

2 Trend 2: New approaches to care

This chapter introduces the trend on the increasing adoption of new approaches to care. It highlights the ways in which the COVID-19 pandemic placed care services under the spotlight with the rapid scaling of technological innovation, especially for healthcare at a distance. The chapter further presents global case studies and examples on innovative approaches taken in the face of increasing demands for mental health solutions, aging populations and growth in chronic diseases, including through the use Artificial Intelligence and behavioural insights.

The COVID-19 pandemic placed care services under the spotlight with rapid scaling of technological innovations, especially for healthcare at a distance. However, global population trends, notably aging and growth in chronic diseases, necessitated a change in approach even before the crisis. In the face of increasing demand, disjointed health systems have prompted calls for more people-centred, integrated approaches. Such systems can also yield better quality data to drive improved outcomes, enabling governments and other health systems to make use of emerging technologies to better understand patients and diseases. This requires a shift towards systems approaches, re-orienting government processes and data flows. OPSI and the MBRCGI also found a strong innovation focus on mental health – a major casualty of the recent pandemic – leveraging methods such as Behavioural Insights. Finally, the most powerful tool for revolutionising care seen in this cycle of work is Artificial Intelligence (AI), with powerful solutions coming from governments, GovTech startups and nonprofits, though hurdles to progress remain, including insufficient data and infrastructure and absence of agreement on tailored principles for ethical and trustworthy use of AI in healthcare.

Re-orienting care (eco)systems

People generally require different types of care at different times and points in their lives. In addition, issues like aging populations and increase in chronic diseases are shifting the focus of healthcare delivery beyond acute hospital care. For instance, almost two in three people aged over 65 years live with at least one chronic condition often requiring multiple interactions with different providers, which makes them more susceptible to poor and fragmented care. Such fragmentation has prompted calls for making health systems more people-centred, and has fuelled debate about the need for integrated delivery systems capable of continuous, co-ordinated and high-quality care delivery throughout people's lifetimes (Barrenho et al., 2022^[1]).

In recent years, governments have introduced [integrated care](#), holistic approaches aimed at ensuring individuals receive the right care, in the right place, at the right time, but existing organisational and financing structures appear to hinder their success. In general, healthcare systems remain fragmented, focused on episodic acute care and unsuitable to solve complex health needs (Barrenho et al., 2022^[1]). Even within the same country, systems are highly unequal across regions and cities (OECD, 2022^[2]). The COVID-19 pandemic has also amplified the need for various parts of the health systems to work together to deliver seamless care and to ensure clear co-ordination across levels of government (OECD, 2022^[2]; OECD, 2021^[3]). In addition to these integrated systems approaches, governments can also drive progress through innovation in how they leverage and activate all relevant actors in care ecosystems able to contribute to promoting health and wellbeing (Deloitte, 2020^[4]) (Pidun et al., 2021^[5]).

The research and Call for Innovations conducted by OPSI and the MBRCGI returned a number of interesting and innovative projects that demonstrate the re-orienting and strengthening of care systems and ecosystems through [systems approaches](#) (Box 2.1).

Box 2.1. Systems approaches

Complexity is a core feature of most policy issues today, including care, yet governments are ill-equipped to deal with the range of uncertain and complex challenges whose scale and nature call for new approaches to problem solving.

Such approaches analyse the different *elements of the system* underlying a policy problem, as well as the dynamics and interactions of elements that produce a particular outcome. The term *systems approaches* denotes a set of methods and practices that aim to affect systems change. Drawing on holistic analysis, they focus on the impacts and outcomes of policies, going beyond the linear logic of

“input-output-outcome” of traditional approaches to policy design. This is achieved by involving *all affected actors* inside and outside government, and leaving room for iterative processes to account for uncertainty.

These approaches are distinct from traditional approaches which address social problems through discrete policy interventions layered on top of one another. Such approaches may shift consequences from one part of the system to another, or address symptoms while ignoring causes. Conversely, looking at the whole system rather than the individual parts enables one to identify where change can have the greatest impact.

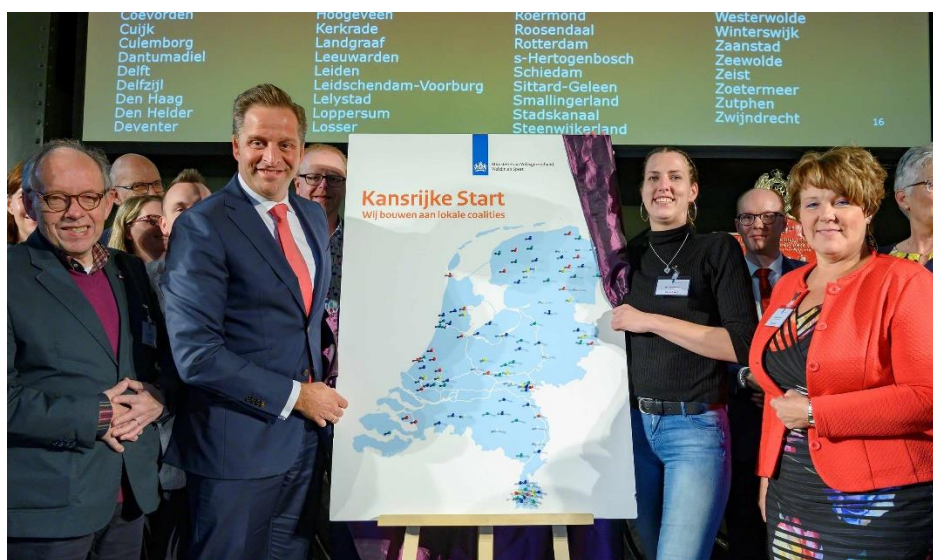
Source: <https://oecd-opsi.org/publications/systems-approaches>.

Re-orienting systems elements to provide integrated solutions

A number of the public sector innovation initiatives reviewed by OPSI and the MBRCGI focused on citizen-centred approaches to care that change the way services come together. Rather than requiring citizens and residents to go to different organisations and offices based on the functional structures of government, government absorbs this burden and provides holistic services that meet people where they are. One of the most compelling and innovative cases in this area is the [Bogotá Care Blocks](#), presented as a case study later in this trend.

Another example – and perhaps one of the strongest proven leaders in this area – is [Solid Start](#), a collaboration among cities, civil society organisations and the Dutch government. Launched in 2018, it seeks to ensure that every child in the Netherlands has the best possible start to life and the opportunity of a good future. As of early 2022, 275 of 345 Netherlands’ municipalities have built “integrated, multisectoral teams – local coalitions – that [have] brought together service providers working in both the health-care and social domains” (Innovations for Successful Societies, 2022^[6]) to [support](#) children’s first 1 000 days.

Figure 2.1. Dutch Minister Hugo de Jonge showing a map of the Solid Smart municipalities



Source: <https://bit.ly/3Xqm9s2>.

Another relevant example is the [Plymouth Alliance Contract](#), which supports people with complex needs in the United Kingdom. Traditionally, contracts were “commissioned in separate silos, often resulting in duplication, inefficiencies and poor outcomes for the person using multiple services.” Under the co-produced Alliance mode, a legal partnership agreement created by the City Council, “25 contracts spanning substance misuse and homelessness were aligned” (E3M, 2021^[7]). Benefits include a range of newly developed practices that are co-operative and focused on the full system, treating more people, better and for less money (Wallace, 2021^[8]). A more focused discussion on affordable housing and homelessness can be found in Trend 3.

“I can’t remember how I found my way – who referred/sent me. What I do know is it wasn’t just life changing, it was lifesaving. Slowly but surely, I began to feel safe, I began to trust someone. Within less than a year I have made giant leaps forward. I am forever grateful for the opportunities given to me.”

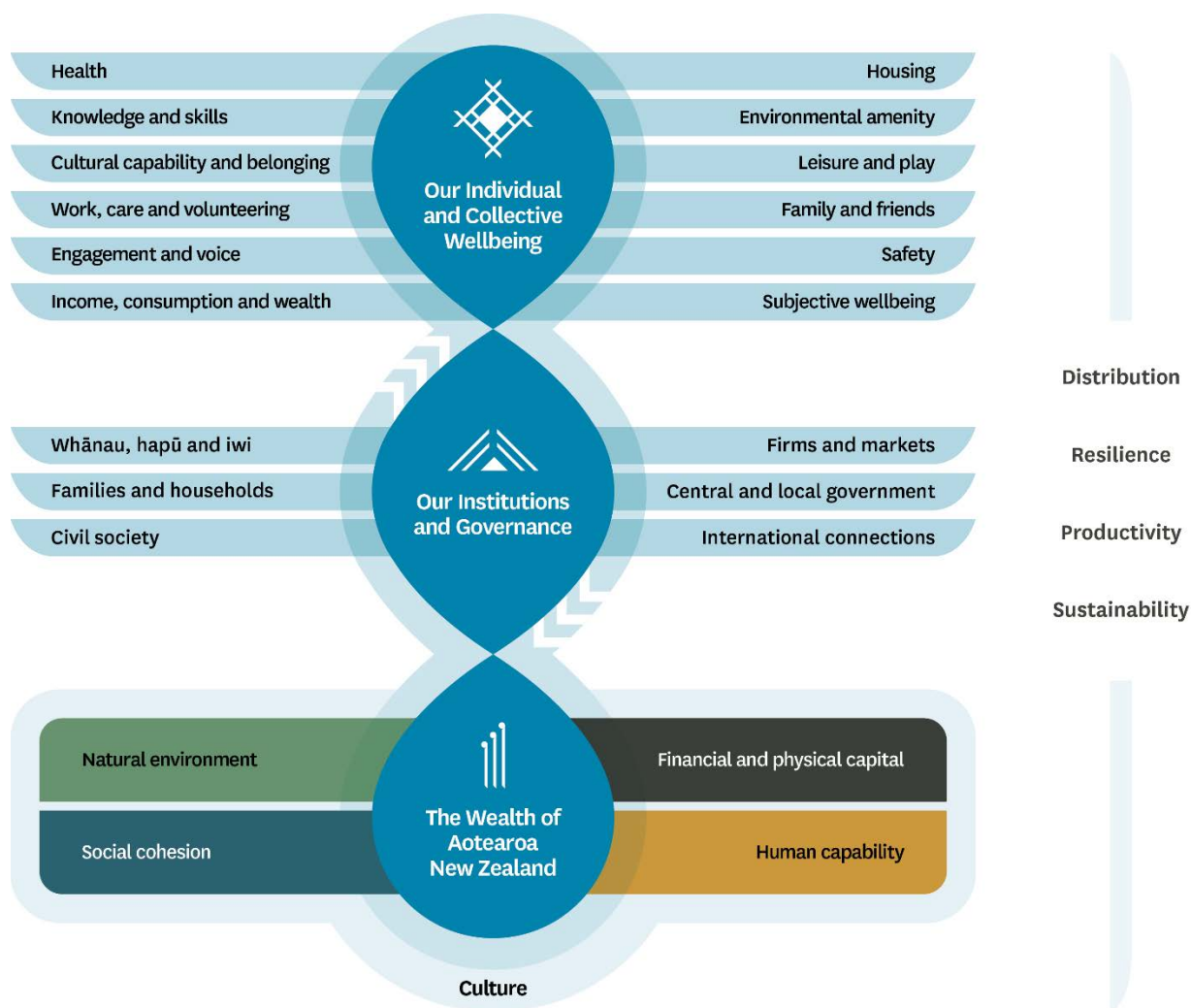
– Testimonial from a Plymouth Alliance service user ([source](#))

In Scotland, the Healthcare Improvement Hub (“ihub”) adds an additional layer to re-orienting, this time by focusing on building a [human learning system](#) using [anticipatory innovation](#) principles (see the [Centre for Public Impact](#) for more research on this field). While most systems approaches identified for this work focus more specifically on the challenges of today (or are still responding to the challenges of yesterday), ihub seeks to build crisis response and anticipation into Scotland’s healthcare system, while adopting a systemic approach to innovation that supports long-term improvements. ihub tests, evaluates, shares, understands, adapts, assesses and evaluates the sustainability of findings and solutions for long-term improvement based on a four-step process:

1. Crisis response and initial reaction management.
2. Adaptation to the crisis.
3. Transition phase to emerge from the crisis.
4. Building new realities and learning from the crisis.

To be able to re-orient systems in innovative ways, governments need to acquire a fuller perspective of the complexities and activities of their systems, as well as how these align with positive health and wellbeing for their people. In New Zealand, the Treasury’s 2021 Living Standards Framework ([LSF](#)) aims to help government understand interdependencies and trade-offs across the different dimensions of wellbeing in order to align government activities to achieve improvements in this area. It focuses on three levels, as captured in Figure 2.2. In the words of Caralee McLiesh, Chief Executive and Secretary of the New Zealand Treasury, the LSF “requires us to look beyond measures of material wealth and consider human, social and natural capital, broader wellbeing outcomes, risk and distribution” (CPI, 2021^[9]).

