

The value and impact of HealthPathways in the COVID-19 response

A case study of HealthPathways use in New Zealand and New South Wales

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Glossary

Abbreviation	Stands for
PHO	Primary Health Organisation
CCN	Canterbury Clinical Network
DHB	District Health Board
GP	General practitioner
HQSC	Health Quality & Safety Commission
LHD	Local Health District
NSW	New South Wales
NZ	New Zealand
PHN	Primary Health Network
RACGP	Royal Australian College of General Practitioners
RNZCGP	Royal New Zealand College of General Practitioners
SME	Subject Matter Expert

Summary of key messages

The aim was to develop a case study that outlines the role and describes the impact of HealthPathways in New Zealand and New South Wales during the COVID-19 response. The performance of HealthPathways during COVID-19 presents a particularly good opportunity to understand the value that it can deliver to a health system. The extreme circumstances of a pandemic presented a severe test of the capability that HealthPathways provides to generate useful clinical information, and to minimise the risks arising from clinical variation at all levels of diagnosis and management. While the impact of HealthPathways is particularly stark in this context, the example of the value delivered during COVID-19 represents a particularly intensive form of the value that HealthPathways delivers on a routine basis for other conditions. This means that a case study during COVID-19 is a valuable example of the impact of HealthPathways more generally.

HealthPathways enabled New Zealand and NSW to rapidly get COVID-19 policy into practice

Overall, we heard that HealthPathways played an important role during the COVID-19 response in New Zealand and New South Wales. HealthPathways provided reliable, trusted, up-to-date information that included best practice guidance coupled with locally-relevant service information. In an environment characterised by very rapidly changing information and clinical advice. HealthPathways provided a one-stop-shop to frontline clinicians managing COVID-19 in the community. HealthPathways allowed clinicians to do their job quickly and safely, with the assurance that the information provided was up-to-date and correct.

Streamliners had existing established processes and systems to gather, collate and present information for frontline clinicians and they were able to pivot quickly and add process changes to speed up the information flow.

Very few regions used alternatives to HealthPathways during the COVID-19 response indicating the wide reach of HealthPathways pre-COVID-19. The awareness and usage of HealthPathways, both COVID-19 pages and other pages increased during the pandemic. This is demonstrated by the use of the COVID-19 pages that broadly mirrored spikes in COVID-19 case numbers and of 'indicator' non-COVID-19 page views, which have increased in most regions.

Integrating government and local responses and creating channels for frontline clinical feedback to inform policy

Overall, collaboration to develop the COVID-19 pathways strengthened relationships, trust, and respect between government, local health systems, community health providers, and colleges. Trans-Tasman relationships were also built upon. This provided a channel for coordination between a wide range of stakeholders as the pandemic developed, and strengthened the connection between front line service delivery and policymakers. Front line clinicians were quick to provide feedback to HealthPathways, and the infrastructure of HealthPathways provided an unusually direct means for communication and clarification of complex, rapidly changing information. For example, HealthPathways and the associated educational webinars provided a unique channel for policy makers

to get direct and continuous feedback from frontline clinicians to inform the improvement of policy and central government support.

Enabling equity by supporting necessary local variation and reducing unwarranted variation

During the COVID-19 response HealthPathways contributed to equitable care by providing consistency of messaging and reducing unwarranted variation and disparate regional responses. The complex range of services involved, including managing covid patients, but also vaccination and prevention processes, as well as delivery of routine primary care under conditions of heightened infection control, were able to be delivered more consistently than would have been the case without HealthPathways.

At the same time, HealthPathways enabled necessary local variation in care processes when there were different levels of access to services and necessary differences in local models of care to achieve equitable outcomes.

1. Context and case study approach

HealthPathways was originally developed in Canterbury, New Zealand, in 2008, to support a whole-of-system approach to patient-centred care and has since been adopted and adapted by other health systems around the world.

The vision for the HealthPathways platform is to enable a network of people in health systems around the world to share and adapt clinical pathways to their local environment to support the following aims.

- Improved quality, safety, and experience of care for patients.
- Improved experience of care for health professionals.
- Health and equity for all populations.
- Best value for health system resource.

HealthPathways offers clinicians locally agreed information to make the right decisions, together with patients, at the point of care.

HealthPathways is designed and written for use during a consultation. Each pathway provides clear and concise guidance for assessing and managing a patient with a particular symptom or condition. Pathways also include information about making requests to services in the local health system.

Content is developed collaboratively by general practitioners, hospital clinicians, and a wide range of other health professionals. Each pathway is evidence-informed, but also reflects local reality, and aims to preserve clinical autonomy and patient choice. HealthPathways serves to reduce unwarranted variation and accelerate evidence into practice.

HealthPathways is designed primarily for general practice teams, but are also available to specialists, allied health professionals, and other health professionals.

1.1 Why look at HealthPathways in a pandemic?

Addressing variation in practice and equity of access to health care is a universal challenge for health services that has been recognised for a long time (Wennberg, 2011, 2014). Where unwarranted variation persists in the delivery of health care, then health planners and policymakers face the problem of working with clinical leaders to establish safe, high quality practice that is equitable for populations. Unwarranted variation can raise questions about the quality of care, and about the equity of access to care, as well as the effective use of health system resources. Variation is often seen as indicating a need for health systems to focus upon outcomes and quality, and the effective dissemination of evidence (Andersen & Mooney, 1990).

The aspects of variation that are warranted and unwarranted can be interrelated and highly sensitive to context (Sutherland and Levesque, 2020). This sometimes places a focus on evidence and best practice that can be at odds with policies that focus on localism in health systems (Mays, 2011). HealthPathways is an approach that explicitly addresses this tension, and provides both a mechanism and a process for reviewing evidence and local practice, and implementing a consistent approach to

clinical practice within the context of a local health system and the resources available. This means that HealthPathways offers a systematic approach to identifying and addressing unwarranted variation in health services, which can otherwise be an extremely challenging task (Mercuri & Gafni, 2011), and for which there is limited evidence of effective approaches (Harrison 2019). In effect, the process of localising a pathway involves clinicians making explicit judgements about what variation in practice is warranted, and what variation might be unjustified in light of the available evidence. This direct approach to addressing variation while respecting the local context of a particular clinical service potentially represents a powerful capability to improve health services in terms of quality, equity and efficiency.

The issue of addressing variation is particularly acute in a context in which clinical evidence is changing rapidly, and where a presentation or problem is highly prevalent. In this circumstance not only is a clear process required for updating evidence, but a high volume of information has to be addressed and disseminated. This was the situation during the covid pandemic, in which the advice for clinicians on aspects of testing and diagnosis, disease management, preventive measures and immunisation recommendations could change rapidly, particularly in the earlier phases of the pandemic. Since advice could change significantly on a daily basis, and since that advice had to be communicated in a trusted, credible form, to all primary health care providers nationally, this presented a significant challenge to health systems around the world.

In this context the ineffective dissemination of clinical advice presented serious risks, including the failure to contain infectious disease and the inadequate monitoring and management of a serious condition. In turn, these failures present risks of imposing inequitable outcomes upon local communities, and impairing the efficiency of health systems more generally.

For this reason, the performance of HealthPathways during COVID-19 presents a particularly good opportunity to understand the value that it can deliver to a health system. The extreme circumstances of a pandemic presented a severe test of the capability that HealthPathways provides to generate useful clinical information, and to minimise the risks arising from clinical variation at all levels of diagnosis and management. While the impact of HealthPathways is particularly stark in this context, the example of the value delivered during COVID-19 represents a particularly intensive form of the value that HealthPathways delivers on a routine basis for other conditions. This means that a case study during COVID-19 is a valuable example of the impact of HealthPathways more generally.

1.2 Regional variation in maturity and usage pre-COVID-19

Prior to COVID-19 there were varying levels of maturity of HealthPathways implementation and usage across regions in New Zealand and New South Wales. Some regions had not implemented HealthPathways (Hawke's Bay and Western NSW), some had recently implemented (Midland, Whanganui & MidCentral and South Eastern Sydney) and others had more established HealthPathways implementations with variable usage across regions (Table 1).

In 2019, usage rates per 100,000 population were highest in Canterbury, Nelson-Marlborough and West Coast regions in New Zealand and Hunter New England, Sydney and Mid & North Coast in New South Wales (Figure 1, Figure 2). All these regions had implemented HealthPathways prior to 2015.

Table 1 Overview of HealthPathways implementation and usage by country and region

Country	Region	Date implemented	Content page views in 2019
New Zealand	Northland	2016	88,119
	Auckland region	2015	651,337
	Midland Region	2018	55,130
	Hawke's Bay	2020	-
	Whanganui & MidCentral	2019	8,450
	Lower North Island	2014	242,114
	Nelson-Marlborough	2012	166,661
	Canterbury	2008	777,533
	West Coast	2010	33,172
	Aoraki	2012	28,707
	Southern	2014	147,461
New South Wales	Central Coast	2013	38,727
	Hunter New England	2012	284,592
	Illawarra Shoalhaven	2015	31,380
	Mid & North Coast	2014	87,912
	Murrumbidgee	2018	7,293
	Nepean Blue Mountains	2017	19,647
	South Eastern Sydney	2018	12,847
	South Western Sydney	2015	38,472
	Sydney	2014	110,516
	Sydney North	2017	23,463
	Western NSW	2020	-
	Western Sydney	2013	64,929
	ACT and Southern NSW	2015	76,186

Figure 1 Total page views per 100,000 population by region in New Zealand, 2019

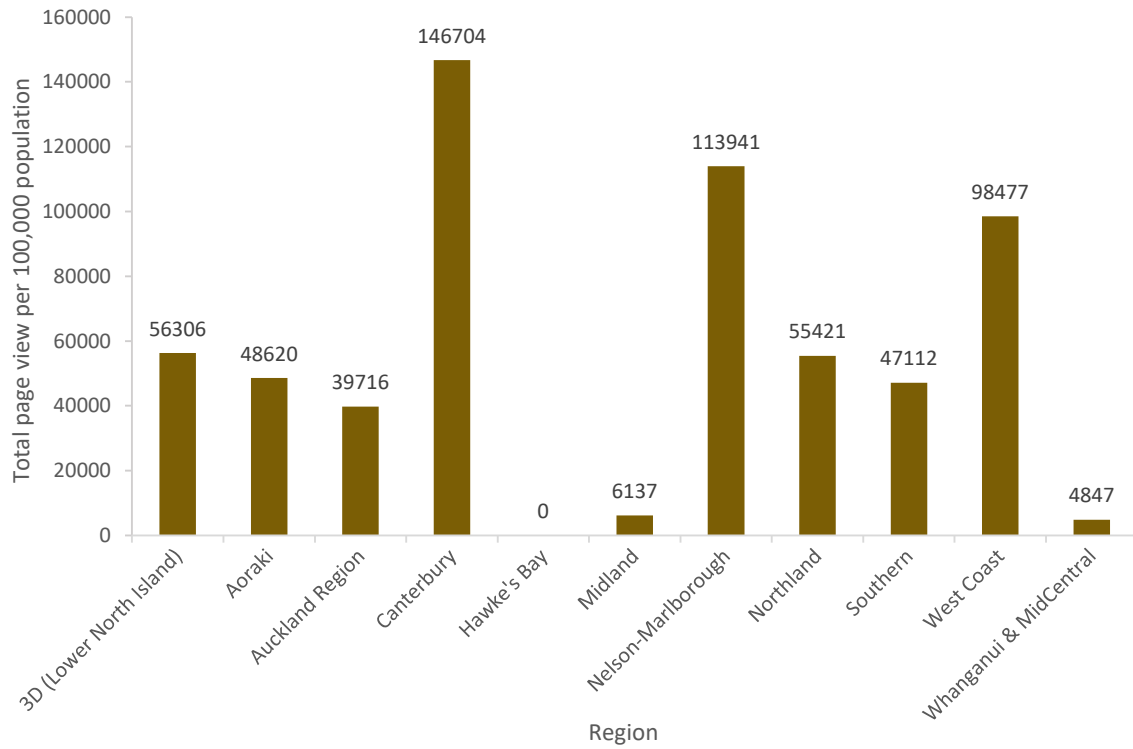
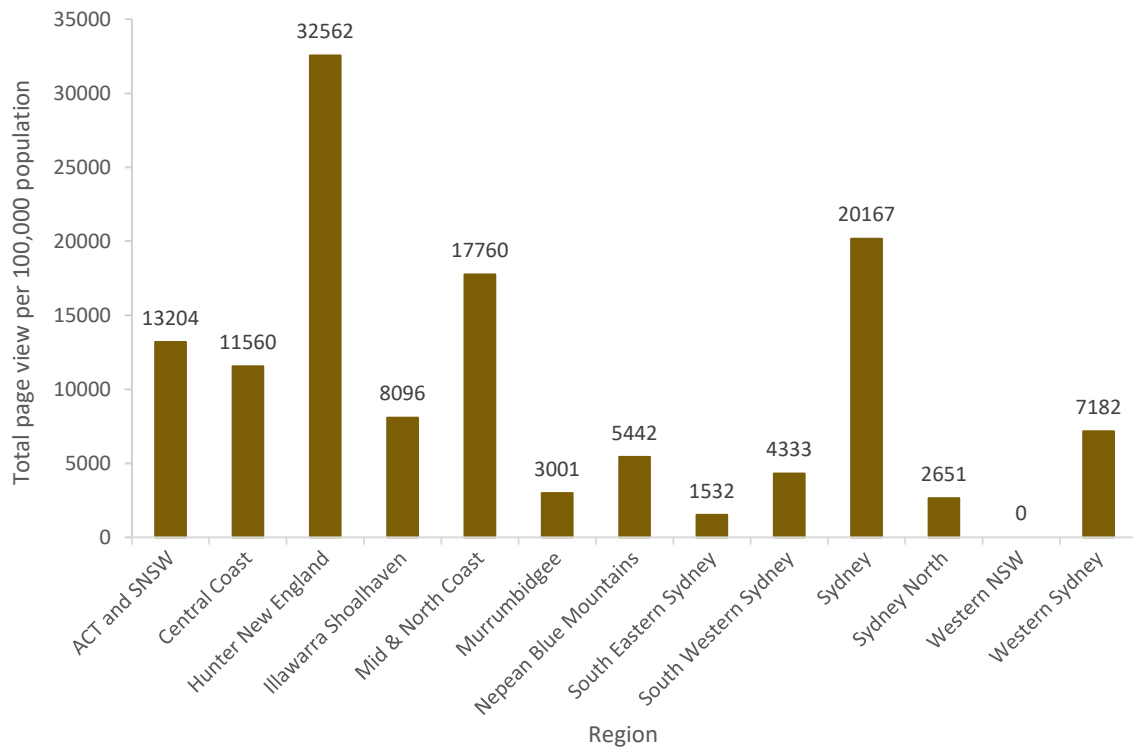


Figure 2 Total page views per 100,000 population by region in New South Wales, 2019



1.3 Relationship with government organisations

In New Zealand prior to COVID-19, Streamliners had no direct relationship with the Ministry of Health for HealthPathways, but worked directly with each of the 20 DHBs around the country. Since the recent health reforms have been implemented, there is direct relationship to Te Whatu Ora, the national health delivery organisation.

In NSW prior to COVID-19 each region had its own HealthPathways team, work programme and budget. Discussions with NSW Health had begun about the potential of lead regions and state level pathways however at that time no funding was available to support the work and regional teams didn't have the capacity to work with state level organisations.

1.4 Broad overview of COVID-19 in New South Wales and New Zealand

On 11 March 2020, the World Health Organization declared the COVID-19 outbreak a pandemic.

New Zealand

The first case of COVID-19 was reported in New Zealand on 28 February 2020 and a second case on 4 March 2020. Following subsequent cases throughout the country an Alert Level system was announced with a national Alert Level 4 lockdown from 25 March to 27 April 2020. Cases peaked in April 2020 and by 8 June 2020 New Zealand was back to Alert Level 1.

Up to 11 August 2020, there was a period of 102 days of no community transmission when several new cases were identified in the community. This was followed by a period (August 2020 to February 2021) of multiple clusters in Auckland and several in Waikato.

A vaccination rollout plan was announced on 10 March 2021 with vaccinations for high priority groups from 28 July 2021.

On 17 August 2021, a community case with no link to the border was reported. Following this was a period of community transmission primarily of the Delta variant and another national Alert Level 4 lockdown followed from 24 August to 31 August 2021.

Cases rose rapidly with a second peak in October 2021 and the elimination strategy was transitioned to a suppression strategy and the vaccination rollout was accelerated. By December 2021, there were cases across New Zealand and in January 2022 the first case of community transmission of Omicron was reported.

During 2022 there has been ongoing community transmission of COVID-19.

New South Wales

The first confirmed cases of COVID-19 in NSW were reported on 25 January 2020. Various levels of restrictions were in place during early 2020 with Australia pursuing a zero-COVID-19 suppression strategy until late 2021.

19 December 2020 Avalon in Sydney records an outbreak after 12 days with no community transmission in NSW.

A nationwide vaccination programme for the public began on 22 February 2021.

Outbreaks of the Delta variant started in June 2021 in New South Wales. On 25 June 2021, Sydney introduced lockdown measure for some suburbs as outbreaks grew.

In July 2021, there was a move away from COVID-19-zero strategy to a national plan to live with COVID-19.

On 11 October 2021, the lockdown of 107 days in NSW was eased.

In late January 2022, daily case number were in the tens of thousands and there was optimism the peak of the Omicron outbreak was over.

In September 2022, the government declared the emergency response over and restrictions were removed.

1.5 Aim and approach of the case study

The aim was to develop a case study that outlines the role and describes the impact of HealthPathways, in New Zealand and New South Wales, during the COVID-19 response.

Semi-structured interviews

Thirty-three semi-structured interviews were completed, via Zoom, between October and December 2022 (Table 3). The key informants were identified by Streamliners with the aim of providing a range of perspectives from New Zealand and New South Wales. Key informants included individuals from Streamliners, the New Zealand Ministry of Health and New South Wales Health.

We did not interview frontline clinicians other than those who were HealthPathways Clinical Editors.

Data analysis

Reports on user engagement and webinar uptake along with HealthPathways usage data from 2019 to 2022 were provided by Streamliners.

The HealthPathways usage data was analysed to provide information on the impact and variation of HealthPathways use during the COVID-19 pandemic.

Synthesis

The quantitative and qualitative information was then synthesised to form an overall picture of the role and impact of HealthPathways in the COVID-19 response.

2. The role of HealthPathways during the COVID-19 response

2.1 Initially a time of chaos—large volumes of constantly evolving information from multiple sources

At the beginning stages of the pandemic, interviewees described the situation as one of chaos. Massive amounts of information were being released from multiple sources (e.g., Government departments, Medical Colleges, HQSC), and the information was constantly changing on a daily, and sometimes hourly, basis. A Clinical Editor noted that:

The volume of work was insane. Volumes of information were coming from all angles, everywhere across the system.

For those interviewees whose role it was to provide information to frontline clinicians, the constant streams of information required continual attention and triaging to ensure the information that got through was credible, up-to-date and needed. Interviewees described needing to sort through all the information to identify what clinicians needed to know to do their jobs. A New Zealand based Clinical Editor and GP felt that:

We got bombarded with information from the college and ministry etc, but often not quite the information that you really needed clinically.

Another New Zealand Clinical Editor said:

The problem is GPs were getting information from so many sources. So we needed to sieve it and present in a simple and easy way for the frontline.

The release times of official information caused issues. Often the information was released publicly at the same time as interviewees received it (with some interviewees noting they sometimes heard about information after the official release). This meant that Clinical Editors were under constant pressure to ensure the information was ready and available in the appropriate places, often requiring a 24/7 operation. A Clinical Editor said:

The pace of information change meant it would go public before or at the same time as Clinical Editors received it. It would have helped if we had the information early to have drafts ready for release. This meant long and late hours to get the information ready. If we didn't do this HealthPathways would have lost credibility. If people look for information once or twice and it's not there, they will stop using it.

Tensions between local and government health leadership also introduced difficulties in sorting through information. For example, national level information in New Zealand conflicted with Auckland regional information, because Auckland were often dealing with outbreaks and lockdowns that the rest of the country was not experiencing. Additionally, interviewees noted initially there were challenges getting local information from the Northern Region Health Coordination Centre in Auckland because they were busy and had many other distractions. New South Wales interviewees noted that Federal and State-level information were often in conflict.

Multiple interviewees noted that staff were often pulled from their usual work to the frontline, meaning staffing levels for pathway work decreased. People often held multiple hats through the pandemic, reducing their ability to focus on one area.

Interviewees noted that Streamliners were quick off the mark to think about what was needed from them in terms of supporting the response through HealthPathways. For example, draft COVID-19 pathways and other content were developed as an information package very early on. Daily stand-ups were enacted for the Streamliners leadership team and regular meetings and communications with HealthPathways teams across New Zealand and Australia were implemented.

2.1.1 Other non-COVID-19 HealthPathways work got displaced at the beginning, and some regions are still behind today

The COVID-19 response was a burden across the health system, as clinicians of all kinds had to work out how to deliver their services in a new environment, as well as responding directly to the needs for assessment, testing and vaccination. This broader burden has an impact on developing and reviewing other non-COVID-19 pathways, due to the focus on COVID-19 pathways and competition for the time of clinical contributors. The impact on development and review of non-COVID-19 pathways varied by region and in some regions the review cycle had already been under pressure pre-COVID-19. Some regions noted they are still catching up with significant delays, and that other non-COVID-19 work

didn't get done. That has impacted the pathway review cycles. Pathways are supposed to be reviewed every 2–3 years. All that work got parked.

One interviewee noted the importance of scaling down urgency for COVID-19 HealthPathways for sustainability as COVID-19 becomes business as usual.

2.2 The need to be responsive to COVID-19 meant rapid change had to happen

Rapid change to HealthPathways processes was required to ensure the system kept up with the ever-changing needs of the pandemic. The changes that were seen may have happened during business-as-usual times, but the pandemic necessitated rapid development and deployment, acting as a catalyst for change. A clinical lead with Streamliners said:

We had to rethink how we worked as information changed daily (e.g. platform implications/publishing pipelines), we moved from once a day changes to multiple changes a day. The writing team shifted to 7 days a week from the usual 5 days a week. Just about everyone in the organisation pivoted onto this.

2.2.1 Streamliners' processes and systems were able to pivot rapidly in the initial phase

Streamliners were already set up to sieve through information from multiple sources and present it in an easy way for frontline staff. In the initial phase of the pandemic, several changes to the processes behind the scenes allowed for these processes to be significantly sped up.

- Technical writers worked almost around the clock to ensure any updates to the pathways went through almost instantaneously. For example, Streamliners set up a quick publish process where COVID-19 pages took 15 minutes to publish (as opposed to the usual 2.5-hour turnaround). While some of the usual checks and balances that went into pathway development had to be amended to accommodate the speed of updates, Streamliners considered it a necessary trade-off.
- The expectation that business-as-usual work would continue was removed and there was a mandate to only work on COVID-19 related pathways.
- Existing meetings and groups set up by Streamliners were repurposed to allow for COVID-19-related issues to be worked through.
- Streamliners ensured that the executives of the local health systems were aware of the great work the programme teams were doing in getting guidance out to the health systems.
- Closer relationships between Clinical Editors and Technical Writers allowed for faster changes, alongside a relaxation of standard HealthPathways style requirements on Streamliners' side.
- Centralised review processes for COVID-19 HealthPathways, with Streamliners taking the lead on reviewing and consolidating, compared to usual regional processes.

2.2.1.1 Addition of Clinical Editor notes was helpful

COVID-19 saw the introduction of COVID-19 Clinical Editor notes in HealthPathways. These notes sit at the top of a pathway and make users aware of issues affected by COVID-19. For example, where clinicians should be aware that COVID-19 has a potential impact on another condition or noting that certain services are closed.

Interviewees noted that these were very useful in conveying important information during the pandemic, but they are difficult to keep up-to-date and careful thought should go into how they are used in the future.

2.2.2 Once the initial burst of activity lessened, Streamliners started making bigger changes to ensure future resilience for future pandemic phases

While the initial changes described above allowed people to keep up with the constant information flows, it was a "heroic, rather than a systematic approach". HealthPathways contributors were beginning to burnout with the large amounts work being undertaken. Once the initial phase of the pandemic was over, Streamliners used the slight lull in activity to look at processes overall to determine where bigger changes could be made for future phases in the pandemic.

2.2.2.1 Lead region model adoption accelerated

The Lead Region model nominates one region as the lead for developing a particular pathway, while other regions are 'followers'. Once the Lead Region publishes a pathway, the follower regions are either 'attached' meaning any changes to the pathway made by the Lead Region get applied

automatically, or 'detached' meaning the follower region must review and approve the changes before they go live on their region's site. This approach reduces the amount of work for the follower regions and helps avoid duplication of work.

While the Lead Region model was in existence prior to COVID-19, because of the pandemic, adoption of the model accelerated due to the sheer amount of work involved in keeping COVID-19 pathways up-to-date, and more established processes were put in place by Streamliners to ease the transition.

Sharing and networking was a pre-COVID concept. But COVID accelerated the idea that it is a good thing to do, as well as accelerating the processes we use. Explicit lead regions were established during COVID (e.g. deciding region X would write this pathway). Technical processes were also amended so changes could go through in an hour. Streamliners technical writers were working 24/7 to enable us to keep up with the constant changes. It was a responsive process, but not without fishhooks, there were teething problems about autonomy and imposing changes. We worked these issues through and now people have the choice about being an attached follower or detached follower, who approves changes. Or not a follower at all who just takes what they want. Everyone is happy with this.

After COVID, we have grabbed the lead region concept for other pathways.

2.2.2.2 Collaboration sites increased speed, flexibility and pathway quality

Streamliners implemented collaboration sites for both New Zealand and NSW. These sites allowed for a collaborative team of Clinical Editors across the regions to work on specific pathways together, rather than in their local sites. This dedicated site meant that pathways could be published quicker. Regions could then take the national pathway and localise it for their specific needs. Both the New Zealand and the NSW governments provided the funding for these sites.

In New Zealand they started their collaboration site before we did, so we could stand on their shoulders. Streamliners said we didn't need to stick to the style conventions, so could structure the pathways differently to try and make it easier for a GP to go to exactly the part that they needed.

There was some confusion out of NSW Health when setting up processes (e.g. how will vaccination be done, etc.). Seemed like a bit of a missed connection. The NSW Collaboration Site helped, and also helped with the noise from PHNs. Information coming through from the Ministry of Health became easier.

This approach helped relieve some of the pressures felt by Clinical Editors in the regions, particularly the smaller regions. Clinical Editors were often working overtime to keep up with constant changes, risking burnout. Localisation was sometimes falling behind. The collaboration sites created a team approach to share the load and helped avoid duplication of work. Pathways benefited from the range of experience and perspectives. A HealthPathways manager at Streamliners noted that:

There was a team of Clinical Editors from around the country or state and we could hand over the baton. COVID needed extra resources and so that worked well.

A clinical advisor with HealthPathways felt that:

Having perspective from different places around the country gave a more balanced view and made better pathways.

The approach was not without its challenges, with an interviewee noting that there was a lack of clarity around who had final say in matters of disagreement. Another noted it was a struggle shifting from the usual approach of adapting every page to local needs to creating a nationally consistent pathway that would need minimal localisation.

2.2.2.3 Webinars very well received and a good source of promotion for HealthPathways

Streamliners became more coordinated about education and partnering with government and colleges. Webinars emerged as a well-received source of knowledge for frontline clinicians, and a valuable opportunity to ask questions during a time of ever-changing information. These webinars were very well attended and were used to promote HealthPathways as a trusted and up-to-date source of truth. In New Zealand, the webinars were jointly held by Streamliners, RNZCGP, and the Ministry of Health. In NSW, Streamliners joined existing webinars held by RACGP, with State-level officials often in attendance.

In addition to raising awareness of evolving clinical guidance and changes to services and models of care, the webinars created an important channel for feedback from frontline clinicians back to policy makers and funders to inform ongoing refinements to the health system response. Each webinar would generate hundreds of audience questions and themes emerged that signalled areas of confusion or frustration where better communication, or change was needed. A medical officer at a New Zealand government agency felt that the webinars:

...were really special. They were well-organised, with good speakers and timed so that they responded to changes as we learnt more. Local HealthPathways people answered questions. The first one [had] about 1245 people online with a mix of professions. There was very engaging discussion of the edgy bits for vaccination, evolving care in community software, antivirals, long COVID etc. It was very impressive.

2.3 External factors played into the response

2.3.1 Differences seen in government responses for New Zealand and NSW

2.3.1.1 Government responses to funding HealthPathways

New Zealand

Through sustained contact with the Ministry of Health, Streamliners was able to secure a pool of funding for the development of the full suite of national COVID-19 pathways and national webinars. While local teams funded the localisation of the COVID-19 suite for their own sites Streamliners have noted that this push for recognition during COVID-19 has led to strengthened relationships with the New Zealand government

Prior to the response we had no relationship with [the] Ministry of Health for pathways getting policy into practice. Things have changed now. We have been using COVID as an example during the health reforms as a way of getting a national approach.

New South Wales

At the start of the pandemic, NSW took a lead region approach, with Hunter New England as the lead. At the time, the only region not using HealthPathways was Western NSW. The NSW Ministry of Health agreed to fund Western NSW to bring them on board, so they had access to the NSW HealthPathways.

In late 2020, a State-level collaboration was developed regarding post-COVID-19 advice, and in February 2021, at the beginning of the vaccine rollout the NSW Ministry of Health agreed to fund this work. The entire COVID-19 suite was overhauled, with six Clinical Editors across the State working together to revise the pathways.

2.3.2 Very few regions used alternatives to HealthPathways during COVID-19, indicating the wide reach of HealthPathways prior to the pandemic

2.3.2.1 Bay of Plenty

Pre-COVID-19 use of HealthPathways in Bay of Plenty was low compared to, for example, Waikato. During COVID-19, one interviewee stated that there was an initial lack of awareness about the HealthPathways response in the Bay of Plenty. Those involved in the covid response used a closed Facebook group to connect with a range of community providers. The interviewee suggested that this approach worked well, there was a two-way flow of information and it allowed a whole health system response including those that did not have access to HealthPathways. It became clear as we spoke to other stakeholders that the use of Facebook in this way was a relatively short term approach, that was not continued beyond the initial weeks of the pandemic.

2.3.2.2 Western NSW

The District of Western NSW was not using HealthPathways pre-COVID-19, unlike the rest of NSW. However, as COVID-19 escalated, NSW Ministry of Health funded Western NSW to start HealthPathways so they could access the COVID-19 content being developed.

2.3.2.3 South Western Sydney

South Western Sydney had a low usage of HealthPathways prior to the COVID-19 pandemic. Many of the 1300 GPs did not use the pathways, with only a small core group using them daily. At the beginning of the pandemic, HealthPathways was still in limited use, with several other sources of information, run by other organisations, available and no directive from the PHN and LHD to use HealthPathways. A

Into 2020, we had a low level of usage from previous years. A core group among the 1300 used them daily and a lot didn't use HealthPathways. There was some confusion with a

doubling up of information, [GPs] they could find it on other PHN resources with the same information, so they didn't want to force GPs to use it. The PHN and LHD didn't feel it was appropriate.

However, usage of HealthPathways picked up in 2021 during Omicron, reflecting changes in the local HealthPathways project team, and a more active promotion of HealthPathways.

2.3.3 A lack of capacity with smaller teams is challenging

Several interviewees identified that the lack of capacity, particularly in smaller teams, can present challenges for developing, localising and updating HealthPathways, especially during times of constant updates. While the improvements made by Streamliners throughout the pandemic helped ease the burden on smaller teams (e.g. through the Lead Region model), keeping pathways up to date with localised information remains a struggle.

Dependence on one person was tough...it's a challenge with only a small number of Clinical Editors in the region with the knowledge/expertise.

A HealthPathways Clinical Advisor made the comment that:

There is no resource for the West Coast team so [their pathways] won't be updated. Taranaki has good pathways but struggle with resources and getting local Clinical Editor resource. Even if it's agreed at the 5-DHB level there isn't the local detail so clinicians are less likely to rely on the resource.

3. The impact of HealthPathways during the COVID-19 response

During the COVID-19 response the benefits and impact of HealthPathways were reflected across three areas.

- The health system overall, as enormous change was rapidly effected to existing services that had to cope with a new set of constraints and challenges.
- Individual clinicians making decisions about how to modify their services, and to provide new covid related assessment, care and vaccination.
- Patients, receiving consistent advice and care.

The following themes were reflected by most interviewees.

3.1 Working on HealthPathways strengthened relationships, trust and respect

A common theme amongst interviewees was the idea that, despite the demanding nature of the work, people felt privileged to be involved in such an important undertaking. Collaboration was more easily achieved than previously, because people realised the task was simply too big to be done alone. An atmosphere of trust developed as the work progressed, and people kept this going when things started to return to a more 'business as usual' approach.

A positive was the fact that people seem to rally when there is a common goal. People work together more easily—a benefit of the pandemic. Everyone puts their guard down and works together for the common cause.

A New Zealand Clinical Editor felt that:

Working together on COVID meant you learnt you could trust your colleagues to do the work. We don't have enough time and energy to do everything ourselves. There is now more keenness to explore doing more collaboration, sharing, learning about how other regions are working and what to look out for.

Interviewees noted that people felt more like part of a community during their pathways work and those relationships endure to the present day. These relationships were established and strengthened between governments, local health systems, , community health providers and colleges. Trans-Tasman relationships were also built upon.

The whole concept of being part of a community was strengthened as a consequence [of COVID]. If someone asks, why would I buy HealthPathways over other programmes—would say you're becoming part of the community/social movement—likeminded regions who are sharing stuff. COVID helped cement this. It is one of the strengths of the HealthPathways programme.

An Australian Clinical Editor noted that:

It is easy in rural and remote areas to feel really isolated and it has been magical to have the wider support network, for sharing of clinical content and advice to GPs but HealthPathways also opened up and provided the connections to other GPs across the State and there is collegiality at such a hard time. We are all in same boat but can share experiences and debrief and provide support.

While a New Zealand Clinical Editor said that they had attended:

an Australasian Clinical Editors meeting and that was a good support. Australia often had more written material and knowing what was there was good and was helpful. It is a different medico legal environment, but it was really useful. That networking and meeting was really helpful for following work.

Consistent messaging from government, HealthPathways, colleges and other health providers is important to ensure effective communication with frontline clinicians. The work on HealthPathways during COVID-19 meant that these relationships could develop and going forward, it should be easier to ensure that communications are consistent. A New Zealand Clinical Editor said that HealthPathways had previously been somewhat separate from DHB and PHO stakeholders, but that more recently since COVID-19:

there has been more collaboration with a wider group of stakeholders, and they now feel more ownership and willingness to be involved because of that. More organisations feeling ownership of the information on HealthPathways has helped.

3.2 Awareness and usage of HealthPathways accelerated, increased and widened

The use of HealthPathways during COVID-19 has a lasting impact in broadening usage for a range of conditions beyond the immediate activity of the COVID-19-response. The number of regions using HealthPathways has increased compared to pre-pandemic, and the usage has generally increased in regions that were already using it (Section 4). Primary care providers are now more aware of how HealthPathways can help them provide improved care to their patients. More broadly, system-wide engagement with HealthPathways also increased amongst hospital staff, allied health, aged care and government. A HealthPathways clinical advisor said that they had:

built a good sense of community and trust. HealthPathways are well recognised in the GP community and have shown their value at being able to support patients to get connected to the services they need. Clinicians have the information to connect patients with what they need. Use rate skyrocketed during COVID. There is now a bigger regular pool of users and it has become a trusted resource.

A New Zealand based clinician felt that:

COVID-19 accelerated system wide engagement with HealthPathways and I sense that there is more non-doctor use, allied, nurses, admin, etc. So there are broader teams of people using them now.

3.3 Provided a key place to access reliable, up-to-date, locally specific information for best practice

Initially during the COVID-19 response there was national level information available but very little local level information. HealthPathways provided reliable, trusted, up-to-date information that included local-specific information. The processes put in place by Streamliners ensured that new information was quickly triaged and updated in the appropriate place, meaning clinicians could trust that all the information they needed was there.

An Australian Clinical Editor noted that HealthPathways:

provided a centralised go to place for GPs to find rapid practical information.

A senior primary care manager felt that HealthPathways meant that:

I have trust and confidence that colleagues are providing good information to me.

A Clinical Editor noted that the value users placed upon HealthPathways was evidenced by the speed with which they provided feedback:

Last Thursday at 4pm there was a technical writing glitch where a Liverpool drug checker was dropped off. By 7pm seven people had complained, and it was fixed by 10pm so we know the pathways are being used or we wouldn't have got any complaints.

3.4 Improved health system alignment and reduced unwarranted variation

HealthPathways during the COVID-19 response has helped to provide national consistency of messaging and reduced duplication of work between regions by creating collaborative processes across regions. A New Zealand Clinical Editor noted that HealthPathways:

provided national consistency, we could see local pathways and we could look at it and say others are using it. There was some local variation, but also more national consistency and efficiency of sharing work done in different regions as well. It reduced duplication and we were able to share ideas.

In addition, curation of information helps reduce unwarranted variation and disparate regional responses. The standardised method used for developing HealthPathways means that users know the information will be there if it is available and they will be able to find what they need quickly, without sorting through irrelevant data. A New Zealand based Clinical Editor felt that without HealthPathways:

local regions would have done their own thing. They would have done their own thing, and had their own testing and vaccine criteria etc. It wouldn't have happened in a timely enough way so there would have had a lot more regional variation and not enough cohesion. HealthPathways was part of the glue to keep people moving forward.

3.5 Enabled clinicians to provide appropriate and safe care for COVID-19 positive patients

HealthPathways helped to reduce the noise in the system and clearly set out care pathways to allow frontline clinicians to provide the best possible care to patients according to best practice. HealthPathways also provided a conduit for various community organisations and secondary services to deliver information. Prior to the pandemic, HealthPathways use among allied health was low, but interviewees noted that use among these groups increased, improving the provision of care across more health services. A HealthPathways Portfolio Manager said that:

HealthPathways was a single platform for practical information they [GPs] actually needed to care for their patient. Without pathways clinicians would be overwhelmed with information, there would be less consistency of care and less awareness of support services/wraparound hubs etc. Inequity would be worse. It would have been dependent on individual clinicians to set up their own processes/system.

Two Australian Clinical Editors felt that:

It's about best practice—if they are not up to date, there is a risk we will offer less than best care. This is the thing I like the most about HealthPathways.

Our page hits mirrors the waves of COVID. If we didn't have the guidance pages there would have been a disjointed trickle of resources so we would have had substandard care of COVID-positive patients.

3.6 Saved time, reduced stress and burnout for frontline clinicians

Using HealthPathways reduced duplication, unnecessary work and time looking for information. By providing a one-stop-shop to frontline clinicians managing COVID-19 in the community, HealthPathways allowed clinicians to do their job quickly, with the assurance that the information provided was up-to-date and correct. Frontline clinicians were aware of the ever-changing messaging throughout the pandemic and having HealthPathways as a 'source of truth' helped reduced the stress they felt when worrying about the constant changes. HealthPathways helped provide confidence to clinicians who were less familiar at the beginning about care for COVID-19-positive patients. A New Zealand Clinical Editor felt that:

the impact that HealthPathways had on the COVID-19 response was to provide a trusted reliable source of information to support the clinicians to do the job they need to do. Burnout and mistakes would have been higher without them. They were supported by a culture of supported leadership and workforce with a pre-existing platform. It showed the network was interconnected. There was so much distress in the GP community it really helped them.

Another Clinical Editor said:

We reduced the noise in the system and acted as a conduit for various community organisations and hospitals to deliver the information they thought primary care needed. Without pathways it would have been clinically less safe, and patients wouldn't have got

the services they needed. It would have wasted time, and increased burnout and stress because people would have been less confident they knew what was going on.

4. Data shows HealthPathways usage has generally increased since COVID-19

The HealthPathways usage data from 2019 (pre-COVID-19) to 2022 was analysed to provide information on the impact and variation of HealthPathways use during the COVID-19 pandemic.

4.1 COVID-19 page views generally increased over time with spikes associated with waves of cases

There was a general pattern for COVID-19 page views across all regions in New Zealand and New South Wales where the number of page views spiked in 2020, dropped back slightly in 2021 and spiked again in 2022. The spikes were more pronounced in some regions.

New Zealand

The Midland region had the largest percentage increase in COVID-19 page views from 2020 to 2022 at 1216% (1805 to 23,746) followed by Whanganui & MidCentral (609%, 1605 to 11,374). Nelson Marlborough (9%, 175,81 to 19,162) and West Coast (27%, 1049 to 1329) had much smaller increases in page views than other regions.

New South Wales

Western NSW had the largest percentage increase from 2020 to 2022 at 938% (843 to 8747) followed by South Eastern Sydney (732%, 2958 to 24,602). Hunter New England and Central Coast had decreases after experiencing the largest spikes in page views in 2020.

4.2 Indicator (non-COVID-19) page views increased in most regions

There was a general increase in total HealthPathways page views and in the indicator (non-COVID-19) page views during the COVID-19 response.

New Zealand

Most regions had an increase in total page views from 2019 to 2022 (range 4–835%), except Aoraki (-24%, 28,707 to 21,927) and West Coast (-27%, 33,172 to 24,313) where decreases were seen, reflecting local challenge with resources to keep their pathways up to date. The region with the largest percentage increase in total page views from 2019 to 2022 was Whanganui & MidCentral (835%, 8450 to 78,977) followed by Midland (239%, 55,130 to 186,917).

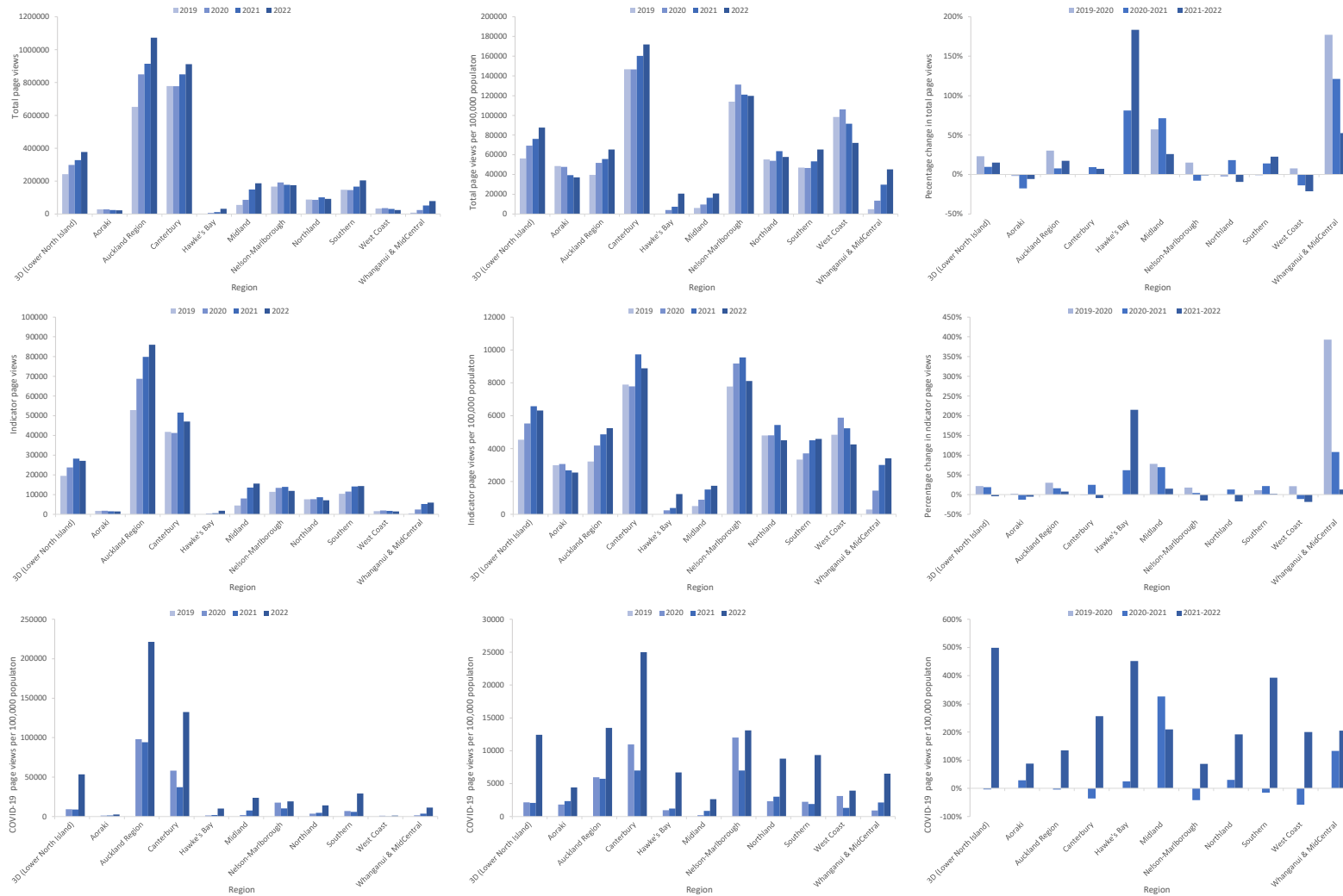
A similar pattern was seen for the indicator page views from 2019 to 2022 with increases from 4–1059%. Decreases were experienced in Aoraki (-15%, 1763 to 1499), West Coast (-12%, 1633 to 1435) and Northland (-6%, 7628 to 7159) regions. Whanganui & MidCentral (1059%, 512 to 5936) and Midland (247%, 4497 to 15,620) regions experienced the largest increases.

New South Wales

All regions had an increase in total page views from 2019 to 2022 (range 15–315%). The regions with the largest percentage increases were South Eastern Sydney (315% 12,847 to 53,295) and Sydney North (216%, 23,463 to 74,169) while the smallest increase was in Mid & North Coast (15%, 87,912 to and 101,214).

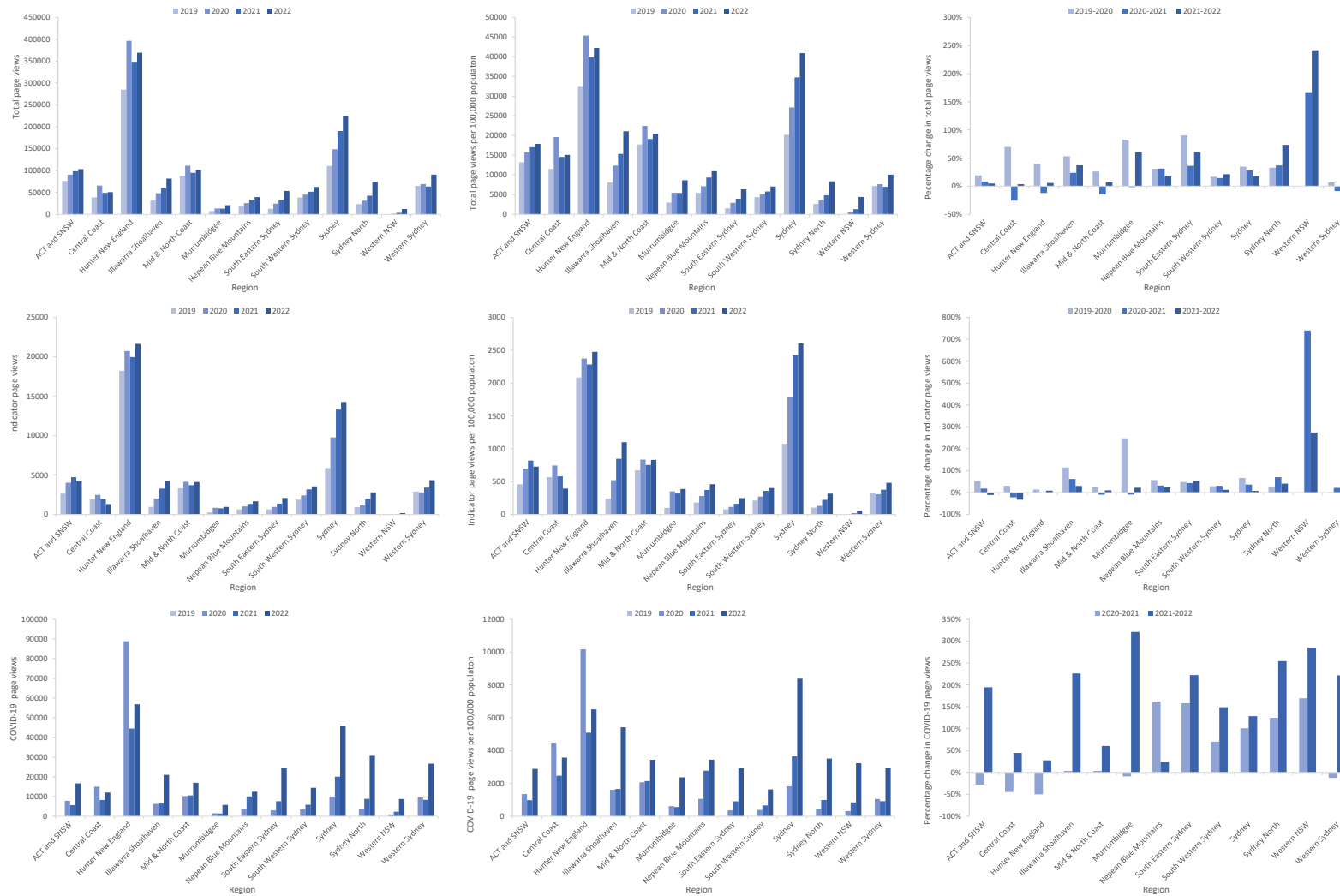
For indicator page views from 2019 to 2022 with increases from 24–351%. The largest percentage increases were in Illawarra Shoalhaven (351% 945 to 4261) and Murrumbidgee (285%, 244 to 943) regions. Central Coast was the only region to experience a decrease (-31%, 1901 to 1315).

Figure 3 New Zealand page views, page views per 100,000 population and percentage change in page views by region and year



Source: Sapere analysis of Streamliners data.

Figure 4 New South Wales page views, page views per 100,000 population and percentage change in page views by region and year



Source: Sapere analysis of Streamliners data.

4.3 Webinars were well attended and received

As noted above the webinars were well attended and received. Webinars were attended primarily by GPs and nurses but also a wide range of healthcare professionals including specialists, pharmacists, allied health, and management/administration/support staff. Table 2 shows there were over 700 attendees on each webinar.

Attendees were invited to provide feedback via survey after each webinar with response rates around 30–40%. Overall, the quality and relevance of the webinars were highly rated.

