



Published in final edited form as:

*Prev Sci.* 2016 February ; 17(2): 167–176. doi:10.1007/s11121-015-0616-1.

## A Comprehensive Prevention Approach to Reducing Assault Offenses and Assault Injuries Among Youth

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### Abstract

Since 2011, the CDC-funded Michigan Youth Violence Prevention Center (MI-YVPC), working with community partners, has implemented a comprehensive prevention approach to reducing youth violence in Flint, MI, based on public health principles. MI-YVPC employed an intervention strategy that capitalizes on existing community resources and application of evidence-based programs using a social-ecological approach to change. We evaluated the combined effect of six programs in reducing assaults and injury among 10–24 year olds in the intervention area relative to a matched comparison community. We used generalized linear mixed models to examine change in the intervention area counts of reported assault offenses and assault injury presentation relative to the comparison area over a period six years prior- and two and a half years post-intervention. Results indicated that youth victimization and assault injuries fell in the intervention area subsequent to the initiation of the interventions and that these reductions were sustained over time. Our evaluation demonstrated that a comprehensive multi-level approach can be effective for reducing youth violence and injury.

### Keywords

youth violence; prevention; assault; injury

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Violence is a significant public health concern, sharing features of other types of epidemics, with predictable patterns as well as identifiable risk and protective factors (Prothrow-Stith, 1995; Resnick, Ireland, & Borowsky, 2004). Adolescents under the age of 25 are most at-risk for witnessing or experiencing violence (Finkelhor, Ormrod, Turner, & Hamby, 2005; Truman & Planty, 2011), with males, ethnic minorities, and urban residents more likely to be affected by violence than females, whites, and rural residents (Buka, Stichik, Birdthisle, & Earls, 2007). Past studies have noted the deleterious effects of youth exposure to violence and victimization, including anxiety and depression (Pailler, Kassam-Adams, Datner, & Fein, 2007), posttraumatic stress disorder (Zatzick et al., 2013), aggression (Sullivan, Fehon, Andres-Hyman, Lipschitz, & Grilo, 2006), and problem behaviors (Cunningham et al., 2006). Exposure to violence has lasting implications for youth as it is associated with future

violent behavior, favorable attitudes toward violence, and negative mental health outcomes (Gorman-Smith, Henry, & Tolan, 2004).

Youth victimization is of particular concern in Flint, MI, consistently one of the most violent cities per capita in the U.S. (Federal Bureau of Investigation [FBI], 2013). Since 2011, the CDC-funded Michigan Youth Violence Prevention Center (MI-YVPC), working with community partners, has implemented a comprehensive prevention approach to reducing youth violence in Flint based on public health principles. Social-ecological (Bronfenbrenner, 1989), social disorganization (Sampson, Raudenbush, & Earls, 1997), busy streets (Aiyer, Zimmerman, Morrel-Samuels, & Reischl, 2014), and empowerment theories (Zimmerman, 1995; Zimmerman, Stewart, Morrel-Samuels, Franzen, & Reischl, 2011) guide the intervention efforts.

## Social Ecology and (Dis)Organization

Social-ecological theory (Bronfenbrenner, 1989) emphasizes individual development within relationships and broader social contexts, and examines how multiple contexts influence youth development. It also involves the dynamic relations across contexts, how they change over time, and the bi-directional influences of person-context interactions. That is, contexts influence individuals and individuals influence contexts (Aber, Bennett, Conley, & Li, 1997). Social disorganization theories by Sampson and Groves (1989) posit that neighborhood context may have positive or negative influences on youth development through both structural characteristics and social processes (Leventhal & Brooks-Gunn, 2000; Sampson, Morenoff, & Gannon-Rowley, 2002). Neighborhood structural characteristics refer to neighborhood socioeconomic status (SES), residential instability, and ethnic heterogeneity. Neighborhood processes refer to the social organizational aspect of neighborhoods such as informal social control, social cohesion, and institutional resources (Sampson et al., 1997) – the ways residents interact with each other and address problems in their neighborhoods. The level of social organization determines the degree of public order and the extent to which residents' behavior is monitored. Poor and residentially unstable neighborhoods are expected to have low levels of social organization, which leads to the proliferation of problem behaviors, such as drug use and crime (Sampson & Groves, 1989; Wilson, 1996). It follows that interventions focused on the influences of the neighborhood context on social interactions (e.g., increasing social capital, community engagement, and ownership) should improve social organization and reduce crime.

