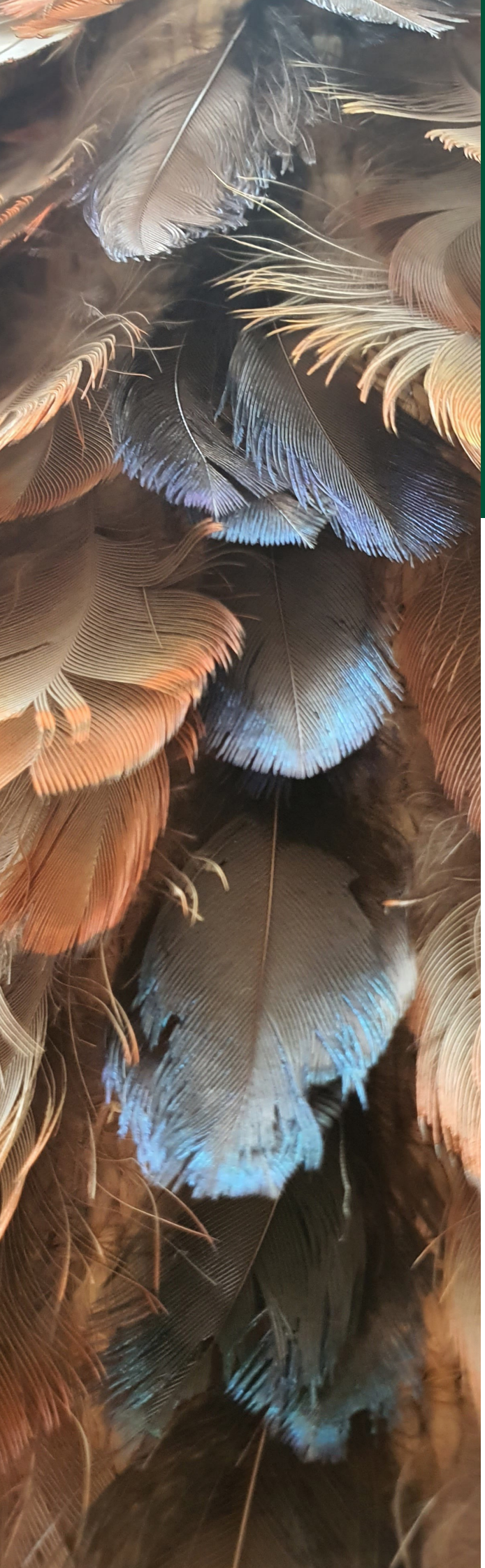

Digital Tools for Mental Health and Wellbeing

Opportunities & Impact

Findings from the literature and community research

Digital Mental Health Lab

Te Kura Tātai Hauora | School of Health

VICTORIA UNIVERSITY OF WELLINGTON
TE HERENGA WAKA

hpa te hiringa hauora
HEALTH PROMOTION AGENCY

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Foreword

Hutia te rito o te harakeke – kei hea te kōmako e kō?
Kī mai ki ahau, he aha te mea nui o te ao?
Māku e kī atu, he tangata, he tangata, he tangata.

Pluck the heart from the flax bush – where will the bellbird be?
Ask me, what is the most important thing in the world?
I will reply, it is people, it is people, it is people.

We have chosen to open this report into digital tools for mental health with this revered whakataukī, which highlights the connectedness between people, the things they do and environments. It identifies people as the very essence of all that we do. It is clear from the work in this report that people and connections are and must remain central to this rapidly developing area of work.

Digital tools for mental health and wellbeing have enormous potential, but to date their impact has been less transformational at population levels than some early predictions suggested.

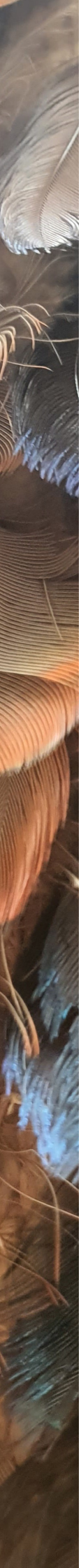
Digital tools can be just as effective as talking therapies and other interventions for mental health, and they can have enormous reach and scalability. However, this potential is not realised unless these tools are built on profound understandings of people's strengths, needs and life contexts. This potential is not realised unless humans promote, refer and suggest tools to users, and support those who use them. This potential is not realised without a broader context of communities, governments and agencies supporting wellbeing, preventing problems and providing more intensive supports where needed. Indeed, the full potential of digital tools will only be realised when people are placed at the front and centre of all stages of their development, from inception to implementation.

Based on our research, we can say with confidence that there must be significant investment in enabling the *improved use* of digital health tools. This is at least as important as investment in providing *more and better* technology, if we wish to achieve positive impact on population mental health and wellbeing outcomes and improve equity. There are opportunities for increasing human engagement and communications to extend the reach of digital tools, for growing people's trust in and openness to these tools, and for supporting people's use of tools, as well as for creating new and improved tools to fill gaps.

This report examines opportunities to improve the impact of digital tools for mental health and wellbeing in Aotearoa New Zealand. We open with this whakataukī and include images of taonga to highlight the fact that digital technologies can serve to bring people together, strengthen our experiences of what is important, and enhance our wellbeing.

Preparing this report has been a privilege. We have learnt valuable lessons from the many participants in this project as well as the work of others. We have derived significant benefit from collaborating and working closely with a dynamic team of students and colleagues.

Terry Fleming and Clive Aspin
Digital Mental Health Lab Co-leaders



Executive Summary

Digital tools such as computerised therapies, apps and websites have tremendous potential for mental health and wellbeing. Globally, millions of people download mental health or wellbeing apps every year. Within New Zealand, more than 10% of the population is likely to have accessed major websites or apps for depression in the last year.

There are many evidence-based computerised therapies and thousands of evidence-informed apps and websites. These include quality Aotearoa New Zealand digital tools with substantive Māori or Pacific led content.

However, major challenges remain: many evidence-based tools have poor uptake or retention outside of trials; popular tools involve charges to users and do not have important mental health content; the digital divide can reinforce health inequities; and communities are often not seeking digital tools for mental health or do not trust these.

In this report, we outline promising ways for Te Hiringa Hauora, the Health Promotion Agency, to increase the impact of digital tools for mental health and wellbeing. We consider evidence from Māori, Pacific, international and local research and insights, and answer specific questions posed by Te Hiringa Hauora. This report builds on our April 2021 report (Fleming et al., 2021) by adding findings from focus groups, interviews and an online survey. This report is in two parts: Part 1 – introduction and key themes (including a summary of findings from focus groups, interviews and the survey), and Part 2 – responses to specific questions asked by Te Hiringa Hauora. The report is accompanied by our 'Stocktake' of New Zealand digital mental health tools.

The evidence included here highlights opportunities to improve the impact of digital tools for mental health and wellbeing by:

1. Prioritising reach of digital mental health tools: ensuring that tools are available in ways that mean those who would benefit from them will find, trust and use them. For example, by:

- offering tools via sites, platforms, and providers that target users already frequent and trust
- optimising reviews, ratings, and price, as users often select apps according to these features
- maximising endorsements and recommendations
- ensuring tools can be found via multiple search terms.

2. Ensuring digital tools are part of a broader ecosystem of support. Digital tools should be part of approaches to address the urgent mental health and wellbeing needs expressed in New Zealand. These should also include efforts that address the determinants of mental health and wellbeing, efforts to harness the enormous wish of New Zealanders to help each other, and more intensive professional supports for those who need them.

3. Increasing human interaction around and within tools. For example, via blended care models or via offering expert webchat and extra help when needed.

4. Increased co-ordination of tools. There are multiple digital tools in Aotearoa New Zealand that include excellent cultural and clinical content. The impact of these tools might be enhanced via portals, platforms or recommendation systems and links. These could support users to select tools and could bring opportunities for increased collective impact.

5. Improving digital tools for mental health and wellbeing. The above areas focus on opportunities around the tools. There are also opportunities to improve digital tools for mental health and wellbeing. Key opportunities include:

- increased availably of tools that are embedded in Te Ao Māori and increased availability of Pacific specific mental health tools
- improved usability (poor usability is the primary reason for discontinuation of mental health app use)
- increased use of codesign and user centred design
- increased use of personalisation and interactivity
- increased use of brief interventions
- ongoing updates and iteration.

Alongside these dimensions, research and community insights highlight that tools must:

- be evidence informed
- be rapidly helpful or enjoyable
- be culturally relevant, with content and values that are relevant to the user
- be visually appealing
- offer choice, depth of content and more help when needed
- be trustworthy, including with privacy and data security.

While these are long to-do lists, there are high level themes. This work provides a strong mandate for both improving the use of existing tools and providing new or enhanced digital resources, as illustrated in Figure 1.

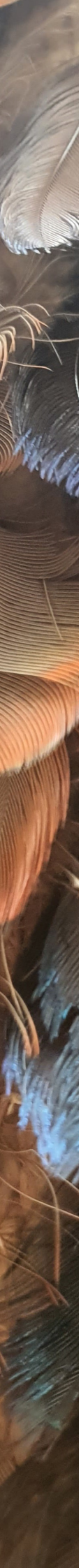


Figure 1. Enhancing digital tools for population impact and equity - key themes

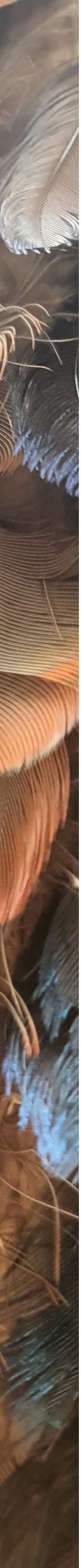
Enhancing digital tools for population impact and equity		
Improving the use of the technology	**Prioritise reach**	Make tools easy to find and trust, locate on platforms users already trust; optimise ratings and reviews; engage local champions; provide promotion.
	Ensure tools are part of an eco-system	Optimise impact as part of an ecosystem of mental health promotion, problem prevention, community engagement and clinical support.
	Increase human support	Train referrers; integrate more help options; ensure support around and within the tool.
	Increase coord-ination	Increase co-ordination between digitial tools and increase integration with other health, education and social services.
Improving the technology	**Address gaps**	Smart development of tools to address gaps especially with Māori, Pacific and other underserved goups.
	Improve tools	Improve UX of new and existing tools; increase use of codesign and updates.

Summary from Part 2

Responses to questions posed by Te Hiringa Hauora

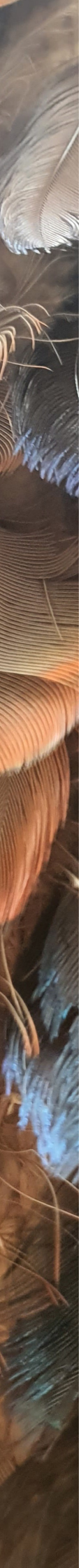
Alongside these overarching themes, this report addresses a series of questions posed by Te Hiringa Hauora. These are summarised in the table below.

Question	Response	Key implications for providers of digital mental health tools
1.1 Who is most motivated to seek digital tools to help with wellbeing challenges? 1.2 What state are they in when seeking digital tools? 1.3 What problems motivate them to use digital tools?	Approximately 85% of New Zealanders will at least occasionally look up a health issue online. This is more common among those with health needs, women and those aged under 35, although a wide variety of people seek support for many different problems. People seek digital tools for wellbeing when in a wide range of states, including when a little concerned or seeking information; and when they or another person is in an urgent state; and, less often, when feeling OK or good. Searches are often focused around distress and symptoms, although stress, relationships and challenges in other areas are important too.	Diverse helping tools and multiple ways of finding them are needed. Providers of digital tools need to be responsive to users with diverse needs and develop active strategies to encourage the use of these tools for health promotion and early intervention.
2.1 What digital tools are available? 2.2 What is available for our priority audiences that is safe and certified?	We have provided a 'Stocktake' document to address this question more fully. In brief, multiple websites, apps and tools with wellbeing content are available in New Zealand. We have identified over 20 tools that are based on quality evidence. These include Māori- and Pacific-led sites and tools.	Consider opportunities to collaborate with or learn from existing providers for improving reach with diverse communities. For example: portals, rec-ommendation systems, links on websites, shared standards, or continued reviews of gaps and oppor-tunities for development.
2.3 What do priority groups currently like and use? What would make the tools more useful?	Depression.org, Headspace and Calm were the most highly used tools among Māori and Pacific participants in our community research. There were a wide range of tools used by just a few users and some participants would not use any digital tools. There was generally positive feedback on the Small Steps website and a wide range of feedback on enhancing usefulness often by stronger integration of Māori and of Pacific values, design and content.	Build on the wide use of depression.org. Seek to learn from the success of Headspace and Calm. Centre Māori and Pacific leadership and codesign in developing tools.



3.1 What messages, interventions and supports are people looking for?	There is enormous variety in what people are looking for, however key themes include supports that are: rapidly helpful, trustworthy, easy to use, 'relatable' to users, and offer follow through or more help when needed.	Ensure diverse supports are available to target groups. Ensure tools are rapidly helpful, trustworthy, easy to use, appealing to priority audiences, and offer follow through.
3.2 What messages, interventions and supports keep people engaged?	Both an external trigger or reason to get started and an internal current need are important prompts for opening a tool. Important factors for engagement include easy access, fast rewards, genuine helpfulness, and reminders. New experiences, progress and strong UI are important for sustained use.	Prioritise both external triggers and meeting internal needs (e.g. advertising and rapid helpfulness with low mood).
3.3 What messages, interventions and supports work best for people?	Core components for measurable change in psychological distress are: • psychoeducation • therapeutic alliance or feelings of understanding and care • relaxation and mindfulness • behavioural activation (setting relevant and manageable goals and achieving these) • cognitive therapy • interpersonal skills • improving sleep and increasing exercise • problem solving. In addition, Māori, Pacific and other areas of research show the importance of: • cultural identity, belonging and connectedness • wairua, meaning, purpose, and connectedness to greater forces, people and environments • freedom from discrimination and inequity. There is limited evidence regarding clinical impact for many standalone tools, and there are risks linked to unsupported chat functions.	Ensure digital tools are informed by clinical and cultural evidence. Ensure digital tools are complemented by prevention and population health approaches (e.g. reducing harms from abuse and bullying) and by access to more intensive services. Ensure that there are high quality tools that address critical areas for Māori and Pacific wellbeing. Ensure that chat functions are moderated.

4.1 How do people search and what search terms do they use the most?	Available data suggest most people use terms linked to anxiety, depression and symptoms, although less clinical terms are important too. Some users do not search 'the internet' but look for options on YouTube, social media platforms or sites that they already frequent. Users search app stores by topic, ratings, reviews and price.	Ensure that tools are: • accessible via internet searches using clinical and non-clinical terms • accessible via social media and frequently used platforms such as YouTube • supported by PR, good ratings and local endorsements • supported by community champions, leaders or influencers in priority groups.
4.2 How do people usually find digital tools – through coming across these or active searching?	Most users currently access Te Hiringa Hauora tools via internet searches, however social media, PR and app stores are expected to be of increasing importance. Word of mouth referrals and endorsements by people users already know remain important, especially in priority groups.	
4.3 Do people prefer to access a digital tool through a direct or indirect doorway?	Available information suggests both indirect doorways (such as searching 'sleep' or 'stress') and more specific or direct doorways (e.g. 'depression', 'anxiety') are needed.	
4.4 What range and mix of digital tools are people using?	People use both tools developed for wellbeing purposes and tools that are not primarily for wellbeing (e.g. games, social media) to support their wellbeing through gaining information, chatting or having fun.	
4.5 What are the usage patterns for different types of digital tools?	Barriers to opening digital tools are low, and people may scroll through or try out multiple options. Brief use is common for most self-help e-therapies and apps for mental health and wellbeing. A handful of high-budget apps for mindfulness retain more users than other tools.	Ensure that digital tools offer real value and appeal for users. Don't assume that you can *'build it and they will come'.*
4.6 Who prefers to use digital tools privately and who prefers to share?	Most tools are designed for private/personal use. Private (rather than shared) use was most popular among all groups in our community research. However, sharable content and tools that can be used with others as well as privately were also popular, especially among Māori and Pacific participants.	Ensure that key tools can be used privately. Ensure that there are resources for family and friends. Ensure that there is content that can be shared or used in groups as an option.
4.7 What makes people want to explore, stay or return to digital tools?	This question is mainly addressed in questions 3.1 and 3.2, however note that the largest single reason for discontinuing mental health app use is poor usability.	Prioritise usability as a critical success factor. See also 3.1 and 3.2.



4.8 When do people like to be nudged to return to a digital tool?	Notifications can support sustained use, however users must be able to adjust or remove these.	Enable optional personalised notifications.
4.9 What helps people to trust a digital tool (e.g. government or commercial branding)?	Trustworthiness, reliability and reputable endorsements are critical. Our community research suggested health agency or health professional endorsements were most appealing and commercial branding was unappealing.	Ensure that users can easily identify that websites and tools are trustworthy.

5.1 How do we measure meaningful engagement?	Opportunities are outlined in the report. These include: • user analytics such as number of unique visitors, visitors who spend sufficient time on sites to expect at least minimal benefit, and data gained via in-site activities • comparisons to similar sites • data gathered via other methods, including from social media channels and community research.	Monitor reach (uptake), engagement (retention), and impact (likely effects) via automatically gathered data and evaluations or research. Ensure that this addresses Te Hiringa Hauora goals and priority groups.
5.2 How do we best evaluate the impact of digital tools?	We recommend monitoring: • reach (how many target users are accessing the tool) • effectiveness (the likely impact of tools on wellbeing or steps towards mental health) • engagement (how many target users are using tools long enough for possible impact). We suggest considering evaluating impact using He Awa Whiria (Braided Rivers) or other approaches that consider Te Ao Māori and scientific processes. Frameworks for evaluating digital mental health tools could also be explored. These frameworks are rapidly developing and can be adapted for agency goals.	

6.1 Can we develop a digital tool that engages people across the 12 to 18 age span?	There are major distinctions in needs and behaviours between older and younger teenagers. It is unlikely that a single tool will appeal across this age span.	We recommend engaging younger adolescents through families, schools, and mental health promotion, and/or engaging older adolescents with a stronger emphasis on social media platforms and tools for dealing with peer or personal distress.
6.2 How do we best respond to the digital divide?	The digital divide includes: access to devices, access to data, access to memory space, confidence using devices, confidence finding tools and knowing which to trust, and access to tools that are relevant to users or their communities.	Ensure digital tools are not the only strategy or option available. Ensure those with limited data or limited access to devices can access resources. Ensure there are relevant resources for priority groups. Ensure it is easy to find trustworthy online resources.
6.3 Should we focus on developing/ procuring new or existing digital tools?	The evidence considered in this report highlights that key opportunities for increasing the impact of digital tools for mental wellbeing and for improving equity relate to: • improving the uptake of tools in priority communities • improving usability or addressing barriers to allow sustained use • Enhancing the availability of tools which are embedded in Māori and Pacific values and concepts.	The largest gains are likely to be from enhancing the impact of existing tools via promotion, usability and co-ordination, and via developing/ supporting access to Māori and Pacific tools.

Contents

Part 1:
Introduction and Key Themes

Introduction

Aotearoa New Zealand ranks highly on global happiness indicators (Helliwell et al., 2021). Most young people and adults report good wellbeing (Fleming, Tiatia-Seath, et al., 2020; Kvalsvig, 2018). At the same time, serious mental distress affects about 1 in 5 people overall, with much higher rates in some communities (New Zealand Health Survey, 2021; Kvalsvig, 2018). Mental challenges appear to be increasing in New Zealand, as in other high- and middle-income countries (Ghebreyesus, 2019; Rehm & Shield, 2019).

Mental health, mental ill-health and wellbeing are all important. Each of these interacting factors affects individuals' quality of life, their current and future mental and physical wellbeing, the wellbeing of their families and communities, and the social and economic future of the country (Government Inquiry into Mental Health and Addiction, 2018; Rehm & Shield, 2019).

New Zealanders have expressed phenomenal energy and commitment to improving mental health and wellbeing (Government Inquiry into Mental Health and Addiction, 2018; Purtle et al., 2019). There are activities and efforts underway led by whānau, hapū and iwi groups; by individuals; by cultural, sports, arts, church and other communities; by health, social and educational organizations; and by government agencies.

Mental health and wellbeing can be improved by addressing the causal and maintaining factors of distress, enhancing protective factors, and supporting people and communities when things go wrong (Government Inquiry into Mental Health and Addiction, 2018; Purtle et al., 2019). One opportunity to support mental health and wellbeing is via digital mental health and wellbeing tools (DMHTs) such as websites, apps, social media channels, chatbots and computerised therapies.

Research and evidence have shown that digital tools can have major impact.

- **Computerised therapies can have equal impact to face-to-face approaches** (Andrews et al., 2018; Ebert et al., 2018; Luo, Sanger, et al., 2020).
- **Digital mental health and wellbeing tools have been developed by and with Māori, Pacific and other diverse communities and groups** (Firestone et al., 2020; Mhurchu et al., 2019; Povey et al., 2020; Shepherd et al., 2018; Shepherd, 2011).
- **Digital mental health and wellbeing tools can be engaging and effective with indigenous and diverse communities and groups** (Reilly et al., 2020; Toombs et al., 2020; Shepherd, 2011).
- **Millions of people use digital mental health and wellbeing tools globally.** Within New Zealand, tens of thousands of people access depression.org and other DMHTs each year.
- **Apps and sites can bring support 24/7 at low or no cost to users.**

At the same time, there is opportunity for major improvement. Early optimism that tools could be placed online and accessed by those who need them, thereby rapidly improving community mental health outcomes, have not been realised (Fleming et al., 2016; Mohr et al., 2017; Wasil, Weisz, et al., 2020). The last five years have seen exponential growth in the sophistication of research about digital tools to help understand and address this gap. We explore new research and emerging opportunities in this report.

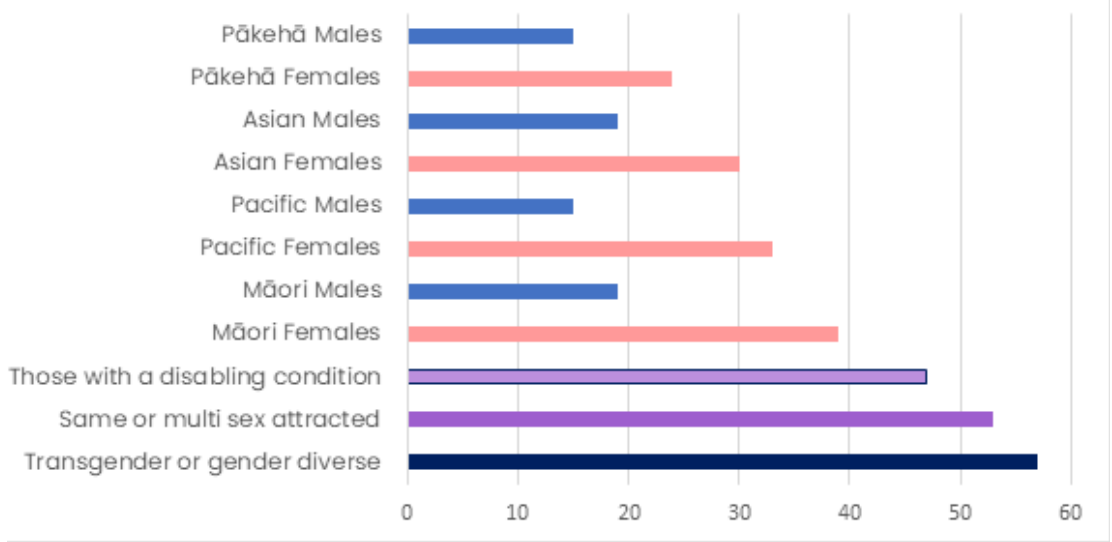
Background:

Mental health and wellbeing needs are high, unequal and increasing

Globally, depression, anxiety, substance use disorders and other mental health conditions account for 1 in 5 years lived with disability, and lead to economic costs of about US$ 1 trillion per year (Rehm & Shield, 2019). Approximately 20% of New Zealand adults report significant mental distress over the last four weeks, with rates particularly high among young people (Kvalsvig, 2018; Ministry of Health, 2021; Wilson & Nicolson, 2020) and particular population groups. For example, in Youth19, the latest in the New Zealand adolescent health surveys (Fleming, Peiris-John, et al., 2020), depressive symptoms were high among all population groups but especially high among Māori, Pacific and Asian girls and markedly high among rainbow young people (including transgender or gender diverse adolescents) and those with disabilities, as shown below (Fleming, Tiatia-Seath, et al., 2020; Roy et al, 2021)

Mental health and wellbeing needs appear to be increasing in high- and middle-income countries, including in New Zealand. This increase is particularly high in young people, with both the Ministry of Health Survey and Youth19 reporting an approximate doubling of distress among young people from 2012 to 2019 (Fleming, Tiatia-Seath, et al., 2020; Ministry of Health, 2021). This is not unique to New Zealand – similar patterns have been reported in North America, England, Australia and elsewhere (Boak et al., 2019).

Figure 2. Percentage of New Zealand secondary school students reporting significant depressive symptoms in the Youth19 survey



This data is shocking and yet is consistent with other sources. Diverse and proactive responses to improve mental health and wellbeing remain essential and urgent.

About this report

This work was commissioned by Te Hiringa Hauora|Health Promotion Agency, a New Zealand government agency, which is part of the New Zealand Health sector and has the mission of "the unrelenting pursuit of wellbeing" (Health Promotion Agency Te Hiringa Hauora, 2021).

The report has been written by the Digital Mental Health Lab, a diverse, multidisciplinary student and staff team at Te Kura Tātai Hauora|The School of Health, Te Herenga Waka|Victoria University of Wellington. The lab was established by Associate Professor Terry (Theresa) Fleming with Dr Clive Aspin and others in 2021. The team has Māori and tauiwi co-leadership and deliberately brings together staff and students from many areas in the university with different types of experience to bring rich, diverse perspectives and to grow expertise.

We focus on tools and digital information that are not full, clinical treatments for diagnosed mental health conditions, but rather those that can:

- reach, engage and be impactful for Māori, Pacific and other young people and adults
- be accessed 24/7 without a referral, at no cost to the user
- support and grow wellbeing and strengths
- support users to get more help when needed
- make a difference for feelings of depression, anxiety and other common mental health and wellbeing challenges.

Methods

We developed this report in two steps. First, we reviewed scientifically robust evidence and carried out preliminary peer review and consultation with cultural advisers and international digital mental health experts. We shared the draft with Te Hiringa Hauora and international colleagues before it was finalised as 'Digital Tools for Mental Health and Wellbeing: Opportunities and Impact. Findings from the Research. Version 1.1' (Fleming et al., 2021). This was provided to Te Hiringa Hauora at the end of April 2021.

Second, we carried out focus groups, interviews and an online survey as described below. These findings have been integrated to form the current report 'Digital Tools for Mental Health and Wellbeing: Opportunities and Impact. Findings from the Literature and community research'. (Fleming et al., 2021).

The report is designed to be read alongside our Stocktake 'Aotearoa New Zealand Digital Tools for Mental Health and Wellbeing' (DaRocha et al., 2021), which is provided as a separate document to allow rapid updates.

Focus group, interview and survey methods

Data were collected using interviews, focus groups and a confidential online survey. The research was approved by the Te Herenga Waka Victoria University of Wellington Human Ethics Committee (ID: 29200).

