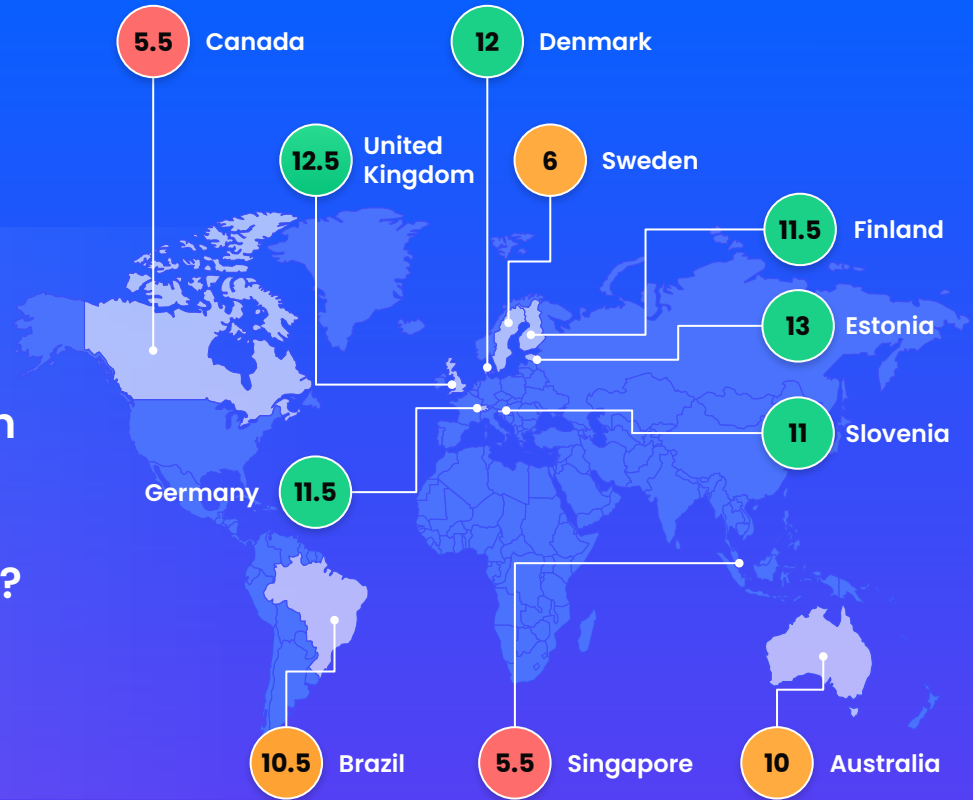


## Global Digital Health Policy Maturity

### Canada in comparison

How does Canada's digital health policy context and focus on interoperability compare with other countries around the globe?



Sponsored by Roche Canada

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# About this report

Around the globe, governments are increasingly moving towards digital health approaches.

**Digital health** is the field of knowledge, practices, data, and technology that:

- Advances the health and wellbeing of people at the individual and population levels
- Reduces health inequalities
- Fosters an ecosystem of health stakeholders able at various times to collaborate, coordinate, co-create and compete, and
- Enables personalised health care and active participation of patients.

In a digital health context, this is done through:

- Intelligent processing of clinical and genetic and other sources of data
- Enabling respectful and ethical participation of individuals, caregivers, healthcare providers, researchers, governments and industry in health-related activities
- Focusing on innovation, and
- Maximising efficient and sustainable use of resources.

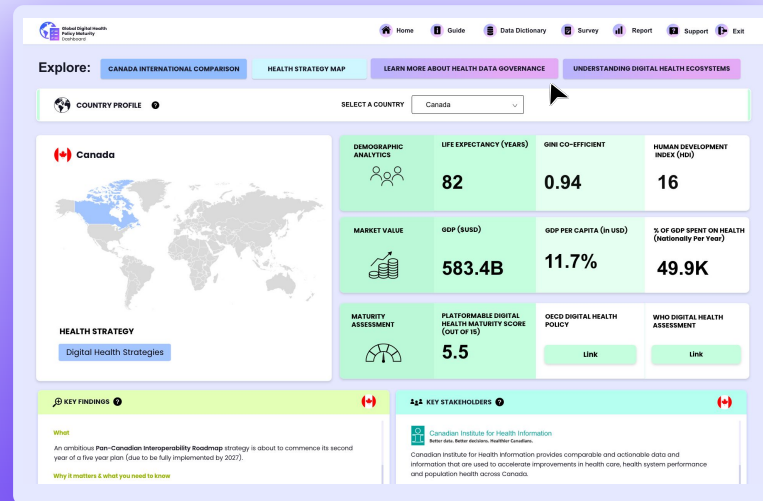
As governments move towards digital health models that support digital healthcare delivery and improve population health within available resource constraints, three key areas need to be addressed:

- **Infrastructure:** The digitisation of health systems to enable data sharing and use in a responsible and ethical manner
- **Access and implementation:** Good data governance policies, systems and processes that enable the use of data within regulatory frameworks, with data interoperability and reuse core to generating value from digital systems
- **Participation:** Mechanisms to support a broad range of stakeholders, including patients, to co-create value from health systems and digital health initiatives.

This report describes Canada's maturity in adopting a digital health policy approach, and compares this with leading countries around the globe. An interactive dashboard is also available to delve deeper into the data and links available to help better understand each country's maturity, current challenges, and key strategies.



## Start exploring Global Digital Health Policy Dashboard



Free access to all



Canada international comparisons research and support for this website funded by Roche Canada



# Overview



# Connected data across Canada

## The challenges of a major policy shift towards interoperability

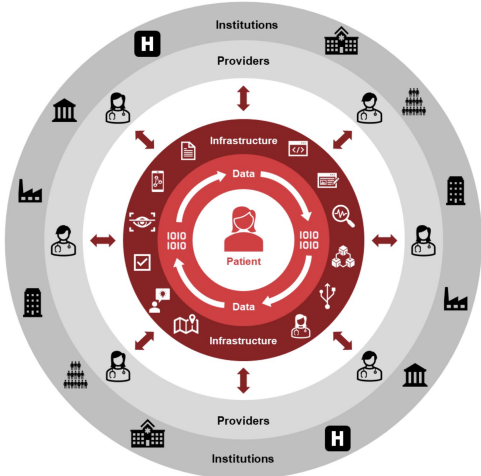
Canada has set itself a large undertaking in seeking to address health data interoperability across the country.

The nature of the devolved health responsibilities between provinces and the Federal Government require negotiated actions to be agreed with each of the ten provinces. This then needs to be documented and signed off in bilateral health funding agreement priorities. Provinces may see other priorities as more important for citizen health and health service optimisation than joined up data systems.

Even when there is agreement and alignment, the scale and complexity of the work can be challenging to address.

The Interoperability Roadmap was published in May 2023 and is currently in the second year of implementation, with goals for completion by 2027. As 2024 concluded, seven key challenges were evident that will impact on the success of actions to achieve greater interoperability in 2025:

- Strategic complexity
- More concerted ecosystem-based approach
- Consolidate open approach
- Slowing pace
- Misalignment between interoperability and data justice
- Limited resources on data governance best practices
- Lack of a lighthouse project in a specific domain.



**Above:** The four goals of the pan-Canadian Interoperability strategy

**Left:** The digital ecosystem as envisioned by the pan-Canadian Interoperability Strategy

**Source:** Shared Pan-Canadian Interoperability Roadmap



# Key challenges in connected data across Canada

Seven challenges are observed in encouraging faster, collaborative actions to deliver on the Interoperability Roadmap.

## 1. Strategic complexity

Canada's Interoperability Roadmap is a well defined policy strategy with an ambitious agenda and 4 key goals. However, interoperability is part of a wider conversation that requires alignment with a pan-Canadian health data strategy, innovation agenda, digital health strategies, and national-provincial health platform infrastructure.

There are some core components to the Interoperability Strategy that appear missing or have not been the focus to date, which makes it challenging for actors to engage in the body of work needed to be completed.

