Women-only Subway Cars, Sexual Harassment, and Physical Violence: Evidence from Mexico City

Arturo Aguilar
Department of Economics, ITAM

Emilio Gutiérrez
Department of Economics, ITAM

Paula Soto Villagrán
Universidad Autónoma Metropolitana (UAM)

Abstract

We conduct a survey and exploit the discontinuity in the hours of operation of a program that reserves subway cars exclusively for women in Mexico City to estimate its impact on self-reported sexual harassment and physical violence through a regression discontinuity design. After showing that the implementation of the program responds sharply to the mandated hours of operation, we find that the program significantly reduces sexual harassment. However, physical violence experienced by men is higher. A willingness-to-pay exercise suggests that sexual harassment imposes considerably larger costs to subway users.

JEL Codes: R41, R48, J16, K4.

Acknowledgements: We are grateful to Carlos Castro for his participation and insights for the study's design. Zeky Murra provided excellent research assistance. Aguilar and Gutiérrez acknowledge support from the Asociación Mexicana de Cultura.

The lack of safety in public spaces imposes important costs to individuals, with women being a particularly vulnerable group. The avoidance behavior related to sexual and physical violence may have important consequences in terms of commuting times and choices, labor supply decisions, and access to certain services. According to a study conducted by GfK commissioned by Stop Street Harassment (SSH)[1], 65 percent of women and 25 percent of men in the US report having experienced some kind of sexual harassment[2] in public spaces in their lifetimes. Furthermore, existing evidence shows that women are more responsive to the risk of victimization (Ferraro, 1995), suggesting that unsafe environments impose larger costs on them. While sexual harassment can occur in a variety of public spaces, women's lack of safety in public transportation systems has attracted considerable attention from international organizations and policy makers alike. Nonetheless, there does not seem to be a clear understanding of the potential policy interventions that could be implemented to combat it, and very little empirical evidence evaluating the existing policies exists.

This paper evaluates the impact of a program implemented in Mexico City, which separates men from women in the subway system. In addition to analyzing the effects on sexual-related violence (which was the aim of the program), we study the consequences on physical violence that results from interaction in single-gender environments versus gender-mixed ones. We also collect willingness-to-pay (WTP) data to assess the effects on wellbeing that result from this division.

Our empirical strategy exploits the discontinuity in the hours of operation of the program, by comparing self-reported prevalence of sexual and physical violence experienced by subway users before and after its hours of operation within each day of analysis. After showing that the implementation of the program responds sharply to the mandated schedule, we find that while sexual violence experienced by women is significantly lower when the program is in operation, physical violence experienced by men is higher. Through a WTP exercise we find that sexual violence

[1] http://www.stopstreetharassment.org/wp-content/uploads/2012/08/2014-National-SSH-Street-Harassment-Report.pdf
[2] Throughout the text, we refer to sexual harassment and sexual violence indistinctly.

imposes considerably larger costs to subway users than physical violence. Taken together, our results then suggest that, while actually having potential undesired effects, the women-only subway cars program implemented in Mexico City is effective at reducing the incidence of sexual violence against women, which is the most costly form of violence for its users.

The paper is presented as follows. Section II describes the context and reviews the few existing studies to which our analysis is related. Section III describes the survey instrument and Section IV the empirical strategy. Section V presents the results that measure the impact of the program on physical and sexual violence, with a series of robustness checks in Section VI. In section VII we present out WTP analysis, and the last section concludes.

II. Context and existing literature

The existing literature exploring the relationship between gender and transportation has generally focused on quantifying gender gaps in travel times and transport-mode choices, and sketching theories rationalizing how the gender differences in household chores, occupation and/or labor force participation may explain them.[3] Another strand of the literature, however, does identify important gender differences in both victimization and fear of violence or crime, and suggests them as the potential forces between some of the gender differences in transport choice (Ferraro, 1995).

While gender differences in victimization and fear of crime in public spaces has been documented in the academic literature for years, only recently have international organizations, media outlets and policy makers focused their attention on discussing and designing policies and interventions aimed at reducing gender-based violence in public spaces. For instance, in 2011, the United Nations

[3] See Boarnet and Hsu (2015) for a review of this literature. For specific papers documenting differences in commuting times by gender see Ericksen (1977) Hanson and Johnston (1985) and Johnston-Anumonwo (1997). For the evolution of these differences with respect to female labor force participation see Crane (2007) and Crane and Takahashi (2009). With respect to differences in travel times for non-work related activities see Hanson and Hanson (1981), Mauch and Taylor (1997), Handy (1998),Steiner (2000), Sarmiento (1998), McGuckin and Murakami (1999), and Hjorthol (2000).

Committee to for the Status of Women launched the UN Women's Safe Cities Global Initiative, with the participation of 14 cities (including Mexico City) from an equal number of countries around the world. [4]

Mexico City and its subway system are not exempt from gender-based violence.[5] The city hosts a large public transportation system, generally characterized by heavy congestion, which responds to the needs of over 20 million inhabitants.[6] Between October and December 2014, the Mexico City subway system alone took charge of 4.46 million trips on average per day (18 percent of all the trips in the public transportation system). While ranked highest among the alternatives for public transportation in the city in terms of quality,[7] the existing statistics regarding the prevalence of violence, and particularly sexual violence, are staggering.

Mexico City's public transportation system is ranked the second least safe among the fifteen largest cities in the world,[8] and the least safe in Latin America[9]. According to a survey (Garibi et. Al. 2010) conducted by the National Council for the Prevention of Discrimination (*Consejo Nacional para Prevenir la Discriminación, CONAPRED*) in three of the main public transportation hubs in the city, more than 80 percent of female passengers were victims of some kind of sexual violence in the public transportation system during 2009 (63.9 percent received unwanted sexual looks and 37.7 percent declared having been inappropriately touched in the previous year), and more than 80 percent of those aggressions took place in the subway system.

[4] Because we explore the effects that separating men from women in public spaces, our paper may also be informative to the existing literature on segregation and conflict (see, for example, Culter and Glaeser, 1995 and Flaherty and Sethi, 2010), and on the effects of single gender vs mixed-gender schools (see, for instance, Martin and Fabes, 2001, and Halper et al, 2011).