Figure 2.2. The Living Standards Framework



Source: www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework.

As with many forms of public sector innovation, data is a critical factor. Integrated systems can yield better quality data to drive better outcomes, and likewise, better use of data is increasingly critical to providing integrated systems approaches to care – as recently [highlighted](#) by the former UK Secretary of State for Health and Social Care. Research (Seastedt et al., 2022^[10]) shows that bringing together different types of data can promote fairness and enables governments and other health systems to make use of emerging technologies such as Machine Learning to better understand patients and diseases (see the “New Technologies” section of this trend). Furthermore, it is possible to achieve this goal and still protect privacy and avoiding issues such as bias. Yet, the pandemic has demonstrated the major weakness of health data systems, with data trapped in silos (Smith, 2022^[11]).

A tremendous number of factors are involved in advancing the systemic [use of data](#) in the public sector, representing an entire field of study, as covered by the OECD [Digital Government and Data Unit](#), and illustrated in the OECD Framework for Data Governance in the Public Sector (Figure 1.2 in Trend 1). However, certain government efforts are geared specifically to re-orienting systems in order to unite data for better care outcomes. Some advocate for secure, trusted data platforms (McKinsey, 2022^[12]). The European Health Data Space, one of the EC’s priority health initiatives through 2025, is an excellent example of this type of effort at the transnational level (Box 2.2). At the national level, domestic efforts like

France's legally mandated [Health Data Hub](#) also seek to bring data together by creating a unique multi-party collective organisation.

Box 2.2. European Health Data Space and Open Science Cloud

Proposed by the European Commission in May 2022, the European Health Data Space (EHDS) seeks to promote access to and interoperable exchange of health data to support healthcare delivery, research and policy making in ways that protect and support the portability of citizen's health data.

The EHDS will enable citizens to easily access their data in electronic form, free of charge, and enable them to share these data with other health professionals in and across Member States to improve healthcare delivery. Furthermore, under the EHDS, Member States will ensure that health documents are issued and accepted in a common European format. Lastly, the EHDS will create a strong legal framework for the use of health data for research, innovation, public health, policy making and regulatory purposes.

Similarly, the European Open Science Cloud (EOSC) provides 1.8 million European researchers and 70 million science and technology professionals with a virtual environment offering open and seamless services for scientific data across borders and disciplines.

The EOSC seeks to create a common data protocol based on a vision of making data findable, accessible, interoperable and reusable (FAIR). Furthermore, the EOSC provides value-added services such as visualisation and analytics to support the long-term preservation of information and the monitoring of open science initiatives developed in the context of the EOSC.

Source: https://ec.europa.eu/health/ehealth-digital-health-and-care/european-health-data-space_en, <https://eosc-portal.eu>.

Underscoring the importance of bringing together ecosystems, as discussed in the next section, the United States National Institutes of Health ([NIH](#)) has led the formation of the National COVID Cohort Collaborative ([N3C](#)), an innovative public-private partnership with more than 300 participating organisations that seeks to overcome privacy concerns and data silos to make over 13 million patient records interoperable and address particular challenges related to disease outbreaks. Indeed, as noted by the OECD (OECD, 2022^[13]) "interest in strengthening health information systems has grown since the COVID-19 pandemic brought into sharp focus the importance of reliable, up-to-date information for decision-making".

The OECD Recommendation on Health Data Governance can help governments optimise the value and use of health data while also ensuring their protection, and comprises a set of internationally agreed principles (Box 2.3). Also with an international scope, the Healthcare Information and Management Systems Society (HIMSS) [Digital Health Transformation](#) toolkit is a comprehensive resource for governments, and the World Health Organization (WHO) has developed a [Digital Health Data Toolkit](#) to help disseminate health data standards. The University of Washington is also compiling a [Global Health Data Toolkit](#). National efforts, too, can serve as excellent examples and may have potential for broader applicability, such as in Canada through the [Health Data and Information Governance and Capability Framework](#) and the proposed [Canadian Health Data Charter](#). Ground-up efforts are also invaluable, as these are grounded in the perspectives of individuals. Good examples here include the [Patient Declaration of Health Data Rights in Canada](#) and the [Data Governance Framework for Health Data Collected from Black Communities in Ontario](#).

Box 2.3. OECD Recommendation on Health Data Governance

Adopted by the OECD Council on 13 December 2016, the Recommendation provides a roadmap to achieve an integrated health information system that meets the health information needs of the Digital Age. It aims at encouraging the availability and use of personal health data to serve health-related public interest purposes, while promoting the protection of privacy and security. Key principles include:

- **Engagement and participation**, notably through public consultation, of a wide range of stakeholders.
- **Clear provision of information to individuals.**
- **Informed consent** and appropriate alternatives.
- **Maximising the potential and promoting the development of technology** as a means of enabling the availability, re-use and analysis of personal health data while, at the same time, protecting privacy and security and facilitating individuals' control over the use of their own data.
- **Establishment of appropriate training and skills development in privacy and security measures for those processing personal health data**, in line with prevailing standards and data-processing techniques.
- **Implementation of controls and safeguards.**
- **Requiring organisations processing personal health data to demonstrate that they meet national expectations for health data governance.**

In 2022, the OECD published a [five-year update](#) on the progress of the Recommendation.

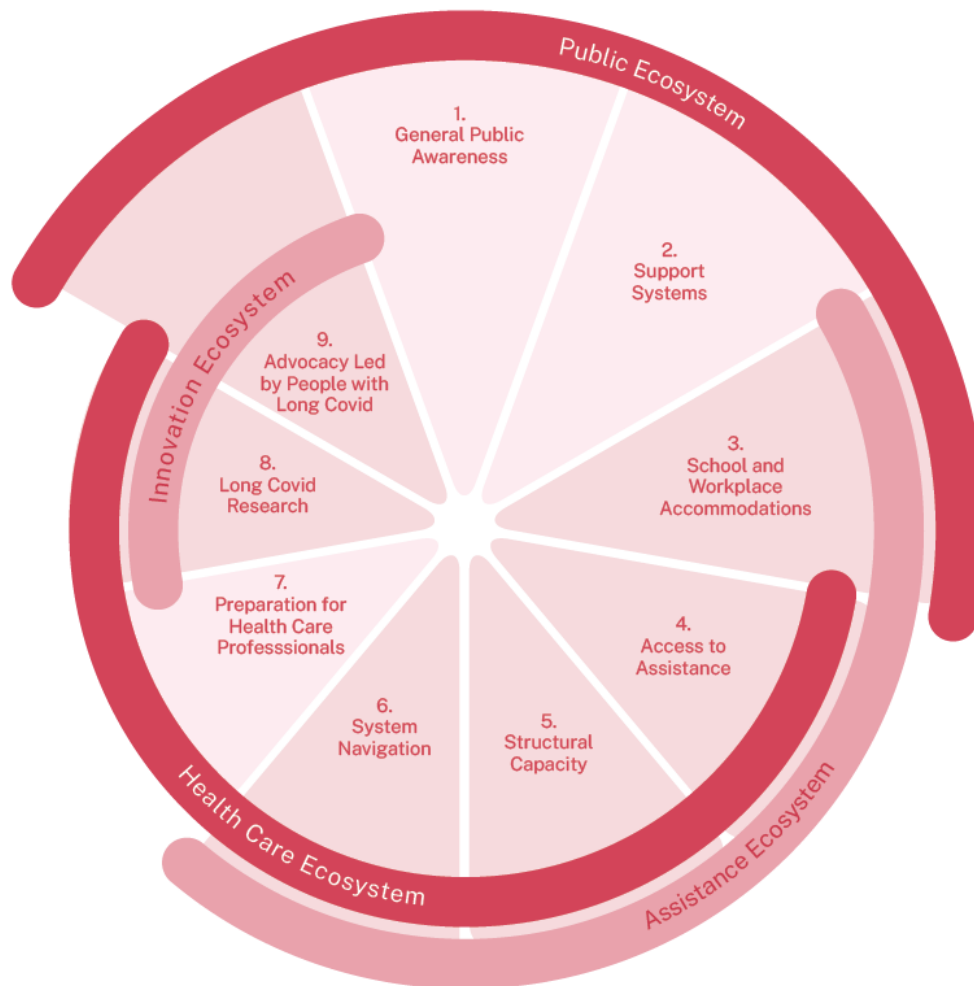
Source: <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0433>.

Fostering care ecosystems and engaging relevant actors

In addition to systems approaches that re-orient *structures, processes and data* for care, OPSI and the MBRCGI identified an even higher rate of innovative initiatives that aim to re-orient and activate *people* to bring forth the collective power of care ecosystems. While these two approaches are presented separately for the sake of discussion, they are highly related and often overlap. The true potential of systems approaches is optimally found when governments unite structure and process transformation hand-in-hand with the array of relevant ecosystem actors within, across and outside the public sector.

Several of the identified innovations were among those [catalysed](#) by the COVID-19 pandemic. One example that united systems and ecosystems innovation to tackle a complex challenge is the US Department of Health and Human Services ([HHS](#)) [Health+ Long COVID](#) initiative. Designed in response to an [Presidential directive](#) calling for a government-wide response to the long-term effects of COVID-19, the initiative uses human-centred design to co-create patient-centred solutions with those impacted. A primary goal of the initiative is to improve healthcare provision and government services using human-centred innovation, while simultaneously advancing interagency efforts to address the longer-term effects of COVID-19, including Long COVID. The cycle culminates in a “Healthathon”, a health-focused innovation sprint with hackathon roots designed to rapidly prototype and deliver solutions with the community. The Health+ team issued a funding [report](#) in November 2022, incorporating an opportunities framework to strengthen and unite innovation, public assistance and healthcare ecosystems (Figure 2.3).

Figure 2.3. Health+ Long COVID Opportunity Framework



Source: www.hhs.gov/sites/default/files/healthplus-long-covid-report.pdf.

[Bibliovid](#) represents an example of ground-up formation of an innovation ecosystem around the pandemic. It was developed to address the difficulties experienced during health crises by practitioners attempting to stay informed of the latest knowledge and recommendations, and to distinguish accurate and quality information from poor data and misinformation. Originated by four friends at the [Grenoble Alpes University Hospital Centre](#) in France, the project has grown and evolved into a collaborative ecosystem, whose resources pull together quality data and research through the combined efforts of a “monitoring unit” and suite of partners.

Of course, issues with underdeveloped and fragmented ecosystems predate the pandemic, and many innovation initiatives have sought to better tap into these ecosystems to address the root causes of care challenges. Governments in Australia have demonstrated leadership in this area, as shown by their Queensland Bridge Labs Programme (Box 2.4), and Victoria’s [Latrobe Health Innovation Zone](#), an umbrella effort housing the Mental Health Café case study presented later in this trend.

Box 2.4. Queensland Bridge Labs Programme: An ecosystem approach to care (Australia)

The Bridge Labs programme was conceived in 2020 to overcome internal deficits in innovation capacity through novel partnerships between the system, clinical teams and academic experts. This innovation was informed by an impactful but small experiment undertaken the previous year, the Healthcare Excellence by Design Symposium 2019, which sought to interlace the healthcare and creative design communities. That early trial provided crucial evidence that seeding an “adhocratic” (informal and flexible) ecosystem between clinical and academic communities was feasible and would create the conditions for innovation and co-evolution.

The programme started by setting up three Bridge Labs consisting of partnerships between health professionals and academic experts of design, systems safety and human factors research – areas of expertise sought due to their importance in healthcare and their relative lack of presence in the sector. The project team played a dual role: setting up the collaboration structures (flexible contracts and simple rules of engagement) and providing a primary sense-making and network cultivation function, achieved by creating the initial micro linkages at the team and project level – in other words, “bridging” communities.

The three Bridge Labs supported a significant body of very diverse work (over 30 projects undertaken in parallel) that reached over 300 clinicians and a multitude of consumers. Several disruptive innovations also emerged from the Labs, attracting over AUD 4 million in external funds and winning several local and national awards. Furthermore, the programme’s many contributions to capacity development of design and human factors in the health workforce have helped grow a community of practice that now amounts to almost 1 000 members.

Source: <https://oecd-opsi.org/innovations/queensland-bridge-labs>.