Table 2 Webinar attendance

Date	Number of attendees
3/11/2021	1894
15/12/2021	717
16/02/2022	1250
16/03/2022	871
13/04/2022	749

Source: Streamliners feedback and evaluation summaries.

5. Thoughts on future value from interviewees

Several ideas and themes came through from interviewees on maintaining value that had been realised during the COVID-19 response, along with views on areas of possible future value for HealthPathways.

Maintain relationships built and collaborative working in times of business as usual

Many of the interviewees highlighted that a key benefit of the COVID-19 response was that the collaborative way of working built relationships. It brought teams together, reduced regional silos, and colleagues learnt to trust each other and encouraged ways for the sector to work together. The flexible and responsive structure has been built now the focus needs to be on how to maintain these relationships as things return to business as usual.

HealthPathways is a tool, it's the conversations that are critical. In some areas they get lots of pathways up, but not enough conversation to build the trust to achieve integration of care.

Find the right balance of national and localised pathways

Some interviewees talked about the challenge of getting local information and accessing expertise and the need to find the right balance between national and localised pathways. A New Zealand Clinical Editor found that there were challenges:

getting access to local evidence, modelling and expertise was and is a problem, as information is in separate DHB systems. It was difficult. A challenge is trying to break down the regional silos and input into the national effort. Also thinking about how to make sure local expertise is tapped into to inform the national guidance. I'm aware that we need to work hard at breaking silos and barriers and including the iwi and Māori perspective. We also need to bring in evidence and expertise about health stats into thinking and planning. It is a small pool of people that we need expertise from.

A NSW based Programme Manager argued that:

It's not about volume of pathways, but using the process to look for issues in the system. We don't rapidly localise pathways for the sake of it. We want to look at the system to develop more innovative process and use HealthPathways to articulate the processes and it also goes with an education programme...Pathways is just an enabler for us and that is why we are successful. Not just writing pathways but using it to change processes.

Promote HealthPathways and provide education programmes more widely

Several interviewees noted the importance of education and promotion of HealthPathways for increasing usage suggesting that there would be value in an education programme for all regions and at a national level. A NSW based Clinical Editor felt that:

All along pre covid we have found a need for education, and promotion has been key to get usage...if we have a big thing, we will wrap it up and promote it with education.

Improvements and extensions

Other ideas for improvements and extensions included being more measured about what pages and information are needed. For example, an Australian HealthPathways project manager felt that they:

Need to be more measured about “do we need that page?”...There are 12 regions at different stages of maturity and this may have changed what needed to be said in COVID-19 pathways (e.g. if some didn't have a respiratory pathway and others did)...sometimes information was in other page content...Streamliners maybe could control that better...or do they need a major incident portfolio that says let's curate a set of content? Rather than a COVID page on how to assess chest condition, say, just drop basic content to the sites that don't have it... We could consider a different approach, and less is more, and feed out content that have already got in some regions... The lesson from COVID is don't overdo content and make relevant stuff viewable.

A further suggestion from a New Zealand Clinical Editor was to broaden the use of HealthPathways among Māori and other providers (e.g. disability, social support services, nonregistered allied health), with the goal of improving equitable access and outcomes:

When working with Māori and other providers with other supports it was quite apparent that they don't have an equivalent for consistent information. And disability too. There is a gap here. Allied health current use only covers registered health professionals...Need to think about how this gap is filled and do HealthPathways fit here?

6. Impact and potential of HealthPathways

Overall, the experience of using HealthPathways during the COVID-19 outbreak in New South Wales and New Zealand has provided an illustration of how HealthPathways can be rapidly scaled in a responsive manner to disseminate information to health professionals. In a complex environment of rapidly changing information, HealthPathways was a trusted source of information for health professionals, while acting as a timely and responsive mechanism for central agencies to disseminate important information. Alternative means of communication from central agencies struggled to match the comprehensiveness and responsiveness of HealthPathways, and did not always achieve the level of trust and confidence that clinicians had in HealthPathways.

The experience of the COVID-19 outbreak highlights some of HealthPathways' strengths as a mechanism for translating policy and evidence into practice in a particularly challenging environment. But the experience also stimulated development of key aspects of HealthPathways in ways that will have a lasting impact on how it is used. It encouraged new ways of cooperating and managing HealthPathways collaboratively across different regions, and generated examples of enhanced value from using HealthPathways in a joined up way across health systems. While the outbreak confronted HealthPathways with a major test of its ability to respond to an outpouring of changing information, responding to that challenge has left HealthPathways with new processes and ways of adding value to health systems.

The use of HealthPathways during COVID-19 illustrates some of the main benefits that arise from HealthPathways in other settings, but in a more concentrated form. The ability to integrate government and local responses, and to respond to frontline feedback was an important element of creating trust in HealthPathways as a reliable source of information, but also had the effect of building relationships across the health system and in government. HealthPathways is often a mechanism for building trust and relationships, but the extreme environment of COVID-19 provides a particularly vivid example of this. Similarly, the ability to ensure equity, disseminate evidence and reduce unwarranted variation is a core part of HealthPathways implementation, but the complex and changing environment of COVID-19 provides a particularly strong example of the value that HealthPathways can bring to health systems.

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Appendix A List of interviewees

Table 3 List of key informants

Name	Role	Organisation
AiVee Chua	HP Clinical Editor	Western NSW PHN
Alex Williams	HP Clinical Editor	
Antoinette Ehmke	Pathway Sharing Programme Manager	Streamliners
Ben Neville	Manager HP	South Western Sydney PHN
Catherine Turner	HP Programme Manager, Auckland	
Chris Scott	HP Programme Manager, Midland	
Christine McIntosh	Local hub rep, Auckland	
David Hughes	Chief Medical Officer	Pharmac
Dianne Davis	HP Senior Clinical Editor, Northland	
Gary Ng	Community and Programme Support Manager	Streamliners
Helen Liley	HP Clinical Editor, Auckland	
Janine Close	HP Clinical Editor, Canterbury	
Jenny Maybin	HP Clinical Editor, Southern	
Joe Bourne	Ministry of Health – COVID community response	
Justine Lancaster	HP Clinical Advisor Ministry of Health – COVID community response	
Kate George	HP Lead Clinical Editor, Sydney	Central and Eastern Sydney PHN
Kieran Holland	Clinical Lead	Streamliners
Louise Delaney	HP Clinical Lead, Australia	Streamliners
Lucinda Whiteley	Clinical Lead, COVID Local hub rep, Canterbury	
Marika Mackenzie	HP Programme Manager	The Hunter New England PHN
Martina Gleeson	HP Senior Clinical Editor	South East Sydney
Mary McLeod	HP Programme Manager, Canterbury	
Melissa Taylor	HP Writing Team Manager	Streamliners
Michelle Crockett	Senior Clinical Editor and Clinical Lead	Western Sydney PHN
Mike Ardagh	Clinical Lead	Streamliners
Nick Rosser	HP Programme Manager	Nepean Blue Mountains PHN
Paul Bennett	HP Programme Manager	Central Sydney PHN
Penny Burns	Australian Technical Advisory Group on Immunisation (ATAGI) Rep and COVID Response	
Regina Osten	Stream Manager Integrated Care and Aboriginal Health, CATALYST	Agency for Clinical Innovation
Sandra Fitzgerald	HP Clinical Editor Initial Lead Clinical Editor for COVID-19 response in NSW	The Hunter New England PHN
Shireen Martin		NSW Health
Tracey Tay		NSW Health
Vince Barry		Ministry of Health, New Zealand

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