ENVIRONMENTAL CORRELATES
WITH VIOLENT INJURY

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Violence is a significant contributor to the global burden of injury, posing a public health challenge. With the goal of informing policy decisions, this work uses a combination of GIS and environmental scans to identify features of the built environment that correlate with areas of high violent injury incidence. Hotspots in the Metro Vancouver area were identified using kernel density estimation. Possible environmental correlates to violent injury were culled from a detailed literature review; teams then travelled to each hotspot to record which of the correlates were present (e.g., alcohol-serving establishments, high density housing). Several suspected features of the built urban environment were found to be present in the majority of hotspots, the most prevalent being alcohol-serving establishments. Using the Vancouver Area Neighbourhood Deprivation Index, a high proportion of hotspots were found to be in or near socially deprived neighbourhoods. However, the findings suggest that violent injury is a geographically complex phenomenon whose links to the built environment are multiscalar and varied. First steps are taken towards developing profiles of violent urban spaces, with ultimate goal of making our cities safer physical and social spaces.

The Burden of Injury

Falls, cuts, burns, gunshot wounds, and punches comprise only a few of the myriad ways in which a person can be injured. Altogether, injuries cause 30% more deaths than tuberculosis, malaria, and HIV combined, and representing 10% of total global mortality [WHO 2006]. Injury is also the fourth leading cause of death in Canada and the leading cause of death for Canadians ages 1 to 44, constituting a significant, yet often overlooked, public health problem [Nantulya and Reich 2002; Smartrisk 2005; Public Health Agency of Canada 2006]. In this paper, we expand upon geographic methods for identifying drivers of injury and present the results of our findings in the Metro Vancouver region.

Contrary to common perception, injury is not a random occurrence; it is strongly correlated in space and time [Dovey 2000]. Areas of high injury incidence, known as hotspots, have been directly linked to features of the built environment [Dovey 2000; Schuurman et al. 2009]. For example, high numbers of injuries are found near alcohol-serving establishments [Taylor et al. 2011]. The built environment has been shown to have significant effects on human behaviours and events [Maghelal and Capp 2011]. As such, injury can be driven both by human behaviours (e.g., a bar fight) and inherent environmental risk (e.g., high traffic levels at an intersection). An enhanced understanding of how these phenomena manifest in space is necessary to inform proactive, targeted policy interventions to reduce the economic, social, political, personal, and medical dimensions of the burden imposed by injury.