Technology is also helping to activate engagement with relevant ecosystems actors, while promoting individual empathy and care. At the mass scale, CrowdBots is a fascinating and innovative project using crowdsourcing techniques to train AI models, dramatically accelerating Alzheimer’s research (Box 2.5). At a more individual level, Israeli startup [Alike Health](#) has devised a compelling approach that may yield inspiration or lessons for governments. Its web platform uses health data and machine learning to match people who are alike on a holistic wellbeing level. Patients are put into contact with anonymised communities so that they can share or receive relevant and personalised insights that help them better manage their conditions. A more targeted discussion on tech for care can be found in “New Technologies Revolutionising Healthcare” later in this trend.

Box 2.5. CrowdBots

When AI models are unable to achieve required accuracy levels in biomedical analysis of very large data sets, they are often discarded, and research is severely hindered. To solve this problem, the Human Computation Institute created CrowdBots to derive utility from imperfect models that were previously shelved. This innovation was developed in the context of Stall Catchers, a citizen science game that leverages crowd-power to achieve rapid, expert-like analysis of Alzheimer’s research data. Since its inception in 2016, 45 000 global volunteers have contributed, conducting decades of professional-level data analysis at an unprecedented pace.

Stall Catchers players analyse brain capillaries through an online virtual microscope to determine if they are flowing or stalled. Answers from several different people about the same blood vessel are combined

to produce a single expert-like crowd answer. This approach enables the discarding of individual errors, ensuring consistently high data quality. However, curating a large community of volunteers to participate in citizen science is a time-consuming and costly endeavour that is difficult to sustain. For this reason, CrowdBots was proposed as a new mode of human-machine collaboration able to reduce reliance on human annotators and augment analytic capacity by creating a hybrid crowd of humans and bots that work together.

By applying consensus methods to cohorts of humans and ML-powered bots, the CrowdBots project team has been able to reuse old data, increase platform sustainability and boost analytic throughput. The resulting process reduces the time needed to make these discoveries from approximately 20 to 5 years, and the outcomes were published in top-tier journals.

Source: <https://oecd-opsi.org/innovations/crowdbots-hybrid-intelligence>.

The ecosystem cultivation approaches discussed in this section represent an innovative and powerful shift to convening the knowledge, skills, expertise and insights of relevant and affected actors. Each represents a strong effort in its own right, but in a meta sense, governments will need to make such systems approaches more systemic. OPSI and the MBR CGI have found Finland's "[Ecosystem School 1.0](#)" to be a unique and interesting model in this regard. Inspired by [Collaborating for a Sustainable Future: Ecosystem guide](#) by the VTT Technical Research Centre of Finland, and designed in collaboration with 50 ecosystems actors, its objective is to develop ecosystem thinking in an agile and co-creative way, in order to push current boundaries and break silos in governmental ways of working. Moreover, it enables participants to work with a participatory mindset across organisational borders in multi-organisational teams. Finland is now scaling up the effort, including by developing a [digital platform](#) with information, tools and tips for multidisciplinary joint development and working in different ecosystems.

Case Study: Bogotá Care Blocks (Colombia)

Some 30% of women living in Bogotá, Colombia (1.3 million people) are devoted to full-time unpaid care work, dedicating an average of 7-10 hours per day. About [90% of these women earn low incomes](#), disproportionately hindering their access to wellbeing services, self-care activities and constitutional rights such as education or social benefits. [Bogotá's Care Blocks](#) offer a context-specific solution to this acute challenge employing a radical, ease-of-access modality never previously tested at this level. The City of Bogotá through the Secretariat of Women's Affairs developed this novel approach to the development of women and caregiver-centric infrastructure and service provision, hoping to make it more accessible, empathetic and closer to the needs of caregivers. The model introduces a new criterion for the city's decision making, budget allocation and urban planning that positions caregivers and care work at the centre of several of the city's services. So far, they have reached a total of 300 000 women across 15 Care Blocks, with 1 million beneficiaries expected by the end of 2023.

Problem

Informal care by family and friends makes a substantial contribution to societies. However, such care impacts the lives of caregivers in terms of employment, wages, health and social status, while governments accrue opportunity costs (e.g. social contributions and taxes lost) (Rocard and Llana-Nozal, 2022^[14]). Across Colombia and its capital city Bogotá, the burden of home care and unpaid work falls disproportionately on women, resulting in what Bogotá officials describe as "time poverty". According to the [city's most recent baseline study](#) on home care and caregivers work, 30% of Bogotá's women (1.3 million) dedicate themselves to about 7-10 hours of exclusive and unpaid work per day on average. The evidence is overwhelming: caregiving in Bogotá is carried out by nine out of ten women, 90% of

caregivers live in low-income households, about 70% have only a secondary education, 21% experience untreated chronic conditions derived from home care, 0% have financial autonomy and so on. The Secretariat of Women's Affairs of Bogotá summarised the issue: “*women experience a kind of poverty reinforced by the burden of unpaid work and unfair time allocation for caregiving*”. Moreover, issues around home and caregiving are not properly assessed or addressed by local authorities.

Despite improvements in the availability of caregiving services, officers from the Secretariat of Women's Affairs describe “*a landscape of fragmented and siloed solutions*”, indicating a mismatch between services supply and the realities and conditions of caregiving. Moreover, the situation [exacerbates several undesired patterns](#) for women beyond monetary poverty, including gender inequality, restricted political participation and visibility in society, and entrenched cycles of domestic violence and physical isolation.

An innovative solution

How do women access care services? What do women give up because of the care overload? With these questions in mind, the team of the Bogotá's Secretariat of Women's Affairs began conceptualising the idea of a public service that is integrative and sensible, yet radical in its approach to the multiple realities of unpaid home and caregiving. Strictly speaking, caregiving work is [highly feminised](#) in the city; more than 90% of caregivers are women, and over 50% of citizens believe that this work should be performed by women. Furthermore, about 65% of citizens believe that men would face social sanctioning and bullying if they performed caregiving work.

Bogotá's Secretary of Women's Affairs [Diana Rodriguez Franco](#) explained that the first step in creating a wholesome care concept and prioritising actions was to “*understand what is care and what it is not*”. The Secretariat began by defining caregiving as any life-supporting activity regardless its degree of complexity. More mainstream caregiving activities such as cooking or cleaning were deemed equal and comparable to more complex ones such as taking care of people/relatives with disabilities or raising children. The concept of unpaid work was then integrated into the concept of caregiving. As most caregiving work takes place in the home and is women-led, it was a logical step to generalise the concept as a gender role that is unpaid and non-voluntary. Attaining a common understanding about these interrelations was key to calculating and increasing the visibility of the value of unpaid caregiving work. The [overwhelming results](#) showed that caregiving accounted for an estimated 20% and 13% of Colombia's and Bogotá's GDP, respectively.

Having clarified the nature of the challenge, the Secretariat embarked on the second step – building a concept model to shed light on the specificities of caregiving activities. Due to the extent of caregiving services provided in Bogotá, by 13 institutions, it was critical to understand the aims of service provision in a multidimensional manner. In early 2020, the Secretariat presented the idea that caregiving services should fulfil three main conditions to be considered as such: 1) they must *recognise* the nature of caregiving as unpaid, non-voluntary and feminised; 2) they must aim to *reduce* the burden of caregiving – long and non-stop working hours, and weak working conditions; 3) they must consist of activities that can be *redistributed* and equally exchanged between men and women. They were labelled as the 3 Rs in Spanish: *reconocer*, *reducir* and *redistribuir*.

Both the definitions and the concept model were key to identifying a set of prioritised activities for caregivers. The goal was twofold: to supply activities strictly related to caregiving (i.e. washing or child caring); and to shift attention towards neglected activities related to caregivers' wellbeing such as reading a book, lifelong learning, doing yoga and more. Amid the pandemic and with mental health conditions increasing among Bogotá's women, the Secretariat decided to develop a system that not only supplied caregiving services, but also focused on caregivers needs and provided women with options for self-care, wellbeing and self-development. The system, which is entitled [Care Blocks \(Manzanas del Cuidado\)](#), was conceived as a novel approach to women and caregiver-centric infrastructure and service provision.

In a broad sense, Care Blocks aims to provide services that contribute to the mitigation of the 3 R's, and to address the two abovementioned goals. Its operational design simultaneously provides care for those who need it (i.e. children, elderly) and educational and leisure opportunities for caregivers whose time is freed-up as a consequence of hyper-targeted and intensive delivery of public services.

Clustering services around the concept of a Care Block was not an easy task. Of a large list of 92 identified operational services, only 36 were considered essential for achieving the Care Block's aims. The number of services was downsized based on two guiding principles: proximity/availability to specific locations, and incorporation of a gender perspective. The latter implied asking caregivers about their needs, their schedules (free vs. busy times) and the activities they would like to engage in if their time was freed-up.

With an emphasis on the second principle, the municipality determined an initial set of core services to be mainstreamed across the Care Blocks. The next step was to add additional services according to the specific needs of the user population. To this end, the team evaluated population samples living in specific areas around a potential block, identified three groups to target, and produced a user and need-centric list of services to be provided in a targeted and dynamic way (see Table 2.1). For example, two Care Blocks can provide similar services to engage caregivers in completing high school while their grandchildren can take part in play-based activities that are also adapted to people with disabilities or any physical limitation. Alternatively, one facility can provide yoga classes or bike-riding lessons, while another focuses on recycling and woodwork teaching.

Table 2.1. Example of service delivery according to specific groups

Groups	Caregivers	Care receivers	Men and the family
Service approach	Education Spare time and wellbeing Income generation	Professional and palliative care services	Cultural change Home duties
Example of services	Secondary education, yoga, recycling	Nursery or physiotherapy	Gender mainstreaming, cooking, washing

Source: Bogotá's Mayor Office, Secretariat of Women's Affairs, 2022.

Having defined the services, the next challenge was to determine the location of the Care Blocks. The Secretariat was aware of budget constraints and the need to use existing infrastructure. Accordingly, the initial setup strategy sought to identify infrastructure with the potential to host several kinds of services, and that could be revitalised and expanded with furniture, equipment and new infrastructure. The initial location and installation of a Care Block would depend on four variables that would produce a [ranking of locations](#):

1. Demand for care

- a. Percentage of children below 5 years old.
- b. Percentage of elderly above 80 years old.
- c. Dependency relationships

2. Presence of caregivers

- a. Percentage of women above 15 years old that exclusively work/perform household tasks.
- b. Percentage of women-led single-parent households with children below 15 years old.
- c. Percentage of women-led single-parent households with elderly above 64 years old.

3. Poverty rate

- a. Low scores on the city's Women Monetary Poverty Index (IPM Mujeres)
- b. Percentage of women-led households below the poverty line.

4. A specific request in the participatory budget

- a. Whether the citizens requested a specific budget allocation for caregiving services of different kinds.

These findings, together with the [newly approved Bogotá's Urban Master Plan](#), were used to re-route and integrate various public services such as psychologists, legal advice, services for people with disabilities and physical limitations, social development, entrepreneurship and more. Foremost, they supported the creation of an Intersectoral Commission of Care System co-ordinated on a monthly basis by 13 Secretariats and permanent guests who determine the next steps to advance the implementation of Care Blocks and urban transformation. As the Secretary of Women's Affairs pointed out, *"it was critical to iterate, put on paper and implement in parallel. This allowed us to build a Care Block concept in less than four months and to open the first one three months later in October"*.

Established at sites around Bogotá, [the locations of the Care Blocks](#) enhance the use of each district's facilities in favour of caregivers, and also ensure that services can be accessed within a 15–20-minute walk, eliminating the need to use public transport for most participants. Moreover, for citizens that live far from a Care Block in rural and peripheral areas of Bogotá, the city has supplied Care Buses to guarantee mobility and access to services.

