

Undertaking a CBAX: Answers and Tips to Frequently Asked Questions

Introduction

Agencies that use the Treasury's CBAX tool have support available to undertake a cost-benefit analysis (CBA) and inform policy decision-making. CBAX can assist you to undertake analysis of the initiative's impacts and show how the initiative contributes. Budget initiatives need value for money analysis, supported by a CBA of the benefits and costs. CBA and CBAX should be used in a fit-for-purpose way, so that the information is useful for decision-making. The budget CBA and CBAX requirements are set out in the budget guidance, which is issued via CFISnet.

This document provides supporting information to the [Guide to Social Cost Benefit Analysis](#) and should be read in conjunction with the [CBAX Tool User Guidance](#). It contains tips and answers to some frequently asked questions for address some commonly faced issues.

The answers are provided under four broad categories:

- Using and prioritising CBAX results in analysis
- Fundamental elements
- Information and evidence
- Varying impact entries

To aid in the development of your CBA / CBAX this document also provides some extra tips, links to other resources and examples (see icons below).



Top Tips



Other Resources



Examples

This document is part of a suite of guidance that relates to preparing high quality funding proposals and CBAs. Other documents to be considered when preparing proposals include:



Budget guidance and templates: Released each year on CFISnet – agency staff should contact your Finance and Budget teams for more information

Treasury's CBA guidance:
<https://www.treasury.govt.nz/publications/guidance/planning/costbenefitanalysis/guide>

Treasury's CBAX Tool User guidance:
<https://www.treasury.govt.nz/publications/guide/cbax-tool-user-guidance>

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Who can I contact for support?

If you have questions that are not covered in this guidance, the Treasury can provide support on specific issues and review draft CBAX models. Please contact your Vote Team or CBAX@treasury.govt.nz. Further support is set out in the table below.

| Type of support | Description | When |
|---|---|---|
| Treasury Vote Analyst | Vote Analysts can engage with policy, research and finance teams and discuss approaches to work through issues in applying CBAX. | Agencies can engage with their Treasury Vote Analyst at any time. We encourage agencies to engage early and raise potential challenges. |
| Treasury CBAX helpline | General enquiries about the information in this guidance can be directed to CBAX@treasury.govt.nz | At any time. |
| CBAX Community of Practice for all users with extensive or limited experience | Treasury runs workshops for CBAX users to learn and share experiences about CBA steps, the inputs to CBAX, the analysis and the outputs. Contact CBAX@treasury.govt.nz | Treasury runs these workshops mainly in the September-December period to support agencies and advisors in their budget preparation. |
| Tailored CBAX workshop | If you are interested in a workshop tailored for your agency, please contact the Treasury Vote Analyst. | Workshops can be tailored on an ad hoc basis depending on the specific needs. |
| Government Economics Network (GEN) CBA course | The GEN course “Introduction to Cost Benefit Analysis” provides a good introduction to CBA and includes some CBAX training. See https://gen.org.nz/upcoming-gen-training/ | This course runs once or twice a year. |

Using and prioritising CBAX results in analysis

How is cost benefit information used in decision-making?

Answer:

- Initiatives are not evaluated on CBAX results alone.
- CBAX results together with unmonetised impacts, evidence base and assumptions (and elements such as alignment with Government priorities and delivery implementation risks) inform overall value for money (VFM) advice.
- VFM is considered along-side the wider case and factors such as fiscal constraints.
- Rigorous CBA is part of sound public policy principles.

The Treasury encourages important public sector decisions to be informed by fit-for-purpose CBA, reflecting the significance and size of an option. CBA and CBAX should be used in a fit-for-purpose way, so that the information is useful for decision-making. In the budget context, the CBAX analysis produced by an agency is used primarily by your Treasury vote team in developing value for money advice. Treasury's focus isn't primarily on the CBA results, but on the underlying assumptions and evidence. CBAX supports agencies to meet decision-making principles including rigorous CBA. (Coalition Government, 2023)

How does CBAX analysis fit into a budget initiative?

Answer:

| CBAX/CBA Guide Steps | Budget initiative templates Benefits and Costs |
|--|---|
| 1. Define the problem, the policy alternatives, and the counterfactual | Section on the proposal, including problem definition and options analysis (consistent with the approach taken in the Regulatory Impact Statement (RIS) and Better Business Case process) |
| 2. Identify the people who gain and lose | Section on the Benefits and Costs and analysis including the intervention logic map and distributional analysis |
| 3. Identify the costs and benefits | |
| 4. Quantify the costs and benefits | Section on the Benefits and Costs sets out the wellbeing impacts |
| 5. Discount to a common period, compare with costs and benefits | |

Who should be involved in completing a CBAX?

