Silenced: Consequences of the Nuisance Property Ordinances *

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Aria Golestani

Abstract

Nuisance property ordinances label a property as a nuisance, and violations are filed against landlords when the police respond to a home a set number of times within a certain period (e.g., three times in six months). After having a property declared a nuisance, property owners who do not abate the nuisance can face fines and criminal charges. Many landlords renting to tenants who incur NuPO violations respond by evicting the tenant, refusing to renew their lease, or instructing tenants not to call 911. In this paper, I examine the impact of applying these policies to domestic violence. Using individual- and agency-level data, I exploit time variation in the enactment of nuisance ordinances across 40 major MSAs to identify the impacts of these ordinances on the rate at which assault victimization is reported to police. I find that nuisance ordinances decrease the rate at which assaults that happen inside the home are reported, and those living in rental units are particularly affected by these ordinances. I also find evidence that these nuisances are followed by a significant increase in the number of reported intimate partner homicides. Results indicate these policies do not affect reporting rates for crimes that are not associated with a property and do not affect non-intimate partner homicide rates. Findings are robust to the inclusion of controls for individual, policy, and economic variables. Additionally, these findings are consistent with estimates produced using alternative estimation strategies proposed by the recent literature on the internal validity of the two-way fixed effect models with staggered rollout and dynamic or heterogenous treatment effects.

Keywords: Crime Reporting, Domestic Violence, Intimate Partner Violence, Evictions, Housing Security, Illegal Behavior and the Enforcement of Law, Housing Supply and Markets
JEL: K42, R31 J18

1. Introduction

A growing number of cities are adopting nuisance property ordinances. Nuisance property ordinances (henceforth, NuPO[1]) label a property as a *nuisance* and impose sanctions on property owners based on the number of times police respond to the property or instances of alleged criminal conduct. While conduct defined as a nuisance varies by ordinance (and municipality), most ordinances contain a broad list of offenses associated with a property ranging from disorderly or disruptive conduct to any criminal conduct, including assault, occurring on or near the property. A majority of ordinances rely on an *excessive* number of 911 calls to determine whether a property is a nuisance, even when a person in need of services is a victim of domestic violence (DV). Upon receiving a nuisance citation, owners or landlords are instructed to *abate the nuisance* or face penalties, such as fines, the loss of their rental permits, and, in extreme cases, incarceration. Critics of these ordinances argue that landlords may respond by evicting the tenant, refusing to renew their lease, or instructing tenants not to call 911 (ACLU; Desmond and Valdez, 2012; Mead et al., 2017).

Nuisance laws aim at recovering the cost of excessive police services and reducing crime. By holding owners and landlords accountable for alleged criminal activities on their property, these laws provide a seemingly low-cost alternative to traditional police involvement to deter crime.[2] These ordinances, though, effectively increase the cost of reporting crime victimization and significantly impact DV victims, causing them to avoid requesting emergency police intervention out of a fear of being evicted. Domestic violence is widely known to be underreported (Klein, 2009; Ellsberg et al., 2001). Based on the National Crime Victimization Survey (NCVS) 1993–2019, about half of domestic violence victimizations were reported to the

[1] This paper has been circulated using the acronym NuPO. However, other research including Mead et al. (2017) has referred to these policies as CANO (Criminal Activity Nuisance Ordinances).

[2] Norristown, PA., code §245-3 (2012) title: "Landlords Responsible for Certain Behavior of Tenants".

police. Enacting nuisance ordinances is becoming an additional factor in deterring crime reporting and contradicts one of the main objectives of the Violence Against Women Act (1994), which aims to ensure that victims and their families have access to the services they need to achieve safety.

This paper examines the impact of nuisance property ordinances on crime reporting and domestic violence. My study begins with assessing the effect of the policy on the rate at which crimes are reported to police. Using victimization data from the NCVS between 1979 and 2004, I exploit time-variation in the enactment and implementation of NuPO laws across major MSAs to identify the impacts of these ordinances on crime reporting and victimization. I find victims of assault are 13 percent less likely to report a crime inside their home to police. I find strong evidence that renters are particularly responsive to nuisance ordinances. I then assess whether or not NuPO achieves one of its main objectives: deterring crimes. Data do not show any significant relationship between the policy and victimization. Lastly, I use the NCVS to examine the impact of NuPO enactment on escalating violence. I find evidence that suggests NuPO leads to a higher rate of injury and a higher likelihood of assault victims acting in self-defense.

An economic theory of household bargaining that incorporates violence predicts that decreasing the victim's bargaining power by worsening outside options raises levels of violence. In other words, the increased cost of reporting and decreased intervention by the criminal justice system as a result of NuPO could affect the probability of escalation and intimate partner homicide (Pollak, 2005; Aizer, 2010; Aizer and Dal Bó, 2009; Miller & Segal, 2019). To test the predictions of this theory, in the second part of the paper, I examine the impact of these ordinances on domestic violence. Supplementary Homicide Reports (SHR) of Uniform Crime Reports (UCR) provide incident-level information on homicides, including the victim's relationship to the murderer. Using SHR, I assess whether NuPO increases the

probability of escalating violence. I find nuisance enactments lead to a sizable increase in the rate of people murdered by intimates.[3]

Lastly, to further corroborate my prior results I use the DV-related calls for assistance dataset from the California Department of Justice to assess the impact of nuisance ordinances on the number of monthly DV calls for assistance reported by agencies between 2001 and 2019. California is home to an estimated 2.5 million undocumented immigrants, most of whom are renters (Mathema, 2017; Christopher, 2021). For families who are, for myriad reasons, including immigration status, experiencing barriers to finding stable and affordable housing, nuisance ordinances create an additional threat to their safety, security, and housing security. California results support the findings in part 1. I find that by leaving victims in a position in which they are risking their housing (or paying fines) by calling for help, nuisance ordinances reduce the number of DV-related 911 calls for assistance by about 12 percent. I also find suggestive evidence on escalating violence. In jurisdictions with nuisance ordinances in their books, the proportion of DV calls that involved a weapon increased.

To my knowledge, this paper provides the first credible causal estimates of the relationship between nuisance property ordinances (or third-party policing[4] in general), crime reporting and DV at the national level. In doing so, the paper makes several contributions. This study, more specifically, complements the rich interdisciplinary literature documenting the cost of nuisance ordinances (Fais, 2008; Mead et al.,2017; Kastner, 2015; Swan, 2015; Epstein and Goodman,

[3] I find *higher* IPH rate for *male* victims that is consistent with studies of DV policy changes including but not limited to, Aizer and Dal Bó (2009) and Miller and Segal (2018). The literature shows that policies aiming at *reducing DV* leads to a reduction in the number of battered women killing their abusers. This paper studies a policy with an opposite impact.

[4] As a form of problem-solving policing, in third party policing, police partner with others (*third* parties) to proactively reduce crime and disorder. The focal point of this type of policing is often people or places. See National Academy of Sciences (2018) and Weisburd & Braga (Eds., 2019).

2018).[5] In a series of influential ethnographic works, Desmond (2016; Desmond and Valdez, 2012) documents that in Milwaukee, nearly a third of all NuPO citations were related to DV. In more than 80 percent of cases where landlords received a citation, landlords evicted or threatened to evict the victim if they[6] contacted the police again.[7] These studies, however, either do not perform a counterfactual analysis (to answer whether nuisance ordinances exacerbated victimization) or are limited to a single unit (i.e., city or state) case studies.[8] By documenting ordinances across major cities in the U.S. and using credible counterfactuals, this paper will allow for more work in this area.

By examining the impact of nuisance property ordinances on domestic assault, it complements broader related literature on the effectiveness of various policies on DV, including the effects of no-drop policies in the prosecution of DV (Aizer and Dal Bó, 2009), the federal Gun Control Act (Raissian, 2016), mandatory arrest policies (Sherman and Berk,1984; Campbell et al., 2003; Iyengar, 2009; Chin and Cunningham, 2019), integration of female officers in policy (Miller and Segal, 2018), introduction of women's police station (Amaral, Bhalotra, and Prakash, 2021; Perova and Reynolds, 2020), and DV-specialized courts and prosecutors (Golestani, Owens, and Raissian, 2021; Arora, Beberman, Jelveh, and Motta, 2021). In assessing the impacts of nuisance ordinances on the number of crimes recorded by police, this paper is most similar to Moss (2019), who documents that in California, jurisdictions that enacted NuPO experienced a reduction in calls for an assistant.[9] While this paper is well-executed, my study makes several

[5] Mead et al. (2017) document that in the state of Ohio, nuisance ordinances are frequently applied to minor and non-criminal conduct and disproportionately target and impact people of color, renters, and those living in subsidized housing. Kroeger and La Mattina (2020) estimate that the enactment of nuisance ordinances in Ohio increases eviction filing rates.

[6] Throughout the paper, I employ "they" as a gender-neutral, third-person singular pronoun.

[7] Desmond and Valdez (2012) also find that these policies disproportionately target racial minorities. A tenant living in a neighborhood where the majority of the residents are Black is three times more likely to receive a nuisance citation than a tenant living in a White-majority neighborhood.

[8] Reading and documenting municipal ordinances in the national level is time consuming and that is, perhaps, the reason why existing research is local.

[9] The sample period in Moss's study is 1995-2016.

important contributions and extensions. First, while data on aggregated DV-related 911 calls provide a valuable tool for examining the reporting pattern, they have two main limitations. First, data do not contain information on non-DV calls to control for the overall reporting pattern in a particular city. Second, using 911 calls (or number of offenses known to law enforcement, or number of arrests made for a particular crime) as the primary source to measure reporting suffers from the *unseen* first-stage selection bias. Observed data provided by police are conditional on a call being made by the *victim* or a crime being known by police. Post-report conditioning underestimates (or conceals) the treatment effect and leads to statistical bias. Without knowing the denominator, i.e., victimization rate, we cannot accurately measure the reporting behavior by victims.

Unlike the literature on the impact of police on crime outcomes, which primarily focuses on the offenders[10], this paper focuses on a particular form of policing (third party policing) and its effect on victims. The results of this study have important implications. First, they suggest that as a result of nuisance property ordinances, a sizeable number of victimizations go unreported. In addition, I do not find any evidence that these ordinances reduce crime victimization, which is one of the key intended goals of the policy. Consistent with the theory and anecdotal evidence, I note that there is a strong relationship between the enactment of the nuisance and intimate partner violence. Reporting a victimization or crime is essential to the quality of police services, and the underreporting of victimization has been a major policy concern. In the majority (about 4 of out 5) of IPHs, no matter which partner was killed, the man physically abused the woman before the murder (Campbell et. al., 2003; Zahn et al., 2003). Thus, one of the primary ways to decrease intimate partner homicide is to identify and intervene promptly with at-risk, abused women.

[10] See McCrary 2002; Di Tella and Schargrodsky 2004; Evans and Owens 2007; Mello 2019; Chalfin, Hansen, Weisburst, and Williams 2020.

The paper proceeds as follows. In Section 2, I provide an overview of NuPO and describe the hypothesized effects. Section 3 discusses data. Section 4 outlines the empirical strategy and presents results for crime reporting and victimization. Section 5 reports the estimated effects of NuPO on DV measured by intimate partner homicide. Section 6 focuses on the number of DV-related 911 calls in California, and Section 7 concludes.

2. Background and Institutional Context

NuPO label a property as a nuisance when the police respond to a home over a set number of times within a certain period (e.g., three times in six months). NuPO authorize a municipality to recover government expenditures on police services by requiring the homeowner or landlord to abate the nuisance or face penalties such as the costs of enforcement and responding to call for services, additional fines, or the loss of their rental permits.[11] To avoid penalties, property owners need to take certain steps to abate the nuisances, typically by evicting the tenant, and "any citation issued to a tenant who is already in the process of being evicted, shall not count towards the number of citations if the property owner can prove that an eviction action has been commenced in a court of law".[12]

Most ordinances contain a list of various triggering offenses and conducts associated with a property (whether by a resident, guest, or other person), and they often include assault; disorderly conduct; drug-, gang-, or weapon-related offenses; and prostitution (Appendix Table A.1 provides a shortened summary of the detailed ordinances). Chicago's ordinances provide a good example of the common features of ordinances across the county. Chicago, IL, Code of Ordinances § 8-4-087 defines a nuisance property as:

[11] See Milwaukee, WI., Code of Ordinance § 80-1 (effective 2007), available at https://city.milwaukee.gov/ImageLibrary/Groups/ccClerk/Ordinances/Volume-1/CH80.pdf

[12] Pittsburgh, Pa., Code of Ordinances § 670.07(b)(effective Feb. 15, 2005), available at https://library.municode.com/pa/pittsburgh/codes/code_of_ordinances

"Any premises that is the subject matter of three or more calls for police service on three different days within any 90-day period resulting in (1) a case report documenting an investigation of illegal activity within the premises; or (2) enforcement action against any tenant or person associated with the premises for illegal activity occurring within the premises or within one block or one thousand feet of the premises."

In a majority of ordinances an incident of DV is included in (or not explicitly exempt from) the list of nuisance offenses without considering whether a person who called for service is a victim of DV or not. Some municipalities exempt DV as a nuisance triggering activity. For example, Chicago's nuisances state that "Any illegal activity *and* incidents of domestic violence reported to the police department by the building owner or the building owner's agent via 911 shall not be counted when determining whether a premises meets the definition of a chronic illegal activity premises."[13][14] Regardless of the exact feature of the ordinance, nuisance ordinances place survivors of DV and people with disabilities at risk for two main reasons. First, these individuals are disproportionately likely to need assistance from police or emergency services. Second, police calls related to DV incidents and disabilities are often not clearly identified and a call for service could be labeled as criminal activity on the property or disorderly person. Mead et al (2017) document a call from a neighbor to state *the male is beating up a female inside that apt* that was recorded in the police dispatch log as *boy/girl trouble* and resulted in nuisance citation sent to the landlord explaining the tenant is involved in a pattern of behavior that is disruptive to her neighbors and places an undue burden on the resources of the Police Department."[15]

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[13] Chicago, IL, Code of Ordinances § 8-4-087 (effective 2008), available at https://codelibrary.amlegal.com/codes/chicago/latest/chicago_il

[14] Section 8-4-087 of the Municipal Code of Chicago was later amended by Ordinance O2018-89[14] by deleting the AND inserting more exceptions such as "any contact made to the police or other emergency services with the intent of preventing domestic or sexual violence, or seeking an emergency response to domestic or sexual violence."

[15] The police dispatch log and nuisance notice available here: https://www.dropbox.com/s/01kisa4g01vn2s6/mm.pdf?dl=0. See Mead et al (2017) for more evidence on the effects of nuisance ordinances in Ohio.

Desmond and Valdez (2012) show that in Milwaukee, a tenant living in a black neighborhood is three times more likely to receive a nuisance citation compared to a tenant in a white neighborhood who has also violated the ordinance. In addition to the disparate impact of these ordinances, Mead et al (2017) document the racial undertones surrounding the enactment of NuPO.

A large body of research in criminology suggests that incidents in which women kill their husbands are more likely to involve victim precipitation than incidents in which men kill their wives (See Richard Felson's works on victim precipitation and interpersonal violence including Felson and Messner 1998). In Appendix A, I present a simple model that describes how changing the cost of crime reporting (and calling for service) in the form of nuisance property ordinances could affect the behavior of a victim or a batterer. The prediction of the model is straightforward: Decreasing the net benefit of reporting discourages victims to report a victimization and could affect the probability of repeated victimization and escalating violence.

3. Main Data Sources

3.1 Nuisance Property Ordinances

To examine the impact of NuPO on crime reporting and DV, I begin with collecting the enactment and implementation years of these ordinances across major cities using the municipality code for each jurisdiction. I then confirm each of them using previous multidisciplinary literature on nuisance ordinances: Desmond and Valdez (2012), Moss (2019), Mead et al. (2017), and law review articles including Fais (2008), Kastner (2015), Swan (2015), and Werth (2013). In addition, I read through municipality codes documented by the Temple University Policy Surveillance Program Database. In Table 1, I list the nuisance property ordinances by municipality and year of enactment for 40 major MSAs identified in the MSA-level release of the National Crime Victimization Survey. When the literature is not consistent

about the adoption years, I trust my own findings. Appendix Table A.1 provides a shortened summary of the detailed ordinances.

Then, in Appendix Table A.10, I list nuisance ordinance and crime-free housing policies across more than 120 cities across California by combing through ordinances and using Dillion, Poston, and Barajas (2020)[16][17].

3.2 Data on Crime Victimization and Reporting

To estimate the impact of NuPO on crime reporting, I use data on crime victimization between 1979 and 2004 from the MSA-level release of the NCVS. The NCVS, which is conducted by the U.S. Census Bureau on behalf of the Bureau of Justice Statistics (BJS), is the nation's primary source of information on criminal victimization and has asked a nationally representative sample of individuals about their experience with victimization since 1973. While the annual NCVS does not contain geographic identifiers below the region level, the extract I am using in this paper contains the crime victimization survey between 1979 and 2004 on a nationally representative sample of about 50,000 housing units and includes the core county identifiers within the top 40 NCVS Metropolitan Statistical Areas (MSAs).

In the survey, persons 12 years of age and older were interviewed in each household sampled, and respondents were asked a series of screening questions to determine whether they were victimized during the six-month period preceding the first day of the month of the interview. Positive responses led to additional questions regarding the types of crimes (rape, robbery, assault, burglary, larceny, and motor vehicle theft); the severity of the crime; injuries; medical care received; the number, age, race, and sex of offender(s); and the relationship of the

[16] "Some California Housing Policies Hurt Black People, Latinos - Los Angeles Times." 2020.

[17] Naturally, it is possible that there are municipalities with nuisance ordinances that is not recorded in this study. If a municipality enacted a nuisance property ordinance but it is assumed to be untreated in this study, the direction of bias in my estimates will be toward not finding significant effects.

offender(s) to the victim (stranger, casual acquaintance, relative, etc.). Demographic information on household members includes age, sex, race, education, employment, median family income, marital status, and military history. More importantly, for the purpose of this study, the NCVS includes the following questions:

- How far away from home did the incident happen?
- Was it reported to the police?

As explained in Section 2, many ordinances penalize property owners for conduct that occurs on or within a set number of feet of their property. Using the distance from home information, I construct an indicator taking the value of one if the incident happened "at, in, or near the building containing the respondent's home/next door" to determine whether the reporting could be affected by NuPO. I construct the outcome of interest, *CrimeReported*, which is one if the crime was reported to police.

Table 2 presents the observable characteristics of individuals and victims in my sample. Columns (1) and (2) report the means from the NCVS's person-based file that contains select household and person variables for all people in NCVS-interviewed households in the core counties of the 40 largest MSAs from January 1979 through December 2004. columns (3) and (4) report the mean of covariates from the NCVS's incident-based file which contains select household, person, and incident variables for persons who reported a violent crime during the 6-month period preceding the interview month. *Odd-numbered* columns report means for MSAs that are not treated between 1979 and 2004. *Even-numbered* columns report means for MSAs that enacted nuisance property ordinances before 2004.