## Busy Streets and Community Empowerment

Aiyer et al. (2014) proposed an approach to understanding how positive neighborhood contexts may create environments where social cohesion, trust, social capital, and collective efficacy thrive. This approach was termed *busy streets*. Neighborhood safety determines whether people are attracted to, or deterred from, visiting an area, and also encourages or discourages economic growth and expansion. People seek active and safe environments where streets are clean, businesses are flourishing, people interact, and homes are well-maintained. Busy streets emphasize the role of positive, healthy social activity in promoting safe neighborhoods. Street activity creates opportunities for informal interactions that

ultimately foster deeper social connections. These social connections also increase residents' sense of accountability and responsibility, further strengthening social control and organization. Thus, community vibrancy creates a context that encourages interactions and social connections among residents, facilitating social control and reducing crime. In blighted or disorganized neighborhoods, focused efforts to change the environmental context in order to facilitate interaction among residents may in turn lead to *busy streets*.

This process of community collaboration for neighborhood change is consistent with empowerment theory (Perkins & Zimmerman, 1995; Peterson & Zimmerman, 2004), which provides a framework guiding interventions to promote positive social interactions associated with busy streets. Community empowerment emphasizes the importance of considering both the structural context and social processes which operate to give local residents the power and capability to make positive change in their neighborhood. It is an active, participatory process through which individuals, organizations, and communities work together to exert the control necessary to create safe environments and to effect the changes they desire (Peterson & Zimmerman, 2004). Busy streets and empowerment theories inform the present intervention because increased social organization and collective efficacy is expected to lead to neighborhood-wide reductions negative outcomes, including youth violence.

## Current Study

Consistent with a social-ecological approach to violence prevention, in this study we evaluated the combined effect of 6 programs in reducing assaults and assault injury among 10-24 year olds in the intervention area relative to a matched comparison neighborhood. MI-YVPC has been a community-academic partnership that includes the Genesee County Health Department (and other county agencies), the Flint Police Department, Hurley Medical Center, faith-based organizations, neighborhood groups, the Boys and Girls Club of Greater Flint, elementary schools, Michigan State University School of Criminal Justice, and Mott Children's Health Center. The MI-YVPC has met regularly with its partners to discuss recruitment, program implementation, and research results. Partnering organizations have also been involved in implementing the interventions. MI-YVPC focused on promoting individual assets and community resources through the application of 6 programs in a geographically defined area of Flint. The goal of these programs has been to reduce violent crime and injury among 10-24 year olds in the intervention area. We evaluated the combined effect of this multi-faceted approach (6 programs) using 2 independent sets of geo-coded data to conduct the evaluation: (a) crime incidents provided by the Flint Police Department and (b) youth presenting with an assault injury in the only public Emergency Department (ED) and regional trauma center at Hurley Medical Center. We also included a geographically defined comparison area in Flint with similar demographic characteristics to assess intervention effects.

## Method

The MI-YVPC intervention included six distinct programs designed to reach both at-risk and general youth populations across individual, social relationship, and community

ecological levels. This comprehensive approach was consistent with Nation et al. (2003) who noted that a multi-faceted, multi-level intervention can be more effective than individual activities. The programs were specifically selected in order to implement an ecological approach to increase youth and family enrollment, implement both high-risk and universal approaches, and include environmental change. Each component of the overall intervention had previous evidence to support its effectiveness at reducing youth violence at one or more ecological levels. Individual focused interventions include: Youth Empowerment Solutions (YES; Reischl et al., 2011) and Project Sync (adapted from SafERteens) (Cunningham et al., 2012). Relationship-focused interventions include: Fathers and Sons (Caldwell et al., 2004) and Targeted Outreach Mentoring. Community-focused interventions include: Community Policing Mobilization (Skogan, 2006) and Clean and Green (Alaimo, Reischl, & Allen, 2010). These programs were implemented in the intervention area beginning in May, 2011.

### **Youth Empowerment Solutions**

*Youth Empowerment Solutions* (YES) was a curriculum-based program that connected youth with community leaders and was supported by trained adult advocates through meaningful activities which promoted positive development and prevent risk behaviors by empowering youth to change their physical and social environment. The program was designed to help youth participants develop leadership skills and to plan and implement a community improvement project (e.g., murals, community gardens, neighborhood cleanup). YES curriculum activities included lessons on leadership, ethnic identity, community, partnerships, and program development. Adults helped youth by providing expertise, role modeling and assisting with tasks that the youth may not be able to perform themselves. Previous studies of YES included both process (e.g., feedback on activities, assessment of program improvement and neighborhood impact; Franzen, Morrel-Samuels, Reischl, & Zimmerman, 2009; Zimmerman, et al., 2011) and both individual (e.g., conflict avoidance, victimization) and community level (e.g., property improvements, violence crime incidents) outcome evaluations (Reischl et al., 2011).

