

Interim Evaluation of Baltimore's *Safe Streets* Program

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THE SAFE STREETS INTERVENTION

The *Safe Streets* program was designed and implemented in selected high-crime neighborhoods of Baltimore in an attempt to replicate Chicago's *CeaseFire* program. The program was developed by Dr. Gary Slutkin of the University of Illinois, Chicago School of Public Health with the following core components:

1. use of surveillance data to identify communities with high rates of youth gun violence;
2. development of a community coalition involving clergy, community-based organizations, and relevant city agencies (public health, police, schools);
3. a campaign with a message of "no shooting" using special community events, community responses to shootings, and media;
4. direct outreach to high-risk youth to provide mentoring, alternatives to violence, and referrals to services to reduce risk factors and increase protective factors;
5. identifying and intervening in conflicts (e.g., through mediation) that could otherwise result in shootings or other serious violence.

Researchers from Northwestern University conducted a scientifically rigorous evaluation of the effects of the *CeaseFire* program in Chicago, developing estimates of program effects on shootings in seven neighborhoods that had been implementing the program for a minimum of 33 months and for an average of nearly five years. The evaluation revealed statistically significant reductions in shootings in six of these communities ranging from 16% to 34%, five of which were associated with the program's implementation. There were large reductions in a seventh community; however, data limitations precluded the development of a firm estimate of the program's effects on shootings in that neighborhood. In addition, there were significant program-related reductions in retaliatory homicides – a type of homicide that should be particularly responsive to program mediation efforts – in four neighborhoods following implementation of *CeaseFire*.¹

Using funds from a \$1.6 million grant from the U.S. Department of Justice, the Baltimore City Health Department (BCHD) worked closely with Dr. Slutkin's *CeaseFire* team to learn about the program, develop a request for proposals from community groups interested in implementing the program, carefully review proposals and recommend which community groups should receive the funding to implement *Safe Streets*. BCHD has overseen the training of community groups and the implementation of *Safe Streets*. In May 2007, Living Classrooms Foundation was awarded the contract to implement the program in the McElderry Park neighborhood in East Baltimore. Communities Organized for Improved Living (COIL) was awarded the contract in August 2007 to implement the program in the Union Square neighborhood of Southwest Baltimore. *Safe Streets East* was expanded in March 2008 to include the Ellwood Park neighborhood that borders McElderry Park, and two additional program sites were added in the fall of 2008 – one that expanded *Safe Streets East* to include parts of the Milton-Montford and Madison-Eastend neighborhoods and one in Cherry Hill (South Baltimore).

¹ Skogan WG, Hartnett SM, Bump N, Dubois J. *Evaluation of CeaseFire – Chicago: Executive Summary*. Evanston, IL: Northwestern University; May 2008.

RESEARCH METHODS

Aims of Research

The overall aims of the research are to: (1) describe how the program was implemented using objective measures generated by program implementers; (2) estimate program effects on attitudes and norms around gun violence among youth; and (3) estimate program effects on severe violence, especially severe violence involving youth. A fourth aim, not examined in this report, is to draw important lessons from the experiences and insights of the individuals who are implementing the program about what strategies and tactics appear to be most effective in preventing gun violence in communities. This is an interim report based on the first 14 months of *Safe Streets* implementation.

Estimating Program Effects on Attitudes About Using Guns to Settle Disputes

We had initially planned to use a 2-by-2 factorial research design with cross-sectional samples at baseline and 10-12 months after the launching of *Safe Streets* in the first two target communities (McElderry Park and Union Square) and a comparison neighborhood with similarly high levels of shootings (Oliver). However, due to an extended period for IRB review and approval as well as the difficulty of finding and training suitable data collectors, we began wave 1 of the data collection in November 2007, approximately five months after the launch of the program in McElderry Park. Thus, for McElderry Park, wave 1 survey data are likely to reflect initial effects of the program (relative to the other neighborhoods that had not implemented the program). We are in the process of collecting data for the second wave of surveys that will enable us to estimate more lasting effects of the program on attitudes and perceived norms.

Survey questions were designed to elicit youths' attitudes and perceived norms regarding gun violence, and were based on the most common scenarios recounted by high-risk, urban young men about their experiences with gun violence in prior research conducted by Dianna Wilkinson.² We refined the questions and verified that they were both relevant and non-threatening by consulting with members of the youth advisory committee of the Johns Hopkins Bloomberg School of Public Health's Adolescent Health Center. See Appendix A for a copy of the survey instrument.

We recruited males within each of the three neighborhoods who appeared to be between the ages of 18 and 24 and use data only from subjects who report on the questionnaire their age to be in the 18-24 years range. We assumed that program efforts would be directed primarily at males because males account for over 90% of firearm violence offenders in Baltimore.

Anonymity was considered key to protecting subjects, encouraging participation, and minimizing selection bias. Thus, the survey was completely anonymous as well as voluntary. We hired and trained men who were familiar with youth in one or more of the study neighborhoods to recruit participants, obtain informed consent, and implement the surveys. To encourage participation and protect research participants, we did not ask

² Wilkinson DL. *Guns, Violence, and Identity Among African American and Latino Youth*. New York: LFB Scholarly Publishing, 2003.

participants to report on criminal acts that they committed or witnessed. For taking the time to complete the survey, participants received a \$10 gift card from a local merchant. To gauge participants' level of risk, we asked three questions: 1) Have you ever been arrested? 2) Have you ever been shot or shot at? and 3) Has a brother or sister of yours ever been shot or shot at? The survey and data collection procedures were reviewed and approved by the IRB of the Johns Hopkins Bloomberg School of Public Health. We had 60 usable surveys of males ages 18-24 in each of the three neighborhoods.

We analyzed the first wave of survey data in order to assess whether, after controlling for factors hypothesized to affect youths' attitudes about gun violence, there were significant differences between the three neighborhoods surveyed. If *Safe Streets* were having a positive effect on youths' attitudes during the initial months of the program, youth in McElderry Park should hold attitudes less supportive of using guns to settle disputes. We also examined whether, according to theory about social norms, a youth's attitudes about the appropriateness of resorting to gun violence to settle disputes was positively associated with their perceptions of their peers' attitudes about gun violence.

Each item that asked whether the participant thought it was okay to either "threaten" with a gun or "shoot" was coded on an ordinal scale – no=0, maybe=1, and yes=2. Responses were summed over the six scenarios for threatening with a gun and six scenarios for shooting to create a global measure of attitudes supportive of using guns to settle disputes. There were no statistically significant differences between the three neighborhoods with respect to participant age, arrest history, history of being shot or shot at, or the history of a sibling being shot or shot at. We compared the mean levels of attitudes supportive of using guns to settle disputes using Analysis of Covariance. To control for possible confounding, we regressed the gun violence attitude scale on two neighborhood indicator variables (McElderry Park and Union Square with Oliver as the reference), age, ever arrested, ever shot or shot at, and sibling ever shot or shot at.

Estimating Program Effects on Serious Violence

The primary research challenge to developing accurate estimates of intervention effects in so-called natural experiments of this type is developing a nonbiased estimate of the counterfactual – how many homicides and nonfatal shootings would there have been in the neighborhoods implementing *Safe Streets* if the program had not been implemented. Our basic strategy for estimating the counterfactual and program effects is to contrast pre- and post-program implementation changes in gun violence that occur in police posts in which *Safe Streets* was implemented with changes in violence that occurred in areas in which the intervention was not implemented. This "difference-in-differences" (DD) approach is commonly used in quasi-experimental studies. Criminal incident and arrest data were collected from the Baltimore Police Department for the period January 1, 2003 through September 30, 2008. We intend to continue data collection through July 2009 for our final report on the effects of the program on serious violent crime.

The outcomes of interest for this study are homicides and nonfatal shootings. We will be examining program effects on other violent crimes including aggravated assaults and robberies in our final report. We assembled a panel dataset consisting of monthly counts of homicides, non-fatal shootings, and arrests for weapons and drug violations for each police post. Because the intervention focused on youth and the bulk of youth-

perpetrated violence involves victims under age 30, we also stratified the homicide and shootings data by whether or not the victim was under age 30. We use data on arrests for weapon-related offenses (typically illegal guns) and drug offenses as measures of criminal activities linked with shootings and police activities that will be used in the analyses to control for differences in policing activities across neighborhoods and time.