Table 2 shows that in all MSA, regardless of NuPO status, the proportion of U.S. residents aged 12 or older who were victims of one or more violent crimes decreased from approximately 14 percent in 1979 to 5 percent in 2004 (down 65 percent). In terms of reporting an assault victimization inside home, however, the difference between MSAs that enacted nuisance ordinances and those that did not is notable. MSAs without NuPO on their books experiences

are 3 percentage point increase in the reporting rate (from 45.5 percent in 1979 to 48.3 percent in 2004), while MSAs that implemented nuisance ordinances saw a 6.5 percentage point decrease in the reporting rate (from 45.9 percent in 1979 to 39.32 percent in 2004).

3.3 Data on Intimate Partner Violence

The homicide data come from the Supplementary Homicide Reports (SHR) within FBI Uniform Crime Reports (UCR) from 1976 to 2018[18]. This incident-level homicide data provides detailed information on criminal homicides reported to the police. I use information on the relationship between the victim and offender to identify intimate partner homicide (IPH) in which the victim is a current or former spouse, girlfriend, or boyfriend of the offender).

The data enable me to perform a falsification test by examining the effect of NuPO on non-intimate partner homicides (non-IPH). Assuming that NuPO do not affect homicides by strangers, I use nonintimate homicide as the placebo group. Examining non-IPH rates has two additional advantages. First, it allows me to test whether or not the variation in homicide rates is caused by differences in general trend in crime across agencies. One major limitation of the SHR is that reporting by the police agency is voluntary. The second advantage of using non-IPH rates is that it allows me to control for the differences in the rate at which a police agency reports homicide. Controlling for the overall reporting and underreporting, we can then look for relative changes in homicide across agencies before and after implementing nuisance property ordinances.

I calculate the outcome, agency-year homicide rates, by dividing the total number of homicides in each group by the population in 100,000s. I restrict the sample to the core cities identified in the NCVS and I keep the main agency in the SHR data. The benefit of restricting the SHR sample to NCVS cities is that I am using the largest counties in the United States;

[18] These data made available online at *openICPSR* by Jacob Kaplan (Kaplan, Jacob. Jacob Kaplan's Concatenated Files: Uniform Crime Reporting (UCR) Program Data: Supplementary Homicide Reports, 1976-2019. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2021-01-16. https://doi.org/10.3886/E100699V10)

therefore my estimates are, most likely, not driven by the fluctuation between small numbers. For the main estimates, I end the sample period in 2004 to be consistent with the end year of 2004 in the analysis of NCVS data on reporting rates.[19]

While this data set is widely used in research and thought to be the most complete compilation of national homicides, it naturally has its own limitations. Reporting homicide counts to the FBI is voluntary which means that in some cities/states, data are missing for a few years. Due to missing data, I drop District of Columbia (missing data: 1996, 1998 to 2008 , and 2012) and cities in Florida[20] (missing data: 1988 to 1991, 1996 to 2018).[21]

Table 2 shows that, in my sample which consists of the biggest agency in 40 largest MSAs, non-intimate partner homicides declined by 40 percent from 1979 to 2004. It also shows that in the cities where NuPO was not implemented, intimate partner homicides have been declining in a significantly higher rates compared to cities where nuisance ordinances apply.

3.4 Data on California's DV-Related 911 Calls

I provide an additional measure for the effect of NuPO on crime reporting and rely on California data because of data availability. Data on domestic violence-related 911 calls come from the Department of Justice (DOJ). California's DOJ Criminal Justice Statistics Center collects information on DV-related calls for service from various law enforcement agencies on a monthly basis. This dataset provides the agency-level number of calls from 2001 to 2019.

[19] Repeating the main specification using the full sample (1977 to 2018) yields similar results and is reported in Appendix Table 7.

[20] Fort Lauderdale, Miami, Orlando, Tampa, and West Palm Beach.

[21] The current study can be improved by following Raissian (2016) where they directly contacted each state for reliable data on homicide.

Domestic violence is defined as abuse committed against an adult or a fully emancipated minor who is a spouse, former spouse, cohabitant, former cohabitant, or person with whom the suspect has had a child or is having or has had a dating or engagement relationship.[22] Appendix Table A.9. lists the nuisance and crime-free housing ordinances by municipality and year of enactment. I use the largest police agency in each county and calculate the outcome, agency-year DV-related 911 calls, by dividing the total number of calls for services in each group by the population in 10,000s. Data include information on DV-related calls for assistance that involved the use, or threat of use, of a firearm, knife or cutting instrument or other dangerous weapon are reported according to the type of weapon used regardless of the outcome or injury. I use this information to construct the proportion of DV calls that involved the use of a weapon as an outcome to assess the probability of escalating violence.

Table 2 provide a summary statistic of DV-related 911 calls in California. It shows that in the cities where NuPO was not implemented, the rate of calls remained the same between 2001 and 2019. Cities where NuPO applies, however, saw a 30.5 percent reduction in the number of DV-related calls for service from 2001 to 2019.

4. Does NuPO Affect Crime Victimization and Reporting? Evidence from the National Crime Victimization Survey

4.1 Crime Reporting

My empirical strategy begins with assessing post-NuPO changes in crime reporting in the MSAs that adopted the nuisance property ordinance relative to pre-NuPO reporting rates and

[22] See Penal Code section 13700(b). Abuse is defined according to Penal Code section 13700(a) as intentionally or recklessly causing or attempting to cause bodily injury, or placing another person in reasonable apprehension of imminent serious bodily injury to himself or herself, or another.

relative to changes in reporting rates in MSAs not experiencing these ordinances. Using individual-level data from the NCVS on victims, I estimate the following specification:

$$CrimeReported_{ist} = \beta NuPO_{st} + \alpha_s + \alpha_t + X_{it}\Omega + Z_{st}\Psi + \epsilon_{ist} \quad (1)$$

The outcome of interest, $CrimeReported_{ist}$, is an indicator variable set to one if a crime in geographic area s and year t was reported to police by victim i. The main variable of interest, $NuPO_{st}$, is the value of the treatment for MSA s in year t. $NuPO_{st}$, therefore, is an indicator equal to one for any MSA with an enacted nuisance property ordinance during the post period. The regressions include a dummy variable for each MSA, α_s, to capture time-invariant differences between MSAs, and a dummy variable for each year, α_t, to absorb national year-to-year variation. X_{it} is a matrix of individual and household characteristics provided in the NCVS, and Z_{st} is a vector of time-varying state-level demographics and public policy controls. Finally, standard errors are clustered at the MSA level to allow for serial correlation and correlated errors (ϵ_{ist}) across victims within an MSA.

I begin with the reporting rates among those who are directly affected by these ordinances. Table 3 reports the estimates using a sample of all assaults that occurred inside a victim's home.[23] In column 1, I first estimate the basic specification with MSA and year fixed effects with no additional controls. The coefficient of - 0.085 on NuPO implies that nuisance ordinances decrease the rate at which crimes are reported by about 14.4 percent In column 2, I report the estimates from a model with individual-level information from the NCVS, which includes age, gender, race, household income level, whether the victim lives in a single-family home, whether the victim is the head of the household, marital status, educational attainment, an indicator equal to one if the victim lives in rental housing, crime type, indicators equal to one if the respondent was injured, whether the incident involved more than one offender, and whether

[23] Assault against victims includes attempted, completed, and aggravated assaults; verbal threats of assault; and sexual assaults.

the offender is known by the victim. Inclusion of these individual-level controls affects the estimated coefficient only by 0.001 percentage point.

In column 3, I report estimates from my preferred model with the main set of controls that are motivated previous research on crime reporting. I additionally control for time-varying state-level demographics and public policy controls such as property crime rate, the generosity of welfare benefit (based on the maximum AFDC payment to a single mother with two children), state-level controls for unilateral divorce laws, mandatory arrest laws, and no-drop prosecution policies (Miller and Segal, 2019; Aizer and Dal Bó, 2009; Nou and Timmins, 2005; Stevenson and Wolfers, 2006; Iyengar, 2009; Chin and Cunningham, 2019). The magnitude of the estimated coefficient in column 3 suggests that NuPO is associated with a 7.5-percentage point (or 12.8 percent) decrease in the likelihood of reporting an assault inside a home.
In Column 4 of Table 3, I explore the hypothesis that the relationship between NuPO and reporting an assault inside the victim's home is stronger for renters. As described in Section 2, while those living in a property that they own are responsible for paying fines when their property is labeled as a nuisance, those living in rental units face the risk of being evicted by the landlord. The estimated coefficient implies that NuPO is associated with a 17.4 percent (0.04+0.062 percentage point) decrease in the likelihood of reporting an assault inside the victim's home for renters.

Placebo Group. Having provided evidence that nuisance ordinances reduce the rate at which assaults inside the home are reported to police, I now turn to examining the reporting rate for crimes that are not affected by nuisance property ordinances. The fact that NuPO target crimes related to a property, provides an opportunity to further probe these results by looking at within-MSA comparison groups that experiences the same MSA-specific trends, as well as their own type-specific trends. Crimes, in particular assaults, that took place outside the victim's home may serve as an ideal placebo group in my setting. Table 4 shows the estimated effect for different placebo groups. In panel A of Table 4, I show the results for reporting rates for assault

offenses that occurred outside the victim's home. Panel B uses a sample of non-assaultive offenses that happened outside the victim's home. Non-assaultive offenses include attempted or completed robbery, pocket picking, burglary, theft, and motor vehicle theft. And finally in panel C, I report the reporting behavior among victims of non-assaultive offenses inside their home. Among all specification, estimated coefficients are imprecise and insignificant.

Event Study. To interpret the coefficient β in equation (1) above as the causal effect of nuisance ordinances on the outcome of interest $CrimeReported_{ist}$, we need to examine the presence of the pre-ordinance trend in the crime victimization rate. To assess the parallel trend in $CrimeReported_{ist}$ between treated and control MSAs in the absence of the implementation of NuPO and to assess the evolution of relative reported crime while controlling for underlying differences across cities over time, I estimate event study models of changes in crime victimization rate relative to a year before enactment, conditioning on fixed effect described above:

$$CrimeReported_{ist} = Ever_NuPO_s \times \sum_{\substack{\tau=-q \\ \tau \neq -1}}^{m} \beta_\tau \, I(t - t_s^* = \tau) + \alpha_t + \alpha_s + X_{it}\Omega + X_{st}\Psi + \epsilon_{ist} \qquad (2)$$

where the variable $Ever_NuPO_s$ equals 1 if a victim is living in an MSA that eventually enacted the nuisance property ordinance law and zero otherwise. Indicator variables $(t - t_s^* = \tau)$ capture the time relative to the implementation year, t_s^*, in each MSA and are zero in all periods for cities that never enacted the law. Event-study design enables us to visually see the effect of enacting the law and checking that all of the pre-trend event years (leads), $\sum_{\tau=-q}^{-2} \beta_\tau \, I(t - t_s^* = \tau)$, are zero. The estimated coefficients of post-event years (lags), $\sum_{\tau=0}^{m} \beta_\tau \, I(t - t_s^* = \tau)$, help us visually observe the evolution of the treatment effect.

Figure 1.A plots point estimates and the 95 percent confidence intervals for victims of assault inside the home based on the event study coefficients of equation 2. The p-value from

the joint significance test of the pre-treatment event time estimates, 0.896, indicates that the test fails to reject the null hypothesis that the reporting rates do not trend differently before the enactment of NuPO. I then turn to timing evidence of my main placebo group, reporting rates for assault offenses that occurred outside of victim's home. Figure 1.B shows the event study that corresponds to my preferred specification (column 3) in panel A of Table 4. Figure 1.B confirms the initial findings that NuPO does not affect the reporting behavior among victims of assault outdoors.

4.2 Robustness Checks for Crime Reporting

The results above suggest that nuisance ordinances are associated with a reduction in the rate at which assaults inside the victims' home are reported to police. In this section, I perform a number of robustness checks on my preferred estimation presented in column 3 of Table 3. A series of papers raise a valid concern and point to an important limitation of the OLS estimation of difference-in-differences with staggered adoption (Borusyak and Jaravel, 2021; Goodman-Bacon, 2021; de Chaisemartin and D'Haultfoeuille, 2020). One important limitation is that the standard two-way fixed effect model calculates the average treatment effect on the treated (ATT) using a weighted average of all possible two-by-two difference in differences estimators.

Recent literature reveals that the difference-in-differences OLS estimator is potentially biased when there is staggered rollout (differential timing) and a dynamic or heterogenous treatment effect. In my setting in which MSAs are adopting NuPO at different points in time, it is theoretically possible that my results are biased. I do not expect this to be a major concern, though, as this study uses 25 untreated units, and among 15 treated units 10 of them enacted NuPO between 1986 and 1999 (i.e., not very close to the beginning or end of the sample period, 1979–2004). In this section I formally investigate whether my main estimates are contaminated with bias.

(Bacon) Decomposition and Weights. To analyze the 2x2 DD comparisons and weights formally, I first implement a decomposition test proposed by Goodman-Bacon (2021)[24]. I find that a cleaner (i.e., Treatment vs Never Treated) comparison contributes to 72 percent of the estimated effect in my preferred specification. Then, I implement a test for the potential influence of negative weights as proposed by de Chaisemartin and d'Haultfoeuille (2020)[25]. The ATT in column 3 of Table 3 is the weighted sum of 160 estimated average treatment effects. Of those, 85 percent of estimates receive a positive weight. The sum of negative weights is -0.08, representing a very small contribution to the overall ATT estimate. Together, these tests suggest that there is not likely to be substantial bias in my estimated ATT due to negative weights or *bad* 2x2 DD comparisons.

Alternative Estimators. I then present the results of the estimation of the event-study, using the following estimators: (1)an imputation-based estimator from Borusyak, Jaravel, and Spiess (2021), (2) de Chaisemartin & D'Haultfoeuille's (2020) estimator, and (3) the interaction weighted (IW) estimator from Sun & Abraham (2020).[26] Borusyak, Jaravel, and Spiess (2021) imputation-based estimator uses untreated (i.e. never-treated or not-yet-treated) observations to estimate unit and time fixed effects, which are subsequently used to impute counterfactual untreated outcomes for treated observations. The difference between the observed outcomes and their imputed counterfactuals gives a unit and time specific treatment effect that can then be aggregated into an estimate of the desired treatment effect.

In an alternative estimation procedure developed by de Chaisemartin and D'Haultfoeuille (2020), the coefficient at the date of treatment ($t = 0$) is estimated by comparing trends between t

[24] Using `ddtiming` Stata package.

[25] Using `twowayfeweights` Stata package.

[26] Event study estimates are calculated using (1) imputation-based estimator from Borusyak et al. (2021) an using the Stata package `did_imputation`, (2) de Chaisemartin & D'Haultfoeuille's (2020) estimator using `did_multiplegt` Stata package, and (3) the interaction weighted (IW) estimator from Sun & Abraham (2020) using Stata package `eventstudyinteract`.

-1 and t for units that switched to treatment in t compared with units that are not yet treated in t. Similarly, the coefficient at $t = l$ (l=1,2,3) is obtained by comparing trends between $t - l$ and $t + l$ for units that switched to treatment in t compared with units not already treated in $t + l$. This estimator calculated bootstrap standard errors.

Sun & Abraham (2020) implement the IW estimator and constructs a pointwise confidence interval for the estimation of dynamic treatment effects. The IW estimator first estimates the interacted regression, where the interactions are between relative time indicators and cohort indicators. Then, it estimates the cohort shares underlying each relative time. To avoid using *bad* controls, here I use all never-treated groups (i.e., NuPO is not implemented until 2004) as the control group.

I present the results of the estimation of the event-study using estimators described above in Figure 2.A and 2.B and find results similar to the traditional event study plots. In Appendix Table A.3, I also estimate the single ATT across all treated observations using the imputation estimator developed by Borusyak, Jaravel, and Spiess (2021). The results from the robust estimator do not vary substantially from the OLS estimates reported in the main set of results. Using Callaway and Sant'Anna's (2020) estimator also yields to similar results that shows a sizeable reduction in the rate at which assaults inside the home are reported.

Empirical Distribution of Placebo Estimates. To ensure I am making correct inferences about statistical significance, I then randomly assign a treatment year to MSAs in my data then estimate the impact of these randomly generated ordinances on victims' reporting behavior. I repeat this exercise 1000 times and generate distributions of estimates. I also calculate the proportion of the placebo estimates that are larger in magnitude than the estimated effect of NuPO[27]. Figure 3 shows the placebo distribution from this exercise. Only 0.06 percent of placebo

[27] Similar to Bertrand et al, 2004; Abadie et al 2010; Chetty, Looney, and Kroft, 2009.

estimates are larger (in magnitude) than the estimated effects.[28] I also show, in Appendix Figure A.2, that the relationship between reporting and NuPO is robust to iteratively excluding each MSA.

NCVS Break. The NCVS was redesigned in the early 1990s. Because of the break in series caused by the NCVS redesign in 1992, I replicate the main estimates using data from between 1993 and 2004 to examine whether my results are sensitive to the NCVS break. Appendix Tables A.4 and A.5 replicate the estimates from Table 3 and 4 using victimization data after 1992. I find qualitatively similar estimates of the impact of NuPO on crime reporting among assault victims. My estimates in Appendix Table A.4 are larger in magnitude compared to those in Table 3, and are consistent with 28 percent decrease in the likelihood of reporting a crime to police.

4.3 Escalating violence and quality of calls for service: Evidence from NCVS

Having assessed the impact of NuPO on crime reporting, I now evaluate the impact of these policies on escalating violence. To examine this relationship, I use the NCVS to estimate whether (1) the victim was injured, (2) the victim received median care, or (3) the victim took self-protective action. In panel A of Table 5, my preferred specifications show that NuPO increases the likelihood of injury among victims of assault by 9.3 percent. For a more severe injury that requires medical care, my estimates are consistent with a 4 percent decrease and a 50 percent increase in the likelihood of requiring medical care. The results in panel C suggest an 8.7 percent increase in the probability of taking self-protective action.

In panel D of Table 5, I examine whether NuPO is associated with a higher quality of calls for police service. The outcome (*Police acted*) is an indicator variable set to 1 if, conditional on crime being reported, police took one of the following actions: took report, searched, took evidence, or questioned witness(es) upon being called. Although not precisely estimated, the

[28] I then repeat the same procedure for MSAs that are not treated between 1979 and 2004. The placebo distribution for untreated MSAs in Appendix Figure A.1 suggests a p-value of 3.5 percent using the placebo approach.

results from panel D show that NuPO has a positive relationship with the seriousness of a report that is made and, conditional on being involved, police officers are more likely to investigate a crime.