Elements that would be helpful include:

- **Clear, overarching digital health and data strategies.** There are some actions identified by the Health Data and Digital Health Action Plan proposed by the National, Province and Territorial Table but no detailed strategy or investment plan. There are Pan-Canadian Health Data Charter principles, but no clear Health Data Strategy. The work of the CIHI in mapping data being collected is somewhat out of date, and difficult to align with data models or understand use for research potential. It is challenging to see in one place the progress of the Interoperability Roadmap initiative.
- **Building block resources at a higher level.**
  - There are detailed resources on the data content framework that explains alignment with health standards, but an overarching list of key health datasets is missing.
  - There are narratives of the health standards being used across Canada and a webpage directory but no single source of truth data table that lists the standards and their official usage and definitions at the province level (as we have developed on page 17 of this report).
  - The pan-Canadian Interoperability Specifications require drilling down individually into each standard to see notes on current progress.

- No information was located that describes datasets that would be considered highest priority for research and innovation or those that are essential for healthcare service planning and delivery, although some indicator work is identified for measuring service optimisation in future (the progress on developing these indicators was unclear).
- No information on the degree of maturity in disaggregating data to assist health equity planning was located.
- A registry of EMR vendors and provincial certification systems was not found.

## 2. Limited ecosystem approach

Digital systems fundamentally shift market dynamics. The interplay of regulations, standards, and market actions in a sector like health (where there are aspects of service delivery that are based on human rights and access for all and other aspects that enable market-based competition and global innovation) lends itself to an ecosystem approach.

***A digital ecosystem is a network of equitable relationships in which stakeholders can share common digital public infrastructure to build solutions and offer services. In an ecosystem approach, stakeholders may at times coordinate (such as when working together to define standards), collaborate and co-create (for example, when sharing data to create new solutions and services or partnering on research), or compete in traditional market behaviour.***

An ecosystem approach recognises these different relationships and supports stakeholders to contribute to shared services. Interoperability is at the core of enabling an ecosystem approach as it is the component that enables stakeholders to share resources and build new digital solutions on top of common tooling and datasets. Training in developing an ecosystem mindset may be needed for Interoperability Pathway leads.

The Interoperability Roadmap describes stakeholders that are essential for action, and while there are consultation processes in place to encourage feedback on draft data standardisation and working groups that allow self-nomination to participate, it is unclear whether stakeholders are invited to take a more active role in standards discussion. Key stakeholder groups, such as doctors (who will be responsible for data collection using interoperable solutions), have raised concerns that they are not sufficiently engaged in discussions to date.

# Key challenges in connected data across Canada

## 3. Raising the bar on openness

The capacity of the interoperability to work in the open – with working group meeting notes and presentations shared online – is highly commendable. However, there is still some complexity in information sharing. For example, the Infoways website which oversees the Interoperability Roadmap does not have a menu item for Interoperability. Recent consultations such as the data content framework are not clearly signposted.

Progress on foundational digital health elements like the introduction of a new Connected Care Act are shown as having had first reading in Parliament but no further progress or roadmap on expected resolution is available. Key strategy elements like the Health Data and Digital Health Action Plan do not have a clear dedicated lead organisation or website.

While Interoperability roadmap activities were indicated in the province bilateral agreements, this is not being defined with implementation activities. There were no updates on the interoperability roadmap published on any provincial department of health website and local stakeholders were not informed of any progress or ramifications of this work.

## 4. Slowing pace

Concerns have been raised, most notably by the [Canadian Medical Association's Interoperability Taskforce](#), that efforts to implement strategies identified under the Interoperability Roadmap have begun to slow, with less of a sense of urgency and momentum as when initially commenced.

## 5. Misalignment between interoperability and data justice

A growing body of work internationally is reframing data interoperability in terms of data justice goals. For Canada, this would be a natural alignment given the leadership work of First Nations in establishing the [CARE principles](#) that recognise the importance of collective action, autonomy, responsibility and ethics. Many of the approaches to addressing First Nation health data governance are seen as separate strategies to Canadian-wide data governance approaches, rather than recognising the leadership of First Nations in setting a model for data governance and data justice that could be used across the country.

At the core of interoperability goals is the improved ability to share and reuse data. That requires greater participation of patients and the public for which the data is about. At its core, interoperability requires trust. Trust frameworks, clear data governance processes, active participation of patients, mechanisms that support autonomy and engagement, and an ongoing communication of the value and risks from increased use of health data are part of a [data justice model](#) that recognises interoperability as an aspect of responsible and ethical data use. As interoperability roadmap strategies have been implemented, it is not always clear that the community has been brought along or that the benefits and concerns of interoperability are being raised as part of a public conversation.

## 6. Limited promotion of data governance best practices

In building health data sharing digital public infrastructure, there is a need for Trust Frameworks to be developed that enable data sharing at scale. This has been highlighted in the Interoperability Roadmap strategy. However, as a capacity building exercise, there is limited focus on supporting all stakeholders to align through developing best practice data governance policies and processes. This is reflected in the fragmented approach taken at the provincial level, where provinces have various requirements on personal health information access, and differences in data platform capacities, with some having a nominated data stewardship body and providing a secure data environment while others do not. One aspect of interoperability is organisational interoperability, which is an organisation's capacity to implement data governance. At the Canadian level, data governance best practices and standards could be shared, including explanations of Trust Frameworks, noting how to adapt to local cultural and community priorities.

## 7. Lack of a lighthouse project in a specific domain

Draft work to progress the data content framework initially focuses on patient summaries. This is a big body of work, and understandable as it is at the core of an EHR which would then enable a whole range of datasets to be standardised. However, a lighthouse project showing how interoperability could improve healthcare, population health outcomes, and health services management and planning in a specific burden of disease area could assist stakeholders to engage more readily, demonstrate value, and enable testing of assumptions and processes more clearly.





INFRASTRUCTURE

1.5/4



ACCESS & IMPLEMENTATION

3/7



PARTICIPATION

1/4

TOTAL

5.5/15

Canada is in the process of “reorienting the ship” after years of growing fragmentation for health data infrastructure. In part because of the nature of province and national autonomy and decision-making around health data infrastructure, there are specific challenges in encouraging a uniform approach nationally. However, other countries with a similar political model (Australia, Switzerland, and Slovenia, for example) have all managed to develop comprehensive digital health strategies that support connected health data, fit-for-purpose digital infrastructure, and best practice approaches in data governance.

The lack of a Canadian health data strategy reduces visibility on the data infrastructure available and obscures some of the goals of the interoperability roadmap, which at this stage are focused on use of health data for interoperability at the primary care service delivery level. Use of health data for research, health tech industry growth, and improved health services management and planning is not widely recognised as a priority in current realignment activities.



## KEY FINDINGS

1

An ambitious Pan-Canadian Interoperability Roadmap strategy is about to commence its second year of a five year plan (due to be fully implemented by 2027). However, an [eighteen-month follow up report](#) by the Canadian Medical Association’s Interoperability Taskforce has found that actions are beginning to slow, and that key ecosystem stakeholders including healthcare providers are not sufficiently involved in activities.

2

In June 2024, Bill C-72, the [Connected Care for Canadians Act](#) was introduced. The aim of the act is to “enable a modern, connected care system, in which health information can be securely accessed by patients and shared between providers, when needed”. The legislation and accompanying regulations require all IT companies providing digital health services in Canada to adopt common standards and allow for protected and secure information exchange across various systems. The Act also prohibits vendors from “data blocking”. The legislation still requires a second reading and to be passed before it can be put into effect.

3

A data content framework has been developed and is seeking feedback, although the consultation period may have recently ended. To date, this work focuses on Patient Information Summaries and includes reference to LOINC, HL7, ICD-10-CA and Canadian-based standards.