Recruitment. We recruited Aotearoa New Zealand adults aged 18 and over. We aimed to include a sample that represented the diversity of the Aotearoa New Zealand population, including gender, ethnicity and socioeconomic status. Participants were recruited using an invitation message, email or notice disseminated through personal networks and snowball sampling. The invitation was shared via email, social media platforms and notice boards. Focus group and interview participants received a $20 supermarket voucher as thanks for their participation. Survey participants were eligible to enter a draw for a supermarket voucher. All participants provided informed consent prior to participation.

Interviews & focus groups. Interviews and focus groups were designed to explore how participants use and do not use digital wellbeing tools and how these tools could be enhanced to improve their impact (see Appendix 2 for a summary of responses). Focus groups took place in Wellington. Interviews included participants from the Auckland, Greater Wellington and Gisborne areas and took place online, by telephone or in person. Māori specific focus groups and interviews also took place in small communities in and around the Gisborne region, facilitated by Alana Haenga-O'Brien and Keenan O'Brien. These focus groups and interviews utilized a Kaupapa Māori approach and focused on principles of manaakitanga, tino rangatiratanga, whānau and ako. Most Pacific specific interviews or focus groups were led by Dom Kafatolu. In each meeting, responses were summarised by note taking and voice recorded (unless otherwise requested). Focus groups were usually led by two researchers and included between two and five participants. The facilitators of each interview or focus group compiled a summary of participant responses. Participants could request a summary of their interview or focus group and/or a copy of the final report. All responses were deidentified although non-identifiable demographic data was retained. Facilitators then meet in workshops to compile and review focus group and interview responses for each research question.

Online survey. We carried out an anonymous online survey using the survey platform Qualtrics XM (see Appendix 3 for survey questions and responses). Survey participants could also participate in an interview or focus group. Survey data was analysed via simple descriptive statistics and is presented under the relevant questions and in Appendix 3 of this report.

Participants. In total, 240 participants took part in the study across the survey (n=168), interviews (n=27) and focus groups (15 focus groups with a total of 45 participants), as shown in Table 1.

The majority of participants were 35 years or under (67%) and identified as female (69%). The New Zealand census ethnicity prioritization method was used for describing demographics for those belonging to more than one ethnic group. Participants were Pākehā or New Zealand European (47%), Māori (30%), Pacific (10%) or Other Ethnicity (13%). Seven focus groups included majority Māori participants and three focus groups included majority Pacific participants. In the focus groups and interviews, Pacific participants identified as Tongan, Samoan, Tokelauan, Kiribati, Cook Island, Tuvaluan, Fijian and Pacific Islander.

Interview and focus group participants were asked their main occupation. In total, 36 were students, 34 were employed or working, and 2 were not studying or working.

Table 1: Focus group, interview and survey participants

	N	Age		Gender			Ethnicity			
		35 years and under	36 years and over	Male	Female	Non-Binary*	Māori	Pacific^	Pākehā#	Other**
Focus Groups	45	36	9	21	24	0	27	9	7	2
Interviews	27	20	7	5	19	3	12	3	6	7
Survey	168	105	61	36	123	7	34	13	99	22
Total	**240**	**161**	**77**	**62**	**166**	**10**	**73**	**25**	**112**	**31**

N = number of participants
* Non-Binary or other diverse gender identity
^ Pacific identities included Samoan, Pacific Islander, Tongan, Kiribati, Tokelauan, Fijian, Cook Islander and Tuvaluan
# Pākehā or New Zealand European.
** Other ethnicities included Asian, British, Indian, Sri Lankan, Brazilian and Middle Eastern

Focus group, interview and survey findings

Overall, focus group, interview and survey results ('our community research') told a story that was very consistent with our version 1 report. That is, that digital tools form an important option for many but not all people, that the placement or promotion of these tools is critical for uptake and that there are opportunities to improve tools to reach and engage priority groups. The results showed two main areas of difference with our version 1 report (issued in April 2021, prior to our community research).

First, concerning the question of '**what state' are people in when they are seeking digital tools** for wellbeing? From available literature we had proposed that many people do not seek online support unless they are very distressed. Our community research suggests that users access these tools when they are in more varied states. A substantial minority of participants reported that they would use tools and apps while they were in a relatively positive state (i.e., when feeling good). A higher number of people reported they would use these tools when they felt somewhat down or worried or wanted information. An approximately equal number of people reported that they would use such tools in more urgent or crisis situations. The relevant section of the report (Part 2, question 1.2) has been updated to reflect these new findings.

Second, based on the literature, we had highlighted the need for investing in promotion and structures around digital tools, rather than necessarily investing large amounts in new tools. This need remains critical, however community research also indicated **value in developing or supporting newer tools**, particularly:

1. Māori participants highlighted the value of developing or offering tools embedded in Te Ao Māori.
2. Participants suggested that very user-friendly meditation and mindfulness apps such as Headspace and Calm are appealing to many, but cost is a barrier. There was interest in free tools in this area.

We reviewed our version 1 report and added these and other findings from our community research to form the current report. The following adjustments have been made:

- Minor updates to the 'Executive Summary' and 'Key Themes' sections
- Addition of a 'Methods' section
- Addition of a 'Focus group, interview and survey findings' section
- Minor updates and addition of 'Opportunities for impact: Māori interviews and focus group responses' under 'Key Themes: Māori'
- Minor updates and addition of 'Opportunities for impact: Pacific interviews and focus group responses' under 'Key Themes: Pacific'
- Addition of new information under questions 1.2, 2.3, 4.2, 4.3, 4.6, 4.9 and 6.3 in Part 2 of this report.
- Addition of an appendix summarising focus group and interview findings (Appendix 2)
- Addition of an appendix summarising survey responses (Appendix 3).

Key Themes: Māori

Here we outline overarching themes relevant to this report from Māori research and advice. Māori focused research or perspectives are also included under specific questions raised by Te Hiringa Hauora.

We have developed these themes by reviewing research by Māori researchers and/or with Māori communities and via consideration of key themes with our Māori co-authors, Dr Clive Aspin, Alana Haenga O'Brien, Keenan O'Brien and Niamh Whelan-Turnbull. We reviewed the themes against findings from our community research with Māori participants. These findings supported the themes and provided additional insights, which are summarized under 'Opportunities for impact: insights from Māori community research participants', below. In addition to this information, ongoing Māori advice and leadership will be critical for the success of digital health interventions.

As outlined in Part 2, Question 3.3, and included under 'Key Themes, international literature', digital tools have been developed with Māori young people, adults and communities. Diverse studies have highlighted that these have appeal. For example, rangatahi and whānau were enthusiastic about SPARX and the program was at least as effective for Māori as for tauiwi clients (Shepherd, 2011; Shepherd et al., 2018). Studies of Ol@ Or@ highlighted interest in this approach (Ni Mhurchu et al., 2019). For ongoing and enhanced impact among Māori, we recommend the following themes and approaches be considered.

By Māori, for Māori

General health and wellbeing services have seldom utilised Te Ao Māori models and, as a result, have made negligible progress in reducing disparities for Māori (Russell et al., 2013). In planning digital mental health and wellbeing responses, it is critical to have interventions designed by Māori, for Māori as well as general responsiveness. This means online approaches and interventions designed and led by Māori, as well as tools and approaches that are inclusive, appropriate and effective for Māori, although they may not be Māori led (Te Pou o te Whakaaro Nui, 2018). Given the richness of traditional and contemporary Māori wellbeing practices, Māori centred approaches provide crucial opportunities to make improvements.

Digital health and mental health websites and tools that have been developed by and with Māori researchers and communities include:

- Ol@ Or@, an app developed with Māori and Pacific communities with an emphasis on shared goal setting and actions (Ni Mhurchu et al., 2019).
- SPARX, an e-therapy with Māori engagement led by kaumatua Rawiri Wharemate and researcher Dr Matt Shepherd, and developed with Māori-led computer games company, Metia Interactive (Shepherd et al., 2015).

Harness the power of approaches that Māori are already using

Many Māori adults and young people make regular use of sites, apps and media (Grimes & White, 2019). Sites that are often used may include kura, kōhanga, community and iwi pages as well as social media sites. Many of these platforms will support identity, social connection, language and whānau relationships, all factors critical for wellbeing. As well as offering mental wellbeing sites, providers should put resources or links on sites that Māori already visit.

Whānau and human connection are critical in Māori cultural contexts (Shepherd et al., 2015). Tools that have no human connection might have limited appeal. Ways of addressing this include:

- putting tools or apps on sites that users already trust,
- having local champions or supporters to promote wellbeing and tools on their platforms, and
- harnessing the power of social media, for example via shareable content, social media feeds and social media advertising.

All of these efforts help to ensure that digital tools are 'live' and offer connection. These should sit alongside kanohi ki te kanohi (face-to-face) approaches as part of a broader strategy.

Be wary of ethnocentrism in general apps and tools

Most mental health apps and digital approaches have been developed based on Western models and are offered in ways that suit relatively individualistic cultural contexts (Shepherd et al., 2018). For example:

Mental wellbeing apps often focus on thoughts and feelings and pay little attention to social, physical, and spiritual aspects of wellbeing, and thus are lacking from a Māori world view.

Digital tools can bring an implicit assumption that improving mental wellbeing is the responsibility of individuals, who can do this on their own by using the tool. In contrast, longer term and big picture perspectives and more collectivist views are also needed.

Apps and sites often target narrow age bands. In Te Ao Māori, addressing families and communities more holistically is important, and is likely to produce more beneficial outcomes than an individualistic approach.

Mental health apps often rely on people using terms such as 'wellbeing' or 'mental health' to find tools rather than offering more holistic pathways.

Opportunities for impact: Insights from Māori community research participants

Māori participants in our focus groups, interviews and survey (see 'Methods'), highlighted that there are opportunities for improving the value of digital tools for Māori via:

- Promotion with and by Māori champions, influencers and content providers.
- Placement on websites and channels accessed by Māori people.
- The use of te reo Māori in apps and programs. This should include the use of some kupu or key concepts in te reo Māori and some in English, as well as full te reo Māori or full English options..
- Development of tools based on Māori concepts. This could include the use Māori models of healing and mental health frameworks (as have been developed and used in many parts of Aotearoa), or the use of concepts such as Maramataka, or Māori seasons and rhythms for activities, including times for healing and recovery.
- The use of Māori chants, waiata, karakia and Māori material for meditation or mindfulness activities.
- The use of stories, including from those with lived experience.
- The inclusion of humour and relatable content, alongside the demonstration of credibility and rigour.
- Holistic wellbeing tools that offer inspiration and support in multiple areas, such as identity, relationships, wairua, food, exercise, relaxation and breathing, rather than only addressing some levels of need or disconnected components of health.

We recommend that decision makers should

Support by Māori, for Māori approaches to tool development as well as Māori review of all tools. This includes supporting the development of Māori tools based on Māori values, stories, concepts and content.

Put tools/links on websites and social media that people already frequent and trust (e.g. Facebook groups/TikTok/Instagram or kura/church/sports pages).

Seek approaches that can support rangatiratanga and interdependence of whānau, hapū, iwi and communities.

Consider broad aspects of hauora Māori, which are interconnected and important, including cultural identity, social connectedness and connection to wairua, whenua and whānau.

Consider multiple factors, search terms and doorways including those that are culturally specific (e.g. identity/wairua/hauora/hinengaro/rongoā/mirimiri/karakia/pūrākau/te reo/maramataka) as well as searches that focus on causes (e.g. terms such as 'someone to talk to/stress') rather than symptoms.

Increase efforts in endorsements and promotion from communities and diverse leaders and influencers.

Key Themes: Pacific

Here we outline overarching themes relevant to this report from Pacific research and advice. This work was led by Dom Kafatolu with the support of palagi co-authors and review by Dr Aliitasi Su'a-Tavila. We identified key themes from local and international peer reviewed literature. We reviewed these against findings from our community research with Pacific participants. Our research was generally consistent with the literature and provided additional insights, which are summarized under 'Opportunities for impact: insights from Pacific community research participants', below. Pacific insights from our community research are also included under specific questions raised by Te Hiringa Hauora (e.g. see Question 3.3 regarding what works and Question 6. 2, responding to the digital divide). In addition to this information, ongoing Pacific partnerships will be critical for the success of digital health interventions in Aotearoa New Zealand.

Although there are few studies about the use of digital tools with Pacific communities specifically, digital tools have been developed or tested with Pacific peoples. These include Aunty Dee and a range of websites developed by Le Va in New Zealand (see Question 2). Dr Esther Cowley-Malcolm has developed an app, Play Kindly, which is centred around Pacific parents and is being tested at the time of writing (see https://www.facebook.com/ECM2412). In addition, Ol@ Or@ has been shown to have appeal among Pacific peoples (Firestone et al., 2020) and SPARX has been effective in a trial in which 38% of participants were Pacific (34% Māori and 28% New Zealand European and other) (Fleming et al., 2012).

For ongoing and enhanced impact, we recommend the following themes be considered.

Apply cultural specificity

When navigating Pacific mental health, be aware that although there are many similarities between the diverse range of Pacific cultures, appropriate responses may differ from nation to nation. Keep in mind that each Pacific culture is unique and specific. Websites and digital tools can be developed or adjusted with specific communities.

Mental health is holistic

There are many factors that contribute to mental health distress in Pacific communities. Some of these factors include family, religion, spirituality and le va. One can become mentally unwell when there is an imbalance in any of these factors (Tucker-Masters & Tiatia-Seath, 2017). When dealing with Pacific mental health, it is important to understand and respond holistically.

Technological barriers and strengths

There is research with adult and older generations of Pasifika people that details that some struggle to use the internet and various applications (Mila-Schaaf & Hudson, 2009). Even when users have access to digital devices, some do not feel confident finding quality sites or knowing which sites or tools to trust (Peni et al., 2014).

At the same time, some Pacific young people would prefer to access digital tools rather than going through 'the system' to avoid embarrassment. Asking for help from entities such as the health system can be seen to bring shame upon your family or violate the va. This can have very serious consequences including exclusion from family or community. Hence, access to online self-help tools can be particularly important.

Further, there are different layers of society, where different approaches will have their own positive and negative effects. Hence it will be important to:

- work with community leaders and Pacific experts in mental wellbeing and in digital technology, and
- ensure that digital tools are part of a broader system of options including community approaches and face-to-face health and wellbeing services.

Tools and promotion must be relatable

Digital tools should include values that are consistent with Pacific world views, content that Pacific people want, and styles or looks that are appealing and inclusive for Pacific peoples. Pacific people of different ages and from different Pacific nations want to be able to align themselves with messages being conveyed, so they can feel comfortable (Mila-Schaaf & Hudson, 2009; Peni et al., 2014). Examples of this would be having Pacific faces and Pacific stories available for people to engage with.

These concepts also apply to where health information is provided. Effort must be put into providing health messaging where people already are, e.g. Facebook, Instagram, TikTok and websites or pages that diverse Pacific age groups and communities use. This removes one step from the process of accessibility, so people no longer need to search for information; health messaging just appears on sites they are on.

Opportunities for impact: Insights from Pacific community research participants

Focus group, interview and survey responses from Pacific participants highlighted several areas of opportunity for improving the relevance and value of digital tools for Pacific communities:

- Pacific-specific digital mental health tools are needed. These must reflect the cultural values and experiences of Pacific people. This involves creating tools that are relatable (i.e., include Pacific people, designs, stories and experiences) and reflect an understanding of what is important to Pacific wellbeing.
- Anonymity while using a digital tool is important, however the content offered could promote a collective sense of self and worldview. Ideally, tools would also be usable in group settings such as youth groups, and would include shareable content, information or pages.
- For some, crossing the va can be too confronting. Indirect methods of addressing mental health (e.g., Small Steps) may be useful to minimise barriers to help-seeking, such as stigma related to labels.
- Form local partnerships to maximise reach – look for endorsement through local channels (e.g., prominent leaders in the community, community elders, church, friends).

Key Themes: International Literature

This section provides a brief overview of key findings and opportunities for increasing impact from recent research literature in digital mental health and wellbeing. These findings set the scene for the consideration of more specific questions.

Background:

Digital tools vary widely

While this report focuses on the use of digital tools for mental health and wellbeing, it is important to note that these vary widely, from very brief inventions to full clinical therapies. These include tools which are:

Information only – for example websites offering information that might help users identify when and how to seek help. Overall, there are few trials testing information based websites, but where these are widely accessed they are likely to be a cost-effective step in supporting people to take steps towards mental wellbeing.

Computerised therapies – for example a cognitive behaviour therapy intervention for dealing with symptoms of anxiety or depression. To date, these have often been designed as 4–10 sessions of 20 minutes or more to be completed over weeks. Examples include SPARX and Beating the Blues. These may be pure self-help or guided. Computerised therapies have been shown to be effective in multiple trials but engagement outside trials is often lower.

Brief interventions and micro-tools or single session interventions. Interventions that are briefer than full computerised therapies but offer an intervention or component of intervention, e.g. breathing exercises. In general these are newer approaches and, while there is some promise, the research on these is at an early stage.

Pure self-help tools. Any type of digital intervention designed to be used without support. These can include brief interventions and full computerised therapies.

Guided interventions. Any type of digital intervention completed with support, for example with email, phone or in-person calls or brief support from a clinician or coach. Guided computerised therapies generally have higher retention than pure self-help therapies, however these generally have higher costs per user.

Telehealth with a clinician. Telephone, webchat or online support or therapy with a clinician, these can be offered as a standalone intervention (e.g. 1737 or iMoko) or as part of other digital tools, for example, if more help is needed.

Chatbots. Automated chat agents, which can offer information or even strucutured therapies following personalised pathways using chat functions.

Apps. Computerised therapies, brief interventions and chatbots can be offered via apps and/or computer programs.

International literature: Key findings

There are multiple effective e-therapies and digital tools for mental health

The evidence for 'what works' is explored in Question 3.3, however an overview is provided here to set the scene.

Many robust randomised controlled trials have demonstrated that computerised therapies (many based on cognitive behavioural therapy) can be as effective as face-to-face therapies for anxiety, depression and other common challenges for children, young people and adults. This finding has been repeatedly demonstrated in systematic reviews and meta-analyses, which pool results from multiple studies (Andrews et al., 2018; Ebert et al., 2018; Luo, Sanger, et al., 2020). E-therapies with evidence-based content have also been shown to be effective for preventing depression (Perry et al., 2017) and reducing suicidal ideation (Torok et al., 2020), and to be appealing for less common challenges such as psychotic disorders (Lal, Nguyen & Theriault, 2018).

Apps, chatbots, and websites have been subject to less clinical testing. However, some of these have been shown to have impact on mental health and wellbeing in clinical trials and evaluations (Huckvale et al., 2020; Lecomte et al., 2020; Weisel et al., 2019).

Brief interventions and one off sessions are proposed as promising approaches to fit how people use the internet (i.e. often for short periods and/or quite specific purposes), however this research is at an early stage. Authors propose that these might be helpful if they are used as part of an ecosystem of support, although some well-designed single session interventions may have measureable impact (Baumel, Fleming & Schueller, 2020; Wasil et al., 2020).

Digital tools have been shown to be appealing to diverse groups

Digital tools have been co-developed with Māori and Pacific young people and adults, and found to be promising or effective with these groups (Firestone et al., 2020; Fleming, Dixon and Merry, 2012; Fleming et al., 2019; Fleming, Stasiak et al., 2019; Ni Mhurchu et al., 2019; Shepherd et al., 2018; Shepherd, 2011). Digital tools have also been co-developed and evaluated with other diverse communities, including rainbow communities (Lucassen et al., 2013; Lucassen et al., 2015; see also Key themes: Reaching diverse communities).

Use of and engagement with digital tools is lower in real life than in trials

Use of digital tools 'in real life' is lower than in trials, even when the evidence is robust and the tool is effective (Baumel et al., 2019; Fleming et al., 2018; Mohr et al., 2017). For instance, in a recent analysis of SPARX usage data, which included over 9,000 adolescent users, fewer than 10% of adolescents completed Module 4 (Lucassen et al., 2021), compared with 86%, in the original SPARX study (Merry et al., 2012). This pattern has been reported with many tools in many countries and reflects challenges in real world implementation and uptake.

Co-design is important but does not guarantee uptake

Even robust and engaging focus groups and co-design processes typically suggest more engagement than occurs in real life. For example, some Aotearoa New Zealand tools that were developed using co-design processes have not been effective in trials (Ni Mhurchu et al., 2019) or have been

discontinued following disappointing uptake (e.g. the Lifehack and Common Ground digital mental health projects).

Although co-design is important, it is not a gaurantee of success (DeSmet et al., 2016; Slattery, Saeri and Bragge 2020). Involving people in co-design is likely to increase their 'buy-in': that is, contributing to creating a tool or process is likely to increase participants' feelings of interest and positivity about the approach. Participating in groups can mean that people compromise and change or 'average out' their views. This is common social behaviour and can be useful, however it can also result in solutions that suit many people somewhat, rather than suiting specific users very well. This may result in disappointing uptake, when potential users then select tools that are ideal for them from many options (Cohen & Torous, 2019; Fleming, Merry, et al., 2019). Hence co-design should include specific groups and processes (see next section).

As well as tested tools, there are thousands of apps, websites and online tools that have not been trialled

In a recent review, Marshall and others (2020) reported that of over 10,000 available mental health apps, only about half reported an evidence-based framework, and approximately 10% of these had been clinically tested or provided direct evidence.

App use is highly concentrated

The three most popular apps for depression and anxiety account for approximately 90% of downloads and active users, with just two apps (Headspace and Calm) accounting for over 50% of ongoing app use for depression or anxiety (Wasil, Gillespie, Patel, et al., 2020). These apps (Headspace and Calm) invest heavily in marketing and have high budgets and strong user design. They also are also designed to build long-term mindfulness practices, which include ongoing app use. In contrast, 63% of depression apps and 56% of anxiety apps had no monthly active users. Over 90% of users discontinue using mental health apps within a week of installation (Wasil, Gillespie, Patel, et al., 2020).

Short-term use of apps and online tools is not unique to mental health and wellbeing

Globally, the app retention rate (for all types of apps) is 4% of users at 90 days and around 25% of users (of all apps) will use an app only once (Bauer et al., 2020; Cohen & Torous, 2019; Hinton, 2021).

Despite some challenging findings, digital tools have large impact and massive potential

Although some of these findings are discouraging, most New Zealanders do look up health information online (see Question Set 4). New Zealand sites such as depression.org and thelowdown.co.nz have tens of thousands of hits per year and high recognition in diverse communities (Te Hiringa Hauora & Aro Digital, 2021) and, globally, millions of people download mental health apps. These tools can bring real support and change, 24/7, often with no cost to the user and much more scalability than other mental health interventions.

International literature: Promising directions

Recent findings and community insights indicate that we can get much smarter about how we offer digital mental health tools in order to increase impact (Fleming et al., 2016; Mohr et al., 2017; Taylor et al., 2020; Wasil, Gillespie, Shingleton, et al., 2020; Wasil, Weisz, et al., 2020). Key themes from this work highlight opportunities, as follow.

1. Recognise and build on people's existing behaviour

To maximise the uptake of digital tools requires good understandings of how target populations use the internet and how they seek and use mental health supports. If we begin with these understandings, we can develop approaches that are closely aligned to current behaviour and hence are likely to be more effective in real world settings.

People use the internet in diverse and creative ways. Many do not 'search the internet' but explore content on YouTube or within other platforms. Many people use the internet in very social ways; for example, sharing material or following posts of specific content creators. Many consume videos, games or interactive material, rather than reading text (for more detail, see Question Set 4).

For digital tools to be used by those who will benefit from them most, they should be offered in ways that people will use them. Close analysis of how target groups use the internet for their own wellbeing suggest that promising areas are:

- brief or bite sized content;
- shareable content;
- opportunities for social connection;
- opportunities for humour or personal style and interest;
- opportunities for choice with pathways that allow personalised recommendations;
- opportunities for user input; and
- ability for follow through or to find more depth when needed.

We also need to understand and address how users and stakeholders want mental health and wellbeing support. Many people looking for mental health or wellbeing information do not actively look for this until they are distressed. At this point, they may be looking for counselling or health professional support rather than simple strategies or fully online tools. In addition, many health providers are used to providing support in face-to-face ways. Thus, increasing the impact of digital tools is likely to require communications to users and providers about the value of digital mental health resources as a genuinely helpful approach.

2. Utilise high-quality co-design with target users

While co-design does not guarantee uptake, high-quality co-design is nevertheless an important component for success (Slattery, Saeri and Bragge, 2020).

High-quality co-design should:

- work with target users in priority populations, as people in different groups and with different levels of need are likely to have differing preferences;
- seek to begin with exploring priority users' current behaviours, values and life contexts, before seeking to develop solutions;
- occur from pre-conceptualisation to review processes and include diverse methods; and
- involve people who have recent lived experience of the target problem, users who get to know the developers, new or 'fresh' users who have not been invested

in earlier phases of design and are not invested in supporting the development, and stakeholders or gatekeepers who might promote (or conversely not support) the intervention.

3. Build on the evidence

There is robust science about the strategies that reduce anxiety and depression or support mental wellbeing (see Question 3.3). There are also robust bodies of evidence about important factors for Māori and Pacific mental health and models of healing. High-quality developments should seek to understand and build on these important sources.

4. Prioritise reach and retention

Reach and retention are arguably the greatest challenges in digital mental health. Many effective tools have been developed. However, getting these to the right groups is not as simple as 'putting it online'. People who need mental health resources often do not search for these or, if they find them, do not use them sufficiently in order to bring about measurable change. Recent international work suggests that increasing use of current tools would have more impact on population health and wellbeing than creating new tools. For example, in a review for the Australian Department of Health, PWC advised emphasising investment in enabling improved use of the technology over developing or providing more digital tools (PWC, 2020).

Opportunities to increase reach and retention include:

- Increasing promotion, endorsements and local champions.
- Offering tools via people and organisations that users already trust (for example, asking trusted providers to host links on their site or promote tools on their feed).
- Optimising reviews, ratings, price – these are the characteristics you can search by on app stores and are of huge importance for uptake (Huang & Bashir, 2017).
- Embracing both large scale and hyperlocal opportunities. Many people will select international tools but also have interest in connections by and with others they know. This can include offering local tools such as social media pages, alongside access to appealing interventions.
- Ensuring digital tools are integrated into systems. For example, digital tools can be integrated into school and community health promotion activities and offered as components of health or social services.

5. Harness human support

Māori, Pacific and many other communities highlight the importance of families and social connection for wellbeing. New Zealanders have expressed tremendous interest in supporting their own and others' mental health. Repeated robust analysis finds that tools offered in blended care models with clinical support have higher retention than pure self-help tools (Taylor et al., 2020).

These varied bodies of evidence highlight the importance of harnessing professional and community support in digital mental health tools. Opportunities include blended care, greater integration of digital and clinical services, 'optimisation teams' (Taylor et al., 2020), as well as moderated chat or support functions, community development efforts, gate-keeper training, and information and support for peers and families.

Aotearoa New Zealand has witnessed enormous gains from movements that harness and grow the strengths of communities, such as the kohanga reo movement. Digital approaches can also harness and grow community skills, leadership and change (see https://etuwhanau.org.nz and https://www.7cups.com). It may be valuable to consider whether there are such opportunities in the digital mental health space.