[5] On April 25, 2016, a massive demonstration was held in Mexico City, organized by women demanding that the government design and implement policies to fight sexual violence against them in public places. http://www.eluniversal.com.mx/articulo/metropoli/df/2015/11/25/marcha-contra-la-violencia-hacia-la-mujer-llega-al-zocalo

[6] http://www2.inecc.gob.mx/publicaciones/libros/652/vallemexico.pdf

[7] http://www.parametria.com.mx/carta_parametrica.php?cp=4539

[8] http://mx.reuters.com/article/topNews/idMXL2N0SJ0N320141029?sp=true

[9] IADB (2015) https://publications.iadb.org/bitstream/handle/11319/7441/El-porque-de-la-relacion-entre-genero-y-transporte.PDF?sequence=4

Given the attention that this type of violence has received by international organizations and policy makers around the world, and the staggering statistics regarding its prevalence in Mexico City, in 2008 government officials implemented a multi-level intervention named "*Viajemos Seguras*" (Let's Travel Safely). The specifics of the intervention include legal support for women who suffered any kind of violence during their commute, and the designation of women-only public transportation options, such as women-only passenger cars[10] in various subway lines, women-only sections in the rapid bus transit system, women-only buses, and even women-only taxis.

While clear in its objectives, to our knowledge, none of the "*Viajemos Seguras*" program's components has been rigorously evaluated, and very little discussion regarding its potential effects on outcomes other than sexual violence has taken place.[11] To our knowledge, this paper is then the first to empirically measure the impact of the designation of women-only subway cars on both sexual and physical violence, as experienced by both men and women in Mexico City's public transportation system.

For the empirical analysis, we take advantage of the precise schedule for the program's implementation, and a survey administered to 3,523 individuals (983 men and 2,540 women), between 8:00am and 8:00pm (with a higher emphasis around the times when the program stops and restarts), on work days between October 25 and December 14, 2014. Respondents were approached at the end of their subway trip and administered a five minute questionnaire about their experience during the trip just taken, including the incidence of different instances of sexual and physical violence. In what follows, we describe the content of the survey instrument, along with our empirical strategy.

[10] Cities in Israel, Japan, India, Egypt, Iran, Brazil, Indonesia, the Philippines, Malaysia and the United Arab Emirates have also implemented similar programs.

[11] Some groups have criticized programs like this given that they lack a strategy to combat the problem's source. Some have discussed the potential costs of these programs in terms of agglomeration. See for example, http://www.news.com.au/travel/travel-updates/womenonly-pink-carriages-idea-for-aussie-trains-causes-controversy/news-story/8377482b8b705dd2854a51d0eb0b7847

III. Survey Design and Implementation

The evaluation of a program of this kind is an empirical challenge due to obvious concerns of reverse causality, and the unavailability of information regarding the prevalence of any kind of violence in the subway system. However, the program's design, in terms of its hours of operation, provides a source of variation in the program's implementation that can potentially be useful for the identification of its impact.

We overcame the data unavailability issues by designing and conducting a short survey to subway users from which we recovered information on the program's implementation, the incidence of different kinds of sexual and physical violence, and a short willingness-to-pay for safe travel questionnaire. Because of the sensitive nature of the questions asked, the 8 surveyors recruited were all female, graduate students in social sciences-related fields at one of the largest public universities in the city (Universidad Autónoma Metropolitana, UAM), with experience in having conducted surveys in the past and familiar to the gender-violence issues surrounding Mexico City's public transportation system.

In order to be able to capture short term variations in both the implementation of the program and the prevalence of sexual and physical violence, surveyors stood at subway stations waiting for arriving trains, and were trained to recruit respondents ensuring that the survey duration was short enough for them to be able to respond to it while walking out of the subway station. These constraints required the design of a very short questionnaire and imposed important limitations to the information that could be potentially obtained. However, after a series of pilot surveys (during which the surveyors also gained experience at conducting it), we reached a final questionnaire that took, on average, five minutes to complete. In the online appendix, we provide the full content of the questionnaire used.

The survey consisted of three main sections with 24 questions in total. The first section recovers socio-economic characteristics of respondents (age, marital status, number of kids, labor force

participation, car ownership and subway ridership frequency). The second section refers specifically to the subway trip that the subjects had just taken. It recovers the subway station where their trip started, a question explicitly asking whether the women-only cars program was enforced during the trip, a series of questions regarding whether the respondent was a victim or a witness of any kind of sexual or physical violence (pushing/shoving, physical fights, insults, theft, unwanted sexual looks, sexually-charged comments, whether pictures of them were taken without consent, inappropriate touching, brushing against their body, and other types of sexual aggression), in addition to the aggressor's gender.

Finally, the last section recovers self-reported information on the alternative transportation options for respondents, and two dichotomous choice questions aimed at recovering the subjects' WTP for safety in the subway system in general, and during the last trip taken in particular. Specifically, the first question stated: "Given your experience on TODAY's trip, would you have been willing to pay X pesos for a completely safe trip?"[12], and the second one stated: "Would you be willing to always pay X pesos if in exchange the subway system guaranteed your safety during your travels?" A total of 3,523 surveys were administered on work days from October 25 to December 14, 2014, of which 27.9% of respondents were male and the remaining 72.1% were female. Surveyors worked from 8 am to 8 pm, although a higher emphasis was placed around the times when the program becomes or stops being operational.

Descriptive statistics of socio-economic variables for women and men are presented in Table 1, Columns 1 and 2, respectively. In order to better assess the representativeness of the characteristics of subway users, Column 3 shows means and standard errors for the same set of descriptive statistics according to CONAPRED's survey conducted on public transportation users in 2009 (Garibi et. al., 2010). As can be seen, the age distribution of our respondents does not differ significantly from that

[12] The price of a subway ride in Mexico City is six pesos. The alternative amounts stated in the WTP exercise were 6, 8 and 10 pesos, randomly assigned across questionnaires.

of the individuals surveyed by CONAPRED. Close to fifty percent of respondents are aged between 15 and 29 years old, and a quarter between 30 and 44. Respondents in our survey have higher schooling levels: 42 percent of women and 39 percent of men report having completed college, while only 11.2 percent of women and 17.4 percent of men in the CONAPRED survey have a college degree. They also use the public transportation system less frequently: 24 percent of women and 17 percent of men in our survey use the public transportation system daily, while 54 and 61 percent of those surveyed by CONAPRED report to be daily users of the system. While these differences may imply external validity concerns, to the extent that our empirical strategy correctly exploits quasi-random variation in the program's implementation, our results can be interpreted as causal for individuals riding the subway around the times at which the program starts and stop operating.

