How Valuable are Civil Liberties?   Evidence from Gang Injunctions, Crime, and Housing Prices in Southern California

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Abstract

Despite the increased use of civil gang injunctions in California since the late 1980's, little is known about their effectiveness on crime, and even less is known about their broader social impact on targeted and surrounding communities. This study assesses the impact of civil gang injunctions on crime and housing prices in the Southern California region, providing evidence on both the crime reducing benefits of these policies and the costs imposed on affected communities. We utilize a geographic regression discontinuity design and three datasets to answer this question: Zillow housing data, gang injunction attributes and shapefiles, and crime data from the Southern California Crime Study. Focusing on the sharp discontinuity of targeted police enforcement within the gang injunction boundaries, and temporal variation in when the injunctions were imposed, we find limited evidence suggesting that crimes fell within safety zones, consistent with existing research. In spite of the increase in safety, home values appear to fall discreetly at the borders of the injunction. We conclude that this reflects individual willingness-to-pay for the civil liberties affected by the injunction. The magnitude of this net decline, roughly 3% of home values between 2002 and 2015, casts doubt on the assertion that gang injunctions are a cost-effective way to reduce crime.

1. Introduction

Crime is costly. While crime rates in the United States are at historic lows, violent and property crimes still cost society over \$376 billion in 2017.[2] There are many mechanisms through which governments can reduce the crime rate, and there is a large empirical literature quantifying the effects of various interventions (Nagin, 2015). One particular type of policy that has been a subject of increasing interest from academics and practitioners is place-based policing. Place-based policing broadly involves identifying particular areas, sometimes as small as one street block, where crimes are disproportionately likely to occur. Police are then proactively deployed to those places in order to identify and correct the source of crime. A large body of research in applied social science, including randomized control trials and well identified quasi-experimental studies, has shown that geographically targeting police activity in this way can generate substantial reductions in crime, with little evidence of crime displacement.[3]

Of course, finding that a policy reduces crime is necessary, but not sufficient, to conclude that an intervention provides a net social benefit. Ethnography, history, and legal research has highlighted the fact that many crime control policies, particularly place-based ones that encourage aggressive police and citizen interactions, can impose large costs on affected communities.[4] To date, however, the magnitude of these costs, which range from poor health outcomes to perceived racial oppression, has not been quantified in a way that can be directly compared to the benefit these same communities receive through reduced crime.[5] This study

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[2]This is based on the 2017 Uniform Crime Reports and the RAND Cost of Crime calculator, available at
https://www.rand.org/jie/justice-policy/centers/quality-policing/cost-of-crime.html
[3] See National Academies of Sciences and Medicine (2018) for a recent review, and Bowers, Johnson, Guerette, Summers, and Poynton (2011) or D. Weisburd et al. (2006) for specific examples.
[4] See Hinton (2016), Meares (2015), Muñiz (2015), or Rios (2011) for specific examples.
[5] This disconnect between research on the costs and benefits of these policies is also highlighted by National Academies of Sciences and Medicine (2018).

assesses the impact of a particular type of place-based policy, civil gang injunctions, on crime and housing prices in the Southern California region. To the extent that housing values reflect the net social willingness-to-pay for both the positive, and negative, effects of civil gang injunctions, we provide some of the first evidence on both the crime reducing benefits of these policies and the costs imposed on affected communities.

Civil gang injunctions aim to reduce crime in certain areas identified by police, prosecutors, and community members by increasing the ability of police to arrest individuals in those places for a set of behaviors identified as precursors to crime. While used throughout the country, gang injunctions were originally used in Southern California, and continue to be a common form of crime control in the region. The first gang injunction, against the Playboy Gangster Crips, was adopted in 1987 in the Cadillac-Corning neighborhood of west Los Angeles. The first injunction in San Diego was institutionalized in 1997, and in 2006 in Orange County. Since that time, the use of gang injunctions has drastically increased. Until recently, there were 46 active injunctions in the city of Los Angeles alone, and an additional 15 in Orange County. In Los Angeles, it is estimated that all the injunction areas cover 75 square miles, or 15 percent of the total city area (Queally, 2016).

Public discourse about gang injunctions reflects that of place-based policing in general; Advocates of this intervention point to their crime reduction benefits, although empirical research on this is relatively scant and conflicting (ACLU, 1997; Carr, Slothower, & Parkinson, 2017; Grogger, 2002; Maxson & Allen, 1997; Ridgeway, Grogger, Moyer, & MacDonald, 2018). Opponents argue against their draconian surveillance of disadvantaged communities, which generate potentially large costs in terms of civil liberties and racial disparities which could outweigh any benefit from reduced crime. Two areas of particular concern are the impact

injunctions have on residents' legal recourse for police abuse and on their individual rights otherwise protected by the US Constitution (Muniz & McGill, 2012; Queally, 2016).

In this paper, we provide the first estimates of citizen's willingness to pay for the potential reduction in civil liberties associated with place-based crime control policies, specifically civil gang injunctions. We utilize a geographic regression discontinuity design and three datasets to answer this question: parcel and transaction level housing data from Zillow, geocoded, incident level crime data from the Southern California Crime Study (SCCS) and gang injunction attributes and shapefiles obtained from legal documents filed in Los Angeles city, Orange County, and San Diego County. Combining the sharp discontinuity of legal constraints on police behavior at the gang injunction boundaries and temporal variation in the implementation of 117 injunctions, we estimate the impact of these injunctions on local crime, as well as the willingness-to-pay for homes both within, at, and outside the boundary.

We find that, at a micro level, there is weak evidence that gang injunctions cause a reduction in crime. In the years following a gang injunction, we observe a slight reduction in serious crimes, on average, inside a safety zone relative to the immediately adjacent areas. This is consistent with existing, more aggregate, research on the crime impacts of gang injunctions (Grogger, 2002; Ridgeway et al., 2018). However, our data provide only limited evidence that creation of a safety zone creates a spatial discontinuity in crime rates. Regardless, this reduction in crime should place upward pressure on housing prices inside gang injunctions.

In contrast, our data suggest that when an area is designated as a "safety zone" by a gang injunction, housing prices just inside the boundary immediately fall by approximately 3% on average, or roughly $14,000, relative to houses just a few blocks away. Alternate functional form specifications suggest the reduction in value could be as large as $40,000. We find no

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evidence that the volume of housing transactions falls, but rather that these transactions are occurring at a lower sales price. Variations in the rules governing the exact boundaries of the injunction allow us to shed some light on what is driving this reduction in value – a subset of the injunctions also specifies a 100 yard extension[6] around the boundary of the safety zone where civil liberties are also limited. When we treat these areas as part of the safety zone, we observe a similar drop in prices, but one that occurs approximately 3 years after the injunction is in place, suggesting that people learn that these houses, which are otherwise not identified as being under injunction, are considered de facto safety zones by police. Note that, unlike the boundaries of the safety zones themselves, which are defined using street names or clear geographic markers (e.g. 18th street, a park, or a lake), these 100 yard buffers do not clearly correspond to any visible spatial feature or street that would alert citizens, without access to mapping software, when their civil liberties are curtailed.   The observed reduction in housing values that we estimate is actually a lower bound on the value that people place on the civil liberties affected by place-based crime control policies. This is because we cannot definitively rule out the possibility that people perceive a sharp increase in safety within the safety zone, which would then be capitalized into the housing values in the safety zones.

The remaining sections of the paper proceed as follows: in section 2 we provide institutional background information on gang injunctions. In Section 3 we describe our data on injunctions, crime, and housing prices, and in section 4 we present our analytic framework. Our estimates of the social impact of gang injunctions are presented in section 5, along with a series

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[6] While we were unable to verify why some injunctions had these buffers and others did not, there are some possible explanations regarding this legal stipulation. First, it is possible that legal standards for the placement of a safety zone were met, so a judge may have been willing to give additional leeway for police intervention in these areas. Alternately, since gang injunctions originate in civil courts, they may mimic other types of restraining, or protective, orders. Other types of restraining orders typically include a 100 yard buffer (Euclidean distance). But, this means the original specified boundary, and not the 100 yard buffer, are the main intervention of interest.

of robustness tests. Section 6 concludes with a discussion of policy implications and suggestions for future research.

2. Gang Injunctions: Legal and Theoretical Background

2.1 Legal Background

Gang injunctions are civil restraining orders issued by state or district attorneys against specific gangs that are found to be public nuisances. The injunctions specify a set of activities that gang members are prohibited from participating in within a specific geographic area, referred to as a "safety zone," whose boundaries are defined in the legal order. For an example, see the map below. Figure 1 displays a 1.59 square mile area showing parcels overlaid with a safety zone boundary (green line) and single family home sales price ranges at the parcel level (dark red parcels indicate higher prices). This gang injunction is located next to Disneyland and is the second to be passed in the city of Anaheim, CA, and the 8th to be passed in Orange County as of 2010.

The specific actions prohibited in civil gang injunctions are considered to be associated with gang related activity, but that police and prosecutors feel they have inadequate legal authority to intervene in. Commonly prohibited activities within such safety zones include associating with known gang members, hanging out in groups of more than two people, intimidating witnesses, fighting, trespassing, being in another private residence, wearing certain colors, carrying a cell phone, involvement with drugs, weapons, alcohol, riding a bicycle, being outside at night, and carrying a flashlight (see O'Deane (2011) for more examples, p.6-7, or Muñiz (2015), p. 48). Note that some of these activities are already illegal- in these cases gang injunctions serve to increase the punishment for these offenses- but injunctions also criminalize

otherwise legal behavior within the safety zone boundaries, and restrict routine activities such as

socializing with friends and family and going to work or church (Maxson, Hennigan, & Sloane,

2003). A violation of these terms results in an automatic fine of $1,000, jail time of 6 months,

and potentially swifter processing through the criminal, rather than civil, justice system[7]. Gangs

are treated as unincorporated entities under California law, meaning that both current and any

future gang members are affected.

Convincing a judge to issue a gang injunction requires prosecutors and police

departments to build a case that a street gang is a public nuisance, defined as a group whose

activities are "obstructing the comfortable enjoyment of life and property" of others (Genelin,

1998; Maxson et al., 2003; Vannoy, 2009). The legal process itself, from initial prosecutorial

evaluation to final judicial hearing, usually lasts a few months to just over one year (Maxson,

Hennigan, & Sloane, 2005; O'Deane, 2011). Law enforcement officials must present compelling

evidence of the gang's nuisance activities, identify members or gangs, and specify a target area

based on past criminal activity and resident complaints. Prosecutors, law enforcement, and

community members are all involved; "most gang injunction cases have numerous, sometimes

hundreds, or declarations from police officers and community members that articulate the

nuisance behavior of the gang and its members, including examples of crimes members have

engaged in, and why particular members were selected for inclusion into the court order"

(O'Deane, 2011). While this is a non-trivial legal bar, researchers have noted a "boilerplate"

appearance to many injunctions, in that there is a general similarity in the structure and language

of different injunctions suggesting that their terms are not obviously tailored to each specific

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[7] An illustration of steps in the gang injunction process provided by the San Diego Attorney's office may be found
here: https://www.sdcda.org/preventing/gangs/gang-injunction-workflow.pdf

context where they apply (Muñiz, 2015). Notably, requests for injunctions are rarely denied, in part because there is infrequently formal legal opposition to them. One potential reason for this is that, unlike in criminal matters, individuals do not have the right to counsel in the civil courts where the injunctions are issued. Another reason is that establishing that you have standing to challenge an injunction requires identifying yourself in civil court as a member of the named criminal organization (Muñiz, 2015).

Since their initial adoption, gang injunctions have been the subject of active criticism about the difficult process of removing oneself from the set of people under injunction and violations of due process rights. Researchers and advocates have raised particular concerns about the validity of the process by which individuals are identified by law enforcement as gang members, generally through a state wide database known as CalGangs, which is itself the target of some controversy, particularly after the release of a highly critical state audit in 2016 (Howle, 2016). In 2017, an audit by the Los Angeles City Attorney's office and the LAPD resulted in the release of 7,300 individuals from gang injunctions, although the geographic safety zones were left in place. More recently, a federal judge has put a hold on the enforcement of gang injunctions in the city of Los Angeles on grounds of due process violation (Youth Justice Coalition v. City of Los Angeles),[8] and similar cases in Orange County are underway.

Whether or not the enforcement of gang injunctions infringe on civil liberties is a separate issue from whether or not they reduce crime. From a social efficiency perspective, the relevant question is whether the harm suffered is outweighed by the benefit provided. This is the specific gap this paper seeks to address: can the harms alleged by community members be

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[8] Read the court order here:
https://www.aclusocal.org/sites/default/files/aclu_socal_yjc_v_la_20180315_order_granting_mtn_expand_pi.pdf

quantified and compared to the crime reducing benefits reported by law enforcement officials and credibly identified by existing quantitative research?

2.2 Theoretical Background

2.2.a Gang Injunctions and Crime

There are two primary ways in which gang injunctions could reduce crime. First, to the extent that specific individuals are named as police targets in the injunction, these individuals should be less likely to offend, and not necessarily just in the specific geographic location identified by the courts. Of course, as documented in Muniz and McGill (2012), gang injunctions in Southern California generally name organizations; in practice, it is extremely difficult, and at times impossible, for individuals to verify whether or not the State of California officially considers them to be a member of a particular gang. The size of the organization subject to injunction is not static, and may expand over time as new individuals join the gang, or are believed to be affiliated with the gang by police. As a result, all individuals living in an area subject to the injunction may reasonably consider themselves to be subjected to heightened police scrutiny and additional criminal justice penalties (Muniz & McGill, 2012).

Second, another probable feature of gang injunctions is increased police presence. However, police officers must travel to the area for patrol, and their beats may not perfectly follow the injunction boundaries. Further, increased police presence in an area under injunction will likely reduce police response times in surrounding areas, which should also have a deterrent effect (S. Weisburd, 2016). This increase police presence would lead to crime falling in a safety zone, but also create crime reductions in nearby areas not technically under injunction. Increased

police presence may also impact perceptions, of higher safety or more crime, of residents nearby as well.

Third, gang injunctions may reduce crime by altering police behavior; by construction gang injunctions encourage officers to interact with citizens in a more aggressive, and frequently proactive way, which can reduce crime. A recent review of the research by the National Academy of Sciences concluded that there is some evidence that changing police tactics in a particular place has positive crime reducing spillover effects in neighboring areas (National Academies of Sciences & Medicine, 2018).

For all of these reasons, we expect that crime may fall in an area under gang injunction. Further, the theoretical mechanisms that link gang injunctions to crime, and available empirical evidence, do not clearly support the idea that treatment, or the probability of treatment, varies sharply at the geographic boundary. Indeed, not only may the precise boundaries of the injunction be unclear to residents or passers-by, places outside gang injunctions are likely to be "treated" by additional police presence as more officers travel to areas in the injunction, or are visible while patrolling the treated areas. Crime may also fall in neighboring areas due to incapacitation if individuals arrested because of the injunction would have committed crimes in those places. With regards to gang injunctions specifically, there is some evidence to support these mechanisms; for example, Grogger (2002) found that while areas within gang injunctions experienced crime reductions of as much as 10%, and some evidence of smaller reductions in neighborhoods adjacent to those targeted by the injunctions. It is therefore an empirical question as to whether or not crime changes continuously or discreetly at these borders.

2.2.b Gang Injunctions and Civil Liberties

When a civil gang injunction is granted, it imposes two distinct sets of costs on people living in the newly created Safety Zone: First, it legally, and publically, labels a particular place as "high crime," sending a signal to the general public that gang activity is a problem. Of course, the injunction also ensures that criminal justice resources are being directed to the area to reduce gang related crime. In spite of this, the clear labeling of the area may be a strong negative signal to potential home buyers. Second, individuals living in the Safety Zone are subject to intensive policing, as constitutional constraints on police officer behavior vary sharply at injunction boundary.

The 4th amendment of the US Constitution states: "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized." Legally, a "seizure" occurs when an officer forces (physically or otherwise) a person to submit to their authority, in a way that restricts that individual's liberty, and a "search" happens when an officer intrudes on a person's reasonable expectation of privacy or trespasses on their property to gather information (National Academies of Sciences & Medicine, 2018). The 4th amendment therefore is one of the primary legal constraints the federal government places on police behavior, as essentially all arrests or police stops constitute seizures or searches (National Academies of Sciences & Medicine, 2018). Gang injunctions interact with an individual's 4th amendment right by relaxing the standard of what constitutes individualized suspicion, and broadening the definition of "crimes" for which an officer needs probable cause to make an arrest.

In general, there are roughly three different types of police stops that could be commonly understood as "seizures" or "searches," and in order to comply with the 4th amendment an officer must have different levels of justification for each type of stop. The first category is a consensual search, where an individual voluntarily complies with an officer's request for additional information. The voluntary and consensual nature of the interaction means that this stop is not covered by the 4th amendment. The second category is an investigative stop (sometimes referred to as Terry stop, in reference to Terry v. Ohio, 1967) where an officer briefly detains someone, perhaps involving a cursory search or "frisk." This category of stop requires the office have a reasonable, individualized, articulable suspicion that the person in question has engaged in criminal behavior. Following Terry v. Ohio (1967) police are not legally allowed to stop and frisk any person on the street- they must have a reasonable suspicion that that specific individual is in violation of a law.

