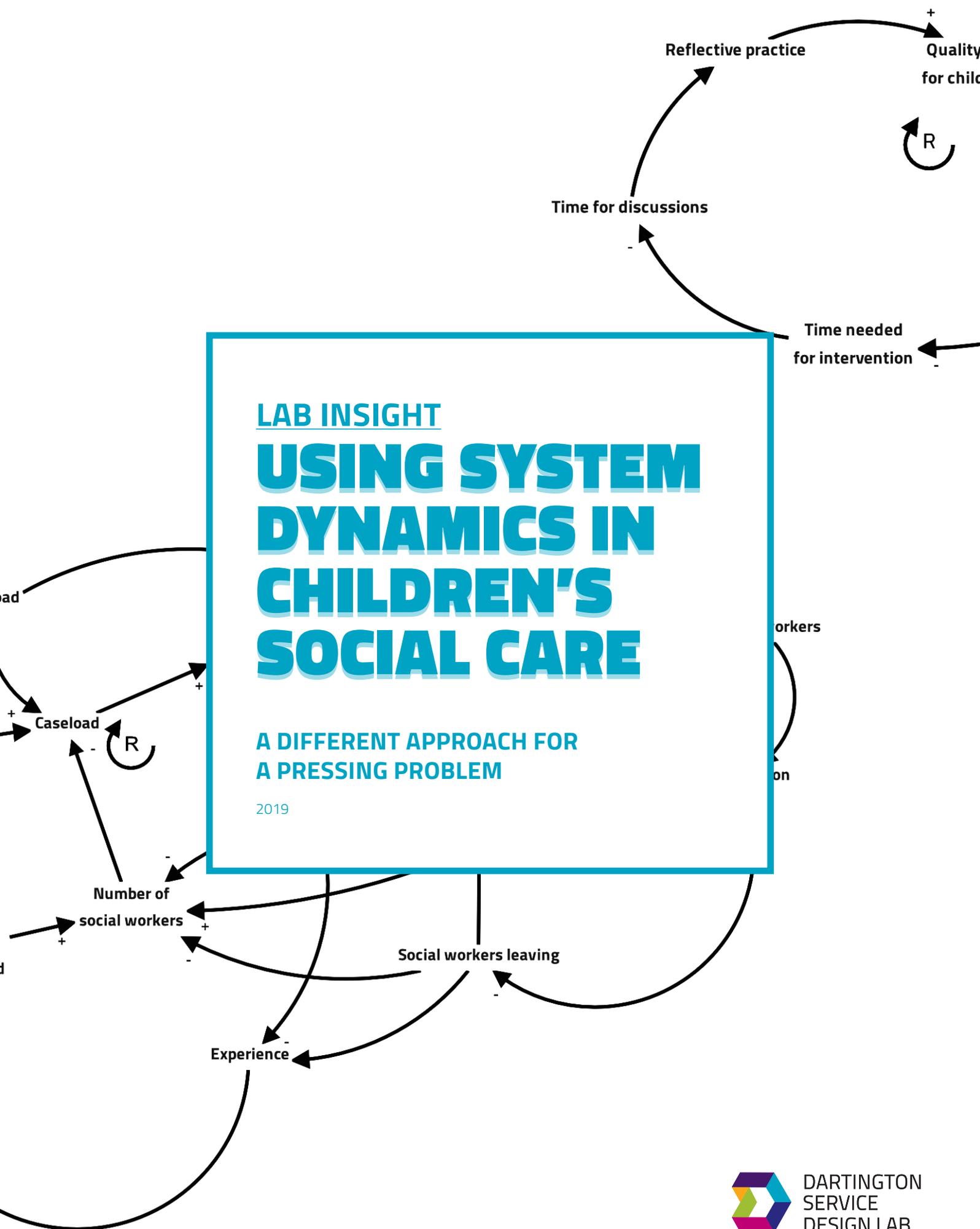


LAB INSIGHT
USING SYSTEM DYNAMICS IN CHILDREN'S SOCIAL CARE

A DIFFERENT APPROACH FOR A PRESSING PROBLEM

2019



ABOUT THIS LAB INSIGHT

Lab Insights are short summaries of current work and learning by the Dartington Service Design Lab. As a research charity we are committed to freely sharing what we learn, and to opening up our ideas and work to promote wider discussion around key issues.