## KEY STAKEHOLDERS

ORGANISATION	ROLE
CIHI	Canadian Institute for Health Information provides comparable and actionable data and information that are used to accelerate improvements in health care, health system performance and population health across Canada.
Infoways	Infoways is an independent, not-for-profit organization funded by the federal government and accountable to our Board of Directors and Members of the Corporation (Canada’s 14 federal, provincial and territorial deputy ministers of health). Infoway leads much of the Pan-Canadian Interoperability Roadmap work.
Digital Health Interoperability Taskforce	Membership made up of the Canadian Medical Association (CMA), Canada Health Infoway (Infoway), the College of Family Physicians of Canada (CFPC) and the Royal College of Physicians and Surgeons of Canada (Royal College).
Public Health Agency of Canada	National body responsible for health data, science, research, statistics, determinants of health, and monitoring and surveillance



## KEY DOCUMENTS

**CIHI Strategic Plan 2022–2027:** Key goals include improving health system and infrastructure; improve data governance across all jurisdictions; increase use of advanced analytics; tailor analysis to local contexts; facilitate data sharing; and work with First Nations communities.

**Pan-Canadian Interoperability Roadmap:** This core document describes in detail the ambitious plan to standardise and align health data across the country. Work in the current phase (to end of 2025) includes creating alignment of patient summaries with standards (see below Data Content Framework), trialing data portability specifications, establishing data exchange processes for patient access to data, and creating a scalable data governance framework.

**Pan Canadian Health Data Content Framework:** Defines and standardizes health information by way of the Data Content Standard and common data architecture. For implementers of the Pan-Canadian Health Data Content Framework, these products define how data should be captured and stored, as well as what data should follow patients from one care setting to another. These products are essential for information and decision-making in clinical care planning, resource management, population health and health system use.

**Pan Canadian Interoperability Specifications:** Online site with specification libraries and reference architecture.

**Joint FPT Action Plan on Health Data and Digital Health:** Ministers agreed to continue to work collaboratively to advance the Action Plan, while respecting that differing health information systems and capacities exist across provinces and territories. There is mention this body of work is being led by a Table but there is no further details or a webpage on current activities and province-level information did not discuss some of the initiatives described such as the conformance/alignment of province-level data protection frameworks. There is a short mention of the Public Health Data Steering Committee working with the Table but there is no website and it is not listed as an official advisory group of the Public Health Agency.

**Pan-Canadian Health Data Charter:** Highlights principles to guide health data activities, although no strategy has been published and no specific body is named to oversee the Charter.

*“Each stakeholder group – patients, policy-makers, health administrators, health professionals, data experts/health informaticians, industry/EHR vendors, health researchers – is necessary but insufficient to address this issue of data and human interoperability by themselves. If collaboration is called for, then the optimal way to go would be through joint vision, shared passion and holding ourselves and each other accountable to meet the goals.”*  
– Canadian Digital Health Interoperability Task Force member




## DATA STANDARDS AND DATA MODELS

- ✓ SNOMED CT CA
- ✓ HL7
- ✓ LOINC
- ✓ UCUM
- ✓ Canadian Clinical Drug Data Set (CCDD)
- ✓ ICD-10-CA




## DATASETS

- ✓ [Health datasets published by Public Health Agency of Canada](#)
- ✓ [Statistics Canada Biobank](#)
- ✓ [Statistics Canada health datasets](#)
- ✓ [Health Claims Insurance Database](#)
- ✓ [Health outcomes data published by CIHI](#)
- ✓ [CIHI Health Data Indicators](#)

 INFRASTRUCTURE	1.5 <sub>/4</sub>
Digital health leadership institution	0
Investment in digitization for primary use of health data and patient consent	0
Commitment to interoperability	.5
Data models and data standards used	1

 ACCESS & IMPLEMENTATION	3 <sub>/7</sub>
Data steward role	1
Legal and governance frameworks for sharing data with patients	1
Legal and governance frameworks for sharing data with healthcare providers	0
Legal and governance frameworks for sharing data with public sector research	0
Legal and governance frameworks for sharing data with private sector research	0
Datasets landscape mapped and publishing calendar	1
Data used to address health inequalities	0

 PARTICIPATION	1 <sub>/4</sub>
Public/private partnerships to pilot innovation	1
Patient participation in use of health data (consent, trust building, involvement, representation)	0
Data literacy and workforce development	0
Data literacy for patients/public	0

# Canada in comparison



# Canada in comparison – scores

COUNTRY	SCORE	LEARNINGS FOR CANADA...
Canada	5.5	While Canada has a key focus on interoperability which is commendable, the level of engagement with sectors and the risk of this agenda currently stalling is great. A regulatory framework at the national level has also stalled.
Australia	10	Australia's approach to addressing policy interoperability by ensuring that separate strategies all align and reinforce is a model worth pursuing in Canada. The involvement of a broad range of ecosystem stakeholders is also worth noting.
Brazil	10.5	Brazil's centering of the patient at the core of digital health ensures participatory mechanisms and reinforces digital literacy initiatives.
Denmark	12	Denmark's approach to approval processes for digital apps is novel and could encourage greater digital health tech participation in the Canadian ecosystem.
Estonia	13	Ongoing investment is recognised in order to revitalise digital health infrastructure. One wave of modernisation is no longer enough: governments must be prepared to invest in updating electronic health record infrastructure on a regular basis.
Finland	11.5	Finland's MyKanta e-patient portal is a world leader, allowing patients to also upload their own health data to complement healthcare provider sources. A clear regulatory framework at the national level enables data access for all stakeholders.
Germany	11.5	Germany's national data regulatory framework is coupled by a secure data exchange platform which allows access to health data for research and other approved purposes in a secure environment where data is not removed.
Singapore	5.5	Singapore has a country and citizen-wide digital blueprint that helps inform digital health plans.
Slovenia	11	Slovenia's ambitious goal to become the European digital health leader was a rallying call for stakeholders to work together in an inspired and collaborative culture.
Sweden	6	Sweden shows how a lack of leadership and coordinated strategic planning focus can limit effective action.
United Kingdom	12.5	UK has ensured key building blocks are in place but must do better at building trust with patients on the use of health data.

# Canada in comparison – summary

## Canada performs poorly against leading countries with well-developed digital health strategies

Australia and Slovenia are useful comparisons for Canada as both deal with bilateral responsibilities similar to the Canadian political environment.

Australia has reached bilateral agreement over many years for a national role in data standardisation, data model design and data collection which enables consistent interoperability across the country, despite health service delivery autonomy being maintained at the state level. This is not without its own challenges: national patient portals for example include some data such as access to prescription details and diagnostic results for areas like medical imagery. However, for patients, it is still a fragmented process. There is the promise at the state level that electronic health records, immunisation records, and bookings features will be added but it is unclear how advanced these are in implementation progress at this stage.

In Slovenia, the national digitalisation strategy proposes a hybrid governance model that ensures delivery of health at the state/regional level and national data collection and standardisation at the national level, as well as creation of common digital infrastructure for the country. Work continues to

shift towards an API-first architecture in which systems can evolve and grow and data can be exchanged securely at scale.

Like both Australia and Slovenia, Canada has challenges in creating national regulations and authorities to enable the sharing of health data, especially with private research bodies. Benchmarking and learning from experiments in overcoming these challenges would be a useful area of cooperation for the future given the similarities facing the three countries. The successes in achieving national data standardisation and interoperability in Slovenia and Australia which are more successful than Canada could be shared to encourage greater collaboration between the national government and provinces.

Canada can also look to Finland, Estonia, Germany and Denmark for inspiration. These countries are global leaders in building secondary use of health data regulatory and governance frameworks and enabling interoperability of health data for a variety of purposes.

# Australia



INFRASTRUCTURE

3.5/4



ACCESS & IMPLEMENTATION

4/7



PARTICIPATION

2.5/4

TOTAL

10/15

Australia has a well-detailed series of interconnecting strategies, starting with the Digital Health Strategy, but including roadmaps, interoperability strategies, workforce capabilities action plans and so on. In addition, Australia has taken a strategy interoperability approach: ensuring the Digital Health Strategy aligns with other key government strategies across health and digital innovation more broadly. Oversight structures include advisory committees involving patients, however the Chair of this committee is currently vacant and details of committee members is limited.

