10 years of HealthPathways Sydney: Are local guidelines improving equity, efficiency, and integration of care?

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The author of this report would like to acknowledge the traditional owners of the lands on which Sydney Local Health District and Central and Eastern Sydney Primary Health Network operate – the Gadigal, Wangal, and Bediagal people of the great EORA Nation.

I pay my respects to Aboriginal and Torres Strait Islander cultures; and to elders past and present.

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Contents:

1. Background and Context

1.1 Sydney Local Health District (SLHD)(1)

SLHD is a major health service provider in New South Wales, covering approximately 126 square kilometres and serving over 740,000 local residents, and many from rural and remote areas. It is one of the most densely populated health districts in NSW, with a projected population of 819,540 by 2036. SLHD provides healthcare through hospitals, community health centres, and in-home care, with a 13,000 strong workforce. The district is culturally diverse, with a significant proportion of residents speaking languages other than English and includes Aboriginal communities along with a vibrant LGBTIQ+ population.

1.2 Central and Eastern Sydney Primary Health Network (CESPHN)(2)

Formed in 2015, CESPHN covers a population of nearly 1.9 million people and coordinates primary care services to enhance health outcomes. It collaborates with local health districts and specialty networks to address health priorities such as Aboriginal health, mental health, chronic disease management, and domestic violence prevention. CESPHN focuses on workforce development, practice support, and clinical support through programs like HealthPathways, telehealth, and cancer treatment coordination.

1.3 Clinical Services Integration and Population Health Directorate

The CSI&PH Directorate oversees SLHD's Strategic Framework for Integrated Care, which aims to deliver high-quality, patient-centred services while integrating efforts from private, non-profit, and government sectors. It involves a wide range of services, including HealthPathways, community health services, and population health programs. The directorate works with various stakeholders, including GPs, allied health professionals, NGOs, and government agencies, to improve care coordination and service integration.

1.4 HealthPathways

HealthPathways is an online platform launched in 2008 through a partnership between Canterbury District Health Board (CDHB) and Streamliners(3,4). It provides GPs with clinical pathways for assessing and managing medical conditions, aiming to reduce care variations and improve referral processes. The platform promotes collaboration across healthcare systems(5), supporting shared care and standardising evidence-based care while remaining flexible to individual needs and increasing community care(6–9). It is used in over 50 healthcare organisations in the UK, Australia, and New Zealand, with guidelines created by experts from various healthcare fields(10).

1.4.1 HealthPathways Sydney (HPS)

The HPS program, launched in 2013, has promoted collaboration between SLHD and the Inner West Medicare Local (now part of CESPHN). The program focuses on improving referral practices, communication, and the continuum of care between GPs and specialists. Over the years, it has grown to include 950 clinical pathways and integrated with platforms like eReferral. HealthPathways has been instrumental in facilitating efficient care and enhancing patient access to services.

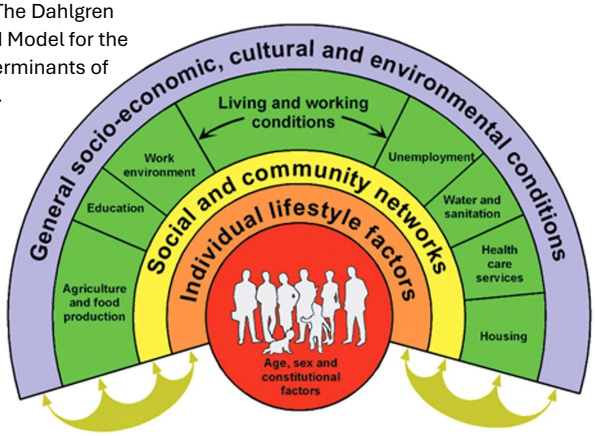
1.5 Frameworks for assessing HealthPathways(11)

HealthPathways' effectiveness will be evaluated through frameworks focusing on **integration**, **health equity**, and **efficiency**:

Integration: HealthPathways contributes to the integration of care across levels, from micro (individual care) to macro (system-wide policy) in line with the Rainbow Model of Integrated Care (12). It aims to improve patient experience, care quality, and reduce system costs by standardising care while maintaining flexibility to individual patient needs.

Figure 1 – The Rainbow Model of Integrated Care(12)

Figure 2 – The Dahlgren Whitehead Model for the social determinants of health(13).



Health Equity: The program's impact on health equity is assessed through the Social Determinants of Health model(13), which considers factors like socioeconomic status, access to healthcare, and quality of care. HealthPathways seeks to ensure equal access to high-quality care for all patients, regardless of background.

Efficiency: Assessing the efficiency of HealthPathways involves analysing the program's cost-effectiveness by comparing the cost of running the platform to the benefits it delivers, such as reduced GP time and improved clinical outcomes. Efficiency metrics also include comparing HealthPathways' outcomes with alternative healthcare resources.

1.6 Project objectives and scope:

The evaluation of HPS, initiated after 10 years of use, aims to assess whether the program has supported the district's goals of integrated and equitable care. The review will focus on the program's growth, its impact on health integration and equity, and its technical and allocative efficiency. Key areas of analysis include:

1. Literature review of HealthPathways worldwide
2. Evaluation of HealthPathways' efficiency within SLHD
3. Impact on integration and equity of care
4. Identification of areas for future research and growth in the program.

Proposed Timeline:

Figure 3 – Proposed timeline for evaluation

2. Methods of evaluation

2.1 Evaluation approach and design:

The approach to this evaluation has been developed based on current literature available for HealthPathways evaluations across Australia, New Zealand and the UK. A review of literature identified a key paper published in 2021 assessing the methodologies used in evaluation processes of HealthPathways(14). Consensus on evaluation of HealthPathways suggests a three-stage approach (Figure 4), with implementation effectiveness being measured against impacts and outcomes(14–16).

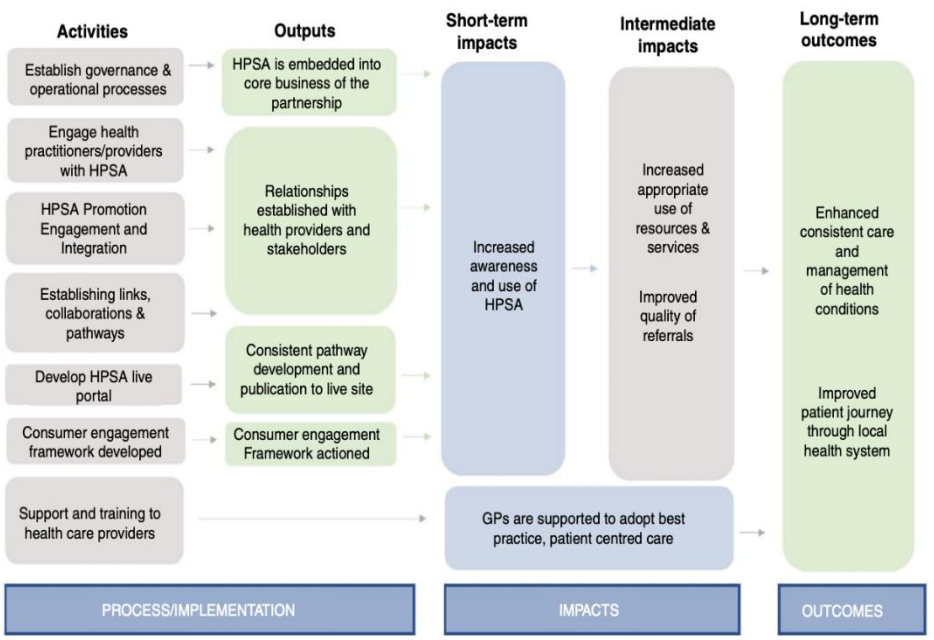


Figure 4(14) - Evaluation structure identified in literature review

Figure 7 – Newly proposed evaluation structure of Health Pathways

The 2021 review specified a further outcome in addition to those in Figure 4 - 'Reduction in health-care cost and increased value for money'(14). For this analysis the additional outcome has been grouped with 'Increased appropriate use of resources and services'.

Assessing the 'increased value for money' (allocative efficiency) component highlights difficulties assessing the cost-effectiveness of a clinical pathway. These challenges have been previously identified(17), with most clinical pathway evaluations focusing on cost-consequence rather than cost-effectiveness.

This report will focus on peripheral measures for Aims where methodologies to directly assess outcomes have not yet been established. A standardised approach to HP evaluation would enhance the validity, rigor, and reliability of results, leading to a more scholarly review process.

2.2 Ethics

Discussion with the SLHD RPA Human Research and Ethics Committee (HREC) was initiated in April 2024. Use of the Review, Renew,

Refresh ACI re-design data within original scope was approved by the Principle Investigator (Paul Bennett) on 3rd April 2024. Lead author added as a co-investigator at a site level in June 2024. Protocol Number X22-0334 2022/ETH02090 and X22-0342 2022/ETH02113.

2.3 Thematic Mapping

Integration			Aim					
Domain	**Evaluation point**		**1**	**2**	**3**	**4**	**5**	**6**
Clinical Service Integration	**Micro**	Assess adherence to pathways and consistency of clinical decision making	■	■		■	■	
	Meso	Evaluate the development of standardised clinical pathways and how they encourage MDT collaboration				■		■
	Macro	Measure population health outcomes and the management of chronic disease		■		■	■	■
Professional Integration	**Micro**	Evaluate the impact of collaboration and communication on patient care	■			■		
	Meso	Assess the impact on MDT assessment and staff training and education		■		■	■	■
	Macro	Analyse the impact on communication channels and co-ordination across primary/secondary care				■	■	■
Organisational Integration	**Micro**	Assess impact on patient referrals and workflow efficiency			■	■	■	■
	Meso	Evaluate resource utilisation and organisational integration at a patient level			■			■
	Macro	Assess HPS resource efficiency in comparison to other integrated care programs			■		■	
System Integration	**Micro**	Evaluate changes in accessibility to healthcare and the effectiveness of care transition		■		■		■
	Meso	Assess the completeness and accuracy of patient referrals				■	■	
	Macro	Analyse the extent to which HPS promotes transition between care levels and the information exchange				■		
Functional Integration	**Micro**	Assess the extent of patient engagement and the use of integrated digital platforms on patient outcomes						■
	Meso	Evaluate HPS impact on cultural competency and the delivery of patient-centred care		■				■
	Macro	Evaluate the availability of care co-ordination and support for health service navigation						■
Normative Integration	**Micro**	Asses patient involvement in decision making and consideration of ethical implications for patient care		■		■		
	Meso	Evaluate compliance to quality and safety standards and alignment with policy					■	
	Macro	Assess engagement with community organisations and alignment with regional and national policy		■	■			■

Table 1 – Thematic mapping for integration

Equity		Aim					
Socioeconomic Status	Evaluate changes in healthcare utilisation patterns among different socioeconomic groups		■				
	Assess whether HealthPathways has improved access to care for disadvantaged populations	■	■	■			■
Demographic Characteristics	Analyse demographic data to identify any shifts in health outcomes or healthcare utilisation patterns among different age, gender, race, or ethnic groups						
	Determine whether HealthPathways has reached diverse demographic populations equally and whether there are any disparities in access or outcomes					■	
Health Status	Compare health outcomes before and after the introduction of HealthPathways to assess any changes in health status						
	Examine whether HealthPathways has contributed to improvements in disease management, prevention, or early detection among vulnerable populations		■				■
Access to Healthcare	Measure changes in healthcare access indicators, such as wait times for appointments, emergency department visits, or hospital admissions		■				■
	Gather feedback from patients regarding their experiences with accessing healthcare services as a result of HealthPathways						
Quality of Care	Assess adherence to clinical guidelines and best practices among healthcare providers using HealthPathways						■
	Collect data on patient outcomes, satisfaction levels, and safety indicators to determine whether HealthPathways has improved the quality of care delivered to diverse patient populations						
Equity in Health Financing	Evaluate changes in healthcare expenditure for different socioeconomic groups			■			
	Analyse the distribution of healthcare costs and financial burdens to assess whether HealthPathways has reduced financial barriers to care for disadvantaged populations		■			■	■
Social Determinants of Health	Examine whether HealthPathways addresses social determinants of health through referral pathways or support services		■			■	
	Assess whether HealthPathways initiatives have targeted underlying social and environmental factors that contribute to health inequities, such as housing instability, food insecurity, or access to education		■				

Table 2 – Thematic Mapping of evaluation questions

2.4 Data collection activities

Data was collected from several sources:

- Extracted from Google Analytics
- Desktop review of grey and peer-reviewed literature
- Extracted from Review, Renew, Refresh re-design raw data
- Extracted from HealthPathways eReferral user data
- Extracted from Menzies analysis of Sydney Health Pathways published in 2019

3. Literature review

A comprehensive review of grey and peer-reviewed literature was conducted to inform the design of this HealthPathways Service (HPS) evaluation. The review involved searches on PubMed, EMBASE, and HealthPathways research databases, as well as additional grey literature identified by the HPS Program Director. The literature highlighted six key evaluation aims, following a three-step evaluation model focusing on implementation, impacts, and outcomes (14,15).

Evaluation of Implementation: Limited literature on the implementation phase was found. However, a 2019 review of Queensland Health's collaboration with GPs identified key success factors(18), such as content design and regular updates, which facilitated GP adoption and integration with local practices. Conversely, a CFIM assessment of the Southern Health Region in New Zealand(19) noted that neglecting adaptable elements (such as IT systems and workflow integration) hindered adoption, leading to inefficiencies and increased costs.