Table 1

Descriptive Statistics				
	Survey		CONAPRED**	
	Women	Men	Women	Men
Married*	26.8	31.1		
Has children*	47.7	47.7		
Number of children	1.1	1.1		
(Std. Dev.)	(1.5)	(1.5)		
*Age**				
15-29	52.6	46.2	53.6	52.2
30-44	27.1	30.4	30	34.1
45-59	14.7	16.2	14.6	11.7
60+	4.8	6.4	1.9	2
*Schooling**				
Less than Primary	1.6	1.2	2.6	0.3
Primary	5.8	4.2	14.6	11
Secondary	13.9	15.6	37.8	33.1
High School	32.0	34.1	32.6	37.5
College	42.0	39.3	11.2	17.4
Graduate	4.7	5.6	0	0.3
*Number of Days a Week using Public Transportation**				
Everyday	23.9	17.4	53.6	61.2
Mon-Fri	42	39.5	35.6	33.1
Other	34.1	43.1	10.8	5.7
Observations	2540	983	267	299

*Reported values in percentages.

**Source: Garibi et al (2010)

Table 2 shows descriptive statistics regarding the prevalence of sexual and physical violence experienced and witnessed by our survey respondents. A few facts are worth highlighting. First, consistent with evidence for other contexts, women are considerably more likely to experience sexual violence: 6.8 percent of all surveyed women and 2.8 percent of surveyed men report having been victims of some kind of sexual violence during their last trip. Second, while unwanted sexual looks are the most prevalent form of sexual violence (5.4 percent of women report having received them), other forms of sexual violence are also prevalent (1.2 and 1.1 percent of surveyed women report brushing against their bodies and receiving sexually-charged comments, respectively). Means for having witnessed any kind of violence are higher for all individuals surveyed, differences between men and women are smaller, and the ranking of the prevalence of different types of observed sexual violence based is also similar that of experienced violence. Importantly, the prevalence of physical violence is high, and women are also more likely to have experienced any kind of physical violence than men. Shoving/pushing is the most prevalent form of physical violence.

Table 2

Descriptive Statistics
Prevalence of Physical and Sexual Violence

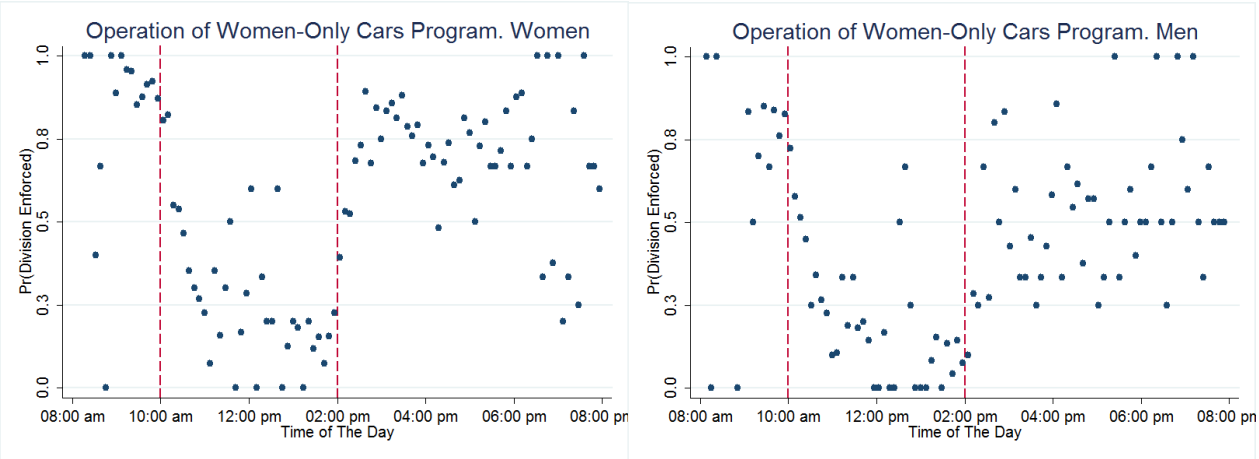
	Experienced		Observed	
	Women	Men	Women	Men
Any Physical Violence	26.3	21.6	35.6	30.4
Pushing/Shoving	25.8	21.2	33.9	28.5
Fights	0.9	1.0	2.8	3.1
Insults	1.9	1.7	8.0	6.8
Theft	0.2	0.3	0.7	1.0
Any Sexual Violence	6.8	2.8	10.2	13.2
Unwanted Looks	5.4	1.4	8.5	10.4
Sexual Comments	1.1	0.3	1.4	1.9
Pictures Taken	0.1	0.3	0.5	0.7
Inappropriate touching	0.4	0.4	1.3	2.1
Brushing against body	1.2	0.6	2.8	3.2
Observations	2540	983	2540	983

IV. Empirical Strategy

The program's implementation rules mandate it to be implemented from 6 am to 10 am and 2 pm to 8 pm. Our empirical strategy then compares self-reported measures of sexual and physical violence for individuals surveyed around the specific times at which the program stops and starts operating (10 am and 2 pm, respectively), through a regression discontinuity design. Therefore, showing that the program's implementation responds sharply to the mandated hours of operation is crucial for identification.

Figure 1 explores graphically if this was indeed the case. It plots the fraction of women and men that reported that the program was in operation against the time at which they boarded the subway. As can be seen, there is a clear sharp decrease in the fraction of people declaring that the women-only program operated during their last trip at 10 am, and a sharp increase in the same outcome variable at 2 pm. Both jumps in the outcome variable correspond to the mandated hours of operation of the program.

Figure 1



In order to explore differences in the program's implementation (and impact) between the morning and the afternoon, and also explore differences by gender, we define four different samples for the

empirical analysis: two for women and two for men, each consisting of individuals of each gender that boarded the subway before and after noon. For those boarding the subway before noon, the discontinuity of interest will be 10 am, while for those boarding after noon, we will exploit the discontinuity observed in the implementation of the program at 2 pm. For each sample, the specification will be the following:

$$D_{idt} = \gamma_d + f(H_{it}) + \beta T_{it} + \varepsilon_{idt} \qquad (1)$$

Where D_{idt} is a dummy variable taking value of one if individual *i*, on day *d*, observed the women-only subway cars program being implemented when (s)he boarded the subway at time *t*; γ_d are day fixed-effects; $f(H_{it})$ is a smooth function of the time at which the survey was conducted. In particular, we adjust a linear, quadratic and cubic time trend; T_{it}, is a dummy taking value of one if the survey was conducted at a time of the day at which, according to the regulation, the program should be implemented (before 10 am for the morning samples, and after 2 pm for the afternoon samples); and ε_{idt} is an error term.

We also present results pooling the morning and afternoon samples for each gender, running regressions of the following form:

$$D_{idt} = \gamma_d + \partial S_t + f(H_{it}) + g(H_{it}) * S_t + \beta T_{it} + \varepsilon_{idt} \qquad (2)$$

Where all variables are defined as above, and S_t is a dummy variable taking value of one if the sample of individuals corresponds to those interviewed after noon. In other words, for the pooled samples, we allow for the smooth relationship between the distance to the discontinuity and the outcomes of interest to vary for those interviewed before and after noon.

In order to explore if the program had an effect both on sexual and physical violence, we run the same specifications, using a dummy variable taking value of one if the individual experienced any

kind of sexual and physical violence during the last subway trip. The results of these regressions can be understood as a reduced-form estimate of the impact of the program on different kinds of violence. Our design, however, allows for a calculation of an instrumental variable estimate of the impact of the program, instrumenting the program's implementation with the dummy variable taking value of one before 10 am and after 2 pm for the morning and afternoon samples, respectively. Because we worry that the program's implementation may be measured with error, and that this error may be negatively correlated with the program's actual operation, throughout the main text, we report reduced-form estimates. Instrumental variable estimates are presented in appendix 3.

V. Results

a. First Stage

Table 3 shows the estimation results for equations (2) and (1), using the dummy variable indicating whether the respondent declared that the women-only cars program was operating when (s)he boarded the subway as dependent variable, and controlling for a linear relationship between the time at which the survey was conducted and the outcome of interest. Columns 1 and 4 correspond to the estimation of equation (2), pooling the morning and afternoon samples for women and men, respectively. Columns 2 and 5 report the results of estimating equation (1) for the women's and men's samples, respectively. Columns 3 and 6 report results for the women's and men's afternoon samples, respectively.

Consistent with the evidence presented in Figure 1, our results indicate that the mandated hours of operation of the program strongly predict its implementation. For the pooled samples, individuals that boarded the subway are close to 30 percent more likely to report the program being implemented at the discontinuities. The estimated impact at the discontinuity for the afternoon samples is larger in magnitude for both the women's and men's samples, but the coefficients of interest are always positive and statistically different from zero at a high confidence level.

Table 3

First Stage Regression Results Dependent Variable: Dummy=1 if Program was Enforced						
	Women			Men		
	Pooled	*Before Noon*	*Past Noon*	*Pooled*	*Before Noon*	*Past Noon*
Program Scheduled to Operate	0.312	0.078	0.548	0.277	0.179	0.233
	[0.028]***	[0.038]**	[0.040]***	[0.050]***	[0.073]**	[0.068]***
Observations	2540	1410	1130	983	550	433
R-squared	0.27	0.31	0.29	0.17	0.26	0.23
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in brackets						
* significant at 10%; ** significant at 5%; *** significant at 1%						

b. Reduced Form

Results for the regressions on reported sexual violence are presented in Table 4. All columns correspond to the same sample as the corresponding columns in Table 3.

Table 4

Reduced Form Regression Results Dependent Variable: Dummy=1 if Sexual Violence Experienced						
	Women			Men		
	Pooled	*Before Noon*	*Past Noon*	*Pooled*	*Before Noon*	*Past Noon*
Program Scheduled to Operate	-0.05	-0.024	-0.088	0.024	-0.006	0.053
	[0.016]***	[0.022]	[0.028]***	[0.018]	[0.026]	[0.028]*
Observations	2540	1410	1130	983	550	433
R-squared	0.27	0.31	0.29	0.17	0.26	0.23
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in brackets						
* significant at 10%; ** significant at 5%; *** significant at 1%						

The program seems to be effective at reducing the incidence of sexual violence and, as expected, the effect is only observed for women. For the pooled sample, women are five percent less likely to report having been victims of any kind of sexual violence at the discontinuity. Given the sample averages presented in Table 2, the effect is considerably large (a reduction of 75 percent in the incidence of sexual violence). The program seems then to be very successful at preventing sexual violence against women during their subway trips.

Likewise, results for physical violence are reported in Table 5, with the same sample designation by column as before.

Table 5

Reduced Form Regression Results
Dependent Variable: Dummy=1 if Physical Violence Experienced

	Women			Men		
	Pooled	*Before Noon*	*Past Noon*	*Pooled*	*Before Noon*	*Past Noon*
Program Scheduled to Operate	0.042	0.077	0.002	0.128	0.227	0.01
	[0.028]	[0.040]*	[0.038]	[0.044]***	[0.066]***	[0.057]
Observations	2540	1410	1130	983	550	433
R-squared	0.27	0.31	0.29	0.17	0.26	0.23
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Perhaps surprisingly, while the program seems to be effective at reducing the incidence of sexual violence against women, it also seems to affect *positively* the incidence of physical violence for men. For the pooled samples, men are almost 13 percent more likely to have experienced any kind of physical violence during their subway trip at the discontinuity. It is worth notingthat while the effect for the female samples is smaller in magnitude and generally not significantly different from zero, the point estimate is also positive.

Identifying the mechanisms through which the program affected physical violence is unfortunately beyond the scope of this paper. The effect may be driven by differences in agglomeration across subway cars driven by the program's implementation or by differences in social norms regarding aggressive behavior in gender segregated versus unsegregated environments, for example. However, in Appendix 2, we sketch a simple model that illustrates how such an effect can arise even when abstracting from these forces, simply by reducing differences in observable characteristics across subway car passengers.

VI. Robustness

Relatively strong assumptions have to hold for the results presented in the previous section to be interpreted as the impact of the program on the incidence of sexual and physical violence. First, as in any RD analysis, we require that only the outcome of interest varies sharply at the discontinuity for our estimates to be interpreted as causal. Second, the functional form chosen to control for the relationship between time of the day and the outcomes of interest should be smooth enough to capture the relationship between these variables in the absence of the program. And third, individuals surveyed must not perfectly manipulate or respond to the known schedule of the program's operation by changing the time at which they board the subway around the discontinuity. In this section, we provide evidence supporting the validity of these assumptions for the context analyzed.

Table 6

Robustness: Test for Smoothness of Control Variables at the Discontinuities						
	Women			Men		
	Between 10:00am and 2:00pm	Before 10:00 am and after 2:00pm	RD estimate	Between 10:00am and 2:00pm	before 10:00 am and after 2:00pm	RD estimate
Married	0.28	0.26	0.00	0.31	0.31	0.05
	[0.014]	[0.011]	[0.027]	[0.020]	[0.022]	[0.050]
Has children	0.49	0.47	0.02	0.50	0.44	-0.04
	[0.016]	[0.013]	[0.031]	[0.022]*	[0.023]*	[0.054]
Number of children	1.10	1.04	-0.02	1.20	1.04	0.00
	[0.047]	[0.037]	[0.092]	[0.067]	[0.070]	[0.158]
Age	32.41	31.99	-0.08	34.14	33.46	0.90
	[0.428]	[0.331]	[0.846]	[0.602]	[0.652]	[1.518]
Highschool degree or less	0.54	0.51	0.03	0.58	0.50	0.01
	[0.016]*	[0.013]*	[0.032]	[0.021]***	[0.024]***	[0.054]
Student	0.36	0.40	-0.03	0.32	0.39	0.04
	[0.015]*	[0.012]*	[0.032]	[0.020]**	[0.023]**	[0.052]
Employed	0.62	0.66	0.02	0.74	0.72	-0.06
	[0.015]**	[0.012**]	[0.031]	[0.019]	[0.021]	[0.048]
Car ownership	0.42	0.41	0.02	0.47	0.54	0.02
	[0.016]	[0.013]	[0.033]	[0.022]**	[0.024]**	[0.055]
Frequent subway ridership (at least five times a week)	0.62	0.68	0.02	0.55	0.59	0.03
	[0.015]***	[0.012]***	[0.030]	[0.022]	[0.023]	[0.053]
Observations	1006	1534	2540	532	451	983

Standard errors (robust for the RD estimates) in brackets.
Stars in columns 1, 2, 4 and 5 indicate that the difference in means is statistically different from zero.
Stars in columns 3 and 6 indicate if the RD estimate is significantly different from zero.
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6 reports means of socio-economic characteristics for women and men, by whether the women-only cars program was scheduled to operate at the time when they boarded the subway system. Columns 1 to 3 focus on the women's sample, while columns 4 to 6 restrict the sample to men. Columns 1 and 4 present means and standard errors for those who boarded the subway system when the program was not scheduled to operate, while Columns 2 and 5 restrict it to those who boarded the subway when it was. Columns 3 and 6 present the RD estimate pooling the morning and afternoon samples and running the specification described in equation (2), not including any of the SES variables as controls, fitting linear trends around the discontinuities, and using each of these variables as the outcome of interest.

Perhaps not surprisingly, women and men who board the subway differ when the program is in operation differ significantly in observable characteristics from those who board it when it is not. In particular, women who board the subway when the program is not scheduled to operate are less likely to have attended college, to be students or to be employed, and less frequent subway users than those who board it when the program is operating. Men who board the subway when the program is not operating are more likely to have children, less likely to have attended college, to be students, and to own a car. Nonetheless, according to the estimates presented in Columns 3 and 6, there are no significant differences in observable characteristics for both the women and men samples around the discontinuities in the program's operating schedule. None of the RD estimates is significantly different from zero at a high confidence level.

Tables 7, 8 and 9 replicate the main results using as outcomes the dummy variables indicating whether the program was operating, whether the respondent experienced sexual and physical violence, respectively fitting a linear, quadratic and cubic relationship between time of day and each of the outcomes of interest.

Table 7

First Stage Regression Results Dependent Variable: Dummy=1 if Program was Enforced						
	Women			Men		
Shift-specific time trend:	*Linear*	*Squared*	*Cubed*	*Linear*	*Squared*	*Cubed*
Program Scheduled to Operate	0.304	0.232	0.175	0.277	0.221	0.196
	[0.028]***	[0.032]***	[0.036]***	[0.050]***	[0.059]***	[0.064]***
Observations	2540	2540	2540	983	983	983
R-squared	0.24	0.24	0.25	0.17	0.17	0.17
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Quadratic Time Trends		Yes	Yes		Yes	Yes
Cubic Time Trends			Yes			Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in brackets						
* significant at 10%; ** significant at 5%; *** significant at 1%						

According to the results presented in Table 7, while the estimated impact of the discontinuities on the probability that respondents declare having observed the program being enforced decreases in magnitude with the inclusion of more flexible controls for the relationship between the time of the survey and the outcome of interest, they remain positive, large in magnitude, and statistically different from zero at a high confidence level.

Table 8

Reduced Form Regression Results Dependent Variable: Dummy=1 if Sexual Violence Experienced						
	Women			Men		
	Linear	*Squared*	*Cubic*	*Linear*	*Squared*	*Cubic*
Program Scheduled to Operate	-0.05	-0.033	-0.034	0.024	0.012	0.014
	[0.016]***	[0.019]*	[0.021]	[0.018]	[0.022]	[0.024]
Observations	2540	2540	2540	983	983	983
R-squared	0.24	0.24	0.25	0.17	0.17	0.17
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Quadratic Time Trends		Yes	Yes		Yes	Yes
Cubic Time Trends			Yes			Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in brackets						
* significant at 10%; ** significant at 5%; *** significant at 1%						

In Table 8, the sign of the coefficients for the change in the prevalence of sexual violence remains negative for the women's sample, and smaller in magnitude and positive for the men's sample. The estimate of the negative impact of the program on the prevalence of sexual violence loses significance when we adjust cubic time trends between the time of the survey and the outcome of interest, but is similar in magnitude to the one obtained when including a linear or quadratic time trend.

Table 9 shows that when our estimation strategy allows for a more flexible relationship between time of day and physical violence, we no longer observe a positive coefficient for the impact of the program on physical violence for the women's sample. The point estimates are very close to and not significantly different from zero at a high confidence level, suggesting that the program did not contribute to change the incidence of physical violence against women. For the men's sample, however, the estimated coefficients remain relatively stable with the inclusion of more flexible time trends, positive and statistically significant, giving us confidence that the women-only subway program had an undesired effect by increasing the prevalence of physical violence among men.

Table 9

Reduced Form Regression Results
Dependent Variable: Dummy=1 if Physical Violence Experienced

	Women			Men		
	Linear	*Squared*	*Cubic*	*Linear*	*Squared*	*Cubic*
Program Scheduled to Operate	0.042	0.01	-0.017	0.128	0.116	0.119
	[0.028]	[0.032]	[0.036]	[0.044]***	[0.052]**	[0.056]**
Observations	2540	2540	2540	983	983	983
R-squared	0.24	0.24	0.25	0.17	0.17	0.17
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Quadratic Time Trends		Yes	Yes		Yes	Yes
Cubic Time Trends			Yes			Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Finally, we explore whether individuals manipulate or respond to the known schedule of the program's operation by taking advantage of a question included in the survey asking explicitly whether individuals took the first train that arrived to the station after where they first boarded the subway system (for the full sample, 72 percent of women and 67 percent of men surveyed declared to have boarded the first available train).

Table 10 shows the results of the same specifications as those presented in Tables 7-9, this time using a dummy variable indicating whether individuals reported to have taken the first available train as dependent variable. As can be seen, no significant differences are observed in this outcome at the discontinuities.

