

ROUTLEDGE STUDIES IN CITIES AND DEVELOPMENT

Reducing Urban Violence in the Global South

Towards Safe and Inclusive Cities

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ROUTLEDGE

3 Urban upgrading linked to positive social outcomes in Cape Town, South Africa

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Introduction

Among the interventions to reduce crime and violence in South Africa, there is growing interest in those that address the social and structural environments that entrench exclusion and are considered important antecedents to a range of deleterious health and well-being outcomes. In Cape Town, the Violence Prevention through Urban Upgrading (VPUU) programme applies an integrated approach, with a strong focus on social interventions and community participation, alongside urban upgrading. In this chapter, we used data from three community-based surveys, conducted in Khayelitsha in 2013, 2014, and 2015, to explore the association between the infrastructure developed by VPUU and several social outcomes: (1) experiencing interpersonal violence; (2) signs and symptoms of depression; (3) satisfaction with neighbourhood infrastructure; (4) involvement in community activities; and (5) social cohesion.

The initial findings were positive. Respondents who lived within 2 km of VPUU infrastructure (i.e. ‘the intervention area’) experienced less violence, showed fewer signs of depression, and were more satisfied with the infrastructure in their neighbourhood than those who lived further than 2 km from VPUU infrastructure. There were similar levels of social cohesion among residents exposed to the intervention and those who were not exposed, but residents living outside the intervention area were more likely to be active in their communities.

These findings support recent policy developments that foreground safety through environmental design. For example, the Western Cape Province’s 2013 *Integrated Provincial Violence Prevention Policy Framework* highlights the importance of the modification of urban environments and public spaces (Western Cape Government 2013). At a national level, the 2016 *White Paper on Safety and Security* includes the integration of safety, crime, and violence prevention principles into urban and rural planning and design to promote perceptions of and actual safety as a key theme (Civilian Secretariat for Police Service 2016). There are several other

research questions that should be answered before these interventions are scaled-up nationally: Are there other factors that might partially explain the positive findings related to urban upgrading and improved social outcomes? Are there unintended consequences of urban upgrading such as displacement of violence to other areas? Are urban upgrading interventions such as the VPUU programme sustainable? Until such time as these questions are addressed, the urban upgrading intervention implemented by VPUU should be considered a promising intervention.

Background

South Africa has high levels of interpersonal violence—a major contributor to the burden of disease (Pillay-van Wyk et al. 2016)—and one of the world’s most unequal income distributions (World Bank 2018), both of which undermine quality of life and development progress. The South African National Development Plan acknowledges the relationship between poverty, inequality, and crime, and there is growing interest in interventions that address the social and structural environments, which have entrenched exclusion and inequality arising from the country’s Apartheid past (National Planning Commission 2012). For example, the 2016 *White Paper on Safety and Security* foregrounds “safety through environmental design” as one of six key themes for crime and violence prevention alongside an effective criminal justice system; early interventions directed at children; comprehensive and high-quality victim support; effective and integrated service delivery; and active public and community participation. The *White Paper* calls for “the integration of safety, crime and violence prevention principles into urban and rural planning and design that promotes safety and facilitates feeling safe” (Civilian Secretariat for Police Service 2016: 18).

Cape Town, the capital city of South Africa’s Western Cape Province, has typically had the country’s highest or second highest provincial homicide rate (Prinsloo et al. 2016) Here, the municipal government co-funded an urban upgrading programme that addresses violence called VPUU. VPUU adopts an integrated community participative approach premised on situational, social, and institutional crime prevention that also includes crime prevention through environmental design principles (Lloyd and Matzopoulos 2019). The approach encompasses building interventions across four categories: buildings, sports facilities, landscaping, and surfacing. In conjunction, social interventions, such as a neighbourhood watch programme, activate these spaces. The programme attempts to offer redress for the deep inequality of Apartheid-era segregated urban development and has broad appeal among different tiers of government. It has been highlighted in the Western Cape Provincial Government’s *Integrated Violence Prevention Policy Framework* as exemplifying a “whole-of-society” approach to preventing violence. VPUU is currently being implemented in

several high-violence urban communities in Cape Town that feature prominently in the national and provincial rankings of police precincts with the highest number of murders per capita, as well as one semi-rural site and one rural site in Western Cape Province. In Cape Town, VPUU operates in two designated Safe Node Areas (SNAs¹) within Khayelitsha: the Harare SNA and the Monwabisi Park SNA.

Evaluation research has shown that interventions aimed at urban upgrading show promise, but there is a dearth of studies from low- and middle-income countries (Cassidy et al. 2014). There is also a pressing need for empirical evidence of the effectiveness of modifying the built environment in conjunction with social interventions as a violence prevention intervention in the South African setting.

In this chapter, we use data from three community-based surveys conducted in Khayelitsha, Cape Town in 2013, 2014, and 2015 to provide a preliminary analysis of the associations between living in proximity to the VPUU intervention area and five outcomes: (1) experiences of severe interpersonal violence; (2) showing signs and symptoms of depression; (3) satisfaction with neighbourhood infrastructure; (4) involvement in community activities; and (5) social cohesion. We considered that these outcomes were implicitly addressed in the design of the intervention and would be measurably better among the exposed population if the intervention was successful.

Methods

Study design

The study was based on a repeated cross-sectional design with surveys conducted annually in 2013, 2014, and 2015.

Study population and sampling procedure

The sampling area covered the suburb of Khayelitsha, Cape Town, which is approximately 30 km from Cape Town's city centre and, at the 2011 census, had a population of 391,749 (City of Cape Town 2013). A total of 1200 households were randomly selected for the first survey in 2013 using the 2012 version of geographical information systems data for all formal dwellings in Cape Town (i.e. registered serviced households) originally sourced from the City of Cape Town's address database (City of Cape Town Open Data Portal 2015). Informal dwellings (i.e. houses that were not registered with and serviced by the municipality at the time of their construction) were mapped using the 2011 version of the Eskom SPOT 5 Building Count dataset (de la Rey 2008). The 2014 and 2015 surveys were conducted at the same approximate geographic locations selected in 2013, but previously interviewed households were substituted

with neighbouring dwellings. This provided three annual cross-sections from the same 1200 locations. Fieldwork took place from July to November each year.