6. Improve the tools

As well as developments around the tools, digital tools for mental health can be updated and improved. Current directions include increases in the use of:

- **Telepresence or feelings of support and connection.** This can be offered via human support outside the app or tool; chat-bot, chat, or forum functions; and by well-designed wording and presentation of digital content to engender feelings of being supported (Fleming, de Beurs et al., 2016).
- **Gamification** of some tools (Vajawat et al., 2021).
- **Increased use of user centred design** and high-quality design processes.
- **Micro-interventions** (Baumel et al., 2020) and **single session interventions** (Wasil, Taylor, et al., 2020).
- **Improving personalisation and interactivity of tools.**
- **Ongoing iterating and updates** based on analytics and evaluation.

7. Diversification and co-ordination of tools

User preferences are diverse and sometimes conflicting. Many potential users will select resources from all over the internet. Recent research suggests that it is valuable to offer tools that are highly appealing to target users, rather than imagining it will be possible to create one tool that will appeal to all.

At the same time, the array of current websites and tools can be confusing for users. Portals and recommendation systems that allow users to select safe, effective and appealing tools are increasingly important. These can also support referrers to know which tools are reliable and which might suit particular clients.

Key Themes: Reaching diverse communities

There are many populations and communities where digital mental health tools may offer value or require particular considerations. These include communities that are underserved by general services and whose members have particular interests or needs in terms of digital supports. For example, people with disabilities and chronic conditions, people in remote areas, rainbow communities, new parents, older people, refugees and migrants, and others.

Digital tools can be developed, adjusted or shared to serve diverse groups. At times, relatively simple alterations or promotion of tools on community sites may improve the reach of digital tools for diverse communities. In this section we outline opportunities with four key groups, however these principles be applied with many communities, thus harnessing opportunities provided by the internet to provide inclusive environments for diverse peoples.

Takatāpui and rainbow people, including those who are LGBTQIA+

Robust population-based data, which include studies from New Zealand, have highlighted that rainbow people are at an increased risk of mental health problems, including suicide and attempted suicide (King et al., 2008; Lucassen et al., 2017; Marshal et al., 2011) and that they are underserved by mental health service providers (Lucassen et al., 2011). Transgender people (Tan et al., 2020), bisexual individuals (Dunlop et al., 2020), and intersex people (Lucassen et al., ePub ahead of press) have been especially underserved by mental health and social service providers.

Digital supports and interventions are particularly salient for rainbow people for several key reasons.

- First, rainbow people are more likely to access supports and resources online than others. For instance, a commissioned study from the United States reported that, among a nationally representative sample of 1,300 adolescents, 76% of rainbow participants had searched online for information on depression, compared to 32% of 'straight youth' (Rideout & Fox, 2018).
- Second, many rainbow people are geographically isolated from the LGBTQIA+ supports that are clustered in New Zealand's largest cities, which make online communities and support particularly important.
- Third, despite being 'underserved populations' with high mental health needs, rainbow people frequently perceive healthcare providers as unhelpful (see, for example, McDermott et al., 2016).
- Finally, effective digital interventions can be delivered specifically for rainbow populations as bespoke tools (Coulter et al., 2019; Craig et al., 2021; Lucassen et al., 2015).

Moving forward, we need safe and effective digital interventions that are freely available and targeted to rainbow people.

Migrants and refugees

Despite increased mental health needs, migrants and refugees, particularly those from non-English speaking backgrounds, are less likely to access care for mental health issues (Satinsky et al., 2019). Barriers to accessing care include language difficulties, the lack of culturally appropriate care, low trust, high cost, and stigma associated with mental health difficulties (Andrade et al., 2014; Colucci et al., 2015). Additionally, COVID-19 has aggravated immigrants' mental health. Specifically, Chinese immigrants are facing unique mental health challenges and vulnerability (Gao, 2020).

Immigrants might be facing 'double unbelonging', described by Gao´s research (2020) as an intense feeling of abandonment added to the difficulties associated with immigrating to a different country. In addition, with the closure of the borders, many immigrants and their families are struggling with separation anxiety and other negative mental health outcomes that have arisen because of the pandemic (Kendrick & Isaac, 2020; McKeown & Dropkin, 2021).

Immigrants are more vulnerable to multiple sources of trauma related to COVID-19, mostly related to the fear of being neglected locally as well as being concerned with their families' safety in their native countries, where the pandemic might be uncontrolled (Kumar et al., 2020). Therefore, digital mental health tools can provide a useful alternative for this community's mental health and wellbeing if the design is culturally appropriate.

Migrants and refugees use the internet as a source of health information (Lloyd, 2014) and are likely to engage with digital mental health tools if they are culturally appropriate. There is increasing research providing evidence for the effectiveness of culturally modified digital mental health tools in migrant and refugee populations (Kayrouz et al., 2016, 2020). To increase uptake in these populations, digital mental health tools should be provided in languages other than English and with culturally appropriate modifications.

New parents

New parents are vulnerable to experiencing a decline in mental health through pregnancy and the post-natal period (Shorey et al., 2018; Underwood et al., 2017). Particularly for new mothers, this time period can be 'chaotic' and 'anxiety provoking' as it involves extreme changes to the body and identity and often involves isolation (Lupton, 2016).

There is a plethora of digital tools aimed at supporting pregnant women and new parents. Research from Australia indicates that the use of these tools is common among this group (Lupton & Pedersen, 2016). Digital tools are particularly advantageous for this group by providing convenient access to information, reassurance, expert advice, the ability to monitor changes to body and foetal/child development and social connectivity (Lupton & Pedersen, 2016; Virani et al., 2019). Pregnant and new mothers have also emphasised the importance of information being immediate, regular, detailed, entertaining, customised, practical, professional, reassuring and unbiased (Lupton & Pedersen, 2016; Virani et al., 2019).

Digital tools provide not only access to such information but also the ability to share information and connect with others (e.g. other mothers, family). This reciprocity enables a greater sense of control and connectivity during an unstable time (Lupton, 2016, 2017).

A limitation to these tools is the validity of the content and security of personal information (Virani et al., 2019). Credibility and trustworthiness of the information are also reported barriers (Donelle et al., 2021). Use of pregnancy apps is lower among lower-income and non-English speaking women (Hughson et al., 2018). Therefore, there is an opportunity to improve the relevance and credibility of these apps to accommodate all users during this critical time period.

Older adults

Older adults are commonly excluded from research on digital mental health tools, despite internet access and use growing rapidly in this age group. Research in Aotearoa New Zealand and internationally consistently finds that one of the main reasons older adults engage with online platforms is to seek health-related information (Szabo et al., 2019; Yoon et al., 2020).

Older adults are motivated to use digital mental health tools, but there are clear barriers that prevent them from engaging with these tools effectively. One is the usability of applications, such as considerations around manual dexterity in mobile apps. Another commonly reported barrier is fear of consequences, such as not knowing what happens to their information and who can access it (Andrews et al., 2019).

Excluding older age groups from research on digital mental health tools and not considering their needs in design is a missed opportunity for intervention in a vulnerable population, thus furthering digital inequalities (Seifert et al., 2019). During the COVID-19 pandemic, older adults are doubly disadvantaged as they are advised to minimise in-person interactions and service use, while being routinely overlooked as potential consumers by digital platforms and tools (Seifert, 2020).

Implications from Part 1

Recognise and address Māori priorities via ongoing partnerships and:

- Support by Māori, for Māori as well as general population tools
- Harness the power of approaches that Māori are already using
- Be way of ethnocentism in many apps and tools.

Recognise and address Pacific priorities via ongoing partnerships and:

- Apply cultural specificity
- Address mental health holistically
- Offer digital tools and address the digital divide
- Ensure tools and promotion are relatable.

In developing and improving tools:

- Build on people's existing behaviour.
- Use high quality co-design with target users, including those with recent experience of the target issue and 'fresh' users.
- Build on the evidence.
- Prioritise reach and retention, e.g. by:
  a) promotion, endorsements and local champions;
  b) offering tools via sites and groups that users already trust;
  c) optimising reviews, ratings and price;
  d) embracing hyperlocal and larger scale opportunities; and
  e) ensuring digital tools are part of health, education or social services.
- Harness human support and willingness of communities to help.
- Improve the tools. e.g. via telepresence, gamification, user-centred design, micro-interventions, personalisation and interactivity, ongoing updates and iterations.
- Increase diversification of tools, alongside facilitate co-ordination of tools, e.g. via portals, platforms or recommendation systems and links.

Digital tools can be developed and tailored for diverse groups and communities.

Part 2:
Te Hiringa Hauora Questions

Question Set 1:
Who uses digital mental health tools?

Te Hiringa Hauora asked:

1.1 Who is most motivated to seek digital tools to help with wellbeing challenges?

1.2 What state are they in when seeking digital tools?

1.3 What problems motivate them to use digital tools?

These are important questions. Exploring how people make use of the internet and digital tools for their wellbeing can allow us to shape tools to build on current behaviour, maximizing the chance that tools are used.

At the same time, these questions are challenging to answer because answers vary for different people, with different needs and at different times. Here we have provided an overview and considered specific groups, where evidence allows.

Please note that many questions overlap and should be considered together.

1.1 Who is most motivated to seek digital tools to help with wellbeing challenges?

Digital tools are widely used for health and wellbeing. Globally, there are over 70,000 health related Google searches every minute, with mental health related searches increasing by 40% from 2015 to 2019 and increasing dramatically in 2020. Of the 380,000 health-related apps available, over 20,000 are focused on mental health (ECH Alliance, 2020) and the Google Play Store reported over 90 million downloads for mental health apps in 2018 alone.

Adults

About 94% of New Zealanders were active internet users in 2020 (Hinton, 2021) and, in 2017, only 15% of adults reported they would never look up health information online (Andrade et al., 2018; Ministry of Health, 2020).

Searching for health information is more common among females than males, more common among those under 35 years old compared to older groups, and less common among Pacific adults compared to adults in other ethnic groupings (Grimes & White, 2019; Ministry of Health, 2020).

Searching for health information is generally more common among those with symptoms or concerns. At the same time, app and device use is typically most common among those with greater internet access and confidence. These complexities highlight that digital tools are important for reaching many groups and people but should not be the only option as they will not reach all groups equally (see also Question 6.3).

Among New Zealand internet users aged 16 to 64 years old, 28% reported using a health and/or fitness app in 2020 (Hinton, 2021). While this is a minority of adults, it is substantial. International data suggests this metric is likely to be rapidly increasing over time.

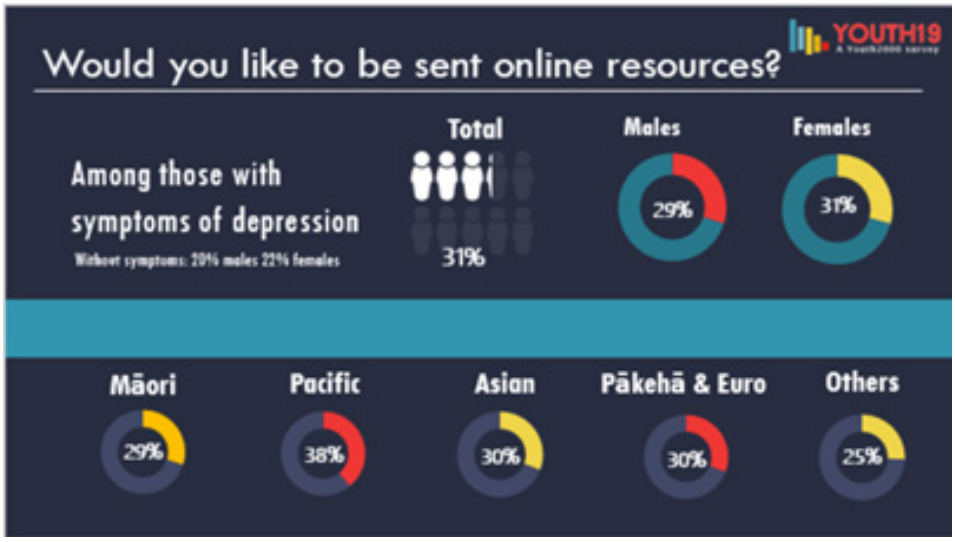
Young people

In the most recent Youth2000 survey, conducted in 2019 (Fleming, Peiris-John, et al., 2020), 15% of New Zealand high school students with depressive symptoms and 9% of all students reported they had used a digital tool for mental health purposes.

Use of digital tools for mental health was three times higher than rates of consulting with a family doctor about mental health (3%) and more than four times higher than using a phone-line to seek mental health support (2%) (Manuscript in preparation).

In addition, the Youth19 survey asked participants if they would like to have links for areas such as mental health and wellbeing sent to their phone or email after the survey. In total, 22% of participants opted to receive digital resources (Shaw, 2021). This was higher among those who had experienced distress (31%) and higher among Pacific young people (38%) than other ethnic groups, as shown in Figure 3.

Figure 3. Percentage of New Zealand high school students who reported that they would like links on health and wellbeing topics sent to their phone or email. (Image from Fleming, Tiatia-Seath, Greaves & Clark, 2020).



1.2 What state are people in when seeking digital tools?

Tens of thousands of New Zealanders visit depression.org each year (Te Hiringa Hauora & Aro Digital, 2021) and, globally, millions of people use health apps. Despite this, relatively little is known about the state people are in when seeking digital tools.

Here we outline information available from the published Aotearoa New Zealand research and then from our own community research. These findings suggest that there are several key groups with quite different needs.

1. **Those who are distressed or worried about current mental health problems for themselves or someone else.** Mental health needs in communities are high and many people report that it is very hard to get help. Culturally diverse adolescents in South Auckland and younger teenagers in Wellington suggest that teenagers would not search online unless they were desperate (Fleming, Merry, et al., 2019, Pine et al., 2020). Rather, these young people have reported that they would rely on their own strategies such as talking to family and friends, distraction and chatting, or posting on social media. Most reported that they would only actively go to a website or choose an app for mental health if they were really desperate or, perhaps, if it was recommended by someone they know (Fleming et al., 2016; Pine et al., 2020).

   As explored in Question 4.1, Te Hiringa Hauora data highlights that most web searchs use terms such as depression, anxiety and associated symptoms, and these highly outweigh searches for wellbeing or other positively framed searches (Te Hiringa Hauora & Aro Digital, 2021). This is consistent with Google Trends data. The 'self-tests' on the agency's website are highly popular pages (Te Hiringa Hauora & Aro Digital, 2021). **These findings suggest that current users are likely to be distressed or worried when they are seeking digital tools.** Te Hiringa Hauora could further explore this question with an analysis of the range of scores on self tests on their websites.

2. **Those seeking help dealing with specific challenges or needs.** For example, help with sleep, relaxing or relationship problems. These users might not search mental health-related terms but rather terms that are specific to the challenges they are facing at the time.

3. **Those seeking to improve their wellbeing, enhance strengths or grow resilience.** There is limited evidence that this is common in New Zealand. However, very popular mental health apps such as Headspace and Calm are not explicit about whether they aim to support wellbeing or to deal with problems; rather they offer concepts such as 'Get some Headspace' and 'Find your Calm'. This is an important area for future development.

4. **Those who are following a recommendation, link, advertising or other external prompt.** Many potential users do not actively search for information or tools but may follow an external prompt or trigger. For example, opening a link or meme that someone they know has posted, clicking on an advertisement, or looking for information for a school task. Users who are following a recommendation or a link might be in a wide range of states including a lower state of need. Te Hiringa Hauora data from 2020 shows social media and displays account for 26% of users (Te Hiringa Hauora & Aro Digital, 2021).

Findings from our community research

Our focus group, interview, and survey data supported the idea that most people looking for digital tools are likely to be seeking help with current problems, as shown in Appendix 3:

- 79% of our survey participants indicated that they would be likely to look up sites or apps for wellbeing if they had some concerns (i.e., if they were feeling a little bit down or worried, if they wanted to know where to get help, or if they wanted to know if they had a problem).
- 73% said that they would be likely to look up sites or apps for wellbeing if they were in more serious states (i.e., if they were feeling very bad, if they were worried about their own or others' safety, or if they wanted to find help right now).
- 29% said they would be likely to look up sites or apps if they were feeling OK or good.

Note, survey participants could select as many options as applied to them. There were some differences by age and ethnicity, as shown in Appendix 3, however there was an overarching pattern of mixed needs.

In contrast to our survey findings, many focus group and interview participants highlighted that they would not search online, and that if they were having difficult time they would be more likely to want to talk with whānau or others, or be out in natural environments. This was particularly common among Māori focus group and interview participants. Many of our Māori participants said that they would be more likely to access digital tools if they were in a more positive state. Likewise, most Pacific focus group and interview participants said that they would prefer to reach out to someone if they felt really stressed and would be most likely to use digital tools if they were feeling a 'just a little bit down or off'.

These mixed findings suggest that digital tools should be available alongside other options, and that there is no single niche for digital tools.

Whichever areas Te Hiringa Hauora targets, there must also be easy access to support for other levels of need.

Background:

Help negation and challenges in seeking help

Seeking digital and face-to-face help for mental health and wellbeing is challenging. In New Zealand and globally, most adults and young people with mental health needs do not get professional help. This is due to both external and internal barriers. External barriers include cost, lack of transport, long waitlists, stigma, discrimination and services that are not friendly to diverse users. Compounding these issues are internal barriers such as embarrassment, shame, not knowing how to get services, not knowing which services to trust, or thinking one's problems are 'not bad enough'.

Help negation also plays a pivotal role in help-seeking. Help negation refers to the idea that getting help can seem simple when one is not stressed. However, depression and many mental health problems can result in feeling hopeless, unconfident and unmotivated. When they are distressed, people often feel overwhelmed and that nothing will help them. Thus, it is generally harder to ask for help when one *needs it most* (Hom et al., 2015; Wilson, 2010; Rickwood et al., 2015; Winsall et al., 2019).

Internal and external barriers and help negation are important even in online help-seeking. For example, some young people in culturally diverse areas within Aotearoa New Zealand reported that using websites 'for depression' would feel awkward even if they were alone (Fleming et al., 2019). Other groups have highlighted that not knowing where to start or not knowing which digital tools to trust is a barrier. Motivation and energy to follow through with digital tools can be challenging for those who are facing difficult times.

This information indicates that **digital tools must be developed and offered in ways that overcome help negation.**

1.3 What problems motivate people to use digital tools?

Digital tools and ways that people interact with these are extremely varied. There is no one answer to what motivates people to use digital tools for mental wellbeing.

Currently available information highlights that problems are likely to include identifying what is going on ('Is this depression?') and looking for help for oneself or others.

As described in questions 1.2 and 4.1, Te Hiringa Hauora data shows that search terms such as 'depression', 'symptoms', 'anxiety', and other fairly clinical terms are common (Te Hiringa Hauora & Aro Digital, 2021). Common terms used by young people to search for mental health help include 'mental health', 'mental health problems', 'depression', or 'symptoms of…', and 'treatment of…' (Horgan & Sweeney, 2010; O'Dea & Campbell, 2011). A check of Google trends in New Zealand over March 2021 reveals that searches for anxiety, depression, mental health, stress and suicide are higher than for those for mood, bullying and relationships and are much higher than searches for wellbeing or happiness.

At the same time, young people and diverse communities report that non-clinical terms are essential too and that a variety of challenges are important motivators to use digital tools. These include topics closely linked to mental health and wellbeing, such as stress and sleep problems, and issues such as relationship problems or financial pressures.

Question Set 1: Māori

There are some specific insights from research by and with Māori about who uses digital tools, what state they are in, and what 'problems motivate them'.

For Māori, the first point of contact for support is likely to be whānau members, friends or partners; people within an individual's circle of trust with whom they feel a close connection (Te Pou o te Whakaaro Nui, 2018). This may be common among many people, but is particularly important for Māori (Shepherd et al., 2015).

At the same time, Māori have expressed interest and enthusiasm for digital tools as part of a range of options. For example, whānau were positive about their taitamariki using SPARX and suggested further resources to enable whānau to support their children (Shepherd et al., 2018).

Māori adults who engaged in the co-design process for a culturally tailored digital tool also communicated enthusiasm for digital tools (Verbiest et al., 2019).

Online options may be particularly important for Māori who do not want to worry those around them, who do not feel connected to those around them, who feel whakamā or embarrassed, and when supports are less available (for example, late at night).

Question Set 1: Pacific

Community insights to date and the literature we located suggest that motivations for Pacific peoples to seek help from digital tools include:

- **Options for self-assessment and avoiding shame.** Many Pacific youth and perhaps adults may prefer to access digital tools rather than go through 'the system'. When people ask for help from other entities such as the health system this can be seen to bring shame upon your family or violating the va.
- **Searching for shared experiences.** For some, seeing other Pasifika people who have gone through similar experiences will be helpful (Mila-Schaaf & Hudson, 2009). This can be facilitated via websites, social media and programs.
- **Community recommendations.** Direct person-to-person interaction is a powerful means of promotion within Pacific communities. When digital tools or assistance via the internet are promoted through local communities and Pacific providers, Pacific people are likely to be more engaged.

Question Set 1: Key implications

The findings outlined in Question Set 1 highlight:

- The need for outreach, offering support and services where people are.
- The need for a diverse range of approaches, including those targeting mental health problems and those focusing on non-clinical terms, culturally significant terms, and life challenges or interests.
- The need for content to include self-assessment, culturally relevant content, and assistance to get more help.
- The need for promotion and external triggers, especially to reach groups who might not otherwise search for digital tools.
- The need for local champions, community recommendations and human support.
- The need for face to face and community based options as well as digital tools.

Question Set 2:
What digital tools are available?

Te Hiringa Hauora asked:

2.1 What digital tools are available to people now?

2.2 What is available for our priority groups that is safe and certified?

2.3 What do the priority groups currently like and use? Do they use the tools identified above? Why/why not/what would help?

We have addressed 2.1 and 2.2 via a Stocktake document (Da Rocha et al., 2021), which is provided separately to allow for rapid updates. This document highlights the many freely available Aotearoa New Zealand sites and tools provided or funded via reputable agencies. Many of these tools are based on quality evidence, include clinical and cultural input and some are Māori- or Pacific-led.

These tools include the following:

Allright.org.nz website

Aroha Chatbot

Atu-Mai website

Aunty Dee app

Beating the Blues e-therapy

Computer Assisted Learning for the Mind website

Changing Minds website

Clearhead website and app

Dear Em website

Depression.org.nz

E Tū Whānau website and social movement

Flo: Pasifika for life website

HeadFirst website

Ignite website

Just a Thought website and e-therapies

Mana Restore website

Melon app, available via some health providers

The Mental Health Foundation website

Mental Wealth website

Mentemia app

Play Kindly app

Oho Mauri app

Quest - Te Whitianga app

SPARX e-therapy

Te Au website

The Lowdown website

Togetherall (previously Big White Wall)

Tough Talk website

Voices of Hope website

In addition to these tools, there are:

- Many quality apps and websites that are not explicitly for mental health or wellbeing, but include highly related content such as family relationships, handling stress, developing identity and more. For example, see many iwi, school, work, sports and other community websites.
- Apps and tools which are not evidence informed and or make unlikely claims. It can be challenging to distinguish between high and poor quality apps and many people have indicated interest in support with this.
- International websites and apps. These include free and not-for-profit tools, some of which are based on robust evidence.
- In addition, people often search and use social media, YouTube or other platforms for wellbeing content.

2.3 What do the priority groups currently like and use? Do they use the tools identified earlier? Why/why not/what would help?

Which tools are liked and used?

Te Hiringa Hauora asked which digital tools are liked and used by priority audiences. Our community research provides some insight into this, as outlined below. User preferences are diverse and change over time, hence continued use of website analytics, user feedback and evaluations are also important.

Survey responses suggested the most commonly used mental wellbeing focused websites and apps were 'New Zealand Government or health websites' and the Headspace app.

- 34% of survey participants reported having used a New Zealand Government or health website for wellbeing or emotional challenges. This was higher among Māori and Pacific survey participants (38% for Māori, 38% for Pacific, 34% total sample), and higher among those aged over 35 (29% for those aged 35 or under and 44% for those aged 36 years or older).
- The most commonly used apps and tools among survey participants were Depression.org, Headspace and Calm. We asked if participants had heard of or used: Depression.org, The Lowdown, SPARX, the Youthline website, 1737, Clearhead, Justathought, Mentemia, Headspace, Calm, or other tools. Of these, the most commonly used tools were Depession.org, Headspace and Calm (see Appendix 3, Questions 2 and 3). Specifically:
    - Depression.org was used by 19% of survey participants, including 27% of Māori, but just 8% of Pacific participants.
    - Headspace was used by 35% of survey participants, including 29% of Māori and 23% of Pacific participants.
    - Calm was used by 24% of survey participants, including 24% of Māori and 17% of Pacific participants.
    - 'New Zealand Government or health sites' were used more by older participants (used by 44% of those aged 36+, and 29% of those aged 35 or younger).
    - Depression.org was used roughly equally by participants in each age group (used by 18% of those aged 36+ and 19% of those aged 35 or younger).
    - Headspace and Calm were more popular among younger participants (Headspace was used by 25% of those aged 36+ and 41% of those aged 35 years or under, Calm was used by 19% of those aged 36+ and 27% of those aged 35 years or under).

Alongside these widely used tools, there was a wide range of other apps and sites used by smaller numbers of people. These included mental wellbeing focused tools (e.g., SPARX, Mentemia, Insight timer and Smiling Mind), health and fitness apps (e.g., Down Dog, Nike training and trackers for movement, body stats and sleep) and productivity apps designed to limit distractions and enhance focus (e.g., Flora and Freedom).

There were some Māori- and Pacific-focused recommendations. Some Māori participants recommended Oho Mauri, an app 'dedicated to uplifting knowledge and understanding of Pūāio (yoga), Mauri Tau (mindfulness), and Whakapakari Tīnana (body strengthening)' (https://www.ohomauri.com/). Some Pacific participants reported using Bible apps with daily inspiration and connection, they

suggested that mental wellbeing could be integrated into such tools. Some Pacific participants also commented positively on the look, purpose and simplicity of the Aunty Dee app.

Tools that were not designed specifically for wellbeing were also popular. Māori, Pacific and other focus group and interview participants commonly accessed music, soundscapes, podcasts and videos on Spotify, YouTube, social media and entertainment media for inspiration, calming down, to feel better, or to lift their mood. Some accessed yoga, health, sleep or meditation content via Spotify or Youtube. Content streaming via Netflix, YouTube and gaming or scrolling through social media (e.g., TikTok, Reddit, Instagram) were also popular activities to feel better or relax. Social media was described as important for supporting connections, including for giving and receiving emotional support. Tools like Facebook (messenger or groups), Instagram and TikTok were commonly used as ways to reach out, share or discover content (e.g., information, songs and memes), and connect with similar others. Again, this was common for Māori, Pacific and other participants.

At the same time, many people reported that they did not use digital tools and would rather connect with people they know or respect, do an activity offline (e.g., go for a walk), connect with nature or environments, or connect with church groups, wairua or karakia. Critical responses included that tools did not provide a personal connection, did not feel relevant (e.g., culture, language, accessibility), could be triggering (e.g., body image, 'not wanting to see the bad'), and that participants did not really think of them or were not sure that they would help. For example, one Māori, male, young adult participant said:

> *"While I've heard of the benefits [of these tools], I haven't experienced them so don't reach for them or know when it's a good time to do so. And then turn to what I do know when really stressed."*

Further recommendations from Māori and Pacific participants

Some Māori and Pacific participants highlighted that free, culturally relevant apps with similar functions to Headspace or Calm would be ideal.