This Brief draws out some early learning from our work with four local authorities in England². Together we are taking a systems perspective to understand the drivers and consequences of escalating rates and costs of children being taken into care. We are exploring how the dynamics of these social care systems may be better understood and managed. We are supported by our collaborators at the Social Systems Design Lab at the Brown School of Social Work in St Louis.

THE LAB'S PROPOSITION

The problem

Local authorities have been experiencing a prolonged period of severe reductions in public expenditure and, at the same time, the general trend of numbers of children in care and the associated costs of providing that care have both been on the increase¹. In many areas this has been accompanied by reductions in expenditure on prevention and early intervention as authorities focus on maintaining statutory services and in some cases is resulting in children not being housed in placements best suited to their needs.

The four authorities we are working with are exploring ways to keep more children safely at home and to keep in check spend on placements to provide the best possible care for those that need it. In turn, this may allow continued investments in prevention and early intervention.

Our hypothesis

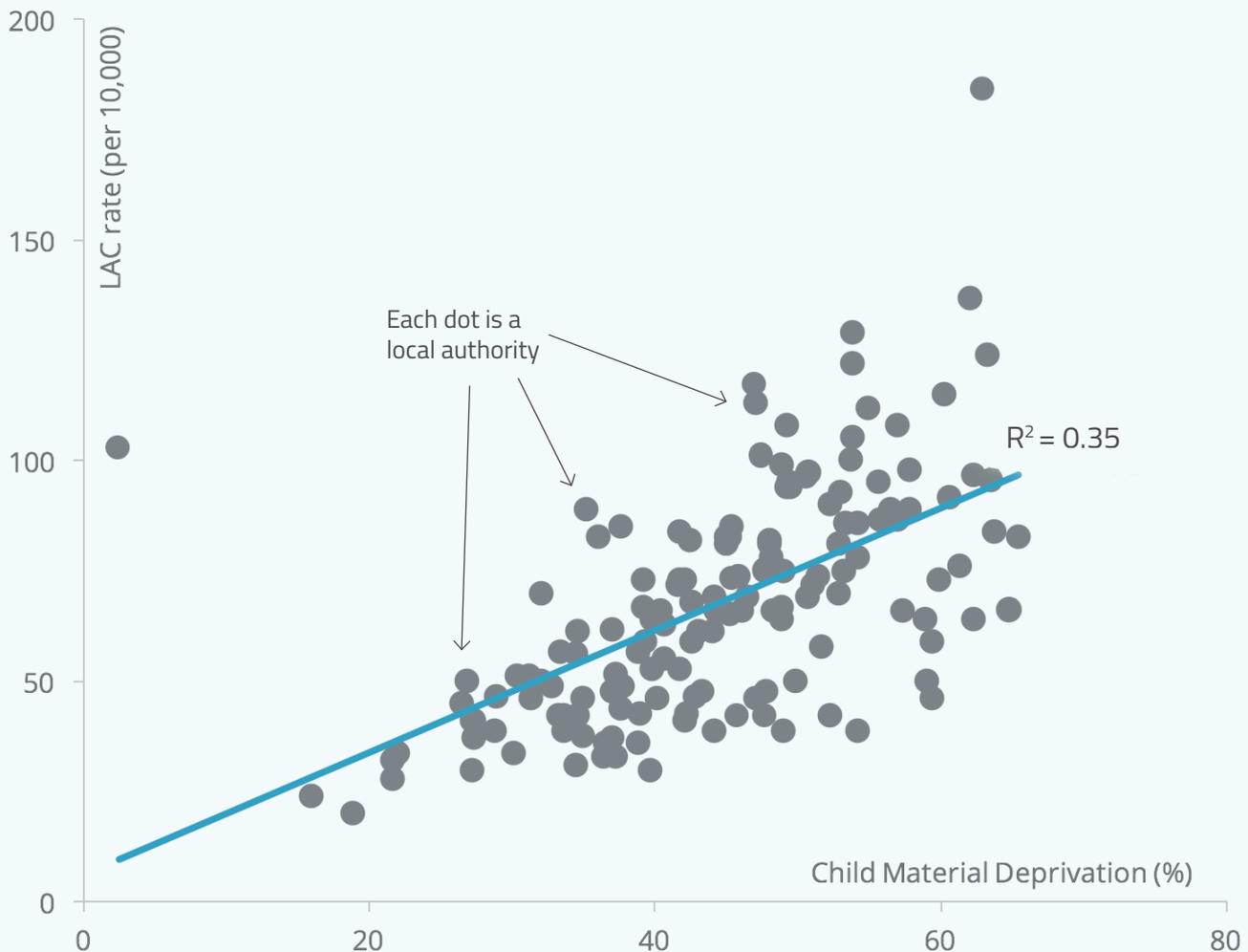
The number of children in care is not solely determined by need. Look at *Figure 1* on the next page. Each dot represents an English local authority. It shows the rate of children in care each year on the vertical axis, plotted against a proxy for the extent of children's needs on the horizontal axis (Child Material Deprivation - an indication of the proportion of children living in poverty). There is a relationship here – the higher the level of child material deprivation, the higher the rate of children in care – but it is not the whole picture. Regardless of the extent of economic disadvantage there is a varying rate of children taken into care, with more variability for authorities with higher levels of need.