Where Australia falters is national regulations: states have responsibilities for managing health data access and as a result there are also limitations to national electronic health portals for patients (which can share prescription records and diagnostic results but not book appointments or share electronic health records, for example). The lack of national regulations also means that much of the focus for health data access nationally is on the ability of public authorities and registered academic institutions to access data rather than private sector stakeholders.



## KEY FINDINGS

1

Australia's Digital Health Strategy is a clear, well-laid out national strategy with a range of roadmaps, supplementary documents and area action plans that are interlinked and provide a clear and through strategic way forward for advancing digital health goals. However, Because of the challenges in the division between national and state-based health responsibilities key areas remain fragmented, including regulations overseeing health data use for secondary purposes, and patient portal

2

Australia's health data fabric is managed at a national level, with clear alignment with international and national standards and regularly reported datasets in aggregate, anonymised formats. A full range of datasets is available.


3

National Medical Research Commercialisation initiatives are in place with clear funding (although small) across 10 years to enable private sector involvement in research and commercialisation of emerging health tech. However, this is quite separate from access to health data to be used for research purposes.




## KEY STAKEHOLDERS

ORGANISATION	ROLE
Australian Digital Health Agency	The Australian Digital Health Agency (the Agency) is a corporate Commonwealth entity established by the Public Governance, Performance and Accountability (Establishing the Australian Digital Health Agency) Rule 2016. Their mission is "To create a collaborative environment to accelerate adoption and use of innovative digital services and technologies"
Australian Institute of Health and Welfare	The AIHW is an independent statutory Australian Government agency with more than 30 years of experience working with health and welfare data.

 INFRASTRUCTURE	<b>3</b> <sub>/4</sub>
Digital health leadership institution	<b>1</b>
Investment in digitization for primary use of health data and patient consent	<b>.5</b>
Commitment to interoperability	<b>.5</b>
Data models and data standards used	<b>1</b>

 ACCESS & IMPLEMENTATION	<b>4</b> <sub>/7</sub>
Data steward role	<b>1</b>
Legal and governance frameworks for sharing data with patients	<b>0</b>
Legal and governance frameworks for sharing data with healthcare providers	<b>0</b>
Legal and governance frameworks for sharing data with public sector research	<b>1</b>
Legal and governance frameworks for sharing data with private sector research	<b>0</b>
Datasets landscape mapped and publishing calendar	<b>1</b>
Data used to address health inequalities	<b>1</b>

 PARTICIPATION	<b>3</b> <sub>/4</sub>
Public/private partnerships to pilot innovation	<b>1</b>
Patient participation in use of health data (consent, trust building, involvement, representation)	<b>1</b>
Data literacy and workforce development	<b>.5</b>
Data literacy for patients/public	<b>.5</b>

# Brazil

## INFRASTRUCTURE

3/4

## ACCESS & IMPLEMENTATION

5/7

## PARTICIPATION

2/4

## TOTAL

10.5/15

Brazil's Digital Health Strategy is a mix of leadership qualities and some limitations in how a mature digital health ecosystem can be fostered. Several key gaps exist: there is unclear data governance and legislative frameworks for the sharing of health data for some audiences, unclear partnerships for innovation with industry or other external stakeholders, and limited features available through a patient portal. But there are legislative commitments to data interoperability, strong use of international standards, and an extensive library of health datasets available.

## KEY FINDINGS

1

### Interoperability approaches embedded into legislation

Ordinance's require a commitment to adoption of interoperability standards by all stakeholders. This promotes robust data governance that ensures interoperability can assist in building a mature digital health ecosystem.

2

### Strong equity focus

Brazil's Digital Health Strategy specifically describes core data indicators to be monitored for reduction of health inequalities. Data infrastructure and interoperability aim to be leveraged to reduce health inequalities.

3

### Patient/citizen as Protagonist

The digital health strategy has a model in which users/patients/citizens are seen as the central protagonist in why digital health should be delivered. As a result, new collaborative models of patient participation are highlighted as a priority area to build out over the strategy lifespan.




## KEY STAKEHOLDERS


ORGANISATION	ROLE
CGESD	The Digital Health Strategy Steering Committee (CGESD), instituted through CIT resolution no. 46/2019, plays the governance role of the Digital Health Strategy at the strategic level, in line with the guidelines, objectives, and goals established in the National Health Plan (BRASIL, 2016) and the National Public Health Policies.
MINISTÉRIO DA SAÚDE Secretaria-Executiva Departamento de Informática do SUS	In 2023, Brazil's Ministry of Health (Ministério da Saúde/MS) created the Secretariat of Information and Digital Health (Secretaria de Informação e Saúde Digital /SEIDIGI), which coordinates digital transformation within the SUS with the goal of expanding access and promoting integral and continuous healthcare.




**SCORE BREAKDOWN**

 <b>INFRASTRUCTURE</b>	<b>3</b> <sub>/4</sub>
Digital health leadership institution	<b>1</b>
Investment in digitization for primary use of health data and patient consent	<b>.5</b>
Commitment to interoperability	<b>.5</b>
Data models and data standards used	<b>1</b>

 <b>ACCESS &amp; IMPLEMENTATION</b>	<b>5</b> <sub>/7</sub>
Data steward role	<b>1</b>
Legal and governance frameworks for sharing data with patients	<b>1</b>
Legal and governance frameworks for sharing data with healthcare providers	<b>0</b>
Legal and governance frameworks for sharing data with public sector research	<b>0</b>
Legal and governance frameworks for sharing data with private sector research	<b>1</b>
Datasets landscape mapped and publishing calendar	<b>1</b>
Data used to address health inequalities	<b>1</b>

 <b>PARTICIPATION</b>	<b>2</b> <sub>/4</sub>
Public/private partnerships to pilot innovation	<b>0</b>
Patient participation in use of health data (consent, trust building, involvement, representation)	<b>1</b>
Data literacy and workforce development	<b>.5</b>
Data literacy for patients/public	<b>.5</b>

# Denmark

 INFRASTRUCTURE

3/4

 ACCESS & IMPLEMENTATION

7/7

 PARTICIPATION

1.5/4

TOTAL

11.5/15

Denmark extended its Digital Health Strategy from finishing in 2022 to 2024, and has since also released a whole of government Digitalisation strategy which includes a set of health goals. Both documents appear to guide strategy at present. Denmark's digital infrastructure is world-class with an extensive electronic health record and patient portal system and clear datasets covering the full range of health data.

The digitalisation strategy has three core strategies: to enable citizens to manage their health using digital solutions, to include self-reported patient data and data from technologies to aid in treatment and early detection, and to enable digital messaging across healthcare professionals to improve the flow of data and care for patients.

The Danish Health Data Authority oversees access to health data for research.




## KEY FINDINGS


- 1 Data acquisition is managed via the Danish Health Data Authority, where applications can be made in line with the Data Healthcare Act. The Authority has a revenue-funded business model, and charges for applications, access to data, and time spent in the secure data environment where data is made available for analysis.
- 2 A new focus on patient care pathways looks at how data is exchanged across the patient episode of care in its entirety as a motivator for identifying interoperability needs.
- 3 A focus of the Digital Health Strategy is to ensure data can be exchanged across services and is accessible and understandable by patients to aid in their own health care management, as well as to build common IT infrastructure and building blocks to enable digital health solutions. In November 2024, the Board for Health Apps was set up by the Ministry of Interior and Health, and was tasked with assessing and recommending health apps to citizens and healthcare professionals. More information about the application process and the assessment criteria will be available on the Board's webpage once they have been determined. It is unclear if there is a remuneration model or whether approved apps being listed on the citizen health portal will be able to use their recommendation as a trust signal for selling their product.