Draw on specialist teams within your agency. Research and analysis teams are likely to prove helpful in the evidence gathering stage, and those with statistical, costing and/or modelling experience are likely to be helpful in navigating the CBAX tool.

Also consider whether there are parties outside of government which could help, for example, universities or research institutes which may have subject matter knowledge to support your evidence base.

Communicate with the relevant Treasury vote team, especially if you're unsure about the process, or even if you just want to test assumptions. You can contact the CBAX team on CBAX@treasury.govt.nz to answer questions, provide advice on how to approach CBAX modelling for a given proposal, and review draft CBAXs. We also offer training.



- Key people: initiative lead (policy/budget) and excel experience.
- Involve different perspectives and use specialist capabilities eg, subject matter experts, policy, finance, actuaries, service delivery and evaluation.
- Think about who is best placed to cost an initiative, who is best to identify the counterfactual, etc.
- Involve other agencies with shared outcomes or intervention group.
- Contact them early on – you might be working on a similar proposal that would benefit from a cross-agency approach.

Which parts of the CBAX analysis should be prioritised?



- Prioritise efforts on those impacts with the greatest influence on the ROI.
- Gathering evidence is often the most time-consuming part of the process, but crucial.

While it is advised to initially identify as broad a range of impacts as possible, some impacts may have a negligible influence on the outputs produced by the model.

How does CBAX fit with wellbeing analysis?



- Use frameworks such as the Living Standards Framework and He Ara Waiora to identify the benefits and costs of a proposal. Think broadly about impacts.
- Consider all significant impacts, even if these are not quantified or monetised.

Agencies can use frameworks such as the Treasury's [Living Standards Framework](#) (LSF) and [He Ara Waiora](#) to systematically identify the benefits and costs. The two frameworks can support you to think broadly about a proposal's potential impacts in a CBA, including impacts in other sectors and unintended impacts. He Ara Waiora also helps you to think about what impacts may resonate with a Te Ao Māori perspective.

Figure 1: He Ara Waiora

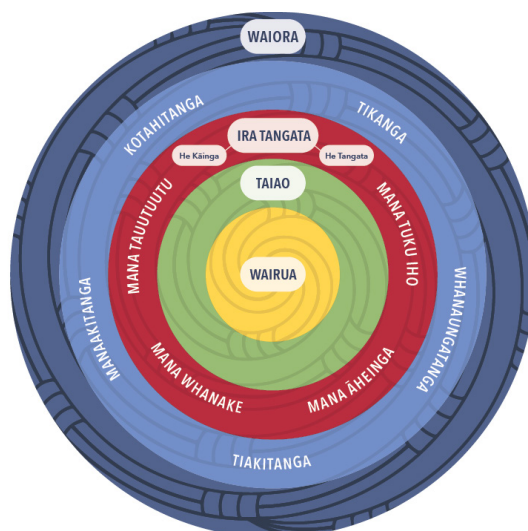
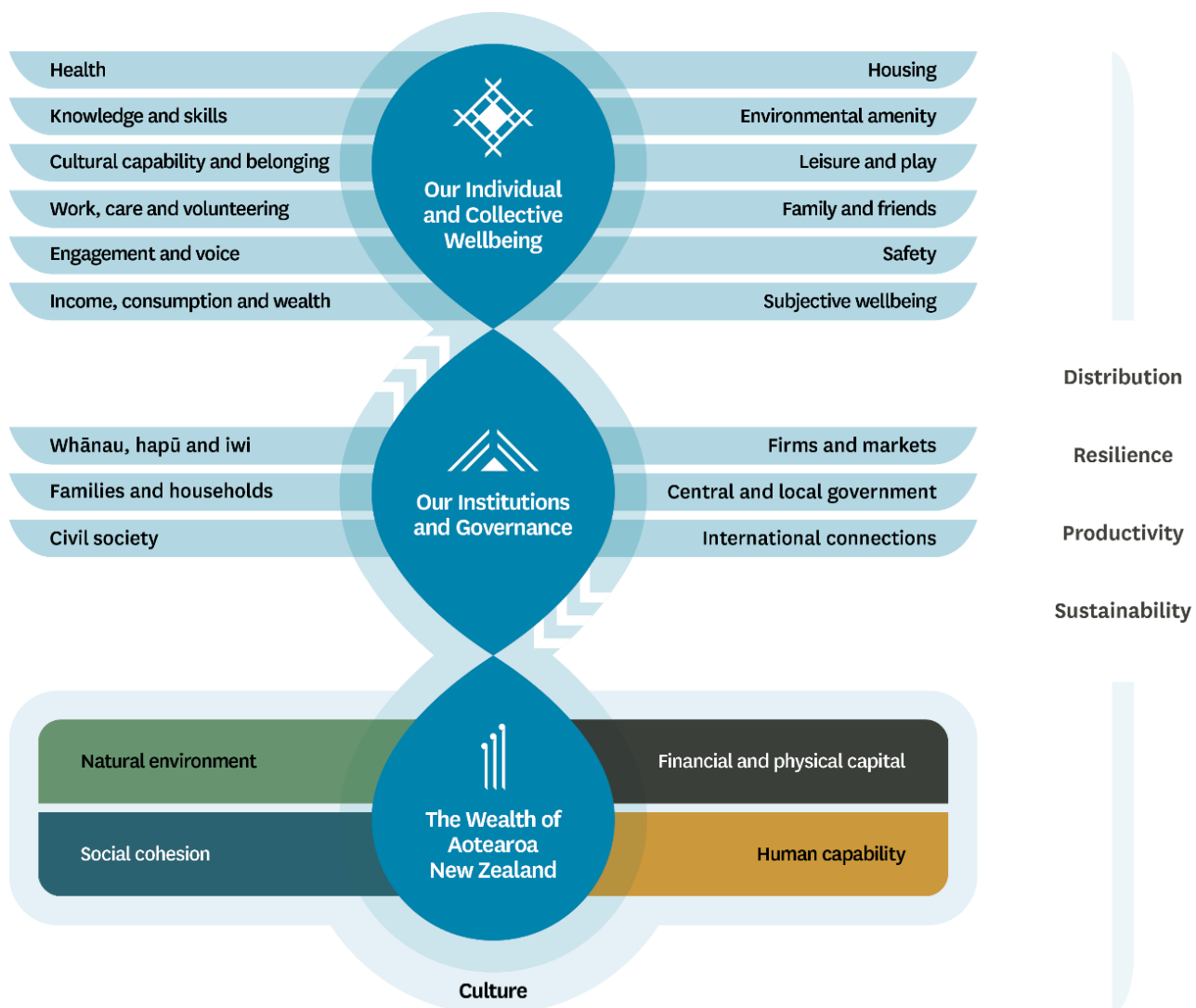


