Understand causes of outcomes and impacts

Most evaluations require ways of addressing questions about cause and effect – not only documenting what has changed but understanding why.

Impact evaluation, which focuses on understanding the long-term results from interventions (projects, programs, policies, networks and organisations), always includes attention to understanding causes.

Understanding causes can also be important in other types of evaluations. For example in a process evaluation, there often needs to be some explanation of why implementation is good or bad in order to be able to suggest ways it might be improved or sustained.

In recent years there has been considerable development of methods for understanding causes in evaluations, and also considerable discussion and disagreement about which options are suitable in which situations.

When choosing between these different options, consider the different types of causal inference that might be involved:

- One cause producing one effect – it is necessary and sufficient to produce the effect
- Two or more causes combining to produce an effect (for example, two programs or a program when combined with other factors such as particular participant characteristics) – one of the causes alone is necessary but not sufficient
- Two or more causes being alternative ways of producing an effect – either of them are sufficient and neither is necessary

Different labels might be used for these different types of causal relationship - 'causal attribution' implying a single cause, 'causal contribution' implying a package of causal factors, and 'causal inference' being used to refer to all of these.

It is also important to consider the different types of questions that might be asked about cause and effect:

- Did the intervention make a difference?
- For whom, in what situations, and in what ways did the intervention make a difference?
- How much of a difference did the intervention make?
- To what extent can a specific impact be attributed to the intervention?

- How did the intervention make a difference?

You can explore the three broad strategies for causal inference shown below.

Check the results are consistent with causal contribution

One of the tasks involved in understanding causes is to check whether the observed results are consistent with a cause-effect relationship between the intervention and the observed impacts.

Some of the methods for this task involve an analysis of existing data and some involve additional data collection. It is often appropriate to use several methods in a single evaluation. Most impact evaluations should include some methods that address this task.

Methods

Gathering additional data

- Asking key informants to attribute causality

  A method for testing causal reasoning by asking key informants.

- Modus operandi

  Interventions create distinctive/characteristic patterns of effects.

  Scriven describes the modus operandi as a set of footprints:

- Process tracing

  Process tracing is a case-based approach to causal inference which focuses on the use of clues within a case (causal-process observations, CPOs) to adjudicate between alternative possible explanations.

Analysis

- Check dose-response patterns

  Evaluators can examine the link between dose and response as part of determining whether the program caused the outcome.

- Check intermediate outcomes

  Intermediate outcomes are identified in a logical model before the final impact.

- Check results match a statistical model

  Program staff may develop a statistical model as part of the project theory design.

Statistical models can be useful tools to predict elements of the program:
Cost Time Comparison between groups

- Check results match expert predictions

  Expert predictions can be a useful part of developing the program theory.

  Program staff can draw expert predictions from the literature or by engaging a group of experts.

- Check timing of outcomes

  The program theory may predict the timing of outcomes for the evaluator to check against these dates with the dates of actual changes and outcomes.

  This is another way of checking the results support causal attribution.

- Comparative case studies

  Comparative case studies can be useful to check variation in program implementation.

- Qualitative comparative analysis

  Qualitative Comparative Analysis (QCA) is a means of analysing the causal contribution of different conditions (e.g. aspects of an intervention and the wider context) to an outcome of interest.

- Realist analysis of testable hypotheses

  Realist analysis of testable hypotheses tests the program theory by developing a nuanced understanding of ‘what works for whom in what circumstances and in what respects, and how?’.

Approaches

- These approaches combine some of the above options together with ruling out possible alternative explanations.

- Contribution analysis

  Contribution Analysis is an approach for assessing causal questions and inferring causality in real-life program evaluations.

- Collaborative outcomes reporting

  Collaborative outcomes reporting (COR) is a participatory approach to impact evaluation based around a performance story that presents evidence of how a program has contributed to outcomes and impacts, that is then reviewed by both technical experts and

- Multiple lines and levels of evidence

  Multiple Lines and Levels of Evidence (MLLE) reviews the evidence for a causal relationship between an intervention and observed impacts in terms of its strength, consistency, specificity, temporality, coherence with other accepted evidence, plausibilit

- RAPID outcomes assessment

RAPID outcome assessment (ROA) is a method to assess and map the contribution of a project's actions on a particular change in policy or the policy environment.