Further recommendations from Māori participants included:

- Creating connectivity to people and place
- Ensuring people and designs are relatable
- Including more themes on nature and environment
- Including a mix of humour to reach out, but serious messages and credibility behind it
- Integrating te reo, e.g. by using te reo, chants, waiata and karakia to welcome users (as on Depression.org) and/or to prompt reflection and meditation.

Further recommendations from Pacific participants included:

- Endorsement by the elder community
- Story telling
- Using Pacific faces and design elements
- Normalising that feeling down is not a flaw – mental health labels were reported as stigmatising in the community.

Other preferences around digital tools were highly consistent across different demographic groups and very consistent with published literature, as outlined in Question Set 3. Participants preferred tools that were personalised, interactive, easy to use, straight to the point, relevant, relatable and free, and those that included audio visual features rather than large blocks of text. They disliked advertisements, notifications that could not be personalised or turned off, and unmonitored chat functions. See Appendix 2 for further details.

Comments on the Small Steps website

Where time allowed, we showed participants the new Te Hiringa Hauora website 'Small Steps', which had recently gone live (interviews and focus groups were carried out in May and June 2021). Feedback on this site was generally positive. Participants enjoyed the aesthetics of the site (e.g., calming and pleasing to the eye, nature, simple layout, use of colour), the messaging (positive 'everyday stress' framing), the resources and the te reo Māori and English options.

A handful of participants suggested the concept of small steps would be overwhelming if they were feeling stressed. They considered in this space they might prefer to be able to webchat, talk to someone right away, or take a single step.

Recommendations for improving the Small Steps site included:

- Customisation – e.g., the option to create a user profile for tailored steps and progress tracking, or including entry tests that suggest three small steps in response to the individual's current difficulties.
- Enhancing steps – e.g., including steps on sleep, motivation, procrastination, physical activity, nutrition, social interaction and dating; framing meditation as 'switching off'.
- Enhancing layout – e.g., information could expand within the page by having a hide/show more option), including an audio option for content to be read aloud, making Small Steps into an app.
- Highlighting crisis options – e.g., making the crisis options more obvious if small steps are not enough and the user needs to talk to someone.
- Using kupu (Māori words) within the English language option.

Summary

These results highlight that:

- Depression.org and New Zealand Government or health websites and commercial apps (Headspace and Calm) appear to be among the most known and used tools, including among priority groups.
- Aside from these, there are a wide range of tools used for diverse purposes.
- Our participants who viewed the Small Steps site were generally positive about it.

Māori and Pacific focus group and interview participants made specific suggestions around ensuring that digital tools are helpful. Some priority users do not think of using digital tools or see why these tools may be helpful. There may be value in promoting the idea and value of digital tools to support wellbeing, as well as acknowledging that face-to-face and other offline options are also needed.

Question Set 2: Key implications

The findings highlight the wide range of existing high-quality tools available in Aotearoa New Zealand. Our community research suggests that Depression.org and international commercial apps (Headspace and Calm) appear to be among the most known and used tools including among priority groups. Aside from these, participants use a wide range of tools.

There are opportunities to ensure tools are appealing to Māori and Pacific users and to ensure communities are aware of the availability and value of digital tools.

There may be opportunities to collaborate with existing providers, for example via shared promotion, links on websites, shared standards, or collaborative clinical or cultural review processes.

There may be advantages in creating a platform, portal or process that allows people to find and select from currently available tools. This has been prioritised in several countries and offers potential to reduce confusion for users and allow efficiency and insights.

Question Set 3:
What are people looking for, what keeps them engaged, what works?

3.1 What messages, interventions and supports within the digital tools are people looking for?

Community insights indicate that there is enormous variation in what people are looking for. Users' needs will vary meaningfully depending on demographics such as age, gender and ethnicity; people's strengths; and the particular challenges they are facing.

Available research suggests that even within quite small and specific groupings, **users have diverse preferences.** For example, in South Auckland focus groups with mainly Māori, Pacific and 'other' ethnicity teenagers with some experience of mental distress, user preferences varied widely. Some teenagers preferred a light, playful or gamified approach and while others wanted a serious, direct approach. Participants agreed that 'an averaged' approach of 'a little bit gamey' and 'a little bit serious' was not appealing (Fleming, Merry et al., 2019).

In a second Auckland study, also with diverse adolescents, some wanted resources that were labelled 'for depression' and reported that this could be validating. Whereas others (including those with experiences of distress) considered that they might not recognise that they were depressed or would not want to access a tool that made them feel like they had a problem. These young people preferred terms such as 'feeling down' or 'dealing with problems'. The adolescents in this study highlighted that choice was important, and ideally tools should be offered in both ways (Fleming, Stasiak et al., 2019).

These findings highlight the importance of **choice and diverse options.**

Although a range of messaging and tools are important, local and international evidence as outlined in this report indicate that there are common overarching themes that people are looking for. Key themes are that users want tools to be:

- **Quickly helpful** with the problem or need;
- **Trustworthy**, safe, respect privacy;
- **Easy to use,** easy to open, easy to get started and easy to return to;
- **Relatable**, with people, words and images that are appealing to them; and
- **Offer follow thorough** or more help when needed.

3.2 What messages, interventions and supports keep people engaged?

Promising directions in the digital mental health literature have been outlined in the introduction section of this report. Here we outline key themes from the health promotion literature. Next, we focus on specific strategies that can be used to build and sustain user engagement on a digital platform from an interactive design approach.

A health promotion perspective

Health promotion focuses on creating supportive environments to enable communities to make healthy choices and improve wellbeing. Within the digital space, this includes positive message framing, relevant content and community engagement to encourage people to use digital tools.

Health messages generally need to be short, sharp and simple to capture individuals' attention and sustain engagement. Health messages and media campaigns can make individuals aware of the potential options to help with their problems, but translating awareness into sustained action is more challenging. Utilising communities, thoughtful messaging or targeted communications around a tool and high-quality approaches within the tool are needed.

Digital tools that **support autonomy or self-determination and promote social connectedness** (i.e. Self-Determination Theory; Deci & Ryan, 2008) are promising for engagement with mobile health interventions (Baumel et al., 2019) and predict greater expectations of better mental wellbeing after using those tools (Clark et al., 2018). These are tools that:

- offer **rapid relief**, hope or a pathway out of a problem;
- include **clear, specific, practical** problem-focused strategies;
- are delivered in **small easily digestible** bouts or pieces; and
- include experiences of **social connectedness** (e.g. via chat, forum, telepresence, and/or building connections with people).

These approaches can align well with whanaungatanga and rangatiratanga, key elements in Māori health models, and are consistent with the priorities identified in Question 3.1.

Diagram from Hooked: **http://ui-patterns.com/blog/making-the-hook-model-actionable**

An interaction design perspective

Engaging users is a process that is dynamic and builds over time (Eval, 2014; Fogg, 2019a; Pinder et al., 2018). The following section outlines strategies DMHTs can use to capture users' attention and then build and sustain their engagement.

Our response takes a general User eXperience (UX) perspective that can be narrowed down to specific DMHTs. The following recommendations synthesise several behaviour change and engagement models, but the explanations fit well (and simply) with the Hook Model by Nir Eyal (2014). This model describes how to create habit forming products, by shifting external triggers for behaviour to internal ones that are entirely driven by the user (See 'The Hook' diagram).

We break down engagement into 3 stages: Starting, Building and Sustaining. Each stage has slightly different approaches because the user has a different relationship to the DMHT.

Starting

Establishing the relationship between the user and the DMHT requires:

- External trigger for engagement
- Easy access
- Fast rewards

Building

Relationship with DMHT is new and external triggers are in the process of shifting to internal ones.
The DMHT needs:

- External triggers to remind users
- To provide genuine and effective help

Sustaining

The relationship with the DMHT is being solidified. The DHMT needs to:

- Keep users interested by offering new experiences
- Let them feel like they have made progress/their time investment is valuable
- Create UI that reinforces habits

Starting Engagement

To start engagement the user does not yet have a relationship with the DMHT so there needs to be an **external trigger** (Eval, 2014; Fogg, 2002; Verplanken & Wood, 2006) and the user needs to have the **ability and motivation** to engage (Deci & Ryan, 2008).

External Triggers

- A suggestion from a friend
- Link on a community site
- Advertisements
- Word of mouth
- Social media posts
- Influencer's endorsement
- Badges and notifications

Timing

The timing and placement of external triggers are key (Purohit & Holzer, 2019).

Idle Moments

Triggers are most effective when they take advantage of **idle moments** (Lathia, 2012; Tuncel, 2015) where the user has spare attention and time to follow through.

Physical spaces such as on public transport, in waiting areas, in the bathroom.

Remove Barriers

Removing as many barriers as possible is key to initial engagement and uptake (Leonard, 2008; Purohit & Holzer, 2019).

Call to Action

Immediately after opening, the DMHT needs to present a **Call To Action** to combat high drop off rates. This should be simple to accomplish quickly, offer a fast boost in mood, guide the user to the next step.

Rewards

Rewards need to be for genuine accomplishment or they will appear condescending (Eval, 2014). Rewarding someone for engaging for the first time is important, but saying 'well done' for entering their name is condescending.

Physical triggers need to have a clear navigation pathway to the DMHT. For example, simple hashtags/URL.

Digital triggers are most effective if they piggyback on existing behaviours (e.g. within platforms users are already in, such as Instagram, TikTok, YouTube, Facebook, community pages, school/ university pages) AND allow the user to access the information without leaving the platform.

Word of mouth triggers need to be easily accessible and shareable. It is important to identify who would be sharing in order to making that process easier. Generally, they need to allow:

- friends and family to share a link from social media;
- the receiver to access the information in the same place it was shared;
- community groups to link/embed the interaction directly on their sites and platforms; and
- people with minimal knowledge to receive direction to support.

Building Engagement

To build engagement, external prompts need to shift to become internal ones (Eval, 2014).

For example, a user is experiencing anxiety, an external prompt gets them to engage with the tool, which offers relief. A positive association starts to form. Over time the prompt will shift from the external trigger and become attached to the internal feeling of anxiety. The shift can mean that the anxiety will prompt users to engage with the app without the need for any external prompts.

Requirements

The interactions with the DMHT must genuinely meet the emotional needs it is trying to 'fix'.

They must be repeated enough that the behaviour and the 'emotional relief' becomes habitual.

External Triggers

External triggers are still required to facilitate repeat engagement; these are commonly in the forms of **badges or notifications.**

Personalised triggers can use idle time but in more personal settings, e.g. in the fridge or cupboard, right before bed by the bedside table.

Piggybacking

Piggybacking on existing **internal prompts** is still beneficial and may be most effective if the prompts are linked with existing short-term emotion regulation behaviours. This can work similarly to contingency management, where existing behaviours are redirected, such as: distraction/escapism, social media, videos and gaming.

Microcopy

The tone and timing of microcopy (small pieces of written communication that help with navigation and feedback) are vital in creating an effective rapport between the tool and the user (Podmajersky, 2019; Roberts, 2017).

The tone needs to:

- be positive, respectful, genuine
- be short and to the point (less than 7 words)
- use concrete, confident and simple language
- use active voice
- offer clear feedback on the users' interactions
- distinguish between necessary information and supplementary information, allowing users to easily bypass the things they don't 'have to' read.

Microcopy should:

- navigate/redirect attention to the next step (clear calls to action)
- build memory retention and habits of new behaviours.

Sustaining Engagement

To sustain engagement the user needs to feel the DMHT is providing ongoing value (Eval, 2014; Fogg, 2019a; Verplanken & Wood, 2006). This means their experience with the tool needs to change over time and **develop alongside the user.** This can be done by using a variable reward schedule and highlighting user progress.

Variable rewards

Initially, the rewards need to be fast and require minimal effort. But if the rewards stay like this, they will become boring and engagement will quickly drop off. Over time, the reward schedule needs to be varied.

The interaction must balance familiarity with anticipation. Engagement will be sustained by not knowing exactly what happens next.

Users must feel like they have invested in the app. By asking users to put in effort, it is significantly more likely they will reengage and take ownership over the process (Norton et al., 2012). This can be in the form of time, data, social capital (Lee & Choi, 2017) or money.

Social investment can be strongly enhanced and supported with community perspectives. We would recommend exploring how investment can be supported through collective interaction. This is particularly true from a Māori perspective.

Habits

Habituating engagement will help sustain longer term use. Long-term repetition is key to creating sustained habits. **The timing of triggers is important** and should be linked both with the **motivation** for **AND** the **ability to carry out the behaviour** (Fogg, 2019b; Tobias, 2009).

Building a quick or ritualistic way to open the intervention could also help develop an automatic behaviour to reinforce the emerging habits. Many people will check the same app automatically when they open their phone, even if they intend to do something else (Ryding & Kuss, 2020). So, if the act of opening the tool can be linked with another behaviour, like picking up the phone or checking social media, then we can increase the number of times the user engages.

It is important to question the assumption that sustained engagement with the DHMT is the goal.

For example, with a breathing tool the goal would be for the user to do the breathing without having to rely on the tool. So, for this tool to be successful, engagement would drop off after the skills were learned.

It is essential to acknowledge that because our goal isn't to build 'a successful app' but to build 'successful wellbeing,' the measures of success are not necessarily the same as standard app/tool measures.

3.3 What messages, interventions and supports work best?

There is a large body of evidence about what works best to reduce symptoms of anxiety and depression and smaller but overlapping bodies of evidence about what works to reduce distress and enhance wellbeing. Much of the evidence of 'what works' in mental health comes from clinical trials with participants who have depression, anxiety or other diagnoses. This evidence highlights the importance of Cognitive Behavioural Therapy (CBT) for anxiety and low mood (Aboujaoude et al., 2020; Khademian, Aslani and Bastani, 2020). There is also growing evidence supporting Acceptance and Commitment Therapy (ACT)-based strategies (Khademian, Aslani and Bastani, 2020).

Brief interventions such as health promotion messages that reach large numbers of people may also be important for improving population wellbeing, even though these will not have clinically significant impact for individuals.

Finally, prevention and health promotion approaches, from reducing inequality, discrimination, bullying and abuse, to enhancing family relationships and community connections are important for improving mental health and wellbeing among populations. Even widely disseminated clinically focused interventions generally do not reach large numbers of people. Hence clinical interventions are alone are unlikely to have major impact on the health of the total population. We should offer these tools, alongside approaches which address social determinants and factors that impact on multiple areas of wellbeing (Arango et al., 2018; Patel et al., 2018).

In this section we focus first on clinical evidence. This is provides the strongest empirical support for 'what works', for individual users. Next, we highlight key research from Māori and other priority groups and then offer recommendations for decision making. These considerations should be complemented by population health approaches.

Background:

Terms

Evidence-based or 'empirically supported' approaches or interventions are those that have been trialled or tested in scientific studies and have a measurable impact on a specified outcome. Ideally, tools will have been tested rigorously several times to be considered 'evidence-based'.

Evidence-informed: approaches or interventions that have not been empirically tested but use strategies or approaches that have been robustly demonstrated in other research.

Not based on evidence: approaches or interventions that have not been empirically tested and do not use strategies or approaches that have been validated in other research.

What works: core components of effective interventions from scientific research

Currently, evidence-based digital mental health tools tend to target specific disorders or symptoms based on a brief assessment of need. A recent systematic review concluded that digital interventions that offer human support appear to be more effective at improving symptoms of depression and anxiety, as well as improving wellbeing outcomes, compared to unsupported digital interventions (Tremain et al., 2020).

Core components within empirically supported interventions have been highlighted in many studies and reviews (Flett, Hayne, Riordan, Thompson and Conner, 2019; Orygen: The National Centre of Excellence in Youth Mental Health, 2016; Parker et al., 2016, 2018; Wasil et al., 2020). These include the following strategies:

Psychoeducation: for example, providing information that normalises and validates the individual's experience, provides labels and descriptions of processes and symptoms that the individual may be experiencing, and promotes help-seeking behaviours.

Therapeutic alliance: the quality of the therapeutic relationship between a therapist and client is an essential component of face-to-face psychological therapies that is suggested to account for up to 30% of treatment outcomes (Lambert, 1992).
Therapeutic alliance in face-to-face settings includes relational elements such as empathy, encouragement and acceptance (Tremain et al., 2020). Translating the benefits of therapeutic alliance to digital interfaces by creating a 'digital alliance', such as through human support or through automated messaging (e.g. empathetic feedback, reminders, praise, and suggestions of other appropriate content) appears to improve user engagement and adherence, particularly among users with low motivation (Henson et al., 2019; Tremain et al., 2020); this in turn has been suggested to improve user outcomes.

Relaxation and mindfulness: mainly targeting anxiety and depressive symptoms, respectively.

Behavioural activation: refers to the setting of tasks, goals and routines that aims to increase the frequency that an individual engages in enjoyable activities as well as activities that provide a sense of accomplishment/mastery. This is important for addressing the behavioural withdrawal that often co-occurs with low mood.

Cognitive therapy: self-monitoring, cognitive restructuring techniques and problem-solving.

Interpersonal relationships: communication and problem-solving skills to improve relationships.

Sleep hygiene and physical activity: to improve these aspects of wellbeing and impact mental health.

Problem solving interventions: approaches to systematically identify and address key problems.

The extent to which these components of evidence-based therapies are used in existing digital mental health tools varies greatly.

International research suggests that strategies that are offered most frequently in mental health apps include: mindfulness, screening/assessment tools, crisis management, stimulus control (contingency management), psychoeducation, relaxation and meditation (Wasil, Gillespie, Patel, et al., 2020). Meanwhile, fewer apps focus on content pertaining to cognitive restructuring, behavioural activation, exposure, problem-solving and self-monitoring (Wasil et al., 2020; Wasil, Weisz, and DeRubeis, 2020).

While there is currently limited evidence for the effectiveness of standalone self-help micro-tools, micro-tools may provide therapeutic benefits such as creating opportunities for improvement and moves towards change (e.g. increasing awareness of supports and resources available). These steps may contribute towards hopefulness, help-seeking and, ultimately, contribute to larger mental health gains.

What works: Māori and indigenous research

Findings from scientific studies are largely based on research involving concepts from 'western' cultures. Research from and with Māori and other cultural groups is critical for Te Hiringa Hauora goals of increasing wellbeing for all, as highlighted in other sections of this report.

Indigenous and minority group leadership and/or partnerships are required. In delivering culturally informed models of care, interventions must be informed by the values, needs and resources of Māori and of minority groups in Aotearoa New Zealand.

Socially connected approaches are needed, rather than health being viewed narrowly and as solely being the responsibility of the individual (Parker et al., 2018; Shepherd et al., 2018).

Holistic approaches are key. Factors such as religion or spirituality; cultural identity and connectedness; relationships/whānau, whanaungatanga; belonging/inclusion as well as freedom from discrimination and racism, are important aspects of mental wellbeing for everyone, and explicitly so for Māori and Pasifika communities (Cormack, Stanley and Harris 2018; Ataera-Minster & Trowland, 2018; Russell, 2018). Such contextual factors need to be reflected throughout the messaging and the strategies used in digital mental health tools.

Utilise indigenous values and models of healing. Diverse and rich models, traditions and contemporary practices are available within Māori, Pacific and other cultures. In Māori contexts, pūrākau, whakataukī and implementation of Māori values are central. Mahi a Atua is an example of an effective therapeutic framework using pūrākau with tāngata whaiora (Kopua, Kopua & Bracken, 2020).

Increasing human-to-human support and creating a sense of community are therapeutic processes that offer promise. For example, developing a complementary set of tools, alongside individual self-help tools, that have a focus on equipping people with skills to help others (e.g. a friend or whānau member) who are experiencing mental health difficulties. Such initiatives are being trialled with encouraging results (see Bernecker, Caporale-Berkowitz, Wasil & Constantino, 2020).

Digital tools have been developed and evaluated with Māori and with other indigenous or minority communities. To date this evidence is promising: some tools have been shown to be appealing and/or effective in small trials (Reilly et al., 2020; Toombs et al., 2020). Examples to date have included digital tools based on culturally important values, culturally relevant content and graphics, meaningful language and therapeutic processes, and engagement of families, as well as addressing concerns such as password protection (Firestone et al., 2020; Mairs et al., 2020; Ni Mhurchu et al., 2019; Reilly et al., 2020; Toombs et al., 2020; Povey et al., 2016; Shepherd, 2011; Shepherd et al., 2018).

What works: recommendations and considerations

Make use of clinical evidence, cultural evidence and ensure access to other modes of treatment

Most currently available *standalone* apps and online tools have not been tested in clinical trials (Wang et al., 2018; Weisel et al., 2019). Of the publically available apps for anxiety or depression, about half report an evidence based framework ('evidence informed'), and about 10% of these have been tested (Marshall, Dunstan and Bartik, 2020).

Many tools have not been developed or trialled with Māori or other indigenous communities or with diverse communities.

Therefore, it is important to ensure that digital therapies for mental health are:

- at least *informed by* clinical and cultural evidence and ideally have been *tested or evaluated*, including with priority populations; and
- are *supported by* access to other services including professional mental health review and support. This will allow the addressing of differing needs across levels of severity.

Build on local and international expertise

There are Māori and Pacific digital mental health providers and experts. In addition, there are research centres in Australia, the United States, New Zealand, and elsewhere that regularly review the evidence base of their digital mental health tools. Learning from or collaborating with these groups of experts could help Te Hiringa Hauora maximise the impact of their work.

Ensure support groups and forums are safe

Many sites use 'support group' and 'forum' functions to foster online communities where members can discuss their experiences, but not all of these are moderated. There is evidence to suggest that incorporating social support functions in digital interventions can be beneficial in fostering a sense of connectedness, cooperation, relatability and accountability (Tremain et al., 2020; White & Dorman, 2001). However, support group/forum functions that are not moderated pose the risk of creating online spaces where mental distress may be exacerbated through harmful processes (e.g. co-rumination, online bullying of other members, pathologising of normative states of development and wellbeing) (Ohannessian, Fagle and Salafia, 2020; Rose, Schwatz-Mette, Glick, Smith and Luebbe, 2014). Social support and online forum functions for digital interventions are likely to work best when they are moderated and monitored by a trained mental health practitioner who can identify and follow up on indicators of deteriorating wellbeing or inappropriate use and can monitor group processes such as co-rumination amongst members and potential of pathologising of normative states of health, development and wellbeing.

Question Set 3: Key implications

- Ensure tools are rapidly helpful, trustworthy, easy to use, appealing to priority audiences and offer follow through.
- Prioritise both external triggers and meeting internal needs (e.g. advertising and rapid helpfulness with low mood).
- Ensure digital tools are informed by clinical and cultural evidence.
- Ensure digital tools are complemented by prevention and population health approaches and by access to more intensive services.
- Ensure that there are high quality tools that address critical areas for Māori and Pacific wellbeing.
- Ensure that chat functions are moderated.

Question Set 4:
Searching and use preferences

Te Hiringa Hauora asked a series of questions about how users search the internet and find and use tools. Specifically:

- How do people search and what search terms do they use the most?
- How do people usually find digital tools – through coming across them or active searching?
- What range and mix of digital tools are people using?
- Do people prefer to access a digital wellbeing tool through a generic or indirect doorway (e.g. sleep, wellbeing) or a more specific and direct doorway (e.g. depression, anxiety)?
- What are the usage patterns for different types of digital tools?
- What makes people want to explore, stay or return to digital tools?
- When do people like to be nudged to return to a digital tool – or not?
- Who prefers to use digital tools privately and who prefers to share the experience with an online group, their whānau or community?
- What helps people to trust a digital tool (e.g. do they trust government or commercial branding)?

Many of these questions relate to rapidly changing behaviours and preferences and are likely to be very different for different people and when they are in different situations or contexts.

The questions are not well covered in the peer-reviewed literature. Here we have provided themes from available literature and from our community research. As internet use and preferences rapidly change, it will be valuable to keep monitoring preferences in the future.

4.1 How do people search and what search terms do they use the most?

Te Hiringa Hauora analyses provide some key insights into how people search and which terms they use (see also Question Set 1). These analyses demonstrate excellent reach and recognition for depression.org and the Lowdown. For example, depression.org was accessed by approximately 10% of New Zealand's population in 2020 (Te Hiringa Hauora & Aro Digital, 2021), an extraordinary achievement for a health website. Of these users, most arrived via a Google search and a further approximately 26% arrived via social media and/or display (Te Hiringa Hauora & Aro Digital, 2021). The reach of depression.org and The Lowdown are supported by multiple links to these sites from other domains, high public recognition, search engine optimisation and paid advertising. These data suggest that depression.org and The Lowdown are aligned with how large numbers of people search at present.

Current search terms: Available data suggest that when searching for 'mental health' or 'wellbeing' supports, people often use problem-focused terms. Some of these are quite clinical, for example, Google Trends data indicate the most searched terms in 2020 in the mental health subject area were depression, major depressive disorder, anxiety, symptom, and panic attack. Breakout topics (terms where searches increased the most rapidly) during the last year included stress, coping, suicide, sadness, and motivation. In contrast, Māori and Pacific and adolescent advice suggests that searches will also include terms that are likely to be more linked to specific issues or interests and less linked to symptoms or pathology (see also Question Set 1).

How people search and the terms they use are likely to change over time and vary among different groups. Ongoing monitoring of data will be required.

There are other important emerging themes, about where and how people search.

Young people (and adults) often do not search 'the internet'. Rather they search YouTube, or social media such as Instagram or TikTok, follow a link on their social media feed, or follow a subject, hashtag or influencer (Harris et al., 2021).

For example, in our research for this project, a 26-year-old Pākehā male said:

> *'I would search YouTube. It is more friendly and less overwhelming than doing a Google search and reading websites. You find a person or a video you like…Then you can get other videos recommended that suit you. It is easier and more personal than searching the whole internet.'*

A 19-year-old, Māori female said:

> *'I would find someone on YouTube or social, then you can follow them and new content keeps coming up.'*

Others report they would look at links or tools on sites that they already visit and trust. For example, on school, iwi, sport, church or community pages and websites. This point (of looking on platforms or sites that you already trust) was suggested multiple times by young adults, as well as Māori and Pacific advisors. Older adults may also find and trust links shared with them by people that they know, for example via Facebook or health groups or other communities.

On app stores, personalised recommendations ('suggested for you'), ratings, price and reviews are key. While people can search by topic, it is challenging to search app stores other than by price, device or ratings.

4.2 How do people usually find digital tools – through coming across them or active searching?

People may find or come across digital tools by:

- searching the internet;
- searching YouTube or a social media platform;
- searching within a portal or directory;
- following links and promotions on sites they frequent;
- following memes and shared content;
- online or in-person recommendations and referrals; and
- searching app stores.

At present, internet searches are the main way visitors to depression.org come to the website (Te Hiringa Hauora & Aro Digital, 2021). However social media and app stores are particularly popular among young people and are likely to continue to increase in relevance. Importantly, social media, advertising and links on other sites may bring users who would not otherwise search for tools.

In 2020, new users accessed depression.org through internet searches (38% organic and 36% paid Google ads). Direct searches used mainly negatively framed terms, such as 'anxiety', 'depression' and 'stress' (Te Hiringa Hauora & Aro Digital, 2021).