¹ Crenna-Jennings, W. (2018). Vulnerable children and social care in England: A review of the evidence. Education Policy Institute

² Derbyshire County Council, North Tyneside, Blackpool and Stockton-on-Tees

Figure 1. Need does not fully explain the number of children in care.

The spread of local authorities around the trend line indicates that there are factors other than Child Material Deprivation, a proxy for need, that is determining the number of children in care. Our hunch is that much of this variation is determined by system factors.



Source: Office of National Statistics (Looked After Child rates, 2017), Department of Work and Pensions (Child Material Deprivation %, 2016).

This is a crude graph, using a crude set of measures and there are undoubtedly other factors involved that we do not have data on. That said, we propose that the largest missing explainer is the structure and behaviour of the system. What do we mean by this? We think everything about the way the local system is organised plays a part in determining the number of children in care - from the organisation of the local services to the ingrained behaviours exhibited by staff (senior, managers and practitioners), to the thresholds for risk applied.

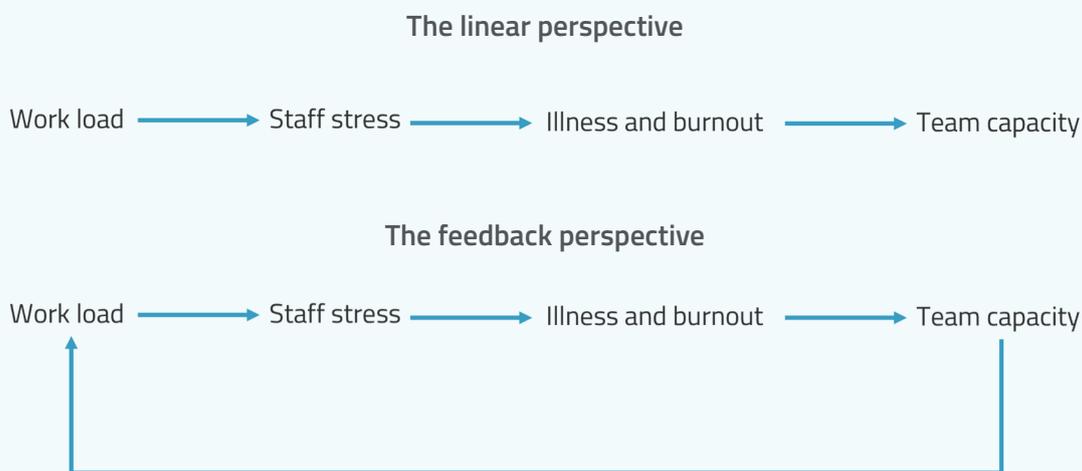
These are not factors that are currently well understood or even explored, yet are potentially ones that system leaders can directly influence. Furthermore, as there is no evidence that taking higher numbers of children into care improves child outcomes, we hypothesise that purposefully and carefully reducing care numbers while using appropriate supports should not be detrimental to child health and wellbeing. The fact is we don't know if child wellbeing is improved by care. There are, of course, cases that clearly require state intervention, but we have never tested the impact of care on child outcomes. Promoting child wellbeing is at the centre of our social care systems work.

Why use a systems approach?

Children's social care systems are complex, adaptive and tend to self-regulate (i.e. keep themselves in check). They have grown and morphed over many decades and undergone a series of policy reforms with the input of many individuals, teams and organisations³. By 'system' we mean the structure, pathways and decision-making points within the local authority department responsible for children's social care. But unlike many more mechanistic systems (like an engineering system), social care systems are governed as much by human behaviours and emotions - such as stress and the fear of making the wrong decision - as they are by structure and process. By 'adaptive' we mean that by making a change in one part of a system it may have a knock-on effect in the rest of the system that is hard to predict, especially as they do not operate in a linear way. System dynamics is an approach that allows us to identify and formalise the feedback loops within the system that contribute to its behaviour (see box on page 4).