Table 10

Reduced Form Regression Results Dependent Variable: Dummy=1 if First Train Taken						
	Women			Men		
	Linear	*Squared*	*Cubic*	*Linear*	*Squared*	*Cubic*
Program Scheduled to Operate	-0.019	-0.005	-0.024	-0.05	-0.046	-0.056
	[0.030]	[0.035]	[0.039]	[0.048]	[0.055]	[0.060]
Observations	2540	2540	2540	983	983	983
R-squared	0.24	0.24	0.25	0.17	0.17	0.17
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Quadratic Time Trends		Yes	Yes		Yes	Yes
Cubic Time Trends			Yes			Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

VII. Willingness to Pay

The results presented thus far suggest that the women-only subway cars program in Mexico City did achieve its desired effect of reducing sexual violence against women, but had an unexpected impact increasing physical violence against men. While the staggering statistics regarding the prevalence of

sexual violence in Mexico City's public transportation system call for policy interventions aimed at reducing it, it may be important to quantify the potential costs that such policies may entail.

A full cost-benefit analysis of the program is beyond the scope of this paper. However, given that our questionnaire did include a short willingness-to-pay exercise, in this section we explore how prices and the incidence of sexual and physical violence correlate with individuals' likelihood of responding affirmatively to the question of whether they would have paid a higher price in exchange for having experienced a "completely safe trip".

We run a standard OLS regression using a dummy variable taking value of one if individual's response to the WTP question was affirmative as the dependent variable, against the log of the price offered and the self-reported prevalence of physical and sexual violence as explanatory variables, pooling the morning and afternoon samples. Specifically:

$$W_{idt} = \gamma_d + \beta_1 \log(price)_i + \beta_2 PhysicalViolence_i + \beta_3 SexualViolence_i + \partial S_t + f(H_{it}) + f(H_{it}) * S_t + \varepsilon_{idt} \qquad (3)$$

Where W_{idt} is the dummy variable taking value of one if the individual responded affirmatively to the question of whether (s)he would have been willing to pay a higher price in exchange for a completely safe trip; $\log(price)_i$ is the natural log of the stated price in such question (randomly assigned to individual *i*); $PhysicalViolence_i$ is the dummy variable taking value of one if the individual reported having experienced any kind of physical violence; $SexualViolence_i$ is the dummy taking value of one if the individual reported having experienced any kind of sexual violence; and all other variables and subscripts are defined as above.

Results are reported in Table 11. The first three and last three columns present the results for the women's and men's sample, respectively. Columns 1 and 4 include no controls. Columns 2 and 5

include date fixed-effects and a linear time trend for the afternoon and morning samples, while Columns 3 and 6 additionally include socio-economic variables as controls.

Throughout specifications, and for both genders, price has a strong predictive power on the likelihood that individuals will respond affirmatively to the question asked. In line with what should be expected, individuals are considerably less likely to declare being willing to pay for a safe trip when the price of said trip is higher. The point estimates are larger in magnitude for the women's sample, suggesting that violence does impose larger costs on them. In addition, the point estimates remain relatively stable with the inclusion of control variables.

Women are considerably more likely to respond affirmatively to the WTP question if they experienced any kind of sexual violence. The coefficient is positive, relatively large in magnitude and different from zero at a high confidence level throughout specifications. The estimated coefficient for men is also positive, similar in magnitude, although not significantly different from zero. Perhaps surprisingly, neither women nor men are more likely to respond affirmatively to the WTP question when they experienced any kind of physical violence. The point estimates are negative throughout specifications and samples, although never significantly different from zero.

While the women-only car programs may be having the undesired effect of increasing physical violence among subway users in the Mexico City context, sexual violence is likely to impose considerably larger costs to individuals than physical violence. Given that the program is effective at reducing the incidence of sexual violence against women, we then do not find evidence that the costs associated with the undesired effects of the program outweigh its benefits.

Table 11

OLS Regression Results Willigness to Pay for Having had a Safe Trip						
	Women			Men		
Log Price	-0.556	-0.523	-0.522	-0.434	-0.426	-0.416
	[0.046]***	[0.051]***	[0.052]***	[0.078]***	[0.085]***	[0.086]***
Experienced Sexual Violence	0.114	0.112	0.097	0.154	0.132	0.12
	[0.039]***	[0.039]***	[0.040]**	[0.095]	[0.097]	[0.098]
Experienced Physical Violence	-0.033	-0.033	-0.034	-0.005	-0.016	-0.016
	[0.022]	[0.023]	[0.023]	[0.039]	[0.040]	[0.040]
Controls						
Date Fixed-Effects	No	Yes	Yes	No	Yes	Yes
Linear Time Trends	No	Yes	Yes	No	Yes	Yes
Socio-Economic Variables	No	No	Yes	No	No	Yes
Constant	1.608	1.671	1.784	1.304	1.305	1.231
	[0.093]***	[0.212]***	[0.216]***	[0.153]***	[0.183]***	[0.199]***
Observations	2503	2503	2503	961	961	961
R-squared	0.06	0.08	0.09	0.03	0.07	0.07

Robust standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

VIII. Conclusions

The lack of safety in public spaces is likely to impose costs to individuals, and particularly to women, who are considerably more vulnerable to sexual harassment and are more responsive to the fear of victimization. Nonetheless, while having attracted the attention of policy makers and international organizations alike, policy proposals aimed at combatting sexual harassment in public places are rather scarce, and there is a lack of empirical evidence evaluating the existing programs. In particular, there is little discussion regarding the potential undersired effects of any kind of intervention. This paper represents, to our knowledge, the first to empirically assess the impact of women-only public transportation options not only on the prevalence of sexual harassment, but also on physical violence.

In particular, by exploiting the discontinuity in the hours of operation a program that reserves subway cars exclusively for women in Mexico City, we compare self-reported prevalence of sexual

and physical violence experienced by subway users before and after the starts or ends operating within each subway line and day of analysis. We find that, while sexual violence experienced by women is significantly lower when the program is in operation, physical violence experienced by men is higher. Our results then suggest that programs of this kind are likely to have undesired consequences. However, through a WTP exercise we find that sexual violence is likely to impose considerably larger costs to subway users.

References

Boarnet, M. G., & Hsu, H. P. (2015). The gender gap in non-work travel: The relative roles of income earning potential and land use. *Journal of Urban Economics*, *86*, 111-127.

Crane, R. (2007). Is there a quiet revolution in women's travel? Revisiting the gender gap in commuting. *Journal of the American planning association*, *73*(3), 298-316.