Figure 2: The Living Standards Framework (2021)



For more information on the He Ara Waiora framework and suggestions for further reading see here: [He Ara Waiora](#) . The [He Kāhui Waiora](#) discussion paper illustrates how wellbeing frameworks can be used.

For more information on the Living Standards Framework and suggestions for further reading see here: [Living Standards Framework](#).

Can you use CBAs for ex-post evaluation?

Yes. The impact information can inform the evaluation following implementation. For example, identify the assumptions that it is most important to test or provide evidence for. While CBAX is designed for ex-ante CBA, it could also be used for ex-post evaluation of already implemented policies and interventions. As agencies increase the focus on the value for money of current spending, ex-post CBAs may become more common.

How does intervention evaluation fit in?



CBAX supports an improved evidence base for decision-making and provides a basis for an evaluation plan. While CBAX is designed for ex-ante CBA, it could also be used for ex-post evaluation of already implemented policies and interventions. As agencies increase the focus on the value for money of current spending, ex-post CBAs may become more common.

Intervention evaluation includes ex-ante evaluation to inform decisions and ex-post evaluation feedback loops. CBAX supports improved evidence base for decision-making. *Ex-ante evaluation* informs the CBAX assumptions, including intervention logic, intervention effectiveness and “what works”. CBAX requires a rating of the quality of evidence for each impact. The ratings do *not* change the calculations. The evidence base forms part of the overall judgements and interpretation of the results.

Ex-post evaluation gives confidence that the assumed impacts are achieved and enables feedback loops and adjustments considering experienced impacts. Over time, the ability to demonstrate delivered impacts will increase confidence in future analysis and advice, for example as part of an investor confidence rating.

The CBAX impacts and assumptions can inform an *evaluation plan*, for example, whether the assumed success rates are achieved. Focus ex-post evaluation on significant and uncertain impacts, or on areas where new knowledge can generalise to inform other programmes, for example by evaluating a theory of change.

A strong ex-post evaluation plan provides greater confidence that we will later know how well the intervention is working. An initiative may include funding for evaluation. While CBAX is designed for ex-ante CBA, it could also be used for ex-post evaluation of already implemented policies and interventions. As agencies increase the focus on the value for money of current spending, ex-post CBAs may become more common.

Fundamental Elements

What if the intervention or initiative is not about people?



- Include an appropriate unit for the intervention cohort.
- The intervention group unit is distinct from people affected and does not have to be people. It can be, for example, firms, areas, animals, schools, society or New Zealand as a whole, houses, rivers.

CBAX intuitively works for interventions with people, for example in the social sector. However, the CBAX model works with any unit that changes the impacts for New Zealanders.