Box 2.6. Care Buses

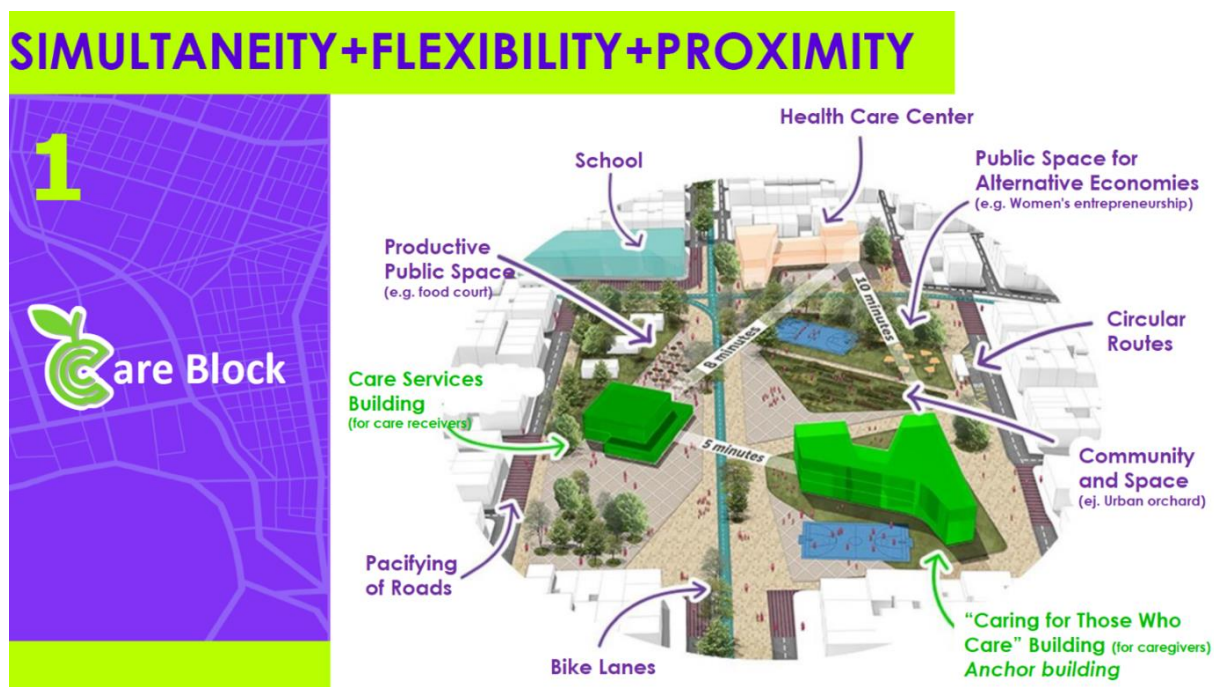
To address the limitations of physical access to Care Blocks, Bogotá implemented the ["Care Buses"](#). These free shuttles run from specific bus stops (points of proximity) or supply citizens living in rural areas with selected services. The prioritisation of Care Buses follows the same mechanism as the ranking of Care Blocks, focusing on areas without or with limited infrastructure, connectivity and basic services, and in high need of specific care services. The Care Bus concept rotates services, visiting different localities each time and ensuring services are adjusted to people's needs in line with the parameters of the 3 R's. However, the service is highly dependent on budgetary availability and on road maps which need to be updated regularly.



Source: Bogotá's Mayor Office, Secretariat of Women's Affairs, 2022.

While Care Blocks represent a good example of social innovation, they may also become a case study of urban and infrastructure innovation. Implementing this radical ease-of-access model required reorganising how the city was planned through the lens of women’s unpaid caregiving work. Caregiving becomes the epicentre of urban transformation as the planning and use of existing and new infrastructures is funnelled through the lens of caregivers needs, profiles and characteristics as priorities. Moreover, the Secretary of Women’s Affairs confirmed that “*the Legislative branch of the City of Bogotá has already approved a development plan that connects both concepts of infrastructure and caregiving, which is a major achievement for the next decades*”. Furthermore, the ambitious approach has resulted in the creation of a 15-30 minute city around the Care Blocks, for which mobility, housing and economic development policies will be updated accordingly.

Figure 2.4. Coverage of a Care Block and prototype of Care Block infrastructure



Source: Municipality of Bogotá, Economic Commission for Latin America and the Caribbean (CEPAL) 2020.

There are [currently 151 Care Blocks](#) spread around Bogotá. For the Secretariat, this represents “*a major success for the System as the plan was just to open a handful of pilots*”. Going forward, the city plans to have 20 Care Blocks in operation by the end of 2023, and 45 by 2035. The leadership of current [Mayor Claudia López](#) has been key to transforming the initiative beyond improving administrative systems towards devising a whole caregiving-centric service delivery and policy making approach that will influence every aspect of life for Bogotá’s citizens.

Novelty

Bogotá is the first city in Colombia and Latin America to have a [Care System](#) based on the 3 R’s concept that recognises, redistributes and reduces the burden of care that falls mainly on women. According to the Secretary of Women’s Affairs, “*the innovation was more on the administrative and organisational side – to reorganise and give purpose to services the City provides (...) We did not specifically invent anything new, until we saw its potential to transform the urban configuration of the city*”.

Like most Colombian cities, before 2020 the services the city offered were mostly siloed and had only a limited impact in terms of freeing up the responsibilities of female caregivers. They did not focus necessarily on caregivers' needs and failed to address in a holistic manner the root causes of women's limited access to self-care and spare time services. The Care Blocks are innovative because:

- They place caregivers at the centre of policy and service delivery design. The model foregrounds caregiving priorities including as a main driver of decision making about infrastructure, mobility and more.
- They re-organise the city to meet people's needs, instead of the reverse. The model integrates several administrative and infrastructures to build a system of care in specific areas of Bogotá.
- They address the inequality of the care burden from a cultural and societal perspective, thus ensuring long-term sustainable change.
- They provide a consistent approach to the diverse and multiple issues around caregiving.
- They incorporate a novel definition of and approach to caregiving in policy making. Similarly, Care Blocks incorporate concepts of free time and wellbeing as part of their service delivery model.
- For the first time, Bogotá's Urban Master Plan has a clear gender approach that places Care Blocks at the core of territorial planning. It aims to achieve an equitable and safe city for women and people in all their diversity.
- The project targets siloed entities, services, administrative systems and infrastructures, and integrates them under the logic of a one-stop shop for the provision of care.

Results and impact

Since the [first Care Block](#) was launched in October 2020, their number has expanded to 15, as noted above, and several Care Buses have provided over 200 000 services. With future expansion plans that aim to benefit Bogotá's society as a whole, benefits are sure to multiply. Caregivers and care receivers are increasingly meeting their specific needs, and the city benefits through a cultural transformation and the achievement of economic growth based on equity. During 2021, the Care Blocks served more than [54 000](#) women. Furthermore, Bogotá expects to launch 20 Care Blocks by 2023, which will serve more than 1 million Bogotá caregivers. By 2035, 45 Care Blocks will be operational, according to the Urban Master Plan which, once enacted, will make more underutilised infrastructures and empty lands available for the implementation of the project.

As noted above, practically none of the carers surveyed in Bogotá have financial autonomy, indicating the negative impacts of their role on their ability to participate in the labour market, which leads to gender gaps in employment outcomes, wages and pensions (OECD, 2017_[15]). Recent OECD work has found that easing employment and other constraints requires a full set of policies, starting with needs assessments, access to information and advice, respite, training, financial support and flexible work arrangements (Rocard and Llana-Nozal, 2022_[14]). The Care Blocks helps to achieve this end. For even greater impact, future iterations of this social innovation could consider a broader framework which would help such women to combine care and work, for example through tax deductions (as is the case in Spain), policies on paid leave for caregivers, telework and other flexible work arrangements (Rocard and Llana-Nozal, 2022_[14]).

Challenges and lessons learned

Since their launch, the Care Blocks have faced [multiple challenges](#), including the COVID-19 pandemic which aggravated the situation of caregivers by increasing their care work burden. The initiative also had to navigate legislative body politics to acquire a budget for the programme. Additional challenges involved reaching out to and raising awareness among the public and a variety of stakeholders, policy officers and entities related to the different categories of services the initiative sought to provide.

Another challenge concerns the integration and mainstreaming of all current information systems into a single data collection system for the care system. The innovation has grown faster than the related interoperability processes, placing the Care Block model under pressure to not only capture information but to do so in the same way across a service delivery journey. As the Secretariat of Women's Affairs points out: *“the idea is that women can access [the entire system] with a single number, their ID”*. For this reason, and to avoid duplication in measuring service delivery, services are counted by Care Block, not the number of people served. Looking ahead, the system needs to address the issue of simultaneous counting and verifying service users.

The Care Blocks team has also learned a number of lessons that have been critical to programme success. First, collaborating across silos and sharing responsibility is key. While the Care Blocks are led by the Secretary of Women's Affairs, they co-ordinate the provision of services from 13 other departments. Second, infrastructure can be a key enabler or blocker. Initially thought of as an administrative innovation, Care Blocks has turned into urban initiative that rethink how the city's services are organised based on a gender approach. This has required the city to rethink service availability based on whether the available services meet population needs and are available when and where they need them.

Other factors involved in success include guaranteeing the legitimacy and durability of the programme in law; ensuring the availability of financial resources; and communicating the need for citizen commitment, which in turn implies a cultural change around the perception of care work.

Replicability

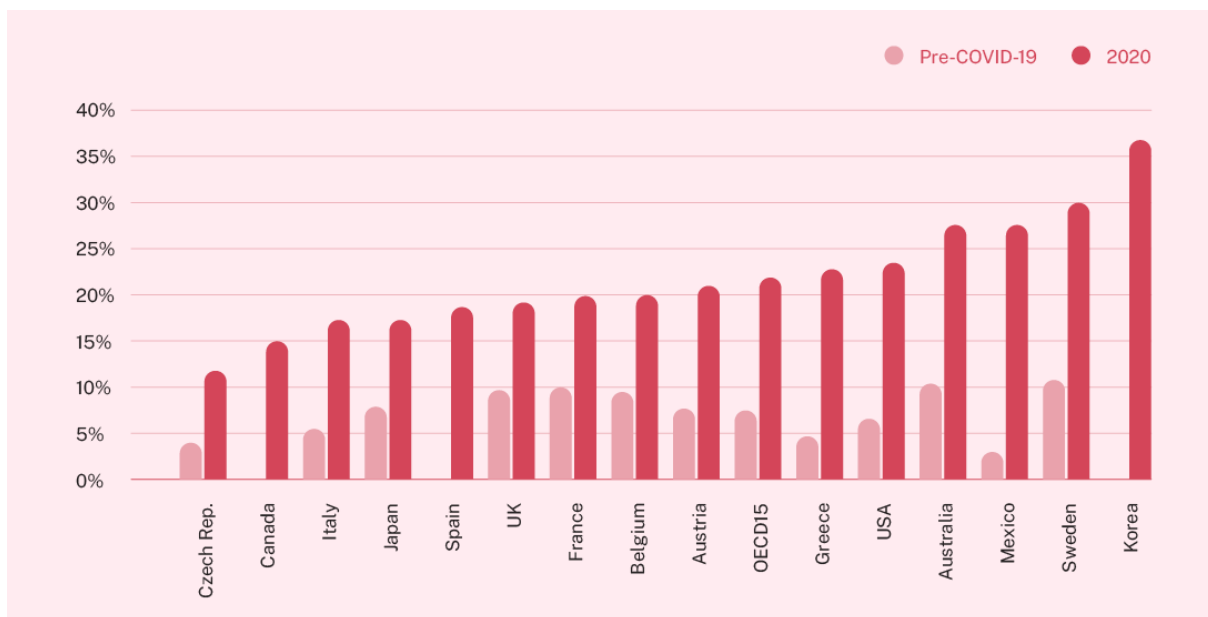
The Bogotá Care System has been replicated in San Pedro Garza García, Mexico. The city has also received requests for technical advice on the implementation of other care systems from the cities of Medellín, Cartagena and Cali, the Colombian National Government, Peru, Argentina, Chile, the Dominican Republic and Mexico, as well as from city networks such as CHANGE.

The Care Blocks team, however, has stressed that the effort cannot be replicated or sustained without a vibrant network of committed partners across stakeholders, including civil society. On this basis, it has built the Care Alliance – a network of actors from the private sector, NGOs, academia and many locally based organisations. The Alliance is designed to function as a platform ensuring that caregivers have a voice and vote in decision making, for example, through participation in the Intersectional Commission of the Care System.

Empathy and care to support mental health

[Mental ill-health](#) can have devastating effects on individuals, families and communities, with one in every two people experiencing a mental illness in their lifetime. During the COVID-19 crisis, many people's mental health worsened, with prevalence of depression and anxiety increasing significantly at the height of the crisis, and even doubling in some countries (see Figure 2.5). The mental health of young people in particular has been impacted significantly by the pandemic (OECD, 2022^[16]). Mental ill-health also weighs heavily on societies and economies; the economic burden of mental ill-health can account for up to 4% of GDP, while those with mental illness have poorer educational, employment and physical health outcomes than those with good mental health. However, as many as 67% of people say they do not get the mental health support they need (OECD, 2021^[17]).

Figure 2.5. National estimates of depression or related symptoms before and after COVID-19



Source: <https://doi.org/10.1787/0ccafa0b-enD>. Data available at <https://stat.link/mw2xro>.

