



**WHAT
WORKS**
SCOTLAND

Evidence Review

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Scaling-Up Innovations



This evidence review is one of a series of papers that What Works Scotland is publishing to share evidence, learning and ideas about public service reform.

What Works Scotland

What Works Scotland aims to improve the way local areas in Scotland use evidence to make decisions about public service development and reform.

What Works Scotland is working with Community Planning Partnerships (CPPs) and stakeholder partners to achieve its aims, namely to:

- Identify and better understand what is working and not working in public service delivery in Scotland, and how we can translate knowledge from setting to setting
- Contribute to the development of a Scottish model of service delivery that brings about transformational change for people living in different places across Scotland

What Works Scotland (2014-2017) is a collaborative between The Scottish Government, the Economic and Social Research Council (ESRC), the University of Edinburgh and the University of Glasgow.

www.whatworksscotland.ac.uk

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Contents

1. Summary points	1
2. Introduction	1
3. Key terms and definitions	2
4. Approach	2
5. Evidence overview	4
5.1. Evidence landscape	4
5.2. Gaps in research	4
5.3. Research in Scotland	5
6. Report on findings	5
6.1. Concepts & Meanings	5
6.2. What is scaled up, and when?	8
6.3. What factors help scaling-up?	11
6.4. What are the barriers to scaling-up?	14
6.5. What are mechanisms for sustainability?	16
6.6. Key messages in scaling-up	19
7. Conclusion	21
8. Appendices	21
8.1. About What Works Scotland	21
8.2. How the research was carried out	21
8.3. Acknowledgements	24
8.4. References	25
8.5. Signposting Guide	32

1. Summary points

- There is a good deal of evidence on scaling-up initiatives and innovations, but there is no agreement on which approaches to use or on what constitutes success.
- It is important to consider both 'hard' components like metrics, and 'soft' components like socio-cultural factors when thinking about scalability.
- How the term 'scaling-up' and related concepts such as 'spread' and 'diffusion' are understood varies across fields and sectors.
- Adequate time and planning is needed when scaling-up any innovation. The more complex an innovation, the more detailed the strategy required.
- Agreement between stakeholders regarding the intentions and goals of the scale-up process is vital.
- Buy-in to the innovation and scaling process is best achieved through influence and advocacy, as opposed to position and authority.
- Both collaboration and networks play pivotal roles in spreading innovations by increasing buy-in from stakeholders and increasing the sharing of resources, knowledge, and experience.
- Infrastructure and administrative and technical support are the scaffolding on which the scaling-up process relies.
- Leadership and key roles are most influential and productive when distributed across all tiers and partners involved in scaling-up an innovation.
- Implementing an innovation with sufficient flexibility while retaining fidelity to the core components is one of the most difficult aspects of scaling-up.
- Having multiple and creative ways to assess and evaluate the adoption and implementation of an innovation helps to embed it within the larger system.

2. Introduction

Scaling-up

There is a broad desire across sectors to improve services and spread effective innovations across different departments, organisations, and areas. Schalock and Verdugo refer to the 'transformational era': that no matter whether one is involved in economics, politics, business, health care, education, or human services, transformational change is happening at strategic, operational, and functional levels across organisations (2013).

However, there is also a widespread view in the literature that regardless of field or sector, the challenges and factors involved in scaling-up innovations successfully makes the process of achieving this transformation very difficult. Despite efforts to identify and explain what works in the process of creating and propagating change – particularly through the spread of innovations – it remains uncertain as to how different innovations can reach more people to produce better outcomes across various settings.

Why this evidence review has been produced

This evidence review was produced to meet a specific commission by the Scottish Government. It is also the first What Works Scotland¹ output under its Spread and Sustainability workstream and provides a foundation for the future work of the workstream over the three year period (2014-2017) of the What Works Scotland programme.

The Scottish Government is focused on sharing evidence of best practice, and reducing the time that it takes to get that evidence into all practice. Sometimes this is about making existing processes more consistent, and sometimes it is about the introduction of new ideas and innovations. Either way the aim is to support organisations and individuals to think differently and enable transformational change to achieve positive outcomes for people. The Scottish Government commissioned this review of theoretical approaches to distil key lessons for scaling up innovation and how these lessons might be applied in practice to inform several current national initiatives within Scottish Government including the Early Years Collaborative, the Raising Attainment for All Programme, and the Permanence and Care Excellence (PACE) programme. Review findings will also be of interest across many areas of the Scottish Government which are concerned with quality improvement and wider transformational change as part of public sector reform.

About this report

Evidence and learning around scaling up for transformational change is found in diverse fields and studies, with multiple approaches and understandings of what 'scaling-up' and its attendant concepts mean. This review provides an accessible way to draw together broad findings and theory from across multiple fields and sectors. Since discussions on scaling-up or associated concepts may occur deep within an evaluation or review of a study, project, or innovation, an evidence review can collate broad learning points from across projects.

It aims to draw together common themes and key learning points on strategy development and emergent issues across the literature that address 'scaling-up' innovations.

¹ <http://whatworksscotland.ac.uk/>

Findings are presented as high-level messages to help inform the stages and processes involved in the strategic scaling-up of innovations; they should not be taken as definitive answers or a prescriptive model.

The generalised findings in this report intend to allow readers to become familiar with many of the issues, strategies, and approaches involved in scaling-up innovations, facilitating thinking and prompting discussion around how to go about public service improvement.

The Scottish Government commissioned this review to consider the existing evidence on *'How can small scale innovation be effectively scaled up to create large scale transformational change?'* More specifically, the Scottish Government identified five sub-questions:

1. How is 'scaling-up' and the terms most associated with the process understood and used?
2. What is scaled-up (e.g. policies, approaches, interventions) and when is scaling-up considered appropriate or beneficial?
3. What are the most reported upon enablers and successful characteristics of scaling-up?
4. What are the most commonly encountered barriers to the scaling-up process?
5. What are some of the mechanisms used to achieve sustainability and long-term change?

Findings are presented in sections addressing each of these questions in turn. Each section contains:

- Findings from the evidence reviewed
- Key summary points
- 'Talking points': to stimulate reflection on the implications of the findings for practice, linking the evidence to dialogue and helping to pave pathways to action.
- Signposting follow-up: selected studies and reports particularly relevant to findings

A more extensive Signposting Guide is found in the appendix, containing guidelines, recommendations, approaches, and frameworks too detailed or complex to include in their entirety within this review.

Citations for references are given throughout. For the more widely stated findings and themes, citations are intentionally not comprehensive; for example, to support the statement that context is important to scaling-up innovations, only the most relevant references are cited to keep the text uncluttered.

This report was produced by What Work's Scotland's Evidence Bank for public service reform. The Evidence

Bank provides appraised, accessible and action-oriented evidence reviews and other resources for those involved in public service delivery including Community Planning Partnerships, policy-makers, local authorities and third sector organisations.

3. Key terms and definitions

This report contains repeated uses of 'scaling-up' and associated terms, such as 'spread' and 'diffusion'. An exact definition of each term was not attempted to allow a diverse range of evidence to be included in the exploration of how different fields, sectors, and studies understand and employ such concepts. Other associated terminology, such as 'implementation', 'sustainability', and 'fidelity', can be vague or unexamined in their use, and were treated in the same fashion.

Similarly, this review considers 'innovation', a term that may be used to refer to a completely new or novel way of working, behaving, organising, delivering, or thinking. It may also refer to an incremental adjustment, an additional component, or a revised version of something already in existence and use. Evidence addressing all of these understandings of 'innovation' was included in this review to gain a well-rounded perspective from diverse sources.

Therefore, a glossary of terms and definitions used is not given.

It should be noted that throughout this report, when 'scaling-up' or 'scale-up' is used in general discussion (as opposed to using the direct words of an evidence source), it encompasses activities of spreading, diffusing, disseminating, and adopting. In the same fashion, 'innovation' encompasses various things that might be considered as innovations (e.g. initiatives, pilots, programmes, systems, frameworks, and policies). For a fuller discussion on types of innovations, and which are most often scaled up, see 6.2.

Discussion of how such terms vary in their use and meanings across different fields, and where common overlaps exist, can be found in 6.1. This discussion is not exhaustive but informative.

4. Approach

The Evidence Bank evidence review process was used to produce this review. The process was developed within public policy and practice contexts, building upon work developed by the Centre for Research on Families and Relationships² and informed by a range of review

² <http://www.crfr.ac.uk/>

methods. The process was developed in response to well documented issues around using evidence including accessibility, relevance, and timeliness.

Since this is not a systematic review or meta-analysis, it does not determine which studies' reported findings were the most effective. All evidence reviewed underwent a quality assessment and the report was both peer and user reviewed.

Informative theoretical sources

Two theoretical sources were integral to the review's development: Rogers' (2003) model on the Diffusion of Innovation was the most commonly referenced text across the literature included in the review, and Greenhalgh et al (2004) systematic review on health innovations represents a more recent reference point in theorising about innovations within larger systems.

Everett Rogers' Diffusion of Innovation model formed a foundation for much of the evidence, and while it was first developed in 1962, the model has undergone revisions and updates. In Rogers' model, 'diffusion' is the process through which (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system. Uncertainty is inherent in the diffusion process, and the four main elements in the diffusion of new ideas are (1) innovation, (2) communication channels, (3) time, and (4) the social system (2003).

In this model, an innovation is any idea, practice, or object that is perceived as new by an individual or other unit of adoption. The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. The attributes that determine an innovation's rate of adoption are: (1) relative advantage, (2) compatibility, (3) complexity, (4) trialability, and (5) observability. Other frequently discussed elements of Rogers' model include a 'tipping point' – after which diffusion of an innovation is self-sustaining – the innovation-decision process, and adopter categories.

Roger's model is a commonly referred to and built upon theory representing one of the earliest models of innovation diffusion theory. Later studies often suggest additions or amendments to Rogers' theory through the development of newer models and frameworks, such as additional key roles that drive the spread of innovations in different contexts (Kerlin 2009) or a pre-implementation phase (Walker et al 2014).

Greenhalgh et al's 2004 systematic review of the diffusion of health innovations was also a regularly referenced study providing a useful way in to the myriad approaches and concerns associated with the diffusion

process. Greenhalgh's review identified gaps, in theory and in research, and made several recommendations regarding future directions of studying the diffusion of innovations, including:

- Affirmation of the importance of social influence and networks and the non-linear nature of diffusion
- The lack of empirical evidence to support widely cited 'adopter traits' and the unhelpfulness of describing patterns of adoption through the lens of 'individuals'
- A need to appreciate that each adoption site will be contextually different and therefore feature different interactions between stakeholders
- There is a relationship between context and what innovation 'success' looks like, and they can be mutually influential
- Focus on the *process* of diffusion rather than on causal determinations

This review applied these suggestions when synthesising the evidence, focusing on contextual, interactive, and process factors.

Approaches to collecting evidence

To accommodate a wide range of literature, over 20 search terms were used in various combinations in multiple databases. Evidence was included from 10 broad but different 'fields' in order to capture evidence discussing scaling-up innovations from various perspectives and in multiple policy areas. A strength of this review stems from its breadth and diversity of evidence. While readers may be familiar with some of the findings presented here, much of the previous work on scale-up and spread is narrow in focus (Norton et al 2012) - this review demonstrates where there is a broad consensus in key findings as explorations were not bounded by geography, field-setting, or type of innovation.