What are feedback loops? *Figure 2* shows a simple feedback loop that is common in children's services and many human-centred services. The linear view of this relationship would be that an increased workload amongst the staff team leads to an increase in stress that in turn increases the amount of sick days taken and burn out experienced. As a result, team capacity is reduced. The feedback perspective adds the looping element that as team capacity is reduced the original workload issue gets worse - for the remaining team the workload has increased further, and the problem begins to spiral. This is a classic reinforcing loop. A change in the starting variable puts in motion a chain of influences that push the starting variable further in its direction of travel unless it is somehow broken or - if the right action is taken - balanced.

Figure 2. Feedback loops create spiraling effects



³ Little, M. (2010). Proof Positive. Demos: London.

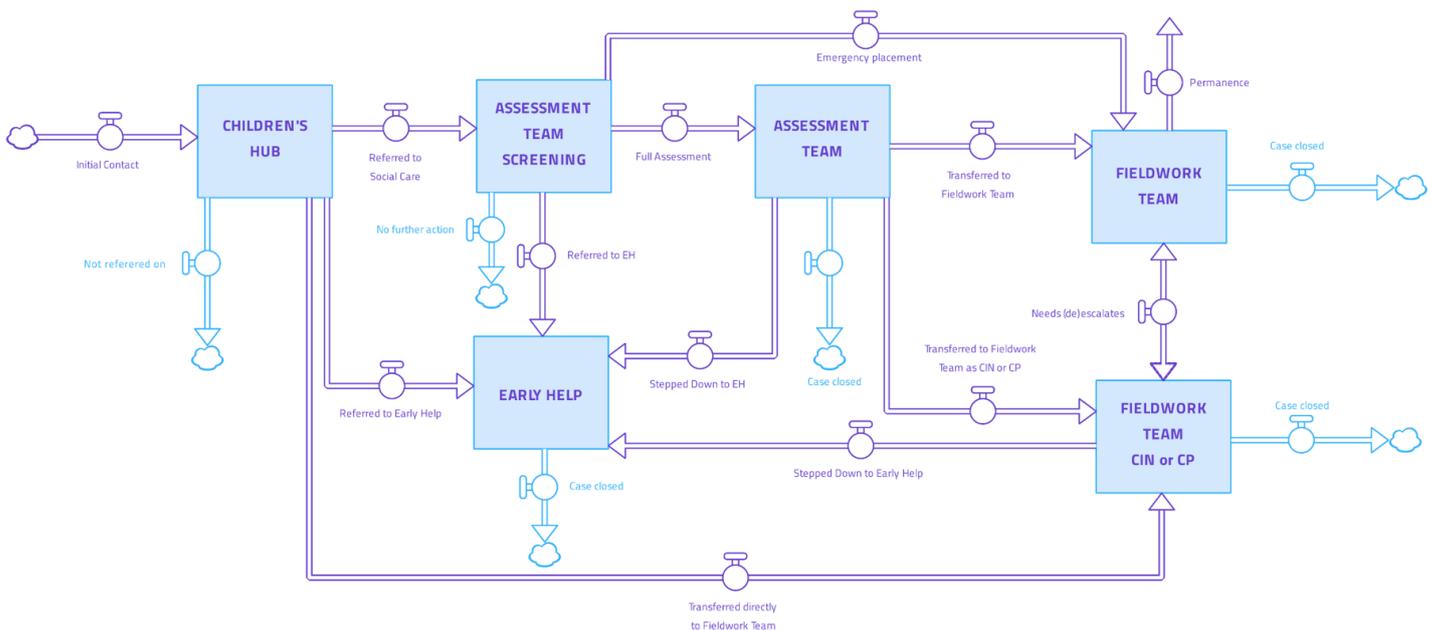
SYSTEM DYNAMICS MODELLING

A system dynamics approach focuses on the relationships between parts of a system. These parts can be tangible (e.g. numbers of children in care) or intangible (e.g. a social workers tolerance for risk). Participatory Group Model Building⁴ allows us to work with practitioners, managers and system leaders to explore and draw out the structure of the system and the inherent feedback loops that govern the system's behaviour. This is done through a series of facilitated workshops where we start to formalise the ideas people have of the system and how it works. The structure of the system is shown via a series of 'stock and flow' maps (see *Figure 3* below), and the behaviours that govern the flows and dynamics that operate across a system. These dynamics are captured and represented via a series of Causal Loops Diagrams: larger and more detailed feedback loops like the workload/burnout example previously described.