As a robustness check, the same as the above, I show the estimates corresponding to Table 5 using data from 1993 to 2004 to see if the estimates are robust to the inclusion or exclusion of earlier years in the NCVS. Appendix Table A.6 confirm that NuPO has a positive relationship with the likelihood of injury, medical need, self-protective action, and police actions upon calling to the crime scene.

4.4 Crime Victimization

Having provided evidence that nuisance ordinances reduce the rate at which assaults inside the home are reported to police, the natural next step is to assess the impact of NuPO on victimization in general. One of the intended aims of nuisance property ordinances is reducing crime by holding property owners accountable. I estimate the changes in crime victimization rates in the MSAs that adopted the nuisance property ordinance relative to non-adoptive MSAs before and after the implementation of the nuisance ordinances. I exploit time-variation in the enactment and implementation of NuPO laws across major MSAs and estimate the following specification:

$$Victimization_{ist} = \beta NuPO_{st} + \alpha_s + \alpha_t + X_{it}\Omega + Z_{st}\Psi + \epsilon_{ist} \quad (3)$$

Where $Victimization_{ist}$ is a binary indicator for whether a respondent i in MSA s interview in year t reported having been a victim of a crime in the previous six months. The main variable of interest, $NuPO_{st}$, is the value of the treatment for MSA s in year t. Similar to Section 4.1, in column 1 of Table 6, I first estimate the basic specification with MSA and year fixed effects with no additional controls. In column 2, I add the individual and household characteristics in each MSA, and in column 3 I add time-varying state-level demographics and public policy controls.

In my preferred specification (column 3), I find that NuPO increases assault victimization by about 14 percent (panel A) and increases assault victimization inside the home by about 19 percent. The corresponding event study versions of equation 3 are plotted in Appendix Figure A.4.

5. Does NuPO Affect Domestic Violence? Measured by Intimate Partner Homicide

The results above suggest that nuisance ordinances are associated with a sizable reduction in the rate at which domestic assault victimization is reported to police. I now turn to examine the impact of these ordinances on domestic violence, measured by intimate partner homicide. I test the hypothesis that worsening victims' outside options (by increasing the cost of crime reporting) along with fewer interventions by the criminal justice system could increase the probability of escalating violence.

5.1 Main Specification and Results

My empirical strategy to evaluate the impact of NuPO IPH is similar to what I described in detail in section 4.1. I use incident-level homicide data from

The homicide data come from the Supplementary Homicide Reports (SHR) within FBI Uniform Crime Reports (UCR), and I exploit the variation in the passage of the policy across cities and over time to estimate the following agency-level regression specification:

$$IPHRate_{ist} = \beta NuPO_{st} + \alpha_s + \alpha_t + X_{st}\Psi + \epsilon_{ist} \quad (4)$$

The outcome $IPHRate_{st}$ is the rate of intimate partner homicides per 100,000 people in agency s in year t with victim of sex i. Following the literature on IPH, the parameter of interest $NuPO_{st}$ is an indicator equal to one for any city with an enacted nuisance property ordinance in year $t-1$. I estimate the effects for both male and female victims. Z_{st} is a vector of time-varying state-level and public policy controls which is comprised of the property crime rate, the generosity of

welfare benefit (based on the maximum AFDC payment to a single mother with two children), state-level controls for unilateral divorce laws, mandatory arrest laws, and no-drop prosecution policies[29]. In my specifications, I report the IPH rate in levels, weight observation using the county population, and cluster standard errors at the jurisdiction level.

For the main estimates in Table 7, I end the sample period in 2004 to be consistent with the end year of 2004 in the analysis of NCVS data on reporting rates. Repeating the main specification using the full sample (1977 to 2018) yields similar results and is reported in Appendix Table 8.

In column 1 of Table 7, I first estimate the basic specification with agency and year fixed effects with no additional control. And in column 2, I include the agency's lagged non-IPH rate to account for agency-specific changes in overall violent crime rates. The estimates in column 3, are from my preferred specification which includes state-level and public policy controls. panel A of Table 7 reports the estimates for the overall intimate partner homicide rate. Across all specifications, I find a positive and significant relationship between the enactment of NuPO and IPH rates. The estimated coefficient from my preferred specification (column 3) implies that NuPO leads to an increase of 0.222 deaths per 100,000 population (a 16 percent increase relative to the sample mean of 1.37).

Panel B of Table 7 reports the impact on women murdered by intimate partners and in panel C, I present the estimated coefficient for male victims. Estimates from my preferred specification (column 3) imply that I rule out any effect greater than 20 percent for female victims. For male victims, the estimate of the impact on NuPO of 0.161 (se = 0.075) is significant and implies a 27 percent increase in intimate partner homicide of males.

[29] My choice of controls, described in Section 4.1, is motivated by the previous studies including Miller and Segal, 2019; Aizer and Dal Bó, 2009; Nou and Timmins, 2005; Stevenson and Wolfers, 2006; Iyengar, 2009; Chin and Cunningham, 2019.

Placebo Group. In column 4 of Table 7, I estimate the impact of nuisance ordinances on non-intimate partner homicide as a *falsification test*. The estimates in column 4 are based on regressions in which I include the full range of controls. The estimated impacts are insignificant and small in magnitude (1 percent change relative to the sample mean). The results from column 4 imply that increasing the cost of reporting a victimization (or crime) associated with a property, does not affect the rates at which individuals are murdered by non-intimates. Column 4 in panel B and C, repeats the falsification exercise and estimate the impact of NuPO on deaths per 100,000 population for women, 0.70 (se = 0.133), and men, 0.872 (se = 0.672), murdered by non-intimates.

Event Study. To test the identifying assumption of parallel trends absent a treatment and to understand the dynamic nature of effects, I also apply an event study setting similar to equation 2:

$$IPHRate_{ist} = Ever_NuPO_s \times \sum_{\substack{\tau=-q \\ \tau \neq -1}}^{m} \beta_\tau \, I(t - t_s^* = \tau) + \alpha_t + \alpha_s + X_{st}\Psi + \epsilon_{ist} \qquad (5)$$

The outcome of interest, $IPHRate_{ist}$, is the rate of intimate partner homicides per 100,000 people in agency s in year t with victim of sex i. Figure 4.A plots point estimates and the 95 percent confidence intervals for the IPH rate (for both female and male victims, corresponding to the specification in column 3 of panel A in Table 7) based on the event study coefficients of equation 5. The p-value from the joint significance test of the pre-treatment event time estimates, 0.377, indicates that the test fails to reject the null hypothesis that IPH rates do not trend differently before the enactment of NuPO. Figure 4.B shows the event study that corresponds to the specification in column 4 of panel A in Table 7.

5.2 Robustness Checks for Intimate-Partner and Non-Intimate Partner Homicide

Similar to Section 4.2, in this section I perform a number of robustness checks.

(Bacon) Decomposition and Weights. I first implement a decomposition test proposed by Goodman-Bacon (2021)[30]. I find that 75 percent of the estimated effect for IPV is coming from a cleaner (i.e., Treatment vs Never Treated) comparison and 14 percent are from comparing early treated units to the control group that consists of units that are treated later. Test proposed by de Chaisemartin and d'Haultfoeuille (2020)[31] show that 85 percent of estimated treatment effect that contributes to the ATT receive a positive weight. The sum of negative weights is -0.06, representing a very small contribution to the overall ATT estimate. These tests do not suggest a substantial bias in my estimated ATT.

Alternative Estimators. In Figure 5.A and 5.B, I present the results of the estimation of the event-study using (1) an imputation-based estimator from Borusyak, Jaravel, and Spiess (2021), (2) de Chaisemartin & D'Haultfoeuille's (2020) estimator, and (3) the IW estimator from Sun & Abraham (2020)[32]. Overall, I find a similar results to the traditional event study plots (Figure 4). In Appendix Table A.8., I use Borusyak, Jaravel, and Spiess (2021) estimator to obtain a single ATT across all treated observations for specification describe in Table 7. The robust ATT confirms that NuPO increases the intimate partner homicide, but it is not correlated with non-IPH.

Inference. Similar to the procedure described in Section 4.2, I then randomly assign a treatment year to agencies in my data then estimate the impact of these randomly generated ordinances on intimate partner homicide rates. I repeat this exercise 1000 times and generate distributions of estimates to ensure that I am making correct inferences about statistical

[30] Using `ddtiming` Stata package.

[31] Using `twowayfeweights` Stata package.

[32] See Section 4.2 for details. Event study estimates are calculated using (1) an imputation-based estimator from Borusyak et al. (2021) using the Stata package `did_imputation`, (2) de Chaisemartin & D'Haultfoeuille's (2020) estimator using `did_multiplegt` Stata package, and (3) the interaction weighted (IW) estimator from Sun & Abraham (2020) using Stata package `eventstudyinteract`.

significance. Figure 6 shows that only 1 percent of placebo estimates are larger than the estimated effects from column C of panel A in Table 7.[33] In Appendix Figure A.6, I show that the relationship between IPH and NuPO is robust to iteratively excluding each agency. Lastly, in Appendix Table A.9, I report the results using the full sample from 1977 to 2018. Inclusion of later years yields similar results.

6. Does NuPO Affect Crime Reporting? Evidence from California's DV-related 911 Calls

Having provided evidence that, in 40 major MSAs in the U.S., nuisance ordinances reduce the rate at which assaults inside home are reported to police, and increase domestic violence, in this section I explore the relationship between nuisance ordinances and the police jurisdiction-level number of domestic violence-related number of 91 calls by estimating the following specification:

$$Y_{st} = \beta NuPO_{st} + \alpha_s + \alpha_t + Z_{st}\Psi + \epsilon_{st} \qquad (6)$$

The outcome of interest is the rate of DV-related 911 calls per 10,000 people in jurisdiction s in year t. $NuPO_{st}$ is an indicator equal to one for any city with enacted nuisance property ordinance during the post period. Z_{st} is a vector of time-varying jurisdiction-level and public policy controls that is comprised of the poverty rate (percentage of the population with income in the past 12 months below the poverty level), Percent of occupied housing units that are renter-occupied,
rent burden (median gross rent as a percentage of household income), and percentage of the population that is White. In my specifications, I report the 911 call rate in log, and cluster standard errors at the jurisdiction level.

[33] Appendix Figure A.5, I repeat the same procedure for agencies that are not treated between 1979-2004.

I present results from estimating the equation above in panel A of Table 8. I first estimate the basic specification with agency and year fixed effects with no additional control. And in column 2, I include time-varying city-level controls. Here, I find evidence that nuisance ordinances are associated with reductions in the number of DV-related 911 calls of about 12 percent. To assess the internal validity of the design, I present the event study analysis in Figure 7.A. The p-value from the joint significance test of the pre-treatment event time estimates, 0.67, indicates that the test fails to reject the null hypothesis that the (log) dv-related 911 calls do not trend differently before the enactment of NuPO.

Now, in panel B of Table 8, I assess the probability of escalating violence. I use a variation of equation (6) from above where the outcome is defined as the proportion of DV calls that involved the use of a weapon. I find consistent evidence that DV incidents involving gun increase for cities that implement nuisance ordinances by about 11 percent. While this study finds a sizable impact of nuisance ordinances in California on domestic violence 911 calls and the proportion of incidents involving a gun, it is not without limitations. First, the event study analysis of the impact of NuPO on escalating violence (Figure 7.B) shows that the joint significance test of the pre-treatment event time estimates fails to reject the null hypothesis that the proportion of DV incidents involving a gun trends differently before the enactment of NuPO. Additionally, unlike Section 4 and 5, here I do not have a credible counterfactual to use as a within-city comparison group that experiences the same city-specific trends as well as its own type-specific trend. This suggests caution when interpreting the results in California.

7. Conclusion

Approximately 2,000 municipalities in the U.S. have adopted nuisance property ordinances that file violations against landlord whose tenants contact 911 frequently and require the landlords to take action to abate the nuisance and reduce the frequency of those calls. In practice, these actions often involve evicting tenants who request police service (National Academy of

Sciences, 2018). While proponents of nuisance ordinances argue they are necessary to deter crime, a large body of sociology and law literature has discussed the consequences of nuisance property ordinances. Although it is well documented that these ordinances have disproportionate impacts on Black residents, immigrants, renters, and those living in subsidized housing, to my knowledge no document has established a credible causal link between NuPO and crime reporting at the national level. This paper attempts to fill this gap by exploiting the MSA-level variations in the enactment of NuPO.

In this paper, I exploit time-variation in the enactment and implementation of NuPO laws across major MSAs to identify the impacts of these ordinances on crime reporting and victimization. I find victims of assault are 14 percent less likely to report a crime inside their home to police. This result suggest that a sizable share of crime victimization is going unreported. I then assess the relationship between NuPO and escalating violence and find nuisance enactments lead to a increase in the rate of people murdered by intimates. Lastly, I use the DV-related calls for assistance in California and find that by leaving victims in a position in which they are risking their housing (or paying fines) by calling for help, nuisance ordinances reduce the number of DV-related 911 calls for assistance.

Attempting to quantify the benefit of these ordinances remains an important area for future work. My findings indicates that NuPO does not reduce the overall victimization, but future work examining the impact on police expenditure, police response time to a call for services, and housing (in)stability can shed light on the welfare implications of these ordinances. In the current study, I use intimate partner homicide as a proxy to measure escalating violence (due to data availability). In future work, I aim to expand my research on the impact of NuPO, starting with a currently in progress projects. I obtained the hospitalization data in California that allows me to measure the (escalating) domestic violence in a different way.

My findings are relevant to concerns raised by legal scholars that third party policing, specifically nuisance ordinances, violate the First Amendment right to petition the government,

due process guarantees, and federal and state prohibitions against housing discrimination (Somai v. Bedford, 2020; Groton v. Pirro, 2017; Rosetta Watson v. Maplewood, 2017; Nancy Markham v. City of Surprise, 2015; Briggs v. Borough of Norristown, 2013). They are also relevant to the recent debate on the negative impact of eviction and the necessity of altering policies surrounding eviction, rent, and other aspects of tenant-landlord relations (for an overview see Desmond and Bell, 2015; and Humphries et al., 2019). This study highlights the adverse effects of *offender focused* policies. Policy makers motivated to end DV, need to reevaluate the welfare benefit of NuPO; a simple policy change with important negative (un)intended consequences. The majority of IPH involve physical abuse of the female by the male before the murder. Therefore, one of the major ways to decrease intimate partner homicide is to increase the rate at which victimization is reported and intervene with battered women at risk.

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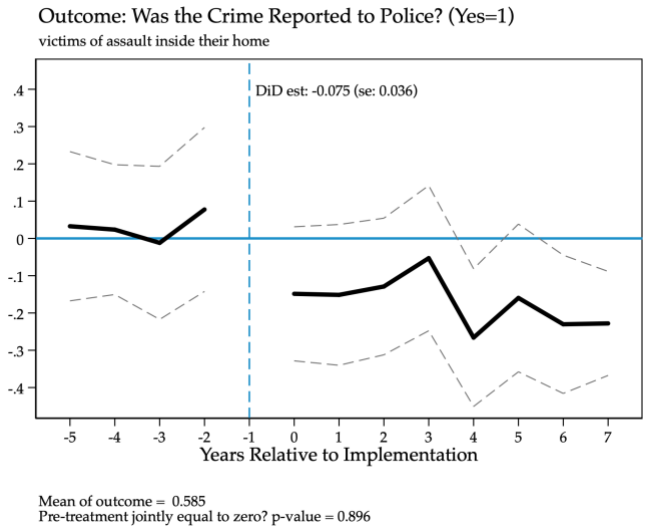
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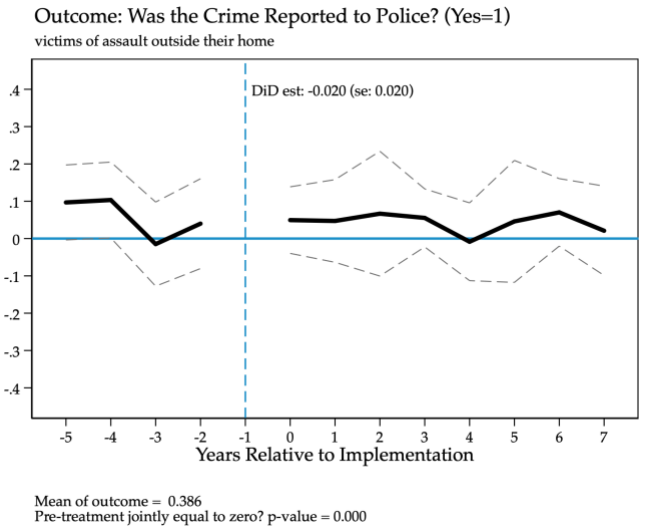
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FIGURES

Figure 1. *Relationship between NuPO and crime reporting for (a) victims of assault inside their home, and (b) victims of assault outside their home*



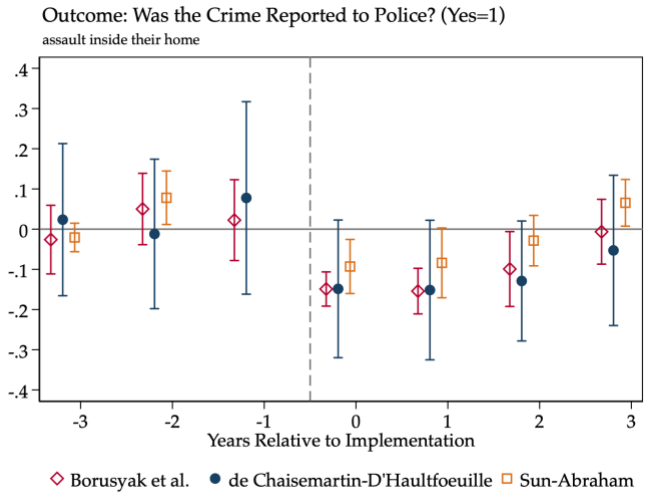
(a)



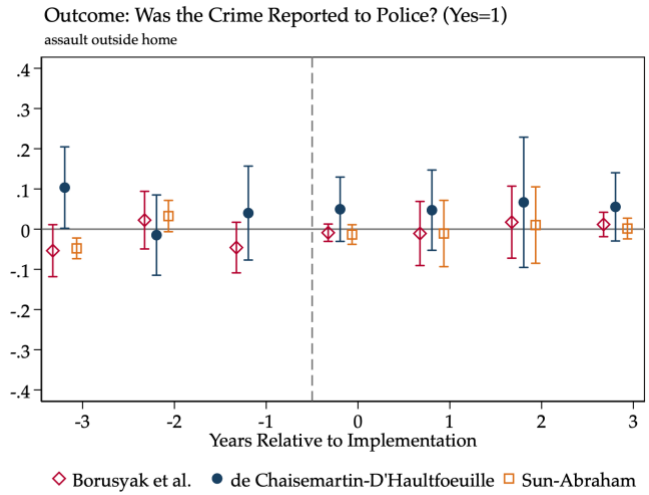
(b)

Notes: The unit of observation is a crime incident, and the outcome is an indicator variable set to 1 if crime was reported to police. The sample in *(a)* consists of assault incidents that happened inside victim's home. Sample used in *(b)* includes assault incidents that happened outside of respondent's home and serves as a within-MSA placebo group. The independent variables of interest are indicator variables for being τ periods away from the enactment of nuisance property ordinances where $\tau = -5, -4, \ldots, 7$. The dashed lines indicate 95% confidence intervals. Mean of the dependent variable and the p-value from the joint significance test of the pre-treatment event time estimates are reported at the bottom of each figure.