Evidence reviewed includes research reviews and summaries, study reports, case studies, evaluations, and theoretical think pieces, with quantitative, qualitative, and mixed methods being used.

Although this review focuses on academic, peer-reviewed evidence, some grey literature (publications from government, academic, business, and industry sectors appearing in electronic and print formats) is included to explore whether there are any significant deviations from the peer-reviewed literature on how scaling is understood and key issues around scaling, and to identify further resources for the Signposting Guide (see appendix).

A detailed account of how the evidence was gathered and assessed can be found in the appendix.

5. Evidence overview

5.1. Evidence landscape

Academic evidence

The evidence landscape for scaling-up innovation is immensely diverse. This review incorporated evidence from the fields of health, education, social care, technology, justice, environment and ecology, marketing, management, and social policy. The disciplines from which the studies came included sociology, social work, information and technology studies, organisational studies, criminology, environmental studies, public health, and psychology.

Geographically, the evidence is somewhat US-heavy, but studies from Scotland, the UK, Australia, New Zealand, Canada, and European countries such as Spain, Finland, Sweden, and the Netherlands are represented. There are some differences in scope according to the country of origin for the study and the field. For example, a large proportion of the public health studies originate from the US and Australia, while a relatively large proportion of environmental, energy, and agricultural studies are from the UK and Europe.

Much of the evidence included in this review reports on particular studies or part of a multi-study programme. Many study reports, evaluations, and case studies are mixed in methodological design. Non-mixed method studies are more often descriptive or qualitative than quantitative. Qualitative studies typically use interviews, focus groups, general observations and policy review, while quantitative use mostly software-assisted modelling for patterns and associations, logistic regression analysis, and surveys or questionnaires.

Usually evidence concentrates on specific segments of scaling-up innovations, such as the strengths or effectiveness of contexts, indicators, or influences. Discussion addressing the process of scaling-up in its entirety is less common in the peer-reviewed literature, and found primarily in theoretical reviews.

'Grey' evidence

The grey literature³ contains more 'guides' and strategies that address 'scaling-up' and 'spreading', much of which is based on evaluations and case studies of programmes and initiatives. A significant portion of publications arise from collaborative initiatives tasked with investigating social innovations and transformations, for example, a case

study report produced for the European Union under the 7th Framework Programme (Davies 2014). As expected, health-oriented literature on the spreading of innovations forms a large portion of the grey evidence, with reports primarily emanating from US and UK health bodies. Education and social innovations are also well represented in evidence relating to the scaling process. The bulk of the grey literature included in the review originates from the UK with the remainder coming from the US.

Unlike the academic literature, a notable amount of grey literature addresses innovators themselves – for third sector publications this is likely to be connected to the emphasis on social innovations and community engagement; health organisations' publications tend to assume the readership includes those directly involved in designing and developing innovations.

Another prominent feature of the grey evidence is an emphasis on the roles and functions of local government and local authorities in the scaling process within the UK. Publications from Nesta, Howell (2013), the Audit Commission, and a joint effort including the National College for School Leadership, the Department for Education and Skills, and the Improvement and Development Agency all explicitly address local authorities and local government in their findings and recommendations. The possibility of local government actors and agencies being able to work directly with innovators, prune existing under-performing services, and establish networks are noted as advantages in scaling-up innovations.

Finally, a resounding message across the grey literature is the pivotal role of networks, sharing, and collaboration. Sharing resources, knowledge, expertise, and experience is emphasised for spreading an innovation (Audit Commission 2007). Recognition of the power of influence via networks rather than positional authority within the NHS (Bevan and Fairman 2014) represents the turn towards mobilising capacities and resources at all levels, with colleagues, citizens, partner and intermediary organisations, and whole sectors all having a part to play in the approaches to scaling-up innovation.

5.2. Gaps in research

There is not enough comparable empirically-supported evidence about scaling-up, or what constitutes successful large-scale spread. For example, Greenhalgh et al's systematic review on the diffusion of innovations in service organisations presents what they refer to as a cost-effective and evidence-based model for considering the

³ Grey literature refers to documents that are not found through publishers or databases, such as company reports, reports published by not-for-profit organisations, and conference reports. Such literature is generally not peer reviewed.

diffusion of innovations in health service organisations, and suggests that the model requires further testing in a wide range of contexts (2004). However, despite being a study commonly relied upon to facilitate further research, conclusive evidence and agreement about the model's effectiveness was not found.

Who the evidence is talking about usually falls into two broad categories: the populations at which an innovation is aimed (e.g. pupils, patients, or even the general public) and the roles involved in the actual process of scaling-up. Typically, the more explicit the discussion on the process of 'scaling-up', the less it focuses on any particular kind of population or socio-demographic characteristics. The social care, justice and criminology, education, and public health fields most often contain evidence about innovations explicitly aimed at improving outcomes and wellbeing for more vulnerable or marginalised groups, for example people experiencing social and health inequalities or people with physical, learning, or developmental disabilities.

No discussions regarding scaling-up innovations explicitly address gender as a problematised variable, but two studies focused on women only in the contexts of cancer education and hormonal contraception. Two public health studies feature sexual orientation as an explicit focus of the study.

5.3. Research in Scotland

While the evidence drawn on in this review emanates from diverse geographic locations, studies are included only where they are considered contextually similar to Scotland. Evidence specifically focussing on Scotland is not common, however, UK-based evidence is frequent.

6. Report on findings

6.1. Concepts & meanings

What is meant by 'scaling-up'?

'Scaling-up' an innovation brings to mind something growing in size, getting bigger. While the phrase 'scaling-up' an innovation was found in all fields investigated, not all fields contained evidence explicitly defining what was meant by the concept. Discussion of its meaning and use was most frequently found within the education field, and also within health and social care.

Discussions of scaling-up an innovation were frequently found in the reporting or description of an evaluation, indicating a next stage of action. Improving the 'scalability'

of an innovation was often framed as a goal in much of the evidence. Usually the development or employment of models, frameworks, or guidelines focused on the issues of fidelity, cost, partnerships, and sustainability in relation to scaling-up an innovation.

'Scaling-up' in academic literature

Within the health and implementation science fields 'scaling-up' was widely (though not unanimously) seen as indicating an increase in the number of recipients of an innovation. 'Scaling-up' usually meant delivering or enacting an innovation in a way that increased the number of people benefiting from it while ensuring the original design and measures were maintained. An innovation's suitability for this potential process was often referred to as its 'scalability', defined as:

'The ability of an innovation shown to be efficacious on a small scale or under controlled conditions to be expanded under real world conditions to reach a greater proportion of the eligible population, while retaining effectiveness' (Milat et al 2012).

Some evidence explicitly acknowledged the vagueness that could accompany the use of 'scaling' terminology, for example, when Norton et al remark that the terms 'scale-up' and 'spread' lack accepted, universal definitions, although they use the terms interchangeably (2012). The authors go on to note that within implementation science, 'going to scale' indicates that at least 60% of the target population who could benefit from the innovation were receiving it (Norton et al 2012).

Within education, scaling-up was understood to be more of a 'widening' rather than getting 'bigger', as expectations were more concentrated on an innovation being able to get up and running with relative success in very disparate contexts (Buzhardt et al 2007). However, 'widening' still contains the aim of reaching greater numbers of students, usually with an objective of the innovation being taken up in a certain percentage of schools within a given region or state.

Within social care, there was a similar concern for expanding in 'width' to reach more disparate contexts, alongside a focus on spreading to the various departments or units across a service system (Lindsay and Strand 2013). Social care featured a particular concern for striking the tricky balance of fidelity to core components while allowing for considerable adaptation given that most innovations are aimed at populations which are vulnerable in some way, with innovations needing to be sensitive to varying needs.

The directions or models of approach that scaling can take were usually referred to as 'top-down' or 'bottom-up'. Top-down models place emphasis on hierarchy, with

decision-making and key roles being clustered primarily at the top tiers of an organisation or setting. A bottom-up approach moves more of the impetus, power, and action to people in 'frontline' positions or those not in positions of prestige and influence. The bottom-up model is closely aligned with community empowerment, community-based organisations, and civic engagement (Fudge and Peters 2009; Kegeles 2012). The bottom-up or community-oriented models were more often explicitly discussed in relation to either smaller pilot projects or policy innovations – usually in energy, education, and healthcare.

Across the evidence, there is largely a consensus that the top-down model is inadequate on its own (Shaw et al 2009). Some evidence explicitly calls for blending the two approaches, where a 'cross-scale' approach can create multi-directional flow of change (Watson 2014).

Scaling-up in grey literature

A difference between the widening out and getting bigger is also commented on in some of the grey literature. The Institute for Research and Innovation in Social Services (IRISS) distinguishes between 'scaling out' and 'scaling-up'. Scaling out is the replication of an idea to other location(s) at the same scale, e.g. from one team to another within an organisation. Scaling-up is the expansion in the area of coverage, for example, from a team within an organisation to the whole of that organisation.⁴

A report on scaling social innovations states that they can be considered to have scaled 'when their impact grows to match the level of need' (Gabriel 2014). The report goes on to describe two different way of thinking about scaling: 'quantitative scaling up' in which the purpose is to increase the number of people benefitting from a social innovation, and 'political' or 'functional scaling', in which iterative exercises can build on or add to existing innovations so that there may be clusters of innovations or innovations in part of a supply chain aiming to bring about policy or regulatory change.

A report from the Young Foundation, a social enterprise that aims to use social innovation to tackle inequalities, argued that 'scaling-up' is an unhelpful way of expressing what social innovations aim to do by drawing on associations of standardisation and potentially narrowing the routes and approaches considered and linked to growth. Instead referring to 'spreading', or even 'growing' innovations that are part of the public and third sectors is suggested, as they better represent the ideas of personalisation and co-production (Davies 2014).

Within the grey literature, the directions in which the scaling process moves can also be considered as top-down (hierarchical, centralized), bottom-up (individual-led,

frontline-led) or relational (network based, participatory) (Ibanez de Opacua 2013; Nieva 2011). Similarly, a report from the National Endowment for Science, Technology and Arts (Nesta) suggests 'scaling routes' that social innovators can take to scale up their innovations; these routes include disseminating and engaging activities all levels with partnerships being formed with collaborators from all tiers of influence (Gabriel 2014).

Concepts associated with scaling-up

In addition to 'scaling-up', much of the evidence considered in this review discussed dissemination, diffusion, implementation, adoption, and spread, although it should be noted that not all evidence discussed how the concepts were being used or the definitions intended by the authors. Usually one or more of these concepts appeared alongside the concept of 'scaling-up' an innovation, but there was also evidence that solely discussed adoption or spread. Evidence where 'scale-up' was not explicitly addressed was included because the associated concepts link closely with the process of scaling-up innovation. It is worth devoting attention to some of the uses and understandings of these concepts within the evidence included in the review.

A logical starting place is Greenhalgh et al's systematic review of the diffusion of innovations in health services (2004). Besides Rogers' diffusion of innovation publication, this was the most commonly referred to review; the literature contained frequent references to this significant review's distinctions between the terms:

- Diffusion – passive spread
- Dissemination – active and planned efforts to persuade target groups to adopt an innovation
- Implementation – active and planned efforts to mainstream an innovation within an organisation
- Sustainability – making an innovation routine until it reaches obsolescence

No clear relationship in meaning and use is found in the distinction between '*diffusion*' and '*dissemination*'. While only a portion of the evidence made a distinction between the two terms, when definitions were given, most sources agreed that 'dissemination' meant something spread in a determined fashion: 'intentionally and actively spread', 'targeted distribution', and 'formally and centrally driven'. While much of the health field recognised this distinction (for example, Glasgow et al 2012), within other fields this differentiation was not as commonly addressed.