### **Fathers and Sons**

*Fathers and Sons* was an evidence-informed, curriculum-based program designed to strengthen the relationships between African American fathers and their sons through enhancing communication skills, ethnic identity, and community service (Caldwell, Rafferty, Reischl, DeLoney, & Brooks, 2010). Over 15 sessions (45 contact hours), the program addressed various topics including parenting behaviors and relationships, culture and history, communication about risky behaviors, and incorporates homework assignments and booster sessions. Developed in a community-based participatory research partnership, the program has been replicated in multiple sites with matched comparison groups and was built on research evidence suggesting that bonding, authoritative parenting, and feelings of closeness are critical pathways through which parents may influence the attitudes and behaviors of their children, serving as mediators between environmental factors and youth risky behaviors (Caldwell et al., 2004).

## Project Sync

*Project Sync* provided individual counseling for youth seeking care in the Emergency Department to assist youth in recognizing risky behaviors and increasing their motivation to change. The one-on-one counseling approach emphasized individual choice and responsibility, supports self-efficacy, and differentiates between current behavior and future goals/values. Project Sync also involved normative resetting and skills training through role-playing responses to scenarios, focusing on refusal skills for conflict resolution and anger management. The counseling offered to youth in the ED is provided by research staff at time of ED visit, but did not interfere with the patient's medical treatment (it occurs while patients are waiting to be seen or waiting for medical staff to administer treatment). Only youth 14-20 who lived in the intervention area were eligible for the intervention. The single 30 minute one-on-one counseling session were focused on enhancing motivation to change in a respectful, non-confrontational and non-judgmental manner. Patients completed a two month follow-up survey after their ED visit. An earlier study provide evidence that Project Sync was effective in reducing youth aggressive behavior and peer victimization for up to twelve months (Cunningham, et al., 2012).

## Targeted Outreach Mentoring

*Targeted Outreach Mentoring* combined a mentoring approach with case management for youth who are referred by area organizations (e.g., schools, social services). The program was developed by the Boys and Girls Clubs of America and was based on previous research showing that mentoring relationships are associated with more positive youth outcomes (Grossman & Rhodes, 2002) including less violent behavior (Hurd, Zimmerman, & Xue, 2009). This mentoring program facilitated respectful relationships between youth and positive adult role models who are invested in their well-being and success. Mentors served as role models, establish relationships with families, monitor youths' school involvement, and assist them with obtaining tailored services. The program was implemented by the Boys and Girls Club of Greater Flint (BGCGF) and paired youth, ages 10-17, with adult mentors who are BGCGF staff members. The mentors were trained by personnel from the BGCGF. The mentors worked with their mentees to establish individual goals and strategies to achieve them. They then assisted the mentees in taking next steps, including providing financial support for classes (such as drivers' education) that will help them meet their goals. The goal of this additional effort was to maximize the potential to develop true natural mentor relationships that will be sustained. Mentors were available to youth full-time, contacted mentees weekly for follow-ups, and served in a mentor capacity for six to twelve months.

The *Community Policing Mobilization* intervention focused on distributing real-time crime data analyses, convening community discussions and providing technical support to neighborhood organizations and law enforcement for crime prevention. Improving the relationships between the police and the community was intended to strengthen collective efficacy (Sampson, et al., 1997) within neighborhoods and thereby increase both informal and formal social control (Skogan, 2006). Evidence from the National Research Council (2004) indicated that community policing may reduce citizen perceptions of disorder, fear of crime, and gun violence reductions. The program provided technical assistance and problem

solving for community policing officers, and training for residents in crime prevention approaches.

### **Clean and Green**

*Clean and Green* was a program of the Land Bank, a county-funded initiative for improving vacant properties by working with community groups to maintain and develop empty lots that are overgrown and often used for dumping trash. At the time of this study, The Land Bank controlled more than 4,000 vacant properties, over 350 of which are in the MI-YVPC intervention neighborhood. Through the Land Bank, community organizations received support and small stipend to maintain a set of vacant lots, giving them control and use of vacant parcels. Neighborhood organizations participating in the Clean and Green program mowed at least 25 vacant lots up to seven times per growing season, and may add gardens or other landscape elements. Alaimo, Reischl, & Allen (2010) found that involvement in neighborhood gardens and beautification activities in Flint and Genesee County enhanced perceptions of social capital (i.e., social organization) more than other measures of neighborhood involvement.