Aim 1: Increased Awareness and Use of HealthPathways: Twelve studies assessed HealthPathways' awareness and usage(14), with most using Google Analytics(20–23) to track user metrics such as monthly counts and session details. Surveys (online, telephone) and mixed methods were also employed(22,24). A 2021 study across New Zealand and Australia found GPs perceived HealthPathways as beneficial in guiding referrals and patient management (25). Evaluations in the Barwon region and studies on Type 2 Diabetes highlighted increased GP engagement, another outcome measure for this aim seen in literature(25–29) and improved referral quality following HealthPathways adoption.

Aim 2: Supporting Best Practice, Patient-Centred Care: This aim focused on identifying barriers and facilitators to HealthPathways adoption. Four studies used qualitative methods such as interviews and focus groups, finding that HealthPathways improved GP access to information(11) and facilitated patient-centred care. Research demonstrated that the platform reduced referral rates(23), improved care coordination, and supported GPs in implementing best practices(32).

Aim 3: Increased Appropriate Use of Resources and Services: Economic impact evaluations of HealthPathways were limited. A 2023 study on musculoskeletal imaging showed a significant reduction in unnecessary tests and potential annual savings(37). Prior studies(38) demonstrated cost savings by reducing inappropriate specialist visits. However, cost-effectiveness analysis remains challenging, with most studies using cost-consequence analysis instead(19).

Aim 4: Improved Referral Quality: Eight studies assessed referral quality using metrics such as completeness and appropriateness(1). The Hunter and New England HealthPathways initiative used audit tools to evaluate referral documents(21), finding improvements post-HealthPathways implementation. Studies from Canterbury and Sydney also reported improvements in referral compliance(39) (42) and reduced unnecessary imaging (41), demonstrating an overall economic benefit.

Aim 5: Enhanced Consistent Care and Management: Eight studies explored the consistency of care through specific patient cohorts (e.g., diabetes, post-menopausal bleeding, urological conditions). The introduction of pathways for conditions like undescended testis led to improved referral rates and treatment adherence. Other studies, such as those evaluating pancreatitis management and post-menopausal bleeding, showed better consistency and reduced unnecessary referrals, contributing to improved care outcomes.

Aim 6: Improved Patient Journey: Studies evaluating the impact on patient journeys primarily measured wait times. Retrospective analyses of hospital records revealed that HealthPathways reduced wait times for patients, particularly in diabetes and antenatal care. A case study following the Christchurch earthquake showed that HealthPathways improved emergency response plans, contributing to more timely patient care. Additionally, HealthPathways helped reduce unnecessary imaging, leading to fewer delays and a smoother patient experience.

4. Results and Analysis

4.1 Evaluation of program impacts – Short term

4.1.1 Aim 1: Increased awareness and use of HealthPathways

1. *How has the number of HPS users changed since implementation?*
2. *How has the overall usage of HealthPathways changed since implementation?*

Data from Google Analytics (January 2016–July 2023) provides insights on users, sessions, and page views. Updates to the dashboard in 2023 have impacted the reporting of page views, consolidating unique and total views into one figure. Data prior to 2016 is based on archived monthly executive reports.

Analysis found a steady increase in users over the last 8 years, with a slight drop in 2019. Regression analysis revealed a significant positive correlation between the number of users and time, with an R-squared value of 0.907, explaining 90.7% of the variance. The slope coefficient of 1,468 (95% CI: 998.932–1,936) suggests robust growth in users, supported by a t-statistic of 7.661 ($p < 0.05$).

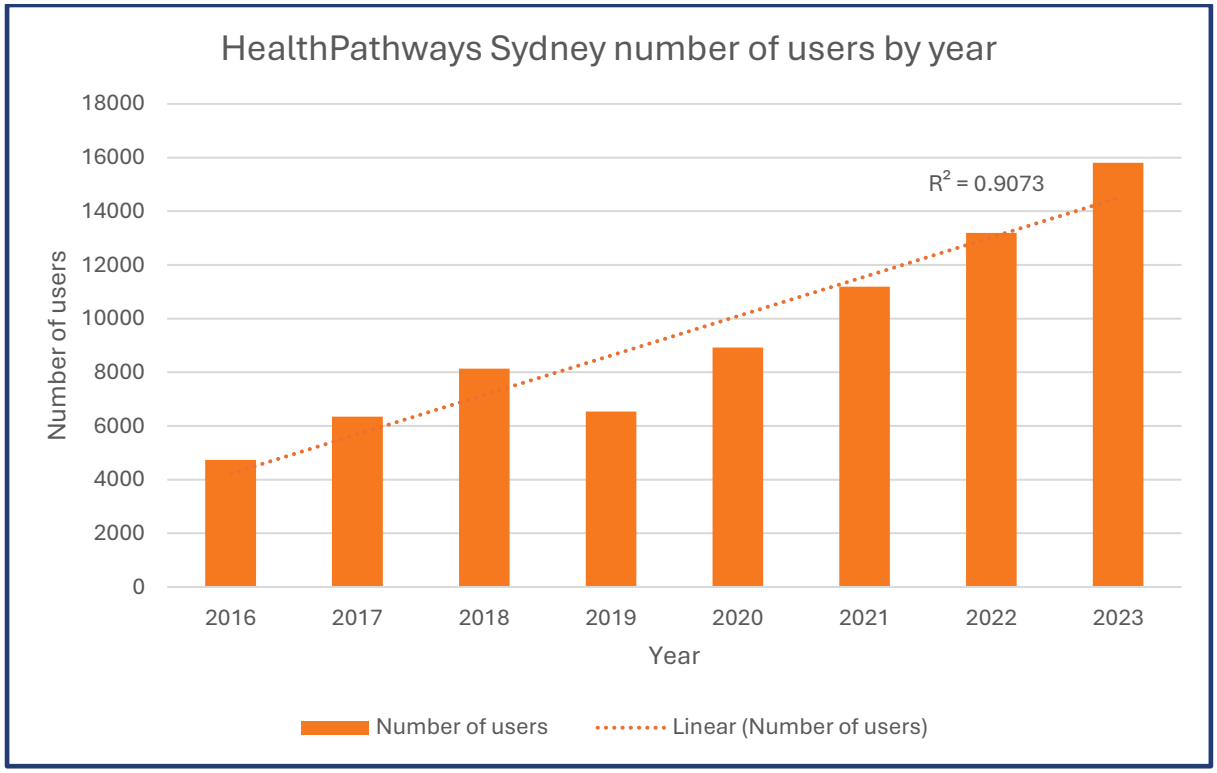
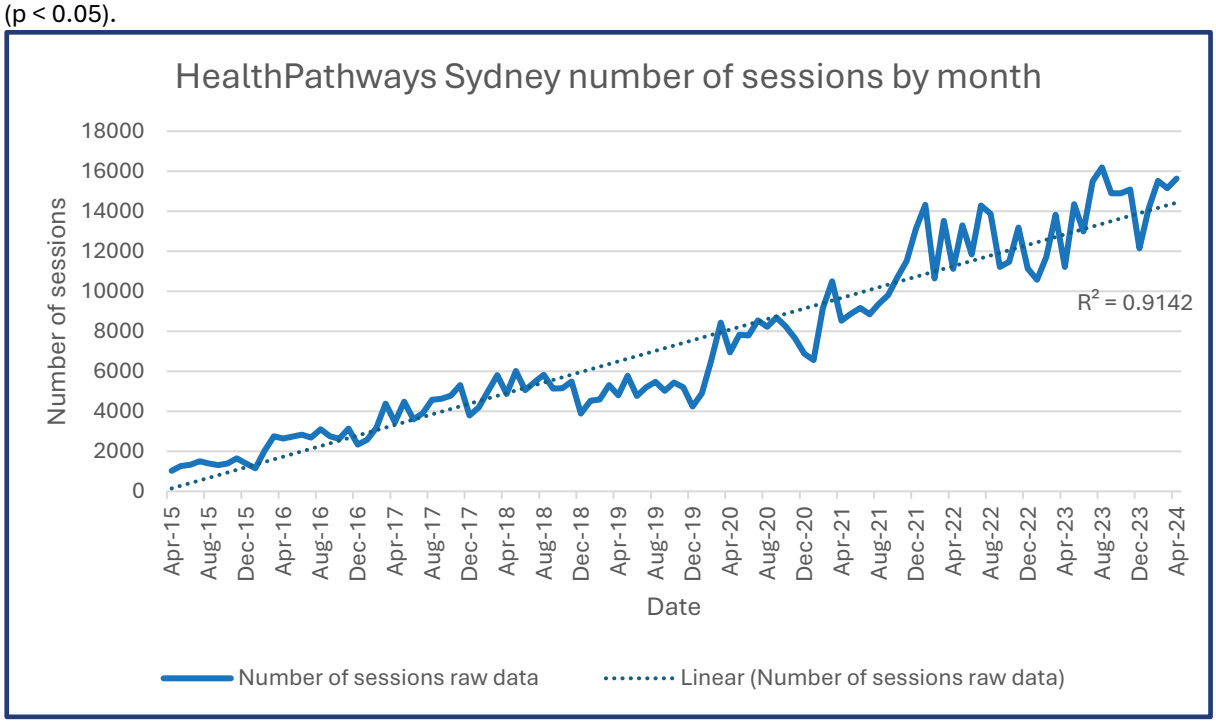


Figure 8 – Graph of HealthPathways Sydney users over time

Similarly, sessions have risen steadily, particularly during the COVID-19 pandemic, where page views nearly doubled between January 2021 and 2022. Regression for sessions over time yielded an R-squared value of 0.914, and a significant positive relationship with a slope of 132.25 (95% CI: 124.49–140.01), as indicated by a t-statistic of 33.787 ($p < 0.05$). A similar trend was observed for page views, with an R-squared value of 0.870, a slope coefficient of 354.98 (95% CI: 327.78–382.17), and a t-statistic of 25.894

($p < 0.05$).



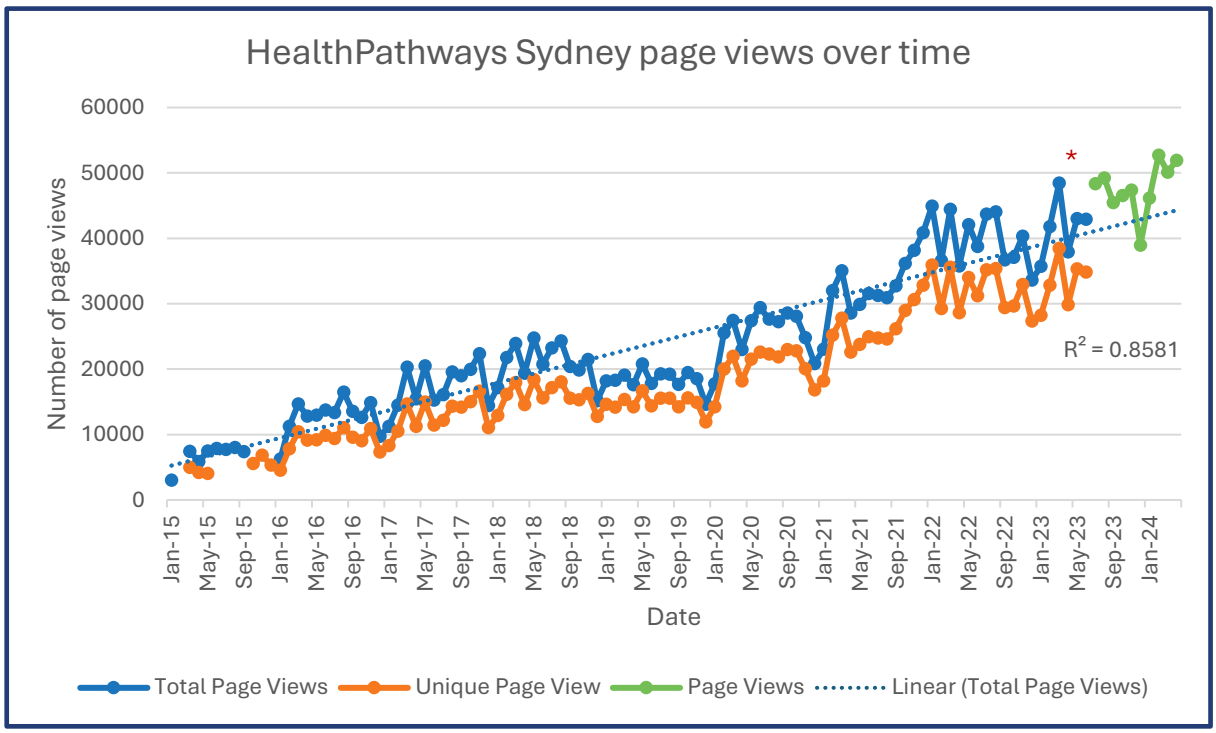
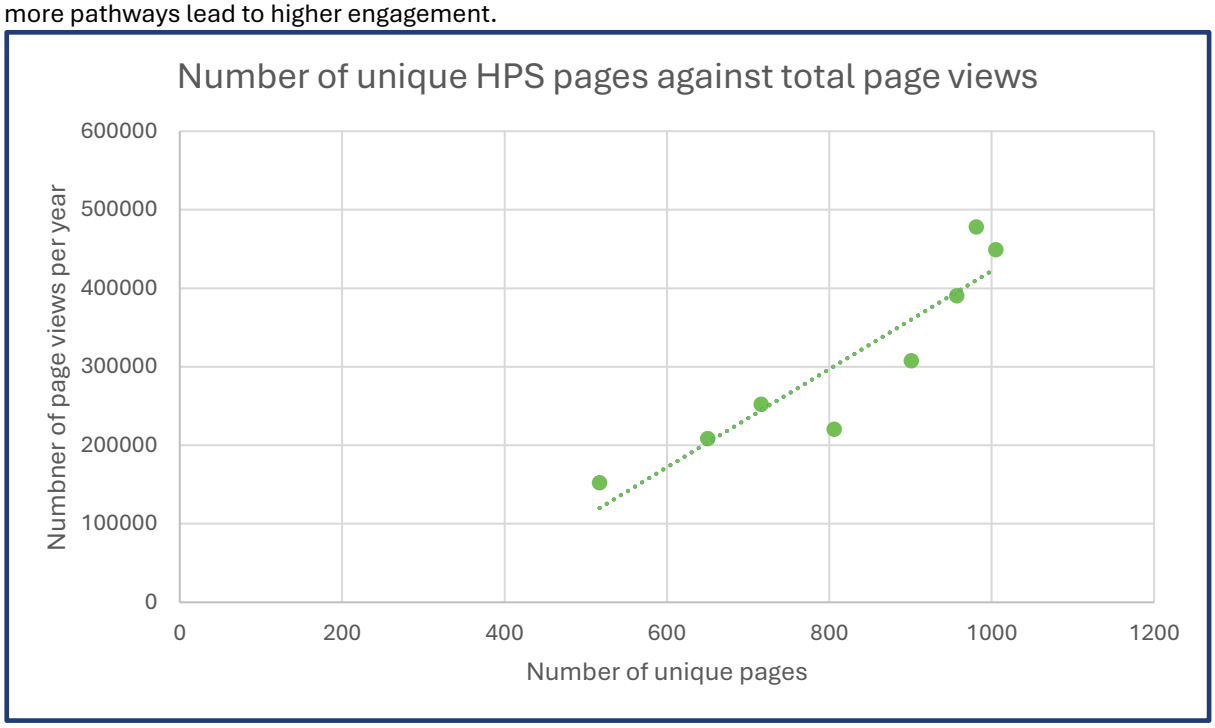


