




Assessing the cost-effectiveness of the Peace Management Initiative as an intervention to reduce the homicide rate in a community in Kingston, Jamaica

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Abstract

Objectives Communities throughout the world are investigating various approaches to reduce violence, especially gun violence. The objective of this study is to determine the cost-effectiveness of the Peace Management Initiative as an intervention to reduce the homicide rate in volatile community in Kingston, Jamaica.

Methods A preliminary longitudinal study tracked the homicide rate in a selected volatile community in Kingston, Jamaica, over the 5-year period of PMI intervention in this community. The changes in the incidence of homicides were costed according to direct medical costs and productivity losses assuming that, without intervention, the number of homicides per year would have remained at the 2005 level. This was used to estimate the cost-effectiveness of the intervention.

Results The Peace Management Initiative approach reduced homicides by 96.9% over the 5-year intervention period. The cost/benefit ratio for the intervention has been estimated to be JMD \$12.38 saved per dollar spent on intervention.

Conclusions The Peace Management Initiative approach was seen to significantly reduce the murder rate over the 5-year intervention period and provides a promising cost-effective approach for violence prevention.

Keywords Peace · Violence · Social · Intervention · Cost-effectiveness · Peace Management Initiative · Violence prevention

Introduction

Communities throughout the world are investigating various approaches to reduce violence, especially gun violence. Given that Jamaica's homicide rate is currently the highest

in the Caribbean and the third highest globally, the need for evidence-based and cost-effective interventions to reduce violence is especially critical (Clavel 2018). In Jamaica, interpersonal violence now ranks as the fourth leading cause of premature death behind diabetes, cerebrovascular disease and ischaemic heart disease, underscoring its pronounced public health impact (Institute for Health Metrics and Evaluation 2016).

While the birth of violence in Jamaica was deeply rooted in political rivalry, many attribute the current homicide rate to additional factors such as unstable families, the drug trade, income and social inequalities, poor education and weakened authority of the state in vulnerable areas of the country (Levy 2012; Hemenway and Lemard 2006; Gray 2007). The strategies by the state to reduce violence have emphasized either heightened law enforcement or punitive measures to deter violence and, to a lesser extent, the use of a more social change-based approach which emphasizes social interventions as a way to tackle the perceived root causes of violence (Leslie 2010).

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Internationally, several strategies appear to be beneficial in reducing homicides, but the most acclaimed models generally depend on law enforcement and use either suppression or deterrence of offenders, or both. While this approach is meant to create behaviour change in the offender, it depends heavily on the power of the state to punish criminal behaviour (Butts et al. 2015). Enforcement-based violence reduction methods can create immediate results, but they have not necessarily been shown to lead to deeper social change (Butts et al. 2015). They have been shown to be ineffective in the long term in the Caribbean and Latin American region (Harriot 2003; Schubert 2016). Several scholars and practitioners have argued that real and lasting change must address the root causes and social norms that perpetuate violence and homicides (Butts et al. 2015). One such strategy is the use of the public health approach. Most popular among them are the Boston TenPoint Coalition (BTPC) and Cure Violence. Both approaches attempt to change behaviour by modifying the social environment rather than by using the coercive power of law enforcement and incarceration (Boston TenPoint Coalition 2015; Butts et al. 2015). They similarly employ tools of mediation and counselling of at-risk youth and gang members (Boston TenPoint Coalition 2015; Butts et al. 2015). Evaluations of both BTPC and CV have shown significant reductions in homicide victimization and shootings in intervention communities (Webster et al. 2012; Braga et al. 2001). Unfortunately, there is a lack of cost-effectiveness research associated with these violence reduction strategies, the lack of which hampers expansion and replication of these strategies (Butts et al. 2015).

In Jamaica, there are few evaluations of interventions which employ a public health approach to reduce homicides altogether. Even fewer assess their cost-effectiveness, an important parameter for policy considerations. Evidence-based solutions for homicide prevention and control are critical in order to identify strategies that work and expand them to the most vulnerable areas. Furthermore, assessing cost-effectiveness provides incentive for policy makers and government to invest in prevention rather than responding after the fact through law enforcement and prosecution. The objective of this paper is to present the methodology of an organization which has employed a unique public health approach to address the causes of homicides and evaluate its cost-effectiveness as an intervention for homicide prevention.

