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PUBLIC SAFETY IMPACTS OF A PUBLIC HEALTH INTERVENTION: Assessing East Palo Alto's Fitness Improvement Training Zone Program

By Rebecca Tublitz and Sarah Lawrence*

East Palo Alto, California, a city of 29,000 residents spanning just 2.5 square miles, has long experienced high rates of crime.¹ In 2012, East Palo Alto had the 13th highest rate of violent crime of all California cities.² Between 2009 and 2013, nearly 9,000 shootings were recorded by the city, for an average of 4.9 shootings each day.³ In addition to high rates of crime, residents of East Palo Alto also experience poor health outcomes when compared to other cities and counties across California. Half of all children in East Palo Alto are overweight or obese, compared with 34 percent across San Mateo County, where East Palo Alto is located.⁴ Residents suffer from chronic diseases, like diabetes, at four times the rate of other areas in the county, and the average age at death is just 62 years, 13 years lower than the county average.⁵

Responding to the health and public safety needs of residents in East Palo Alto, in 2011, the East Palo Alto Police Department (EPAPD) developed the Fitness Improvement Training (FIT) Zone program with funding support from The California Endowment. The FIT Zone program employs a variety of health strategies aimed at improving public safety, reducing gunshots and increasing healthy behaviors in neighborhoods affected by high levels of crime. In August 2012, the program was officially launched at two sites in East Palo Alto as a multi-agency collaboration between the Ravenswood Family Health Center, the Ravenswood School District, the San Mateo County Health System, and other community-based organizations.

This research brief describes an assessment of the public safety impacts of the FIT Zone program. Specifically, this study evaluated the FIT Zone program's impact on the level and location of shootings across the city. The study was conducted as part of a larger evaluation by researchers at the Warren Institute.

The Fitness Improvement Training Zone Program

The FIT Zone program is an innovative initiative that aims to improve public safety and reduce violent crime using health-related strategies in high-crime neighborhoods in East Palo Alto. Both direct and indirect exposure to violence has been associated with adverse health and social outcomes, including depression, anxiety, and suicide, as well as truancy, increased sexual activity, and criminal behavior.⁶ High levels of crime can increase residents' fear of crime and violent victimization, which may inhibit outdoor physical activities, such as walking, jogging, or bicycling, leading to poor health outcomes.⁷ The City of East Palo Alto has several city parks and public spaces that are open to all residents, but many residents report avoiding these spaces, even during the day, for fear of crime and violence.⁸

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Understanding the link between violent crime and poor health, the EPAPD developed the FIT Zone program to address crime in East Palo Alto, and the health and fitness of its residents. Staff from the EPAPD, the Ravenswood Family Health Center, and volunteers lead exercise activities and healthy eating and wellness presentations with the goal of improving public safety and the fitness and physical well-being of residents. By encouraging the use of public spaces for pro-social activities, the FIT Zone program also aims to discourage individuals from conducting criminal activity in these areas. An underlying assumption of the FIT Zone program is that the visibility or presence of police officers and residents engaging in pro-social activities in public spaces may lead to a decrease in criminal activity in those areas.⁹

FIT Zone Program Sites

To identify areas in the city that were appropriate for the intervention, the EPAPD drew upon data from the ShotSpotter gunshot location detection system, which is a system of acoustic sensors that identifies and geolocates gunfire within a given area in real-time. In 2009, dozens of sensors were installed across the city that are triggered by a range of noise events, including gunshots, firecrackers, airplanes, and cars backfiring.¹⁰

Once activated, these sensors provide the time and location of the shooting incidents to law enforcement. Using these data, staff at the Warren Institute and San Mateo County Health System identified two neighborhoods with the highest concentrations of shootings to use as locations for the FIT Zone program.

The first of two sites, known as the “Jack Farrell FIT Zone,” is a residential area of approximately 2,300 residents in the northeastern part of East Palo Alto (see Figure 1). Program activities were held primarily at two locations inside the larger FIT Zone: the Jack Farrell Park and a nearby school. The Jack Farrell Park is accessible via two different entrances, and activities taking place inside the park are visible to passers-by. The second site, the “Martin Luther King (MLK) FIT Zone,” is located in the southeastern part of the city, where nearly 2,000 East Palo Alto residents live. The site is adjacent to an open space preserve that abuts the San Francisco Bay (see Figure 2). Within the larger MLK FIT Zone, program activities were conducted at the Martin Luther King Park and a nearby middle school inside the boundaries of the FIT Zone. The Martin Luther King Park is located on the eastern edge of the city, at the end of a cul-de-sac, and is not easily visible from surrounding areas.