Crane, R., & Takahashi, L. (2009). Sex Changes Everything The Recent Narrowing and Widening of Travel Differences by Gender. *Public works management & policy*, *13*(4), 328-337.

Ericksen, J. A. (1976). An analysis of the journey to work for women. *Soc. Probs.*, *24*, 428.

Ferraro, K. F. (1995). *Fear of crime: Interpreting victimization risk*. SUNY press.

Garibi, M., Núñez, M. F. Z., & Ríos, E. P. (2010). La discriminacion y violencia contra las mujeres en el transporte publico de la Ciudad de Mexico.

Handy, S. (1996, October). Non-work travel of women: patterns, perceptions and preferences. In *e Women's Travel Issues Second National Conference*.

Hanson, S., & Hanson, P. (1981). The impact of married women's employment on household travel patterns: A Swedish example. *Transportation*, *10*(2), 165-183.

Hanson, S., & Johnston, I. (1985). Gender differences in work-trip length: explanations and implications. *Urban geography*, *6*(3), 193-219.

Hjorthol, R. J. (2000). Same city—different options: An analysis of the work trips of married couples in the metropolitan area of Oslo. *Journal of Transport Geography*, *8*(3), 213-220.

Johnston-Anumonwo, I. (1997). Race, gender, and constrained work trips in Buffalo, NY, 1990. *The Professional Geographer*, *49*(3), 306-317.

Mauch, M., & Taylor, B. (1997). Gender, race, and travel behavior: Analysis of household-serving travel and commuting in San Francisco bay area.*Transportation Research Record: Journal of the Transportation Research Board*, (1607), 147-153.

McGuckin, N., & Murakami, E. (1999). Examining trip-chaining behavior: Comparison of travel by men and women. *Transportation Research Record: Journal of the Transportation Research Board*, (1693), 79-85.

Sarmiento, S. (2000, January). Household, gender, and travel. In *Women's Travel Issues Second National Conference*.

Steiner, R. (2000). Women's Travel for Shopping in Traditional Neighborhoods: How Does a Woman's Role in the Household Affect Their Activity and Travel for Shopping. In *Proceedings of the Second National Conference on Woman's Travel Issues, 2000*.

Halpern, D. F., Eliot, L., Bigler, R. S., Fabes, R. A., Hanish, L. D., Hyde, J., ... & Martin, C. L. (2011). The pseudoscience of single-sex schooling. *Science*, *333*(6050), 1706-1707.

Martin, C. L., & Fabes, R. A. (2001). The stability and consequences of young children's same-sex peer interactions. *Developmental psychology*, *37*(3), 431.

Cutler, D. M., & Glaeser, E. L. (1995). *Are ghettos good or bad?* (No. w5163). National Bureau of Economic Research.

O'Flaherty, B., & Sethi, R. (2010). Homicide in black and white. *Journal of Urban Economics*, *68*(3), 215-230.

Appendix 1. Survey Questionnaire

Pollster Only
Date: _____
Exact Time the Metro Arrived: _____
Metro Line and Station:
_____
Are the women's and men's sections separated? Yes ____ No____
Metro car in which the survey occurred
_____

Pollster Only

Pollster Name: _____
Pollster Code.:_____
Start Time: _____ End Time: _____
Survey Number: _____

"Hello, we are students from the UAM (Autonomous Metropolitan University) and we are administering an anonymous survey about the Metro. May I accompany you while you walk? "

I RESPONDENT'S INFORMATION

1) Age (use numbers)	2) Currently you are:	3) Do you have children?	4) Does your household have a car?
_____	Single ..... 1 Married .....2 Common-Law Marriage……3 Separated or Divorced.....…….4 Widow/Widower……...5 Don't Know/Doesn't Answer (DK/DA)…….……99	Yes……..1 No…….2 DK/DA……..…99 3.1 How Many (number)_____	Yes……..1 No……2 DK/DA……..……99 4.1 Are you the member of your household who most uses this (these) car(s)? Yes……..1 No……2 DK/DA……..……99

5) Are you currently a student? Yes ___ No_____ Yes => What level are you studying? NO=> What was the last level you completed?	6) Are you currently working? Yes_____ No _____ 7) What was the main reason for your trip today? *Select more than one if necessary.*	8) How frequently do you make this trip?
Incomplete Elementary school or less ……...1 Elementary…….....2 Secondary….....3 High School/Technical School……...4 University……5 Postgraduate ……...6 DK/DA…….....99	Work……..1 School……2 Shopping……...3 Medical……...4 Social……5 Food……6 Recreation……..7 Returning Home .....8 7.1 Other: List 9	Everyday..……..1 Every weekday……2 2 to 4 times a week..……..3 Once a week…….……5 Less than once a week.....7 Once every 2 weeks……8 Once a month or less……..……9

II TRIP Now we will ask you some questions about your trip TODAY on the [COLOR] line, which you just got off of

9) At what station did you begin your trip on the [COLOR] line? _____ 10) Approximately how long ago did you board the [COLOR] line at [STATION NAME]? _____	11) When you boarded at [STATION NAME] was there a division between men's and women's cars? Yes _____ No _____	12) How was this division established at [STATION NAME]? Police .....1 Physical barrier .....2 Tape on the floor .....3 Sign .....4 DK/DA 99

13) On your trip did you get onto the first train that passed or did you wait for a later train? First train……..1 Second Train…….2 Third Train……...3 Other: Which?.....4 13.1 _____ *If the respondent answers that s/he did not get on the first train, ask Question 14. If not, ask Question 15.*	14) Why didn't you get on the first train that passed? *Do not read the options* There were too many people at the station and I could not get to the door ..... 1 The train was full……..2 There was no space to sit on the train……...3 I was waiting for someone…….4 The train seemed unsafe……5 It was the women's only car……..6 Other: List.....7 14.1 _____	15) On the train that you boarded at [STATION NAME] were there available seats? Yes……..1 No……2

III Perception of Insecurity during the Trip Now we are going to talk about THE TRIP YOU JUST TOOK ON LINE [COLOR]

16) During your trip on line [COLOR] did you feel unsafe? Yes……..1 No…….2	17) During your trip on line [COLOR] did you observe or experience any of the following situations?									
		Observed		Gender of the Victim		Gender of the Aggressor		Experienced		Gender of the Aggressor	
		Yes	No	Male	Female	Male	Female	Yes	No	Male	Female
	1.Shoving, elbowing										
	2. Physical fighting										
	3. Insults										
	4. Robbery										
	5. Unwanted Sexual looks										
	6. Catcalls										
	7. Photos taken without consent										
	8. Groping without consent										
	9. Brushing against your body										
	10. Any other type of sexual violence _____										

