CASE STUDIES

NEW ONTARIO RESEARCH HELPS US ESTIMATE THE HEALTH CARE SAVINGS FROM URBAN GREEN INFRASTRUCTURE

BY TOM BOWERS, MSC

Decision-makers and practitioners have a helping hand quantifying the health savings accrued by greenspaces with the help of new research in the form of three case studies recently published by the Greenbelt Foundation and EcoHealth Ontario (EHO) in collaboration with Green Analytics. This research is the culmination of several years of work and that draws on the full range of expertise of the EHO partners. The case studies presented are the first of their kind in Ontario to estimate the health care savings from urban green infrastructure.

Three case studies were undertaken in 2019/2020 applying an ecohealth conceptual framework in order to understand the benefits which are accrued when using ecohealth practices. The case studies included a project to plant additional trees in order to increase the tree canopy in a Brampton neighbourbood to help adapt to impacts from heat and air pollution; a parking lot transformation into an urban downtown park in Peterborough; and developing a survey and outdoor recreation program which can be used with seniors in Peel Region to improve their life satisfaction and general well-being.

Brampton Case Study

The Peel Climate Change Partnership undertook a climate vulnerability assessment in 2019, and identified some high priority neighbourhoods that were found to be heat vulnerable. Very hot summer temperatures are an increasing health concern especially for vulnerable members of the community – the old, young and those with underlying health conditions. Montreal saw a particularly deadly heat wave two years ago, when at least 66 people died.

In 2016 there were 38 very hot days in Brampton. In 2080, that number is expected to be 62 very hot days. The Greenbelt Foundation worked with a team from Ryerson university to assess the cooling potential of increasing the urban tree canopy. An 80% increase in tree canopy could almost half the current number of very hot days, and prevent 34 hot days by 2080.

The increased tree canopy cover would result in health system savings through reduced exposure to extreme heat days, improved air quality and increased physical activity. The annual net benefits are estimated to be between $2.5 million and $3.2 million.

Peterborough Case Study

The Urban Park under development is approximately 1.1 acres in size located in the downtown core of the City of Peterborough on a site that used to be a parking lot. When completed, the park will provide an urban greenspace alongside a variety of amenities for residents and visitors in downtown Peterborough.

Parks in the urban environment encourage physical activity, improve mental health, can reduce exposure to air pollution and hot weather, and increase life satisfaction among users and those living in the vicinity of the park.

These improvement result in significant health system savings through prevented lost productivity associated with poor health and illness, and reduced mortality. The park will also increase life satisfaction for local communities. The combined value of these worth $4,240,000 annually meaning the health return on investment will pay back the development cost in 1.5 years.

Each project identified the benefits they expected to achieve based on current research, and the pathways (or activities) that would help to achieve those benefits. Green infrastructure and nature-based solutions are emerging as cost-effective, practical options that address the twin biodiversity and climate crises. Nature-based solutions work by conserving ecosystems in order to remove carbon dioxide (CO2) from the atmosphere, while providing a range of other important benefits, such as recreation space, cleaner air and water, protection from flooding and extreme heat, and habitat for biodiversity.

Ecological goods and service valuations for natural assets have frequently been used to inform decisions about land use planning, conservation and ecological restoration projects. Many municipalities in the GGH are assessing and valuing the infrastructure services provided by natural assets to identify cost effective management options for maintaining service levels in a changing climate, for example looking at the flood protection services of forests and wetlands.

In much the same way, these new case studies consider the important health care services provided by urban green infrastructure and can similarly inform decisions about the design and composition of our cities and towns.

In 2015, EcoHealth Ontario published a systematic review of literature that concluded that green space improves physical health, mental health, and wellbeing of urban residents. Not a huge surprise to many of us who have become increasingly reliant on our local green spaces over the past year.

The economic valuation framework developed for these case studies builds on this 2015 study and digs deeper into health benefits associated with different types of green space. The framework allows users to identify specific improvements to health outcomes in the local community that result from increased provision of green infrastructure. These improved health outcomes can then be valued by considering avoided health care costs and loss of productivity.

Assigning a monetary value to greenspace investments is challenging, given the difficulties in identifying quantifiable health outcomes attributed to a policy, program, or planning decision. The evidence connecting greenspace investments to health outcomes is strongest in three areas, namely:

1. Physical health improvements associated with higher levels of physical activity.
2. Mental health improvements associated with spending time in nature.
3. Health improvements, avoided health system costs and loss of productivity associated with reduced exposure to air pollution (specifically reduced respiratory symptoms and incidences of cardiovascular disease) and extreme heat.

Punjabi Community Health Services and Credit Valley Conservation Case Study

The Punjabi Community Health Services in association with Credit Valley Conservation Authority has developed a mental health program with the goal to engage 200 seniors in nature-based programming. As part of the programming, seniors will have opportunities to engage in mindfulness exercises, yoga in the forest, games using elements of nature and natural materials, poetry, storytelling, singing, and dancing. These surveys are designed to capture the data necessary to populate the economic framework once large gatherings can be held.

The surveys have been developed to capture the data necessary to populate an ecohealth economic valuation framework which is necessary to determine economic value of the programming. Program administrators will be able to determine any improvements in participants' life satisfaction by reviewing their pre and post program survey responses after participating in the programs.

Research shows that a one-point increase in life satisfaction is equivalent to an approximate increase of $57,200 (CND 2019) in annual per capita income.
Interested in Using The Ecohealth Conceptual Framework?

As with all pilot project, the valuations aren't perfect but they capture a lot of valuable information and are a great step in the right direction. The datasets and models used for this project are being improved by teams from Ryerson and Waterloo Universities – if you are interested in using the framework please contact Tom Bowers at the Greenbelt Foundation.

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