Figure 1. Jack Farrell FIT Zone Boundaries



Figure 2. Martin Luther King FIT Zone Boundaries



Fit Zone Intervention Goals and Activities

Improving the relationship between the police and residents of the East Palo Alto is one key focus of the FIT Zone program. Governance of the program is shared between the EPAPD and a range of community-based organizations and residents, who assist with the management, direction and frequency of program activities at each site. Prior to the launch of the FIT Zone program, the EPAPD conducted extensive community outreach to both residents and community-based organizations in each neighborhood. EPAPD officers actively facilitate FIT Zone activities, and use them as an opportunity to engage with community members.

Another key goal of the FIT Zone program is to improve the physical health of residents and encourage residents to engage pro-social activities in public spaces. To do this, police officers and staff from EPAPD, resident volunteers, and staff from the Ravenswood Family Health Center organize FIT Zone “gatherings,” or events that consist of exercise activities like walking tours, bicycling, Zumba, and field sports, as well as health presentations on such topics as healthy eating, cholesterol and diabetes, and female health. Each intervention area (a small area within the larger neighborhood FIT Zone, a park or a school, as discussed above), hosts these gatherings one-to-two times per week. Analysis of program activity data found that, in the first seventeen months of implementation, the intervention areas within the Jack Farrell FIT Zone hosted an average of nine FIT gatherings each month, while the intervention area within the MLK FIT Zone averaged seven gatherings per month. Bicycling and field sports were the most common fitness activities (38% and 33%, respectively), while healthy eating and cooking lectures were the most common educational talks (30%). Resident participation was higher at the gatherings hosted within the Jack Farrell FIT Zone, with an average 58 participants each gathering. Gatherings held within the MLK FIT Zone drew an average 27 participants each gathering.

Evaluation Design

This study was undertaken to assess the effectiveness of the FIT Zone program in achieving its goal of reducing violent crime in the intervention areas. The study focused on two key questions:¹¹

1. Did the FIT Zone program affect the level of shootings in East Palo Alto?
2. Did the FIT Zone program displace shootings from one area to another?

The study used five years of shooting data from the ShotSpotter system, spanning from 2009 to 2013, which included information on the time, date, and the latitude and longitude of each “activation” the system identified as a gunshot or possible gunshot. Observational data regarding the physical environment of each intervention site was collected, and staff interviews were conducted to understand program history and implementation.

The FIT Zone program is a neighborhood level intervention, meaning its activities target residents in two clearly defined areas, or FIT Zones, in East Palo Alto (see Figures 1 and 2). However, most of the program activities took place at smaller “intervention areas”, two parks and two schools, *within* the larger FIT Zone areas, providing an opportunity to examine how proximity to the intervention activities within the FIT Zones affected the incidence of shootings.

