may affect family planning utilisation as women who have a partner (married, living together or not living together) will likely use family planning to a larger extent than those who do not (never married, widowed or divorced), as they will likely have more frequent sex.

The number of *total children ever born* measures how many children the respondent has given birth to, regardless of whether those children are still alive or not. It will likely affect contraceptive utilisation as women who have had as many children as they want to have (and in Colombia the two-child norm is persistent) will want to limit childbearing, thus using family planning. Women who have not yet had as many children as they want to will have a need for family planning to space births. Women who do not have children may use modern contraception to postpone childbearing. *Desire for children* is a categorical variable measuring whether the respondent wants children within two years, after two years, wants more children but is unsure of timing, has not decided whether she wants more children, or if she does not want any more children. Controlling for desire for children is relevant as women who want to space or limit births will have more incentive to use modern contraception than those who want children right away.

Age of youngest child measures the chronological age of the child most recently born to the respondent at the time of interview, and is included to further account for spacing needs.

7. Results

The effect of the conflict variable measuring the best estimates of number of deaths in the department the year before interview was not statistically significant in a basic conflict model as only independent variable, nor when controlling for socio-economic and family characteristics, because the P-value exceeded 0.05. Hence, this continuous measure of conflict is not presented, but only the dichotomous conflict variable.

Below, the results of the department random effects logistic model of contraceptive use in Colombia 2000, 2005 and 2010 are presented:

	MODEL 1		MODEL 2		MODEL 3	
	Odds Ratio	Std. error	Odds Ratio	Std. error	Odds Ratio	Std. error
Conflict dummy						
No	1	-	1	-	1	-
Yes	1.19***	0.03	1.07*	0.03	1.05	0.03
Year of interview						
2000	-	-	1	-	1	-
2004	-	-	1.11*	0.05	1.10*	0.05
2005	-	-	1.17***	0.03	1.17***	0.03
2009	-	-	1.52***	0.09	1.52***	0.09
2010	-	-	1.53***	0.04	1.53***	0.04
Age in 5-year groups						
13–19	-	-	1	-	1	-
20–24	-	-	2.39***	0.07	2.39***	0.07
25–29	-	-	2.02***	0.07	2.02***	0.07
30–34	-	-	1.58***	0.07	1.58***	0.07
35–39	-	-	0.97	0.05	0.97	0.05
40–44	-	-	0.61***	0.03	0.61***	0.03
45–49	-	-	0.37***	0.02	0.37***	0.02
Type of place of residence						
Urban	-	-	1	-	1	-
Rural	-	-	0.87***	0.02	0.84***	0.03
Highest educational level						
Primary	-	-	1	-	1	-
Secondary	-	-	1.25***	0.03	1.25***	0.03
Higher	-	-	2.02***	0.07	2.02***	0.07
Household wealth quintiles						
Poorest	-	-	1	-	1	-
Second	-	-	1.12***	0.03	1.12***	0.03
Middle	-	-	1.16***	0.04	1.16***	0.04
Fourth	-	-	1.14***	0.04	1.14***	0.04
Richest	-	-	1.17***	0.05	1.17***	0.05
Occupational status						
Not working	-	-	1	-	1	-
Working	-	-	1.23***	0.03	1.23***	0.03
Marital status						
Never in union	-	-	1	-	1	-
Married	-	-	5.04***	0.18	5.03***	0.18
Living together	-	-	4.90***	0.15	4.89***	0.15
Widowed	-	-	0.80*	0.07	0.80*	0.07
Divorced	-	-	1.26	0.22	1.26	0.22
Not living together	-	-	1.17***	0.04	1.17***	0.04

Total children ever born						
0	-	-	1	-	1	-
1	-	-	3.09***	0.12	3.09***	0.12
2	-	-	3.84***	0.18	3.84***	0.18
3	-	-	4.54***	0.25	4.55***	0.25
4	-	-	4.11***	0.27	4.11***	0.27
5	-	-	3.85***	0.32	3.85***	0.32
6+	-	-	3.29***	0.28	3.29***	0.28
Desire for more children						
Wants within 2 years	-	-	1	-	1	-
Wants after 2 years	-	-	2.31***	0.08	2.31***	0.08
Wants, unsure timing	-	-	1.19**	0.08	1.19**	0.08
Undecided	-	-	1.61***	0.10	1.61***	0.10
Wants no more	-	-	2.09***	0.07	2.09***	0.07
Age of youngest child						
No children	-	-	1	-	1	-
0-2	-	-	0.94	0.03	0.94	0.03
3-5	-	-	1.08*	0.04	1.08*	0.04
6+	-	-	1	(omitted)	1	(omitted)
Conflict # residence						
Yes # rural	-	-	-	-	1.12*	0.05
CONSTANT	0.55***	0.03	0.03***	0.002	0.03***	0.002
Rho	0.03	0.007	0.05	0.01	0.05	0.01

Table 2: Department random effects odds ratios of contraceptive use in Colombia 2000, 2005 and 2010.