Figure 10– Graph of Page Views over time for HealthPathways Sydney
* This denotes the transition between reporting due to new Google Analytics dashboard

The hypothesis that page views increased due to expanding content was supported, with an R-squared value of 0.845 for the correlation between content volume and page views. These findings suggest that

more pathways lead to higher engagement.



Despite these robust results, there are limitations. Google Analytics' tracking errors, changes in session definitions, and the potential for bot traffic can skew data. Aggregation and the lack of user interaction details may also limit the analysis. To improve data accuracy, future evaluations should integrate user surveys and qualitative feedback, and individual logins will enable more granular analysis.

4.1.2 Aim 2: General Practitioners are supported to adopt best practice, patient centred care

1. *Has HPS supported GPs to deliver best practice care?*
2. *Has HPS improved healthcare equity for the district's residents?*

Data was collected through a GP survey in February 2023, with 56 out of 849 GPs responding (6.83% response rate), and from Google Analytics regarding page views for priority populations.

Survey results showed that 89% of GPs reported HPS improved patient care, 73% found it supportive for diagnostics, and 77% trusted its diabetes content. Qualitative feedback further supported HPS's value, particularly in providing timely, reliable information during the COVID-19 pandemic. Google Analytics data indicated increased access to pathway pages for priority populations, including Aboriginal and Torres Strait Islander, LGBTQIA+, Gender Diversity, Disability, and Homelessness. Notably, the percentage of total page views dedicated to these populations increased over time, with a statistically significant positive correlation in all but one category (LGBTQIA+).

For Aboriginal and Torres Strait Islander content, a strong correlation was found between page views and time ($R^2 = 0.829$), with a slope of 58.07 ($p<0.05$). Similar significant positive correlations were observed for Gender Diversity ($R^2 = 0.969$), Disability ($R^2 = 0.816$), and Homelessness ($R^2 = 0.663$). However, the LGBTQIA+ category showed no significant correlation ($R^2 = 0.498$). The increase in page views for these pathways indicates growing awareness of health equity issues for these groups.

Despite these promising findings, survey limitations—such as a low response rate, potential response bias, and the absence of questions on all aspects of patient-centred care—compromise the generalisability and validity of the results. Future evaluations should link GP engagement with actual patient outcomes to better assess HPS's impact on patient-centred care and health equity.