In 2000, the Supreme Court held that the location of an incident could constitute part of an officer's reasonable decision about suspicion (Illinois v. Wardlow 2000). To provide an example of what this means for citizen and police interactions: suppose an officer observes a young man walking past her. She requests that the young man to stop and identify himself, but he turns and runs away. While most states require that individual people comply with police orders, they are not required to voluntarily comply with police requests or invitations to comply. Further, the US constitution protects the right of individuals to decline to cooperate with an officer's request for compliance, and choosing to exercise that right cannot be legally used by a

police officer to deem you individually as specifically suspicious.[9] In other words, legally, the young man running away should be the end of the police-citizen encounter in most situations.

Critically, however, the courts have held that in areas identified as high crime, citizens do not have the same protection of their civil liberties (Harris, 1998). Inside an area under gang injunction, if an officer requests that you stop, and you decline to comply with that request, this can be considered appropriate grounds for the officer to suspect you have committed a crime - specifically, being in a safety zone and "evasive" behavior. Therefore, the officer may conduct a legal search (a Terry stop) under the 4th amendment (Illinois v. Wardlow 528 US 119, 2000). Of course, areas placed under gang injunction may have been considered "high crime" prior to the injunction being put in place, and any ex-ante departmental designation as "high crime" would likely lead a court to defer to the officer's assessment.   However, the legal and administrative nature of the safety zone declaration essentially guarantees that Illinois v. Wardlow would apply (Ferguson, 2011).

The final category of stop is an arrest, for which police need probable cause that a specific person has committed a crime. By enjoining a set of otherwise legal activities, gang injunctions create a situation where engaging in otherwise non-criminal acts, like possessing a felt tip marker in the case of the 10 Gang injunction in Los Angeles, constitutes a violation of California Penal Code 166.9, misdemeanor contempt of court.

The reason that people named in the injunction are prohibited from possessing felt tipped markers is that having these writing instruments may be a precursor to criminal activity, specifically defacing public property. Once the injunction is enacted, outside of the safety zone

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[9] Of course, police officers could ignore these constitutional protections, but doing so would place them and their department at risk of sanction, and any evidence obtained in such a search would not be admissible in court.

an officer would need probable cause to believe that an individual named in the injunction *has defaced* public property in order to arrest them. Within the safety zone, an officer can make an arrest (for contempt of court) even if she has only probable cause to believe that an individual has the *capability to deface* public property (by having a marker). When combined with the practical difficulty of discerning who is actually covered by an injunction, and the ease at which individuals can be added, this expansion of an officer's ability to make arrest and still comply with the 4th amendment, potentially imposes large costs on all people living inside of a Safety Zone.

A reduction in civil liberties is a theoretically possible consequence of gang injunctions. Whether or not this is an unintended consequence of gang injunctions is up for debate. A recurring theme among scholars and practitioners alike is the potential use of gang injunctions as tools of gentrification and displacement. The privileged adjacency hypothesis was first documented as a speculative statement in Alonso (1999) as the "pattern of using gang injunctions to benefit nearby affluent areas." For example, an injunction in Oxnard, California actually contained a neighborhood redevelopment effort within its boundaries (Barajas, 2007). Arnold (2011) argues that gang injunctions are "something that developers wanted" to change the demographics of affected neighborhoods. Arnold (2011) also notes that gang injunctions may lower home values, noting that median neighborhood home values are lower in places with more safety zones. Whether the co-location of safety zone boundaries and gentrification processes occurred by chance, or if it is a causal process, remains to be empirically assessed both for any individual injunctions and injunctions over a larger geographic area over time.

2.2.c. Gang Injunctions and the Value of Neighborhood Amenities

Public neighborhood amenities and social spaces may capitalize into home values differently based on their location in a gang injunction. Safety zones pose implications for land use types beyond just residential (e.g. recreational, educational, religious) within their boundaries. For example, while parks typically function as an amenity in lower crime areas, they may be a disamenity if they are viewed as dangerous crime hot spots (Troy & Grove, 2008). Gang injunctions may decrease crime in parks and thus increase park quality and home values. Or, injunctions may impede the use of parks for fear of over-surveillance by police, or if family members of a gang member are unable to utilize them due to the non-association condition in injunctions. This non-association condition may also impact the use of other public amenities such as bus stops, shopping areas, or after school programs. On the other hand, residents that may have organized for and supported gang injunctions may be more inclined to frequent local areas inside the boundaries because of decreased crime and fear.[10] The interaction of land use, injunctions, and crime is complex, however they each have the potential to influence home prices and residential mobility. Importantly, though, while the social value of a neighborhood feature inside a safety zone may be sharply different than a similar one outside, the extent to which that feature is capitalized into housing values should not vary discontinuously at the injunction boundary.

3. *Existing Empirical Literature on Gang Injunctions*

There is some evidence that some gang injunctions reduce some types of crime. Maxson and Allen (1997) identified a small reduction in serious crimes after the imposition of one gang

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[10] In theory, community support is central to the creation of a gang injunction. However, in practice it is not clear that this is necessary. Allen (1997, p.i) states "community involvement in the decision making process was decidedly weak, primarily due to the lack of community organizations in gang plagued neighborhoods, the low-profile nature of the initiatives, and the concern for gang retaliation against community participants."

injunction in Inglewood, California. Grogger (2002) used a differences-in-differences approach to evaluate 14 gang injunctions imposed in Los Angeles in the 1990s. Relative to otherwise similar areas, he identified statistically significant reductions in violent crime, although no change in property crimes known to police. Ridgeway, Grogger, Moyer, and MacDonald (2018) found that most of the short and long term impacts of injunctions in Los Angeles city on crime came from reductions in assault. Carr et al. (2017) examine the impact of four different gang injunctions, imposed at various times in England and Wales, on the criminal behavior of 36 individuals and find evidence that the criminal activity of the affected individuals declined during the injunction. Anecdotal evidence from many law enforcement officials tend to support these aggregate findings (Maxson et al., 2005).At the same time, a frequently cited case study by the ACLU (ACLU 1997) found a small short-term increase in violence in a Los Angeles neighborhood under injunction, accompanied by adverse spillover effects in nearby areas. Goulka et al. (2009) evaluate the Santa Nita gang injunction in Orange County also using a differences-in-differences and matching approach. They find evidence of a short run increase in violent crimes and a decrease in property crimes after the injunction went into effect.

Any change in crime caused by the gang injunction will likely be capitalized into house prices by altering the demand for a particular building or location. Housing values appear to be strongly responsive to even small changes in the probability of victimization (Linden & Rockoff, 2008). More recent studies of housing and crime find a statistically significant relationship between crime and several dimensions of housing demand; housing volume turnover (Boggess, Greenbaum, & Tita, 2013), types of homeowners (Chamberlain, Wallace, Pfeiffer, & Gaub, 2016) and homeowner stability (Boggess & Hipp, 2010). As we will show, there appears to be a small impact of gang injunctions on crime at a highly disaggregate level; this is consistent with

many of the mechanisms linking the injunctions to criminal behavior, such as increased police presence and incapacitation of mobile individuals, being relatively geographically diffuse.

The nuisance gang activity itself may not be concentrated within the safety zone. For example, using an ecological behavioral model, Smith, Bertozzi, Brantingham, Tita, and Valasik (2012) found that gang members frequently travel on the boundaries of other gang territories, and that gang related violence tends to occur outside of these target area boundaries. Given this finding, and the probability that injunctions and the locations of previous gang crimes overlap, areas right outside the injunctions should be similar to areas just inside the boundaries on many key characteristics. One exception to this is the legal constraints on police officer behavior, as the injunction establishes administrative boundaries within which gang members are subject to heightened restrictions.

Besides providing a metric of net willingness to pay for civil liberties, any change in housing values associated with gang injunctions is important to document on its face, as housing wealth is a major component of overall individual wealth, and many times the only asset an individual possesses (Skinner, 1989). To the extent that gang injunctions are predominantly implemented in low income areas, this has implications for the persistence of geographically concentrated poverty by reducing the value of the assets owned by members of these communities.

4. *Data*

4.1 Gang Injunctions.

Our data on the location and timing of gang injunctions was compiled from a series of sources. First, the legal documents associated with the gang injunctions were obtained from

District Attorney's offices (county of San Diego, county of Orange, city of Los Angeles) and coded for the following information for 70 unique injunctions: complaint date, file date of preliminary injunction, date of permanent injunction, city, county, safety zone street boundaries, and the name of the gangs implicated in the safety zone areas. The legal filings themselves generally contained pdf maps of the affected areas, which were digitized using Google Earth Pro and ArcGIS. If pdf maps were not readily available, we relied on other sources, including official county district attorney press releases, reports, and news coverage, to retrieve the boundary street names and locations (see appendix A1 for a list of all injunctions, and A2 for a description of all data source). An important caveat for our analysis is that it is possible for one gang injunction to include two, or more, separate non-contiguous safety zones. Therefore, the same gang injunction may apply to more than one geographically designated area. In this case, for the sake of conceptual simplicity, we will refer to each non-contiguous area as its own injunction. Therefore, 70 injunctions correspond to 117 unique injunction areas. Figure 2 displays the locations of all of the gang injunctions in our sample.

4.2 Crime.

Crime data were obtained from the Southern California Crime Study (SCCS) provided by the Irvine Laboratory for the Study of Space and Crime (ILSSC). Crimes known to the police in 219 of the 341 cities in Southern California, covering 83% of the Southern California population, are recorded at the street segment level, and we focus on serious property (larceny, motor vehicle theft, burglary) and violent crime (homicide, robbery, aggravated assault) for the years 2007-2015. These street segments were mapped onto the location of the gang injunctions, allowing us to determine whether or not the crime occurred inside or outside of an area under injunction, and how far the crime was to the closest injunction boundary. Dividing the data by both distance to

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injunction and census tract partially adjusts for differences in population density, as census tracts

generally have roughly 4000 people living in them. Table 1 displays summary statistics of crime

in our full sample, inside and outside of injunctions, and in areas immediately surrounding the

boundaries of these injunctions. We also aggregate crimes into a total social loss in 2012 dollars,

using cost of crime estimates from Heaton (2010).

At first glance, the summary statistics in table 1 suggest that there is very little difference

in local crime in and outside of active safety zones. If anything, on average there is slightly more

crime in areas not under gang injunction. When we focus on areas within 400 meters of an

injunction boundary we find even less difference; there is an average of 0.77 index crimes per

tract-bin month both inside and outside of injunction boundaries, 0.153 violent crimes, and 0.62

property offenses.   On average, $35,377 is lost to crime per month, roughly equal to one robbery

every other month, or two burglaries and a car theft, and this value is about $2000 higher outside

vs inside safety zones. However, when we focus just on places within 400 meters of the

boundary, the average loss to crime is only $500 higher in the areas just outside of injunction

space.

4.3 Home Prices.

The Zillow data is a national level dataset officially known as ZTRAX Transaction and

Assessment Dataset[11]. This database contains two separate datasets that contain data at the

transaction and parcel level. Variables about the physical characteristics of individual property

units are provided for the year 2015, including total number of rooms, square feet of living

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[11] Data provided by Zillow through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found at *http://www.zillow.com/ztrax*. The results and opinions are those of the author(s) and do not reflect the position of Zillow Group.

space, and age of housing unit. Information on housing transactions and prices at the coordinate level are provided for 2002-2015. The coordinates of each single family home transaction were geocoded and mapped onto the injunction areas.[12] Table 2 displays summary statistics of housing characteristics and values. To best represent the impacts on home sales, we adjust for inflation by normalizing all prices to the 2012 dollars based on GDP deflators from the St. Louis Federal Reserve.

On average, the single family homes in our sample were sold for just over $440 thousand, well below the average estimated value of the existing housing stock, which is $532 thousand. The 36% of the home sales which were inside safety zones were $60 thousand below home sales on average, a difference which is slightly larger than the average difference in surrounding house value ($490 for houses inside safety zones, $40 thousand less than the full sample). That said, the homes sold inside the injunction area are slightly smaller, with 0.5 fewer rooms and about 270 fewer square feet than houses on average. The homes are also older, almost 70 years old at the time of sale versus 61 years old over all. Looking in a narrower band around the injunctions, homes inside and outside the injunction areas are more similar, although the houses outside the injunction area are still larger and newer, the differences in total rooms, square footage, age, and surrounding home values fall by 33% to 68%.

4.4 Gang Injunctions, Crime and Home Values: Graphical Discontinuity Evidence

The mean values reported in tables 1 and 2 suggest that there is a negative correlation between being located in an area currently under gang injunction and housing prices. Of course, this does not necessarily reflect the cost of reduced civil liberties in those areas, as the housing

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[12] We observe housing prices for more areas than we observe crime incidents. An important future robustness test will involve limiting our sample to places for which we observe both crime and housing information.

stock or neighborhood amenities within the injunction area may be fundamentally different from untreated areas. Variation in other amenities that are capitalized into housing values, such as distance to parks and beaches, community centers, or grocery stores, age of construction, and lot size, will all diminish as the set of homes inside and outside of the safety zone become physically closer together.

4.4.a Crime

As a first step in our regression discontinuity analysis, we graphically describe how crime rates vary relative to the boundaries of the safety zones. The mean number of crimes, per parcel, in 50 meter bins inside and outside of safety zone boundaries is displayed in Figure 3. Two facts are immediately apparent in Figure 3. First is that crime is, on average, relatively higher crime areas outside of gang injunction boundaries, but the relationship between crime and distance seems roughly smooth. However, in areas immediately adjacent to the boundary, police identify substantially more crime just inside the safety zone than out of it. Overall, excluding the two points closest to the threshold would suggest that crime is lower inside of the safety zone than outside areas, consistent with existing research on the average impact of injunctions on crime. Including these two points, which are highly influential in the RDD context, makes the magnitude of the reduction at the boundary much more typical of general variation in the data. Appendix figures A3 and A4 replicate figure 3 for violent and property crimes, respectively.

4.4.b House Values

In figure 4 we plot the relationship between the mean natural log of sales price (in 2012 dollars) of housing transactions relative to how far that house in question was from a safety zone boundary at the date of sale. We plot the mean of real sales price in figure 5; the majority of the

hedonic price literature examines the natural log of house values. However, given the dispersion in house values across southern California, estimating an average dollar value of a change civil liberties, rather than an average percentage change in price associated with a change in civil liberties has conceptual appeal. We also include simple quadratic lines of best fit inside and outside of the injunction boundary. Houses generally increase in value as one moves from the center of a safety zone outwards, and there is a clear break in prices at the boundary, with houses 100 meters inside the safety zone selling for approximately 11%, or $70 thousand less than houses 100 meters outside of the safety zone.

In figure 6, we produce a standard test for another assumption of RDD analysis, the absence of perfect manipulation around the threshold. In this context, a specific concern might be the injunction boundaries were drawn in a way that excluded high value houses, or if homes were more likely to change hands without a sales price being recorded to Zillow.[13] We find no evidence that this is the case, although there are a higher number of home sales close the the boundary than further away.

4.5 "Diff-in-Disc" – Gang Injunctions, Crime and Home Values: Graphical Discontinuity Evidence Over Time

Of course, the boundaries of a safety zone may correspond with a discontinuity in another geographic feature that may be capitalized into housing values and affect our measure of crime rates.[14] In order to address this concern, in figures 7, 8, 9, and 10 we replicate figures 3 , 4, 5, and

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[13] We observe these transactions in our data, but as the sales price is missing, they are excluded from our primary analysis.

[14] One possibility includes historic districts. We checked for overlap between historic district boundaries (shapefiles from National Register for Historic Places) and safety zones, and found little to no spatial overlap. There is substantial overlap between injunction boundaries and "Gang Resistance and Youth Development" or "GRYD" site boundaries. GRYD sponsors community events (like outdoor movie screenings and film festivals) in GRYD sites, and young people who "spend a substantial amount of time" in GRYD zones are eligible for a variety of services.

6 in the set of crimes, and home sales, using the distance from the crime, or home sale, to the closest injunction boundary that *would be imposed*. Specifically, we identify the distance from tract-bin or housing parcel to the closest gang injunction boundary that was not yet imposed, ignoring the actual gang injunction boundaries that were in effect when the crime was committed, or the home sale occurred. This natural falsification test will allow us to identify the average, time invariant, features that tend to correspond with the placement of injunction boundaries. We will also examine how the characteristics of houses sold varies across the boundary of a gang injunction, both before and after it goes into effect, as well as average home values in the local area (surrounding tracts), as reported in the American Communities Survey.

Beginning with crime, prior to the injunction going into effect, we see relatively more crime inside, rather than just outside, the boundaries, although the highest crime rates tend to be in areas relatively far from where injunctions will later be put in place.[15] Areas "deep" inside of future injunctions have the high crime rates, but in the 250 meters inside a future safety zone, and in the 250 meters outside of it, crime rates are roughly equal where gang members will, and will not, be enjoined. In appendix figures A5 and A6, we reproduce these figures for violent and property offenses. These figures are consistent with the results of Grogger (2002); averaging violent crime rates inside and outside of the safety zones before and after the injunctions go into effect would suggest the injunction caused a decrease in violent crime, and there is less evidence of any change in property crime rates. However, with our spatially disaggregated data, it is clear that crime rates inside and just outside of the boundaries are nearly identical, with the exception of areas just 50 meters inside the boundary, which appears somewhat anomalous. Appendix figures A11-A14 show that the same pattern is evident for housing characteristics and number of

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[15] Of course, not that some of these areas may actually be in active safety zones.

homes sold; we observe some discontinuity in the total number of rooms and square footage of houses sold just inside and just outside the boundary, but this gap is time invariant.