Users also find digital tools via promotions on their social media feeds or websites that they visit. These can be driven by algorithms and can target highly specific demographics. Te Hiringa Hauora data suggests that social media channels are important: The Lowdown Facebook page had over 30,000 followers and social media was particularly important in reaching young adults and rainbow groups in the Small Steps campaign (Te Hiringa Hauora & Kantar, 2018).

Common strategies to find apps are to search within Apple and Google stores. Many users will only search the first few apps or will browse reviews of popular apps. Other common sources include recommendations from social connections or health providers and advertisements on social media platforms (Nicholas et al., 2015).

Reports from SPARX computerised therapy for adolescents suggest that about half of users are referred by an adult at school (such as a school guidance counsellor) and hits increase with news media coverage that school staff and parents might see (Lucassen et al., 2018). Likewise, Te Hiringa Hauora data suggests that campaign strategies via television and online media channels were successful at increasing awareness of depression.org (Te Hiringa Hauora & Kantar, 2018). These insights highlight the importance of public relations and the use of champions.

Ways to reach us: Information from focus group and interview participants

Our focus group and interview participants reported that the best way to reach them if they were not already on a website would be to reach out proactively, rather than relying on them to search.

This included:

- Word of mouth and community-based promotions, including via friends, family and community or church leaders. This was recommended by 100% of Pacific participants.
- Recommendations by school staff, counsellors and health providers were seen as important and influential.

- Te Hiringa Hauora or health agency social media channels, which are updated regularly.
- Via Māori, Pacific and other social media influencers. This was suggested by participants in all demographic groups and was very frequently suggested by Māori and Pacific participants. For example, an experienced Māori digital health expert suggested:

  "Work with Māori and Pacific influencers whose values are consistent with the message. Someone who can clearly articulate what young people feel in their language."
- A Māori woman said:

  "Using both popular and expert influencers is important. For example, Anika Moa or Stan Walker, but paired with an expert like Hinemoa Elder or a doctor or group to show it is legitimate."
- Social media and online advertising.
- Working with social media providers to ensure automated pop ups or messages are activated if people are posting concerning material on social media.
- Other media advertising including outdoor advertising.

One young adult participant summarized these themes concisely:

"Online help should be live. Coming to me. By people I trust."

4.3 Do people prefer to access a digital wellbeing tool through a generic or indirect doorway (e.g. sleep, wellbeing) or a more specific and direct doorway (e.g. depression, anxiety)?

There is relatively little literature on this question. Our Māori, Pacific and other participants, reported that it is important to provide both direct (searching particular mental health conditions or symptoms) and indirect (searching general well-being concerns) pathways. Each were considered useful and to serve different purposes:

- Indirect pathways. Many participants preferred a general wellbeing focus (e.g., targeting mood, everyday stressors and sleep) with positive wording. General wellbeing tools were often a gateway to identify coping and preventative strategies. People preferred to share tools that used indirect pathways with others.
- Direct pathways. Participants also wanted to be able to search for information and strategies related to specific topics (e.g., conditions, symptoms) and to easily find help when needed. Some people noted that direct pathways had the potential to be limiting, stigmatising or confronting. However, others suggested that direct pathways helped to validate how they felt by labelling their difficulties.

This is consistent with information outlined in other parts of this report; many people do search specifically using clinical mental health terms and yet for others it is quite the reverse.

Te Hiringa Hauora might wish to consider webpages or tools that can be accessed via terms related to wellbeing, terms related to specific issues and challenges such as sleep, worries or relationships, AND terms related to depression, anxiety or distress. This would make good use of opportunities offered by the internet.

4.4 What range and mix of digital tools do people use?

People use a broad range of formal and informal digital tools to support their wellbeing. By 'formal tools' we mean digital tools that are explicitly created for mental health or wellbeing, while 'informal tools' are those that are not created for this purpose but are used to support health and wellbeing. Research suggests:

- The literature and our community research are highly consistent, both highlight that people use **a mix of tools, often trying out many relatively briefly.** These patterns are quite different from processes of accessing clinical support. In part, this is due to barriers to online tools being very much lower than barriers to accessing clinical services (Baumel, Fleming & Schueller, 2020).
- For teenagers at least, **informal tools** are more widely used than tools that are explicitly labelled as for mental health (Christie et al., 2018; Pine et al., 2020).

The range of digital tools that people use include:

- **Sites, programmes and tools that are not designed specifically for mental health or wellbeing**, such as music or movie streaming services and games. Diverse New Zealand adolescents report

using these to lift their mood, have fun or connect when they are down, depressed or stressed (Christie et al., 2018; Pine et al., 2020).

- **Social media, forums and chat functions**. Adolescents describe reaching out to chat or post on a social media profile or within online games as one of the main ways that they use the internet for mental wellbeing (Christie et al., 2018; Fleming, Merry, et al., 2019). This may be important among adults too. For example, in our early consultations a Māori woman in her 50s described how her family members would use social media more than formal tools for mental wellbeing support: *'In my own family, some people under 40 do post personal stuff in Facebook and they get a lot of support through that… the younger ones, they have their private chats on Snapchat/Instagram, and they usually would get support from that.'*
- **Websites that are designed for mental health and wellbeing**. As outlined previously, depression.org and The Lowdown are well known New Zealand sites with high levels of recognition.
- **Apps**. There are millions of users of a small number of mental health and wellbeing apps. Local apps include Mentemia, Clearhead, SPARX, Ol@ Or@, Quest|Te Whitianga and Play Kindly. According to the app store, in March 2020, Mentemia has have over 10,000 downloads, Clearhead and SPARX have had over 1,000 downloads, and the others have had lower numbers of downloads.
- **Evidence-based e-therapies** are available in Aotearoa New Zealand; however, the number of users and completions are often not publicly reported.

Barriers to opening free websites or downloading apps are low compared to the efforts required to access mental health support services (Baumel, Fleming & Schueller, 2020). To reach a therapist or mental health service may require referrals, meeting assessment criteria, significant wait times, traveling to appointments, and building relationships with specific agencies and individuals. In contrast, users can visit multiple sites or download multiple apps in moments.

Additionally, online behaviour is quite different from accessing face-to-face support. Visiting a service may involve 50-minute visits on a weekly or similar schedule; in contrast, users can visit sites for seconds, scroll through reviews, and try out multiple sites or apps. Further, online users can create their own set of supports. For example, chatting on social media, following YouTube creators and visiting websites or using apps.

4.5 What are the usage patterns for different types of digital tools?

As highlighted in Question 4.4, users can visit or open online tools quickly and easily. Further, there are thousands of websites and apps for mental health and wellbeing; hence users may be choosing from a broad range of options.

Te Hiringa Hauora data shows high numbers of hits of depression.org and thelowdown.co.nz, with some pages, such as self-tests, having particularly high use (Te Hiringa Hauora, n.d.-b, n.d.-a). Usage patterns for other New Zealand tools might be best explored by requesting analytics or metadata from other providers. As outlined in Question 2, there are many New Zealand sites and tools funded via Health or other government agencies. Even high-level data about reach and user retention from varied sites might offer useful insights. Numbers of downloads of specific apps can be explored in real time via app stores.

International literature highlights that drop off rates for e-therapies such as computerised CBT and for apps are high, with much higher numbers of hits or registrations than completions. As outlined in Part 1, this is the case even with co-designed tools and with evidence-based e-therapies. This pattern is common to apps and websites globally.

While it is easy to view digital tools as an updated version of face-to-face interactions, user behaviour suggests these are quite different experiences. Shopping around, browsing sites and reviews, and scrolling rapidly through options are common online behaviours. Online users might pick up small kernels of value on brief visits, actively select places where they will get support, and return to a handful of these.

High rates of opening but very rapid drop off has been reported for many digital tools. For some this may be appropriate, e.g. a brief information-based tool may only offer a few minutes of material. In contrast, meditation apps may be designed to support a lifelong practice.

Apps with substantial meditation or mindfulness content are among the most downloaded apps globally (Baumel et al., 2018; Carlo et al., 2019). Notably, nearly 50% of ongoing app use for depression or anxiety is attributed to just two apps, Headspace and Calm. Each of these has an ongoing mindfulness/meditation practice focus and an ongoing subscription model (with subscriptions in the region of US$100 per year); each also has substantial marketing and offers regular updates. Apps with mindfulness/meditation and/or significant social support functions appear to retain users most (Baumel et al., 2018).

4.6 Who prefers to use digital tools privately and who prefers to share the experience with an online group, their whānau or community?

As outlined in some early sections of this report, most mental health apps, websites and therapies target individual users seeking help with their own challenges. There are exceptions, such as apps and therapies that target parents (e.g. Play Kindly, see facebook.com/ECM2412) or parents and children (e.g. BRAVE Online, brave-online.com). However, most are designed primarily for individual use. Māori studies have repeatedly demonstrated that whānau wish to be involved (Shepherd et al., 2018).

Ol@ Or@ is an Aotearoa Māori and Pacific-focused app that mainly targets physical activity and physical health. It was co-designed with communities as a tool to support community goal setting and community behaviour change (Verbiest et al., 2019). There was good community interest in this approach, although the use of it in a trial did not demonstrate measurably improved outcomes (Ni Mhurchu et al., 2019; Verbiest et al., 2019). Ol@ Or@ is available on the app store and has had over 500 installs as of March 2021. There is ongoing research in this area, for example, Dr Tupa'ilevaililigi Ridvan Firestone is planning to explore opportunities to use or develop Ol@ Or@ with rangatahi Māori (see https://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uuid=6B746356-4CE2-49E3-9853-5622E1E05634).

Our focus group, interview and survey participants suggested that most people would prefer to use digital wellbeing tools in private, but they also saw value in having optional shareable content, especially for Māori and Pacific participants.

We asked survey participants, '*When you use apps or websites for wellbeing, would you rather use it on your own (privately), have the option of an online group or chat function, use it with someone from your whānau or community, or have pages or links you can share? (Select as many as apply)*'.

Responses were as follows:

- Use it on my own (privately): 96% of survey participants, including 94% of Māori and 92% of Pacific participants
- Optional online group or chat function: 20% of survey participants, including 27% of Māori and 15% of Pacific participants
- Use it with someone from my whānau or community: 10% of survey participants, including 18% of Māori and 31% of Pacific participants
- Have pages or links I can share: 13% of survey participants, including 18% of Māori and 15% of Pacific participants.

Focus groups and interviews suggested value in private use for most participants. Participants suggested that if they were in a difficult state, some would want to be independent and away from others, wishing to work through personal thoughts and seek information on their own. Participants highlighted that users need to know that their mental health information is kept private.

Many said that information about how to support others is important and that there should material that users can share with people they are supporting, or who might be supporting them.

Some participants were interested in options to share their own goals, progress and tracking information with others (e.g., health professional, friends, family or online community). However, others worried that this could create a 'competitive environment', or make some users feel like a failure if they are not doing well. Hence, sharing and tracking features like this must be created thoughtfully and with diverse user input.

Two key advisors from Māori and Pacific communities reported that they would want to introduce an app or tool in a group setting, for example a youth group or class. They advised that working through material in groups could demystify content and allow users to return later and thought that people in their communities would be very much more likely to use tools if they were introduced in this way.

Many participants, including younger and gender diverse participants, highlighted the importance of anonymous communities or groups. They said that, when such groups work well, they can help people support each other, feel heard and connect with others in ways that do not breach their privacy.

These mixed findings, highlight the need for tools which can be used privately, and the need for optional sharable content.

4.7 What makes people want to explore, stay, or return to digital tools?

This question is explored in Question Set 3 and multiple aspects of this report. Key themes include:

- recommendations, referrals and other triggers;
- free availability;
- availability across different platforms;
- knowing that a tool is trustworthy;
- being very easy to find and begin;
- visuals that are appealing and relevant;
- the tool is rapidly helpful or enjoyable;
- content that is consistent with user values and world views;
- choice and depth of content;
- human interaction around or within the tool; and
- variability of experience with good feedback loops and choice architecture that supports positive/easy decisions.

A 2020 analysis that mined 13,549 reviews of mental health apps, reported that users placed very strong emphasis on the user interface and user friendliness. Functions that allowed users to choose options or adapt features were rated highly. Poor usability was the most common reason for discontinuing mental health apps. Lack of content variety, lack of personalization, lack of customer service, and security and privacy concerns were other primary reasons for discontinuation (Alqahtani & Orji, 2020).

The Youth19 study provided some Aotearoa New Zealand data from secondary school students. In total, 980 13–18-year-olds answered an open text question: 'How could mental health and wellbeing sites and apps be more useful?' Their responses are summarised in the box below.

Background:

Making mental health and wellbeing websites more useful: views from Youth19 participants

(comments from 980 13–18 year olds)

Make sure sites and apps are:

- endorsed by experts/doctors/government or have some kind of quality mark;
- easy to find: 'provide a single, trustworthy site, so people do not have to look around for the answer'; and,
- trustworthy, with clear data security and privacy.

Ensure content is:

- relatable (e.g. stories);
- reliable (e.g. from professionals); and,
- relevant (e.g. personalised).

Offer follow through such as webchat or support: *'if the website says you are depressed THEN HELP US.'*

4.8 When do people like to be nudged to return to a digital tool – or not?

Nudges and notifications can support users to return to and benefit from a tool. At the same time, frequent notifications can divert users' attention from more important things and exacerbate disengagement. Notifications regarding mental health interventions might also cause rumination (repetitively returning to negative thoughts) or embarrassment (for example, if someone else picks up the phone).

In several studies, notifications for mental health tools have been shown to increase engagement, particularly where these are personalised. However, these effects are not high, and do drop off rapidly over time (Bidargaddi et al., 2018).

There are several models for designing nudges and notifications, these include:

- inviting users to select when and how they would like to receive notifications;
- offering the ability to personalise and turn on or off notifications; and
- using external prompts and heuristics that will lead users to make the decision you're hoping for. For these, it is necessary to map out the specifics of the interaction you're aiming to achieve. The Purohit and Holzer's (2019) modification of Schneider et al. (2018) framework provides a useful approach.

Our community research suggests that optional and modifable nudges and reminders are important. Some participants did want reminders, and said these can be helpful for keeping on track. They did not want these more than about once a day or once a week depending on the purpose. They did want to be able to turn the notifications off and to modify them (e.g. select term of address, time of notifications etc).

4.9 What helps people to trust a digital tool (e.g. do they trust government or commercial branding)?

While many people use digital tools, others are sceptical that digital health solutions will be helpful are uncertain which ones to trust, or are concerned about data ownership or privacy.

Trusting that digital tools might be helpful

Digital tools remain a relatively new approach for addressing mental health and wellbeing for many people. Many people find getting help for mental health uncertain and difficult. By the time they have decided to address the subject, they may be expecting other models or forms of delivery such as face-to-face interventions. Many communication efforts around digital tools have focused on promoting specific websites and apps.

In addition, many health and social service providers express discomfort about digital tools. Concerns are often relatively universal to digital tools, for example:

- Will this replace human contact?
- Is this clinically safe?
- Will this add to my work load?
- Which ones do I trust?
- Don't people already spend too long on the computer?

However, communication activities in Aotearoa New Zealand often promote the use of a specific tool or site. Arguably there is also a need to communicate to the public about the value of digital tools. For example, highlighting that these can help and that there are a range of quality options.

Knowing which tools to trust (government or commercial branding)

Knowing which tools to trust is frequently identified as a problem by both users and providers. There is little literature about which types of branding or endorsement work best for users.

We asked about this in our community research. Our survey suggested that:

- Commercial branding was very unappealing to all groups of participants (endorsed by 0 to 5% of each demographic group).
- Ministry of Health/ health agency branding or recommendations by doctors or health care professionals were generally appealing.
- For all our survey respondents combined, 'Ministry of Health or a health agency branding' was the most appealing (endorsed by 72% of the total population) followed by 'recommended by my doctor, therapist or a professional I know' (64%), 'recommended by doctors or health care professionals' (61%), 'recommended by a friend or family member (56%), and government logo message or branding' (52%). Other options were selected by less than 50% of all participants.
- Among Māori survey participants, 'recommended by doctors or health care professionals' was the most popular (70%), 'Ministry of Health or a health agency branding' and 'recommended by my doctor, therapist or a professional I know' was next (each selected by 64% of Māori survey participants) and 'government logo, message or branding' (55%). Other

options were selected by less than 50% of all participants.

- Among Pacific participants, 'Ministry of Health or a health agency branding' was the most appealing overall (endorsed by 72% of the total population) followed by 'recommended by my doctor, therapist or a professional I know' (64%), 'recommended by doctors or health care professionals' (61%), 'recommended by a friend or family member' (56%), and 'government logo message or branding' (52%). Other options were selected by less than 50% of all participants.
- Government logos or branding were less appealing for some. Some Māori focus group or interview participants said that government branding would be unappealing for some users and so should appear lower down or in a smaller size on sites.
- Our interview and focus group participants reported high levels of interest in tools and sites shared by friends, family, or community members or social influencers. Recommendations by friends or family members were very important among Pacific survey participants (85%), and important, but not as important as health recommendations for most other groups. A personal endorsement by a credible provider was seen as useful, with 'Dr Ashley Bloomfield' being the most highly recommended by university students in some groups.

While these responses were diverse, focus group and interview participants were clear that indications of legitimacy and credibilty were important and they wanted to know where a site was from. Trust of commercial providers was low. Most groups highlighted that health agency branding and endorsements or recommendations from those that you respected were helpful.

Data ownership and privacy

Key reasons for lack of trust in digital tools include lack of transparency about data use, ineffective communication about data use, or a combination of these. Data sovereignty and effective communication of how data will be used is important for trust.

One solution to this is 'user-owned' data, such as the approach being used by eHealth stakeholders in Europe and patient owned medical records (HIMSS Analytics, 2019). User-owned data can be consistent with the principles of Māori data sovereignty (Hudson, 2016; Jansen, 2016; Te Mana Raraunga, 2018) and the Ministry of Health's vision that 'New Zealanders are "health smart" – they have access to, and understand, all the health information they need' (Ministry of Health, 2018). Additionally, placing guardianship of data with the individual may increase trust that it will not be misused (Dobkin, 2018).

It is important to note that having user-owned data does not absolve a service provider of their responsibility to maintain individuals' privacy, security and confidentiality under the recently revised New Zealand Privacy Act (Ministry of Justice, 2020). Instead, it suggests a pathway by which the user can exist on equal footing with their digital service provider regarding the control and management of their data.

Question Set 4: Key implications

These questions about searching and use patterns underscore the importance of:

- recommendations, referrals and other triggers;
- placement and promotion of tools, e.g. via social media, campaigns and presence on sites and media that users already frequent;
- diverse search terms and both mental distress and non-clinically focused ways into websites and apps;
- free availability across different platforms;
- knowing that a tool is trustworthy, endorsed or mandated, e.g., with health branding;
- excellent usability;
- visuals that are appealing and relevant;
- rapidly helpful or enjoyable tools;
- content that is consistent with user values and world views;
- choice and depth of content;
- human interaction around or within the tool; and
- privacy and data security.

There appear to be particular opportunities to make strong use of social media and interactions as well as potentially offering material for whānau or community use.

Question Set 5: Measuring Engagement and Impact

5.1 How do we measure meaningful engagement?

Sufficient use of a tool is needed for meaningful impact. This varies depending on the purpose of the tool. For example, a self-test might be useful within one or two minutes, while e-therapies are often designed for six or more 30- to 60-minute sessions, and some mindfulness apps are designed for a lifetime of practice.

Brief engagements are typically associated with less change in symptoms, however even brief engagements might offer users hope – the idea that there is help when they want it or reassurance that they are not alone.

In recent years, purposive brief interventions have been developed to fit ways that people use the internet (e.g. in small frequent bursts) while offering meaningful changes. Brief interventions can be conceptualised as part of a kete or tool kit of options that people might use. There are useful models proposed using micro-interventions (e.g. Baumel et al., 2020), single session interventions (e.g. Wasil, Taylor, et al., 2020), and brief interventions (Orygen: The National Centre of Excellence in Youth Mental Health, 2016).

Measuring engagement

The term 'engagement' can refer to a psychological sense of immersion, but often refers to objective measures such as frequency and duration of use. The latter is the focus here.

Automatically gathered metrics

Websites and apps have slightly different metrics for engagement. Of the many engagement metrics for websites, average time on page, bounce rate and average session duration were ranked most important in 2019 (Databox, 2019b).

- Average time on page: the average time a visitor spends on a specific page. Google analytics excludes exit pages and bounces in its calculation of this metric, (Metric HQ, 2021). Average time spent on a page can be indicative of how engaging content is.
- Bounce rate: the percentage of all sessions in which users only viewed one page before leaving the site (Google Analytics, 2021)
- Average session duration: the average amount of time spent on the website across all pages visited. In Google Analytics, this is calculated by dividing the total duration of all sessions over a set period by the total number of sessions for that period. For Google Analytics to calculate the time spent on the last page visited, the user must take an action on that page. For example: If a visitor clicks on a post, finishes reading it, then clicks onto the next post and begins reading, unless the visitor also performs an action on the

page with second post before leaving the site, it will not register as a part of the session duration (Databox, 2019a).

Mobile app engagement measures differ slightly, but share common principles with website engagement measures (Anurag, 2017). These include:

- number of downloads;
- total number of new and old users, which can be broken down into daily, weekly, or monthly active users;
- active app users – when the number of active app users is greater than the number of new users, it indicates that there are recurring users in the app;
- time in the app – the time a user stays on the app. This is a function of session frequency and session length; and
- retention – percentage of users that have returned to the app in the last 30 days.

Other opportunities to measure engagement

These automatically gathered data provide information about use but offer little guidance as to whether tools are engaging target groups. They can be supplemented by other forms of research, such as:

- data gained from activities within the site. For example, mood quiz scores can be analysed for Te Hiringa Hauora sites, giving an indication of the level of need expressed by users;
- data gained through registration. A registration process allows opportunities to explore uptake and retention by those in specific groups. For example, by age, ethnicity, referral agency, gender and level of symptoms;
- data from social media channels. For example, likes and shares;
- checking reviews and help requests;
- comparative analyses within sites. For example, comparing open rates and retention on pages within the site, comparing data for tools on the same platform, and comparing data when pages are offered with minor changes ('AB testing');
- comparative analyses across sites. For example, comparing reach and retention with other sites with similar goals;
- micro-surveys on the website;
- directly approaching target groups about their use via surveys, workshops, panels, focus groups or interviews; and
- observational methods such as talk-aloud interviews and direct observation.

Te Hiringa Hauora has undertaken multiple analyses of engagement with its sites. Perhaps the less explored opportunities include:

- **Rapid monitoring of minor updates,** for example via utilising AB testing (e.g. randomly offering two different layouts of the same page for a short period and comparing retentions), or using 'optimization teams' who closely monitor use and adapt interventions and communications around these as described by Taylor and others (2020).
- **Comparative analyses across sites**, for example comparing reach and retention with other sites with similar goals to learn from successful strategies.
- **An ongoing programme of research** about target groups use and preferences.

5.2 How do we best evaluate the impact of digital tools?

For digital mental health tools to enhance the wellbeing of communities they need to:

Reach the target population. That is, have enough of the target users find or come across the tool in a way that enables them to use it. Reach can be supported by campaigns, advertising, human support and thoughtful placement of material on diverse sites as discussed in other parts of this report.

Be effective in supporting wellbeing or addressing problems. That is, the tools need to work or 'make a difference'. Typically, mental health tools are tested in clinical trials. These usually target measurable reductions of symptoms in relatively small groups of users. When tools are available to large numbers of people, smaller or more upstream changes (such as knowing when and how to seek help) are also important.

Engage or be used by the target users sufficiently for impact. This will vary by the target of the tool as outlined in Question 5.1.

There are many ways to evaluate impact. Common models include:

- **Randomised controlled trials.** These are crucial for knowing if a tool has a measurable impact on pre-specified problems under research conditions. To know if a tool has impact in a community, this information should be supplemented by information about how many target users are using the tool and how long they remain engaged with it.
- **Pre-post comparisons**. For example, looking at changes on measures for users before and after using a tool. This can provide valuable information, particularly if large numbers of people use the tool. While pre-post comparisons do not rule out placebo effects, effect sizes can be compared with those gained from other tools.
- **Evaluations can also be based on articulating a logic model** of how and where an intervention is expected to have impact, and then exploring or testing each step of this model.
- **Qualitative research** can provide rich understandings of how users use or experience a tool.
- **User surveys, user ratings and stakeholder perspectives** offer valuable insights into whether these groups consider that a tool is helpful.

Evaluating impact should be meaningful to the goals. For example, if Te Hiringa Hauora aimed to increase hope, increase knowledge of help options or increase ability to talk about mental health within whānau, then these should be the outcomes measured. In contrast, if the aim of the tool was a clinical one, for example, to reduce depression, then we should aim to measure changes in symptoms or diagnoses or improvements in recovery.

Evaluating impact should also be meaningful to the target users. For example, measuring outcomes that are important to target users, in ways that are acceptable and meaningful to them.

Macfarlane and others (Macfarlane A. & Macfarlane S., 2019; Macfarlane A., Macfarlane S and Gillon, 2015) have developed a **He Awa Whiria** or **Braided Rivers** approach for testing programme effectiveness. This values both scientific literature and Te Ao Māori. The empirical science brings rigour about causality and impact on measurable outcomes, while Te Ao Māori brings greater emphasis on partnerships with users, elements which impact engagement and effectiveness, and the varied effects that

the tool may have for users. A braided rivers approach includes each of these systems of knowledge, to bring meaningful partnerships and rich understandings.

Increasingly there are also **frameworks for evaluating apps and digital mental health tools** (e.g. Quintana & Torous, 2020). For instance, assessing aspects of intended use, funding, costs, privacy, data security, user engagement, user feedback and longer-term outcomes such as effects over time.

Question Set 5: Key implications

We recommend that:

1) Te Hiringa Hauora consider:

- Monitoring reach, e.g. via analytics and meta data as well as community research.
- Assessing effectiveness of included components, e.g. via clinical testing of e-therapies or micro-interventions or, at least, a robust review of the evidence that informs these.
- Assessing engagement among target users, e.g. via analytics as well as community research.

2) Te Hiringa Hauora consider evaluation opportunities offered via the He Awa Whiria or Braided Rivers approach as well as frameworks for evaluating digital mental health tools, such as that outlined above.

Question Set 6:
Synthesis Questions

6.1 Can we develop a well targeted digital tool that engages people across the 12 to 18 age span?

This is a period of rapid growth and change. Generally, in New Zealand, 12-year-olds are in intermediate school, while 18-year-olds may be in paid work, training or tertiary study. Typically, younger adolescents spend more time at home with whānau and attend compulsory health and physical education classes. In contrast, older teens spend more time with their friends and are more engaged in social media and or diverse work, education or community settings.

Aotearoa New Zealand research has highlighted differences in the preferences of younger and older adolescents. For example, many younger teens have been more open to mental health promotion interventions and expressed preferences for short clear messages and gamification, while older teens have expressed a desire for 'straight to the point' resources that support autonomy and choice (Christie et al., 2018; Fleming et al. 2019; Pine et al., 2020; Stasiak et al., 2019). Age differences are also highlighted in Te Hiringa Hauora data: for instance, The Lowdown Facebook site is appealing to a very specific age range, with 70% of fans being aged 18–24 and only 4% being under 18 years old.