Only ask these questions if the respondent answered that he/she experienced a robbery. If not, go to Question 20. 18) What was stolen? _____ 19) ¿Where? Entering the Metro…...…1 Turnstiles…….....2 Platform……3 Train……4 Stairs…..5 Unknown .....6 Other: List…….7 19.1_____	20) If you had not been able to take the Metro today, what method of transportation would you have utilized to arrive at your destination? *Write the codes in the relevant boxes* Metrobús (bus rapid transit) ……1 Large Bus……2 Small Bus……3 Taxi……..4 Personal Car/Ride.…5 Walking .....6 Light rail……...7 Bicycle .....8 Rickshaw .....9 Trolley RTP/Atenea (publically regulated bus)	21) Have you ever taken this trip via this different method of transportation? Yes……..1 No……2 22) ¿How much would this trip have cost using this other method? _____ Mexican Pesos 23) ¿How long would it have taken you to make this trip via this other method? _____ minutes more (23.1) _____ minutes less (23.2)	24) Imagine that there exists a completely safe Metro that spans the entire trip you just took, but that it costs **$6 Mexican pesos.** Given your experience TODAY, would you prefer to pay **$6 Mexican pesos** and take the safe Metro? Yes _____ No _____ 25) Would you be willing to always pay **$8 pesos** for a ticket for a completely safe Metro? Yes _____ No _____

Appendix 2. A simple model

In this appendix, we present a simple model that abstracts from the potential impact of differences in social norms in gender-mixed and single-gender environments and from agglomeration, that delivers the study's findings: an increase in physical violence under single-gender subway cars. In particular, we discuss the implications of Donohue and Levitt (1998)'s model in a context in which there exist observable differences between two groups of individuals, *A* and *B* (men and women).

Consider, then, the following setting:

When an individual boards the subway, (s)he is randomly matched with another individual, with which (s)he engages in a bargaining process in order to obtain a unique and indivisible prize $W>0$ (the private value of a seat, or of personal space in the subway, for example).

Each individual can claim the prize for him/herself, or simply give it away to the other player. If a player gives the seat away, (s)he receives a payoff of zero, while the other player receives *W* if (s)he had claimed the prize.

A conflict occurs when both players claim the prize, in which case it is assigned to the player of the highest "fighting ability". If conflict occurs, each player pays a cost *C*. The loser's payoff is then *–C*, while the winner's payoff is *W-C*.

Each individual is characterized by an observed (θ_i) and unobserved (ε_i) component of his fighting ability, F_i:

$$F_i = \theta_i + \varepsilon_i$$

θ_i is assumed to be observed by both players and to differ in means by individuals' gender, while ε_i is unobserved even by the player him/herself. Further, the θ's are assumed to be normally distributed within each group, independent, and $E(\theta|A) = \theta_A, E(\theta|B) = \theta_B,$. Assume further that $Var(\theta|A) = Var(\theta|B) = \frac{1}{2}\sigma_\theta^2$.

The ε's are assumed to be independently and identically distributed with a type-I extreme value distribution characterized by:

$$Pr[\varepsilon_i \leq \varepsilon] = exp\left[-exp\left(\frac{-\varepsilon}{\sigma_\varepsilon}\right)\right]$$

The distributional assumptions for the unobserved component of the fighting ability allows to derive simple conditions under which conflict will occur, namely:

$$\theta_1 - \theta_2 \geq ln\left(\frac{C}{W}\right)\sigma_\varepsilon$$

and

$$\theta_1 - \theta_2 \leq -ln\left(\frac{C}{W}\right)\sigma_\varepsilon$$

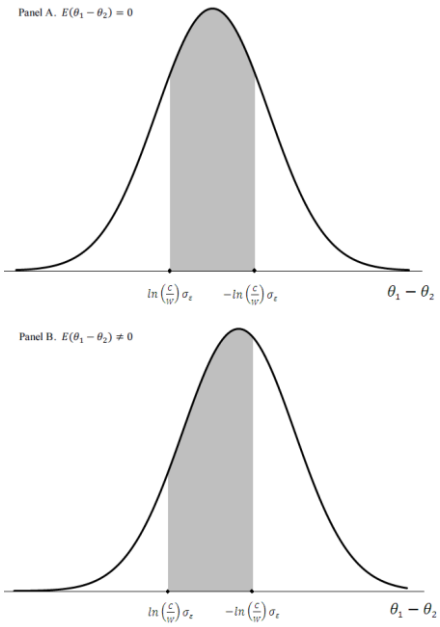
The normality and independence assumption for the distribution of the θ's within each group implies that the distribution of $\theta_1 - \theta_2$ is normal, with variance equal to σ_θ^2. As a result, the probability of a conflict ocurring can be expressed as:

$$P[conflict] = 1 - \Phi\left(-ln\left(\frac{C}{W}\right)\sigma_\varepsilon\right) - \Phi\left(ln\left(\frac{C}{W}\right)\sigma_\varepsilon\right)$$

It is easy to see why, under this setup, conflict will be more likely to occur between matches of individuals of the same group. Under gender separation, $E(\theta_1 - \theta_2) = 0$. However, under integration, for matches between individuals from different groups, $E(\theta_1 - \theta_2) \neq 0$. Figure 1 then illustrates how under integration the prevalence of conflict is minimized.

$$P[conflict|segregation] > P[conflict|integration]$$

Figure A1. Differences in observables and conflict



Appendix 3. Additional Tables

Table A1

Instrumental Variables Regression Results Dependent Variable: Dummy=1 if Sexual Violence Experienced						
	Women			Men		
	Pooled	*Before Noon*	*Past Noon*	*Pooled*	*Before Noon*	*Past Noon*
Program Operating	-0.158	-0.325	-0.157	0.088	-0.091	0.235
	[0.055]***	[0.306]	[0.053]***	[0.081]	[0.145]	[0.132]*
Observations	2540	1410	1130	983	550	433
R-squared	0.27	0.31	0.29	0.17	0.26	0.23
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A2

Instrumental Variables Regression Results Dependent Variable: Dummy=1 if Physical Violence Experienced						
	Women			Men		
	Pooled	*Before Noon*	*Past Noon*	*Pooled*	*Before Noon*	*Past Noon*
Program Operating	0.164	0.963	0.018	0.499	1.332	0.002
	[0.089]*	[0.661]	[0.069]	[0.194]**	[0.535]**	[0.244]
Observations	2540	1410	1130	983	550	433
R-squared	0.27	0.31	0.29	0.17	0.26	0.23
Controls						
Date Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Socio-Economic Variables	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%