We examined graphs of trends in the outcome variables for the January 2003 – September 2008 study period for police posts in the *Safe Streets* neighborhoods, the posts bordering *Safe Streets* interventions, and for all other police posts that were in the upper quartile for nonfatal shootings and homicides for the 2003-2006 period.³ Because the trends were relatively flat prior to the first implementation of *Safe Streets*, we compared the mean number of shootings during the intervention period with the period prior to the intervention for each of the program sites using t-tests to determine whether the difference in means was statistically significant. We used data on outreach workers' enrollment and contacts with high-risk clients to discern the first month of significant program implementation. The intervention periods were August 1, 2007 through September 30, 2008 in McElderry Park, April 1, 2008 through September 30, 2008 for Ellwood Park, and March 1, 2008 through July 31, 2008 for Union Square. (The city decided not to renew the contract for implementing *Safe Streets* in Union Square due to COIL's inability to fully implement the program model.) The same comparisons across time periods were made for police posts that bordered on *Safe Streets* sites and for all other posts in the top quartile for shootings during the baseline period.

We used regression analyses to more formally estimate program effects by providing an assessment of whether any changes that occurred in the neighborhoods that implemented *Safe Streets* following program implementation were statistically different from the changes that occurred in other neighborhoods with historically high levels of shootings. Because the distribution of monthly shootings within a police post is non-normal and truncated by zeros, we used a negative binomial regression model for count data to develop estimates of program effect. To control for the effects of potentially different levels and trends in criminal activity and policing across neighborhoods that might affect shootings, we controlled for the number of arrests for weapons and for illegal drug possession lagged by one month. The difference-in-difference estimation model is of the general form minus the fixed effects (baseline means for each post):

$$\log(\lambda(Y_{it})) = a_{it} + b1(\text{Int post}_{it}) + b2(\text{Int period}_{it}) + b3(\text{Int post}_{it} \times \text{Int period}_{it}) + b4(\text{weapon arrests}_{it-1}) + b5(\text{drug arrests}_{it}) + b6(\text{calendar month}_{it}) + \epsilon_{it}$$

In this equation, the estimate for $b1$ will reflect the difference in the mean for the intervention posts relative to the other posts for the study period, $b2$ will reflect any differences in non-intervention posts during the period *Safe Streets* was being implemented, and $b3$ will reflect the difference-in-difference estimate for the effect of *Safe Streets* on shootings based on the change in the *Safe Streets* posts relative to the change in non-*Safe Streets* posts. The effects of arrests in the month prior for weapons or drug violations⁴ will be estimated by $b4$ and $b5$, respectively. Because there is some

³ We excluded three police posts in the Oliver community where there was major redevelopment during the study period that resulted in population displacement.

⁴ The effects for weapon arrests and drug arrests are estimated separately.

seasonality in gun violence trends, we also included indicator variables for each month with January as the reference category. The coefficients are the natural log of the incident rate ratio (IRR) and will be reported in the form e^b – an adjusted IRR – for ease of interpretation. IRRs below 1.0 reflect reduced risk for homicides and shootings of a proportion equal to 1 minus IRR. IRRs above 1.0 are interpreted as increases in risk.

FINDINGS

Program Implementation

To assess the implementation of the Safe Streets intervention in McElderry Park (Post 221), Ellwood Park (Post 223) and Union Square (Post 933) the groups managing the programs in those areas were required by the Baltimore City Health Department to collect and report on certain activities. These activities included the number of: 1) outreach workers and clients; 2) face-to-face contacts with clients or others; 3) referrals for services; and 4) mediations of disputes. Other measures, such as the number of flyers or other materials distributed within the neighborhood and the number of shooting responses conducted, were also recorded.

Figures 1 through 4 provide the monthly totals for our four primary implementation measures in each of the three neighborhoods, from August 2007 to October 2008. As Figure 1 makes clear, in McElderry Park the program began identifying clients in August 2007 (with 4 outreach workers associated with 16 clients). By February 2008, eight outreach workers were working with 55 clients. Additional outreach workers continued to be hired and trained, and by October 2008 the number of clients had reached 88. Similarly, in the smaller expansion neighborhood of Ellwood Park outreach workers and clients were successfully identified. By comparison, in Union Square, a stable group of outreach workers was not assembled until March 2008 (28 clients) and the number of total clients never exceeded 56 (in July 2008). The overall number of face-to-face contacts (Figure 2) increased steadily in McElderry Park and to a somewhat lesser degree in Union Square⁵ and Ellwood Park.

Referrals for services (Figure 3) include assistance with educational, employment, mental health, housing, substance abuse, healthcare, or other services. For the combined areas of McElderry Park and Ellwood Park, referrals peaked during the summer months of June-July 2008, but remained relatively high through October 2008 (42). Perhaps not surprisingly, by far the largest single category of referrals was for employment services. Although beginning late, Union Square initially provided a substantial number of referrals (27 in March 2008), but did not sustain that momentum beyond May 2008.

For the crucial metric “mediations of disputes,” there is considerable month-to-month variation (Figure 4). In McElderry Park, a relatively large number of mediations were reported at or near the beginning of the project period (a total of 15 in just August and September 2007). An additional four mediations actually occurred *before* (in June and July 2007) the official start-date of the primary component of the intervention

⁵ Implementation halted in Union Square after July 2008 when the contract was not renewed due to the inability of the community group to fully implement the program model.

(outreach workers and their clients). Again, Union Square did not report a comparable number of mediations, never exceeding two in a given month, with 4 overall.

Estimated Program Effects on Attitudes Supportive of Gun Violence

As stated above, wave 1 of the surveys on attitudes about gun violence was fielded in November and December 2007 when one of the three neighborhoods (McElderry Park) had been fully implementing *Safe Streets* for four to five months, another (Union Square) had implemented a kick-off rally but was months away from full implementation, and a third neighborhood served as a non-intervention comparison (Oliver). The three neighborhoods were similar with respect to participants' risk factors for involvement in gun violence – arrest history, prevalence of gun violence victimization, and sibling gun violence victimization. Nevertheless, participants from McElderry Park held attitudes less supportive of using violence to resolve six types of disputes that are common “sparks” for gun violence. The mean score on the global scale for support for using guns to resolve disputes was 2.47 (SD=2.72) in McElderry Park, 4.48 (SD=2.96) in Union Square, and 3.57 (SD=3.03; F=7.01, df=2, p=.001) in Oliver.

In the first regression, we controlled for age, prior arrest history, personal gun violence victimization, siblings' gun violence victimization, perceptions of friends' attitudes about the appropriateness of using guns to settle disputes, and tested the effects of an indicator variable for McElderry Park. The model estimated that being in McElderry Park reduced the mean score on supportiveness for gun violence to settle disputes by 1.88, an effect that is both highly statistically significant (p<.001) and substantial (41% less supportive of gun violence in McElderry Park compared to the other neighborhoods). Also, participants' perceptions of peer norms concerning the use of guns to settle disputes were positively associated with participants' own attitudes supporting the use of gun violence (Table 1).

Table 1. Estimates from a multiple linear regression model for young men's attitudes supporting the use of guns to settle disputes.

Model:	Unstandardized Coefficients		Standardized Coefficients	Signif.
	B	Std. Error	Beta	
(Constant)	.524	2.249		.816
Age (years)	.104	.107	.071	.333
ever arrested	-.306	.499	-.048	.541
ever shot or shot at	.327	.525	.054	.535
sibling ever shot or shot at	.326	.488	.054	.505
friends' shooting propensity	.274	.068	.304	<.001
McElderry Park/ <i>Safe Sts.</i>	-1.88	.465	-.295	<.001

Model R² = .168

Estimated Program Effects on Homicides and Nonfatal Shootings

Figures 5-7 depict the 3-month moving averages for the number of homicides plus nonfatal shootings for the three neighborhoods implementing *Safe Streets* and for the remaining police posts that were in the upper quartile in shootings among all police posts in the city. In McElderry Park, as well as in the police posts surrounding McElderry Park, there is a downturn in shootings immediately following the implementation of *Safe Streets* beginning August 2007 through the end of 2007. However, among the comparison police posts that had historically high levels of shootings during the baseline period, but which did not have *Safe Streets*, there is also a downturn in shootings beginning the summer of 2007 through the end of the year followed by an increase in the Spring of 2008. There is no observable reduction in shootings in either Union Square or Ellwood Park when those communities began to implement *Safe Streets*.

Table 2. Mean number of homicides per month before and after *Safe Streets* implementation in intervention, border, and comparison communities.