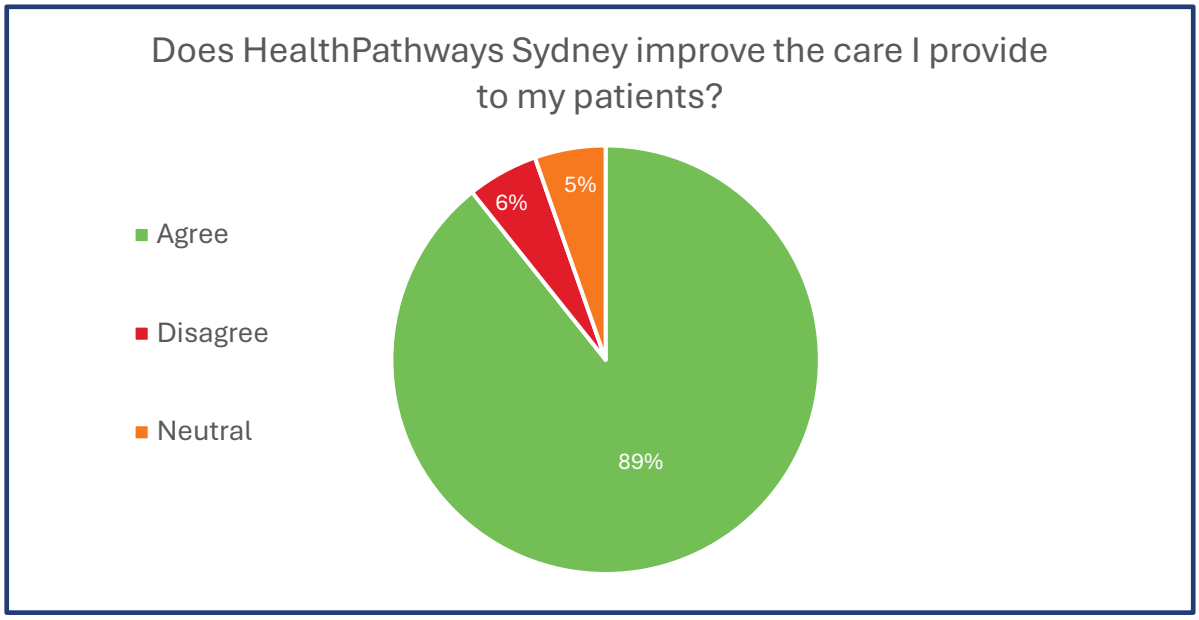


Figure 12 – Graph of HPS impact on care

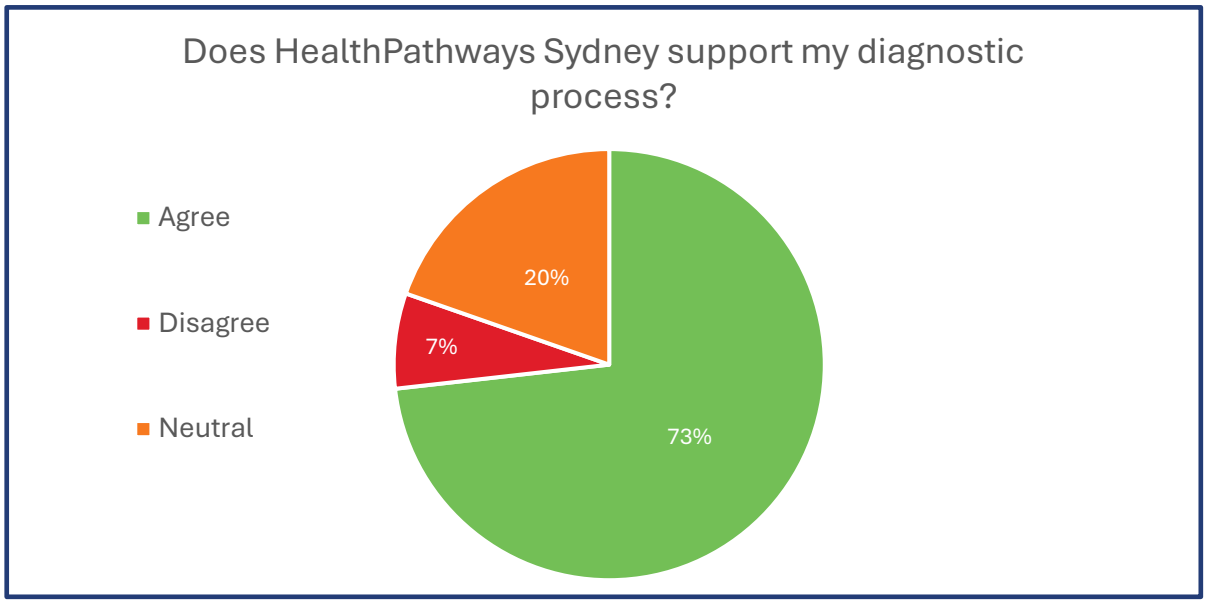


Figure 12 – Graph of HPS impact on diagnostic process

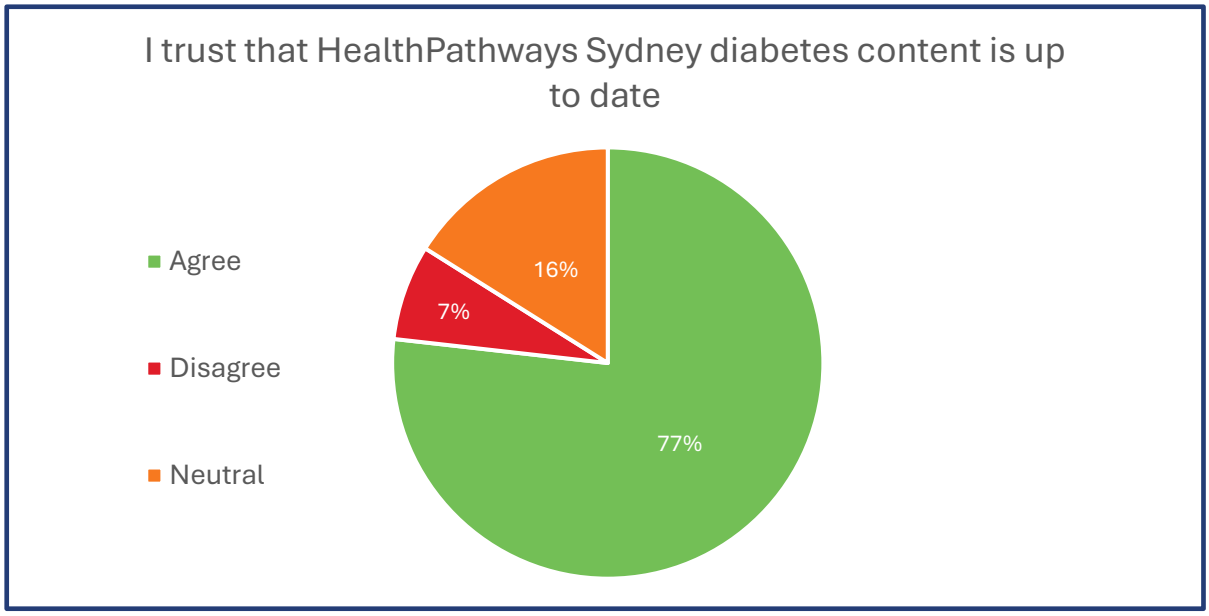


Figure 13 – Graph of GP trust in HPS diabetes content

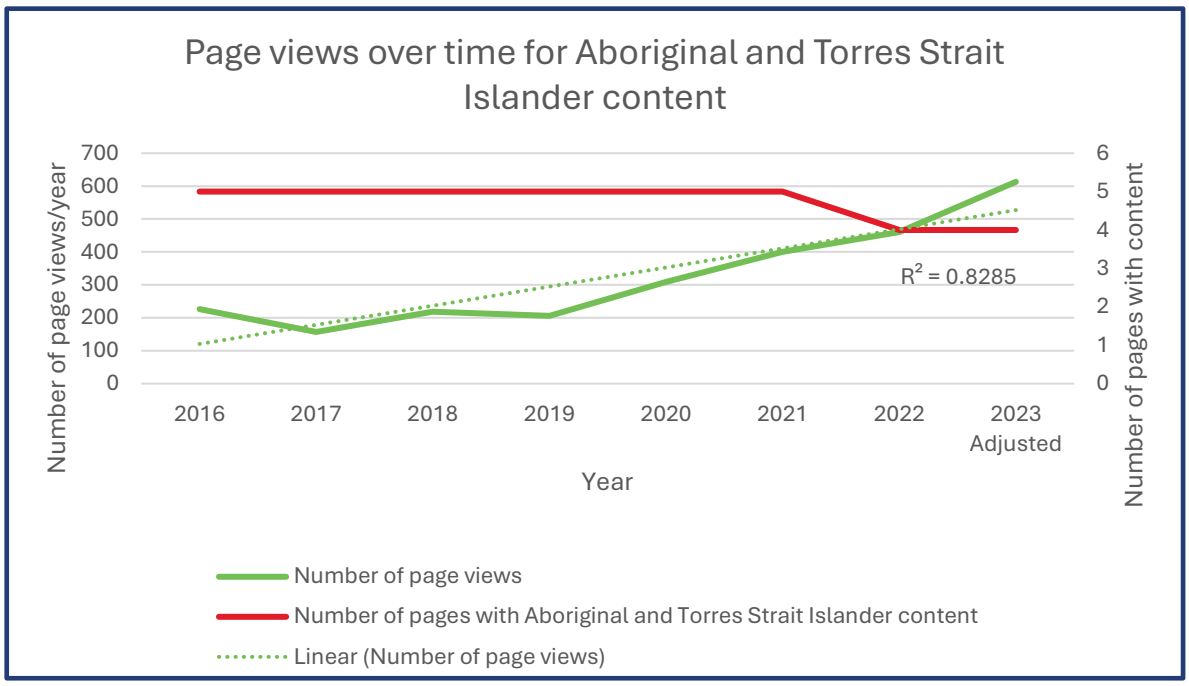


Figure 14 – Graph of HPS Aboriginal and Torres Strait Islander content over time

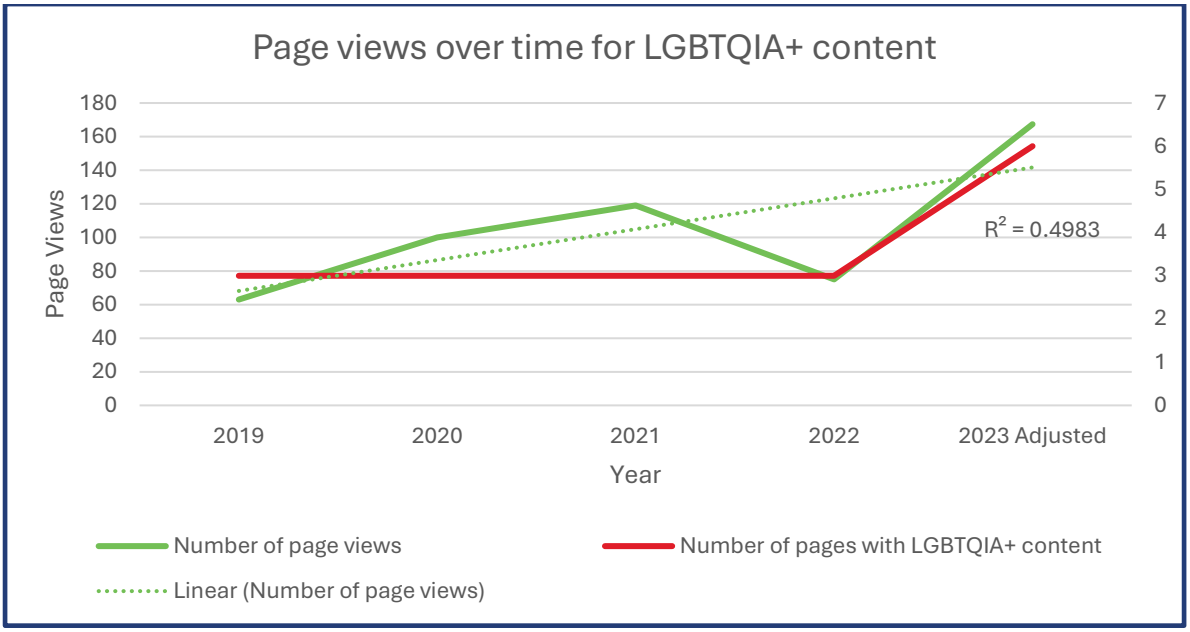


Figure 15 – Graph of HPS LGBTQIA+ content over time

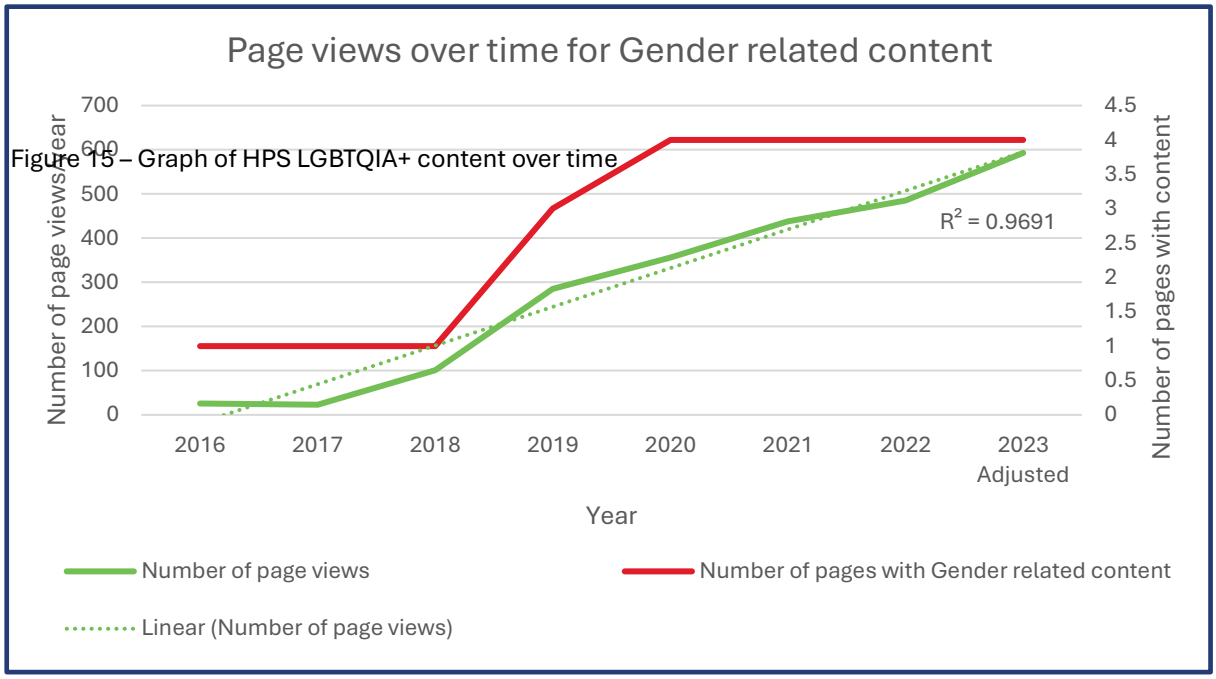


Figure 16 – Graph of HPS Gender diversity content page views over time

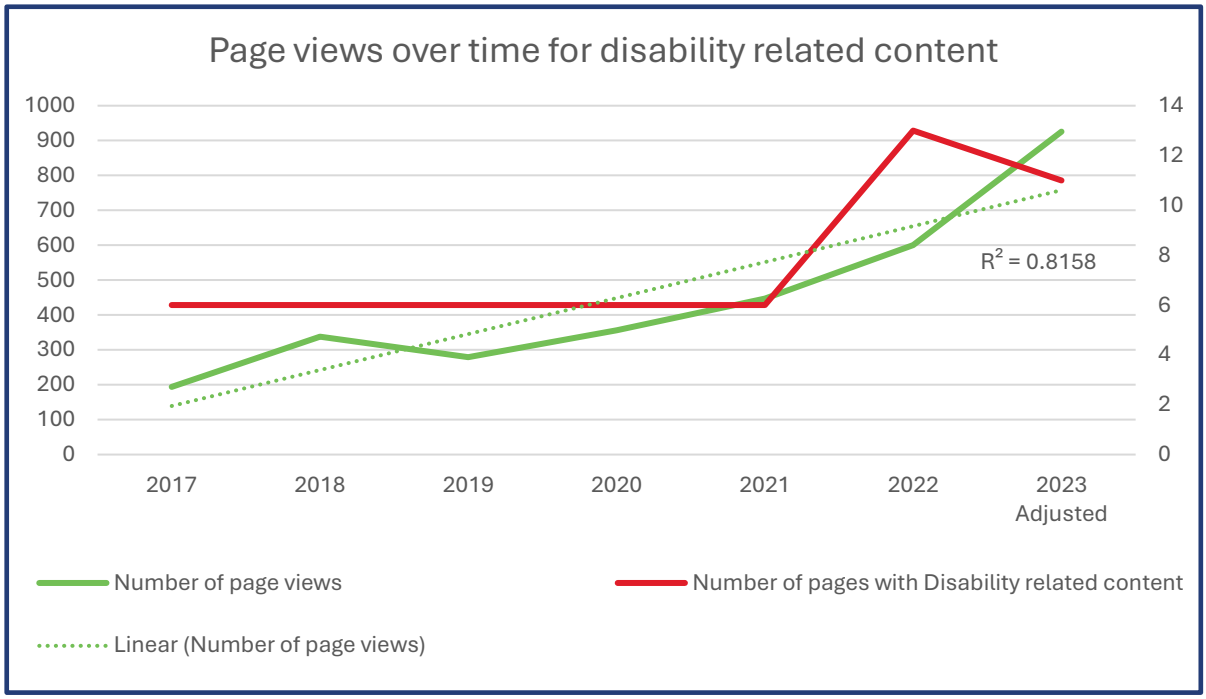


Figure 17 – Graph of HPS Disability related content page views over time

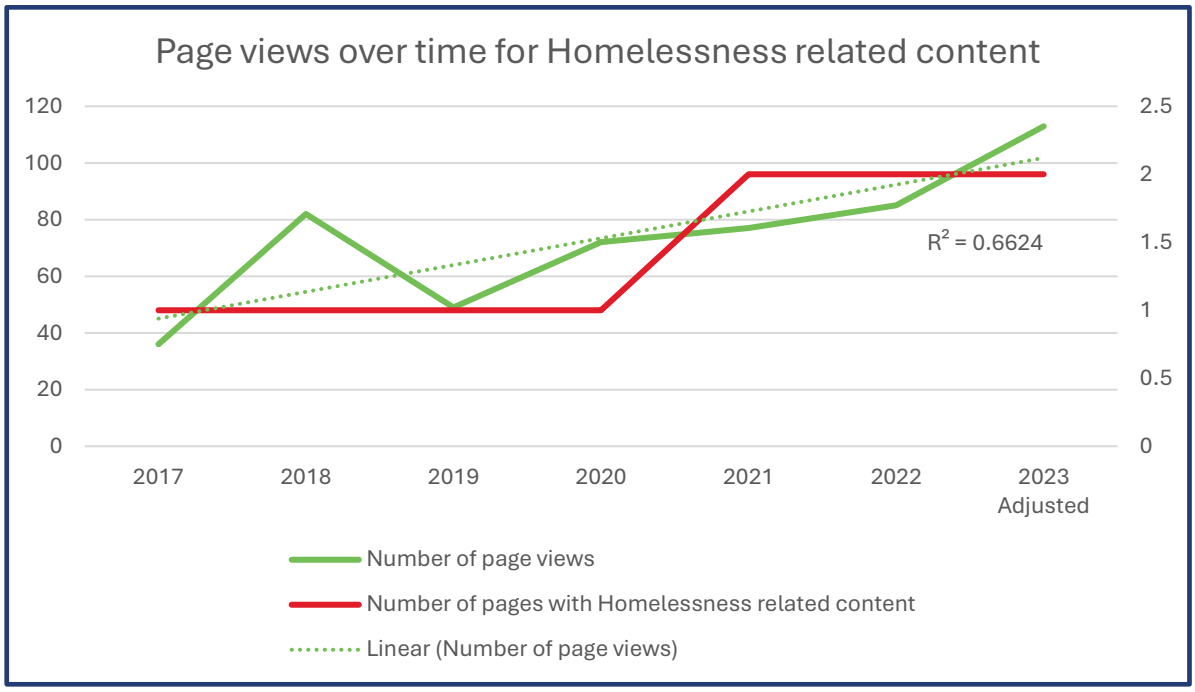


Figure 18 – Graph of HPS homelessness related content page views over time

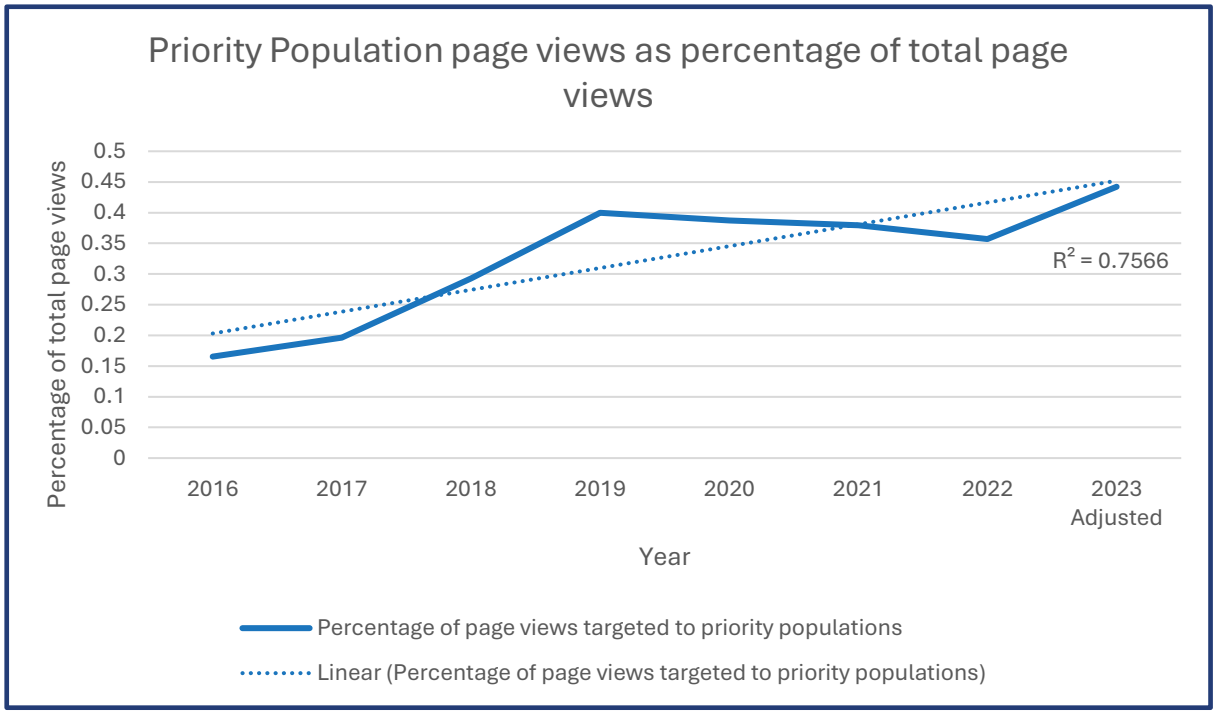
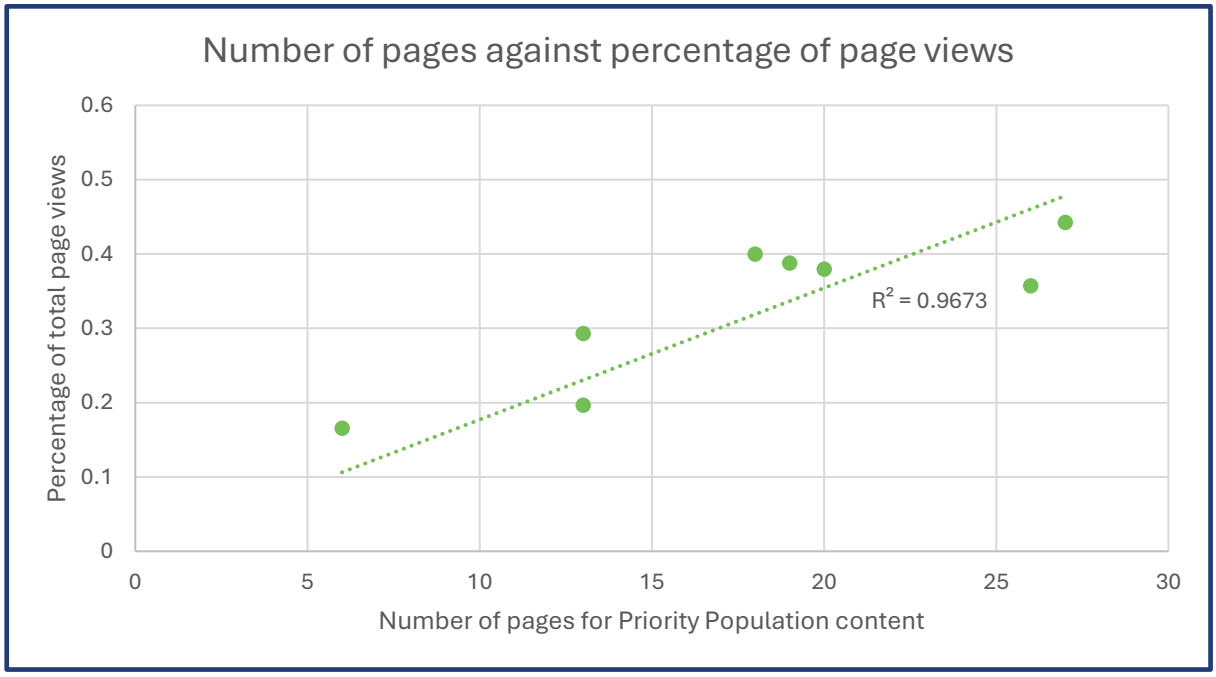


Figure 19 – Graph of HPS priority population views as a percentage of total views over time



4.2 Evaluation of program impacts – intermediate-term

4.2.1 Aim 3: Increased appropriate use of resources and services

1. *How has the cost per page view changed over time to reflect changes in efficiency?*
2. *How much time does a HPS page view have to save a GP to be cost effective?*

The cost per page view has decreased over time, reflecting increased usage and efficiency. A linear regression analysis revealed a statistically significant negative correlation between cost per page view

Figure 20 – Graph of HPS priority population page views compared to amount of priority population content

and time (R^2 = 0.875, $p<0.05$), with a slope of -0.477. This indicates that as HPS usage rises, the cost per page view decreases, suggesting improved resource utilization.

To assess cost-effectiveness, the time saved by GPs using HPS was calculated. With a cost per page view of $2.35, a GP would need to save 34.36 seconds for the system to be cost-effective. Assuming the average value of GP time is $4.10 per minute, this calculation highlights the minimal time savings required to justify the cost, suggesting that even small time reductions are valuable, especially for tasks like finding local referral criteria or managing uncommon cases.

However, the cost per page view and time savings only reflect technical efficiency and do not directly measure the program's impact on resource use, such as reducing unnecessary referrals or investigations. These indirect metrics may not fully capture HPS's effectiveness in improving resource allocation or patient outcomes, weakening the criterion validity. The reliability of these findings depends on accurate cost data and consistent pathway usage, and variations in these factors could affect the results. A more comprehensive assessment should incorporate direct measures of clinical decision-making and resource utilization to provide a fuller evaluation of HPS's impact.

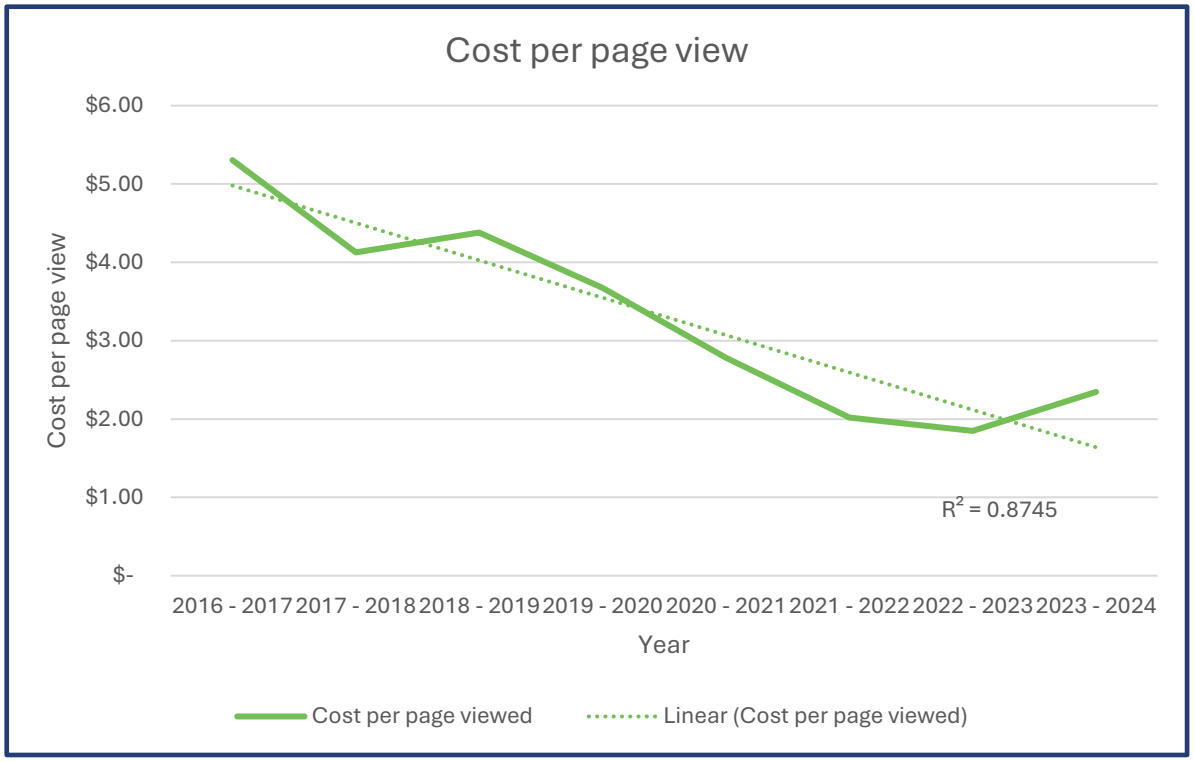


Figure 21 – Graph of HPS program cost per page view over time

GP Time	Cost per item number	Item Number	Cost per hour for shortest time $	Cost per hour for longest time $
<6 mins	$ 11.00	Item 52	660.00	132.00
6-20 mins	$ 41.40	Item 23	414.00	124.20
21-40 mins	$ 80.10	Item 36	228.86	120.15
>40 mins	$ 118.00	Item 44	172.68	118.00

Table 3 – Cost calculation for GP time

4.2.2 Aim 4: Improved quality of referrals

In 2019, Norris et al. conducted a mixed-methods study to evaluate the impact of HealthPathways (HPS) on referral quality and appropriateness in the Haematology and Renal Medicine Departments. The study's main questions were: 1) Has the quality of referrals improved with HPS use? 2) Has the completeness of referrals improved over time with HPS use?

The study found a slight trend towards more complete referrals to these departments following the implementation of HPS, suggesting that standardized referral pathways may have improved referral comprehensiveness. However, no statistically significant changes were observed in referral quality or appropriateness. This could be due to high baseline appropriateness of referrals before HPS was introduced, or because specialists continued to accept patients regardless of referral completeness.

A time-series study of referral trends to SLHD clinics showed that HPS contributed to increased awareness of available services, leading to more referrals, particularly to Royal Prince Alfred clinics. This indicates that HPS improved communication and collaboration between primary care providers and specialists, potentially enhancing coordinated care.

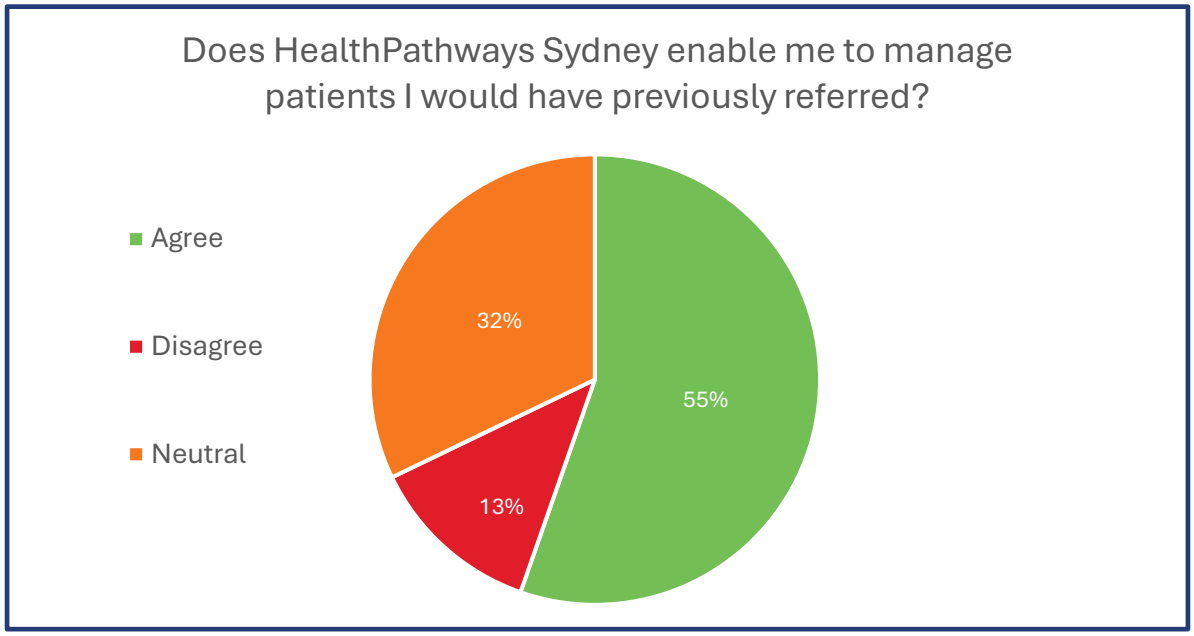
While these findings suggest that HPS improved referral processes, the study's reliability and validity are limited by the absence of unique user logins, which made it difficult to assess individual user impact. Additionally, the lack of clear criteria for referral quality and the absence of validated measurement tools may have weakened the criterion validity. The study's external validity could be limited by differences in the healthcare setting and population. A more robust methodology, including validated tools and controlling for confounding factors, would strengthen future evaluations of referral quality and HPS's impact.

4.3 Evaluation of program outcomes

4.3.1 Aim 5: Enhances consistent care and management of health conditions

1. *Has HPS supported GPs to make appropriate use of referrals to hospital-based services?*
2. *Has the HPS program team achieved equitable uptake of HealthPathways from district GPs?*

The evaluation of HPS's ability to enhance consistent care is based on indirect measures, including GP surveys and engagement with eReferrals. The survey gathered GP opinions on HPS's impact on patient management and referral practices. Key questions explored whether HPS supported appropriate referrals and whether the program achieved equitable uptake across different community segments. In 2023, 55%



of GPs reported that HPS helped them manage patients they would have previously referred, indicating positive perceptions of the platform's utility in reducing unnecessary referrals. However, 18% of GPs disagreed, suggesting variability in experiences.

Regarding the program's equitable reach, GP use of eReferrals was analysed across SLHD suburbs, with engagement compared to the Index of Relative Socioeconomic Disadvantage (IRSD). A significant negative correlation was found ($R^2 = 0.162$, $p < 0.05$), indicating a moderate inverse relationship between socioeconomic disadvantage and GP engagement with HPS. This suggests that GPs in more disadvantaged areas may have lower engagement, though other factors likely contribute.

While eReferrals serve as a proxy for HPS engagement, their correlation is not definitive, and further research is needed. The low survey response rate (<7%) and use of a subset of questions from a larger survey introduce limitations to the study's validity. The selection of survey questions weakens construct validity, and the lack of direct measures of patient outcomes undermines the conclusions about consistent care. Reliability is also compromised by low uptake and potential interpretation biases. To improve rigor, validated survey tools and more comprehensive data collection would be needed.

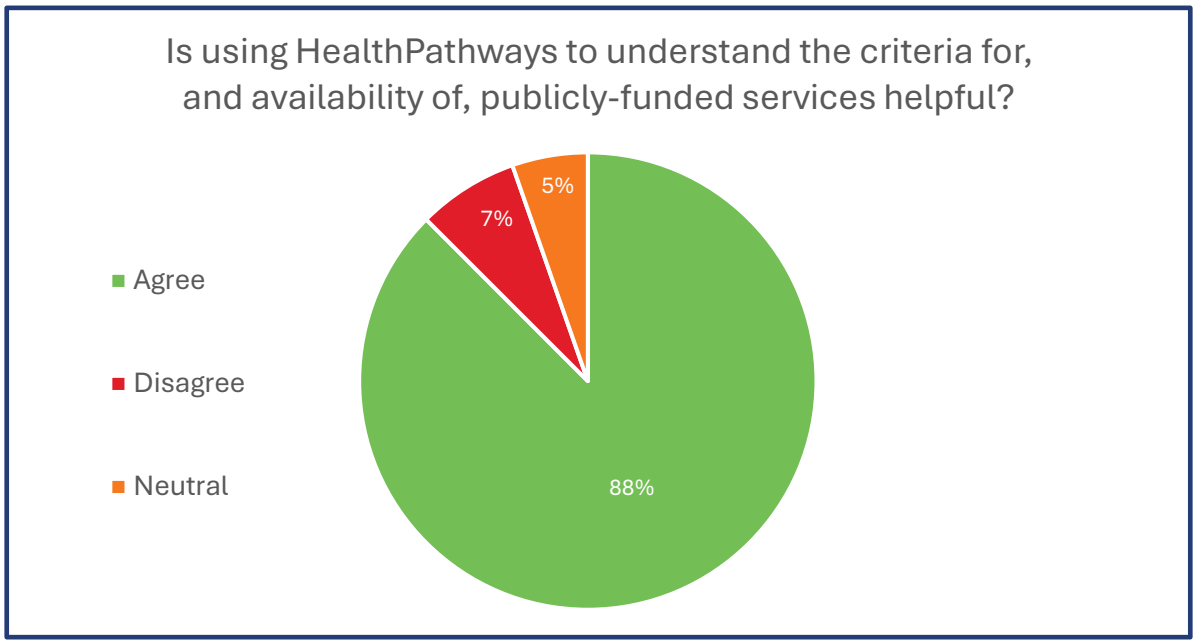


Figure 23 – Graph of HPS impact on GP understanding of publicly-funded services

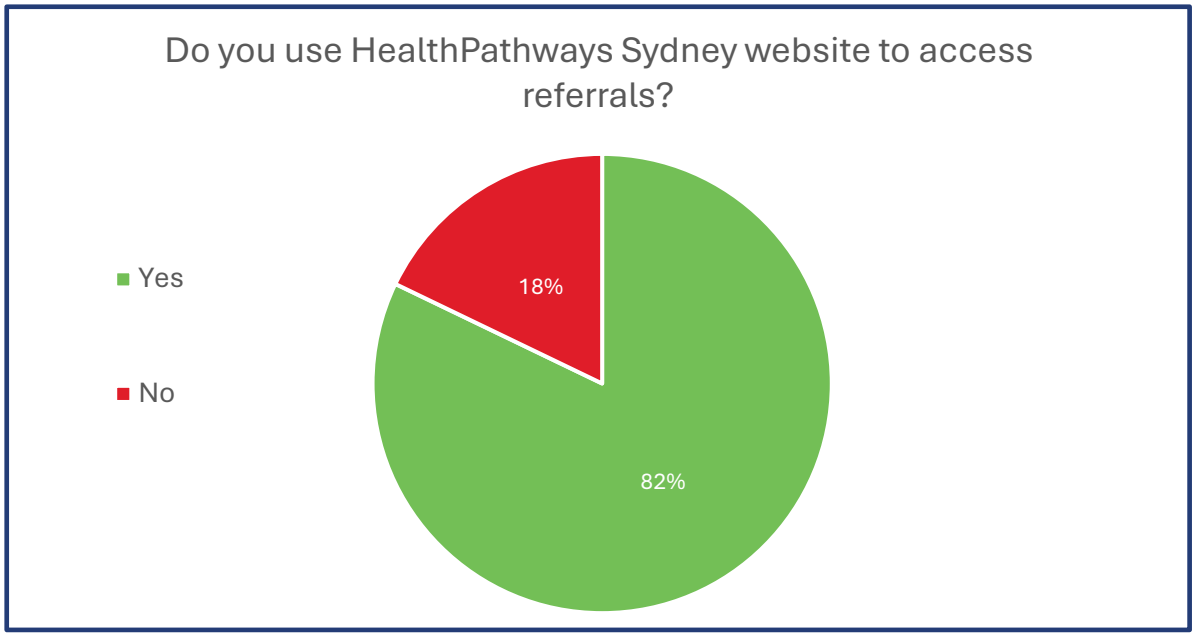


Figure 24 – Graph of HPS impact on patient management in community over referral

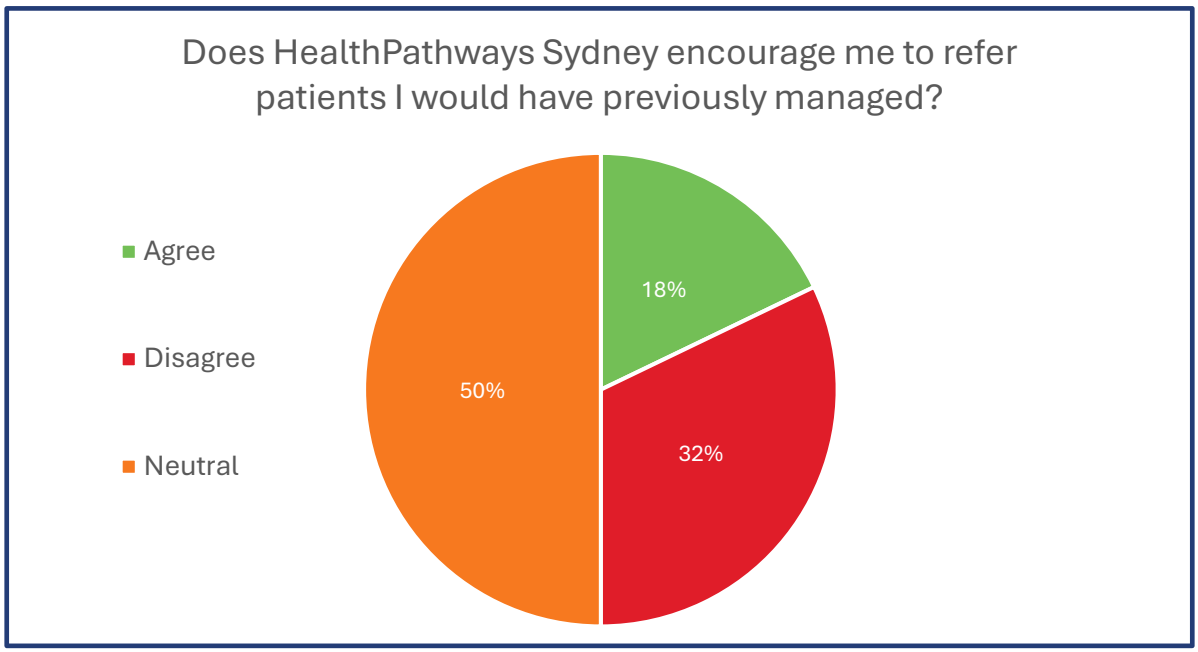
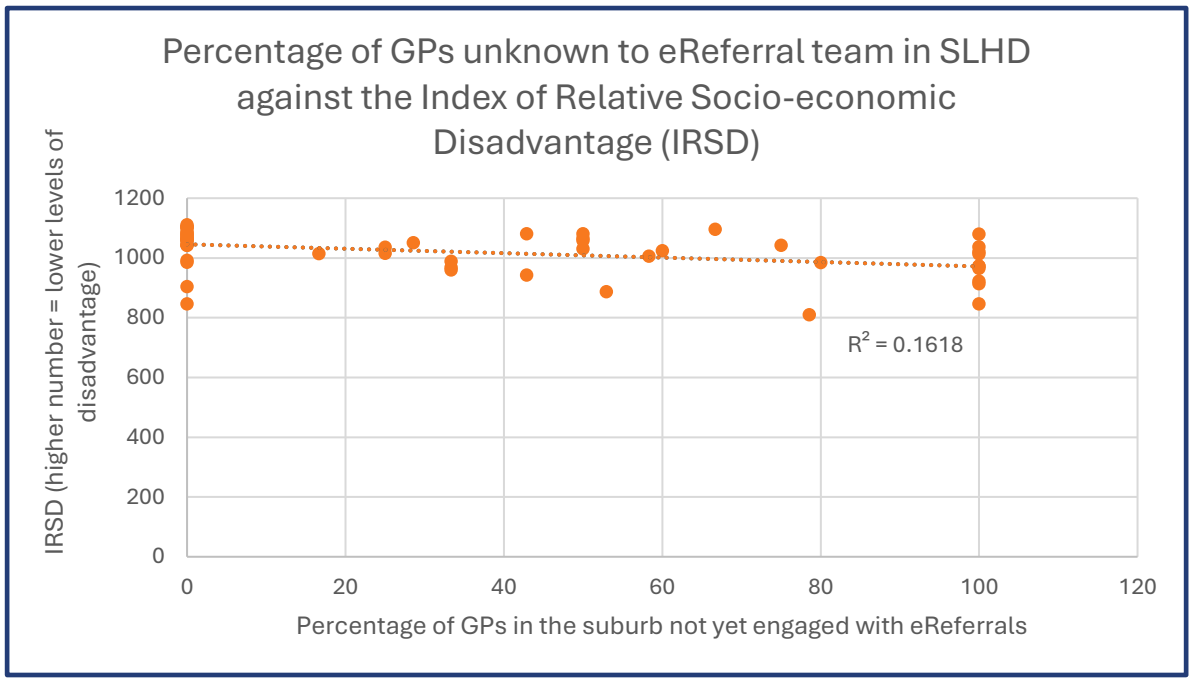


Figure 25 – Graph of HPS impact on GP decision to refer



4.3.2 Aim 6: Improved patient journey through the local health system

1. *Has HPS usage by GPs in SLHD improved patient experience of the local health system?*
2. *How did HPS reflect the patient care journey throughout the COVID-19 pandemic?*

Data from Google Analytics and the GP End User Survey from the Review, Renew, Refresh re-design program were used to assess the improvement of the patient journey through indirect measures, focusing on GP engagement with HealthPathways Services (HPS). Key questions aimed to evaluate whether HPS usage by GPs improved the local healthcare experience and how it adapted during the COVID-19 pandemic.

Survey results showed 64% of GPs agreed that HPS supports community healthcare delivery, and 59% confirmed using HPS to access community-based services. However, 41% did not use it for this purpose, highlighting areas for increased awareness. The platform was more widely used for hospital-based services, with 71% of GPs accessing this content.

Further analysis of page views revealed a significant shift in GP engagement over time. Clinical content pages, which provide localized clinical guidelines, showed a consistent upward trend, with a strong positive correlation ($R^2 = 0.883$) between time and the percentage of clinical page views. Conversely, referral pages showed a downward trend. During the COVID-19 pandemic, HPS usage mirrored healthcare needs, with acute care content dominating in 2020-2021. In 2023, the focus shifted to managing COVID as an endemic disease, with a notable rise in content related to COVID-medications (44.20%).

While these findings suggest HPS' role in improving care integration and adapting to evolving needs, the survey's indirect questions on patient experience are limited in construct validity. Criterion validity would be enhanced with benchmarks for direct patient experience. Future studies should aim to align survey questions with patient outcomes, improve reliability through time-series analysis, and ensure broader applicability to diverse healthcare contexts.

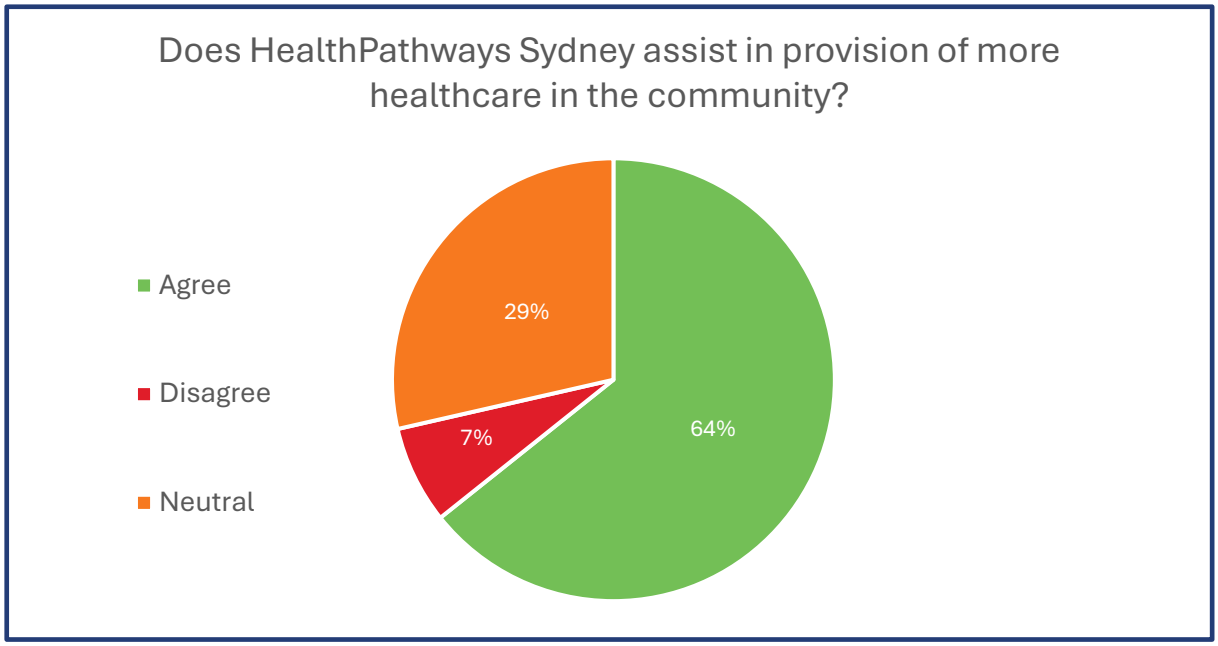


Figure 27 – Graph of GP opinion on HPS ability to assist in provision of community healthcare

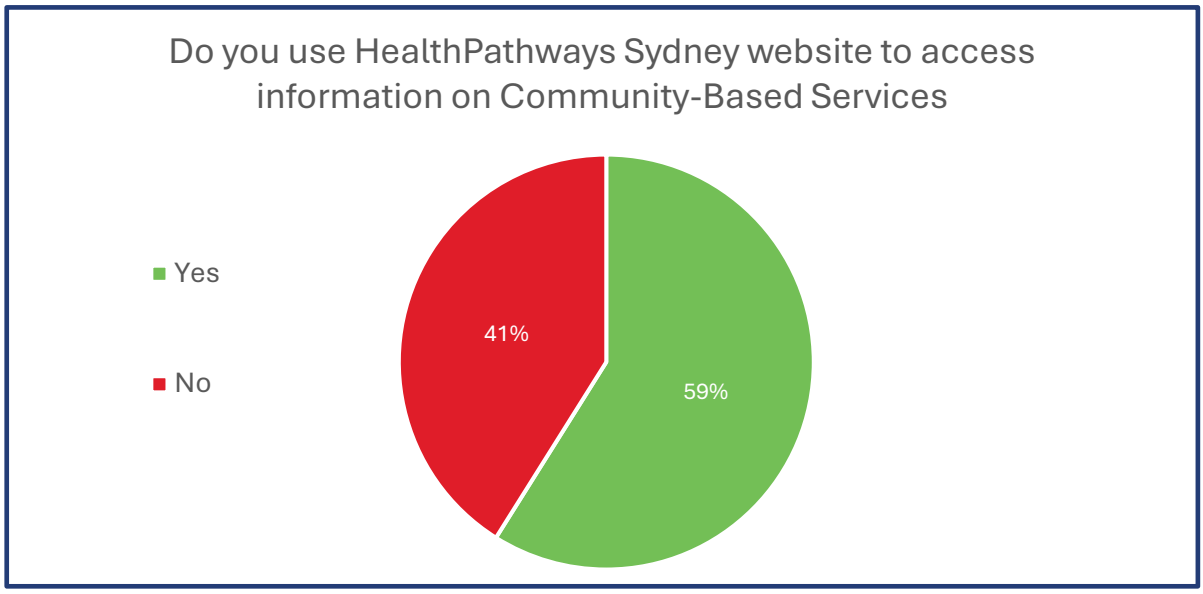


Figure 28 – Graph of GP use of HPS to access information on community services

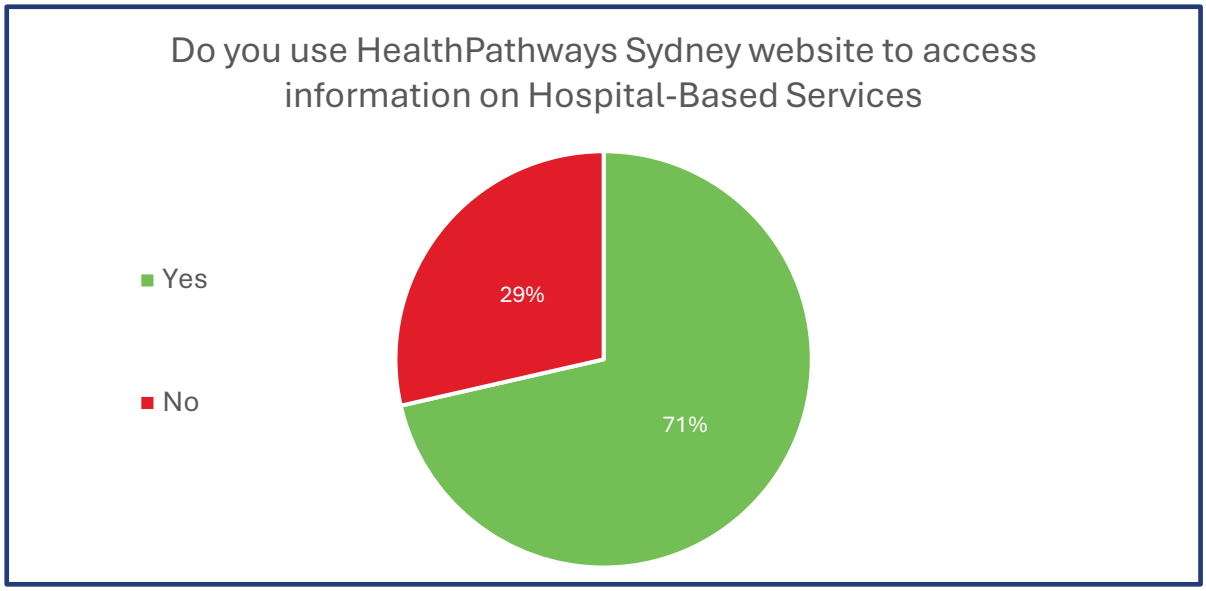


Figure 29 – Graph of GP use of HPS to access information on hospital services

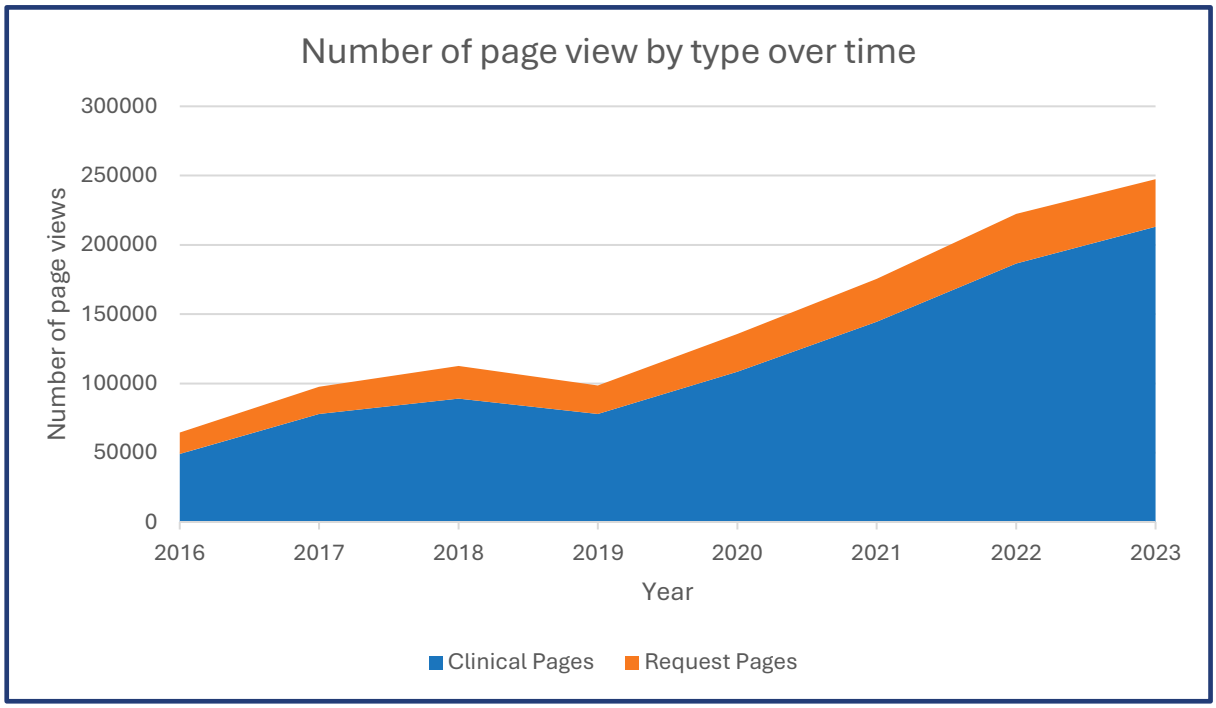


Figure 30 – Graph of clinical information and request/referral pages over time

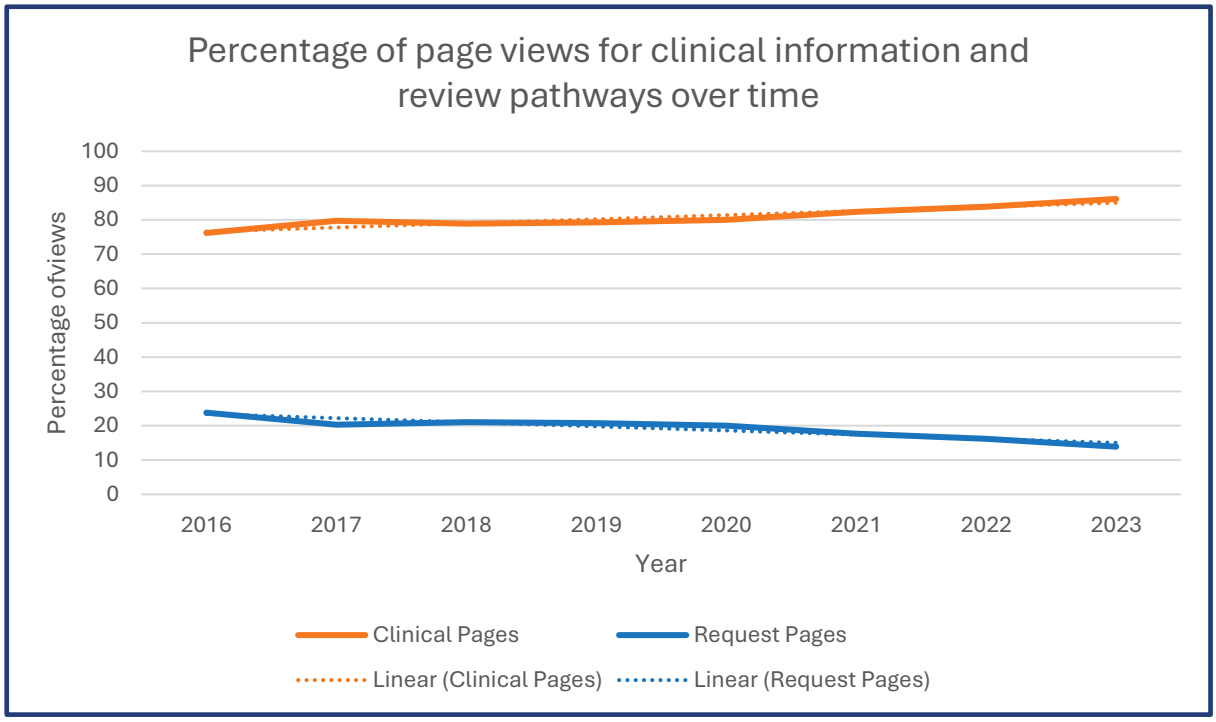


Figure 31 – Graph of clinical information and request/referral percentage of page views over time

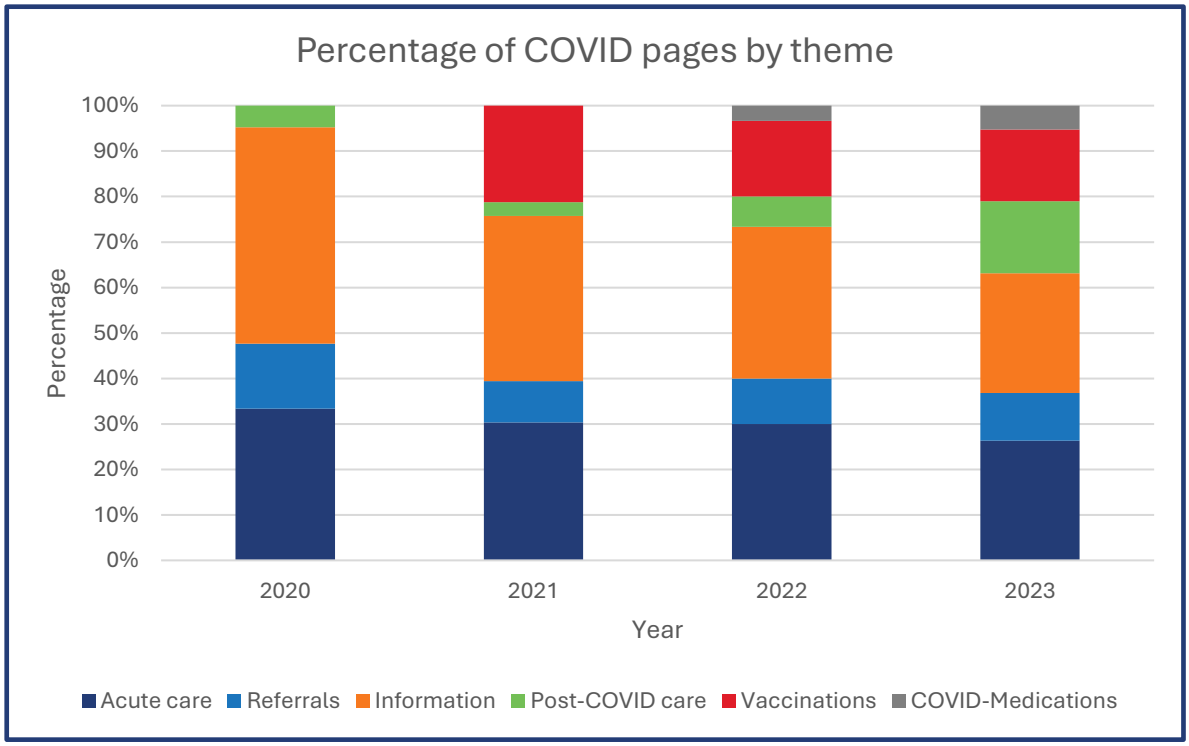


Figure 32 – Graph of changing COVID content over time by total pages

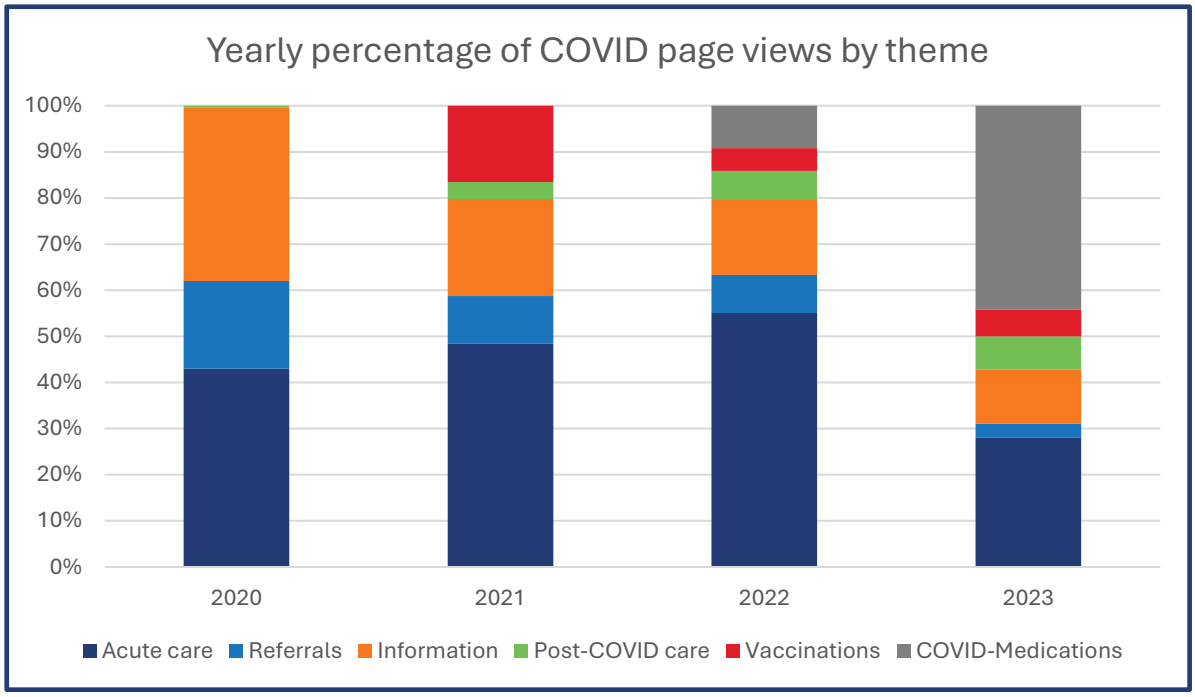


Figure 33 – Graph of COVID page access as a percentage of total page views by year

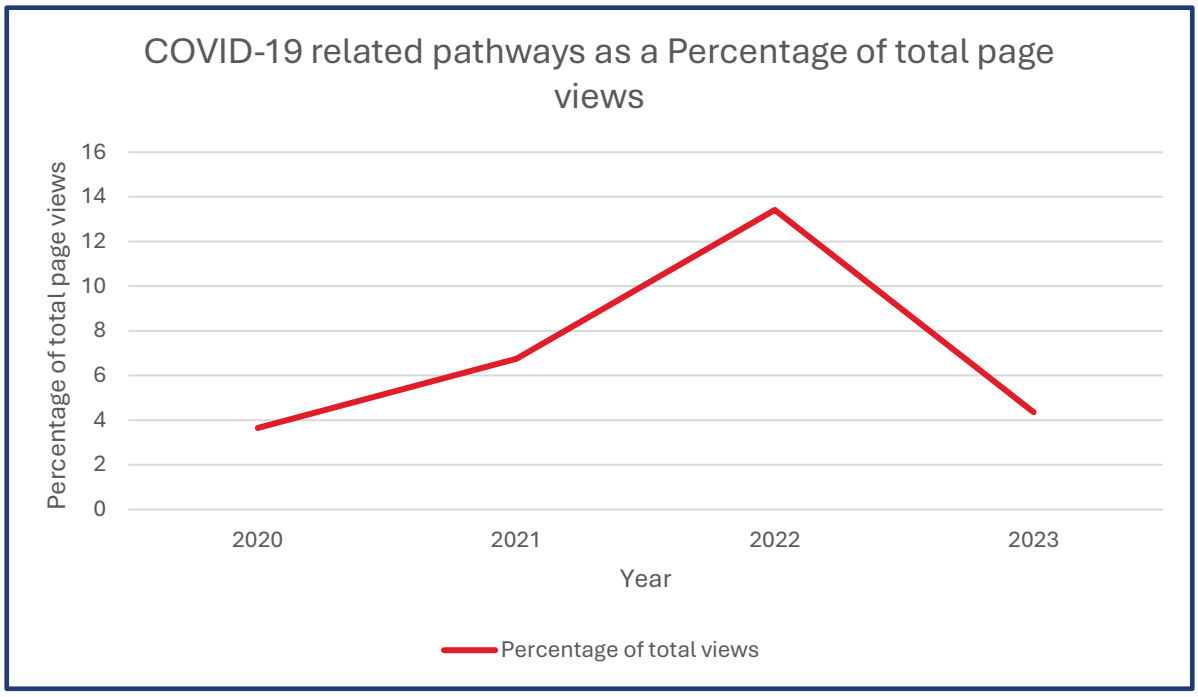


Figure 34 – Graph of COVID page views as a percentage of total views by year

5. Conclusion

Over the past 10 years, HealthPathways Sydney (HPS) has seen significant growth in engagement, driven by the increasing volume of pathways and its ability to adapt to both the COVID-19 pandemic and the evolving needs of priority populations. HPS has played a key role in integrating clinical services across SLHD, with extensive stakeholder consultation during its implementation and ongoing adaptation to streamline the pathway review process. This has contributed to growing GP trust in the platform as a diagnostic and management tool.

Engagement metrics, such as page views, sessions, and unique users, show a strong adoption of standardised clinical protocols by GPs, with 85% of page view growth attributed to HPS's high output of pathways. A survey found that 77% of GPs trust HPS, and 89% report improved care quality due to its use. There is also evidence of improved 'completeness' in referrals to specific departments, though statistical significance was not identified.

HPS has enhanced professional integration by fostering collaboration between primary and secondary care providers. It has facilitated better communication and improved referral appropriateness, with 82% of GPs using eReferrals via the platform. GPs also report HPS aids in diagnostic decisions (73%) and enables more community-based care (55%).

The platform's adaptability was particularly evident during the COVID-19 pandemic, where HPS rapidly provided relevant local information. This quick response contributed to improved organisational integration. This is also reflected in the increasing focus on priority populations, such as Aboriginal and Torres Strait Islander health. Engagement with these groups has risen significantly, suggesting better access to care.

Although direct assessments of patient outcomes are needed, the increase in GP engagement, especially in underserved areas, and the platform's growing efficiency point to improved healthcare access and equity. Further research into referral practices, cost savings, and direct patient outcomes is needed to fully assess the impact of HPS.

6. Recommendations

There is strong evidence that the highly productive nature of HPS has directly impacted on the level of engagement with the local pathways from GP users, and continuing the growth of the resource is key to the ongoing impact it has on integration, health equity and efficiency. Recommendations for further research specific to HPS have been made to support ongoing evaluation and address gaps in this report.

Recommendations for HPS growth:

1. **Enhance eReferral adoption:** Develop targeted strategies to increase GP engagement with eReferrals, particularly in areas with low uptake, such as through educational campaigns or technical support.
2. **Expand content for priority populations:** Previous growth shows increased number of pages for priority populations significantly increases user engagement. By increasing the focus and depth of content HPS can ensure specific healthcare needs are adequately addressed and supported.
3. **Develop governance in relation to extended-scope practitioners:** Use individual logins to better track and analyse engagement from Nurse Practitioners and other extended scope allied health workers. This may indicate a need to specify which content is appropriate for non-GP use.
4. **Enhance feedback mechanisms to support content review:** Implement robust feedback mechanisms to gather detailed input from GPs on the reliability, usefulness and effectiveness of the pathways, guiding the continuous improvement and content review strategy.
5. **Continue to adapt to emerging needs:**
    a. Utilise HPS as a change enabler to achieve health system goals of long-term sustainability and resource allocation, e.g: using the pathway review process as a prompt for collaborative MOC re-design
    b. Use HPS to reduce low-value care by implementing a checkpoint in the pathway review cycle to ensure content promotes high-value, sustainable care options.
    c. Explore variables beyond the total number of pathways as indicators of long-term GP engagement. Consider factors such as the number of updated pathways or time spent developing new MOC facilitated by HPS MDTs. Identifying these early will allow adequate data collection to assess individual variable impact and determine which most significantly enhances GP engagement.

Recommendations for further research:

1. **Assess adherence to HPS content:** Conduct a study to directly measure how closely GPs adhere to the clinical pathways for management and referrals, including evaluating any variations in adherence across different regions and demographics.
2. **Evaluate impact on MDT collaboration:** Investigate the specific ways in which HealthPathways has affected MDT collaboration and coordination, and identify any barriers or facilitators to effective teamwork.
3. **Analyse population-level health outcomes:** Perform research to determine the impact of HPS on broader population health outcomes in SLHD, including tracking changes in health indicators before and after pathway implementation.

4. **Investigate eReferral disparities:** Conduct a study to explore the reasons behind variable GP engagement with eReferrals by suburbs and identify strategies to improve adoption in these areas.
5. **Assess direct patient outcomes:** Carry out pre/post implementation studies and patient surveys to evaluate direct patient outcomes and the overall impact of GP use of HPS on patient health and satisfaction.

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8. Appendix

8.1 Summary of evaluations assessed by Senanayake et al. in impact and outcome evaluation of HealthPathways: a scoping review of published methodologies

Study reference	Aim 1	Aim 2	Aim 3	Aim 4	Aim 5	Aim 6	Aim 7
(25)	Y						
(28)	Y					Y	
(27)	Y	Y					
(23)	Y						
(16)(15)	Y			Y	Y		
(21)	Y			Y			
(26)	Y						
(30)	Y			Y	Y	Y	
(22)	Y	Y		Y	Y		
(29)	Y			Y			
AB Consulting - unavailable	Y				Y		
(31)		Y					
(32)		Y			Y		
(33)		Y		Y	Y		Y
(34)				Y		Y	
(35)					Y		
(8)					Y	Y	
(36)					Y		
(7)						Y	
(37)						Y	
Totals	**12**	**5**	**0**	**8**	**10**	**6**	**1**