As of December 2013, MI-YVPC programs had enrolled 317 youth across YES, Project Sync, Fathers & Sons, and Targeted Outreach Mentoring; interacted with ~40 residents per month through Community Mobilization; and have improved over 600 properties in the intervention area (see Table 1). Designation of control or intervention group was assigned based on a participant's self-reported home address. All intervention programs had maps and address lists of the intervention area, in order to ensure that only participants who live in the intervention area received the intervention. The ED intervention recruited from both the intervention and control areas, however only patients living in the intervention area received the intervention. Patients living in the control area received a resource pamphlet of service in their area, and both the intervention and control group completed surveys at both baseline and 2 month follow-up. We evaluated the total intervention effect of the comprehensive program, rather than the specific effect of any single program. Simultaneous deployment with a multi-component strategy, particularly one tailored to a community is more likely to effect change (Spielman, 2006).

### **Intervention and Comparison Communities**

The intervention community was a single geographic area of 1.16 square miles encompassing eight Census block groups across three Census tracts. The intervention community was bordered by the Flint River on the south; a major north-south thoroughfare on the east, and two prominent streets to the north and west. These boundaries formed a distinct area encompassing the Durant-Tuuri-Mott neighborhood. Historically, the Flint River separated the predominantly African American neighborhoods from the downtown district and other areas of Flint. The comparison community was another predominantly African American neighborhood encompassing two Census tracts (1.03 square miles) about one and a half miles directly north of the intervention community. The comparison neighborhood had similar crime rates and demographic characteristics at the start of the study. Variables to match the areas were drawn from the 2000 U.S. Census and included population counts of 10-19 year olds, percentage African American/Hispanic, percentage

owner-occupied housing, percentage of high school graduates, percentage below the poverty level, and median household income (see Table 2). Notably, neither area had a middle school or a high school, which are often sites where high rates of youth-on-youth violent crime occur. We chose to identify an intervention community that did not include a middle or high school because we wanted to better understand how to reduce youth violence in neighborhoods and community-based settings rather than school-based settings.

## Data Sources

**Flint Police Department Crime Data**—The Flint Police Department (FPD) provided incident reports on an annual basis from 2005-2013. These data include all incidents for which FPD filed a report including the location and type of crime(s) such as assaults, robberies, homicides, and forcible sex. Data files containing case incident and victim information were merged across years in order to generate monthly crime counts for each crime category from January 2005 to December 2013 (N = 108 months; see Table 3). Geocoding of incident location using Arc GIS indicated whether crimes occurred in the intervention or comparison area (incidents occurring in other parts of Flint were excluded from the analyses).

**Hurley Medical Center Assault Injury Data**—Medical chart reviews were completed for all 10-24 year olds seeking care for assault injuries at Hurley Medical Center's (HMC) Emergency Department from January 2010 through December 2013 (N = 48 months). HMC houses the only Level 1 trauma center in the region and is the only public emergency department in Flint. Assault injuries were defined as injuries intentionally caused by another person. Information related to patients' gender, age, race/ethnicity, home address, mechanism of assault, date and time of triage, injury severity score, and disposition status was recorded. Based on the local address provided, patients were coded as living in the intervention area, comparison area, or another part of Flint (those outside the intervention or comparison areas were excluded for this analysis). A total of 306 patients living in one of the 2 focal areas were included in the analyses.

## Measures

**Police Data: Assault Offenses**—To measure changes in number of assaults before and after the intervention began, time was represented as standard calendar months from January 2005 when crime data became available, to the most recent data provided (December 2013). Intervention activities began in May 2011 (month 77 of 108).

An intervention dummy variable was created to represent the main effect of the intervention activities. This variable was coded 0 for the comparison area across all 108 months, and for the first 76 months for the intervention area prior to receiving the intervention activities. For months 77-108, the intervention area was coded 1, accounting for the presence of the six intervention activities. To examine the main effect of area, a dummy variable was created by assigning a 0 value to the comparison area across all 108 months and a 1 to the intervention area.

Assault counts represent the aggregate number of assault offenses reported by the FPD with a victim under 25 years old. We focused on assaults because they were most numerous across time, space, and area, thus allowing adequate statistical power to detect differences.

**Covariates**—We also included assault counts for victims over 25 years old, as well as counts of other violent crimes (homicides and robberies) for victims under 25 years old.

