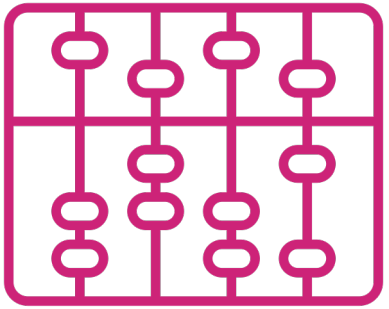
Schiff Consulting

Impact valuations for CBA and SROI in the NZ Treasury CBAx tool



Aaron Schiff, PhD
5 September 2024

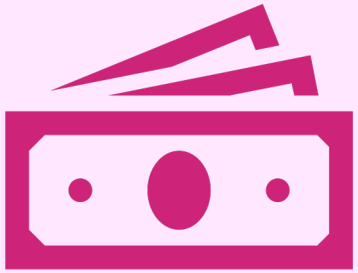
Valuing benefits of social interventions

Cost-benefit analysis (CBA) and social return on investment (SROI) are methods for evaluating benefits and costs of social interventions or investments

Incremental (additional) benefits and costs of the intervention are assessed relative to a counterfactual scenario

In theory, anything that people value can be included as a benefit or cost

In a CBA or to calculate an ROI number, all benefits and costs need to be expressed in monetary terms so they can be compared



Estimating a monetary value for benefits of a social intervention

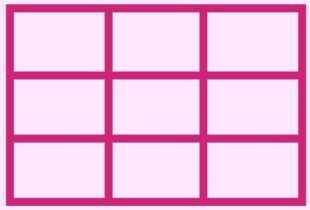
Benefit ($) = **Causal change in outcome** ✖ **Impact valuation**

Changes in outcomes caused by the intervention are translated into **dollar estimates of benefits** using **impact valuations** that reflect the value to society of those changes

Benefits are compared to costs over the lifetime of the intervention in a CBA or SROI

The **NZ Treasury CBAx Tool**

https://www.treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/investment-planning/treasurys-cbax-tool

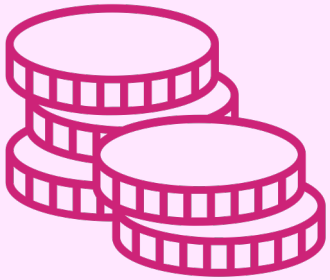


It is a spreadsheet model that provides a framework for doing CBA

It includes a database of **impact valuations** to translate impacts or changes into dollars that can be used in CBA or SROI analysis as part of an evaluation

Values reported here are from the **December 2023** model

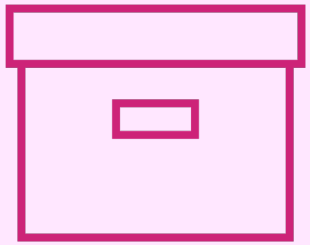
Note: I'm not associated with the Treasury and any errors in describing the CBAx model are mine



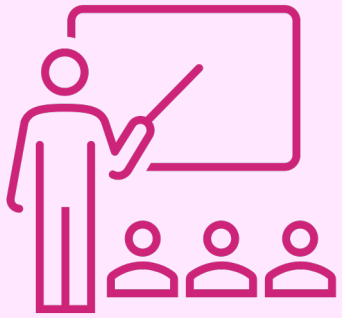
Impact valuations are **per-unit dollar amounts** that are applied to estimates of **changes in outcomes caused by the intervention**

These can be applied to outcomes that reflect either benefits (positive monetary values) or costs (negative monetary values) of the intervention

