THREE ESSAYS IN DEVELOPMENT ECONOMICS AND GENDER

by

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Abstract

This dissertation is a collection of three chapters in Development Economics and Gender for the Mexican context. Chapter 2 analyses whether the gender composition of decision-making boards affects promotion decisions for either male or female researchers, by using a unique database for a context in which a group of peers makes all promotion decisions for all academic institutions in Mexico. The empirical analysis examines the probability of promotion for each researcher enrolled in the National System of Researchers, and how this is affected by the committee's gender composition, exploiting the random assignment of evaluators. The results show that women in decision-making committees do not significantly favor the probability of promotion for women; but women facing a male-only committee have a lower probability of promotion than men.

Chapter 3 studies the effects on social attitudes of the sharp increase in violence experienced in Mexico during the "Drug War". This is done through a lab-in-the-field experimental approach with Mexican undergraduate students. The results suggest that there are experience-type specific effects for the different levels of violence exposure. Differential gender effects are also found; women with drug war-related violence experience appear to have two different behaviors; depending on which type of violence experience they had; one where they become community builders and show solidarity, and the other one where they develop a lot of fear and feelings of vulnerability and show spite.

Chapter 4 studies the effect of the sharp increase in violence in Mexico on preventive health care attitudes, and on classic health measurements. The data used in this study is a match of the INEGI monthly homicide reports at the municipality level with the individual level data from the Mexican Family Life Survey. The results presented suggest that having high levels of violence can affect the individual's health when measured by classic variables such as blood pressure, hospitalizations, body mass index, and mental health; and it can also affect the behaviors that could help alleviate health problems, such as having a healthier lifestyle including non-smoking, spending time outdoors, sleeping well, going for wellness checkups, and having a positive mindset about oneself.

Lay Summary

This dissertation is a collection of three chapters in Development Economics and Gender for the Mexican context. First, I study the role of gender in decision-making boards in the Mexican Academia. I find that women in decision-making committees do not significantly favor the probability of promotion for women, but women facing a male-only committee have a lower probability of promotion than men. Second, I study the effects of drug war-related violence exposure of social attitudes. I find differential gender effects of violence in which women show experience-type specific behavioral responses. Third, I study the effects of violence exposure on health indicators and on preventive health care attitudes. I find that a high level of violence has a negative effect in health measurements and in behaviors that could potentially help alleviate health problems.

Preface

This dissertation is original, unpublished, independent work by the author, Coral Gonzalez.

The fieldwork reported in Chapter 3 has been approved by the UBC Human Ethics Research Board under the name "Experiments on Violence in Mexico" and certificate number H14 – 00348.

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1 Introduction

This dissertation examines three issues of Development Economics and Gender for the Mexican context. In particular it studies the effect of gender composition for promotion of academics; and the effects of violence exposure on social attitudes, and on health care decisions and indicators.

Through the United Nations Millennium Declaration, member states committed "to promote gender equality and the empowerment of women as effective ways to combat poverty, hunger and disease, and to stimulate development that is truly sustainable" (Summit et al., 2000). During these last two decades, many outcomes for women have definitely improved. Women have unprecedented wins in education, health, employment, and rights; however, although this progress is significant, women and girls continue to suffer discrimination and violence in all parts of the developing world (Anderson et al., 2018). This dissertation aims to continue these conversations for the Mexican context.

Chapter 2 analyses whether the gender composition of decision-making boards affects promotion decisions for either male or female researchers, by exploiting a unique database for a context in which a group of peers makes all promotion decisions for all academic institutions in Mexico. The empirical analysis examines the probability of promotion for each researcher enrolled in the National System of Researchers (SNI), and how this is affected by the committee's gender composition, exploiting the random assignment of evaluators. This is a simple and clear design that finds its strength in the randomized assignment of evaluators into promotion committees; hence, not relying on strong assumptions for identification. The results show that women in decision-making committees do not significantly favor the probability of promotion for women; however, having a gender mixed committee does favor the probability of promotion for all researchers. On the other hand women facing a male-only committee have a lower probability of promotion than men; this is important because it can contribute to the female under-representation currently evident in all academic fields within the Mexican Academia.

Chapter 3 studies the effects on pro- and anti-social attitudes of the sharp increase in violence experienced in Mexico after 2006, arisen from the governmental strategy known as the "Drug War". This is done through a lab-in-the-field experimental approach with Mexican undergraduate students. The fighting of the Mexican government against drug trafficking organizations has implied a 130,000+ death toll, and almost 2 million displaced people. Drastic changes in Mexicans' lives are part of the large unaccounted collateral damage. These changes go from the way institutions work, and businesses are born; to the way people make decisions, and relationships. The results shown in this study suggest that there is a strong effect of having been exposed to a Drug War-related incident

on several behavioral measures. In particular, experience-type specific effects are found for the different levels of violence exposure. Interestingly, differential gender effects triggered by individual's exposure to Drug War-related violence are also found. Women with Drug War-related violence experience appear to have two different behaviors; depending on which type of violence experience they had; one where they become community builders and show solidarity, and the other one where they develop a lot of fear and feelings of vulnerability and show spite. These results shed some light on the public policy strategies that can be used to begin to overcome the already negative lasting effects of the Drug War.

Chapter 4 estimates the effect of an unprecedented and sharp increase in violence in Mexico on preventive health care attitudes, and more classic health indicators. This is done by exploiting the unique circumstances of this spike in violence, in which individuals can be compared before and after this sharp increase. The data used in this study is a match of the INEGI monthly homicide reports at the municipality level with the individual level data from the Mexican Family Life Survey (MxFLS), which follows individuals through the different waves of the survey. Thus, the response for the same individual can be compared pre- and post- violence. The results presented suggest that having high levels of violence can affect the individual's health when measured by classic variables such as blood pressure, hospitalizations, body mass index, and mental health; and it can also affect the behaviors that could potentially help alleviate health problems, such as having a healthier lifestyle including non-smoking, spending time outdoors, sleeping well, going for wellness checkups, and having a positive mindset about oneself. This can result in self-reinforcing cycles of experiencing bad health outcomes in municipalities with high levels of violence.

Finally, Chapter 5 outlines some concluding remarks.

2 Gender and Academia in Mexico

2.1 Introduction

The under-representation of women in academia is a worldwide fact, even though female educational levels and female labor force participation have been increasing in most countries. It has been widely documented in the literature that women earn less than men even after accounting for education, work experience, and professional qualifications (see for instance Weichselbaumer and Winter-Ebmer (2005); Altonji and Blank (1999); Blau and Kahn (2003)). Moreover, there is also research showing that the gender wage gap is increasing across the wage distribution, and that women remain underrepresented in higher paying jobs and in top positions (Albrecht et al., 2003; Arulampalam et al., 2007). These results can be due to differences in investment in human capital or in experience among genders, but it can also be related to the fact that promotions favor men more than women.

The Mexican academia is not the exception to the reality women face in terms of gender representation gaps, particularly in higher ranks. The Mexican National System of Researchers (SNI, after its initials in Spanish) is a ranking affiliation for researchers, managed by the National Council of Science and Technology. The percentage of female researchers enrolled in the is less than half across nearly all disciplines, and is decreasing with rank. This stylized fact may be a source of concern, as it could be the result of different promotion opportunities for women.

The male versus female gap in labor market outcomes has been explained by economic theory through three main channels. First, focusing on incomplete information on the employer side about skills or productivity of candidates, hence arising negative beliefs about some groups (Aigner and Cain, 1977). Second, focusing on preferences of decision-makers, and their dislike for working with women (Becker, 2010). And third, focusing on the differences in preferences and attitudes between men and women (Bertrand, 2011).

One more factor that may affect female promotions is the role that men and women in decision-making entities play in promotion decisions, and how these differ for men and women. This factor is the focus of this study. This problem has not been extensively examined in the literature, and the results have been ambiguous. On one hand, Zinovyeva and Bagues (2010) show that committees with a larger share of women reduce gender gaps in competitions to full professor positions, but they find no effect in competitions to associate professor. Moreover, De Paola and Scoppa (2015) find that female candidates are less likely to be promoted when there is an all male-committee, while the gender gap disappears when the candidates are evaluated by a mixed-sex committee.

On the other hand, Bagues and Esteve-Volart (2010) show that female candidates are less likely to be hired when there is a higher percentage of female evaluators. Moreover, Bagues et al. (2017) find that female evaluators do not significantly favor female candidates for promotions, and that male evaluators become less favorable toward female candidates as soon as a female evaluator joins the committee.

Given that the literature has not given a decisive answer as to how and when do women in power help or not other women; this paper aims to shed more light on this issue, providing new evidence on whether the gender of evaluators matters for promotion decisions in the Mexican National System of Researchers. Based on the current literature there is no clear hypothesis of the direction of the effect that women in the SNI's decision-making committees have on promotion decisions for other women.

The advantage of this study is its clear and simple framework, which is based on the random assignment of evaluators to committees; therefore, not relying on strong assumptions for identification as other studies have had to do. With this, the probability of success of promotion can be estimated in relation to the committee gender composition, avoiding possible problems deriving from unobservable factors that may be correlated with evaluator and individual characteristics.

The importance of this study is that disentangling the effects of differences in promotion practices can be developed for the Mexican context, given the structure and rules of the SNI. This paper aims to exploit a unique dataset and context, not explored before, in which a group of peers makes all promotion decisions for all academic institutions in Mexico (around 800 promotions each year), under precise and clearly stated rules, in order to test empirically if differences in promotions opportunities for men and women exist. In particular, we look at the impact of the gender composition of decision-making committees at the time of promotion. The study's framework has two main advantages; first, the members forming the decision-making committees are randomly assigned. And second, I am able to exploit the fact that, for promotion decisions within the SNI, the only variable taken into consideration in the promotion process, as defined in the bylaws, is a raw measure of research productivity: each researcher's publications count[1]. Hence, all that is officially needed for promotion is known.

In this study, the probability of promotion for each academic is estimated. The empirical analysis shows that the gender composition of decision-making boards has an impact on promotion decisions. This study has two main results. First, it is found that women in decision-making committees do not significantly favor the probability of promotion for women; however, having a gender mixed committee does favor the probability of promotion for all

[1] "Científicos maquilan artículos" at http://www.eluniversal.com.mx/cultura/53824.html, and SNI's bylaws for 2013.

researchers. And second, women facing a male-only committee have a lower probability of promotion than men; this is alarming because it can contribute to the female under-representation currently evident in all academic fields within the Mexican Academia

This work contributes to the literature analyzing gender gaps in high-paying jobs and top positions; it also contributes to the small but growing literature on studying the evaluators gender effect, since results found so far are mixed it is useful to provide new evidence.

The paper is structured as follows. Section 2.2 describes the Mexican National System of Researchers (SNI) and its academic promotion system. The data used for the empirical analysis is described in Section 2.3. In Section 2.4 the empirical strategy and results are presented. Section 2.5 concludes, and robustness checks are presented in Section 2.6.

2.2 Institutional Background and Data

The Mexican National System of Researchers is a ranking affiliation for academic researchers, managed by the National Council of Science and Technology (Consejo Nacional de Ciencia y Tecnología, CONACYT). Its objective is to promote and strengthen the quantity and quality of research in Mexico through granting academic distinctions and monthly compensations for a three year period, subject to renewal, to eligible researchers in private and public institutions in Mexico; and to eligible Mexican researchers in institutions abroad. The nature of the SNI in Mexico is quite particular; it was created in 1984 as a response to the drop in up to 60% of academics' salaries due to the called "lost decade" in Mexico (Galaz Fontes and Gil Antón, 2009). As a result of this drop, many academics left Mexico for better economic opportunities in other places in the world. The SNI first worked to establish compensation guides to keep researchers in the country, but it continued after the "brain drain" was over to promote and strengthen research.

The SNI is a voluntary enrollment system, it is not related to the institution where the researcher is employed, and it provides them with a (substantial) monetary contribution and an academic distinction. According to a survey conducted by the Network of Researchers on Academics (Red de Investigadores sobre Académicos, RDISA), the self-reported average monthly salary (including SNI compensation) of SNI members is around $50,000 Pesos ($3,740 USD). The self-reported average monthly SNI compensation for these same individuals was around $13,000 Pesos ($972 USD) (Padilla González, 2010). That is, the SNI compensation represents, on average, 26% of the total income of a SNI member.

There are four hierarchy levels in the SNI, individuals are ranked as Candidates (labeled as Level 0 in this study), Level 1, 2, or 3 according to their past publications record at the time of review (with Level 3 being the highest rank). The economic compensation is fixed within level. According to the formal compensation scheme published by SNI; the monthly compensation is (in USD) approximately $436, $870, $1,162, and $2,034 for Candidates, Level 1, Level 2, and Level 3 members, respectively.

All individuals with an academic position in Mexico and belonging to the affiliation go under review every three years, and they are all required to enter all of their publications record into a standardized system. A board of peers is appointed to make all promotion decisions within each field, and only the information entered by the candidates into the standardized system can be used by the board in order to make the promotion decisions.

The SNI accounts for 21% of the entire Full-Time faculty in Mexican institutions[2] (Galaz Fontes et al. (2009)). As Table 1 describes, when comparing researchers enrolled in SNI versus Full-Time faculty in Mexican Institutions, the distribution of researchers across fields of specialization and gender is very similar for both. The SNI is thought of as the institution that gathers the most productive researchers in Mexico[3] because of the productivity requirements, which are increasing in rank.

Table 1: Composition of SNI and of National Full-Time faculty (FTf)

Area	SNI	FTf in Mexico	Women in SNI	Women in FTf
1. Physics-Math and Earth Sciences	16.6%	17.8%	18.5%	29.8%
2. Biology and Chemistry	17.2%		40.5%	
3. Medicine and Health Sciences	9.5%	13.4%	44.8%	47.4%
4. Humanities and Behavior Sciences	15.4%	23.4%	49.3%	48.1%
5. Social Sciences	15.8%	17.9%	34.8%	43.0%
6. Biotechnology and Agricultural Sciences	11.1%	4.1%	28.4%	10.3%
7. Engineering	14.3%	23.4%	18.6%	20.5%
Total	100%	100%	33.2%	35.7%

Source: SNI's registry for 2009, and Galaz et al. (2009).

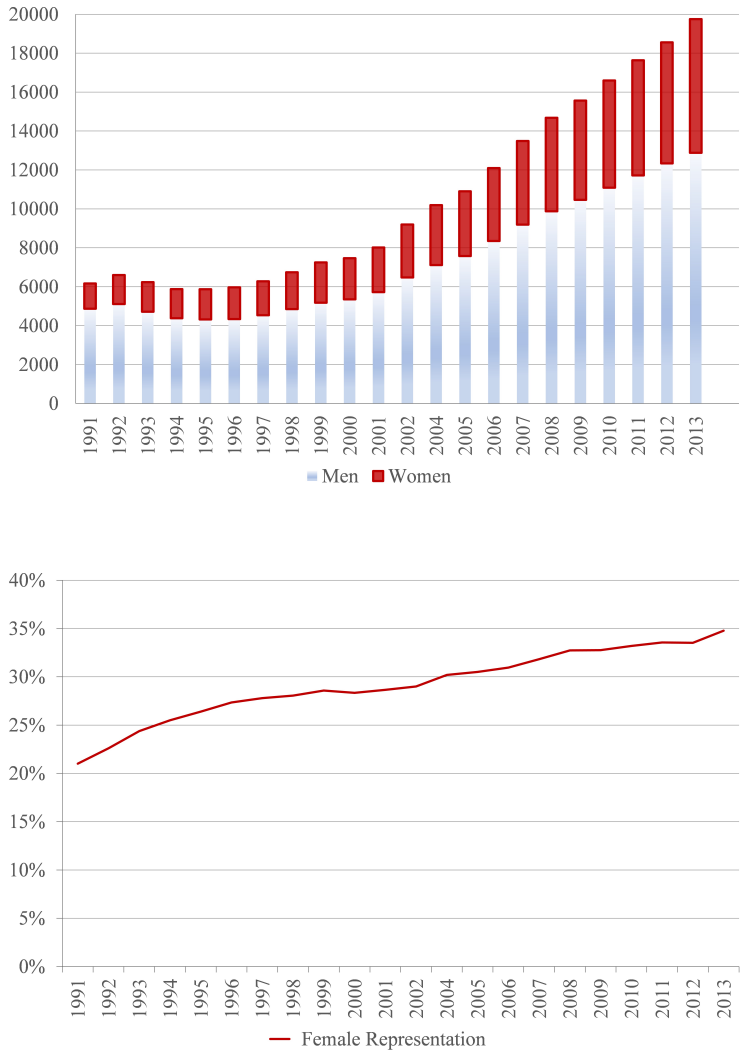
[2] This percentage is not closer to 100% due to the high academic requirements to belong to the National System of Researchers (SNI).

[3] Either Mexican researchers in Mexican and foreign institutions, or foreign researchers in Mexican institutions.

To look at the Mexican academia context is very interesting due to the nature of the affiliation. The SNI has the structure of any academic affiliation in a developed country, having clear stated rules and clear incentives. Moreover, the compensation received by the SNI represents, on average, around 57% (Padilla González (2010)) of the regular[4] wage of a researcher belonging to the affiliation. Hence, a very high percentage of the income of any productive academic in Mexico is determined by only one agent; and therefore, the SNI could easily act as a monopoly and incur in inequitable practices. The SNI has shown to have success, as seen by the growing enrollment of members in the affiliation over the last two decades, which has more than tripled. Figure 1 shows this growing enrollment, as well as a growing female representation going from 21% in 1991 to 35% in 2013.

[4] Without SNI compensation.

Figure 1: Total enrollment and female representation in the SNI



Notes: The figure on top shows the total number of researchers enrolled in the SNI by year from 1991 to 2013, by gender. The figure on the bottom shows the female representation throughout the same period, it is calculated as the percentage of female researchers enrolled in the SNI for every year.

Source: Own elaboration with data collected from Didou Aupetit and Gérard (2010) for the 1991-2006 period, and from SNI's registries for 2007-2013.

2.3 Data

2.3.1 Members of the National System of Researchers

The data used in this study was a coordinated effort of obtaining data from the Integrated Information System on Scientific Research, the Technological Development and Innovation System (SIICYT, after its initials in Spanish), the Unit of Information and Regulations of Science and Technology within the National Council of Science and Technology[5], and yearly documents containing information about the decision-making committees. After collecting the different information, Matlab algorithms were used to create the final database used in this study.

The database contains a list of the researchers enrolled in the SNI for each year in the period of 2007 to 2013. By matching the names of the researchers from each of these lists, those who had been promoted in 2008, 2009, 2010, 2011, 2012, and 2013 were identified. Data on several variables for each individual enrolled was collected, such as total number of publications for each individual (which is officially the only measure taken into account at the time of promotion[6]), discipline in the SNI, level in SNI for each year, field of specialization, age, institution, gender, and gender composition of committee members deciding on promotions for each area and each year.

The subject pool consists of 24,118 enrolled researchers throughout 2007-2013, of which 66% are men and 34% are women. Observable characteristics for the entire sample are described in Table 2. The average academic is 48 years old, has a Level 1 distinction in the SNI, and has 39 publications by 2013. Female researchers in my sample are younger, have a lower level distinction in the SNI, and have fewer publications. It is important to notice that female representation in the lower levels of the SNI is higher, and the one in the higher levels is lower. It can be observed that the number of men-per-women has been decreasing in the last two decades; however, there are still four men for every woman in the highest level in the SNI, as described in Figure 2. This stylized fact may be a source of concern, as it could be the result of systematic different promotion opportunities by gender, giving way to the existence of biased practices in the highest levels of the Mexican academia ranking.

[5] I acknowledge the support of Gilberto Alarcon from CONACYT in this task.

[6] "Científicos maquilan artículos" at http://www.eluniversal.com.mx/cultura/53824.html, and SNI's bylaws for 2013.

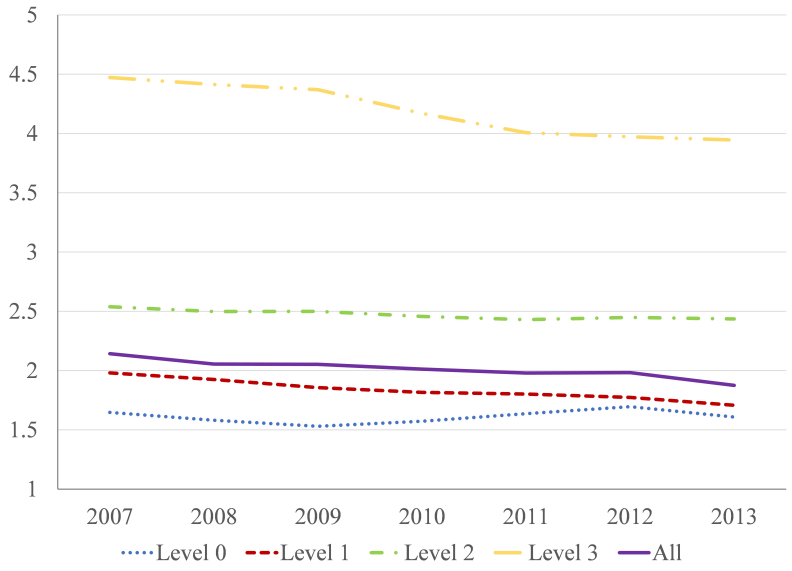
Table 2: Descriptive statistics for researchers enrolled in SNI's 2013 registry

	Sample mean	Men	Women	Diff
Age	48.3	48.7	47.6	-1.1***
% Women	34.3%			
Level in SNI	1.16	1.23	1.04	-0.2***
└ Level 0	18.8%	17.7%	21%	
└ Level 1	54.5%	52.3%	58.6%	
└ Level 2	18.1%	19.6%	15.3%	
└ Level 3	8.6%	10.5%	5%.1	
Publications	38.6	42.7	30.8	-11.9***
Promoted during 2008-2013	23.5%	24.1%	22.1%	-2%***
Total 2013 enrollment	19,747	12,965	6,782	

**** p<0.01, ** p<0.05, * p<0.1*

Source: Data collected from 2013 SNI's registry, and from 2007-2013 for promotions.

Figure 2: Number of men per woman in the SNI



Notes: The figure shows the number of men per woman enrolled in the SNI by year from 2007 to 2013, by Level.

Source: Own elaboration with data collected from 2007-2013 SNI's registries.

When looking at those researchers who were promoted at least once during the study period (i.e. 4,873 people), 67% of promoted academics are men, and 33% are women. The average promoted academic is 45 years old at the time of promotion, was promoted to a level 2 distinction in the SNI, and has 40 publications at the time of promotion. Female researchers that were promoted during this period are younger, promoted to a lower level, and have fewer publications at the time of promotion. It is important to note that when compared to men, as before when describing the entire sample, less women were promoted to the highest levels in the SNI, this is shown in Table 3.

Table 3: Descriptive statistics for researchers promoted during 2008-2013

	Promoted academics	**Promoted Men**	**Promoted Women**	**Diff**
Age at promotion	45	45.2	44.7	-0.5*
% Women	32.8%			
Promotion Level in SNI	1.7	1.7	1.6	-0.1***
└ Promoted to Level 1	46.1%	42.4%	53.7%	
└ Promoted to Level 2	39.8%	41.8%	35.9%	
└ Promoted to Level 3	14%	15.8%	10.3%	
Publications at promotion	39.8	42.9	33.4	-9.5***
Total promoted academics	4,873	3,276	1,597	

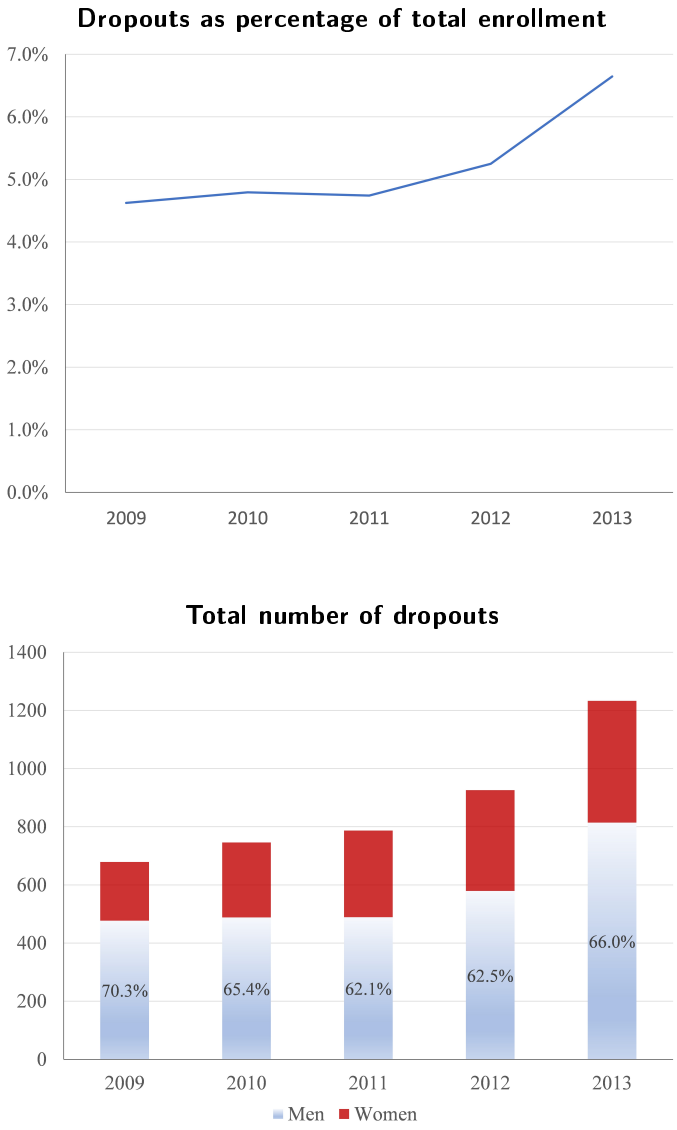
**** p<0.01, ** p<0.05, * p<0.1*

Notes: Descriptive statistics for researchers enrolled in the SNI who where promoted during the 2008-2013 period.

Source: Data collected from 2007-2013 SNI's registries.

It can be concerning the fact that the female under-representation phenomenon in the Mexican Academia could be driven by women dropping out of the affiliation more than men. Due to the nature of the way the data was collected, it is possible to distinguish those researchers who dropped out of the SNI during the study period, as well as those who did not. Figure 3 shows that dropouts account for 5.2% of yearly enrollment on average, and account for 18% of the entire sample. It also shows that more than 60% of these dropouts are men, for each year.

Figure 3: Academics that dropped out per year



Notes: The figure on top shows the number of researchers that dropped out every year as a percentage of the number of total enrolled researchers in the SNI, by year. The figure on the bottom shows the total number of dropouts and its gender composition by year.
Source: Own elaboration with data collected from 2007-2013 SNI's registries.

It is also interesting to describe the academic career transition for the 2007-cohort in the SNI. As Table 4 describes, when looking at the academic paths of those researchers enrolled in 2007, 29% were promoted and 20% dropped out during the 2008-2013 period. It is interesting to note that for the 2007-cohort women were promoted less

than men for the 2 highest levels; and there were more female dropouts than men throughout the promotion period.

Table 4: Promotions and dropouts in the 2007-cohort

	Promoted				**Dropped out**			
Level in 2007	All	Men	Women	Diff	All	Men	Women	Diff
Level 0	54.4%	53.7%	55.6%	1.9%	43.5%	44.1%	42.6%	-1.5%
Level 1	26.7%	28.3%	23.5%	-4.8%***	19.1%	19%	19.1%	0.1%
Level 2	24.7%	25.7%	22.1%	-3.6%*	6.8%	7.1%	5.9%	-1.2%
Level 3	-	-	-	-	5.9%	5.7%	7.1%	1.4%
All levels	28.7%	28.8%	28.4%	-0.4%	19.7%	19.1%	20.9%	1.8%**
Observations	3,679	2,513	1,166		2,526	1,668	858	

**** p<0.01, ** p<0.05, * p<0.1*

Notes: This table describe the promotions and dropouts of academics in the 2007-cohort, by level, and by gender.

It can also be observed that promotions to levels 2 and 3 are more scarce than promotions from level 0 to level 1, as is described in Table 5. This also shows to be the case for men and women separately, although percentages of promotion to the highest levels for women seem smaller than those for men.

Table 5: Transition from Level in 2007 to Level in 2013

(a) All researchers

	Level in 2013		
Level in 2007	Level 1	Level 2	Level 3
Level 0	**53.9%**	**2.6%**	**0%**
Level 1	55.8%	**17.5%**	**1.4%**
Level 2	5%	64.5%	**23.7%**
Level 3	0.6%	1.6%	91.8%

(b) Men

	Level in 2013		
Level in 2007	Level 1	Level 2	Level 3
Level 0	**52.8%**	**3.1%**	**0%**
Level 1	54.2%	**25.2%**	**1.6%**
Level 2	4.6%	63%	**25.3%**
Level 3	0.7%	1.6%	92.1%

(c) Women

	Level in 2013		
Level in 2007	Level 1	Level 2	Level 3
Level 0	**55.8%**	**1.6%**	**0%**
Level 1	58.9%	**20.8%**	**1.2%**
Level 2	6%	68.3%	**19.8%**
Level 3	0.5%	1.5%	90.9%

Notes: These tables describe the academic path for researchers enrolled in the SNI by showing the percentages of promotions, non-promotions, and demotions for each level of the 2007-cohort Numbers in bold letters show the percentages of successful researchers in being promoted for each year. Numbers below the ladder describe the stickiness and demotions in the SNI.