These two elements combined are used to develop a computer simulation model around an issue of importance (i.e. the number of children in care). Simulation models can only ever be an approximation of reality, replicated as best we can. Their strength lies in creating a platform to consider the complex and dynamic nature of the system, and to enable system leaders to test the potential effects – intended and unintended – of a range of strategies, before choosing which to implement in the real world.

System dynamics modelling shines because of the feedback loops built into the simulation – it can account for both tangible influences (numbers of children, need, thresholds) and intangible influences (stress, risk, leadership).

Figure 3. A portion of a stock and flow system map



⁴ Vennix, J. A. M. (1999). Group model-building: tackling messy problems. *System Dynamics Review*, 15 (4).

EARLY INSIGHTS

In this section we provide some learning and insights gained from our work to date. These reflections are generally common across our work in each authority, although each is at a different stage of progression with the system modelling.

The process is as important as the final model

The simulation model quickly became a central focus of the projects, but the process of getting to the final model provided much of the insight. Engaging practitioners in the thinking around system change before making changes helped to move away from the feeling that change was done to them and increased communication between system leaders and social workers. The practitioner workshops also helped create a joint understanding of the system and where there were opportunities to work closer together. For example, social workers often left sessions with the names and numbers of their, previously unknown, colleagues from different teams in different sections of the system who could provide help with children and families on their caseload.

Another example was that the simulation model required the input of detailed strategies. This meant current and planned local strategies had to have solid theories of change. For instance, one local authority is considering building new residential facilities due to the spiralling cost of third sector provision and to look after more of their children closer to home.

This will increase capacity to serve children but only temporarily because the current system behaviour is to fill all available placements. As space becomes available, new cases will occupy them. To avoid this, a defined threshold was set to ensure only the target group (the children with the right needs) would be placed there.

There are common feedback loops across different local authorities

Behavioural feedback loops are a core element of the system dynamics modelling approach, and there are several loops that are common across local authorities. The “drifting goals” behaviour is one example. This happens when there is a gap between what the ideal caseload for a social worker is (the goal) and the actual caseload of the worker (the reality). System leaders will understandably seek to correct the discrepancy and the quickest system change would be to increase what is considered to be the ideal caseload (i.e. have a higher expectation of what an ideal caseload is).

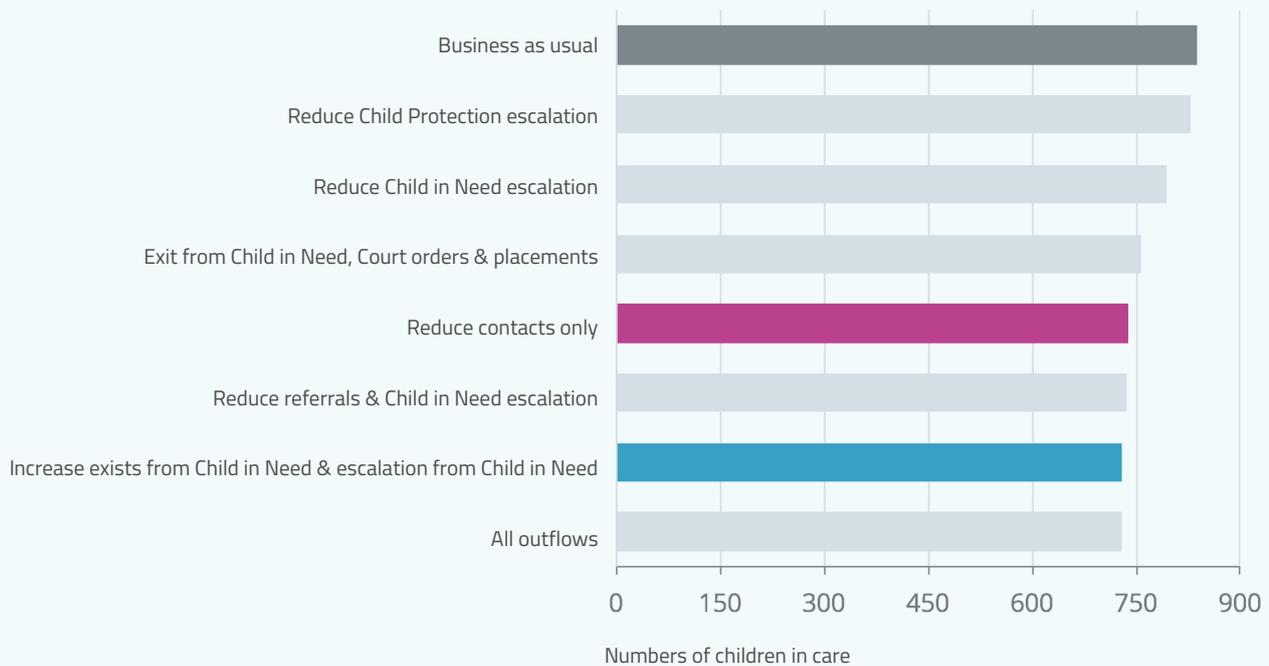
The harder system change is to correct social workers actual caseload to bring it down to the original ideal or goal level. “Drifting goals” is often observed because changing what is considered the ideal is often seen as the only immediate fix. It does not tackle the underlying issue and so the new goal quickly becomes the norm, and drifts further as the underlying system behaviours continue to drive the rise of caseloads and the same fix is applied multiple times (i.e. the ideal caseload steadily increases). This may be one contributor to the general rise in children in care.