**ED Data: Assault Injury Data**—Time, area, and intervention (see above) were each included in the analyses of reported assault injuries at the local trauma center, and were operationalized as above. Because data were only available from January 2010 through December 2013, time consisted of a total of 48 months for analysis with these data.

Analyses of the assault injury data controlled for patient race and gender. Only data from African American ( $n = 277$ ) and white ( $n = 29$ ) patients were used for the purpose of this study. Thirteen participants whose racial/ethnic category was unknown were excluded from the analyses. The sample included 145 females (47.4%) and 161 males (52.6%). Assault injury counts represented the number of patients under age 25 seeking care for assault injuries within a given month who reported living in the intervention or comparison area.

### Data Analytic Strategy

**Assault Offense Data**—A mixed-effect Poisson regression model with a random effect for time using PROC GLIMMIX in SAS (SAS Institute, 2011) compared the two areas to evaluate the effect of the intervention on reducing the assault crime rate for victims under 25 years old. The random effect for time was added to control for natural seasonal/monthly change in crime counts. We controlled for time, area, intervention, assault offense crime rates for victims over 25 years old, and other violent crime rates for victims under 25 years old. All predictors were included in the model with an intervention by time interaction term, which was included given *a priori* beliefs that the effects of intervention activities would take time to emerge.

**Assault Injury Data**—As with assault offenses, a mixed-effect Poisson regression model using injury counts as the dependent variable, controlling for time, area, gender and race differences, was used to evaluate the effect of the intervention on reducing the number of youth patients seeking care for assault injuries. As with the crime data, the model included main effects for all predictors, along with an intervention by time interaction term.

## Results

### Descriptive Statistics

As seen in Table 2, the demographic distribution of individuals living in the intervention versus comparison areas were roughly similar. We noted, however, that the comparison community had a slightly higher percentage of African American youth and fewer Hispanic youth, as well as a higher percentage of home ownership. Total and average counts of violent crime against youth in the intervention and control areas are reported in Table 3.



## Youth Assaults

From January 2005 through December 2013, a total of 6,154 assault offenses were reported in the two areas, among which 2043 included victims under 25 years old. As seen in Table 4, we found that the overall expected number of assaults per month for victims under 25 years old was lower in the intervention area relative to the comparison area ( $B = -2.03$ ,  $SE = .80$ ; see Figure 1). The ratio of the generalized chi-square statistic and its degrees of freedom was close to 1 (1.03), indicating that the variability in the data had been properly modeled, and that there was no residual overdispersion. Controlling for other main effects, the month by intervention interaction effect indicated that the reduction over time also differed between the intervention and comparison areas ( $B = -2.03$ ,  $SE = .80$ ). The hypothesized associations held after controlling for over 25 assault rates as well as other violent crime rates for youth under 25.

## Youth Assault Injury

From 2010 through 2013, a total of 3,654 assault-injured youth living in the Flint area came to HMC seeking ED services, of whom 306 (8.4%) were living in the intervention or comparison areas. As seen in Table 5, we found that the overall expected number of assault injuries per month for victims under 25 years old was lower in the intervention area relative to the comparison area ( $B = -0.29$ ,  $SE = .12$ ; see Figure 2). The generalized chi-square statistic was 1.60, indicating no overdispersion. Controlling for other main effects and crime rates, the month by intervention interaction effect indicated that the reduction over time differed between the intervention and comparison areas ( $B = 0.06$ ,  $SE = .01$ ).

## Discussion

Our results suggest that efforts to prevent youth violence that are focused on specific geographic areas and include both high risk and universal approaches across ecological levels can be an effective strategy for reducing youth violence. This conclusion is strengthened by several design features of the evaluation. First, we included a matched comparison area that had similar demographic characteristics that was not adjacent to the intervention areas. Second, we had two sources of data (police incidents and Emergency Department assault injury data) that provided converging evidence that, relative to the comparison area, youth in the intervention area experienced lower rates of violence in the 32 months post intervention period. Third, we controlled for adult assaults and other youth violent crime in the analysis to reduce these potential confounding factors. Fourth, we included many months of data prior to and after the initiation of the interventions. These features contribute to our confidence in the results.

The results are also consistent with predictions from social-ecological and social disorganization, as well as busy street theories. Both social ecology and social disorganization theories highlight the bi-directional influences of person-context interactions as key components of development and ultimately behavior. The MI-YVPC intervention integrated these ideas with programs that were: a) community-based, utilizing social capital; b) multi-level in their focus; and c) designed to empower residents within their neighborhoods. The results support the idea that community interventions that focus on

person-environment interactions, but that also include pathways to community and youth empowerment can be successful at reducing youth violence.