Consensus on the meaning of 'diffusion' is also lacking. It was most often used in comparison to 'dissemination' to represent a passive phenomenon: 'informal and

⁴ Please see <http://www.iriss.org.uk/about/innovation> for more detail [accessed 18 April 2015].

uncontrolled', 'without concerted promotion', and 'informal processes'. Yet a notable quantity of the evidence used diffusion to simply refer to the process of an innovation spreading, being adopted, or being communicated. This difference in conceptualisation is particularly interesting given that 'diffusion' is used much more commonly in relation to theoretical discussions of scaling-up – a macro view of scaling – but with 'dissemination' commonly being referred to as a necessary component of the process of scaling-up – a meso/micro or practical view of scaling.

Given these conceptual uses, this review is arguably more interested in the relationship between scaling-up and dissemination, as it relates to the proactive, planned, and driven aspects of taking on an innovation.

'**Spread/spreading**' is usually used synonymously with diffusion, depicting a more horizontal flow. This movement of spreading can be along established pathways, for example, within a department or professional community of practice, or along less formalised pathways, such as across organisations within a defined geographic region. Despite the ambiguous use, it is most common in the context of the innovation being a system or policy, or the setting being a larger geographical area.

The concept of '**adoption**' was defined much less often, although it is frequently used, particularly within the fields of education, ICT, governance, and environment and energy. When explicitly addressed, it is considered to be the process through which an entity (organisation, sector, setting) comes into knowledge of, forms attitudes about, decides to take on or reject, and implement an innovation.

That adoption of an innovation did not necessarily indicate a long-term phenomenon was remarked upon in some of the evidence, indicating that adoption is understood more readily as the initial action phase of scaling-up. Despite

the lack of explicit definition, adoption was frequently framed in a comparative relationship with implementation and fidelity. '**Implementation**' was usually presented as the systematic uptake of an innovation, or the process of achieving adoption in multiple levels or settings. Adoption was sometimes discussed in conjunction with '**adaptation**' – the process of modifying an innovation in some manner – in relation to concerns around the **fidelity**, or accuracy, of implementing an innovation (Salveron et al 2006).

The concept of 'fidelity' featured relatively frequently in discussions of scaling-up innovations, referring to an alignment between the originally designed form and function of component parts in the innovation and the actual practice of carrying it out. Words such as 'integrity', 'adherence', and 'faithfulness' were associated with fidelity, and it was often placed in a somewhat contentious relationship with adaptation.

'**Replication**', intertwined with fidelity and adaptation conceptually, was rarely defined. One definition explained it as the reimplementation of an established programme in a new context in a way that maintains fidelity to core goals, activities, and parameters of the original study (Card et al 2011).

'**Sustainability**' can refer to an on-going process of scaling-up an innovation or the establishment and routinisation of an innovation. IRISS refers to sustainability as the process of 'embedding'. There is some ambiguity around the meaning of sustainability because it may be viewed as the end goal itself – as a 'successful' conclusion – or as another process that continues indefinitely to integrate an innovation into the daily working and practices or service delivery. Greenhalgh et al (2004) note that 'sustainability' can be problematic because the longer an innovation is sustained, the less likely the organisation will be open to additional innovations.

Key findings: concepts and meanings

- 'Scaling-up' and its associated concepts do not mean the same thing to all stakeholders and language can shape perceptions
- Clear thinking and communication about what is meant by 'scaling-up' are helpful to the process
- It is important to ensure that any associated concepts to be used, such as 'dissemination', are fully explained and understood

Talking points

- How is 'scaling-up' and other related terms understood in relation to an identified innovation and setting?
- Does the use of the term 'scaling-up' accurately represent the process being planned and its objectives?
- How might different positions of authority and power affect the direction and flow of the scaling process?

Follow-up in the Signposting Guide

- A report produced by TEPSIE, a research collaboration between six European institutions aimed at understanding the theoretical, empirical and policy foundations for developing the field of social innovation in Europe, presents alternative frames for thinking about 'growing' social innovation. Read Davies 2014 to learn about typologies of social innovations and case studies that explore what the spread of social innovations looks like in contexts that go beyond organisation growth
- An initiative to bring together representatives of stakeholders from implementation science to discuss broader scale-up and spread of effective health programs at the regional, national, or international level resulted in a key conference. To read the findings and recommendations for advancing scale-up activities that resulted from this conference, read Norton et al 2012

6.2. What is scaled up, and when?

Much of the evidence reviewed did not explicitly engage with the rationales of what types of innovation were to be scaled-up or when scaling was deemed appropriate beyond referencing the evidence-base or effectiveness of an innovation. When and what is scaled revolves around the relationship between evidence and innovation (Pennacchia 2013). Across the fields, at least some evidence is required before scaling: of effectiveness, in different settings or at least through some kind of evaluation or field trial; of versatility for some fields; of benefits or advantages in relation to the current practice.

Issues over what is scaled up and when such scaling is deemed appropriate or beneficial are intertwined: deciding factors in embarking on the process of spreading an innovation include whether or not certain aspects of an innovation are considered 'desirable'.

How 'desirable' is defined depends on multiple factors but ultimately requires some kind of success or improvement. Success factors are bound up with both 'when' and 'what' considerations - when is an appropriate time for scaling-up an innovation is linked to what kind of evidence is available at that point in time. Similarly, an innovation seen as worthwhile, and therefore a contender for scaling-up or out, depends on what the wider social and political forces consider to be those needs or issues requiring innovative strategies to address them.

What is scaled?

What is being scaled can be broad, big, and complex or specific, small, and simple. For example, broader and more complex innovations included:

- Policies and policy agendas
- System-wide innovations such as management systems or technological systems

- Initiatives or approaches that focus on cultural change or overarching principles
- Methodologies, paradigms, or orientations across a sector or organisation
- Programmes that include multiple projects or interventions

Examples of the more specific and simple innovations being scaled up are usually targeted at particular needs, populations, or problems and include:

- Initiatives that are more targeted
- Projects
- Services
- Tools and products
- Interventions

These two 'levels' are related, and the distinction between them can easily blur.

Scaling by fields

Innovations scaled up in fields examined in this review could be categorised as both broad and specific, but typically they did tend to cluster.

Those fields that were more definite in their clustering towards broad and big scaling of innovations were:

- Energy, environment, and agriculture
- Policy and governance
- Innovation, complexity, and organisational management

Fields that were relatively evenly distributed across broad and specific were:

- Technology and Information & Communication Technologies
- Public Health
- Primary Care and Clinical Medicine
- Education

Those fields that tended to scale-up more targeted projects and interventions included:

- Social care
- Justice and Criminology
- Economics and marketing

Influential factors on what is scaled and when

Being evidence-based is the most common requirement for an innovation to be spread and scaled-up. Innovations demonstrated to be effective by having a positive impact on a problem (Elliot et al 2004) or by reporting on successful trials (Naylor et al 2010) were most often scaled up. To demonstrate effectiveness, most innovations needed to have been evaluated and supported by empirical data, published in reports or in peer-reviewed journals (Barnett et al 2011; Bell et al 2007; Ozer et al 2010; Salveron et al 2006). The scaling process is best served by having as many of the issues and troubles identified in evaluations addressed and resolved before beginning the scaling (Littlejohn et al 2003).

The type of evidence used to demonstrate an innovation's effectiveness needs to be appropriate for the type and scale of innovation. Randomised control trials (RCTs) can be important for determining effectiveness and cost-effectiveness (Janus et al 2012; Liberman 2007). However, there are many other kinds of evidence, for example, field trials or community-based trials to demonstrate generalisation of effects (Lindsay and Strand 2013). Innovations in the social realm are often not able to be subject to RCTs for ethical reasons and due to the logistics of complex social worlds (Salveron et al 2006). Being subject to an RCT may not be indicative of an innovation's ability to be scaled-up, as poor implementation and sustainability may still be experienced (Hendy et al 2012).

Ideally, innovations should have evidence relating to the 'real-world' (Hoagwood et al 2014; Miller and Shinn 2005; McDonald et al 2006). The advantage of trials in 'real-world' settings is that the generalisability of the effects are somewhat proven (Lindsay and Strand 2013). Thus, the scaling process becomes possible when an innovation is seen to demonstrate effectiveness through evidence of benefit to users (Dworkin et al 2008). Focus may be best placed on 'good enough' evidence that is sufficient, of good quality, and supports effective delivery, rather than searching for 'perfect data' (Parker and Leadbeater 2013).

Innovations that meet identified needs of service users, communities, or populations are most commonly scaled up or out. For instance, when

external research or policy identifies a gap in provision and support or a problem for which the current approach is not working well, the scaling-up of an innovation becomes an obvious consideration (Ashby et al 2007; Hoppe 2012; Sexton et al 2006). Innovations that can deliver to underserved populations or simplify services for 'over-served' populations are encouraged for scaling-up (Christensen et al 2006).

The demands of consumers (of goods or services) can highlight problems and gaps, and create a greater motivation for addressing the problem through an innovative solution (Davis et al 2006; Nielson et al 2014; Redmond 2013). Innovations that clearly emphasise client benefits are more likely to gain enthusiasm from all stakeholders (Cunningham et al 2012; Strindhall et al 2007). The rationale of an innovation to improve circumstances and outcomes for clients, whether designed in response to the clients themselves or those delivering the services, makes an innovation more attractive for scaling (Schalock and Verdugo 2013; Vedel et al 2013).

Innovations that maximise financial resources are good choices for scaling-up. Innovations to be scaled should be well-matched to the implementing setting as costs of implementation, especially with fidelity, can be enormous (Hoagwood et al 2014). As most sectors and service organisations are under financial pressures, innovations that are cost-effective are often chosen for scaling-up (Vedel et al 2013). Because of financial constraints, innovations that incorporate considerations of scaling-up into their original design may be easiest to spread and adopt (Penuel and Fishman 2012).

Changes in the funding agenda may shape what innovations are scaled up and when the scaling occurs. Potential or existing funder's interests and agendas may expand and thereby funds for scaling-up become available (Elliot 2004; Gage et al 2014). For instance, a government may create a new agenda for mitigating climate change, making relevant innovations more likely to be scaled up (Bauer et al 2014), especially if there is mounting public pressure (Massey et al 2014).

Social and political forces may re-prioritise certain problems or issues, creating an opportunity to gain the support and buy-in from multiple stakeholders necessary to scale-up an innovation (Schalock and Verdugo 2013). The need to stay competitive can cause certain innovations to be scaled up, particularly those that are tools or products (Redmond 2013). Pressure from surrounding regions or organisations which have adopted or implemented an innovation can cause the further scaling-up or out of the innovation (Adams and Jean-Marie 2011; Buhrs 2003; Massey et al 2014). Similarly,

an external occurrence, such as data becoming more accessible, can instigate scaling-up an innovation in order to maximise that opportunity (Skogan et al 2005). Scaling-up innovations may help to usher in policy, or follow on from engagement with policy development (Gage et al 2014).

The importance of evidence in relation to innovation means that evolving research findings and agendas can affect what is scaled and when. There is a distinct place for and requirement of research-based activities

and efforts in the scaling-up of innovations, so that new findings may highlight gaps in a particular field (Ashby et al 2007; Webster et al 2013). Academic enquiry may increase awareness regarding unmet needs or better strategies to help vulnerable populations (McCartney and Teague 2004). Research also informs establishing when the main components of an issue have been accurately identified, making the scaling of an appropriate innovation more effective (Kershner et al 2014).

