

Task 3 – Answering questions – Individual questions

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Individual questions – introduction

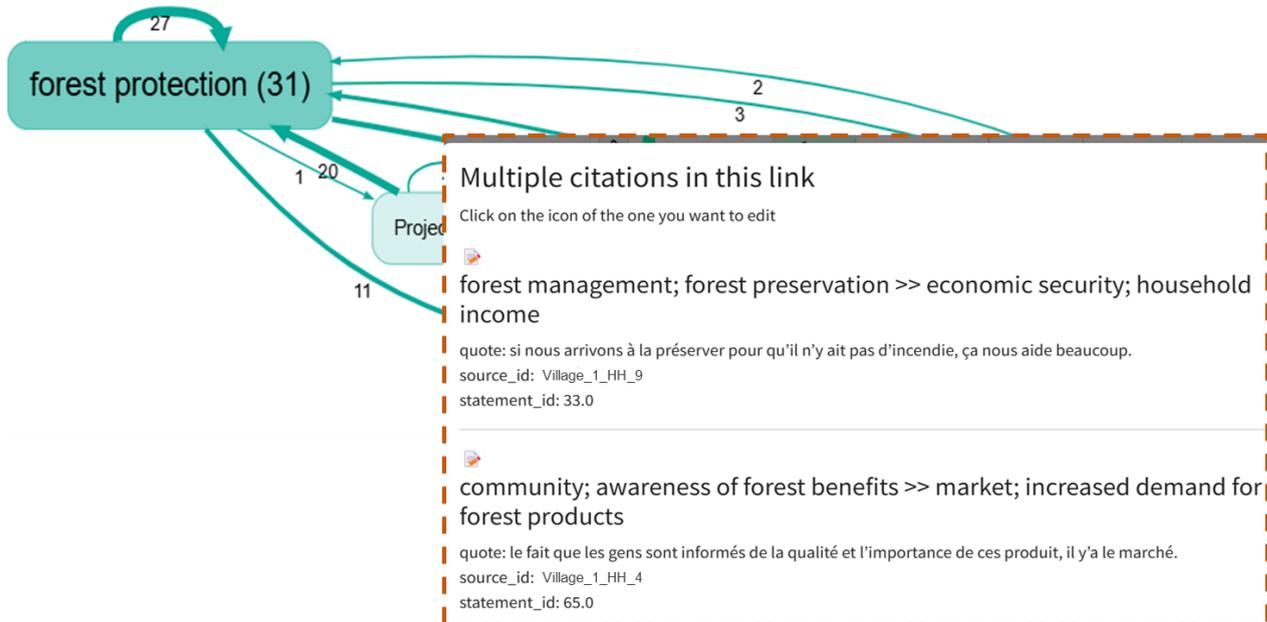
Individual views – How does the system work according to individual sources ?

Summarising – How do the sources claim that the system works, in summary ?

Vignettes – What is a typical source and what is their story ?

What are the narratives behind a specific link ?

22 Oct 2025



It is important to frequently return to the original quotes associated with each factor or link to **understand how different stakeholders interpret and talk about key concepts**. This can be done in Causal Map by clicking on a link in the interactive map, or by printing out quotes for a particular filter (e.g. just for a single bundle of links) with additional context and metadata.

Bundle: Snapping/saying something sharp >> Feeling guilty

Source: 1

And then I snap. Just say something sharp. To the kids. Or to Sarah, if she's just walked in. **And then, instantly, it's like, "Why did I say that?" That guilt. It just sits there.**

Relevant page from Causal Map help:

[Print View](#)

Which factors and links were most frequently mentioned ?

Which factors and links are mentioned by the most sources ?

Main outcomes. Which factors are mentioned most often as outcomes ?

Main drivers. Which factors are mentioned most often as drivers ?

Splitting by groups. Are different groups involved in different ways ?

Comparing groups – What factors or links were mentioned more by some groups than others, in the same map ?

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What are the emerging or unexpected factors ?