While CBAX is interested in the *impacts for people* (that is, New Zealanders), the impact analysis covers *intervention changes to people* or any other appropriate unit. The unit (or CBAX cohort) does not have to be people. It can be anything that makes sense for the intervention, such as firms, areas, animals, society/New Zealand, houses or rivers. The unit can be identified at the appropriate level, for example: individual, family, business, community, city or country.

How do I determine the intervention unit?



- Try different units to see what works best.
- Our advice – keep the analysis as simple as possible and as flexible as possible.

Defining the intervention cohorts may need a lot of analysis, research, and discussion. Try different units to see what works the best. Getting this unit right is important - the unit is entered into the 'Primary Inputs' tab as the policy intervention cohorts and all impacts / flow on calculations are applied to this unit. Impact assumptions and calculations must relate back to the cohorts.

Keep the analysis as *simple* as possible and as *flexible* as possible. Choose a unit that makes it easy to understand what is going on in the model, and easy to vary the assumptions. As a starting point, think about:

- Who or what is this about? Who or what are you investing in or intervening with?
- What is the intervention/investment logic? See the start of the intervention logic.
- What are the (possible) impacts? What unit can you relate these impacts to?
- What changes the variable costs? This can also be a driver of changes to impacts.
- What are the primary and secondary / flow-on impacts?

Start with considering what the intervention is about and the intervention logic. Initially focus on the main aim of the intervention, and then consider how easy it is to update the analysis for changes.



Thinking about options for the intervention unit

It could work to use something other than people as the intervention unit, eg, schools. This means that each impact value is expressed in *per school* terms. The analysis can work with a cohort of students or schools. The intervention context and options will determine what makes the most sense.

Consider an intervention unit that gives you flexibility to add other impacts. Check whether it makes sense to tell the story for each impact along the lines: the intervention affects x number of students or schools and has y and z impacts.

How are pre and post intervention levels set out?



- Specify pre and post intervention levels in one of three ways: binary, frequency, or proportional.
- It relates to the unit of the impact. Check that it makes sense.

There are three ways in which you can specify the pre and post intervention levels. The way you specify the level links back to the type of unit for the value impacts that you have chosen.

| Impact unit type | When to use this option |
|------------------|---|
| Binary | Something happens or does not happen. Unit type: per year, incident, event 0 (pre-intervention) and 1 (post-intervention) OR 1 (pre-intervention) and 0 (post-intervention) |
| Frequency | Something happens less or more often. Unit type: per day, hour, event, visit, incident For example: 6 (pre-intervention occurrence of an incident) and 5.7 (post-intervention less occurrence of an incident) |
| Proportional | The pre- or post-intervention level is a reference point. Unit type: per year For example: 0.8 (pre-intervention Job Seeker benefit is 80% of new income) and 1 (post-intervention new income level) |

What if the proposal relates to a cost pressure?

Cost pressure initiatives cover a very wide range of proposals that the government might fund. CBAX works well for some cost pressure initiatives but provides less insight for others. It depends on the initiative and the information at hand.

A well-considered and reasonable counterfactual is crucial for developing a CBAX for a cost pressure proposal. Many cost pressure proposals will have a complicated counterfactual, reflecting that the alternative includes a range of actions.



- A clear counterfactual is a crucial piece of analysis for a cost pressure proposal and will tell us a lot about whether a CBAX is appropriate.
- If a CBAX is required, consider ways in which you might do this (such as a reverse analysis).
- In some instances, an exemption to the CBAX requirements might be warranted.

Information and Evidence

What if the information is poor or uncertain?

You can present overall advice considering your evidence base and do sensitivity analysis (copy and paste various scenarios into the *sensitivity analysis* tab to compare assumptions).

Even if you have poor information on assumptions and impacts, you can still gain useful insights from CBAX. It is not uncommon that there is a weak evidence base for assumptions relating to one or more impacts in your analysis. If the impact is:

- *unlikely* to have a material impact on the results, then you can leave the impact out of the CBAX analysis and cover it as an unmonetised impact in your advice.
- *likely* to have a material effect on the overall results then you are best to include the impact in the analysis and do sensitivity analysis using your best professional judgement about reasonable assumptions.

This CBAX functionality can also be used when you have a very poor evidence base, and you want to test or do reverse analysis to see what a value would need to be to break even. That can provide insights for the policy development and give a sense of magnitude and how reasonable that value would be.



- Use professional judgement and available information to best estimate assumptions that are reasonable and err on conservative.
- Undertake sensitivity analysis for varying assumptions.
- Provide ranges of potential net present values (NPVs). These ranges are likely to be wider where there is greater uncertainty.
- Interpret your results considering the evidence base.

You should explain the key assumptions and judgements in the budget initiative templates and the yellow open-text box in the Outputs tabs. This box is specifically there to explain key modelling assumptions or anything important in understanding the results.

How do you make assumptions?