2.3.2 Members of promotion decision-making committees

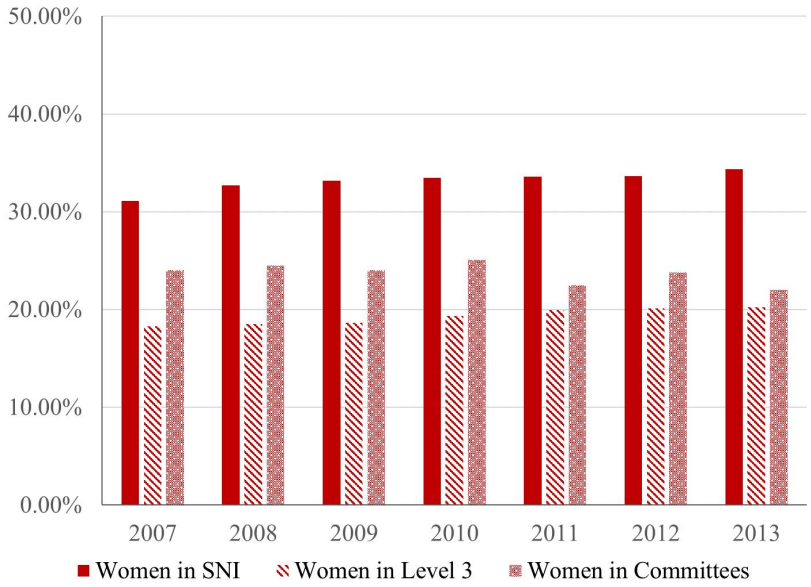
Promotion decisions along the academic ranks in the SNI are made by a committee. Each academic area has its own committee, integrated by 13 or 14 members who hold a Level 3 rank in the affiliation. Decisions on promotions are based on single majority. As described in a previous section, the SNI could easily act as a monopoly and incur in inequitable practices; therefore, each committee member plays a very important role. It is natural to question whether the composition of this committee has an effect on such promotion decisions, and whether the SNI's female under-representation can be explained by it. In particular, it is interesting to study what is the effect of

the gender composition of this decision-making committee on promotion decisions, for both men and women in the SNI.

It is good to remember that committees are formed every year for each area, and their members are randomly chosen from the area's Level 3 researchers. Figure 4 describes the gender composition of committees for each year during the study period. For comparison with female participation in the affiliation, the female representation in the SNI is also shown for each year, as well as its corresponding female representation for the highest level in the SNI, level 3. As can be observed, the percentage of women in the committees is lower than the percentage of women in the SNI, and higher than the female representation in level 3, for each year.

It is worth noting that the number of female members on decision-making boards range from 0 to 5 or 6 for all the areas and years studied in this paper. This means that women are always a minority within the committees, and this stylized fact can play an important role in the impact that women may have on promoting other women; hence, possibly having a limited influence on reducing the gender gap on promotions within the SNI. Moreover, it is important to note that while the total number of publications for each individual is officially the only measure taken into account at the time of promotion; each member of the committee has a discretionary judgment that I can not account for, and that could potentially lead to an omitted variable problem.

Figure 4: Female representation in decision-making committees per year



Notes: This figure shows the percentage of enrolled women for each year, as well as the percentage of Level 3 members that are female, and the percentage of women in the promotion committees for each year.

Source: Own elaboration with data collected from 2007-2013 SNI's registries.

Moreover, Figure 5 shows the same information as Figure 4, but for each Academic area within the SNI. It is interesting to note that, except for humanities, the percentage of women in the decision-making committees is larger than the percentage of women in level 3 members. This is particularly noticeable for the physics-math area, in which even the percentage of women in committees is larger than the percentage of women in the entire area. However, it is still true that for the rest of the academic areas, and for every year, the percentage of women in committees is lower than the percentage of women in the area.

Figure 5: Female representation in decision-making committees per academic area per year

2.4 Empirical Analysis

2.4.1 Analysis of committee's gender composition effects on promotion

As described above, the aim of this study is to uncover the effects of the decision-making boards composition; that is, this paper investigates whether the probability of promotion of researchers is affected by the gender composition of the committee, for either male or female academics. In particular, I am interested in estimating the effect of the gender composition on women promotions in the SNI. For this, the percentage of women in each committee for each area is included in the estimation, denoted as $Percentage_a$. Moreover, to determine whether there are differential gender effects in promotion decisions, interaction terms between gender and committee gender composition are included. Hence, the following model is estimated:

$$Promoted_i = \beta_1 Female_i + \beta_2 Percentage_a + \beta_3 Female_i * Percentage_a + \gamma X_{i,a} + \varepsilon_i \qquad (1)$$

Where, $Promoted_i$ is a dummy variable taking value of one if researcher i was promoted at least once during the study period;

$Female_i$ is a dummy variable taking value of one if individual i is female;

$Percentage_a$ is the mean of the percentage of female members in the decision-making board for academic area a during the promotion period 2008-2013;

$X_{i,a}$ include individual controls for individual i; these are age, academic publications, female representation in individual's area;

ε_i is the error term.

Therefore the coefficient β_1 measures the effect of being a female on the probability of promotion when the decision-making committee is composed exclusively by men, while $\beta_1 + \beta_3$ represents the differential gender promotion practices when there is at least one female among the committee members. The specification described in equation (1) is estimated with a Probit model.

The estimation results are described in Table 6. It is found that female evaluators do not significantly favor the probability of promotion for female researchers, this result is in line with studies such as Bagues and Esteve-Volart

(2010); Bagues et al. (2017). However, having a gender mixed committee, does favor the probability of promotion for all researchers; while having a male-only committee makes women to have a lower probability of promotion than men.[7] Columns (A), (B), and (C) show the Probit estimates; column Margins show the marginal effects. As can be observed in the last column of Table 6, having an all-male committee reduces the probability of promotion for women by 0.065, or a 32% decrease in the probability of promotion as compared to the average.

Similar results are found when a Linear Probability Model is estimated instead, these results are shown in Table 45 in the Appendix. Results from estimating (1) including location fixed effects are also included in Table 46 in the Appendix, showing the same results as in Table 6. When men and women are estimated separately it is found again that female evaluators are not significantly favoring the probability of promotion for women, as described in Table 47 in the Appendix. In that table it is also shown that a male-only committee lowers the probability of promotion for both men and women.

[7] When thinking about the error, it is natural to suspect that there might be a research area component. Therefore, I have estimated the baseline specification clustering the standard errors by research area. The results remain in magnitude and significance as in Table 6.

Table 6: Analysis of committee's gender composition effect on promotion decisions

Probability of promotion during the study period

	(A)	(B)	(C)	Margins
Female	-0.201**	-0.197**	-0.226**	-0.065**
	[0.082]	[0.082]	[0.109]	[0.031]
Committee Percentage		1.405***	1.378***	0.396***
		[0.159]	[0.173]	[0.049]
Female * Percentage			0.104	0.030
			[0.264]	[0.076]
Dep var sample mean		0.202		
Pseudo-R^2	0.06	0.06	0.06	
Observations	19,737	19,737	19,737	19,737

*** p<0.01, ** p<0.05, * p<0.1 Robust Standard errors in brackets.
Notes: Area Fixed Effects included in (A). Variable percentage refers to the mean of the percentage of women in the evaluation committee for the individual's area for 2007-2013. Controls included for all specifications: age, age^2, log transformation of academic publications, its interaction with female dummy, average percentage of women in individual's area for 2007-2013.

In order to uncover any differences in the probability of promotion across the ladder in the SNI, the model in equation (1) is estimated separately for each level of promotion. Hence, the following models are estimated:

$$Promoted\,to\,Lk_i = \beta_1 Female_i + \beta_2 Percentage_a + \beta_3 Female_i * Percentage_a + \gamma X_{i,a} + \varepsilon_i \qquad (2)$$

Where $k \in \{1, 2, 3\}$ is the level within the SNI; therefore, $Promoted\,to\,L1_i, L2_i, L3_i$ are dummy variables taking value of one if researcher i was promoted to Level 1, 2, or 3, respectively during the promotion period of 2008-2013.

The results from these specifications are particularly interesting because they shed some light into what is happening within the academic ladder and its promotion opportunities for men and women. When each promotion

level is estimated separately it can be observed if different promotion decisions are being taken for different levels. As Table 7 describes; in which columns (A), (B), and (C) show the Probit estimates and column Margins show the marginal effects; and as found from estimating equation (1), women in decision-making boards are not significantly favoring the probability of promotion for women, and having a gender mixed committee, does favor the probability of promotion for all researchers; regardless of the promotion level.

When estimating each level of promotion separately, results from before hold in terms of the effect of a male-only committee, in which women face a lower probability of promotion, regardless of the promotion level. In particular, as can be observed in columns Margins1, Margins2, and Margins3 of Table 7, having an all-male committee reduces the probability of promotion for women by 0.056 for Level 1, by 0.125 for Level 2, and by 0.043 for Level 3. This is important because it contributes to the current female under-representation in Mexican Academia.

Table 7: Analysis of committee's gender composition effect on promotion decisions by level of promotion

Probability of promotion during the study period, by level of promotion

	Promoted to Level 1				Promoted to Level 2				Promoted to Level 3			
	(A1)	**(B1)**	**(C1)**	**M1**	**(A2)**	**(B2)**	**(C2)**	**M2**	**(A3)**	**(B3)**	**(C3)**	**M3**
Female	-0.232***	-0.233***	-0.341***	-0.056***	-0.681***	-0.678***	-0.772***	-0.125***	-0.501*	-0.494*	-0.699**	-0.043**
	[0.087]	[0.088]	[0.124]	[0.020]	[0.118]	[0.118]	[0.148]	[0.024]	[0.258]	[0.259]	[0.328]	[0.020]
Committee Percentage		0.667***	0.555***	0.091***		1.115***	1.045***	0.170***		3.280***	3.166***	0.196***
		[0.195]	[0.214]	[0.035]		[0.201]	[0.216]	[0.035]		[0.336]	[0.358]	[0.023]
Fem*Percentage			0.387	0.063			0.304	0.049			0.578	0.036
			[0.320]	[0.052]			[0.341]	[0.055]			[0.652]	[0.040]
Dep var mean	0.095				0.088				0.028			
Pseudo-R^2	0.13	0.13	0.13		0.11	0.11	0.1		0.22	0.21	0.21	
Observations	19,737	19,737	19,737	19,737	19,737	19,737	19,737	19,737	19,737	19,737	19,737	19,737

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Robust standard errors in brackets.Variable percentage refers to the mean of the percentage of women in the evaluation committee for the individual's area for 2007-2013. Controls included for all specifications: age, age^2, log transformation of academic publications, its interaction with female dummy, average percentage of women in individual's area for 2007-2013. Area Fixed Effects included in (A1), (A2), and (A3). Marginal effects shown in columns M1, M2, and M3 for levels 1, 2, and 3, respectively.

There has been discussion in the literature about the ability and power of women to favor other women when there is only a certain number of women in decision-making committees, and how the promotions look when going from an all-male committee to one with one-woman, 2-women, 3-women, and so on. An analysis of this issue is presented in the Robustness checks section and in the Appendix. Table 11 shown in Section 2.6 describes this estimation for the year of 2013. In 2013 all area's committees had one or more women, with a maximum of 5 women per committee. It is found that, similar to the results presented in Tables 6 and 7, women in decision-making boards are not significantly favoring the probability of promotion for women, regardless of the number of female committee members. A similar analysis is done for each year in the 2008-2013 period. The rest of the years are shown in Tables 48 through 52 in the Appendix. In Section 2.6 it is also shown all the years together when including dummy variables for each number of female committee members; the results are shown in Table 12.

2.4.2 Analysis of committee's gender composition effects on publication requirements at the time of promotion

The gender composition of the decision-making committees can affect not only the probabilities of promotion, but also the requirements at the time of promotion. This section answers the question of what is happening at the time of promotion for those researchers that were promoted during 2008-2013. In particular, I want to discover if the publication requirements differ for gender mixed committees versus only-male committees. Moreover, I want to investigate if there are also differential gender effects on publication requirements at the time of promotion, and how do these differ according to the gender composition of committees.

Some descriptive characteristics about publication count for promoted researchers during the promotion period are shown in Table 8. It can be observed that promoted women in my sample have less publications than promoted men, for all levels of promotion, and for all percentages of women in promotion committees. When looking more closely, it can be seen that when facing a committee in which more than 23% are women(called high percentage herein)[8], women have less publications than men for promotions to levels 2 and 3. This does not appear to be the case for the lowest level, level 1; or for a low female percentage in the decision-making committee for the higher levels. This stylized fact seems interesting since, even when it was found in the previous section that female members on the boards were not significantly favoring women's probability of promotion, it can be the case that these board members are promoting women with less requirements than men.

[8] 23% is the mean of the women representation in decision-making committees at time of promotion.

Table 8: Publication count for promoted academics during 2008-2013

	Men	Women	Diff
All promoted academics	43	33	-10***
Promoted to Level 1	21	19	-2***
Promoted to Level 2	49	44	-5***
Promoted to Level 3	81	69	-12**
High female percentage in committee	40	32	-8***
Low female percentage in committee	46	35	-11***
Promoted to L1 & high percentage	18	18	0
Promoted to L1 & low percentage	23	19	-4***
Promoted to L2 & high percentage	43	40	-3*
Promoted to L2 & low percentage	55	51	-4
Promoted to L3 & high percentage	75	64	-11**
Promoted to L3 & low percentage	92	82	-10
Number of observations	3,276	1,597	

*** p<0.01, ** p<0.05, * p<0.1

Notes: This table shows the publication count for promoted academics during 2008-2013. The variable High percentage in committee refers to the percentage of women in decision-making committees being larger than 23% which is the mean for all committees at the time of promotion. A Low percentage in committee is below or equal to 23%.

To formally investigate whether those women and men who were promoted in the study period are being evaluated differently at the time of promotion, the number of publications required for promotion are estimated with an OLS model. In this model only those promoted during the period 2008-2013 are included. The following model is estimated:

$$Publications_i = \delta_1 Female_i + \delta_2 Percentage\,at\,Promotion_{i,a} + \delta_3 Fem_i * Percentage\,at\,Promotion_{i,a} + \gamma X_{i,a} + \eta FE_i + \varepsilon_i \quad (3)$$

Where, $Publications_i$ denotes the total number of publications by researcher i at the time of promotion[9];

$Percentage\,at\,Promotion_{i,a}$ is the percentage of female members in the decision-making board for academic area a at the time of promotion for individual i;

$X_{i,a}$ are baseline controls for individual i; such as age, age^2, female representation in individual's area;

FE_i are Promotion level, and Promotion year Fixed Effects;

In this model, δ_1 reflects the effect of a male-only board on female publication requirements for promotion. The effect of female board members on the publication requirements for women at the time of promotion is captured by $\delta_1 + \delta_3$.

The results from estimating the model in equation (3) are shown in Table 9. Women are found to be promoted with less publications than men when facing a male-only committee. Once again, we find that women in decision-making committees are not significantly favoring women at the time of promotion[10].

[9] Since the distribution of the dependent variable, academic publications, has a thick tail, we use the log transformation $log(x+1)$.

[10] Even though the coefficient for Female*Percentage at promotion is significant, when tested for joint significance with the coefficient for Female, it is not significantly different from zero.

Table 9: Publication requirements at the time of promotion for promoted academics during 2008-2013

	(A)	(B)	(C)
Female	-0.087***	-0.093***	-0.190***
	[0.018]	[0.019]	[0.047]
Committee Percentage at promotion		-1.383***	-1.502***
		[0.094]	[0.110]
Female * Percentage at promotion			0.394**
			[0.178]
Area Fixed Effects	X		
Promotion level Fixed Effects	X	X	X
Promotion year Fixed Effects	X	X	X
R^2	0.50	0.47	0.47
Observations	4,632	4,632	4,632

*** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in brackets. Dependent variable is the log transformation of the publication count for each promoted academic at the time of promotion. Variable percentage at promotion refers to the percentage of women in the evaluation committee for the individual's area at the time of promotion. Controls included for all specifications: age, age^2, average percentage of women in individual's area at her time of promotion, Promotion level Fixed Effects, and Promotion year Fixed Effects. Area Fixed Effects are also included in (A).

In order to uncover any differences in the publication requirements at the time of promotions for the different levels across the ladder in the SNI, the model in equation (3) is modified to include each level of promotion. Hence, the following model is estimated:

$$Publications_i = \alpha_1 Female_i + \sum_{k=1}^{3}(\beta_k Percentage\,at\,Promotion\,to\,Lk_{i,a} + \delta_k Fem_i * Percentage\,at\,Promotion\,to\,Lk_{i,a}) + \gamma X_i + \eta FE_{i,a} + \varepsilon_i \qquad (4)$$

Where $Percentage\,at\,Promotion\,to\,Lk_{i,a}$ is the percentage of female members in the decision-making board for academic area a at the time of promotion for individual i that was promoted to level k, with $k \in \{1, 2, 3\}$.

The results from estimating the model in equation (4) are shown in Table 10. Women are found to have more publications at the time of promotion to level 1 when there is a gender mixed committee, but no significant

effect for levels 2 and 3[11]. However, when there is a male-only committee women are found to be promoted with less publications than men. Once again, we find that women in decision-making committees are not significantly favoring women at the time of promotion, and are even asking more from women for promotions to level 1.

Table 10: Publication requirements at the time of promotion for promoted academics during 2008-2013

	(D)	(E)
Female	-0.122***	-0.264***
	[0.020]	[0.050]
Percentage at promotion to Level 1	-2.256***	-2.54***
	[0.109]	[0.129]
Percentage at promotion to Level 2	-0.09	-0.202*
	[0.101]	[0.119]
Percentage at promotion to Level 3	1.328***	1.295***
	[0.127]	[0.144]
Fem*Percentage at promotion to 1		0.820***
		[0.203]
Fem*Percentage at promotion to 2		0.406**
		[0.194]
Fem*Percentage at promotion to 3		0.062
		[0.253]
R^2	0.41	0.41
Observations	4,632	4,632

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Robust standard errors in brackets. Dependent variable is the log transformation of the publication count for each promoted academic at the time of promotion. Variables Percentage at promotion to Level 1, 2, and 3 refers to the percentage of women in the committee at the time of promotion when the individual was promoted to Level 1, 2 or 3 respectively. Controls included for all specifications: age, age^2, average percentage of women in individual's area at her time of promotion, and Year of promotion Fixed Effects.

[11] This is the result of joint significance tests for coefficients Female and Female*Percentage at promotion for levels 1, 2, and 3 in column (E).

2.5 Conclusion

The under-representation of women in academia is a worldwide fact, even though female educational levels and female labor force participation have been increasing in most countries. Mexican academia is not the exception to the reality women face in terms of gender representation gaps, particularly in higher ranks. The Mexican National System of Researchers (SNI) is a ranking affiliation for researchers, managed by the National Council of Science and Technology. The percentage of researchers who are female is less than half across nearly all academic disciplines, and is decreasing with rank. This stylized fact may be a source of concern, as it could be the result of different promotion opportunities for women. Therefore, testing for unequal promotion practices against women in academia seems relevant, in particular for the Mexican context which has not been explored before. One more factor that may affect female promotions is the role that men and women in decision-making entities play in promotion decisions, and how these differ for men and women. This factor is the focus of this study.

This paper analyses whether the gender composition of decision-making boards affects promotion decisions for either male or female researchers, by exploiting a unique database for a context in which a group of peers makes all promotion decisions for all academic institutions in Mexico. The empirical analysis examines the probability of promotion for each researcher enrolled in the SNI, and how this is affected by the committee's gender composition, exploiting the random assignment of evaluators. This is a simple and clear design that finds its strength in the randomized assignment of evaluators into promotion committees; therefore, not relying on strong assumptions for identification as other studies have had to do.

The results presented show that women in decision-making committees do not significantly favor the probability of promotion for women; however, having a gender mixed committee does favor the probability of promotion for all researchers. Another result found that might be alarming is that women facing a male-only committee have a lower probability of promotion than men. In particular, having an all-male committee reduces the probability of promotion for women by 0.065, or a 32% decrease in the probability of promotion as compared to the average. This is important because it can contribute to the female under-representation currently evident in all academic fields within the Mexican Academia.

When looking at those academics who were promoted during the study period, my results show that when women face a male-only committee, they are being promoted with less publications than men. Moreover, it is found that women in decision-making committees are not significantly favoring women at the time of promotion. It can be said that women in committees are even making it harder for women to start their promotion career since

promoted women to level 1 are found to have more publications than men when there is a gender mixed promotion committee.

The findings of this study of women in influential positions not helping other women to advance in their career are in line with those from Bagues et al. (2017), but are in contrast with the findings of Zinovyeva and Bagues (2010) who find a positive effect of female evaluators on the probability of success of women in competitions to full professors in Spain. These mixed results suggest that additional research is necessary in order to better understand the role of influential women and men in promoting equality of career opportunities for female academics.

2.6 Robustness Checks

Table 11: Analysis of non-linear effects of women in committees for 2013

	(1)	(2)	(4)	(5)	(All)
Female	-0.212*	-0.202*	-0.230*	-0.230*	-0.240*
	[0.118]	[0.118]	[0.123]	[0.119]	[0.133]
One woman in committee	0.045				
	[0.041]				
Fem*One woman	-0.021				
	[0.072]				
Two women in committee		0.059			0.014
		[0.045]			[0.052]
Fem*Two women		-0.072			-0.044
		[0.101]			[0.113]
Four women in committee			-0.050		-0.063
			[0.038]		[0.045]
Fem*Four women			0.033		0.035
			[0.065]		[0.078]
Five women in committee				-0.088	-0.116
				[0.067]	[0.073]
Fem*Five women				0.092	0.099
				[0.095]	[0.108]
Pseudo-R^2	0.03	0.03	0.03	0.03	0.04
Observations	19,737	19,737	19,737	19,737	19,737

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in brackets.

Notes: One estimation for each number of women in decision-making committees. Variable only one woman is a dummy variable taking the value of one if there was only one female member, Two women is having only 2 women in the individual's committee, and so on. For 2013, committees included either 1, 2, 4, or 5 women. The omitted group in column (All) is having only one woman in the committee. Controls included for all specifications: age, age^2, log transformation of academic publications.

Table 12: Analysis of non-linear effects of women in committees

	2008	2009	2010	2011	2012	2013
Female	-0.033	-0.605**	-0.347**	0.308	0.005	-0.240*
	[0.209]	[0.236]	[0.176]	[0.189]	[0.170]	[0.133]
Two women in committee	0.122	-0.005		0.111		0.014
	[0.085]	[0.085]		[0.097]		[0.052]
Three women in committee	0.151**	0.008		0.095	0.044	
	[0.068]	[0.094]		[0.072]	[0.060]	
Four women in committee	0.032	0.158**	0.183***	0.187***	0.138**	-0.063
	[0.094]	[0.062]	[0.053]	[0.067]	[0.063]	[0.045]
Five women in committee	0.007	0.101	0.111**			-0.116
	[0.100]	[0.087]	[0.054]			[0.073]
Six women in committee	0.043				0.061	
	[0.081]				[0.088]	
Fem*Two women	0.012	0.528***		-0.211		-0.044
	[0.184]	[0.196]		[0.164]		[0.113]
Fem*Three women	0.128	0.410**		-0.090	-0.095	
	[0.156]	[0.194]		[0.135]	[0.122]	
Fem*Four women	-0.026	0.186	0.013	-0.226*	-0.117	0.035
	[0.174]	[0.169]	[0.104]	[0.130]	[0.122]	[0.078]
Fem*Five women	-0.209	0.326*	0.261**			0.099
	[0.192]	[0.185]	[0.112]			[0.108]
Fem*Six women	0.122				-0.068	
	[0.166]				[0.145]	
Pseudo-R^2	0.02	0.02	0.02	0.02	0.04	0.04
Observations	11,515	12,493	13,649	15,471	17,313	19,737

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: One estimation for each year of promotions. Variable only one woman is a dummy variable taking the value of one if there was only one female member, Two women is having only 2 women in the individual's committee, and so on. From 2008 to 2013, except for one area in 2012, every area's committee had at least one woman, and a maximum of 6. The omitted group for 2008, 2009, 2010, 2011, and 2013 is having only one woman in the committee. The omitted group for 2012 is having zero female members in the committee. Controls included for all specifications: age, age^2, log transformation of academic publications.

3 Drug War Violence and Behavior: A Field Experiment in Mexico

3.1 Introduction

It is well discussed in the literature the causal mechanisms of why crime might deter growth (see Fajnzylber et al., 1998, 2002a,b; Londoño and Guerrero, 2000; Demombynes and Ozler, 2005; Stone, 2006; Cardenas and Rozo, 2008; Powell et al., 2010; Detotto and Otranto, 2010). Crime takes resources that could have been used in more productive ways. Crime also increases security costs for business and people, and represents a serious threat to private property; it discourages investment, and destroys physical capital.

The Mexican reality is particularly interesting for several reasons; its geographic location makes Mexico a strategic country for staging and transferring narcotics, illegal immigrants, and contraband into the U.S. Is clear that it is no coincidence that one of the largest consumers, and one of the major drug-producing and transit nations (UNODC, 2015), happen to be neighbors. These illegal activities have triggered violence between drug Cartels, which has been occurring since the 80's. As important as this matter is, there is little research on the effects of the Drug War-related violence due to the nature of its source, *illegal* organizations and contraband. The lack of access to reliable information, in particular reliable statistical data, creates misconceptions about the magnitude, nature, and implications of the drug violence in Mexico (Heinle et al., 2014). Given this, researchers have had to turn to other resources.

This paper addresses the question of how does exposure to Drug War-related violence affect social behaviors; such as altruism, trust, and spite, in *regular* people; this is, people who are in the middle of this war but yet have nothing to do with it. This furthers the understanding of the consequences of such war. In particular, it helps understand the unaccounted collateral damage and indirect costs; costs resulting from distortions to daily lives of consumers, workers, investors, and so on.

This study finds its place in three different literature areas. First, it contributes to lab-in-the field experiments carried out in developing countries. Particularly, adding to the literature an analysis of the responses to conflict and violence at the individual-level; which so far has documented mixed results. Second, it contributes to the understanding of the Mexican Drug War-related violence effects on individual social behavior; which, to the best of my knowledge, has not been studied before. Third, this study finds a place in the gender violence literature. As such, the main contribution of this paper is to examine the role of drug war-related violence exposure on pro-social

and anti-social attitudes, such as altruism, trust, trustworthiness, and spite; using a lab-in-the field experimental approach with a new sample which are undergraduate students in Mexico.

To answer the main research question. I conducted a series of lab-in-the-field experimental sessions with a total of 642 undergraduate students as experimental subjects, in four different cities around the country. In these experiments, economics games are implemented to elicit social preferences, such as altruism, trust, trustworthiness, and spite, in an incentive-compatible fashion. I want to be able to address, for the first time, the effects of the Drug War-related violence on individual's social behavior through classic experimental games. The aim is to be able to distinguish the channels through which the exposure to violence triggers different pro-social and anti-social behaviors.

The empirical results show that women and men with Drug War-related violence exposure have different social behaviors as a result of their experiences. Two main findings are shown; first, women who grew up in a very violent environment, become more pro-social; this result is in line with what has been described in the literature as parochial altruism. Second, women whose family or friends were victims become less pro-social; this, stemming from the fear and vulnerability that arose from feeling that violence is around them and close to them.

This paper is structured as follows. An overview of the Mexican Drug War background is provided in the next section. Section 3.3 describes the related literature. The experimental design, and the description of the games played is outlined in Section 3.4. The empirical analysis is presented on Section 3.5. Section 3.6 shows the results from the study. Section 3.7 concludes, and some robustness checks are presented in Section 3.8.

3.2 The Mexican Drug War background

The outbreak of illegal drug trade in Mexico with the U.S. began in 1933, and towards the end of the 1960's Mexican smugglers started to contraband drugs on a major scale (Vulliamy, 2011). Although Mexican drug trafficking organizations have existed for several decades now, their power and influence increased with the demise of Colombia's major drug-trafficking organizations in the late 1980's.

The issues related to drug trafficking in Mexico are not new. Drug Trafficking Organizations (DTOs) have been active in the country for a few decades now, and until recently, without major outbursts of violence. The government and the Cartels had held a peaceful coexistence made possible through a generally passive strategy that

consisted of agreements with some members of the State-authority, dominated by the 71-year old ruling Institutional Revolutionary Party (PRI). This ruling party held an authoritarian regime; the lack of power replacement and weak institutions, generated an indulgent political system but protective of DTOs (Astorga Almanza and Shirk, 2012; Buscaglia, 2013). Cartels were given protection and access to certain areas and trafficking routes, called *plazas*. These plazas reassured a baseline code of conduct between Cartels; they would not sell drugs in the domestic market, or incite violence and fighting directly with authorities. Failing to uphold these rules would be penalized by the State seizing drugs, arresting, or killing Cartel's leaders (Gutiérrez Romero et al., 2014b).