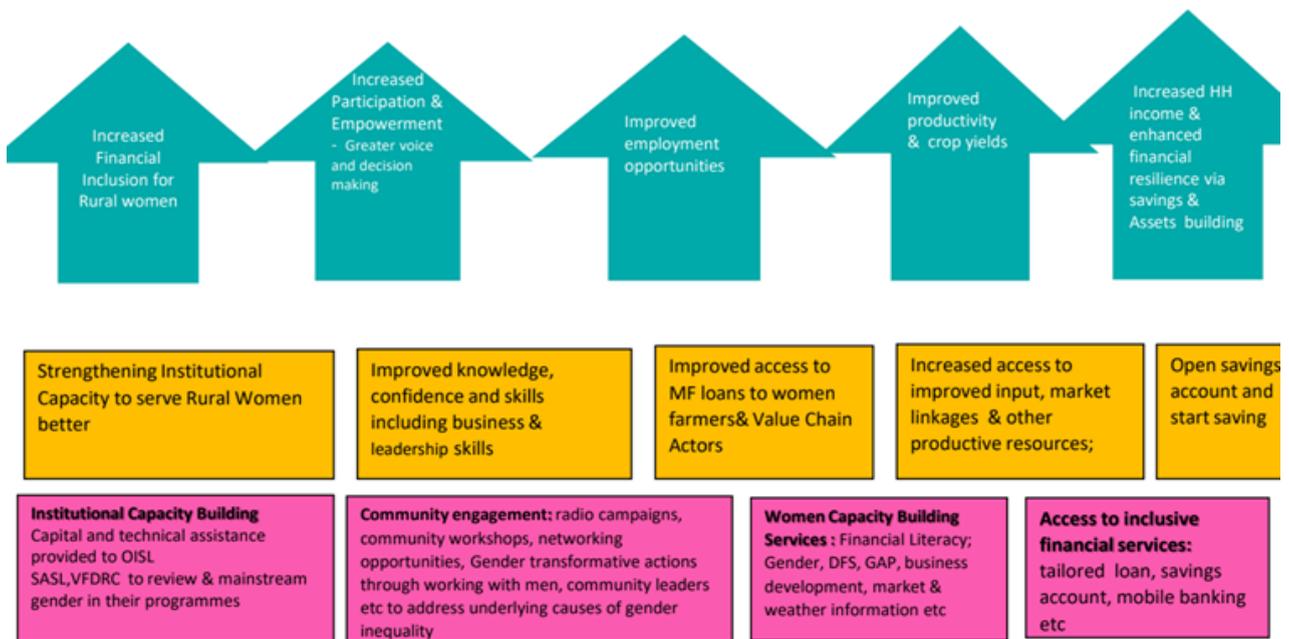
22 Oct 2025

One way to do identify emerging or unexpected factors is to use the elements from your theory of change as your codebook while coding and only adding other elements when necessary, making a note of these additional elements.

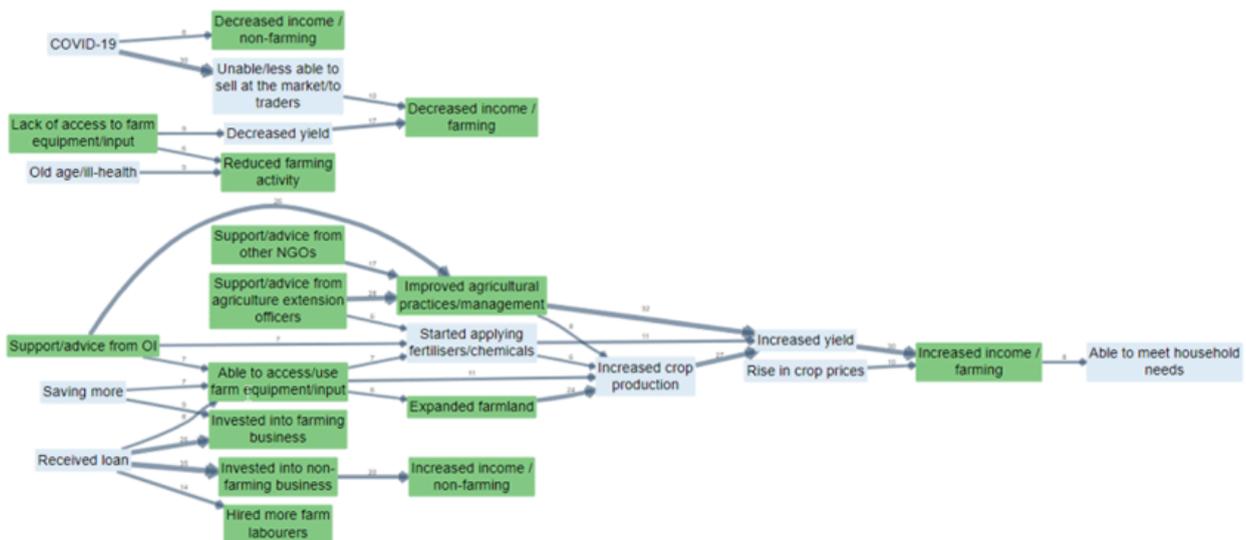
Does the evidence support your theory of change ?