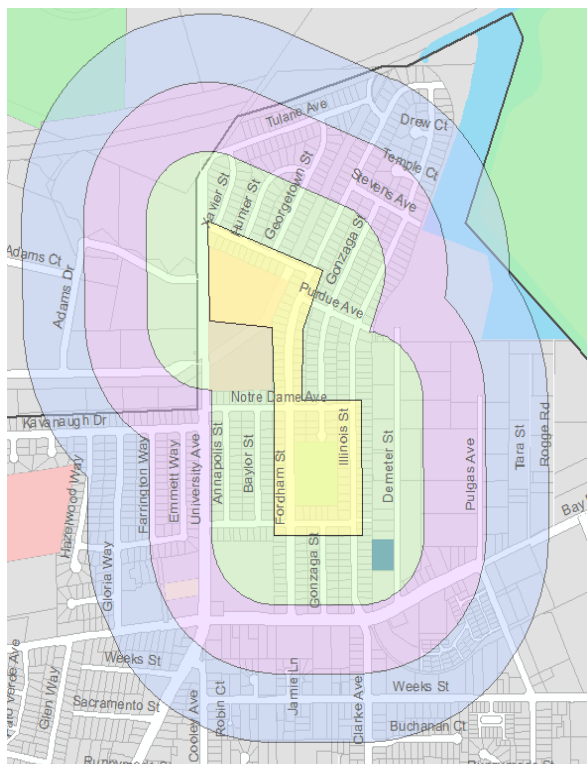
First, two key geographic areas were identified: (i) FIT Zone intervention areas, smaller areas within the larger FIT Zone sites where the intervention activities actually took place, and (ii) areas immediately surrounding the activity sites, called “buffer areas.” The FIT Zone intervention areas include the park and school within each FIT Zone that hosted the program activities, as well as the small regions in between. The buffer areas are regions around the intervention areas where would-be offenders might move to if they were discouraged from conducting their criminal activity inside the intervention area—creating a *displacement* effect. On the other hand, shootings might also decrease in the buffer areas—known as a *diffusion* effect. Drawing a series of three buffer areas around the two intervention sites, each roughly the size of two city blocks, allowed for an examination of whether and how the program affected shootings in nearby areas. Figures 3 and 4 show the Jack Farrell and MLK FIT Zone intervention areas and surrounding buffers. Finally, a comparison area was selected for its similarity to the intervention areas in both size and concentration of shootings. This area of the city did not receive the FIT Zone intervention.¹²

Evaluation Findings

Shootings decreased significantly in the Jack Farrell FIT Zone. No significant impact was found in the MLK FIT Zone.

Using a difference-in-difference technique, which compares the before-after change in shootings in the FIT Zone intervention sites with the before-after change in the comparison area, the study found that the FIT Zone program was associated with a drop in shootings of between 27 to 58 percent relative to the buffer and comparison areas.¹³ Figure 5 illustrates two estimates of the program’s impact on shooting for the two sites combined, and for each intervention area separately.¹⁴ However, the FIT Zone program did not have the same impact at each site. Only the Jack Farrell site experienced a significant decrease in shootings after adjusting for time and place-specific factors. No significant effect on shooting was found at the MLK site.

Figure 3. Jack Farrell FIT Zone Intervention Area and Buffers



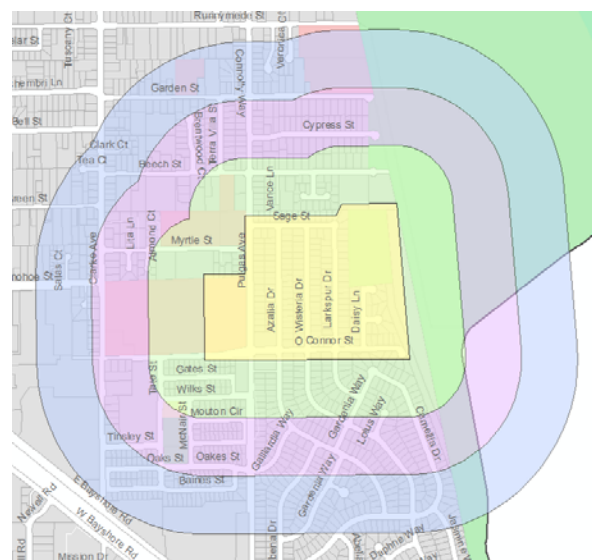
 FIT Zone Area	 1000 ft. Buffer
 500 ft. Buffer	 1500 ft. Buffer

There was no evidence of displacement of shootings to nearby areas.

If shootings dropped inside the FIT Zones, it is possible that would-be offenders *displaced*, or moved, their shooting activity to other areas of the city. It is also possible that the FIT Zone program discouraged potential offenders in areas nearby the intervention sites, and shootings fell in those areas in addition to the intervention sites, creating what is called a “diffusion of crime control benefits.”¹⁵ To assess whether shootings in nearby areas changed during the course of the intervention, the study used difference-in-difference estimation to examine changes in each buffer area, the same method used to measure a change within the FIT Zone sites.