## KEY STAKEHOLDERS

ORGANISATION	ROLE
Healthcare Denmark	Healthcare Denmark facilitates collaborations and partnerships between Danish companies and international stakeholders. We bring together stakeholders from the healthcare sector, including private companies, universities, hospitals, and public authorities.
Danish Health Data Authority	The Danish Health Data Authority works to ensure better health for the Danish citizens through the use of data and by creating digital coherence in the healthcare sector.

 INFRASTRUCTURE	<b>3</b> /4
Digital health leadership institution	<b>1</b>
Investment in digitization for primary use of health data and patient consent	<b>1</b>
Commitment to interoperability	<b>.5</b>
Data models and data standards used	<b>1</b>

 ACCESS & IMPLEMENTATION	<b>7</b> /7
Data steward role	<b>1</b>
Legal and governance frameworks for sharing data with patients	<b>1</b>
Legal and governance frameworks for sharing data with healthcare providers	<b>1</b>
Legal and governance frameworks for sharing data with public sector research	<b>1</b>
Legal and governance frameworks for sharing data with private sector research	<b>1</b>
Datasets landscape mapped and publishing calendar	<b>1</b>
Data used to address health inequalities	<b>1</b>

 PARTICIPATION	<b>1.5</b> /4
Public/private partnerships to pilot innovation	<b>.5</b>
Patient participation in use of health data (consent, trust building, involvement, representation)	<b>0</b>
Data literacy and workforce development	<b>.5</b>
Data literacy for patients/public	<b>.5</b>



INFRASTRUCTURE

4/4



ACCESS & IMPLEMENTATION

6/7



PARTICIPATION

3/4

TOTAL

13/15

*Estonia's Digital Health Strategy 2025 sets a range of priorities including continued investment in Electronic Health Record (EHR) infrastructure, new investment in supporting industry and academia to advance applied research projects, and stated goals for workforce and patient digital literacy. Two areas that appear challenging for Estonia is the continued lack of a health data access body, which is an objective of the health strategy but does not appear to have progressed, and related data governance legislation not yet in place that would enable private sector access requests to health data to be assessed.*



## KEY FINDINGS

1

### Investment in electronic health record infrastructure

A current focus is on upgrading IT systems and data infrastructure for the country's electronic health records.

2

### Unclear regulatory framework for non-government use of health data

While the Health Data Organisation Act covers health data access for healthcare and government stakeholders, there is a lack of regulatory certainty and lack of data governance processes for private sector and non-government use of health data.

3


### Metrics on user experience regularly monitored and reported

Some indicators in digital health strategy for user experience. While it is unclear if there are any structures to ensure participation in decision-making, structural requirements for metrics ensure patient needs are being reported and digital health user needs are being regularly addressed.




## KEY STAKEHOLDERS


ORGANISATION	ROLE
Ministry of Health	Oversees the e-Health Strategy 2025–2030, which supports the implementation of the goals and objectives set out in the country's long-term development strategy "Estonia 2035", as well as the objectives of the Population Health Development Plan and the Welfare Development Plan.
TEHIK	Health Information System
Invest in Estonia	Through Enterprise Estonia's Applied Research Program, the nation has invested over €100 million since 2021, supporting 170+ innovative projects. This programme facilitates high-value entrepreneurship, enabling Estonian companies to develop and launch advanced healthcare technologies globally.

 INFRASTRUCTURE	4 <sub>/4</sub>
Digital health leadership institution	1
Investment in digitization for primary use of health data and patient consent	1
Commitment to interoperability	1
Data models and data standards used	1

 ACCESS & IMPLEMENTATION	6 <sub>/7</sub>
Data steward role	1
Legal and governance frameworks for sharing data with patients	1
Legal and governance frameworks for sharing data with healthcare providers	1
Legal and governance frameworks for sharing data with public sector research	1
Legal and governance frameworks for sharing data with private sector research	0
Datasets landscape mapped and publishing calendar	1
Data used to address health inequalities	1

 PARTICIPATION	3 <sub>/4</sub>
Public/private partnerships to pilot innovation	1
Patient participation in use of health data (consent, trust building, involvement, representation)	1
Data literacy and workforce development	.5
Data literacy for patients/public	.5

# Finland

 INFRASTRUCTURE

3/4

 ACCESS & IMPLEMENTATION

7/7

 PARTICIPATION

1.5/4

TOTAL

11.5/15

Finland has developed a strong foundation for much of its health data sharing capabilities, and has often been at the frontier of global efforts. Finland was an early adopter of legislation that enables secondary use of health data and has implemented governance frameworks that enable data sharing with researchers from private and public sectors. Data access has supported a thriving ecosystem of researchers to make use, and has created data business models for sharers of data in a secure manner with patient consent. Findata, the national health data authority notes data applications increased by 10% in 2023 over 2022, and decisions were made at an increased rate of 24%, with 84% of application decisions positive. 91% of applications for data use were for scientific research, with 35% of all applications coming from the private sector.

There may be some signs that Finland is willing to plateau on this. The most recent digital health strategy is less ambitious and discusses incremental elements to maintain progress on aspects like interoperability and data management.

## KEY FINDINGS

1

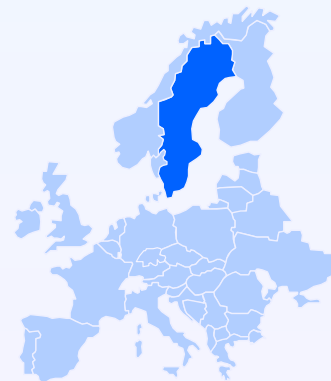
Finland's MyKanta health records portal is possibly world-best. Patients can access their data, upload personal health data from their own devices, decide on sharing protocols and consent, and access the full range of digital health services via the platform and app.

2

New indicators have been established to monitor the number of health datasets that apply national and international standards, and an ongoing interoperability agenda is described in the digital health strategy published in 2024.


3

Under Findata arrangements, after processing fees are deducted from Findata for managing data application requests and permits, data controllers (data owners) may set their own data access costs. In 2023, A total of approximately EUR 2 million was paid for the secondary use of social and health data through Findata in 2023. 65% of this was paid by applicants to the data owners, with 35% paid for processing fees including access to secure environments to view and use computing technologies to analyse the data.




## KEY STAKEHOLDERS

ORGANISATION	ROLE
Ministry of Social Affairs and Health	The Ministry of Social Affairs and Health is responsible for the general planning, guidance and monitoring of information management within its administrative branch and for the financing of significant national projects. Each year the Ministry updates the development paths for national information management and guides their implementation together with regional operators and key stakeholders.
Finnish Institute for Health and Welfare	The Finnish Institute for Health and Welfare is responsible for planning, guiding and monitoring the electronic processing of client data in healthcare and social welfare and the related information management as well as the use and implementation of national information system services (Kanta Services) and joint national data resources specific to individual administrative branches.
Findata	Findata is the Finnish data permit authority for the social and health care data, and its activities are based on the Act on the Secondary Use of Health and Social Data
Business Finland	Business Finland manages a Digital Health innovation accelerator called Health 360.

 INFRASTRUCTURE	<b>3</b> <sub>/4</sub>
Digital health leadership institution	<b>1</b>
Investment in digitization for primary use of health data and patient consent	<b>1</b>
Commitment to interoperability	<b>.5</b>
Data models and data standards used	<b>.5</b>

 ACCESS & IMPLEMENTATION	<b>7</b> <sub>/7</sub>
Data steward role	<b>1</b>
Legal and governance frameworks for sharing data with patients	<b>1</b>
Legal and governance frameworks for sharing data with healthcare providers	<b>1</b>
Legal and governance frameworks for sharing data with public sector research	<b>1</b>
Legal and governance frameworks for sharing data with private sector research	<b>1</b>
Datasets landscape mapped and publishing calendar	<b>1</b>
Data used to address health inequalities	<b>1</b>

 PARTICIPATION	<b>1.5</b> <sub>/4</sub>
Public/private partnerships to pilot innovation	<b>.5</b>
Patient participation in use of health data (consent, trust building, involvement, representation)	<b>0</b>
Data literacy and workforce development	<b>.5</b>
Data literacy for patients/public	<b>.5</b>

# Germany



INFRASTRUCTURE

2.5/4



ACCESS & IMPLEMENTATION

6/7



PARTICIPATION

3/4

TOTAL

11.5/15

Germany continues to develop a strong and clear digital health strategy, building on access to health data by a wide range of stakeholders, while ensuring data is governed responsibly and ethically. A new focus in the latest digital health strategies aims to move beyond acute care and include care services, with an initial priority focus on interoperability. Moves to shift the current digital health department of the German government into a standalone digital health agency are also underway, which will prioritise patient pathways of care. This will require a focus on interoperability and patient-centred service design.



