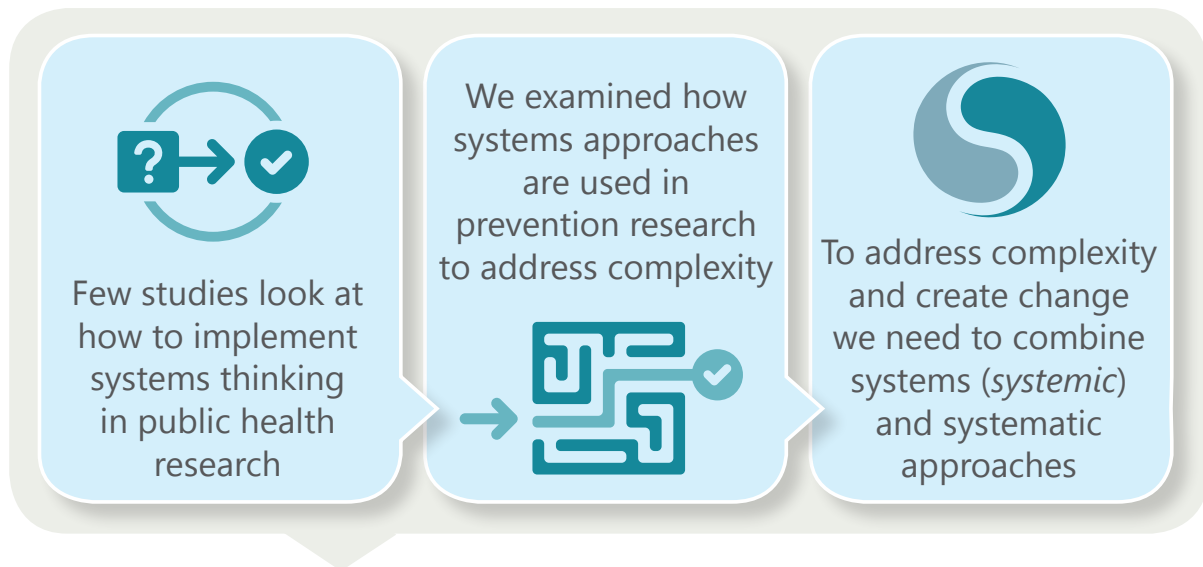




Using systems approaches to tackle complexity in prevention



Key messages

- Prevention Centre investigators and partners have been at the forefront of championing systems thinking to help respond to the complexities of chronic disease prevention.
- This project aimed to build the evidence base for systems approaches in chronic disease prevention, and to explore how those working in prevention can use systems approaches to bring about change.
- Using Prevention Centre projects as case studies, this study identified key factors that support the use of systems approaches, and how, when, and in what combination, these approaches are used.
- Addressing complexity in prevention research relies on striking a balance between *systemic* and systematic paradigms.
- For a whole system to be working towards change, there needs to be shared understanding and common goals.
- Systems leadership capabilities and practices within teams, and across entire systems, helps support change making efforts.

The project: Addressing complexity in prevention research using systems approaches: systems case studies

Project lead: Professor Lucie Rychetnik and Dr Melanie Pescud

Project start: July 2019 **Project end:** December 2022

Why is this issue important?

Since 2013, the Prevention Centre has shown the value of systems approaches for chronic disease prevention. It has pioneered the use of systems tools and methods to better understand complex public health problems and inform decision making.

Systems thinking is defined as a way to make sense of a complex system that focuses on exploring the interrelated parts, boundaries and perspectives within that system, and understanding how all that fits together to make up the whole. However, there is limited evidence to describe and compare how systems thinking is being used in prevention research. .

What did we do?

This project aimed to develop a better understanding of the many ways in which systems approaches are being used to study and understand complex problems. The project also examined what prevention researchers could do to help enact broader systems change.

We identified six prevention research case studies that used systems approaches to study and address complex problems. We adapted the work of Ison and Straw (2020*) on *systemic* and *systematic* paradigms to examine some of the similarities, differences, and patterns in the application of these approaches. We then categorised key lessons from these case studies on the use and value of systems thinking, systems practices, and systems science tools in applied prevention research.

The six case studies related to food and nutrition policy, obesity prevention, liveability, and health services research. Our project was also designed to identify, at a deeper level of practice, whether and how systems approaches are being used to create real world change.

The *systemic* and *systematic* paradigms were defined as:

<i>Systemic</i> (Systems)	<i>Systematic</i>
<ul style="list-style-type: none">• Exploring the bigger picture• Focus on whole systems composed of interconnected parts• Natural experiments• A non-linear focus• Supporting change and change-agents in leveraging systems• Non-dualistic thinking (embracing the continuum)• "What works for what systems in what contexts?"• A focus on strengthening existing systems	<ul style="list-style-type: none">• A focus on details• Methodical• Examining the parts within a system• A more linear focus• Duality (black and white, night and day, inhale and exhale, yin and yang, etc.)• Randomised controlled trials and cluster randomised controlled trials• "What intervention works?"• A focus on fidelity in program delivery

*Ison R & Straw E (2020). *The Hidden Power of Systems Thinking Governance in a Climate Emergency*. Routledge.

What did we find?