22 Oct 2025

Improved wealth and livelihoods for 12,000 women in rural communities in Ghana and DRC



One way to do this is to use the elements from your theory of change as your codebook and only add other elements when necessary. Validated pathways of change (by showing which mechanisms are observed on the ground) and find gaps where expected pathways might be missing or where stakeholders list elements were not anticipated in the theory of change?



We discuss this approach at more length in (Powell et al. 2023).

References

Powell, Larquemin, Copestake, Remnant, & Avard (2023). *Does Our Theory Match Your Theory? Theories of Change and Causal Maps in Ghana*. In *Strategic Thinking, Design and the Theory of Change. A Framework for Designing Impactful and Transformational Social Interventions*.

Assessing systems change

27 Oct 2025

One of the most exciting applications of causal mapping is to assess change over time within a system. If we apply a systematic approach to coding (using blindfolded manual coding or AI-supported coding) we can compare the frequencies with which links or factors are mentioned over time. This becomes particularly interesting when applying inductive coding, so that new and emerging phenomena can be included into the codebook. Re-applying new codes to previously coded data would be very tedious with manual coding but is easy to do with AI-supported coding: [AI extensions -- Clustering, Soft Recode, Magnetisation](#)

More details are given in this paper: (Powell et al. 2025)

Unfortunately, there is not much consensus about what assessing systems change means. Sometimes we read about *measuring* systems change, which would imply assigning numbers to change, but often just means "assessing".

(Rizzardi 2025)

References

Powell, Cabral, & Mishan (2025). *A Workflow for Collecting and Understanding Stories at Scale, Supported by Artificial Intelligence*. SAGE PublicationsSage UK: London, England.

<https://doi.org/10.1177/13563890251328640>.

Rizzardi (2025). *Systems Change | Modern Slavery*.

<https://www.freedomfund.org/news/systems-change-pathways-measurement/>.

Sentiment – Which changes are perceived as most positive or negative ?

Focusing on specific factors. What influences and outcomes are connected to a specific factor ?

Looking downstream. What are the direct and indirect consequences of one or more factors ?

Looking upstream. What are the direct and indirect influences on one or more factors ?

Path tracing – How do one or more causes affect one or more effects, including indirect pathways ?

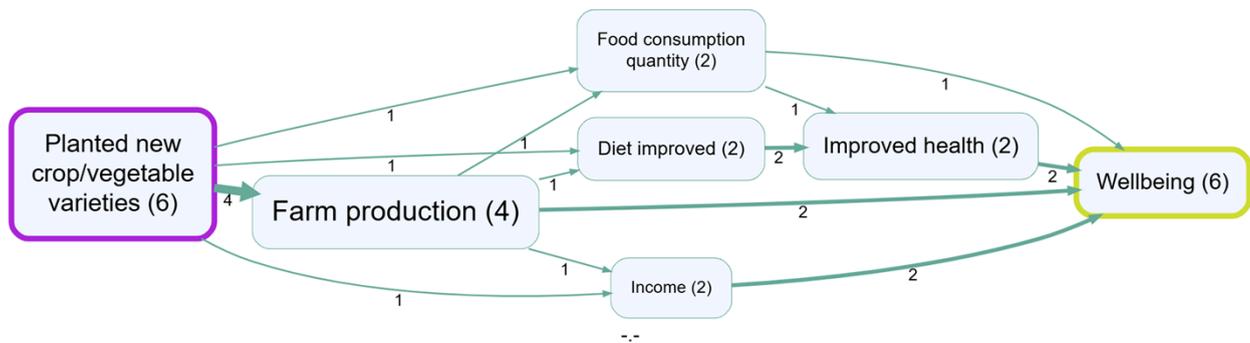
Source tracing – What are the consequences of one or more factors, looking only at stories told in their entirety by individual sources ?

Robustness – How robust is the evidence for that X influences Y ?

Counting and comparing influences

22 Oct 2025

How much evidence is there for the influence of our intervention on a valued outcome? Is that a lot? Can we compare these numbers across pathways?



In this map, six sources told stories which start with our intervention and end with Wellbeing (tracing threads). Is this a lot?

Well, we can compare that with the total number of sources to make a source-mention-proportion, to say that 6 out of 24 sources mentioned this pathway.

Or we can compare it with the number of sources mentioning Wellbeing at all, to say that 6 out of the 16 sources mentioning Wellbeing told stories which began with our intervention.

Or we can compare it with the number of sources telling stories ending with Wellbeing and beginning with a different intervention.

Or we can compare any of these figures with the same figures from a previous time point.

Using numbers and proportions like this in a fundamentally qualitative approach like causal mapping can be very useful but we have to be careful. These are quite fragile indicators which can be easily influenced by other factors (for example, how visible was our intervention?) and can be hard to generalise.

We should always also consider the evidence itself behind each link by looking at the quotes.

Properties of the causal map – Which factors are reported as being causally central or causally peripheral ?

Properties of the causal map – What is the overall structure of the network ?

Properties of the causal map – Are there leverage points ?

Properties of the causal map – Are there feedback loops ?

Combining questions

22 Oct 2025

Filter to include links from boys only



Filter to include only chains beginning with “training” and ending with “improved knowledge”



Count the number of sources mentioning “Improved knowledge”

Causal mapping gets really useful when you start to combine the different questions you might want to ask in order to answer more sophisticated questions. We can think of many of the techniques as filters which filter the view in a particular way. Using multiple filters allows you to build up an answer to a question. Usually, order matters.

Tribes. The most relevantly different subgroups in your data (by causal story)

Showing group data as custom link labels on the map with optional significance test

Names of tables and fields

2 Oct 2025

Columns and tables

We can think of a causal map as a database consisting of two tables, the links table and the sources table. We don't need to have a separate table for the factors because the factors can be derived from the links table.

Columns in both the links and factors tables

Field name	Explanation
Citation count aka Link count	Number of citations of a given factor or link.
Source count	Number of sources mentioning a given factor or link. Source count cannot be higher than citation count and may be a lot lower if some sources mentioned the same factor or link many times.

Columns in the factors table

Field name	Explanation
incoming_links, indegree	Number of citations of all the incoming links to a particular factor.
outgoing_links, outdegree	Number of citations of all the outgoing links from a particular factor.
outcome-ness (%)	A factor with a high outcomeness percentage is mostly an outcome; it has mostly incoming links. If it has low outcomeness it has mostly outgoing links so it is mostly a driver. Outcomeness is the proportion of citations of incoming links out of all the citations of a particular factor: a normalised version of the Copeland Score (Copeland 1951). So factors with high <i>outcomeness</i> can be thought of as “outcomes”. And factors with low outcomeness can be thought of as inputs or drivers.

Columns in the links table

Field name	Explanation
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Columns in the sources table

Field name	Explanation
source_id	
title	
filename	

Glossary ▶

References

Copeland (1951). *A Reasonable Social Welfare Function*.

Hierarchical coding

23 Dec 2025

SOURCE NOTES (consolidation): The hierarchical coding / zooming material is now integrated into [Minimalist coding for causal mapping](#) (section “Hierarchical coding and ‘zooming’ (FIL-ZOOM)”).

Keep this file only as source material / extra examples / cut text.

See also: [Minimalist coding for causal mapping](#); [Combining opposites, sentiment](#); [A formalisation of causal mapping](#).

**

Our hierarchical coding approach

This approach can also be seen as reflecting the themes/codes hierarchy implicit in standard thematic coding ([Braun & Clarke, 2006](#)).

Each factor (cause or effect or intermediate step) was labelled by the AI following this template: 'general concept; specific concept' so that a more abstract concept is followed by a semi-colon and then a more specific concept. The AI was told also to provide a corresponding verbatim quote for each causal chain. This was an essential part of the process: ensuring that every claim identified by the AI could be verified.

So for each causal chain it identified, the AI provided information like this:

agricultural practices; diversified crops → income generation; more sales

Quote: "with a lot of good product, we are now able to sell more."

This short (minimal) chain can be understood as a link from

Agricultural practices (general concept); diversified crops (specific concept)

To

Income generation (general concept); more sales (specific concept).**

✓ Simplifying causal maps with hierarchical coding



Summary

You can use the special separator ; to create nested factor labels, like this:

New intervention; midwife training → Healthy behaviour; hand washing

We can read this separator as “in particular” or “for example”:

New intervention, in particular the midwife training,

Or we can read it in reverse like this:

The midwife training, which is an example of / part of the new intervention

Factor labels can be nested to any number of levels, e.g.

New intervention; midwife training; hand washing instructions

The higher level factors can, within the same coding scheme, themselves be used for coding.

So as well as creating links to and from New intervention; midwife training; hand washing instructions, you can always also use New intervention; midwife training and New intervention as factors too.

e.g. we could code “this whole new intervention has also led to happier health providers” like this:

New intervention → Happier health providers

We can “zoom out” of a causal map containing nested factors to show a simpler, higher-level structure as a summary. This is done by applying an algorithm which re-routes links to and from the lower-level factors into their higher-level parents.

So then, loosely yet informatively and with certain caveats, accepting a loss of detail but affirming that the overall meaning is not distorted, this algorithm can deduce for us, from the first example above, the following causal map:

New intervention → Healthy behaviour

Usually each higher-level factor will each be a summary of *many different* lower-level factors.

Introduction

An analyst coding text to create a causal map is confronted with the same challenge as any qualitative researcher: identifying recurring themes in such a way as to help a larger picture emerge, while retaining important detail. Expressing factor labels in a hierarchical fashion can help solve this problem. But hierarchical labelling also enables a particular strength of causal mapping: it lets us “zoom out” to view a whole causal map from a higher-level perspective, merging causally similar concepts to give a simpler map with far fewer components. Formally, the process of zooming out produces a map which logically *follows from*, is *implied by*, the original map. This chapter also introduces a smarter way to “zoom out” from a causal map, and explains how these features are implemented in the Causal Map app.

When conducting qualitative coding of any text, there is always a tension between wanting to keep the detail (e.g. hand washing) but also to code in such a way that general themes emerge (e.g. health behaviour). One way to do this is to organise the codes into a hierarchical structure, so that “Hand washing” is nested as part of “Health behaviour”. This can be done (see e.g. Dedoose, saturateapp.com) by using labels in which the hierarchy is directly expressed, for example Hand washing; health behaviour – using semi-colons or some other convenient character to separate the levels of the hierarchy.

This approach is convenient for several reasons:

- A search for “Health behaviour” will find Health behaviour; Hand washing as well as Health behaviour; vaccinating children and other combinations.
- It can be arbitrarily extended to any number of levels, e.g. Health behaviour; Hand washing; Before meals
- Related items appear next to each other when they are listed alphabetically
- The hierarchical structure does not require that the analyst (whether using paper-and-pencil or software) maintains a separate set of “parent” codes; the higher-level codes are simply whatever is visible before the semi-colons. Higher-level codes can be created and changed on the fly without having to open a separate codebook or software interface.
- It is possible to code directly at higher levels, for example using the code Health behaviour where no more details are given.

When reading a nested factor label aloud, the semi-colons could be substituted with “... and in particular ...”, e.g. “Health behaviour, and in particular Hand washing, and in particular Before meals”.

The way factor (labels) emerge during causal mapping is just a special case of the way codes emerge in any qualitative coding process, and nested coding is useful in ordinary qualitative data analysis as well as in causal mapping. However, hierarchical coding in causal mapping is particularly exciting because it allows us to do things like simplify a causal map to give a higher-level version of it with far fewer components.

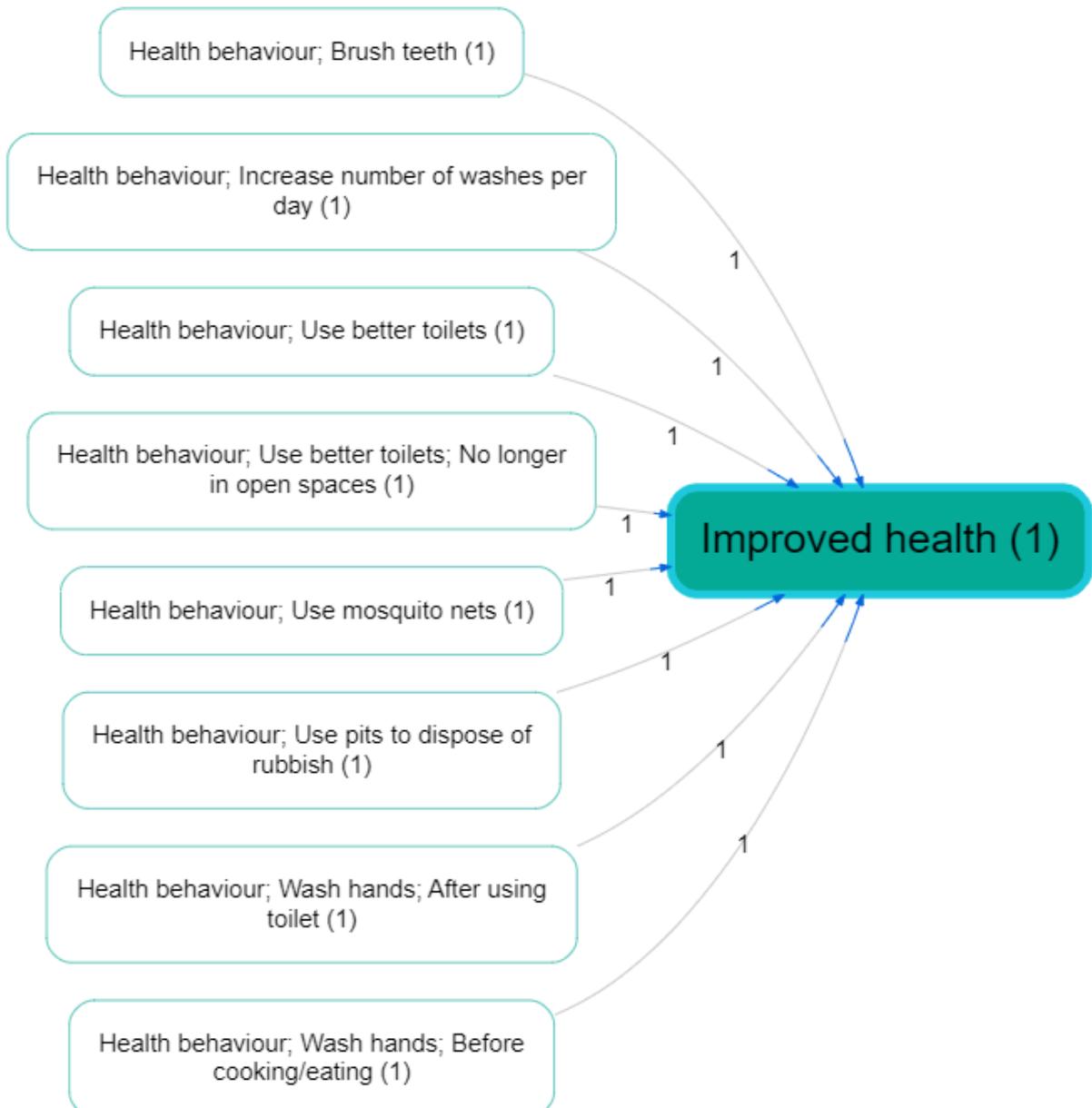
A factor can’t belong to two different hierarchies

One limitation to this way of expressing the hierarchy as part of the factor label is that you can’t make one factor belong to two different higher-level concepts. For example, you could understand a particular midwife training both as causally part of a new intervention but also perhaps as causally part of an institution’s in-service training programme or an individual’s workload, but you can’t code it as both “New intervention; midwife training” and “In-service training; midwife training” at the same time.

This limitation is because of the meaning of the semicolon: the ; in Y; X means that this label can be replaced as needed with just Y, accepting a loss of detail but affirming that the overall causal story is not essentially distorted. If a hierarchical label had more than one parent, we wouldn’t know which parent to “roll up” the factor into.

If you find yourself wanting to put a factor into more than one hierarchy, try using [Factor label tags -- coding factor metadata within its label](#) instead.

Zooming out



Assuming we have a causal map which has used hierarchical coding, as in the small map shown above, how do we take advantage of this coding to “zoom out”?

If we define the “level” of a factor as the number of semicolons in its label plus 1, here is the same map, zoomed out to level 2 (i.e. a maximum of one semi-colon per factor).

image.png

Here is the same map, zoomed out to level 1 (i.e. there are no semi-colons at all).

image.png

A warning: causal mapping as described here is a *qualitative* process. While zooming in and out can be very useful, it should never be used mechanically.

Zooming out is like making deductions with the ; separator

A causal map coded using a hierarchical separator can be “zoomed out” given a specific interpretation of the ; separator, as follows.

If we know

New intervention; midwife training → Healthy behaviour; hand washing

then, loosely yet informatively and with certain caveats, accepting a loss of detail but affirming that the overall meaning is not distorted, we can deduce:

New intervention → Healthy behaviour; hand washing

and

New intervention; midwife training → Healthy behaviour

and even

New intervention → Healthy behaviour

This actually reflects the dilemma of the analyst often referred to as *granularity*: with how much detail should I code the beginning (or the end) of this causal story? Expressing a factor as Health behaviour; Hand washing; Before meals shows that this is indeed to be understood as a kind of health behaviour, although of course not the whole of it. By using this approach, the analyst says: if you are just looking for the global picture, I am happy for this factor to be understood as Health behaviour.

When factors are nested like this within one another as part of a hierarchy, it is possible to give an overview and ‘zoom out’ of the detailed data. This helps to simplify some of the analysis, enabling the user to focus on the links between the top-level groups rather than all the details. It follows that two factors like Y; X and Y; Z are *causally similar enough to one another to merge into Y* at a more general level.

Expressing a factor in a form like Y; X **means** it can be replaced as needed with just Y, accepting a loss of detail but affirming that the overall meaning is not essentially distorted. If you wouldn’t be happy to accept this replacement, don’t use the “;” to code this factor.

Semi-quantitative formulations work best

We already saw that causal mapping often works best when the factors are semi-quantitative. The hierarchical approach also works best when the higher-level factors are themselves labelled such that also they are *semi-quantitative, causal* factors which could be used on their own – in a way which themes or categories [see here](#) could not. Good examples would be:

- Social problems
- Social problems; Unemployment
- Social problems; Addiction
- Psychosocial stressors
- Psychosocial stressors; Fear of job losses
- Psychosocial stressors; Pre-existing mental health issues

Here, Social problems and Psychosocial stressors are higher-level causal factors in their own right; they are not just themes or boxes to put factors into.

So we might have:

“The problem of unemployment is a psychosocial stress for many”

Social problems; Unemployment → Psychosocial stressors

“When people get stressed they often turn to drugs“

Psychosocial stressors → Social problems; Addiction

These could be combined into this story:

Social problems; Unemployment → Psychosocial stressors → Social problems; Addiction

If we zoom out of the above story, we could focus in on the higher-level factors and in this case we would get a vicious cycle:

Social problems → Psychosocial stressors → Social problems

Higher-level factors are *generalisations*

Usually, we don't use higher levels merely to organise factors into themes which are not causally relevant.