*Note: p-values: *p<0.05, **p<0.01, ***p<0.001
The numbers are rounded up to two decimals.

7.1 Model 1 – Basic conflict model

In model 1 above, the basic effect of conflict on modern contraception use is presented. When living in a department that had been experiencing conflict in the last year, women had 19 percent higher odds to use modern contraception. This suggests that women are more careful not to become pregnant when there has been nearby conflict violence. Hence, the null-hypothesis and hypothesis 1 can be rejected, while hypothesis 2 is confirmed.

7.2 Model 2 – Socio-economic conflict model

In model 2, covariates are added to control for heterogeneity related to general period effects and individual socio-economic and family characteristics. Now, the effect of conflict has decreased from a 19 to 7 percent higher odds of women in conflict to use family planning. The effect is significant at the 5 percent level. This result is very interesting because it contradicts most of the previous research in the field, which mostly points towards the negative effect of conflict on reproductive health and rights outcomes through a deterioration of health systems, including family planning services. On the

contrary, modern contraceptive utilisation has increased on average for Colombian women affected by conflict in the year before interview. This result indicates that conflict makes Colombian women more cautious to not become pregnant, perhaps by reducing or more firmly deciding their demand for children.

The expected relationships between basic characteristics of women and their modern contraceptive utilisation were found and are presented below.

The effects of interview year show that modern contraceptive use has increased quite linearly over time compared to the baseline in year 2000. This is not surprising, as the Colombian government has introduced family planning policies to achieve the Millennium Goal number 5 regarding the improvement of maternal health, which was adopted by the government in 2005. Women interviewed in later years have higher propensities to use modern contraception compared to year 2000. These results are statistically significant.

Regarding age, women aged 20–24 and 25–29 are more than twice as likely to use modern contraception compared to the youngest group. Women aged 30–34 have 58 percent higher odds of using modern contraception compared to the youngest women in the sample. This is probably due to a rise in sexual activity and a consequential need of family planning to prevent unwanted pregnancy to postpone and then space births. Women over the age of 40 have a 39 and 63 percent lower propensity respectively to use modern contraception, maybe suggesting that family planning may be more socially accepted among younger generations. All effects of age are significant at the 0.1 percent level, except for the age category 35–39 years which is not a statistically different odds ratio from that of the 13–19 year olds.

Women living in rural areas have 13 percent lower odds of using modern contraception compared to women living in urban areas, which is a result that corresponds to previous research.

The odds of using modern contraception are stratified across educational categories. Women with secondary school as highest level of education have 25 percent higher odds of using modern contraception. The propensity of women with tertiary education to use modern contraception is more than twice as big and statistically significant. Both groups are compared to women with primary school as highest educational level. This corresponds to previous research about how education affects both the possibility and intention to use family planning.

The odds of using modern contraception are also significantly stratified across household wealth quintiles. Respectively, women in the second, middle, fourth and richest quintiles have significant 12, 16, 14 and 17 percent higher odds ratios to use modern contraception compared to the poorest. All groups therefore have a similar propensity to use modern contraception, except for the poorest wealth quintile. Hence, household wealth matters for the propensity to use modern contraceptive, but mostly for women in the poorest quintile.

Women that were working at the time of interview have 23 percent higher odds of using modern contraception than non-working women, which may be explained by increased

fertility control due to the increased opportunity costs of children for women who would have to leave their jobs to care for their newborns, and increased economic opportunities and freedom to acquire family planning goods.

Compared to women who have never been in a union, the odds of married and cohabiting women are significantly around five times as big to use modern contraception. This is not surprising, as women in a stable relationship probably will have sex more frequently, which increases the demand for modern contraception. Married women use modern contraception the most. Women in a non-cohabiting relationship have 17 percent higher odds of using modern contraception. Widowed women have a 20 percent lower chance to use modern contraception. The effect of being divorced is not statistically significant. It seems like women that are not in a union have the lowest propensity to use modern contraception, except for widows, maybe due to infrequent sexual relations or social stigma that prevents them from accessing family planning goods because they are not in a relationship.

The odds of women who have children to use modern contraception are significantly between three and 4.5 times as big compared to women who do not have any children. It may suggest that women who want to space or limit births are more prone to use modern contraception, as compared to those who simply want to postpone the first birth.