Compare results to the counterfactual

One of the three tasks involved in understanding causes is to compare the observed results to those you would expect if the intervention had not been implemented - this is known as the 'counterfactual'.

Many discussions of impact evaluation argue that it is essential to include a counterfactual. Some people however argue that in turbulent, complex situations, it can be impossible to develop an accurate estimate of what would have happened in the absence of an intervention, since this absence would have affected the situation in ways that cannot be predicted. In situations of rapid and unpredictable change, when it might not be possible to construct a credible counterfactual it might be possible to build a strong, empirical case that an intervention produced certain impacts, but not to be sure about what would have happened if the intervention had not been implemented.

For example, it might be possible to show that the development of community infrastructure for raising fish for consumption and sale was directly due to a local project, without being able to confidently state that this would not have happened in the absence of the project (perhaps through an alternative project being implemented by another organization).

For a discussion about counterfactual approaches to causal inference, see The Stanford Encyclopedia of Philosophy entry.

Methods

- There are three clusters of options for this task:

Experimental options (or research designs)

- Develop a counterfactual using a control group. Randomly assign participants to either receive the intervention or to be in a control group.
- Control group

  A control group is an untreated research sample against which all other groups or samples in the research is compared.

Quasi-experimental options (or research designs)

- Develop a counterfactual using a comparison group which has not been created by randomization.

- Difference-in-difference

  Difference-in-difference involves comparing the before-and-after difference for the group receiving the intervention (where they have not been randomly assigned) to the before-after difference for those who did not.

- Instrumental variables

  This method is used to estimate the causal effect of variables on an intervention.

- Judgemental matching

  Judgemental matching involves creating a comparison group by finding a match for each person or site in the treatment group based on researcher judgements about what variables are important.

- Matched Comparisons

  When using Matched Comparisons, participants (individuals, organizations or communities) are each matched with a non-participant on variables that are thought to be relevant which can be difficult to adequately match on all relevant criteria.

- Propensity scores

  Propensity score matching (PSM) is a quasi-experimental method used to estimate the difference in outcomes between beneficiaries and non-beneficiaries that is attributable to a particular program.

- Regression discontinuity

  Regression Discontinuity Design (RDD) is a quasi-experimental evaluation option that measures the impact of an intervention, or treatment, by applying a treatment assignment mechanism based on a continuous eligibility index which is a variable with a co

- Sequential allocation

  Sequential allocation involves creating a treatment group and a comparison group by using a sequence to choose participants (e.g. every 3rd person on the list).

- Statistically created counterfactual

  A statistical model, such as regression analysis, is used to develop an estimate of what would have happened in the absence of an intervention.

Non-experimental options

- Develop a hypothetical prediction of what would have happened in the absence of the intervention.

- Key informant

  Asking experts of programmes or in the community to predict what would have happened in the absence of the intervention.

- Logically constructed counterfactual

In some cases it is not possible to construct a counterfactual by creating a control group or a comparison group, but by constructing one logically.

Approaches

- Randomised controlled trial

  Randomised controlled trials (RCTs), or randomised impact evaluations, are a type of impact evaluation that uses randomised access to social programmes as a means of limiting bias and generating an internally valid impact estimate.

Investigate possible alternative explanations

All impact evaluations should include some attention to identifying and (if possible) ruling out alternative explanations for the impacts that have been observed.

Methods

- Force field analysis

  A force field analysis is used to support the decision making process by providing a detailed overview of the variety of forces that may be acting on an organisational change issue.

- General Elimination Methodology

  General Elimination Methodology has two stages:

- Key informant

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- Process tracing

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- Ruling out technical explanations

  Ruling out technical explanations involves identifying and investigating possible ways that the results might reflect technical limitations rather than actual causal relationships.

- Searching for disconfirming evidence/following up exceptions

  Treating data that doesn't fit the expected pattern not as outliers but as potential clues to other causal factors and then seeking to explain them.

- Statistically controlling for extraneous variables

  Statistically controlling for extraneous variables is an option for removing the influence of a variable on the study of program results.

Approaches

- These approaches combine ruling out possible alternative explanations with options to check the results support causal attribution.

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- Collaborative outcomes reporting

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