It is notable that the time by area interaction effect indicated that the comparison area assaults were decreasing over time and getting closer to (though not surpassing) the rates in the intervention area. This finding was due to a substantial drop in the comparison area assaults (both assaults reported to police and assaults requiring care at the ED) rather than a rise in rates within the intervention area which began to level off. Based on discussions within the MI-YVPC community partnerships, this finding may be explained by a focused effort by the Michigan State Police designed to reduce crime across the City of Flint. This initiative, which began in the summer of 2012, used traffic stops to enforce unlawful gun possession, but may have also had the effect of mitigating overall crime based on an increased police presence and arrests. Such confounding factors cannot be ruled out as alternative explanations for the observed changes in youth violence. We would expect additional police presence to have the same effect at reducing youth violence in both regions. Moreover, the observed trend in youth assaults in the intervention area began prior to the start of the summer of 2012. We know of no other factors that would differentially affect the comparison versus intervention areas.

### Limitations

Although the initial results are encouraging, we note several study limitations. First, a limited number of covariates means we were unable to control for other variables that may relate to youth violence such as home ownership and other community programming. Nevertheless, the intervention and comparison areas were selected because they had similar demographic (e.g., average income, race, education) and neighborhood (e.g., no high schools, home ownership) characteristics, and crime incidence, suggesting a realistic counterfactual.

Second, although geo-coding both crime incidents and patient residences enabled comparisons between the two communities, the data had spatial limitations. Some of the crime reports, for example, did not have specific addresses. Rather, they had cross street indicators that were defaulted to the ends of street segments for analysis purposes. This may have resulted in some error in specification of the crime location, but this issue was only relevant for incidents along the boundary of the two areas, which arose infrequently and were evenly distributed in the intervention or comparison areas. Thus, we are confident that the likelihood that this measurement error would account for the results is very low.

Third, our analysis focused on overall intervention effects and could not tease apart which programs may be more effective than others. Further, we were unable to discern whether youth were participating in more than one program and thus accruing additive benefits. Yet, our theoretical framework integrating ideas from multiple developmental and community theories would suggest that one program alone could not itself move the needle at a population level. Ecological theory, for example, suggests the mutual causal interplay between individuals and their environment. People collaborating on community change is an essential component of empowerment theory. Busy streets and social disorganization theories focus on social interactions. Combined, the programs capture different aspects of

community context and individuals' actions. Thus, our analysis focused on the combined intervention effects rather than any one individually because together they more appropriately address simultaneously the multiple causal mechanisms associated with youth violence. Nevertheless, efforts to tease apart which program may be more effective than others may be a useful direction for future research.

MI-YVPC employed an intervention strategy that both capitalizes on existing community resources (e.g., Boys and Girls Club mentorship program; Land Bank program for unoccupied properties) and application of evidence-based interventions (e.g., YES, Project Sync, Fathers and Sons) using a social-ecological approach to change. Our evaluation demonstrates that such an approach can be effective for reducing youth violence. The mobilization and empowerment of community members to take ownership of the intervention, development of new multi-sector partnerships, and creation of an ecological and synergistic approach to youth violence may be necessary to address this complex public health problem that is detrimental to both individual and community health. The MI-YVPC model provides evidence that such an approach can be an effective method to reduce youth violence and its consequences.