Women who want to have children within two years have – not surprisingly – the lowest propensity to use modern contraception compared to women with other fertility wishes.¹⁰ In contrast, women who want children after two years or want no more children, thus in need of family planning to space and limit births respectively, have more than twice the propensity to use modern contraception. Those who want more children but are unsure as to when have a higher chance of 19 percent, and women who are undecided as to whether they want more children have a higher chance of 61 percent to use modern contraception.

Age of the youngest child is tightly linked to the desire for children variable but was introduced to fully capture the dynamics related to birth spacing. Women whose youngest child is aged 0–2 years did not have a statistically different odds ratio from that of the women without children. Women whose youngest child is aged 3–5 years have 8 percent higher odds of using modern contraception. The result for women with children above the age of six was omitted due to multicollinearity.

The constant is understood as representing the odds to use modern contraception for women in non-conflict departments, interviewed in year 2000, in the youngest age group, living in an urban area, in the lowest educational level and wealth quintile, who are not working, have never been in a union and have no children, and want children within 2 years.

¹⁰ The robustness of the model was tested by excluding the variable desire for children. The effects of total children were slightly reduced and the effects of marital status increased somewhat. For all other variables the effects remained at the same level.

7.3 Model 3 – Interaction between conflict and type of place of residence

A likelihood ratio test was used to assess the best goodness-of-fit when adding two-way interactions between conflict and the following socio-economic variables to model 2: type of place of residence, highest educational level and household wealth quintiles. Only residence significantly improved the model's fit to the data.

Model 3 includes this interaction between type of place of residence and conflict using the product term approach.

When including the interaction effect, the main effect of conflict is not statistically significant, meaning that women in urban conflict do not have an odds ratio of using modern contraception that is statistically different from women in urban non-conflict. In other words, conflict does not seem to affect urban women's propensity to use modern contraception.

The main effects of residence are similar in model 2 and 3. Women in rural non-conflict areas have a statistically significant 16 percent lower propensity of using modern contraception compared to the reference category, women in urban non-conflict.

The interaction effect between conflict and type of place of residence indicates that the effect of conflict in rural areas is 12 percent stronger than in urban areas. The odds ratio of women in rural conflict areas to use modern contraception is 18 percent higher than in rural non-conflict ($1.05 * 0.84 * 1.12 / 0.84$). This result suggests that conflict encourages women in rural areas to be more careful to not have an unplanned pregnancy, and perhaps their desire for children is also reduced or more firmly decided.

8. Discussion and conclusions

Building on Ansley Coale's contraception paradigm and previous research on reproductive health in conflict settings, the contesting hypotheses of this study were that conflict either increases or reduces modern contraceptive utilisation, through the mechanisms of willingness and ability.

The results of this study show that the Colombian armed conflict indeed affects modern contraceptive use, by significantly increasing the general propensity of utilisation even when controlling for unobserved period effects. As suggested by Coale's paradigm and previous research, family planning may be positively affected if women want to limit childbirth due to e.g. difficult living conditions because of impoverishment caused by conflict. This relates to Coale's prerequisite about the willingness to use contraception. Given that conflict creates economic disruption, increased uncertainty and unsafety, emotional stress, and a general disturbance of everyday life including reproductive issues, it is not surprising that women may want to prevent pregnancies due to extensive societal violence. In other words, the demand for children has likely been more firmly decided or even reduced by the Colombian armed conflict, which has increased the modern

contraceptive utilisation among women who lived in a department where conflict occurred the year before the interview.

The result of the interaction term suggested that women in rural areas in departments where conflict events occurred the year before interview are the ones who are increasingly using modern contraception to avoid pregnancy. This might be explained by the fact that women in rural areas may have less access to (both legal and clandestine) abortions and post-abortion care in the case of unwanted pregnancies, and therefore are more careful to avoid pregnancies than women in urban areas when faced with conflict. Rich women in urban areas can more often access safe abortions and post-abortion care while poor women in rural areas usually don't have the same option (Díaz Amado et al., 2010; Prada et al., 2011). Consequently, it is not surprising rural women's willingness to use contraception was affected, but it is astonishing that their ability to act on that wish was not removed by the armed conflict.

The results of the study are highly interesting because they contradict most of the previous knowledge in the area. Supposedly, conflict should eradicate women's reproductive health and rights by the deterioration of health systems, including access to family planning goods and services. Instead, the causal relationship is positive; when faced with conflict, Colombian women are more prone to using modern contraception. It is therefore very encouraging to find that women can limit childbearing if they want to, despite the negative effect of conflict on the health care sector. Of course, it is not possible to deduce from the data whether women were always able to access modern contraception, and the reducing effect of conflict on family planning might also be at play, causing the more evident positive effect to be minimised by pressure from the other direction.