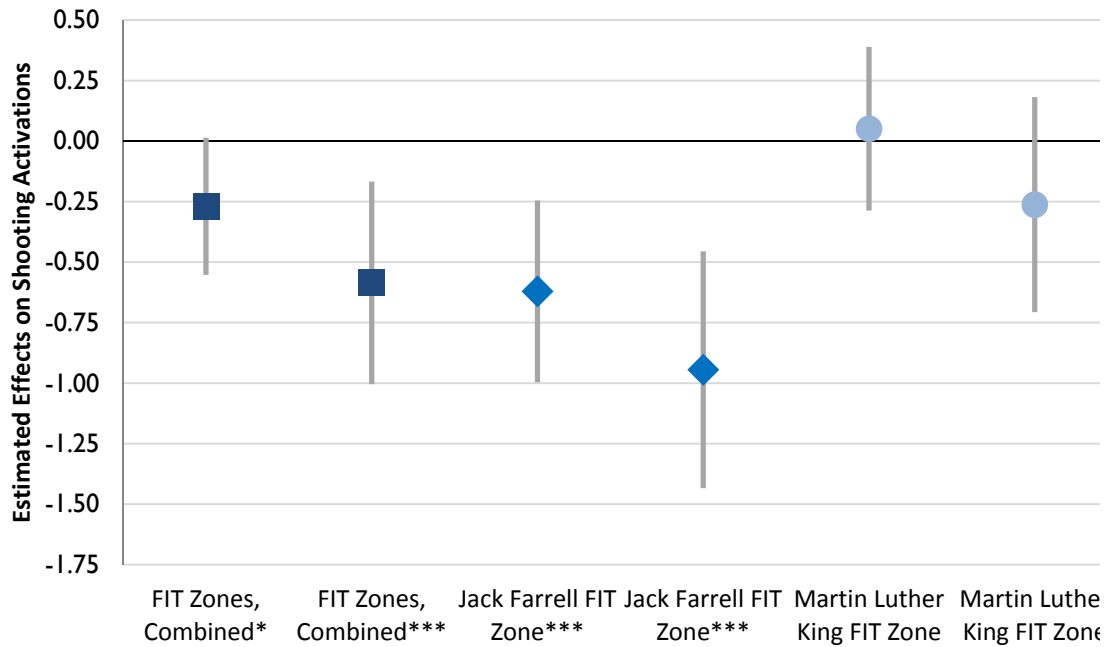
Overall, the study found little evidence of displacement. In fact, the study found that the FIT Zone intervention may have led to a reduction in shooting incidents in the first 1000 feet surrounding the Jack Farrell site, indicating a possible diffusion effect (see Figure 6). None of the buffers around the MLK site showed a statistically significant change in shootings, indicating no evidence of either a displacement or diffusion effect.

Figure 4. Martin Luther King FIT Zone Intervention Area and Buffers



 FIT Zone Area	 1000 ft. Buffer
 500 ft. Buffer	 1500 ft. Buffer

Figure 5. Difference-in-Difference Regression Estimates of FIT Zone Program Impact, Combined and by FIT Zone Site



Note: Symbols in the figure are regression coefficients from separate regressions of the difference-in-difference characterizations of the impact of FIT Zone Program and surrounding buffer areas on shooting activations, and lines show the 95 percent confidence interval.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Discussion

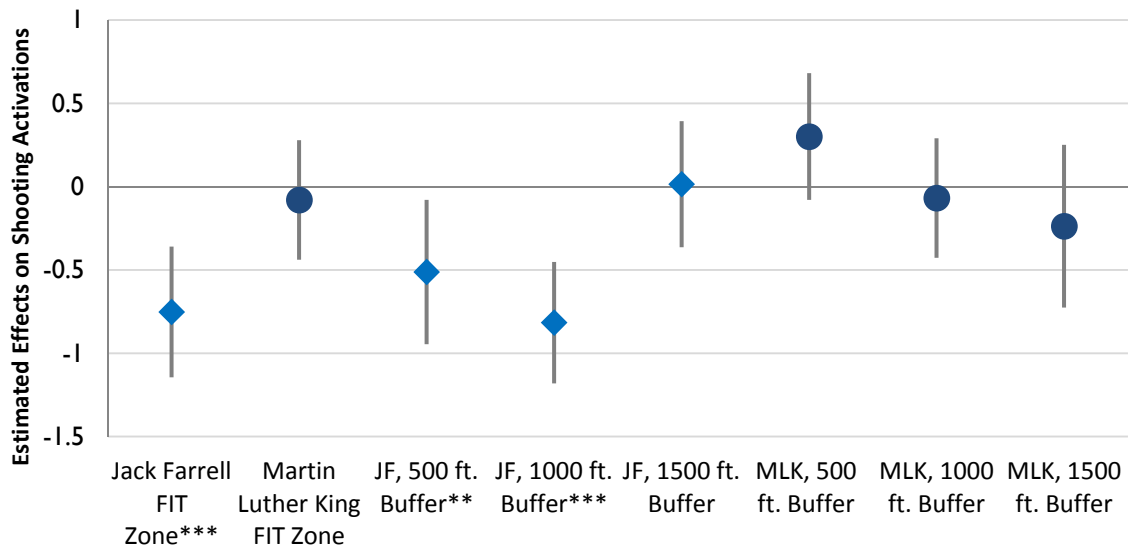
The evaluation of the public safety impact of the FIT Zone program yielded mixed results. Overall, the program was associated with a significant decrease in shootings on average, but this impact was driven entirely by the impact at one of the two intervention sites. Little evidence was found to indicate that the FIT Zone program encouraged offenders to move their shooting activity elsewhere. Other studies that have examined the question of crime displacement and place-based policing strategies have found little supporting evidence for a displacement effect, but have sometimes found small reductions of crime in nearby areas instead.¹⁶ In the Jack Farrell FIT Zone site, this study found evidence of a diffusion benefit.