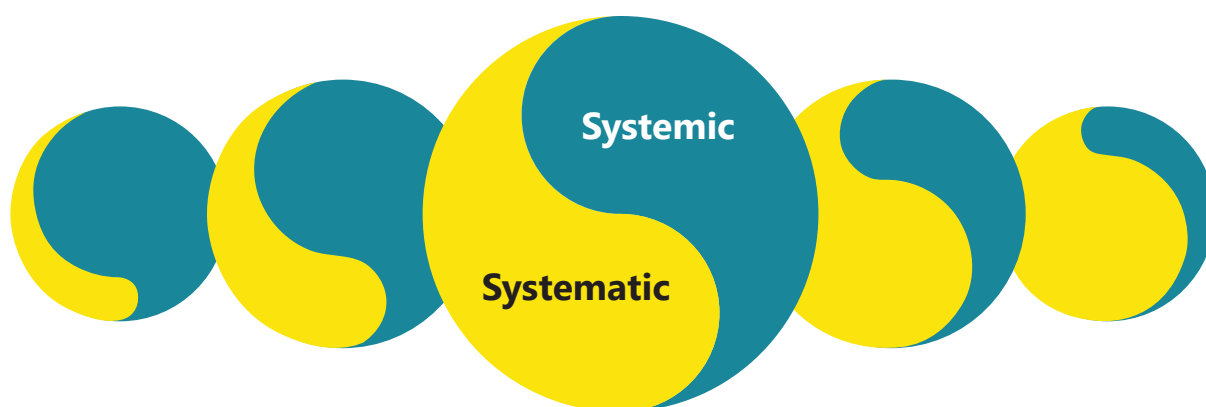
Our findings show that to address complex problems, prevention research strikes a balance between *systemic* and *systematic* paradigms. We found different examples of this duality and described a number of ways in which these complementary aspects of prevention research were embodied and operationalised.

We noted that the *systemic* paradigm can be operationalised not only through the use of systems theory and methods, but also through the ways in which people approached their research partner relationships, their approaches to capacity building, and how they enabled and supported knowledge mobilisation.

The duality of *systemic* and *systematic* paradigms played out across all the different dimensions within each case study, including the theory, methods, relationships, capacity building, learning orientation, multi-perspectivity, and knowledge mobilisation/translation that were adopted.

To understand how *systemic* and *systematic* paradigms manifested within a case study, it was necessary to explore in depth each of its composite dimensions. We found different degrees of balance between the *systemic* and *systematic* paradigms in the case studies examined, and substantial variability across different dimensions.

A key finding from this research is the importance of avoiding surface-level judgements about whether and how systems approaches are used in different types of prevention research. Our findings will also support more purposeful decisions about where and how to apply systems thinking in prevention research. More explicit application and reporting of the *systemic* paradigm may also be useful.



What does it produce?

Our findings propose a coherent theoretical frame to better understand existing approaches for addressing complexity in prevention research. It will allow researchers to be more conscious and bilingual in both *systemic* and *systematic* paradigms so that their respective value and strengths may be utilised and shared.

We have released recommendations with practical guidance on how to improve the use of systems approaches for the prevention of chronic disease. We also produced a suite of case illustrations, practice examples, [four peer reviewed publications](#) and a framework to support the use of systems thinking in prevention research, policy and practice.

Our [Prevention Systems Change Framework](#), adapted from the ABLe Change Framework, was specifically developed to support review and planning for more impactful prevention research and has value in its ability to translate across different contexts, content and scale.

Why does it matter?

This research illustrates how researchers, policy makers and practitioners can use systems approaches to understand complexity and bring about change. It will also inform research funders of the ways in which research may incorporate systems approaches, and when, how, and in what combination, these approaches can be used.

Our findings are informing the work of the Prevention Centre and will enhance the skills and capacity of those working across the prevention system to:

- Gain a deeper understanding of the paradigm from which they predominantly work,
- Describe how they are working both systemically and systematically and to what extent,
- Identify opportunities for how to become more *systemic* in their practice.

Next steps

Further inquiry to assess the practical application of this work is warranted, as well as examination of the roles and impact of the interplay between *systemic* and systematic paradigms within prevention research. By exploring the roles, functions and effectiveness of the *systemic* paradigm, researchers may also build the empirical evidence required to support or challenge the need for balanced approaches.

Future research may also identify new important dimensions within which to assess the relative proportions of *systemic* and systematic approaches. There is also scope for more studies to explore the value of this work in the context of creating systems change.



Contact us

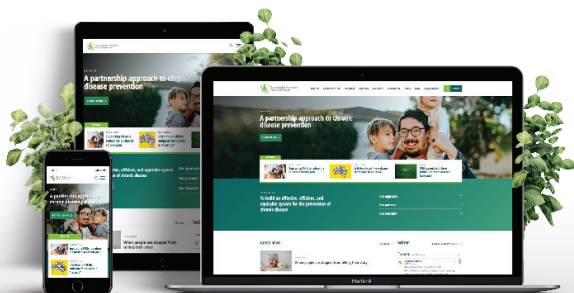
Contact us: preventioncentre@saxinstitute.org.au

Follow us on [Twitter](#)

Join us on [LinkedIn](#)



© 2023 The Sax Institute



For more resources and publications related to this project, visit our website, preventioncentre.org.au

The Australian Prevention Partnership Centre is funded by the NHMRC, Australian Government Department of Health, ACT Health, Cancer Council Australia, NSW Ministry of Health, Wellbeing SA, Tasmanian Department of Health, and VicHealth. The Australian Government also contributed through the Medical Research Future Fund. Queensland Health became a financial contributor in 2022. The Prevention Centre is administered by the Sax Institute.