Period and <i>Safe Streets</i> exposure	before <i>Safe Streets</i> mean (SE)	during <i>Safe Streets</i> mean (SE)	difference (% chg)	t	signif.
Intervention Period 1 (8/07 - 9/08)					
McElderry Park – <i>Safe Sts.</i>	0.31 (0.08)	0 (0)	-0.31 (-100%)	-3.79	.0004
posts bordering McElderry Park	0.17 (0.03)	0.07 (0.03)	-0.10 (-59%)	-2.14	.034
Other top 25% police posts for shootings	0.29 (0.01)	0.20 (0.02)	-0.09 (-31%)	-3.09	.002
Intervention Period 2 (4/08 - 9/08)					
Ellwood Park – <i>Safe Sts.</i>	0.33 (0.08)	0.33 (0.21)	0.0 (0%)	0.00	1.00
posts bordering Ellwood Park	0.14 (0.03)	0.06 (0.06)	-0.08 (-57%)	-1.31	.202
other top 25% police posts for shootings	0.28 (0.01)	0.20 (0.04)	-0.08 (-29%)	-1.80	.073
Intervention Period 3 (3/08 - 7/08)					
Union Square – <i>Safe Sts.</i>	0.20 (0.06)	0.60 (0.24)	+0.40 (+200%)	1.64	.169
posts bordering Union Square	0.17 (0.02)	0.17 (0.07)	0.0 (0%)	0.07	.943
other top 25% police posts for shootings	0.27 (0.01)	0.19 (0.04)	-0.08 (-30%)	2.24	.026

A comparison of the monthly mean for homicides before and after *Safe Streets* implementation is provided in Table 2 for the intervention sites, posts bordering the intervention sites, and for the comparison posts during the relevant intervention periods. In McElderry Park, there was an average of 0.31 homicides per month (3.7 per year) during the months prior to the implementation of *Safe Streets* in August 2007, but no homicides during the 14-month follow-up period. In fact, through the end of December 2008 – for 17 months, there has not been a single homicide in McElderry Park since *Safe Streets* was implemented. This reduction was statistically significant ($p=.0004$) suggesting that there was only a 4 in 10,000 probability that the neighborhood would be homicide free during this period due solely to chance variation. In police posts bordering McElderry Park, the mean number of homicides per month fell 59 percent, from 0.17 (2.0 per year) prior to the *Safe Streets* implementation in McElderry Park to 0.07 per month (0.82 per year) following program implementation ($p=.034$). In the non-intervention comparison posts, monthly homicides declined 31 percent from 0.29 (3.43 per year) before August 2007 to 0.20 (2.44 per year) after August 2007 ($p=.002$). Comparing the mean number of homicides with and without *Safe Streets* for the much more brief periods of full program implementation in Union Square (5 months) and in Ellwood Park (6 months) revealed an upturn during program implementation in Union Square and no program-related differences in Ellwood Park. There was also no program-related difference in the number of homicides among police posts that bordered on these *Safe Streets* neighborhoods (Table 2).

Table 3. Estimates from a negative binomial regression analysis of monthly homicides.

Model	IRR	Z	signif.
Intervention Period 1 (8/07 – 9/08)			
nonintervention comparison posts	0.75	-2.00	.045
McElderry Park – Safe Streets	5.71 ⁻⁹	-18.6	<.001
posts bordering McElderry Park	0.65	-0.99	.334
Intervention Period 2 (4/08 – 9/08)			
nonintervention comparison posts	1.10	0.33	.742
Ellwood Park – Safe Streets	1.32	1.23	.220
posts bordering Ellwood Park	0.69	-0.32	.749
Intervention Period 3 (3/08 – 7/08)			
nonintervention comparison posts	0.75	-1.09	.278
Union Square – Safe Streets	4.76	6.59	<.001
posts bordering Union Square	1.46	0.81	.420
arrests for illegal weapon possession in prior month	0.99	-0.37	.715
arrests for drug possession and distribution	1.01	3.08	.002

* The model also includes fixed effects for police post and calendar month.

The regression analyses control for potential confounders including baseline means for homicides within each post, arrests for illegal weapons violations (lagged one

month), arrests for drug possession and distribution, and month and estimate program impact based on the difference in changes experienced in the intervention areas relative to the changes that occurred during the same time period in high-crime areas that did not implement the program. Estimates from the regression models are reported in Table 3. The period during which *Safe Streets* was implemented in McElderry Park was associated with a statistically significant 25 percent decrease in homicides among police posts that did not implement or border *Safe Streets* (IRR=0.75, p=.045). The decrease in homicides in McElderry Park that was associated with the program was significantly greater than the reduction in the comparison posts. There was no association between *Safe Streets* implementation in Ellwood Park and homicides, and the 5 months of *Safe Streets* in Union Square were associated with an increase in homicides relative to changes in comparison areas.

When we estimated the model for homicides of victims under age 30, a subgroup of homicides mostly likely to be affected by the youth-focused program, *Safe Streets* was associated with reductions in youth homicides in McElderry Park. The estimate for program implementation in Union Square was positive, indicating an increased risk of homicides among persons under 30; however, that is based on the occurrence of a single homicide in March, just when program implementation was getting under way in that neighborhood. If one assumes substantive program implementation began in April

Table 4. Estimates from a negative binomial regression analysis of monthly homicides of victims under age 30.

Model	IRR	z	signif.
Intervention Period 1 (8/07 – 9/08)			
nonintervention comparison posts	0.78	1.26	.209
McElderry Park – <i>Safe Streets</i>	5.02 ^b	-16.3	<.001
posts bordering McElderry Park	0.84	-0.37	.714
Intervention Period 2 (4/08 – 9/08)			
Nonintervention comparison posts	1.39	0.96	.337
Ellwood Park – <i>Safe Streets</i>	0.83	-0.79	0.429
posts bordering Ellwood Park	8.05 ^b	-27.0	<.001
Intervention Period 3 (3/08 – 7/08)			
nonintervention comparison posts	0.54	-1.76	.078
Union Square – <i>Safe Streets</i>	2.44 ^{**}	3.44	.001
posts bordering Union Square	1.67	1.10	.272
arrests for illegal weapon possession in the prior month	0.92	-1.88	.060
arrests for drug possession and distribution	1.01	1.82	.069

^a The model also includes fixed effects for police post and calendar month.

^{**} This estimate was highly unstable, determined by a single homicide, and would be statistically significant in the opposite direction if implementation was assumed to begin one month later.

rather than in March, the estimate shows a statistically significant decrease in the risk of homicide for persons under 30. The estimate for program effect was not statistically significant in Ellwood Park (IRR = 0.82, p=.368). The program was associated with a significant reduction in under-30 homicides among the police posts that border Ellwood Park. Also of note, increased arrests for illegal weapons lagged by one month were associated with reductions in homicides of victim under 30 (Table 4).

Table 5 provides pre- and post-*Safe Streets* bivariate comparisons in the mean number of nonfatal shootings per month. There is no evidence of significant program-related changes in the neighborhoods implementing *Safe Streets*. Nonfatal shootings were 7 percent lower in McElderry Park following program implementation, but nonfatal shootings were down 23 percent lower in comparison posts during the same period (p=.001). There was no change in Ellwood Park or in the surrounding posts following *Safe Streets* implementation, nor was there a change in the comparison posts during the period when the program was implemented. Shootings increased 33 percent during the

Table 5. Mean number of nonfatal shootings per month before and after *Safe Streets* implementation in intervention, border, and comparison communities.

Period and <i>Safe Streets</i> exposure	no <i>Safe Streets</i>	during <i>Safe Streets</i>	difference (% chg)	t	signif.
	mean (SE)	mean (SE)			
Intervention Period 1 (8/07 – 9/08)					
McElderry Park – <i>Safe Sts.</i>	0.85 (0.15)	0.79 (0.26)	-0.06 (-7%)	0.23	.820
posts bordering McElderry Park	0.49 (0.06)	0.34 (0.11)	-0.15 (-31%)	1.18	.242
Other top 25% police posts for shootings	0.69 (0.02)	0.53 (0.04)	-0.16 (-23%)	3.38	.001
Intervention Period 2 (4/08 – 9/08)					
Ellwood Park – <i>Safe Sts.</i> 4/08 – 9/08	1.05 (0.14)	1.00 (0.37)	-0.05 (-5%)	0.12	.906
posts bordering Ellwood Park	0.45 (0.07)	0.50 (0.23)	+0.05 (+11%)	-0.21	.837
other top 25% police posts for shootings	0.65 (0.02)	0.69 (0.07)	+0.04 (+6%)	-0.52	.604
Intervention Period 3 (3/08 – 7/08)					
Union Square – <i>Safe Sts.</i> 4/08 – 7/08	0.45 (0.11)	0.60(0.40)	0.15 (+33%)	0.43	.686
posts bordering Union Square	0.37 (0.04)	0.37 (0.12)	0.00 (0%)	-0.06	.948
other top 25% police posts for shootings	0.65 (0.02)	0.69 (0.07)	+0.04 (+6%)	0.46	.643

5 months of program implementation in Union Square, a time during which nonfatal shootings were increasing 17 percent in the comparison posts. However, two of the three shootings in Union Square during the implementation period occurred in March, when implementation was just beginning.