Figure 2. *Relationship between NuPO and crime reporting among victims of assault is robust to alternative estimation procedures.*



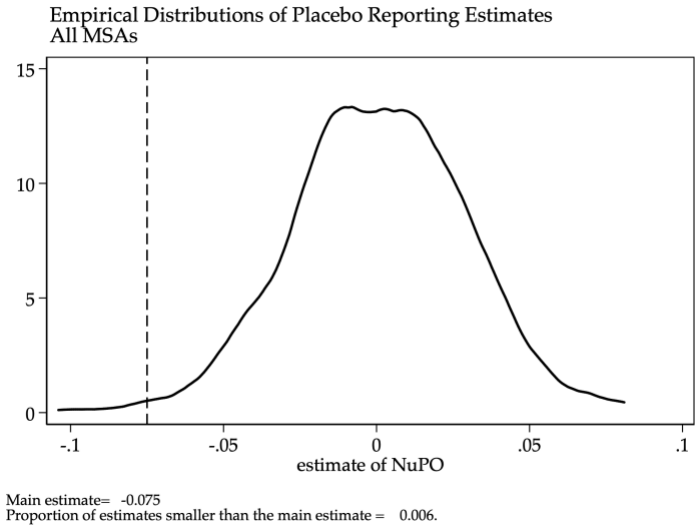
(a)



(b)

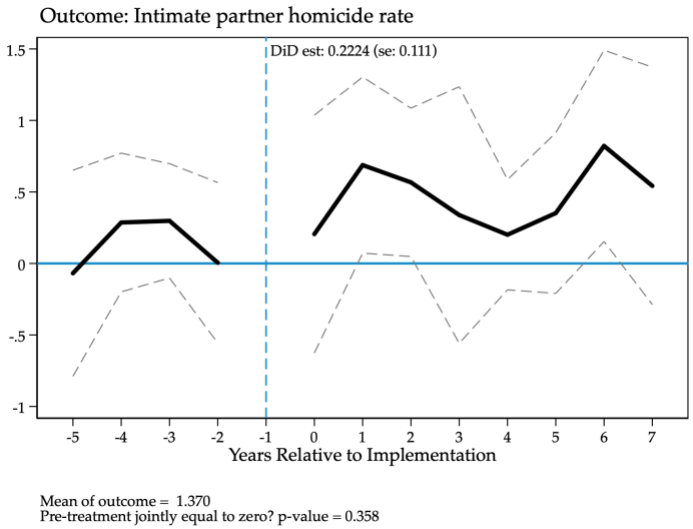
Notes: The unit of observation is a crime incident, and the outcome is an indicator variable set to 1 if crime was reported to police. The sample in *(a)* consists of assault incidents that happened inside victim's home. Sample used in *(b)* includes assault incidents that happened outside of respondent's home and serves as a within-MSA placebo group. Event study estimates are calculated using (1) imputation-based estimator from Borusyak et al. (2021), (2) de Chaisemartin & D'Haultfoeuille (2020) estimator, and (3) the interaction weighted (IW) estimator from Sun & Abraham (2020). Estimates are plotted using `event_plot` Stata package from Borusyak et al. (2021). See section 4.2 for a brief explanation of each estimator.

Figure 3. *Empirical Distribution of Placebo Reporting Estimates*

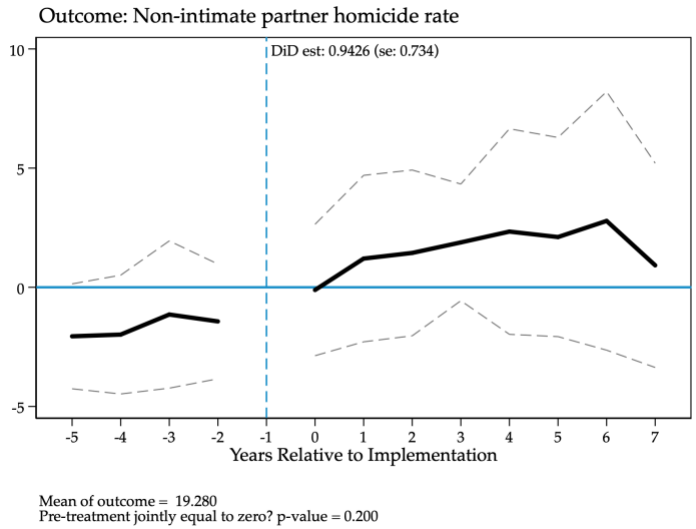


Notes: The vertical line corresponds to the estimated effect of NuPO on crime reporting among victims of domestic assault (column 3 of Table 3). To ensure that I am making correct inferences about statistical significance, I randomly assign a treatment year to MSAs in my data then estimate the impact of these randomly generated ordinances on victims' reporting behavior. I repeat this exercise 1000 times and generate distributions of estimates. Figure 3 shows the placebo distribution from this exercise. A total of 0.6 percent of placebo estimates lie to the left of the estimated effect. See Appendix Figure A.1 for the distribution of placebo reporting estimates using only MSAs that are not treated between 1979-2004.

Figure 4. *Relationship between NuPO, (a) intimate partner homicide (IPH), and (n) non-intimate partner homicide (non-IPH)*



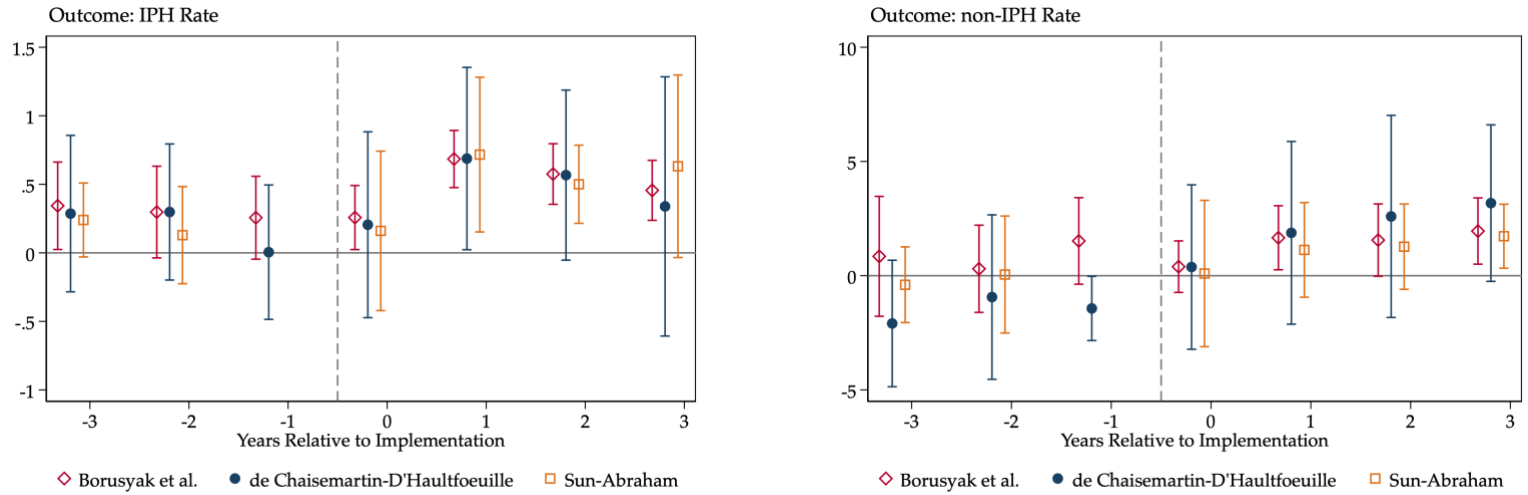
(a)



(b)

Notes: The unit of observation is county-year. The sample period is 1977-2004. Outcome in (a) is intimate partner homicide (IPH) rate per 100,000 population. Outcome in (b) is non-intimate partner homicide (non-IPH) rate per 100,000 population as serves as within-jurisdiction placebo group. The independent variables of interest are indicator variables for being τ periods away from the enactment of nuisance property ordinances where $\tau = -5, -4, \ldots, 7$. The dashed lines indicate 95% confidence intervals. Mean of the dependent variable and the p-value from the joint significance test of the pre-treatment event time estimates are reported at the bottom of each figure.

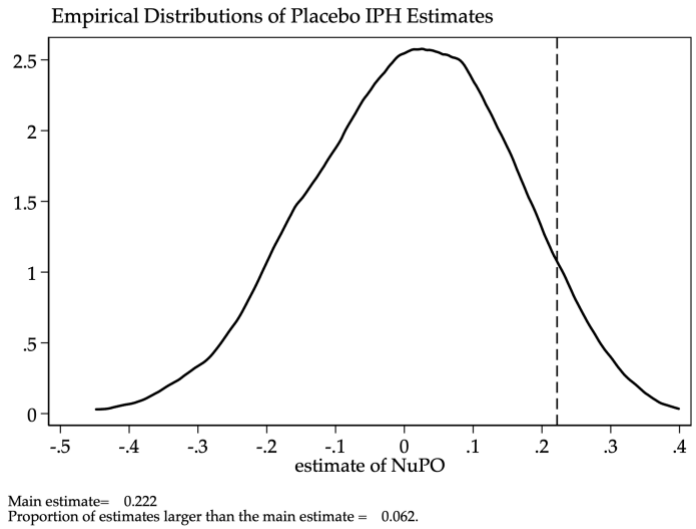
Figure 5. *Relationship between NuPO and homicide is robust to alternative estimation procedures.*



(a) (b)

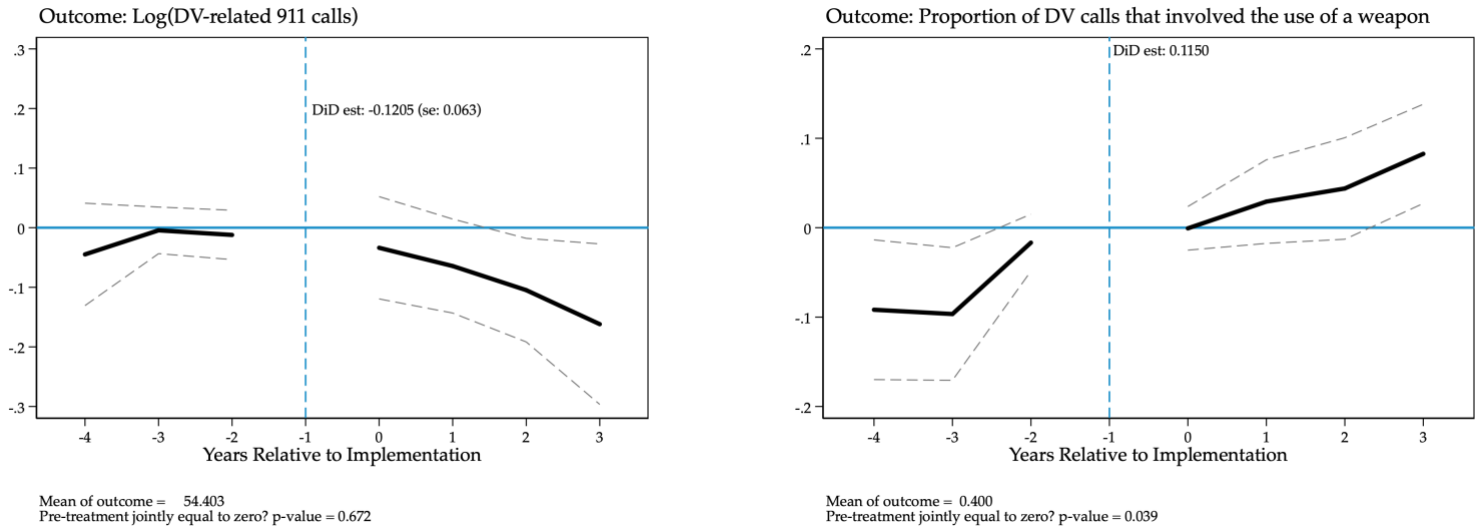
Notes: The unit of observation is county-year. The sample period is 1977-2004. Outcome in (a) is intimate partner homicide (IPH) rate per 100,000 population. Outcome in (b) is non-intimate partner homicide (non-IPH) rate per 100,000 population as serves as within-jurisdiction placebo group. Event study estimates are calculated using (1) imputation-based estimator from Borusyak et al. (2021), (2) de Chaisemartin & D'Haultfoeuille (2020) estimator, and (3) the interaction weighted (IW) estimator from Sun & Abraham (2020). Estimate are plotted using `event_plot` Stata package from Borusyak et al. (2021). See section 4.2 for a brief explanation of each estimator.

Figure 6. *Empirical Distribution of Placebo Homicide Estimates*



Notes: The vertical lines represent the estimated effects of NuPO on intimate partner homicide (+0.222) corresponding to column 3 of panel A in Table 7. A total of 6.2 percent of placebo estimates lie to the right of the estimated effect. Procedure described in the notes to Figure 3. See Figure 3 for notes. See Appendix Figure A.5 for the distribution of placebo IPH estimates using MSAs that are not treated between 1979-2004.

Figure 7. *Relationship between NuPO, (a) domestic violence related 911 calls, and (b) violence.*



(a) (b)

Notes: The unit of observation is jurisdiction-year. The sample period is 2001-2019. Outcome in Figure (a) is the (log) number of DV-related calls for service (i.e., 911 calls). Outcome in Figure (b) is the proportion of DV-related calls for service that involved the use of a weapon. The independent variables of interest are indicator variables for being τ periods away from the enactment of nuisance property ordinances where $\tau = -4, -3, \ldots, 3$. The dashed lines indicate 95% confidence intervals. Mean of the dependent variable and the p-value from the joint significance test of the pre-treatment event time estimates are reported at the bottom of each figure.
In (a), I find evidence that nuisance ordinances are associated with reductions in number of DV-related 911 calls. The p-value from the joint significance test of the pre-treatment event time estimates, 0.67, indicates that the test fails to reject the null hypothesis that the (log) dv-related 911 calls do not trend differently before the enactment of NuPO. However, figure (b), suggests caution when interpreting the result for proportion of calls involving a gun.

TABLES

Table 1. *Adoption year of Nuisance Property Ordinances*

City	*Year of Enactment*	*Ordinance Code/Section*	*City*	*Year of Enactment*	*Ordinance Code/Section*
Detroit, MI	1964	§ 37,38	***San Diego, CA***	2007	§ 11.-0210
Dallas, TX	1975	§ 27-48	***St. Louis, MO***	2007	Ordinance no. 68535
Newark, NJ	1986	§ 17:3A-1	***San Antonio, TX***	2007	§ 21-81
Santa Ana, CA	1988	$ 10-300	***Los Angeles, CA***	2008	§ 151.09
New York, NY	1989	§ 7-703	***Atlanta, GA***	2008	Housing Code § 6
Mesa, AZ	1992	§ 6-12-4, 8	***Baltimore, MD***	2008	art 19 § 43
Philadelphia, PA	1992	NuPO Task Force	***Kansas City, MO***	2008	§ 48- 50
Minneapolis, MN	1994	§ 386.10-.60	***Portland, OR***	2008	§ 14B.60.010
Sacramento, CA	1997	§ 8.04.100	***San Francisco, CA***	2009	§ 80.4
San Jose, CA	1998	§ 1.13.050	***Fort Lauderdale, FL***	2009	§ 18-1
Washington, DC	1998	§ 22-2713	***Orlando, FL***	2009	§ 42.04
Denver, CO	1999	§ 37-50	***Tampa, FL***	2009	§ 14-293
Suffolk, NY	1999	§ 623-2	***Seattle, WA***	2009	§ 10.09
Oakland, CA	2004	§ 8.23.100	***Chicago, IL***	2010	§ 8-4-087
Miami, FL	2004	§ 2-98.5	***San Bernardino, CA***	2011	§ 15.27.050
Columbus, OH	2005	§ 4703.1	***West Palm Beach, FL***	2011	§ 54-402
Pittsburgh, PA	2005	§ 670.02	***Boston, MA***	2012	§ 16-57-2
Cincinnati, OH	2006	§ 761-1-N	***Fort Worth, TX***	2012	§ 7-394
Cleveland, OH	2006	§ 630.01	***Charlotte, NC***	2013	§ 6-581
Houston, TX	2006	§ 28-281	***Virginia Beach***	.	.

Notes: Sources: author, Desmond and Valdez (2013), Fais (2007), and Mead (2017). I check the adoption years across multiple references. In case of contradictions between the adoption years in the previous literature, I trusted my own findings. When the adoption year is not available in published study, I personally collected them through municipalities ordinances.

Table 2. *Descriptive Statistics*

	(1)	(2)	(3)	(4)
	Without NuPO	With NuPO	Without NuPO	With NuPO
Panel A: Crime Victimization Survey	**NCVS**		**NCVS Victims**	
Avg Number of Respondents/Year	86,390	86,755	9,286	9,376
Female	0.528	0.530	0.517	0.520
White	0.644	0.669	0.694	0.719
Single	0.477	0.486	0.585	0.586
Age 40 or above	0.469	0.472	0.325	0.337
High School or below	0.575	0.556	0.534	0.513
Low Income	0.473	0.417	0.512	0.450
Renter	0.344	0.346	0.480	0.446
Single Housing	0.673	0.649	0.579	0.586
Head of Household	0.476	0.473	0.533	0.526
N	1,251,701	972,156	121,284	94,722
Crime Victimization Rate				
1979	13.94%	13.46%		
2004	4.98%	5.04%		
% of Assaults Reported to Police				
1979			45.46%	45.90%
2004			48.26%	39.32%
Panel B: Homicide per 100,000 population	**SHR**			
Intimate partner homicide rate				
1979	2.77	1.41		
2004	0.64	0.62		
Non-Intimate Partner Homicide Rate				
1979	24.12	20.78		
2004	13.93	12.16		
Panel C: 911 calls per 10,000 population	**California**			
Domestic violence related 911 calls				
2001	56.09	68.50		
2019	54.28	47.63		

Notes: *Odd-numbered* columns report means for MSAs/cities where, during the sample period, NuPO never applies. *Even-numbered* columns report means for MSAs/cities where NuPO applied during the sample period. In *Panel A*, data is from National Crime Victimization Survey (NCVS) MSA sample. Columns (1) and (2) report means from NCVS's person-based file that contains select household and person variables for all people in NCVS interviewed households in the core counties of the 40 largest MSAs from January 1979 through December 2004. Columns (3) and (4) report mean of covariates from NCVS's incident-based file contains select household, person, and incident variables for persons who reported a violent crime during the 6-month period preceding the interview month. *Low Income* = 1 if the reported household income is below HUD's Median Family Income estimates. *Crime Victimization Rate* reports the percentage of respondents who reported victimization for any crime. *Percentage of assaults reported to police*=1 if an assault that happened inside victim's home reported the crime to police. In *Panel B*, the homicide data come from the Supplementary Homicide Reports (SHR) within FBI Uniform Crime Reports (UCR). I use information on the relationship between the victim and offender to identify intimate partner homicide (IPH) in which the victim is a current or former spouse, girlfriend, or boyfriend of the offender). Unit of observation is county-year (34 counties × 28 years). In Panel C, data on domestic violence-related 911 calls come from California's Department of Justice (DOJ). Unit of observation is county-year (58 counties × 19 years).