We observe a very different pattern in housing values, which for the purposes of exposition we will show in annual terms, rather than aggregating to pre and post. There is little evidence of a jump in housing prices, in log (figure 7) or level (figure 8) terms, around the boundaries of future gang injunctions; however, a downward trend in all home prices is consistent with the enactment of injunctions being endogenous to neighborhood conditions. However, starting in the first year the injunction is in effect, houses just inside the boundary are sold at lower prices than houses sold just outside of the boundary. Because the break in housing prices appears only after the boundaries of the safety zone are legally defined, there is a very limited scope for alternate explanations of the observed patterns. Any feature must not only vary sharply at the gang injunction boundary, the typical identifying assumption for RDDs, but also has to be something that was only capitalized into housing values after the boundary was legally defined, which is not the case for actual crime rates or characteristics of homes sold. We propose that the only possible explanation that fits these two categories is a direct result of the gang injunction: the official designation of a particular house as being located in a high crime area, and the subsequent reduction in the civil liberties of people in those places.

5.   *Empirical Framework*

Based on the graphical evidence, it seems to be the case that housing prices are negatively affected by gang injunctions at the injunction boundary. Crime rates, on the other hand, do not appear to fall discreetly at the border. If it is true that no other factor affecting housing prices discontinuously changes at the injunction boundary, comparing the limits of

housing prices as one moves closer to the boundary will provide an unbiased local estimate of the effect of the gang injunctions on house values.

The graphical evidence suggested that the social value of the civil liberties affected by the gang injunctions is roughly $70,000, or 11% of the value of a home on average. However, the standard assumption of continuity in other relevant variables at the threshold is not true in a cross sectional sense. That said, the impact of the injunctions on housing prices can still be identified under the assumption that these discontinuous factors are equally discontinuous, and equally capitalized into house prices, before and after the injunction goes into effect, an identification strategy referred to as a "difference-in-discontinuities" (Grembi, Nannicini, & Troiano, 2016). More formally, in a standard RDD, identification of a treatment effect β is based on the difference in values of an outcome as one approaches the limit of a running variable from above or below, or

$$\hat{\beta} = \lim_{r \downarrow 0} Y - \lim_{r \uparrow 0} Y$$

Following the Rubin causal framework, this can be re-written as

$$\hat{\beta} = \lim_{r \downarrow 0}(\beta + \theta X_{it} + \varepsilon_{it}) - \lim_{r \uparrow 0}(\theta X_{it} + \varepsilon_{it})$$

$$\hat{\beta} = \beta + \theta \left[\lim_{r \downarrow 0}(X_{it}) - \lim_{r \uparrow 0}(X_{it})\right] + \left[\lim_{r \downarrow 0}(\varepsilon_{it}) - \lim_{r \uparrow 0}(\varepsilon_{it})\right]$$

The assumption of continuity of all characteristics, besides treatment, at the threshold identifies $\hat{\beta}$. In the case of Southern California, this assumption clearly does not hold. However, as long as there is a constant relationship between prices and relevant characteristics X_{it} over time, an unbiased estimate of β can be obtained by comparing the traditional RDD with an

estimate from a falsification test: how did housing prices vary around the border of gang injunctions that had not yet gone into effect? Specifically, for each housing transaction, we calculate r, the distance from that house to the closest gang injunction at the date of sale, and then f, which is the distance from that house to the closest gang injunction boundary that would be imposed by the end of our sample period. We use these alternate distances to calculate a difference in discontinuities, or DiDisc, estimate:

$$\hat{\beta} = \beta + \theta \left[\lim_{r\downarrow0}(X_{it}) - \lim_{r\uparrow0}(X_{it}) \right] + \left[\lim_{r\downarrow0}(\varepsilon_{it}) - \lim_{r\uparrow0}(\varepsilon_{it}) \right]$$

$$- \theta^f \left[\lim_{f\downarrow0}(X_{it}) - \lim_{f\uparrow0}(X_{it}) \right] - \left[\lim_{f\downarrow0}(\varepsilon_{it}) - \lim_{f\uparrow0}(\varepsilon_{it}) \right]$$

under the assumption that the relationship between X_{it} and home prices at the gang injunction boundary does not depend on the imposition of an injunction, (i.e. $\theta = \theta^f$), then the DiDisc, estimate of the impact of gang injunctions on house prices will produce an unbiased estimate of β.

In practice, we provide four estimates of β. First, we estimate a naïve cross-sectional RDD, where we estimate a standard OLS model of gang injunctions on home values, assuming a parametric relationship between distance from a boundary and price, adjusting for covariates and allowing the unobserved determinants of sales prices to be correlated within census tracts.

$$SalesPrice_{pnt} = \alpha + \beta Injunction_{pnt} + \theta X_{pnt} + \gamma Dist_{pnt}^{Inside} + \pi Dist_{pnt}^{Outside} + \varepsilon_{pnt}$$

Here, $SalesPrice_{pny}$ is the sales price of the house (in levels or logs) located on parcel p in neighborhood (census tract) n sold on date t. As in the previous figures, we define "distance" as positive outside injunctions and negative inside injunctions. The outcome of interest is our estimate of β, which reflects the average conditional difference in $Salesprice_{pnt}$ at the boundary.

We include a matrix *Xpnt* of housing characteristics; the number of rooms, the age of the house, square feet of living space, and the year and month of sale. Recent papers that use spatial RDDs have included boundary fixed effects, which is particularly important for large geographical areas where home values might vary dramatically. We propose a more parsimonious approach to preserve degrees of freedom by including controls for the average house values in individual and adjacent census tracts where the transaction took place, as reported in the 2010-2015 ACS. While allowing us more degrees of freedom, this average house value should also capture any unobserved neighborhood amenities that are capitalized into the transaction price.

We then estimate a more robust RDD, a local linear regression where we allow for a nonparametric relationship between how far a house is from a boundary and price.[16] Since individual housing characteristics and area home values are important, we follow Calonico, Cattaneo, and Titiunik (2014) and Calonico, Cattaneo, Farrell, and Titiunik (2018) and adjust our estimates to reflect the inclusion of covariates, and use a data driven, MSE-optimal bandwidth selector, and construct confidence intervals using a cluster-robust nearest neighbor variance estimation, where clusters are defined by census tracts.

The next step is to implement the DiDisc estimate. We first show the DID analogue of our OLS estimates, created by generating two observations per transaction: one where distance is measured using the injunctions in effect at the date of sale, and a second distance based on future gang injunctions. We define the dummy variable $T_{pnt}=1$ if the distance calculation was based on the actual, rather than future, injunction boundaries.

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[16] See Fan (1992) and Porter (2003). This approach to RDD is becoming increasingly common in applied work (e.g. Cook, Kapustin, Ludwig, and Miller (2017)).

$$SalesPrice_{pnt} = \alpha + \beta\left(T_{pnt} x\ Injunction_{pnt}\right) + \varphi T_{pnt} + \delta Injunction_{pnt} + \theta X_{pnt}$$

$$+ \gamma Dist_{pnt}^{Inside} + \pi Dist_{pnt}^{Outside} + \upsilon_{pnt}$$

In this model, β represents the jump in housing prices at active injunction boundaries over and above the jump we see at inactive ones.

Finally, we provided DiDisc local linear regressions by replacing actual distance with future distance. Our nonparametric DiDisc estimate is the difference between our cross sectional RDD and this estimate, with standard errors of this difference estimated by bootstrapping.[17]

When we estimate the impact of these injunctions on crime, as well as the number of transactions taking place, we follow the same general framework, but adapt our spatial units of analysis. Specifically, rather than measure crime (or count of housing transactions) at the parcel level, we identify all crimes happening (or number of houses sold) within 50 (1) meter bins of injunction boundaries.[18] The unit of observation is therefore a bin-tract-year-month.

6. Results.

6.2.a Crime

Table 3 presents our preliminary estimates of the relationship between gang injunctions and crimes known to police, estimated using a parametric RDD. In the cross-section, we do not observe any relationship between being inside of a safety zone and total, property, or violent crime. When we compare the change in crime across injunction boundaries before and after they

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[17] While we use the same sample in our two cross sectional estimates, both the optimal bandwidths and all other estimated parameters vary completely freely across models. This total flexibility means that our estimated standard errors will be larger than in standard DID analysis, which generally impose more structure on, for example the magnitude of year fixed effects.

[18] Specifically, we round the distance from the parcel to a boundary to be in single meter units. For crimes, which are not obviously recorded with precise geographical accuracy, we use 50 meters as the unit of measurement.

go into effect, our data do suggest that crime may increase outside of the safety zone relative to inside of it. However, the magnitude of this effect is sensitive to the functional for assumptions about our running variable, casting doubt on the validity of the result. Notably, our results are consistent with Grogger (2002) and Ridgeway et al. (2018). We find that moving outside of the safety zone is associated with 0.024 (se = 0.003) additional crimes per month, a roughly 3% increase over the sample mean. We observe similar reductions in both property (0.013) and violent (0.01) crime, meaning that proportionately, we observe a larger increase in violent offending – a relative 6% increase in violence outside the safety zone relative to inside, and a 2% increase in property offending. Including tract fixed effects does not alter our results.

In Figure 9, we present nonparametric Diff-in-Disc estimates of the impact of injunctions on crime, using bandwidths ranging from 450 (the minimum possible) to 1500 meters, along with 90% and 95% confidence intervals. In the smallest estimable bandwidth, we estimate a 3% reduction in crime once you leave the safety zone, which has a p-value of just over 5%. The estimated values quickly converge to zero, and become substantively quite small, although still negative, at bandwidths larger than 700 meters. In Figure 10, we present estimates using the cost of crime, rather than counts. Here, we find that the social benefit of the injunctions, in terms of crime reduction, are much smaller, and consistent with the parametric results, tend to imply a relative reduction in safety outside of the boundary.

There are two reasons why we are cautious about interpreting these results. First, the finding that crime increases outside of safety zones is based on a parametric RDD where we assume that the relationship between the running variable and crime follows a third order polynomial above and below the threshold; Non-parametric results are much less precise. Second, our overall goals is to estimate how residents value changes in crime relative to civil

liberties. Actual crime, in some sense, is actually a proxy for how crime is capitalized into housing values. It is possible that people living 50 meters away from a crime do not perceive any change in their victimization risk, but it is also plausible that actual crime is capitalized into housing values in the same way that other neighborhood amenities, such as parks or pools are. In the absence of survey data on resident's perceptions of safety, we conclude that the actual increase in the cost of crime outside of injunction boundaries is an upper bound on the extent to which housing prices should fall, ceteris paribus.

6.2.b Home Values

Tables 4 and 5 presents our preliminary point estimates of the impact of gang injunctions on housing values. We present five sets of results for each specification: conventional cross sectional RDD estimates, bias-corrected cross sectional RDD estimates with the robust variance estimator developed in Calonico et al. (2014), and then Diff-in-Disc estimates where the discontinuity observed in the cross section is compared to the discontinuity at not-yet-enacted boundaries; two parametric estimates, and one based on the difference in two bias-corrected local linear regressions, with standard errors estimates via bootstrapping.[19]

Using the natural log of housing prices as our outcome, we estimate that moving just outside of a safety zone is associated with a 4% increase in home values, with an estimated standard error of about 2 percentage points. About 25% of that difference is due to time invariant features, as our difference in difference estimates suggest a 3% reduction in house values. The nonparametric regressions are less precise, and approximately 6% of those estimates are less than zero, but given the general stability of the point estimate across specifications, and

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[19] Specifically, the reported point estimate is the estimated impact of crossing a gang injunction boundary using the actual injunctions at the date of sale, minus the estimated impact of crossing an injunction boundary using only future injunctions. This difference is calculated in 2000 randomly drawn samples (with replacement), and the reported standard errors are the standard deviation of this distribution of these estimates.

the fact that these regressions allow for complete flexibility in all parameters, we might expect

these estimates to be underpowered. In figure 11, we show how our non-parametric Diff-in-Disc

estimates vary by bandwidth. We estimate a roughly 3% increase in housing values outside of

the safety zone, which is statistically precise, at bandwidths ranging from 400 to 1100 meters.

At larger bandwidths, the estimates remain statistically precise, and correspond to a roughly

1.5% increase in home values.

In level terms, our data suggest that people are willing to pay between $20 thousand

(se=$17 thousand,) and $58 thousand (se=$28,000) to not live inside of a safety zone. When we

compare this level difference to the jump in prices we observe at injunctions that are not yet in

effect, the parametric estimates actually increase to $43,000 (se=9,400), while the nonparametric

estimates fall by $1000 – statistically indistinguishable from the cross-sectional estimates. Note

that these two different assumptions about how civil liberties are capitalized into housing values

yields substantively different estimates, as a 3% increase in house value is roughly $12,000.

Figure 12 shows that the magnitude and precision of these estimates is robust to bandwidths of

between 300 and 600 meters. At larger bandwidths, the increase in values becomes slightly

imprecisely estimated, and falls by roughly ½ in magnitude at bandwidths larger than 1300

meters.

In tables 6 and 7, we re-estimate our cross sectional and parametric diff-in-disc estimates

where we replace the original gang injunction boundaries with 100 yard buffer boundaries

around the original injunction. This additional buffer area was not included in all injunctions, so

we replaced this boundary only when specified in the original injunction. This re-estimation

effectively treats the outer boundary of the 100 yard buffer, where specified, as the intervention

of interest. Recall that the legal constraints on officers in these 100 yard buffer zones is unclear,

as the injunction language does differentiate these areas from the actual safety zone, but a close reading of the injunction suggests that individuals named in the suits are subject to the same restrictions on their activity even in this buffer area. As such, it may also be the case that officers might expect similar leeway in their actions in these buffer areas. It is unknown to us that the equivalence of these buffer zones and the safety zones, in terms of their implications for citizen and officer behavior, themselves had been legally tested.[20]

Graphically, it appears to be the case that when these buffer zone boundaries are included as part of the safety zone, house values appear to take 3 years to adjust. However, once they do, we actually estimate slightly larger impacts of boundaries on house prices; the cross sectional estimates suggest a 5% (se = 2.2 percentage points) increase in price, and the diff-in-disc estimates are 3.7% increase in prices (se=0.013). Notably, in level terms, we estimate no increase in prices (and in fact point estimates are negative) outside the boundaries which include the buffer zones, by the diff-in-disc estimates suggest that this is a $38,000 increase in value (se=9,700) relative to the previous difference in price at that boundary. While not conclusive, the finding that including legally gray areas as "treated" does not appreciably change our results, along with the graphical evidence on when the changes become most apparent, suggests that whatever the mechanisms driving the disutility associated with living in a safety zone are, they are at least in part likely to accrue over time.

6.2.c Frequency of Housing Transactions

We now explore whether or not the presence of gang injunctions affected the probability that a home was sold. Consistent with the graphical evidence, in table 8 we show that there is no

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[20] This specific point was independently raised by two of the criminal defense attorneys we spoke with.

statistical or substantively meaningful change in the probability a home is sold just inside or outside of a safety zone. On average, there are roughly 0.75 transactions per bin-neighborhood-year-month, meaning that our estimates of roughly -0.03 and standard errors of around 0.04 correspond to relatively precisely estimated zeros.

6.3. Who moves into Safety Zones?

One of the underlying assumptions of hedonic pricing is that buyers and sellers have the same information, and roughly the same preferences, about the amenity in question. The imposition of gang injunctions may generate a shift in the composition of a neighborhood in a way that may be driving the observed drop in home values. The ZTRAX data does not contain information about the individual people involved in housing transactions. However, some insight into how the declaration of a safety zone affects neighborhood composition can be obtained from the ACS. In table 9, we describe the average racial, ethnic, and poverty status of people who moved into their current home one year ago, based on 2012-2016 tract level average survey values. In order to identify tracts where the typical survey respondent likely moved into a safety zone, we weight census tracts by the number of observed Zillow transactions that occurred, in that tract, between 2012 and 2016 that were inside a safety zone at the date of sale. We then characterize people who moved into places just outside of safety zones by re-weighting the tracts based on how many Zillow sales of homes, outside of safety zones, occurred between 2012 and 2016. In constructing all weights, we exclude all homes that are more than 1000 meters outside (or inside) of a boundary.

The fraction of resident who say they moved into their home less than one year ago is substantively equal inside and outside of injunction boundaries, consistent with the ZTRAX data, and also with the housing supply being relatively inelastic in Southern California. People who

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move into homes inside and outside of safety zones are roughly equally likely to be black or Asian, although there are slightly more black people moving inside of the boundaries (10% vs 8%), and slightly more Asian people moving outside of them (8% vs 11%). New residents of areas inside of safety zones are much more likely to be Hispanic (40%) relative to non-Hispanic white (21%); just outside of safety zones people who move into a neighborhood appear to be roughly equally likely to identify as Hispanic or non-Hispanic white (32% vs 33%). Turning to income, just under 70% of people who move into areas outside of safety zones live in households earning more than 150% of the poverty line, compared to 59% of people inside of the safety zones. Approximately 27% of people who move into safety zones live in households earning less than 100% of the federal poverty line, compared to 21% of people who move outside of them.

Overall, the ACS data suggest that people who move into areas under gang injunction are more likely to be Hispanic, and slightly more likely to be very low income. In order to provide a sense of whether or not this is a function of the injunction itself, in the next two columns present estimates where we construct weights based on the number of homes sold inside or outside of safety zone boundaries that had not yet gone into effect at the date of sale. Notably, the racial, ethnic, and poverty status of movers appears to be roughly identical outside of future and active boundaries. This is consistent with the observed gap in home values inside and outside of the boundaries being a function of something happening in safety zones. Prior to safety zones being established, only 2% of "inside" movers are Black, 12% are Asian, 25% are non-Hispanic White, and 41% are Hispanic. We also observe that the about 65% of people moving close to future safety zones live in household earning more than 150% of the federal poverty line.

