

Pre-analysis plan and design description

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```
library(RIttools)
library(optmatch)
library(tidyverse)
library(arm)
library(tidyverse)
library(coin)
load(here::here("Analysis", "match_data_prep.rda"), verbose = TRUE)
```

```
Loading objects:
wdat17p
wdat17i
wdat18p
wdat18i
covs3
allcovs
outcomes
designvars
covsCensus
```

```

covaS
load(here::here("Analysis", "initial_balance.rda"), verbose = TRUE)

Loading objects:
  xb0i
  xb_svd_i
  initial_omnibus_bal
  initial_omnibus_bal_perm
  baselineFmla
  baselineFmlaCluster
## First, drop the observations for the placebo pharmacies

table(wdat17i$soldvsnot17, exclude = c())

  0    1 <NA>
420 160   20
table(wdat17p$soldvsnot17, exclude = c())

  0    1 <NA>
42   16    2
load(here::here("Analysis", "design_soldvsnot.rda"), verbose = TRUE)

Loading objects:
  parms1_res
  parms1
  dat17i
  dat17p

```

We aim to assess the effect of living near a pharmacy that sells marijuana on the attitudes and perceptions of the neighbors after living near that selling pharmacy for one year. We are focusing on neighbors' perceptions of crime and experiences with crime as outcomes in this study.

1 Study Design Overview: Data Collection

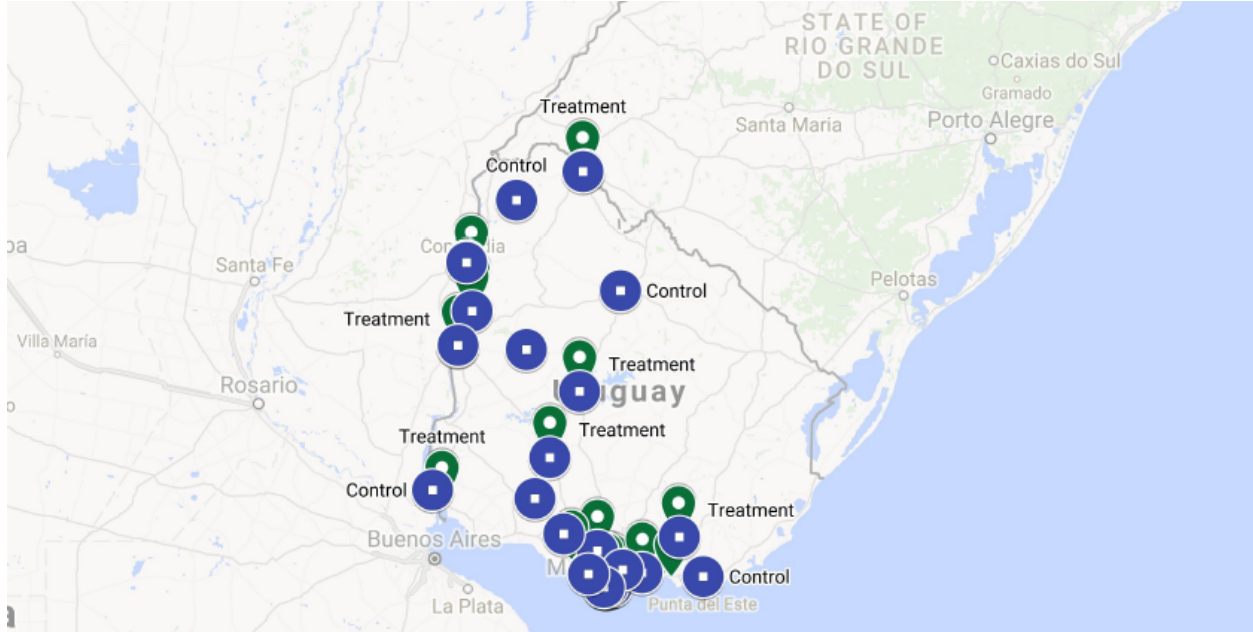
1.1 Data Collection: Changes in Selling Pharmacies

Our initial sample contained 42 non-selling pharmacies and 18 selling ones. Figure 1.1 shows the geographical distribution of the pharmacies in our study. During the first year of policy implementation, some changes in the pharmacies selling group occurred. First, two pharmacies that initially were registered to sell, never actually did it: this reduced our selling group to 16. Second, six pharmacies that had entered the system abandoned it due to the prohibition imposed by US banks that forbid cannabis selling pharmacies to operate with bank accounts.¹ And third, because pharmacy registration remained open, 4 new pharmacies entered the system.

This means that by the second round of data collection we had (1) pharmacies that never sold and never registered to do it (n=42) that we call `control'` or `comparison'` pharmacies, (2) two pharmacies that never sold but initially were willing to do it (n=2) named as `placebo'` pharmacies, (3) pharmacies that sold cannabis during the entire time between the first and second round (n=10) that we label as `wholetime'`, (4) pharmacies that sold marijuana for some of that first year but stopped selling at some point between 2017 to 2018 (n=6) that we call `dropouts'`, and (5) pharmacies that joined the system at some point between the 2017 round and 2018 round (n=4) that we call `newcomers'`

¹For information about the problem with the banking system see: <https://www.elobservador.com.uy/nota/broucierra-cuentas-vinculadas-con-marihuana-y-mas-farmacias-evaluan-dejar-de-venderla-20178175004>.

Figure 1: Pharmacies registered to sell marijuana and comparison pharmacies



Note: green symbols show pharmacies registered to sell marijuana as of June 2017.
Blue symbols are comparison pharmacies.

The selection process for pool of non-selling pharmacies used for comparison with the selling pharmacies followed four criteria that aimed to produce a set of pharmacies that was not selling cannabis where the neighborhood characteristics would be at least roughly similar to the neighborhood characteristics of the selling pharmacies. Here we describe the first steps in our selection process. The first criteria was **same geographical unit** --- pharmacies in the same administrative region (the *departamento*) without at least one selling pharmacy were deleted from the sampling frame. The second criteria was **population density** --- pharmacies in rural areas were deleted from the sample because none of the selling pharmacies is located in rural areas. The third criteria was **criminality rate** --- pharmacies in neighborhoods (for Montevideo) or cities where homicides reports, assaults reports and robberies reports are too high or too low in comparison with the neighborhoods where selling pharmacies were situated, were discarded. The fourth criteria is **distance** --- pharmacies in the control group should be at least 6 blocks away from any treatment pharmacy. After eliminating the pharmacies that did not pass the four criteria, we randomly selected 42 control pharmacies among the remaining roughly 1000 pharmacies \footnote{We used official sociodemographic information about the neighbourhoods/localities/departamentos. See Table 4 in the Appendix for more details on the pharmacies characteristics}.

For this study we are interested in the effects of living near a pharmacy that sold marijuana for at least part of the period. Since we did not have baseline data for the **newcomer** pharmacies, we do not use them in our analysis as described here. We combine the **wholetime** and **dropout** pharmacies as our **selling** group (16 pharmacies) and use the 42 comparison pharmacies which never sold marijuana as the source of our comparison group. We describe more below about how we designed our specific comparisons after we describe the survey data collection that measured attitudes about marijuana before and after the pharmacies began sales.