Description of Peace Management Initiative (PMI) intervention

The PMI is a combination of government funding and civil society support which is charged with the responsibility to reduce community violence. The PMI, originally based in

Kingston, was established by the Government in 2002 with a mandate to mitigate and diffuse community violence. Members of the PMI board include representatives from both of the main political parties in Jamaica (the Jamaica Labour Party and People's National Party), civil society organizations, the church, academia, the police force as well as the legal fraternity. The PMI has a well-published, four-pronged strategy to reduce violent crime in a community. These are as follows:

1. Mediation and dispute resolution
2. Grief counselling and therapy for persons affected by violence
3. Mainstreaming unattached youth
4. Involving the wider community in building a culture of peace (Levy 2012).

PMI's programmes are largely aimed at stabilizing communities by supporting and sustaining ceasefire initiatives, deepening the integration in once polarized communities through sports and other community engagement activities, implementing counselling and therapy programmes to heal the pain of losing family members and providing young men involved in gang activity with immediate opportunities to change their lifestyle. This is encouraged through participation in behaviour change and life skills workshops, residential retreats, educational assistance and income-generating programmes. The PMI liaison officers are now known as violence interrupters who work at the community level to directly intervene in community conflicts, reduce retaliation killings, counsel and mainstream youths and facilitate community engagement events. PMI has developed a process of working with key persons of influence in the communities who show the potential to change. It specifically targets high-risk youth.

Methods

Study design

This study is a cost-effective analysis of a community-based violence intervention programme. The PMI intervention took place over the course of 5 years in a community that will be referred to as Xtown to preserve anonymity. Xtown was chosen due to the ease of availability of homicide data for the community and its larger population size when compared to other, smaller communities in which the PMI has intervened. The number of homicides was tracked over the intervention period (2005–2009) for Xtown using Jamaica Constabulary Force data verified by community development groups. The changes in the incidence of homicides were costed considering the impact of direct medical costs and productivity

losses assuming that, without intervention, the number of homicides per year would have remained at the 2005 level. This was used to estimate the cost-effectiveness of the intervention.

Xtown

Xtown is located in downtown Kingston, near one of the main arterial roads, and is a historic garrison community, also known as a political stronghold. In 2002, Xtown had an estimated population of ~ 15,000. There was a 30% unemployment rate compared to the national average of 15% (Statistical Institute of Jamaica 2011; Ministry of Labour and Social Security 2006). Thirty per cent of the residents used a shared toilet facility, and 33.5% collected water from a water standpipe in the yard. 35.5% of the population lived in households with 5 or more members (Statistical Institute of Jamaica 2011).

The intervention

In 2005, PMI activities in Xtown began with a 'peace walk' through the community. The peace walk involved violence interrupters and community members walking through the community advocating for peace. The peace walk aims to (1) familiarize community members with the PMI, (2) garner community ownership of the peace and (3) allow residents to contribute their opinions and ideas for maintaining the peace.

After this, a closed-door mediation was held with key persons from warring factions responsible for the violence in a location outside of the community to broker peace. During these meetings, a peace agreement was reached by all parties involved to commence a ceasefire. Residential retreats were then held for the main rival gangs in a location outside of the community. The purpose of this was to target, rehabilitate and mainstream these youths and encourage them to live together peacefully.

Grief counselling was held in the community for the families of lost loved ones and others affected by community violence. Community outreach events such as sporting competitions were held where youth from opposing teams played on the same teams. Dances were held with all sections of the community in attendance in order to mainstream the at-risk youth.

In 2006, peace council district representatives were elected from the community to comprise the community development council (CDC) which is responsible for directing community development depending on the areas of greatest need. In 2006, the organization helped all the members of the community to obtain birth certificates, carry out a skills inventory and set up homework programmes.

In addition, a PMI liaison officer was appointed to remain within the community and act as an early warning system should violence or the threat of violence flare up in the future. The need for intervention is relayed by the liaison officer to trained PMI staff to allow the process to restart from the first step before more violence occurs. In 2007, sporting events were organized and small income-generating activities began such as chicken rearing, furniture making and the opening of a local restaurant. 2008 saw a continuation of sporting activities and the introduction of a summer camp and homework programmes. In 2009, two residential retreats were carried out with key persons involved in community violence. These were run outside of the city in green spaces with the objective of breaking down barriers between rival groups and negotiating peace.

Intervention costs

The cost associated with the PMI intervention in Xtown was derived for the period 2005–2009. Resources were designated towards community outreach activities, residential retreats, educational assistance for students, start-up funding for income-generating programmes, skill building and other workshops as well as stipends for the violence interrupters. Total intervention costs over the 5-year period amounted to JMD \$97M.