For each survey, the ‘main household’ at each property was defined as the residence of the property’s owner. Where the owner was not resident, the household with the longest residing tenant was considered as the main household. Surveys were completed by the female head of the main household (i.e. the adult female identified as the primary caretaker of the house and household members). A male adult resident was selected if there was no female adult resident or if the main household adult female was unable to respond due to psychological or hearing impairment. Comparisons in strata restricted to males were limited by smaller sample sizes. Our rationale for selecting female respondents was twofold. First, the questionnaire included a range of topics relating to the household and the neighbourhood that might be reported differentially by gender and we required a structured sampling process that would limit potential bias if fieldworkers had the discretion to select respondents from within a household. Second, our understanding, based on pilot studies and consultation with community members, indicated that female respondents were likely to have a more complete understanding of household and neighbourhood dynamics because they had more restricted mobility than their male counterparts in a high violence community like Khayelitsha.

Households were substituted after three unsuccessful visits, if the property was vacant, if residents refused to be interviewed, if the resident had been interviewed in a previous survey, or if there was no one aged 18 or older in residence. Substitutions were made from a second random sample drawn immediately after the initial phase of fieldwork, after which fieldworkers systematically visited households to the left and then to the right of the households selected for the second random sample. The study was approved by the Human Research Ethics Committee of the Faculty of Health Sciences, University of Cape Town (HREC REF 637/2013) and all residents provided written informed consent.

Instruments and procedures

Trained fieldworkers collected information on sociodemographics, experiences of interpersonal violence, signs and symptoms of depression, satisfaction with neighbourhood infrastructure, participation in community activities, and social cohesion using a structured questionnaire.

Outcomes

For *interpersonal violence*, we constructed a binary measure for *experience of severe interpersonal violence* if the respondent reported *any* attempted or actual rape or murder of someone well known to the respondent, assault

with a weapon, or two or more of the following incident types affecting the respondent personally: assault (with or without a weapon), rape, robbery, petty theft,² arson, car hijacking, victim or witness of another's experience of discrimination-based violence,³ drug-related violence, gang-related violence, victim or witness of another's experience of targeted or threatened community justice, or domestic violence.

To measure *signs and symptoms of depression*, we used the 10-question version of the Center for Epidemiological Studies-Depression scale (CES-D-10) adapted from the original 20-question version developed as a screening tool for depression in the general population and suitable for use in Black and White English-speaking American populations of both sexes across a wide age range and socioeconomic strata (Radloff 1977; Andresen et al. 1994). Each CES-D-10 question was measured on a 4-point scale (0 to 3), which produced a composite score between 0 and 30. A CES-D-10 cut-off of 13 was used to indicate the presence of significant signs and symptoms of depression, which has been validated among isiXhosa-speaking South Africans, the predominant language group in Khayelitsha (Baron, Davies, and Lund 2017).

To measure *satisfaction with neighbourhood infrastructure*, respondents were asked to report their current satisfaction (yes/no) with the conditions and maintenance of the following infrastructure and services provided in whole or in part by VPUU: roads or pathways, storm water drainage, streetlights, high mast lights, electrical supply, refuse removal, green space, public open space, sports and recreational facilities, water taps (in areas with informal houses), nearest waste collection point, nearest pension pay-out point, nearest clinic, nearest library, and nearest sports facility. Each response was scored on a 0/1 scale, which produced a composite score ranging from 0 (i.e. not satisfied with any aspect of infrastructure) to 15 (satisfied with all aspects of infrastructure). We used a cut-off of 75 per cent (i.e. satisfied with more than 11 of the 15 services) to indicate sufficient neighbourhood infrastructure satisfaction.

For *community participation*, respondents were asked whether they were actively involved in any of five different types of community groups that we were concerned with: (1) neighbourhood services or problems; (2) social, religious, or hobby groups; (3) formal or informal sports groups; (4) voluntary security-related organisations; or (5) other voluntary organisations. These categories were derived from the work of De Silva et al. (2007). Residents that were actively involved in two or more groups were considered as being 'active in the community'.

The 2015 survey measured *social cohesion* by asking residents the following questions: (1) How common is it that neighbours help each other out?; (2) How common is it that neighbours do things together?; (3) How common is it that people in your neighbourhood are aggressive?; and (4) Can the majority of people in your neighbourhood be trusted? Each question was rated on a 5-point Likert scale (reversed for question 3 and

with missing values recorded as zero), providing a cumulative score ranging from 0 to 20.

Defining the intervention area

Exposure to the intervention was defined as the household's *proximity* to the VPUU built environment. Households situated within 2 km—equivalent to a 20 minute walk—were considered *exposed to the intervention* (i.e. intervention group). According to urban fabric theory, this measure is consistent with the limit of the walking city (Newman, Kosonen, and Kenworthy 2016). Households located outside this zone were considered to be *unexposed to the intervention* (i.e. the control group). Figure 3.1 illustrates the spatial distribution of exposed and unexposed households included in the study.

Statistical analysis

Survey results were pooled from each of the annual cross-sections and prevalence was estimated for each of the four binary outcomes. Exposed and