These distinctions suggest that there are different opportunities for younger and older teens and one approach is unlikely to appeal across this age group. It might be more useful to target a specific group and:

- engage younger adolescents through families, schools, and mental health promotion; and/or
- engage older adolescents with a stronger emphasis on social media platforms and tools for dealing with peer or personal distress.

6.2 How do we best respond to the digital divide?

About 94% of New Zealanders were active internet users in 2020 (Hinton, 2021). However, a substantial proportion of minority groups have limited internet access and/or face digital barriers. These groups include Pasifika, Māori, non-Asian migrants and elderly populations (Grimes & White, 2019). Internet access is also lower among people with disabilities and those with lower income and less stable housing.

Digital barriers include lacking a device to access the internet, lacking memory space (e.g. on a phone, lack of space can preclude downloading large files such as apps), lacking data or WIFI, lacking private access, and experiencing barriers to finding and selecting good quality internet tools or those that are relevant to your community and preferences.

Hence, it is important to:

- **not rely on online approaches alone.** Internet based information should not be the only strategy that supports mental health and wellbeing. Other avenues such as addressing the determinants of mental wellbeing, community development, health promotion via mainstream media and accessible high-quality health and social services are also critical.
- **ensure those with limited internet access can access resources**. For example, ensuring resources can be accessed with limited data, older devices or limited memory.
- **support public access to online resources.** For example, via community hubs, libraries and other locations where people can access the internet and receive support to navigate online resources.
- **ensure there are relevant resources for all groups.** For example, language, messages and visual resources that are relevant and appealing to diverse communities.
- **make it easy to find trustworthy online resources.** For example, by providing endorsed or mandated resources in places that they can easily be found and recognised as reliable.

6.3 Should we focus on developing/procuring new or existing digital tools?

The evidence considered in this report highlights that key opportunities for increasing the impact of digital tools for increasing mental wellbeing and improving equity relate to improving the uptake of tools, especially in priority communities and improving usability of tools to allow sustained use. These concepts overlap with those highlighted in a recent report for the Australian Department of Health, in which PWC emphasised the need to **invest in enabling improved use of the technology**, rather than necessarily providing more digital tools. The authors advised that key barriers to enhancing the impact of online mental health interventions in Australia were not a lack of tools, but rather a lack of openness or confidence in using the tools; poor interoperability and referral processes; and poor usability (PWC, 2020).

It is our view that Te Hiringa Hauora might have greatest impact on mental health and wellbeing by:

- **Focusing on reach.** That is, ensuring digital tools are promoted by people and positioned in places where priority groups will come across them, know that they can trust them, and be interested in using them. Current evidence suggests that communications, community engagement and efforts to support reach should be a significant proportion of the investment in digital mental health.
- **Improving usability of tools.** Building new tools without excellent usability has limited value. Investment is needed in ensuring that key tools are immediately appealing, offer value very quickly and have excellent user experience.
- **Maximising the impact of existing tools.** There are a wide range of quality Aotearoa New Zealand websites and local tools. Generally these are promoted fairly separately. We recommend that Te Hiringa Hauora consider opportunities to improve the impact of digital mental health and wellbeing tools, e, via collaboration or joined up efforts. These might include communication about the value of digital tools, mutual website links, and/or the development of platforms that allow users to access multiple tools from a key reputable location.

Alongside these efforts, providing or developing tools that address specific gaps and needs is important. Promising areas or targets for specific development include:

- Tools that are based in Māori and Pacific models and world views. These have been highlighted as critical in the published literature and from our own community research.
- Mindfulness and meditation based interventions. Specific mediation and mindfulness apps have very high uptake and use including by priority groups. Our community research participants were interested in free tools with similar content. However, note that part of the success of these tools is likely to be linked to very intensive marketing, as well as excellent usability and simple yet extensive content.
- Tools targeting areas that are important for mental wellbeing and are less well covered by current tools. For example, sleep focused apps, content about interpersonal relationships, content about supporting others and other areas as highlighted in question 3.3.

The opportunities available via online approaches will continue to change, as will community needs and preferences. Te Hiringa Hauora currently has impressive use of key assets. Building on successes, growing community partnerships and continued use of high-quality information will be important for the unrelenting pursuit of wellbeing in communities.

Appendix 1: About us

This report was produced by the Digital Mental Health Lab, a newly established group in the Te Kura Tātai Hauora|School of Health at Te Herenga Waka|Victoria University of Wellington. Academic staff and students involved in this project are:

Associate Professor Terry Fleming School of Health (Co-leader). Terry (Theresa) has a background in youth mental health and in digital tools for improving mental health.

Dr Clive Aspin School of Health (Co-leader). Ngāti Maru, Ngāti Whānaunga and Ngāti Tamaterā. Background in policy and public health research with a strong focus on achieving equity for Māori and indigenous populations.

Associate Professor Anne Haase School of Health. Anne has a background in health promotion with a focus on physical activity and behaviour change interventions using psychology theory.

Dr Agnes Szabo School of Health. Agnes has a focus on the intersecting areas of health, ageing and immigration.

Helen Andreae School of Design. Helen has a background in interaction design and developmental psychology, and with a focus on how this area intersects with psychological and social aspects.

Dr Mary Dewhirst Mary is a clinical psychologist and a research fellow with an interest in digital tools for mental health.

Dr Victoria Chinn Victoria has a background in health promotion with a focus on women's health and empowerment.

Alana Haenga-O'Brien Alana affiliates to Ngāti Porou and Te Whānau ā Apanui. Alana is a clinical psychology trainee and has a focus on how rangatahi Māori understand wairuatanga related to their hauora and oranga. Alana is an advisor on this project.

Keenan O'Brien Keenan is a Kaiakiaki Māori Engagement Advisor at Te Herenga Waka|Victoria University of Wellington. He is an advisor on this project.

Niamh Whelan-Turnbull Niamh is a post-graduate student in forensic psychology and a research assistant for this project, focusing on Māori content in the report.

Dominique Kafatolu Dom is studying cultural anthropology with a focus on development and Pacific studies and is a research assistant on this project.

Russ Pine Russ is a practicing educational psychologist and PhD student working on digital tools for adolescents.

Maria DaRocha Maria has a background in computer science and data science.

Fabi Ormerod Fabi is a post-graduate student in health psychology and has a background in business and in online health coaching.

Kylie Sutcliffe Kylie is a clinical psychology trainee and PhD student. She is an advisor for the project.

Dr Mathijs Lucassen is a digital mental health expert with a focus on and with rainbow communities. He is based at the Open University, England.

Appendix 2:
Focus group and interview findings

We carried out focus groups and interviews, as described under 'Methods'. The research was approved by the Te Herenga Waka Victoria University of Wellington Human Ethics Committee (ID: 29200). There were 27 interview participants and 45 focus group participants, a combined total of 72 participants. Most participants were 35 years or younger, 60% were female, 54% were Māori and 17% were Pacific as shown in the table below.

High level themes for each of the eight key questions (shown as headings in bold, below) are provided. Overall, these themes are highly consistent with literature and analytics included in version 1 of this report. We have made additions under specific questions where new insights have been found and summarised these below.

We have added information under 'Key Themes: Māori' and 'Key Themes: Pacific' to reflect the findings that were highly important to Māori and Pacific participants. Note where differences by ethnicity are not specified, they appeared to be important across each of the groupings. As number are not large and participants are not randomly selected, we have not provided detailed analyses by demographic groups.

	Focus Groups		Interviews		Total (Focus Groups and Interviews)	
	Total Number	Percent	Total Number	Percent	Total Number	Percent
Total	45		27		72	
Female	24	53%	19	70%	43	60%
Male	21	47%	5	19%	26	36%
Non-binary	0	0	3	11%	3	4%
35 years and under	36	80%	20	74%	56	78%
36 years and over	9	29%	7	26%	16	22%
Māori	27	60%	12	44%	39	54%
Pacific	9	20%	3	11%	12	17%
Pakeha	7	16%	6	22%	13	18%
Other Ethnicity	2	4%	7	26%	9	13%

1. What are some the main things you do online?

Almost all participants described spending time online. Some participant's activity was highly concentrated, e.g. using the internet mainly for work, mainly as a way to communicate and connect, or mainly using it for entertainment.

- Entertainment: gaming, movies (Netflix, YouTube), music
- Social media and messaging apps
- New media
- Shopping
- Study, information and learning
- Work and business, including banking.

2. If you (or someone similar to you) were feeling stressed, worried, or down, would you use an app or access the internet?

Participants' responses were diverse. Some participants were clear that they would not use online tools if they felt this way, and instead would talk with whānau, pray, go outside, exercise or do other activities. This included but was not limited to Māori and Pacific participants.

Those who did use the internet when feeling stressed, down or worried, most often used online resources that were not created primarily for mental wellbeing, for example connecting with family and others on social media, gaming or watching movies 'to chill' or 'switch off a busy mind', or listening to music to feel better.

Some Māori participants reported that they might use self-help, healing or personal development apps or content provided on YouTube or social media channels, for example where this included nutritional information, spiritual development or exercise apps.

A minority of participants did actively search or use apps or tools created for wellbeing. This included connecting to others in their communities (for example via Facebook groups), searching symptoms, or using apps.

Participants indicated that they were in varied states when they used digital tools, this information is shown in Part 2, Question 1.2.

3. Which digital tools have you heard of or used?

We explored which resources participants preferred in focus groups and interviews. This information indicated high recognition of Depression.org and then use of a wide variety of tools. These findings were consistent with our survey findings. Participants expressed positive interest in the Small Steps approach. These responses are summarised in Part 2, Question 2.3.

4. What did people like and dislike about digital tools for wellbeing?

Participants from the focus groups and interviews expressed diverse likes. However, there were common themes of app or website features that were appealing. These were highly consistent with findings from local and international literature. Participants highlighted that digital tools must be:

- Personalised and interactive. Digital tools should be customisable to personal preferences, as YouTube channels and tailored social media feeds are. Users liked features such as personal tracking and feedback (e.g., sleep, mood) and wanted apps to be responsive to what they were looking for.
- Easy to use. Participants preferred tools with simple interfaces, were easy to navigate and had limited text. Being integrative with other commonly used tools, having a familiar layout and being able to use one tool for many strategies were important features.

- Straight to the point. Participants suggested tools should quickly produce a strategy or solution and not require people to work though or input a lot of information to get it. Important features were short videos, brief text and simple messaging.
- Relatable and relevant. Tools need to feel familiar to target communities. This is achieved through showing similar faces, relatable experiences and personal stories. Tools designed to the local context and accessible to diverse needs (e.g., language, audio) are also important. Seeing similar others share personal stories, connecting with anonymous communities that share experiences or using facts about their target group help to validate and normalise what people are feeling.
- Audio/visual features. Participants reported that apps and websites with audio and visual features were important for supporting relaxation and inclusivity. Users preferred features such as calming audio (e.g., soundscapes, music or voices), happy colours and relaxing videos.
- Free. Participants preferred tools that were free. Many participants were positive about the look and feel of Headspace and Calm but said that cost was a major barrier for these apps.

What did people dislike about digital tools?

- Advertising. Participants disliked ads, especially if feeling stressed. At minimum, people want a disclosure relating to why ads are included on a wellbeing app and overall, they wanted very few ads.
- Cost. Similar to the argument regarding advertising, charging people (both as base cost and premium schemes) to use a tool intended to benefit mental health was perceived as counterproductive and unethical. Cost was also a barrier to accessing the tool.
- Notifications. Participants reported that notifications could be overwhelming. Including an option to customise notifications was important. Messages should be simple, concise and tailored.
- Untrained or unmonitored forums/chats. Participants found it problematic when sites provided helplines, chat, or forums that were not moderated by professionals or monitored regularly. People had observed users' questions being left unanswered or replied to by other users which had not been helpful. There was a shared expectation that chats, and forums should have someone helpful at the other end to provide help or advice.

5. What might make apps and sites for wellbeing to useful to people like you?

We asked participants how apps and sites could be improved or made more appealing for them or people like them. Key themes were:

- Ensure tools or links are on sites and channels that they already frequent online (e.g., popping up on their social media feed, on their school or church website, or on a banking or shopping site that they use).
- Invest in PR, champions or support by people that they know, respect or follow.
- Invest in advertisements or sponsored content on social media. Pacific young adults particularly highlighted that Tiktok and Instagram would be valuable.
- Ensure tools are free and have excellent appeal and usability (attractive, easy to open and easy to use).
- Ensure tools are relatable. Pacific, Māori and sexuality and gender diverse participants stressed the importance of having people or faces 'like me', content that is relevant to me, values that fit for me, language and wording that is inclusive and welcoming to me.
- Rapidly helpful/useful.
- Holistic rather than being only for specific levels of need or narrowly defined mental

wellbeing needs. This was particularly stressed by Māori and Pacific participants.

- Personalised and interactive. Participants highlighted that digital tools should be customisable to personal preferences. They pointed to Spotify playlists, YouTube channels and tailored social media feeds as positive examples of this.
- Participants liked features such as personal tracking and feedback (e.g., sleep, mood, activity, body stats) as well as mediation and mindfulness.
- Audio/visual. Such features make apps more inclusive to varying needs and soothing if feeling distressed. For example, calming soundscapes, music and/or voices; happy or relaxing colours; relaxing videos and personal videos or messages from people who had experienced distress.

Overall, these are highly consistent with version 1 of this report. We have made additions under Key Themes: Māori and Key Themes: Pacific to reflect the findings that were highly important to Māori and Pacific participants in particular, and added question 2.3 and added minor alterations to question 6.3 to reflect this input.

6. Do you think a 'direct' pathway (e.g., targeting 'depression') or less direct pathway (e.g., targeting wellbeing, relationships or sleep) is better to reach others like you?

Participants highlighted that both of these are necessary. Question 4.3 (in Part 2) has been updated with these findings.

7. If you were not already on a website, what would be the best way to "reach" you?

Participants reported that if they were not already on a mental health or wellbeing website, the best ways to reach them would be:

- Word of mouth, including via friends, family and community leaders. This was reported by 100% of Pacific interview and focus group participants.
- Promotions or advertising on sites that they already frequent (e.g., social media, shopping, banking, community or school sites).
- Some participants, including Pacific participants, also reported that billboards and posters were helpful.

These results are highly consistent with our version 1 report and have been included under question 2.3.

8. Would you prefer an app or wellbeing program to be something you would use on your own, or something you could do or share with others?

Question 4.6 in Part 2 of this report directly addresses this question, hence responses to this question from surveys and focus groups and interviews have been added there.

9. What would help you to know if a site was trustworthy?

Question 4.9 in Part 2 of this report directly addresses this question, hence responses to this question from surveys and focus groups and interviews have been added there.

Appendix 3: Online survey

We carried out an online survey as described under 'Methods'. This was approved by the Te Herenga Waka Victoria University of Wellington Human Ethics Committee (ID: 29200).

Participants were asked to report their age, gender and ethnicity using open-text responding. Responses were grouped into '35 years and under' or '36 years and over'; 'non-binary or other diverse gender identity', 'female' or 'male'; and 'Māori', 'Pacific' or 'Other ethnicity'. The 'Other ethnicity' group comprised those of Asian, Pākehā or other European, and other ethnicities, and those who did not report their ethnicity. Where participants reported two or more ethnicities, we used the New Zealand census ethnicity prioritization method to assign them to a single ethnicity group for reporting. We also asked 'In the last 12 months have you felt very down, depressed, overwhelmed or very worried for more than a few days in a row?' Response options were 'yes', 'not sure' or 'no'.

In total, there were 168 participants, with the majority being female, 4% were non-binary or another diverse gender (hereafter 'non-binary' for brevity, as all of these respondents identified their gender with this label). The majority of participants had felt very down, depressed, overwhelmed or worried for more than a few days in a row in the last year (hereafter 'felt down' for brevity). 20% of survey participants were Māori, 8% were Pacific and the majority were of other ethic groups (including New Zealand European).

In this appendix, we present graphs of responses to survey questions from all participants, Māori participants, and Pacific participants, with further demographic breakdown in the tables that follow. The survey was shared on social media, though notice boards and personal networks of the research group. Students and users of social media are likely to be over represented. In addition, people with an interest in digital health tools and mental wellbeing are more likely to have responded than others. Hence, results should be treated as indicative rather than definitive. Results for smaller groups and the distinctions between groups should be treated with particular caution.

Online survey participants.

	Percent	Total number
Female	73%	123
Male	21%	36
Non-binary	4%	7
Gender not reported	1%	2
35 and under	63%	105
36 and over	36%	61
Age not reported	1%	2
Māori	20%	34
Pacific	8%	13
Other ethnicity	72%	121
Felt very down	77%	128
Not sure	9%	15
Not felt down	14%	24
Total	100%	168

1. If you were having a hard time or feeling bad, what would you do?

We asked: *If you were having a hard time or feeling bad, which of the following might you do? (Select as many as apply)*

a) Talk with a friend, family member or someone in your community

b) Contact a phoneline (e.g. Kidsline, Whatsup, 1737, Youthline)

c) Post on social media (e.g. post on Facebook, Instagram)

d) Search on social media (e.g. search Facebook, Instagram, TikTok)

e) Search Youtube

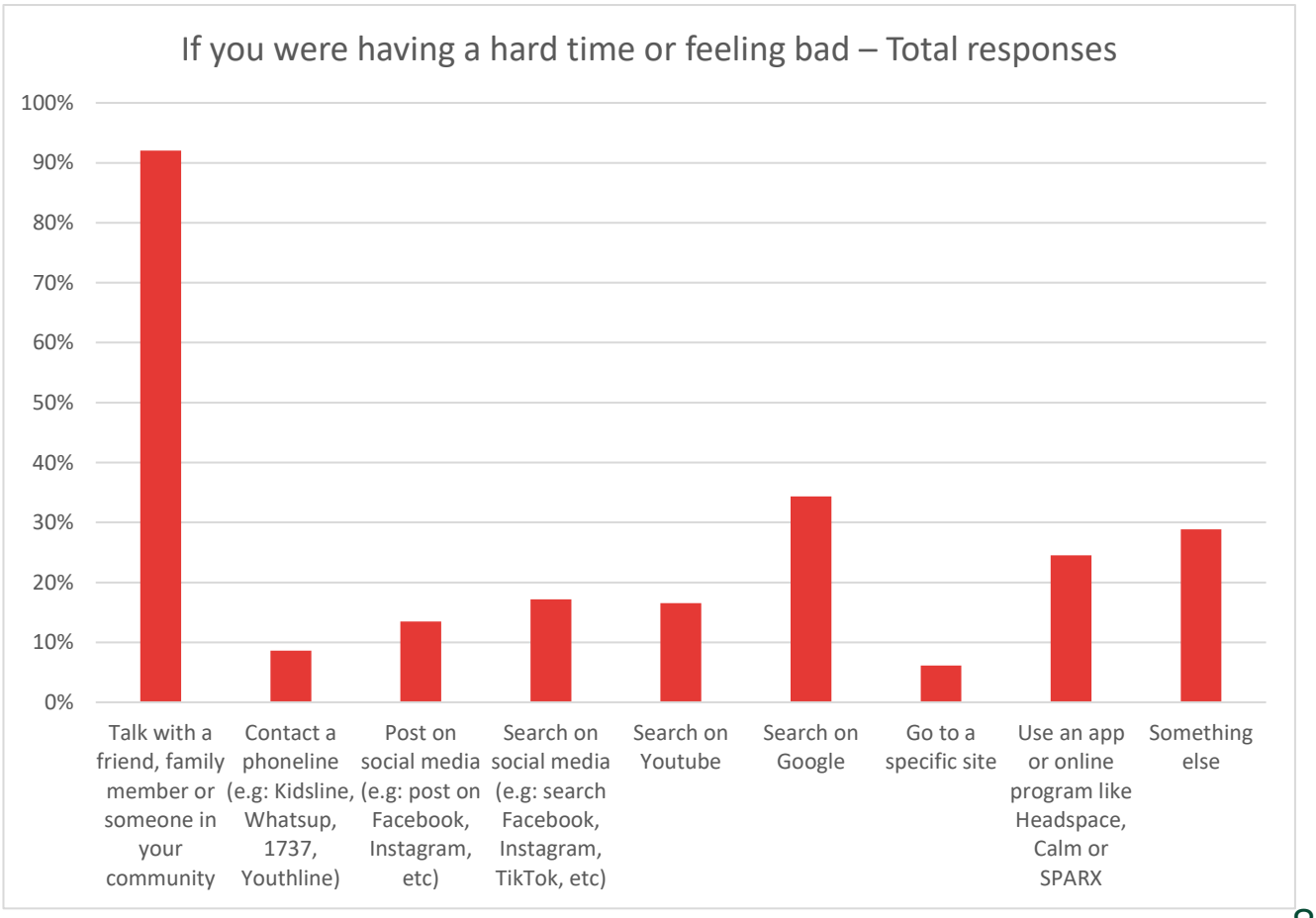
f) Search the internet (e.g. Google)

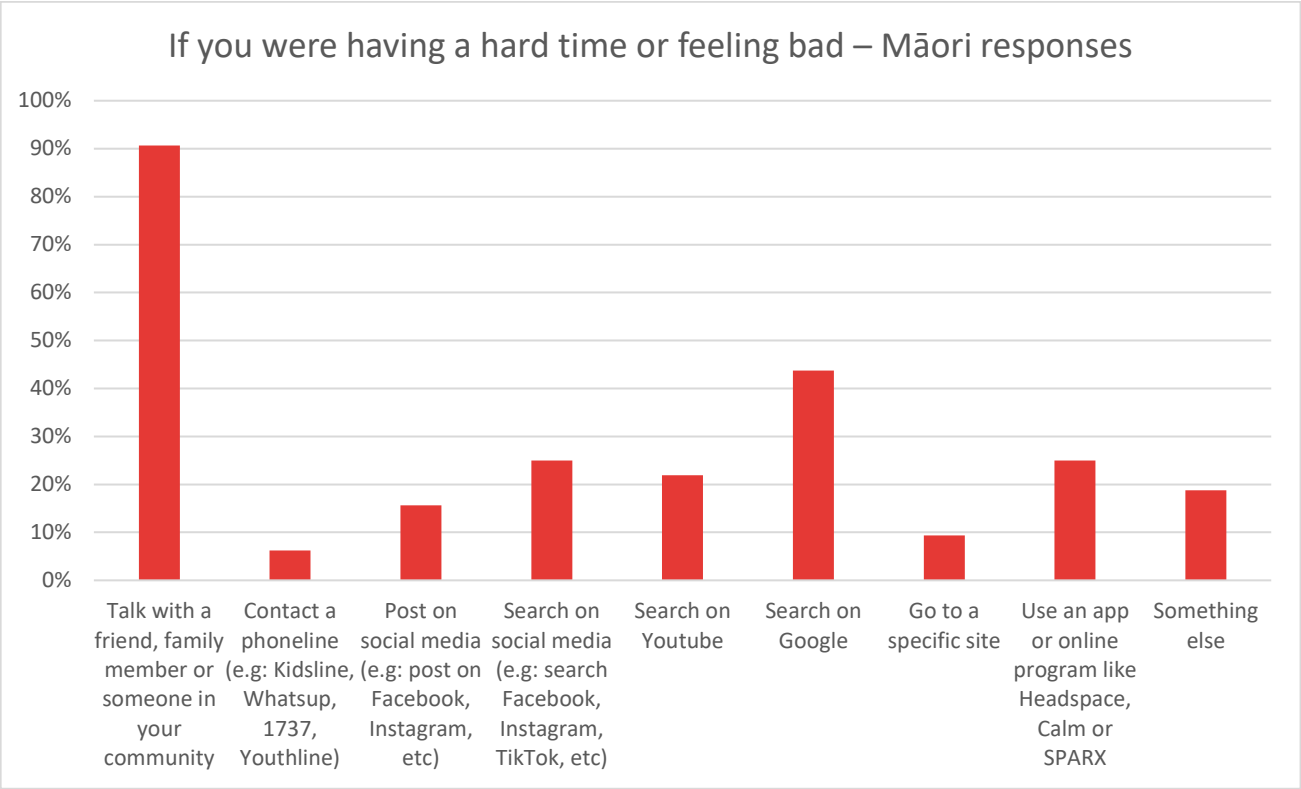
g) Look up a website with information such as The Lowdown or Depression.org

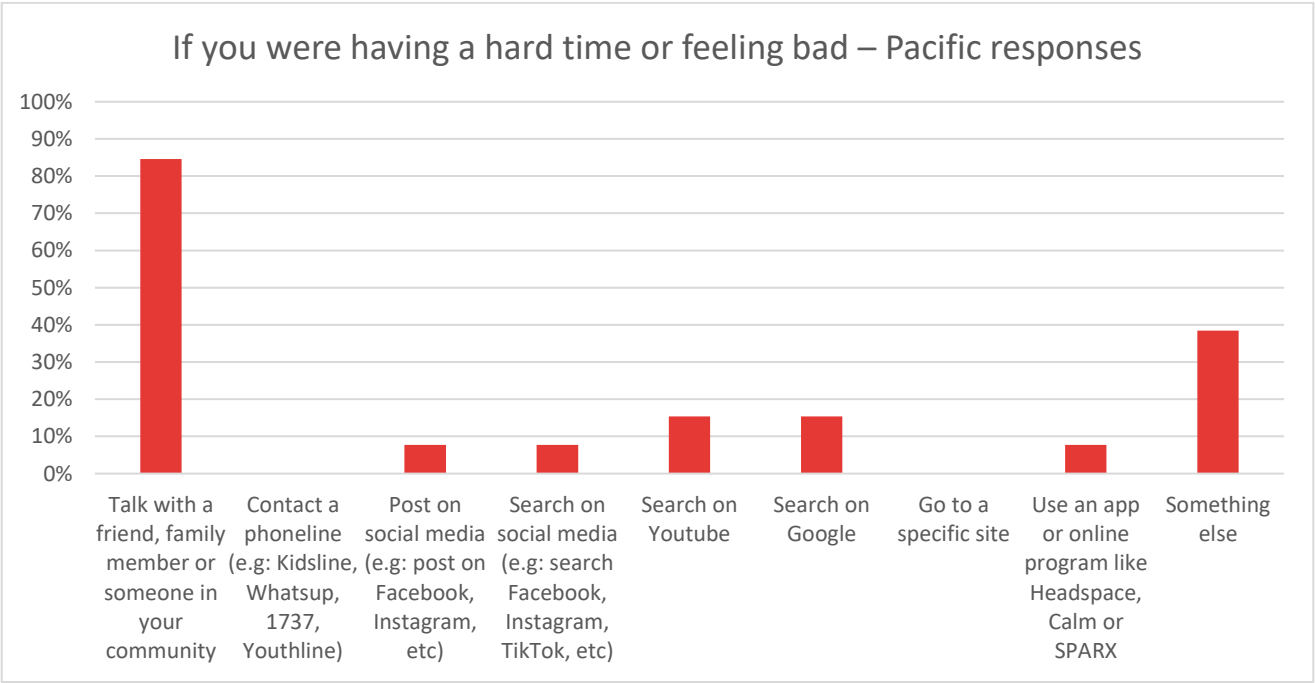
h) Use an app or online program like Headspace, Calm or SPARX

i) Something else

In total, **92%** of participants said they would talk with a friend, family member or someone in their community. Digital tools were also appealing to many, with a total of **59%** reporting any digital tool use (post or search on social media, search YouTube, Google, go to a specific site, or use an app). There were distinctions by ethnicity; our 13 Pacific participants reported much lower digital tool use than others. Responses for the total population, Māori participants, and Pacific participants are shown below. The table that follows shows data for different demographic groups.