While far from conclusive, patterns in the ACS suggests that wealthier people sort out of safety zones, and Black people sort in (replacing White and Asian movers). Mobility patterns of Hispanic people appear to be unchanged by the safety zones, although more Hispanic people live in areas under injunction, or will be placed under injunction at some point. What is striking about this pattern, particularly the increase in Black movers, is that Black California residents are the most likely to be identified by the state of California as gang members; in 2012 almost 11% of all Black people between the ages of 20 and 24 in LA county were listed in the CalGang database, compared with 3.5% of Hispanic people and 0.3% of White people (Muniz and McGill 2012).

7. *Conclusion*

Civil gang injunctions are one of many policing strategies that try to reduce crime by targeting criminal justice resources on a specific subset of the population in a specific place. By proactively criminalizing behaviors that may be precursors to crime, and enhancing the penalties for criminal behavior, these injunctions are intended to reduce the social harm from crime, specifically gang violence. However, the structure of gang injunctions, specifically the designation of a particular area as a "high crime" one, and the ease at which officers are able to add individuals to the injunction, has potentially important negative consequences for all people living inside the gang injunction's boundaries. Previous research has found evidence that crime rates fall in safety zones, but ours is the first to directly estimate the cost associated with the way those crime reductions are achieved.

While we are able to qualitatively replicate existing evidence of the impact of injunctions on crime using incident level data, we do not find robust evidence that crime changes sharply at the boundaries – this is also consistent with the existence of positive crime spillovers associated with

place-based policing strategies. If perceptions of crime are smooth across these boundaries, we can interpret our estimates as the social willingness to pay for the aggressive policing that generates the aggregate crime reductions. If perceptions of crime are correlated with actual crime rates, and thus also jump discontinuously at the boundary, then our estimates are a lower bound of the true social cost of civil liberties.

Overall, these results call into question the social efficiency of gang injunctions, and place-based proactive policing policies more generally. On average, our data suggest that all surrounding house values are higher when gang injunctions are put in place, but this is simply a pre-post comparison without a counterfactual.[21] Using the estimated annual crime impact from Ridgeway et al. (2018), our more conservative estimates suggest that, once the cost of civil liberties is taken into account, gang injunctions are unlikely to be cost effective in police reporting districts with more than 1,220 housing units, and may be ineffective in districts with as few as 430 units. Given that police reporting districts in LA are slightly larger than Census tracts, which in Los Angeles County contain approximately 1,404 housing units on average, we conclude that most civil gang injunctions are unlikely to pass a cost-benefit test.[22] A relatively large body of field experiments suggest that place-based policing strategies, in particular identifying crime "hot spots," can lower crime rates. The results of this paper suggest that this finding is insufficient to conclude these are good policies.

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[21] Specifically: the mean value of Ln(Sales Price) for homes situated within 1000 meters of a boundary, inside (outside) of an injunction is 12.69 [se= 0.003] (12.87 [se=0.002]). The equivalent value for homes currently outside of a safety zone, but located inside (outside) of a future boundary is 12.53 [se =0.004] (12.71 [se=0.003]). Overall, home prices in Southern California rose by 2.57% each year during this time period.

[22] Ridgeway et al. (2018) estimate that, on average, gang injunctions in LA results in 9 fewer crimes, primarily aggravated assaults, per reporting district, per year. Using the estimated cost of aggravated assault in Heaton (2010), we estimate this crime reduction generates $785,000 in value per year. Assuming a real interest rate of 2.2%, the present value of annual $785,000 payments over 30 years is $17.1 million, which is approximately equal to $13.6 thousand (our low estimate) times 1,220, or $40 thousand (our high estimate) times 430.

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Figure 1: Anaheim Safety Zone and Home Sales

Figure 2: Gang Injunctions in Southern California
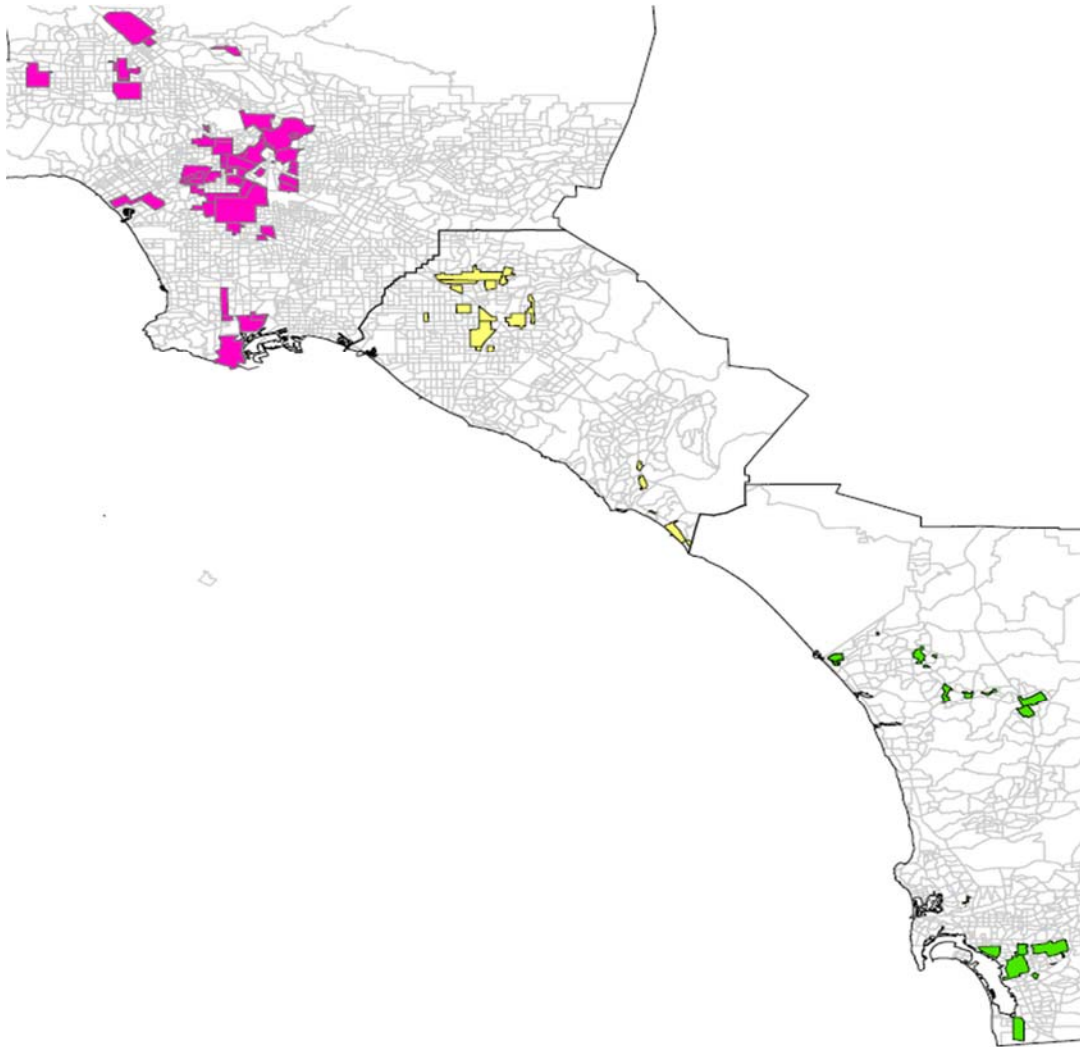
Figure 3: Gang Injunctions and Serious Crime Rates in Southern California

Monthly Index 1 Crimes

Distance from Boundary (50m)
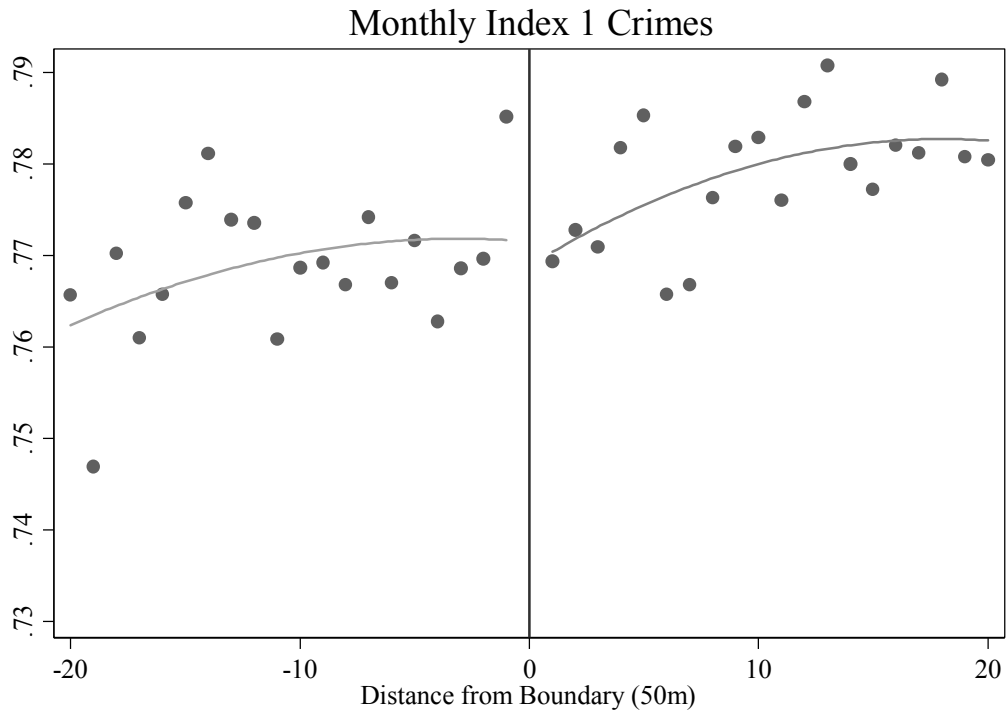
Figure 4: Gang Injunctions and Ln(Home Sales) in Southern California, 2002-2015

Mean Ln(Sales Prices)

Distance from Boundary (100m)
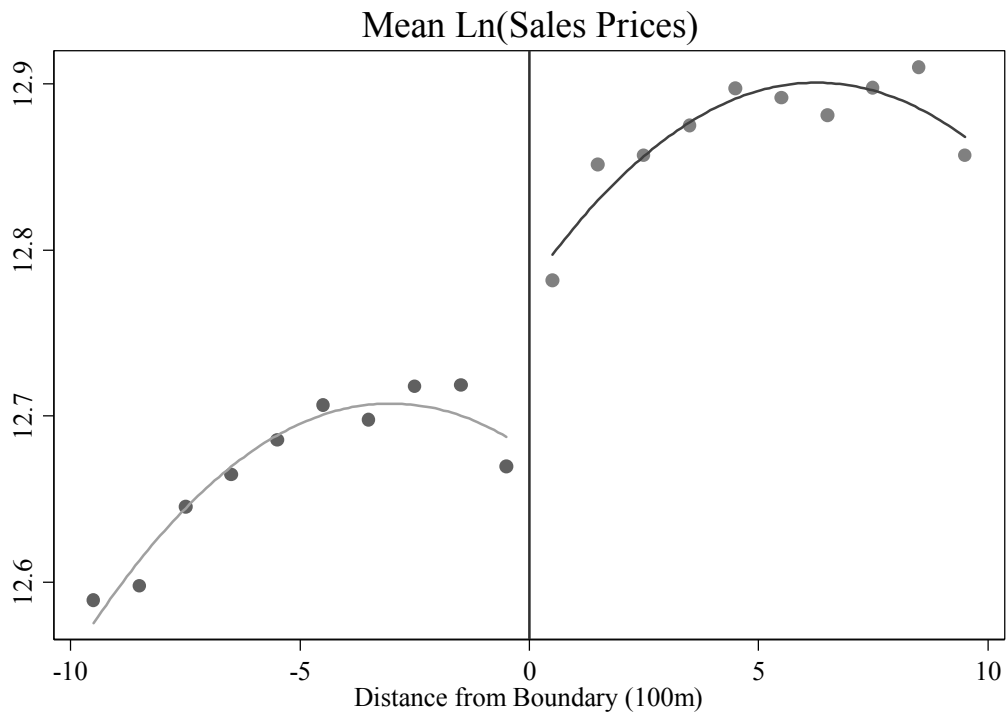
Figure 5: Gang Injunctions and Average Home Sales in Southern California, 2002-2015

Mean Sales Prices
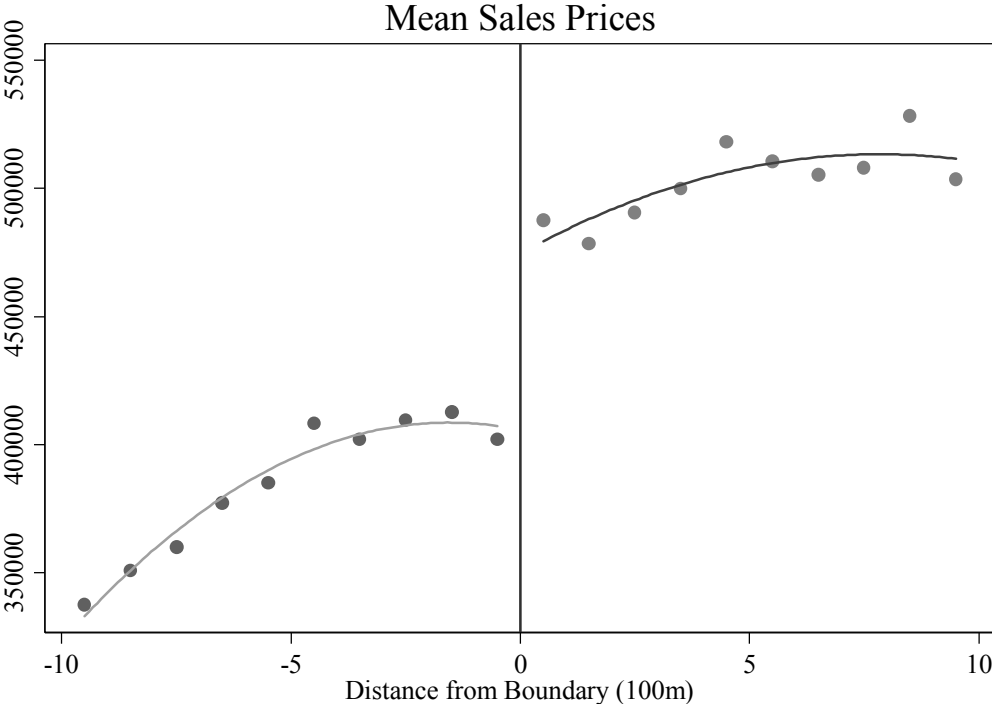
Figure 6: Gang Injunctions and Serious Crime Rates in Southern California, Future Safety Zone
Boundaries

Monthly Index 1 Crimes
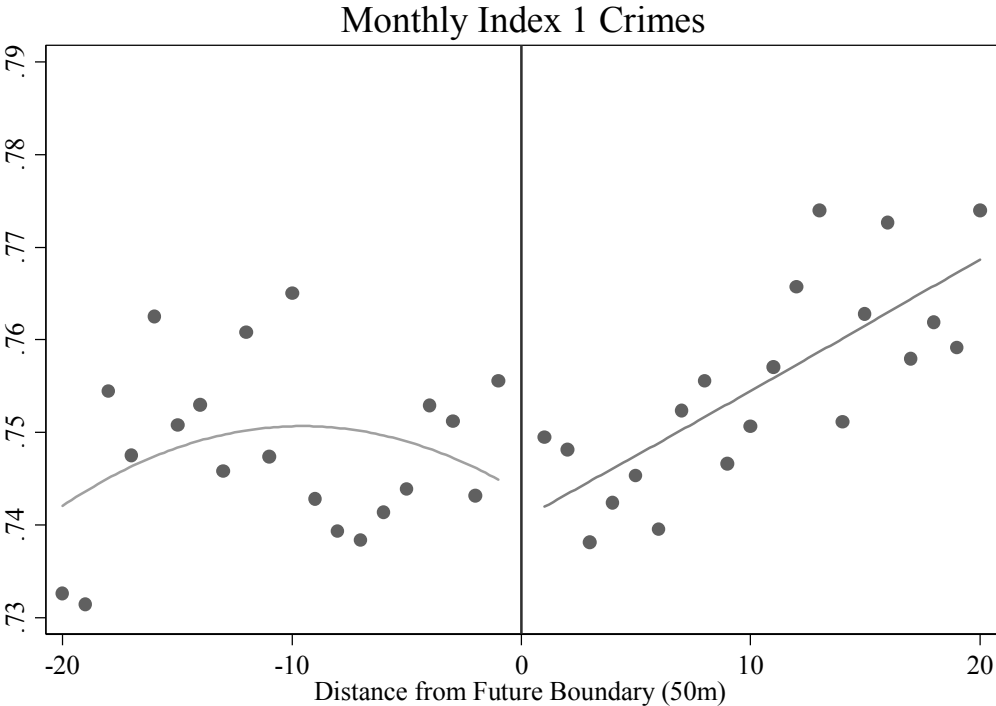
Figure 7: Gang Injunctions and Ln(Home Sales) in Southern California, by Year