The CBAx model has a database of impact valuations



Wellbeing Domai	Description	Value adjusted to 2024	Value	Unit	Government/Non-Government	Sector	Year of dat	Source (1)
Income, consumption	Superannuation - Generalised	-23,119	-21,840	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Superannuation or veterans pension - Single, living alone	-27,323	-25,811	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Superannuation or veterans pension - Single, sharing	-25,220	-23,825	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Superannuation or veterans pension - Married, civil union, or de facto couple, both	-21,017	-19,855	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Superannuation or veterans pension - Married, civil union, or de facto couple, with	-21,017	-19,855	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Superannuation or veterans pension - Married couple, with non-qualified spouse i	-21,017	-19,855	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Orphan's Benefit or Unsupported Child's Benefit - Generalised	-16,005	-15,119	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Orphan's Benefit or Unsupported Child's Benefit - Under 5	-15,047	-14,215	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Orphan's Benefit or Unsupported Child's Benefit - 5 to 9	-15,151	-14,313	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Orphan's Benefit or Unsupported Child's Benefit - 10 to 13	-16,326	-15,423	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Orphan's Benefit or Unsupported Child's Benefit - 14+	-17,494	-16,527	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Foster care allowance - Generalised	-16,117	-15,226	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Foster care allowance - under 5	-15,047	-14,215	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Foster care allowance - 5 to 9	-15,151	-14,313	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Foster care allowance - 10 to 13	-16,326	-15,423	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Foster care allowance - 14+	-17,494	-16,527	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Foster care allowance - Family home	-16,568	-15,652	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Family tax credit - Generalised	-6,700	-6,330	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Family tax credit - First or only child, aged 0 to 15 years	-7,538	-7,121	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Family tax credit - First or only child, aged 16 years or older	-7,538	-7,121	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Family tax credit - Second or subsequent child, aged 0 to 12 years	-6,142	-5,802	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Family tax credit - Second or subsequent child, aged 13 to 15 years	-6,142	-5,802	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Family tax credit - Second or subsequent child, aged 16 years or older	-6,142	-5,802	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Training incentive allowance	-5,492	-5,188	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Generalised, single without children	-16,193	-15,297	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Generalised - married, civil union or de facto couple (each)	-16,260	-15,360	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Single, 18 to 19 years, at home, without children	-13,796	-13,033	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Single, 18 to 19 years, away from home, without children	-16,193	-15,297	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Single, 20 to 24 years, without children	-16,193	-15,297	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Single, 25+ years, without children	-18,591	-17,562	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Married, civil union or de facto couple, without children (each)	-15,817	-14,942	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Married, civil union or de facto couple, with children (each)	-16,702	-15,778	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Jobseeker Support - Sole parent	-26,025	-24,585	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Young Parent Payment - Sole parent, 16 to 17 years, living with or supported by p	-15,013	-14,182	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Youth payment - Single 16-17 years (each)	-16,193	-15,297	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Youth payment - Married, civil union, or de facto couple (each)	-15,817	-14,942	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Grandparented Woman alone or Domestic Purposes Benefit woman alone	-19,188	-18,127	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Accommodation supplement - Generalised (across areas)	-7,913	-7,475	Per year	Government	Social Developmen	2023	Studylink, 2022
Income, consumption	Accommodation supplement - Married, civil union or de facto couple (without childr	-12,936	-12,220	Per year	Government	Social Developmen	2023	Studylink, 2022
Income, consumption	Accommodation supplement - Married, civil union or de facto couple (without childr	-8,532	-8,060	Per year	Government	Social Developmen	2023	Studylink, 2022
Income, consumption	Accommodation supplement - Married, civil union or de facto couple (without childr	-5,780	-5,460	Per year	Government	Social Developmen	2023	Studylink, 2022
Income, consumption	Accommodation supplement - Married, civil union or de facto couple (without childr	-4,404	-4,160	Per year	Government	Social Developmen	2023	Studylink, 2022
Income, consumption	Supported living payment - Generalised	-20,974	-19,814	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Supported living payment - Single/16-17	-17,758	-16,776	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Supported living payment - Single/18+	-21,188	-20,016	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Supported living payment - Married, civil union, or de facto couple without children	-18,001	-17,005	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Supported living payment - Sole parent	-29,040	-27,434	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Supported living payment - Married, civil union, or de facto couple with children (ea	-18,886	-17,841	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Standard disability allowance (maximum)	-4,134	-3,905	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Special disability allowance	-2,578	-2,436	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023
Income, consumption	Child disability allowance	-3,116	-2,943	Per year	Government	Social Developmen	2023	Work and Income New Zealand, 2023



Example

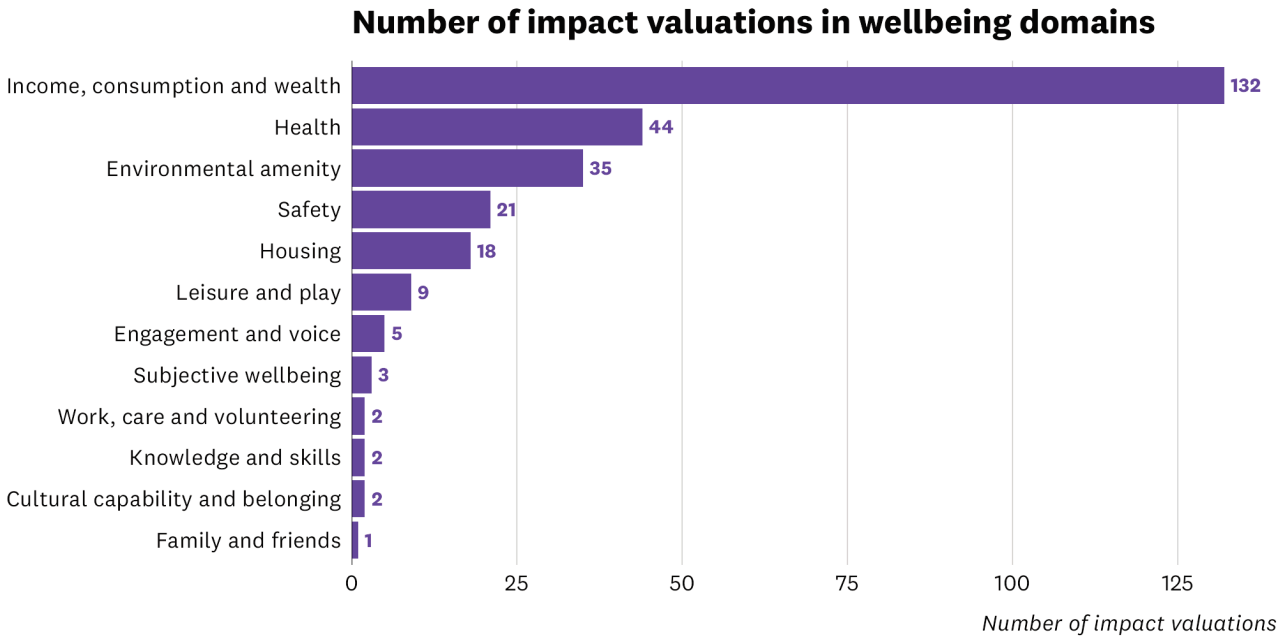
An intervention got rid of all mould in 100 houses for a year

The impacts database says that a house with “very bad” mould imposes a wellbeing cost on its occupants of $4,502 per year (2024 dollars)

The annual benefit of the intervention is the avoidance of these wellbeing costs, i.e. around $450,000 per year

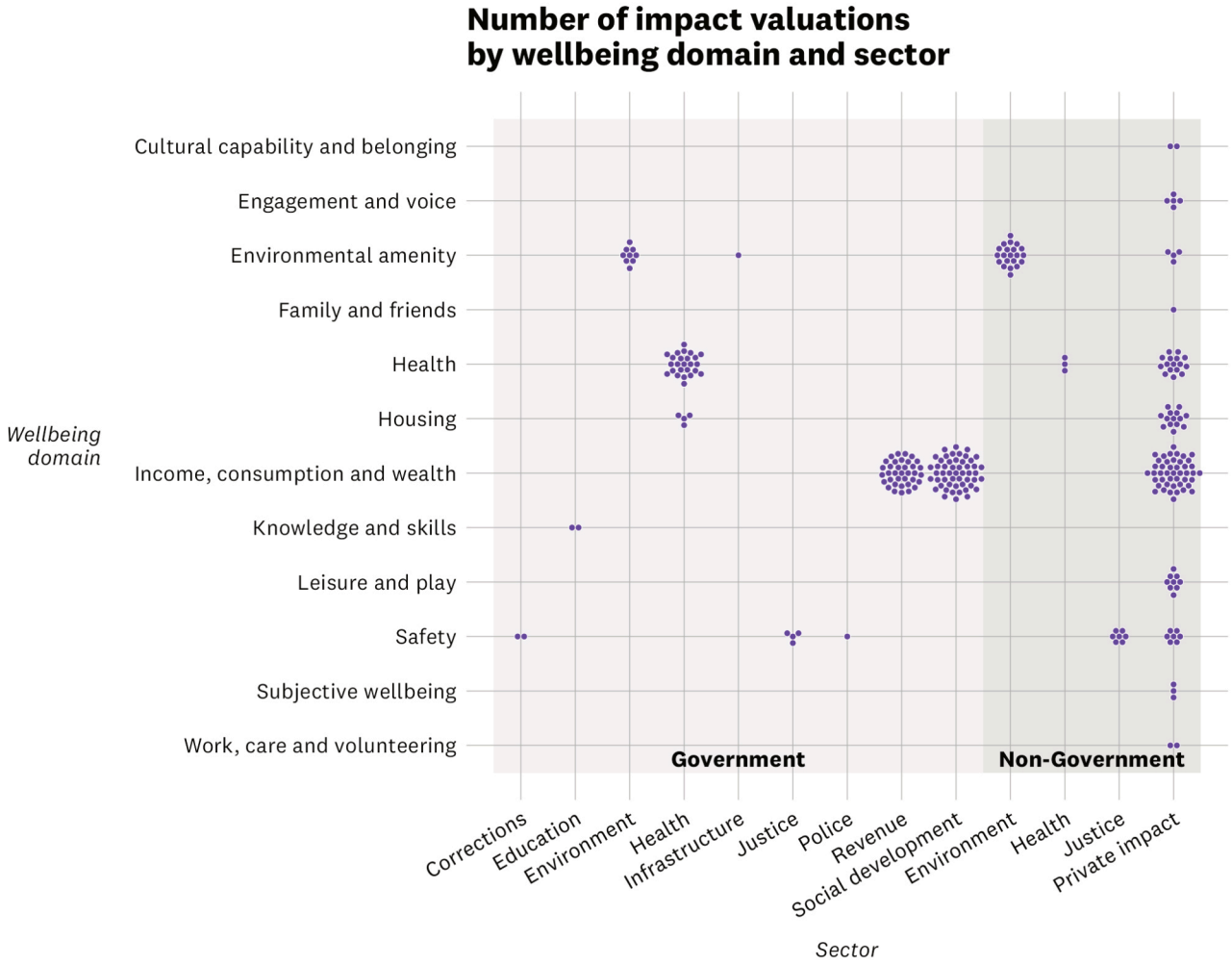
Wellbeing domains

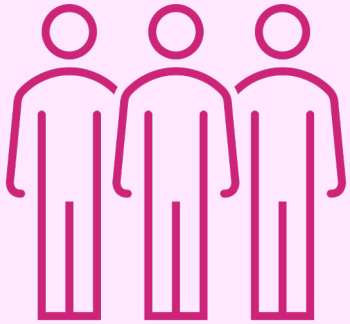
The December 2023 CBAx model includes 274 impact valuations across 12 *domains of wellbeing*