It is difficult to explain why the program produced its intended effect in only one intervention area and not in the other. Several explanations, as well as limitations of the study design, may explain why the intended program impact was detected in one location and not the other.

First, the implementation of the FIT Zone program differed between the two sites. The Jack Farrell FIT Zone held more gatherings and had significantly higher participation rates than the MLK FIT Zone—essentially receiving *more* of the intervention. It is not clear why participation rates were higher within one zone or the other. Participation at each location may be related to the community engagement activities undertaken prior to the program’s launch, or to pre-existing relationships between the communities and the police department. However, information on outreach activities or police-community interactions was beyond the scope of this study.

Second, the two FIT Zone intervention sites chosen differed significantly in their physical characteristics. One key underlying assumption of the FIT Zone program is that the visibility of police officers and residents engaging together in pro-social activities in public spaces may lead to a decrease in criminal activity in those areas.¹⁷ The difference in access to intervention areas and visibility of the intervention activities to outside observers may have contributed to the success of the FIT Zone initiative in the more central and visible Jack Farrell location, and played a role in the

Figure 6. Difference-in-Difference Regression Estimates of Shooting Displacement, by FIT Zone and Buffer Distance



Note: Symbols in the figure are regression coefficients from separate regressions of the difference-in-difference characterizations of the impact of FIT Zone Program and surrounding buffer areas on shooting activations, and lines show the 95 percent confidence interval.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

lack of impact found in the Martin Luther King site, which lacked easy access and visibility.

Finally, a few limitations to this study should be noted. East Palo Alto was one of the first cities in the United States to install and utilize the ShotSpotter gunshot location detection system. Between its launch citywide in 2009 and the implementation of the FIT Zone program in August 2012, methods for reviewing all potential gun-related activations of the ShotSpotter system changed. This may have affected the quality and reliability of the shooting data over time. The study used a statistical technique to control for all fixed factors (i.e., factors that do not change over time), as well as for long-term and seasonal variation in shootings. However, the study did not control for other factors that may have changed during the study period that may have also affected shooting activity.

Program Implications

The results of this evaluation point to the promise of the FIT Zone program to impact public safety, but raise several critical issues for similar initiatives. Importantly, the FIT Zone program, or similar anti-crime interventions aimed at changing the way that communities interact with public spaces should:

- *Analyze underlying drivers of shooting in each intervention site.* Social and physical characteristics that are conducive to crime in one place may be quite different from the characteristics of another place. Future place-based public safety intervention strategies should identify and target particular drivers of crime in different neighborhoods. For each potential program site, program developers should focus on underlying crime trends, the presence or concentration of likely offenders, opportunities for interaction with potential targets of crime, and the presence or absence of capable guardians in a place.
- *Choose the location of intervention activities carefully.* The physical characteristics of the environment including ease of access, visibility of the intervention activities, and distance from the nexus of a crime problem should be carefully considered for programs that aim to bolster pro-social community presence in a particular place, as the FIT Zone program does. Visibility and promotion of positive community activities in public spaces, as well as respectful interactions between the police and residents, may be important to discouraging future criminal behavior.