Mean Ln Home Sales
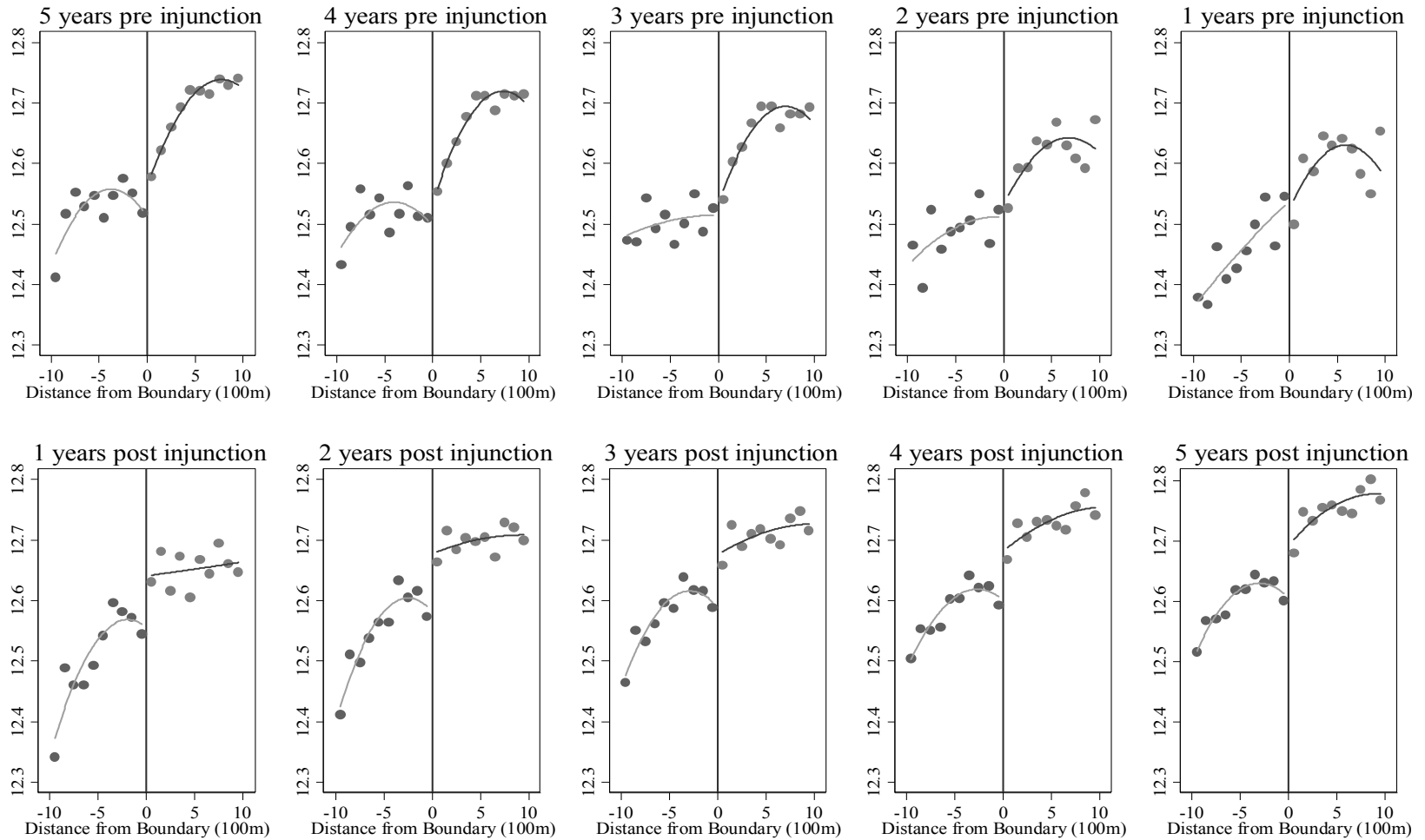
Figure 8: Gang Injunctions and Home Sales in Southern California, by Year
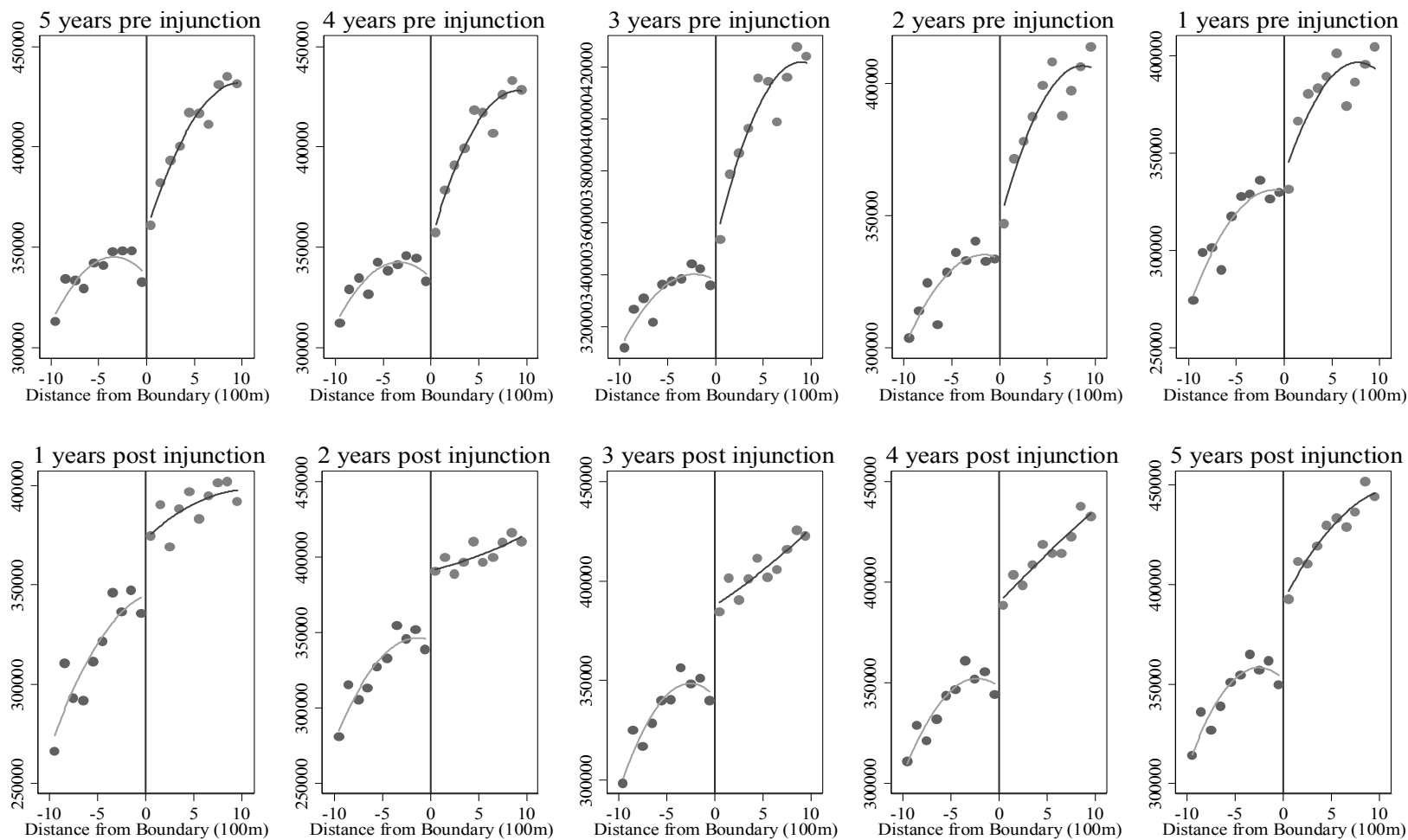
Mean Home Sales

Figure 9: Nonparametric Diff-in-Disc estimates of Injunctions and Index Crimes, alternate bandwidths
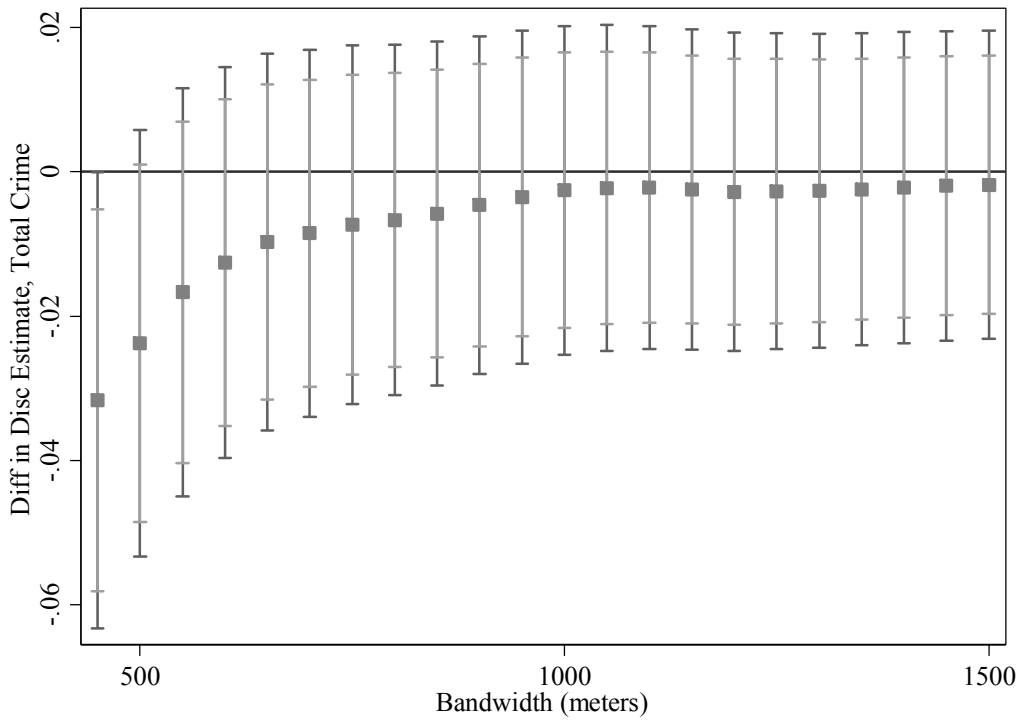

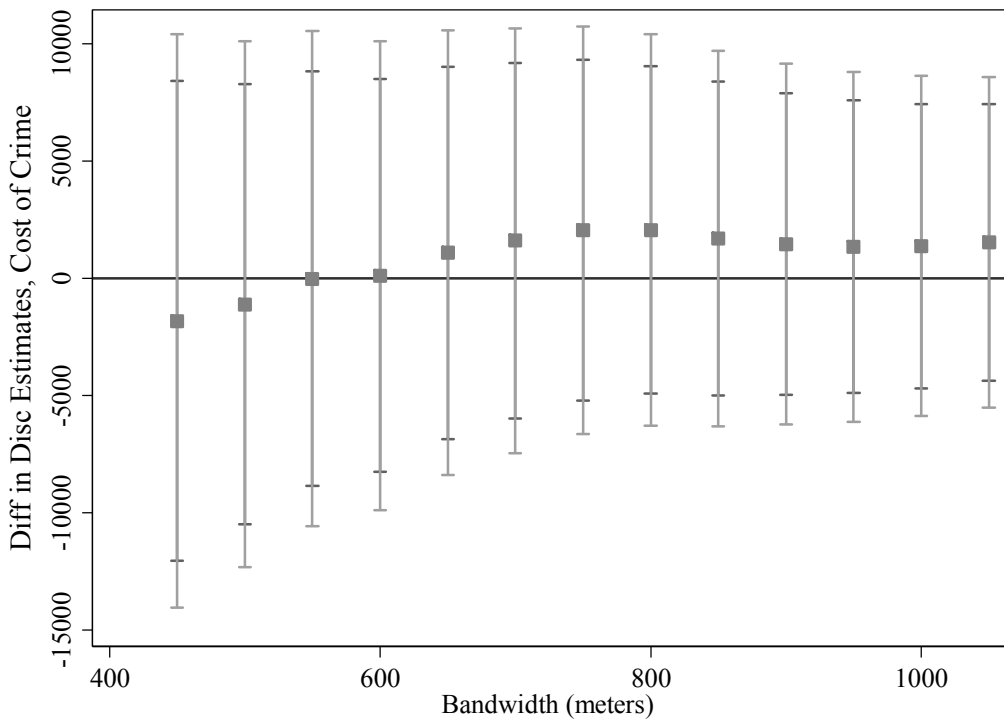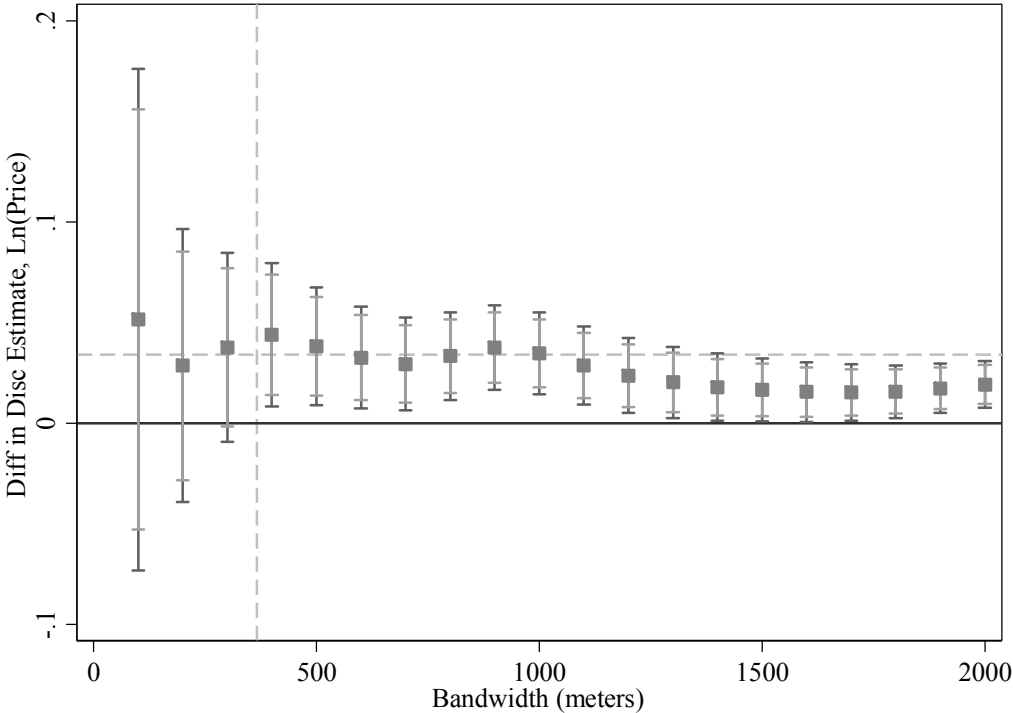Figure 10: Nonparametic Diff-in-Disc estimates of Injunctions and Cost of Crime, alternate bandwidths

Figure 11: Nonparametic Diff-in-Disc estimates of Injunctions and Ln(Home Price), alternate bandwidths

Note: Calonico et al 2014, 2016 estimate and optimal cross sectional bandwidth indicated

Figure 12: Nonparametic Diff-in-Disc estimates of Injunctions and Home Price, alternate bandwidths
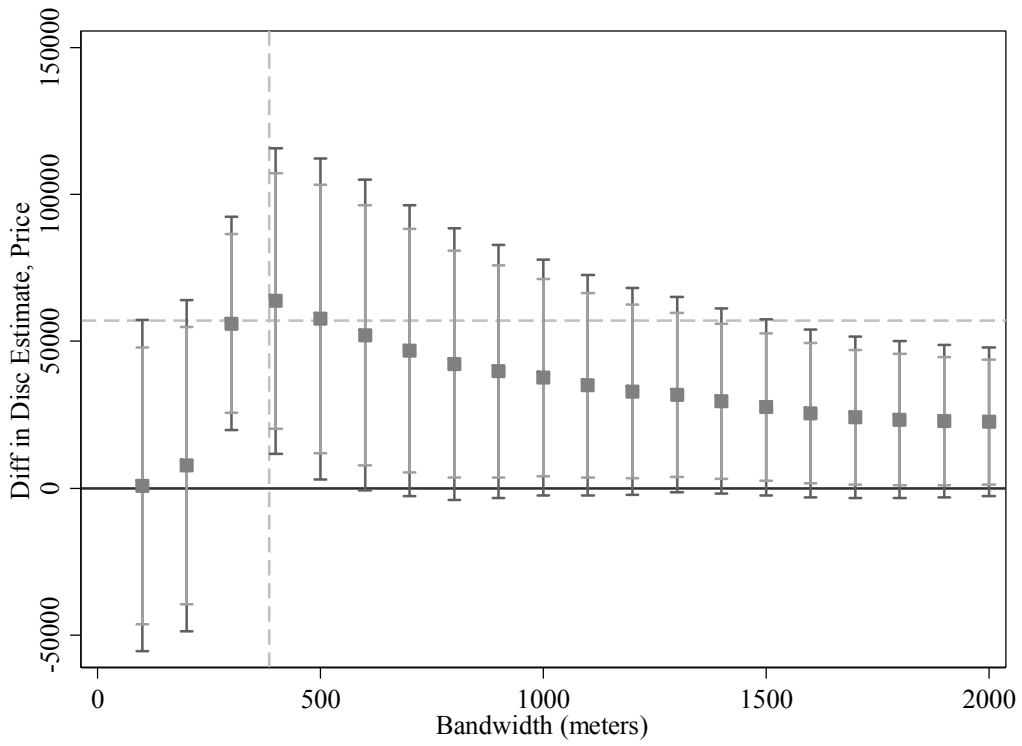
Note: Calonico et al 2014, 2016 estimate and optimal cross sectional bandwidth indicated

Table 1: Crimes in Southern California, 2002-2015

	Full Sample	Injunction Areas	Non-Injunction Areas	400m from Boundary	
				Injunction Areas	Non-Injunction Areas
All Part I	0.776	0.772	0.780	0.772	0.773
	(1.02)	(1.04)	(1.00)	(1.02)	(1.03)
Violent	0.154	0.152	0.156	0.153	0.153
	(0.449)	(0.450)	(0.447)	(0.462)	(0.444)
Property	0.622	0.620	0.624	0.619	0.620
	(0.939)	(0.960)	(0.953)	(0.938)	(0.956)
Social Loss	35,378	34,290	36,220	35,205	35,765
	(427,216)	(416,897)	(435,033)	(427,488)	(426,347)
N	1,226,784	535,200	691,564	270,814	221,972

Notes: Unit of observation is a 50 meter wide ring around a safety zone boundary, divided by census tract, by month ("tract-bin-month"). Standard deviations in parentheses. Crime is measured based on gang injunction boundaries at date of offense.