Key findings: what is scaled up and when

- Innovation and research are inextricably linked, so innovations with robust evidence-bases are best, ideally from several field tests or piloting sites
- An innovation doesn't necessarily need to be subject to a randomised control trial (RCT) to be evidence-based; the type of evidence should be appropriate for the innovation with focus on sufficient, good quality data that supports effective implementation and delivery
- Innovations that explicitly address an identified problem, an under-served population, or emerging issues are more likely to be scaled-up
- The financial and human resources required for scaling-up an innovation means an innovation should 'fit well' with intended sites/settings
- Wider social and political forces play a role in determining what types of innovations get scale-up and when, so keeping up-to-date on external issues and events can help with the process

Talking points

- What is the intended purpose of the innovation – e.g. to meet a need or to address a gap - and is there a clear sense of how it will do so?
- Is there robust and clear evidence supporting the effectiveness of the innovation?
- What do you mean by 'evidence'? Is the type of evidence appropriate for the type of innovation?
- Is there available funding for the innovation, and does the innovation fit with any funding criteria?
- Have the external factors – wider social and political forces – been identified and their impact on and links with the scaling process been considered?

Follow-up through the Signposting Guide

- Innovations may incorporate considerations of 'scalability' from the earliest design stage, with the design taking into account issues of replication and effectiveness. More can be read about a framework with five dimensions of scale that can be used from the design-stage onwards from the perspective of educational innovations in Clarke and Dede 2009
- In public health prevention innovations, one study focuses on the perspectives of senior researchers and policymakers to identify intervention factors that increase potential for interventions to be scaled-up. Read Milat et al 2012 for a discussion around factors for scaling, including the role of evidence of effectiveness for a health promotion innovation to be scaled-up
- A technology study that surveyed small construction companies in the UK and examined technological innovation adoption found that the technology such companies tend to transfer more successfully is that which can contribute to the business in a quick, tangible fashion, and which can fit into existing organisational capabilities. Follow-up with Sexton et al 2006 to read more about technology transfer initiatives and the need to appreciate differences in motivations and capabilities of small and large construction companies to absorb and use new technology

6.3. What factors help scaling-up?

Characteristics and actions that enable successfully scaling-up and spreading an innovation are many and varied. Often within the evidence, the particularities of site settings, the innovation, and the stakeholders led to detailed discussions regarding the enablers involved in the scaling process.

Since there were no distinct differences between fields as to the most beneficial factors for scaling-up innovations, high order themes that emerged across the fields are described below. Differences did arise in the weight and emphasis placed on some of the enablers; for example, whether or not strong administrative support was considered to be absolutely critical or simply desirable. Assessing the validity of weight given to the enabling characteristics is outwith the remit of this review, however the level of consensus and commonality is usefully demonstrated by focusing on those most frequently discussed.

Many of the elements found to be important to the scaling process can be applied to more than one top-level theme; for example, the emphasis on adequate planning relates to commitment, infrastructure, and communication. Because of this, the groupings should not be read as a definitive categorisation, but instead demonstrate the wide-range of considerations and issues stakeholders need to be aware of when involved in spreading an innovation. While some detail is included within the findings below, more extensive details regarding the facilitators of scaling-up innovations can be found in the evidence listed in the Signposting Appendix.

Enablers for scaling-up

Preparation & compatibility

Compatibility is important between the innovation and new setting regarding goals and objectives; priority population characteristics; and agency practices and values (Card et al 2011; Minnis et al 2010; Schalock and Verdugo 2013). Determining whether or not the intended site(s) in which an innovation is to be implemented is ready is a first step in the scaling process (Elliot and Mihalic 2004). The process of scaling-up an innovation should begin with all stakeholders understanding the purpose of innovation, as consensus builds confidence (Zeldin et al 2005).

There is no set recommendation for determining how long scaling-up an innovation will take, but allotting adequate time is key (Edvardsson et al 2011; Gask et al 2008). Timescales for smaller, more geographically isolated sites can be longer, as can timescales for more complex and larger innovations (Clarke and Stevens 2009).

For example, commitment to developing site capacity to be ready for the new innovation may be needed (Elliot and Mihalic 2004).

Realistic timeframes are necessary to develop any new skills, knowledge, and partnerships required (McKinsey Hospital Institute 2015; Morrow 2011). Extensive time resources are required of all stakeholders involved (Davis et al 2006), especially for developing and maintaining trusting relationships (Clarke and Stevens 2009).

User-friendly innovations are more likely to scale-up successfully. This includes those entailing shorter assessment and implementation protocols and those requiring less time and effort increasing knowledge and skills (Henderson et al 2006; Ozaki and Dodgson 2010).

Integrating an innovation with current and established services facilitates the scaling-up process and can help in gaining sanction by established bodies such as Inspectorates (Brady and Curtin 2012). Integration also encourages buy-in from community services and their acceptance of the need for the innovation (Lindsay and Strand 2013).

Expectations & perceptions

Adoption of an innovation is more likely in settings where innovative strategies and practices were adopted in the past (Chen et al 2009). Staff support is easier when they view themselves as innovative practitioners (Webster et al 2013). Building a culture that rewards and encourages scaling up innovation is conducive to the scaling process (Bevan and Fairman 2014; National School of Government 2011).

Perceptions that an innovation is highly useful (relative advantage) and of low risk if adopted facilitate the scaling process (Dunne et al 2013; Escobar-Rodriguez et al 2014; Patel et al 2013). For staff working at the frontline with clients and service-users, innovations that are perceived to accurately reflect and address the client experience will encourage adoption (Patel et al 2013; Sexton et al 2006). Similarly, perceived pressure from clients or service-users for service delivery personnel to be more knowledgeable about what the innovation represents (e.g. technological capacity) increases adoption (Dunne et al 2013).

Realistic assessments regarding new skills and responsibilities expected for scaling-up any innovation are needed (Lambooi et al 2013). There should be transparency about what the innovation will look like in the new setting, scale, or form (Minnis et al 2010), and all deadlines and expectations should be explicit and communicated simply (Littlejohn et al 2003).

Communication & interactions

Clarity regarding benefits, operational attributes, and goals is critical (Pearson et al 2008; Davis et al 2006; Morrow 2011). Any proof of effectiveness, means of diffusion, and the rationale for the scale-up should be regularly communicated to all stakeholders (Barnett et al 2011). Communicating the innovation as responding to a perceived need increases motivation (Brady and Curtin 2012).

A rigorous dissemination plan should be drawn up (Henderson et al 2006). Knowledge and experience regarding the innovation being scaled up will need to be inserted into the plan with explicit dissemination activities formulated (e.g. making protocols and plans widely available) (Korteland et al 2008). Dissemination may need to be reshaped or redefined for different audiences or purposes (Johnson et al 2005).

Knowledge exchange and sharing platforms facilitate the scaling process. Local implementation stories, successes, and guidance should be compiled into an accessible, central resource (Jagodic et al 2009; Morrow et al 2012). Established networks such as attendants at a conference or established list serves should be utilised (Lozner 2004; Skogan et al 2005). Virtual interactions can facilitate communication (Hoyles et al 2013). Exchange can be facilitated by responsive management (Shaw et al 2009) and regular feedback (Shea et al 2006), and peer-to-peer sharing can be highly influential (Talukder and Quazi 2011).

Collaborations & partnerships

Boundary-crossing for a wider, more comprehensive knowledge and experience base is integral to the scaling-up process (Dalitza et al 2012). Such collaborations can increase variety, creativity, and knowledge utilisation (Nielson et al 2014; Schneider et al 2012). Partnerships that cross-administrative boundaries, functional specialisms and divisions in the public sector are particularly beneficial (Ashby et al 2007).

Engaging social networks in the scaling process is a critical influencing factor for promoting an innovation and the decision to adopt or implement it (Talukder and Quazi 2011). Innovations spread via peer-to-peer social processes are more likely to be embraced as opposed to more top-down or removed sources (Ryvicker et al 2008). Informal networks also represent free learning, which is particularly relevant for ICT due to its short life cycle (Jagodic et al 2009).

Involving clients and service-users, as well as frontline staff, from the earliest stages ensures diverse influences and relevant changes (Essén and Lindblad 2013). When service users' and communities' expertise are

involved in all stages, the mobilisation of social capital can make the scaling process more welcome (McMichael et al 2013). Instructing staff and service deliverers to implement a change without including or consulting them can demotivate and prohibit widespread adoption (Albury et al, no date). Obtaining feedback from prospective consumers on the innovation prior to implementation could increase the relevance of the innovation to them (Cederbaum et al 2014).

Involving state policy leaders in the role of an innovation can increase the power behind the scaling process (Grinstein-Weiss et al 2009; Patel et al 2013). Incentives and other reinforcements connected to national policy and wider social discourse can encourage buy-in and adoption (Grinstein-Weiss et al 2009). One way of involving influential partners is through the elite mobilisation strategy, whereby influential policy players are incorporated in to the pre-decision phase to ensure a significant stake from the outset (Brady and Curtin 2012). Soft political pressure can encourage adoption of innovations (Korteland et al 2008).

Location

A careful and planned approach to contextualisation of an innovation by the scaling team is key. Usually additions to an innovation do not alter its effectiveness, but adaptations that are not well thought out could (Gibbons 2004). Use of existing knowledge, research and data regarding the context, situation, and demographics can help to understand implementing an innovation in a new setting (Browne et al 2013; Knickel et al 2009).

Inter-regional clustering in terms of policy and practice help to foster diffusion and spread of an innovation (Gibbons 2004). Diversification through alliances with other providers of services and those with an interest in the issues within a region can help an innovation to grow (Lyon and Fernandez 2012).

Community needs and capacity should be considered (Dworkin et al 2008). Honouring local knowledge, understanding local demands and being aware of local politics can all encourage the adoption of innovations (Bauer et al 2014; Welsby et al 2014).

Infrastructure

Implementing skills and capacity audits of the organisation or setting can help determine the feasibility of scaling-up an innovation as well as which human resources are already present and which will need to be recruited (Gask et al 2008; Hoppe 2012; Jauhiainen 2008).

Administrative support and business efficiencies may need to be improved to facilitate the scaling process. Elements such as high performance teams, open access and up-to-date information systems, centralized scheduling

practices, and concurrent documentation procedures can help (Hoagwood et al 2014; Schalock and Verdugo 2013).

Training should be well planned and resourced.

Training should begin before implementation (Dworkin et al 2006) and multiple individuals and tiers should be involved in delivering it (Gask et al 2008). Ideally, all staff should be hired prior to training, administrators and managers should attend, and multiple methods of learning (e.g. videos, role-playing) should be used (Elliot et al 2004). Incorporating innovation into professional development courses proved a quick and sustainable means of achieving innovation across organisations (Dekker and Feijs 2005).

Technical assistance and intensive exchange between the innovation originator or pilot team and the new setting and team aids scaling-up

(Littlejohn et al 2003; Nixon et al 2010). Through supervision, mentoring, and consultation the new setting can gain the expertise of the originators (Shapiro et al 2012) and troubleshoot effectively (Buzhardt et al 2007). Sites where the practical equipment is adequately sourced are more likely to adopt the innovation (Skogan et al 2005). Taking a proactive approach to technical assistance by making it easily accessible ensures the quality of the communication and support (Kegeles et al 2012).