Table 3. *Relationship between NuPO and crime reporting for victims of assault inside their home*

Outcome: Was the assault inside victim's home reported to police? (Yes = 1)

	(1)	(2)	(3)	(4)
NuPO	-0.085**	-0.084**	-0.075**	-0.040
	(0.035)	(0.033)	(0.036)	(0.043)
NuPO × Rent				-0.062**
				(0.028)
Mean of Outcome			0.585	
Observations			5,888	
Year & MSA FE	Y	Y	Y	Y
Individual Controls	.	Y	Y	Y
Economic & Policy Controls	.	.	Y	Y

Notes: The unit of observation is a domestic assault victimization, and the outcome is an indicator variable set to 1 if crime was reported to police. The sample period is 1979-2004. This table reports β from equation 1. *NuPO* = 1 for any MSA with enacted nuisance ordinances during the post period. *Rent* is an indicator for whether the victim lives in a rental unit. *Individual Controls* are from the NCVS and includes individual-level information about the victim's race (White), education (High school or below and an indicator for missing value), income (whether below the median income), housing and tenure (whether the victim lives in a single unit housing and whether the victim lives in a rental unit), and whether the victim is the head of household. Offense-related controls are indicators for: multiple offenders, attempted assault/attack, and whether the victim was injured. *Economic & Policy Controls* include non-violent crime rates covering burglary, larceny, and mother vehicle theft, female-to-male employment ratio, income per capita, unilateral divorce laws indicators, AFDC/TANF maximum benefit for a family of 3, indicators for whether the state has the death penalty, no-drop prosecution law, indicators, and mandatory arrest laws. All standard errors are clustered at the MSA-level. * *p<0.1; ** p<0.05; *** p<0.01*

The coefficients in columns 1-3 are estimated from the following regression:

$$CrimeReported_{ist} = \beta NuPO_{st} + \alpha_s + \alpha_t + X_{it}\Omega + Z_{st}\Psi + \epsilon_{ist}$$

The coefficients in column 4 are estimated from the following regression:

$$CrimeReported_{ist} = \beta(NuPO \times Rent)_{st} + \gamma NuPO_{st} + \delta Rent_{st} + \alpha_s + \alpha_t + X_{it}\Omega + Z_{st}\Psi + \epsilon_{ist}$$

Estimates from Table 3 imply that nuisance ordinances decrease the rate at which assaults that happened inside home is reported. Those living in rental units are particularly affected by these ordinances.

Table 4. *Falsification exercise by offense type and location of the incident*

	(1)	(2)	(3)
Panel A: *Was the assault that happened outside of victim's home reported to police? (Yes = 1)*			
NuPO	-0.015	-0.024	-0.020
	(0.020)	(0.020)	(0.020)
Mean of Outcome		0.386	
Observation		20,791	
Panel B: *Was Other (non-assault) offenses that happened outside of victim's home reported to police? (Yes = 1)*			
NuPO	-0.019	-0.019	-0.009
	(0.017)	(0.014)	(0.011)
Mean of Outcome		0.317	
Observation		80,649	
Panel C: *Was Other (non-assault) offenses that happened inside of victim's home reported to police? (Yes = 1)*			
NuPO	-0.015	-0.015	-0.019
	(0.014)	(0.015)	(0.016)
Mean of Outcome		0.424	
Observation		59,606	
Year & MSA FE	Y	Y	Y
Individual Controls	.	Y	Y
Economic & Policy Controls	.	.	Y

Notes: Outcome is an indicator variable set to 1 if crime was reported to police. *Assault* against victims include attempted, completed, and aggravated assaults, verbal threat of assault and sexual assaults. *Other offenses* include attempted or completed robbery, pocket picking, burglary, theft, and motor vehicle theft. *The location* is constructed by victims' respondents on whether the incident happened in/around home. The regressions are estimated using specifications and controls described in the notes to Table 3. See Table 3 for notes.
The unit of observation in panel A is an assault victimization out of home. The unit of observation in panel B is a non-assault victimization out of home. The unit of observation in panel C is a non-assault victimization inside victim's home. All standard errors are clustered at the MSA-level. * *p<0.1;* ** *p<0.05;* *** *p<0.01*

Table 4 reports the estimated effect of NuPO on the rate at which crimes that are not directly targeted by these nuisance (i.e., assault outside of victim's home and income generating crimes) are reported to police. Among all specification, estimated coefficients are imprecise and insignificant.

Table 5. *Does NuPO increase the likelihood of escalating violence among victims of domestic assault?*

	(1)	(2)	(3)
Panel A: *Victim suffered injury (Yes = 1)*			
NuPO	0.009	0.034**	0.034*
	(0.026)	(0.016)	(0.018)
Mean of Outcome		0.362	
N		5,888	
Panel B: *Victim received medical care (Yes = 1)*			
NuPO	0.030	0.040	0.036
	(0.023)	(0.024)	(0.022)
Mean of Outcome		0.161	
N		5,888	
Panel C: *Self-protective action taken by victim (Yes = 1)*			
NuPO	0.036	0.039	0.051**
	(0.027)	(0.027)	(0.025)
Mean of Outcome		0.583	
N		5,888	
Panel D: *Police took reported, search, took evidence, or questioned witness(es) upon being called (Yes = 1)*			
NuPO	0.024	0.023	0.031
	(0.027)	(0.028)	(0.033)
Mean of Outcome		0.560	
N		3,442	
Year & MSA FE	Y	Y	Y
Individual Controls	.	Y	Y
Economic & Policy Controls	.	.	Y

Notes: The unit of observation is a crime incident for victims of assault inside their home. The sample period is 1979-2004. In panel A, the outcome (*injury*) = 1 if victim indicated they suffered injury. In panel B, outcome (*medical care*) =1 if victim indicated that they received medical care for injury. In panel C, I look at the possible escalation by looking at the outcome (*self-protective*) = 1 if self-protective action by the victim was taken. In panel D, the outcome (*Police acted*) is an indicator variable set to 1 if, conditional of crime being reported, police took one of the following actions: took reported, search, took evidence, or questioned witness(es) upon being called. Regressions in panel D are conditioned on police being called and include fewer observations. The regressions are estimated using specifications and controls described in the notes to Table 3. See Table 3 for notes. All standard errors are clustered at the MSA-level. * *p<0.1; ** p<0.05; *** p<0.01.*

Altogether, in Table 5, I find suggestive evidence of positive relationship between NuPO and escalating violence.

Table 6. *Does NuPO increase the likelihood of assault victimization (in general) and domestic assault victimization?*

	(1)	(2)	(3)
Panel A: *Assault victimization rate*			
NuPO	0.00099	0.00161	0.00212*
	(0.00140)	(0.00124)	(0.00114)
Mean of Outcome		0.015	
Observation		1,034	
Panel B: *Domestic assault victimization rate*			
NuPO	0.00062	0.00094*	0.00095*
	(0.00060)	(0.00056)	(0.00055)
Mean of Outcome		0.005	
Observation		1,034	
Year & MSA FE	Y	Y	Y
Individual Controls	.	Y	Y
Economic & Policy Controls	.	.	Y

Notes: The unit of observation is an individual surveyed by the NCVS. The sample period is 1979-2004. *Assault victimization rate* is the proportion of individuals in in MSA *s* interview in year *t* reported having been a victim of an assault in the previous six months. *Domestic assault victimization rate* is the proportion of individuals in in MSA *s* interview in year *t* reported having been a victim of an assault inside their home in the previous six months. Additional controls are described in the notes to Table 3. See Table 3 for notes. All standard errors are clustered at the MSA-level.

** p<0.1; ** p<0.05; *** p<0.01*

Table 7. *Relationship between NuPO and intimate partner homicide (IPH) and non-intimate partner homicide (non-IPH)*

	(1)	(2)	(3)	(4)
		IPH rate		***Falsification:*** **Non-IPH**
Panel A: *Both Female and Male Victims*				
NuPO	0.609***	0.602***	0.222*	0.943
	(0.127)	(0.130)	(0.111)	(0.734)
Mean of Outcome	1.370	1.370	1.370	19.28
Panel B: *Female Victims*				
NuPO	0.174***	0.171***	0.061	0.070
	(0.052)	(0.050)	(0.054)	(0.132)
Mean of Outcome	0.792	0.792	0.792	2.590
Panel C: *Male Victims*				
NuPO	0.435***	0.431***	0.161**	0.872
	(0.095)	(0.099)	(0.075)	(0.672)
Mean of Outcome	0. 578	0. 578	0.578	16.69
Observations	952	952	952	952
MSA- and Year FEs	Y	Y	Y	Y
Lagged non-IPH rate	.	Y	Y	Y
Economic & Policy	.	.	Y	Y

Notes: Unit of observation is county-year (34 counties × 28 years). The sample period is 1977-2004. Coefficients are estimated from the following regression:

$$Y_{ist} = \beta NuPO_{st} + \alpha_s + \alpha_t + X_{st}\Psi + \epsilon_{ist}$$

Outcome in columns (1), (2), and (3) is intimate partner homicide (IPH) rate per 100,000 population. Outcome in column (4) is non-intimate partner homicide (non-IPH) rate per 100,000 population. Lagged non-IPH rate is included to account for agency-specific changes in overall violent crime rates. Economic & Policy Controls include non-violent crime rates covering burglary, larceny, and mother vehicle theft, female-to-male employment ratio, income per capita, unilateral divorce laws indicators, AFDC/TANF maximum benefit for a family of 3, indicators for whether the state has the death penalty, no-drop prosecution law, indicators, and mandatory arrest laws. All standard errors are clustered at the MSA-level. * *p<0.1;* ** *p<0.05;* *** *p<0.01*

Across all specifications, I find a positive and significant relationship between the enactment of NuPO and the IPH rates. In column 4, I estimate the impact of nuisance ordinances on non-intimate partner homicide as a *falsification test*. For non-IPH, the estimated impacts are insignificant and small in magnitude.

Table 8. *Relationship between NuPO, domestic violence related 911 calls, and violence.*

	(1)	(2)
panel A: *Log(DV-related 911 calls per 10,000)*		
NuPO	-0.113*	-0.120*
	(0.057)	(0.063)
Mean of Outcome	54.40	
SD of Outcome	36.52	
N	1,102	
panel B: *Proportion of DV calls that involved the use of a weapon*		
NuPO	0.119***	0.115***
	(0.039)	(0.037)
Mean of Outcome	0.40	
N	1,102	
Year & Unit FE	Y	Y
Controls	.	Y

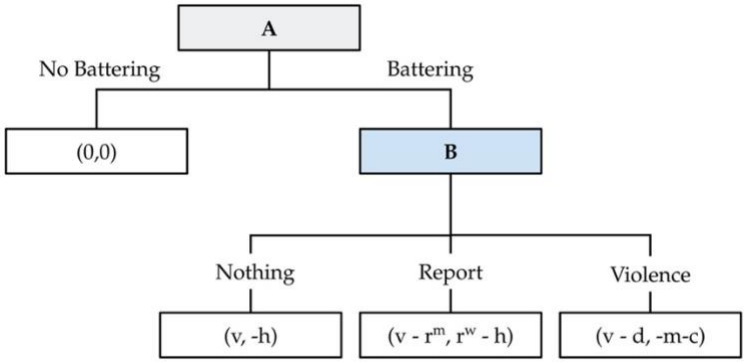
Notes: Unit of observation is county-year. The sample period is 2001-2019. In *Panel A*, the outcome of interest is the (log) rate of DV-related 911 calls per 10,000 people in agency s in year t. In *Panel B*, the outcome of interest is the proportion of DV calls that involved the use of a weapon. $NuPO_{st}$ is an indicator equal to one for any city with enacted nuisance property ordinance during the post period. Z_{st} is a vector of time-varying city-level and public policy controls which is comprised poverty rate (percentage of the population with income in the past 12 months below the poverty level), Percent of occupied housing units that are renter-occupied, rent burden (median gross rent as a percentage of household income), and percentage of population that is White. In my specifications, I cluster standard errors at the county level. ** p<0.1; ** p<0.05; *** p<0.01*

Across all specifications, I find a negative and significant relationship between the enactment of NuPO and the (log) rate of DV-related 911 calls. Results suggest a positive relationship between these ordinances and the proportion of incidents that involved a weapon. However, the event study (Figure 7.B) suggests caution when interpreting the results for proportion of DV calls involving weapon.

Appendices

A Hypothesized Effects of Nuisance Property Ordinances

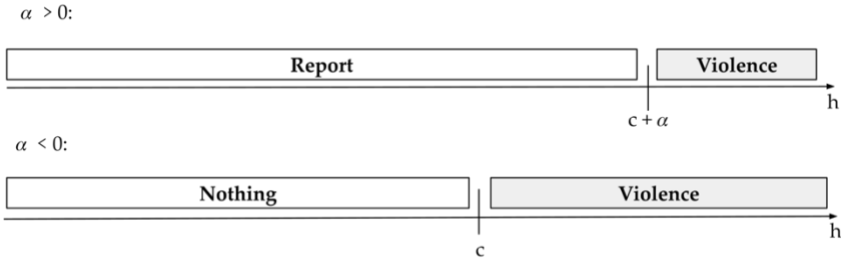
To clarify the argument, in this section, I present a simple model that describes how changing the cost of crime reporting (and calling for service) in the form of NuPO could affect the behavior of a victim or a batterer. Considering crime-specific preferences, Θ is a vector of a binary reporting decision, and $\theta_k = \{0,1\}$ is the reporting decision corresponding to crime type *j*. The victim reports a crime victimization ($\theta_k = 1$) when the expected benefit of reporting is greater than the cost of reporting. The net benefit of reporting, α, varies across individuals. Victim sets $\theta_k = 1$ if $\alpha_k > 0$. How would NuPO affect reporting? Consider two types of crime: (k=1) domestic assault and (k=2) sexual harassment in bars/restaurants. Nuisance ordinances focus on crimes related to a property. Therefore, we expect that the net benefit of reporting a sexual harassment in a restaurant, α_2 remains the same, while the cost of reporting a domestic assault will increase, decreasing α_1 and leading to less reporting of domestic assault victimization.



Person *i*, first chooses between battering or not. If no battering is involved in this stage, the game ends and both players receive a utility normalized to zero. *i* receives *v* from battering, which is randomly distributed on the real numbers indicating that person *i* might like or dislike battering. If they decide to batter, they receive a payoff of *v* minus the cost, which depends on the circumstances and the victim's actions. By interacting with an abusive person, the victim bears the cost of *h***.** The true value of *h* cannot be anticipated by the victim until it occurs. A batterer cannot anticipate (or observe) the magnitude of *h* before (and after) the incident. If battering occurs, *j* has three options: (1) report the victimization to police, (2) do nothing, or (3) use violence.

If the victim does not report the victimization to authorities, the victim's payoff equals to *(-h).* If the victim reports the incident, they gain α, which is the *net benefit* of reporting from a victim's point of view. I assume that if an offense is reported, the batterer bears the cost of β. Note that reporting a victimization does not imply dissolution of the relationship. Therefore, the victim receives the dissatisfaction of the abuser's presence *(-h)* in addition to the net benefit of the reporting (α). If a victim commits a violent act as a commitment device, they face legal consequences, *c*. The abuser payoff in this case is utility from battering minus the cost such as injury *(v-d).*

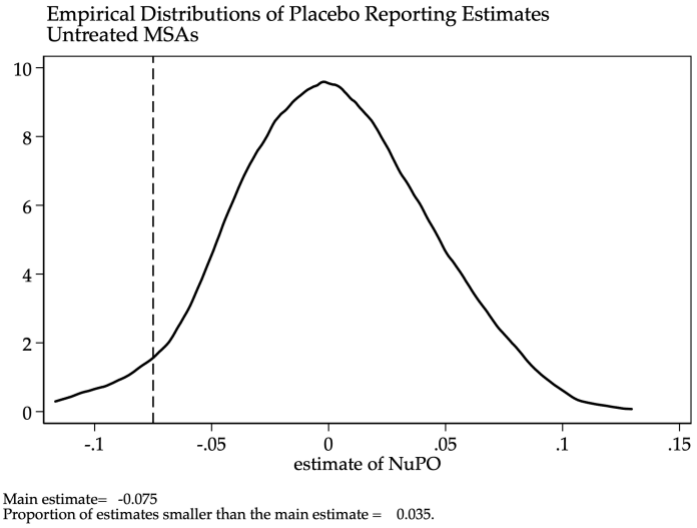
With a positive value of α (when the benefit of reporting is greater than cost), a victim always prefers reporting over doing nothing (α - h > -h). The victim reports instead of engaging in violence as long as α - h > -c. Both m and c are positive values; therefore, she prefers reporting to killing if (- h > -c- r^w). In other words, she decides to kill the abuser if living with an abusing partner is more costly than the combined costs of losing a marriage, facing a penalty for committing homicide, and the risk of being evicted. Thus, the victim reports if the disutility of living with an abusive partner is not very large; otherwise, the victim will kill him. Figure below shows the equilibrium responses.



With increased costs associated with the enactment of NuPO, I expect some victims to shift away from reporting toward doing nothing if the net benefit of reporting becomes negative (α - h < -h). For some values of h < h*, the victim prefers doing nothing, and for h > h* they engage in violence. As shown in Figure above, when NuPO laws make the reporting costly, depending on the value of $(m - h)$, a victim either commits to violence or does nothing. In this case, the threshold of violence is lower compared to the threshold in the case of positive r^w.