Perhaps triggered by increasing mental distress during and in the wake of the COVID-19 pandemic, OPSI and the MBRCGI have identified a stronger focus on mental health in this cycle of work compared to previous years, with a number of empathetic and innovative services coming on line. These cases often involve deep engagement with those whose lived experiences run counter to the philosophies of traditional mental health approaches, which may be less centred around the person who needs help – as seen in the Australian examples in Box 2.7 and the Mental Health Café case study featured later in this trend.

Box 2.7. A co-created Philosophy of Care (South Australia)

People experiencing mental health distress and crisis require a response system prepared to understand and adequately address their needs. When planning began for an Urgent Mental Health Care Centre, a new standard centred on people with lived experiences was sought by the Office of the Chief Psychiatrist (OCP). The Australian Centre for Social Innovation (TACSI) and the Lived Experience Leadership & Advocacy Network (LELAN) were commissioned to advise the OCP on how this could be achieved and suggested investing in the co-creation of a Philosophy of Care with a group of people who had specific lived experiences of distress and crisis emergency.

This Philosophy of Care provided the principles that guide the real-life implementation of the Centre. It represents a shift to a person-centred approach, impacting service modelling by incorporating the perspectives of the community that will use the service. The Philosophy of Care was a key reference during the commissioning process in which people with lived experience participated in an evaluation panel to select the service provider responsible for developing the Centre. It also provided key guidance on the recruitment of a workforce, about 50% of which have lived experience of mental distress and crisis.

The Centre operates 24/7 and has provided support to 5 029 people who self-refer or are brought by police or ambulance services due to acute mental health distress.

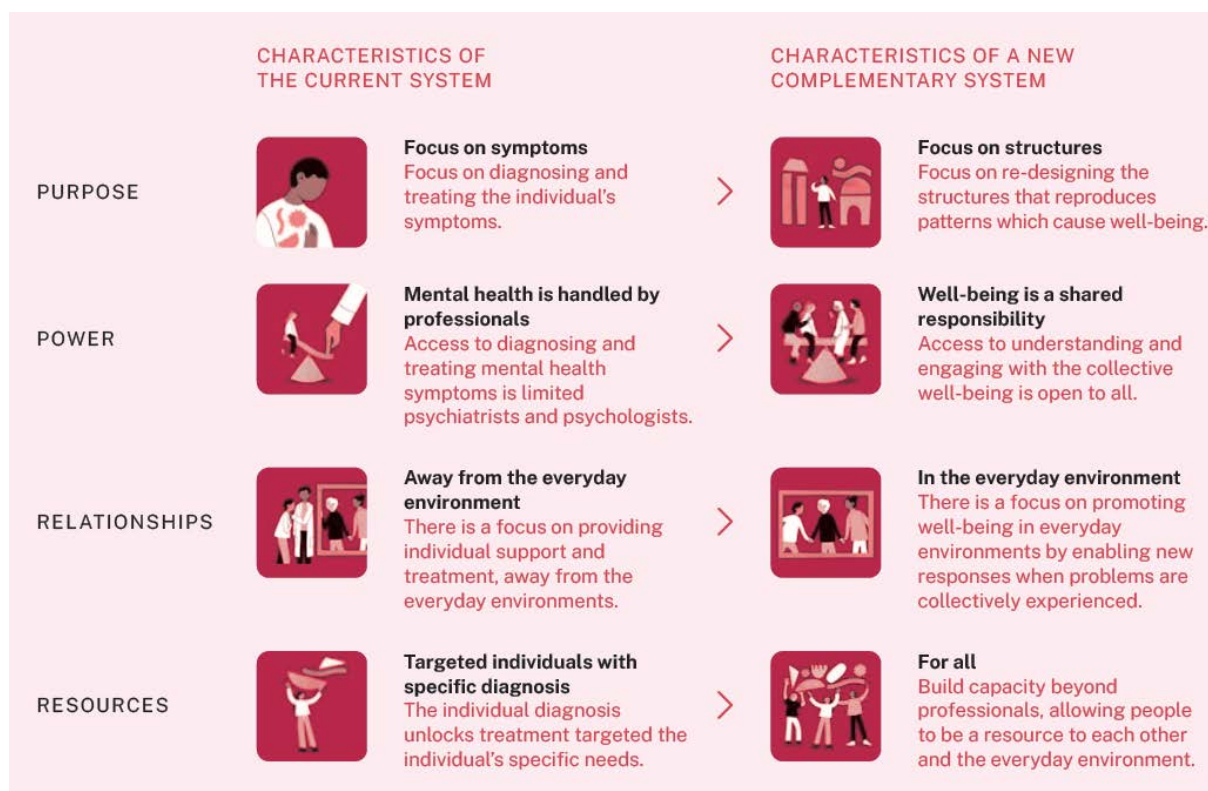
Source: <https://oecd-opsi.org/innovations/co-created-mental-health>.

Many initiatives also demonstrated the power of talking therapy to address mental ill-health. This kind of cure has proved particularly effective against mild-to-moderate conditions such as depression and anxiety. Indeed, as shown by previous [OECD work on mental health systems](#), countries are increasingly focusing on scaling-up talking therapy initiatives and making these kinds of services more and more accessible. This has been achieved through community-focused initiatives – the Mental Health Café project presented as a case study below is a perfect example – but also by making talking therapy available through primary care practitioners. Indeed, in more than the half of countries considered in the OECD Policy Questionnaire, some or all primary practitioners provide talking therapy (OECD, 2021^[17]).

As touched on in the Introduction, a secondary surfaced innovation trend is a focus on young people. A number of these collaborative efforts have focused specifically on this population, who are particularly vulnerable to mental ill-health (Kuyper and Fokkema, 2011^[18]) (Mitrou et al., 2014^[19]) (Sijbrandij et al., 2017^[20]). Indeed, young people with a mental health condition are 35% more likely to repeat a grade at school and to leave school early (OECD, 2015^[21]). One example of such an innovation is “[Reversing Youth Mental Health Outcomes](#)” by [Mind the Class](#), an American mental health prevention organisation partnering with school systems to reduce the risks and reverse the rates of mental and behavioural health disorders through the creation of community ecosystems. The collaborative project worked with local public and private partners to design a preventive implementation plan using proven wellbeing research and data-driven solutions. Outcomes of the Plan include reduced stress and self-harm, as well as increased wellbeing, coping skills, family connections and achievement. In the United Kingdom, the [MH2K](#) programme also uses collaborative approaches to give young people a leadership role in addressing this challenge. It works with people aged 14-25 years old to identify the mental health issues they see as most important, and encourages them to engage with their peers to explore these topics as well as with decision makers to make recommendations for change.

In Denmark, the “[Imagine if we](#)” initiative by the [Danish Design Centre](#) (DDC) and the [Rockwool Foundation](#) is also working to promote mental wellbeing among young people through future-oriented [anticipatory](#) scenarios. The initiative aims for systemic shifts in mental health away from the individual and towards the community (Figure 2.6). DDC’s work in this area represents a collaboration with the OECD [Mission Action Lab](#) (Box 2.8), spearheaded by OPSI, the OECD Directorate for Science, Innovation and Technology ([STI](#)), and the OECD Development Co-Operation Directorate ([DCD](#)).

Figure 2.6. The four shifts of “Imagine if We”



Source: <https://ddc.dk/projects/imagine-if-we>.

Box 2.8. OECD Mission Action Lab

The OECD Mission Action Lab unites diverse sets of international expertise to work with policy makers in order to establish and operationalise mission-oriented innovation in real-world contexts.

By working directly with policy teams to provide tailored strategic and tactical advice, the Lab supports countries in overcoming major mission challenges preventing them from getting started or meaningfully staying on course. In turn, the Lab seeks to leverage this work to build an evidence base and develop adequate mechanisms and practices on how governments are employing a mission-oriented innovation approach for the benefit of others.

The Mission Action Lab website provides an explanation of mission-oriented innovation, details of mission governance including how to manage a portfolio of innovations and evaluate missions, and a resource library.

Source: <https://oecd-missions.org>, <https://oecd-opsi.org/work-areas/mission-oriented-innovation>.

[Behavioural Insights](#) (BI) are also being used to help understand and improve mental health, as [seen](#) on OPSI's [BI Knowledge Hub](#). The Hub is a suite of tools to support the global BI community and promote cross-border knowledge sharing. It includes interactive maps of BI units and projects and a portal for pre-registering experiments. Examples where BI have been applied for better mental health include the following:

- The [Slovak Republic](#) is working to improve prevention of mental health issues, destigmatise the topic, improve awareness of the possible forms of help for different types of mental health problems and gradually break down the barriers that prevent those in need from seeking professional help.
- [Pakistan and the World Bank](#) have collaborated on efforts to introduce group-based Cognitive Behavioural Therapy (CBT) training for entrepreneurs.
- Projects in the Philippines endeavoured to improve mental health and wellbeing among public healthcare workers during the pandemic (Mantaring et al., 2022^[22]).

While BI techniques are used increasingly with demonstrated effectiveness, they can be controversial at times. In January 2022, dozens of psychologists, therapists and other health professionals raised potential ethical concerns in a [letter](#) about the use of BI, or “nudges”, by government. A wide variety of frameworks and resources are currently available to help governments integrate BI into the policy cycle (e.g. the [OECD BASIC](#) framework); however, very few have the primary purpose of safeguarding the responsible use of behavioural science in government. This has at times left teams to establish their own ethical standards and practices, which has resulted in an uncoordinated mosaic of procedures. To address these challenges, OPSI has developed the first-of-its-kind [Good Practice Principles for the Ethical Use of BI in Public Policy](#) to advance the responsible use of BI in government. The Principles guide readers through four key phases (Figure 2.7).

Figure 2.7. Phases of taking an ethical approach to BI



Source: <https://oecd-opsi.org/publications/bi-gpps>.

As this area overlaps with many different approaches and techniques, a handful of additional tech-oriented mental health solutions are discussed in the “New Technologies” section of this trend.

Case Study: Mental Health Café (Latrobe City, Australia)

Latrobe Valley in Victoria, Australia has positioned itself at the forefront of efforts to promote better mental health and wellbeing for citizens and residents, and to provide early first-line support to patients or those

living with a mental health condition. The [Latrobe Health Assembly](#) is a [community-led](#) state government initiative that seeks to positively shape and facilitate new ways of working to improve health and wellness in Latrobe. Through a co-design process with service providers, public health and government bodies, and citizens, the Assembly has developed an innovative [Mental Health Café](#), a physical space tailored to after-hours and non-emergency stabilisation of people experiencing mental health challenges. Driven by a community-centred approach, the café aims to increase opportunities for peer support and social connection, reduce emergency department presentations for non-emergency mental health issues, and improve mental health consumer experiences and outcomes.

Problem

Mental health in the state of Victoria and Latrobe Valley is a sensitive topic. The results of a 2020 [Victorian Population Health Survey](#) showed that 23% of Victoria's inhabitants present high or very high levels of psychological distress, affecting 35% of young adults aged 18–25 years old. Latrobe displays similar [results](#), with residents 38% more likely to experience mental health conditions including depression or anxiety than the rest of the state. Statistics also show that recurrence of mental health episodes among the population have worsened in the wake of the COVID-19 pandemic. As a consequence, emergency and non-emergency services for mental health have seen their capacities pushed to the limit. In addition, Latrobe faced a handful of operational challenges limiting the delivery of mental health services. Traditional 9 am to 5 pm operation times for mental health services are insufficient to address current patient inflow, not to mention inconvenient for people that work. In addition, there is a [critical shortage of trained psychologists](#) and other mental health workers to meet current demand. Lastly, there has been pressure to fund the strengthening of innovative mental health services, but few indications of how to achieve this at the community level. Officers from the Mental Health Café stated that challenging existing thinking and taking mental health care to the next level was not only necessary, but urgent in small cities like Latrobe.

An innovative solution

Following recommendations from the 2016 [Hazelwood Fire Inquiry](#) on improving health impacts and transforming the future of health in Latrobe Valley, in 2020 the municipality launched a co-design process to address the issue of mental health in the community. The process sought to reimagine engagement with innovation and mental health in ways that would enable a broad range of stakeholders, in particular first-line service providers and citizens, to translate their experiences into a specific service delivery model.

“To have people listen to you and consider your life and real experience is what’s needed. If I can help the next generation by contributing to this, that’s wonderful.” (co-design participant)

Throughout 2021-22, Latrobe's Department of Health and Human services brought together hundreds of local and state-wide providers, doctors and carers, and experts, and prioritised their interactions with existing and prospective patients as the main priority group for engagement and empathy. As officers at the Mental Health Café explained, they created spaces to draw on diverse perspectives and experiences using a variety of engagement methods *“to check whether the concept resonates with people and to get a sense of the services to be provided”*. From there, a series of co-design workshops was organized to translate every aspect of patients' needs into action.