Sectors

Impact valuations are also classified across *government* and *non-government* sectors





Non-government impacts reflect changes in people's wellbeing

Private impacts come from changes in outcomes for individuals

Examples: changes in after-tax income, personal physical and mental health, being a victim of a crime

External impacts reflect broader social and environmental changes

Examples: traffic congestion costs, river water quality, productivity benefits of urban density, broader impacts of crime

External impacts are currently available for environment, health, and justice categories

Subjective wellbeing

General values are provided for changes in people's overall life satisfaction

A **WELLBY** is a one-point change for one year in one person's overall self-reported life satisfaction on a scale from 0 to 10

The value of a WELLBY is quite uncertain so a range is provided and it's important to do sensitivity analysis

Low: $6,714 / Medium: $15,878 / High: $25,405

Changes in life satisfaction can be assessed using a survey, but we need to consider if small changes in life satisfaction can be measured accurately and if they can be attributed to the intervention being evaluated

Government impacts

Reflect changes in government revenue and expenditure associated with outcomes

Some are *transfers* between private individuals and the government so are not net impacts on society

Examples: superannuation and social welfare benefit payments changes in income tax revenue

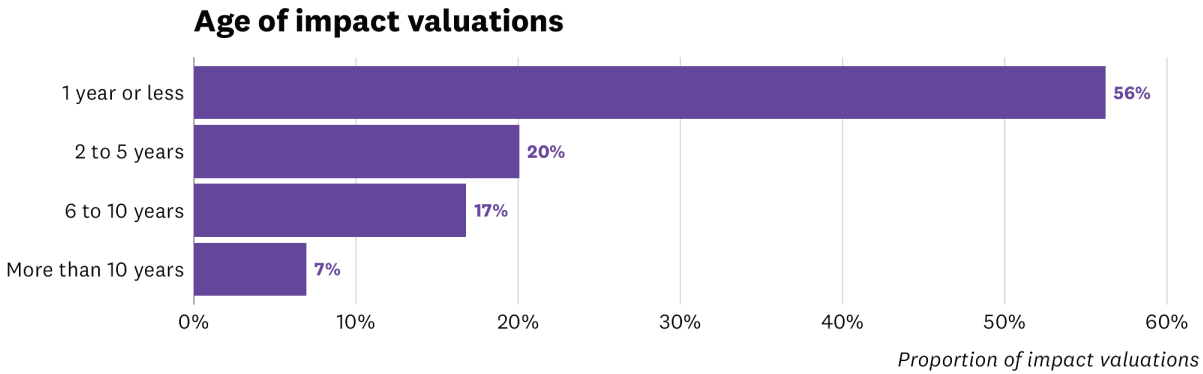
Others are the cost for the public sector to provide services and may be costs incurred by an intervention or costs that an intervention can avoid

Examples: costs of health services, average costs of care for health conditions, costs of policing and justice services

Where do the numbers come from and how reliable are they?

Each impact valuation has source references

Historic values have been inflated to 2024 dollars, but some estimates are more than 10 years old



It is good practice to check methods and assumptions used to estimate the valuations, and search for alternative estimates

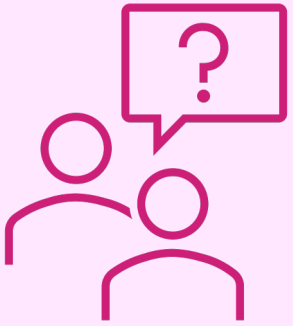
Sensitivity analysis is essential to test how results could change with different valuations

Benefits estimates are only as reliable as the estimates of changes in outcomes that impact valuations are applied to

Benefit ($) = **Causal change in outcome** ✖ **Impact valuation**

Good evidence and robust methods are needed to estimate the **causal changes in outcomes** of an intervention being evaluated

Help?



I help clients find answers at the intersection of data science and economics

Aaron Schiff
PhD

www.schiff.nz

aaron@schiff.nz