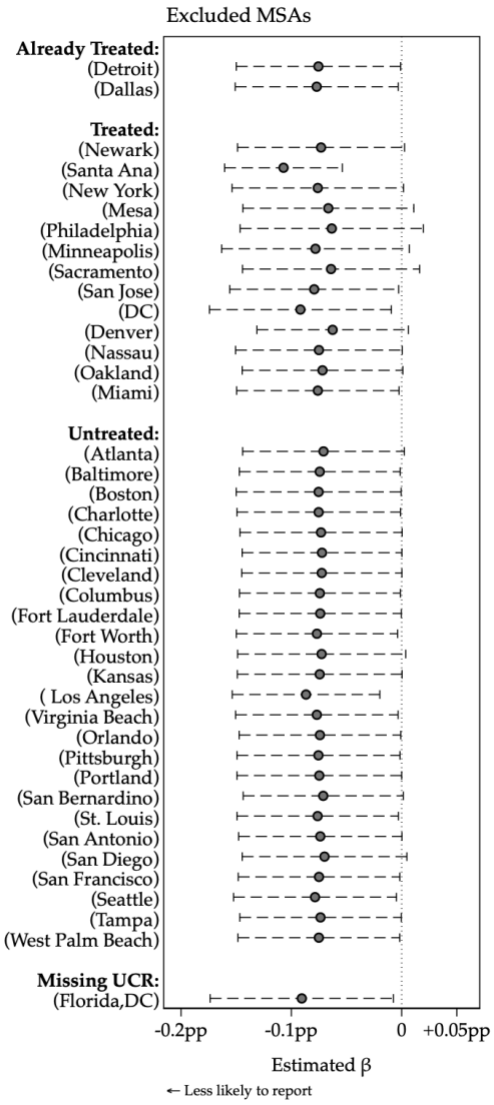
Appendix Figures

Figure A.1. *Empirical Distribution of Placebo Reporting Estimates*



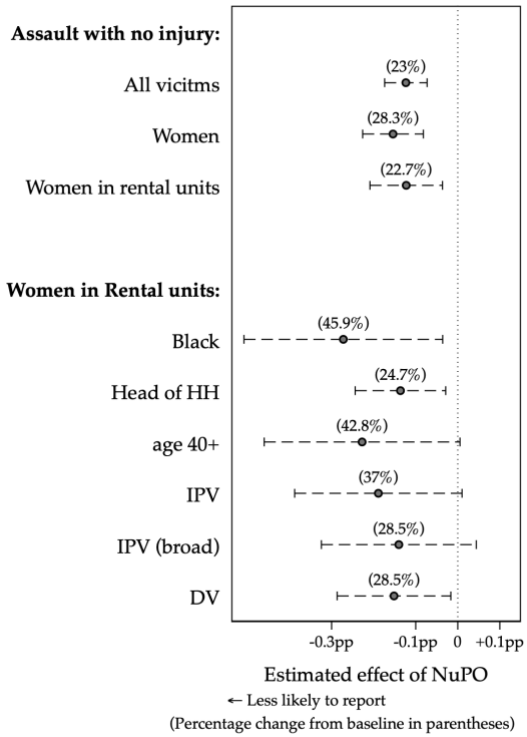
Notes: The vertical line corresponds to the estimated effect of NuPO on crime reporting among victims of domestic assault (column 3 of Table 3). To ensure that I am making correct inferences about statistical significance, I randomly assign a treatment year to MSAs that are not treated between 1979-2004 and then estimate the impact of these randomly generated ordinances on victims' reporting behavior. I repeat this exercise 1000 times and generate distributions of estimates. Figure shows the placebo distribution from this exercise. A total of 3.5 percent of placebo estimates lie to the left of the estimated effect. See Figure 3 for the distribution of placebo reporting estimates using all MSAs.

Figure A.2. The relationship between NuPO and reporting assault is robust to iteratively excluding each MSAs



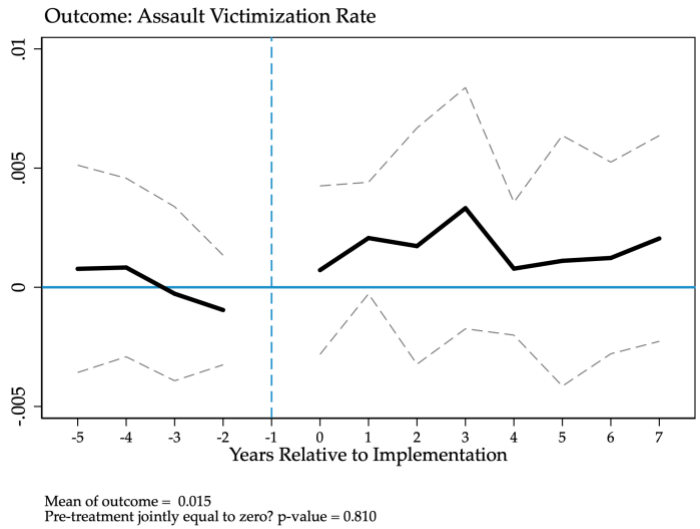
Notes: The dependent variable is an indicator taking value of one if victim reported an assault victimization inside their home to police. The independent variable of interest is an indicator for whether the MSA had implemented a nuisance property ordinance. The plotted coefficient and 95% confidence intervals are obtained excluding the MSA listed on the vertical axis. All standard errors are clustered at the MSA-level. The regressions are estimated using specifications and controls described in the notes to Table 3. See Table 3 for notes.
This figure show that the relationship between reporting and NuPO is robust to iteratively excluding each MSA. In addition, the estimated effect is robust to excluding DC and MSAs in Florida that do not provide homicide data as discussed in Section 3.3.

Figure A.3. *Heterogenous treatment effect of NuPO on crime reporting*

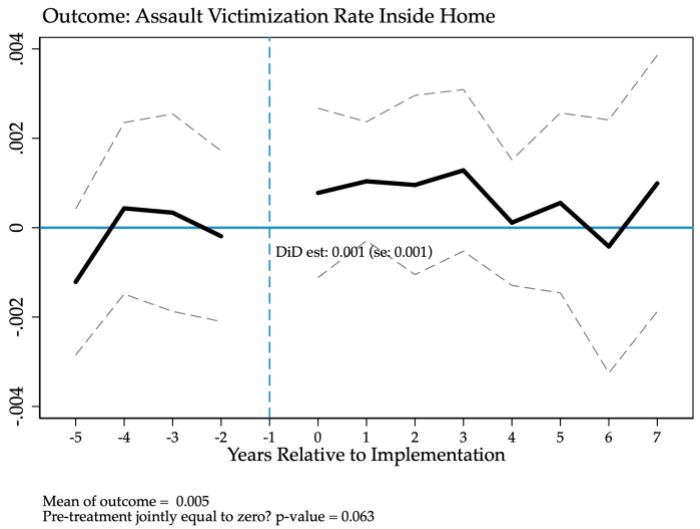


Notes: The dependent variable is an indicator taking value of one if a victim reported an assault (with no injury) inside their home to police. The independent variable of interest is an indicator for whether the MSA had implemented a nuisance property ordinance. *Head of HH* = 1 if the victim is the head of household. *IPV* = 1 if victim is a current or former spouse, girlfriend, or boyfriend of the offender. *IPV (broad)* = 1 if victim is a current or former spouse, girlfriend, boyfriend, or friend of the offender. *Domestic* = 1 if IPV = 1 or offender is a family member (parent, child/step-child, or sibling). The plotted coefficient and 95% confidence intervals are obtained from estimating the effect for each subgroup labeled in the y axis. All standard errors are clustered at the MSA-level.

Figure A.4. *Victimization rate*



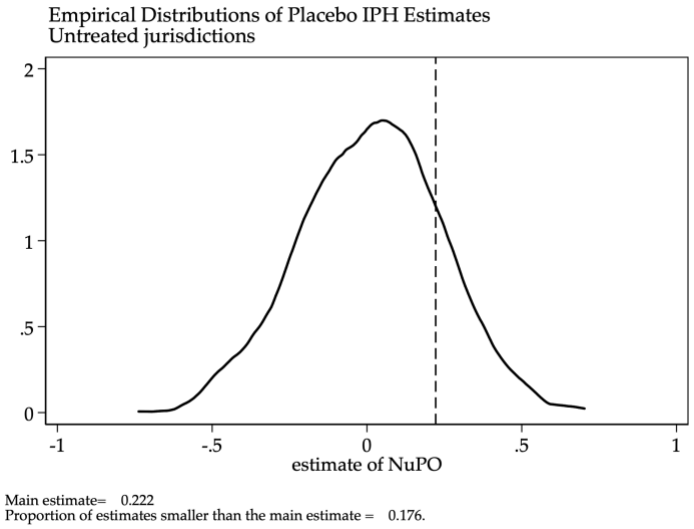
(a)



(b)

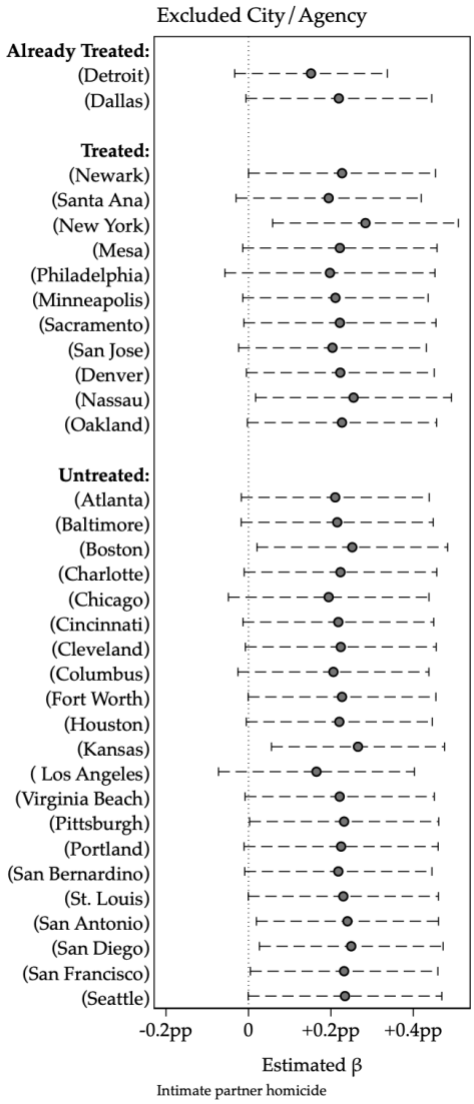
Notes: The unit of observation is an individual surveyed by the NCVS. The sample period is 1979-2004. *Assault victimization rate* is the proportion of individuals in in MSA s interview in year t reported having been a victim of an assault in the previous six months. *Domestic assault victimization rate* is the proportion of individuals in in MSA s interview in year t reported having been a victim of an assault inside their home in the previous six months. The independent variables of interest are indicator variables for being τ periods away from the enactment of nuisance property ordinances where $\tau = -5, -4, \ldots, 7$. The dashed lines indicate 95% confidence intervals. Mean of the dependent variable and the p-value from the joint significance test of the pre-treatment event time estimates are reported at the bottom of each figure.

Figure A.5. *Empirical Distribution of Placebo Homicide Estimates*



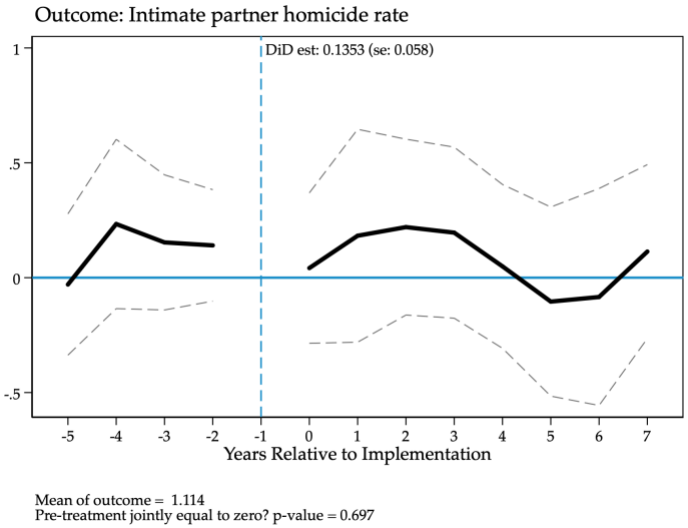
Notes: The vertical lines represent the estimated effects of NuPO on intimate partner homicide (+0.222) corresponding to column 3 of panel A in Table 7. To ensure that I am making correct inferences about statistical significance, I randomly assign a treatment year to jurisdictions that are not treated between 1979-2004 and then estimate the impact of these randomly generated ordinances on IPH. I repeat this exercise 1000 times and generate distributions of estimates. Figure shows the placebo distribution from this exercise. See Figure 6 for the distribution of placebo reporting estimates using all jurisdictions.

Figure A.6. *The relationship between intimate partner homicide (IPH) and NuPO is robust to iteratively excluding each agency*

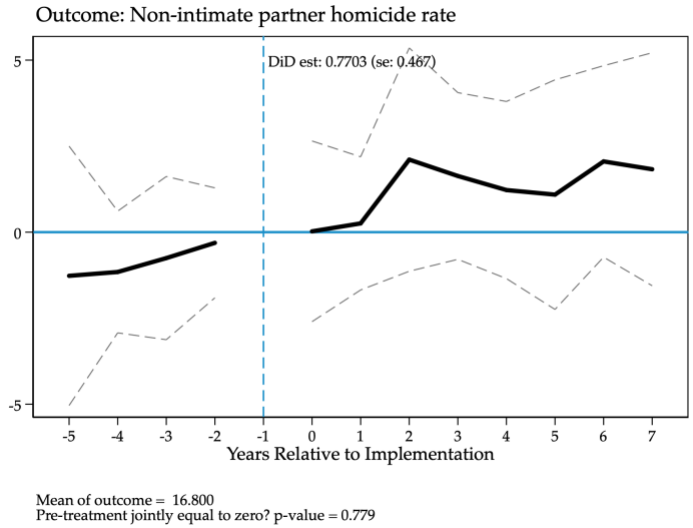


Notes: The unit of observation is county-year. The sample period is 1977-2004. Outcome is intimate partner homicide (IPH) rate per 100,000 population. The independent variable of interest is an indicator for whether the agency had implemented a nuisance property ordinance. The plotted coefficient and 95% confidence intervals are obtained excluding the agency listed on the vertical axis. All standard errors are clustered at the agency-level.

Figure A.7. *Relationship between NuPO and intimate partner homicide (IPH) and non-intimate partner homicide (non-IPH) from 1977 to 2018*



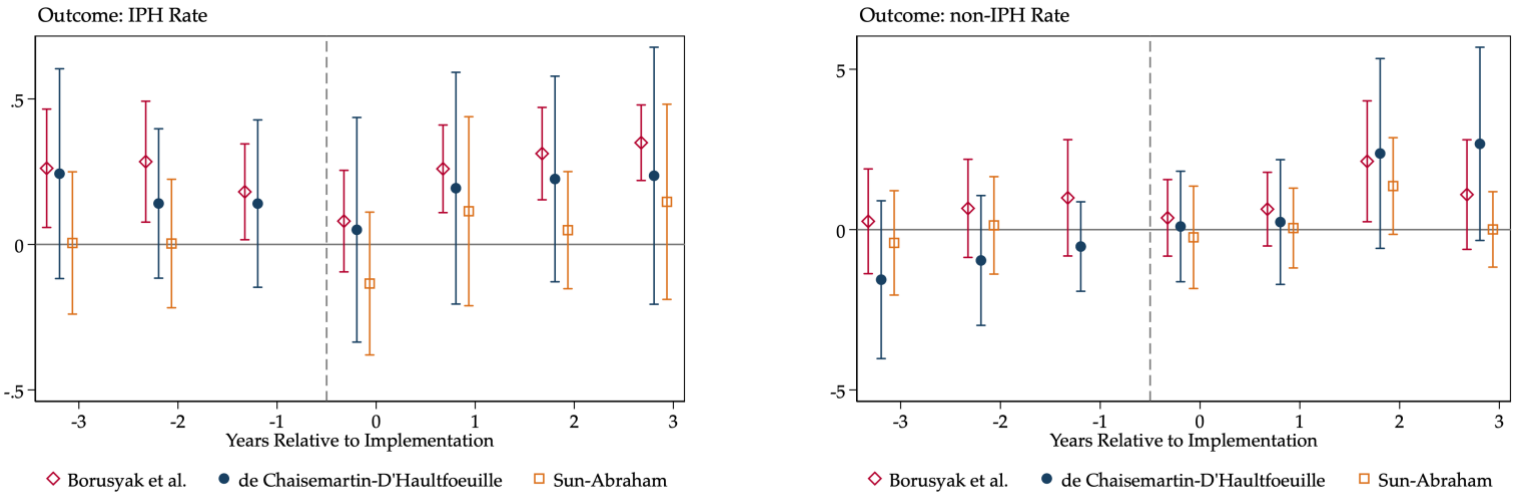
(a)



(b)

Notes: The unit of observation is agency-year. The sample period is 1977-2018. Outcome in *(a)* is intimate partner homicide (IPH) rate per 100,000 population. Outcome in *(b)* is non-intimate partner homicide (non-IPH) rate per 100,000 population. The independent variables of interest are indicator variables for being τ periods away from the enactment of nuisance property ordinances where $\tau = -5, -4, \ldots, 7$. The dashed lines indicate 95% confidence intervals. Mean of the dependent variable and the p value from the joint significance test of the pre-treatment event time estimates are reported at the bottom of each figure.

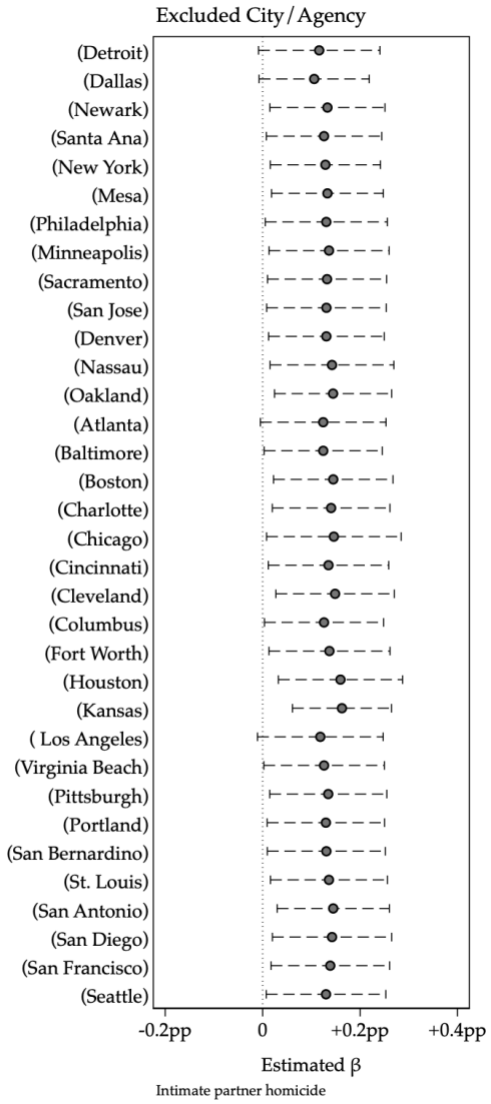
Figure A.8. *Relationship between NuPO and homicide between 1977 to 2018 using alternative estimation procedures from 1977 to 2018*



(a) (b)

Notes: This figure uses sample describes in the notes to Appendix Figure A.7. See Appendix Figure A.7. for notes. Event study estimates are calculated using (1) imputation-based estimator from Borusyak et al. (2021), (2) de Chaisemartin & D'Haultfoeuille (2020) estimator, and (3) the interaction weighted (IW) estimator from Sun & Abraham (2020). Estimate are plotted using event_plot Stata package from Borusyak et al. (2021). See section 4.2 for a brief explanation of each estimator.