Table 2: Housing Characteristics and Values in Southern California, 2002-2015

	Full Sample	Injunction Areas	Non-Injunction Areas	400m from Boundary	
				Injunction Areas	Non-Injunction Areas
House Price	$440,463	$381,132	$459,796	$405,375	$487,740
	($574,956)	($314,398)	($636,052)	($636,052)	($1,229,256)
Number of Rooms	5.12	4.66	5.26	4.79	5.1
	(1.69)	(1.56)	(1.70)	(1.57)	(1.67)
Building Size	1,550	1,383	1,605	1,420	1,567
	(716.6)	(540.6)	(757.4)	(571)	(710)
Housing Age	61.0	69.4	58.3	66.5	63.0
	(23.6)	(25.6)	(22.3)	(25.4)	(23.3)
Area Home Value	$532,617	$489,108	$546,794	$519,519	$558,179
	($245,957)	($214,246)	($253,835)	($250,317)	($273,500)
N	347,685	126,242	221,443	59,488	59,116

Notes: Unit of observation is a Housing Transaction. Housing Characteristics measured in 2015. All prices measured in 2012 dollars. Standard deviations in parentheses.

Table 3: RD Estimates of the Impact of Gang Injunctions on Crime in Southern California

	Cross Section		Difference in Discontinuities			
Total Crime $\bar{x}= 0.774$	Linear RD		Linear RD		3rd order RD	
Effect of Leaving Gang Injunction	-0.004	-0.006	0.001	0.001	0.024 ***	0.024 ***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.003]	[0.003]
Bandwidth	1000 m	1000 m	1000 m	1000 m	1000 m	1000 m
Tract FE		X		X		X
Sample Size	978,506	978,506	1,821,314	1,821,314	1,821,314	1,821,314
R-Squared	0.01	0.01	0.01	0.01	0.01	0.011
Violent Crime $\bar{x}= 0.154$						
Effect of Leaving Gang Injunction	-0.002	0.0001	0.002	0.002	0.01 ***	0.01 ***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]	[0.001]
Bandwidth	1000 m	1000 m	1000 m	1000 m	1000 m	1000 m
Tract FE		X		X		X
Sample Size	978,506	978,506	1,821,314	1,821,314	1,821,314	1,821,314
R-Squared	0.01	0.01	0.01	0.01	0.01	0.01
Property Crime $\bar{x}= 0.621$						
Effect of Leaving Gang Injunction	-0.002	-0.006	-0.001	-0.001	0.013 ***	0.013 ***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.003]	[0.003]
Bandwidth	1000 m	1000 m	1000 m	1000 m	1000 m	1000 m
Tract FE		X		X		X
Sample Size	978,506	978,506	1,821,314	1,821,314	1,821,314	1,821,314
R-Squared	0.01	0.01	0.01	0.01	0.01	0.01

All estimates include controls for year and month of incident fixed effects. Standard errors in brackets allow for clustering at the tract level.

+ = p <0.1 , * = p < 0.05 , ** = p < 0.01, *** = p < 0.001

Table 4: RD Estimates of the Impact of Gang Injunctions on Ln(Housing Prices) in Southern California

	Cross Section		Difference in Discontinuities		
	Linear RD	Robust LLR	Linear RD	3rd order RD	Robust LLR
Effect of Leaving	0.041 +	0.040 **	0.029 *	0.030 *	0.034
Gang Injunction	[0.022]	[0.017]	[0.013]	[0.013]	[0.022]
Bandwidth	1000 m	366.33 m	1000 m	1000 m	
Effective Sample Size		66,156			
Sample Size	156,873	305,426	273,818	273,818	
R-Squared	0.49		0.44	0.44	

All estimates include controls for the natural log of the average home price in surrounding census tracts, the age of the house, total number of rooms, square footage, and year and month of sale fixed effects. Standard errors in brackets allow for clustering at the tract level. 95% confidence intervals in braces based on 2,000 bootstrapped replications.
$+ = p <0.1$, $* = p < 0.05$, $** = p < 0.01$, $*** = p < 0.001$

Table 5: RD Estimates of the Impact of Gang Injunctions on Housing Prices in Southern California

	Cross Section		Difference in Discontinuities		
	Linear RD	Robust LLR	Linear RD	3rd order RD	Robust LLR
Effect of Leaving	20,173 +	58,298 *	43,572 ***	43,739 ***	57,117 *
Gang Injunction	[16,846]	[28,121]	[9,458]	[9,420]	[25,037]
Bandwidth	1000 m	385.20 m	1000 m	1000 m	
Effective Sample Size		70,143			
Sample Size	156,873	305,426	273,818	273,818	
R-Squared	0.18		0.21	0.21	

All estimates include controls for the natural log of the average home price in surrounding census tracts, the age of the house, total number of rooms, square footage, and year and month of sale fixed effects. Standard errors in brackets allow for clustering at the tract level. 95% confidence intervals in braces based on 2,000 bootstrapped replications.
$+ = p <0.1$, $* = p < 0.05$, $** = p < 0.01$, $*** = p < 0.001$

Table 6: RD Estimates of the Impact of Gang Injunctions on Ln(Housing Prices) in Southern California, with 100 yard buffers

	Cross Section		Difference in Discontinuities	
	Linear RD	Robust LLR	Linear RD	3rd order RD
Effect of Leaving	0.05 *	0.056 ***	0.037 ***	0.037 ***
Gang Injunction	[0.022]	0[.015]	[0.013]	[0.013]
Bandwidth	1000 m	464.546 m	1000 m	1000 m
Effective Sample Size		85,239		
Sample Size	161,044	305,426	279,816	279,816
R-Squared	0.49		0.45	0.45

All estimates include controls for the natural log of the average home price in surrounding census tracts, the age of the house, total number of rooms, square footage, and year and month of sale fixed effects. Standard errors in brackets allow for clustering at the tract level. 95% confidence intervals in braces based on 2,000 bootstrapped replications.
+ = p <0.1 , * = p < 0.05 , ** = p < 0.01, *** = p < 0.001

Table 7: RD Estimates of the Impact of Gang Injunctions on Housing Prices in Southern California, with 100 yard buffers

	Cross Section		Difference in Discontinuities	
	Linear RD	Robust LLR	Linear RD	3rd order RD
Effect of Leaving	-2,598	-21,642	38,245 ***	38,281 ***
Gang Injunction	[18,587]	[34,731]	[9,758]	[9,768]
Bandwidth	1000 m	612.7 m	1000 m	1000 m
Effective Sample Size		109890		
Sample Size	161,044	305,426	279,816	279,816
R-Squared	0.19		0.22	0.22

All estimates include controls for the natural log of the average home price in surrounding census tracts, the age of the house, total number of rooms, square footage, and year and month of sale fixed effects. Standard errors in brackets allow for clustering at the tract level.
+ = p <0.1 , * = p < 0.05 , ** = p < 0.01, *** = p < 0.001

Table 8: RD Estimates of the Impact of Gang Injunctions on Housing Transactions in Southern California

	Cross Section		Difference in Discontinuities	
	Linear RD	Robust LLR	Linear RD	3rd order RD
Effect of Leaving	-0.032	-0.017	-0.016	-0.029
Gang Injunction	[0.038]	[0.038]	[0.055]	[0.025]
Bandwidth	1000 m	1000 m	375 m	1000 m
Effective Sample Size			90725	
Sample Size	208,830	208,830	394,512	344,718
R-Squared	.25	.25		.22

The unit of observation is distance-tract-year-month bin, and the outcome is the number of home sales with valid price information. All estimates include controls for the natural log of the average home price in surrounding census tracts, the age of the house, total number of rooms, square footage, and year and month of sale fixed effects. Standard errors in brackets allow for clustering at the tract level. 95% confidence intervals in braces based on 2,000 bootstrapped replications.

+ = p <0.1 , * = p < 0.05 , ** = p < 0.01, *** = p < 0.001

Table 9: Percent of Households who are movers, and characteristics of movers, in census tracts near safety zones, 2012-2016

	(1) Inside Active Safety Zones	(2) Outside Active Safety Zones	p(1=2)	(3) Inside Future Safety Zones	(4) Outside Future Safety Zones	p(3=4)	DID	p(DID =0)
% Movers	11.2	11	0.394	11.2	10.9	0.733	-0.1	0.95
% White	21.1	33	0	24.8	27.4	0.406	-9.3	0.006
% Asian	8.4	10.9	0	11.5	9.7	0.309	-4.4	0.024
% Black	10.2	8.2	0.006	2	9.5	0	9.6	0
% Hisp.	39.8	31.6	0	41	34.4	0.025	1.6	0.6
% < 100% FPL	26.7	20.7	0	18.3	23.7	0.048	11.3	0
% 100%-150% FPL	13.9	10.3	0	17	11.7	0.099	-1.7	0.595
% >150% FPL	59.4	69	0	64.7	64.6	0.991	-9.6	0.022

Mean ACS values with tract weights based on (1) number of homes sold within safety zones, (2) number of homes sold outside of safety zones, (3) number of homes sold in future safety zones, (4) number of homes sold outside of future safety zones. Movers identifying as other/multiple races not reported. P values assume no covariance across columns.

Appendix A1: Southern California Gang Injunctions

Orange County Gang Injunctions		
Injunction	City	File Date of Preliminary Injunction
West Trece	Westminster	6/30/1993
Santa Nita	Santa Ana Garden Grove	7/14/2006
Boys from the Hood	Anaheim	10/16/2006
Varrio Chico	San Clemente	11/1/2007
Varrio Viejo	San Juan Capistrano / Mission Viejo	11/1/2007
Orange County Criminals	Orange	6/4/2008
Orange Varrio Cypress (OVC)	Orange	2/1/2009
Hard Times	Garden Grove	12/03/2009
Jeffrey Street	Anaheim	4/15/2010
FOLKS	Anaheim	
Tokers Town	Fullerton	2/14/2011
Big Stanton	Stanton	10/12/2012
Eastside Anaheim	Anaheim	3/01/2012
Townsend	Santa Ana	6/12/2014
Plas	Placentia	09/21/2015
La Jolla	Placentia	09/21/2015
San Diego County Gang Injunctions		
Varrio Posole Locos	Oceanside	November 25, 1997
Varrio San Marcos	San Marcos	November 1, 1999
Varrio Mesa Locos	Oceanside	June 1, 2000
Linda Vista 13	Linda Vista	March 23, 2001
Westide & Diablos	Escondido	July 13, 2001
Nestor	San Diego	July 15, 2002
Logan Red Steps	San Diego	April 10, 2003
Center Street Gang	Oceanside	December 3, 2003
Vario Posole Locos	Oceanside	March 2, 2004
Eastside Piru	San Diego	May 14, 2004
Vista Home Boys	Vista	September 30, 2005
Old Town	National City	October 31, 2005
Varrio San Marcos	San Marcos	November 28, 2007
Westside & Diablos	Escondido	September 5, 2007 March 22, 2010
Center Street Gang	Oceanside	May 24, 2010
Varrio Posole Locos	Oceanside	January 11, 2011
Los Angeles City Gang Injunctions		
Blythe Street Gang		2/22/1993
18th Street Gang Southwest (Alsace Clique, Jefferson Park)		3/21/1997
18th Street (Pico-Union) I (Pico Union II)		8/1/1997
Mara Salvatrucha I (Mara Salvatrucha II)		3/4/1998
18th Street Gang (Shatto Park Locos, Columbia Little Cycos) (10 Gang)		5/1/1998
Harpys		6/16/1998

|	
Langdon Street Gang	3/26/1999
Culver City Boys	4/23/1999
Venice Shoreline Crips	5/21/1999
Harbor City & Harbor City Crips	11/12/1999
Venice 13 Gang	2/4/2000
Pacoima Project Boys	3/20/2001
Eastside Wilmas Gang & Westside Wilmas Gang	5/23/2001
Canoga Park Alabama	1/29/2002
18th Street - Pico Union II (Hoover St, Red Shield)	4/16/2002
KAM	10/3/2002
Avenues	12/17/2002
Rolling 60 Crips	7/8/2003
Bounty Hunters	8/26/2003
18th Street - Hollywood	11/4/2003
Mara Salvatrucha II	3/9/2004
Wilshire 18th Street	4/6/2004
38th Street	7/28/2004
Varrio Nuevo Estrada	8/12/2004
42nd Street, 43rd Street & 48th Street Gangster Crips	12/16/2004
Grape Street Crips	3/10/2005
Hoover & Trouble	3/15/2005
18th Street, Crazy Riders, Down in Action, Krazy Town, La Raza Loca, Orphans, Rockwood Street Locos, Varrio Vista RIFA, Wanderers, Witmer Street Locos	5/2/2005
Big Hazard	6/28/2005
School Yard Crips & Geer Street Crips	3/23/2006
Playboys	5/8/2006
Black P Stones	5/25/2006
White Fence (Hollywood)	6/8/2006
Clover, Eastlake & Lincoln Heights	9/20/2006
Dogtown	10/6/2006
Highland Park	10/6/2006
Rolling 40, 46 Top Dollar Hustler & 46 Neighborhood Crips	11/5/2007
5th & Hill	11/16/2007
204th Street & Eastside Torrance	12/7/2007
San Fer	4/10/2008
All for Crime, Barrio Mojados, Blood Stone Villains, Florencia, Oriental Boyz, Pueblo Bishops	9/5/2008
Eastside Pain	10/10/2008
Temple Street	11/3/2008
Toonerville	11/24/2008
Barrio Van Nuys	5/6/2009
Fremont (Swan Bloods, Florencia 13, Main Street Crips, 7 Trey, Hustlers/Gangster Crips_	6/12/2009
Grape Street Crips (Central)	4/7/2010
Rancho San Pedro	4/27/2011
Columbus Street	2/20/2013
Glendale Corridor (Big Top Locos, Crazys, Diamond Street Locos, Echo Park Locos, Frog Town Rifas, Head Hunters)	6/11/2013

Appendix A2: Sources used to create injunction boundaries and retrieve dates

San Diego County District Attorney	https://www.sdcda.org/preventing/gangs/injunctions.html
Los Angeles City Attorney	https://www.lacityattorney.org/gang-injunction
Orange County	Data were not made freely available by the Orange County District Attorney's Office, so data were obtained from a combination of sources: legal documents, press releases, news stories, and maps.
Gang Injunctions and Gang Abatement Book	O'Deane, Matthew D. Gang injunctions and abatement: Using civil remedies to curb gang-related crimes. CRC Press, 2011.

