# STICKE: Systems Thinking In Community Knowledge Exchange

**Victorian communities are seeking answers to a number of complex problems, particularly in the area of population health and wellbeing.**

**Complex** or **'wicked' problems** are influenced by many interacting factors and can therefore be difficult to address in a simplistic manner. These problems:

- are difficult to clearly define
- have many causes and interdependencies
- are often evolving – a 'moving target'
- have no clear solution
- are socially complex.

Solutions to complex problems are usually beyond the capacity of a single organisation or sector to address and require a holistic and coordinated approach[1].

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**We are really trying to get away from the idea that complex problems can be solved with linear thinking."**

**STICKE researcher**

Obesity, for example, is considered a "complex, multifactorial disease, with genetic, behavioural, socioeconomic, and environmental origins"[2]. Acknowledging and navigating with this sort of complexity through multiple strategies at multiple levels, delivered through locally-based initiatives, may represent the most promising approach for prevention[3].

**Systems thinking** is a way of understanding complex problems and the interactions between the factors that perpetuate them. Systems thinking can be used collaboratively with communities to design interventions to improve complex problems[4]. Other sectors have used this type of approach before, but its potential in health and community-led prevention of disease is yet to be fully realised.

**Complex problems are influenced by many interacting variables: multiple strategies at multiple levels, delivered as community-based interventions, may represent the most promising approach.**

## KEY POINTS

STICKE is an easy to use, cloud-based software platform that supports a 'systems thinking' approach to tackling complex problems. It can be used by individuals looking to explore wicked problems, or by facilitators looking to bring together multiple perspectives from a large number of people. The software guides users through the creation of a system 'map' that can then be used to help explore the problem and potential intervention points.

STICKE can support communities in mapping a complex problem and its drivers at all levels of policy and decision-making authority and identify appropriate and feasible locally-led responses.

STICKE has been developed in collaboration with Victorian communities through research undertaken by Deakin University, and continues to be used in an increasing number of health promotion and other settings.

If you are interested in learning more about STICKE and how you can access the platform, contact sticke@deakin.edu.au.

# What is STICKE?

STICKE is a user-friendly, cloud-based software platform that supports communities in applying a systems thinking approach to complex problems. It was developed by the Global Obesity Centre and the Institute for Intelligent Systems Research and Innovation at Deakin University.

STICKE asks community members to identify what they perceive as key drivers of a problem. It then supports them to capture the connections between these factors on a 'connection circle'.

Finally, STICKE helps the user untangle their connection circle into a causal loop diagram (CLD): a powerful visual tool that can be used to show the recurring feedback loops that continue to feed complex problems over time (see Figure 1). Understanding that there are many interconnected causes that drive complex problems and, in particular, how they arrange themselves into these negative feedback loops, is a critical step in identifying strategic actions that groups and communities can take to tackle public health and other complex problems.

**Figure 1: A connection circle and causal loop diagram created using STICKE**



CONNECTION CIRCLE

CAUSAL LOOP DIAGRAM
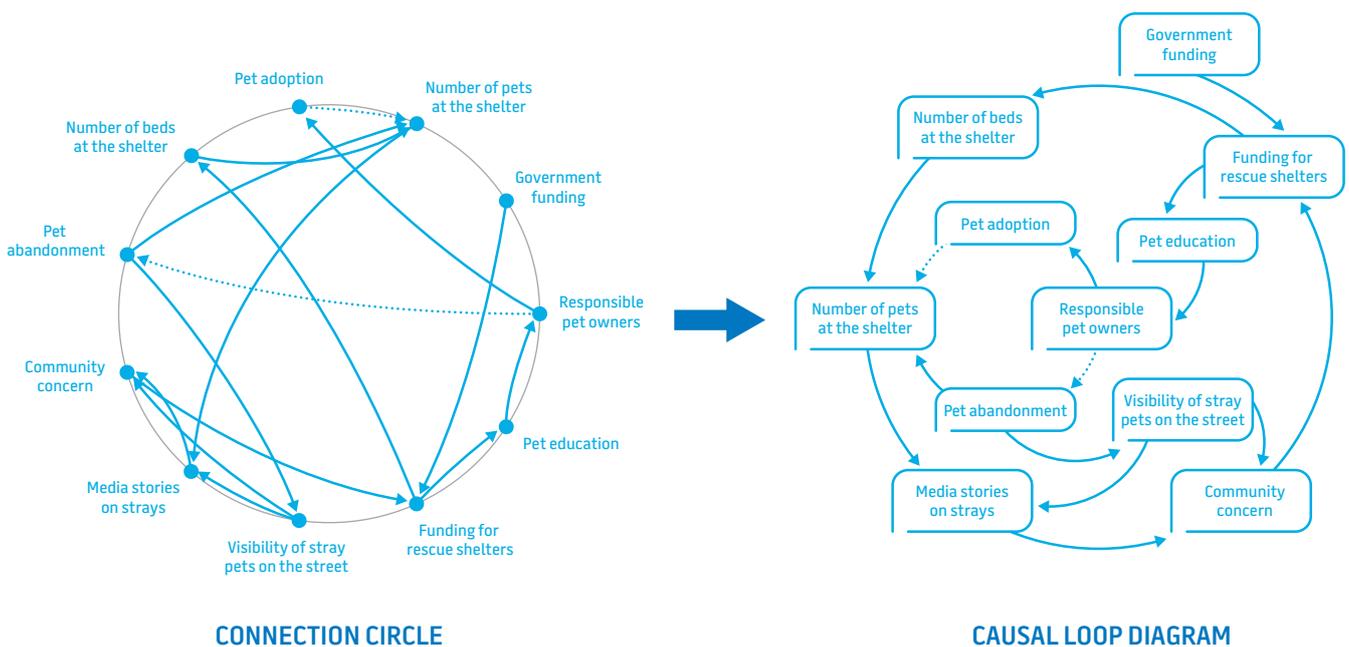
STICKE can be used to build CLDs in various ways (see Figure 2). Individuals can use STICKE to explore issues that are important to them, using a systems thinking perspective. Alternatively, groups can work collaboratively to share their ideas and build common understanding about the things that drive a complex problem. STICKE can even be used as a facilitation tool, to engage stakeholders and bring together lived experiences and community perceptions about a wicked problem.