Figure A.9. *The relationship between IPH and NuPO (from 1977 to 2018) is robust to iteratively excluding each agency*



Notes: The unit of observation is county-year. The sample period is 1977-2018. Outcome is intimate partner homicide (IPH) rate per 100,000 population. The independent variable of interest is an indicator for whether the agency had implemented a nuisance property ordinance. The plotted coefficient and 95% confidence intervals are obtained excluding the agency listed on the vertical axis. All standard errors are clustered at the agency-level.

Appendix Tables

Table A.1. *Adoption Year of Nuisance Property Ordinance Laws*

City	*Year*	*Code/Section*	*shortened summary of the detailed ordinances*
Detroit, MI	1964	§ 37,38	Public nuisance is an unreasonable interference with health, safety, peace, and comfort of life.
Dallas, TX	1975	§ 27-48	Five or more abatable criminal activities within 365 days resulting in either a report of a law enforcement agency documenting an investigation of an abatable criminal activity of the property or enforcement action against any person associated with the abatable criminal activity on the property
Newark, NJ	1986	§ 17:3A-1	
Santa Ana, CA	1988	$ 10-300	
New York, NY	1989	§ 7-703	…Within the period of one year, there have occurred 3+ violations of one or any combination of the provisions of penal law article 220… provided that at least one such violation was personally witnessed by a police officer…
Mesa, AZ	1992	§ 6-12-4, 8	… A gathering of 2 or more persons on any property in a manner which disturbs the peace and quiet of a neighborhood or a reasonable person of normal sensibilities and/or creates noise prohibited under 6-12-2. After 3 violations on the same property, the owner of the property may also be deemed responsible for the violation….
Philadelphia, PA	1992	Public Nuisance task force & Philadelphia § 9-4401	3 or more separate days during 60-day period or 7 or more separate days during any 12-month period… is considered chronic nuisance.
Minneapolis, MN	1994	§ 386.10-.60	… a place has been used more than once within a period of 12 months for purpose of lewdness, assignation, or prostitution…. Anything which is injurious to health, or indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, is a nuisance.
Sacramento, CA	1997	§ 8.04.100	… It is unlawful and a misdemeanor and a public nuisance for any person owning, leasing, occupying, or having charge or possession of any premises in this city to maintain the premises in a manner that any one or more of the activities described in the following subsection are found to exist to allowed to continue: … any activity occurring on the property that is detrimental to the life, health, safety, or welfare of the residents, neighbors, or public.
San Jose, CA	1998	§ 1.13.050	A public nuisance is the use of property in the city in the manner that jeopardizes the health, safety, or welfare of persons on the premises or in the surrounding area; or real property that has been the suits for nuisance activities including, but not limited to: disturbing peace, acts of violence, unreasonably loud noise, …

Washington, DC	1998	§ 22-2713	
Denver, CO	1999	§ 37-50	… 2 or more offenses of disturbing the peace, §38-39, within 180-day period….
Suffolk, NY	1999	§ 623-2	…Any building, residence, premises or place where an owner thereof has been given first notice that prohibited conduct has occurred therein or thereon and within a period of three years after said first notice has been given there is an additional occurrence of any prohibited conduct therein or thereon…
Oakland, CA	2004	§ 8.23.100	… The City has broad authority to address nuisances, including nuisances created by illegal activity. Often the City's recourse is to seek mandatory injunctions to force rental property owners to remove tenants who engage in illegal activity; this can be time consuming and costly to the City and the rental property owner. The City may also have to order the property vacated, which often can result in the displacement of tenants who are not engaged in illegal activity. The City Council desires a more expeditious, less costly, and more targeted approach to removal from the rental property tenants committing a nuisance by engaging in illegal activity. The purposes of this amended ordinance include: to expand the illegal activities that can be used to require landlords to bring eviction actions against individuals conducting nuisance activity on rental properties; to penalize owners for maintaining a nuisance or authorize the City to take other action against the rental property owner for failing to take appropriate action against the offending tenants; to enable rental property owners to assign the eviction cause of action to the City and allow the City Attorney to handle the eviction of the offending tenant; and to authorize owners to remove from the rental unit only the person engaged in the illegal activity and not other tenants in the unit who may be innocent of the activity….
Miami, FL	2004	§ 2-98.5	…Any place or premise which has been used on more than 2 occasions within a twelve-month period:…By a youth and street gang for the purpose of conducting a pattern of youth and street gang activity, or…For lewd or lascivious behavior, or… Any premise or place declared to be a nuisance by Florida Statute, Section 823.05 or Section 823.10 as they may be renumbered or amended from time to time.
Columbus, OH	2005	§ 4703.1	…Any building, premises, or real estate, including vacant land, or any appurtenance thereto as defined as a nuisance or public nuisance in Ohio Revised Code Chapter 3767….Any building, premises, or real estate, including vacant land, or any appurtenance thereto that is used or occupied by a criminal gang (as defined in RC 2923.41) on more than two (2) occasions within a one (1)-year period to engage in a pattern of criminal gang activity (as defined in RC 2923.41).
Pittsburgh, PA	2005	§ 670.02	*DISRUPTIVE PROPERTY*. Any property on which disruptive activity has occurred on three (3) or more separate occasions within any 12-month period or any property on which a serious offense has occurred. *ABATEMENT PLAN.* A plan of action that the property owner will take to remove the violation causing the disruptive activity and prevent further disruptive activities *PUBLIC NUISANCE.* Property declared as a disruptive property where disruptive activity continues to occur on one (1) or

			more separate occasions within six (6) months after the declaration or a single serious offense occurs within six (6) months after the declaration.
Cincinnati, OH	2006	§ 761-1-N	The city solicitor or his or her designee shall notify a premises owner in writing that the premises is in danger of becoming a chronic nuisance when any of the following circumstances have occurred at the premises: …When three or more nuisance activities have occurred at the premises, where each activity occurs on a separate day during a thirty-day period; or …When, within a one-year period, the following number of nuisance activities has occurred at the premises:(A) Premises with 2 or 3 residential units: 6 nuisance activities (B) Premises with 4 to 19 residential units: 14 nuisance activities (C) Premises with 20 to 39 residential units: 18 nuisance activities (D) Premises with 40 to 119 residential units: 20 nuisance activities (E) Premises with 120 to 199 residential units: 26 nuisance activities (F) Premises with over 200 residential units: 30 nuisance activities
Cleveland, OH	2006	§ 630.01	…When 3 or more nuisance activities occur on separate occasions on the same property within any 6 month period, the Director of Public Safety, or his or her designee, may declare the premises to be a nuisance property and may abate the nuisance …
Houston, TX	2006	§ 28-281	…The purpose of this article is to establish a method by which the city may measure certain types of criminal activity occurring in apartment communities in the city and to create a program to address within those apartment communities shown to have excessive levels of criminal activity the application of methods proven to reduce such activity. It is the intent of this article to identify the parties the city will hold responsible for compliance with and violations of this article, rather than to determine the rights and liabilities of persons under agreements to which the city is not a party. Community per capita crime index or CPCCI means a determination by the police official of the criminal activity on the property of an apartment community over the immediately preceding 12-month period, calculated on a per capita basis. Two separate CPCCIs will be calculated for each apartment community based on the Part 1 and Part 2 crimes listed in the definition of the term criminal activity below that have occurred on such property. The CPCCIs shall be calculated in accordance with the manual…
San Diego, CA	2007	§ 11.-0210	…Public nuisance means any condition caused, maintained, or permitted to exist which constitute a threat to the public's health, safety and welfare, or which significantly obstructs, injures, or interferes with the reasonable or free use of property in a neighborhood, community, or to any considerable number of person. A public nuisance also has the same meaning as set forth in California Civil Code §3479…
St. Louis, MO	2007	Ordinance no. 68535	…public nuisance exists when the premises are used for two or more of the following incidents within the previous 12 months: ... maintaining or permitting a condition or engaging in an activity which unreasonably annoys, injures, or endangers the safety, health, morals, or repose of any inhabitants of the City of St. Louis or a part thereof...making a false report of a violation of the law to any police officer or other officer of the law in person, or from any police alarm or call box, or over the telephone or radio, or by improper use of Emergency 911, or by any other means of

			communication...any other condition or activity that may constitute a felony, misdemeanor or ordinance violation under federal, state, or municipal law which is detrimental to the safety, welfare or convenience of the inhabitants of the City of St. Louis or a part thereof.
San Antonio, TX	2007	§ 21-81	…(a) Should an officer respond to a party, gathering or large event and while at the location determines that there is a substantial disturbance of the quiet enjoyment of private or public property, any person responsible for the party, gathering or event shall be liable for the reasonable costs of any second or subsequent response by any police officer to that same incident or for a response to the same location for another party, gathering or event within sixty (60) days. (b) If two (2) or more persons are responsible for the party, gathering or event such persons shall be jointly and severally liable for the reasonable costs of a second or subsequent response. (c) The liability imposed by this section may be in addition to any civil or criminal penalties or fines….
Los Angeles, CA	2008	§ 151.09	… [Eviction] a landlord may bring an action to recover possession of a rental unit upon one of the following grounds: … [Ord. No. 180,449] The tenant is committing or permitting to exist a nuisance in or is causing damage to, the rental unit… or creating an unreasonable interference with the comfort, safety, or enjoyment of ant of the other residents of the rental complex or within a 1,000 ft radius extending from the boundary line of the rental complex. … The frequency for a drug-related nuisance, and for a public nuisance, is one activity (Cal Civil Code § 3479; LA Cal. Mun. Code §47.50 (A)).
Atlanta, GA	2008	Housing Code § 6	… Nuisance shall mean any condition, act or occurrence that results in annoyance, harm, inconvenience, or damage to another; and the fact that the act or occurrence may otherwise be lawful shall not keep it from being a nuisance. The inconvenience complained of shall not be fanciful, or such as would affect only one of fastidious taste, but it shall be such as would affect an ordinary reasonable person…
Baltimore, MD	2008	art 19 § 43	… *Public nuisance* means any premises that, on 2 or more separate occasions within a 24-month period, were used …. by persons who engage in a crime of violence on or near the premises; or… or…for criminal gang offenses prohibited under State Criminal. 2 reports by police officers, written in the regular course of business, of a premises' having been used for activities described[above] are prima facie evidence that the premises are a public nuisance. *Neighborhood nuisance* means any premises where, on 2 or more separate occasions within a 6-month an owner or tenant of the premises engaged in acts or created or maintained conditions that - significantly affected neighboring residents by being disorderly in manner; or - disturbed the peace of neighboring residents by: (A) making an unreasonably loud noise; or (B) the unreasonable use of profanity, cursing, or swearing.
Kansas City, MO	2008	§ 48- 50	... It shall be unlawful for any owner or occupant... to cause, permit, encourage or allow a chronic nuisance to exist upon said property… A chronic nuisance is the use of any property, premise, ..., for any of the following repeated activities... occurring on that property or ... or that is associated with the property: … illegal use, possession or distribution of drug ... firearms ... Prostitution or patronizing prostitution, Disorderly conduct ... Attempting

			bodily injury ...Any other activity that constitutes a felony or misdemeanor under federal or state law. Whenever the city police department has responded three or more times during a 30-day period or seven or more times within a 180-day period to the same property for any of the activities described above. Where a nuisance presents an immediate, specifically identified risk to the public health or safety, or presents a danger to the health or welfare of others, an emergency order requiring immediate removal of the nuisance shall be issued. Provided, however, that the grounds for determining a chronic nuisance violation for the purposes of this section does not include any request for police protection or any police intervention in the face of a threat or a perceived threat to person or property, or any request for the assistance of the police to enforce a court order, including, but not limited to, circumstances in which the conviction, request for assistance or other police intervention arises from an incident relating to domestic violence, dating violence, sexual assault or stalking against any person at or near the premises.
Portland, OR	2008	§ 14B.60.010	Chronic Nuisance Property. Property on which 3 or more Nuisance Activities exist or have occurred during any 30 day period, or, property on which or within 200 feet of which any Person Associated With the Property has engaged in 3 or more Nuisance Activities during any 30 day period… Nuisance activities include harassment, disorderly conduct, assault, sexual abuse, public indecency, …
San Francisco, CA	2009	§ 80.4	Any thing or condition, including but not limited to violations of the Municipal Code or State law, that threatens injury or damage to the health, safety, welfare or property of members of the public, that obstructs the free use of property of others or of the public way or commons, or otherwise interferes with the comfortable enjoyment of life or property, is a public nuisance.
Fort Lauderdale, FL	2009	§ 18-1	It is declared unlawful and a public nuisance for any owner of any property in this city to maintain such property or to permit such property to be maintained in such a manner that the property is or may reasonably become infested or inhabited by rodents, vermin or wild animals, or may furnish a breeding place for mosquitoes, or threatens or endangers the public health, safety or welfare, or may reasonably cause disease, or adversely affects and impairs the economic welfare of adjacent property. Repeat violation means a violation of this chapter by a person or entity who has previously been issued a notice to abate and failed to comply, resulting in abatement of the nuisance by the city, or has previously been found by the special magistrate to have violated the same provision of the Code within five (5) years prior to the violation, or has previously been issued a citation violation notice
Orlando, FL	2009	§ 42.04	It shall be unlawful for any person to make, maintain, create, or allow to be created any unreasonably disturbing noise that is of such character, intensity or duration as to be detrimental to the life, health, comfort or repose of any individual of ordinary sensibilities residing in or occupying the area.
Tampa, FL	2009	§ 14-293	Public nuisance conduct means the conduct described [below]. Recurring public nuisance conduct means any single or multiple instances of the conduct described [below].

			The Public Nuisance Abatement Board shall have the power to declare as a public nuisance any place or premises, that has been used... On more than 2 occasions within a six-month period, as the site of the unlawful sale, delivery, manufacture, or cultivation of any controlled substance; ... On at least 3 occasions within a six-month period based on the offense date(s) of the citations … relating to the nuisance associated with unreasonably excessive noise, where the citations have resulted in payment of the citation, a finding of violation by a court, or default… has been used on more than 2 occasions within a six-month period as the site of a violation... relating to assault and battery... burglary... theft... robbery by sudden snatching...relating to the unlawful distribution of controlled substances... On more than 1 occasion within an 18-month period as the site of the combination of any of the following crimes against persons; relating to murder or attempted murder; manslaughter; aggravated assault; aggravated battery; felony battery; sexual battery;...the unlawful use or possession of a weapon or firearm, discharging a firearm, or a felon in possession of a firearm… Order the abatement of a declared public nuisance upon clear and convincing evidence that said place or premises has been used ... public nuisance may be established if the conduct described herein occurs in the adjacent parcel or public right-of-way, and there is a showing by clear and convincing evidence that the incident arose out of or originated from the place or premises; and… Issue orders having the force of law consistent with authority contained herein ...
Seattle, WA	2009	§ 10.09	"Chronic nuisance property" means: - Property on which 3 or more nuisance activities ... exist or have occurred during any 60-day period or 7 or more nuisance activities have occurred during any 12-month period, or - Property which, upon a request for execution of a search warrant, has been the subject of a determination by a court 2 or more times within a 12-month period that probable cause exists that illegal possession, manufacture or delivery of a controlled substance or related offenses ... "Nuisance activity" includes: ... Drug related activity... Any of the following activities, behaviors, or criminal conduct...Assault, fighting, menacing, stalking, harassment, or reckless endangerment...
Chicago, IL	2010	§ 8-4-087	“Chronic illegal activity premises” means any premises that is the subject matter of 3 or more calls for police service on 3 different days within any 90-day period resulting in (1) a case report documenting an investigation of illegal activity within the premises; or (2) enforcement action against any tenant or person associated with the premises for illegal activity occurring within the premises or within one block or one thousand feet of the premises. Provided, however, that the following shall not be counted when determining whether a premises meets the definition of a chronic illegal activity premises: (1) any illegal activity reported to the police department by the building owner or the building owner's agent via the city's 9-1-1 emergency telephone system; (2) incidents of domestic violence, as defined in the Illinois Domestic Violence Act of 1986, as amended; (3) any contact made to the police or other emergency services with the intent of preventing domestic or sexual violence, or seeking an emergency response to domestic or sexual violence;

			(4) any contact made to police or other emergency services by, on behalf of, or otherwise concerning an individual with a disability, where the purpose of that contact is related to that individual's disability; (5) any incident of actual or threatened domestic or sexual violence against a tenant, a household member, a guest or any other party that occurs in or on the premises of a residential dwelling unit; (6) criminal activity or a local ordinance violation occurring in or on the premises of a residential dwelling unit that is directly relating to domestic violence or sexual violence and is reported by the victim or a party seeking services or assistance for the victim.
San Bernardino, CA	2011	§ 15.27.050 and City of San Bernardino Crime Free Multi-Housing Program Crime-Free Lease Addendum	… Resident, any member of the resident's household, or a guest or another person under the resident's control shall not engage in any illegal activity, including: prostitution… criminal street gang activity… criminal threats… assault and battery… burglary… sexual offenses… or any breach of the lease agreement that otherwise jeopardizes the health, safety and welfare of the landlord, his agent or other tenant or involving imminent or actual serious property damage. … A single violation of any of the provisions of this added addendum shall be deemed a serious violation and a material and irreparable non-compliance. It is understood that a single violation shall be good cause for termination of the lease. Unless otherwise provided by law, proof of violation shall not require criminal conviction, but shall be by a preponderance of the evidence.
West Palm Beach, FL	2011	§ 54-402	Nuisance activity means any activities relating to the following violations, whenever engaged in by the property owner, agent, tenant, or invitee of the property owner, agent or tenant:... criminal street gang injunction... sexual offender and sexual predator residence... renting space to be used for prostitution... disorderly intoxication... breach of the peace; disorderly conduct... other offense under state or federal law that is punishable by a term of imprisonment exceeding one year.... Real property shall be deemed to exhibit a pattern of nuisance activity if: (1) The police department has responded to 3 or more nuisance activities at the property within 30 days; or (2) The police department has responded to 7 or more nuisance activities at the property within 6 months...
Boston, MA	2012	§ 16-57-2	*Establishing a Problem Properties Task Force*. ...Upon the effective date of this ordinance, each member of the Task Force shall make a diligent search of the records of his or her department and gather all records of multiple calls from the public concerning specific addresses in the last 12 month period. Such records shall be forwarded to the Chair, …A problem property shall be defined as: Any property to which the Police Department has been dispatched or caused to respond not fewer than 4 times within the preceding 12 month period for any incident involving any criminal offense including but not limited to disturbing the peace, trespassing, underage drinking or assault or violation of any city ordinance involving unreasonable or excessive noise…
Fort Worth, TX	2012	§ 7-394	The landlord at a multifamily dwelling complex consisting of 3 or more units shall require the prospective tenant to execute a lease. The lease shall include (one of) the following provisions for each new lease or lease renewal for a unit :

			A crime free lease addendum to read as follows: In consideration of the execution or renewal of a lease of the dwelling unit identified in the lease, owner and resident agree as follows: Resident shall not engage in any activity on or near the dwelling unit premises that would subject the resident to a penalty of - Class C misdemeanor (possession of drug paraphernalia, assault or disorderly conduct) - Class A or B misdemeanors (violation or engage in any hazardous conduct that otherwise jeopardizes the health, safety and welfare of the landlord, his or her agent or other tenant or involving imminent or actual serious property damage.) Nothing in this provision shall be construed as requiring or encouraging the eviction or termination of a lease of a victim of domestic violence. Violation of the above provisions shall be a material violation of the lease and good cause for immediate termination of the tenancy. A single violation of any provisions of this addendum shall be deemed a serious violation and a material noncompliance with the terms of this lease. It is understood that a single violation shall be good cause for the immediate termination of the lease. Unless otherwise provided by law, proof of a violation of law prohibited by this addendum shall not require a criminal conviction, but shall be by a preponderance of the evidence.
Charlotte, NC	2013	§ 6-581	...To establish a registration requirement for owners of residential rental property so that the city may expeditiously identify and contact the owner when excessive levels of disorder activity have occurred on or in the property. In addition, the city desires to establish a method to hold owners of residential rental property accountable for failing to use effective methods to reduce disorder activity on their property...The police official shall determine the disorder activity count for each residential rental property and the disorder risk threshold for each residential rental property category on a quarterly calendar basis. These determinations shall be made using the disorder activity during the previous calendar quarter...Disorder activity means activity occurring on or in a residential rental property categorized as either reported violent crimes, or certain types of disorder-related activities... A domestic violence call for service is not a disorder activity...