The simulation model can provide unique insights

The computer simulation model allowed the system leaders to test multiple intervention points and estimate the effect they might have on their key concern – the total number of children in care and the associated placement costs. Testing a wide range of strategies in this way helps clarify where they should focus their limited resources to effect change.

Not all intervention points are equal. Some single strategies will likely have a larger effect than multiple strategies combined. The chart in *Figure 4* shows the number of children in care in one locality as estimated by the model in the year 2024. Focusing solely on reducing the number of initial contacts to social work has almost the same effect as increasing children leaving the system at all possible exits (e.g. returning from care, exiting a Child in Need or Protection plan).

Figure 4. Some intervention points have a greater effect than others combined



The process and simulation model highlight counterintuitive behaviour

The work helped to highlight some misconceptions within each children's social care system. Firstly, the chart from *Figure 4* came as quite a surprise. When trying to reduce in-care numbers, increasing the flow of children exiting the system is the most intuitive approach to take. The work showed that this won't always have the desired effect.

For example, preventing children from escalating into care can have a larger effect than increasing the number of children being reunified with their families. Secondly, given the behaviour of the system, high caseloads cannot be corrected by simply increasing the number of social workers on staff. To do so would temporarily relieve the issue but without a conscious effort to manage and control the maximum caseloads would creep back to the previously accepted, and far too high, level. This is due to the self-regulating behaviour of the system to fill empty spaces with new cases. The system behaviour is not currently to reduce the number of placements, so when space is freed up a new child will be found to fill it⁵.

TOOLS FOR CHANGE

Systems thinking helps to identify where in a system it may be best to intervene but not what that intervention should look like. It can also be a lengthy process and local authorities need some quick gains. This is where practice tools and user-centred service design play a role. For example, the modelling work may show that reducing the number of children who are referred into social care but who then have no further action taken would reduce the overall number of children in care. This is because effective triaging of referrals can save caseworkers time later which allows them to more effectively work with the children and families who most need help.

What the model doesn't tell us is how to achieve that. There are existing evidence-based tools and practice that can be implemented at various stages of the system to aid social workers (e.g. Dartington's practice tools, such as 'Threshold', 'Matching Needs and Services' and 'Going Home') to produce such effects. Sometimes no prior solution is available. User-centred service design can play a part, bringing together system leaders, practitioners, and, where appropriate, service users to co-create solutions.

⁵ Dartington Service Design Lab. (in press). Matching needs and services in children's social care: a case of three circles.

REFLECTIONS

This work is new, and we are learning a lot as we work in partnership with partnering local authorities and collaborators. In this section, we reflect on some of the necessary conditions or pre-conditions that are required to do this system modelling work effectively.