Making some assumptions at least provides a platform for future evaluations. Assemble the best information you can to make judgements based on your experience. Make sure that you are explicit about your assumptions and that they are clearly documented in your advice. Assess your assumptions against your evaluation plan, consider are the key assumptions being evaluated?



Some practical tips for making assumptions

- Always start with the evidence. More research might shed light on the issues.
- Break big assumptions down into smaller components, and then focus on evidencing and quantifying these.
- Professional judgements can sometimes be quite useful. Consider: who are the subject matter experts? Could these experts assist with making assumptions?
- Assumptions can be easier to support when there is a clear plan for evaluation. Although they might be wrong, if they will be evaluated longer-term, then we will have learned something.

Document the key assumptions and judgements in the budget initiative templates and the yellow open-text box in the Outputs tabs. This box is specifically there to explain key modelling assumptions or anything important in understanding the results.

What are the appropriate labour market impacts?

Where an intervention has some impact on the labour market, people moving in and out of jobs, consider the following points on displacement effects. The effects of these will vary for different interventions, so reflect in your analysis that the effects have been considered and taken appropriately into account.



- Labour market impacts such as income, tax, ACC, and income benefits such as Jobseeker Support need to be adjusted for displacement effects and opportunity cost (see below).
- Consider how large the displacement effect of labour impact is, and therefore how large the value adjustment should be.
- The impacts database has 25% adjusted values for a conservative scenario.

Displacement effect

The **displacement effect** accounts for the fact that if an intervention moves an individual from unemployment into employment, the individual may take a job someone else would have otherwise filled. In other words, in the absence of the intervention, someone else would have taken the vacant job and the unemployment rate would be no higher or lower.

Because in CBA we only want to measure the marginal impact, for example tax revenue, the benefit generated from a worker who merely displaces another worker should not be included. CBAX impacts include 100% and adjusted 25% of the increase in income or tax for a conservative scenario. The 25% incorporates two adjustments accounting for displacement effect and the opportunity cost of labour. Each adjustment is 50% (50% multiplied by 50% gives 25%).



There are examples where the displacement effect is zero.

- If an initiative trains up individuals to fill a specialist position that would not otherwise be filled the displacement effect will be zero.
- Or if an intervention creates jobs that would not have otherwise been created and fills the positions with unemployed workers the displacement effect will be zero.

Tax and labour income

You need to list two or more impacts (such as Job Seeker Benefit) to include the benefit of people moving into a job.

1. **Wage income impact.** The after-tax income capturing the benefit to the individual, the non-government impact.
2. **Tax impact.** The tax component the wage income, capturing government impact.

We split out government and non-government impacts because this is useful in the analysis.

Pre and post intervention levels of income and tax

Ensure that pre-intervention levels are appropriate. For example, before moving to a minimum wage job, someone may be receiving the Jobseeker Support benefit. You must therefore list this as the pre-intervention level in the 'wage income impact'. The same applies if someone is moving from a low paid job to a higher paid one, you list these after-tax incomes in the pre and post intervention cells.

The other side to this is the impact for the government. If people are moving from Jobseeker Support the government saves this amount, and so an impact should be listed to factor this in. The government still receives tax income from the Jobseeker Support benefit which needs to be accounted for. If people are moving into a higher paid job (rather than from the Jobseeker Support to the minimum wage) the pre-intervention level in the 'tax impact' should reflect what the government received beforehand.

How do you use Quality Adjusted Life Years impacts (QALYs)?

The Quality Adjusted Life Year Saved (QALY) is a measure of health benefits. It combines an intervention's impact on quality of life with its impact on life expectancy. One QALY is set to be the value of a year of life in perfect health. A person in perfect health with a life expectancy of 25 years has 25 QALYs, as does a person with low health status (valued at half of perfect health) with a life expectancy of 50 years.



QALY impacts can drive a significant proportion of the net present values, so it is important to have good evidence and best estimate assumptions to support the analysis.

The CBAX model includes one value for a QALY based on Pharmac data. You should undertake sensitivity analysis to understand the effect of using QALY impacts in your analysis.

For the purposes of CBAX, we seek to identify the additional QALYs associated with an intervention. For example, a person with a life expectancy of 25 years, who receives a treatment expected to improve the value of their health status by 10%, gains a total of $0.1 * 25 = 2.5$ QALYs (before discounting) over their lifetime.

What if there is no appropriate value in the database?



- Some values may not be available in the CBAX impacts database.
- However, it is easy to add your own values to the database for a specific intervention at the bottom of the table. Analysis then flows through the model like any other value. Document and source any values you add.
- The evidence base for a new value may vary, and judgement is needed to decide whether to add a value and what value to use. Any new values should be based on solid evidence where possible.
- You can add values to explore 'what if' or 'what would it take to...'
- Over time, values that are publicly available can be incorporated into the standard CBAX impacts database (email cbax@treasury.govt.nz to have them included).

If you have a monetised impact that you want to include in a CBAX, but which is not present in the 'Impact Database' tab, you can add it to the table.

To add an impact yourself, open the Impacts Database tab of the CBAX tool.

Inputs you will need:

- Wellbeing domain most applicable to the impact
- Description of the impact
- Value
- Unit
- Government / non-government
- Sector
- Year of data
- Documentation and source links.

In some cases where there are drop-down boxes there may not be a direct fit - you will need to select the closest option. The option selected does not impact the ROI calculation.

| Row Number | Wellbeing Domain | Description | Value adjusted to 2024 | Value | Unit | Government/Non-Government | Sector | Year of data | Source |
|------------|----------------------|---|------------------------|--------|----------|---------------------------|---------|--------------|--------|
| 276 | Knowledge and skills | Average annual cost of Early Childhood Educ | -14,460 | -7,596 | Per year | Government | Health | 2013 | M |
| 277 | Knowledge and skills | Average annual cost of Early Childhood Educ | -3,223 | -1,693 | Per year | Government | Health | 2013 | M |
| 278 | Safety | Adding a new impact | 161 | 100 | Per year | Non-Government | Justice | 2016 | |
| 279 | | | | | | | | | |

In the screenshot example above, we have entered information into each of the yellow cells for an impact relating to Safety. Once the impact is included in the database, we treat it the same as for any other impact in the Impact Inputs tab. We take the corresponding row number (far left column) and enter that into the Impact Inputs tab to continue our analysis.

Note the column reading 'value adjusted to 2024'. The \$100 we entered in the 'value' column is current for a particular year; in this case 2016. The 'value adjusted to 2024' column automatically adjusts this to bring impact values on a common year basis. This is the value that will be used in CBAX calculations.

How can I use and develop values?

There are several non-market valuation methodologies available for developing values. The simplest values are where these are already expressed in monetary terms and part of regular reporting, such as costs of public services or people's income. Most of the CBAX values are of this nature.

The CBAX model distinguishes fiscal impacts for the government (classified as "government") and total economic value or wellbeing impacts for people (classified as "non-government"). Both government and non-government impacts are included in the total societal impacts. In many cases, the government impacts may be used as proxies for impacts for people, eg, hospital cost savings enable services for other people, if the savings are not returned.

CBAX values should only be applied if there is justified causation between the intervention, and the impact in question.

Traditional non-market valuation methodologies use revealed or stated preferences based on market or survey data to derive monetary values for people's willingness to pay or accept an impact. Developments in wellbeing economics include new methodologies, including subjective wellbeing measures.

In July 2021 the UK Treasury issued [“Wellbeing Guidance for Appraisal: Supplementary Green Book Guidance”](#). The UK guidance includes useful information on the different valuation methodologies. The UK material has been adapted in the table below.

| Valuation approach | Comments |
|---|---|
| Existing values | <ul style="list-style-type: none"> • Use existing, agreed methodology. • From published studies, or CBAX values. |
| Market price | <ul style="list-style-type: none"> • Well-functioning, competitive markets exist. • Consider externalities not reflected in the price. • Consider utility mispredictions in choices. • Cannot provide non-use or existence values. |
| Non-market valuation methodologies | |
| Revealed preference | <ul style="list-style-type: none"> • Real-world market trade-offs can be identified (eg, through time or purchase) and confounding factors sufficiently controlled for. • Consider externalities not reflected in the price. • Uses market data (eg, housing and labour market) to derive a value (eg, for noise pollution). • Cannot provide non-use or existence values. |
| Stated preference | <ul style="list-style-type: none"> • Going beyond the value associated with using goods and services ('use-value') to 'non-use values' such as knowing that something exists or having the option of using or visiting. • Based on a survey or an evaluation, which assesses the causal wellbeing impact. Designed surveys can be time-consuming, be expensive and have biases. • Can be used for impacts that have <i>not</i> yet happened or been experienced. |
| Subjective wellbeing | <ul style="list-style-type: none"> • Real-world trade-offs not possible to identify, convincing payment vehicles do not exist, and /or responses may be subject to strategic bias in stated preference. • There is a clear change of state (eg, flooding, ongoing frequent events such as social groups) which could cause a level shift in wellbeing. • Where existing survey information exists, such as GSS, it can be a cost-effective method of valuing non-market goods and impacts • Uses big data sets and econometric analysis to derive coefficient for changes to life satisfaction (evaluative subjective wellbeing) or changes to feelings (momentary subjective wellbeing). |
| Not valued | <ul style="list-style-type: none"> • Identify and quantify impact to the extent possible, without monetising the impact. |

Subjective wellbeing valuations using life satisfaction data

Over the past decade the subjective wellbeing valuation methodology has developed. It offers the possibility of developing values for a range of impacts using existing New Zealand datasets, such as the General Social Survey. It calculates the compensating surplus for a wellbeing gain or loss. The methodology is efficient, cheap, and fast, compared to expensive and time-consuming bespoke surveys used to calculate “willingness to pay”.