Notes:

Table A.2. *Relationship between NuPO and crime reporting for victims of assault inside their home by gender*

Outcome: was the crime reported to police? (Yes = 1)				
	(1)	(2)	(3)	(4)
Panel A: *Female victims*				
NuPO	-0.095**	-0.095**	-0.063	-0.033
	(0.045)	(0.042)	(0.039)	(0.046)
NuPO × Rent				-0.052
				(0.041)
Mean of Outcome		0.595		
Observations		4,027		
Panel B: *Male victims*				
NuPO	-0.033	-0.024	-0.057	-0.016
	(0.053)	(0.049)	(0.056)	(0.083)
NuPO × Rent				-0.075
				(0.063)
Mean of Outcome		0.561		
Observations		1,861		
Year & MSA FE	Y	Y	Y	Y
Individual Controls	.	Y	Y	Y
Economic & Policy Controls	.	.	Y	Y

Notes: The unit of observation is a domestic assault victimization, and the outcome is an indicator variable set to 1 if crime was reported to police. The sample period is 1979-2004. This table reports β from equation 1. *NuPO* = 1 for any MSA with enacted nuisance ordinances during the post period. *Rent* is an indicator for whether the victim lives in a rental unit. *Individual Controls* are from the NCVS and includes individual-level information about the victim's race (White), education (High school or below and an indicator for missing value), income (whether below the median income), housing and tenure (whether the victim lives in a single unit housing and whether the victim lives in a rental unit), and whether the victim is the head of household. Offense-related controls are indicators for: multiple offenders, attempted assault/attack, and whether the victim was injured. *Economic & Policy Controls* include non-violent crime rates covering burglary, larceny, and mother vehicle theft, female-to-male employment ratio, income per capita, unilateral divorce laws indicators, AFDC/TANF maximum benefit for a family of 3, indicators for whether the state has the death penalty, no-drop prosecution law, indicators, and mandatory arrest laws. All standard errors are clustered at the MSA-level. * *p<0.1;* ** *p<0.05;* *** *p<0.01*

Table A.3. *Relationship between NuPO and crime reporting for victims of assault inside their home: Robust ATT (Borusyak, Jaravel, and Spiess, 2021; Callaway and Sant 'Anna's,2020)*

Outcome: Was the assault inside victim's home reported to police? (Yes = 1)	
BJS Robust ATT	-0.097***
	(0.024)
CS aggregated ATT	-0.14***
	(0.0411)
CS avg. ATT per group	
1989	-0.1487
	(0.0761)
1992	-0.1364
	(0.1666)
1994	-0.0977
	(0.0898)
1998	-0.1633
	(0.0758)
1999	-0.0020
	(0.0523)
2003	-0.2688
	(0.1399)
Observations	5,385
Mean of Outcome	0.585

Notes: The unit of observation is a domestic assault victimization, and the outcome is an indicator variable set to 1 if an assault inside the victim's home was reported to police. The sample period is 1979-2004. *BJS Robust ATT* estimates the single ATT across all treated observations using the imputation estimator developed by Borusyak, Jaravel, and Spiess (2021). The results from the robust estimator do not vary substantially from the OLS estimates reported in the main set of results (Table 3). *CS aggregated ATT* uses Callaway and Sant 'Anna's (2020) estimator.

Table A.4. *Relationship between NuPO and crime reporting for victims of assault is robust to excluding the earlier years (1979-1992) in NCVS. In this table I report the estimated effect using observations from 1993 to 2004.*

Outcome: Was the assault inside victim's home reported to police? (Yes = 1)

	(1)	(2)	(3)	(4)
NuPO	-0.163***	-0.153***	-0.156***	-0.107**
	(0.026)	(0.029)	(0.035)	(0.042)
NuPO × Rent				-0.091***
				(0.029)
Mean of Outcome			0.557	
Observations			3,780	
Year & MSA FE	Y	Y	Y	Y
Individual Controls	.	Y	Y	Y
Economic & Policy Controls	.	.	Y	Y

Notes: The sample period is 1993-2004. The unit of observation is a crime incident, and the outcome is an indicator variable set to 1 if crime was reported to police. This table reports β from equation 1. Rent is an indicator for whether the victim lives in a rental unit. Individual Controls are from the NCVS and includes individual-level information about the victim's race (White), education (High school or below and an indicator for missing value), income (whether below the median income), housing and tenure (whether the victim lives in single unit housing and whether the victim lives in a rental unit), and whether the victim is the head of household. Offense-related controls are: indicators for multiple offenders, attempted assault/attack, and whether the victim was injured. Economic & Policy Controls include non-violent crime rates covering burglary, larceny, and mother vehicle theft, female-to-male employment ratio, income per capita, unilateral divorce laws indicators, AFDC/TANF maximum benefit for a family of 3, indicators for whether the state has the death penalty, no-drop prosecution law, indicators, and mandatory arrest laws. All standard errors are clustered at the MSA-level.

Table A.5. *Falsification exercise by offense type and location of the incident using sample from 1993 to 2004.*

	(1)	(2)	(3)
Panel A: *Was the assault that happened outside of victim's home reported to police? (Yes = 1)*			
NuPO	0.010	0.005	0.004
	(0.029)	(0.030)	(0.034)
Mean of Outcome		0.355	
Observation		9,279	
Panel B: *Was Other (non-assault) offenses that happened outside of victim's home reported to police? (Yes = 1)*			
NuPO	0.004	0.002	0.004
	(0.022)	(0.021)	(0.021)
Mean of Outcome		0.313	
Observation		26,393	
Panel C: *Was Other (non-assault) offenses that happened inside of victim's home reported to police? (Yes = 1)*			
NuPO	0.006	0.010	0.020
	(0.019)	(0.021)	(0.017)
Mean of Outcome		0.378	
Observation		32,177	
Year & MSA FE	Y	Y	Y
Individual Controls	.	Y	Y
Economic & Policy Controls	.	.	Y

Notes: The sample period is 1993-2004. Outcome is an indicator variable set to 1 if crime was reported to police. *Assault* against victims include attempted, completed, and aggravated assaults, verbal threat of assault and sexual assaults. *Other offenses* include attempted or completed robbery, pocket picking, burglary, theft, and motor vehicle theft. *The location* is constructed by victims' respondents on whether the incident happened in/around home. The regressions are estimated using specifications and controls described in the notes to Table 3. See Table 3 for notes. The unit of observation in panel A is an assault victimization out of home. The unit of observation in panel B is a non-assault victimization out of home. The unit of observation in panel C is a non-assault victimization inside victim's home. All standard errors are clustered at the MSA-level. * *p<0.1;* ** *p<0.05*; *** *p<0.01*

Table A.6. *Does NuPO increase the likelihood of escalating violence among victims of domestic assault?*

	(1)	(2)	(3)
Panel A: *Victim suffered injury (Yes = 1)*			
NuPO	0.022	0.061**	0.041*
	(0.052)	(0.024)	(0.024)
Mean of Outcome		0.317	
N		3,780	
Panel B: *Victim received medical care (Yes = 1)*			
NuPO	0.030	0.051	0.037
	(0.030)	(0.030)	(0.038)
Mean of Outcome		0.127	
N		3,780	
Panel C: *Self-protective action taken by victim (Yes = 1)*			
NuPO	0.033	0.036	0.035
	(0.046)	(0.046)	(0.049)
Mean of Outcome		0.587	
N		3,780	
Panel D: *Police took reported, search, took evidence, or questioned witness(es) upon being called (Yes = 1)*			
NuPO	0.069	0.067	0.082
	(0.065)	(0.066)	(0.066)
Mean of Outcome		0.748	
N		2,106	
Year & MSA FE	Y	Y	Y
Individual Controls	.	Y	Y
Economic & Policy Controls	.	.	Y

Notes: The sample period is 1993-2004. The unit of observation is a crime incident for victims of assault inside their home. In panel A, the outcome (*injury*) = 1 if victim indicated they suffered injury. In panel B, outcome (*medical care*) =1 if victim indicated that they received medical care for injury. In panel C, I look at the possible escalation by looking at the outcome (*self-protective*) = 1 if self-protective action by the victim was taken. In panel D, the outcome (*Police acted*) is an indicator variable set to 1 if, conditional of crime being reported, police took one of the following actions: took reported, search, took evidence, or questioned witness(es) upon being called. Regressions in panel D are conditioned on police being called and include fewer observations. The regressions are estimated using specifications and controls described in the notes to Table 3. See Table 3 for notes. All standard errors are clustered at the MSA-level. * *p<0.1; ** p<0.05; *** p<0.01*

Table A.7. *Relationship between NuPO and crime reporting for victims of assault inside their home by gender*

Outcome: was the crime reported to police? (Yes = 1)				
	(1)	(2)	(3)	(4)
Panel A: *Female victims*				
NuPO	-0.198***	-0.193***	-0.158***	-0.109*
	(0.048)	(0.045)	(0.044)	(0.054)
NuPO × Rent				-0.089*
				(0.046)
Mean of Outcome		0. 566		
Observations		2,424		
Panel B: *Male victims*				
NuPO	-0.050	-0.023	-0.123*	-0.082
	(0.070)	(0.066)	(0.066)	(0.089)
NuPO × Rent				-0.074
				(0.075)
Mean of Outcome		0.541		
Observations		1,356		
Year & MSA FE	Y	Y	Y	Y
Individual Controls	.	Y	Y	Y
Economic & Policy Controls	.	.	Y	Y

Notes: The sample period is 1993-2004. The unit of observation is a domestic assault victimization, and the outcome is an indicator variable set to 1 if crime was reported to police. This table reports β from equation 1. *NuPO* = 1 for any MSA with enacted nuisance ordinances during the post period. *Rent* is an indicator for whether the victim lives in a rental unit. *Individual Controls* are from the NCVS and includes individual-level information about the victim's race (White), education (High school or below and an indicator for missing value), income (whether below the median income), housing and tenure (whether the victim lives in a single unit housing and whether the victim lives in a rental unit), and whether the victim is the head of household. Offense-related controls are indicators for: multiple offenders, attempted assault/attack, and whether the victim was injured. *Economic & Policy Controls* include non-violent crime rates covering burglary, larceny, and mother vehicle theft, female-to-male employment ratio, income per capita, unilateral divorce laws indicators, AFDC/TANF maximum benefit for a family of 3, indicators for whether the state has the death penalty, no-drop prosecution law, indicators, and mandatory arrest laws. All standard errors are clustered at the MSA-level. * *p<0.1; ** p<0.05; *** p<0.01*

Table A.8. *Relationship between NuPO and intimate partner homicide (IPH): Robust ATT (Borusyak, Jaravel, and Spiess, 2021)*

BJS Robust ATT	
Panel A: *Intimate partner homicide*	
Total	0.531***
	(0.116)
Female Victims	0.134***
	(0.050)
Male Victims	0.397***
	(0.085)
Panel B: *Non-intimate partner homicide*	
Total	-1.378**
	(0.660)
Female Victims	-0.079
	(0.124)
Male Victims	-1.298**
	(0.578)

Notes: Unit of observation is county-year (34 counties × 28 years). The sample period is 1977-2004. Outcome is intimate partner homicide (IPH) rate per 100,000 population. *BJS Robust ATT* estimates the single ATT across all treated observations using the imputation estimator developed by Borusyak, Jaravel, and Spiess (2021). The results from the robust estimator do not vary substantially from the OLS estimates reported in the main set of results (Table 7).

Table A.9. *Relationship between NuPO and intimate partner homicide (IPH) and non-intimate partner homicide (non-IPH) is robust to including post 2004 sample*

	(1)	(2)	(3)	(4)
	IPH rate			Falsification Non-IPH
panel A: *Both Female and Male Victims*				
NuPO	0.337***	0.319***	0.135**	0.770
	(0.070)	(0.073)	(0.058)	(0.467)
Mean of Outcome	1.114	1.114	1.114	16.80
panel B: *Female Victims*				
NuPO	0.097**	0.087**	0.034	0.162
	(0.039)	(0.034)	(0.037)	(0.115)
Mean of Outcome	0.667	0.667	0.667	2.129
panel B: *Male Victims*				
NuPO	0.241***	0.232***	0.101**	0.608
	(0.049)	(0.056)	(0.041)	(0.485)
Mean of Outcome	0.447	0.447	0.447	14.67
Observations	1,420	1,420	1,420	1,420
MSA- and Year FEs	Y	Y	Y	Y
Lagged non-IPH rate	.	Y	Y	Y
Economic & Policy	.	.	Y	Y

Notes: Unit of observation is county-year. The sample period is 1977-2004. Coefficients are estimated from the following regression:

$$Y_{ist} = \beta NuPO_{st} + \alpha_s + \alpha_t + X_{st}\Psi + \epsilon_{ist}$$

Outcome in columns (1), (2), and (3) is intimate partner homicide (IPH) rate per 100,000 population. Outcome in column (4) is non-intimate partner homicide (non-IPH) rate per 100,000 population. Lagged non-IPH rate is included to account for agency-specific changes in overall violent crime rates. Economic & Policy Controls include non-violent crime rates covering burglary, larceny, and mother vehicle theft, female-to-male employment ratio, income per capita, unilateral divorce laws indicators, AFDC/TANF maximum benefit for a family of 3, indicators for whether the state has the death penalty, no-drop prosecution law, indicators, and mandatory arrest laws. All standard errors are clustered at the MSA-level. * *p<0.1;* ** *p<0.05;* *** *p<0.01*

Across all specifications, I find a positive and significant relationship between the enactment of NuPO and the IPH rates. In column 4, I estimate the impact of nuisance ordinances on non-intimate partner homicide as a *falsification test*. For non-IPH, the estimated impacts are insignificant and small in magnitude.

Table A.10. *Adoption Year of Nuisance Property Ordinances in California*

City	*County*	*Ordinance*
Berkeley	Alameda	link
Dublin	Alameda	link
Hayward	Alameda	link
Livermore	Alameda	link
Newark	Alameda	link
Oakland	Alameda	link
Ione	Amador	link
Oroville	Butte	link
Williams	Colusa	link
Antioch	Contra Costa	link
Clovis	Fresno	link
Coalinga	Fresno	link
Fowler	Fresno	link
Fresno	Fresno	link
Parlier	Fresno	link
Blue Lake	Humboldt	link
Eureka	Humboldt	link
Fortuna	Humboldt	link
Tehachapi	Kern	link
Hanford	Kings	link
Lemoore	Kings	link
Bell	LA	link
Bellflower	LA	link
Claremont	LA	link
Commerce	LA	link
Covina	LA	link
Diamond Bar	LA	link

Duarte	LA	link
El monte	LA	link
Gardena	LA	link
Glendale	LA	link
Hawaiian Gardens	LA	link
la Miranda	LA	link
Lancaster	LA	link
Lynwood	LA	link
Maywood	LA	link
Palmdale	LA	link
Pasadena	LA	link
Pomona	LA	link
West Covina	LA	link
Novato	Marin	link
King City	Monterey	link
St. Helena	Napa	link
Nevada City	Nevada	link
Gross Valley	Nevada	link
la hembra	Orange	link
Costa Mesa	Orange	link
Huntington Beach	Orange	link
Orange	Orange	link
Orange	Orange	link
San Jacinto	Riverside	link
Banning	Riverside	link
Canyon Lake	Riverside	link
Cathedral City	Riverside	link
Indio	Riverside	link
Menifee	Riverside	link
Moreno Valley	Riverside	link

Riverside	Riverside	link
Palm Desert	Riverside	link
Rancho Cordova	Sacramento	link
Sacramento County	Sacramento	link
San Benito	San Benito	link
Adelanto	San Bernardino	link
Colton	San Bernardino	link
Grand Terrace	San Bernardino	link
Hesperia	San Bernardino	link
Highland	San Bernardino	link
Montclair	San Bernardino	link
Rancho Cucamonga	San Bernardino	link
Rialto	San Bernardino	link
San Bernardino	San Bernardino	link
San Bernardino county	San Bernardino	link
Twentynine palms	San Bernardino	link
Upland	San Bernardino	link
Yucaipa	San Bernardino	link
Chula Vista	San Diego	link
Coronado	San Diego	link
El cajon	San Diego	link
Escondido	San Diego	link
Imperial Beach	San Diego	link
la mesa	San Diego	link
Oceanside	San Diego	link
Poway	San Diego	link
San Marcos	San Diego	link
San Diego County	San Diego	link
Solana Beach	San Diego	link
Escalon	San Joaquin	link

Manteca	San Joaquin	link
Stockton	San Joaquin	link
Atascadero	San Luis obispo	link
Colma	San Mateo	link
South San Francisco	San Mateo	link
San Jose	Santa Clara	link
Benicia	Solano	link
Fairfield	Solano	link
Vacaville	Solano	link
Vallejo	Solano	link
Rohnert Park	Sonoma	link
Hughson	Stanislaus	link
Modesto	Stanislaus	link
Visalia	Tulare	link
Santa Paula	Ventura	link
Davis	Yolo	link
West Sacramento	Yolo	link
Woodland	Yolo	link

Notes: