The Ineffectiveness of 'Observe and Report' Patrols on Crime

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Abstract: The deterrence effect of police on crime has been well established using modern quasi-experimental micro-econometric methods. Although the results from these studies uniformly suggest that police spending is cost justified, it is worth exploring whether police-like alternatives can deter crime even more cheaply. Unarmed private security personnel that conspicuously patrol a neighborhood have the potential to cheaply leverage the ability of police to be informed of crimes while also providing direct deterrence on their own. In the Fall of 2013, a neighborhood in Oakland, CA mounted a campaign to provide observe and report security patrols to augment the publicly provided policing in the area. While the initial effect of the additional security was a drop in crime, it quickly evaporated, calling into question the value of security forces that do not have the ability to apprehend criminals directly.

1. Introduction

The empirical micro literature demonstrates that police have a large deterrent effect on crime. Although Levitt's (1997) important contribution was later shown to be in error (McCrary 2002; Levitt 2002), subsequent credible work finds that elasticities of crime with respect to police are likely substantial at least over very short periods (Di Tella and Schargrodsky 2004; Klick and Tabarrok 2005; and Draca, Machin, and Witt 2011). These short-term elasticities are largely borne out over the longer term in designs that, while perhaps not sharing as dramatic a shock for identification purposes as the short-term studies, likely involve more policy relevant settings (Evans and Owens 2007; Heaton, Hunt, MacDonald, and Saunders 2016; MacDonald, Klick, and Grunwald 2016). In a benefit cost framework, these estimates imply that police provide considerable social value with Chalfin and McCrary (2018) suggesting that an additional dollar spent on police leads to more than $1.60 in social benefit, implying that many jurisdictions may be substantially under-policed.

That said, depending on the mechanism by which police generate deterrence, it might be possible to generate these benefits at substantially lower cost. If the mere presence of a conspicuous monitor generates deterrence, uniformed security guards are likely to be much cheaper than police due to reduced training costs as well as the possibility of hiring personnel outside of the civil service and/or police union framework. Security guards acting in an observe and report capacity might also effectively leverage police manpower, serving systematically as additional eyes and ears on the street.

The work on Business Improvement Districts (BIDs) at least hints in this direction (Brooks 2008; Cook and MacDonald 2011). In BIDs, neighborhoods voluntarily pay more in taxes to supply additional public goods, including increased security. These analyses have generally found that the spending leads to reductions in crime, but it is not possible to sort out the effects of each individual portion of the spending, which in addition to supplying security guards also generally includes spending on sanitation projects and security cameras. Also, the degree of community support required for the creation of the BIDs may raise some endogeneity concerns due to changes in unobservable civic engagement.

To focus on a plausibly exogenous shock that arguably isolates the effect of observe and report type security patrols alone, we examine the introduction of unarmed patrols in the Lower Rockridge neighborhood of Oakland in late 2013. These patrols were financed by a crowd funding campaign after a resident was the victim of an armed robbery at a carpool station in the neighborhood. Using geo-coded crime data from 2007 to 2016, we examine the effect of these patrols on crime using difference-in-difference and synthetic control methods. Although the initial effect of these patrols was to lower crime, this decline disappeared within six months.

These results suggest that conspicuous monitors are insufficient to generate the deterrent effect associated with police. Presumably, as criminals learn that the monitors do little more than is done by regular residents alone, their criminal behavior resumes unimpeded. The hope that observe and report security patrols might prove to be lower cost substitutes for police officers is not borne out. For private security to generate comparable deterrence, it appears as though something like the armed patrols with arrest powers studied in MacDonald, Klick, and Grunwald (2016) and Heaton, Hunt, MacDonald, and Saunders (2016) might be necessary.

In the following sections, we discuss the value of estimating the deterrence effect of alternative security patrols as substitutes for police patrols. We also provide background for the private security patrol intervention in Oakland, describe the data, research design, results, and conclusions.

2. The Potential Value of Non-Police Security Patrols

As discussed in the introduction, the best estimates suggest that police generate significant deterrence. This stands in contrast to many of the other crime policy levers available (Chalfin and McCrary 2017)[1] and the value of that deterrence more than offsets the budgetary costs associated with employing the police officers. Using an annual fully-loaded cost estimate of $130,000 per officer, Chalfin and McCrary (2018) find that if one uses the mean estimate for the value of a statistical life from the labor economics literature to value police-deterred homicides and basic valuations for other averted crimes, a dollar spent on police generates a return of more than 60 percent. Basic public finance principles then would suggest that many more police should be hired.

However, political constraints and recruiting[2] and training realities might limit expanding police forces substantially at least in the short run. Further, if other police-like personnel can generate comparable deterrence at lower cost, they may represent a superior investment. The campus police studied by MacDonald, Klick, and Grunwald (2016) generate similar deterrence levels as those associated with publicly provided police, but their cost levels are comparable, most likely since they receive similar training which is necessitated by the fact that they carry guns and have arrest powers within their campus jurisdiction.

Lower level security personnel, which will generally not be armed, nor will they have arrest power, are available at significantly lower costs. Unarmed security guards might cost as little as $10-$20 per hour.[3] BLS estimates the annual mean income of security guards as less than $31,000 per year, as compared to the $65,000 figure for police officers in 2017. The cost gap may be even larger than is suggested by these income figures since benefit costs for police are substantial and civil service protections will make it costly to dismiss an officer. These ancillary costs will be substantially lower for security personnel. Indeed, data from the Los Angeles BIDs estimate $21,000 expenditure per averted violent crime (Brooks 2008), a measure at the very low end of estimates of police costs of $20,000 to $86,000 (Levitt 2004).

3. The Safer Rockridge Initiative

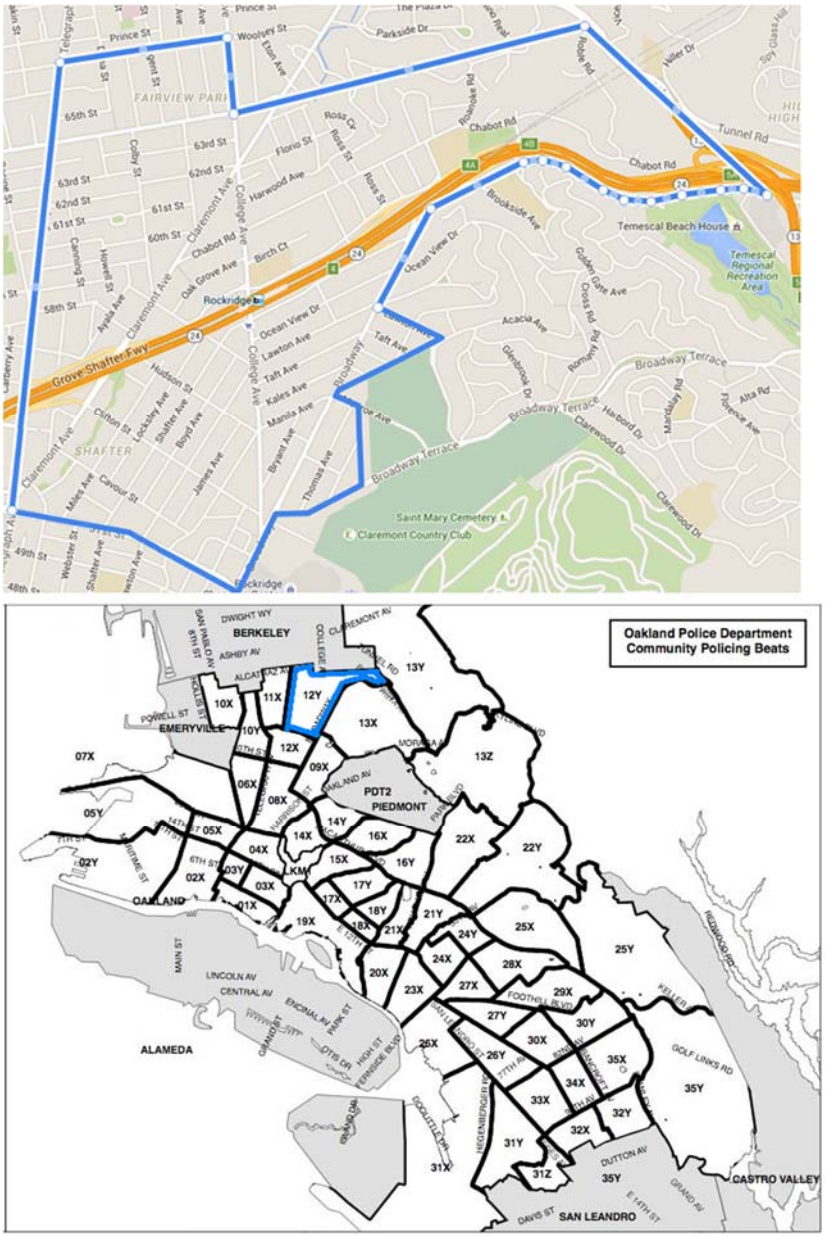
On September 2013 a resident of Lower Rockridge, a neighborhood in the city of Oakland, California, launched a crowd-funding campaign for a private security patrol after experiencing an armed robbery at a carpool station. The specific area proposed for the patrol was the area north of Highway 24, west of College Ave, east of Telegraph Ave., and south of Woolsey St (Lower Rockridge North/West in the upper panel of Figure 1).

Figure 1:

[1] A noteworthy exception is reported by Cheng and Long (2018), who study the French Quarter Task Force in New Orleans to show that an effective use of monitoring and incentives for security officers can further improve police services.

[2] When Washington, D.C. significantly increased its police force in 1989-1990, it ended up hiring gang members and other candidates who might not have been optimally placed as police officers. See Keith A. Harriston and Mary Pat Flaherty, D.C. Police Paying for Hiring Binge, The Washington Post, August 28, 1994, page A1.

[3] https://unitedamericansecurity.com/how-much-do-security-guards-cost/



After the announcement of this crowd-funding campaign, two other campaigns were formed in immediately adjacent neighborhoods (Lower Rockridge South and Lower Rockridge North/East). Each of the crowd-funding campaigns successfully funded. Subsequently, the patrol for Lower Rockridge North/East was combined with North/West (forming Lower Rockridge North) and the boundary for Lower Rockridge South was slightly extended. Patrol services began on November 4, 2013.[4] The area covered by Safer Rockridge patrols extends for approximately 0.4 square miles and it is reported in the upper panel of Figure 1.

[4] A crowdfunding campaign named "CrowdTilt" was used for the first four months of the patrols, through February 2014. Subsequent funding has come from community contributions to a new non-profit organization, Safer Rockridge, that was created by the organizers of the original CrowdTilt campaigns.

During the period covered by the analysis, Safer Rockridge patrolling activity varied between 35 and 45 weekly hours and involved one or two security officers at time patrolling the area by car or by foot.[5] The patrol officers employed by Safer Rockridge are unarmed. The addition of private patrols determines a considerable increase of security manpower, since the Oakland Police Department in a regular day employs a single patrol unit for covering an area equivalent to the Safer Rockridge patrolling zone.
The mission of the Safer Rockridge organization is to "increase the safety of Lower Rockridge by providing unarmed eyes and ears only private security patrols to the neighborhood."[6] The security patrol officers are trained to observe and report criminal activity, and their first response to any criminal or safety concern will be to contact the Oakland Police Department. "The primary purpose of the patrols is to create a visual deterrent to crime, to operate as our eyes and ears during peak crime hours, and when appropriate, to communicate and coordinate with the police."[7] Patrol members are recognizable by their service uniforms and their primary duty consists of observing and reporting suspicious activities. Active intervention to help anyone in need only occurs "when it is safe to do so."[8]

The service offered by the security officers is independent from an individual's contribution to the Safer Rockridge organization. Therefore, an officer will not engage in more frequent patrolling of any specific area within the stated boundaries, even if the location hosts residents who contributed a larger share of the Safer Rockridge revenue. Similarly, if a specific street within the patrolling area does not include contributors to Safer Rockridge, the service remains the same as in the rest of the patrolling area.

4. Data

We obtained data for crime episodes in the city of Oakland collected by the Oakland Police Departments and by the Urban Strategies Council. The dataset includes 662,947 crime episodes in Oakland spanning from January 2007 to October 2016. Table 1 reports descriptive statistics of the crime data available for the area associated with the Safer Rockridge program (we will refer to the area where the Safer Rockridge patrols are employed as "Safer Rock" onward) and in the remainder of the city.

Each crime record contains precise geocoded information about the event location. Using GIS software we determined whether the crime event took place within Safer Rock or outside its boundaries. Crimes outside Safer Rock were also associated to the respective Oakland police beat.[9] Safer Rock overlaps almost

[5] During the period we have data for, the patrols were operating following this schedule: November 2013 - March 2014 12 hours per day Monday to Friday 11am-11pm with two patrols, one patrol Saturday 3-11pm; after March 2014 it has been 2 patrols always, March 2014 4 hours per day Monday to Friday 6pm-10pm; April 2014 8 hours per day Monday to Friday 3pm-11pm, 4 hours per day Saturday and Sunday 6-10pm; From May 2014 until October 2016 8 hours per day Monday to Friday 3pm-11pm, 6 hours per day Saturday and Sunday 5-11pm.
[6] http://www.rockridgehome.com/charitable-mission.html
[7] http://saferrockridge.org/about-us/our-mission
[8] http://saferrockridge.org/about-us/about-the-patrols
[9] Police beats are an artefactual division of a city territory introduced in the nineteenth century with the goal of coordinating the city coverage and the effectiveness of policing in a period when radio mobile communication did not exist. The division of cities into police beats remained in place until after the advent of mobile radio communication systems, mostly with the goal of simplifying and strengthening the relationship between communities of residents and police departments. As a matter of fact, there are no visible boundaries between beats and residents are not usually aware of their beat number or of their beat boundaries. Indeed, the organizers of the crowd-funding campaigns acknowledge that, for the choice of the patrol area borders, the area chosen for the patrol service simply constitutes the aggregation of three areas surrounding the locations were the organizers themselves

perfectly Oakland police beat 12Y, and additionally includes a few blocks belonging to police beats 13X and 13Y. The lower panel of Figure 1 reports the map of Oakland Police beats. In the analysis that follows, we compare crime data from Safer Rock with crime data in the non-treated area, and we collapse data at the beat level.

We classify crimes by dividing them in three categories: total crimes, violent crimes (assault, domestic violence, homicides, rape and robbery), and property crimes (the non-violent crimes).

Table 1: Average Monthly Crime

(standard deviation in parentheses)			
	Total Crime	Property Crime	Violent Crime
Safer Rock Area	89.3	76.0	13.3
	(33.9)	(28.9)	(8.5)
Average Crime in Other Beats	78.6	57.6	20.9
	(69.1)	(51.1)	(20.5)

5. Analysis

5.a Difference-in-Difference

We collapsed the data to the monthly beat level starting with data from January 2007 running through October 2016. In our first examination, we estimate a standard difference-in-difference model with beat level fixed effects and period fixed effects, clustering our standard errors at the beat level. In Table 2, we examine total crime, property crime, and violent crime.

Table 2: Effect of Safer Rock Patrols
Difference-in-Difference Model

(Standard Errors Clustered by Beat)			
	Total Crime	Property Crime	Violent Crime
Safer Rock Intervention	-6.62**	-5.47**	-1.15
	(3.23)	(2.37)	(0.89)
Beat Fixed Effects	Yes	Yes	Yes
Period Fixed Effects	Yes	Yes	Yes

In the basic difference-in-difference model, the Safer Rock intervention generates a statistically significant reduction in total crime and property crime, but the reduction in violent crime is not statistically significant. Proportionately, the overall crime reduction is about 7 percent as is the drop in property crime.

were residing. For policing reasons, the organization of beats is now less important compared to that of police districts. See, for instance, the Oakland City Council Resolution No. 79235, April 13 2005, in which the organization and role of police beats is discussed.

If we examine a shorter window, namely six months before and six months after the intervention, the effects are substantially larger as seen in Table 3.

Table 3: Effect of Safer Rock Patrols – 6 Months Before and After
Difference-in-Difference Model

(Standard Errors Clustered by Beat)			
	Total Crime	Property Crime	Violent Crime
Safer Rock Intervention	-20.68***	-20.72***	0.05
	(1.86)	(1.34)	(0.64)
Beat Fixed Effects	Yes	Yes	Yes
Period Fixed Effects	Yes	Yes	Yes

In Table 4, we allow for a baseline shift effect of the interaction and then additional individual period treatment effects.

Table 4: Effect of Safer Rock Patrols – Changing Over Time
Difference-in-Difference Model

(Standard Errors Clustered by Beat)			
	Total Crime	Property Crime	Violent Crime
Safer Rock Intervention	-27.08***	-31.32***	4.24***
	(1.78)	(1.45)	(0.44)
Additional Effects of Intervention			
Months 4-6	3.82**	10.01***	-6.19***
	(1.66)	(1.29)	(0.46)
Months 7-9	11.18***	18.63***	-7.45***
	(1.65)	(1.36)	(0.43)
Months 10-12	8.98***	11.65***	-2.68***
	(1.65)	(1.36)	(0.42)
Months 13-15	39.32***	45.04***	-5.73***
	(1.52)	(1.20)	(0.49)
Months 16-18	75.27***	82.23***	-6.95***
	(1.63)	(1.38)	(0.49)
Months 19-21	52.72***	58.34***	-5.62***
	(2.03)	(1.45)	(0.72)
Months 22-24	7.43*	13.98***	-6.55***
	(3.91)	(2.61)	(1.34)
Months 25-27	6.96**	12.68***	-5.73***
	(2.73)	(1.95)	(0.85)
Months 28-30	13.80***	19.46***	-5.66***
	(1.87)	(1.43)	(0.54)
Months 31-33	5.00***	10.70***	-5.69***
	(1.74)	(1.35)	(0.52)
Months 34-35	21.10***	27.50***	-6.41***
	(1.94)	(1.42)	(0.60)
Beat Fixed Effects	Yes	Yes	Yes

Period Fixed Effects	Yes	Yes	Yes

Table 4 makes it clear that for total crime and property crime, the initial reduction in crime associated with the Safer Rock intervention dissipates substantially after month six and in many subsequent periods the joint effect (baseline effect plus specific period effect) is not significantly different from zero. For violent crime, there appears to be no deterrence effect of the Safer Rock intervention.

One concern with the foregoing analysis might be that the difference-in-difference approach is inapt as there are substantial differences in crime levels and trajectories across police beats in Oakland. If the Table 2 regression is re-estimated allowing for differential period fixed effects for the Safer Rock area in the pre-intervention period, for each of the three outcomes, the Safer Rock specific pre-period fixed effects are jointly significant (in each case $p < 0.01$). This draws into question whether the difference-in-difference approach can credibly isolate the causal effect of the Safer Rock intervention.

To search for a suitable comparison beat, we re-ran the original Table 2 difference-in-difference specification using the Safer Rock data and iteratively using each other beat as a single comparison jurisdiction, including the Safer Rock specific pre-intervention period fixed effects. Although many potential comparators led to seemingly suitable comparisons (with Safer Rock specific pre-intervention period fixed effects being jointly insignificant), the treatment effects were all over the map for each outcome, as seen in Figures 2, 3, and 4 below. These figures show kernel densities for the estimated treatment effects from the regressions in which the Safer Rock specific pre-intervention period fixed effects generate F statistics with p values greater than 0.1.

Figure 2:

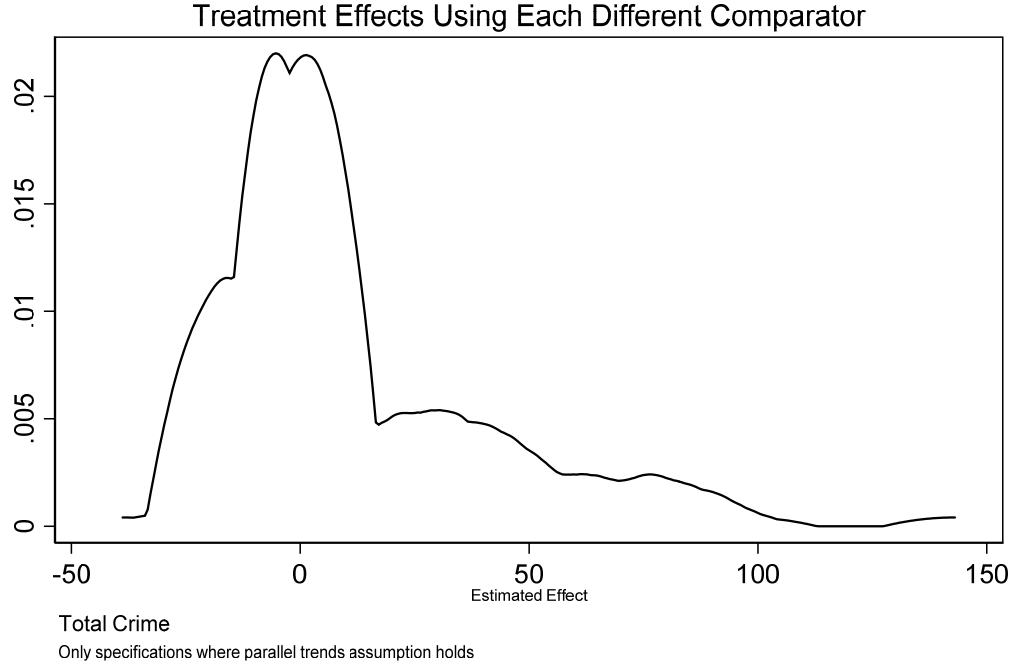
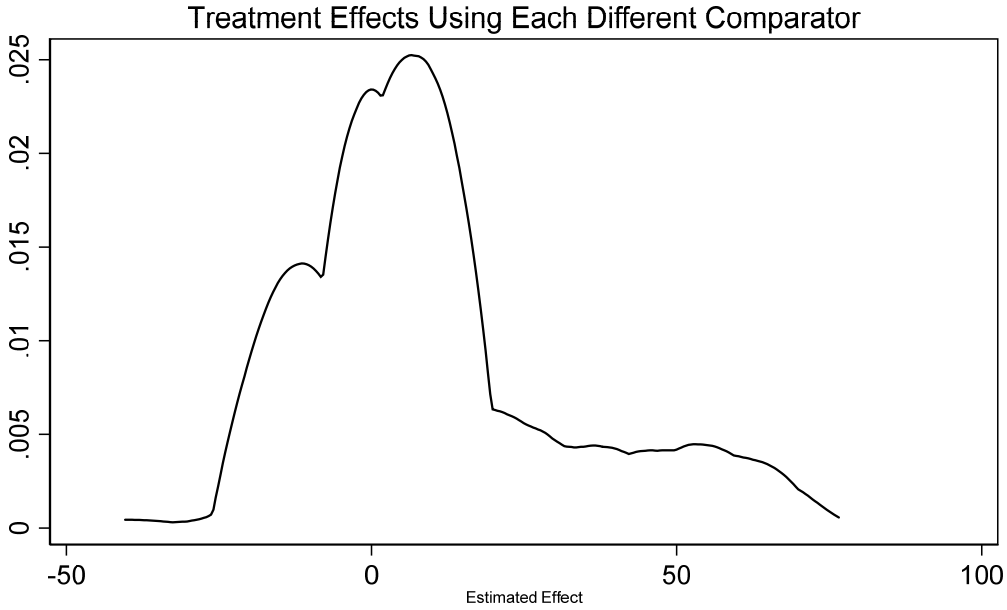


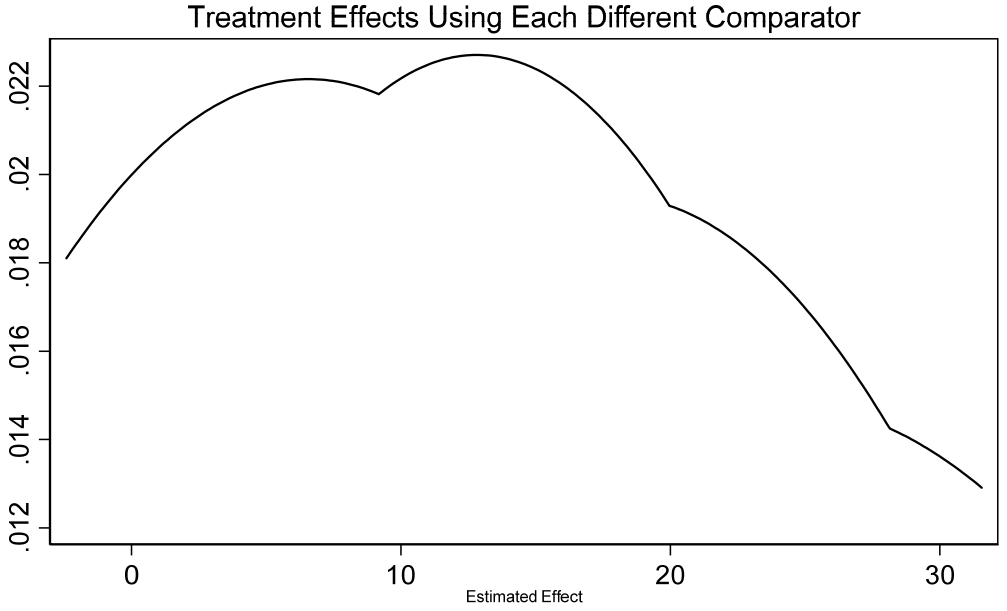
Figure 3:



Property Crime

Only specifications where parallel trends assumption holds

Figure 4:

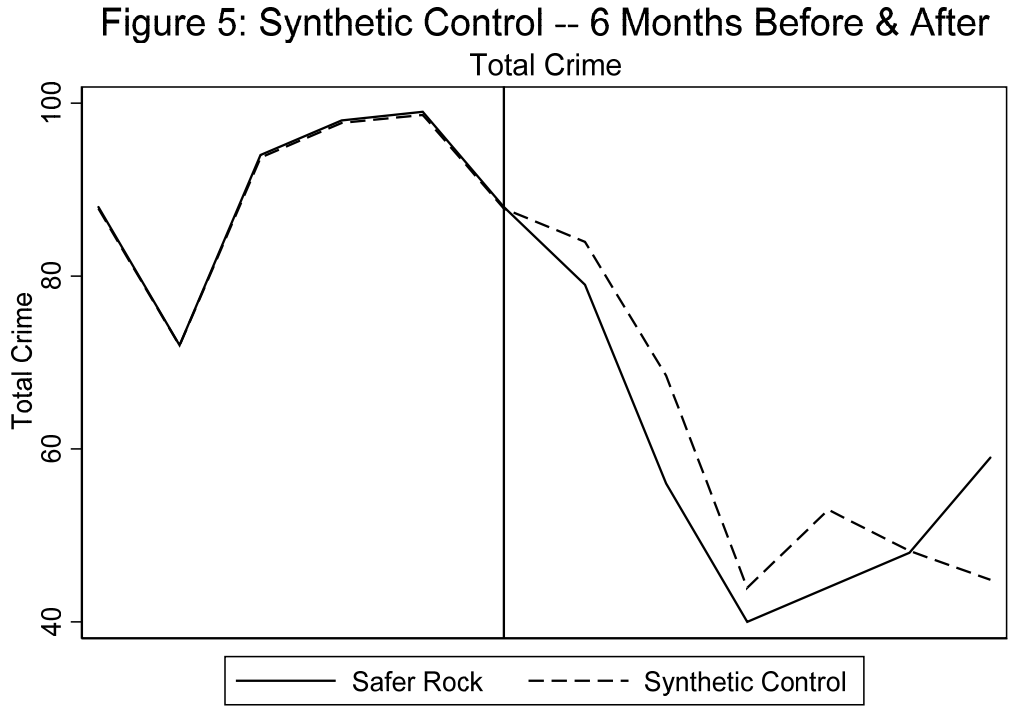


Violent Crime

Only specifications where parallel trends assumption holds

5.b Synthetic Controls

Because of the absence of an obvious comparison beat, we implement the synthetic control approach of Abadie, Diamond, and Hainmueller (2010) to find the weighted combination of comparator beats that provides the best pre-period match for Safer Rock.



As suggested in the difference-in-difference estimates, there is a decline in crime immediately after the Safer Rock intervention, but it dissipates within 6 months as seen in Figure 5. However, as distinct from the earlier estimates, the synthetic control estimates provide confidence that Safer Rock and the comparison beats are plausible comparators at least in the pre-period, making them presumptively good counterfactual comparisons in the post intervention periods. When the estimated effects for the first five periods after the intervention are examined, only the first three are statistically significant, and even then, only at the 10 percent level.

Figure 6 tells the same story for property crime.

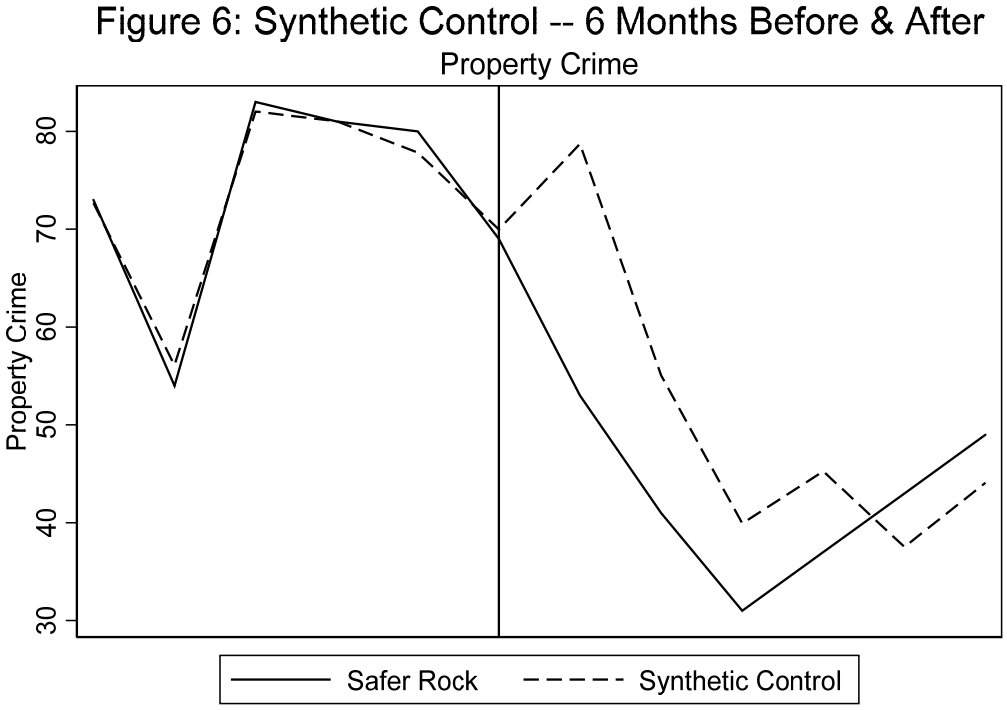
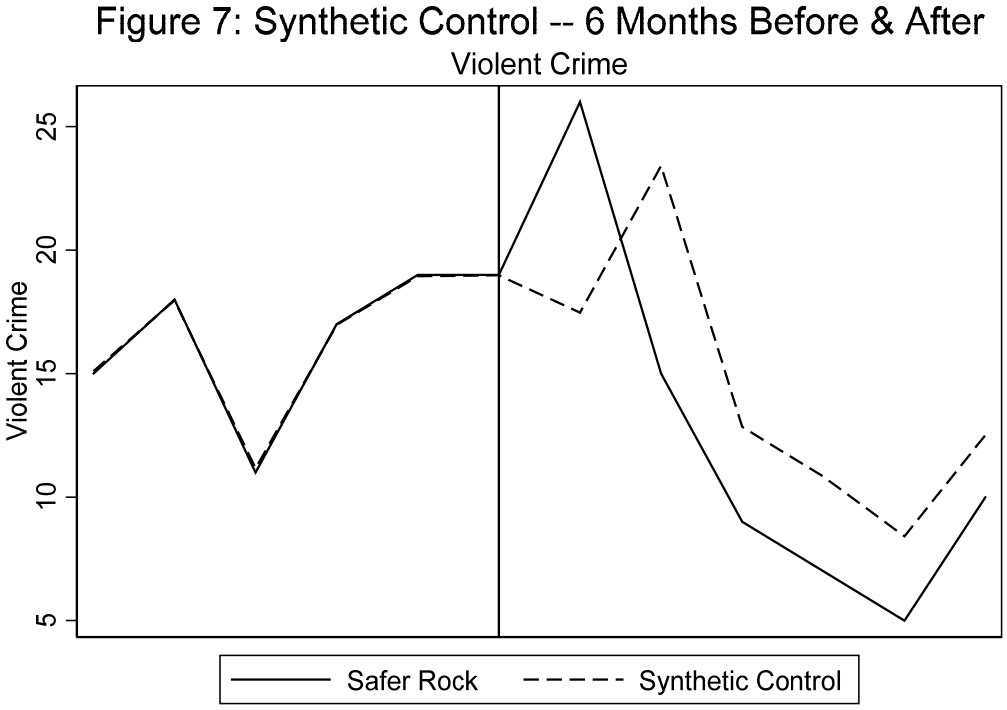
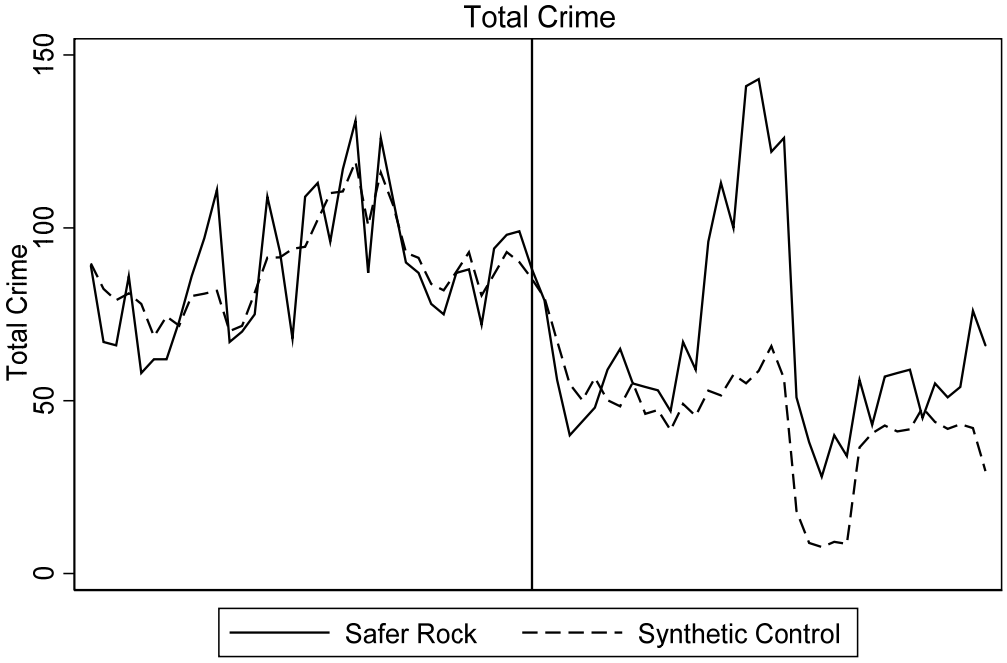


Figure 7 indicates a slightly different pattern for violent crime. Although the immediate response after the intervention is for violent crime to increase in Safer Rock, violent crime then declines relative to the synthetic comparator. All of these effects (including the initial increase) are statistically significant at the 10 percent level, but not at the 5 percent level.



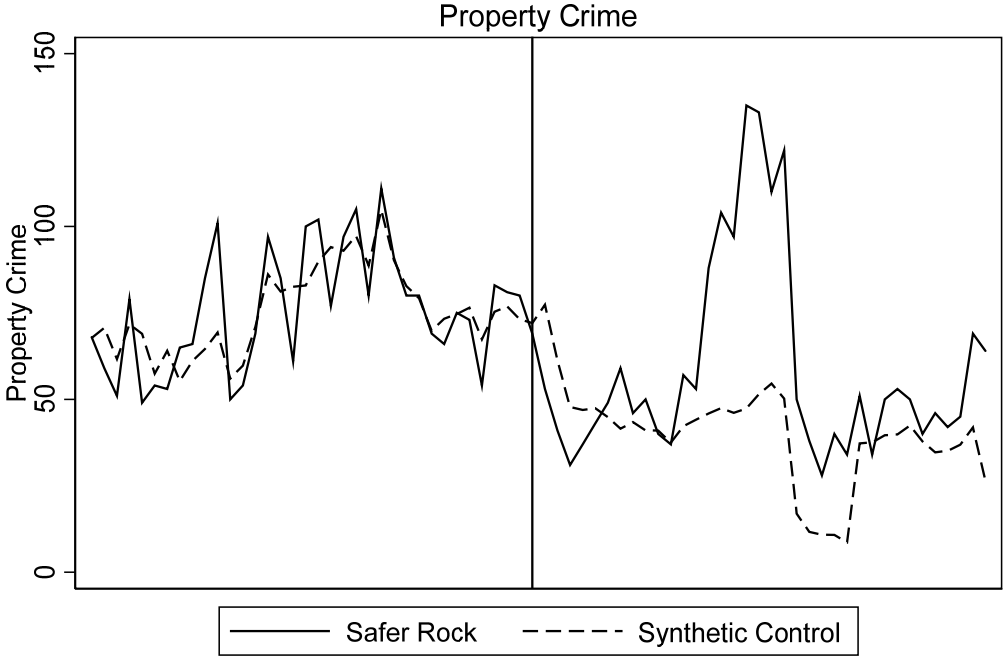
To examine the longer terms effects, we again use the synthetic control approach, this time using 36 months before and after the intervention (i.e., all of our post intervention data and an equal number of pre-treatment periods). In the longer time period, as seen in Figure 8, total crime reacts as before. That is, while there is a very short term, statistically insignificant, decrease in crime, it disappears before the sixth month after the introduction of private security patrols in Safer Rock.

