Beautiful information? Creating impact with data visualisation and interactive tools

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Pursuing impact often requires academics to strip away complexity and deliver straightforward messages to non-scientific audiences. However, the data that underlie headline findings are often deep and complex – and can in fact be directly useful to decision makers. The Centre for Diet and Activity Research and MRC Epidemiology Unit are using public-realm and research-generated data to develop visual, interactive approaches, both to engage external audiences and provide information to aid decision makers.

Within two weeks of its launch, our visualisation of income, education and food choice (www.cedar.iph.cam.ac.uk/resources/evidence/food-income-education-graphic/) became the most visited page on our website, outweighing traffic from all other pages in the previous five months. An interactive version of this was then developed using the open-source software D3.js: http://epidvisualisations.medschl.cam.ac.uk/food-income-education. This software was subsequently used to create an interactive graph that allows users to explore food price changes over a ten year period, in relation to variables such as healthiness, food groups, calorific value and portion size: http://epidvisualisations.medschl.cam.ac.uk/foodprice/

We are also building online tools to directly support practice and policy decisions. Co-produced with bodies including the Department for Transport and Transport for Greater Manchester, the *National Propensity to Cycle Tool* (working prototype at http://geo8.webarch.net/master/) will help planners and charities decide where to target investment in cycling under a range of future scenarios. *The Food Environment Assessment Tool* (in development) will aid initiatives to create healthier neighbourhoods by providing detailed interactive visualisations of food environments for local authorities, health professionals and community groups.

These tools also provide opportunities for bidirectional knowledge exchange: user feedback and co-production are helping us refine tools, plan future resources and shape emerging research questions. There remain both technical and resource challenges in maintaining and developing these approaches, in a fast-changing and increasingly crowded interactive space.

Is a picture really worth a thousand words? Documentary video as a vehicle for knowledge-translation and exchange

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Documentary video is a dynamic vehicle to share research findings and a powerful catalyst for dialogue. However, critical examination is necessary to better understand the strengths and limitations of using this arts-based method for knowledge-translation and exchange. We created and disseminated a 19-minute, evidence informed documentary video "I'd Rather Stay", that engaged community and government stakeholders around the planning of mobility-friendly neighborhoods that enhance the health of older adults.

"I'd Rather Stay" intimately explores of joys and challenges of growing older in one's chosen home and neighbourhood. Stories are told through the eyes of 5 diverse older adults (65+) in Vancouver, Canada. It reflects themes that were generated from three research programs that address the question: what makes a neighbourhood a good place to grow old?

In the first two years of dissemination of "I'd Rather Stay", we closely tracked and facilitated post-screening discussions (focus groups) at 14 community forums for an estimated 500 older adults, service providers, municipal stakeholders and policy makers. The video was also screened (by invitation) at 4 international film festivals for an estimated 200 individuals. To assess the impact of this documentary video, we collected and conducted a content analysis of Director, facilitator, and/or research assistant field notes. We also transcribed forum discussion sessions, and post-screening survey data.

We found that documentary video is an effective method to convene individuals and initiate constructive discussion related to a topical issue (e.g. 'barriers and facilitators for ageing in place'). Importantly, ongoing stakeholder relationships are essential to move research-evidence from discussion to implementation and ultimately to achieve sustained impact.

"Online Learning Resources: an effective way to promote the use of research evidence"

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Introduction

Incorporating research evidence into policy, program, and practice decisions requires a wide variety of skills, including searching for research evidence, critical appraisal and synthesis skills. The National Collaborating Centre for Methods and Tools (NCCMT) offers various products and services to build these skills among public health professionals in Canada. Responding to results from an environmental scan, surveys and evaluation reports, the NCCMT designed an online learning platform to make multiple high-quality online learning resources available to all public health professionals, including those in rural and remote areas and those with limited budgets who might otherwise be unable to access traditional skill-building opportunities.

Methods

NCCMT worked with Web developers and online learning specialists to create the "Learning Centre," an online learning management system launched in June, 2012. The Learning Centre offers multiple online learning resources for which the content, practical examples and assessments have been collaboratively developed McMaster faculty and NCCMT staff, with additional input from public health practitioners who pilot tested and reviewed for relevance all modules. The Learning Centre currently offers nine online learning modules designed to address each of the seven steps in NCCMT's process of evidence-informed public health.

NCCMT's suite of seven Search Pyramids is also available in the Learning Centre. These free online tools help users find the best available evidence to support their public health decisions. The general and topic-specific Pyramids guide users to search for the most synthesized research evidence first and advise them when they need to critically appraise the evidence they find. Functionality and usability were key considerations in the design and development of the Learning Centre.

A free NCCMT account is required to access the Learning Centre. Learners can leave and return to the resources as often as they wish and collaborate with colleagues using an optional group function.

Results

The online learning resources in the Learning Centre are being used by public health professionals engaged in various roles and positions within Canada and worldwide. Learners return to the resources multiple times, suggesting that the resources continue to support evidence-informed practice. Quantitative evaluation data indicate that the online learning modules result in statistically significant increases in knowledge and self-efficacy related to the content of the modules. In terms of functionality, data indicate that learners view the online learning format and features of the Learning Centre positively. Evaluation data will be presented from June, 2012 when the Learning Centre was launched to March, 2016.

Discussion

The evaluation data available demonstrate that the resources offered in the Learning Centre, and the features of the Learning Centre, contribute to an innovative, accessible and effective strategy for supporting evidence-informed decision making among public health professionals. Moving forward, NCCMT will evaluate the functionality, usage, and learning outcomes of the online learning resources currently available in the Learning Centre. Evaluation data, including user feedback, will inform decisions about the need for additional online learning modules, topic-specific Search Pyramids, and/or other new resources in the Learning Centre.

Educational Objectives

- To know about the online learning resources offered in the Learning Centre
- To be aware of the functionality, usage, and learning outcomes for the online learning resources offered in the Learning Centre
- To consider ways that NCCMT's online resources support participants' learning and professional development