The regression analyses indicate that *Safe Streets* was associated with fewer nonfatal shootings in Ellwood Park, but was associated with more non-fatal shootings in McElderry Park and Union Square (Table 6). The difference-in-difference estimates indicate that Ellwood Park's program-associated reduction in nonfatal shootings was 20 percent. But relative to the reduction in nonfatal shootings experienced among high-crime areas that did not receive *Safe Streets* when McElderry Park and Union Square were implementing *Safe Streets*, nonfatal shooting risks were higher in these intervention neighborhoods. However, as was demonstrated in the regression models for homicides, the program effect estimate for Union Square was determined based on two nonfatal shootings during the program's first month of implementation. A model that assumed program implementation one month later estimated a statistically significant *reduction* in nonfatal shootings linked with *Safe Streets*. When the outcome was restricted to nonfatal shootings of victims under age 30, *Safe Streets* implementation was associated with fewer nonfatal shootings in Union Square, but with relatively more nonfatal shootings in McElderry Park (Table 7).

Table 6. Estimates from negative binomial regression of monthly nonfatal shootings.

Model	IRR	z	signif.
Intervention Period 1 (8/07 – 9/08)			
nonintervention comparison posts	0.59	-4.05	<.001
McElderry Park – Safe Streets	1.19	2.01	.034
posts bordering McElderry Park	0.79	-0.61	.540
Intervention Period 2 (3/08 – 7/08)			
nonintervention comparison posts	1.42	2.12	.034
Ellwood Park – Safe Streets	0.80	-2.35	.019
posts bordering Ellwood Park	1.09	0.34	.743
Intervention Period 3 (4/08 – 9/08)			
Nonintervention comparison posts	1.25	1.12	.262
Union Square – Safe Streets	1.32*	2.81	.005
posts bordering Union Square	0.86	-0.48	.631
arrests for illegal weapon possession	0.99	-0.22	.827
arrests for drug possession and distribution	1.00	1.34	.180

* The model also includes fixed effects for police post and calendar month.

** This estimate was highly unstable, determined by 2 shootings in the initial month of implementation. The estimate was statistically significant in the opposite direction if implementation was assumed to begin one month later.

Table 7. Estimates from a negative binomial regression analysis of monthly nonfatal shootings of victims under 30 years-old.

Model	IRR	z	signif.
Intervention Period 1 (8/07 – 9/08)			
nonintervention comparison posts	0.56	-4.17	<.001
McElderry Park – Safe Streets	1.67	5.11	<.001
posts bordering McElderry Park	0.80	-0.49	.624
Intervention Period 2 (4/08 – 9/08)			
nonintervention comparison posts	1.22	0.98	.326
Ellwood Park – Safe Streets	1.12	1.07	.283
posts bordering Ellwood Park	0.80	-0.64	.525
Intervention Period 3 (3/08 – 7/08)			
nonintervention comparison posts	1.43	1.49	.326
Union Square – Safe Streets	1.35	2.40	.016
posts bordering Union Square	1.00	-0.00	.996
arrests for illegal weapon possession	0.99	-0.16	.875
arrests for drug possession and distribution	1.00	1.10	.272

* The model also includes fixed effects for police post and calendar month.

** This estimate was highly unstable, determined by 2 shootings in the initial month of implementation. The estimate was statistically significant in the opposite direction if implementation was assumed to begin one month later.

DISCUSSION

The Baltimore City Health Department awarded contracts to Living Classrooms Foundation in May 2007 and to Community Organized for Improved Life (COIL) in August 2007 to implement the *Safe Streets* program in the neighborhoods of McElderry Park and Union Square, respectively. Although outreach workers in McElderry Park were significantly engaged in implementing key components of the program by August 2007, this did not occur in Union Square until March 2008. Because COIL did not fully implement the program, its contract was not renewed and significant program implementation was in place for (at most) only five months in Union Square. In Ellwood Park (a neighborhood adjacent to McElderry Park), full implementation of *Safe Streets* began in April 2008, leaving 6 months of intervention-period data for this interim evaluation. Aside from variations in the timing and duration of program implementation, the *Safe Streets* neighborhoods differed in the degree to which outreach workers mediated conflicts that were deemed to be at high risk for a shooting. Outreach workers in McElderry Park and Ellwood Park documented many conflict mediations, but many fewer mediations were recorded for Union Square.

The logic model for *Safe Streets* to reduce gun violence includes efforts to facilitate changes in community attitudes and norms about the acceptability of using guns to settle disputes. This is carried out through modeling by outreach workers and community organizers, community events that promote nonviolence, and the distribution of materials with messages that promote non-violence. Wave 1 of our survey was conducted approximately 5 months following the implementation of *Safe Streets* in McElderry Park, prior to program implementation in Union Square, and in the non-intervention comparison community of Oliver. The survey data revealed far less support for using gun violence to settle disputes in McElderry Park than in the other communities that had not implemented the program – a major success and sign that the program was working.

Our most reliable findings on the effects of *Safe Streets* on homicides and nonfatal shootings are for McElderry Park where we had 14 months of data during the intervention period. The most positive finding was that there was not a single homicide in McElderry Park since *Safe Streets* has been implemented – 17 months at the time of this report. If historical patterns for homicides in the neighborhood had continued, one would have expected 4 or 5 homicides in McElderry Park during that time span. This is a notable accomplishment for a program oriented toward the prevention of gun violence among youth in areas with endemically high rates of gun violence.

Yet the significance of the reductions in homicides associated with the program is somewhat muted by evidence that nonfatal shootings in McElderry Park declined less than was the case among the 31 comparison police posts with the highest numbers of shootings that did not receive the program. What one infers from these disparate findings for homicides versus nonfatal shootings depends on whether one assumes that: a) there is little difference between a homicide and a nonfatal shooting aside from the assailant's marksmanship and promptness of medical care, or b) it is plausible that the intervention could have differential impacts on the two outcomes. If there really is little difference between homicides and nonfatal shootings and there is no reason to believe the program would have differential impact on the two outcomes, then it is harder to conclude that *Safe Streets* was responsible for the reductions in homicides in McElderry Park. When we combine homicides and nonfatal shootings into a single measure, total shootings went down in McElderry Park at a slightly greater rate than was the case in the comparison communities. However, the difference-in-difference estimate of program effect does not approach statistical significance.

But at least some homicides may be sufficiently different from nonfatal shootings and *Safe Streets* may actually have a greater impact on homicides. Outreach workers are trained to identify the highest risk individuals in the community – the persons believed to be a greatest risk of killing or being killed by violence. In McElderry Park, outreach workers logged hundreds of contacts with these high-risk individuals during which they encouraged alternatives to violence, mediated conflicts, provided informal mentoring, and made referrals for services that could decrease risks. The outreach workers interfaced with dangerous gangs with access to guns that operated under circumstances where the odds of lethal altercations are alarmingly high. *Safe Streets* outreach workers in McElderry Park reported intervening to mediate 53 high-stakes disputes and altercations over 15 months. Many of these conflicts – based on their descriptions – could have led to one or more homicides as well as possible retaliatory assaults had the initial altercations become deadly. The extensive evaluation of the long-term impacts of the *CeaseFire* program in Chicago found that program had its most

dramatic effects on reducing retaliatory homicides. These facts, in addition to the apparent positive impact of the program on the attitudes of young men in the community, make it quite plausible that *Safe Streets* did indeed save lives in McElderry Park.