These levels of engagement were fuelled by a strong bottom-up participatory approach that not only gave the patients a voice but also a direct influence in decision making, thereby ensuring their needs are at the heart of the process. In addition, the Latrobe Health Assembly further ruled that 1) the people's

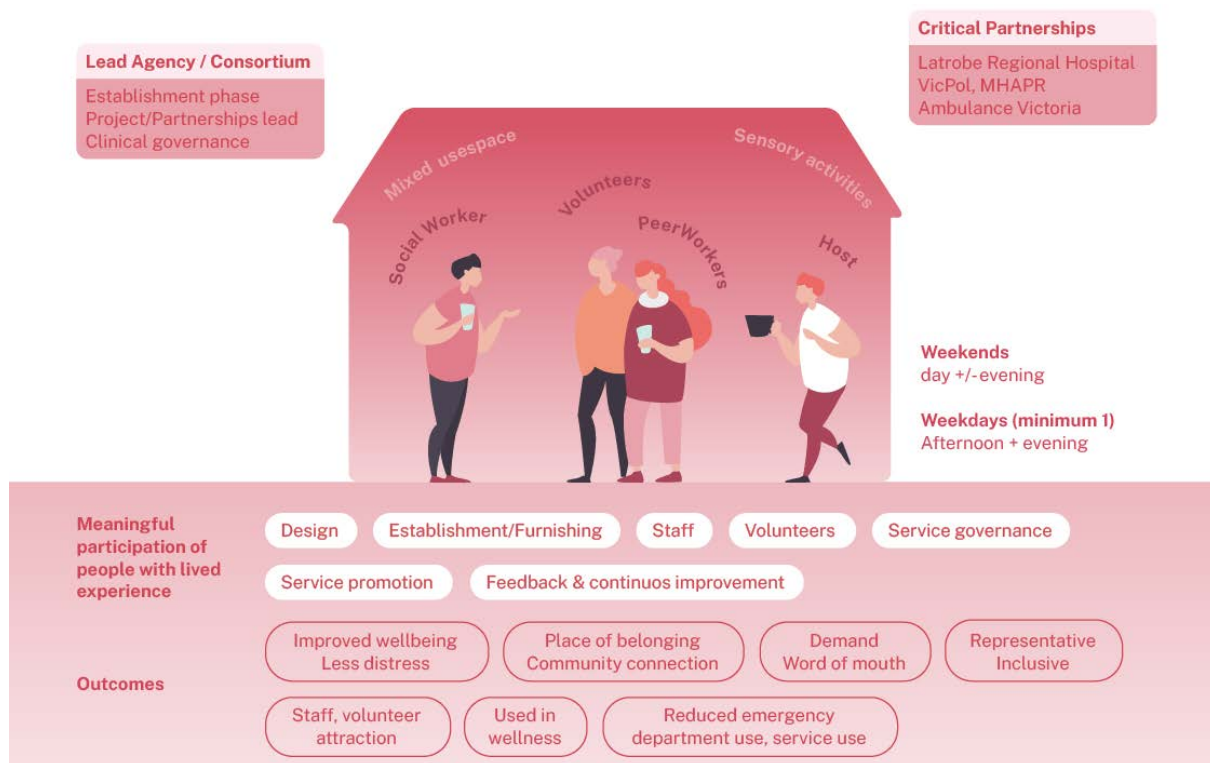
recommendations on service and delivery were non-negotiable, and 2) that the Assembly itself would be bound to implement the co-produced outputs.

These efforts culminated in the creation of the Mental Health Café concept, a peer-led model characterised by evening operating hours, wellbeing supports, a recovery-oriented approach and a commitment to meaningful, ongoing community participation, in particular of people with lived experience as experts, at all decision-making levels. Specifically, the Café seeks to:

- innovate upon the traditional medical model of mental health services
- harness lived experience expertise in the development of supports
- increase opportunities for peer support and social connection, including after-hours support
- improve mental health consumer experiences and outcomes
- reduce emergency department presentations for non-emergency mental health issues
- provide peer support in order to model recovery and build hope, confidence and self-esteem.

As one of its officers explained, the concept of the Café “*needed to scream service*”. Accordingly, the Café was configured around the idea of making patients feel comfortable, allocating caregivers and volunteers strategically to meet their needs and deliver the right set of services, including by redirecting them to other services. The physical space of the Café also serves to experiment with novel approaches, test new solutions and approaches to address the specific needs of patients, and register experience-based evidence related to emerging issues with a view to supporting better policy making at the local and state levels.

Figure 2.8. Mental Health Café for Latrobe Valley



Source: www.healthassembly.org.au/all-projects/mental-health-cafe.

To achieve the above objectives, the Café developed an Outcomes Framework (Table 2.2), a tool by codesigned people with lived experiences to assess all aspects of the model delivery process. The Framework seeks to assess programme fidelity (whether the programme is being implemented as planned) and to help all stakeholders assess and track the success of the programme's outreach over time (whether it is reaching the intended beneficiaries). As one Mental Health Café Officer explained, *"Listening to the community is compulsory (...) it frames our thinking and decision making at all times."*

The Framework is particularly innovative at integrating more traditional outcomes of service delivery with concepts related to the community, patient's and caregivers' wellbeing, and the specifics of its value proposition. It includes four goals that are evaluated using a mix of quantitative and qualitative indicators which will evaluate the extent to which the Café achieves the desired changes for individuals, the community and the organisation. This tool will also help to highlight systemic changes across different sectors, including in public health, and to assess the quality of human resources.

Table 2.2. Outcomes Framework

Goal	Outcome example
A space for positive mental health conversations	Guests (patients) and Café staff/volunteers report feeling safe and supported
A space that responds to community demand (expressed or otherwise)	The Café has guests throughout its opening hours
Building community connectedness	The Café is seen as a safe space in times of wellness as well as in times of need
Improved service access	Guests are provided with pathways to mental health services, as needed

Source: Mental Health Café team.

Having spent the past two years generating ideas, designing solutions, and developing a model and business case, the Mental Health Café has now reached the implementation phase and expects to start operations officially in February 2023. The Latrobe Health Assembly has partnered with [Lifeline Gippsland](#) – the largest nonprofit institution in Victoria State specialised in suicide prevention and support for mental health issues – to lead the establishment and operational phase of the service. Currently, the Mental Health Café is amid the first six-month phase of a two-year pilot, which includes validating the initial concept and, more importantly, guaranteeing its appeal as a community-centred solution to ensure its sustainability and replicability, where possible.

Results and impact

Much of the project work to date has involved the establishment of a strong governance and service model that capitalises on local strengths with an eye on the broader system, including building rapport and evidence for institutional support. For this reason, the Café is currently undergoing an external evaluation with a particular focus on how the Café is developing (here the Outcomes Framework will be used), and how the extended hours are working (a cost-benefit analysis will be conducted).

It is expected that service provision will be tightened at the most granular level of the Café. This implies improving and adjusting the outlet's design, the opening days and times, the way volunteers and caregivers are recruited and the incorporation of living experiences into specific services, among others. This ongoing evaluation process forms part of the Mental Health Café's strong commitment to patient wellbeing and building trust among all stakeholders. According to the Café's officials, *"an initial screening of the co-design process showed ... high rates of engagement among volunteers and stakeholders such as community members and service providers."*

Challenges and lessons learned

The first main challenges were the co-design and community-based model development processes. Latrobe's Health Assembly sought to avoid an overly complex concept to enable the Café to leverage novel methods of service design and delivery, and draw on flexible approaches in order to build institutional commitment and strength. This is reflected in a greater ability to show genuine commitment, empathy and understanding in regard to the lived experiences of people affected by mental health issues.

The Café's approach also demonstrated that policy making in mental health can be implemented at a granular level and that it is useful to avoid some of the consequences of government decisions (i.e. the politicisation of mental health outcomes among a population or the risk of only partially addressing a problem due to lack of understanding or cultural/social bias). In this sense, the non-negotiability of the recommendations related to the kind of services and the way they are delivered were key to building a strong community and bottom-up model. Furthermore, the Café understood the power of diverse conversations and inclusive decision-making for building a strong community.

“When you work in a community, you need to bring together all the actors whose lives you plan to make better” (Mental Health Café Officer).

Additional lessons have come from early engagement of stakeholders and investment of time and resources in shared sensemaking to ensure that the vision is shared and has strong buy-in. Mental health and lived experiences are not only sensitive topics, but mostly unknown, not to mention difficult to approach and reflect upon. The Café, therefore, prioritised early learning opportunities, organising gatherings with a broad base of stakeholders, to hear from groups who would use the services and run them. Strategic tools that are wellbeing oriented, such as the Outcomes Framework, help to understand beneficiaries' experiences and expectations when interacting with the service. The fact that such tools are co-created with the beneficiaries add an important layer of “reality” in the way that results are measured and lessons are pulled out.

Replicability

Although it is too early to assess the replicability of the Mental Health Café concept, three key areas could be interesting and relevant for further study and assessment: 1) the creation of technical and community-centred policy bodies such as the Latrobe Health Assembly; 2) the co-creative process that led to the Mental Health Café concept; and 3) the codesigned Outcomes Framework which reconciles impact measurements with concepts of wellbeing and public value.

New technologies revolutionising healthcare

As can be seen in the previous sub-themes in this trend, emerging technologies and new digital approaches are transforming the ways in which governments and their partners are looking after the health of their people.

Leveraging tech for care at a distance

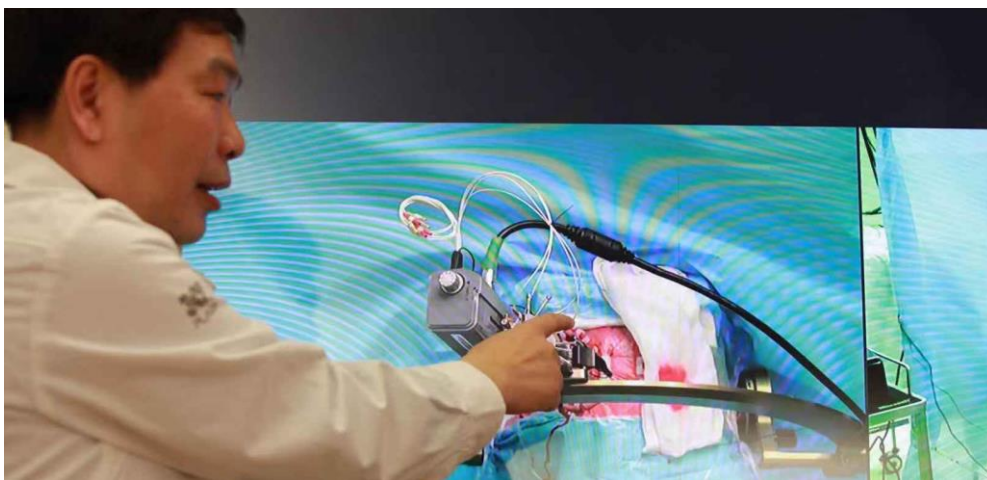
Back in 2020, OPSI and the MBR CGI [reported](#) that the rapid acceleration of digital innovation and transformation was a leading aspect of government responses to COVID-19, successfully compressing years' worth of technological advancements into a few weeks and months. While much of the world is

working to emerge from the pandemic, this trend has continued to flourish, with innovative digital approaches becoming more embedded into the business of government.

One area where this trend has advanced most is remote care, with innovative processes ensuring that people can access care even if they are hard to reach, or if health situations prevent person-to-person contact. Telehealth exploded during COVID-19 (Mantaring et al., 2022^[22]), with nearly half of adults across OECD countries having a remote consultation during the pandemic (OECD, 2021^[23]). Medical interactions online have evolved from band-aid responses such as Zoom consultations to sophisticated and transformative initiatives at scale. For example:

- Hospitals in [China](#) and [France](#) have used 5G technology to conduct real-time remote surgeries (Figure 2.9).
- In Greece, [Cardiac Telerehabilitation](#) is increasing participation in cardiac rehabilitation services through structured, real-time, supervised exercise.
- Israel has developed a [Telemedicine Community](#), a cross-organisational multi-disciplinary health practitioners' community to advance wide-scale, informed and safe telemedicine practices through the creation of a learning environment, knowledge sharing and joint action.
- India's [eSanjeevani](#) National Telemedicine Service is a cloud-based telemedicine platform providing user-friendly, round-the-clock support tapping into an expansive ecosystem of 102 000 health centres and 208 000 providers that serve over 225 000 patients per day.
- Public healthcare and education in Serbia is being transformed through mixed reality technologies to improve patient care while reducing risks to medical staff (Box 2.9).