“The subjective wellbeing valuation technique measures the monetary value of life satisfaction, and then measures the change in life satisfaction that would arise due to

a change in a specific aspect of wellbeing. This technique therefore measures the equivalent monetary value of a wellbeing outcome, by measuring the amount of money that would have the same effect on life satisfaction.”*

Given that the use of subjective wellbeing values is relatively new, and we have limited experience, we recommend that users are cautious when applying subjective wellbeing values to not overstate the impacts.

In 2017, the Treasury purchased a licence to use about 60 subjective wellbeing values compiled by the Australian Social Value Bank (ASVB). The Treasury can sub-licence to the New Zealand government sector. The values include monetised impacts for wellbeing outcomes like ‘housing is no longer overcrowded’ and ‘increased hope for the future’. There is the potential for agencies to develop subjective wellbeing values based on New Zealand data. The CBAX database includes Kāinga Ora and Sport New Zealand values, based on a methodology like the ASVB.

How can I access the Australian Social Value Bank values?

The Australian Social Value Bank (ASVB) values are developed by international experts using robust econometric analysis and adjusted for New Zealand purposes. The Treasury has license arrangements with the ASVB which provides a list of quantified wellbeing values. You can consider using these wellbeing values in your analysis. ASVB values can be used in CBAX modelling in accordance with the license agreement. See also:



Check the list of quantified wellbeing values available through Treasury’s licence arrangements with the ASVB see: www.asvb.com.au

Contact the Treasury (cbax@treasury.govt.nz) to purchase an ASVB sub-licence.

Using WELLBY measure of life satisfaction

Wellbeing researchers* argue that policy makers should use subjective wellbeing as a common measure to evaluate policy options.

WELLBY is a subjective wellbeing measure, which equates to a one-point change in life satisfaction on a 0-10 scale, per person per year. Agencies can use WELLBYs either (a) as a wellbeing cost effectiveness analysis of WELLBYs/costs or (b) as a standard CBA where WELLBYs are monetised. CBAX is flexible and can be used either way.

To enable agencies to use WELLBYs in a CBA, CBAX includes new values for a WELLBY – a low and high estimate and a midpoint value. These values build on the UK methodology for valuing a WELLBY. The New Zealand values are lower compared to the UK values.

CBAX takes a cautious approach to not overestimate the WELLBY impacts, for example by using the minimum New Zealand wage rather than the average New Zealand income. Agencies should do sensitivity analysis, if using WELLBYs.



The Treasury Wellbeing Report Seminar Series includes several seminars that cover subjective wellbeing, eg, Arthur Grimes, Paul Frijters & Christian Krekel, Nancy Hay and John Helliwell. See the seminars online [here](#).

*Frijters, P. and C. Krekel (2021) *A Handbook for Wellbeing Policy-Making*. Now available for free [online](#).

Varying Impact Value Entries

Can there be multiple entries of the same impact value?

Yes, you can include the same impact from the database (impact value) multiple times to model variations in impacts for different people or periods, such as the number of people affected differing over time, or segments of the cohort being affected differently. You can then vary the assumptions.

Warning: Be careful not to double count impacts if using the same impact several times – make sure the assumptions are clearly document and each use addresses different segments / periods.

CBAX calculates the net present value (NPV) for each impact entry separately. Impacts would be double counted if for example the same segment and period was covered in both impact entries. Ensure that there is no overlap and that for example the combined segments total less than / equal to 100%. You can manually add up NPVs relating to the same impact to summarise results.

This flexibility also enables you to calculate the NPV for several scenarios of an impact in one CBAX model. In that case, you can use the NPVs for each individual impact entry, but *not* the overall results, for example return on investment, as these would include double counted impacts. This can be useful for quick “what if” sensitivity analysis and development of ranges.

What if the number of people affected differs over time?

In the Impact inputs tab, you can use multiple impact value entries for each period and vary the assumptions.

What if the impact incidence varies over time?

An impact might be stronger or more likely to occur in one year over another for the same cohort. In the Impact inputs tab, you can use multiple impact value entries for each period and vary the assumptions.

What if the segments are affected differently?

An impact might be stronger or more likely to occur on one segment over another segment in the same cohort. In the Impact inputs tab, you can use multiple impact value entries for each segment and vary the assumptions.

Can I use a non-flat / variable impact profile?