Figure 8: Synthetic Control -- 36 Months Before & After

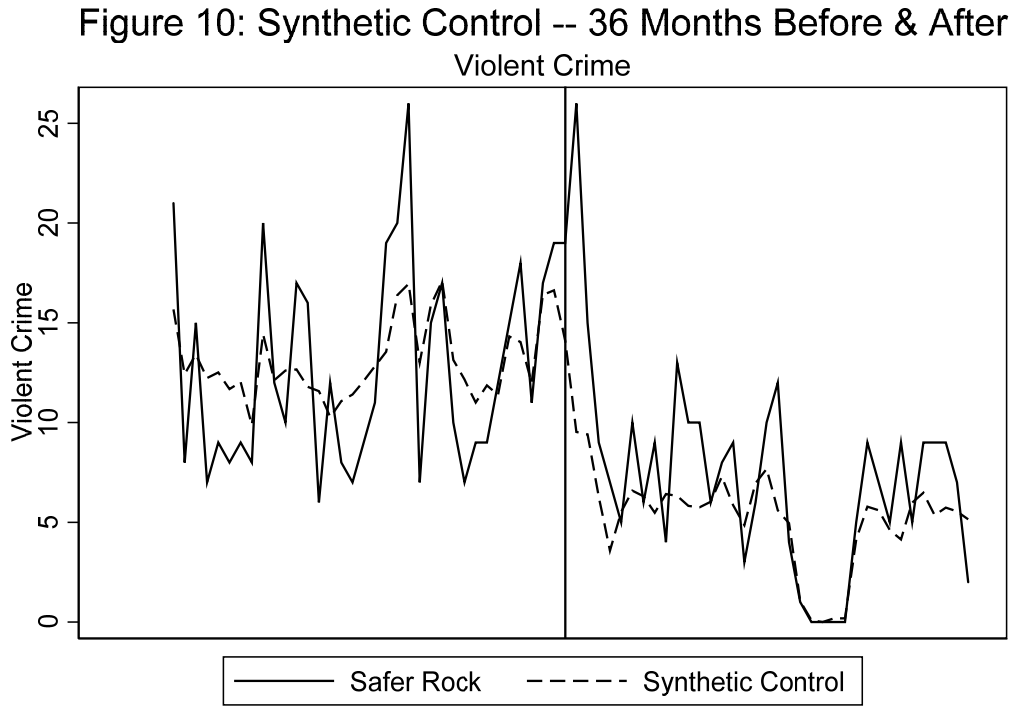


The same is true with respect to property crime, as seen in Figure 9.

Figure 9: Synthetic Control -- 36 Months Before & After



The analysis of the longer violent crime period, presented in Figure 10, indicates that the earlier finding of the Safer Rock intervention being associated with a potential decline in violent crime is not robust.



6. Conclusion

This paper estimates the effects of unarmed private security patrols on crime. The patrolling activity took place within the boundaries of a well-defined area of the city of Oakland, CA. The patrols are unarmed and hired with the explicit duty to not engage in physical interventions against wrongdoers, but only to engage in visual deterrence by observing and reporting criminal activities to regular police officers. Results, estimated using a difference-in-difference model, suggest a sharp decline in property crime in the initial 4 to 6 months following the introduction of the patrols, while violent crime – a relatively low fraction of total crime in the area studied – remained unaffected. These results are consistent with early estimations of the program effects provided by Safer Rockridge organizers.[10] However, when considering a longer time period, the effects of the patrolling program on crime levels vanish and crime levels in Safer Rock go back to baseline levels. Our results are confirmed when a synthetic control approach is employed to construct the counterfactual.

A possible explanation for these findings is that the mere presence of additional patrol units wearing police-like uniforms deters the commission of crime as long as no information regarding the patrols' competences are circulating among potential criminals. However, once criminals learn that patrols are

[10] See for instance https://docs.google.com/document/d/18ClYNh9sotEKS8b1DqFlDJloW27AFPyx5skTJ10uvOg/edit.

unarmed and that their duty is limited to “observe and report” to regular police like any regular citizen, the intervention loses its deterrence effects. Therefore, these results suggest that the mere visual presence of unarmed private security patrols is not sufficient to deter crime. Perhaps, to produce a persistent crime reduction, private security patrols need the possibility to effectively enforce the law, for instance by having the possibility to carry weapons and to arrest criminals.

These findings provide an important contribution to the literature on crime. Additional cost-effective policies for reducing crime could be valuable. However, our paper shows that observe and report security patrols do not generate deterrence.

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