There must be agreement on the central challenge before modelling begins

The Dartington Service Design Lab began this work with a goal of supporting local authorities seeking to manage the dynamics of their children's social care system to ensure the best possible provision for those that need it and to protect investments in prevention and early intervention. However, this is not the only concern of local authorities. Neither is it the only question that the systems approach can be applied to. It is crucial that system leaders within the local authority are aligned around what the core challenge is for the system – and it can take time to get to this alignment – but there should be flexibility around what that challenge can be. For example, in some localities the overall number of children in care is not the central focus, but rather the placement mix between the use of services external (very costly) and internal (less costly) to the authority.

The systems thinking approach provides insights from the outset

Initially, the end model was the focus as it was new and innovative, but this masked some of the important insights that became apparent whilst gathering all the information needed to create a simulation model. For the work to retain relevance throughout the course of the project and beyond, the insights from the process need to be continually captured and fed back. These can be as valuable as the end result. For instance, formalising explanations of the feedback loops and suggestions about how they can be broken or mitigated early on for those insights to influence strategy development throughout the project.

The system dynamics model is a tool that needs to be embedded in decision-making processes

Once the simulation model was complete it was primarily used by the Lab team to help answer local authority questions or as an exploratory tool to suggest new possibilities. This limited its utility. At its core, the model is a tool for decision-makers – it can be used to help think through strategies and decisions and estimate their effects where it would otherwise be hard to do so. We think it should sit with senior staff who can use it regularly to interrogate new strategies, test whether they are likely to have roughly the desired effect and check for unintended consequences.

WHAT'S NEXT?

Our systems approach to children's social care is relevant to most authorities. The challenge in each authority may not be the same but the circumstances of almost all authorities are – severe cuts and increased demand on remaining services. Much of the work done to date is directly relevant, especially the behavioural feedback loops that are common across jurisdictions. It is our intention to further share the elements that can be applied more universally.

The Dartington Service Design Lab also wishes to develop a general model of children's social care that will be freely available for all authorities to use (with some structural variations to reflect different systems across the four countries of the UK). This will be a high-level model to introduce some of the systems thinking that has proved useful with our pilot sites and help authorities understand what drives the rising numbers of children in care better. This may form the basis from which individual authorities may produce more locally specific adaptations to meet their own needs.

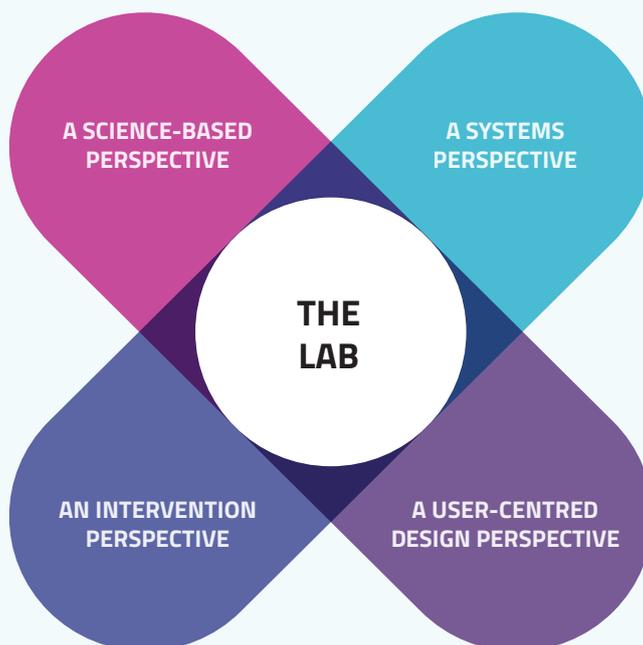
If you are a local authority interested in partnering with us to use the methods in your area - get in touch!

ABOUT THE DARTINGTON SERVICE DESIGN LAB

The Lab is a research and design charity committed to improving outcomes for children and young people. We design and improve services for children and families by practically applying research and evidence. But we think it is really important to balance this with user and practitioner involvement. Designs should not only 'work' but also engage users. We believe it is critical to situate service design and improvement in the context of the wider complex and messy systems in which services are delivered – be these public agencies or local communities. We work at the intersections between evidence-informed and user-centred design, and practical service delivery and wider system reform.

Our system dynamics work brings this approach to bear on the children's social care system by seeking to identify system-level changes that may foster greater change to children's lives than a single intervention alone and to identify the system conditions in which specific services could make the most difference. This is achieved in partnership with local authorities, and through the participatory approach to systems thinking and simulation modelling described above.

Figure 5. Lab intersections





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