Figure 2.9. Remote brain surgery in China from 3 000 kilometres away



Source: Handout via <https://engineerine.com/china-performed-its-first-5g-remote>.

Box 2.9. Mixed reality technology for healthcare (Serbia)

Public healthcare in Serbia is being transformed through the innovative use of mixed reality technology powered by AI, increasing efficiency and quality of healthcare, minimising risks and efforts, and optimising procedures. This innovation was launched during the COVID-19 pandemic to reduce the exposure of staff in the red zone, and to minimise their levels of stress and exhaustion, which were manifested in the rising incidence of burnout.

With the support of the Office of the Prime Minister and through partnership with Microsoft, the University Hospital Centre piloted HoloLens2, a mixed-reality device that revolutionised healthcare collaboration and improved the efficiency and quality of healthcare, as well as working conditions for doctors. Rather than the entire medical team, only one doctor enters the red zone with the mixed-reality headset and views all relevant medical documentation and images as 3D holograms, while other doctors monitor from outside providing input and advice.

Beyond the excellent results during the pandemic in terms of medical service delivery and education, mixed reality can play a key role in providing the highest level of healthcare even in the most remote areas, saving time and money, and raising the quality of the service, as top medical teams can remotely treat patients whenever they are located. Indeed, the Serbian Government has recognised this initiative as a promising innovation and has decided to equip all medical centres with mixed-reality technology as part of long-term plans.

Source: <https://oecd-opsi.org/innovations/mixed-reality-healthcare>.

Governments and health providers have also been using robots and drones to help care for citizens and residents at a distance. For instance:

- Singapore’s “[BeamPro](#)” robot can deliver meals and medication to hospital patients, is programmed to chat with patients in four different languages and allows doctors to routinely monitor them (Thomas et al., 2021^[24]).
- The Dominican Republic is using flying and driving [cargo drones](#) for public health to autonomously deliver medicines to remote areas.
- In [Rwanda](#), the government is using drones to deliver blood and essential drugs to rural hospitals.

While many of the issues surrounding robot and drone usage [discussed](#) by OPSI and the MBRCGI involve public safety and policing, with some forms becoming increasingly [controversial](#) in recent years, these care efforts illustrate how this technology can be used to provide critical medical aid. As these practices continue to become embedded, they may move from the realm of innovation to standard practice, with [Forbes](#) indicating that they may become “the next big thing” in healthcare delivery.

Artificial Intelligence for real outcomes

Of all emerging technologies, AI is the most strongly leveraged in care. As touched on earlier in the section on Algorithmic Accountability, AI holds tremendous promise for the public sector, and government are tapping into this potential in a variety of ways. OPSI work has [repeatedly identified](#) healthcare as one of the top areas globally where governments are investing time and energy in exploring and adopting AI. For instance, the recent OECD report on [The Strategic and Responsible use of AI in the Public Sector of Latin America and the Caribbean](#) highlighted the use of AI for personalised outreach for pre-natal and baby care in [Argentina](#), early detection of anaemia in [Peru](#), and detecting depression, anorexia and other disorders

through social networks in [Mexico](#), not to mention a slew of projects focused specifically on COVID-19 response.

The work of OPSI and the MBRCGI also uncovered the growing innovative use of AI in more refined and well-informed ways. For instance, the UK'S NHS AI Lab is bringing together cross-sector stakeholders for co-creation and experimentation around AI to revolutionise healthcare (see Box 2.10).

Box 2.10. NHS AI Lab (United Kingdom)

The NHS Artificial Intelligence Laboratory (NHS AI Lab) was created to accelerate the safe and effective adoption of AI in health and care by bringing together government, health and care providers, academics and technology companies. Its mission is to create a sustainable health and care system which achieves better outcomes, equality and fairness for all.

This innovation comprises five main programmes:

1. The *AI in Health and Care Award* supports AI technologies across the spectrum of development.
2. *AI Regulation* operates programmes to build a safe and robust regulatory ecosystem.
3. *AI Skunkworks* helps the health and care community experiment with AI projects and develop capabilities.
4. *AI Ethics* applies a patient-centred approach to ethical and effective adoption.
5. *AI Imaging* supports the development of imaging technology.

Source: <https://transform.england.nhs.uk/ai-lab>, <https://bernardmarr.com/4-powerful-examples-of-how-ai-is-used-in-the-nhs>.

GovTech startups in particular have been a driving force in innovative forms of care. In leveraging techniques to foster care ecosystems (see earlier section), governments are seeking to better tap into these GovTech ecosystems to bring fresh ideas and techniques to the public. Indeed, some of the most powerful and innovative solutions being used by governments today have come from agile GovTech startups. [Tucuvi](#), a “virtual nurse” for automating medical phone conversations through empathy AI, is an excellent example and is covered in an in-depth case study later in this trend.

Beyond granular projects, Israel's [Challenge Tenders](#) demonstrates an innovative method of engaging GovTech ecosystems to solve urgent health problems not often the focus of startups, such as fall prevention among older people and improvement of geriatric care. Once the Ministry of Health defines a problem, it invites the GovTech community to submit proposals. Those selected receive funding for a 6-12-month test pilot in a real-world setting. For instance, “[GAITBETTER](#)” combines AI and virtual reality for fall prevention and reduced falls by 71% in the senior living community where it was tested. [Brazil](#) has also launched an AI solutions challenge for the public sector, including a focus on health.

In another example bridging the aforementioned topic of mental health with new technologies, GovTech partner [NeuroFlow](#) is working with governments and health systems in the United States to streamline the collection of behavioural health data at scale from different types of public servants (e.g. for firefighters, medics and dispatchers), via an app. An AI then identifies the most at-risk users for mental health issues (Shein, 2021^[25]). Such practices highlight a growing body of work on using real-time data and data science approaches to support mental health, including suicide prevention efforts (Amankwah, Pool and Nass, 2022^[26]). The International Telecommunication Union (ITU) recently published a [round-up of 14 tech-based innovations](#) for promoting good mental health, especially among young people, a number of which involved AI from GovTech startups. Some examples include:

- [ViveTeens](#), a personalised “wellness” companion providing teenagers with content, tools and services that can benefit them
- [Wysa](#), an AI-powered chatbot that helps young people use proven cognitive behavioural therapy (CBT) techniques.

Other initiatives surfaced outside of government include projects initiated by civic tech organisations and nonprofits. For instance, the [Information Society Foundation for the Americas](#) in Argentina has used AI to create an [integrated system of care](#) for victims of gender-based violence (SIAVIGia). The objective of the platform is to provide governments with a tool that allows them to comprehensively assist victims of gender violence, including an anonymous data registry and an AI-based Risk Assessment system that can estimate the probability that a domestic violence case will escalate to greater conflict and even femicide. The [Civic Tech Field Guide](#) has catalogued a number of additional cases involving [AI for care](#).

However, despite this progress and some promising innovations, AI has not quite transformed care as radically or rapidly as expected, with hurdles including insufficient data infrastructure and a lack of collective, interoperable, quality data (Leonard and Reader, 2022^[27]). As data are the foundation of practically all modern AI systems, governments and their partners will need to overcome this challenge if they are to harness the full potential of AI in this field and move beyond one-off, ad-hoc solutions in narrow environments. As noted in recent research on AI for health, “AI that adds value relies on good policy foundations, and, in particular, “strong health data governance – within and across countries – and developing better digital infrastructure and technological capacity” (Hashiguchi, Oderkirk and Slawomirski, 2022^[28]). The discussion on data in the “Re-orienting systems” section of this trend has a major bearing on AI approaches.

Another limiting factor besides data is agreement on guiding principles for ethical and trustworthy use of AI in healthcare (European Parliamentary Research Service, 2022^[29]) (Mittelstadt, 2021^[30]) (Naik et al., 2022^[31]). Key issues include the use of data, data privacy, safety and transparency, and algorithmic fairness. While the [OECD AI Principles](#) and the [Good Practice Principles for Data Ethics in the Public Sector](#) (Box 2.3) may be applied to any area, [health](#) is a specialised field with a high duty of care that may warrant a more tailored approach. As noted in the work of the [EPRS](#), “use of AI in medicine and healthcare has been praised for the great promise it offers, but has also been at the centre of heated controversy”, with risks including:

- patient harm due to AI errors
- misuse of medical AI tools
- bias in AI and the perpetuation of existing inequities
- lack of transparency
- privacy and security issues
- gaps in accountability
- obstacles in implementation.

These risks can be mitigated through (1) multi-stakeholder engagement; (2) increased transparency and traceability; (3) AI training and education for clinicians and other practitioners, citizens and decision makers; and (4) in-depth clinical validation of AI tools ([EPRS, 2022](#)). Recent research underscores the first point, demonstrating that strengthening co-design in health AI systems with end users can help anticipate and address these issues (Donia and Shaw, 2021^[32]). This further emphasises the remarkable achievement of the NHS AI Lab case, which focuses explicitly on co-creation, including with potentially affected members of the public. In their work, Donia and Shaw also compiled some notable myths and misconceptions about co-design for ethical AI for health that practitioners should take into account. Trend 4 also includes relevant discussion on this point.

The efforts discussed in the Algorithmic Accountability section could go a long way to supporting the second point on transparency and traceability. With regard to the third point on training, OPSI and the MBRCGI's 2020 work on [Upskilling and Investing in People](#) helps to set the stage for AI training for both citizens and practitioners, such as through its case study on [Elements of AI](#), a free online course taken by over 500 000 people. Such training of citizens can also help prevent negative trust cycles in which public distrust of AI leads to citizens withdrawing their data, thus exacerbating the issue of biased or skewed algorithmic results. Also relevant is the European Commission's Masters' degree programme on AI in Public Services ([AI4GOV](#)), albeit not in a way specific to the field of care. The last point on clinical validation of AI tools is generally outside the realm of OPSI and the MBRCGI's expertise, but such work may include:

1. A framework for validating AI in precision medicine (Tsopra et al., 2021^[33]).
2. Key Principles for Clinical Validation, Device Approval and Insurance Coverage Decisions of AI (Park, Choi and Byeon, 2021^[34]).
3. The WHO's [Generating Evidence for AI-Based Medical Devices](#): A framework for training, validation and evaluation.

In regard to providing overall guidance on AI for care, Canada, the United Kingdom and the United States have collaborated on principles for good machine learning practices (Box 21). In the latter, the National Academy of Medicine's Committee on Emerging Science, Technology, and Innovation in health and medicine ([CESTI](#)) has also developed an ethical governance [framework](#) for using emerging technologies in this field.

Box 2.11. Good machine learning practices for health – guiding principles

The US Food and Drug Administration (FDA), Health Canada, and the United Kingdom's Medicines and Healthcare products Regulatory Agency (MHRA) have jointly identified ten guiding principles that can inform the development of Good Machine Learning Practice (GMLP). These guiding principles will help promote safe, effective and high-quality medical devices that use AI and machine learning.

1. Multi-disciplinary expertise is leveraged throughout the total product life cycle.
2. Good software engineering and security practices are implemented.
3. Clinical study participants and data sets are representative of the intended patient population.
4. Training data sets are independent of test sets.
5. Selected reference datasets are based upon best available methods.
6. Model design is tailored to the available data and reflects the intended use of the device.
7. Focus is placed on the performance of the human-ai team.
8. Testing demonstrates device performance during clinically relevant conditions.
9. Users are provided clear, essential information.
10. Deployed models are monitored for performance and re-training risks are managed.

Source: www.fda.gov/medical-devices/software-medical-device-samd/good-machine-learning-practice-medical-device-development-guiding-principles.

Case Study: Tucuvi (Spain)

The lack of nurses and doctors in Spain has led to an increase in unmet needs, insufficient medical availability and lower quality of health services. This has had a significant impact on patients with chronic

conditions who require recurrent visits to hospital. In this context, Tucuvi represents an innovative solution that can help both patients and doctors. It consists of a voice assistant that operates through phone calls providing an effective and accessible way to (i) reach users with standardised triage questions and retrieve information on a patient's status; (ii) support early assessment of a patient's health status; and (iii) inform the hospital facility and doctors and nurses about the results, which they can monitor using a dashboard. Using automatic speech recognition and natural language processing, Tucuvi makes remote patient monitoring possible, ensuring continuous care services.

Problem

In Spain alone, it is estimated that almost a third of the population suffer from a chronic disease or illness, a proportion that reaches nearly 60% for those aged over 65 (OECD/WHO, 2019^[35]). This population is predicted to increase in line with the accelerated aging of the Spanish population and the impact of future diseases such as COVID-19 variants. According to a [report on the chronicity of diseases](#), it is estimated that by 2025 a growing share of people over 65 years of age will require multiple treatments due to the increased presence of chronic illnesses or diseases. Likewise, a wave of post-pandemic chronicity is expected in the younger population, requiring an increase in follow-up and care from the healthcare systems, putting more pressure on nurses and doctors, as well as on scarce resources.