Leadership and influence

Leadership and influence need to be multi-directional, not just top-down (Grinstein-Weiss et al 2011; Morrow 2011). Bridging the gap between top-down and bottom-up

spread should be a primary goal for innovation leaders (Watson 2014). One way of connecting the tiers is to recruit champions from all levels and encourage their identification with 'lower order' groups (frontline and workgroup members) (Hendy and Barlow 2012). Technical assistance and mentoring is best implemented by leaders as an exchange rather than top-down directive (Kegeles et al 2012). However, it has been suggested that champions may be their most advantageous at the inception stage (Hendy and Barlow 2012).

Distributed leadership ensures that champions and advocates are located at all levels within an innovation setting and across all partners' organisations

(Meijer 2014). This not only helps with shared responsibilities and work, it also encourages buy-in and a sense of ownership across stakeholder groups. The role of top and senior management is critical for giving legitimacy and authority to an innovation and champions involved (Hendy and Barlow 2012), but all staff and employees need to play a role in the public acceptance of an innovation (Barnett et al 2011).

Participative leadership is effective, whereby key influencers are seen to be regularly engaging with the scaling process

(Schalock and Verdugo 2013). Leaders should regularly access all connections with social and professional networks who may have any interest in adopting an innovation (Hoppe 2012). Ideally, there will be a centralised strong 'change agent' that programme champions at each site (Harting et al 2005).

Key findings: enabling and success factors

- Pairing the innovation and original sites to the settings in terms of compatible goals, objectives, values, and population characteristics is critical
- Scaling-up an innovation needs large amounts of time and commitment
- Communication needs to be as clear and direct as possible, and happen frequently between all partners and stakeholders
- People's expectations and perceptions help to shape the scaling-up process
- Involving as many groups of stakeholders as possible from a very early stage in the scaling-up process helps with buy-in and influence

Talking points

- Has a realistic and comprehensive assessment of available resources – financial, human, and contextual – been carried out and communicated to colleagues and partners?
- Have the ways in which the new setting(s) differ from the originating context been mapped out, understood, and planned for?
- Are there multiple means and ways of communicating within the organisation and across partnerships?
- What types and means of communication might help to get all stakeholders involved and sharing?

Follow-up through the Signposting Guide

- A policy and governance study into enabling drivers of the diffusion of innovative organisational forms in Denmark found that a high concentration of administrative professionals and the presence of incentives to demonstrate innovative abilities were key to policy innovation. Bhatti et al 2011 also discuss findings of regional imitation in policy diffusion and the importance of needs-based innovation
- Within the context of non-profit (third sector) programmes and social innovation diffusion, a US-based study considers organisational and environmental factors in the state-level spread of a social educational innovation aimed at child carers. To read more about the process and key factors in the diffusion of the T.E.A.C.H. Early Childhood Project across four states, follow-up with Kerlin 2009
- A study focusing on complex health care settings describes two case studies of scale-up and spread, emphasising the importance of self-organisation, a process whereby local interactions give rise to patterns of organising. The US-based study, Lanham et al 2013, argues for particular attention to be paid to local contexts and available resources, with scale-up stakeholders needing to improve collaboration and 'interdependencies' to increase the probability of spreading effective practices across diverse settings

6.4. What are the barriers to scaling-up?

Many of the barriers discussed throughout the evidence were effectively the negative or lack of the identified enablers to scaling-up innovations. For example, where adequate funding from secure sources was identified as an enabling driver to the scaling process, the lack of funding or insecure funding relationships can be a barrier to an innovation being successfully scaled up.

However, some barriers are not simply the lack of the enabling characteristics, and are listed below. As in the case of the facilitating characteristics, these can be cross cutting, for example inconsistent expectations and perceptions may affect momentum, capacity, and collaborative working.

It should be noted that other barriers exist that are difficult to investigate and not in the literature, including personal characteristics of individual people, a basic resistance to change within an organisation, or over-caution across the entire setting.

Commonly encountered barriers

Disharmony

Unresolved tensions around the larger or core elements of an innovation. A lack of agreement around either the rationale for adopting the innovation or the interpretation of the supporting evidence can be particularly difficult to overcome (Bradley et al 2006; Butler 2013; Dunne et al 2013; Morrow et al 2012). Viewing the scaling process through very different lenses can pose problems, with those in policy-oriented and top-level roles

more likely to focus on macro-level concerns while other stakeholders focus on micro-level concerns (Lambooi et al 2013; Savlenan et al 2011). Unresolved issues can prevent synergistic working (Harting et al 2009; Wainwright and Waring et al 2007).

Inconsistent perceptions, such as differing ideas about the level of risk (Salveron et al 2006; Sexton et al 2006). Perceived loss of autonomy, either regarding personal discretion or within context of increased surveillance and monitoring by management, can be hampering (Meier et al 2013; Nielson et al 2014). Scepticism regarding the innovation's usefulness (Doyle et al 2013) or methods (Mathers et al 2014) can slow the process of scaling-up. Emphasis on stories of failure or trouble from other settings can negatively shape perceptions of the scaling process at the new site (Ingle et al 2007).

Shortfalls

Resource difficulties – both financial and human – could derail or stall the scaling-up of an innovation. Financially, insufficient funds to last the length of the scaling-up process were the most detrimental (Massey et al 2014), while in terms of human capital, a lack of qualified or committed personnel was difficult to surmount (Días-Puente et al 2009). Excessive use of both types of resources could be problematic: overburdened key roles, such as an innovation site coordinator who was also an active teacher (Buzhardt et al 2007), or an exceeded budget that resulted in having to seek further investment (Nielson et al 2014; Sexton et al 2006).

Flagging momentum or support. Too much reliance on a small number of advocates or champions, or on one organisational partner, can lead to organisational fatigue

(Sievanen et al 2011). Momentum may also be lost if the outcomes are too long-term to be visible in the earlier phases of scaling-up and the demonstrable benefits are obscured (Olstad et al 2011). Technical support that ebbs or stops too soon was a commonly found barrier (Ashby et al 2007; Buzhardt et al 2007; Elliott and Mihalic et al 2004).

Isolation & boundary-making

Geographic or collaborative isolation can stall the scaling-up process. Geographically, areas less densely populated or remote can prove challenging in building social networks and infrastructure (Clarke and Stevens 2009; Choudrie et al 2007). A lack of integration between services can isolate an innovation and stall the scaling process (Brady and Curtin 2012). An unexpected 'isolation' can also result from the interference between different scaling and innovation projects implemented at the same time within the same region, resulting in a lack of coordination and collaboration (Castelnuovo 2009). Poor advice networks and a lack of bridging ties will be problematic for partnership working (Clarke and Stevens 2009; Díaz-Puente et al 2009).

Silo thinking & behaviour discourages cooperation. Many professional or practice groups can become 'self-sealing' to outside individuals, groups, or organisations, which slow or block effective knowledge exchange and learning between partners and collaborators (Bauer et al 2014; Morrow 2011). When individuals tend to operate within single subject or uni-professional communities of

practice, this 'sticky knowledge flow' is more common (Ferlie et al 2005). Sometimes the lack of knowledge and experience exchange can be attributed to little trust between groups or a sense of competition (Hoppe 2012; Korteland et al 2008).

Design & setting difficulties

Too simple or complex an innovation design for the setting. While there are no specific rules for determining whether an innovation design is adequate but not too complicated for successful scaling-up, too simplistic a model can be a barrier (Miller and Shinn 2005) as can over-complexity (Morrow et al 2012) when it comes to capacity and integration. Scaling-up innovations in the social, health, and education fields in particular are subject to tension between a complex innovation being less likely to spread or be sustained and the real world settings involved requiring such complexity to address the contexts (Salveron et al 2006).

Reluctance for wider organisational change. Evidence-based innovations require some degree of internal changes by the adopting organisation (Walker et al 2014), and a new set of organisational norms and behaviours should be adopted that reflect core principles of the innovation (Watson 2014). Sometimes, the wider changes required may be bureaucratic mechanisms that need to be simplified, streamlined, or integrated (Cederbaum et al 2014; Shapiro et al 2012).

Key findings: barriers to scaling up

- Scaling-up an innovation is complex, with many 'moving parts' that need managing and attention
- A lack of understanding due to different perspectives and visions are problematic
- Resources and stakeholders' energy need to be taken into account
- Reluctant partnership working can be detrimental to scaling-up an innovation

Talking points

- Have the likely differences in working styles and contexts between partners been identified, understood, and incorporated into the scaling strategy?
- Is there a consensus across all partners on the expectations, aims and goals of scaling an innovation?
- Are those in leadership positions encouraging cross-boundary knowledge and experience sharing? How?
- Has adequate technical assistance and support been factored in across the whole of the scaling process?

Follow-up through the Signposting Guide

- The difficulties and challenges faced during the implementation and adoption of an English NHS complex public health innovation highlights the importance of the 'fit' of an innovation with the core characteristics of the setting. Read Mathers et al 2014 for details around challenges related to resources, buy-in and scepticism, unclear role boundaries, and mismatched perceptions

- A study examining the assessment of the development and adoption of environmental management systems (EMSs) across the third sector in the UK addresses some of the factors of weak adoption. Follow-up with Edwards et al 2013 for a discussion that uses case studies to demonstrate how ambiguous government policy, a lack of sustained leadership, and a lack of knowledge around the innovation contributed to weak adoption
- A US-based study into the effective scaling-up of evidence-based educational practices identifies and discusses barriers to implementing innovations at a distance from the original research and development team. Buzhardt et al 2007 go on to identify strategies for overcoming barriers to implementation including limited communication between practitioners and research staff, lack of support for the innovation from leaders, and unexpected changes in school

6.5. What are mechanisms for sustainability?

How sustained an innovation is in a new setting is one way of assessing the 'success' of the scaling-up process. Where many of the barriers to scaling-up innovations were the lack of enabling drivers, many of the mechanisms for sustaining an innovation were the continuation of those same facilitating drivers. Commonly, the evidence suggested that partnership working, committed leadership, adequate resources, and a robust infrastructure were integral to embedding the scaled-up innovation and ensuring the sustainability.

Within the grey literature 'sustainability' was not always explicitly addressed, or was simply referred to as an aim of growing innovation. Some evidence in which sustainability was discussed echoed the concerns and issues found within the peer-reviewed literature, however, there were some notable exceptions in relation to what was emphasised as most important. A guide to spread and sustainability produced by Healthcare Improvement Scotland included its sustainability model, which placed staff factors – particularly clinical and senior leadership – as the most significant for achieving sustainability (Ibanez de Opacua 2013). As noted above, committed leadership was integral to sustainability in the rest of the evidence, but it was not usually listed as the over-riding factor.

Similarly, a report on scaling up innovation in the public sector underlined the importance of funding from diverse sources in order to ensure sustainability (National School of Government 2011). While much of the academic literature acknowledged that adequate funding was necessary for embedding an innovation, discussions on sustainability usually moved swiftly into non-financial dimensions.

Mechanisms for sustainability that are considered to be complex and less easily declared in their relationship to securing sustainability are considered below.

Mechanisms for sustainability

The translational problem

Balancing fidelity and adaptation. The degree of fidelity required for an adopted innovation to 'work' effectively is disputed within the evidence, and it is largely agreed that finding a balance between fidelity and adaptation, or 'adoption versus adaptation', is a complicated and elusive issue. The debate around balancing fidelity with adaptation is more pronounced in the fields of public health, primary care and clinical medicine, education, and social care, in which innovations are often programmes, interventions, and models. This 'translational problem' can be summarised as:

'Adherents of programme fidelity believe that working to ensure that adopters make as few modifications as possible is key to retaining the success of the original program; on the other hand, adherents of the program adaptation perspective counter that it is only through allowing adopters to change a program to suit their needs that the likelihood of sustainability is increased' (Dearing et al 2006).

Many discussions around this mechanism for sustainability acknowledge the ideal is to replicate an evidenced innovation in a new setting with no changes to the original, but there are usually mismatches or discrepancies between the characteristics of the new priority population, implementing agency, or local community and those of the original programme (Card et al 2011).

It has been suggested that the debate on adoption versus adaptation centres on three perceptions of what constitutes 'success' in diffusion: (1) the effectiveness of a transplanted innovation in terms of achieving its desired outcomes; (2) the extent (spread) of diffusion; and (3) the degree to which the innovation is sustained in its new context/setting (Salveron et al 2006). In this model, the

more emphasis that is placed on an innovation replicating exactly its intended outcomes, the more important fidelity will be; the more adaptable an innovation is to the needs and contexts of new settings and service-users, the greater the likelihood of spread and sustainability in some form.

Maintaining the core components. Across the evidence, there is emphasis that in ‘real world’ settings in which adaptation must be considered, the core components of an innovation need to remain inviolable (Clarke and Dede 2009). An innovation’s core components are those required to represent the theory and internal logic that most likely produce the main effects – and therefore should not be significantly modified or dropped. Identifying and maintaining the integrity of the core elements is frequently directed (Gabriel 2014; Harshbarger et al 2006; Kilbourne et al 2007; McDonald et al 2006).

The difficult task is to determine how to go about adapting an existing, empirically-validated innovation to better suit a new context and to maximize its transferability, while preserving what made—or is believed to have made—it effective in the first place (Card et al 2011; Kilbourne et al 2007). Much of the evidence emphasises that adaptations are best when they adjust for contextualisation and locality factors (Ozer et al 2010). Acceptable changes made to an innovation can be theory-driven, to bring the examples and situations ‘closer to home’; driven by local constraints and realities; or by the discovery of unmet needs or underserved populations (Bell et al 2007).

Determining whether or not adaptation will increase adopters’ and recipients’ acceptance of an innovation. For example, it was suggested that innovations designed to withstand the adaptations that were seemingly inevitable with implementation at each new site were appreciated by the adopters (Hoyle et al 2013). When considering how to adapt an intervention, considering not only more fixed dimensions (age, ethnicity group, language) but also contextual dimensions (their social environment, the heterogeneity of the client group) was encouraged (Davidson et al 2013). However, determining which (if any) activities and services may be eliminated or substituted should be well researched and thought-out (Card et al 2011).

Thinking broadly

Incorporating the bottom-up approach. This does not indicate top-down drivers are not necessary, but involving staff/service providers and clients/consumers in the scaling-up process helps to generate culturally relevant elements and increases a sense of utility (Cederbaum et al 2014). This approach can also promote ownership of an innovation, which supports sustainability (Doyle et al 2013). Integrating the skills and knowledge

training required by any innovation into the professional development and professional networks of an organisation or setting decreases the perceptions that decision-making is centralised (Ellison 2009).

Continuum thinking and acting. Thinking beyond the funding timescale and locating an innovation within a continuum of past and future practices/services contributes to the likelihood of an innovation becoming sustained (Carr and Lhussier 2007). Innovations need to be considered within the wider spectrum of goals, services, and practices of an organisation so they are not disjointed. This kind of ‘continuum thinking and acting’ applies to both time and scale and facilitates the innovation’s integration. Regarding time, it is important to consider the coherent narrative of an organisation and how an innovation fits within and connects to the past, present and future workings so that it makes sense to individuals involved in the scaling process. The continuum approach can also be applied to a scale-up strategy that ranges from internal growth and change within an organisation to wider dissemination of practices and learning (Lyon and Fernandez 2012). When large-scale transformations and innovations are being enacted, examining what was sustained according to the original plan should be complemented by questions of how the change unfolded in reality and why (Greenhalgh et al 2012). Presenting the adoption of innovation as a continuous process can help it to become integrated in the setting or organisation (Johnson et al 2005). If possible, continuum thinking and acting should be incorporated into the on-going training and development involved in scaling-up an innovation (for example, how it fits within the framework of all services provided and how such training may shape future working) (Vismara et al 2013).

Connecting to and embracing wider social and political agendas. Demonstrating connection to national policies can not only motivate stakeholders, but can also help with securing resources (Morrow 2011). Being aware of external fluctuations (e.g. in policy agendas, legislative measures, or social movements) can help to create a lasting sense that the innovation is relevant in the ‘bigger’ events and trigger or amplify stakeholder reactions (Essén and Lindblad 2013). Connecting to wider socio-political agendas and activities can also facilitate cross-boundary support and interest in the long-term success of an innovation (Adams and Jean-Marie 2011).

Marking progress

Incorporating assessment and monitoring from the beginning (Lindsay and Strand 2013; Penuel and Fishman 2012). Regularly mapping ideas, reviewing organisational context, and assessing capacity needs throughout the scaling-up process are key (Chamberlain and Aarons 2010; Morrow 2011).

Monitoring and evaluating the scaling process iteratively. The process needs to be on-going, requiring a long-term view during which findings from earlier stages of monitoring are incorporated back into scaling the innovation (Kerlin 2009). On-going evaluation also helps to understand and demonstrate what works in what circumstances and why (National School of Government 2011). The benefits of innovation may take time to become

clear and measurable, and evaluation should encompass the development and implementation of the innovation, as this learning can often be applied to new ideas and projects (Audit Commission 2007).

Diversifying assessment and monitoring. One way to ensure effective monitoring is to work with innovation researchers or developers to decide methods for assessing fidelity to the core practices (Miller and Shinn

Key findings: mechanisms for sustainability

- Good practices and strategies that facilitated an innovation to be scaled-up in the first place need to be continued in to the long-term
- Determining the balance between fidelity and adaptation is difficult but necessary, as too much rigidity can result in incompatibility but too many changes can reduce the innovation's effectiveness
- A careful and informed approach is needed to determine whether an innovation can be adapted, and if so, how much and at what points
- Monitoring and evaluation are not used only for pilots or field tests – this process needs to be on-going throughout the scaling-up process

Talking points

- Can you link with the innovation designer or originating site to identify the core components necessary for effectiveness?
- Are there planned 'review points' across the scaling where key partners can review the roles and resources needed at different phases, and consider changes in strategy?
- Has the scaling-up of the innovation been situated within a broader continuum of services or practices of the setting(s), with key leaders reinforcing this alignment?
- Have clear and consistent means of monitoring and assessment been incorporated into the scaling process, with agreed outcome measures and indicators?
- How can you use feedback loops and monitoring data to inform what is needed (e.g. people, infrastructure) for sustainability?

Follow-up through the Signposting Guide

- The NHS Institute for Innovation and Improvement Sustainability Model (SM) was designed to help healthcare teams recognise determinants of sustainability and take action to embed new practice in routine care. Doyle et al 2013 describe a formative evaluation of the application of the SM by the National Institute for Health Research Collaboration for Leadership in Applied Health Research and Care for Northwest London (CLAHRC NWL). This study indicates the SM provides a potentially useful approach to measuring teams' views on the likelihood of sustainability and prompting action, and emphasises that component redesign and capacity building and facilitation may be needed to deploy the SM
- A UK-based educational report on spreading innovations across local authorities uses examples from local government innovations to discuss ways of building sustainability into networks with the aim of achieving self-governance. Read the joint publication from the Department of Education and Skills, National College for School Leadership, and Improvement and Development Agency 2005 for more local government examples.
- The sustainability of health promotion efforts is the focus of a Swedish study on the facilitators, barriers, and requirements for sustainability as experienced by professionals two years after finalizing the development and implementation of a multi-sector child health programme in Sweden. Follow-up with Edvardsson et al 2011 to read about the importance for both practitioners and researchers to pay attention to parallel processes at different levels in multi-disciplinary improvement efforts intended to ensure sustainable practice change

2005). Another is to document and use innovation change and logic models, scaling-up strategies, and dissemination plans (McEvoy 2013). The use of electronic platforms for measuring and tracking specific clinical practices and outcomes can be used in health innovations (Hoagwood et al 2014). By taking a rigorous and well-planned approach to monitoring the implementation, immediate feedback about implementation to local site implementers can be given and evidence of benefit can be demonstrated to stakeholders (Elliot et al 2004).

6.6. Key messages in scaling-up

Scaling-up innovations and encouraging change

The following key messages are distilled from across the body of evidence, taking messages from the recommendations, guidelines, and strategies. Some of the ‘take home’ messages stem from wider discussions relating to whole-system change or service transformation, while others are more practically relate to scaling-up or scaling-out specific innovations. They are intended as messages that can be used in conversations and strategic planning sessions to help scaling-up innovations.

Size and complexity matter in scaling-up innovations.

Complexity itself can derail the spreading process. All innovation needs to be well-planned, but innovations that are broader in scope, such as programmes of work, policies, or systems, may in fact in require multiple innovations targeted at all levels of the organisation involved: strategic, operational, and frontline. One way of thinking about it is to consider a suite of interventions or changes that together make up the innovation. The more complex the innovation, the more planning and strategy required.

While planning and strategy are critical, the non-linear nature of spread means that not all dynamics and consequences of an innovation can be planned for in advance. There are intended and unintended effects when change takes place, and the meanings attached to any innovation by different stakeholder groups will sometimes be unanticipated. Informal communications and interactions contribute to the non-linear dissemination and adoption of innovations. Having leaders and influencers who feel comfortable with uncertainty and can work with ‘messy’ and fluid processes is beneficial. While strategic coordination is required, expect the unexpected as well.

Collaboration and networking are crucial. Change and scaling-up innovations relies more on influence than control. Peer-to-peer interactions and social networks play a positive and significant role in the usage of innovation, and collaboration should happen across

sectors, departments, organisations, and professional groups when at all possible. All levels of partnerships and collaborations are fundamental to encouraging change within an organisation between peers, across the tiers of positions, as well as influencing change across partner organisations and institutions. Building trust and understanding in relationships facilitates the influencing, and the more time devoted to the relationships, the easier they are to maintain.

Facilitating information exchange, collaboration and using existing knowledge is critical for scale-up and spread.

Synthesising existing knowledge, facilitating the exchange of new and emerging knowledge, experiences, and lessons helps to develop practical means of scaling approaches. Communities of practice, knowledge exchange communities, and ‘boundary-spanning’ networks are all critical to building scaling strategies. A mixture of communication methods are most effective – digital, online forums and networks as well as regular face-to-face interactions that facilitate relationship building and trust amongst networks and partners.

Scaling innovations and transformational change can take an emotional, mental, and physical toll on people.

Scaling-up an innovation for new groups or settings means people will be put into a state of transition. The motivation, commitment, and energy required can lead to organisational fatigue, and the stress brought on by the change can affect the process. Key stakeholders need to be aware that transition has an emotional and mental impact, and consistent communication and engagement can reduce stress and anxiety. Furthermore, collaboration and engagement across all tiers and partners involved in the scaling process can help alleviate too much strain on individuals.

Any innovation being scaled up requires adequate infrastructure.

For each setting, a dedicated site coordinator or project team leader should be in place who can physically meet with other stakeholders face-to-face. No leader should be expected to fulfil dual roles, for example, being site coordinator for the innovation and being an active teacher. The team involved in the scaling-up of an innovation should be considered carefully to meet needs, and the team composition should be reviewed regularly at various stages to ensure the skills and competencies needed are fulfilled.

The innovation narrative is very important. Any innovation to be scaled up is best accompanied by a clear and shared narrative regarding its rationale, aims, and benefits. Having all partners signed up to the narrative encourages them to be ready and willing to communicate it at all opportunities, acting as ambassadors. It is key to

remember that more than one message may be needed to communicate with different stakeholder groups, and the key narrative may need updating due to wider socio-political changes.

Multi-directional influence and drivers are most effective. Cross-scale interplay and sharing of power through combining top-down and bottom-up approaches is extremely important in spreading innovations. The process of spreading an innovation will not work without either the senior leaders or the frontline deliverers. For an innovation to become sustainable or embedded, a sense of ownership

across all stakeholders helps, so that each setting locally 'owns' the innovation.

Leadership in spreading innovations is most effective if distributed. Locating leaders in positions relating to budgets and finance, decision-makers and managers, frontline staff and delivery workers, and well-known figureheads is necessary. By engaging leadership from all tiers, the momentum for change is dispersed, allowing responsibility to be distributed. This distribution can also help relieve stress and workloads when building up required skills and competencies.

Talking points

- What are some of the first steps in scaling-up an innovation?
- How can you prepare people before the change process, and provide appropriate on-going support while recognising that support needs may change?
- If you were look back at the scaling process two years on from the implementation of the innovation, what difference would you like to say it made?

7. Conclusion

One straightforward concluding statement regarding the scaling-up of innovations could be that there is no clear, unmistakable way to go about it; the process needs careful thought with due consideration of all elements and configurations particular to each situation.

‘Scaling-up’ is not an uncritical approach to finding an innovation that seems likely to work and transplanting it, nor is it the process of finding what research states and treating it as definitive (McDonald et al 2006). Indeed, much of the evidence warns of assuming an innovation is worthy of dissemination simply because it is ‘new’, a warning akin to Rogers’ ‘pro-innovation bias’ in which an innovation’s weaknesses or limits may not be recognised simply because of its status as an innovation (2003).

This report has presented findings from multiple fields and countries to address the issue of scaling-up innovation for large-scale transformational change, using research questions asking:

- what is meant by ‘scaling-up’
- what is scaled-up and when?
- what enables such scaling
- what hinders it?
- what mechanisms help the scaling-up be sustained?

The review was able to extract evidence relating to each question, and to go some way in providing insights about the facets of scaling-up innovation. However, there are no unequivocal answers. The overarching finding is well-expressed in the suggestion that when thinking about the scaling-up of innovations, it is essential to balance insights derived from studying ‘hard’ components (success metrics, commissioning plans) alongside the historical, economic, socio-cultural, and interpersonal influences that gave rise to them (Greenhalgh et al 2012).

8. Appendices

8.1. About What Works Scotland

What Works Scotland aims to improve the way local areas in Scotland use evidence to make decisions about public service development and reform.

We are working with Community Planning Partnerships involved in the design and delivery of public services (Aberdeenshire, Fife, Glasgow and West Dunbartonshire) to:

- learn what is and what isn’t working in their local area

- encourage collaborative learning with a range of local authority, business, public sector and community partners
- better understand what effective policy interventions and effective services look like
- promote the use of evidence in planning and service delivery
- help organisations get the skills and knowledge they need to use and interpret evidence
- create case studies for wider sharing and sustainability

A further nine areas are working with us to enhance learning, comparison and sharing. We will also link with international partners to effectively compare how public services are delivered here in Scotland and elsewhere. During the programme, we will scale-up and share more widely with all local authority areas across Scotland.

WWS brings together the Universities of Glasgow and Edinburgh, other academics across Scotland, with partners from a range of local authorities and:

- Glasgow Centre for Population Health
- Healthcare Improvement Scotland
- Improvement Service
- Inspiring Scotland
- IRISS (Institution for Research and Innovation in Social Services)
- Joint Improvement Team
- NHS Health Scotland
- NHS Education for Scotland
- SCVO (Scottish Council for Voluntary Organisations)

www.whatworksscotland.ac.uk

What Works Scotland is funded by the Economic and Social Research Council and the Scottish Government.

8.2. How the research was carried out

About the Evidence Bank for public service reform

The Evidence Bank provides appraised, accessible and action-oriented reviews of existing evidence for What Works Scotland, in response to policy and practice-related research questions.

The Evidence Bank evidence review process is used to produce this evidence review. The process has been developed within policy and practice contexts and builds on methods developed by CRFR (Centre for Research on Families and Relationships) to address well-documented issues around using evidence including accessibility, relevance, and timeliness.

Reviews are conducted within a limited time-period in order to provide timely responses. Due to the timescale, the purpose of reviews, resources available, and the types of evidence and variety of sources that are drawn on in addressing policy and practice research questions, the Evidence Bank does not conduct systematic reviews or meta-analyses. The Evidence Bank review process is informed by a range of review methods including systematic review, rapid realist review, and qualitative synthesis. The approach aims to balance robustness with pragmatism to open up the evidence base for public and third sector services.

Evidence reviews are peer reviewed by an academic expert and user-reviewed by an expert working in the relevant field.

How evidence was gathered and reviewed:

Key sources searched: Evidence was sourced using the Searcher Discovery Service of the University of Edinburgh library to run searches on a multitude of databases using various combinations of the agreed terms.

Just over sixty different searches were run in total; these ranged from broader two-term searches (e.g. 'spread*' and 'program*') to more specific three-term or phrase searches (e.g. 'policy spread in social care'):

- Approximately 40,000 articles screened according to their title and key words
- Approximately 522 articles selected as possibly relevant, with their abstracts subsequently reviewed
- 385 articles were included at the completion of the scoping stage
- The final evidence review consists of 162 articles from peer-reviewed journals and 23 publications from grey literature

Key words: Searches were conducted using combinations of:

Scal* up
 Scalab*
 Spread*
 Sustainab*
 Diffus*
 Disseminat*

Adopt*
 Roll*out
 Replicat*
 Policy transfer
 Improvement method*
 Program*
 Initiative*
 Intervention*
 Pilot*
 Innovat*
 Implement*
 Support* implementation
 Service delivery
 Appreciative inquiry
 Adapt

Third search terms were sometimes added in order to focus on specific fields:

- Social
- Social care
- Justice
- Early childhood care and education

Grey literature evidence was sourced from Google searches using the identified terms and by specifically targeting organisational websites such as:

- Nesta
- Institute for Research and Innovation in Social Services (IRISS)
- Scottish Third Sector Research Forum (STSRF)
- Centre for Understanding Behaviour Change, Institute of Public Affairs, University of Bristol
- Centre for Excellence and Outcomes in Children and Young People's Services (C4EO)
- Social Services Knowledge Scotland (SSKS)
- Institute of Health Innovation
- National Institute of Health
- Social Policy Research Unit, York University
- Centre for Health Innovation, Leadership and Learning, University of Nottingham

Date range searched: 2002-2015

Research summary:

Distribution of evidence by country

Geographic location	Evidence total
U.S.	67
U.K. (either the whole of or outside of Scotland)	45
Australia	12
Multi-country	12
Netherlands	7
Sweden	5
Canada	4
Denmark	4
Ireland	4
Scotland	4
Spain	4
Finland	2
Germany	2
Italy	2
France	1
New Zealand	1
Switzerland	1
Total	175

Distribution of evidence by country

Field	Evidence total
Education	18
Energy, Environment, & Agriculture	15
Economics & Marketing	4
Grey Literature	18
Justice & Criminology	4
Innovation, Implementation & Management Studies	31
Policy & Governance	26
Primary Care & Clinical Medicine	21
Public Health	29
Social Care	21
Technology & Information and Communication Technologies	6
Total	175

Distribution of evidence by type of data

Type of evidence	Evidence total
Qualitative	94
Mixed Method	48
Quantitative	33
Total	175

Research standards: To ensure high quality, a critical appraisal process was applied. Evidence drawn on is either peer-reviewed⁵, publicly funded or produced by government bodies. Where relevant, grey literature⁶ has been drawn on to inform the report.

Literature published in peer review journals was judged as having met the quality threshold, though papers were excluded if for example they featured unaddressed limitations or were too conceptual or problem-focussed for the needs of the review.

To quality review other literature, critical appraisal criteria for qualitative research was drawn on⁷.

Any limitations in methodology and robustness of findings are highlighted.

The draft report was peer-reviewed and user-reviewed.

Exclusion criteria:

At the beginning of the searching stage of the review, the decision was made to exclude evidence in any language except English and evidence focusing on geographic regions too different from the Scottish context socially, culturally, politically, and economically.

The review did not include evidence in which the terms or concepts of 'quality improvement', 'evidence-based practice', 'evidence-based policy', 'best practice', 'knowledge exchange', or 'knowledge transfer' were used without reference to scaling-up or its cognate terms. Only if scaling-up or spread was explicitly discussed in conjunction with any of the above terms was the evidence included.

Further exclusions included:

- Evidence that focused on scaling-up at a global or transnational level
- Evidence focusing only on quality/quality improvement/ improvement or effectiveness as there is a literature review exploring Improvement and Effectiveness is being produced by the University of Glasgow at the time of writing
- Evidence in which scaling-up or a cognate term were only briefly mentioned without any engagement with the process
- The constituent parts of the innovation were too specific to be drawn from, e.g. a pension initiative based in the US that is particularly situated within the

dynamics of the federal-state funding and taxation system

- The use of the key term was not applicable, e.g. many of the discussions of 'diffusion' within the criminology/ justice literature referred to the diffusion of criminal activities from one geographic area to another that resulted from a change in protocol or approach
- The subject matter was deemed too unwieldy to be useful, e.g. wireless technology spread across the entire European Union
- The evidence was more focused on excluded localities, e.g. the UK's involvement in the diffusion of public health interventions in developing countries

Data extraction and recording:

Data recording: Data included in the evidence review was recorded in an evidence log.

Data extraction: a standardised data extraction template was used to summarise study/publication features, link findings with research questions, and capture any other relevant themes or quality issues arising.

Relevance checking: feedback was sought from the relevant WWS lead and Scottish Government as needed to ensure relevance and accessibility.

Dates of searches: the review was conducted January – May 2015.

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Research team: Dr Kelly Shiell-Davis (lead researcher and author); Alex Wright (research assistant); Karen Seditas (Evidence Bank lead, review co-ordinator, editor); Dr Sarah Morton (What Works Scotland Evidence to Action lead, editor); Dr Nick Bland (What Works Scotland Spread and Sustainability lead)

Peer reviewer: Dr Steve MacGillivray, Senior Lecturer, Director of the Centre For Evidence Synthesis, Institute for Applied Research in Health and Wellbeing, University of Dundee

User reviewer: Chris Mieзитis, Fair Isle Nursery School, Kirkcaldy

⁵peer review is a process used to ensure the quality of academic work through a process of academics with similar expertise reviewing each others' work.

⁶Grey literature refers to documents that are not found through publishers or databases, such as company reports, reports published by not-for-profit organisations, and conference reports. Such literature is generally not peer reviewed.