Appendix Figure A3: Gang Injunctions and Violent Crime

Monthly Violent Crimes
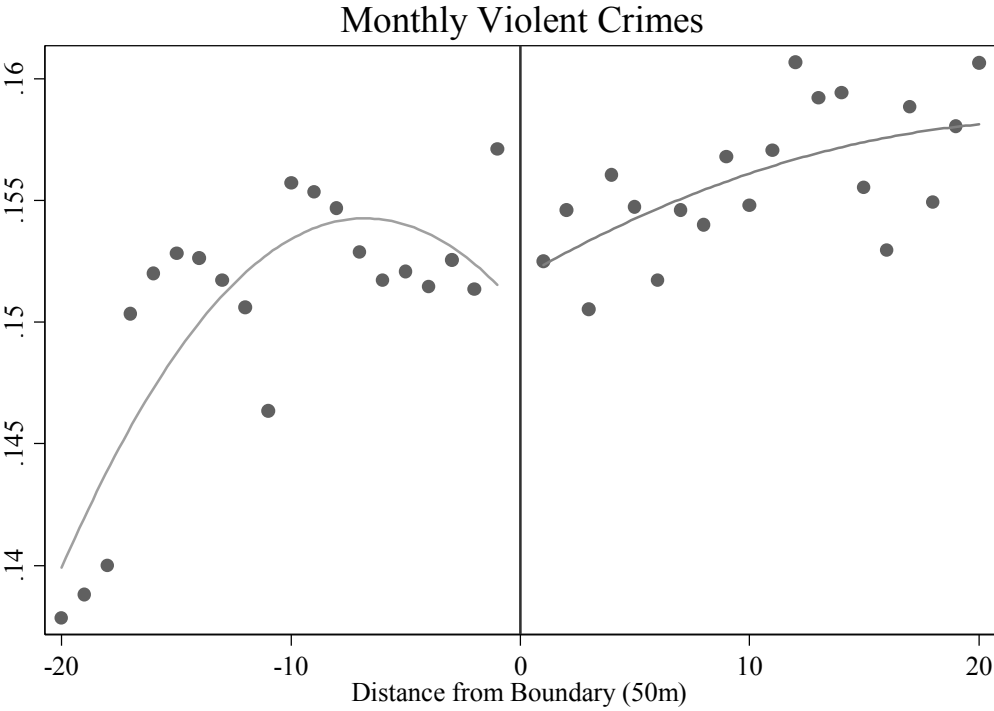
Appendix Figure A4: Gang Injunctions and Property Crime

Monthly Property Crimes

Distance from Boundary (50m)
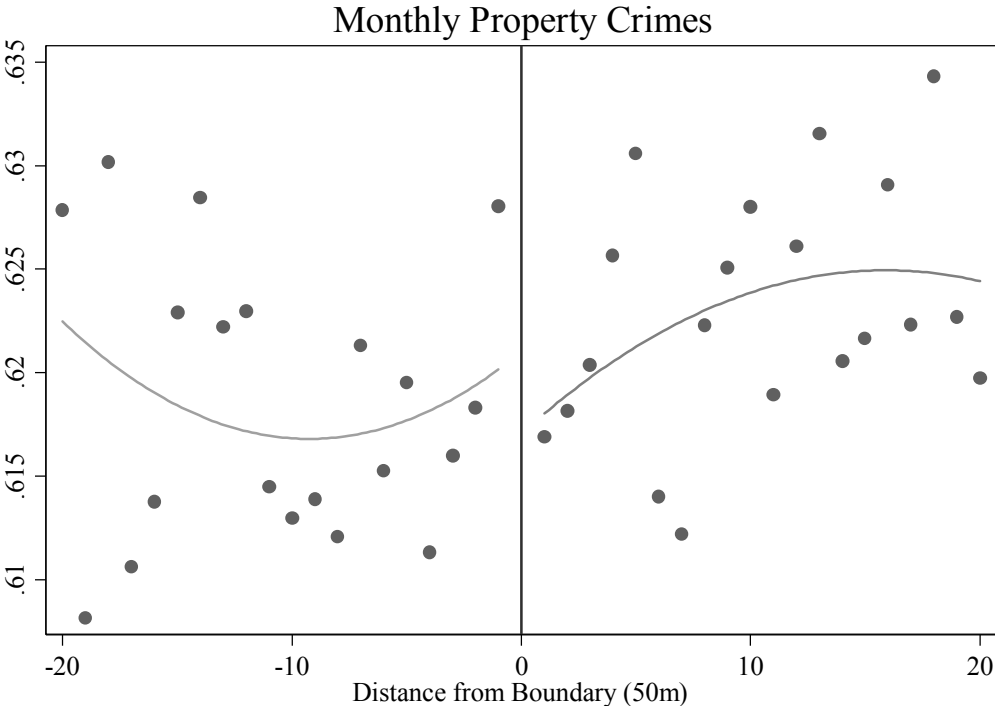
Appendix Figure A5 Gang Injunctions and Violent Crime, Future Boundaries

Monthly Violent Crimes

Distance from Future Boundary (50m)
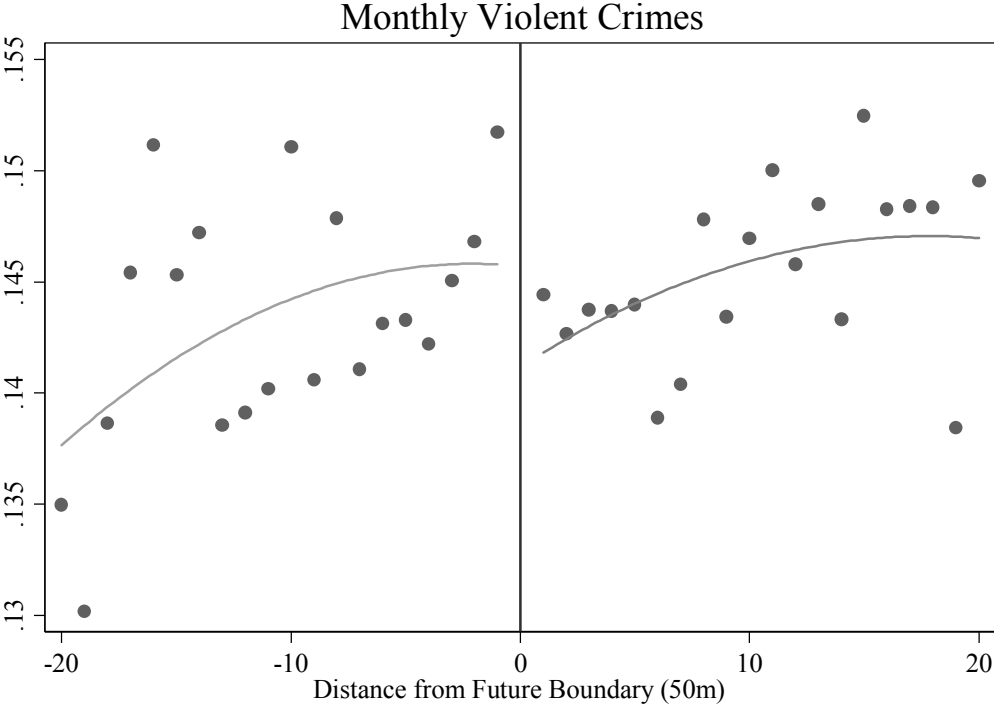
Appendix Figure A6 Gang Injunctions and Property Crime, Future Boundaries

Monthly Property Crimes

Distance from Future Boundary (50m)
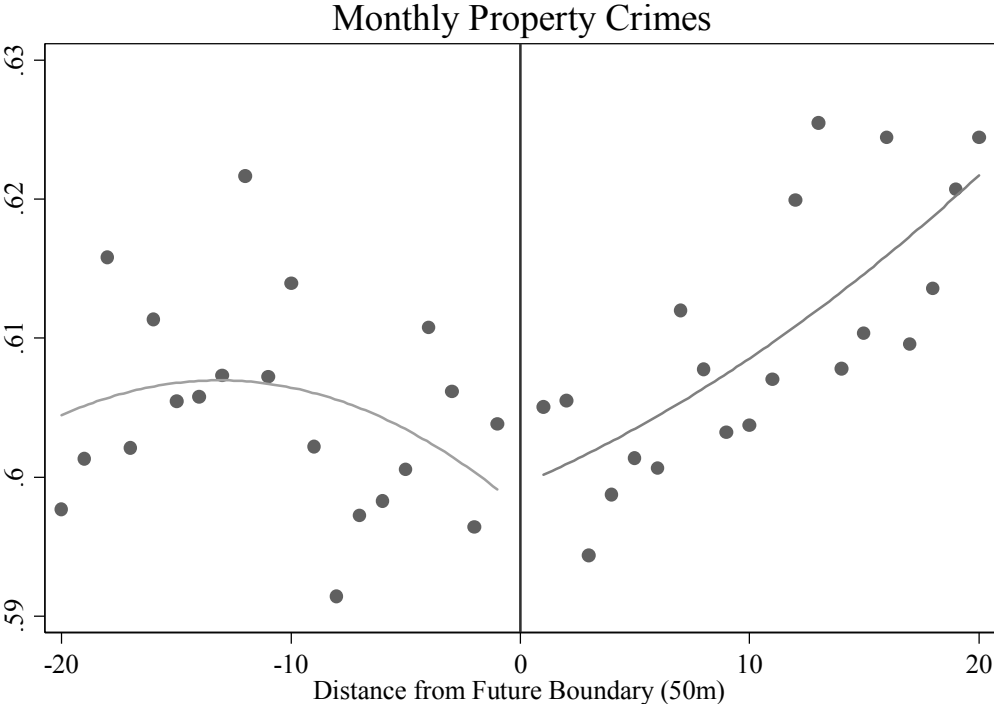
Appendix Figure A7 Gang Injunctions and Year of Sale

Year of Sale
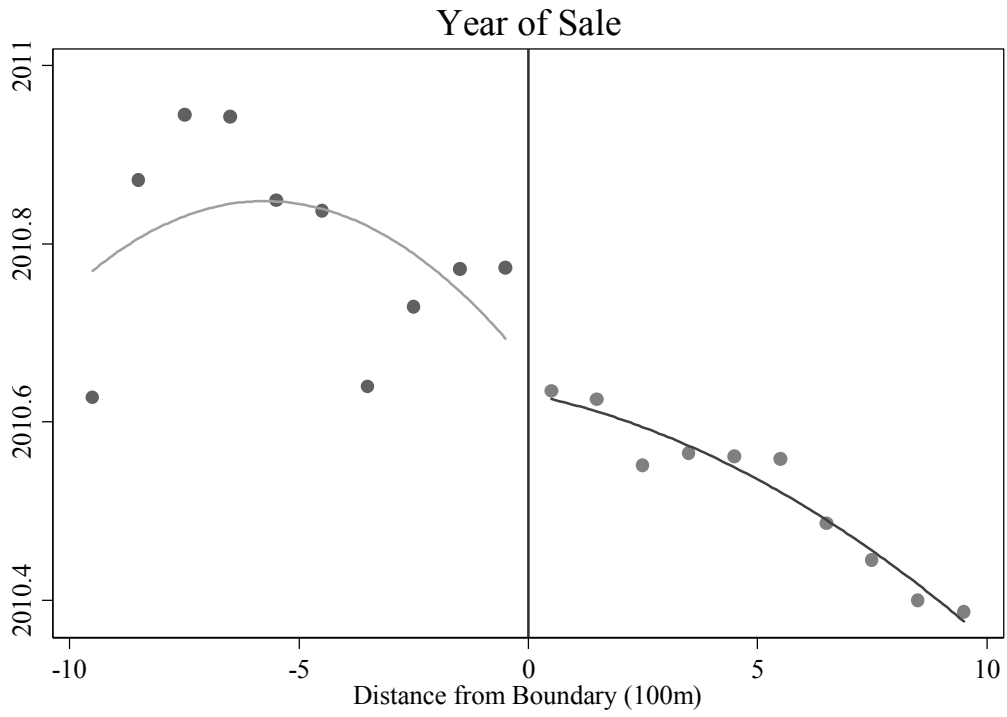
Appendix Figure A8 Gang Injunctions and Month of Sale [1-12]

Month of Sale
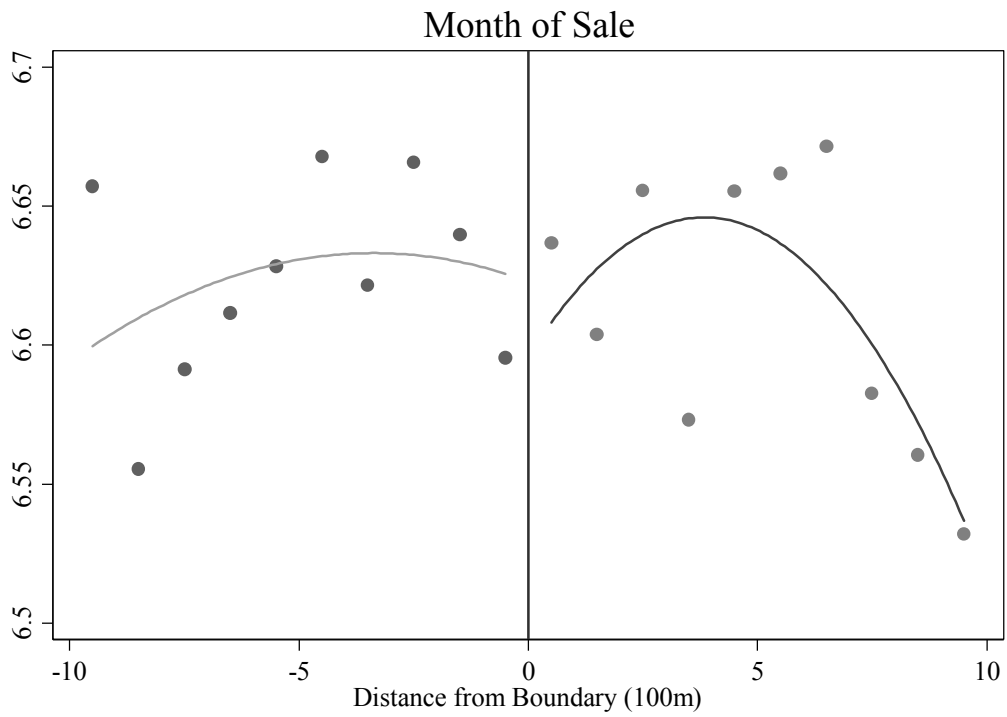
Appendix Figure A9 Gang Injunctions and Number of Transactions

Number of Transactions

Home Transactions
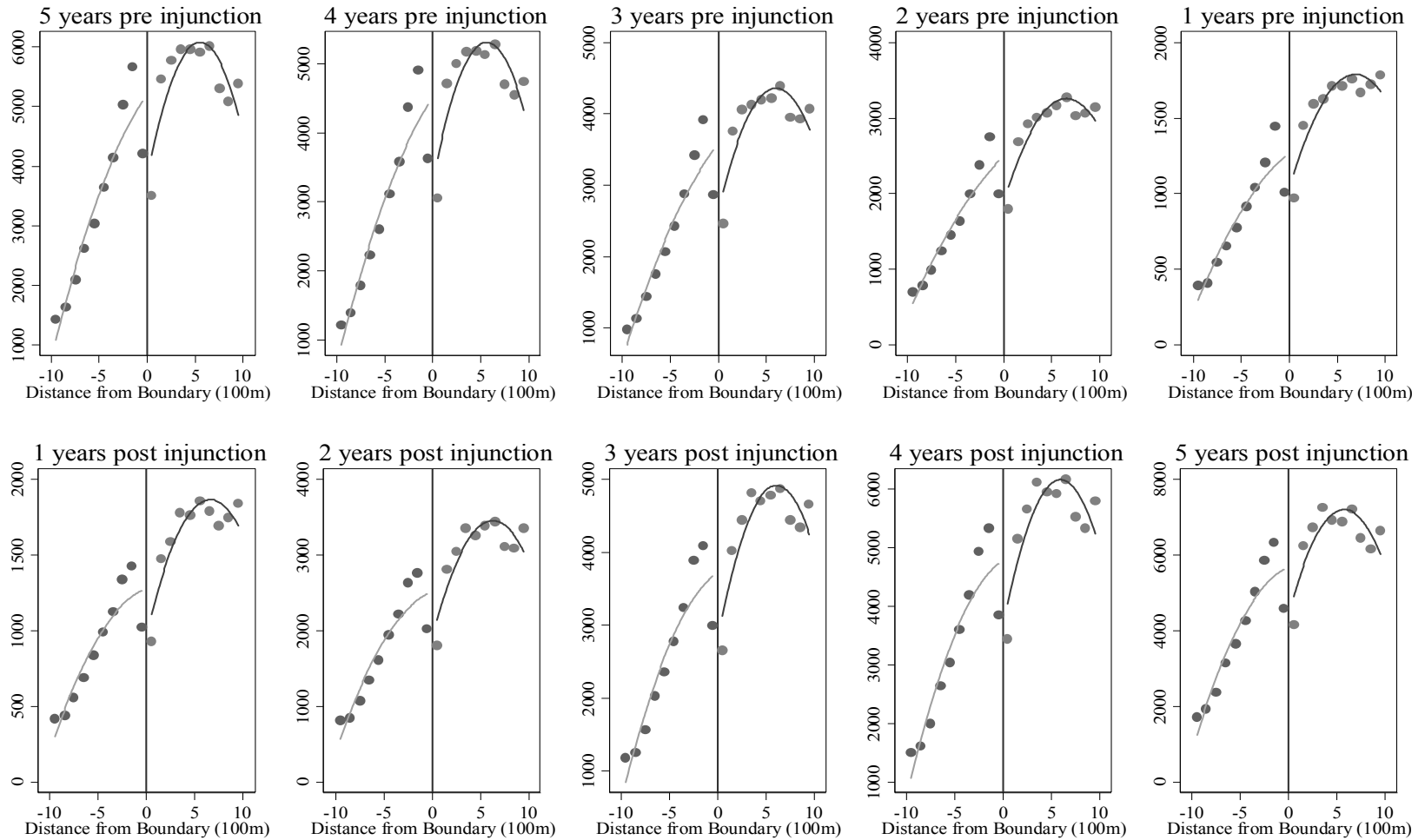
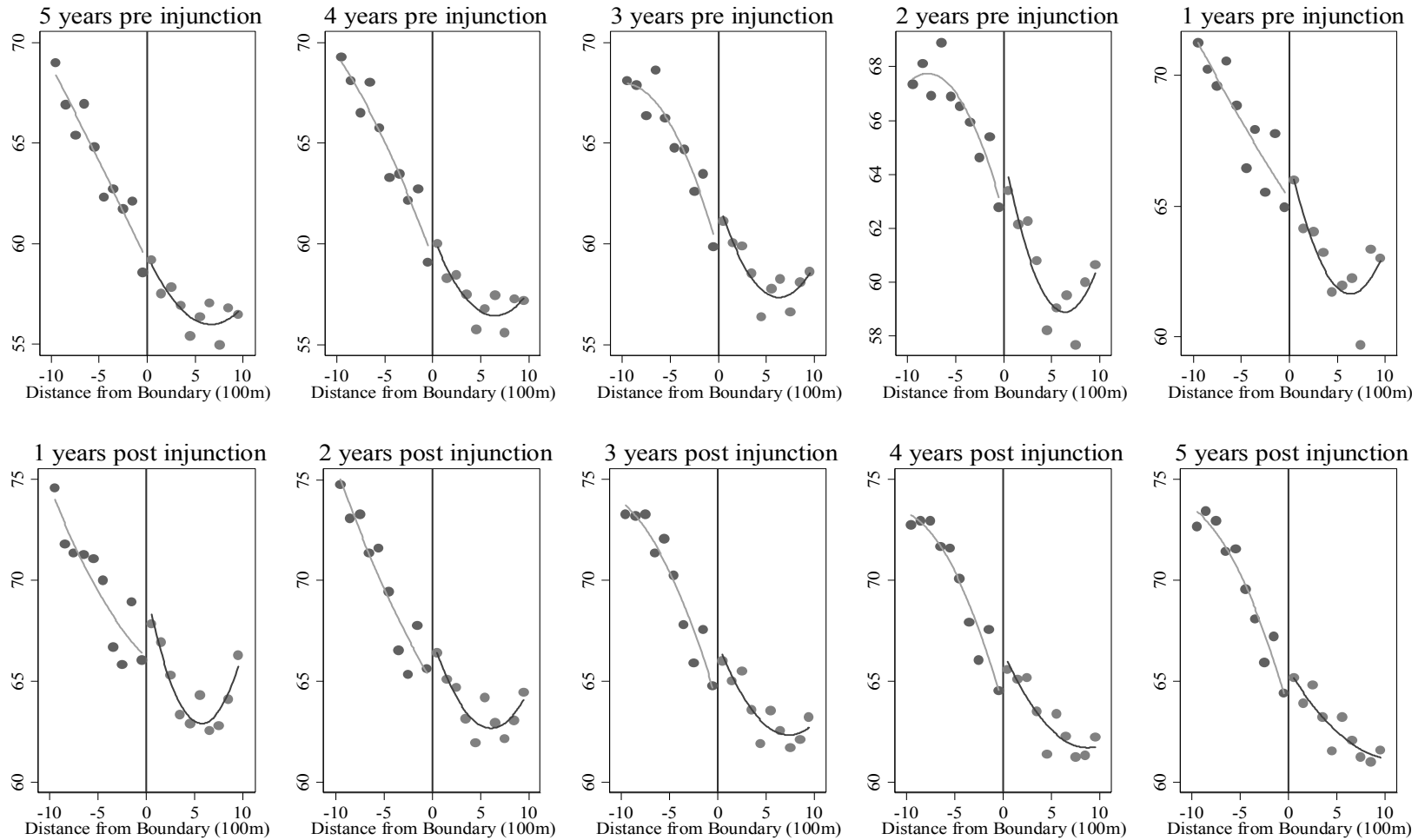Appendix Figure A11 Gang Injunctions and Area Home Values, By Year