Table 1: Status of marijuana selling pharmacies

Pharmacy	Neighborhood	Dpt.	Round 1	Round 2	Entrance	Drop out	Type
Antartida	Centro	Montevideo	Yes	Yes	7/19/17		wholetime
Caceres	Pocitos	Montevideo	Yes	Yes	7/19/17		wholetime
Tapie	Ciudad vieja	Montevideo	Yes	Yes	7/19/17		wholetime
Las toscas	Las toscas	Canelones	Yes	Yes	7/19/17		wholetime
Nueva Brun	Trinidad	Flores	Yes	Yes	7/19/17		wholetime
Gortari	Centro	Lavalleja	Yes	Yes	7/19/17		wholetime
La Cabina	Las Flores	Maldonado	Yes	Yes	7/19/17		wholetime
Termal guaviyu	Termas	Paysandú	Yes	Yes	7/19/17		wholetime
Albisu Termal	Pasaje Comercial	Salto	Yes	Yes	7/19/17		wholetime
Bengoechea	Centro	Tacurembó	Yes	Yes	7/19/17		wholetime
Miguel	Canelones centro	Canelones	Yes	Yes	7/19/17	10/2/17	dropouts
Carmelo	Carmelo	Colonia	Yes	Yes	7/19/17	8/25/17	dropouts
Pitagoras	Malvin norte	Montevideo	Yes	Yes	7/19/17	8/9/17	dropouts
Saga	Centro	Artigas	Yes	Yes	7/19/17	9/6/17	dropouts
Medicci	Paysandú	Paysandú	Yes	Yes	7/19/17	9/1/17	dropouts
Bidegain	Libertad	San José	Yes	Yes	7/19/17	9/1/17	dropouts
Camaño	Pocitos	Montevideo	No	Yes	9/11/17		newcomers
Silleda	Brazo oriental	Montevideo	No	Yes	9/11/17		newcomers
Constitución Sur	Flor de Maroñas	Montevideo	No	Yes	20/4/18		newcomers
Lilen	Punta Carretas	Montevideo	No	Yes	17/5/18		newcomers

1.2 Neighbors Survey

The data used in this analysis come from face-to-face surveys that aimed to help us measure the crime victimization experienced by those living near pharmacies and their attitudes towards the law and public security. None of these surveys were intended to be representative of the Uruguayan population. We conducted two rounds of surveys with neighbors of selling and non-selling pharmacies. In collaboration with TODO NAME OF THE GOVERNMENT GROUP, our research team learned the names and locations of the pharmacies that were going to sell marijuana as of the date that the law allowing sales at pharmacies went into effect (July 19, 2017). In the first survey round, fieldwork started on June 17, 2017 and finished in July 1, 2017 before the sales started. The final sample contains 600 neighbors of 60 pharmacies, 10 neighbors per pharmacy. The list of pharmacies that were licensed to sell marijuana was confidential until the sale started, so this initial group of neighbors did not know if their closest pharmacy was going to sell.

The second round of the survey was carried out approximately one year later, between August 9 and September 30, 2018. Overall, we have conducted 1298 interviews across the country in the two rounds. Respondents were selected among people over 18 years old that lived in the sampled household and were present at the moment of the interview. The most recent birthday selection process was used to choose among households residents.

1.3 Pharmacy Interviews

In addition to neighbors, we also interviewed one representative of each pharmacy (sellers and non-sellers) in both rounds. Overall, we conducted 119 surveys with pharmacy representatives (59 in 2017 and 60 en 2018). Data from the pharmacies' representatives survey allowed us to characterize selling and non-selling pharmacies, and to describe any initial differences between them using the 2017 data.

The data that we collected show that selling and non-selling pharmacies are not different in terms of their general characteristics: TODO EXPLAIN A BIT MORE SHOW A TABLE MAYBE. The only relevant distinction is that among non-selling there are stores that are part of a larger pharmacy's

chain. In terms of infrastructure both selling and non-selling pharmacies are quite similar, and they are also similar regarding security measures, perceptions of security by their workers (the representatives of the pharmacy who spoke with our interviewer) and crime victimization. These data suggest that pharmacies that sell cannabis did so not because they are better equipped in terms of security protection, have suffered less crimes and/or feel more secure in their neighborhoods. We also did not detect large differences between the ways that pharmacy representatives thought about cannabis and its users (TODO see Table/Figure TODO in Appendix).

The most important distinction among sellers and non-sellers is concerning opinions towards the public policy itself. Owners and representatives of pharmacies that decided to sell are consistently more in favor of the regulation and anticipate it would have more positive impacts on society? (TODO Table ?? in the Appendix).

1.4 The Stratification Design

To learn about whether sale of cannabis in pharmacies influences crime victimization, attitudes and perceptions of neighbors, we compare the survey responses of neighbors living near pharmacies selling cannabis to the responses of neighbors who did not live near such pharmacies. The problem arising from a strategy like this, is that neighborhoods where pharmacy owners decided to sell cannabis are probably different from neighborhoods where they decided to pass over the opportunity to sell cannabis (we already know that owners and representatives of the pharmacies differ on their opinions towards the policy even if the pharmacies themselves were not overly different in most other aspects see TODO Table in Appendix). The question is whether the amount of difference between the two groups of pharmacies would mislead us as we interpret such comparisons. What is the standard to judge whether a given comparison people living near selling to non-selling pharmacies might mislead us? We know that if an intervention is randomly assigned, then the comparisons based on that intervention would not confuse causal effects with confounding. That is, we know that, say, if we were to randomly assign licenses to sell marijuana to 16 out of 60 pharmacies, those 16 pharmacies and their surrounding neighborhoods might well differ, but those differences would not be systematically related to the decision to sell marijuana, and thus not systematically related to the exposure of people nearby to the selling of marijuana. Now, we do not have such a randomized design, but we know what such a design would look like. And we can use the hypothetical design as a standard against which we can compare an observational study. (Hansen and Bowers 2008) develop a formal way to compare a given observed comparison with what would be expected if that comparison had been randomized: they provide a test for the hypothesis that the neighbors of selling pharmacies and the neighbors of not selling pharmacies might have been allocated at random.

In our case, the raw comparison of attitudes around pharmacies selling cannabis and those not selling cannabis, confirms our hunch that the places do not in fact compare favorably to a randomized experiment: an omnibus balance test (Hansen and Bowers 2008) across 89 covariates reports a p -value of 0.0682.

1.5 Designing a Better Baseline Comparison

Our strategy to finding comparisons between people living near selling versus non-selling pharmacies involves stratification: we create pairs of pharmacies which are similar in the characteristics of their neighborhoods before they began to sell marijuana. These characteristics include aggregated survey data from the neighborhoods that these pharmacies serve – for example, the mean age of the survey

respondents as well as the 25th percentile of the age of those survey respondents. Overall, we use more than 80 covariates measured before the pharmacies began selling marijuana.

Why create pairs? Let's consider the hypothetical case of a pair-randomized experiment. If we had managed to convince the government to issue the registrations by lottery and if a large pool of pharmacies had entered the lottery, we would be able to say that the pharmacies and nearby neighborhoods selected by lottery to sell cannabis would be no different from the pharmacies and associated neighborhoods losing the lottery. This would also be the case if the lottery occurred in groups of places — say, the right to sell were randomly assigned among pharmacies in Montevideo and also among pharmacies outside of Montevideo. This kind of design would yield a block-randomized experiment. If Montevideo/Interior were the only observed covariate that might confound our comparison, we could directly compare pharmacies to each other within area, and we could compare that stratified design to a hypothetical block-randomized experiment in order to assess the comparison (just as we did above when we compared the simple selling-vs-not selling comparison to a simple randomized experiment with 16 treated and 42 control groups and 81 background covariates). This is what we do below. We use an optimization strategy to produce a series of strata that compares favorably to a hypothetical block-randomized experiment across many observed covariates.

Of course, we do not claim that a stratified design substitutes for an experiment — we can only speak to differences on the covariates we observed, not on all possible observed and unobserved as we could if we had an actually randomized experiment.

If we find that we have strong evidence against the null of no effects of living near a pharmacy (say, p -values of less than .05 on tests of that hypothesis in the outcome analysis), then we will assess the extent to which we might change our substantive conclusions based on the stratified design due to the influence of unobserved covariates.²

Our specific design creates strata with similar neighborhoods where one neighborhood has a pharmacy selling marijuana and the other comparison neighborhoods were places where a pharmacy did not sell marijuana. This design compared favorably with a randomized experiment. The algorithm ended up dropping 13 neighborhoods as too different from the focal neighborhoods.

For example, it created 14 pairs and two sets with one selling pharmacy and two non-selling pharmacies. It also dropped 24 comparison pharmacies. The comparison to a randomized experiment across many covariates suggests little evidence against the idea that this design is compatible with the randomized hypothetical design ($p=0.5762$).

```
summary(parms1_res$fm_p, max.controls = Inf)
```

```
Structure of matched sets:
1:1 1:2 0:1
 14  2 24
Effective Sample Size: 16.7
(equivalent number of matched pairs).
pvalue(parms1_res$maxTp)[[1]]
```

```
[1] 0.5755
```

²See [rosenbaum2010design], Chapter 3 for an overview of this method of sensitivity analysis and [cinelli2020making] for an approach we would use with our linear models.

2 Analysis Plan

2.1 Outcomes

Our outcome variables are the following:

```
outcomes <- c("n_sec_i", "c_sec_i", "vic12", "dt_impact_i", "ps_impact_i", "boca1_i", "social_dis", "activities_index")
```

Hypothesis	Outcome	Variable(s)
H1	Neighbors' crime victimization in the last 12 months	vic12
H2	Neighbors' insecurity perceptions. Country and neighborhood	c_sec_i and n_sec_i
H3	Existence of "bocas" in the neighborhood	boca1_i
H4	Social Disorder Index	social_dis
H5	Neighbors' insertion in neighborhood	activities_index
H6	Law's perceived of impact on public security	ps_impact_i
H7	Law's perceived of impact on drug trafficking	dt_impact_i

For more on how these were created and their coding, see Table~?? in . §~??

3 Hypotheses

We developed and motivated these hypotheses in our literature review and synthesis, not shown here. We list them here as a guide to our analysis.

Our two main confirmatory hypotheses are: - H1: *Crime victimization of pharmacies' neighbors will not differ between people living near selling versus non-selling pharmacies*

- H2: *Neighbors' insecurity perceptions will not differ between people living near selling versus non-selling pharmacies*

In addition we have five exploratory hypotheses:

- H3: *The sale of marijuana at pharmacies will push "bocas" outside the neighborhood, and by doing that, neighbors' insecurity perception might be reduced*
- H4: *The sale of marijuana at pharmacies will increase social disorder in the neighborhood, that would lead to higher levels of public insecurity perception among neighbors*
- H5: *The sale of marijuana at pharmacies will diminish citizens' overall connection with and participation in the neighborhood*

- H6: *The sale of marijuana at pharmacies will not change citizens' evaluations about the impact of marijuana legalization on public security*
- H7: *The sale of marijuana at pharmacies will change citizens' evaluations about the impact of marijuana legalization on drug trafficking*

4 Measures and Index Construction

The social disorder index was built using three variables measured using the surveys: perceptions of presence of young people loitering, perceptions of presence of drunk or stoned people in the streets, and perceptions of presence of people arguing with each other. Each of these variables have the following values: 1 (Not at all), 2 (Little), 3 (Somewhat), and 4 (Very much). In order to construct the index we assume intermediate substitutability among variables and assign the mean value Goertz 2006.

Citizens' Connection to their Neighborhood is an index constructed with eight variables grouped in four dimensions. The dimensions are: use of services (education and health) in the neighborhood, contact among neighbors (chat and/or meet for collective action activities), perform recreational activities in the neighborhood, and shopping in the neighborhood. We assume intermediate substitutability among dimensions and assign the mean value. The use of services dimension has two indicators: use of educational services (kindergarten, school, high school) in the neighborhood and use of health services (doctor, hospital) in the neighborhood. We assume total substitutability among the two indicators and assign the maximum value Goertz 2006. Contact among neighbors dimension also has two indicators: talk with your neighbors and meets/organizes with the neighbors for any improvement activity for the neighborhood. We also assume total substitutability among the two indicators and assign the maximum value. Perform recreational activities in the neighborhood is measured by the question: do you perform any recreational activities in the neighborhood? Finally, shopping in the neighborhood is measured by the question: do you purchase in warehouses or stores in the neighborhood?

We document our index construction in the github repository in `datasetup.do`.

Table 1. Outcomes variables description

Variable	Question	Scale	Minimum	Maximum
Country insecurity perception	In general, in your country, do you feel very safe somewhat unsafe or very unsafe?	1. Very safe; 2. Somewhat safe; 3. Somewhat unsafe; 4. Very unsafe; 88 - Don't know; 99 - No answer	1	4

Variable	Question	Scale	Minimum	Maximum
Neighborhood insecurity perception	And in the neighborhood where you live, do you feel very safe, somewhat safe, somewhat unsafe or very unsafe?	1. Very safe; 2. Somewhat safe; 3. Somewhat unsafe; 4. Very unsafe; 88 - Don't know; 99 - No answer	1	4
Crime victimization in the last 12 months	Now, changing the subject, have you been a victim of any type of crime in the past 12 months? That is, have you been a victim of robbery, burglary, assault, fraud, blackmail, extortion, violent threats or any other type of crime in the past 12 months?	1. Yes; 2. No; 88 - Don't know	1	2
Perceived impact on public security	Now regarding to public safety, because of this law, do you think the country will be better, will remain the same or will be worst?	1. Yes; 2. No; 88 - Don't know; 99 - No answer	1	3
Perceived impact on drug-trafficking	And regarding the fight against drug-trafficking, do you think the country will be better, will remain the same or will be worst?	1. Yes; 2. No; 88 - Don't know; 99 - No answer	1	2

Variable	Question	Scale	Minimum	Maximun
Reported existence of bocas	Based on what you know or hear, there is a any boca in this area?	1. Yes; 2. No; 88 - Don't know; 99 - No answer	1	2
Social Disorder Index	Index	1. Nothing; 2. A little; 3. Something; 4. A lot	4	1
Presence of young people loitering	Observation	1. Nothing; 2. A little; 3. Something; 4. A lot	4	1
Presence of drunk or stoned people in the streets	Observation	1. Nothing; 2. A little; 3. Something; 4. A lot	4	1
Presence of people arguing with each other	Observation	1. Nothing; 2. A little; 3. Something; 4. A lot	1	4
Citizens insertion in the neighborhood	Index	-	0	1
Talk with your neighbors	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: talk with your neighbors	1. Once a week; 2. Once or twice a week; 3. Once or twice a year; 4. Never; 88. Don't know; 99. No answer;	4	1

Variable	Question	Scale	Minimum	Maximum
Chat and/or meet for collective action activities	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: chat and/or meet for collective action activities	1. Once a week; 2. Once or twice a week; 3. Once or twice a year; 4. Never; 88. Don't know; 99. No answer;	4	1
Use educational services (kindergarten, school, high school)	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: use educational services (kindergarten, school, high school)	1. Once a week; 2. Once or twice a week; 3. Once or twice a year; 4. Never; 88. Don't know; 99. No answer;	4	1
Use health services (doctor, hospital)	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: use health services (doctor, hospital)	1. Once a week; 2. Once or twice a week; 3. Once or twice a year; 4. Never; 88. Don't know; 99. No answer;	4	1

Variable	Question	Scale	Minimum	Maximum
Buy in local stores	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: buy in local stores	1. Once a week; 2. Once or twice a week; 3. Once or twice a year; 4. Never; 88. Don't know; 99. No answer;	4	1
Perform recreational activities	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: perform recreational activities	1. Once a week; 2. Once or twice a week; 3. Once or twice a year; 4. Never; 88. Don't know; 99. No answer;	4	1

5 Estimation Procedure and Inference Criteria

We will estimate the average effect of living near a pharmacy that sells marijuana using differences of means conditional on matched set, adjusting the standard errors for hypothesis testing and confidence interval creation using the CR2 cluster-robust standard errors at the level of the neighborhood (cite). All of this will occur using the `lm_robust()` command from the `estimatr` package in R. For example, if `soldvsnot17` is an indicator of whether a pharmacy sold marijuana and `fm_i` is an indicator of pair and `Q56` is a neighborhood indicator, then we will estimate effects and calculate confidence intervals for the average effect as follows:

```
lm1 <- lm_robust(outcome1 ~ soldvsnot17, fixed_effects = ~fm_i, cluster = Q56, data = dat17i)
```

5.1 Subgroup analysis

We expect that the effects of living near a pharmacy should be weaker for those people living near the “dropout” pharmacies if living near a pharmacy does matter for the outcomes. We also assess this exploratory hypothesis using the same analytic strategy as above, but allowing different effects for people living near the dropout pharmacies. For example, we would use code like this:

```
lm2 <- lm_robust(outcome1 ~ soldvsnot17 * I(dropout), fixed_effects = ~fm_i, cluster = Q56, data = dat17i)
```

5.2 Approach to multiple testing

We have 8 outcomes and one comparison (Selling versus Not Selling pharmacy). If we were going to make a decision about the effect of the pharmacies if *any one of the 8 comparisons yielded a $p < .05$* then we would make a false positive error not 1 in 20 tests, but $1 - (1 - .05)^8 \approx 1/3$ or almost 7/20.

However, if each analysis stands alone in terms of our decision making: the assessment of perceptions of insecurity can be null or significant independently of the assessment of reports of experiences with crime, then we do not need to adjust the tests.

In the case of this project, we do not make any adjustment because decisions regarding the effect of the pharmacy stand alone.

6 Missing Data and Extreme Data Points

Since our data are from a survey we do not anticipate extreme data points in the endline — our work with the baseline data supports this idea that we should not worry about overly influential points

6.0.1 Sensitivity Analysis

We will conduct a sensitivity analysis using both the Rosenbaum style approach (probably using the `senstrat` package for R) and the Cinelli and Hazlett approach (using the `sensmakr` package for R) on results where we have strong evidence against the null of no effects.

7 Appendix

Table 4: Indicators for Selected Pharmacies

Locality	Pharmacy's name	Administrative Region (departamento)	Treatment	Assaults per neighborhood/Locality	Assaults per administrative region	Robberies per Locality	Robberies per administrative region	Homicides per administrative region	Total population of administrative region	Total population per Locality	Locality's population density	Average income of the Locality	Average age of the Neighborhood/Locality
Malvin Norte	Pitagoras	Montevideo	Yes	871	11409	184	31.137	113	1.305.082	19.916	11.620	19.302	39
Cordon	Galena	Montevideo	No	1469	11409	222	31.137	113	1.305.082	42.456	18.629	29.580	39
Aguada	Rosevelt	Montevideo	No	514	11409	514	31.137	113	1.305.082	18.557	8.982	25.982	40
Belvedere	Mastil	Montevideo	No	480	11409	480	31.137	113	1.305.082	21.970	6.861	18.376	41
Paso	Mastil	Montevideo	No	0	11409	0	31.137	113	1.305.082	21.970	6.861	18.376	40
Molino													
Pocitos	Bruto del Pino	Montevideo	No	1221	11409	171	31.137	113	1.305.082	67.992	21.660	42.403	44
Sayago	Farmacia Ariel	Montevideo	No	626	11409	189	31.137	113	1.305.082	14.692	5.625	21.465	38
Cordon de Curva	La caja	Montevideo	No	1469	11409	222	31.137	113	1.305.082	42.456	18.629	29.580	38
Maroñas	Lulisan	Montevideo	No	0	11409	239	31.137	113	1.305.082	20.812	7.133	15.591	41
Parque Rodo	Farmashop 50	Montevideo	No	429	11409	0	31.137	113	1.305.082	12.944	16.898	33.781	41
Ciudad Vieja	Cielmar	Montevideo	No	593	11409	0	31.137	113	1.305.082	12.555	5.947	23.112	41
Union Buco	Milena	Montevideo	No	1582	11409	299	31.137	113	1.305.082	39.880	9.975	21.562	43
Brazo oriental	Farmashop 58	Montevideo	No	1155	11409	251	31.137	113	1.305.082	36.998	8.905	27.440	43
Sayago	Farmacia Goñi	Montevideo	No	456	11409	0	31.137	113	1.305.082	16.812	8.976	21.519	43
La Blanca	Central	Montevideo	No	626	11409	189	31.137	113	1.305.082	14.692	5.625	21.465	43
Parque Batlle	Guarani	Montevideo	No	0	11409	0	31.137	113	1.305.082	9.600	12.245	31.489	43
Cordon Malvin	FARMASHOP 52	Montevideo	No	1049	11409	185	31.137	113	1.305.082	31.153	9.231	36.782	40
Malvin	Pigalle	Montevideo	No	1469	11409	222	31.137	113	1.305.082	42.456	18.629	29.580	43
Malvin	El tunel	Montevideo	No	871	11409	217	31.137	113	1.305.082	28.102	8.027	37.732	40
Centro	Roque	Montevideo	No	871	11409	217	31.137	113	1.305.082	28.102	8.027	37.732	40
Pocitos	Antartida	Montevideo	Yes	1120	11409	173	31.137	113	1.305.082	22.120	17.055	34.049	44
Ciudad vieja	CACERES	Montevideo	Yes	1221	11409	171	31.137	113	1.305.082	67.992	21.660	42.403	44
Aguada	Tapie	Montevideo	Yes	593	11409	0	31.137	113	1.305.082	12.555	5.947	23.112	43
La Blanca	Sildia	Montevideo	No	514	11409	514	31.137	113	1.305.082	18.557	8.982	25.982	43
Ciudad de Artigas	Quintela	Montevideo	No	0	11409	0	31.137	113	1.305.082	9.600	12.245	31.489	41
Bella Unión	Saga	Artigas	Yes	14	25	386	1.647	0	73.377	40.658	2.740	11.733	36
Ciudad de Artigas	Santa Cecilia	Artigas	No	7	25	2	1.647	0	73.377	40.658	2.740	11.733	36
Las Toscas	Centro Horandre	Artigas	No	14	25	386	1.647	0	73.377	40.658	2.740	11.733	36
Ciudad de Canelones	Las toscas	Canelones	Yes	38	2165	1160	11.490	26	520.173	3.146	1.022	19.130	40
Parque del Plata	miguel bologna	Canelones	Yes	57	2165	706	11.490	26	520.173	19.865	1.582	19.130	40
Ciudad de Canelones	Pirujas	Canelones	No	38	2165	1160	11.490	26	520.173	7.896	945	19.130	40
Pando	Farmacia central	Canelones	No	57	2165	706	11.490	26	520.173	19.865	1.582	19.130	40
Carmelo	Farmacia central	Canelones	No	169	2165	1045	11.490	26	520.173	25.947	2.471	15.117	38
Nueva Palmira	Carmelo Arrieta	Colonia	Yes	2	20	434	1.971	3	123.203	18.041	1.512	15.117	38
Carmelo	Ferrer	Colonia	No	4	20	100	1.971	3	123.203	9.857	528	15.947	38
Trinidad	Nueva Flores	Flores	Yes	2	20	434	1.971	3	123.203	18.041	1.512	15.117	38
Trinidad	Nueva Brun	Flores	Yes	15	7	644	396	0	25.050	21.429	3.221	15.694	40
Ismael Cortinas	Osta Vidal	Flores	No	15	7	644	396	0	25.050	21.429	3.221	15.694	40
Minas	Gortari	Lavalleya	Yes	0	7	12	396	0	25.050	918	963	15.694	40
Minas	Idamias	Lavalleya	No	27	17	647	1.009	5	58.815	38.446	2.135	15.879	37
Minas	Willman	Lavalleya	No	27	17	647	1.009	5	58.815	38.446	2.135	15.879	37

Table 4: Indicators for Selected Pharmacies

Locality	Pharmacy's name	Administrative Region (departamento)	Treatment	Assaults per neighborhood/Localidad	Assaults per administrative region	Robberies per Locality	Robberies per administrative region	Homicides per administrative region	Total population of administrative region	Total population per Locality	Locality's population density	Average income of the Locality	Average age of the Neighborhood/Localidad
Las Flores	La Cabina	Maldonado	Yes	0	212	102	6.238	12	164.298	241	229		
San Carlos	Alvariza	Maldonado	No	43	212	755	6.238	12	164.298	27.471	3.656	16.948	38
Maldonado	Maldonado	Maldonado	No	31	212	1106	6.238	12	164.298	62.590	4.916	16.127	36
Ciudad de Paysandú	Medicci	Paysandú	Yes	38	74	834	2.635	4	113.107	76.412	3.539	15.082	38
Villa Quebracho	Guaviyu	Paysandú	No	0	74	33	2.635	4	113.107	2.853	2.202	.	.
Termas de Guaviyu	Termal	Paysandú	Yes	0	74	19	2.635	4	113.107	38	44	.	.
Guichón	Lombardi/Guaviyu	Paysandú	No	1	74	19	2.635	4	113.107	5.039	1.577	10.181	37
Ciudad de Paysandú	San Roque	Paysandú	No	29	74	534	2.635	4	113.107	76.412	3.539	15.082	38
Ciudad de Paysandú	Dorotte II	Paysandú	No	29	74	534	2.635	4	113.107	76.412	3.539	15.082	38
Dayman	Albisu	Salto	Yes	17	122	1187	2.978	7	124.861	356	209		
Ciudad de Salto	Termal	Salto	No	16	122	804	2.978	7	124.861	104.011	2.812	16.209	38
Ciudad de Salto	Farmacia Pasteur	Salto	No	16	122	804	2.978	7	124.861	104.011	2.812	16.209	38
Libertad	Bedegain	San José	Yes	10	143	440	1.815	2	108.304	10.167	1.764	15.757	37
Ciudad del Plata	Del 26	San José	No	109	143	507	1.815	2	108.304	31.146	1.200	21.655	37
San José de Mayo	Bellini	San José	No	20	143	646	1.815	2	108.304	36.743	2.641	18.934	40
Paso de los Toros	Bengoechea	Tacurembó	Yes	1	16	93	907	6	90.051	12.985	1.341	12.768	36
Paso de los Toros	Demilton	Tacurembó	No	1	16	93	907	6	90.051	12.985	1.341	12.768	36
Tacurembó	Dini	Tacurembó	No	19	15	600	907	6	90.051	54.757	1.721	13.940	37
Pocitos	Camaño	Montevideo	Yes	1221	11409	171	31.137	113	1.305.082	67.992	21.660	42.403	44
Brazo oriental	Silleda	Montevideo	Yes	456	11409	0	31.137	113	1.305.082	16.812	8.976	21.519	43
Flor de Maroñas	Constitución	Montevideo	Yes	0	11409	239	31.137	113	1.305.082	20.812	7.133	15.591	42
Punta Carretas	Sur Lilén	Montevideo	Yes	617	11409	170	31.137	113	1.305.082	24.181	8.858	46.759	43

Source: Own elaboration. Population data from National Census (2011). Income and age data from National Household Survey (2017). Criminality data per administrative regions from Ministry of Interior (1st. semester 2018). Criminality data per neighborhoods in Montevideo from Ministry of Interior (1st. semester 2018). Criminality data per localities in the rest of the country from Ministry of Interior (2016).

8 Outcome Variables

Table 5: Outcome Variable Description

Variable	Survey question	Scale	Min.	Max.
Country insecurity perception	In general, in your country, do you feel very safe somewhat unsafe or very unsafe?	1. Very unsafe 2. Somewhat unsafe 3. Somewhat safe 4. Very safe	1	4
Neighborhood insecurity perception	And in the neighborhood where you live, do you feel very safe, somewhat safe, somewhat unsafe or very unsafe?	1. Very unsafe 2. Somewhat unsafe 3. Somewhat safe 4. Very safe	1	4
Crime victimization in the last 12 months	Now, changing the subject, have you been a victim of any type of crime in the past 12 months? That is, have you been a victim of robbery, burglary, assault, fraud, blackmail, extortion, violent threats or any other type of crime in the past 12 months?	0. Yes 1. No	0	1
Perceived impact on public security	Now regarding to public safety, because of this law, do you think the country will be better, will remain the same or will be worst?	1. Worst (is already worst) 2. Same 3. Better (is already better)	1	3
Perceived impact on drug trafficking	Now regarding to drug trafficking, because of this law, do you think the country will be better, will remain the same or will be worst?	1. Worst (is already worst) 2. Same 3. Better (is already better)	1	3
Reported existence of “bocas”	Based on what you know or hear, there is a any “bocas” in this area?	0. Yes 1. No	0	1
Social disorder index	Built with the following questions:	1. Very much 2. Somewhat 3. Little 4. Not at all	1	4
Presence of young people or children in the streets without doing anything, who are wandering	Observational	1. Very much 2. Somewhat 3. Little 4. Not at all	1	4
Presence of people drunk or stoned in the streets	Observational	1. Very much 2. Somewhat 3. Little 4. Not at all	1	4
Presence of people discussing in aggressive or violent (speaking in a tone of voice very high, with anger)	Observational	1. Very much 2. Somewhat 3. Little 4. Not at all	1	4
Citizens insertion in neighborhood*	Built with the following questions:	-	0	1
Talk with your neighbors	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: talk with your neighbors	1. Never 2. Once or twice a year 3. Once or twice a month 4. Once a week	1	4
Organize meetings with the neighbors to improve the neighborhood	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: organize meetings with the neighbors to improve the neighborhood	1. Never 2. Once or twice a year 3. Once or twice a month 4. Once a week	1	4
Use educational services (kindergarten, school, high school) in the neighborhood	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: use educational services (kindergarten, school, high school) in the neighborhood	1. Never 2. Once or twice a year 3. Once or twice a month 4. Once a week	1	4
Use health services (doctor, hospital) of the neighborhood	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: use health services (doctor, hospital) of the neighborhood	1. Never 2. Once or twice a year 3. Once or twice a month 4. Once a week	1	4
Buy at the shops in the neighborhood	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: buy at the shops in the neighborhood	1. Never 2. Once or twice a year 3. Once or twice a month 4. Once a week	1	4
Do recreational activities in the neighborhood	Finally, thinking about the activities you do in this neighborhood, please tell me how many times you: do recreational activities in the neighborhood	1. Never 2. Once or twice a year 3. Once or twice a week 4. Once a week	1	4

*Standardized

The social disorder index was built using three variables: presence of young people loitering, presence of drunk or stoned people in the streets, and presence of people arguing with each other. Each of these variables have the following values: 1 (Very much), 2 (Somewhat), 3 (Little), and 4 (Not at all). In order to construct the index we assume intermediate substitutability among variables and assign the mean value Goertz 2006.

citizens' Insertion on their Neighborhood is an index constructed with eight variables grouped in four dimensions. The dimensions are: use of services (education and health) in the neighborhood, contact among neighbors (chat and/or meet for collective action activities), perform recreational activities in the neighborhood, and shopping in the neighborhood. We assume intermediate substitutability among dimensions and assign the mean value. The use of services dimension has two indicators: use of educational services (kindergarten, school, high school) in the neighborhood and use of health services (doctor, hospital) in the neighborhood. We assume total substitutability among the two indicators and assign the maximum value Goertz 2006. Contact among neighbors dimension also has two indicators: talk with your neighbors and meets/ organizes with the neighbors for any improvement activity for the neighborhood. We also assume total substitutability among the two indicators and assign the maximum value. Perform recreational activities in the neighborhood is measured by the question: do you perform any recreational activities in the neighborhood? Finally, shopping in the neighborhood is measured by the question: do you purchase in warehouses or stores in the neighborhood? Each indicator is measured using the same scale: 1 (Never), 2 (Once or twice a year), 3 (Once or twice a month), and 4 (Once a week). Citizens' insertion is an index standardized, values go from 0 to 1.

References

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