Although modern contraceptive utilisation generally increased during the time period, it is stratified across social categories such as age, type of place of residence, highest educational level, occupational status, and family characteristics, which suggests that all women did not completely enjoy reproductive autonomy. Further, it is extremely problematic that women who may have wanted to have children in the absence of conflict, may lose this wish due to societal violence.

What is bewildering about the result is not the women's choice to use modern contraception; that is quite understandable given how conflict disrupts life in almost every way possible. Rather, it is the *ability* for women to continuously and increasingly use modern contraception in times of conflict in the near area. This may be an additional reason to why the case of Colombia is very fascinating.

The continued possibility for women to access modern contraception, which is suggested by the general increase in modern contraceptive utilisation, may be explained by the fact that Colombia is considered to be a state with strong family planning efforts (Iqbal, 2010, 81–2). Since the 1960s two important phenomena with implications for women's reproductive health and rights have been present in Colombia: general family planning provision as first introduced by Profamilia, and the armed conflict between the government and various left-wing guerrilla groups. Compared to other conflict settings, Colombia is unique in the sense that a low-intense armed internal conflict has been

present for more than half a century. The family planning initiatives – first private, non-profitable and funded from abroad; later governmental and stimulated by international goals and agreements – were instigated in a society with extreme levels of violence, which might have created services that by necessity are more robust to conflict in comparison to other settings.

Contraceptive uptake in Colombia has in other words started in a culture of violence, which also was a large contributor to the armed conflict. An analysis of access to reproductive health goods and services in conflict is possible with the DHS and UCDP-GED data, although it did not fit into the scope of this thesis, and would be required to fully understand the mechanisms of family planning use in the Colombian armed conflict. Further research should explore the effects of armed conflict on reproductive health goods and services comparatively between Colombia and a short-term conflict setting, to explore whether Colombian family planning services are more robust to conflict than elsewhere.

As previously mentioned, women who have been affected worst by conflict are likely not represented in the DHS data, or at least they cannot be identified. Due to the extensive timeframe of the armed conflict, it is not possible to distinguish a Colombia in peace from a Colombia in war or to measure the universal effect of national conflict. Nevertheless, with this novel data from UCDP-GED it is possible for the first time to quantitatively assess the impact of war, even if it is limited to a floor effect connected to a specific time and place.

Since this study only focused on the time period 2000–2010 due to the selection of variables, large parts of the DHS and UCDP-GED datasets remains untapped from the late 1980s and the entirety of the 1990s. Future research could therefore focus on a larger time span, to further explore the relationship between armed conflict and reproductive health and rights outcomes, especially since this area of research largely remains untheorised. For example; can the increased family planning utilisation in Colombia due to armed conflict be explained by a reduction in the demand for children?

A limitation of this study was that sterilised women were excluded from the sample, which is the custom in the research on family planning utilisation. However, female sterilisation is an uncommonly frequent method of contraception compared to other Latin American countries. Given its unusual prevalence, it would be interesting to do a stratified analysis of female sterilisation in Colombia with regards to the conflict. Perhaps the armed conflict has created a situation where women who are certain they want no more children are sterilised to make absolutely sure they cannot become pregnant again? If the demand for children is reduced by conflict, this is not an unlikely scenario.

Finally, other sexual and reproductive health and rights outcomes should be explored in this emerging area of research, such as the relationship between armed conflict and intimate partner violence or sexual violence, which both are highly prevalent in Colombia. With UCDP-GED and DHS data, it is possible to examine this relationship between conflict-related macro-level and domestic micro-level violence in Colombia and elsewhere.

The relationship between armed conflict and sexual and reproductive health and rights is not sufficiently explored or theorised. This is problematic in the Colombian setting, as a peace process is underway but the ramifications of the conflict are not fully understood, despite the explicit involvement of women in the negotiations. The lack of knowledge may potentially be at the expense of the post-conflict implementation of a peace agreement with women's reproductive health and rights in mind. A goal for both public policy and academia should therefore be to produce research in this field.

It is also crucial to state that even though Colombia deserves recognition for its excellent family planning provision services, women's reproductive health and rights will never be fully respected as long as abortion is illegal. Because of its contribution to maternal morbidity and mortality in Colombia as well as other countries, the negligence to provide women with safe and legal abortion remains one of the biggest violations of women's health and human rights.