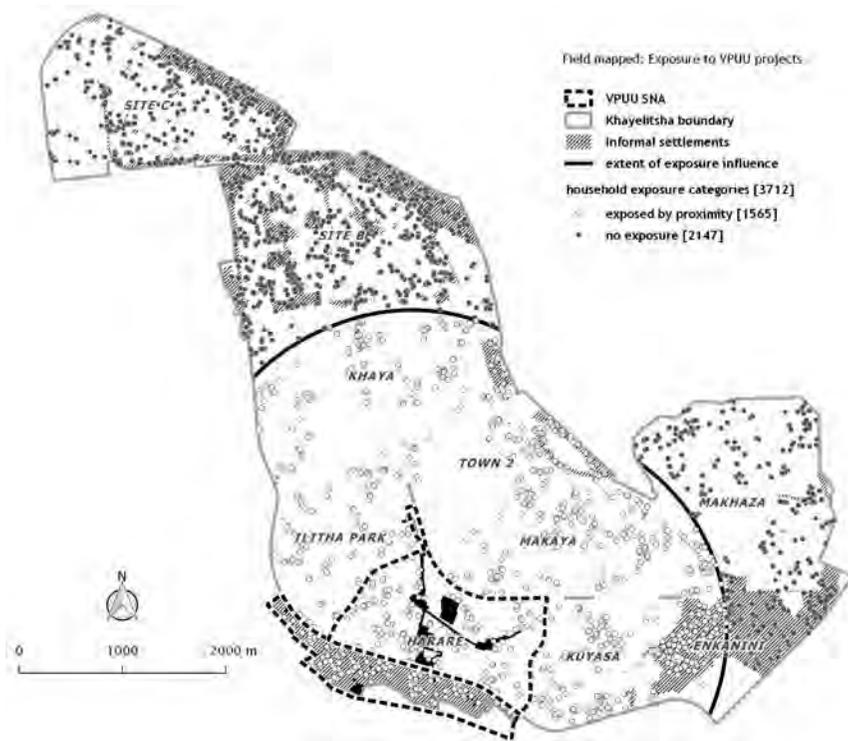


Figure 3.1 Household survey points and proximity to VPUU intervention stratified by category of exposure.

unexposed households were compared using the Pearson's Chi-squared test for the binary outcomes and Student's *t*-test to compare the mean scores for social cohesion. Summaries were stratified by gender and formal/informal area to take into account possible effect modification. Acknowledging the multiple comparisons made in this study, associations were assessed using a significance level of $\alpha=0.01$ rather than the conventional 0.05. The analysis was conducted using Stata version 13.1 (Stata Corporation, USA).

Findings

The sample consisted of 3703 participants, most of whom were women (82 per cent). A similar number of houses were sampled in formal and informal areas and for each year from 2013 to 2015. The stratified findings for each outcome that follow were not adjusted for potential confounders and may be reflective of other differences across the exposure groups (see Table 3.1).

Table 3.1 Summary statistics for each outcome and covariates by exposure category

	<i>Exposure to VPUU intervention*</i>		<i>All areas (n=3703)*</i>
	<i>Unexposed (n=2138)</i>	<i>Exposed (n=1565)</i>	
	n (%)	n (%)	n (%)
Gender			
Male	348 (17)	282 (19)	630 (18)
Female	1645 (82)	1164 (80)	2809 (82)
Area type			
Formal	952 (45)	1017 (65)	1969 (53)
Informal	1182 (55)	547 (35)	1729 (47)
Year			
2013	694 (32)	499 (32)	1193 (32)
2014	741 (35)	516 (33)	1257 (34)
2015	703 (33)	550 (35)	1253 (34)
Outcomes			
Experience of violence	482 (23)	216 (15)	698 (20)
Signs and symptoms of depression	327 (16)	152 (11)	479 (14)
Satisfaction with neighbourhood infrastructure	422 (19)	408 (27)	830 (22)
Community participation	1041 (51)	591 (40)	1640 (46)
	Mean (SD)	Mean (SD)	Mean (SD)
Social cohesion (<i>n</i> =1192)	11.4 (3.4)	12.0 (3.4)	11.7 (3.2)

Note

* Exposed households were situated less than 2 km from the infrastructural intervention.

Violence

The survey confirmed the considerable burden of violence experienced by residents of Khayelitsha. Overall, 19.7 per cent of residents were considered to have been exposed to severe interpersonal violence within the last year. There was considerable variation in the experience of violence by neighbourhood within Khayelitsha (see Figure 3.2).⁴ Site C (34.0 per cent), Site B (22.2 per cent), and Harare (19.4 per cent) were the areas that experienced the highest levels of violence.

In the intervention area, 14.7 per cent of households experienced severe interpersonal violence, which was significantly less than the 23.3 per cent of households outside the intervention area ($p < 0.001$) (see Figure 3.3).

Gender was an important risk factor for violence. Men were more likely to have experienced severe interpersonal violence within the last year than women—23.2 per cent compared to 18.9 per cent ($p = 0.016$). However, both men ($p = 0.001$) and women ($p < 0.001$) living in the intervention area were significantly less likely to experience severe interpersonal violence than those living outside the intervention area.

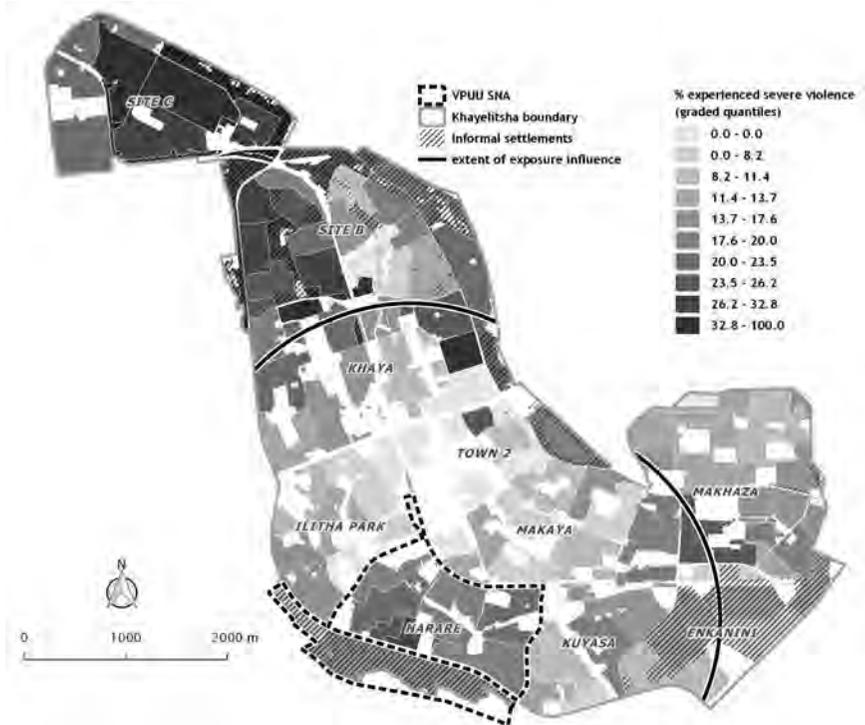


Figure 3.2 Experience of severe violence in the last year by neighbourhood within Khayelitsha.