## Acknowledgments

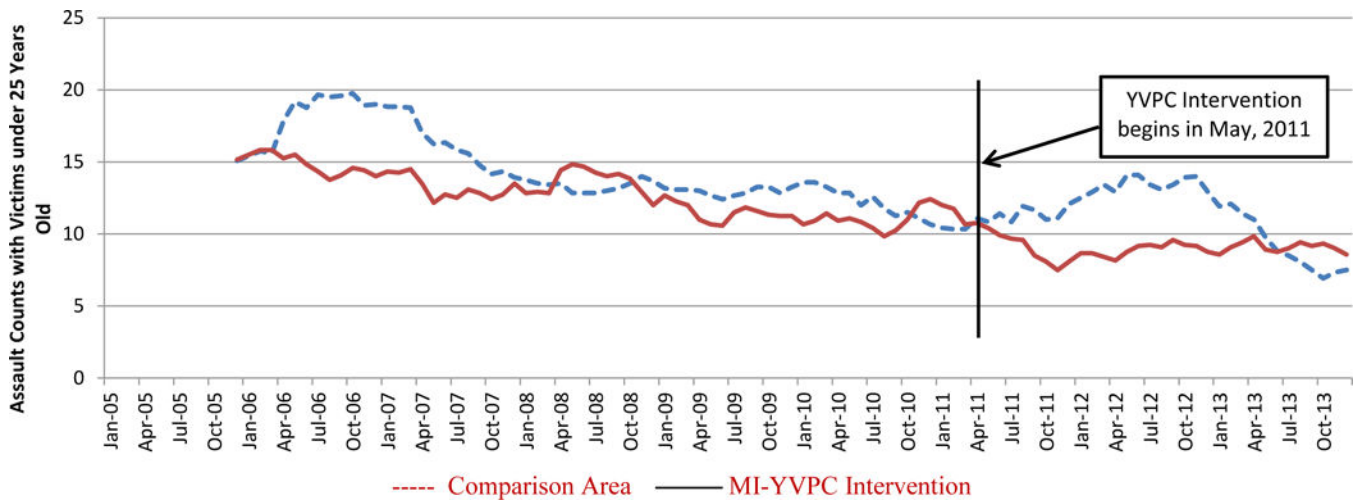
This research is supported by the Michigan Youth Violence Prevention Center Cooperative Agreement Number 5U01CE001957-02 (PI, Zimmerman) from the Centers for Disease Control and Prevention.

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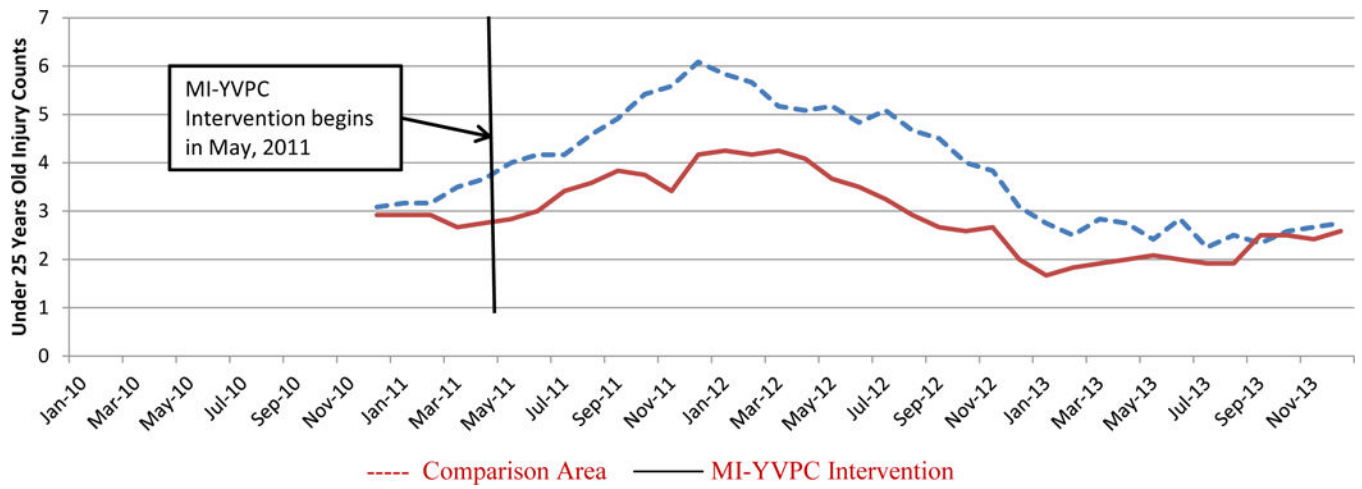
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**Figure 1. 12-Month Moving Average of Assault Offense Rates in Intervention and Comparison Areas**

Note: Solid line = intervention area; dashed line = comparison area. Counts from January-December 2005 not shown due to insufficient data to calculate 12-month average.



**Figure 2. 12-Month Moving Average of Assault Injury Counts in Intervention and Comparison Areas**

Note: Solid line = intervention area; dashed line = comparison area. Counts from January-December 2010 not shown due to insufficient data to calculate 12-month average.