Estimating costs associated with homicides

Cost savings because of the intervention were calculated, assuming that the number of homicides in 2005 would have remained at this level without intervention since PMI entered in 2005. From this baseline, the net number of homicides averted can be calculated by subtracting the expected number of homicides over the 5-year period from the actual number of homicides. The net events avoided were then multiplied by the direct medical costs of fatal injuries and, separately, by the productivity losses associated with fatal injuries.

A lifetime approach was used to estimate the economic cost of fatal injury based on incidence data and disaggregated hospital unit cost data. The savings in direct medical cost were found using estimates for the cost of medical care for fatalities in Jamaica in 2006 published by Ward et al. (2009). Productivity loss cost savings due to homicides were also found by using estimates published by Ward et al. (2009). Productivity loss was calculated using the World Health Organization methodology for estimating the costs of violence-related injuries (Brown et al. 2008). As recommended by WHO, a standard discount rate of 3% per year was used to calculate the present value of a sum of money to be earned in the future (Brown et al. 2008).

Estimating cost-effectiveness of PMI intervention

Cost-effectiveness was identified by dividing the costs of the intervention by the cost of net events averted.

Results

The PMI intervention in Xtown began in 2005. In 2005, before the intervention, there were 65 homicides in this community, representing a murder rate of $\sim 433/100,000$, compared to a national murder rate of $63/100,000$ for the same year (Jamaica Constabulary Force 2005).

In the community of Xtown, the PMI methodology resulted in a drop of 89.2% in the number of homicides in 1 year. Five years after the initial intervention, the murder rate dropped by a total of 96.9% (Table 1). This represents a fall in the annual murder rate from $433/100,000$ in 2005 to $13/100,000$ in 2009. Comparatively, the national murder rate reduced by only 1.61% over the 5-year period.

Table 1 shows that over this 5-year period, 87 people were killed in Xtown which, without the PMI intervention, was projected to have been 325 people assuming a consistent murder rate. As a result, an estimated 238 lives could be claimed to have been saved as a result of the intervention (Tables 2, 3).

An estimated JMD \$17M was saved in direct medical costs as a result of the intervention. Indirect costs saved are estimated at JMD \$3.7B which, after being discounted by 3% to give the present value of this sum of money, amounted to JMD \$1.19B. As a result, the total direct and indirect costs saved have been estimated at JMD \$1.20B. Given that the PMI programme costs were JMD \$97M over the same period, the cost/benefit ratio for the intervention has been estimated to be JMD \$12.38 saved per dollar spent on intervention.

Discussions

The results of our analysis indicate that the PMI intervention is not only effective in reducing homicides in Xtown but also presents as a cost-effective approach. This positions the PMI as a promising method for violence prevention that can act as an alternative to the use of suppression or deterrence by law enforcement, a method which has not been successful in the past in the Caribbean and Latin American region (Harriot 2003; Schubert 2016). Furthermore, the intervention presents the viability of the public health approach in a developing country setting outside of more popular programmes functioning in the USA such as Cure Violence and Boston TenPoint Coalition. The research presented also aims to address the unfortunate lack of cost-effectiveness research associated with these types of violence reduction strategies, the lack of which hampers their expansion and replication.

While the costs derived encompass the direct and indirect losses as a result of homicides, this value is likely a severe underestimation of the true economic burden of violence on the country. It is especially difficult to estimate the cost of witnessing or losing a loved one due to homicide and the effect of this on children, families, communities and the society. While various studies have captured the direct medical cost and productivity loss of such inju-

Table 2 Estimated average direct medical costs and productivity losses for each incident of fatal, serious and slight injuries due to interpersonal violence in 2006 in Jamaica (Jamaica, 2006) (Ward 2009)

	Average direct medical cost	Average productivity loss
Fatal injury	\$72,000	\$15,800,000
Serious injury	\$418,000	\$1,700,000
Slight injury	\$256,000	\$724,000

Table 1 Number of homicides and homicides averted over the course of the Peace Management Initiative intervention in Xtown (Jamaica, 2005–2009)

	Number of homicides	Number of homicides averted	Xtown homicide rate (per 100,000)	% change from baseline	Jamaica murder rate (per 100,000)	% change from baseline (2005 rate)
2005	65	0	433	0	62	0
2006	7	58	47	89.20	50	20.00
2007	7	58	47	89.20	59	4.83
2008	6	59	40	90.80	60	3.23
2009	2	63	13	96.90	61	1.61
Total	87	238		96.90		1.61

Table 3 Estimated direct and indirect cost savings as a result of the Peace Management Initiative programme and estimate of cost-effectiveness of the programme (Jamaica, 2005–2009)