Furthermore, nonfatal shootings in McElderry Park did decline following program implementation, just not as much as in other high crime areas. Our ability to forecast the counterfactual – how many nonfatal shootings would there have been in McElderry Park had *Safe Streets* not been implemented – is limited. The program has operated during a time in which gangs were gaining a strong foothold in the area and already harsh economic conditions got worse. If the conditions that contribute to gun violence – difficult to measure in studies of this type - were indeed getting worse in McElderry Park than in other traditionally high-crime areas of the city, then our model estimates for nonfatal shootings may be incorrect. Ideally, we would have liked to have more observations – more neighborhoods that implemented the program and longer follow-up times – to develop estimates of program impact. Although there are only a combined 11 months of observations between the two other *Safe Streets* sites, our data indicate reductions in nonfatal shootings in one of these neighborhoods – in Ellwood Park where there was greater evidence of full program implementation.

With some types of neighborhood crime control strategies there may be a concern about displacement of crime to surrounding neighborhoods. However, we did not hypothesize such an effect from a public health intervention designed to change attitudes about the acceptability of gun violence, steer high-risk youth away from gun violence, and to mediate potentially lethal disputes. We examined whether *Safe Streets* had any effect on surrounding neighborhoods and found more evidence of a protective effect in these neighborhoods than any displacement of violence from the neighborhoods where the program was concentrated.

The certainty with which we can infer direct program effects from the associations derived from this “natural experiment” is limited. Studies of this type are limited by the difficulty of measuring factors that lead to gun violence increasing (e.g., battles between gangs, changes in local drug markets) or decreasing (e.g., policing initiatives, heightened supervision of high-risk parolees and probationers). While we did control for the effects of arrests for illegal weapons and for drug-related arrests, these measures explained a minimal amount of monthly fluctuations in murders and nonfatal shootings across police posts. This may be because such measures tap both criminal activities as well as police responses to suppress such activities. Thus our estimates of program effect are highly dependent upon assumptions that important determinants of gun violence that were not directly measured were unrelated to program implementation.

Roughly coincident with the implementation of *Safe Streets* in McElderry Park, law enforcement initiatives were launched that included closer monitoring of individuals with histories of gun offending, increased police presence in areas with the highest number of shootings, and efforts to suppress illegal gun possession and sales. Some of these law enforcement initiatives overlapped with *Safe Streets* implementation, but many other neighborhoods with endemically high rates of shootings were also targeted. Our analyses indicate that murders and nonfatal shootings declined 32 percent and 39 percent, respectively, from pre-*Safe Streets* means for the August 2007 through September 2008 period in neighborhoods that had been in the top quartile of shootings during 2003-2006 but did not implement *Safe Streets*. This suggests that the new law enforcement efforts have contributed to substantial reductions in gun violence

throughout the city. It has been suggested that the deployment of the Violent Crime Impact Division (VCID) in particular, especially in the West and East Baltimore, is likely to have led to significant reductions in gun violence in the affect areas.⁶ Unfortunately, we were unable to obtain information from the BPD about the timing and location of their deployment of the VCID for this report. Information of this type may help to explain reductions in gun violence within and across high-crime neighborhoods, and enable us to both estimate the effects of policing tactics on gun violence and derive more valid and precise estimates of the effects of the *Safe Streets* initiative.

The findings from this interim evaluation of the *Safe Streets* program in selected Baltimore neighborhoods should be considered in the context of the findings from the evaluation of the *CeaseFire* program upon which it is modeled. While this evaluation was limited to one site where the program had been in place for 14 months and to two others that had only six and five months of full implementation, the *CeaseFire* evaluation covered up to eight intervention neighborhoods, each of which had implemented the program for at least 33 months. While there was some variation in estimated program effects across the *CeaseFire* sites, there was consistent and compelling evidence that the program led to significantly fewer shootings and homicides. Much of the evidence from this interim evaluation of *Safe Streets* is consistent with the findings from the *CeaseFire* evaluation.

The social and economic costs of gun violence to Baltimore as well as to the state and federal government are broad and substantial. Prominent economists Philip Cook and Jens Ludwig estimated that the annual cost of gun violence in the U.S. is \$100 billion, and their research found that citizens were willing to pay an equivalent of \$1 million per gunshot injury prevented and \$5 million per gunshot fatality prevented.⁷ Medical costs alone are estimated at \$15,200 per gunshot injury treated. Productivity losses from gun violence are estimated at \$308,000 per incident.⁸ Given these enormous costs, along with the evidence from the evaluations of *CeaseFire* and *Safe Streets*, it seems wise for Baltimore to continue its investment in *Safe Streets* while looking for ways to maximize its effectiveness.

⁶ Several studies have shown that special units deployed to focus on identifying and arresting people illegally possessing firearms in hot spots for shootings – part of the VCID strategy – have consistently resulted in significant reductions in shootings. For a review of this research see Ludwig, Jens (2005) Better gun enforcement, less crime. *Criminology & Public Policy* 4:677-716.

⁷ Cook PJ, Ludwig J. *Gun Violence: The Real Costs*. New York: Oxford Press, 2000.

⁸ Corso PS, Mercy JA, Simon TR, Finkelstein EA, Miller TR. Medical costs and productivity losses due to interpersonal and self-directed violence in the United States. *Amer J Preventive Med* 2007;32:474-482.

Figure 1: Outreach Worker Clients, August 2007 - October 2008

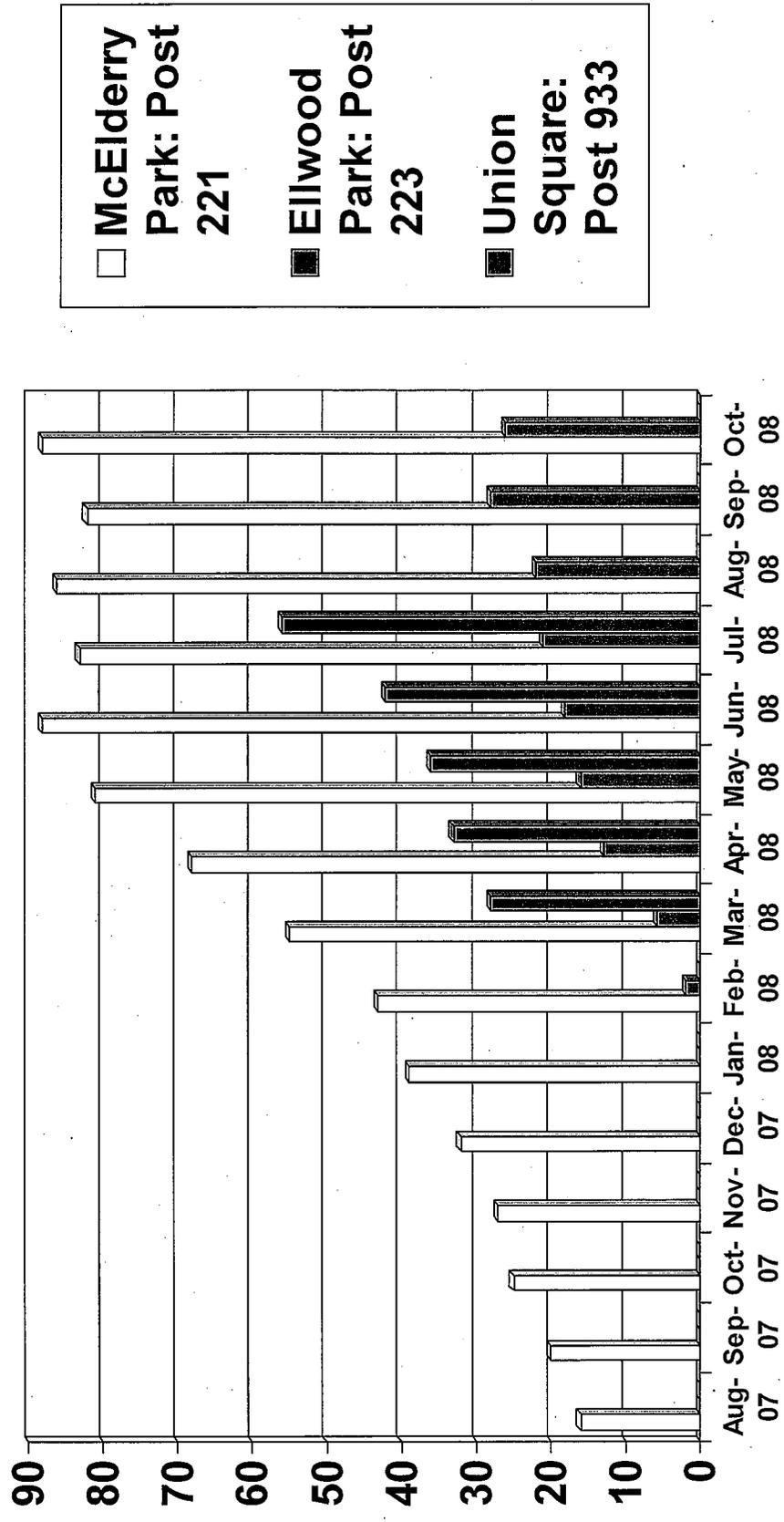


Figure 2: Face-to-Face Contacts, August 2007 - October 2008

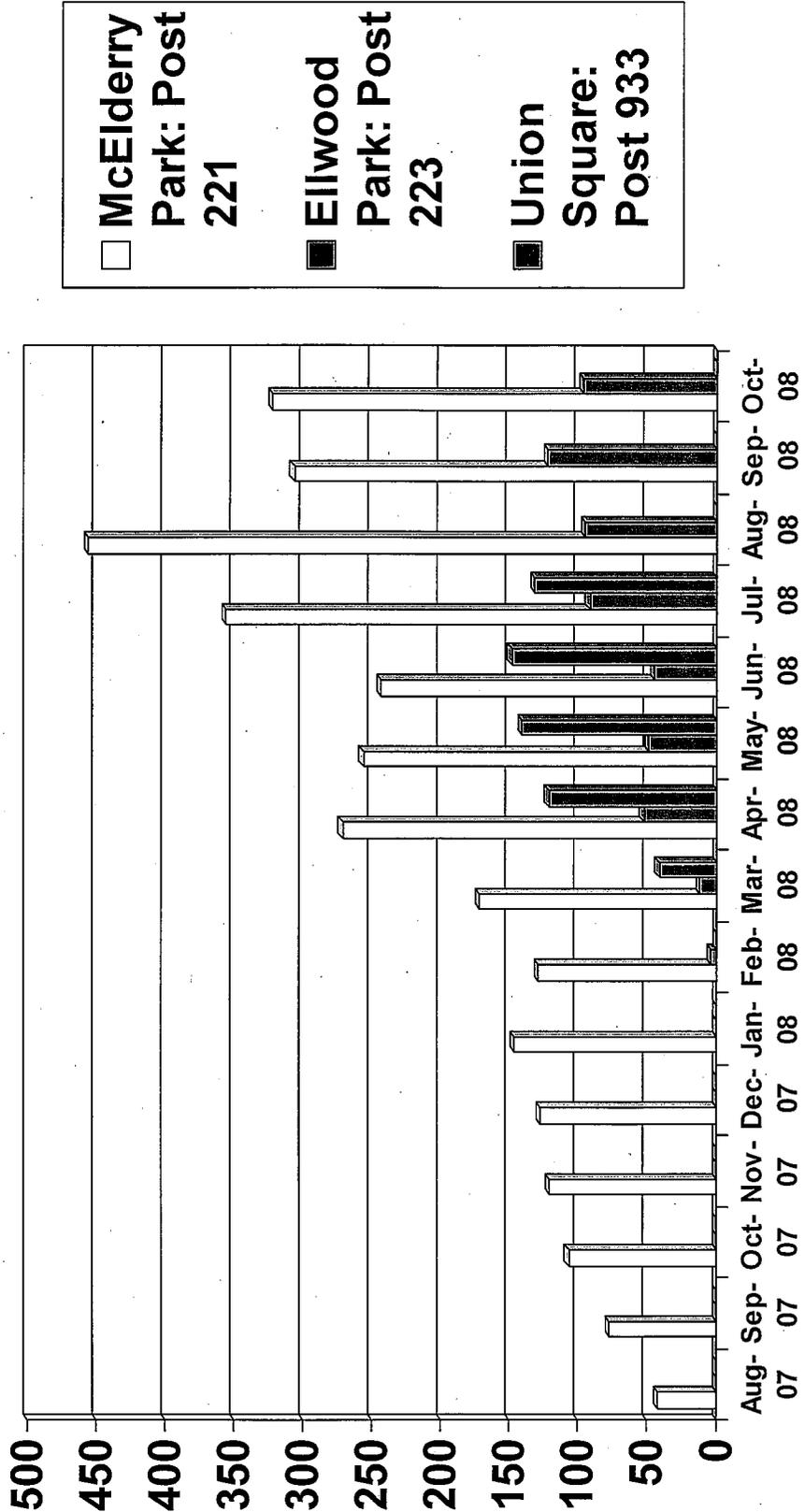


Figure 3: Referrals for Services, August 2007 - October 2008