If you were having a hard time or feeling bad – Māori responses
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Talk with a friend, family member or someone in your community
Contact a phoneline (e.g: Kidsline, Whatsup, 1737, Youthline)
Post on social media (e.g: post on Facebook, Instagram, etc)
Search on social media (e.g: search Facebook, Instagram, TikTok, etc)
Search on Youtube
Search on Google
Go to a specific site
Use an app or online program like Headspace, Calm or SPARX
Something else


If you were having a hard time or feeling bad – Pacific responses
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Talk with a friend, family member or someone in your community
Contact a phoneline (e.g: Kidsline, Whatsup, 1737, Youthline)
Post on social media (e.g: post on Facebook, Instagram, etc)
Search on social media (e.g: search Facebook, Instagram, TikTok, etc)
Search on Youtube
Search on Google
Go to a specific site
Use an app or online program like Headspace, Calm or SPARX
Something else

If you were having a hard time or feeling bad - All responses.

	Talk with a friend, family member or someone in your community	Contact a phone-line (e.g: Kidsline, Whatsup, 1737, Youth-line)	Post on social media (e.g: post on Facebook, Instagram, etc)	Search on social media (e.g: search Facebook, Insta-gram, TikTok, etc)	Search on You-tube	Search on Google	Go to a specific site	Use an app or online program like Head-space, Calm or SPARX
Total sample	92%	9%	14%	17%	17%	34%	6%	25%
Māori	91%	6%	16%	25%	22%	44%	9%	25%
Pacific	85%	0%	8%	8%	15%	15%	0%	8%
35 and under	95%	10%	10%	25%	21%	35%	5%	20%
36 and over	86%	5%	20%	5%	10%	34%	8%	32%
Female	94%	9%	12%	20%	17%	35%	7%	22%
Male	85%	6%	12%	9%	18%	41%	3%	26%
Non-binary	83%	0%	67%	17%	17%	0%	0%	50%
Felt down	92%	9%	15%	18%	18%	40%	7%	23%
Not sure	93%	14%	7%	21%	21%	14%	7%	21%
Not felt down	92%	4%	8%	8%	4%	13%	0%	33%

2. What have you tried for wellbeing or emotional challenges?

We asked: *Which of the following have you tried for wellbeing or for emotional challenges? (Select as many as apply)*

a) A link or post on my social media feed (e.g. Facebook, Instagram, TikTok)

b) A post or video by someone I follow

c) A link or post someone sent me

d) A New Zealand Government or health website

e) An app – which?

f) A different website – which?

g) A humour or gaming site

h) Something else

i) None of these

The most common response was a New Zealand Government or health website (34% of participants). 25% had followed a post or video by someone they follow on social media and 25% had followed a link or post that someone had sent them (42% of participants had used at least one of these two social options). 28% had tried an app and 30% had not tried any of the options.

A New Zealand Government or health website was the most frequently endorsed option for the total population and for Māori and Pacific participants. This varied by age; younger people (35 and under) reported high interest in New Zealand Government or health sites, while older people (over 35) reported less interest in these sites while their interest in social media appeared higher. Interest in New Zealand Government or health websites was highest among those who had experienced feeling down, although those who had not felt down or weren't sure also reported significant interest in these sites.

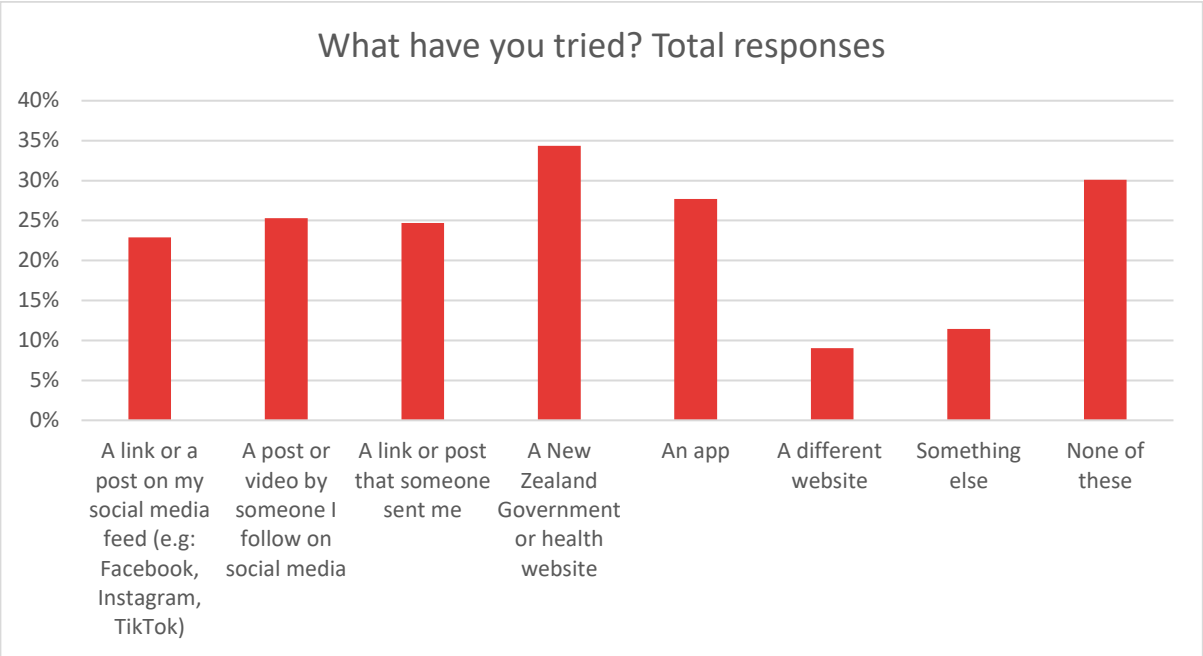
Males were more likely than females to have used none of the tools mentioned, and non-binary participants were more likely to have tried most of these options.

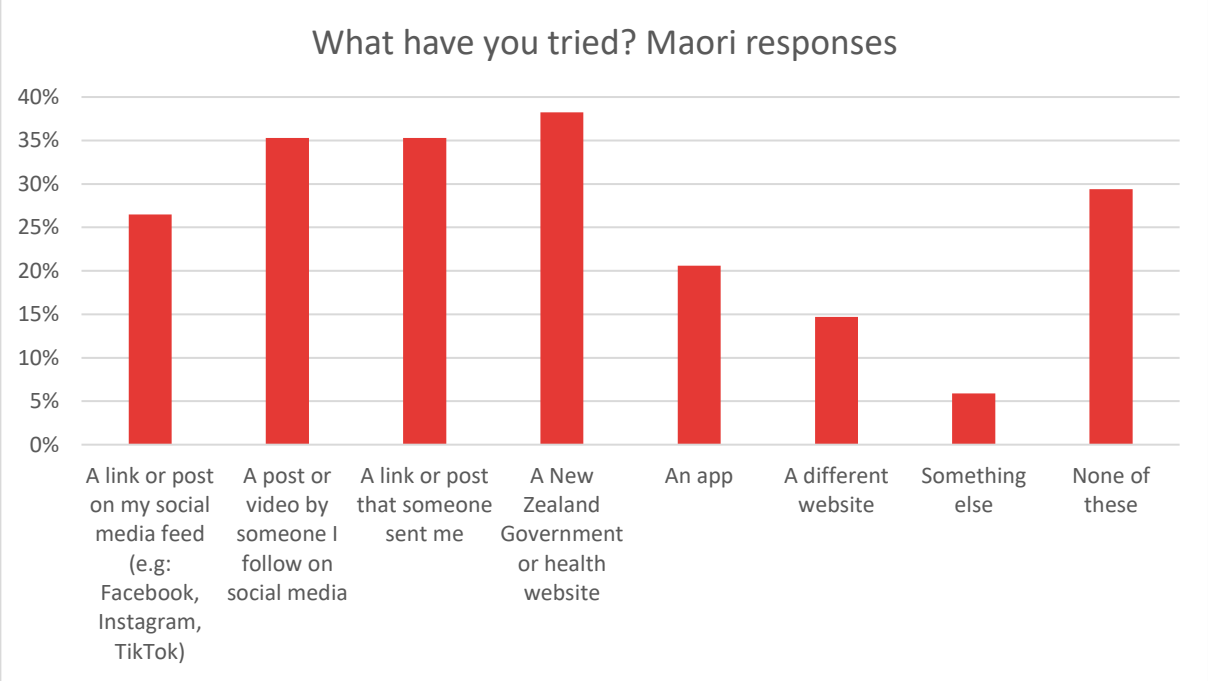
Responses for the total population, Māori participants, and Pacific participants are shown below. The table that follows shows data for different demographic groups.

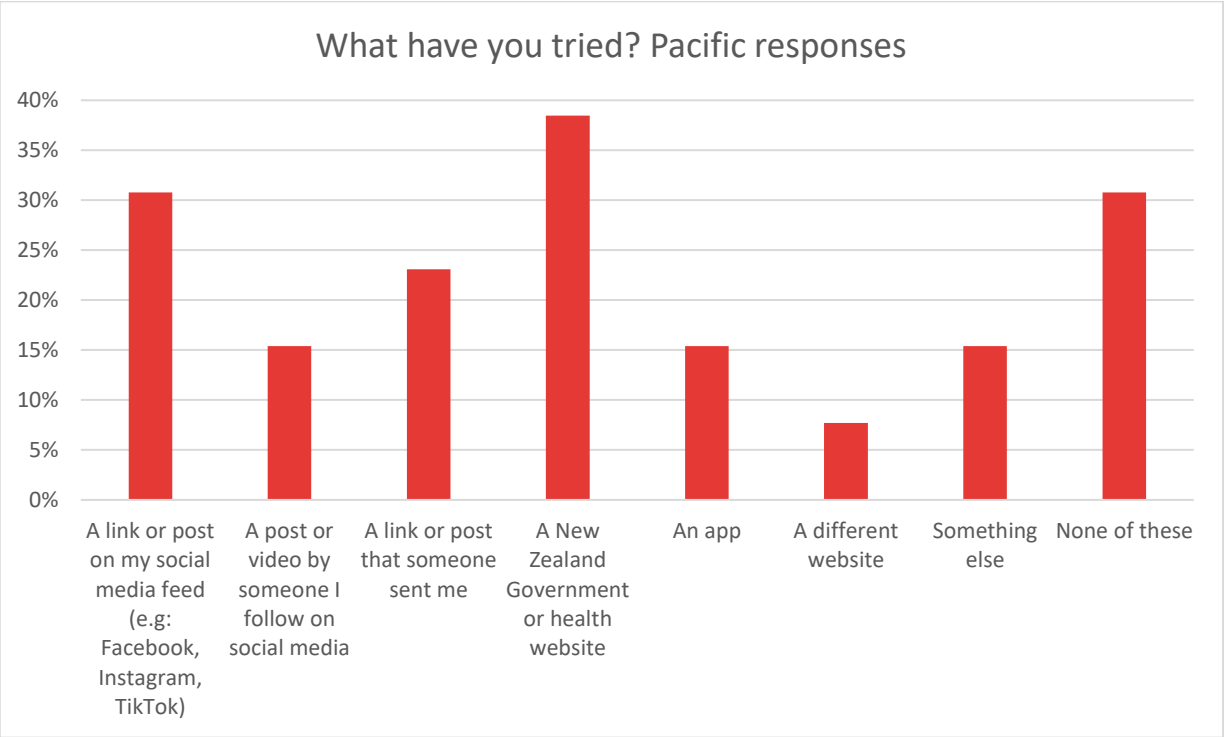
Those who had used 'an app', or 'a different website' were asked which app(s) or website(s) they had used. The most common responses were:

- Headspace (used by 22 participants)
- Calm (used by 7)
- Smiling Mind (used by 3)
- Mentemia and Happfiy (each used by 2).

Many other sites and apps were mentioned, but each was mentioned once only.


What have you tried? Total responses
40%
35%
30%
25%
20%
15%
10%
5%
0%
A link or a post on my social media feed (e.g: Facebook, Instagram, TikTok)
A post or video by someone I follow on social media
A link or post that someone sent me
A New Zealand Government or health website
An app
A different website
Something else
None of these


What have you tried? Maori responses
40%
35%
30%
25%
20%
15%
10%
5%
0%
A link or post on my social media feed (e.g: Facebook, Instagram, TikTok)
A post or video by someone I follow on social media
A link or post that someone sent me
A New Zealand Government or health website
An app
A different website
Something else
None of these



What have you tried? All responses.

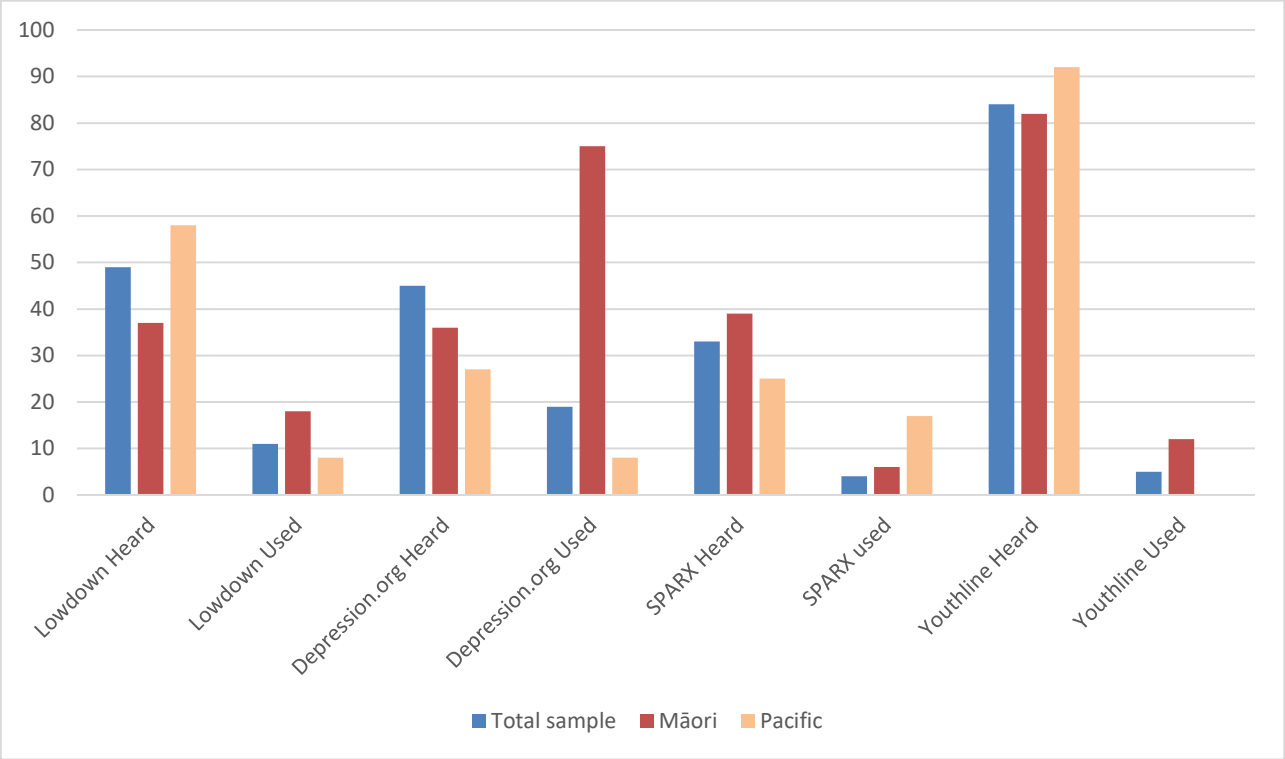
	A link or post on my social media feed	A post or video by someone I follow	A link or post that someone sent me	A New Zealand Government or health website	An app	A different website	None of these
Total sample	23%	25%	25%	34%	28%	9%	30%
Māori	26%	35%	35%	38%	21%	15%	29%
Pacific	31%	15%	23%	38%	15%	8%	31%
35 years and under	24%	31%	27%	29%	24%	8%	30%
36 years and over	22%	15%	22%	44%	34%	12%	31%
Female	23%	25%	24%	33%	28%	8%	28%
Male	17%	22%	19%	33%	22%	8%	42%
Non-binary	57%	57%	71%	57%	43%	29%	14%
Felt down	24%	27%	28%	37%	29%	9%	28%
Not sure	27%	20%	13%	27%	7%	13%	33%
Not felt down	13%	17%	13%	29%	38%	8%	42%

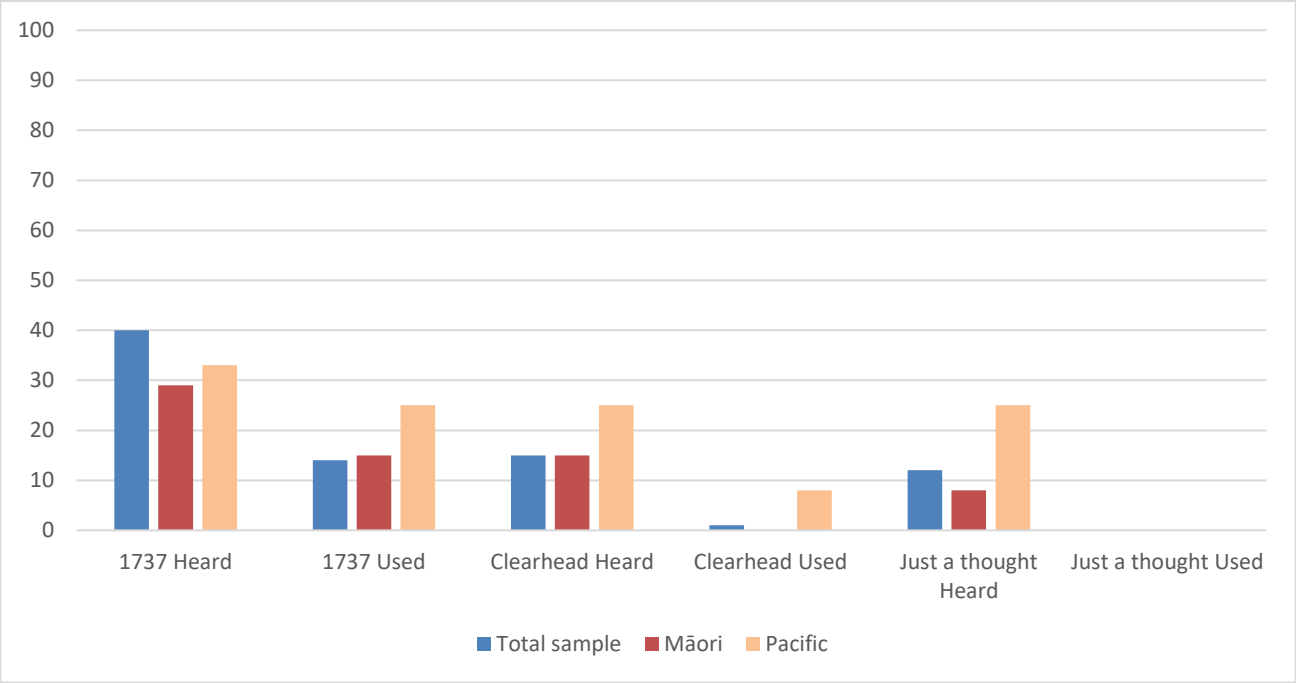
3. Recognition and use of key sites and apps

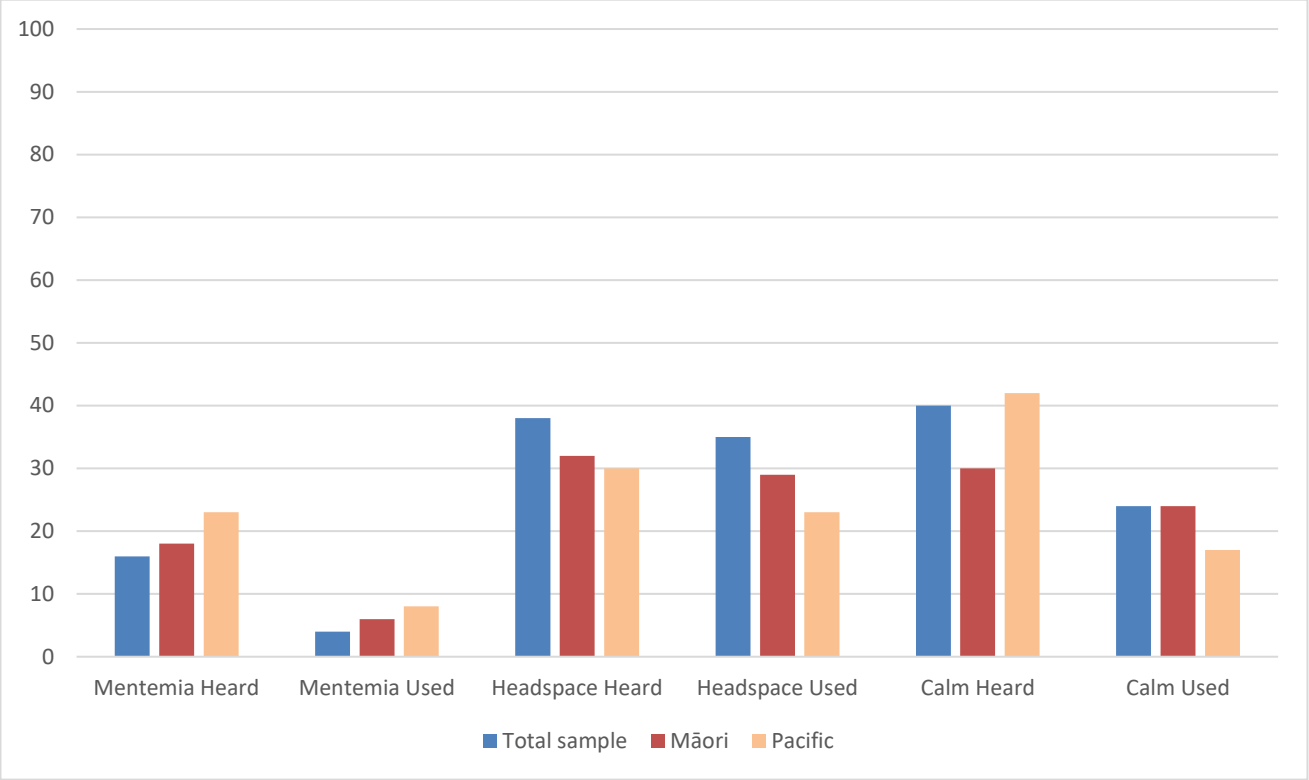
We asked participants whether they had 'never heard of', 'heard of but not used', or 'used' the sites and apps shown in the figures and tables below. As there are many options, we have combined total population, Māori and Pacific data here. Where a tool is shown as 'Heard', this indicates that participants have heard of it but not used it.

'Used' indicates that participants have used the tool (and presumably also heard of it). There was notably high recognition and use of The Lowdown and Depression.org and very high recognition of Youthline. There was also fairly high use of the commercial apps Headspace and Calm.

Percentage of total, Māori and Pacific particpants who have heard of or used key sites or apps.




100
90
80
70
60
50
40
30
20
10
0
1737 Heard
1737 Used
Clearhead Heard
Clearhead Used
Just a thought Heard
Just a thought Used
Total sample
Māori
Pacific


100
90
80
70
60
50
40
30
20
10
0
Mentemia Heard
Mentemia Used
Headspace Heard
Headspace Used
Calm Heard
Calm Used
Total sample
Māori
Pacific

Percentage of each group who have 'heard of but not used' or 'used' named sites and tools.

	Lowdown Heard	Lowdown Used	Depression.org Heard	Depression.org Used	SPARX Heard	SPARX Used	Youthline Heard	Youthline Used
Total sample	49	11	45	19	33	4	84	5
Māori	37	18	36	75	39	6	82	12
Pacific	58	8	27	8	25	17	92	0
35 and under	53	13	47	19	34	4	86	5
36 and over	42	7	40	18	31	5	83	7
Female	49	13	45	19	35	4	86	6
Male	47	3	44	14	25	6	81	3
Non-binary	71	14	29	43	43	0	86	14
Felt down	47	13	39	22	33	3	83	6
Not sure	53	7	73	7	13	7	100	0
Not felt down	57	4	52	9	41	9	81	5

Percentage of each group who have 'heard of but not used' or 'used' named sites and tools.

	1737 Heard	1737 Used	Clearhead Heard	Clearhead Used	Just a Thought Heard	Just a Thought Used
Total sample	40	14	15	1	12	0
Māori	29	15	15	0	8	0
Pacific	33	25	25	8	25	0
35 and under	39	21	20	1	16	0
36 and over	39	3	7	0	5	0
Female	40	16	14	0	12	0
Male	36	8	17	3	11	0
Non-binary	43	29	29	0	29	0
Felt down	35	17	16	1	13	0
Not sure	53	13	7	0	0	0
Not felt down	55	5	19	0	14	0

Percentage of each group who have 'heard of but not used' or 'used' named sites and tools.