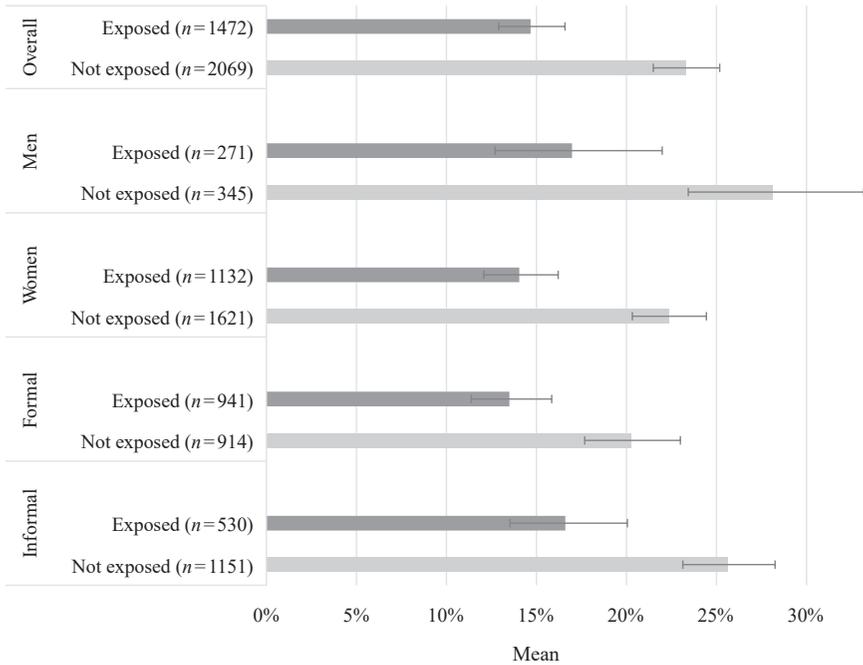


Figure 3.3 Experience of severe violence by proximity to VPUU intervention.

The type of area where residents lived also influenced the risk of experiencing severe interpersonal violence. Experience of severe interpersonal violence was significantly higher among residents living in informal areas (22.8 per cent) compared to residents living in formal areas (16.8 per cent) ($p < 0.001$). Although the VPUU intervention was more concentrated in formal rather than informal areas, the significantly lower prevalence of severe interpersonal violence among residents exposed to the intervention was observed in both formal and informal areas. Residents in informal areas were at significantly lower risk of severe interpersonal violence if they were exposed to the intervention than if they lived outside the intervention area (16.6 per cent vs 25.6 per cent; $p < 0.001$). Similarly, in formal areas, people living within the intervention area experienced less severe interpersonal violence than those outside the area (13.5 per cent vs 20.2 per cent; $p < 0.001$).

Signs and symptoms of depression

Overall, 13.9 per cent of residents were considered to be exhibiting signs and symptoms of depression. Outside the intervention area, 16.3 per cent

of respondents reported signs and symptoms of depression, which was significantly higher than the 10.6 per cent reported by the exposed population ($p < 0.001$) (see Figures 3.4 and 3.5). Prevalence of depression was similar among men and women (13.1 per cent and 14.0 per cent, respectively). Among women, there was a significantly lower prevalence of depression in the intervention area compared to outside the area (10.9 per cent vs 16.2 per cent; $p < 0.001$), whereas the lower prevalence of depression among men living in the intervention area compared to outside the area was not statistically significant (11.0 per cent vs 14.8 per cent; $p = 0.165$).

Prevalence of depression was similar in formal and informal areas: 15.0 per cent of residents living in informal areas and 12.9 per cent of residents living in formal areas showed signs and symptoms of depression ($p = 0.068$). In formal intervention areas, residents were significantly less likely to show signs and symptoms of depression (9.9 per cent) than residents living in formal, control areas (16.0 per cent) ($p < 0.001$). In informal areas, residents residing within the intervention area also had a lower prevalence of depression (11.8 per cent) than residents living outside the intervention area (16.5 per cent) ($p = 0.014$).

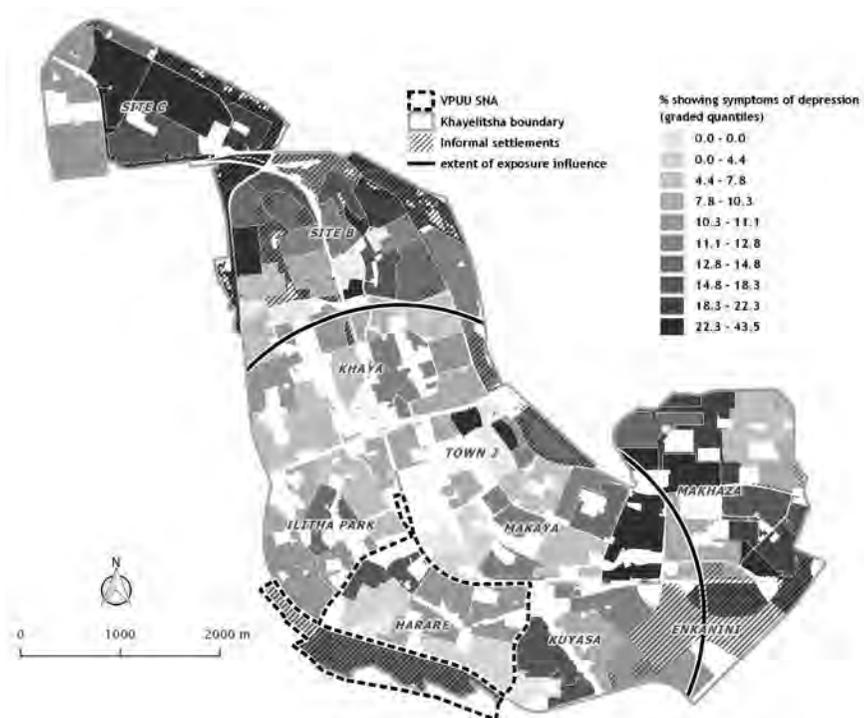


Figure 3.4 Symptoms of depression by neighbourhood within Khayelitsha.

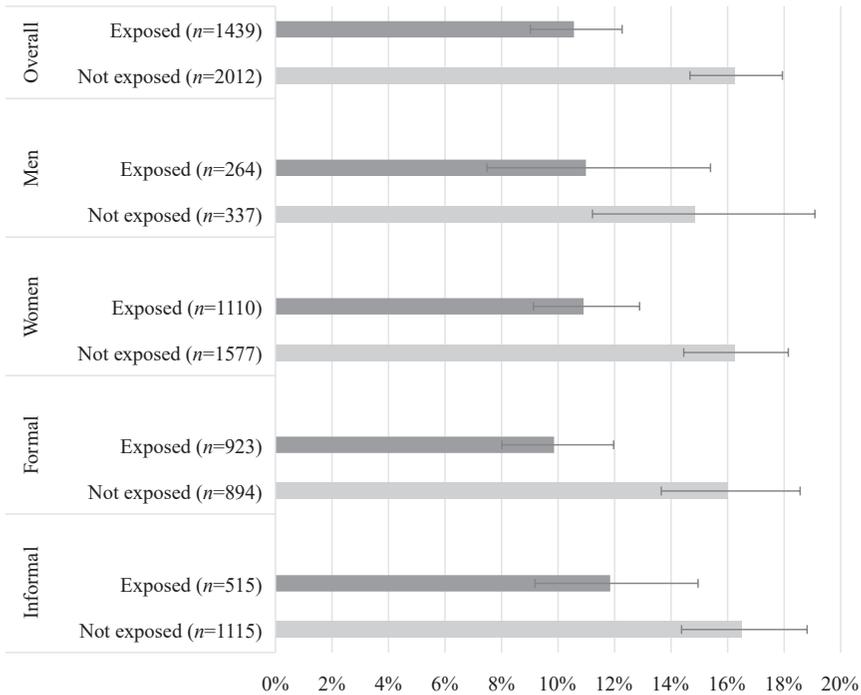


Figure 3.5 Depression by proximity to VPUU intervention.

Satisfaction with neighbourhood infrastructure

Overall, just 22.4 per cent of residents were satisfied with the range of infrastructure and services in their neighbourhoods, but residents were significantly more satisfied if they lived within the intervention area (27.0 per cent vs 19.1 per cent; $p < 0.001$). Gender was not identified as an independent determinant of satisfaction with infrastructure; approximately 21 per cent of both men and women reported satisfaction with services ($p = 0.92$). Among both male and female respondents there was significantly more satisfaction with services within the VPUU intervention area compared to those outside it (24.8 per cent vs 17.5 per cent of men and 24.7 per cent vs 17.8 per cent of women, respectively; $p < 0.001$ for all comparisons).

Overall, living in formal areas was significantly associated with satisfaction with neighbourhood infrastructure (see Figures 3.6 and 3.7): residents living in informal areas were significantly less likely to be satisfied with infrastructure than those living in formal areas (10.1 per cent vs 33.2 per cent; $p < 0.001$). Within formal areas, residents were significantly more

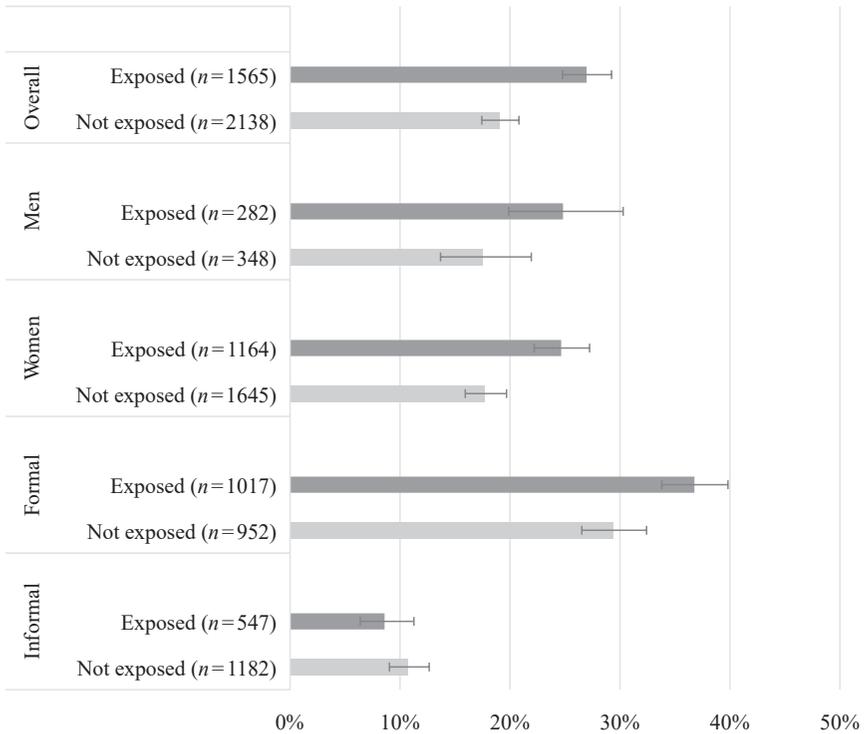


Figure 3.7 Satisfaction with infrastructure by proximity to VPUU intervention.

involved in community activities than men, but not significantly so (46.5 per cent vs 43.8 per cent; $p=0.224$) and they were significantly more likely to participate in community activities if they lived outside the intervention area (50.9 per cent vs 40.1 per cent; $p<0.001$). Men were also more likely to participate if they lived outside the intervention area (47.8 per cent vs 38.5 per cent; $p<0.021$).

Levels of community participation were generally higher in informal areas than in formal areas (48.6 per cent vs 44.0 per cent; $p=0.006$). The higher participation levels observed outside the intervention area were consistent in both informal areas (40.9 per cent vs 52.2 per cent; $p<0.001$) and formal areas (48.8 per cent vs 39.5 per cent; $p<0.001$) (see Figures 3.8 and 3.9).

In interpreting the community participation findings, it is important to note that the measure of community participation in this analysis is a composite of several different activities. The rationale for participation in voluntary organisations (security-related or otherwise) vs private interest groups (such as sports organisations) could be very different,

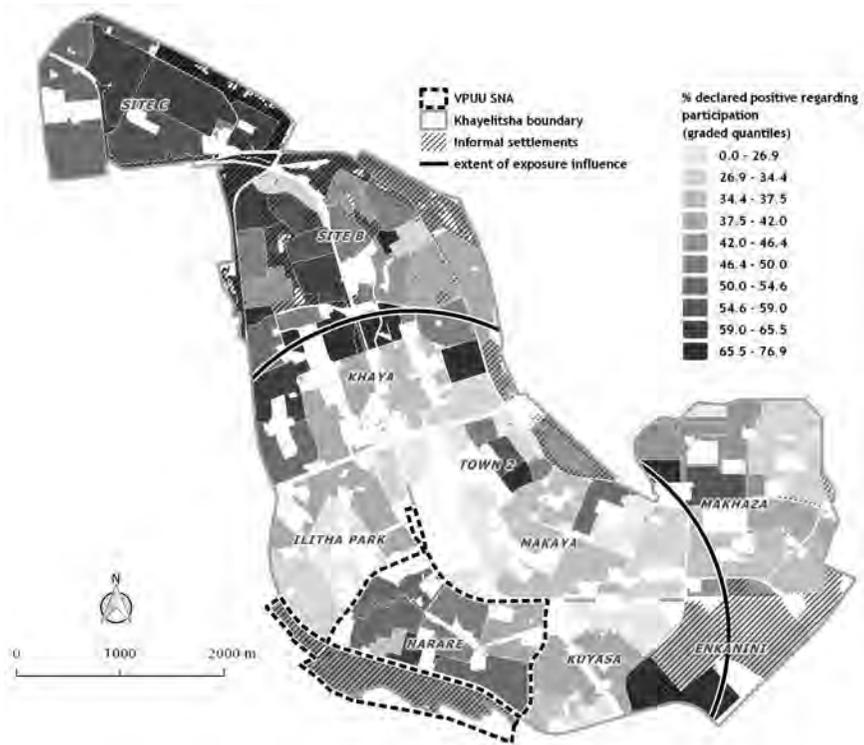


Figure 3.8 Community participation by neighbourhood within Khayelitsha.

and conflating these activities into a single participation measure might not be appropriate.

It could be argued that VPUU would impact all forms of participation (e.g. sports clubs through improved infrastructure and church or book clubs by improving mobility and strengthening opportunities for interactions and social networks). However, it is more likely that any community participation effect from VPUU would be concentrated within the designated SNAs and would be focused on participation in voluntary organisations and voluntary security-related activities, particularly neighbourhood patrols.

The 2km distance-based exposure used in the current analysis did not take into account the differential exposure of households within the SNA to these VPUU activities, which may have diluted any possible effect. Figure 3.9 is instructive in that within the area exposed to the VPUU infrastructure (as defined by the 2km boundary), the areas within the demarcated SNAs appear to have relatively higher community participation scores.

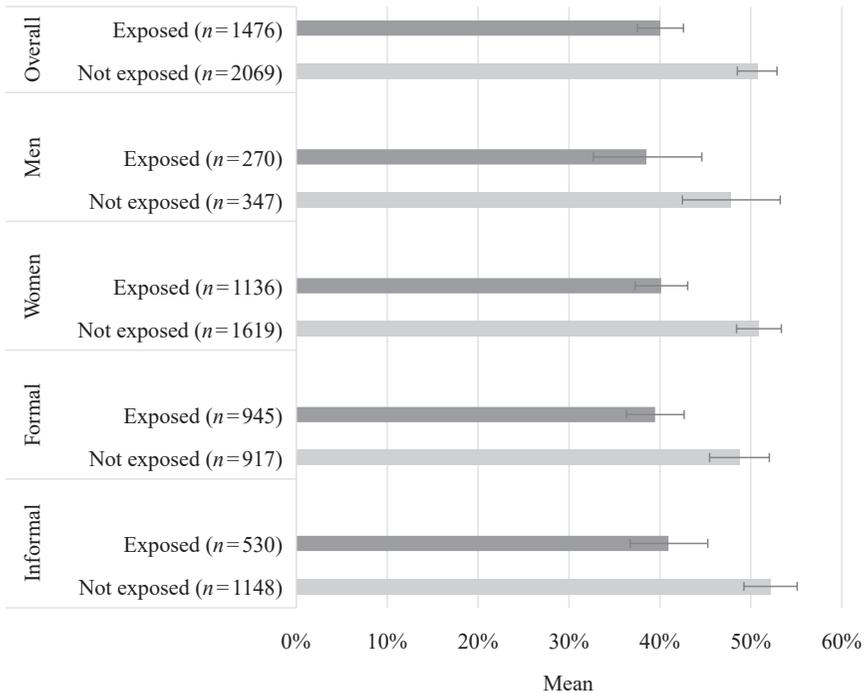


Figure 3.9 Community participation by proximity to VPUU intervention.

In addition, there is emerging evidence that, in low-income contexts, community participation may be negatively associated with mental health, particularly for those from a relatively privileged socioeconomic position (Lloyd 2017). In this volume, Barolsky and Borges (Chapter 5) allude to the association between certain negative communitarian forms of community participation that are associated with interpersonal violence. This does seem evident when we compare areas with high levels of community participation (Figure 3.9) and those that experience high levels of interpersonal violence (Figure 3.2). Further analysis is required to understand the effect of the intervention on different forms of participation separately, and which forms of participation are in fact desirable in terms of strengthening communities and building social cohesion.

Social cohesion

Social cohesion was the only non-binary outcome and was recorded only in the 2015 survey. We used a narrow measure of social cohesion that

evaluated four separate questions pertaining to interpersonal connections that provided a continuous score from 0 to 20. The mean score was 11.7. In an ethnographic study of the intervention area, Barolsky (2016) cautioned that the VPUU intervention's attempts to formalise the urban space, while beneficial, might disrupt complex social networks by not fully utilising community resources and conceptions of social solidarity.

Using our measure of social cohesion, we could not find any empirical evidence to support this hypothesis in the overall sample, nor among male or female heads of households, nor in formal or informal areas, according to our measure (see Figures 3.10 and 3.11). We found, overall, that residents living within the intervention area had higher social cohesion scores than residents living outside the intervention area (average scores 12.0 vs 11.4; $p=0.004$). Among females, there was a positive, but again not significant, association between social cohesion and proximity to the intervention compared to other areas (average scores 11.9 vs 11.4; $p=0.017$), with similar levels recorded among males (average scores 12.0 vs 11.3; $p=0.117$). There were no significant differences in average social cohesion scores when comparing female with male respondents (average scores 11.7 vs 11.6; $p=0.765$).

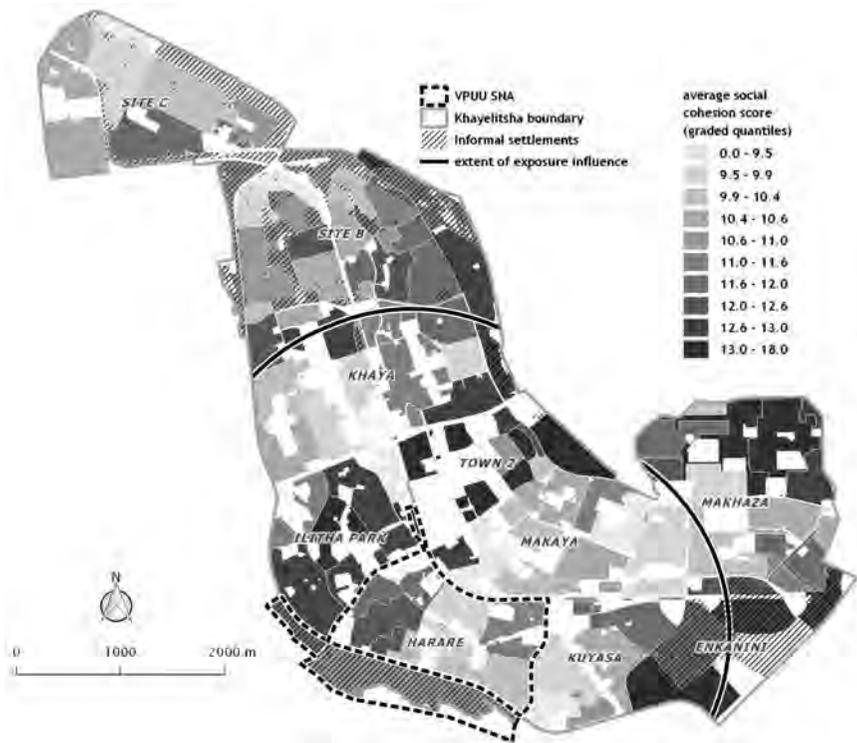


Figure 3.10 Social cohesion by neighbourhood within Khayelitsha.

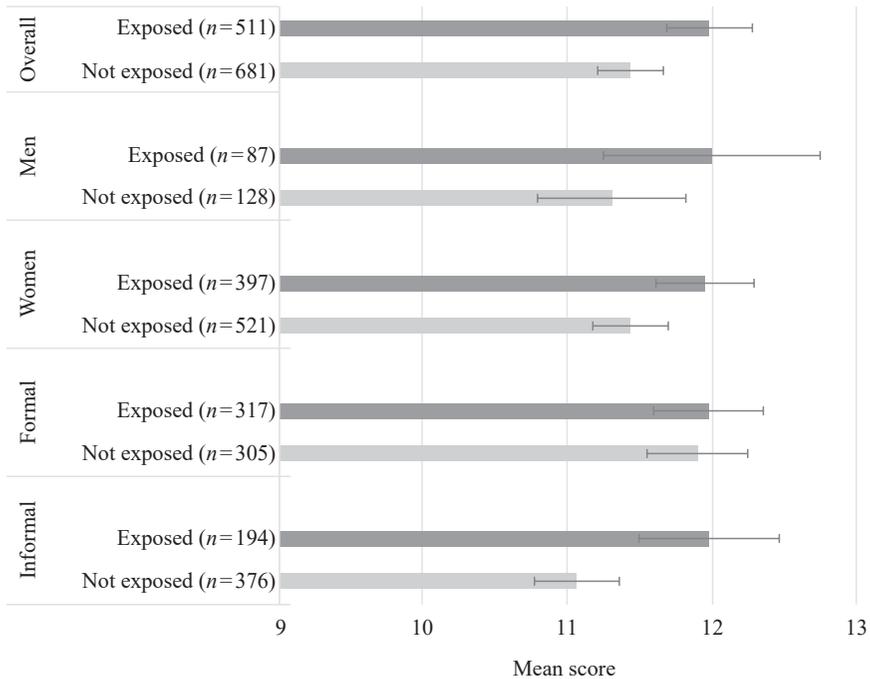


Figure 3.11 Social cohesion by proximity to VPUU intervention.

Residents living in formal areas had significantly, but modestly, higher average social cohesion scores than residents living in informal areas (average scores 11.9 vs 11.4; $p=0.002$). A modest positive association between the intervention and higher levels of social cohesion was also found in the informal areas. Residents in informal areas living within the intervention area had higher social cohesion scores than residents of informal areas living outside the intervention area (average scores 12.0 vs 11.1; $p<0.001$). In formal areas, social cohesion scores were similar between residents that lived close to the intervention and those that lived further away (average scores 12.0 vs 11.9; $p=0.762$) (see Figures 3.10 and 3.11).

It may well be that the intervention could be improved through a more nuanced understanding of the pathways to enhance social cohesion. However, this initial analysis indicates that, far from the VPUU intervention having a negative impact because of its disruption of pre-existing non-Western communitarian forms of social cohesion, VPUU is either a beneficial addition to social cohesion or it is at least unlikely to be part of a zero-sum context between indigenous and colonially imposed dimensions of social cohesion.

One further aspect in relation to Barolsky's (2016) work that we were able to address was the relationship between social cohesion and violence, in respect of which there is limited empirical research in South Africa. In our 2015 survey, residents that reported experiencing severe interpersonal violence had significantly lower social cohesion scores than those who did not experience severe interpersonal violence (average scores 11.0 vs 11.9; $p < 0.001$). This association leads to the thesis that increased social cohesion may reduce violence, or vice versa. What remains to be tested is whether the lower prevalence of exposure to severe violence in the intervention area results from the effect of the intervention on interpersonal violence directly or through the mechanism of improved social cohesion.

Conclusion

Two programmatic interventions in South Africa have already been shown to be effective in reducing violence through strong study designs: Stepping Stones, an HIV prevention programme promoting safer sexual behaviour among youth (Jewkes et al. 2006), and IMAGE, a microfinance intervention for the prevention of intimate-partner violence (Pronyk et al. 2006). Notwithstanding these positive developments, programmatic interventions face challenges with replication and scale-up. There remains a need to develop the evidence base for more complex interventions and passive structural interventions that address the urban space, given the prominence of such initiatives in policy documents.

In this study, comparison between households exposed versus those not exposed to the VPUU intervention area suggests a positive association between living in proximity (within 2 km) of the VPUU intervention and three of the five social outcomes: experience of violence, signs and symptoms of depression, and satisfaction with neighbourhood infrastructure. For social cohesion, scores were, on average, similar in intervention and non-intervention households, although slightly higher in the intervention area. There was a significant negative association between the intervention and community participation, but the nature of this participation and whether, as defined, it can be considered a characteristic with positive community impact is unclear. The findings were broadly consistent for both genders and for households in formal and informal areas.

In interpreting the statistical significance of comparisons between groups, the magnitude of the differences in outcomes must be considered. For most comparisons, these were modest. For violence and depression, the difference in prevalence between exposed versus unexposed households was approximately 5 per cent. For community participation, the difference in prevalence between exposed and unexposed households was also approximately 5 per cent, but in the opposite direction. For infrastructure satisfaction, the difference in prevalence between exposed and unexposed households was approximately 9 per cent. For social cohesion (measured

on a scale of 1 to 20), the difference in mean scores between households inside versus outside the intervention area was 0.5.

These initial findings corroborate the positive effects of infrastructural and urban upgrading interventions such as VPUU and provide evidence to support recent policy developments that foreground environmental interventions. However, it should be noted that, except for the stratification by gender and formal versus informal areas, we have presented an unadjusted analysis that does not account for other independent factors known to influence these outcomes and which may also be associated with VPUU exposure. The findings could well be reflective of other differences across the exposure groups. Further analyses should also consider and adjust for potential confounding.

We also recognise the limitations of some of the simple binary measures and scores that we used to parsimoniously describe multiple outcomes and which may have diluted the estimate of the intervention effect. For example, our use of a binary exposure based on proximity to the intervention does not take into account more complex urban geography. Residents considered to be within the area of influence of the intervention may in fact have limited access due to the nature of road, rail, and pedestrian infrastructure. Investigation of the impact of VPUU could be enhanced through further analysis using more complex geoinformatic methods. In addition, the intervention area was defined based on proximity to the VPUU built environment and did not take exposure to VPUU social programming into account, which may also influence outcomes. We did not consider the cost implications of the intervention in this analysis, but note that replicating and scaling-up programmatic interventions in under-resourced contexts is also challenging and costly.

All of these aspects can be addressed through more complex multivariable analyses of each outcome. However, the study consists of a series of post-VPUU intervention cross-sections and therefore cannot address temporal aspects of cause and effect. For example, areas in Khayelitsha within 2 km of the intervention that have ostensibly benefitted from the intervention may always have been safer and more habitable. Alternatively, increased population density in the intervention area may also have caused a reduction in crime. Both these hypotheses would need to be tested through the analysis of longitudinal data that investigates risk prior to and after the intervention and measures possible displacement of violence to other areas.

The approach utilised in this chapter to evaluate the VPUU intervention could be applied to assess whether other large-scale infrastructure projects have a positive effect on social and health outcomes. This would provide further insight into the potential causal mechanisms through which interventions such as VPUU impact violent crime and other outcomes, whether any effect is due to the explicit inclusion of crime prevention through environmental design principles, or whether it is the infrastructure expenditure alone that matters. If there is indeed a benefit for multiple outcomes

at a population level, then it would seem the approach adopted by VPUU is worthy of consideration.

Notes

- 1 The VPUU methodology emphasises community participation and ownership. Once the boundaries of a SNA have been defined, all developments are preceded by a social compact, developed in consultation with community representatives and an elected representative body.
- 2 Fieldworker quality control revealed inconsistent conceptualisation by fieldworkers and residents with the result that some muggings, in which people were threatened but not injured, were incorrectly recorded as “petty theft” instead of robbery.
- 3 Examples include xenophobic or homophobic assaults.
- 4 We also defined a measure for “any violence” reflecting a resident’s experience of one or more of the following incidents in the previous year: assault (without a weapon), murder, rape, robbery, arson, car hijacking, discrimination-based violence, drug-related violence, gang-related violence, community justice, domestic violence, and petty theft. Overall 32.5 per cent of residents experienced some form of violence, and the findings were broadly consistent irrespective of our choice of definition for experience of violence.

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Reducing Urban Violence in the Global South seeks to identify the drivers of urban violence in the cities of the Global South and how they relate to and interact with poverty and inequalities. Drawing on the findings of an ambitious 5-year, 15-project research programme supported by Canada's International Development Research Centre and the UK's Department for International Development, the book explores what works, and what doesn't, to prevent and reduce violence in urban centres.

Cities in developing countries are often seen as key drivers of economic growth, but they are often also the sites of extreme violence, poverty, and inequality. The research in this book was developed and conducted by researchers from the Global South, who work and live in the countries studied; it challenges many of the assumptions from the Global North about how poverty, violence, and inequalities interact in urban spaces. In so doing, the book demonstrates that accepted understandings of the causes of and solutions to urban violence developed in the Global North should not be imported into the Global South without careful consideration of local dynamics and contexts. *Reducing Urban Violence in the Global South* concludes by considering the broader implications for policy and practice, offering recommendations for improving interventions to make cities safer and more inclusive.

The fresh perspectives and insights offered by this book will be useful to scholars and students of development and urban violence, as well as to practitioners and policymakers working on urban violence reduction programmes.

Jennifer Erin Salahub is a Canadian public servant. She managed the Safe and Inclusive Cities initiative, a global research programme jointly funded by Canada's International Development Research Centre and the United Kingdom's Department for International Development.

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