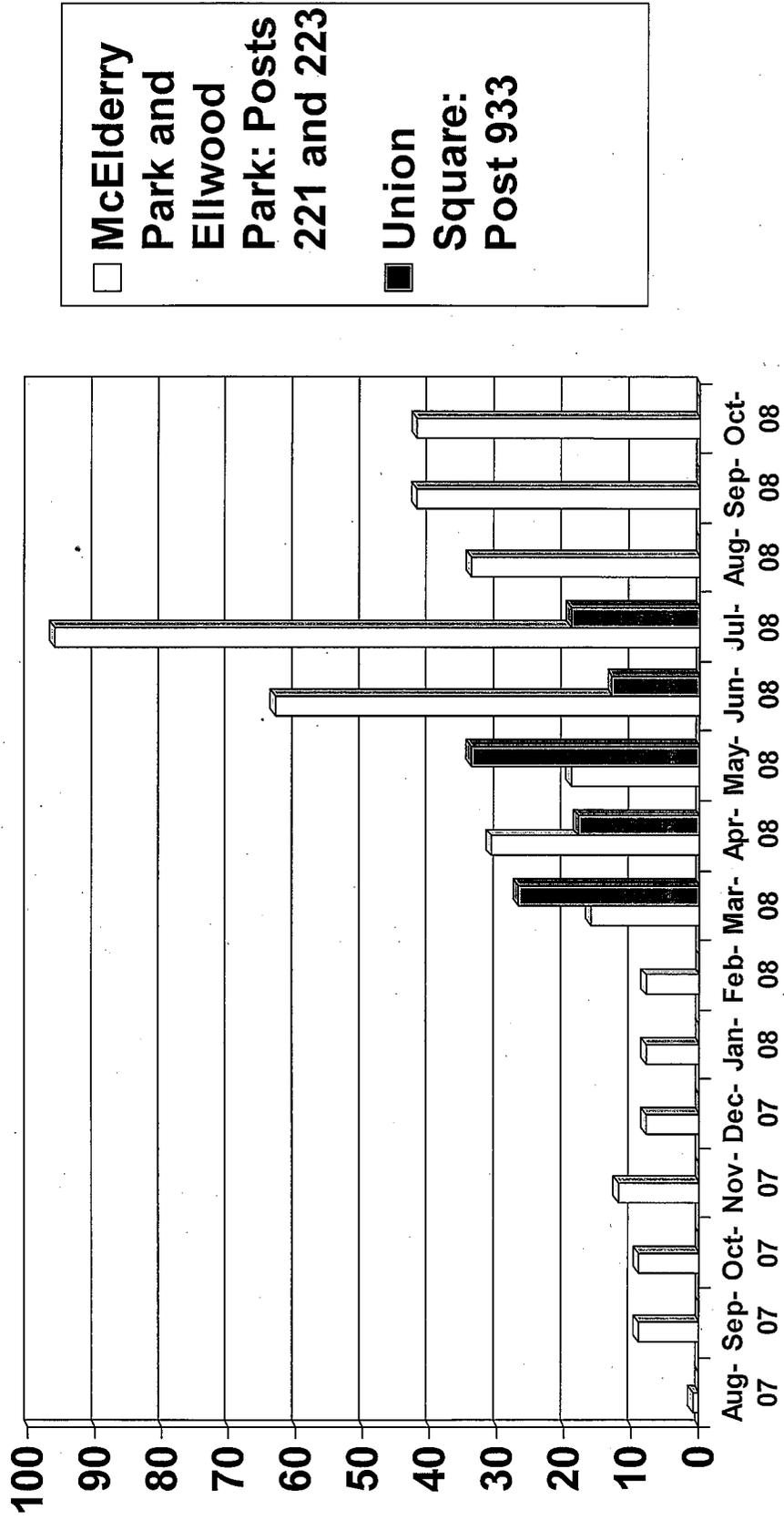


Figure 4: Mediations, August 2007- October 2008

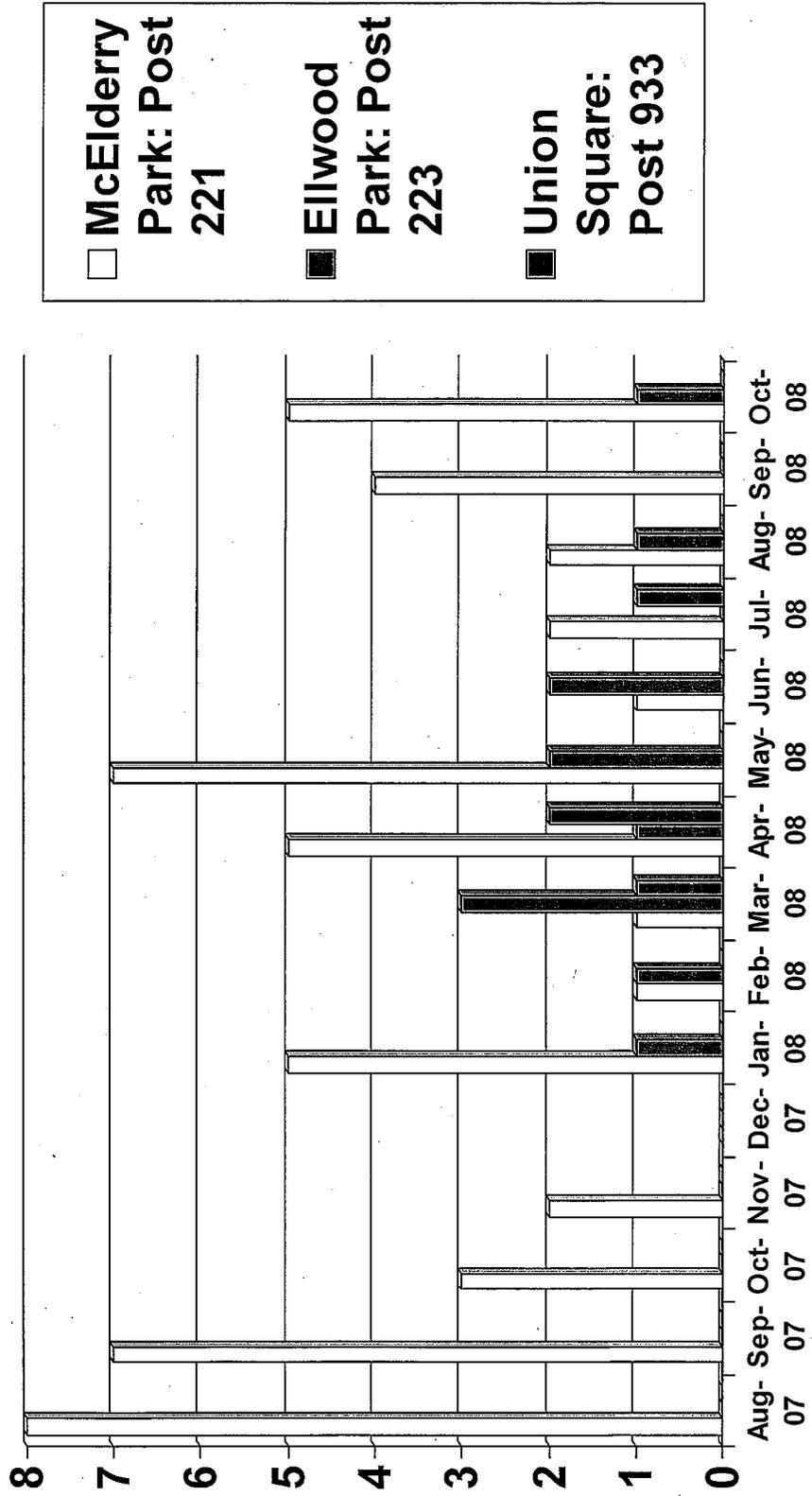
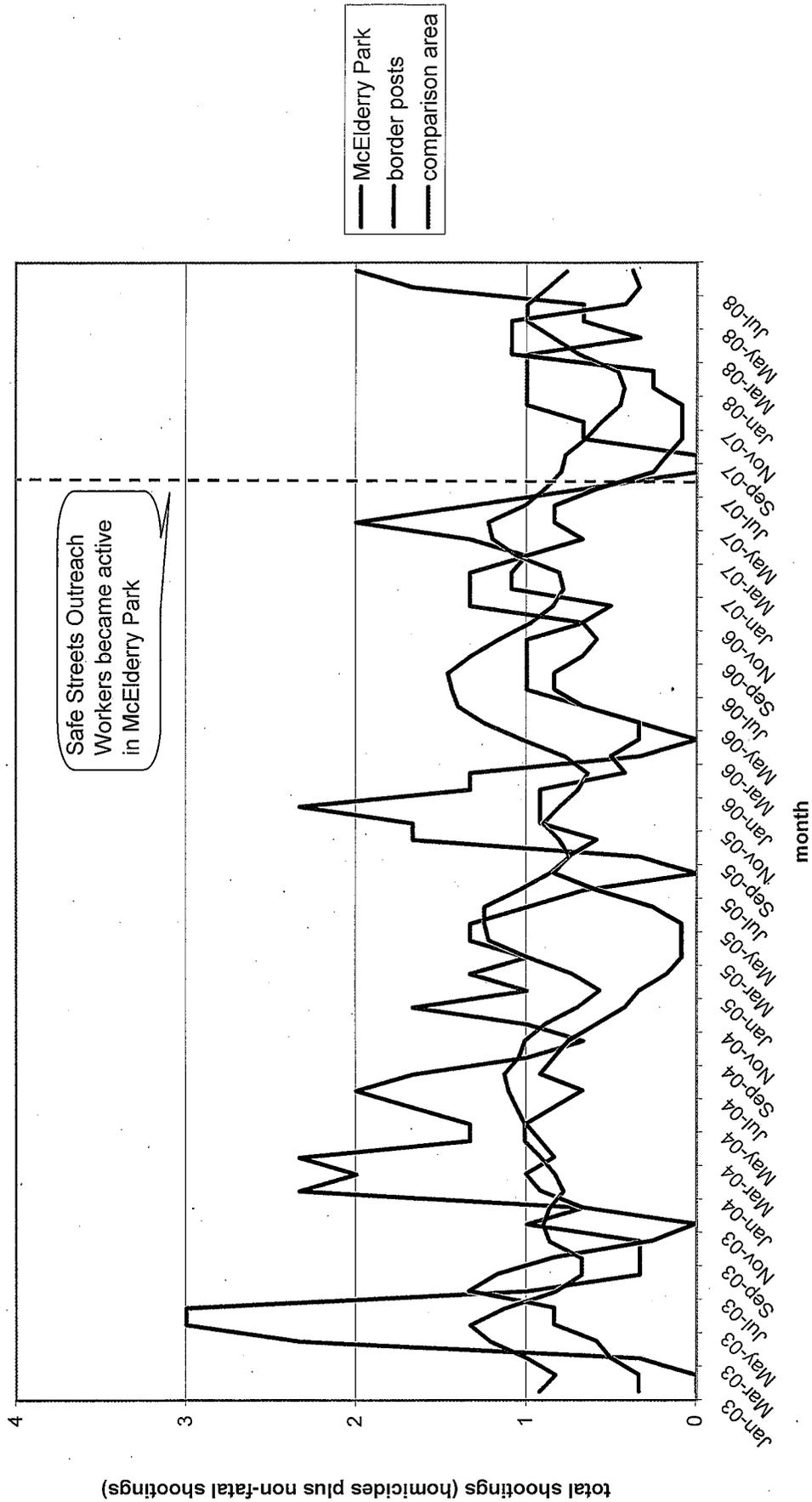
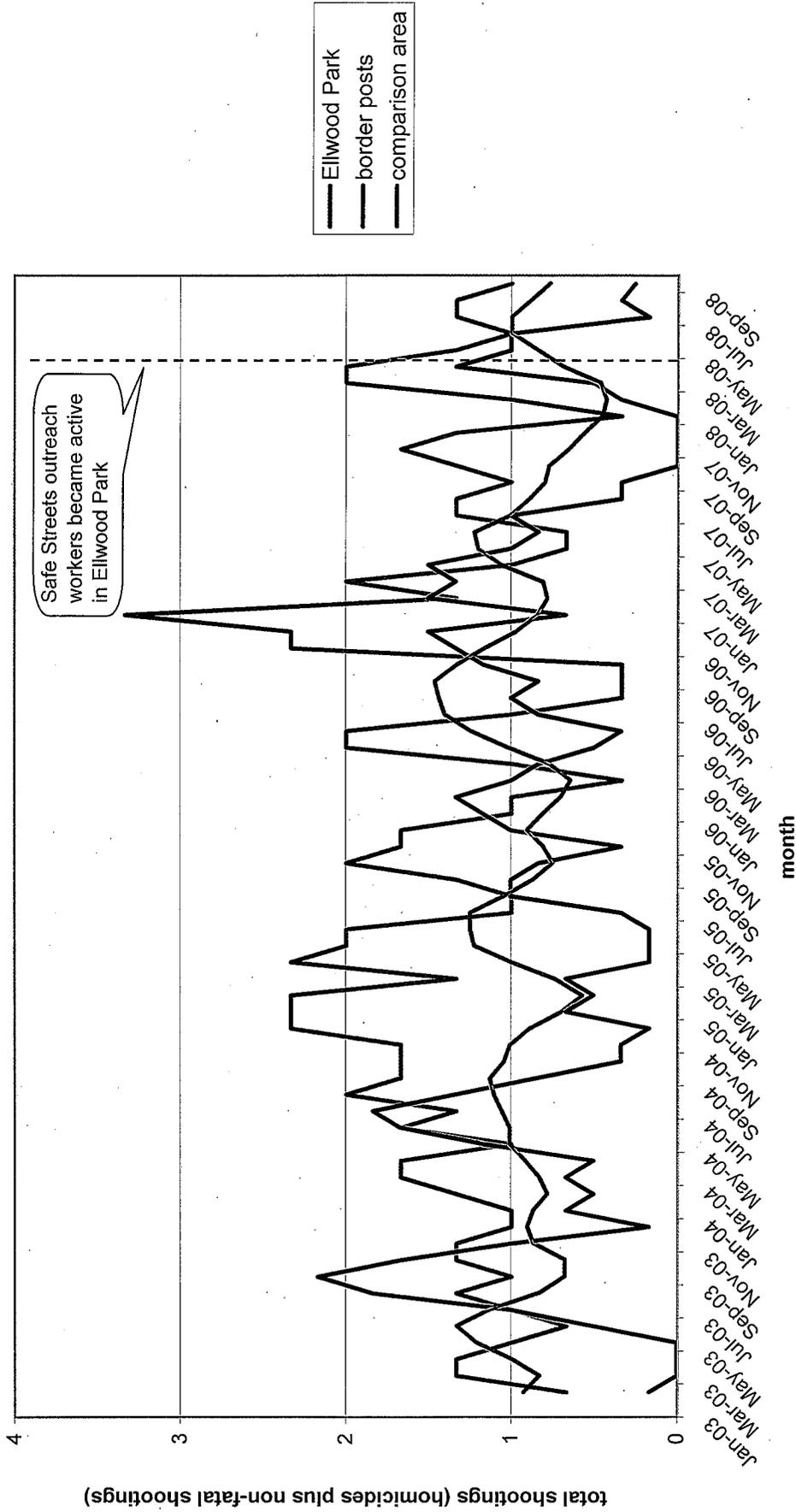