## KEY FINDINGS

1

### Commitment to interoperability

Secondary use of health data to support patient-centred care is explained in the current digital health strategy: "Data infrastructures will be harmonised and interfaced by means of binding interoperability requirements and via the use of internationally recognised standards. Data from healthcare, from registers and studies will be combined via an interconnected healthcare data infrastructure, enabling overarching, cross-source analyses. Transparency regarding data storage sites will be ensured and duplicate structures eliminated. The data will be made accessible on the basis of purpose and need via secure data processing environments."

2

### Health Data Act in place

Germany's new Health Data Act provides clear regulatory data governance frameworks for public and private actors to access health data in secure environments to advance research and create new health products and solutions.

3

### Digital Health Strategy designed with patient input

Structures are in place that enabled patients and patient representative groups to participate in the design of the current digital health strategy.




## KEY STAKEHOLDERS


ORGANISATION	ROLE
Gematik	German Digital Health Agency: "At Gematik, the specialist teams, with their extensive expertise in e-health and information security, work daily to further develop the infrastructure for digital healthcare. To this end, they maintain close communication with all actors, stakeholders, and partners in the healthcare sector. gematik plays a central role in driving digitalization forward and helping to shape it for the benefit of all."
Health Data Lab	The Health Data Lab (HDL) at the Federal Institute for Drugs and Medical Devices makes pseudonymised billing data from people insured in the statutory health system available for research purposes with the goal of improving healthcare for all.



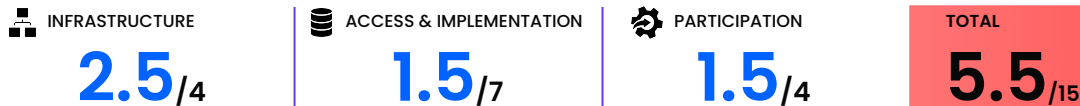

**SCORE BREAKDOWN**
**TOTAL 11.5** /15

 INFRASTRUCTURE	2.5 /4
Digital health leadership institution	1
Investment in digitization for primary use of health data and patient consent	.5
Commitment to interoperability	1
Data models and data standards used	0

 ACCESS & IMPLEMENTATION	6 /7
Data steward role	1
Legal and governance frameworks for sharing data with patients	1
Legal and governance frameworks for sharing data with healthcare providers	1
Legal and governance frameworks for sharing data with public sector research	1
Legal and governance frameworks for sharing data with private sector research	1
Datasets landscape mapped and publishing calendar	1
Data used to address health inequalities	0

 PARTICIPATION	3 /4
Public/private partnerships to pilot innovation	1
Patient participation in use of health data (consent, trust building, involvement, representation)	1
Data literacy and workforce development	.5
Data literacy for patients/public	.5

# Singapore



*A clear national digital and digital health strategy has now evolved into a complex web of strategies, plans and agencies, which at times make it clear how initiatives are connected, or which organisation has stewardship and governance responsibilities. This has created some lack of coordination in areas such as innovation with external stakeholders. Despite Singapore's seemingly advanced outlook, basic challenges remain. There are few datasets that align with international standards, for example, and a full suite of health datasets does not appear centrally available. A national health data regulatory framework is also not yet in place.*

## KEY FINDINGS

1

### Promising focus on next generation electronic health record model

Singapore has prioritised a new approach to Electronic Health Records (EHRs) that shift to a patient pathway approach rather than a single episode of care.

2

### Lack of national regulatory framework for data access, use and sharing

While personal data protection legislation is in place, moves towards passing a Health Information Bill which clarifies data governance of health data for secondary purposes appears to be stalled.

3


### Opaque focus on digital health literacy for patients


Singapore has a fully developed e-patient portal suite of features. The Digital Health Blueprint Report in 2023 notes the importance of digital health literacy for patients and the public, and references the Digital Readiness Blueprint focused on enhancing all citizens' digital skills but it is unclear how this blueprint can be viewed.




## KEY STAKEHOLDERS

ORGANISATION	ROLE
Synapse	"Synapse is the national HealthTech agency inspiring tomorrow's health. The nexus of HealthTech, we connect people and systems to power a healthier Singapore. Together with partners, we create intelligent technological solutions to improve the health of millions of people every day, everywhere."
HealthX	"An innovation hub to bring HealthTech ideas to reality, HealthX provides multiple enablers to support public healthcare institutions and industry partners in their smart health innovation journey."

 INFRASTRUCTURE	2.5 <sub>/4</sub>
Digital health leadership institution	1
Investment in digitization for primary use of health data and patient consent	1
Commitment to interoperability	.5
Data models and data standards used	0

 ACCESS & IMPLEMENTATION	1.5 <sub>/7</sub>
Data steward role	0
Legal and governance frameworks for sharing data with patients	1
Legal and governance frameworks for sharing data with healthcare providers	0
Legal and governance frameworks for sharing data with public sector research	0
Legal and governance frameworks for sharing data with private sector research	0
Datasets landscape mapped and publishing calendar	.5
Data used to address health inequalities	0

 PARTICIPATION	1.5 <sub>/4</sub>
Public/private partnerships to pilot innovation	.5
Patient participation in use of health data (consent, trust building, involvement, representation)	0
Data literacy and workforce development	.5
Data literacy for patients/public	.5

# Slovenia



INFRASTRUCTURE

3.5/4



ACCESS & IMPLEMENTATION

5/7



PARTICIPATION

2.5/4

TOTAL

11/15

*Slovenia's Digitalisation strategy for Health aims to situate the country as a best practice leadership example for all of Europe. In particular, their proposed hybrid governance model that finds a middle way between national responsibilities and state based health services delivery is particularly innovative and describes how at the national level, work will be led to support interoperability and the adoption of health standards while recognising the autonomy and delivery focus of regions.*

*Slovenia's health IT infrastructure is designed as an API-first architecture to future proof digital health systems and enable interoperability and sharing of data across robust, secure channels.*



## KEY FINDINGS

1

Slovenia has identified the need to update health data access regulations to enable secondary use of health data. This includes recognition of the need for a Health Data Access Body. However, work to progress these actions has not advanced as yet.

2

Slovenia's digital health strategy recognises the need to train managers and healthcare professionals in broader health data management skills and use in order to ensure digital health ecosystem growth.


3

Slovenia has a clear focus on interoperability. They have identified the key international standards including ICD-10, LOINC, and OMOP CDM data models. As well as FHIR and OpenEHR for API standards. These standards form the first set of interoperability functional components, along with common tooling for communications, notifications, analytics and resource management. With these in place, they then focus on EHR interoperability as a second functional component, recognising the central data importance of the EHR. The third functional component then identifies use case-specific interoperability needs.




## KEY STAKEHOLDERS

ORGANISATION	ROLE
Slovenian Health Department	The Slovenian Health Department partners with the Digital Transformation Office to oversee the digitalisation strategy of the Slovenian health system.
Zdravje	E-health agency and patient portal platform with full range of digital health services for patients available
Institute of Public Health	The National Institute of Public Health has responsibility for managing and publishing health data

 INFRASTRUCTURE	3.5 <sub>/4</sub>
Digital health leadership institution	1
Investment in digitization for primary use of health data and patient consent	1
Commitment to interoperability	.5
Data models and data standards used	1

 ACCESS & IMPLEMENTATION	5 <sub>/7</sub>
Data steward role	1
Legal and governance frameworks for sharing data with patients	1
Legal and governance frameworks for sharing data with healthcare providers	1
Legal and governance frameworks for sharing data with public sector research	0
Legal and governance frameworks for sharing data with private sector research	0
Datasets landscape mapped and publishing calendar	1
Data used to address health inequalities	1

 PARTICIPATION	2.5 <sub>/4</sub>
Public/private partnerships to pilot innovation	.5
Patient participation in use of health data (consent, trust building, involvement, representation)	1
Data literacy and workforce development	.5
Data literacy for patients/public	.5

# Sweden



INFRASTRUCTURE

1/4



ACCESS & IMPLEMENTATION

4/7



PARTICIPATION

1/4

TOTAL

6/15

*The Swedish Digital Health Strategy has been assessed by the Swedish Treasury Department and has been found to have significant gaps and challenges that will limit the value of its strategic goals. In addition, government and European work looking at Sweden's positioning of the European Health Data Space implementation has also highlighted the need for more focused activity. In particular, a lack of commitment and focus on interoperability, lack of adoption of international data standards, limited data governance legislation and frameworks to define access to health data, and a lack of a focus on workforce and patient digital literacy are all weaknesses identified by multiple reports and stakeholders.*



## KEY FINDINGS

1

### Interoperability as a low priority

Data standards are not mandatory and there is no commitment to interoperability in current digital health strategic plans.

2

### Outdated regulatory frameworks

While it is known that health data regulatory frameworks and data governance legislation is out of date, there are no current priorities to address this and build clarity for digital health stakeholders.

3


### Removal of patient participation

Lack of structures and mechanisms for participation from patients reduces trust and increases the risk of poorly designed digital health services.



## KEY STAKEHOLDERS

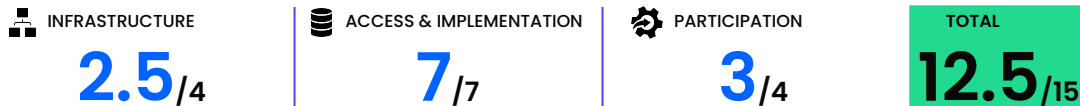
ORGANISATION	ROLE
Swedish e-Health Agency	"The E-Health Agency, on behalf of the government, has, together with the Swedish Association of Local Authorities and Regions, staffed a coordination office that has supported the joint steering and cooperation organization with, among other things, external monitoring and decision support."
DIGG	The Digital Governance Agency (DIGG) is tasked with coordinating and supporting digitalization within public administration to make it more efficient and effective.
National Board of Health and Welfare	Oversees collection and publication of health statistics.

 <b>INFRASTRUCTURE</b>	<b>1</b> <sub>/4</sub>
Digital health leadership institution	<b>1</b>
Investment in digitization for primary use of health data and patient consent	<b>0</b>
Commitment to interoperability	<b>0</b>
Data models and data standards used	<b>0</b>

 <b>ACCESS &amp; IMPLEMENTATION</b>	<b>4</b> <sub>/7</sub>
Data steward role	<b>1</b>
Legal and governance frameworks for sharing data with patients	<b>0</b>
Legal and governance frameworks for sharing data with healthcare providers	<b>0</b>
Legal and governance frameworks for sharing data with public sector research	<b>1</b>
Legal and governance frameworks for sharing data with private sector research	<b>0</b>
Datasets landscape mapped and publishing calendar	<b>1</b>
Data used to address health inequalities	<b>1</b>

 <b>PARTICIPATION</b>	<b>1</b> <sub>/4</sub>
Public/private partnerships to pilot innovation	<b>1</b>
Patient participation in use of health data (consent, trust building, involvement, representation)	<b>0</b>
Data literacy and workforce development	<b>0</b>
Data literacy for patients/public	<b>0</b>

# United Kingdom



While UK is usually alluded for its advanced thinking around the use of health data and global leadership in creating a digital health landscape, this has faltered somewhat over the past few years.

A revamped digital health strategy owned by the current government has not yet been produced. For several years, UK has also been immersed in several reviews: the Topol Review, Goldcare Review, and most recently the Sudlow Review all produce similar findings that are then not translate into action.

UK has also repeatedly destroyed public and patient trust in its willingness to share health data with third party providers without patient consent. Webpages from the government acknowledged the mistakes made in 2021 in too quickly sharing patient health data to third parties, yet a similar approach has been taken this year for use of health data for AI.

## KEY FINDINGS

1

UK's digital health strategy is currently stalled and risks slipping backwards as an increasing array of strategies and policies fail to join up. The recent AI strategy suggested exposing health data but this is not addressed in digital health strategies. It is unclear how proposed budget cuts to the NHS will influence the digital health agenda. New funding for digital health implementations do not allocate to specific areas such as interoperability. The digital health strategy has not been updated in the past 2 years, despite a change in government.

2

UK has a well-established and maintained standards catalogue and is a world leader in ensuring interoperability and adopting standards for health data use.

3

Health Data Research UK acts as the health data access body for the UK, and manages requests for access to service. Data is provided in a secure data environment for use by approved applicants.



## KEY STAKEHOLDERS


ORGANISATION	ROLE
NHS	The UK's National Health Services includes responsibilities for patient data and digital health systems.
HDRUK	Health Data Research UK oversees requests from private and public sector for access to health data
Innovate UK	Supports private industry to create new digital health products and medicines based on the use of health data. Provides funding.




# United Kingdom

## SCORE BREAKDOWN

TOTAL **12.5**<sub>/15</sub>

 INFRASTRUCTURE	2.5 <sub>/4</sub>
Digital health leadership institution	0
Investment in digitization for primary use of health data and patient consent	1
Commitment to interoperability	.5
Data models and data standards used	1

 ACCESS & IMPLEMENTATION	7 <sub>/7</sub>
Data steward role	1
Legal and governance frameworks for sharing data with patients	1
Legal and governance frameworks for sharing data with healthcare providers	1
Legal and governance frameworks for sharing data with public sector research	1
Legal and governance frameworks for sharing data with private sector research	1
Datasets landscape mapped and publishing calendar	1
Data used to address health inequalities	1

 PARTICIPATION	3 <sub>/4</sub>
Public/private partnerships to pilot innovation	1
Patient participation in use of health data (consent, trust building, involvement, representation)	1
Data literacy and workforce development	.5
Data literacy for patients/public	.5

# Methodology



# Methodology Overview

To assess health policy maturity in each country, we used the core set of 15 indicators in our digital health policy maturity assessment model. The design of our model and its comparison with other digital health policy assessment models is discussed here: <https://platformable.com/blog/global-digital-health-policy-maturity>

In our model, digital health policy maturity characteristics are grouped into three categories:

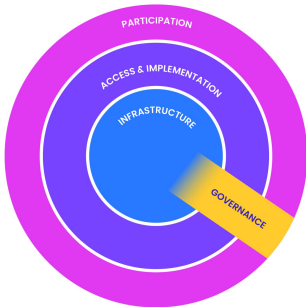
**Infrastructure:** The data infrastructure, legal frameworks, institutions and policies that foster digital ecosystems

**Access and implementation:** The strategies and guidelines, processes, and enablement factors that support digital ecosystems to achieve their goals and generate benefits/value

**Participation:** The approaches that enable data to be shared and for stakeholders and new market players to enter and compete and collaborate responsibly, ethically and equitably.

