

How big data is helping the public understand their health risks

Project Big Life calculators were developed using ICES data to show the public how research and public health policy could affect individuals, their families and their communities. The calculators use big data to develop precision health algorithms that predict the risk of diseases, dying or using health care. There are four calculators: the Life Expectancy Calculator, the Sodium Calculator, the Heart Attack and Stroke Calculator and the Elder-life Calculator.



Area of impact:



Healthier
People

ICES Research

A team of ICES scientists in Ottawa have used ICES data collected through the province's health system and Statistics Canada to build a series of four online calculators, collectively called Project Big Life. These calculators, or prognostic tools, help patients and their doctors see how their current health behaviours might affect their future health. The first was the **Life Expectancy Calculator**, released in 2012 and based on a report by ICES and Public Health Ontario called *Seven More Years: The Impact of Smoking, Alcohol, Diet, Physical Activity and Stress on Health and Life Expectancy in Ontario*. The success

of this calculator led to the creation in 2013 of the **Sodium Calculator**, which was developed by analyzing the sodium levels of more than 20,000 grocery and restaurant food items. The **Elder-life Calculator**, released in 2014, estimates the life expectancy of individuals based on their responses to 25 questions about what diseases they have and their ability to care for themselves. In 2018, the most recent calculator in the series was launched: **the Heart Attack and Stroke Calculator** provides individuals with their risk of hospitalization or death due to heart disease by considering factors like diet and level of physical activity.

How this work is having **impact**

It took physicians approximately four minutes to discuss the sodium calculator results with their patients, and 75 percent of them found it to be a desirable and feasible intervention to facilitate dietary advice.

Jefferson K. A **Feasibility study of an eHealth intervention for dietary sodium reduction in primary care** [master's thesis]. Oshawa, ON: University of Ontario Institute of Technology; 2019.

Public Use

- When the Life Expectancy Calculator was released online in 2012, it attracted 50,000 users in the first 30 minutes of going live and caused the host servers to crash.
- There have been over 1.5 million uses of the calculator in over 200 countries.
- Schools in Canada and the United States use the calculators for class projects to illustrate how research can be useful at the individual level.
- At a presentation outside the House of Commons in 2013, members of Parliament lined up to have their sodium levels measured using the Salt Calculator.

Use Among Clinicians and Planning Professionals

- The calculator developers are working with the City of Ottawa to facilitate use of the algorithms in planning tools to support the healthy city initiative and health care planning.
- Canadian dietitians are using the Sodium Calculator as part of the **SODIUM-HF clinical trial**, which is testing dietary sodium and clinical outcomes in patients with heart failure.
- The Elder-Life Calculator is recommended by the **Ontario Palliative Care Network**.
- Currently set up for use in Canada, the calculators can be adapted for use by any of the 100 countries around the world that collect health survey data.