Mean Ln(Area Home Values)
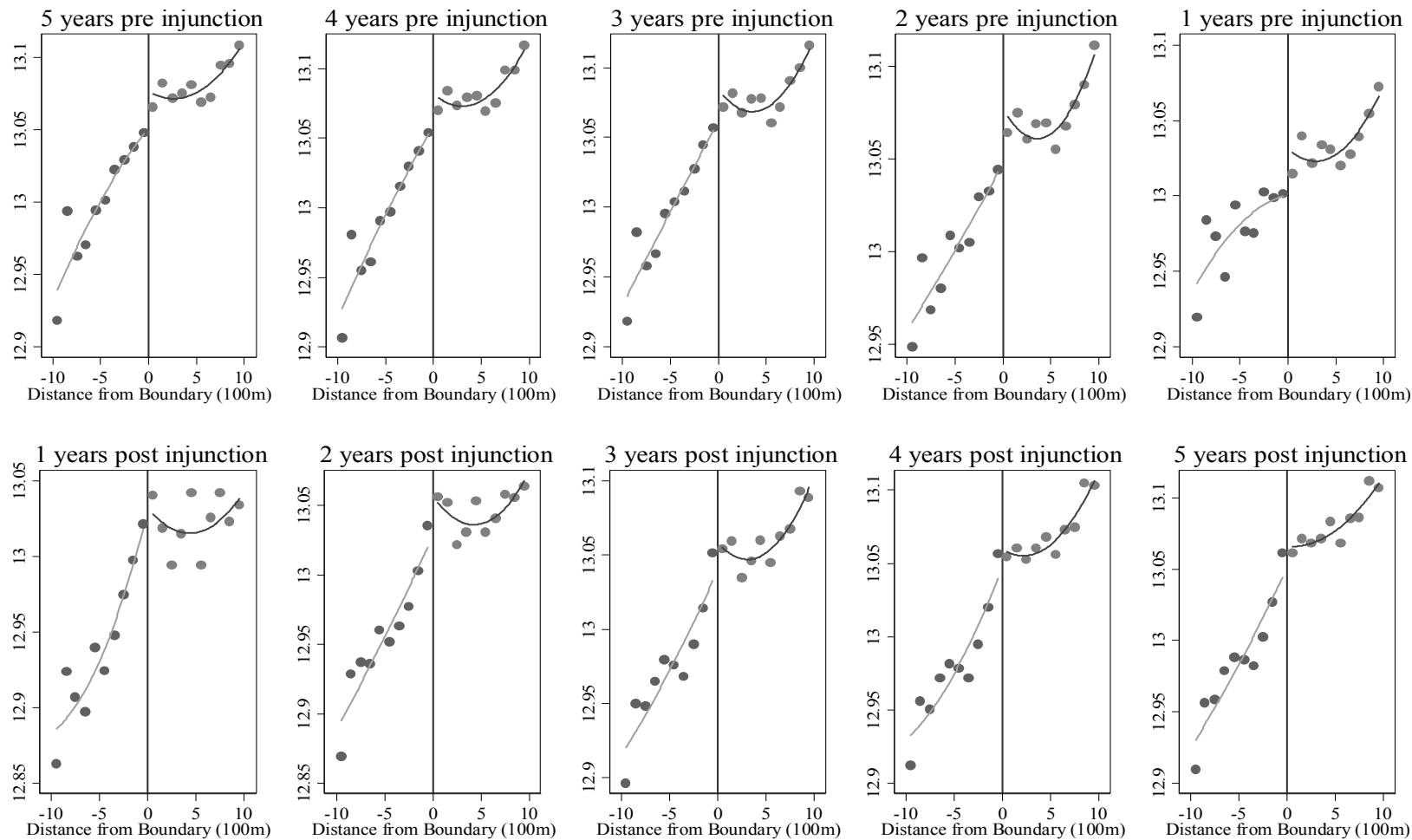
Appendix Figure A12 Gang Injunctions and Square Footage, By Year
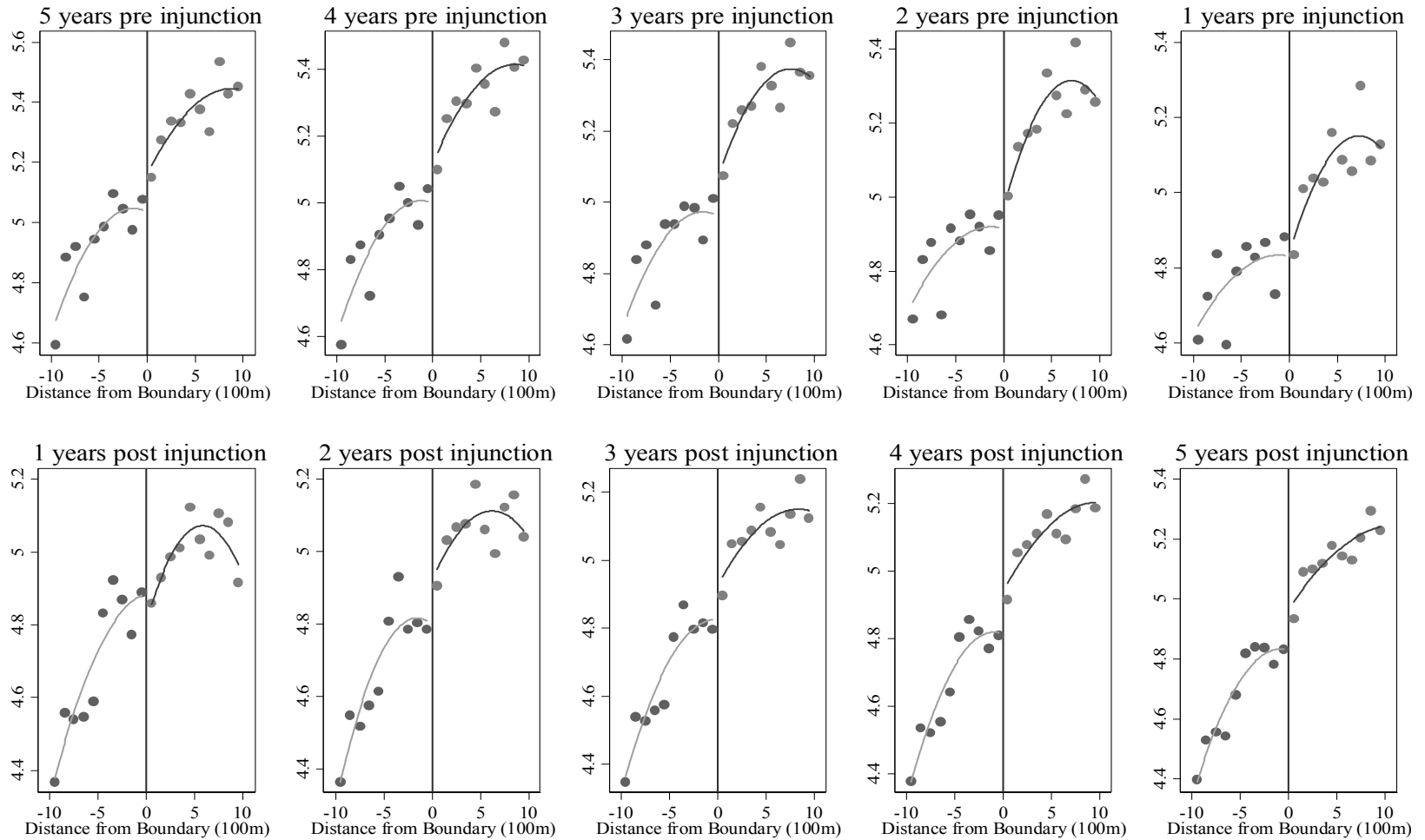
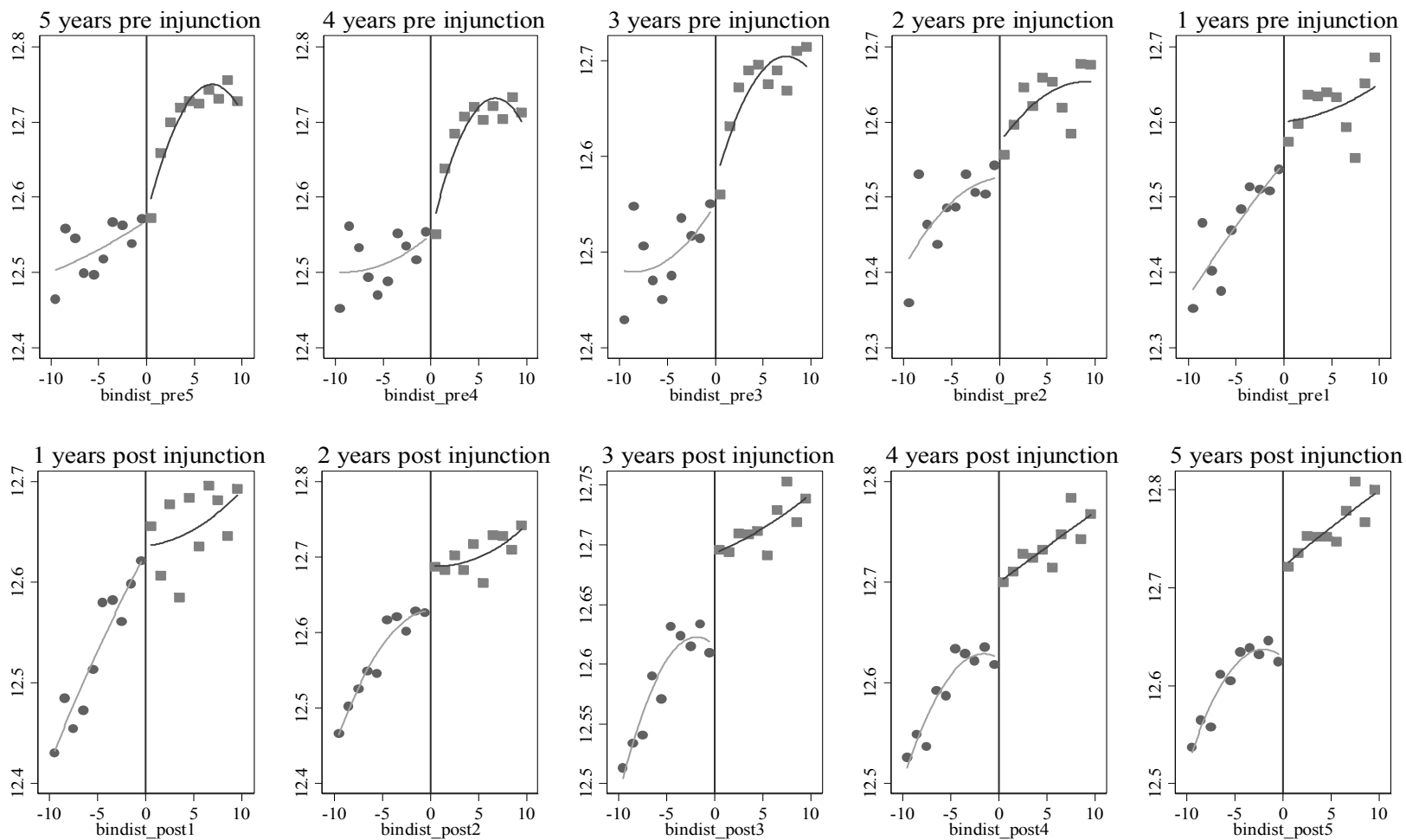# Mean Square Footage
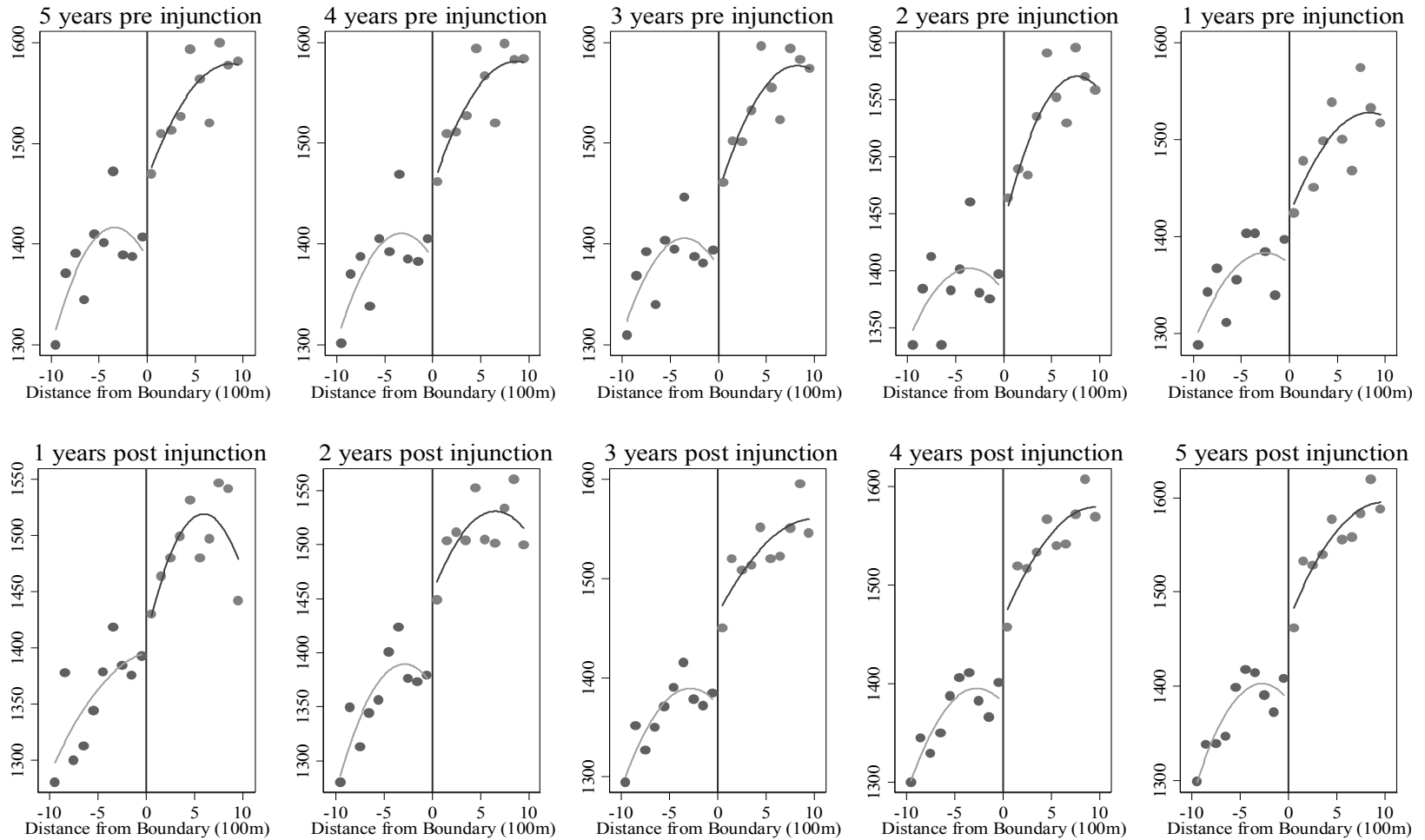
Mean House Age

Appendix Figure A14 Gang Injunctions and Total Rooms, By Year

Mean Total Rooms

Appendix Figure A15 Gang Injunctions and Ln(Home Sales), with 100 Yard Buffers

Mean Ln Home Sales

Appendix Figure A16 Gang Injunctions and Home Sales, with 100 Yard Buffers

Mean Home Sales