Recent research has seen the development of experimental techniques to use STICKE as a survey tool, remotely capturing CLDs from individual users, and merging them into a single map that summarises the understanding of the group as a whole. Through these applications, STICKE can support communities in understanding a complex problem and its drivers at all levels of policy and decision-making authority and working towards promising and feasible local responses.

**Figure 2: Four ways of using STICKE to produce causal loop diagrams**

| Single users investigating | Small teams collaborating | Facilitators engaging community/stakeholders | Investigators surveying community/stakeholders |
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## What are the benefits of STICKE?

Evidence from the obesity prevention literature has shown that locally-tailored, locally-led initiatives that make use of many diverse strategies are the most likely to effect positive change[5]. STICKE was designed in collaboration with Victorian communities and is being used in two key Victorian obesity prevention trials conducted by Deakin University – WHO-STOPS[6] and RESPOND[7].

While research with STICKE has to date focused on obesity prevention, it can be applied across a range of health promotion and other settings. It can also be used to 'drill down' into specific factors that may affect certain groups within the community (e.g. physical activity levels within socioeconomically disadvantaged groups).

The tool's ease of use means that stakeholders (e.g. local governments or community groups) can create CLDs to describe local problems without an expert facilitator driving the process, reducing cost and enabling a large number of people to be engaged and multiple perspectives to be captured.

The ability for individuals to use STICKE online means that barriers to participation can be removed for those in the community who may not otherwise be able or willing to participate in a face-to-face group mapping process.

**STICKE can help remove barriers to participation and reduce the cost of community engagement.**

## STICKE IN ACTION IN THE COMMUNITY

A great example of a community's use of STICKE began with a discussion about the local drivers of water consumption.

In this community, attitudes toward the taste of the local tap water were generally poor, and families often reported that their kids didn't want to drink it. In one local outlet, parents faced a choice between better-tasting bottled water at $1–2 a bottle, or the same amount of cola on special at 69c. As a result, water consumption was lower than the community thought it should be.

Having identified water quality as a local contributing driver of obesity, the community talked to the region's water authority in a collaborative discussion about what could be done. Through this discussion, and using the community's obesity map, the water authority was able to see their role and place within a broader community response to obesity prevention.

They found that water quality was actually a relatively easy issue for the water authority to address, and a program of works began. This led to improvements in water taste, and it is hoped these changes will increase the community's consumption of water, in turn, reducing consumption of sugary drinks over the long term.

Water taste was not the only issue identified and addressed through the community's systems thinking, supported by STICKE. The community has implemented hundreds of community-led actions, from very small activities to policy-level actions, addressing both diet and physical activity factors. Many things are happening across the community that are generating some really meaningful and sustainable changes.

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**It's the combination of many small wins around a community that improves engagement and generates excitement – the community can 'own' their response to an issue."**

STICKE researcher

## Want to know more?

For a small annual license fee, you can use STICKE to work with your community in talking about a complex problem and create a map to help identify local interventions most likely to address it. This provides an opportunity to develop collaborative, holistic, community-owned and -led responses.

For more information about STICKE, or the process undertaken to develop it, contact the STICKE team at sticke@deakin.edu.au.

## References

1   Australian Government Australian Public Service Commission 2018, *Tackling wicked problems: A public policy perspective*, 15 August 2019, www.apsc.gov.au/tackling-wicked-problems-public-policy-perspective.

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5   Waters et al. 2011, *Interventions for preventing obesity in children*, Cochrane Database of Systematic Reviews, 7(12): CD001871.

6   Allender et al. 2016, *Whole of systems trial of prevention strategies for childhood obesity: WHO STOPS childhood obesity*, Int J Res Public Health, 13: 1143.

7   Government of Victoria *Tackling childhood obesity in the Goulburn Valley*, 20 September 2019, https://prevention.health.vic.gov.au/blog/posts/tackling-childhood-obesity-in-the-goulburn-valley.