Health; vaccinations law is passed

Health; mortality rate

These two items can be grouped into a *theme* “health” but can hardly be understood as special cases of a more general causal factor, so it would be a mistake to use the semi-colon. Instead, it

would be more suitable to include the word “Health” just as a **hashtag**, without the semi-colon:

Vaccinations law is passed #health

Mortality rate #health

In other words, **causal factors in hierarchies should usually be semi-quantitative.**

Don’t mix desirability!

All the factors within one hierarchy should be desirable, or undesirable, but not both.

Generally speaking, make sure that the **sentiment of a more detailed factor is interpretable in the same way as the factor higher up in the hierarchy.** Ideally *all* the detailed factors within a hierarchy should be broadly *desirable*, or all *undesirable*, but not both. For example, you don’t want to nest something undesirable into something desirable. E.g. you don’t want to formulate a factor like this:

Stakeholder capacity; Lack of skills.

Because capacity would normally be understood as something desirable, and lack of skills would not. If you zoom out to level 1, this factor will be counted as an instance of Stakeholder capacity which is surely not what you want.

Try to use [opposites coding](#) and the ~ symbol to reformulate as:

~Stakeholder capacity; ~Presence of skills.

If you zoom out to level 1, this factor will *not* be counted as an instance of Stakeholder capacity.

Using higher level factors for “Mixed bags”

In spite of what we just said, sometimes you find you *have* use higher-level factors just to group a mixed bag, like this:

Politics; increase in populism

Politics; shift to the left

Politics; shift to the right

Politics; more engagement from younger voters.

The higher-level factor Politics is not in any sense a generalisation of these very disparate factors. However, we can at least think of it as a ‘mixed bag’. If we roll the map containing these stories up to level 1, we’ll see this ‘mixed bag’ factor Politics as a cause and effect of other factors. It will be a

bit hard to interpret, but we can live with it as long as we remember that it is a mixed bag rather than a semi-quantitative summary.

Hierarchical coding as a way of coping with a large number of factors

Usually analysts are faced with the quandary of either having too many factors which they lose track of, or merging them into a smaller number of factors and losing information. With hierarchies, you can have your cake and eat it; it is similar to the process of recoding an unwieldy number of factors into a smaller number of less granular items, but with the advantage that the process is reversible; the information can be viewed from the new higher level but also viewed from the original, more granular level. For example, we can count that the higher-level factor component “Health behaviour” was mentioned ten times, while retaining the information about the individual mentions of its more granular components.

Don’t use a hierarchy when a hashtag will do

When the analyst wants to group certain factors into a theme (like “health”) which is not itself a causal factor, hierarchical coding should not be used. Instead, text hashtags like “#Environment” or “[Environment]” or just “Environment” can be used to create themes simply by adding the text hashtag to the factor label, e.g.

Soil loss (Environment)

Eco training courses for NGOs (Environment)

Re-usable factor components as hashtags

Sometimes your factors relate to each other in ways which are not just hierarchical. For example:

- Activities completed; Training; Health
- Activities completed; Distribution; Health; First-aid kits
- Outcomes achieved; Health; First-aid skills

These are three (hierarchical) factors in which “health” appears in different places, and at different levels of the hierarchy.

This is not ideal, but sometimes it’s just the best way to organise a tricky set of factors.

In this example, “Health” appears only as a “component” of other factors. Although on its own it might look like a mere theme rather than a causal factor, it plays a role in differentiating the causal factors in which it participates, e.g. “Activities completed, in particular training, in

particular on health”; and because “Health” is used across hierarchies, it can *also* be treated as a [hashtag](#) and can be used as part of searches, lists and counts of factors, etc.

Isn't that a contradiction? Didn't we just say that “Health” is not to be used on its own as a factor because it is just a theme and is not expressed in a semi-quantitative way? No, because here the word “Health” does not function as only a theme but as a way of differentiating causal factors: all the actual factor labels in which it participates are correctly expressed in a semi-quantitative way. So Activities completed; Training; Health is intended as a causal factor about the extent of completion of activities, in particular training activities, and in particular health training activities.