The State's passive strategy regarding drug trafficking operations changed on December 11, 2006. The newly elected President Felipe Calderon sent 6,500 federal troops into the state of Michoacan to end drug violence in such places. This was the first major national operation against organized crime in Mexico, and the starting point of the so called *Drug War*. The Mexican government employed this strategy against drug Cartels and organized crime during all Calderon's presidential period. At the same time, drug Cartels have been fighting for control over new or displaced territory ever since. As a result; soldiers, police men, drug traffickers, and civilians have been endangered. Therefore, the rapid increase in violence in Mexico is consequence of three main factors; exogenous changes in the narcotics market (including Colombia's major DTOs demise), the rupture of Mexican Cartels into smaller DTOs and criminal cells, and the governmental militarized strategy to fight DTOs.

The Drug War-related collateral damage is of at least 130,000 individuals murdered (Molloy, 2013). However, the consequences of the Drug War are not limited to lost human lives; some places once peaceful and safe, are now dangerous and violent. As Rios (2013) points out, some cities have experienced spikes in violence that transformed them into "war zones" (Rios, 2013). Some other cities are starting to feel the presence of the Cartels. This spread of violence has changed everything; from the way institutions work, businesses are born, and election of governors are made, to the way people build up relationships.

"Cambia la forma en la que vas por la vida, así de fácil"[12]

(It changes the way you go through life, that simple)

"La juventud crece con la idea de que el narco está bien, que es lo normal"[12]

(The Country's youth grow up with the idea that drug trafficking, and drug trafficking organizations are okay, that it is normal)

"La sociedad se degenera poco a poco, y nosotros con ella"[12]

(Society slowly degenerates, and we along with it)

[12] Experimental subjects statements about the effect of the experiences related to the Drug War violence in their daily lives.

As can be observed, the trafficking industry in Mexico has gone from a peaceful and stable equilibrium (before 2006), into a *self-reinforcing violent equilibrium* (Rios, 2013); and with this, so have Mexicans' lives. In 2018, 50% of the adult population throughout Mexico reported feeling unsafe in their own neighborhood; moreover, 75% of Mexicans believe the state where they were living is unsafe, and 48% of them perceive themselves as a possible victim of extortion or kidnapping[13]. This implies that over 67 million adults are living in a state of insecurity because of crime, and 76% of them believe the security situation will remain bad or even get worse. As a consequence, people have changed their daily routines, they have stopped going out at night, changed their routes, their cars, their friends, their homes, their frequented places, their lifestyle, and their relationships; their trustfulness, their confidence, and their sociality. These feelings of fear and vulnerability do not seem to fade away as is described in the ENVIPE throughout the years 2012 to 2018; where year after year around 60% of Mexicans rank insecurity as the number one issue that generates the greatest concern in the country. Even though fear of crime is a very important measure of quality of life, there has been a lack of policies intended for reducing and coping with it.

Drug violence associated with the Mexican Drug War has spread from city to city, for reasons that were not likely driven by local fluctuations in economic activity, or individual behavior; particularly, not from common people who are not involved in the drug business. Much of this violence has been driven by inter-Cartel rivalries over territory, which has been exacerbated by arrests and killing of key leaders under the enforcement of the governmental strategy that started in 2006.

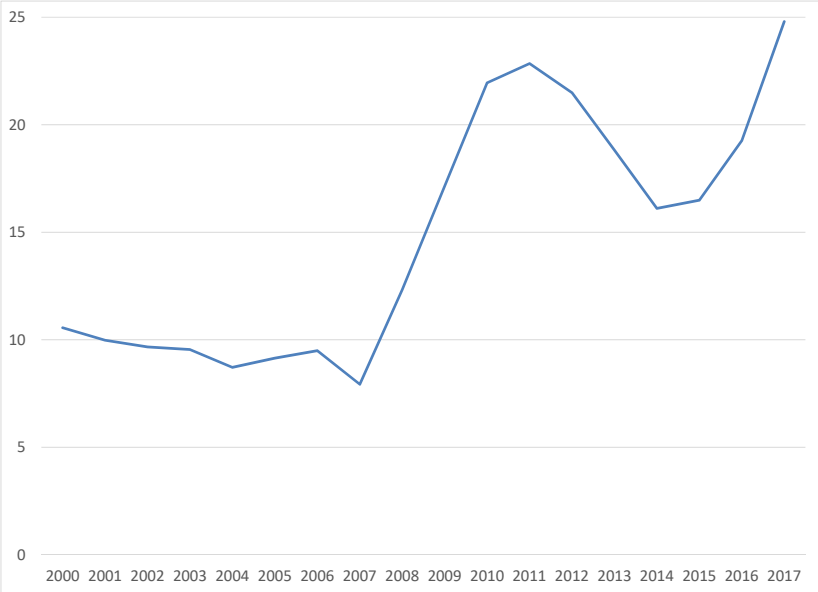
During Calderon's presidential period, from 2006 to 2012, the number of homicides and the homicide rate steadily increased, averaging a homicide rate of 17.3 murders per 100,000 population, this implies 52 murders per day. This positioned Mexico in the top 10 of countries with the most number of homicides; only behind countries such as Iraq, Afghanistan, Syria, Libya, Sri Lanka, and the Congo region of central Africa (Molloy, 2013). However, it is well known that these other countries in the top 10 are plagued with hot civil wars, foreign invasions, and insurgencies. Nevertheless, a *flourishing democracy* such as Mexico with promising economic growth, a large middle class, has a comparable homicide rate. This high homicide rate did not go back down once President Calderon finished his period in 2012; in fact, for 2017 this rate was 24.8 homicides per 100,000 population, or 88 murders daily.

Figure 6 shows the homicide rate in Mexico, which more than tripled in a 4-year period; moreover, it can be observed that this spike in violence levels has had a lasting effect. The homicide rate was 7 murders per 100,000

[13] Data from the National Survey on Victimization and Public Safety Perception, 2018 (ENVIPE, after its initials in Spanish)

population in 2007, when President Calderon took the presidency, and it kept increasing until reaching its highest level during his period by 2011, becoming 23 homicides per 100,000 inhabitants. As mentioned above, violence did not cease once his period ended; it reached a new high level in 2017, when the homicide rate became 25 murders per 100,000 inhabitants. It is worth noting that no other country in the Western Hemisphere has seen such a large increase in the absolute number of homicides, or in the rate of homicides over the last decade (Heinle et al., 2015).

Figure 6: Intentional homicide rate in Mexico (per 100,000 inhabitants)



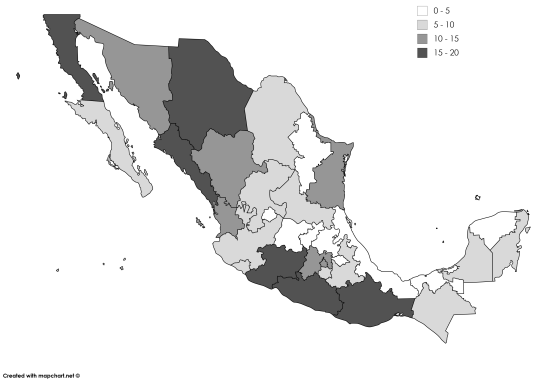
Note: Own elaboration with data sourced from the World Development Indicators.

Figure 7 shows the geographical spread of violence for the years 2005, 2010, and 2015. As can be observed, violence spiked in states along the coast en route to the USA. In 2005, before Calderon's presidential period, the homicide rate in the country was 9 homicides per 100,000 population. Moreover, only 19% of the states had a homicide rate larger than 15. By 2010, four years after the governmental strategy against DTOs came in place, the average homicide rate spiked up to 22 homicides per 100,000 inhabitants; that is, it more than doubled.

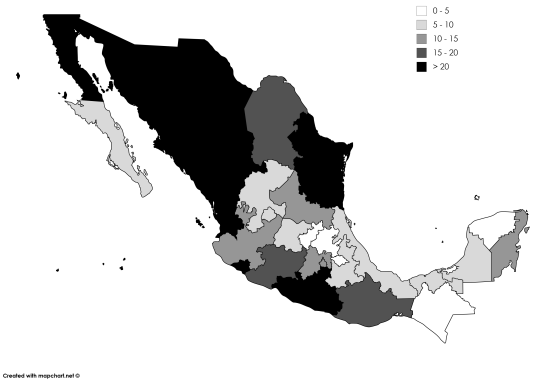
Furthermore, by 2010, 44% of the states had a homicide rate larger than 15. Calderon ended his presidential period on 2012, but the violence remained. On 2015 the country had a homicide rate of 17, and 50% of the states had a homicide rate larger than 15. As explained above, these geographical changes of violence are not mainly driven by underlying conditions, but by the governmental strategy of chasing cartel leaders and de-heading them, hence making smaller drug gangs who fight each other to remain in power.

Figure 7: Homicide rate evolution

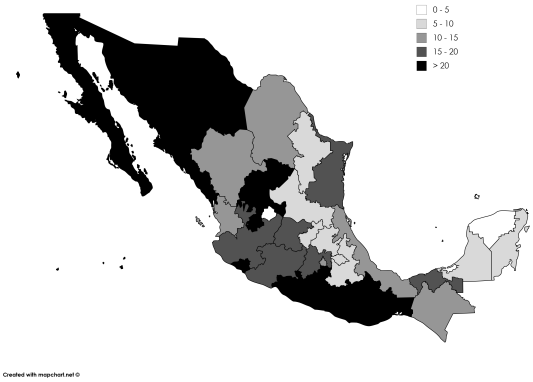
(a) Homicide rate by state in 2005



(b) Homicide rate by state in 2010



(c) Homicide rate by state in 2015



Note: Own elaboration with data sourced from INEGI.

In addition to the death toll of at least 130,000 people, and more than 22,000 missing (Heinle et al., 2015), nowadays civil society at all socioeconomic levels is endangered of being violently robbed, kidnapped, extorted, or

murdered. This reality is worth our attention since living in a war-like situation makes a place ripe for terrorism; and when terrorism threatens, everybody (specially ordinary people) feel vulnerable, anxious, confused, uncertain, and helpless. Moreover, citizens feel "hopeless and lose trust in their leaders to guarantee the fundamentals of existence: safety and security" (Zimbardo, 2003). Violence, particularly in the form of murder, is completely outside of the regular range of acceptable human experiences; moreover, it has very low levels of tolerance in most societies around the world, which makes the Drug War in Mexico a reality hard to ignore.

> *"It's a nightmare scenario: High levels of violence combined with heavy doses of silence*[...] *Is this equilibrium stable? Not in the long run: One day the country will remember that there are things to sort out, and deaths to count. But as the time comes, we can expect the same thing: a lot of anger and little noise; the perception improving, the reality stubbornly terrifying"*[14]

The accelerated growth in the number of total homicides between 2006 and 2012 is accompanied by a slight decline in non-drug related crimes, and by a sharp increase in drug traffic-related homicides. As documented in Rios (2012); in 2007, drug related homicides represented 28% of the total number of homicides in the country; in 2011, this percentage increased to 73%. Moreover, non-drug related homicides declined by an average of 4% each year between 2007 and 2011 (Ríos, 2012). From 2007 to 2011, Mexico's homicide rate went from 8 to 23 homicides per 100,000 people. To have an idea of this number, the death rate from diabetes, which is in the top 5 of mortality causes health-wise[15], during the same period was 22 deaths per 100,000 population in Canada, and 25 in the US[16]. Therefore, Mexico's homicide rate can be considered an alarming public health issue for the country.

Concerns about crime and violence in Mexico has risen among Mexicans and foreigners. Since 2006, in most of the years, the top concern among Mexicans has been crime and violence (Heinle et al., 2014), as censuses have shown. It has been a preoccupation for policy makers, and for ordinary people as well. Moreover, it is a shared concern with the US government and its people. Therefore, issues regarding Mexican drug trafficking organizations, crime, and violence have become a priority in both governments' agendas. Nonetheless, although my results refer only to the case of Mexico, they are also relevant for other similar countries at prey of expanding Mexican drug Cartels. These Cartels have broadened their scope and are allegedly working in several countries in different regions including USA, Canada, Central America, South American, Africa, and Europe.

[14] Translated fragment from Alejandro Hope, *"Menos ruido, misma furia"*, Nexos, July 2013.
[15] Only after causes such as: Acute myocardial infarction, Cerebrovascular diseases, Chronic obstructive Pulmonary diseases, and Dementia.
[16] OECD Health Status data set.

As the United Nations Office on Drugs and Crime (UNODC) points out, numerous Security Council and General Assembly resolutions have emphasized that the harm caused by illicit drugs has a significant impact on peace, security and development (UNODC, 2015). All of these factors induce a drop in income. Following a simple growth model, the drop in income would be temporary until violence and crime are over; per capita income would eventually return to its steady state, *caeteris paribus*, and hence, societies should return to the pre-crime income levels. However, this pattern is not obvious if conflict affects institutions, human capital, or social organizations. If crime and violence help individual behaviors become anti-social and deteriorates social capital, adverse effects on income and growth could take place even after violence and crime have ceased. Nevertheless, there could also be positive effects if individual behaviors become more pro-social after violent experiences. Therefore, creating a "*Paradox of Violence*: violence destroys, but can also be associated with social creativity" (Cramer, 2006).

3.3 Relevant literature

This study finds its place into three main literature areas. The first one studies the effects of conflict-related violence exposure on behavior. The second main literature studies the effects of the Mexican Drug War on several aspects of Mexico's reality. Finally, the third one studies the differential gender effects of violence.

The empirical evidence has yet to establish an unambiguous direction of the relationship between violence exposure and behavior; this means that it is still not clear whether the effect of exposure to conflict on pro-social attitudes is positive or negative. On one hand, there are studies that find social attitudes improving after violence exposure; such as Bellows and Miguel (2009), who find an increase in collective action among those more affected by the war in Sierra Leone. The study by Blattman (2009) is another example of such results, finding evidence of an increase in voting and community leadership among ex-combatants in Uganda when an experience of violence happened in the past. Moreover, Bauer et al. (2014) find that victimized children in the Republic of Georgia show higher egalitarianism and parochialism after the war with Russia; they also find this result for Sierra Leone with subjects victimized as children during the civil war. Also in Sierra Leone and eight years post-conflict, Cecchi et al. (2015) find that soccer players who had been exposed to more intense violence behave more altruistically towards their teammates but not towards the out-group; they were also more likely to receive a yellow or red card during the game, suggesting an increase in out-group antagonism. In the community-level study done by Gilligan et al. (2014) in Nepal, they find that communities with greater exposure to violence during the Maoist rebellion show higher levels of collective action and more trust. Finally; Voors et al. (2012) carried out a lab-in-the-field experiment in Burundi, in which they find that subjects with exposure to greater levels of violence during the

war, display more altruistic behavior towards their neighbors. This body or research is rapidly growing, and in Bauer et al. (2016) the findings are synthesized showing that people exposed to war violence tend to behave more cooperatively after war, they tend to increase their social participation, they also take actions to benefit others, such as altruistic giving.

On the other hand, there is work finding the opposite effect, an anti-social behavior after violence exposure. In Nunn and Wantchekon (2011), they show that not only does violence experience have an effect, but also the subject's history of violence. They find that going back as far as the slave trade in Africa can have a strong and negative impact on contemporary trust. In Becchetti et al. (2011) is shown that individuals most affected by violence in Kenya display lower trustworthiness. Rohner et al. (2013) find negative effects of conflict on inter-ethnic trust in Uganda, particularly strong and negative effects for those communities ethnically divided. Finally, Cassar et al. (2013) find that exposure to violence in the Tajik civil war weakens trust within localities, decreases willingness to engage in impersonal exchange, and reinforces kinship-based norms of morality; this effect is found to be stronger when looking at subjects in communities with severe infighting and high political polarization. These negative effects remain even through borders, as Couttenier et al. (2016) describe; they find that refugees in Switzerland who were exposed to civil conflicts or mass killings during childhood, are more prone to violent crimes in their host country than refugees born after the conflict. Interestingly, Lupu and Peisakhin (2017) conducted a multi-generational survey of Crimean Tatars; they find that the psychological responses to crime are passed down from the victims of the deportation to their descendants, since the descendants of survivors who were exposed to more violence are more likely to self-identify as victims, be more fearful of potential threats, and have higher levels of in-group attachment.

As described above, most of the existing research for this matter looks at violence exposure during a civil war. There are similarities between civil conflicts and violence related to organized crime groups. Both are often characterized by violence that is extreme but highly localized, and fought using small arms and munitions that do not lead to the kind of physical destruction seen in inter-State wars (Blattman and Miguel, 2010). The Mexican Drug War has sometimes been called a civil war, but has in fact a different nature. In a civil war, citizens from the same country fight against each other on different bands. The Drug War is also within the country and its citizens, but the government is the one fighting drug trafficking organizations (DTOs). As a result, citizens are in the middle of this fight. Therefore, Mexican citizens, not being part of the government, or the DTOs, are taking a role in the conflict, they are being actual victims.

Moreover, this papers uses experimental games to elicit social behavior where the truthful revelation of the

attitudes via a simple survey would be less likely. Another possibility is what García-Ponce et al. (2018) do to answer the question of why do civilians affected by violence support vigilante groups in Mexico. They use interviews to elicit preferences for more punitive policies. Nevertheless, the experimental design of this study using games is interesting and more subtle.

Regarding the literature on the effects of the Mexican Drug War, there is still limited knowledge on the subject. Most of the work done so far studies the economic implications of drug violence in Mexico. On this matter, victimization surveys estimate that only for the year 2010, the cost of crime (in monetary losses) for victims are valued at US$12.9 billion. Moreover, for that same year, 42.8% of Mexico's firms paid for private security; spending about 2.2% of their annual sales on these services (Corporation and Bank, 2012). Furthermore, reductions in economic activity and growth were found at the municipal level between 2006 and 2010 (Robles, Calderón, and Magaloni, 2013; Enamorado, López-Calva, and Rodríguez-Castelán, 2014a). Moreover, Enamorado et al. (2014) find that a one point increment in the Gini coefficient between 2006 - 2010 translates into an increase of over 10 drug-related homicides per 100,000 inhabitants. This finding can be attributed to a decrease in the cost of crime with the proliferation of gangs, and an increase in inequality in some municipalities; this would imply a lower marginal cost of criminal behavior, and a higher expected benefit. These studies have mostly focused on economic effects; however; the focus of this study, is the effects on individual social behavior; which, to the best of my knowledge, has not been studied before.

Dell (2011) studies the political effects of the drug war, and the causes of this violence spike. She shows that drug trade-related violence in a municipality increases after the close election of a mayor from the ruling party at the time (the conservative party, PAN). She also shows that, when drug traffic is diverted to other municipalities, drug trade-related violence in these other municipalities increases. These results are used in the present study to explain how drug war-related violence is not mainly driven by underlying characteristics, but by drug traffic being diverted to other cities due to cartels being de-headed, and smaller gangs being created and fighting each other to stay in power.

It is well documented that women and men manage adverse situations differently, including coping mechanisms towards violence exposure; it is also documented that women and men have different psychological effects from conflict and violence. For instance, King et al. (1999) find that although PTSD in men is due to war-zone stressors, post-trauma resilience-recovery variables were more important for women; in Diehl et al. (1996) is observed that women use more internalizing defenses than men.

Moreover, Breslau et al. (1999) describe how the violence exposure is more prevalent in women than in men, even when the number of traumas experienced was lower; also, the overall likelihood of having PTSD was approximately double in females than males. Ferrier et al. (2010) find that women deployed to a combat zone were more likely to experience emotional distress as consequence of combat trauma than men. There is also the study by Mota et al. (2012) where they look at Canadian Forces, and find that women are more likely than males to have PTSD, depression, panic disorder, and any mood or anxiety disorder, they also find that women have lower rates of alcohol dependence than men.

In the matter of gender violence; as previous literature has shown, there exists differential gender effects of violence. For instance, Van Vugt et al. (2007) suggest that men respond more strongly than women to inter-group threats. In a natural quasi-experiment in Uganda; Annan et al. (2011) find that violence drives social and psychological problems, especially among females. Moreover, Plümper and Neumayer (2006) find that inter-State and civil wars affect women more adversely than men, decreasing the life expectancy gap between women and men. In the same line of this literature, one aim of this study is to address the effect of the Drug War-related violence exposure with a gender eye. This means, answering the question of how this exposure differs between men and women. Therefore, identifying any differential gender effects that this particular violent environment might trigger. This issue has not been addressed yet.

3.4 Experimental design

The main challenge of this study is to gather accurate data, since we are analyzing an illegal activity and the consequences of it. As such, official data and surveys are not readily available or reliable. In the existing literature, it has been difficult to assess the effects of Drug War-related violence because of the paucity of micro and macro-level data in areas of conflict. To overcome this, in this study I use a series of lab-in-the field experiments carried out in different universities throughout Mexico to answer the main research question. I conducted 35 experimental sessions with a total of 642 experimental subjects in four different cities around the country. These cities are Mexico City, Puebla, Merida, and Acapulco. In these field experiments, economics games are implemented to elicit social preferences in an incentive-compatible fashion. I want to be able to address the effects of Drug War-related violence on individuals' social behavior through classic experimental games. The aim is to be able to distinguish the channels through which the exposure to violence triggers different pro-social and anti-social behaviors, such as altruism, trust, trustworthiness, and spite. Moreover, we also want to address any differential gender effects that might exist due to violence exposure.

After playing the experimental games, each subject is asked to fill out a small survey. This survey includes basic demographic questions such as gender, age, degree pursued, and household income. The survey also includes questions regarding places where the subject has lived, and Drug War-related violence experiences. After finishing the survey, the subjects are privately paid what was earned from the games previously played. Each experimental session lasted 60 minutes on average.

3.4.1 Descriptive statistics of my sample

The experimental sessions were carried out in four cities in Mexico in order to exploit the variation in violence levels across the country. Each of these cities correspond to a different violence level, according to its homicide rate. We use a four-level violence scale[17]; as described in Table 13. The cities used for the experiment are Merida, with a zero level of violence; Puebla, with a low level; Mexico City, with a medium level; and Acapulco, with a high level of violence[18]. Their geographic location is shown in Figure 8.

University students were recruited in two different ways, for some universities, they were invited and volunteers showed up to the experimental sessions; for other universities, complete classes were given to us, and the whole group would participate. The subject pool consists of 642 undergraduate students; of which 54% are men, and 46% are women.

[17] Violence levels are classified by the homicide rate (per 100,000 population) in the corresponding state.
[18] Homicide rates for each level: $Zero \in [0, 5]$, $Low \in (5, 10]$, $Medium \in (10, 15]$, $High > 15$.

Table 13: Cities where the experimental sessions were carried out

Violence Level	City	Homicide rate
Zero	Merida	3
Low	Puebla	10
Medium	Mexico City	12
High	Acapulco	69

Total number of subjects

	Merida	Puebla	Mexico City	Acapulco	Total
Total Subjects	58	150	194	240	642
└ Men	79%	47%	63%	47%	54%
└ Women	21%	53%	37 %	53%	46%
Migrated to attend current university	26%	37%	24%	6%	21%
Migrated to this city because of violence	2%	5%	1%	1%	2%

Figure 8: Geographical location of experimental sessions

With the gathered data, it is possible to distinguish among four violence experience levels within the subjects; described as follows,

No experience: This person has not have a Drug War-related violence experience, and has only experienced it through television or newspapers, if any. Hence, her exposure is only through the media.

Witness experience: This person saw a Drug War-related crime, scene, or issue. The subject was a witness or bystander.

Indirect experience: The victim of the Drug War-related crime was a well-known person to the subject; such as a family member, or a close friend.

Direct experience: The victim of the Drug War-related crime was the subject themselves.

It is important to clarify that these Drug War-related experiences are not mutually exclusive. This is because a person living in a violent environment can be exposed to witnessing a crime, and can also have a direct experience, or her family and friends might be victims, as well. Moreover, this is the case for my sample, since 47% of the subjects with violence experiences, have more than one type of them.

Observable characteristics for the entire sample are described in Table 14. The average subject is 20 years old, starting the third year of her undergraduate studies, and with a monthly household income in the range of $11,900 – $15,000 MXN ($830–$1,050 USD). Regarding Drug War-related violence experience, nearly half of my subjects (47%) have had one experience or more. Out of these subjects, 23% of them had a direct experience, 75% an indirect one, and 40% have been witness in a Drug War-related issue. On average, each of the subjects with violent experiences has had 3 experiences in total. In the survey there are also questions about their own perception of how affected they feel they have been by these experiences. On average, they feel they have been affected in a medium level, since their affected index is 2.5 on a scale of 1 to 5, where 1 means the subject believes the drug war environment has not affected them at all, and 5 meaning it has changed their life in a very negative way.

Table 14: Descriptive statistics for the study sample, including all subjects

	Sample Mean
% Women	46%
Age	20.2
Years of education	14.0
Household Income	6.9
Migrated because of violence	2%
Grew up in a very violent state	42%
Violence experienced	47%
└ Direct experience	└ 23%
└ Indirect experience	└ 75%
└ Witness experience	└ 40%
└ Number of experiences	└2.9
Affected Index	2.5
Total Subjects	642

Notes: Income ranges correspond with official income deciles; these are (USD):
1. $0–$280; 2. $280–$370; 3. $370–$455; 4. $455–$560; 5. $560–$678; 6. $678–$832
7. $832–$1,050; 8. $1,050–$1,427; 9. $1,427–$3,112; 10. >$3,112.
Very violent state defined as those states with a homicide rate larger than 15.
Affected index on a scale from 1 to 5.

When comparing men and women we observe that, as Table 15 describes, women in my sample are younger, live in a poorer household, and more of them grew up in a very violent state. A very violent state is defined by the state's homicide rate per 100,000 inhabitants being larger than 15 murders. Women in my sample also feel they have been affected more by this violent Mexican reality, than men. However, women and men in this sample have been equally likely to have a violence experience, but less women have had a direct Drug War-related violence experience. This is in line with the literature on the topic, which suggests that the most vulnerable subjects (women, children, and seniors) are more afraid of being victims, but more often are not.

Table 15: Descriptive statistics by gender

	MEN	WOMEN	Diff
Age	20.4	20	-0.4*
Years of education	14.1	14	-0.1
Household Income	7.4	6.4	-1.0***
Migrated because of violence	3%	1%	-2%
Grew up in a very violent state	38%	47%	9%**
Violence experienced	47%	46%	-1%
└ Direct experience	└ 14%	└ 7%	-7%**
└ Indirect experience	└ 34%	└ 36%	2%
└ Witness experience	└ 20%	└ 17%	-3%
└ Number of experiences	└ 3.1	└ 2.7	-0.4
Affected Index	2.4	2.7	0.3***
Total Subjects	350	292	

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Income ranges correspond with official income deciles; these are (in USD): **1.** $0–$280; **2.** $280–$370; **3.** $370–$455; **4.** $455–$560; **5.** $560–$678; **6.** $678–$832; **7.** $832–$1,050; **8.** $1,050–$1,427; **9.** $1,427–$3,112; **10.** >$3,112.
Very violent state defined as those states with a homicide rate larger than 15.
Affected index on a scale from 1 to 5.

Table 16 presents a comparison of the study sample with household survey data from students in the same age range in Mexico (column 2)[19], the wider population in the same age range (column 3), and the wider population of Mexico (column 4) based on the National Census. Similar tables, shown in Table 53 in the Appendix, are replicated for each of the four states used in this study. The Census is representative for each state used in the study, and at the national level. Compared with University students in the same age range in Mexico, people in the study sample belong to a higher income decile (7th versus 3rd decile), and fewer are women (46 percent versus 52 percent).

[19] The age range of the study population and for column 2 of Table 16 is 18 to 26.

Table 16: Baseline Summary Statistics and Comparison to National Census

	Study Sample	**Wider population in Mexico**		
		University students	Young people	Mexico
	(1)	(2)	(3)	(4)
Age	20.2	20.6	21.8	28.9
	(2.46)	(2.05)	(2.58)	(20.28)
% Women	0.46	0.52	0.51	0.51
	(0.50)	(0.50)	(0.50)	(0.50)
Years of education	14.0	13.7	10.3	7.1
	(1.24)	(1.51)	(3.55)	(4.98)
Income range	6.9	2.7	1.8	2.0
	(3.03)	(2.25)	(1.55)	(3.44)
Total Subjects	**642**	**25,792**	**177,938**	**1,122,552**

	Men in Sample	**Men in Mexico**		
		Male Univ students	Young men	Men in Mexico
	(1)	(2)	(3)	(4)
Age	20.3	20.8	21.8	28.3
	(2.03)	(2.10)	(2.58)	(20.16)
Years of education	14.1	13.7	10.2	7.2
	(1.28)	(1.51)	(3.50)	(5.00)
Income range	7.4	2.8	1.9	1.8
	(2.88)	(2.29)	(1.56)	(1.76)
Total Subjects	**350**	**12,312**	**86,446**	**540,504**

	Women in Sample	**Women in Mexico**		
		Female Univ students	Young women	Women in Mexico
	(1)	(2)	(3)	(4)
Age	20.0	20.5	21.9	29.5
	(2.89)	(2.00)	(2.58)	(20.37)
Years of education	14.0	13.7	10.4	7.1
	(1.20)	(1.51)	(3.59)	(4.96)
Income range	6.4	2.7	1.9	1.7
	(3.11)	(2.22)	(1.55)	(1.68)
Total Subjects	**291**	**13,480**	**91,492**	**568,069**

Notes: The age range of the study population and for columns 2 and 3 is 18 to 26. University students are those surveyed people who declared being a student when asked about their occupation, and having 12 or more years of completed education. Standard errors shown in parenthesis. Income ranges correspond with official income deciles; these are (in USD): **1.** \$0–\$280; **2.** \$280–\$370; **3.** \$370–\$455; **4.** \$455–\$560; **5.** \$560–\$678; **6.** \$678–\$832; **7.** \$832–\$1,050; **8.** \$1,050–\$1,427; **9.** \$1,427–\$3,112; **10.** >\$3,112.

We also asked subjects about the cities where they have lived since they were born. This, with the aim of being able to distinguish those that probably grew up in a very violent place during the outburst of the Drug War-related violence, but are now living in a peaceful one, or are still living in a violent place. In Table 17, we compare individuals who grew up in a very violent state, versus those who did not. As stated above, in the experimental sample, more women than men grew up in a very violent state. Also, people in my sample that grew up in a very violent state are younger, live in a poorer household, and more of them have experienced a Drug War-related violence episode. These observations are in line with what we would expect, living in a violent environment increases the likelihood of experiencing a Drug War-related crime. Subjects growing up in a very violent state believe the drug-war reality that surrounds them has affected them at a higher level than those not growing up in a very violent state.

Table 17: Descriptive statistics by place where the person grew up

	NOT very violent state	**IN a very violent state**	**Diff**
% Women	42%	51%	9%**
Age	20.6	19.8	-0.8***
Household Income	7.7	5.9	-1.8***
Migrated because of violence	1.1%	3.3%	2.2%**
Violence experienced	33%	66%	33%***
└ Direct experience	7%	16%	9%***
└ Indirect experience	28%	45%	17%***
└ Witness experience	8%	34%	26%***
Number of experiences	2.5	3.2	0.7*
Affected Index	2.4	2.6	0.2**
Total Subjects	370	271	

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Income ranges correspond with official income deciles; these are (in USD): **1.** $0–$280; **2.** $280–$370; **3.** $370–$455; **4.** $455–$560; **5.** $560–$678; **6.** $678–$832; **7.** $832–$1,050; **8.** $1,050–$1,427; **9.** $1,427–$3,112; **10.** >$3,112. Very violent state defined as those states with a homicide rate larger than 15. Affected index on a scale from 1 to 5.

Later on in the survey, we asked subjects about their individual violence experiences. In column (4) of Table 18, we compare individuals who have never experienced a Drug War-related violence episode versus those who at

least have had one violence experience of any kind (either a direct, indirect, or witness experience). We observe that those subjects with violent experience(s) are younger, live in a richer household, more of them have migrated because of violence reasons, more of them grew up in a very violent state, and currently live in a more violent city. Moreover, they feel the Drug War has affected them more; this is interesting because even when the subjects have not had any violence experience, the drug-war environment, the information on the media, and the fact that people know something may happen to them at anytime; is felt almost as equal as when something has been experienced. This means that people with no direct, indirect, or witness experience also feel the Drug War has affected them on a medium level; on average, they think that it has affected them on a level of 2.3 out of 5.

When comparing subjects with no violent experience at all, versus those who had a direct experience; these differences remain significant. Moreover, as described in column (5) of Table 18 we also observe that in the case of direct experiences, women in my sample are less likely to be victims than men. Additionally, subjects with direct experiences feel the most affected by this Drug War environment among all subjects from the sample.

Table 18: Comparing individual characteristics with different violence experiences

	(1) None	(2) Any kind	(3) Direct exp	(4) Diff (1) - (2)	(5) Diff (1) - (3)
% Women	46%	45%	31%	-2%	-15%**
Age	20.3	20.0	20.8	-0.3**	0.5
Household Income	6.7	7.1	8.2	0.4**	1.5***
Migrated because of violence	0.3%	4%	7%	3.7%***	7%***
Grew up in a very violent state	27%	59%	63%	32%***	36%***
City's violence level	1.7	2.3	2.3	0.6***	0.6***
Number of experiences	0	2.9	4.6		
Affected Index	2.3	2.8	3.1	0.5***	0.8***
Total Subjects	342	300	70		

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Notes: Income ranges correspond with official income deciles; these are (in USD): **1.** \$0–\$280; **2.** \$280–\$370; **3.** \$370–\$455; **4.** \$455–\$560; **5.** \$560–\$678; **6.** \$678–\$832; **7.** \$832–\$1,050; **8.** \$1,050–\$1,427; **9.** \$1,427–\$3,112; **10.** >\$3,112.

Very violent state defined as those states with a homicide rate larger than 15. Affected index on a scale from 1 to 5.

3.4.2 Experimental Games

Description of the games

Three well-established experimental game protocols to implement social orientation (Voors et al., 2012) are used in the experimental sessions. These games are Dictator Game, Trust Game, and Third Party Punishment Game. A newer experimental game for social preferences is also included; the Joy of Destruction Game (Abbink and Sadrieh, 2009).

The 35 experimental sessions were carried out at nine different universities, in four different cities in Mexico. Each session lasted around 60 minutes. A total of 642 undergraduate students participated. Each experimental session was run as a pen-and-paper experiment. Each session was carried out with students from the same university, and sometimes from the same class, all seated together at the same time in the same room. Each subject was allowed to participate in one session only, and no subject had participated in a similar experiment before. Subjects interacted anonymously and were paid their earnings from the games confidentially[20]. Each subject played three or four games, depending on the available time for each session. Game choices and outcomes were not known by the subjects. After finishing the experimental session, the average participant ended up earning a sum of $68 MXN ($5 USD); which is the equivalent to one-day earning in relation to Mexico City's minimum wage[21].

Every time a new game began, new endowments were given to the subjects. The games were played as follows,

1. **Dictator Game (DG)**: Two players. Player 1 has an endowment of $100 Mexican Pesos (MXN) ($7 USD) and decides on how much of that endowment she wants to transfer to player 2 (the transfer will be called X from now on). It can be any amount between $0 and $100 in multiples of five. Therefore, payoffs for this game are $(100 - X, X)$ for players 1 and 2, respectively.

2. **Trust Game (TG):** Two players. Player 1 decides how much of her new initial endowment of $100 MXN to transfer to player 2. Player 2 receives $2X$, (with $0 \leq X \leq 100$), and later decides how much of that sum, called Y (with $0 \leq Y \leq 2X$), she wants to transfer back to Player 1. Therefore, payoffs for the Trust Game are $(100 - X + Y, 2X - Y)$ for players 1 and 2, respectively.

3. **Third Party Punishment Game (TPP):** Three players. Player 1 decides how much of her initial endowment of $100 MXN to transfer to player 2 (X). Player 3 observes this decision and decides how much of

[20] Each subject was paid the average of the payoffs from all the games they played.
[21] Minimum wage for Mexico City, as reported by the Mexican National Board of Minimum Wages.

her own initial endowment of $50 MXN she would like to pay to punish player 1's decision (Z). Player 1's payoff is reduced by twice the amount player 3 has payed to punish. Therefore, payoffs for this game are $(100 - X - 2Z, X, 50 - Z)$ for players 1, 2, and 3, respectively.

4. **Joy of Destruction Game (JD):** Two players, each with an initial endowment of $100 MXN, simultaneously decide on how much of the other player's endowment to destroy (D_1, D_2). Destruction is costless, anonymous, and entails no monetary benefit for the destroying party. Therefore, payoffs for the Destruction Game are $(100 - D_2, 100 - D_1)$ for players 1 and 2, respectively.

From the Dictator Game, a measure for altruism is elicited. According to the standard economic theory, the individual playing as dictator should keep 100% of her endowment, and give nothing to the other player. However, it has been observed in many studies that players do not behave in this manner, but rather send some of their endowment to the other player. This action is seen as an act of selfishness, as well as evidence of the importance of other-regarding motives in economic behavior; teaching us about sociality and human motives. Dictators may be willing to give up part of their earnings because they care about others' welfare (altruism), but also out of a concern for the equality of the resulting allocation (fairness) (Guala and Mittone, 2010).

In the Trust game measures for trust and trustworthiness are retrieved. Trust and trustworthiness, are two concepts that may be at the core of the formation of social capital. By sending some of their initial endowment, the player is risking losing what was sent; hence, this amount can be interpreted as the extent to which they are trusting their completely anonymous counterpart. Similarly; the response from the other player goes against their self-interest, since they are willing to comply with a moral obligation or distribution motives (Danielson and Holm, 2007), without actually having any incentive for returning any money, hence showing trustworthiness.

From the Third Party Punishment game measures for social norms, such as altruistic punishment, are elicited. In this game, an unaffected observer punishes selfishness and/or inequality. It can be explained as egalitarian distribution norms and cooperation norms happening in the experimental subjects' minds, and that punishers may be willing to enforce these norms although the enforcement is costly for them. Punishers are therefore seen as punishing the violation of the distribution norm; thus, this can be noted as the notion of strong reciprocity extending to the sanctioning behavior of unaffected third parties. These experiments propose that third-party punishment games are powerful tools for studying the characteristics and the content of social norms (Fehr and Fischbacher, 2004).

Finally, in the Joy of Destruction game a measure for *spite* (anti-social behavior) is obtained. In this game, both

players mutually and simultaneously decide whether to destroy the other's endowment, or not. Destruction is costless and involves no material benefit for the destroying party. Therefore, it can be argued that no pecuniary, fairness, or reciprocity motives are present, suggesting that the decision of destroying the other's endowment is most likely due to *pure spite and nastiness*, and attributing it to a *visceral pleasure of being nasty* (Abbink and Sadrieh, 2009) (*spite,* herein).

These games outcomes are used to assess the social orientation of the individual. The main aim of playing these games is to compare social behavior among individuals with different Drug War-related violence exposures, in order to be able to distinguish channels through which the exposure to violence has an effect on social capital in a society.

Individual choices in experimental games

This subsection summarizes the decisions made in the experimental games by the subjects. A summary is shown on Table 19.

In the Dictator Game (DG), on average, people in my sample gave away 39% of their own endowment to player 2; this is my measure for altruism.

In the Trust Game (TG) it can be observed that subjects in my sample trusted their unknown partners, since they sent a higher percentage of their endowment than in the DG; 46% versus 39%. Therefore, they believed their partner was trustworthy, and they trusted them. However, it is observed that players 2 were not proportionally reciprocal since, on average, subjects in the role of player 2 sent back 34% of what they had received; however, they sent an amount greater than zero which implies a reciprocal attitude, and shows that the social norm they believe surrounds the game, is one of equality.

Interestingly, in the Third Party Punishment Game (TPP) we observe that people in my sample are somehow afraid of being punished. An idea of intrinsic social norms can be acquired, since they are sending a higher percentage (45%) of their endowment to player 2, compared to that sent in the DG. In addition, it seems to appear as if there is also an implicit social norm about how much should player 1 send player 2; since, on average, punishers in this game (players 3) were willing to pay 18% of their own endowment in order to punish. Moreover, 57% of all players acting as punishers decided to actually spend some of their money in punishing what they believe was not a fair decision.

Finally, in the Joy of Destruction Game (JD), experimental subjects destroyed, on average, 25% of their partner's endowment. Moreover, more than 60% of all of the subjects in my sample decided to destroy something. This means than 60% of the experimental subjects showed some spite towards their partner for the sole reason of taking money from others, without benefiting from it.

Table 19: Characteristics of experimental games choices (as percentage of their endowments)

	Dictator	**Trust**	**TPPunishment**	**Destruction**
Money sent/destroyed	38.5%	46.1%	44.8%	25.3%
Money sent back		35.3%		
Punishment			17.8%	
Observations	471	550	596	642

Notes: This table shows the decisions made by the experimental subjects in each game played. Each percentage show the decision made as a percentage of the available money for such decision.

Differential choices by observable characteristics

Gender

We compare decisions made by men and women in the different experimental games. As shown in Table 20 Panel (a), women in my sample appear to trust less and be less trustworthy; since they send less money to their anonymous partner, and also send back less money in the Trust Game (TG). Also, women in my sample appear to care less about social norms, giving the impression of being less afraid of being punished; they also make less altruistic punishments; which is shown by their decision of sending and punishing less in the Third Party Punishment (TPP) Game. Finally, there seems to be no difference in anti-social behavior between men and women in my sample, since both genders, on average, destroy the same amount of money from their anonymous partners[22]

[22] Table 20 is replicated for each city and included in the Appendix in Tables 55 through 58.

Growing up in a very violent state

Continuing with another mechanism through which the Drug War-related violence might affect individuals, individuals who grew up in a very violent state are compared to those who did not. Interestingly, as shown in Table 20 Panel (b), it is shown that those individuals who grew up in a very violent state show more spite; that is, show a more anti-social behavior, since they destroy more of their anonymous partner's endowment in the Joy of Destruction Game. Also, it seems that people in my sample who grew up in very violent states trust less and are less trustworthy in the TG. Finally, people growing up in a violent place do not appear to have different intrinsic ideas of what the social norm may be for the TPP Game.

Drug War-related violence experience

A clear response from violence exposure to the games choices is captured in Panel (c), from the dummy variable of having experienced a Drug War-related violent event. This variable takes the value of 1 if the subject has had an experience; either a direct experience, an indirect, or a witness one; and zero otherwise. It can be observed that those subjects with any amount of violence experience(s) appear to be less trustworthy than those with no violence experience at all.

Table 20: Games choices by individual characteristics (as percentage of their endowments)

Table 20a: By Gender

	Dictator			Trust			TPPunishment			Destruction		
	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff
Money sent/destroyed	38.7	38.3	-0.4	49.6	41.6	-8.0**	47.7	41.7	-6.0**	25.7	24.9	-0.8
Money sent back				36.7	33.9	-2.8						
Decision punish							20.9	13.8	-7.1***			
Observations	350	292		295	257		320	276		350	292	

*** p<0.01, ** p<0.05, * p<0.1

Table 20b: By growing up in a very violent state

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	39.6	37.1	-2.5	49.8	41.2	-8.6**	44.4	45.4	1.0	23.4	27.7	4.3**
Money sent back				36.9	33.2	-3.7						
Decision punish							19.2	15.8	-3.4			
Observations	254	216		308	241		330	265		370	271	

*** p<0.01, ** p<0.05, * p<0.1

Table 20c: By having a violence experience(s)

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	38.1	38.9	0.7	47.3	44.9	-2.4	43.9	45.9	2.0	25.9	24.6	1.3
Money sent back				36.6	33.5	-3.1*						
Decision punish							19.6	15.7	-3.9			
Observations	342	300		299	253		323	273		342	300	

*** p<0.01, ** p<0.05, * p<0.1

Notes: This table shows the decisions made by the experimental subjects in each game played. Each number represents the decision made as a percentage of the available money for such decision. Table 20a shows choices separately for men and women. Table 20b shows choices separately for those who grew up in a very violent state (homicide rate>15), versus those who did not. Table 20c shows choices separately for those who have had a drug war-related violence experience, versus those who have not.

On that account, what is being observed according to the subjects' choices in the different experimental games, is that individuals do behave differently according to their individual characteristics. These differences in choices seem to increase among genders, among different violence levels of the place where the subject grew up in, and as expected, among people with violence experiences. This is interesting because it seems like gender, place were people grew up, and violence experiences are important mechanisms through which the Drug War-related violence is affecting individual preferences and social attitudes.

3.5 Empirical Strategy

As shown above in the descriptive statistics of the subjects' choices in the experimental games; the three circumstances looked at as being correlated with social behaviors are: being a woman, having grown up in a very violent state, and having had a Drug War-related violence experience. As such, we empirically explore these circumstances in order to find them as possible mechanisms.

Formally, this study focus on testing whether the gathered violence variables have an effect on individual's social attitudes. An Ordinary Least Squares regression analysis is carried out, for each game played during the experimental sessions, where the dependent variables are the different outcomes for each of the experimental games. Therefore, the dependent variable is $Outcome_{i,g}$, for individual $i \in \{1, 2, ..., 642\}$ and game $g \in \{DG, TG, TPP, JD\}$; where DG stands for Dictator Game, TG for Trust Game, TPP for Third Party Punishment Game, and JD for Joy of Destruction Game.

Each of these dependent variables will be representing a different social attitude, for each game, as follows;

1. $Outcome_{i,DG} = Altruism_i$
2. $Outcome1_{i,TG} = Trust_i$
3. $Outcome2_{i,TG} = Trustworthiness_i$
4. $Outcome1_{i,TPP} = Belief\ of\ egalitarian\ social\ norms_i$
5. $Outcome2_{i,TPP} = Altruistic\ punishment_i$
6. $Outcome_{i,JD} = Spite_i$

There is large variation in violence levels across municipalities from the start of the War on Drugs. Some municipalities with originally high homicide rates saw a reduction or no change in it. Among those with originally a low level of violence, some remained peaceful while others experienced a spike in the homicide rate. Including

city fixed effects removes all observed and unobserved municipality characteristics that are constant, thus removing the bias in the estimation that is caused by characteristics that vary at the city level.

The specifications used for each analysis take two general forms, described in equations (1), (2), (3), and (4):

$$Outcome(i,g,s) = \beta Violence\, exp_i + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (1)$$

$$Outcome(i,g,s) = \beta Level\, exp_{l,i} + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (2)$$

$$Outcome(i,g,s) = \beta Grow\, up_i + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (3)$$

$$Outcome(i,g,s) = \beta Level\, exp_{l,i} + \gamma Grow\, up_i + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (4)$$

Where,

$Violence\, exp$ is a dummy variable taking the value of 1 for those individuals who have had at least one Drug War-related violence experience.

$Level\, exp_l$ refers to each type of violence level experienced; with $l \in \{0,1,2,3\}$. Violence level zero means the subject did not have a violence experience, level 1 is for those who had a witness experience, level 2 is for the individuals with an indirect experience, and level 3 for those who experienced a direct one.

$Grow\, up$ is a dummy variable taking the value of 1 for those individuals who grew up in a very violent state.

X are the individual characteristics, including the following;

Fem, Dummy variable taking the value of 1 if the subject is female.

Age, Age of the subject.

$Affected$, Index variable reflecting the individual's perception from the effect the Drug War has had on their own well being. $Affected \in \{1,2,3,4,5\}$, where 1 means the Drug War has not affected the subject in any way, and 5 means the subject believes the Drug War has completely changed her life in a negative way.

FE are fixed effects for the following variables;

$Municipality$, One variable for each of the municipality where the experiment was carried out.

$Income_k$, One variable for each of the ten deciles for monthly income in Mexico. It represents the decile of income to which the subject belongs to, according to her household income[23]. With $k \in \{1, 2, ..., 10\}$. The first decile corresponds to the range $\$0 - \$4,000\,\text{MXN}$ ($\$0 - \$280\,\text{USD}$); and the last one is for any monthly income above $\$44,500$ ($\$3,112\,\text{USD}$).

Equations (1), (2), (3), and (4) describe the baseline model, and capture the effects of violence experience measured by different variables; such as having experienced a Drug War-related violence crime, having a particular type of crime, and growing up in a violent environment.

Furthermore, in order to address the research question of whether the Drug War-related violence has a differential gender effect, equations (5), (6), (7), and (8) are also estimated.

$$Outcome(i, g, s) = \beta Violence\, exp_i + \delta Fem_i * Violence\, exp_i + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (5)$$

$$Outcome(i, g, s) = \beta Grow\, up_i + \delta Fem_i * Grow\, up_i + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (6)$$

$$Outcome(i, g, s) = \beta Level\, exp_{l,i} + \delta Fem_i * Level\, exp_{l,i} + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (7)$$

$$Outcome(i, g, s) = \beta Levelexp_{l,i} + \gamma Growup_i + \delta Fem_i * Levelexp_{l,i} + \lambda Fem_i * Growup_i + \alpha X_i + \eta FE_{m,i} + \varepsilon_i \qquad (8)$$

Where,

$Fem * Violence\, exp$ is the interaction variable of being female and having had at least one Drug War-related violence experience.

[23] All of our subjects either live with their parents, or are supported by them, hence we take their parents' income

$Fem * Grow\ up$ is the interaction variable of being female and having grown up in a very violent state.

$Fem * Level\ exp_l$ are the interaction variables of being female and having had a violence experience of each type (witness, indirect, and direct).

Given that the literature has not given a decisive answer as to how and when do violence exposure affects social attitudes; this paper aims to shed more light on this issue, providing new evidence on whether drug war-related violence exposure impacts behavior. Based on the current literature there is no clear hypothesis of the direction of the effect of this violence exposure; however, for the Mexican context, one can quickly learn that each type of violence exposure can have a different effect on behavior. Therefore, exploring the Drug War context and all the different types of violence experiences it involves, would give way to finding new ways in which violence affects social attitudes.

Regarding the hypothesis of having differential gender effects of violence on social attitudes; just like others have found (Breslau et al. (1999); Van Vugt et al. (2007); Annan et al. (2011); Ferrier-Auerbach et al. (2010); Mota et al. (2012); and others), the hypothesis of this study is that women will be showing more emotional, social, and psychological problems after violence exposure than men with similar violence experiences.

It is important to note that individual Drug War-related violence exposure is most likely not related to individual social preferences. The reasoning behind this, is that the Drug War-related violence started because of the governmental strategy of going after the Cartel leaders and seizing their goods. As a consequence, Cartels were divided and expanded, and plazas were left with no leader, making other DTOs leaders fight for them. This escalated violence all around the country, particularly in places where the plazas were fought over. The location of the plazas is not related to people's social attitudes, nor their social preferences; therefore, the fact that violence spread more in one place is most likely not related to people's behavior and/or preferences. This fight over territory is an exogenous factor when discussing individuals choices regarding pro-social or anti-social attitudes.

Moreover, the underlying assumption for this model to be correctly specified is that there are no omitted municipality characteristics that are correlated with the violence variables. Given that these large city-specific changes in violence levels are not likely to have been driven by the differences in the trends in pro/anti-social individual behaviors, as described in the Drug War background, it is unlikely that this fixed effects approach will suffer from endogeneity bias. One potential mechanism of an impact of social behavior on violence level in a municipality is migration. If those municipalities most affected by increasing violence presented a change in migration patterns this would cause a change in the social behaviors within the new community where they migrated into. Because

of this, subjects that migrated because of violence reasons are excluded from the estimation; this subjects account for 2% of the sample.

3.6 Results

In this Section the results from the empirical model are presented. In this model, the relationship between Drug War-related violence exposure and social behavior is explored through an experimental approach. In particular, three main factors related to violence exposure that appear to have a strong effect on pro-social and anti-social choices during the experimental games are explored; as described in Section 3.4. These factors are, (a) Being female, (b) Having a Drug War-related violence experience, and (c) Growing up in a very violent state.

It is important to note that having a violence experience, and growing up in a violent environment are considered different since people might have different reactions to different experiences. For instance, having experienced either an indirect, direct, or witness experience can be thought as having a more direct effect on attitudes and behavior. However, living in a violent environment might change people's beliefs, since each individual may have a different reaction to living in a violent environment, some individuals can have more pronounced reactions than others, since their beliefs might have changed more than the other person's beliefs. Hence, it is important to study these two scenarios as different exposures to violence.

Given that the main focus and interest of this study is exploring the possible differential gender effects of Drug War-violence related exposure on social behavior, we first describe the results from the specifications in equations (5), (6), (7), and (8); by describing the results for each game. Later, in subsection 3.6.2, the results from the baseline specifications in equations (1), (2), (3), and (4) are presented.

3.6.1 Differential gender effects of violence exposure

As previously discussed in the literature review, just as gender may structure several aspects of our daily lives, it may also structure how individuals behave after becoming a victim of crime. Hence, we are now interested in testing whether the relationship between Drug War-related violence exposure and social behavior, vary based on the individual's gender. In order to answer this, the model specified in equations (5), (6), (7), and (8) is now tested; where interaction terms of the subject's gender, and violence exposure variables are now included.

Differential gender effects would exist if, holding everything else constant, the effects of the violence exposure variables on the games choices, differ across genders.

First, the model in equation (5) is estimated; where the violence exposure is measured through having experienced at least one Drug War-related violence incident, disregarding of its type; that is, the interaction variable included in this model is the interaction of gender with ever having a violence experience. Hence, the new variable included is $Fem * Violence\, exp$. The results from estimating equation (5) are shown in column (5) of Tables 21 through 24. Second, the model in equation (6) is estimated, where growing up in a very violent state is used to measure the individual's violence exposure. Here, the interaction variable included is $Fem * Grow\ up$; the results from this estimation correspond to column (6) of Tables 21 through Table 24. Third, the specification from equation (7) is estimated, where individual violence exposure is disentangled into which type of experience it was; either being a *witness*, having an *indirect* experience, or being the actual victim (*direct* exposure). That is, the interaction variables included are $Fem * Witness$, $Fem * Indirect$, and $Fem * Direct$. The results from this estimation are shown in column (7) of Tables 21 through Table 24. Finally, column (8) for each Table shows both measures of violence exposure: having a particular type of experience, and growing up in a violent environment. In Table 25, the results from estimating equation (8) for each game are shown together.

When measuring violence exposure as ever having experienced any type of Drug War-related violence incident, it seems as if having such exposure to violence has no effect on altruism; as shown in column (5) of Table 21. However, when disentangling the different types of violence experienced, as observed in columns (7) and (8), women with indirect violence experience are found to be less altruistic than men with similar violence experience; they are found to send $12 less, or 30% less as compared to the sample mean. This result is interesting because the fact of having family members or close friends being victims is enough to change women's beliefs, turning them fearful and vulnerable, and hence not behaving as community builders. As a result, they stop being willing to altruistically help others when they believe these others might hurt them. On the other hand, when women are the direct victims, they are found to be more altruistic than male victims, sending $17 more, or 45% more as compared to the average.

Furthermore, regarding trust; it is showed in Table 22a that women who were direct victims are found to trust less than male victims, since they send $18 less, or 39% less as compared to the sample mean.

In addition, when measuring violence exposure as ever having experienced any type of Drug War-related violence incident, it is found that women show a less egalitarian social norm ruling their choices since they are found to send

$14 less, or 31% of the sample mean, in the Third-Party Punishment Game than men with violence experience; as shown in column (5) of Table 23a. Moreover, the type of violence experience driving this anti-social attitude is having an indirect experience; as shown in columns (7) and (8) of Table 23a. This means that having family or close friends being victims, make women believe less in having to be egalitarian with others, since *these others* might have hurt their loved ones, or might hurt them.

Finally, as Table 24 shows, women who had family or close friends as violence victims behave in a more anti-social way, showing more spite, since female subjects are found to destroy $9 more when they had an indirect violence experience, than men with similar violence experiences; this represents 35% as compared to the average. Therefore, it seems important to create public policies to help those women whose family or friends were victims into overcoming their experience, since having a more anti-social community can be very detrimental for many aspects of society. On the other hand, when comparing women and men who grew up in a very violent state, women decide to destroy $16 less of the other's endowment, or 63% as compared to the average, in the Joy of Destruction Game; as shown in columns (6) and (8) of Table 24. Women show a less anti-social behavior, they show *less spite* than men who also grew up in a violent state. This result is particularly interesting because women can be used to start reversing the anti-social behavior that arose from having a Drug War-related violence experience; since the results show that women who grew up in a very violent state; to whom a violent environment was quite *normal*, and whom experienced first hand the destruction the Drug War has done in their hometowns, do not follow this destruction pattern as much as men also growing up in a violent environment, and do not adopt an anti-social behavior as much as men.

To sum up, when compared to men with similar violence exposure and or experiences, women make more pro-social choices when growing up in a violent place. This more pro-social choice represents 63% of the sample mean. This result is in line with what Bellows and Miguel (2009); Blattman (2009); Bauer et al. (2014); Cecchi et al. (2015); Gilligan et al. (2014); Voors et al. (2012) have found, which is an increase in social participation, altruism, collective action, parochialism, and trust after violence exposure and/or experiences.

On the other hand, women are found to behave more anti-social than men after having family or friends being victims, or after being direct victims. This more anti-social choices represent around 30% to 40% of the average choices. These results are in line with what Nunn and Wantchekon (2011); Becchetti et al. (2011); Rohner et al. (2013); Cassar et al. (2013); Couttenier et al. (2016); Lupu and Peisakhin (2017) have found, which is a negative impact on trust, trustworthiness, social ties, and and increase in criminal behavior after violence exposure and/or experiences.

The results from the previous analysis hold when women and men are estimated separately as shown in Tables 31 in Section 3.8. One possible concern is that individual's exposure of each type of the different violence experiences, can be correlated to each other (see Table 54 in the Appendix). For this, the model is also estimated including one type of experience at a time (Table 32). Furthermore, in the Appendix it is also shown that the results are robust to a series of different specifications. For instance, the results are not being driven by confounding variables that vary at the University level, or at the place where the individual grew up (Tables 59 through 61). Tables 62 and 63 in the Appendix also show the results when standard errors are clustered at the experimental session level and at the university level. In none of these models was there a substantially different result.

Table 21: Differential gender effects in Dictator Game

	(5)	(6)	(7)	(8)
Female	0.756	-2.129	-0.718	-0.527
	[3.332]	[3.225]	[3.168]	[3.559]
Violence experienced	3.760			
	[3.080]			
Female*Violence experience	-4.619			
	[4.252]			
Grew up in a very violent state		0.571		2.717
		[4.777]		[4.793]
Female*Grew up		1.297		-0.650
		[4.388]		[4.603]
Had a Witness Experience			-4.283	-4.871
			[3.728]	[4.011]
Had a Indirect Experience			6.713**	6.667**
			[3.037]	[3.041]
Had a Direct Experience			-8.889*	-8.823*
			[5.002]	[4.989]
Female*Had Witness			5.405	6.037
			[5.009]	[5.330]
Female*Had Indirect			-11.575***	-11.627***
			[4.309]	[4.352]
Female*Had Direct			17.278***	17.172***
			[6.407]	[6.423]
R^2	0.05	0.05	0.07	0.07
Observations	427	426	427	426

*** p<0.01, ** p<0.05, * p<0.1

Notes: The outcome of these specifications refers to the choices made by individuals in the Dictator Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 22: Differential gender effects in Trust Game

Table 22a: Money sent in Trust Game

	(5)	(6)	(7)	(8)
Female	-10.452**	-8.816*	-8.850*	-9.669*
	[5.229]	[5.271]	[4.894]	[5.676]
Violence experienced	-1.824			
	[5.355]			
Female*Violence experience	8.539			
	[7.116]			
Grew up in a very violent state		-13.589*		-9.567
		[7.069]		[7.454]
Female*Grew up		6.642		2.618
		[7.175]		[7.537]
Had a Witness Experience			-12.819**	-11.241*
			[6.242]	[6.297]
Had a Indirect Experience			2.681	2.331
			[5.710]	[5.780]
Had a Direct Experience			2.923	4.343
			[7.898]	[8.207]
Female*Had Witness			23.900***	22.183**
			[8.573]	[8.816]
Female*Had Indirect			-2.514	-1.809
			[7.601]	[7.804]
Female*Had Direct			-17.604*	-17.948*
			[9.646]	[9.527]
R^2	0.09	0.09	0.11	0.12
Observations	254	254	254	254

*** p<0.01, ** p<0.05, * p<0.1

Notes: The outcome of these specifications refers to the choice made by individuals when deciding how much to send in the Trust Game. Robust standard errors in brackets. Included in all specifications: City and income level fixed effects; individual's age, age^2, and affected index.

Table 22b: Money sent back in Trust Game

	(5)	(6)	(7)	(8)
Female	-4.842	-6.823	-6.595	-7.294
	[5.874]	[6.192]	[5.633]	[6.656]
Violence experienced	-4.802			
	[5.666]			
Female*Violence experience	-4.319			
	[7.638]			
Grew up in a very violent state		5.319		9.368
		[11.566]		[12.137]
Female*Grew up		0.977		1.487
		[7.845]		[8.300]
Had a Witness Experience			-3.065	-3.706
			[7.900]	[8.057]
Had a Indirect Experience			-8.080	-8.490
			[5.862]	[5.969]
Had a Direct Experience			5.865	7.400
			[9.144]	[9.290]
Female*Had Witness			1.740	2.097
			[10.297]	[10.483]
Female*Had Indirect			-0.059	-0.367
			[8.400]	[8.239]
Female*Had Direct			-6.023	-7.256
			[12.840]	[12.996]
R^2	0.07	0.06	0.08	0.08
Observations	252	251	252	251

*** p<0.01, ** p<0.05, * p<0.1

Notes: The outcome of these specifications refers to the choice made by individuals when deciding how much to send back in the Trust Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 23: Differential gender effects in Third-Party Punishment Game

Table 23a: Money sent in Third-Party Punishment Game

	(5)	(6)	(7)	(8)
Female	3.034	-6.925	0.020	-3.311
	[4.511]	[4.522]	[4.243]	[4.664]
Violence experienced	9.412**			
	[4.759]			
Female*Violence experience	-13.751**			
	[5.926]			
Grew up in a very violent state		2.250		2.946
		[6.122]		[7.248]
Female*Grew up		6.086		9.524
		[6.012]		[6.727]
Had a Witness Experience			-0.405	-0.397
			[5.808]	[5.964]
Had a Indirect Experience			9.582*	10.194**
			[5.016]	[5.075]
Had a Direct Experience			-7.731	-7.208
			[7.615]	[7.664]
Female*Had Witness			-6.500	-7.687
			[7.466]	[7.614]
Female*Had Indirect			-11.233*	-14.086**
			[6.130]	[6.408]
Female*Had Direct			7.111	5.518
			[9.755]	[9.549]
R^2	0.12	0.10	0.12	0.14
Observations	272	271	272	271

*** p<0.01, ** p<0.05, * p<0.1

Notes: The outcome of these specifications refers to the choice made by individuals when deciding how much to send in the Third-Party Punishment Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 23b: Money spent on punishing in Third-Party Punishment Game

	(5)	(6)	(7)	(8)
Female	-3.627	-2.454	-3.430	-2.690
	[2.225]	[2.140]	[2.112]	[2.433]
Violence experienced	0.908			
	[2.379]			
Female*Violence experience	0.131			
	[2.791]			
Grew up in a very violent state		3.815		3.478
		[3.663]		[3.512]
Female*Grew up		-2.607		-2.773
		[2.831]		[3.096]
Had a Witness Experience			2.350	1.118
			[3.193]	[3.170]
Had a Indirect Experience			0.774	0.460
			[2.697]	[2.703]
Had a Direct Experience			-3.168	-2.771
			[2.558]	[2.579]
Female*Had Witness			-0.859	0.841
			[3.420]	[3.526]
Female*Had Indirect			-0.416	-0.058
			[3.182]	[3.205]
Female*Had Direct			0.435	0.257
			[3.328]	[3.351]
R^2	0.09	0.10	0.10	0.10
Observations	274	274	274	274

**** p<0.01, ** p<0.05, * p<0.1*

Notes: The outcome of these specifications refers to the choice made by individuals when deciding how much to spend on punishing in the Third-Party Punishment Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 24: Differential gender effects in Joy of Destruction Game

	(5)	(6)	(7)	(8)
Female	-3.825	4.213	-3.469	1.746
	[3.397]	[3.320]	[3.230]	[3.681]
Violence experienced	-3.795			
	[3.469]			
Female*Violence experience	3.857			
	[4.773]			
Grew up in a very violent state		1.500		3.665
		[5.422]		[5.523]
Female*Grew up		-13.944***		-16.046***
		[4.861]		[5.249]
Had a Witness Experience			-2.408	-5.225
			[4.099]	[4.367]
Had a Indirect Experience			-5.795	-6.028*
			[3.560]	[3.490]
Had a Direct Experience			5.439	4.884
			[5.535]	[5.569]
Female*Had Witness			-1.612	3.625
			[5.820]	[6.105]
Female*Had Indirect			7.135	8.860*
			[5.094]	[5.024]
Female*Had Direct			-5.657	-4.424
			[9.718]	[9.651]
R^2	0.06	0.07	0.06	0.08
Observations	592	591	592	591

*** p<0.01, ** p<0.05, * p<0.1 **Notes:** The outcome of these specifications refers to the choice made by individuals when deciding how much to destroy in the Joy of Destruction Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 25: Differential gender effects

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-0.527	-9.669*	-7.294	-3.311	-2.690	1.746
	[3.559]	[5.676]	[6.656]	[4.664]	[2.433]	[3.681]
Had a Witness experience	-4.871	-11.241*	-3.706	-0.397	1.118	-5.225
	[4.011]	[6.297]	[8.057]	[5.964]	[3.170]	[4.367]
Had an Indirect experience	6.667**	2.331	-8.490	10.194**	0.460	-6.028*
	[3.041]	[5.780]	[5.969]	[5.075]	[2.703]	[3.490]
Had a Direct experience	-8.823	4.343	7.400	-7.208	-2.771	4.884
	[4.989]*	[8.207]	[9.290]	[7.664]	[2.579]	[5.569]
Grew up in a very violent state	2.717	-9.567	9.368	2.946	3.478	3.665
	[4.793]	[7.454]	[12.137]	[7.248]	[3.512]	[5.523]
Female * Had Witness	6.037	22.183**	2.097	-7.687	0.841	3.625
	[5.330]	[8.816]	[10.483]	[7.614]	[3.526]	[6.105]
Female * Had Indirect	-11.627***	-1.809	-0.367	-14.086**	-0.058	8.860*
	[4.352]	[7.804]	[8.239]	[6.408]	[3.205]	[5.024]
Female * Had Direct	17.172***	-17.948*	-7.256	5.518	0.257	-4.424
	[6.423]	[9.527]	[12.996]	[9.549]	[3.351]	[9.651]
Female * Grew up	-0.650	2.618	1.487	9.524	-2.773	-16.046***
	[4.603]	[7.537]	[8.300]	[6.727]	[3.096]	[5.249]
Dependent variable sample mean	38.22	46.09	33.89	44.88	8.91	25.59
R^2	0.07	0.12	0.08	0.14	0.10	0.08
Observations	426	254	251	271	274	591

*** p<0.01, ** p<0.05, * p<0.1

Notes: Each column in this table refers to the outcome of a different game played during each experimental session. The results from each of the columns (8) from tables 21 to 24 are shown in this table. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; as well as individual's age, age^2, and affected index.

3.6.2 Baseline effects of violence exposure

In equation (1) the individual's violence exposure is measured with the variable $Violence\ exp$, which indicates if the subject has had at least one Drug War-related violence experience of any kind. As can be observed, it seems like having a violence experience has no effect on social behavior, as shown in column (1) of Tables 26 through 29. However, when estimating equation (2), where the variable measuring violence exposure is further expanded into each type of experience; such as being a *witness* of an episode (*witness* exposure), having family or friends as victims (*indirect* exposure), or being the actual victim (*direct* exposure). It is found that individuals whose family or friends were victims are found to be less trustworthy, as shown in columns (3) and (4) of Table 27b. Moreover, subjects with a direct violence experience spend less of their own endowment to punish others. This shows that a less egalitarian implicit social norm appears when the subject was a direct victim; this is shown in columns (3) and (4) of Table 28b.

In addition, growing up in a very violent state is also used to measure violence exposure when estimating equation (3). Here, the variable $Grow\ up$ is included in order to recover how the violent environment has an effect on subjects' behavior. It is found that growing up in a violent state influences the subject's trust in others in a negative manner, as shown in column (2) of Table 27a.

In column (4) of Tables 26 through 29; both measures of violence, the type of violence experienced, and growing up in a violent environment, are included. When including all measures of violence in the estimation, the summary of results from estimating equation (4) for each game are shown in Table 30.

It is important to remember that, even though there is large variation in the individuals' violence experiences within the study sample, exposure to violence in my experimental sample is not randomized; and therefore, the results should be taken cautiously.

Table 26: Dictator Game

	(1)	(2)	(3)	(4)
Female	-1.403	-1.512	-1.863	-1.873
	[2.328]	[2.345]	[2.314]	[2.321]
Violence experienced	1.542			
	[2.219]			
Grew up in a very violent state		1.128		1.536
		[4.322]		[4.319]
Had a Witness experience			-1.563	-1.725
			[2.642]	[2.706]
Had an Indirect experience			1.516	1.450
			[2.161]	[2.180]
Had a Direct experience			-4.106	-4.092
			[3.753]	[3.762]
R^2	0.05	0.05	0.05	0.05
Observations	427	426	427	426

*** p<0.01, ** p<0.05, * p<0.1

Notes: The outcome of these specifications refers to the choice made by individuals in the Dictator Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 27: Trust Game

Table 27a: Money sent in Trust Game

	(1)	(2)	(3)	(4)
Female	-6.121	-5.982	-6.667*	-6.490*
	[3.737]	[3.742]	[3.772]	[3.776]
Violence experienced	1.931			
	[4.002]			
Grew up in a very violent state		-10.521*		-9.739
		[6.179]		[6.524]
Had a Witness experience			-1.893	-1.055
			[4.721]	[4.723]
Had an Indirect experience			1.493	1.596
			[3.945]	[3.958]
Had a Direct experience			-4.188	-2.711
			[6.349]	[6.597]
R^2	0.08	0.09	0.08	0.09
Observations	254	254	254	254

*** p<0.01, ** p<0.05, * p<0.1

Table 27b: Money sent back in Trust Game

	(1)	(2)	(3)	(4)
Female	-6.725	-6.371	-6.878*	-7.040*
	[4.157]	[4.218]	[4.145]	[4.174]
Violence experienced	-6.838			
	[4.161]			
Grew up in a very violent state		5.805		9.579
		[11.047]		[11.059]
Had a Witness experience			-2.223	-2.758
			[5.262]	[5.143]
Had an Indirect experience			-8.274*	-8.793**
			[4.310]	[4.308]
Had a Direct experience			3.451	4.462
			[6.058]	[6.136]
R^2	0.07	0.06	0.08	0.08
Observations	252	251	252	251

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: The outcome of these specifications refers to the choices made by individuals in the Trust Game. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 28: Third-Party Punishment Game

Table 28a: Money sent in Third-Party Punishment Game

	(1)	(2)	(3)	(4)
Female	-3.676	-3.892	-4.582	-4.695
	[3.177]	[3.198]	[3.176]	[3.189]
Violence experienced	2.609			
	[3.344]			
Grew up in a very violent state		5.324		6.609
		[5.269]		[6.006]
Had a Witness experience			-2.778	-3.500
			[4.062]	[4.053]
Had an Indirect experience			4.400	3.997
			[3.308]	[3.358]
Had a Direct experience			-5.556	-5.887
			[5.490]	[5.521]
R^2	0.10	0.10	0.11	0.11
Observations	272	271	272	271

*** p<0.01, ** p<0.05, * p<0.1

Table 28b: Money spent punishing in Third-Party Punishment Game

	(1)	(2)	(3)	(4)
Female	-3.565**	-3.575**	-3.706**	-3.700**
	[1.584]	[1.583]	[1.601]	[1.604]
Violence experienced	0.967			
	[1.789]			
Grew up in a very violent state		2.745		2.235
		[3.278]		[3.104]
Had a Witness experience			1.897	1.730
			[1.979]	[1.855]
Had an Indirect experience			0.566	0.468
			[1.828]	[1.836]
Had a Direct experience			-2.890*	-2.743*
			[1.605]	[1.595]
R^2	0.09	0.09	0.10	0.10
Observations	274	274	274	274

*** p<0.01, ** p<0.05, * p<0.1

Notes: The outcome of these specifications refers to the choices made by individuals in the Third-Party Punishment Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 29: Joy of Destruction Game

	(1)	(2)	(3)	(4)
Female	-1.976	-1.839	-1.771	-1.727
	[2.521]	[2.502]	[2.536]	[2.534]
Violence experienced	-2.020			
	[2.583]			
Grew up in a very violent state		-4.312		-3.389
		[5.057]		[5.097]
Had a Witness experience			-3.220	-2.928
			[3.053]	[3.087]
Had an Indirect experience			-2.595	-2.373
			[2.692]	[2.686]
Had a Direct experience			3.783	3.748
			[4.643]	[4.646]
R^2	0.06	0.06	0.06	0.06
Observations	592	591	592	591

*** p<0.01, ** p<0.05, * p<0.1

Notes: The outcome of these specifications refers to the choices made by individuals in the Joy of Destruction Game. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; individual's age, age^2, and affected index.

Table 30: Baseline effects

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-1.873	-6.490*	-7.040*	-4.695	-3.700**	-1.727
	[2.321]	[3.776]	[4.174]	[3.189]	[1.604]	[2.534]
Had a Witness experience	-1.725	-1.055	-2.758	-3.500	1.730	-2.928
	[2.706]	[4.723]	[5.143]	[4.053]	[1.855]	[3.087]
Had an Indirect experience	1.450	1.596	-8.793**	3.997	0.468	-2.373
	[2.180]	[3.958]	[4.308]	[3.358]	[1.836]	[2.686]
Had a Direct experience	-4.092	-2.711	4.462	-5.887	-2.743*	3.748
	[3.762]	[6.597]	[6.136]	[5.521]	[1.595]	[4.646]
Grew up in very violent state	1.536	-9.739	9.579	6.609	2.235	-3.389
	[4.319]	[6.524]	[11.059]	[6.006]	[3.104]	[5.097]
Dep variable sample mean	38.22	46.09	33.89	44.88	8.91	25.59
R^2	0.05	0.09	0.08	0.11	0.10	0.06
Observations	426	254	251	271	274	591

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Each column in this table refers to the outcome of a different game played during each experimental session. The results from each of the columns (4) from tables 26 to 29 are shown in this table. Robust standard errors in brackets. Included in all specifications: City and Income level fixed effects; as well as individual's age, age^2, and affected index.

3.7 Conclusion

In recent years scientists from different areas have started to study and become more interested in the issues of social capital and its mechanisms; there have also been several studies regarding the threats and problems of these social outcomes. One threat in particular is conflict. The existing literature has shown us that conflict exposure can either enhance, or worsen the social capital of a society or an individual. The aim of this study is to contribute to the literature of the effects of conflict on behavior, by studying a new conflict event, the Mexican Drug War. Interestingly, this war can not be classified as a Military War, or a Civil War, it is a governmental strategy to combat crime, and drug trafficking organizations. As such, thousands of civilians are involved in the

middle of this fight, between the government and the drug traffickers, without even wanting to. These innocent, but affected civilians are the focus of this study.

Since the Mexican Drug War has its core problem in something illegal; accurate, reliable, and complete data is not available to study this reality. Hence, the comprehension of the effects of this phenomenon has many misunderstandings, and many things are missing. In recent years, what researchers have opted for, instead of using unreliable official databases, is to create their own data (see for instance, Dell (2011)); and so have I. This study addresses the question of how does the exposure to Drug War-related violence affects social attitudes. This is done through a lab-in-the-field experimental approach with 642 undergraduate students as the subject pool for 35 experimental sessions carried out in four different cities in Mexico.

The results show that the Drug War-related violence exposure has differential gender effects. It is important to note that the effect of the violence exposure on social outcomes, is different for each type of experience the subject had. As described in the literature review, the effects of violence on behavior can be ambiguous; the experiments carried out in this study are designed to possibly give an answer on why these effects have been found inconclusive. Particularly, when comparing men and women.

It is found that a parochial attitude can be build up in women after growing up in a violent environment; since women show less spite than men who grew up in a very violent state. This more pro-social choice represents 63% of the sample mean. On the other hand, this study also finds that anti-social behaviors from women can emerge after actually being victims of violence experiences, or after family or close friends were victims. For instance, it is found that women who were victims of a Drug War-related violence experience trust less than men with direct violence experiences; this decrease in trust represents 39% of the sample mean. Moreover, women with family or close friends who suffered a Drug War-related violence experience, show less altruism, less egalitarian intrinsic social norms, and more spite. These choices represent 30%, 31%, and 35% of the average, respectively.

In conclusion, the results show that women with Drug War-related violence experience have two different behaviors. One, where they become community builders and show solidarity after growing up in a violent environment; by not showing spite. And the other one, where they develop a lot of fear and feelings of vulnerability after themselves or their close circle were victims; hence trusting less, being less altruistic, less egalitarian, and more destructive. These results suggest policy makers should focus on these strengths and weaknesses from women and men to rebuild trust and safety in different communities; as well as to work on improving the fear environment and the vulnerability that the Drug War has created throughout the years. Since having an anti-social community can be

very detrimental for many aspects of society.

3.8 Robustness Checks

Table 31: Estimation results Men and Women separately

(a) **Women**

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Had a Witness exp	-0.110	9.918	-0.284	-9.876**	1.680	-2.342
	[3.778]	[6.689]	[6.337]	[4.676]	[2.160]	[4.334]
Had an Indirect exp	-2.817	2.207	-9.316	-2.421	0.642	2.083
	[2.973]	[5.816]	[6.844]	[4.359]	[2.402]	[4.032]
Had a Direct exp	8.113*	-8.980	-4.119	-3.177	-3.598	-3.065
	[4.464]	[7.917]	[8.945]	[6.138]	[2.273]	[8.409]
Grew up in violent state	-1.170	-8.116	1.038	8.048	-1.523	-23.094***
	[7.617]	[10.400]	[18.511]	[8.408]	[3.600]	[5.819]
Dependent Var. mean	38.19	41.61	30.95	41.56	6.79	25.01[24]
Std. Dev.	(21.23)	(26.22)	(28.02)	(20.93)	(9.79)	(27.28)
R^2	0.05	0.16	0.14	0.18	0.17	0.12
Observations	202	113	122	129	123	268

*** p<0.01, ** p<0.05, * p<0.1

(b) **Men**

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Had a Witness exp	-5.699	-12.050*	-7.369	0.015	1.885	-4.818
	[4.107]	[6.862]	[9.083]	[6.719]	[3.206]	[4.523]
Had an Indirect exp	6.005*	2.757	-9.654	9.756*	-0.087	-5.263
	[3.074]	[6.132]	[6.311]	[5.445]	[2.903]	[3.596]
Had a Direct exp	-8.503	2.741	8.607	-5.301	-2.775	6.197
	[5.230]	[8.911]	[10.505]	[7.802]	[2.786]	[5.723]
Grew up in violent state	6.575	-6.964	22.475	4.974	5.703	13.145*
	[5.664]	[9.567]	[18.103]	[11.335]	[4.851]	[6.900]
Dependent Var. mean	38.26	49.7	36.74	47.96	10.66	26.07
Std. Dev.	(22.76)	(28.73)	(32.46)	(25.68)	(13.04)	(30.55)
R^2	0.15	0.10	0.14	0.19	0.14	0.11
Observations	224	141	129	142	151	323

*** p<0.01, ** p<0.05, * p<0.1

Notes: Each column in these tables refer to the outcome of a different game played during each experimental session. Men and women are estimated separately. Robust standard errors in brackets. Current City and and Income level fixed effects are included in all columns, as well as individual's age, age^2, and affected index. Mean sample and its standard deviation in parenthesis.

Table 32: Separate estimations for each type of violence experience

(a) **Direct experience**

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-3.292	-5.589	-5.597	-4.571	-3.650**	-1.322
	[2.493]	[3.945]	[4.558]	[3.422]	[1.730]	[2.622]
Had a Direct experience	-8.739*	-1.933	3.839	-5.737	-2.284	3.495
	[4.647]	[7.995]	[8.706]	[7.186]	[2.290]	[5.403]
Female*Had Direct	14.619**	-9.427	-6.563	1.375	-0.454	-3.486
	[6.112]	[9.333]	[11.650]	[9.225]	[2.846]	[9.348]
R^2	0.06	0.09	0.06	0.10	0.10	0.06
Observations	427	254	252	272	274	592

(b) **Indirect experience**

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	1.286	-5.644	-6.794	0.217	-3.463*	-4.223
	[2.939]	[4.699]	[5.333]	[3.948]	[1.946]	[3.058]
Had an Indirect experience	4.766	1.598	-7.934	8.692*	0.585	-5.509
	[3.129]	[5.893]	[5.499]	[5.036]	[2.586]	[3.557]
Female*Had Indirect	-8.090*	-1.334	-0.444	-10.780*	-0.323	6.351
	[4.317]	[7.671]	[7.847]	[6.037]	[3.004]	[4.946]
R^2	0.05	0.08	0.08	0.11	0.09	0.06
Observations	427	254	252	272	274	592

(c) **Witness experience**

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-2.988	-10.413**	-6.736	-2.668	-3.559*	-1.627
	[2.716]	[4.169]	[4.833]	[3.623]	[1.826]	[2.812]
Had a Witness experience	-4.973	-11.402*	-3.751	0.229	1.625	-2.104
	[3.460]	[6.138]	[7.223]	[5.580]	[2.959]	[4.093]
Female*Had Witness	6.652	20.949**	2.240	-7.412	-0.086	-1.850
	[4.747]	[8.341]	[9.391]	[7.166]	[3.143]	[5.740]
R^2	0.05	0.10	0.06	0.10	0.09	0.06
Observations	427	254	252	272	274	592

(d) **Grew up in a very violent state**

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-2.129	-8.816*	-6.823	-6.925	-2.454	4.213
	[3.225]	[5.271]	[6.192]	[4.522]	[2.140]	[3.320]
Grew up very violent state	0.571	-13.589*	5.319	2.250	3.815	1.500
	[4.777]	[7.069]	[11.566]	[6.122]	[3.663]	[5.422]
Female*Grew up	1.297	6.642	0.977	6.086	-2.607	-13.944***
	[4.388]	[7.175]	[7.845]	[6.012]	[2.831]	[4.861]
R^2	0.05	0.09	0.06	0.10	0.10	0.07
Observations	426	254	251	271	274	591

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Notes: Each column in these tables refer to the outcome of a different game played during each experimental session. Each violence experience type is estimated separately. Robust standard errors in brackets. City and Income level fixed effects are included in all columns, as well as individual's age, age^2, and affected index.

[24] The mean for those women who grew up in a violent state is 38.8 with std dev 24.9.

4 Health, Preventive Health Care, and Violence: Evidence from the Drug War in Mexico

4.1 Introduction

When thinking about fear of crime and violence exposure and their effect on wellness; physical health and mental health can be compromised due to stressful life events (You and Conner, 2009). Fear of crime is a natural response of violence exposure, and as such, the anxiety and mental distress created by it also affects physical and mental health. People who are worried about crime change their lifestyle patterns, they may restrict how much they leave home, who they see, and which places they visit; this can lead to reducing social ties and social activities, which appear to be protective for physical and mental health, and functioning (Stafford et al., 2007). Moreover, the experience of increased stress may lead to adopt riskier behaviors, such as smoking and drinking (Paarlberg et al., 1999). Cronholm and Bowman (2009) find that women with recent safety concerns report receiving fewer recommended gender-specific preventive services, and Clark et al. (2008) show that women who witnessed violent acts were more likely to experience depressive and anxiety symptoms. Fear of crime can also impact decisions on spending time outdoors, including decreasing walking and cycling activities (Wallace, 2019), leading to a less physically active lifestyle, which can increase the risk of several diseases, may impact mental health, and cognitive functioning (Ganley, 1995; Gaitán-Rossi and Shen, 2018).

In particular, I am interested in looking at how these preventive health care attitudes and decisions are impacted by violence exposure in the context of the Mexican Drug War. The focus of this study is to analyze the effect of violence on health outcomes, and to study its impact on preventive health care decisions.

The data used in this paper is a match of the INEGI monthly homicide reports at the municipality level with the Mexican Family Life Survey (MxFLS). The individual level data used in this study comes from the MxFLS, which is a longitudinal study that is representative at the national, urban, rural, and regional level of the population living in Mexico in 2002, when the baseline was conducted. It includes information on approximately 8,440 households and 35,600 individuals from 136 municipalities and 16 states throughout Mexico. The second wave, MxFLS2, started in 2005 and the third wave, MxFLS3, started in 2009 (Rubalcava and Teruel, 2008, 2013b). One of the

great successes of the MxFLS has been its ability to keep quite low levels of attrition, with over 89% of the original panel respondents being re-interviewed (Rubalcava and Teruel, 2013a).

One particularly valuable aspect of the MxFLS, for the purposes of this study, is the fact that the timing of the survey waves provides a useful snapshot of Mexico before and during the major rise in violence. The first follow-up was conducted between 2005 and 2006, a period of low levels of violence; and the vast majority of the second follow-up was performed from 2009 to 2011, during times of extremely elevated violence levels.

The results show that an increase in the local homicide rate leads to spending less time doing outdoor activities, sleeping less, smoking more, and to showing more symptoms of a mental health problem. An increase in the violence level also reduces the individual's cognitive performance, and worsens their self-reported health state. Regarding more classic health measurements, it is found that a high homicide rate increases blood pressure, as well as the likelihood of having been hospitalized during the last 12 months. Therefore, it is found that a high level of local violence may be affecting the individual's health, and it can also affect their behaviors and attitudes towards adopting preventive health care measures that could potentially offset these negative effects of violence on health. Negative differential gender effects of violence are also found on hemoglobin levels, body mass index, self-reported health, and on mental health.

This paper is structured as follows, Section 4.2 describes the Mexican Drug War background and the sharp increase in violence during that period. The relevant literature is summarized in Section 4.3. In Section 4.4, the data used in this paper is presented. The empirical strategy and results can be found in Section 4.5. Finally, Section 4.6 concludes.

4.2 Background

The outbreak of illegal drug trade in Mexico with the U.S. began in 1933, and towards the end of the 1960's Mexican smugglers started to contraband drugs on a major scale (Vulliamy, 2011). Drug Trafficking Organizations (DTOs) have been active in the country for a few decades now, and until the beginning of the 2000s, without major outbursts of violence. The government and the Cartels had held a peaceful coexistence made possible through a generally passive strategy that consisted of agreements with some members of the State-authority, dominated by the 71-year old ruling Institutional Revolutionary Party (PRI). This ruling party held an authoritarian regime; the lack of power replacement and weak institutions, generated an indulgent political system but protective of DTOs

(Astorga Almanza and Shirk, 2012; Buscaglia, 2013). Cartels were given protection and access to certain areas and trafficking routes, called *plazas*. These plazas reassured a baseline code of conduct between Cartels; they would not sell drugs in the domestic market, or incite violence and fighting directly with authorities. Failing to uphold these rules would be penalized by the State seizing drugs, arresting, or killing Cartel's leaders (Gutiérrez Romero et al., 2014b).

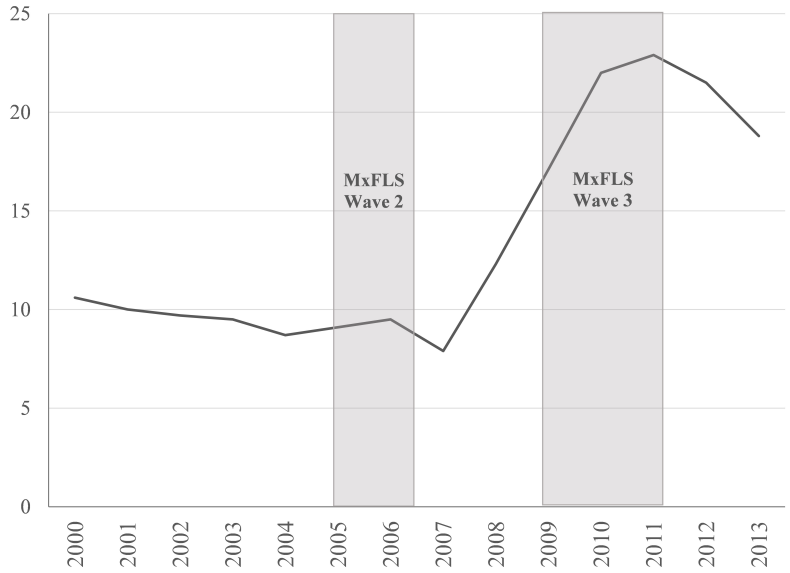
The State's passive strategy regarding drug trafficking operations changed on December 11, 2006. The newly elected President Felipe Calderon sent 6,500 federal troops into the state of Michoacan to end drug violence in such places. This was the first major national operation against organized crime in Mexico, and the starting point of the so called *Drug War*. The Mexican government employed this strategy against drug Cartels and organized crime during all Calderon's presidential period. At the same time, drug Cartels have been fighting for control over new or displaced territory ever since. As a result, soldiers, police men, drug traffickers, and civilians have been endangered. Therefore, the rapid increase in violence in Mexico is consequence of three main factors; exogenous changes in the narcotics market (including Colombia's major DTOs demise), the rupture of Mexican Cartels into smaller DTOs and criminal cells, and the governmental militarized strategy to fight DTOs.

The Drug War-related collateral damage is at least 130,000 individuals murdered (Molloy, 2013). However, the consequences of the Drug War are not limited to lost human lives; some places once peaceful and safe, are now dangerous and violent. As Rios (2013) points out, some cities have experienced spikes in violence that transformed them into "war zones" (Rios, 2013). Some other cities are starting to feel the presence of the Cartels. Drug violence associated with the Mexican Drug War has spread from city to city, for reasons that were not likely driven by local fluctuations in economic activity, or individual behavior; particularly, not from common people who are not involved in the drug business. Much of this violence has been driven by inter-Cartel rivalries over territory, which has been exacerbated by arrests and killing of key leaders under the enforcement of the governmental strategy that started in 2006.

During Calderon's presidential period, from 2006 to 2012, the number of homicides and the homicide rate steadily increased, averaging a homicide rate of 17.3 murders per 100,000 population, this implies 52 murders per day. This positioned Mexico in the top 10 of countries with the most number of homicides; only behind countries such as Iraq, Afghanistan, Syria, Libya, Sri Lanka, and the Congo region of central Africa (Molloy, 2013). The homicide rate in Mexico more than tripled in a 4-year period; going from 7 murders per 100,000 population in 2007, when President Calderon took the presidency, to 23 at its highest level during his period by 2011.

The relationship between the timing of the escalation in violence and the dates of the MxFLS waves is displayed in Figure 9, which describes the annual national homicide rate per 100,000 inhabitants from 2000 to 2013 and highlights the periods in which the MxFLS2 and MxFLS3 were carried out. As can be seen, the timing of the survey waves provides a useful snapshot of Mexico before and during the major rise in violence. The first follow-up was conducted between 2005 and 2006, a period of low levels of violence, and the second follow-up was performed from 2009 to 2011, during times of extremely elevated violence levels.

Figure 9: Annual Homicide Rate (per 100,000 population)

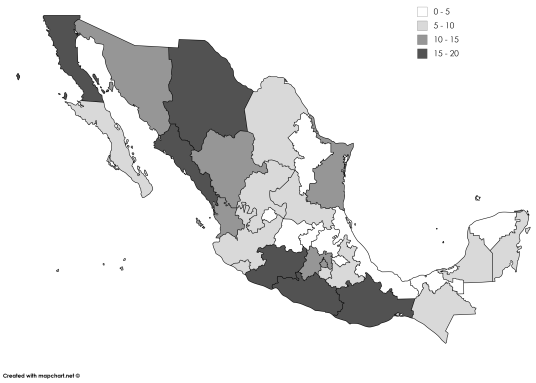


Source: Own elaboration with data from INEGI

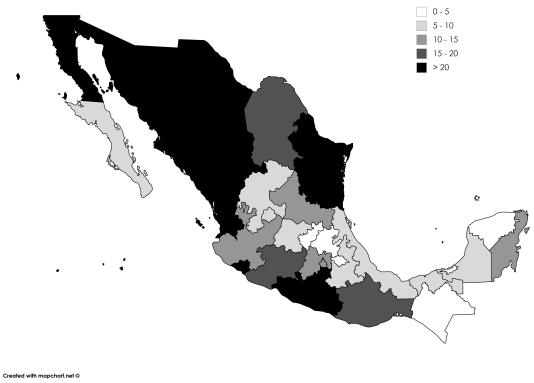
While the magnitude of the violence has risen significantly in the last few years across Mexico, the level of the change across municipalities varies a lot. Figure 10 shows the geographical spread of violence for the years 2005, and 2010. As can be observed, violence spiked in states along the coast en route to the USA. In 2005, before Calderon's presidential period, only 19% of the states had a homicide rate larger than 15. By 2010, four years after the governmental strategy against DTOs came in place, 44% of the states had a homicide rate larger than 15. Thus, along with the temporal variation in violence, this analysis will also be able to exploit the large degree of heterogeneity in the geographic distribution of violence exposure across municipalities.

Figure 10: Homicide rate evolution

(a) Homicide rate by state in 2005



(b) Homicide rate by state in 2010



Source: Own elaboration with data from INEGI.

4.3 Relevant Literature

This study finds its place into three main literature areas. The first one studies the relationship of preventive health care on well-being and how violence affects health. The second main literature studies the effects of the Mexican Drug War on several aspects of Mexico's reality. Finally, the third one studies the differential gender effects of violence.

Each year millions of people die from preventable deaths. Preventive health care deals with the prevention of illness to decrease the burden of disease and associated risk factors. These services both prevent and detect illnesses and diseases, from flu to cancer, in their earlier, more treatable stages, significantly reducing the risk of illness, disability, early death, and medical care costs. According to estimates made by the World Health Organization (WHO), about 55.4 million people died worldwide in 2019, 74% of this group died from non-communicable diseases such as cancer, diabetes, chronic cardiovascular and chronic lung diseases[25]. Preventive health care is especially important given the worldwide rise in chronic diseases and deaths from these diseases, which many are classified by the medical community as preventable[26], and is also important because preventive health care

[25] Retrieved from "The top 10 Causes of Death" from the World Health Organization website: https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

[26] According to the Centers for Disease Control (CDC)

consists of measures taken for disease prevention which relies on anticipatory actions. Statistics like these signal a large need for emphasis on preventive strategies to improve health care.

Healthy People, a federal program administered by the United States Department of Health and Human Services, states that health screenings, primary care consultations, and scheduled immunizations give people the opportunity to save years of life and to help people live better during those years[27]. The National Institute of Health (NIH) recommends vaccinations, check-ups, and routine tests and exams as part of a preventive health care plan. Some successes of preventive services include: preventing up to 50% of cancer deaths by modifying or avoiding key risk factors and implementing prevention strategies[28]; having the recommended vaccines prevent on average 42,000 children's deaths each year; having blood pressure screenings and control reduces the risk of cardiovascular disease by 33% to 50% among people with diabetes; and having fluoride in water reduces tooth decay by 25% (Office of the Surgeon General, 2011).

In addition to clinical preventive health care measures, there are also the non-clinical preventive health care measures, which include avoiding smoking, good nutrition, physical activity, healthy body weight, avoiding excessive UV exposure, and assessing and addressing mental health. All these measures provide the benefit of saving lives and improving the quality of health for years to come. Moreover, the benefits of adopting preventive health care measures go beyond the individual's well-being, it also impacts the individual's country economy; Maciosek et al. (2010) find that, for the United States, increasing the use of preventive clinical services from 2006 levels to 90% would result in total saving of $3.7 billion.

Despite the fact that when the WHO was founded, it defined health as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (WHO, 1946), 70 years later the majority of social science research is still focusing on a "narrow view of health: one that emphasizes illness" (Howell et al., 2016).

When thinking about fear of crime and violence exposure and their effect on wellness; physical health and mental health can be compromised due to stressful life events (You and Conner, 2009). Fear of crime is a natural response of violence exposure, and as such, the anxiety and mental distress created by it also affects physical and mental health. People who are worried about crime change their lifestyle patterns, they may restrict how much they leave home, who they see, and which places they visit; this can lead to reducing social ties and social activities,

[27] As stated in their leading health indicators 2020 report's website https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Clinical-Preventive-Services

[28] According to the World Health Organization in their Cancer health topic website https://www.who.int/health-topics/cancer#tab=tab_2

which appear to be protective for physical and mental health, and functioning (Stafford et al., 2007). Moreover, the experience of increased stress may lead to adopt riskier behaviors, such as smoking and drinking (Paarlberg et al., 1999). Cronholm and Bowman (2009) find that women with recent safety concerns report receiving fewer recommended gender-specific preventive services, and Clark et al. (2008) show that women who witnessed violent acts were more likely to experience depressive and anxiety symptoms. Fear of crime can also impact decisions on spending time outdoors, including decreasing walking and cycling activities (Wallace, 2019), leading to a less physically active lifestyle, which can increase the risk of several diseases; it may also impact mental health, and cognitive functioning (Ganley, 1995; Gaitán-Rossi and Shen, 2018). This paper contributes to the literature on the effects of violence on health, by including the preventive health care measures and attitudes.

Regarding the literature on the effects of the Mexican Drug War, there is still limited knowledge on the subject. Most of the work done so far studies the economic implications of drug violence in Mexico. On this matter, victimization surveys estimate that only for the year 2010, the cost of crime (in monetary losses) for victims are valued at US$12.9 billion. Moreover, for that same year, 42.8% of Mexico's firms paid for private security, spending about 2.2% of their annual sales on these services (Corporation and Bank, 2012). Furthermore, reductions in economic activity and growth were found at the municipal level between 2006 and 2010 (Robles, Calderón, and Magaloni, 2013; Enamorado, López-Calva, and Rodríguez-Castelán, 2014a). Moreover, Enamorado et al. (2014b) find that a one point increment in the Gini coefficient between 2006 - 2010 translates into an increase of over 10 drug-related homicides per 100,000 inhabitants. This finding can be attributed to a decrease in the cost of crime with the proliferation of gangs, and an increase in inequality in some municipalities; this would imply a lower marginal cost of criminal behavior, and a higher expected benefit.

Other channels through which the violence has had effects are documented in studies such as the ones by Nasir et al. (2020); Brown et al. (2019); Brown and Velásquez (2017). These studies find that exposure to drug war-related violence significantly increases risk aversion and reduces trust in civic institutions (Brown et al., 2019; Nasir et al., 2020). Brown and Velásquez (2017) find that 14- to 17-year-old teenagers exposed to increased violence achieve less years of education, and were less likely to complete compulsory schooling.

Dell (2015) studies the political effects of the drug war, and the causes of this violence spike. She shows that drug trade-related violence in a municipality increases after the close election of a mayor from the ruling party at the time (the conservative party, PAN). She also shows that, when drug traffic is diverted to other municipalities, drug trade-related violence in these other municipalities increases. These results are used in the present study to explain how drug war-related violence is not mainly driven by underlying characteristics, but by drug traffic being

diverted to other cities due to cartels being de-headed, and smaller gangs being created and fighting each other to stay in power.

Regarding the effects of the Drug War on health, Martínez and Atuesta (2018) find a negative effect on the mental health of individuals. Moreover, Brown (2018) finds that early gestational exposure to drug war-related violence is associated with a lower birth weight.

The contribution of this study to this literature studying the effects of the Drug War, is the incorporation of the effects on individual's preventive health care decisions; which, to the best of my knowledge, has not been studied before.

As for the possible differential gender behavior on reacting to violence or stress; it is well documented that women and men manage adverse situations differently, including coping mechanisms towards violence exposure. It is also documented that women and men have different psychological effects from conflict and violence. For instance, King et al. (1999) find that although PTSD in men is due to war-zone stressors, post-trauma resilience-recovery variables were more important for women; in Diehl et al. (1996) is observed that women use more internalizing defenses than men.

Moreover, Breslau et al. (1999) describe how the violence exposure is more prevalent in women than in men, even when the number of traumas experienced was lower; also, the overall likelihood of having PTSD was approximately double in females than males. Ferrier-Auerbach et al. (2010) find that women deployed to a combat zone were more likely to experience emotional distress as consequence of combat trauma than men. There is also the study by Mota et al. (2012) where they look at Canadian Forces, and find that women are more likely than males to have PTSD, depression, panic disorder, and any mood or anxiety disorder, they also find that women have lower rates of alcohol dependence than men.

In the matter of gender violence; as previous literature has shown, there exists differential gender effects of violence. For instance, Van Vugt et al. (2007) suggest that men respond more strongly than women to inter-group threats. In a natural quasi-experiment in Uganda; Annan et al. (2011) find that violence drives social and psychological problems, especially among females. Moreover, Plumper and Neumayer (2006) find that inter-State and civil wars affect women more adversely than men, decreasing the life expectancy gap between women and men.

For the Mexican drug war context, Tsaneva et al. (2019) find that an increase in homicide rate lowers women's bargaining power at home; Lyn (2020) explains that this decrease can potentially be explained by the increased

levels of fear in men that have as result women being at higher risk of domestic violence. Lyn (2021) finds that a violent environment lowered a woman's relative decision-making power over her children's goods, worsened her employment outcomes, and increased the fear of assault.

One goal of this study is to contribute to this literature of gender violence by addressing the effect of a particular type of violence exposure which is the one created by the Drug War-related violence; and looking at its effects on health, with a gender approach.

4.4 Data

The data used in this paper is a match of the INEGI monthly homicide reports at the municipality level with the Mexican Family Life Survey (MxFLS). The individual level data used in this study comes from the MxFLS, which is a longitudinal study that is representative at the national, urban, rural, and regional level of the population living in Mexico in 2002, when the baseline was conducted. It includes information on approximately 8,440 households and 35,600 individuals from 136 municipalities and 16 states throughout Mexico. The second wave, MxFLS2, started in 2005 and the third wave, MxFLS3, started in 2009 (Rubalcava and Teruel, 2008, 2013b). One of the great successes of the MxFLS has been its ability to keep quite low levels of attrition, with over 89% of the original panel respondents being re-interviewed (Rubalcava and Teruel, 2013a).

One particularly valuable aspect of the MxFLS, for the purposes of this study, is the fact that the timing of the survey waves provides a useful snapshot of Mexico before and during the major rise in violence. The first follow-up was conducted between 2005 and 2006, a period of low levels of violence, and the second follow-up was performed from 2009 to 2011, during times of extremely elevated violence.

When looking at the homicide rates in the municipalities where the MxFLS was carried out, it is found that the homicide rate went from 10 murders per 100,000 population in Wave 2, to 20 in Wave 3, as described in Table 33. Table 34 and Table 35 show descriptive characteristics of the more than 25,000 individuals included in Wave 2 and Wave 3 of the MxFLS.

Table 33: Homicides rates from Wave 2 to Wave 3 of the MxFLS

	Wave 2	Wave 3
Number of states included in surveys	21	28
Number of municipalities	196	282
Homicide rate in last 12 months	10.01	20.2
Change in homicide rate from 2005 to 2009	9.76	10.13
Observations	18,699	22,672

Notes: Wave 2 of the MxFLS was collected from 2005 to mid 2006, Wave 3 from 2009 to 2011. The total number of states in Mexico is 32. The homicide rate is defined as the number of homicides per 100,000 population.

When looking at the individual characteristics from the MxFLS, more than 60% of our sample are individuals found in both waves. On average, as described in Table 34, individuals in our sample are 40 years old, 53% of them are women, 89% can read, they have 8.4 years of schooling, 65% of them are married/common-law relationship, 51% worked last week, 34% stay at home as homemakers, and they make $284 (CAD) per month. Moreover, 31% of the sample believe they feel less safe than they did 5 years ago.

Table 34: Individual characteristics

	All	Wave 2	Wave 3	Diff
Women	53.5%	54.6%	55.2%	0.6%
Age	40.5	40.8	40.3	-0.5***
Can read	89.4%	89.2%	89.6%	0.4%
Years of education	8.4	8.1	8.5	0.4***
Married	65.5%	65.9%	65.3%	-0.6%
Worked last week	50.5%	49.7%	51.2%	1.5%***
Stay at home homemaker	34.3%	36.7%	32.3%	-4.4%***
Monthly income (CAD)	$284	$278	$298	$20
Feels less safe than 5 years ago	30.5%	26.1%	34.3%	8.2%***
Observations	41,371	18,699	22,672	

*** p<0.01, ** p<0.05, * p<0.1

Regarding preventive health care attitudes, as described in Table 35 (a), 14% of people in our sample exercise, 11% do some type of outdoor activity, 9% smoke, 5% believe their health is bad or very bad, and 2% went to see a doctor or nurse for a reason that was considered part of a preventive health care measure such as immunizations, planned parenthood, pregnancy controls, and wellness checkups. On average, people in my sample sleep 7.7 hours per night, have a waist circumference of 91.5 cm, and a body mass index of 27.4.

Table 35 (b) shows the descriptive characteristics of more classic health measures. On average, people in my sample have a blood pressure of 121/77, a hemoglobin level of 14.6, a cognitive score of 50.8%, and 5% have a moderate/severe or severe mental health problem. It is also found that 6% of my sample have been hospitalized in the last 12 months, 16% of people have a chronic disease, and 3% have a disability.

Table 35: Individual characteristics in relation to preventive health care attitudes and more classic health measures

(a) Individual characteristics in relation to preventive health care attitudes

	All	Wave 2	Wave 3	Diff
Exercises	14.4%	12.7%	15.9%	3.2%***
Self reported bad health	4.7%	4.5%	4.9%	0.4%**
Hours of sleep	7.7	7.8	7.7	-0.1***
Has outdoor activities	10.6%	10.3%	10.9%	0.6%*
Has preventive visit with doctor/nurse	1.8%	1.8%	1.8%	0%
Smokes	9.4%	8.7%	10.1%	1.4%***
Body Mass Index	27.4	27.2	27.7	0.5***
Waistline	91.5	90.5	92.4	1.9***
Observations	39,939	18,585	21,354	

*** p<0.01, ** p<0.05, * p<0.1 **Notes:** A Preventive visit is seeing a doctor or nurse for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. The Body Mass Index is calculated as the weight in kg divided by the square height in m.

(b) Individual health measures

	All	Wave 2	Wave 3	Diff
Hospitalized in last year	5.7%	4.7%	6.5%	1.8%***
Systolic Blood Pressure	121	117.7	123.8	6.1***
Diastolic Blood Pressure	77.5	75.7	79.2	3.5***
Hemoglobin level	14.6	14.2	14.8	0.6***
Has chronic disease	16.2%	14.7%	17.4%	2.7%***
Has a disability	3%	3.1%	2.5%	-0.6%***
Mental health problem ranking	0.306	0.301	0.310	0.09
Cognitive score	0.508	0.555	0.471	-0.084***
Observations	39,781	18,439	21,342	

*** p<0.01, ** p<0.05, * p<0.1 **Notes:** Systolic BP normal reading is ≤ 130. Diastolic BP normal reading is ≤ 80. Hemoglobin normal levels for men is 13.8 to 17.2, and for women is 12.1 to 15.1. Mental health ranking follows the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score.

4.5 Empirical Analysis

The escalation of violence in Mexico is likely to cause some people living in Mexico to respond systematically to alleviate potential harm and victimization. Specifically, this study explores whether changes in the level of violence affected preventive health care decisions and other health measures of those in the affected localities. As per the literature, it would be expected that after experiencing violence, both physical health and mental health deteriorate. Moreover, violence would be expected to have differential gender effects in some health variables, in which women fare worse than men.

To examine the impact of local violence on health measures and preventive health care decisions, I estimate the following regression:

$$y_{imt} = \beta_1 HomRate_{mt} + \delta_1 X_{it} + \gamma_1 Wave_{it} + \gamma_2 Mun_{im} + \varepsilon_{imt} \qquad (1)$$

Where y_{imt} is a set of health indicators for individual i living in municipality m at the time of interview t; these include preventive health care decisions such as exercising, waistline, smoking, preventive health care visits, hours of sleep, outdoor activities. It also includes more classic health measurements such as Body Mass Index, blood pressure, hemoglobin level, having been hospitalized, mental health, having a disability, cognitive score. Two more health outcomes of interest are included, these are feeling less safe than 5 years ago, and having a self-reported bad health. $HomRate_{mt}$ is the natural logarithm of the homicide rate during the last 12 months in municipality m. Individual characteristics are included in X_{it} such as sex, age, years of education, and marital status. MxFLS wave and municipality fixed effects are included in $Wave_{it}$ and Mun_{im}, respectively. With this specification, β_1 is our coefficient of interest.

Moreover, in order to explore whether there are differential gender effects of violence on health and on preventive health care decisions, an interaction term of sex and the homicide rate is included in the previous model, hence I also estimate the following regression:

$$y_{imt} = \beta_1 HomRate_{mt} + \beta_2 Female_i * HomRate_{mt} + \delta_1 X_{it} + \gamma_1 Wave_{it} + \gamma_2 Mun_{im} + \varepsilon_{imt} \qquad (2)$$

Where the interaction term $Female_i * HomRate_{mt}$ is the interaction of being female and the natural logarithm of the homicide rate in the last 12 months in municipality m.

It is important to remember that the assumption behind the validity of this model is that the parallel trends assumption holds. That is, that in the absence of this violence shock created by the sharp increase in violence due to the drug war, the trends in the regions would be identical when comparing the different health outcomes. The major threat to this empirical strategy is that some other unobserved municipality level trend is correlated with both the local homicide rate and the preventive health care attitudes and health measurements of individuals. One way to check this is to follow a similar strategy as the one described in Brown and Velásquez (2017), in which I formally examine whether the current levels of local violence are related to the health outcomes from before the escalation in violence. Specifically, I estimate the model from equation (1), but using observations from Wave 1 and 2 of the MxFLS in 2002 and 2005, respectively; while assigning the levels of local violence from Wave 2 and 3 of the survey. As described in Table 69 of the Appendix, it is found that future homicide rates do not predict worse health outcomes between 2002 and 2005.

Another potential issue is selective migration. Specifically, having non-random migration as a response to increased violence could hinder identifying the impact of violence on health outcomes; in particular this issue might arise when people too sick to migrate are left behind. I have investigated whether individuals migrated in response to an increase in local violence. The results of this exercise are described in Table 42 in the Robustness Checks section (Section 4.7). I find that there is not a significant relationship between increased violence levels and migration. Similar results are found in Brown and Velásquez (2017); Brown (2018); Brown et al. (2019); Velásquez (2020). Moreover, Basu and Pearlman (2017) find little evidence that increases in homicides led to migration, at the domestic and international level.

However, it can not be ruled out non-linear municipal characteristic changes that may have occurred at the time of the sharp increase in violence. Therefore, the results presented here can only be interpreted as under the assumption that this type of unobserved factor did not occur.

It is important to note that the use of homicide rates as the measure of violence is not intended to rule out the effect of other types of crime that also increased as a result of the Mexican war on drugs. Homicides are used as the measure of violence in this study as they act as the most accurate and best proxy for the crime environment in Mexico. However, it can be possible that people living in violent places do not necessarily believe that such crime affect their lives, one can think that crime could be alien to people's realities.

Therefore, as first step in this study, there is a need for establishing the possible relationship between crime and it's effect on people's perception of such crime. Ir order to do this, equations (1) and (2) are estimated using as

dependent variable a dummy that reflects if the subject feels less safe than 5 years ago. The results are shown in Table 36. As can be observed, people that experienced a higher level of violence in their municipalities, are more prone to feel less safe than those with lower homicide rates. This suggests that people living in these violent places are in fact seeing and feeling the violence, and is actually affecting the way they feel about their safety, and most likely the decisions taken as a result of this. Therefore, using the homicide rate as the violence measure is a good proxy to study the effect of violence on behavior.

Table 36: Using homicide rates is a good proxy for violence

	Feels less safe than 5 years ago	
Female	0.055***	0.038***
	[0.005]	[0.015]
Ln (Homicide Rate)	0.069***	0.065***
	[0.007]	[0.007]
Fem * Ln (Hom Rate)		0.007
		[0.006]
Mean of Dep Var	0.305	
R^2	0.08	0.08
Observations	27,561	27,561

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in brackets. **Notes:** Dependent variable is a dummy equal to 1 if the person feels less safe than she did 5 years ago. Controls included: age, age^2, years of education, married dummy. Time and municipality fixed effects included.

Now that it has been established that the local homicide rate is affecting the way people perceive their safety, the hypothesis of this study is that this fear created by the local homicide rate is affecting the individual's health and preventive health care choices, due to the psychological stress and the individual's perception of possibly being a victim of this violence.

The next step in this study is to analyze the effects of violence on several variables measuring health and preventive health care attitudes; by estimating equation (1) and (2) using as dependent variables health measurements, and preventive health care behaviors.

From the literature regarding violence and health, it is natural to expect that violence exposure through the large increase in homicide rate induces a fear of crime; and as a result anxiety and mental distress appear giving way to worsening both physical and mental health. Like Ganley (1995); Gaitán-Rossi and Shen (2018); Wallace (2019); and others have found; the hypothesis of this study is that violence exposure through a large increase in the homicide rate will decrease the time spent outdoors, and will negatively impact mental health and cognitive functioning.

Regarding the hypothesis of having differential gender effects of violence on health indicators and on preventive health care attitudes; just like others have found (Clark et al., 2008; Cronholm and Bowman, 2009), the hypothesis of this study is that women will be showing more mental health distress symptoms than men with similar violence experiences.

The results from estimating equation (1) are shown in Table 37 and Table 38. Table 37 describes the effects of violence exposure on more classic health measurements. High levels of violence are found to increase the likelihood of having been hospitalized during the last 12 months, as well as the individual's blood pressure. Also, an increase in the homicide rate decreases the hemoglobin level in the individual; it is worth mentioning that low levels of hemoglobin can lead to anemia. Moreover, an increase in the local homicide rate leads to showing more symptoms of a mental health problem, and to a poorer cognitive performance.

Table 37: Effects of violence on more classic health indicators

	Hospitalized	Diastolic BP	Hemoglobin	BMI	Bad Mental health ranking	Cognitive score
Female	0.051***	-3.017***	-2.017***	0.997***	0.169***	-0.015***
	[0.003]	[0.139]	[0.028]	[0.063]	[0.007]	[0.003]
Ln (Homicide Rate)	0.012***	0.438***	-0.057*	0.012	0.040***	-0.018***
	[0.004]	[0.168]	[0.031]	[0.079]	[0.009]	[0.004]
Mean of Dep Var	0.057	77.55	14.61	27.44	0.306	0.508
R^2	0.03	0.14	0.28	0.15	0.06	0.25
Observations	27,519	25,192	20,463	24,501	27,562	18,446

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: Dependent variables are: (1) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (2) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80. (3) Hemoglobin: Normal levels for adult men is 13.8 to 17.2, and for adult women: 12.1 to 15.1. (4) BMI is the Body Mass Index calculated as the weight in kg divided by the square height in m. (5) Bad Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (6) Cognitive score goes from 0 to 1 according to the Raven's Raven's Progressive Colored Matrices score.

Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 38 describes the effects of violence exposure on preventive health care attitudes. These show that an increase in the local homicide rate leads to spending less time doing outdoor activities, sleeping less, and smoking more. An increase in the level of violence also worsens their self-reported health state. Therefore, not only are high violence levels worsening all decisions taking part in a preventive health care regime, but they are also deteriorating the way people see their own health.

The results from Table 37 and Table 38 show that high levels of homicide rate are affecting the individual's health, and they are also affecting their behaviors and attitudes towards adopting preventive health care measures that could potentially offset these negative effects on health.

Table 38: Effects of violence in more preventive health care attitudes

	Outdoor time	Hours of sleep	Bad health	Preventive visit	Smokes
Female	-0.090***	0.156***	0.015***	0.004	-0.124***
	[0.004]	[0.016]	[0.002]	[0.012]	[0.004]
Ln (Homicide Rate)	-0.008*	-0.077***	0.006**	0.026*	0.008*
	[0.004]	[0.019]	[0.003]	[0.014]	[0.004]
Mean of Dep Var	0.106	7.730	0.047	0.129	0.094
R^2	0.10	0.06	0.04	0.06	0.07
Observations	27,623	27,590	27,580	3,733	27,589

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in brackets.