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Appendix 1 – Descriptive statistics

Armed conflict was present in the department the year before interview for 23,884 women or 32.29 percent of the total sample. 50,084 women or 67.71 percent of the sample did not experience conflict in the department the year before interview. There were 47 conflict events in the year before interview. The number of deaths in each conflict event ranged from 1 to 239, with a mean of 16 deaths and a standard deviation of 48. The total number of deaths was 1,529 individuals.

The characteristics of the sample population are summarised in table 2:

	Frequency	Percentage
<i>Modern contraception</i>		
No	46,465	62.82
Yes	27,503	37.18
<i>Conflict dummy</i>		
No	50,084	67.71
Yes	23,884	32.29
<i>Year of interview</i>		
2000	14,028	18.96
2004	6,702	9.06
2005	20,267	27.40
2009	3,186	4.31
2010	29,785	40.27
<i>Age in 5-year groups</i>		
13–19	25,015	33.82
20–24	13,953	18.86
25–29	11,135	15.05
30–34	8,411	11.37
35–39	6,695	9.05
40–44	5,258	7.11
45–49	3,501	4.73
<i>Type of place of residence</i>		
Urban	56,674	76.62
Rural	17,294	23.38
<i>Highest educational level</i>		
Primary	16,462	22.26
Secondary	42,705	57.73
Higher	14,801	20.01
<i>Household wealth index quintiles</i>		
Lowest	14,509	19.62
Second	17,504	23.66
Middle	16,279	22.01
Fourth	13,934	18.84

Highest	11,742	15.87
<i>Occupational status</i>		
Not working	40,204	54.35
Working	33,764	45.65
<i>Current marital status</i>		
Never married	37,199	50.29
Married	9,515	12.86
Living together	17,660	23.88
Widowed	935	1.26
Divorced	166	0.22
Not living together	8,493	11.48
<i>Total children ever born</i>		
0	36,318	49.10
1	16,280	22.01
2	11,542	15.60
3	5,115	6.92
4	2,370	3.20
5	1,189	1.61
6 +	1,154	1.56
<i>Desire for more children</i>		
Wants within 2 years	8,833	11.94
Wants after 2 years	34,077	46.07
Wants, unsure timing	2,867	3.88
Undecided	2,013	2.72
Wants no more	26,178	35.39
<i>Age of youngest child</i>		
No children	36,318	49.10
0–2	12,231	16.54
3–5	8,956	12.11
6+	16,463	22.26
Total	73,968	100.00

Table 3: Frequencies of the characteristics of the sample population.

The distribution of respondents by department is:

Department	Freq.	Percent	Department	Freq.	Percent
<i>Antioquia</i>	5,645	7.63	<i>Norte de Santander</i>	2,422	3.27
<i>Atlántico</i>	4,000	5.41	<i>Quindío</i>	2,138	2.89
<i>Bogotá</i>	5,638	7.62	<i>Risaralda</i>	2,172	2.94
<i>Bolívar</i>	2,301	3.11	<i>Santander</i>	2,764	3.74
<i>Boyacá</i>	2,287	3.09	<i>Sucre</i>	2,082	2.81
<i>Caldas</i>	2,428	3.28	<i>Tolima</i>	2,227	3.01
<i>Caquetá</i>	1,438	1.94	<i>Valle</i>	5,349	7.23
<i>Cauca</i>	2,190	2.96	<i>Arauca</i>	1,159	1.57
<i>Cesar</i>	2,085	2.82	<i>Casanare</i>	1,224	1.65
<i>Córdoba</i>	2,418	3.27	<i>Putumayo</i>	1,244	1.68
<i>Cundinamarca</i>	2,323	3.14	<i>San Andrés y Provincia</i>	1,086	1.47
<i>Chocó</i>	1,517	2.05	<i>Amazonas</i>	1,452	1.96
<i>Huila</i>	2,396	3.24	<i>Guainía</i>	1,032	1.40
<i>La Guajira</i>	1,641	2.22	<i>Guaviare</i>	1,199	1.62
<i>Magdalena</i>	2,001	2.71	<i>Vaupés</i>	1,054	1.42
<i>Meta</i>	1,789	2.42	<i>Vichada</i>	956	1.29
<i>Nariño</i>	2,311	3.12			
Total	73,968				

Table 4: Frequency table of the respondents by department.

Appendix 2 – Sample exclusion

In the table below the number of excluded cases from the sample population are displayed:

Category	Frequency
<i>Pregnant women</i>	4,694
<i>Amenhorreic women</i>	4,351
<i>Infecund/menopausal women</i>	6,813
<i>Sterilised and declared infecund women</i>	21,869
Total number of excluded cases	37,727

Table 5: Frequency table of excluded cases from the sample population.