**Table 1**

MI-YVPC Program Enrollment (through December, 2013)

<b>Intervention Approach</b>	<b>Individual</b>	<b>Focus of Intervention Relationship</b>	<b>Community</b>
<b>Primary Prevention</b>	<i>Youth Empowerment Solutions</i>	<i>Fathers &amp; Sons</i>	<i>Clean and Green</i>
	27 youth	36 youth 27 fathers	699 Clean and Green lots 71 lots adopted
<b>Secondary Prevention</b>	<i>Project Sync</i>	<i>Mentoring</i>	<i>Community Policing Mobilization</i>
	183 youth	44 youth	~40 residents/month

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Demographic Characteristics of Intervention and Comparison Communities and Flint, MI.

Table 2

Demographic Variable	Intervention Community Census Tracts			Comparison Community Census Tracts		City of Flint All Tracts	
	14	15	28	4	6	6	All Tracts
Total Population Count	2210	2515	553	2775	3514		124,943
<i>Age</i>							
Population Count (Age 10-19)	407	385	77	555	636		19,050
Median Age	28.9	25.2	33.8	26.2	28.3		30.8
<i>Race</i>							
% African American (Age 10-19)	79.12	72.47	88.4%	92.8%	95.8%		62.9%
% Hispanic	2.7%	2.9%	2.7%	1.5%	1.29		3.0%
<i>Housing</i>							
Owner Occupied	43.4%	31.1%	19.7%	51.6%	55.2%		58.8%
<i>Education</i>							
% Over 25 HS graduate or higher	65.0%	68.0%	43.5%	66.7%	69.6%		74.5%
<i>Income and Poverty</i>							
% below poverty level	42.4%	43.0%	36.4%	43.7%	41.3%		26.4%
Median Household Income (1999)	18,866	20,192	22,574	20,652	20,882		28,015

Note. All block groups within a given census tract were included with the exception of Tract 28, where only 1 block group was included. Source: U.S. Census Bureau (2000 Census)

**Table 3**

Violent Crime Counts and Means in Intervention and Comparison Areas, 2005-2013

Area	Total Count	<i>M (SD)</i> <sup>£</sup>
<b>Assault Offenses with Victims under 25 Years Old</b>		
Comparison Area (n = 1799)	1129	10.454 (5.114)
Intervention Area (n = 1435)	914	8.463 (3.875)
<b>Assault Offenses with Victims over 25 Years Old</b>		
Comparison Area (n = 2747)	2064	19.120 (6.575)
Intervention Area (n = 2056)	2046	18.944 (7.220)
<b>Other Violent Crime Offenses with Victims under 25 Years Old<sup>*</sup></b>		
Comparison Area (n = 1799)	212	1.963 (2.238)
Intervention Area (n = 1435)	237	2.194 (2.386)

Note:

<sup>£</sup> Average counts per month (months = 108).<sup>\*</sup> Includes robberies, homicides, and sexual assault.

**Table 4**

## Youth Assault Offenses in the Intervention versus Comparison Area

Covariates	Estimate	SE
Intercept	1.89	0.19 ***
Month <sup>a</sup>	-0.005	0.001 ***
Area <sup>b</sup>	-0.31	0.06 ***
Intervention <sup>c</sup>	-2.03	0.80 *
Assault rate of victims over 25 years old	8.54	1.85 ***
Other crime rate with victims under 25 years old	-1.15	1.12
<b>Month *</b>	<b>0.02</b>	<b>0.01 *</b>
<b>Intervention</b>		
Time Cov. Parameter	0.05	0.01 ***

Note.

<sup>a</sup>Baseline for Month is Month 1, January 2005

<sup>b</sup>Reference Area is Comparison Area

<sup>c</sup>Reference Intervention Group is the group without intervention: Intervention = 0

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$ .

**Table 5**

Youth Assault Injuries in the Intervention versus Comparison Area

Covariates	Estimate	SE
Intercept	-1.45	0.24 ***
Month <sup>a</sup>	-0.03	0.01 ***
Area <sup>b</sup>	-0.29	0.12 *
Gender <sup>c</sup>	-0.10	0.11
Race <sup>d</sup>	2.26	0.20 ***
Intervention <sup>e</sup>	-2.39	0.30 ***
<b>Month *</b>	<b>0.06</b>	<b>0.01 ***</b>
<b>Intervention</b>		
Time Cov. Parameter	0.09	0.05 <sup>+</sup>

Note.

<sup>a</sup>Baseline for Month is Month 1, January 2010

<sup>b</sup>Reference Area is Comparison Area

<sup>c</sup>Reference Gender is Male

<sup>d</sup>Reference Racial Group is White

<sup>e</sup>Reference Intervention Group is the group without intervention: Intervention = 0

<sup>+</sup>  $p = .08$ ,

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$ .

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