

GIS and evidence based decision-making: a knowledge translation story

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Abstract

The transfer of research findings from the academic realm to stakeholders is a critical process for facilitating social change. Knowledge translation (KT) tools derived from theoretical development in a discipline are required to foster the engagement of practitioners and community groups on important societal issues. This paper describes how the visualization power of GIS, and the accessibility of research findings resulted in an inadvertent collaboration between a research team and a community advocacy group on an important public health issue. Users of GIS may be in strong position to transfer knowledge and contribute to decision-making and stakeholder engagement. For GIS practitioners, KT principles derived largely from the health and medical literature can provide some guidance on how to accomplish these aims; however, what is needed is broader theoretical development from within the GIS community regarding this important instrument of social change.

Background and Relevance

This abstract describes an inadvertent collaboration between a team of academic researchers and an advocacy group on an important public health issue. This collaboration was catalyzed as a result of the knowledge translation (KT) and communicative powers of GIS, combined with open-access publishing. Evidence-based decision-making (EBDM) – essential in public health - “requires that the right people have the right information at the right time and in the right formats” (Kiefer *et al.*, 2005, pp. I-2) Many decisions affecting public health (and other concerns) are still made, however, without adequate evidence of need or effectiveness (MacKay & Vincenten, 2009; Mallonee *et al.*, 2006). Bridging the divide between research and decision-making requires 1) *collaboration*, 2) *communication*, and 3) *knowledge translation* (Mallonee *et al.*, 2006). GIS, in particular, is highly touted for its ability to bring disparate groups together (Benigeri, 2007), including researchers, administrators, policy makers, and advocacy groups. As GIS is particularly suited to communication and knowledge transfer, researchers working with these media should take advantage of collaboration opportunities with these groups to not only translate their research findings into results, but also to harness the knowledge and expertise of collaboration partners.

Methods and Data

An academic study designed to examine associations between the built-environment and pedestrian injury was carried out. Maps of pedestrian injury were created, which visualized ‘hotspot’ locations throughout the City of Vancouver. Hotspot locations were surveyed for potential roadway design and land-use features that are associated with

pedestrian injury. Certain land-use and environmental correlates of pedestrian injury were observed at the hotspots, however, a primary result ended up simply being the disproportionate burden of pedestrian injury centred in the downtown eastside (DTES) area of Vancouver – a place infamous for poverty, drug abuse and homelessness, but also well-known for community and political capital. The results were published in *BMC Public Health*, an online open access journal. Due to the findings of the study – which provided evidence of a hidden public health problem – combined with the accessibility of the article (freely accessible, easy to interpret visualized results), the press picked it up immediately. Increased awareness of this issue instigated the creation of the City-funded DTES Pedestrian Safety Project. Project coordinators invited DTES stakeholders, City engineering, public health, and transportation departments, and our research team from UBC and SFU to form an advisory group to steer the project. The aim of the Pedestrian Safety Project was to harness the knowledge of the advisory group to understand the reasons for the problem, and deliver feasible recommendations for improving pedestrian safety in this community.

Results

At the end of the eight-month Pedestrian Safety Project, a report was produced that provided evidence regarding the unique pedestrian injury problem in the DTES, and proposals for its redress. Based on the knowledge of the advisory group, proposed interventions included the implementation of a reduced speed zone in the area, and engineering solutions designed to reduce pedestrian-vehicle conflicts. Soon after the release of the report, some of the safety measures were implemented, with more planned for the short term. In addition to this direct result, a further benefit of the collaboration between our team and the advisory group was the mutual involvement on a subsequent study of human behaviour and pedestrian injury. Our team provided GIS data analysis and study design expertise, and the project coordinators provided volunteer hours and knowledge translation expertise. In addition, we were presented with an opportunity during the meetings to harness the expertise of the advisory group to fine-tune the design of our pedestrian behaviour study.

Conclusions

Greater focus on the ‘healthy communities’ model has helped to highlight the need for collaborative, localized, and evidence-based decision-making (Gudes *et al.*, 2010). Although involvement with the community advocacy group required commitments beyond the proposed scope of the project, participation was mutually beneficial. This case study in community collaboration and knowledge translation is a successful example of research leading to results. As EBDM becomes paramount in many sectors, community collaboration and effective methods of KT will be required in order to ensure research findings are understood and utilized. Visualization of spatial data was a key driver in communicating and translating the study results. Those of us who are involved with GIS and data visualization in health and other domains may be in a unique position to participate in and influence the decision-making process.

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