Cost savings as a result of Peace Management Initiative	
Indirect costs saved through lives saved	\$1,187,359,634.00 ^a
Direct costs saved through lives saved	\$17,136,000.00
Total savings	\$1,204,495,634.00
Total cost of Peace Management Initiative programme for Xtown 2005–2009	\$97,287,600.00
Total money saved per dollar spent	\$12.38

^aThe WHO manual recommends using a standard discount rate of 3% per year for loss of productivity to calculate the present value of a sum of money to be earned in the future. This value represents the present value which was found by calculating the future value of indirect costs (JMD \$3.7B) and discounting it by the recommended 3% (World Health Organization 2008)

ries, as yet, the loss of productivity to the Jamaican economy as a result of lost tourism income, foreign direct investment, increased security expenditure and depressed real-estate values has not yet been estimated (Ward et al. 2009). No measure can truly quantify the impact of this preventable loss of human life on the Jamaican society.

Evaluations of multifaceted interventions like PMI targeted to community change are particularly challenging to assess. When measuring community-level change, few research designs control for the various types of confounding factors that influence violence apart from the intervention being studied (Butts et al. 2015). Due to the lack of a control community (one in which no intervention takes place), it is difficult to compare the findings to natural fluctuations in violence. This places constraints on accounting for the findings solely to the work of PMI. However, the case for the PMI approach is strengthened by similar successes it has seen in other communities. An overall 75% reduction in homicides was seen for four communities over a similar 5-year intervention period conducted by PMI (Levy 2012). Furthermore, this reduction in the murder rate has been sustained post-intervention over the last 10 years in Xtown.

The impact of this intervention warrants an independent external evaluation of a fully funded programme of PMI activities. Armed with further evidence of the impact of PMI, a greater case can be made for a wide-scale PMI intervention across the island. If the PMI model is to be a sound example of the public health approach to violence reduction, then various sectors must unite to utilize data and evaluation that can create a rigorous test of the intervention. It must also be noted that the effect of the intervention on other forms of violence outside of homicides was not assessed but is vital to evaluate in future explorations.

The emphasis on community development is a critical part of the PMI approach. In the earlier phase of the PMI intervention, it pacifies these volatile communities to allow for social development agencies to enter the community and for community members to become engaged in local

activities (use of playgrounds, church attendance, school attendance, etc.). After the initial drop in the homicide rate, other agencies including the Citizen Security and Justice Programme (CSJP), Community Security Initiative (CSI), Jamaica Social Investment Fund (JSIF) and Ministry of Health (MOH) re-entered the community. Investments were made into the physical assets of the communities. These included road repairs, a multipurpose court and the rehabilitation of a park in the neighbourhood by the Jamaica Social Investment Fund (JSIF). CSJP and CSI played an important role in the latter part of the intervention by providing parenting programmes, after-school activities, life skills training programmes, job trainings and work placements. Work has continued in subsequent years to improve the standard of living of these communities and maintain peace guided by the CDC. It effectively serves as a bridge for the entry of other agencies for long-term community development to begin.

Specifically, the PMI ensures that the community take ownership of the peace and responsibility for policing the at-risk youth. Other social intervention projects may have had a limited impact (in comparison with PMI) on reducing the homicide rate because they focus more narrowly on the gang elements or target their interventions towards other specific subgroups of the community. On the other hand, the PMI engages the whole community, and specifically at-risk youth, to change community norms. To further promote community ownership, local community members are trained to become leaders of the community and become part of the CDC. PMI's inclusion of CDCs builds on the peace by attracting further investment into the assets and infrastructure of the community. Dealing with the traumatic effects of community violence is another critical part of the PMI which serves to placate grieving community members and reduce retaliation killings.

Conclusion

The results from our case study show a reduction in the homicide rate of 96.9% in Xtown that has been attributed

to the efforts of the PMI intervention and provides cost savings of at least \$12 dollars for every dollar spent. This positions the PMI as a promising method for violence prevention that can act as an alternative to the use of suppression or deterrence by law enforcement. The impact of this intervention warrants an independent external evaluation of PMI activities if it is to serve as a sound example of the public health approach to violence reduction.

Historically, most public security in the Caribbean has invested in law enforcement and corrections with little, though increasing, focus on violence prevention (UNDP 2012). While enforcement-based violence reduction methods are necessary, interventions using a public health approach would lead to deeper and lasting social change. To change negative community norms and attitudes and to disrupt the underlying sociocultural conditions, law enforcement, corrections and prevention strategies must be employed collectively to build sustainable peace.

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Compliance with ethical standards

Human and animal right statements None of the research involved human participation or animals.

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