The default approach is for the value of an impact to be the same each year that the impact lasts. The CBAX Impacts Database makes it simple to use this approach. Through segmentation and use of different lags, you can use different values for different periods. This is the simplest way to incorporate variation across time.

However, if the profile values for an impact varies across time and you have this information available from other analysis you can bypass the CBAX Impacts Database.

Warning: Using this functionality involves changing formulae in Excel and may break model functionality outlined in the user guide. Do not re-use a CBAX workbook which has a manually entered time profile.



You can input an impact profile for pre and post intervention that varies across time – this may be a result of separate modelling.

This option is recommended for advanced users only. For support, please contact the Treasury via cbax@treasury.govt.nz.

We have provided an example of this below. For this example, we will input a time profile which has:

- a pre-intervention level of zero
- a post-intervention level value of \$1000 for the first year
- and the post-intervention level value increases by \$200 each year for five years.



In the Impact Impacts tab, we manually overwrite the formulas and input the details of the impact which CBAX would normally auto-populate after entering the row number from the Impacts database.

- Name: 'Fictional example'
- Wellbeing domain: 'Health'
- Sector: 'Health'
- Unit: 'per thing'
- Type: 'Government'

| Row Number | Impact | Wellbeing Domain | Sector | Adjusted Value | Unit | Type | Evidence Quality |
|----------------|-------------------------------|------------------|--------|----------------|-----------|------------|------------------|
| Impact 1 OK | Fictional example EXCLUDED | Health | Health | - | Per thing | Government | Low |

Normally you would enter the information for an impact into the various yellow cells.

Impact Inputs

| Row Number | Impact | Evidence Quality | Time lag before impact occurrence (years) | Length of impact (years) | End year | Segment of target population per year (percentage) | Success rate (Percentage) | Impact type | Units per person per annum |
|----------------|-------------------------------|------------------|---|--------------------------|----------|--|---------------------------|--|----------------------------|
| Impact 1 OK | Fictional example EXCLUDED | Low | | | | 100% | 100% | Pre intervention level Post intervention level Marginal impact | - |
| Impact 2 OK | EXCLUDED | Low | | | | 100% | 100% | Pre intervention level Post intervention level Marginal impact | - |
| Impact 3 OK | EXCLUDED | Low | | | | 100% | 100% | Pre intervention level Post intervention level Marginal impact | - |
| Impact 4 | | Low | | | | 100% | 100% | Pre intervention level Post intervention level Marginal impact | - |

In this case, you only update the evidence quality, there is no need to touch any other cells. You add the values for the impact directly into the columns shown in the screenshot below. For this set of inputs, we manually add the pre and post intervention values for the impact across future years.

| Row Number | Impact | Impact type | Units per person per annum | Annual value (\$) Per cohort member | Year Ending June | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|------------|--------|-------------------|----------------------------|-------------------------------------|-----------------------|-------|-------|-------|-------|-------|-------|
| | | | | | Start of year counter | - | 1 | 2 | 3 | 4 | 5 |
| | | | | | End of year counter | 1 | 2 | 3 | 4 | 5 | 6 |
| Impact 1 | - | Fictional example | | | | - | - | - | - | - | - |
| OK | | INCLUDED | | | | 1,000 | 1,200 | 1,400 | 1,600 | 1,800 | 2,000 |
| | | | | | | 1,000 | 1,200 | 1,400 | 1,600 | 1,800 | 2,000 |
| Impact 2 | - | | | | | - | - | - | - | - | - |
| OK | | EXCLUDED | | | | - | - | - | - | - | - |
| | | | | | | - | - | - | - | - | - |
| | | | | | | - | - | - | - | - | - |

In our example, this is a pre intervention level of zero, and a post intervention value of 1,000 for the first year in 2018, increasing by 200 each year for five years. We input this information directly. As you overwrite the formulae in the CBAX model, it is good practice to shade the affected cells a different colour and insert a comment to warn other users of the spreadsheet that this has been done. The duration of the impact is six years, so in 2024 we do not input anything. CBAX automatically calculates the marginal impact in the row below.

The Output tabs record this impact like any other. What you input for the dollar values will apply to each year of the policy intervention cohort entered in the Primary Inputs tab.

| Impact summary | | | Unit: 2018 (\$m) | | | | | | | |
|------------------|-----|-------------------|------------------|-------------|-------------|------|------|------|------|------|
| Evidence Quality | | | 5-Year NPV | 10-Year NPV | 50-Year NPV | 2018 | 2019 | 2020 | 2021 | 2022 |
| | | | \$m | \$m | \$m | | | | | |
| Impact 1 | Low | Fictional example | 61 | 126 | 126 | 4 | 9 | 14 | 21 | 28 |
| Impact 2 | - | | - | - | - | - | - | - | - | - |