Notes: Dependent variables are: (1) Outdoor time: Dummy variable for spending time outdoor doing an activity. (2) Hours of sleep. (3) Bad health: Dummy variable for self reporting having a bad health. (4) Preventive visit is a dummy variable for going to the doctor for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. (5) Smokes is a dummy variable for currently smoking. Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

As previously discussed in the literature review, just as gender may structure several aspects of our daily lives, it may also structure how individuals behave after violence exposure. Hence, we are now interested in testing whether the relationship between Drug War-related violence and health care attitudes, vary based on the individual's sex. In order to answer this, the model specified in equation (2) is now estimated; where an interaction term of the subject's sex and violence level is now included. Differential gender effects would exist if, holding everything else constant, the effects of the violence exposure variable on health, and health care choices, differ across genders.

Table 39 describes the effects of violence exposure on health indicators, and its possible differential gender effects. As found before, high levels of violence are found to increase the likelihood of having been hospitalized during the last 12 months, as well as the individual's blood pressure. Moreover, differential gender effects of violence are found on hemoglobin levels and body mass index; an increase in the local homicide rate decreases hemoglobin levels of women more than when compared to men. Women are also found to have a larger body mass index than

men, after an increase in violence; and a worse mental health than men. Therefore, not only are high violence levels worsening the individual's health, but women are being more affected by men in some of these health components.

Table 39: Differential gender effects of violence in more classic health measures

	Hospitalized	Diastolic BP	Hemoglobin	BMI	Bad mental health	Cognitive score
Female	0.048***	-3.037***	-1.703***	0.697***	0.097***	-0.020**
	[0.007]	[0.369]	[0.071]	[0.171]	[0.018]	[0.008]
Ln (Homicide Rate)	0.011***	0.433**	0.022	-0.063	0.023**	-0.019***
	[0.004]	[0.188]	[0.036]	[0.085]	[0.009]	[0.004]
Fem*Ln (Hom Rate)	0.001	0.009	-0.134***	0.131*	0.031***	0.002
	[0.003]	[0.151]	[0.027]	[0.070]	[0.007]	[0.003]
Mean of Dep Var	0.057	77.55	14.61	27.44	0.306	0.508
R^2	0.03	0.14	0.28	0.15	0.07	0.25
Observations	27,519	25,192	20,463	24,501	27,562	18,446

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: Dependent variables are: (1) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (2) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80. (3) Hemoglobin: Normal levels for adult men is 13.8 to 17.2, and for adult women: 12.1 to 15.1. (4) BMI is the Body Mass Index calculated as the weight in kg divided by the square height in m. (5) Bad Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (6) Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score.

Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 40 describes the effects of violence exposure on preventive health care attitudes, and its possible differential gender effects. These show that an increase in the local homicide rate leads to sleeping less, and smoking more. Interestingly, it is also found that an increase in local homicide rate makes women to have a worse self-reported health when compared to men. Therefore, not only are high violence levels worsening decisions taking part in a preventive health care regime, but women are being more affected by men in some of these health components.

These results can be alarming since, having high levels of violence is affecting the individual's health when measured by classic variables such as blood pressure, hospitalizations, mental health, and body mass index; but it is also affecting the behaviors that could potentially help alleviate health problems, which are having a healthier lifestyle including non-smoking, spending time outdoors, sleeping well, going for wellness checkups, and having a positive mindset about oneself. This can result in self-reinforcing cycles of experiencing bad health outcomes in municipalities with high levels of violence.

Table 40: Differential gender effects of violence in preventive health care attitudes

	Outdoor time	Hours of sleep	Bad health	Smokes
Female	-0.084***	0.138***	0.002	-0.081***
	[0.010]	[0.043]	[0.006]	[0.010]
Ln (Homicide Rate)	-0.007	-0.081***	0.003	0.018***
	[0.005]	[0.021]	[0.003]	[0.005]
Fem*Ln (Hom Rate)	-0.003	0.008	0.006**	-0.019***
	[0.004]	[0.018]	[0.003]	[0.004]
Mean of Dep Var	0.106	7.730	0.047	0.094
R^2	0.10	0.06	0.04	0.07
Observations	27,623	27,590	27,580	27,589

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets.

Notes: Dependent variables are: (1) Outdoor time: Dummy variable for spending time outdoor doing an activity. (2) Hours of sleep. (3) Bad health: Dummy variable for self reporting having a bad health. (4) Smokes is a dummy variable for currently smoking. Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Given the nature of the panel dataset, an individual fixed effects model is also estimated, using a balanced panel from the original sample; the results of this estimation are shown in Table 41. The results found in the fixed effects model are in line with those presented above. Moreover, it can be concerning that given the fact that the variation in violence level is at the municipality level, that there might be some variables that are correlated within-municipality; therefore, I also estimate the model clustering the standard errors at the municipality level. These results are shown in Table 64, and do not significantly differ from those presented in Tables 37 through 40.

Table 41: Individual Fixed Effects model using balanced panel

	Hours of sleep	Mental health ranking	Cognitive score	Hospitalized	Diastolic BP	Hemoglobin Level
Ln (Homicide Rate)	-0.072***	0.036***	-0.019***	0.017***	0.591***	-0.132***
	[0.023]	[0.010]	[0.007]	[0.005]	[0.212]	[0.048]
Mean of Dep Var	7.7	0.31	0.50	0.052	77.9	14.56
R^2	0.02	0.01	0.12	0.02	0.09	0.02
Observations	19,502	19,487	12,174	19,462	18,092	14,483

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in brackets.

Notes: Independent variable is the natural logarithm of the homicide rate in the last 12 months. Dependent variables are: (1) Hours of sleep. (2) Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (3) Cognitive score goes from 0 to 1 according according to the Raven's Progressive Colored Matrices score. (4) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (5) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80. (6) Hemoglobin: Normal levels for adult men is 13.8 to 17.2, and for adult women: 12.1 to 15.1.
Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

The estimations are replicated using a stricter definition of sample in which only those individuals present in both waves are included; the results are in line with the ones presented in this section, and are shown in Tables 65 and 66 in the Appendix. In order to check how sensible my results are in how the dependent variable is defined, Section 4.7 shows a sensitivity analysis using the absolute level of homicide rate in Tables 43 and 44. Moreover, the Appendix shows another sensitivity analysis using the inverse hyperbolic sine transformation of the homicide rate in Tables 67 and 68. These results are in line with the ones presented in Tables 37 through 40.

4.6 Conclusion

The improvement in health and well-being of implementing preventive health care decisions has been widely established. When thinking about fear of crime and violence exposure and their effect on wellness; physical health and mental health can be compromised due to stressful life events. People who are worried about crime change their lifestyle patterns, they may restrict how much they leave home, who they see, and which places they visit;

this can lead to reducing social ties and social activities, which appear to be protective for physical and mental health, and functioning. Moreover, the experience of increased stress may lead to adopt riskier behaviors, such as smoking and drinking. Fear of crime can also impact decisions on spending time outdoors, including decreasing walking and cycling activities, leading to a less physically active lifestyle, which can increase the risk of several diseases, may impact mental health, and cognitive functioning.

The aim of this study is to contribute to the literature of the effects of conflict on health, by including the preventive health care component. Moreover, this study amplifies the need of policies that target a broader definition of the effects of the drug war-related violence on the Mexican population. This study addresses the question of how does the exposure to Drug War-related violence affects decisions on preventive health care, and how does it affect more classic health measurements. This is done through exploiting the fact that the MxFLS allows us to have a before and after analysis of the sharp increase in violence due to the drug war.

The results show that an increase in the local homicide rate leads to spending less time doing outdoor activities, sleeping less, smoking more, and to showing more symptoms of a mental health problem. An increase in the violence level also reduces the individual's cognitive performance, and worsens their self-reported health state. Regarding more classic health measures, it is found that high levels of homicide rate increases blood pressure, as well as the likelihood of having been hospitalized during the last 12 months. Hence, high levels of violence appear to be affecting the individual's health, and they can also affect their behaviors and attitudes towards adopting preventive health care measures that could potentially offset these negative effects of violence on health.

As previously discussed in the literature review, just as gender may structure several aspects of our daily lives, it may also structure how individuals behave after violence exposure. Differential gender effects of violence are found on hemoglobin levels and body mass index; an increase in the local homicide rate decreases hemoglobin levels of women more than when compared to men. Women are also found to have a larger body mass index than men, after an increase in violence. Interestingly, it is also found that an increase in local homicide rate makes women to have a worse self-reported health when compared to men; and that the deterioration in mental health is worse for women than for men. Therefore, not only are high violence levels worsening decisions taking part in a preventive health care regime, but women are being more affected by men in some of these health components.

To conclude, exposure to drug war-related violence has a broader set of negative externalities, and these include preventive health care decisions as well as more classic health measures. The results presented in this study can be alarming since, being exposed to high levels of violence is affecting the individual's health when measured by

classic variables such as blood pressure, hospitalizations, and body mass index; but it is also affecting the behaviors that could potentially help alleviate health problems, which are having a healthier lifestyle including non-smoking, spending time outdoors, sleeping well, having a good mental health, going for wellness checkups, and having a positive mindset about oneself. This can result in self-reinforcing cycles of experiencing bad health outcomes in municipalities with high levels of violence, which strengthens the idea of having long-term and persisting negative effects of the Mexican Drug War.

4.7 Robustness Checks

Table 42: Selective migration analysis

	Moved	
Female	-8.446	-8.319
	[0.548]***	[0.583]***
Change in Homicide Rate	0.021	0.028
	[0.014]	[0.019]
Fem*Change in Homicide Rate		-0.013
		[0.020]
R^2	0.07	0.07
Observations	12,716	12,716

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets.
Notes: Dependent variable is a dummy that equals 100 if the person moved municipalities between Wave 2 and Wave 3. Independent variable is the change in the municipal homicide rate between 2005 and 2009. Controls included for all: age, age^2, years of education, married dummy; time and state fixed effects.

Table 43: Sensitivity analysis with absolute homicide rate

	Outdoor time	Hours of sleep	Bad health	Mental health ranking	Cognitive score	Preventive visit	Smokes	Hospitalized	Systolic BP	Diastolic BP
Female	-8.972***	15.586***	1.494***	16.917***	-1.521***	0.401	-12.364***	5.085***	-7.584***	-3.018***
	[0.383]	[1.578]	[0.223]	[0.672]	[0.308]	[1.197]	[0.374]	[0.271]	[0.206]	[0.139]
Homicide Rate	-0.053***	-0.168*	0.032**	0.060*	-0.071***	0.121**	0.035*	0.044***	-0.022**	0.016**
	[0.018]	[0.086]	[0.013]	[0.035]	[0.016]	[0.060]	[0.019]	[0.016]	[0.011]	[0.007]
Mean of Dep Var	10.6	773	4.7	30.6	50.8	12.9	9.4	5.7	121	77.5
R^2	0.10	0.06	0.04	0.06	0.25	0.06	0.07	0.03	0.26	0.14
Observations	27,623	27,590	27,580	27,562	18,446	3,733	27,589	27,519	25,192	25,192

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets. ***Notes:*** Independent variable is the absolute level of the homicide rate in the last 12 months. All dependent variables that are dummy variables take values of 0 or 100. Dependent variables are: (1) Outdoor time: Dummy variable for spending time outdoor doing an activity. (2) Hours of sleep multiplied by 100. (3) Bad health: Dummy variable for self reporting having a bad health. (4) Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking takes values of 0, 100, 200, 300, and 400 where 0 is absence of mental health problems, and 400 is severe mental health problems. (5) Cognitive score goes from 0 to 100 according to the Raven's Progressive Colored Matrices score. (6) Preventive visit is a dummy variable for going to the doctor for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. (7) Smokes is a dummy variable for currently smoking. (8) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (9) Systolic BP: Systolic Blood Pressure, which a normal reading is ≤ 130. (10) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80.
Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 44: Sensitivity analysis with absolute homicide rate including gender interaction term

	Outdoor time	Hours of sleep	Bad health	Mental health ranking	Cognitive score	Preventive visit	Smokes	Hospitalized	Systolic BP	Diastolic BP
Female	-8.986***	15.833***	0.989***	14.952***	-1.694***	0.133	-10.993***	5.024***	-6.869***	-2.961***
	[0.493]	[2.058]	[0.295]	[0.867]	[0.408]	[1.519]	[0.488]	[0.354]	[0.274]	[0.183]
Homicide Rate	-0.053**	-0.158	0.013	-0.014	-0.078***	0.110	0.086***	0.042**	0.005	0.018**
	[0.023]	[0.099]	[0.014]	[0.036]	[0.019]	[0.070]	[0.026]	[0.017]	[0.013]	[0.009]
Fem*Hom Rate	0.001	-0.016	0.032**	0.125***	0.011	0.016	-0.087***	0.004	-0.046***	-0.004
	[0.019]	[0.092]	[0.014]	[0.035]	[0.017]	[0.057]	[0.021]	[0.015]	[0.012]	[0.008]
Mean of Dep Var	10.6	773	4.7	30.6	50.8	12.9	9.4	5.7	121	77.5
R^2	0.10	0.06	0.04	0.06	0.25	0.06	0.07	0.03	0.26	0.14
Observations	27,623	27,590	27,580	27,562	18,446	3,733	27,589	27,519	25,192	25,192

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets. ***Notes:*** Independent variable is the absolute level of the homicide rate in the last 12 months. All dependent variables that are dummy variables take values of 0 or 100. Dependent variables are: (1) Outdoor time: Dummy variable for spending time outdoor doing an activity. (2) Hours of sleep multiplied by 100. (3) Bad health: Dummy variable for self reporting having a bad health. (4) Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking takes values of 0, 100, 200, 300, and 400 where 0 is absence of mental health problems, and 400 is severe mental health problems. (5) Cognitive score goes from 0 to 100 according to the Raven's Progressive Colored Matrices score. (6) Preventive visit is a dummy variable for going to the doctor for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. (7) Smokes is a dummy variable for currently smoking. (8) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (9) Systolic BP: Systolic Blood Pressure, which a normal reading is ≤ 130. (10) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80.
Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

5 Concluding Remarks

The current dissertation is a collection of three essays that study different scenarios in which women may fare worse than men. In Chapter 2 the under-representation of women in Mexican academia is analyzed through the gender composition of the decision making committee. The empirical analysis examines the probability of promotion for each researcher enrolled in the SNI, and how this is affected by the committee's gender composition, exploiting the random assignment of evaluators. The results presented show that women in decision-making committees do not significantly favor the probability of promotion for women; however, having a gender mixed committee does favor the probability of promotion for all researchers. Another result found that might be alarming is that women facing a male-only committee have a lower probability of promotion than men. In particular, having an all-male committee reduces the probability of promotion for women by 0.065, or a 32% decrease in the probability of promotion as compared to the average.

In Chapter 3 violence is considered a threat to social outcomes in the context of the Mexican Drug War. This chapter addresses the question of how does the exposure to Drug War-related violence affects social attitudes. This is done through an experimental approach with undergraduate students. The results from this chapter show that women with Drug War-related violence experience have two different behaviors: It is found that a parochial attitude can be build up in women after growing up in a violent environment; since women show less spite than men who grew up in a very violent state. This more pro-social choice represents 63% of the sample mean. On the other hand, this study also finds that anti-social behaviors from women can emerge after actually being victims of violence experiences, or after family or close friends were victims. For instance, it is found that women who were victims of a Drug War-related violence experience trust less than men with direct violence experiences; this decrease in trust represents 39% of the sample mean. Moreover, women with family or close friends who suffered a Drug War-related violence experience, show less altruism, less egalitarian intrinsic social norms, and more spite. These choices represent 30%, 31%, and 35% of the average, respectively.

In Chapter 4 violence is considered a threat to health and preventive health care outcomes in the context of the Mexican Drug War. This chapter addresses the question of how does the exposure to Drug War-related violence affects decisions on preventive health care, and how does it affect more classic health measurements. This is done through exploiting data that allows us to have a before and after analysis of the sharp increase in violence in Mexico. The results from this chapter show that having high levels of violence can negatively affect the individual's health when measured by classic variables such as blood pressure, hospitalizations, and body mass index; but it

can also negatively affect the behaviors that could potentially help alleviate health problems, which are having a healthier lifestyle including non-smoking, spending time outdoors, sleeping well, having a good mental health, going for wellness checkups, and having a positive mindset about oneself.

The findings of this dissertation draw a more complete and complex picture of the effects that the Drug War has had on people living in Mexico. Many of these effects are not usually considered under the regular economic distortions of violence. However, as shown here, they play an important role in the individual's life and wellbeing; and should be taken into consideration when designing public policies aiming at improving lives after the Drug War in order to avoid negative self-reinforcing cycles. The next steps for my research stem from the same common denominator which is fear of crime, and with the same goal of having a more complete picture of the long-term effects of the exposure to violence due to the Drug War in Mexico. One could examine other channels in which violence affects daily lives such as family structure, social networks, repercussions for long term, and for next generations. Overall, further work should be conducted on studying more deeply the individual's responses to violence exposure for them and their children, which can vary according to different violence experiences, and different contexts. The results from Chapters 3 and 4 of this dissertation can be considered part of such a comprehensive evaluation.

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Appendices

Appendix A: Supplemental material for Chapter 2

Table 45: Analysis of committee's gender composition effect on promotion decisions

Linear Probability Model

	(A)	(B)	(C)
Female	-0.046	-0.047	-0.054
	[0.019]**	[0.019]**	[0.026]**
Percentage		0.393	0.386
		[0.047]***	[0.051]***
Female * Percentage			0.028
			[0.072]
R^2	0.06	0.06	0.06
Observations	19,737	19,737	19,737

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Robust standard errors in brackets. Area Fixed Effects included in (A). Variable percentage refers to the mean of the percentage of women in the evaluation committee for the individual's area for 2007-2013. Controls included for all specifications: age, age^2, log transformation of academic publications, its interaction with female dummy, average percentage of women in individual's area for 2007-2013.

Table 46: Baseline estimation including location Fixed Effects

	(A)	(B)	(C)
Female	-0.196**	-0.195**	-0.218**
	[0.084]	[0.084]	[0.111]
Percentage		1.355***	1.334***
		[0.164]	[0.177]
Female * Percentage			0.081
			[0.267]
R^2	0.07	0.07	0.07
Observations	19,087	19,087	19,087

*** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in brackets. Area Fixed Effects included in (A). Variable percentage refers to the mean of the percentage of women in the evaluation committee for the individual's area for 2007-2013. Controls included for all specifications: age, age^2, log transformation of academic publications, its interaction with female dummy, average percentage of women in individual's area for 2007-2013.

Table 47: Analysis of committee's gender composition effect on promotion decisions by gender

Probability of promotion during the study period

	Men	**Women**
All-male committee	-1.889***	-1.348***
	[0.328]	[0.513]
Percentage of women in committee	-0.324	0.314
	[0.204]	[0.342]
Pseudo-R^2	0.23	0.26
Observations	12,960	6,777

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets.
Notes: One estimation for women and one for men. Variable percentage refers to the mean of the percentage of women in the evaluation committee for the individual's area for 2007-2013. Controls included for all specifications: age, age^2, log transformation of academic publications, average percentage of women in individual's area for 2007-2013, and SNI level in 2013.

Table 48: Analysis of non-linear effects of women in committees for 2008

	(1)	(2)	(3)	(4)	(5)	(6)	(All)
Female	0.033	0.042	-0.004	0.057	0.051	0.012	-0.033
	[0.157]	[0.157]	[0.159]	[0.159]	[0.157]	[0.160]	[0.209]
One woman in committee	-0.096						
	[0.062]						
Fem*One woman	-0.011						
	[0.145]						
Two women in committee		0.046					0.122
		[0.068]					[0.085]
Fem*Two women		-0.011					0.012
		[0.129]					[0.184]
Three women in committee			0.109**				0.151**
			[0.047]				[0.068]
Fem*Three women			0.129				0.128
			[0.086]				[0.156]
Four women in committee				-0.066			0.032
				[0.078]			[0.094]
Fem*Four women				-0.067			-0.026
				[0.114]			[0.174]
Five women in committee					-0.080		0.007
					[0.086]		[0.100]
Fem*Five women					-0.265*		-0.209
					[0.139]		[0.192]
Six women in committee						-0.046	0.043
						[0.063]	[0.081]
Fem*Six women						0.124	0.122
						[0.100]	[0.166]
Pseudo-R^2	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Observations	11,515	11,515	11,515	11,515	11,515	11,515	11,515

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in brackets.

Notes: One estimation for each number of women in decision-making committees. Variable only one woman is a dummy variable taking the value of one if there was only one female member, Two women is having only 2 women in the individual's committee, and so on. For 2008, every area's committee had at least one woman, and a maximum of 6. The omitted group in column (All) is having only one woman in the committee. Controls included for all specifications: age, age^2, log transformation of academic publications.

Table 49: Analysis of non-linear effects of women in committees for 2009

	(1)	(2)	(3)	(4)	(5)	(All)
Female	-0.370**	-0.381**	-0.362**	-0.233	-0.380**	-0.605**
	[0.161]	[0.161]	[0.161]	[0.171]	[0.161]	[0.236]
One woman in committee	-0.113*					
	[0.059]					
Fem*One woman	-0.284*					
	[0.164]					
Two women in committee		-0.113*				-0.005
		[0.068]				[0.085]
Fem*Two women		0.284**				0.528***
		[0.122]				[0.196]
Three women in committee			-0.091			0.008
			[0.081]			[0.094]
Fem*Three women			0.149			0.410**
			[0.120]			[0.194]
Four women in committee				0.133***		0.158**
				[0.043]		[0.062]
Fem*Four women				-0.186**		0.186
				[0.079]		[0.169]
Five women in committee					-0.001	0.101
					[0.070]	[0.087]
Fem*Five women					0.067	0.326*
					[0.104]	[0.185]
Pseudo-R^2	0.02	0.02	0.02	0.02	0.02	0.02
Observations	12,493	12,493	12,493	12,493	12,493	12,493

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: One estimation for each number of women in decision-making committees. Variable only one woman is a dummy variable taking the value of one if there was only one female member, Two women is having only 2 women in the individual's committee, and so on. For 2009, every area's committee had at least one woman, but no area had more than 5. The omitted group in column (All) is having only one woman in the committee. Controls included for all specifications: age, age^2, log transformation of academic publications.

Table 50: Analysis of non-linear effects of women in committees for 2010

	(1)	(4)	(5)	(All)
Female	-0.206	-0.142	-0.305**	-0.347**
	[0.152]	[0.158]	[0.153]	[0.176]
One woman in committee	-0.148***			
	[0.048]			
Fem*One woman	-0.104			
	[0.099]			
Four women in committee		0.120***		0.183***
		[0.043]		[0.053]
Fem*Four women		-0.162**		0.013
		[0.074]		[0.104]
Five women in committee			0.003	0.111**
			[0.043]	[0.054]
Fem*Five women			0.212***	0.261**
			[0.079]	[0.112]
Pseudo-R^2	0.02	0.02	0.02	0.02
Observations	13,649	13,649	13,649	13,649

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: One estimation for each number of women in decision-making committees. Variable only one woman is a dummy variable taking the value of one if there was only one female member, Four women is having 4 women in the individual's committee, and so on. For 2010, committees included either 1, 4, or 5 women. The omitted group in column (All) is having only one woman in the committee. Controls included for all specifications: age, age^2, log transformation of academic publications.

Table 51: Analysis of non-linear effects of women in committees for 2011

	(1)	(2)	(3)	(4)	(All)
Female	0.127	0.145	0.110	0.231	0.308
	[0.149]	[0.149]	[0.151]	[0.155]	[0.189]
One woman in committee	-0.146**				
	[0.063]				
Fem*One woman	0.181				
	[0.123]				
Two women in committee		-0.010			0.111
		[0.082]			[0.097]
Fem*Two women		-0.071			-0.211
		[0.123]			[0.164]
Three women in committee			-0.038		0.095
			[0.051]		[0.072]
Fem*Three women			0.091		-0.090
			[0.083]		[0.135]
Four women in committee				0.120***	0.187***
				[0.046]	[0.067]
Fem*Four women				-0.138*	-0.226*
				[0.078]	[0.130]
Pseudo-R^2	0.02	0.02	0.02	0.02	0.02
Observations	15,471	15,471	15,471	15,471	15,471

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in brackets.

Notes: One estimation for each number of women in decision-making committees. Variable only one woman is a dummy variable taking the value of one if there was only one female member, Two women is having only 2 women in the individual's committee, and so on. For 2011, every area's committee had at least one woman, but no more than 4. The omitted group in column (All) is having only one woman in the committee. Controls included for all specifications: age, age^2, log transformation of academic publications.

Table 52: Analysis of non-linear effects of women in committees for 2012

	(0)	(3)	(4)	(6)	(All)
Female	-0.092	-0.078	-0.061	-0.084	0.005
	[0.135]	[0.136]	[0.139]	[0.136]	[0.170]
Zero women in committee	-0.080				
	[0.056]				
Fem*Zero women	0.094				
	[0.113]				
Three women in committee		-0.037			0.044
		[0.044]			[0.060]
Fem*Three women		-0.023			-0.095
		[0.076]			[0.122]
Four women in committee			0.104**		0.138**
			[0.046]		[0.063]
Fem*Four women			-0.053		-0.117
			[0.076]		[0.122]
Six women in committee				-0.010	0.061
				[0.074]	[0.088]
Fem*Six women				0.013	-0.068
				[0.107]	[0.145]
Pseudo-R^2	0.04	0.04	0.04	0.04	0.04
Observations	17,313	17,313	17,313	17,313	17,313

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: One estimation for each number of women in decision-making committees. Variable zero women is a dummy variable taking the value of one if there were no women in the committee, Three women is having only 3 women in the individual's committee, and so on. For 2012, committees included either zero, 3, 4, or 6 women; only one area had no women in their committee. The omitted group in column (All) is having zero women in the committee. Controls included for all specifications: age, age^2, log transformation of academic publications.

Appendix B: Supplemental material for Chapter 3

Table 53: Sample comparison to National Census per state

Table 53a: Guerrero

	Study	Wider population		
	Sample	Univ students	Young people	Guerrero
	(1)	(2)	(3)	(4)
Age	19.5	20.6	21.6	26.2
	(1.75)	(1.95)	(2.59)	(21.14)
% Women	0.53	0.55	0.53	0.53
	(0.50)	(0.50)	(0.50)	(0.50)
Years of education	13.5	13.5	8.3	4.9
	(0.96)	(1.44)	(3.99)	(4.55)
Income range	5.4	2.5	1.7	1.8
	(2.99)	(2.01)	(1.39)	(1.50)
Total Subjects	**240**	**5,199**	**73,694**	**481,408**

Table 53b: Mexico City

	Study	Wider population		
	Sample	Univ students	Young people	Mexico City
	(1)	(2)	(3)	(4)
Age	20.1	21.2	22.0	32.7
	(1.99)	(2.21)	(2.58)	(20.76)
% Women	0.37	0.52	0.51	0.52
	(0.48)	(0.50)	(0.50)	(0.50)
Years of education	13.8	13.7	11.4	9.1
	(0.89)	(1.59)	(3.17)	(5.17)
Income range	9.0	3.9	2.7	3.1
	(1.38)	(2.86)	(2.34)	(2.62)
Total Subjects	**194**	**12,794**	**54,962**	**353,030**

Table 53c: Puebla

	Study	Wider population		
	Sample	Univ students	Young people	Puebla
	(1)	(2)	(3)	(4)
Age	20.9	20.6	21.7	28.0
	(3.64)	(1.96)	(2.60)	(21.25)
% Women	0.53	0.54	0.53	0.52
	(0.50)	(0.50)	(0.50)	(0.50)
Years of education	14.6	13.7	8.9	5.3
	(1.40)	(1.49)	(3.67)	(4.37)
Income range	7.0	2.4	1.5	1.6
	(3.13)	(2.13)	(1.29)	(1.42)
Total Subjects	**150**	**13,595**	**147,815**	**962,593**

Table 53d: Yucatan

	Study	Wider population		
	Sample	Univ students	Young people	Yucatan
	(1)	(2)	(3)	(4)
Age	21.3	20.8	21.8	29.3
	(1.71)	(1.97)	(2.58)	(20.96)
% Women	0.21	0.49	0.50	0.50
	(0.41)	(0.50)	(0.50)	(0.50)
Years of education	15.5	13.6	9.2	5.6
	(1.09)	(1.42)	(3.36)	(4.35)
Income range	5.8	2.2	1.5	1.5
	(2.86)	(2.01)	(1.17)	(1.34)
Total Subjects	**58**	**5,448**	**65,375**	**398,578**

Notes: The age range of the study population and for columns 2 and 3 is 18 to 26. University students are those surveyed people who declared being a student when asked about their occupation and having 12 or more years of completed education. Standard errors shown in parenthesis. Income ranges correspond with official income deciles; these are (in USD):
1. $0–$280; **2.** $280–$370; **3.** $370–$455; **4.** $455–$560; **5.** $560–$678; **6.** $678–$832; **7.** $832–$1,050; **8.** $1,050–$1,427.

Table 54: Correlations between variables

(a) **Having a violence experience**

	Violence experience	Grew up	Hh income	Age
Grew up in a very violent state	0.3238*	1		
Household income	0.0705	-0.3003*	1	
Age	-0.0686	-0.1513*	0.0671	1
Female	-0.0091	0.0923	-0.1682*	-0.0732

* Correlation coefficient significant at the 1% level.