⁷CASP Qualitative Checklist http://media.wix.com/ugd/dded87_951541699e9edc71ce66c9bac4734c69.pdf

Spencer et al (2003) Quality in Qualitative Evaluation: a framework for assessing research evidence. Cabinet Office. http://www.civilservice.gov.uk/wp-content/uploads/2011/09/a_quality_framework_tcm6-38740.pdf

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8.5. Signposting Guide

Grey Evidence	
Albury et al 2011	Report on the first stage of the After the Lightbulb initiative for NHS London led by UCL Partners; brought together a group of experts from a range of disciplines and perspectives to cast light on why the problem of diffusion might exist within the NHS and what characteristics and conditions might need to be developed within the NHS to address this problem. Available at: http://www.uclpartners.com/our-work/cross-cutting-themes/innovation
Bevan and Fairman 2014	A White Paper from NHS Improving Quality examines leading trends in change and transformation from multiple industries across the world, and identifies implications and opportunities for leaders of health and care. Available at: http://www.nhs.uk/resource-search/publications/white-paper.aspx
Bunt and Harris 2010	This discussion paper presents an approach by which central and local government can encourage widespread, high quality local responses to big challenges. The approach draws on the lessons of Nesta's Big Green Challenge – a successful programme to support communities to reduce carbon emissions. Available at: http://www.nesta.org.uk/publications/mass-localism
Chamberlain and Aarons 2010	A conference session published by The Office of Behavioral and Social Sciences Research (OBSSR) at the National Institute of Health, this is a summary of a think tank session with various health professionals and scale and spread experts present. Available at: http://obssr.od.nih.gov/news_and_events/conferences_and_workshops/DI2010/documents/ConcurrentSession4/4F_Chamberlain_ThinkTankSummary.pdf
Davies 2014	A project report from a research collaboration between six European institutions led by the Danish Technological Institute and the Young Foundation, and through a literature review and case study approach explores what the spread of social innovations looks like in contexts that go beyond organisation growth. Available at: http://www.tepsie.eu/index.php/publications
Dees and Anderson 2004	Article in the Stanford Social Innovation Review on the 'Five R's' of strategies of scaling social impact: Readiness, Receptivity, Resources, Risks, and Returns. http://www.ssireview.org/articles/entry/scaling_social_impact .
Department of Education and Skills 2005	A report that details a programme of work that involved over 50 local authorities in 'strategic exchanges' that allowed generic challenges experienced across the UK to be illustrated, with some of the resolutions devised by local authorities included. Available at: http://dera.ioe.ac.uk/7707/
Gabriel 2014	A study report produced by Nesta that aims to help social innovators think through the best scaling options for them. It looks at how others have developed their scaling strategies, reflects on the benefits and challenges of different options, and shows how social innovators have tackled these in reality. Available at: https://www.nesta.org.uk/sites/default/files/making_it_big-web.pdf

Howell 2013	A report produced for Localis looking at how local government is meeting the reduced government grant challenge and social challenges, highlighting the new approaches councils are taking, and what's standing in the way of further innovation. Available at: http://www.localis.org.uk/article/1526/Changing-Places.htm
Ibanez de Opacua 2014	A guide developed by Healthcare Improvement Scotland to summarise the existing resources and key pieces of research around spread and sustainability. Available at: http://www.healthcareimprovementscotland.org/about_us/what_we_do/knowledge_management/knowledge_management_resources/spread_and_sustainability.aspx
Lyon and Fernandez 2012	A paper from the Third Sector Research Centre that examines the strategies social enterprises can use to scale up their impact, looking at the range of alternatives for scaling up social impact ranging from maximising the impact internally to growth beyond the confines of the organisation. Available at: http://www.birmingham.ac.uk/generic/tsrc/documents/tsrc/working-papers/working-paper-79.pdf
Massoud et al 2006	A White Paper from the Institute of Health Innovation that focuses on 'spread', including the major spread projects that IHI supported and a reprint of an IHI article describing how the Veterans Health Administration (VHA) used the Framework for Spread to spread improvements in access to care to more than 1,800 outpatient clinics. Available at: http://www.ihl.org/resources/Pages/IHIWhitePapers/AFrameworkforSpreadWhitePaper.aspx
McKinsey Hospital Institute 2015	A paper published through The Health Foundation on transformational change from the perspective of providers, based on interviews with provider chief executives, chairs, medical directors and other executives leading transformations in acute hospitals, community and mental health care services, but not primary care. Available at: http://www.health.org.uk/media_manager/public/75/publications_pdfs/Supplement%20-%20Transformational%20change%20in%20NHS%20providers.pdf
Nieva et al 2011	A report on healthcare innovations published by the AHRQ Healthcare Innovations Exchange entitled, Report on Scale-up & Spread Activities that includes multiple recommendations: https://innovations.ahrq.gov/sites/default/files/reports/Report%20on%20Scale%20Up%20and%20Spread%20Activities%202011.pdf
Parker and Leadbeater 2013	A report from the Creative Councils Programme – a partnership between Nesta and the Local Government Association – detailing key learning and lesson from the innovative solutions developed to meet community challenges. Available at: http://www.nesta.org.uk/project/creative-councils
Quint et al 2005	The final report on the scaling-up of an educational reform in the US that looks at the evaluation of the implementation in multiple sites and the evolution of the programme across the process. Available at: http://www.mdrc.org/publication/challenge-scaling-educational-reform
The Audit Commission 2007	A report intended to encourage local authorities to work in new ways to achieve continual improvement and to fulfil their new place shaping role, and includes recommendations for local government bodies and central government departments and how the Audit Commission can provide support. Available at: http://archive.audit-commission.gov.uk/auditcommission/nationalstudies/localgov/Pages/seeingthelight.aspx.html

Academic Evidence	
Ashby et al 2007	Studies the resistance to change in UK policing with regards to adopting geographic information systems (GIS) and other technical innovations.
Bauer et al 2014	Analyses whether and how regional partnerships catalyse innovations in climate adaptation policies.
Bhatti et al 2011	A Danish study looking at enabling drivers of the diffusion of innovation in organisational forms of local government with findings highlighting the importance of incentives and competition amongst administrative professionals to encourage a culture of innovation

Buzhardt et al 2007	Discusses barriers and challenges to implementing educational innovations in sites at a proximal distance from the originating research and development team, and some strategies for overcoming these obstacles.
Card et al 2011	A US-based study on effective HIV prevention programs that includes a step-by-step framework for the adaptation of effective programs.
Choudrie et al 2007	Examines impact of UK government's policies on broadband adoption. Shows the influence on the spread of broadband of the government's specific interest in broadband access and decision that broadband was needed for public services and UK competition.
Clarke and Dede 2009	Describes a framework of 5 dimensions of scale to be considered, emphasises the importance of innovations with robust-design, and illustrates the framework through the description of an educational innovation in the US
Davidson et al 2013	A toolkit of adaptation approaches to behaviour change interventions aimed at minority groups from the public health perspective.
Davis et al 2006	Qualitative study providing extensive description of barriers and facilitators of replicating a palliative care model.
Dearing et al 2006	Provides 10 principles for working effectively within societal sectors and enhancing user involvement in processes of adoption and implementation.
Díaz-Puente et al 2009	Analyses the nature of technology innovation activities in small-to-medium enterprises using the Regional Innovation Systems approach.
Doyle et al 2013	Describes the evaluation of the application of a sustainability model to healthcare improvement. The model itself is a self-assessment tool detailing 10 key determinants that increase the likelihood of sustainability.
Dworkin et al 2008	Explains findings from the community-based public health DEBI (Diffusion of Effective Behavioural Interventions) Project which sought to spread HIV/AIDS prevention projects in United States.
Edvardsson et al 2011	Explore facilitators, barriers and requirements for sustainability in implementation of child health promotion program.
Edwards et al 2013	Assesses the development and adoption of an environmental innovation across the private and third sectors.
Elliot et al 2004	Presents findings from a violence prevention initiative, particularly the factors that enhanced or impeded the successful implementation of the initiative. Key comments on the fidelity vs adaptation balance in scaling up.
Ellison 2009	A US-Finnish educational system comparison that suggests three characteristics that foster an innovative public education sector.
Fahey et al 2008	Case study example detailing the failure of a new knowledge management system to disseminate in hospitals.
Gask et al 2008	Reporting on the Choose Life initiative in the Highlands of Scotland, explores the diffusion, dissemination and implementation of the educational intervention
Gibbons 2004	Models depicting the most conducive geographical and regional patterns of relationships to encouraging diffusion and spread.
Ingle et al 2007	Examines regional adoption of education policy in the United States.
Johnson et al 2005	Presents the main features of an alternative perspective to 'policy diffusion: the translation perspective. This perspective recognizes that understanding local translation and enactment of policies is critical.
Kerlin 2009	Various roles and their description that are considered advantageous spreading innovations.

Kerlin 2009	Identifies 5 key roles in the diffusion of a state-level non-profit programme across states in the US.
Kilbourne et al 2007	Describes use of conceptual framework and implementation protocol to prepare effective health services interventions for implementation based on the Replicating Effective Programs (REP) framework from the Centre for Disease Control (CDC) in the United States.
Knickel et al 2009	Discusses the gaps between current societal/consumer demands and related adjustments needed in agriculture at farm-level, and addresses changes needed to adopt new paradigms regarding how farmland is used.
Lanham et al 2013	Describes two case studies of scale-up and spread in complex health care contexts, emphasizing the importance of self-organization and interdependencies.
Lara et al 2011	Examines how sites translated chosen interventions in their communities, with specific respect to: criteria defining fidelity of translation; community contextual factors serving as barriers or enablers to fidelity; types of adaptation; and strategies to balance contextual factors and fidelity.
Martin et al 2012	Contributes to understanding paths to sustainability of four organizational innovations. Emphasizes that sustainability should be viewed as being on a continuum and not as a binary state.
Massey et al 2014	Develops a set of hypotheses on the drivers and barriers of adoption of climate change adaptation policies across Europe.
Mathers et al 2014	Longitudinal study examining the implementation and sustainability patterns of a health trainer service in the NHS, discussing 'policy windows' and uses conceptual framework for complex interventions.
Meier et al 2013	Exploring what factors explain employees' resistance to change towards implementation of a technology innovation.
Milat et al 2012	A study into increasing the scale and adoption of health interventions with senior researchers and policymakers, with a detailed table on scalability considerations when scaling up health promotion interventions
Milat et al 2014	Examines how decisions to scale up interventions are currently made in practice, and the role that evidence plays in these decisions.
Norton et al 2012	Describes the first two phases of an initiative on scale-up and spread of effective health programs, reporting on the results and recommendations from a conference and follow-up activity with stakeholders.
Patel et al 2013	Discussion of tele-dentistry for rural areas, noting that perceived compatibility and relative advantage of the innovation is different in rural and urban areas.
Schneider et al 2012	Studies the development and spread of an agricultural innovation through concepts of co-creation of knowledge and networks.
Sexton et al 2006	Exploring how to motivate small companies to adopt a new technology, including drivers and barriers.
Shapiro et al 2012	A study examining the implementation of a parenting innovation aimed at preventing child maltreatment with an extensive chart of facilitators that extends to scaling-up.
Shaw et al 2009	Explains 5 primary concerns related to embedding new policies across UK welfare organisations.
Walker et al 2014	The importance and role of a Pre-Implantation Phase.
Waterman et al 2007	Using action research from consultation stage through the scaling process to facilitate adoption and overcome barriers.
Zeldin et al 2005	Identifies 6 managerial guidelines for adopting and beginning to implement an innovative practice for organisational and community change.