- *Monitor the fidelity of program implementation and capture outcome data on perceptions of guardianship and police-community interactions.* Ongoing monitoring activities should be bolstered with systematic observation of police-community interactions during program activity times, as well as at times outside formal program events. Additional outcomes, including perceptions of guardianship and usage of the park, should be captured. Social observation, resident satisfaction or feedback surveys, and other methods of capturing these data have the potential to enrich our understanding of *how* the FIT Zone intervention affects public safety and *why* the program appeared to lower shooting in one location, but not the other.

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Endnotes

¹ US Census Bureau State & County QuickFacts, East Palo Alto, California.

² Federal Bureau of Investigation. (2012). Crime in the United States, 2012. Available at: <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2012/crime-in-the-u.s.-2012/>

³ ShotSpotter activation data for single, multiple or possible gunshot incidents, January 1, 2009 to December 31, 2013.

⁴ Babey, S. H., et al. (2011). A Patchwork of Progress: Changes in Overweight and Obesity among California 5th-, 7th-, and 9th-graders, 2005-2010. UCLA Center for Health Policy Research and California Center for Public Health Advocacy.

⁵ Anderson, K. M. (Ed.). (2010). Demographic Changes, a View from California: Implications for Framing Health Disparities: Workshop Summary. National Academies Press, p. 35-6; Babey et al. (2011).

⁶ Haynie, D. L., Petts, R.J., Maimon, D. and Piquero, A. R. (2009). Exposure to Violence in Adolescence and Precocious Role Exits. *Journal of Youth and Adolescence* 38(3), 269-86; Margolin, G. and Gordis, E. (2000). The Effects of Family and Community Violence on Children. *Annual Review of Psychology* 51, 445-79.

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¹⁰ In order for an activation to be recorded and its location to be triangulated by the system, a minimum of three sensors must be activated by a noise event. Noise events resulting in an activation of the ShotSpotter system can range from gunfire, firecrackers, cars backfiring, and construction noise, among others. The ShotSpotter system uses an algorithm to differentiate activations resulting from gunfire from activations resulting from other non-gunfire noise events. Further, an employee of the ShotSpotter Corporation manually reviews each gunshot, or possible gunshot activation.

¹¹ Additional evaluation questions were explored in the study, but are not discussed in this summary report. See <http://www.law.berkeley.edu/ewi.htm> for full technical report.

¹² To provide a comparison area against which to measure the change in shootings, a third area in East Palo Alto was identified. This area, roughly .057 square miles in size, represents the third largest shooting hot spot in the city, behind the two targeted hot spots, but was not chosen as a site for the FIT Zone intervention. Geographic and demographic characteristics of the two intervention sites and the comparison site are available in the full technical report.

¹³ The author conducted a series of difference-in-difference regression models to estimate treatment effects. Put simply, a difference-in-difference model takes the before-after difference in means of shooting activations in the treatment areas, and subtracts the before-after difference in means of shooting activations from the control area. The difference of the two differences is the estimated effect of the treatment. The regression models also included fixed effects for location and time. By using fixed-effects models, each location is effectively being compared to itself over time by calculating the deviations of each observation from the location-specific mean for all time periods for each variable of interest. The fixed-effects model has the advantage of controlling for all observed and unobserved time-invariant variables within each location. Month and year fixed effects were included to control for long-term trends in crime and control for seasonal variation in shootings.

¹⁴ While the point estimates of the effect differ according to the specifications of the models used in the analysis, the direction of the effect (i.e., either positive or negative) and the statistical significance of the estimates did not differ according to model specification.

¹⁵ Weisburd, D., L. Wyckoff, J. Ready, J. Eck, J.C. Hinkle and F.S. Gajewski. (2006) Does Crime Just Move Around the Corner? A Controlled Study of Spatial Displacement and

Diffusion of Crime Control Benefits. *Criminology* 443, 549-591.

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¹⁷ See Clarke, R. V. G. (Ed.). (1997). *Situational Crime Prevention*. Criminal Justice Press; Hollis-Peel, M., Reynald, D., van Bavel, M., Elffers, H., and Welsh, B. (2011). Guardianship for Crime Prevention: A Critical Review of the Literature. *Crime, Law and Social Change*, 56 (1), 53-70.