Governance is treated as a cross-cutting issue as there are specific governance approaches that we assess for how infrastructure is managed (organisational governance), to oversee access and implementation (data stewardship and regulatory frameworks for data protection and use), and for participation (focused on governance to support a cross-section of stakeholders to participate in the ecosystem), as shown in the following diagram:

Health Policy Maturity Indicators - Overview



Our indicator framework includes up to 25 indicators. For this study in partnership with Roche Canada, we selected 15 indicators, shown in darker shades in the following diagram:



Our assessment methodology is based on a review of available source documents from each country, in particular any documented digital health or e-health strategies. Occasionally, these are published as part of a wider digital strategy or as a component of a population health strategy. There are also a range of supplemental documents that are reviewed, including interoperability strategies, data protection and health data access regulations and legislations, and budget papers.

For these studies, we are assessing the digital maturity based on strategy design. Ideally, this would be coupled with an implementation assessment score that measures how much of a digital health strategy has been progressed since the plan was published, and whether the implementation activities are aligned with the the intended goals. This is mostly avoided in this study, although where supplemental materials are published, such as in the case of Canada (from the Medical Association's Interoperability Taskforce) and from Sweden (where the Treasury Department assessed the strategy implementation progress), these are incorporated into the maturity assessment.

# Methodology Scoring

## Infrastructure

Indicator	Definition	Scoring methodology
<i>Digital health leadership institution</i>	Digital health policy or legislation clearly articulates a government authorised body that is responsible for overseeing digital health leadership across Government activities	Score 1 if there is a clear institution named
<i>Investment in digitization for primary use of health data and patient consent</i>	Investment is made in modernization of electronic health records and patient portals/apps, with the following features available for EHR:  And the following features available for patient portals/apps: <ul style="list-style-type: none"><li>• Electronic referrals</li><li>• Electronic health event summaries</li><li>• Diagnostic test results</li><li>• Care plan management</li><li>• Appointment booking and management</li><li>• Medications management</li><li>• Chronic disease management</li><li>• Telemedicine (telehealth) and mobile health (mHealth)</li></ul>	Score 1 if 80% of EHR and 80% of patient features are available Score 0.5 if at least 50% of EHR and 50% of patient features are available
<i>Commitment to interoperability</i>	Policies and processes describe a commitment to health data interoperability and include a strategy to achieve interoperability	Score 1 if there is a clear approach to interoperability and investment Score 0.5 if there is a strategy but no investment amount listed
<i>Data models and data standards used</i>	Data standards and data models officially adopted by the government are listed and description of how they are to be used is described	Score 1 if there is a clear commitment to aligning with a core set of health data standards and data models Score 0.5 if there are mentions in documents and published data models that mention alignment with at least one national or international health data standard/data model

# Methodology Scoring

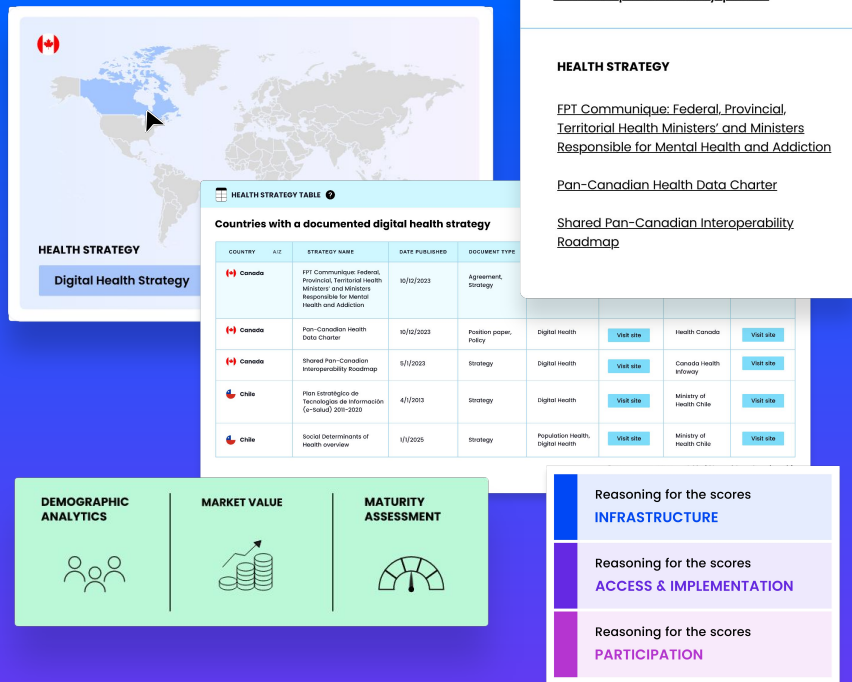
## Access and Implementation

Indicator	Definition	Scoring methodology
<b>Data steward role</b>	Digital health policy or legislation clearly articulates a government authorised body that is responsible for overseeing health data	Score 1 if there is a clear institution named
<b>Legal and governance frameworks for sharing data with patients</b>	There are legal and governance frameworks in place for how data can be accessed and shared by patients	Score 1 if there is a clear legal and data governance framework for patients to access and share their data
<b>Legal and governance frameworks for sharing data with healthcare providers</b>	There are legal and governance frameworks in place for how data can be accessed and shared by healthcare providers	Score 1 if there is a clear legal and data governance framework for healthcare providers to access and share patient data
<b>Legal and governance frameworks for sharing data with public sector research</b>	There are legal and governance frameworks in place for how data can be accessed and shared by governments and academic institutions	Score 1 if there is a clear legal and data governance framework for governments and academic institutions to access and share patient data
<b>Legal and governance frameworks for sharing data with private sector research</b>	There are legal and governance frameworks in place for how data can be accessed and shared by private sector researchers	Score 1 if there is a clear legal and data governance framework for private sector researchers to access and share patient data
<b>Datasets landscape mapped and publishing calendar</b>	<p>The full range of health datasets are regularly maintained and published by government, including:</p> <ul style="list-style-type: none"> <li>• Births</li> <li>• Deaths</li> <li>• Population health data (burden of disease datasets)</li> <li>• Hospital/acute care and visits</li> <li>• Medication dispensations and adverse reactions</li> <li>• Vaccine surveillance</li> <li>• Personal/wellbeing device data</li> <li>• Patient reported outcomes</li> <li>• Insurance claims</li> <li>• Sickness and employment benefits data</li> </ul>	<p>Score 1 if 80% of the datasets described are being collected and regularly published in aggregate form</p> <p>Score 0.5 if at least 40% of the datasets described are being collected and regularly published in aggregate form OR if 80% of datasets are being collected but not published regularly</p>
<b>Data used to address health inequalities</b>	<p>Data strategies and policies explicitly mention how data will be used to monitor and address health inequalities across populations</p> <p>Use of health data to work with specific populations such as Indigenous populations is described</p>	Score 1 if there are policies that describe how data will be used to address health inequalities

# Methodology Scoring

## Participation

Indicator	Definition	Scoring methodology
<i>Public/private partnerships to pilot innovation</i>	There is a clear policy/strategy to encourage innovation in health technology and digital health development, including new pharmaceuticals, devices and data capacities	Score 1 if there is a clear policy and investment amount Score 0.5 if there is a clear policy but investment amounts are not defined
<i>Patient participation in use of health data (consent, trust building, involvement, representation)</i>	There are clear processes, strategies and organisational structures that ensure ongoing/regular patient and public participation in managing the use of health data including in consent, ethics review, research participation, data governance oversight, and other activities	Score 1 if there are clear organisational structures that enable regular participation of patient and public representatives in health data governance decision-making
<i>Data literacy and workforce development</i>	There are clear processes, strategies and budget aimed at improving the health data literacy and use of health data amongst the healthcare professional workforce	Score 1 if there are clear policies and identified investments to support workforce development in health data use and governance Score 0.5 if there are clear policies/strategies/resources mentioned but investment amount is unclear
<i>Data literacy for patients/public</i>	There are clear processes, strategies and investment aimed at improving the health data literacy and use of health data amongst patients and the public, including rights to personal health data consent and access	Score 1 if there are clear policies and identified investments to support public and patient knowledge and skills in health data use and governance Score 0.5 if there are clear policies/strategies/resources mentioned but investment amount is unclear



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