(b) **Types of violence experiences**

	Had Witness experience	Had Indirect	Had Direct
Had an Indirect experience	0.1719*	1	
Had a Direct experience	0.2659*	0.2144*	1
Grew up in a very violent state	0.3215*	0.1778*	0.1459*
Household income	0.0227	0.0864	0.1519*
Age	-0.0788	-0.1036*	0.0852
Female	-0.0323	0.0240	-0.0987

* Correlation coefficient significant at the 1% level.

Notes: Very violent state defined as those states with a homicide rate larger than 15. Income ranges correspond with official income deciles; these are (USD): **1.** $0–$280; **2.** $280–$370; **3.** $370–$455; **4.** $455–$560; **5.** $560–$678; **6.** $678–$832; **7.** $832–$1,050; **8.** $1,050–$1,427; **9.** $1,427–$3,112; **10.** >$3,112.

Table 55: Games choices by individual characteristics (as percentage of their endowments) in Acapulco

Table 55a: By Gender

	Dictator			Trust			TPPunishment			Destruction		
	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff
Money sent/destroyed	36.4	37.1	0.7	43.2	40.7	-2.5	45.2	43.9	-1.3	33.3	27.3	-6*
Money sent back				33.6	33.2	-0.4						
Decision punish							18.6	10.8	-7.8**			
Observations	92	103		108	114		112	128		112	128	

Table 55b: By growing up in a very violent state

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	40	36.7	-3.3	46.7	41.7	-5.0	57.5	44.2	-13.3	46.3	29.5	-16.8*
Money sent back				25	33.6	5.6						
Decision punish							10	14.9	4.9			
Observations	5	190		8	214		8	232		8	232	

Table 55c: By having a violence experience(s)

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	34.9	37.9	3	39.6	43.1	3.5	45.2	44	-1.2	28.8	30.9	2.1
Money sent back				33	33.7	0.7						
Decision punish							15.5	14.2	-1.3			
Observations	76	119		79	143		89	151		89	151	

**** p<0.01, ** p<0.05, * p<0.1*

Notes: This table shows the decisions made by the experimental subjects in each game played for the City of Acapulco. Each number represents the decision made as a percentage of the available money for such decision. Table 55a shows choices separately for men and women. Table 55b shows choices separately for those who grew up in a very violent state (homicide rate>15), versus those who did not. Table 55c shows choices separately for those who have had a drug war-related violence experience, versus those who have not.

Table 56: Games choices by individual characteristics (as percentage of their endowments) in Mexico City

Table 56a: By Gender

	Dictator			Trust			TPPunishment			Destruction		
	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff
Money sent/destroyed	43.4	38.5	-4.9	55.2	46.6	-8.6	47.4	42.1	-5.3	17.4	16.9	-0.5
Money sent back				35.1	35.1	0						
Decision punish							17.7	16.7	-1			
Observations	60	37		84	57		92	56		122	72	

Table 56b: By growing up in a very violent state

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	41.6	41.1	-0.5	52.8	40.8	-12	44.1	54.4	10.3	17.7	12.9	-4.8
Money sent back				35.2	33.4	-1.8						
Decision punish							16.9	21.7	4.8			
Observations	88	9		130	11		133	15		173	21	

Table 56c: By having a violence experience(s)

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	41.6	41.4	-0.2	49.3	54.7	5.4	40.9	51.1	10.2**	21.9	11.9	-10***
Money sent back				37.4	30.6	-6.8						
Decision punish							18.1	16.3	-1.8			
Observations	58	39		85	56		84	64		103	91	

**** p<0.01, ** p<0.05, * p<0.1*

Notes: This table shows the decisions made by the experimental subjects in each game played for Mexico City. Each number represents the decision made as a percentage of the available money for such decision. Table 56a shows choices separately for men and women. Table 56b shows choices separately for those who grew up in a very violent state (homicide rate>15), versus those who did not. Table 56c shows choices separately for those who have had a drug war-related violence experience, versus those who have not.

Table 57: Games choices by individual characteristics (as percentage of their endowments) in Merida

Table 57a: By Gender

	Dictator			Trust			TPPunishment			Destruction		
	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff
Money sent/destroyed	31	45	14	53.8	53.8	0	51.2	63.8	12.6	31.1	33.8	2.7
Money sent back				39.6	23.6	-16						
Decision punish							29.1	16.3	-12.8			
Observations	24	5		46	12		46	12		46	12	

Table 57b: By growing up in a very violent state

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	32.7	45	12.3	52.4	72.5	20.1	50.8	78.3	27.5*	32.6	1.7	-30.9
Money sent back				36.4	0	-36.4						
Decision punish							25.5	-	-			
Observations	26	2		54	3		54	3		54	3	

Table 57c: By having a violence experience(s)

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	33.5	33.3	-0.2	52.6	60	7.4	47.9	77	29.1***	34.39	17.2	-17.1
Money sent back				38.2	16.6	-21.6						
Decision punish							27.6	12.5	-15.1			
Observations	23	6		49	9		49	9		49	9	

**** p<0.01, ** p<0.05, * p<0.1*

Notes: This table shows the decisions made by the experimental subjects in each game played for the City of Merida. Each number represents the decision made as a percentage of the available money for such decision. Table 57a shows choices separately for men and women. Table 57b shows choices separately for those who grew up in a very violent state (homicide rate>15), versus those who did not. Table 57c shows choices separately for those who have had a drug war-related violence experience, versus those who have not.

Table 58: Games choices by individual characteristics (as percentage of their endowments) in Puebla

Table 58a: By Gender

	Dictator			Trust			TPPunishment			Destruction		
	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff	Male	Fem	Diff
Money sent/destroyed	40.2	39.2	-1	50.5	37.7	-12.8*	49.4	35.9	-13.5**	24.3	26.8	2.5
Money sent back				42.8	36.1	-6.7						
Decision punish							23.9	16.2	-7.7			
Observations	70	80		56	72		70	80		70	80	

Table 58b: By growing up in a very violent state

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	39.7	39.7	0	45.7	26.4	-19.3*	41.9	39.3	-2.6	25.7	25	-0.7
Money sent back				39.4	32.7	-6.7						
Decision punish							19.7	23.8	4.1			
Observations	135	15		116	13		135	15		135	15	

Table 58c: By having a violence experience(s)

	Dictator			Trust			TPPunishment			Destruction		
	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
Money sent/destroyed	39.6	39.8	0.2	49.2	33.5	-15.7**	43.3	38.1	-5.2	23.4	30.1	6.7
Money sent back				38.3	39.8	1.5						
Decision punish							20.2	20	-0.2			
Observations	101	49		86	43		101	49		101	49	

**** p<0.01, ** p<0.05, * p<0.1*

Notes: This table shows the decisions made by the experimental subjects in each game played for the City of Puebla. Each number represents the decision made as a percentage of the available money for such decision. Table 58a shows choices separately for men and women. Table 58b shows choices separately for those who grew up in a very violent state (homicide rate>15), versus those who did not. Table 58c shows choices separately for those who have had a drug war-related violence experience, versus those who have not.

Table 59: Estimation results using University fixed effects

	Altruism	**Trust**	**Trustworthiness**	**Social norms**	**Altruistic punish**	**Spite**
Female	-0.841	-9.568	-5.527	-2.645	-2.803	2.048
	[3.500]	[5.327]*	[6.571]	[4.669]	[2.273]	[3.660]
Had a Witness experience	-3.373	-11.105	-5.961	-0.607	0.597	-3.746
	[4.046]	[5.998]*	[8.473]	[6.345]	[3.093]	[4.342]
Had an Indirect experience	6.781	0.907	-10.189	10.830	1.315	-4.623
	[3.015]**	[5.774]	[6.230]	[5.317]**	[2.622]	[3.528]
Had a Direct experience	-8.477	0.211	8.523	-6.475	-2.442	4.954
	[4.963]*	[8.156]	[9.336]	[7.657]	[2.562]	[5.429]
Grew up in a very violent state	3.372	-9.032	4.150	4.751	4.186	2.931
	[4.827]	[7.164]	[12.073]	[7.335]	[3.432]	[5.470]
Female * Had Witness	5.231	23.259	2.235	-6.617	0.176	3.119
	[5.334]	[8.631]***	[10.477]	[7.783]	[3.524]	[6.099]
Female * Had Indirect	-11.376	-1.617	1.649	-14.131	-0.577	7.200
	[4.309]***	[7.695]	[8.290]	[6.532]**	[3.192]	[5.080]
Female * Had Direct	18.212	-24.157	-7.031	1.770	0.508	-1.577
	[6.629]***	[10.584]**	[13.087]	[10.013]	[3.861]	[9.564]
Female * Grew up	0.523	4.221	0.718	8.950	-4.293	-13.310
	[4.816]	[7.326]	[8.886]	[6.941]	[2.957]	[5.274]**
R^2	0.10	0.18	0.11	0.14	0.15	0.09
Observations	426	254	251	271	274	591

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets.

Notes: Each column in this table refers to the outcome of a different game played during each experimental session. Included in all specifications: University and Income level fixed effects; as well as individual's age, and affected index.

Table 60: Estimation results using City and growing up state fixed effects

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	0.297	-12.092	-6.771	-3.376	-3.297	0.464
	[3.771]	[6.164]*	[7.384]	[5.142]	[2.514]	[3.883]
Had a Witness experience	-4.852	-8.728	-3.558	-0.586	-0.264	-6.417
	[4.325]	[6.713]	[8.325]	[6.565]	[3.022]	[4.568]
Had an Indirect experience	6.237	0.835	-8.789	12.305	-0.434	-4.531
	[3.400]*	[6.451]	[6.768]	[5.703]**	[2.737]	[3.735]
Had a Direct experience	-10.469	2.990	7.026	-10.543	-2.516	4.361
	[5.258]**	[8.772]	[9.883]	[9.006]	[2.831]	[5.700]
Female * Had Witness	-11.434	-0.781	9.327	20.227	0.824	4.200
	[8.881]	[17.290]	[21.414]	[15.304]	[8.118]	[12.230]
Female * Had Indirect	4.186	22.352	1.415	-7.335	1.459	1.878
	[5.699]	[9.674]**	[10.598]	[8.559]	[3.563]	[6.315]
Female * Had Direct	-11.260	-4.767	0.885	-16.643	0.606	8.975
	[4.648]**	[8.346]	[8.553]	[7.089]**	[3.193]	[5.364]*
Grew up in a very violent state	19.394	-10.834	-8.144	6.424	1.415	-3.100
	[6.849]***	[9.777]	[13.733]	[11.329]	[3.545]	[10.197]
Female * Grew up	-1.045	6.842	2.309	10.533	-2.521	-14.117
	[4.869]	[8.199]	[9.395]	[7.253]	[3.320]	[5.629]**
R^2	0.11	0.23	0.14	0.17	0.20	0.12
Observations	426	254	251	271	274	591

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets.

Notes: Each column in this table refers to the outcome of a different game played during each experimental session. Included in all specifications: City, Growing up State, and Income level fixed effects; as well as individual's age, and affected index.

Table 61: Estimation results using University and growing up state fixed effects

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-0.550	-11.983	-5.618	-2.695	-3.836	-0.039
	[3.762]	[5.715]**	[7.375]	[5.060]	[2.450]	[3.887]
Had a Witness experience	-3.586	-9.171	-5.549	-0.996	-1.021	-5.360
	[4.364]	[6.676]	[8.572]	[6.919]	[2.876]	[4.530]
Had an Indirect experience	6.308	-0.097	-9.376	12.506	-0.049	-3.395
	[3.365]*	[6.343]	[6.958]	[5.898]**	[2.618]	[3.723]
Had a Direct experience	-10.428	-1.108	8.137	-9.700	-1.773	4.840
	[5.286]**	[8.847]	[10.123]	[8.891]	[2.840]	[5.522]
Female*Had Witness	-9.660	8.839	2.609	21.417	0.369	3.078
	[9.162]	[15.691]	[23.208]	[15.247]	[6.987]	[11.542]
Female*Had Indirect	3.784	23.663	2.420	-7.013	1.018	2.393
	[5.655]	[9.839]**	[10.712]	[8.765]	[3.456]	[6.262]
Female*Had Direct	-11.184	-5.909	2.310	-16.644	0.656	7.986
	[4.627]**	[8.255]	[8.712]	[7.202]**	[3.158]	[5.382]
Grew up in a very violent state	20.223	-18.177	-10.194	5.523	0.654	-2.365
	[6.949]***	[10.518]*	[14.069]	[11.788]	[4.019]	[10.052]
Female*Grew up	0.313	9.446	1.279	9.876	-4.095	-11.306
	[5.107]	[7.972]	[9.967]	[7.588]	[3.140]	[5.639]**
R^2	0.14	0.30	0.16	0.19	0.25	0.14
Observations	426	254	251	271	274	591

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets.

Notes: Each column in this table refers to the outcome of a different game played during each experimental session. Included in all specifications: University, Growing up state, and Income level fixed effects; as well as individual's age, and affected index.

Table 62: Estimation results using clustered standard errors at the experimental session level

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-0.527	-9.669**	-7.294	-3.311	-2.690	1.746
	[3.387]	[4.327]	[5.477]	[4.700]	[1.983]	[4.212]
Had a Witness experience	-4.871	-11.241*	-3.706	-0.397	1.118	-5.225
	[3.643]	[5.727]	[5.898]	[8.036]	[3.227]	[4.010]
Had an Indirect experience	6.667**	2.331	-8.490	10.194**	0.460	-6.028
	[2.557]	[6.142]	[5.914]	[4.417]	[2.667]	[4.234]
Had a Direct experience	-8.823	4.343	7.400	-7.208	-2.771	4.884
	[5.697]	[8.307]	[9.608]	[9.801]	[2.449]	[4.982]
Grew up in a very violent state	2.717	-9.567	9.368	2.946	3.478	3.665
	[4.209]	[7.615]	[13.790]	[7.537]	[2.069]	[6.454]
Female * Had Witness	6.037	22.183**	2.097	-7.687	0.841	3.625
	[5.658]	[9.544]	[8.132]	[8.328]	[3.930]	[5.163]
Female * Had Indirect	-11.627***	-1.809	-0.367	-14.086**	-0.058	8.860*
	[3.523]	[7.056]	[8.021]	[6.681]	[3.013]	[5.003]
Female * Had Direct	17.172**	-17.948	-7.256	5.518	0.257	-4.424
	[8.212]	[10.953]	[15.588]	[9.292]	[2.837]	[8.298]
Female * Grew up	-0.650	2.618	1.487	9.524	-2.773	-16.046***
	[5.101]	[6.189]	[8.986]	[7.656]	[2.848]	[4.767]
R^2	0.07	0.12	0.08	0.14	0.10	0.08
Observations	426	254	251	271	274	591

**** p<0.01, ** p<0.05, * p<0.1* Standard errors clustered at the experimental session level.

Notes: Each column in this table refers to the outcome of a different game played during each experimental session. Included in all specifications: City and Income level fixed effects; as well as individual's age, and affected index.

Table 63: Estimation results using clustered standard errors at the university level

	Altruism	Trust	Trustworthiness	Social norms	Altruistic punish	Spite
Female	-0.527	-9.669*	-7.294	-3.311	-2.690	1.746
	[2.692]	[4.787]	[4.284]	[4.216]	[2.346]	[5.082]
Had a Witness experience	-4.871*	-11.241*	-3.706	-0.397	1.118	-5.225
	[2.489]	[5.389]	[8.041]	[8.198]	[4.281]	[3.246]
Had an Indirect experience	6.667**	2.331	-8.490	10.194	0.460	-6.028
	[2.688]	[3.766]	[9.325]	[6.114]	[2.501]	[4.013]
Had a Direct experience	-8.823*	4.343	7.400	-7.208	-2.771	4.884*
	[4.194]	[5.596]	[5.073]	[9.790]	[1.676]	[2.249]
Grew up in a very violent state	2.717	-9.567	9.368	2.946	3.478	3.665
	[3.995]	[6.445]	[7.301]	[7.957]	[2.318]	[6.373]
Female * Had Witness	6.037*	22.183**	2.097	-7.687	0.841	3.625
	[3.135]	[8.190]	[7.668]	[9.571]	[5.494]	[5.542]
Female * Had Indirect	-11.627*	-1.809	-0.367	-14.086	-0.058	8.860
	[5.119]	[5.039]	[5.958]	[8.341]	[3.298]	[5.299]
Female * Had Direct	17.172*	-17.948**	-7.256	5.518	0.257	-4.424
	[7.937]	[5.863]	[9.165]	[13.102]	[1.645]	[3.664]
Female * Grew up	-0.650	2.618	1.487	9.524	-2.773	-16.046**
	[3.138]	[6.515]	[7.403]	[6.545]	[3.025]	[5.405]
R^2	0.07	0.12	0.08	0.14	0.10	0.08
Observations	426	254	251	271	274	591

**** p<0.01, ** p<0.05, * p<0.1* Standard errors clustered at the university level.

Notes: Each column in this table refers to the outcome of a different game played during each experimental session. Included in all specifications: City and Income level fixed effects; as well as individual's age, and affected index.

Appendix C: Supplemental material for Chapter 4

Table 64: Analysis clustering standard errors at the municipality level

	Hospitalized	Hemoglobin	Mental health ranking	Cognitive score	Outdoor time	Hours of sleep	Bad health	Smokes
Female	0.051***	-2.017***	0.169***	-0.015***	-0.090***	0.156***	0.015***	-0.124***
	[0.003]	[0.038]	[0.009]	[0.003]	[0.006]	[0.021]	[0.002]	[0.006]
Ln (Hom Rate)	0.012**	-0.057	0.040***	-0.018*	-0.008	-0.077***	0.006	0.008*
	[0.005]	[0.051]	[0.012]	[0.010]	[0.009]	[0.029]	[0.004]	[0.004]
R^2	0.03	0.28	0.06	0.25	0.10	0.06	0.04	0.07
Observations	27,519	20,463	27,562	18,446	27,623	27,590	27,580	27,589

Including gender interaction terms

	Hospitalized	Hemoglobin	Mental health ranking	Cognitive score	Outdoor time	Hours of sleep	Bad health	Smokes
Female	0.048***	-1.703***	0.097***	-0.020***	-0.084***	0.138**	0.002	-0.081***
	[0.007]	[0.102]	[0.020]	[0.008]	[0.013]	[0.065]	[0.006]	[0.013]
Ln (Hom Rate)	0.011**	0.022	0.023*	-0.019*	-0.007	-0.081**	0.003	0.018***
	[0.005]	[0.057]	[0.012]*	[0.010]	[0.010]	[0.032]	[0.004]	[0.006]
Fem*Ln(Hom Rate)	0.001	-0.134***	0.031***	0.002	-0.003	0.008	0.006**	-0.019***
	[0.003]	[0.038]	[0.007]	[0.003]	[0.005]	[0.028]	[0.003]	[0.005]
R^2	0.03	0.28	0.06	0.25	0.10	0.06	0.04	0.07
Observations	27,519	20,463	27,562	18,446	27,623	27,590	27,580	27,589
Mean of Dep Var	0.057	14.61	0.306	0.508	0.106	7.73	0.047	0.094

*** p<0.01, ** p<0.05, * p<0.1 Clustered standard errors at the municipality level in brackets. ***Notes:*** Dependent variables are: (1) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (2) Hemoglobin: Normal levels for adult men is 13.8 to 17.2, and for adult women: 12.1 to 15.1. (3) Bad Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (4) Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score. (5) Outdoor time: Dummy variable for spending time outdoor doing an activity. (6) Hours of sleep. (7) Bad health: Dummy variable for self reporting having a bad health. (8) Smokes is a dummy variable for currently smoking. Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 65: Analysis with restricted sample

	Hours of sleep	Bad health	Mental health ranking	Cognitive score	Preventive visit	Smokes	Hospitalized	Systolic BP	Diastolic BP	Hemoglobin level	BMI
Female	0.143***	0.017***	0.169***	-0.015***	0.011	-0.121***	0.044***	-6.690***	-2.696***	-1.950***	1.117***
	[0.018]	[0.003]	[0.008]	[0.004]	[0.013]	[0.004]	[0.003]	[0.243]	[0.161]	[0.033]	[0.073]
Ln(Hom Rate)	-0.080***	0.007**	0.029***	-0.018***	0.026*	0.009*	0.013***	-0.024	0.505**	-0.065*	0.001
	[0.022]	[0.003]	[0.010]	[0.005]	[0.016]	[0.005]	[0.004]	[0.293]	[0.196]	[0.036]	[0.090]
Mean of Dep Var	7.7	0.049	0.310	0.501	0.127	0.089	0.053	121.8	77.9	14.55	27.79
R^2	0.06	0.04	0.07	0.26	0.07	0.08	0.03	0.25	0.14	0.26	0.14
Observations	20,971	20,963	20,951	13,122	2,881	20,969	20,926	19,370	19,370	15,586	18,796

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets.

Notes: Sample used in this estimation is restricted to those individuals present in both Wave 2 and Wave 3 of the MxFLS. Independent variable is the natural logarithm logarithm of the homicide rate in the last 12 months. Dependent variables are: (1) Hours of sleep. (2) Bad health dummy variable for self reporting having a bad health. (3) Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (4) Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score. (5) Preventive visit is a dummy variable for going to the doctor for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. (6) Smokes is a dummy variable for currently smoking. (7) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (8) Systolic BP: Systolic Blood Pressure, which a normal reading is ≤ 130. (9) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80. (10) Hemoglobin : Normal levels for adult men is 13.8 to 17.2, and for adult women 12.1 to 15.1. (11) BMI is the Body Mass Index calculated as the weight in kg divided by the square height in m.

Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 66: Analysis with restricted sample including gender interaction term

	Hours of sleep	Bad health	Mental health ranking	Cognitive score	Preventive visit	Smokes	Hospitalized	Systolic BP	Diastolic BP	Hemoglobin level	BMI
Female	0.153***	0.006	0.095***	-0.027***	0.023	-0.075***	0.047***	-4.877***	-2.847***	-1.730***	0.784***
	[0.048]	[0.007]	[0.020]	[0.010]	[0.037]	[0.011]	[0.008]	[0.635]	[0.426]	[0.084]	[0.196]
Ln(Homicide Rate)	-0.077***	0.004	0.011	-0.021***	0.029	0.020***	0.013***	0.431	0.467**	-0.009	-0.084
	[0.024]	[0.004]	[0.010]	[0.005]	[0.018]	[0.006]	[0.004]	[0.328]	[0.219]	[0.041]	[0.099]
Fem*Ln(Hom Rate)	-0.004	0.005	0.032***	0.005	-0.005	-0.020***	-0.001	-0.796***	0.066	-0.094***	0.147*
	[0.020]	[0.003]	[0.008]	[0.004]	[0.015]	[0.005]	[0.003]	[0.266]	[0.177]	[0.033]	[0.081]
Mean of Dep Var	7.7	0.049	0.310	0.501	0.127	0.089	0.053	121.8	77.9	14.55	27.79
R^2	0.06	0.04	0.07	0.26	0.07	0.08	0.03	0.25	0.14	0.26	0.14
Observations	20,971	20,963	20,951	13,122	2,881	20,969	20,926	19,370	19,370	15,586	18,796

**** p<0.01, ** p<0.05, * p<0.1* Robust standard errors in brackets.

Notes: Sample used in this estimation is restricted to those individuals present in both Wave 2 and Wave 3 of the MxFLS. Independent variable is the natural logarithm of the homicide rate in the last 12 months. Dependent variables are: (1) Hours of sleep. (2) Bad health dummy variable for self reporting having a bad health. (3) Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (4) Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score. (5) Preventive visit is a dummy variable for going to the doctor for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. (6) Smokes is a dummy variable for currently smoking. (7) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (8) Systolic BP: Systolic Blood Pressure, which a normal reading is ≤ 130. (9) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80. (10) Hemoglobin : Normal levels for adult men is 13.8 to 17.2, and for adult women 12.1 to 15.1. (11) BMI is the Body Mass Index calculated as the weight in kg divided by the square height in m.

Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 67: Sensitivity analysis with inverse hyperbolic sine transformation of the homicide rate

	Outdoor time	Hours of sleep	Bad health	Mental health ranking	Cognitive score	Preventive visit	Smokes	Hospitalized	Systolic BP	Diastolic BP
Female	-0.090***	0.156***	0.015***	0.169***	-0.015***	0.004	-0.124***	0.051***	-7.587***	-3.017***
	[0.004]	[0.016]	[0.002]	[0.007]	[0.003]	[0.012]	[0.004]	[0.003]	[0.206]	[0.139]
Inv hyp Hom Rate	-0.009**	-0.077***	0.006**	0.041***	-0.018***	0.027*	0.009*	0.012***	-0.023	0.439**
	[0.005]	[0.020]	[0.003]	[0.009]	[0.004]	[0.014]	[0.005]	[0.004]	[0.255]	[0.173]
Mean of Dep Var	0.106	7.730	0.047	0.306	0.508	0.129	0.094	0.057	121	77.55
R^2	0.10	0.06	0.04	0.06	0.25	0.06	0.07	0.03	0.26	0.14
Observations	27,623	27,590	27,580	27,562	18,446	3,733	27,589	27,519	25,192	25,192

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in brackets. ***Notes:*** Independent variable is the inverse hyperbolic sine transformation of the homicide rate in the last 12 months. Dependent variables are: (1) Outdoor time: Dummy variable for spending time outdoor doing an activity. (2) Hours of sleep. (3) Bad health: Dummy variable for self reporting having a bad health. (4) Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (5) Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score. (6) Preventive visit is a dummy variable for going to the doctor for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. (7) Smokes is a dummy variable for currently smoking. (8) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (9) Systolic BP: Systolic Blood Pressure, which a normal reading is ≤ 130. (10) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80.
Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 68: Sensitivity analysis with inverse hyperbolic sine transformation of homicide rate including gender interaction term

	Outdoor time	Hours of sleep	Bad health	Mental health ranking	Cognitive score	Preventive visit	Smokes	Hospitalized	Systolic BP	Diastolic BP
Female	-0.082***	0.133**	-0.002	0.073***	-0.022**	-0.011	-0.066***	0.048***	-4.545***	-3.053***
	[0.013]	[0.056]	[0.008]	[0.023]	[0.011]	[0.041]	[0.013]	[0.010]	[0.706]	[0.479]
Inv Hyp Hom Rate	-0.008	-0.081***	0.003	0.023**	-0.019***	0.024	0.019***	0.012***	0.552*	0.432**
	[0.005]	[0.022]	[0.003]	[0.009]	[0.004]	[0.016]	[0.006]	[0.004]	[0.283]	[0.193]
Fem*InvHyp Hom Rate	-0.003	0.008	0.006**	0.032***	0.002	0.005	-0.019***	0.001	-1.012***	0.012
	[0.004]	[0.018]	[0.003]	[0.007]	[0.003]	[0.013]	[0.004]	[0.003]	[0.229]	[0.154]
Mean of Dep Var	0.106	7.730	0.047	0.306	0.508	0.129	0.094	0.057	121	77.55
R^2	0.10	0.06	0.04	0.06	0.25	0.06	0.07	0.03	0.26	0.14
Observations	27,623	27,590	27,580	27,562	18,446	3,733	27,589	27,519	25,192	25,192

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in brackets. ***Notes:*** Independent variable is the inverse hyperbolic sine transformation of the homicide rate in the last 12 months. Dependent variables are: (1) Outdoor time: Dummy variable for spending time outdoor doing an activity. (2) Hours of sleep. (3) Bad health: Dummy variable for self reporting having a bad health. (4) Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (5) Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score. (6) Preventive visit is a dummy variable for going to the doctor for a reason that is part of a preventive health care plan, such as immunizations, planned parenthood, pregnancy controls, wellness checkups. (7) Smokes is a dummy variable for currently smoking. (8) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (9) Systolic BP: Systolic Blood Pressure, which a normal reading is ≤ 130. (10) Diastolic BP: Diastolic Blood Pressure, which a normal reading is ≤ 80.
Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.

Table 69: Impact of future homicide rates on health

Individual Fixed Effects model comparing the same individual in Wave 1 and 2 of the MxFLS

	Hospitalized	Hemoglobin	Mental health ranking	Cognitive score	Outdoor time	Hours of sleep	Smokes
Ln (Hom Rate)	-0.005	0.053	-0.005	-0.001	-0.007	0.024	-0.001
	[0.004]	[0.047]	[0.010]	[0.004]	[0.005]	[0.022]	[0.004]
Observations	21,129	13,961	21,218	15,295	21,324	21,304	21,239

*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in brackets. ***Notes:*** Dependent variables are: (1) Hospitalized: Dummy variable for having been hospitalized in the last 12 months. (2) Hemoglobin: Normal levels for adult men is 13.8 to 17.2, and for adult women: 12.1 to 15.1. (3) Bad Mental Health Ranking: Ranking following the guidelines of the Generalized Anxiety Disorder-2 and the Patient Health Questionnaire-9, the ranking goes from 0 to 4, where 0 is absence of mental health problems, and 4 is severe mental health problems. (4) Cognitive score goes from 0 to 1 according to the Raven's Progressive Colored Matrices score. (5) Outdoor time: Dummy variable for spending time outdoor doing an activity. (6) Hours of sleep. (7) Smokes is a dummy variable for currently smoking. Controls included for all: age, age^2, years of education, married dummy; time and municipality fixed effects.