Spain has around 330 000 [nursing professionals](#) equating to a ratio of 625 nurses per 100 000 inhabitants, well below the European average of 827 nurses. This lack of nurses makes it difficult to transform the healthcare model towards one of prevention and care. Additionally, lack of information among the population about what care options exist and how to access them, can result in serious physical, emotional, social, financial and other effects due to the absence of such care. This [mismatch between unmet needs, poor medical availability and lack of knowledge](#) contributes to the erosion of trust in hospital and healthcare systems, with resultant impacts on the quality of life of patients, regardless of whether they have a chronic, terminal or other diagnosis.

An innovative solution

In recent years, caring for patients with chronic diseases has become a priority due to the high risk of hospitalisation and the associated intensive use of healthcare resources during and after the COVID-19 pandemic. According to the [Spanish Society of Cardiology \(SEC\)](#), the percentage of 30-day readmissions associated with post-operative heart failures is about 9.5%. Post-surgery care continues at the home of the patient, who must feel safe and have sufficient knowledge of self-care procedures as well as those provided by nurses or doctors. Such situations underscore the importance of [continuous and palliative care](#) provision as part of medical treatments. As Head Doctor of the Spanish nationwide movement “#PatientsWithoutPause” ([#PacientesSinPausa](#)), Alfonso Micó, points out that *palliative care is fundamental to every step of a patient's recovery/treatment (...) Doctors and nurses know patients best and should be able to remain a step ahead of any condition, illness or disease*”.

This shift in perspective is predicated on the introduction of [new tools and knowledge](#) for the Spanish healthcare system, including digital tools to support and monitor patient treatment as well as associated risk factors. In December 2021, the Ministry of Health published the [Digital Health Strategy](#) (EDS), a document that envisages an optimised healthcare model for Spain which takes advantage of the benefits offered by new technologies and makes better use of existing ones. The EDS prioritises assistance for primary care centres and encourages greater follow-up of patients after hospital discharge as a useful and cost-effective tool to avoid high volumes of emergencies, especially those that are preventable. The identification of patients who only require a single call, while respecting others who require more urgent care, represents an advance in the integration of voice systems, automatic call systems and implementation of new technologies in support of doctors and nursing staff. This approach represents an

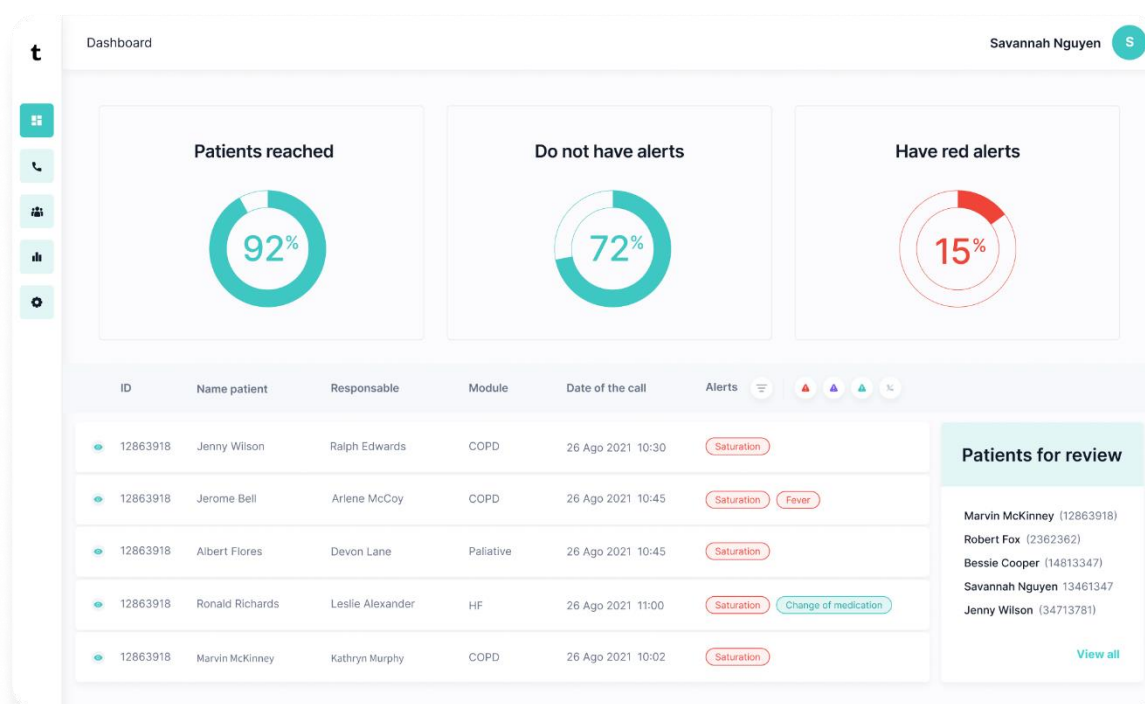
opportunity for telemonitoring, remote monitoring and surveillance of patients with chronic or persistent symptoms as well as those with a post-operative status or a diagnosis.

In this context, the innovative [AI nurse “Tucuvi”](#) has emerged to augment the capacity of healthcare professionals and provide continuous care for the elderly and chronic patients at home. Tucuvi is an AI voice-powered virtual caregiver who supports doctors and nurse professionals in three main ways:

1. Reaching out to users with standardised triage questions to learn about a patient’s status;
2. Supporting early assessment of a patient’s health status (e.g. determining whether the patient is potentially at risk and needs to go to an emergency ward); and
3. Informing the hospital facility and doctors and nurses about the results, which they can monitor using a dashboard.

Furthermore, Tucuvi accomplishes the above without requiring patients to download any software or app. Assessments are made by phone calls where callers interact directly with the AI chatbot “Lola”.

Figure 2.10. Tucuvi’s monitoring dashboard



Source: <https://www.tucuvi.com/platform>.

The nurse “Lola” operates regardless of a patient’s location or technological capabilities. The AI caregiver talks to the user, analyses their conversations in real time using Natural Language Processing (NLP) techniques, and processes and shares the information to produce a specialised assessment. “Lola” thus enables [remote patient monitoring](#) to ensure that healthcare from any public or private facility is delivered more quickly and continuously, while maintaining safety standards and quality of care. The chatbot is also well trained in replicating a “common” interaction between a patient and their doctor.

Tucuvi’s main goal is to help doctors and nurse professionals monitor their patients automatically using AI. This process constitutes first level of attention or triage, where the patient is asked frequently common

questions such as: How do you feel today? Did you have fever within the last 24 hours? Are you experiencing any side effects? Follow-up phone calls are made to patients at 48 hours, 7 days, 15 days and 30 days after performance of a specific medical process (i.e. any surgery) or after a diagnosis (i.e. diabetes, or COVID-19). In the event that the patient is not reachable on the first attempt, up to three more attempts are made for each scheduled call. In a [user case conducted at the University Hospital “La Princesa”](#) in Madrid, the virtual assistant enabled the follow-up of 100 patients with COVID-19, with an answering rate of 69% and a success rate of call finalisation of 62%. The average length of calls was 2.1 minutes, with [alerts](#) generated to be delivered to nurses and doctors for personalised follow-up.

Tucuvi also addresses the need for easy-to-use technologies for patients and healthcare personnel. María González Manso, CEO and co-founder of Tucuvi, explains that *“although several healthcare and patient-oriented instruments/technologies are available in the market, they are too complex to understand and use”*. Using a diverse array of products and technologies to monitor and gather key information about patients’ status and wellbeing is highly inconvenient, especially during a pandemic. Tucuvi’s digital approach in the back end allows for:

- post-recovery monitoring and support for patients at home
- follow-up of high-risk populations without placing an extra burden on healthcare professionals
- remote monitoring of other pathologies without mobilising the hospital or emergency room
- rapid and scalable monitoring for elderly people living alone
- detection of patients’ support needs, including cleaning, shopping, support with basic tasks, etc.
- dissemination of new measures and educational elements to people difficult to reach by digital means, such as the elderly
- ensuring the population are safe, informed and monitored through regular check-ups.

Novelty

Tucuvi’s main innovation is twofold: (1) it uses a simple phone call-based approach to reach out to patients, reducing the impact of the technology gap; and (2) its powerful NPL-based processing technology manages to interpret what the user needs and is constantly trained to learn from every interaction. As Tucuvi is capable of communicating via a telephone line, the patient does not even require Wi-Fi or a smartphone to be monitored and assessed, only a landline phone. Tucuvi also personalises interactions and can quickly adapt to new use cases, as well as learn from those interactions, and according to different needs.

Crucially, Tucuvi is not an Interactive Voice Respondent (IVR) – a pre-set system that gives patients a default menu. It is an AI-based system that allows for a fluid conversation and interaction with the patient’s needs. As Tucuvi’s co-founder María González explains, the aim was to move away from the traditional “press 1 or 2” approach. Instead, the Tucuvi AI works integrates large amounts of data to generate predictive and interactive models. The innovation uses a generalist NLP model, which the designers hope to enrich in order to move towards the creation of custom models that can detect symptoms and target specific medical conditions and diagnosis requiring a tailored triage approach. Finally, in order to ensure these innovative processes are safe for patients, Tucuvi’s AI and NLP models are certified as medical device software by the Spanish Agency of Medicine.

Results and impact

As of today, “Lola” the virtual caregiver has had over 1 million [patient conversations](#) and flagged thousands of risk cases that need particular attention. In the case of the University Hospital “La Princesa”, Tucuvi’s protocol was adapted to monitor patients experiencing post COVID-19 symptoms, including Long COVID.

One of the most notable features of the assistant “Lola” is its manner of expressing itself. The jargon, language and overall approach has been adapted to forms of speech used by the elderly and ways in which this group interprets indications.

“We must start from the premise that a nurse’s attitude towards his or her patients is usually accompanied by an affection and love that is not distilled in other personal interactions. Therefore, we had to nurture the personality of “Lola” with these characteristic traits using, for example, diminutives that convey more affection and closeness. All this has led us to patients describing Lola as affectionate, close, kind and polite.” (María González, CEO and Co-Founder of Tucuvi)

In addition, “Lola” has proven to be versatile, adapting to different use cases, including by improving medication adherence, monitoring symptoms of some of the most prevalent chronic diseases in the elderly, conducting satisfaction surveys with caregivers and promoting good habits.

Challenges and lessons learned

Some key challenges affected the development of “Lola”, which was driven by the ambition to infuse her with the intelligence and empathy necessary to communicate in a simple and effective manner with patients while providing useful information to healthcare professionals. These challenges involved:

- *Automatic speech recognition.* Capturing users’ words accurately was crucial to obtaining relevant and accurate information on a patient’s experience. However, poor acoustic conditions often made it difficult to distinguish a patient’s voice from background noises. Furthermore, Lola encountered difficulties in understanding when patients’ sentences started and finished due to the lack of trigger word and the frequency of long sentences. More accurate AI systems had to be developed to address these issues.
- *Latency.* Communication with patients needed to be natural and fluid but the ability to capture information and quickly prepare a reply is hard for AI models. Furthermore, the absence of visual elements to indicate that the system has received and is processing the necessary information, represents a disadvantage compared to systems such as Alexa or Siri. Following significant work on the underlying algorithms, Lola was able to achieve the desired low levels of latency.
- *Distrust.* Patients tend to distrust virtual assistants – indeed, initial interactions with Lola are often monosyllabic. The greatest benefits of Lola occur when patients elaborate about their condition. To ensure trust, it proved important to communicate clearly with patients about the purpose of Tucuvi – which does not replace human health professionals – and to diffuse information about its success. This is proven by the fact that on average patients rated their experience of talking with Lola as 4.7 out of 5.

Replicability

Tucuvi’s applications are many and the innovation has high potential for replicability:

- *Estimating the number of infected people:* Tucuvi will be able to estimate the number of infected in a household. With a single telephone number more than 100 000 calls can be received and analysed each day.

- *Follow-up of chronic patients with other pathologies and diagnosed patients at home.* Through periodic calls, Tucuvi will be able to evaluate the evolution of symptoms among infected persons.
- *Identification of support needs.* Tucuvi can make calls to people living alone and in isolation, and identify their support needs. In Spain, the estimated population in this situation is 2 million people.
- *General information:* Tucuvi can act as a telephone number to resolve doubts related to most diseases and illnesses.

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