Figure 5. Homicides plus non-fatal shootings: January 2003 to September 2008
 Safe Streets East - McElderry Park



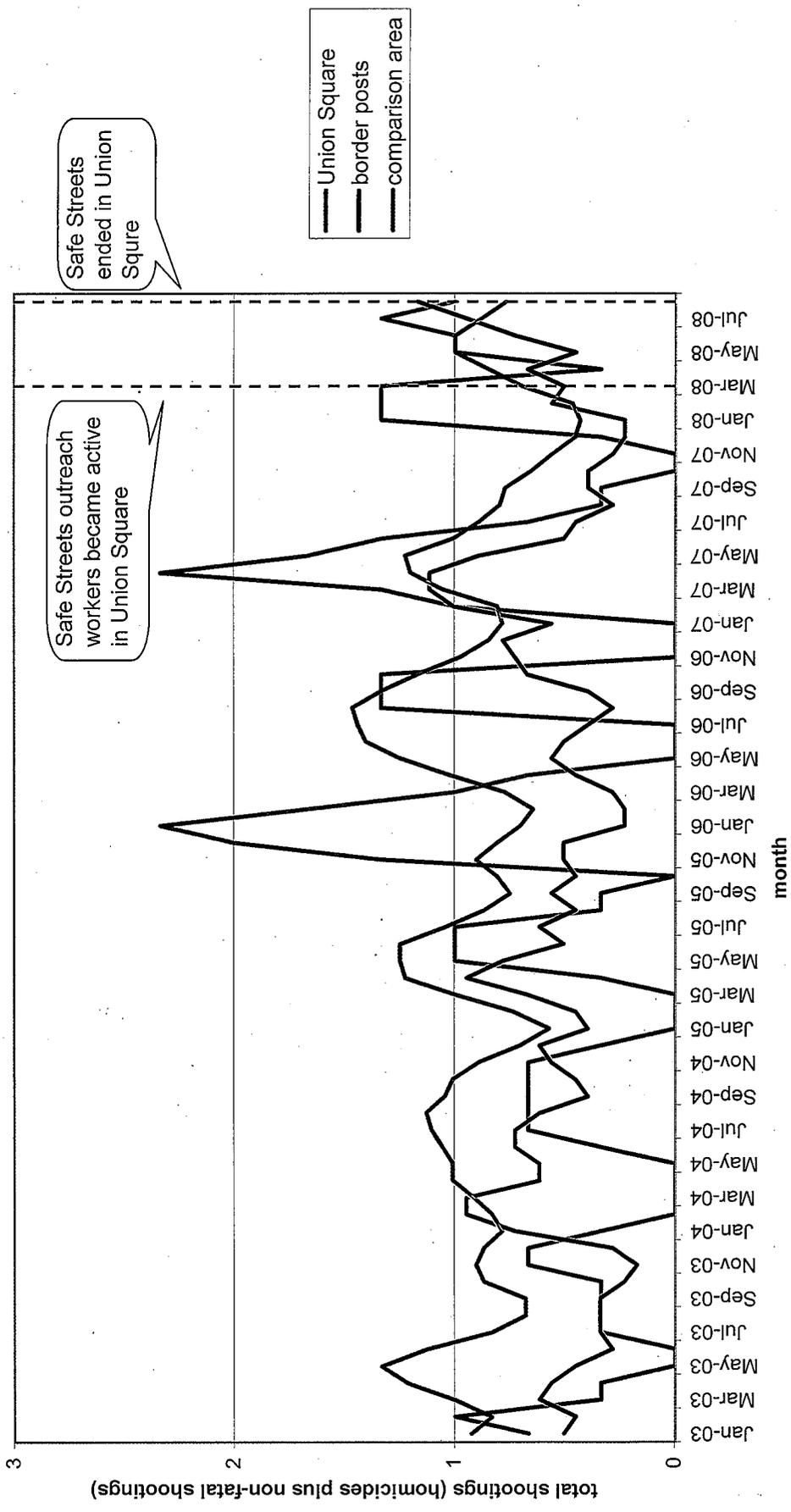
Note: The trend lines on the graph above represent the moving average. The line for the border posts is the average for posts which border McElderry Park (Post 221) but did not receive intervention (posts 212, 222, 324 and 325). The comparison area reflects the average across posts in the top quartile of shootings for 2003-2006 that did not receive or border on a post with the Safe Streets intervention.

Figure 6. Homicides plus non-fatal shootings: January 2003 to September 2008
 Safe Streets East - Ellwood Park



Note: The trend lines on the graph above represent the moving average. The line for the border posts is the average for posts which border Ellwood Park (Post 223) but did not receive in intervention (posts 222, 224, 334). The comparison area reflects the average across posts in the top quartile of shootings for 2003-2006 that did not receive or border on a post with the Safe Streets intervention.

Figure 7. Homicides plus non-fatal shootings: January 2003 to September 2008
 Safe Streets Southwest - Union Square



Note: The trend lines on the graph above represent the moving average. The line for the border posts is the average for posts which border Union Square (post 933) but did not receive in intervention (posts 711, 712, 836, 931, 934, 935). The comparison area reflects the average across posts in the top quartile of shootings for 2003-2006 that did not receive or border on a post with the Safe Streets intervention.