	Mentemia Heard	Mentemia Used	Headspace Heard	Headspace Used	Calm Heard	Calm Used	Other Heard	Other Used
Total sample	16	4	38	35	40	24	12	34
Māori	18	6	32	29	30	24	0	0
Pacific	23	8	30	23	42	17	67	50
35 and under	18	3	38	41	43	27	7	36
36 and over	12	5	38	25	34	19	25	33
Female	16	4	35	38	40	27	10	38
Male	11	6	44	28	42	14	22	11
Non-binary	43	0	57	14	29	29	0	100
Felt down	15	4	34	37	41	25	13	33
Not sure	13	0	53	20	33	13	0	60
Not felt down	18	5	42	38	41	27	17	17

4. Barriers to online help

We asked: *Here are some reasons people don't find information online even if they want to. Are any of these important for you? (Choose as many as you need)*

a) It's hard for me to get data or Wi-Fi

b) I don't have a device to use in private

c) I am blocked from some internet sites at home, work or school

d) I am worried or scared someone might find out

e) I didn't know where to find information or it was too hard to find what I was looking for

f) I didn't know how to describe what I was looking for

g) There was too much reading, or I didn't understand it

h) I didn't like the look of the website

i) It didn't seem relevant to me

j) I was scared of what I might find out

k) I didn't know what websites I could trust

l) I would rather talk to someone in person

m) I didn't think anything would help me

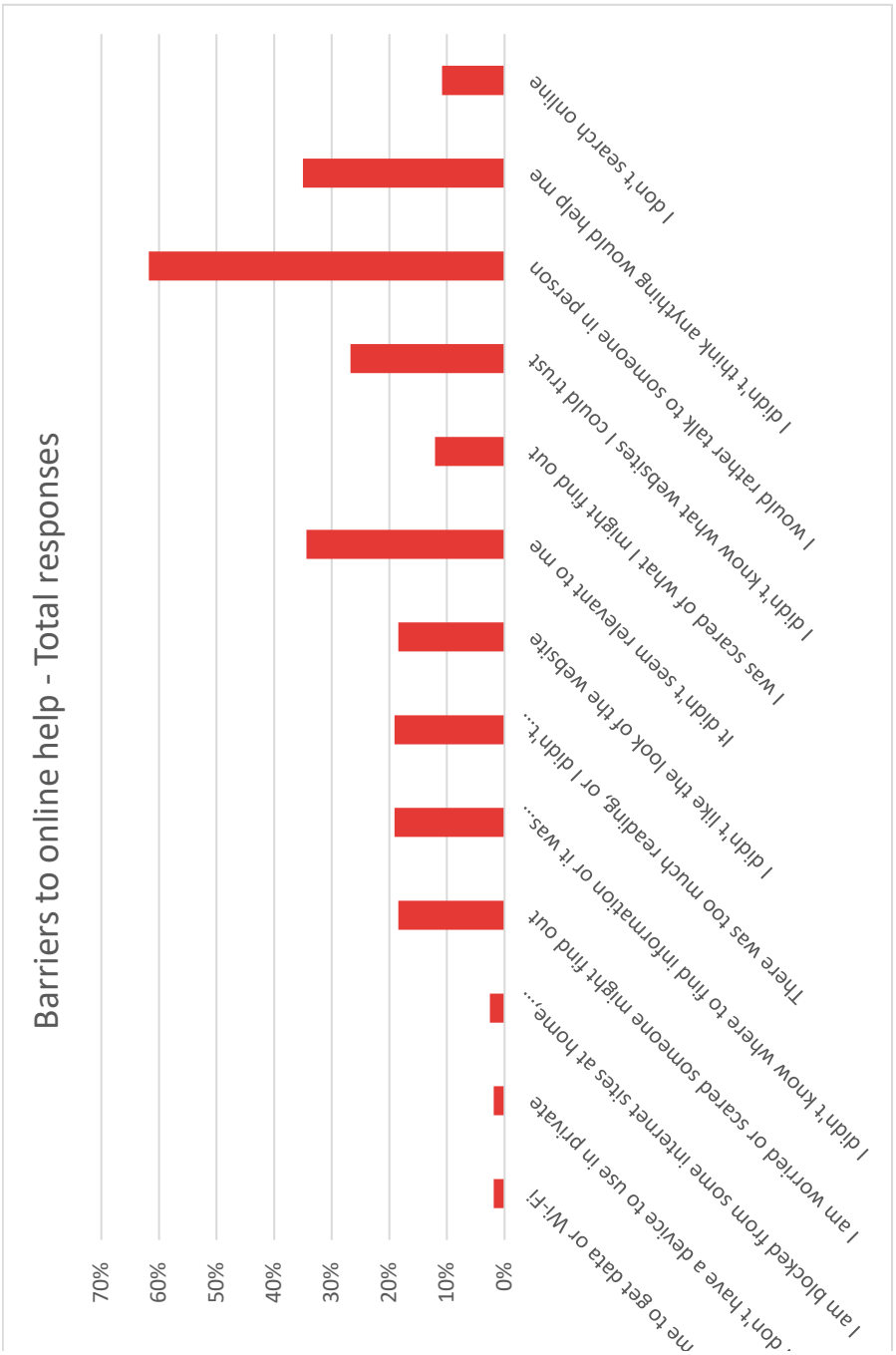
n) I don't search online

The most common response for all groups was 'I would rather talk to someone in person'. Other common responses differed by group. For the total population the second and third most common responses were 'I didn't think anything would help' or' it did not seem relevant to me'. For Māori participants, common responses included 'I didn't think anything would help', 'I don't know which sites I can trust' or 'it did not seem relevant to me'. For Pacific participants, the second and third most common responses were 'I didn't like the look of the website' or 'there was too much reading or I didn't understand it.'

Participants of all ages endorsed 'I would rather talk to someone in person' as the main reason that they did not find information online. Younger people (35 and under) were more likely to say that there was too much reading, and to endorse help negation barriers ('It didn't seem relevant to me', 'I was scared of what I might find out', or 'I didn't think anything would help').

Males were particularly likely to report that they would rather talk to someone in person and non-binary participants were particularly likely to report that they felt nothing would help.

Responses for the total sample are shown on the graph and the table that follows provides a breakdown by demographic groups.


Barriers to online help - Total responses
70%
60%
50%
40%
30%
20%
10%
0%
I don't search online
I didn't think anything would help me
I would rather talk to someone in person
I didn't know what websites I could trust
I was scared of what I might find out
It didn't seem relevant to me
I didn't like the look of the website
There was too much reading, or I didn't...
I didn't know where to find information or it was...
I am worried or scared someone might find out
I am blocked from some internet sites at home,...
I don't have a device to use in private
me to get data or Wi-Fi

Barriers to online help – All responses

	It's hard for me to get data or Wi-Fi	I don't have a device to use in private	I am blocked from some internet sites at home, work or school	I am worried or scared someone might find out	I didn't know where to find information or it was too hard to find	There was too much reading, or I didn't under-stand it	I didn't like the look of the web-site	It didn't seem relevant to me	I was scared of what I might find out	I didn't know what websites I could trust	I would rather talk to some-one in person	I didn't think any-thing would help me	I don't search online
Total sample	2%	2%	3%	18%	19%	19%	18%	34%	12%	27%	62%	35%	11%
Māori	3%	0%	6%	18%	27%	27%	21%	33%	18%	33%	55%	30%	12%
Pacific	15%	8%	8%	23%	15%	38%	54%	23%	15%	15%	69%	31%	31%
35 years and under	3%	3%	2%	22%	23%	27%	23%	43%	19%	33%	62%	40%	11%
36 years and over	0%	0%	4%	13%	11%	5%	11%	20%	0%	16%	62%	27%	11%
Female	0%	2%	2%	19%	19%	19%	18%	35%	11%	27%	61%	36%	10%
Male	6%	0%	3%	13%	19%	22%	19%	31%	6%	25%	75%	22%	16%
Non-binary	14%	14%	14%	43%	14%	14%	29%	43%	57%	43%	29%	86%	0%
Felt down	2%	2%	2%	21%	20%	20%	21%	35%	15%	30%	61%	36%	9%
Not sure	7%	0%	7%	20%	33%	13%	7%	40%	7%	20%	67%	40%	20%
Not felt down	0%	0%	0%	0%	5%	16%	11%	21%	0%	16%	58%	26%	16%

5. When would you be likely to look up sites or apps for wellbeing?

We asked: *Would you be likely to look up sites or apps for wellbeing if you were (select as many as apply)*:

a) Feeling OK or good

b) Feeling a little down or worried

c) Wanting to know where to get help

d) Wanting to know if you had a problem

e) Feeling very bad

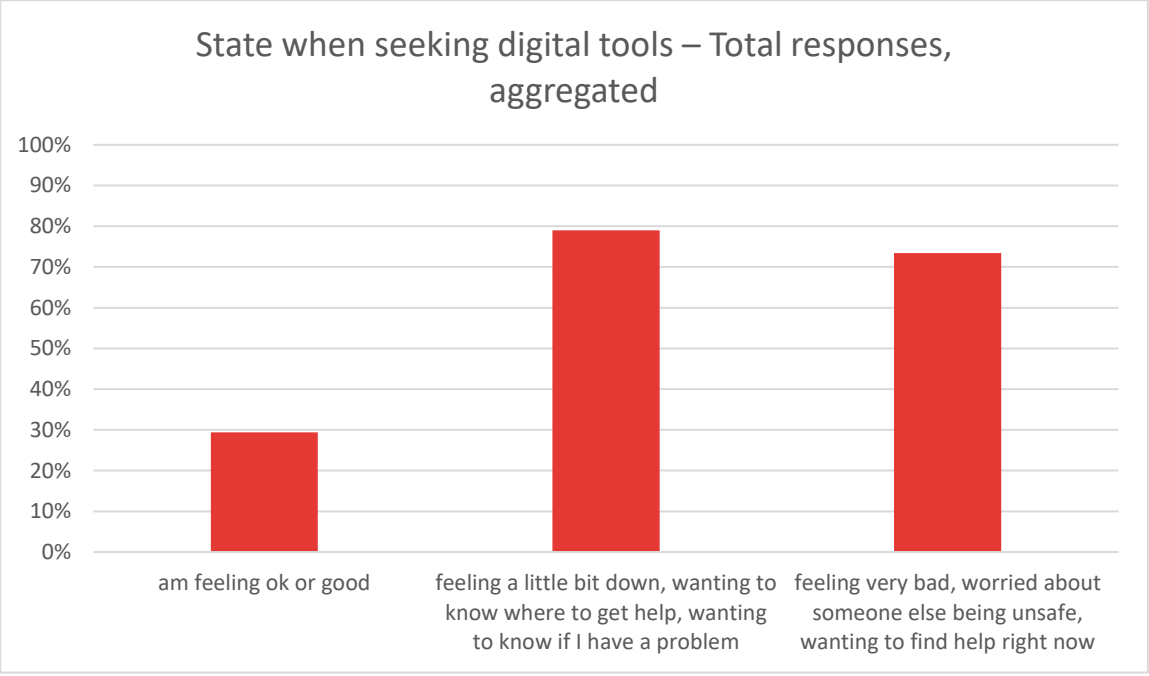
f) Worried about you or someone else being unsafe

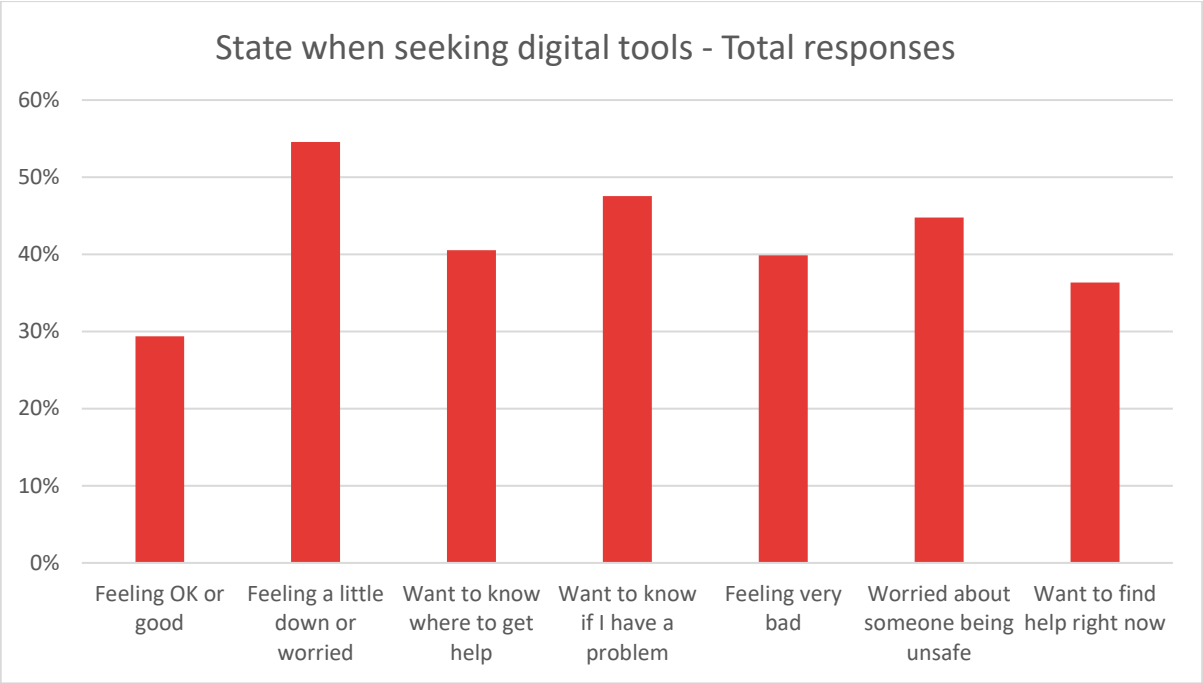
g) Wanting help right now

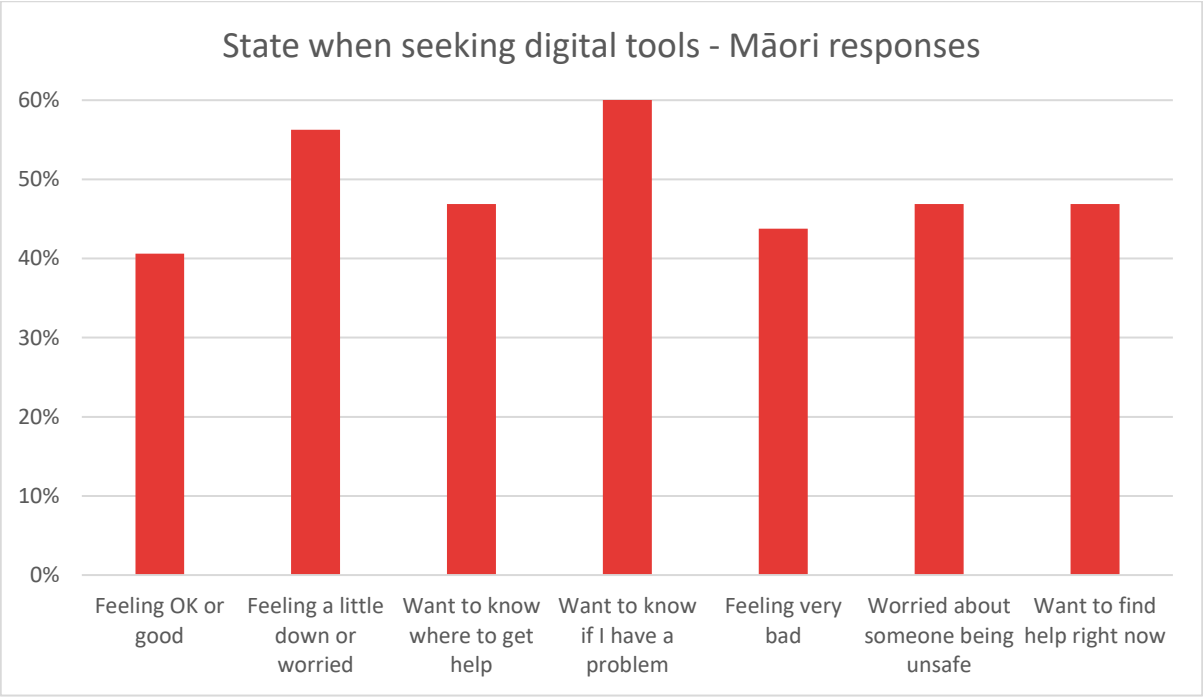
Participants indicated they would be likely to look up apps or tools when they were in a various 'states'. We combined these responses into three categories:

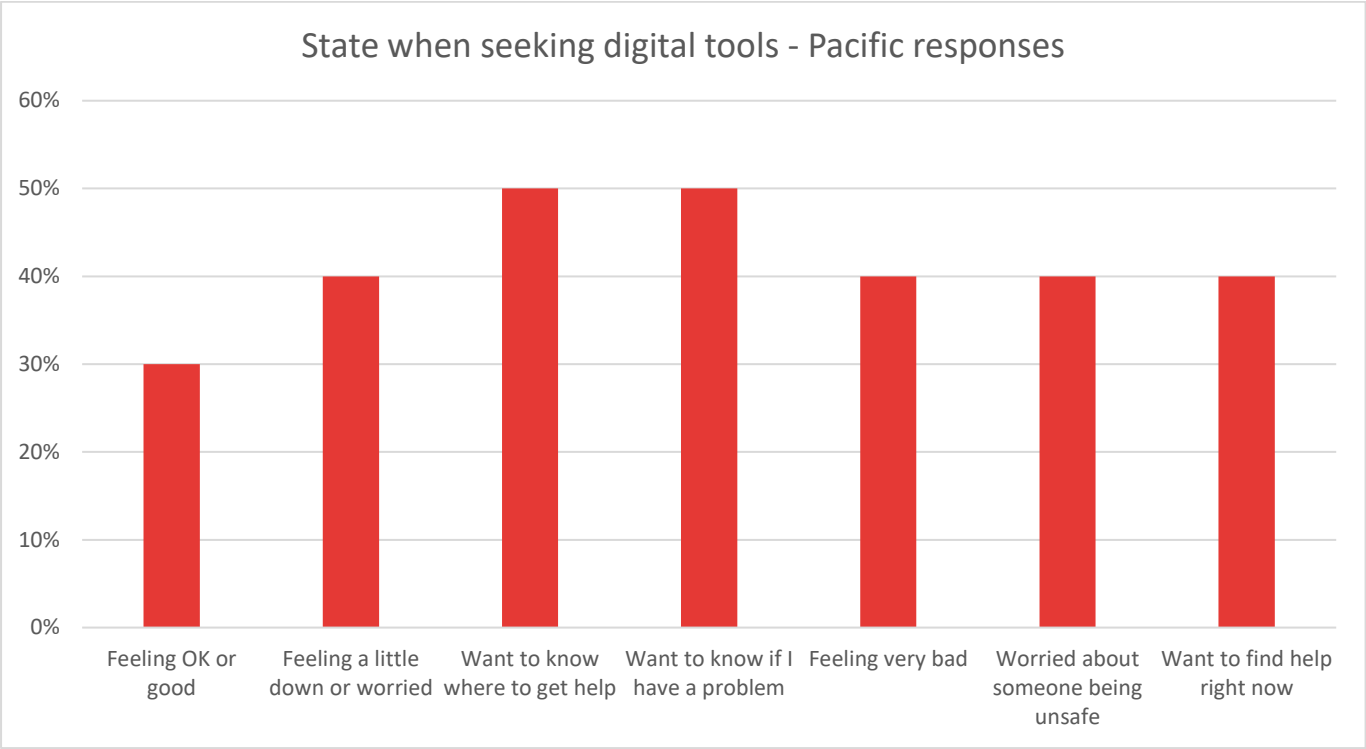
- Feeling OK or good 29%
- Feeling a little down or worried; Want to know where to get help; Want to know if I have a problem 79%
- Feeling very bad; Worried about safety; Want help right now 73%

Detailed responses for the total population and demographic groups are shown in the figures and table below.




State when seeking digital tools - Total responses
60%
50%
40%
30%
20%
10%
0%
Feeling OK or good
Feeling a little down or worried
Want to know where to get help
Want to know if I have a problem
Feeling very bad
Worried about someone being unsafe
Want to find help right now


State when seeking digital tools - Māori responses
60%
50%
40%
30%
20%
10%
0%
Feeling OK or good
Feeling a little down or worried
Want to know where to get help
Want to know if I have a problem
Feeling very bad
Worried about someone being unsafe
Want to find help right now



Likely state when seeking digital tools – All responses

	Feeling OK or good	Feeling a little down or worried	Want to know where to get help	Want to know if I have a problem	Feeling very bad	Worried about safety	Want to find help right now
Total Population	29%	55%	41%	48%	40%	45%	36%
Māori	41%	56%	47%	63%	44%	47%	47%
Pacific	30%	40%	50%	50%	40%	40%	40%
35 and under	23%	59%	39%	53%	43%	46%	35%
36 and over	40%	46%	42%	35%	35%	42%	38%
Female	25%	52%	37%	44%	37%	45%	36%
Male	42%	58%	46%	58%	42%	38%	31%
Non-binary	33%	83%	67%	67%	83%	67%	50%
Felt down	27%	56%	42%	51%	44%	44%	38%
Not sure	23%	46%	46%	54%	46%	31%	38%
Not felt down	53%	53%	24%	18%	6%	59%	24%

6. Use of apps or websites alone or with others

We asked: *Would you rather use apps or sites for wellbeing*:

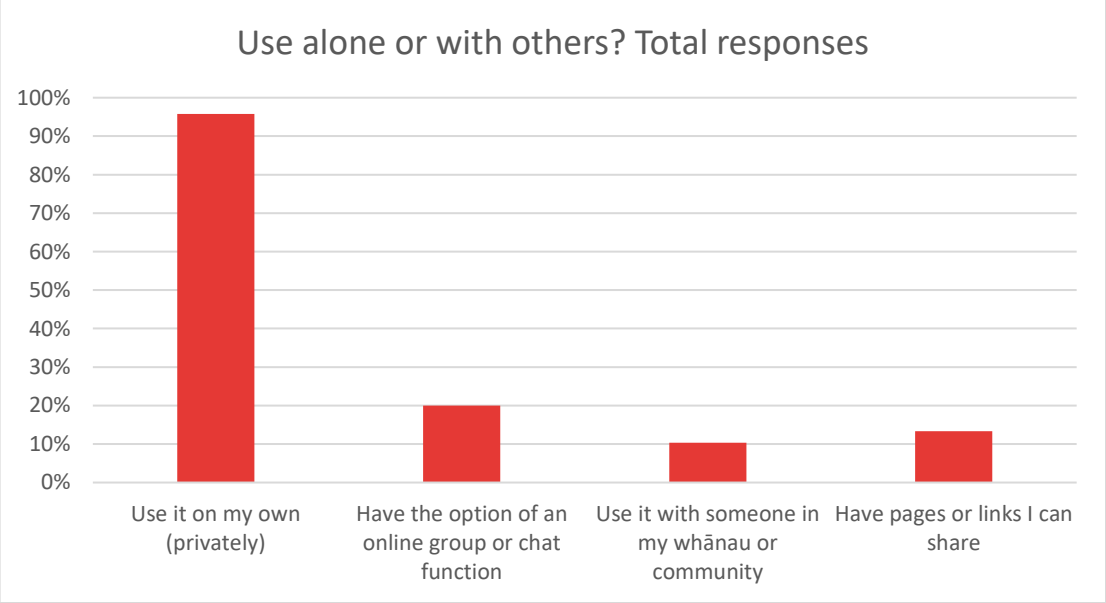
a) On your own (privately)

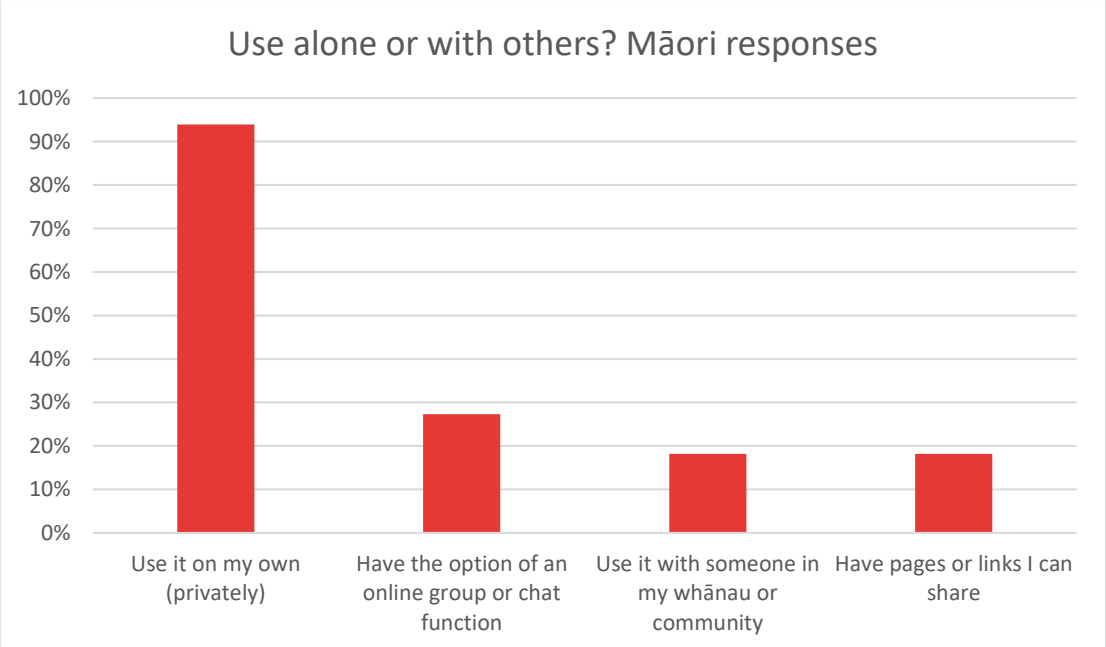
b) Have the option of an online group or chat function

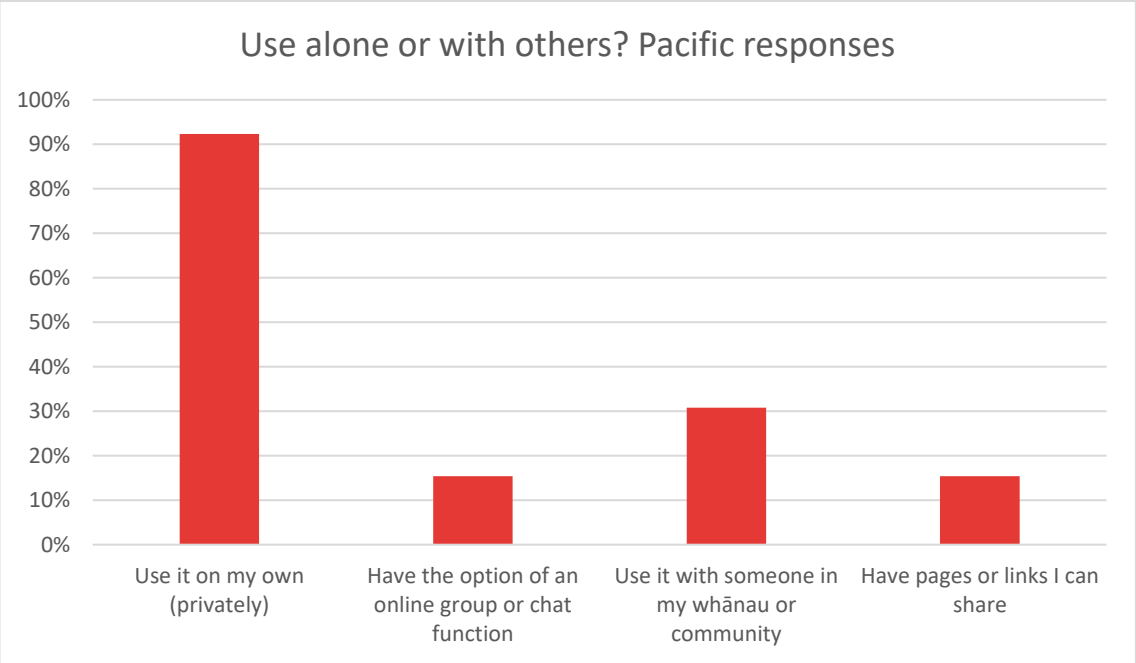
c) Use it with someone in your whānau or community

d) Have pages of links you can share.

Most participants indicated that they would rather use digital tools on their own. However, significant numbers did want social options, as shown below. This was particularly important for Māori and Pacific participants.







Use alone or with others – All responses

	Use it on my own (privately)	Have the option of an online group or chat function	Use it with someone in my whānau or community	Have pages or links I can share
Total Population	96%	20%	10%	13%
Māori	94%	27%	18%	18%
Pacific	92%	15%	31%	15%
35 and under	96%	20%	12%	13%
36 and over	95%	19%	8%	12%
Female	96%	17%	10%	11%
Male	94%	29%	15%	15%
Non-binary	100%	14%	0%	43%
Felt down	96%	21%	8%	13%
Not sure	100%	20%	20%	13%
Not felt down	92%	17%	17%	17%

7. Showing a site or app is trustworthy.

We asked: *What would help you know an app or website for wellbeing was trustworthy? (Select as many as apply)*:

a) It has a Government logo, message, or branding

b) It's from the Ministry of Health or a health agency

c) It's recommended by doctors or health professionals

d) It is recommended by MY doctor, MY therapist or a professional I know

e) It's recommended by a friend or family member

f) It's recommended by my school or work

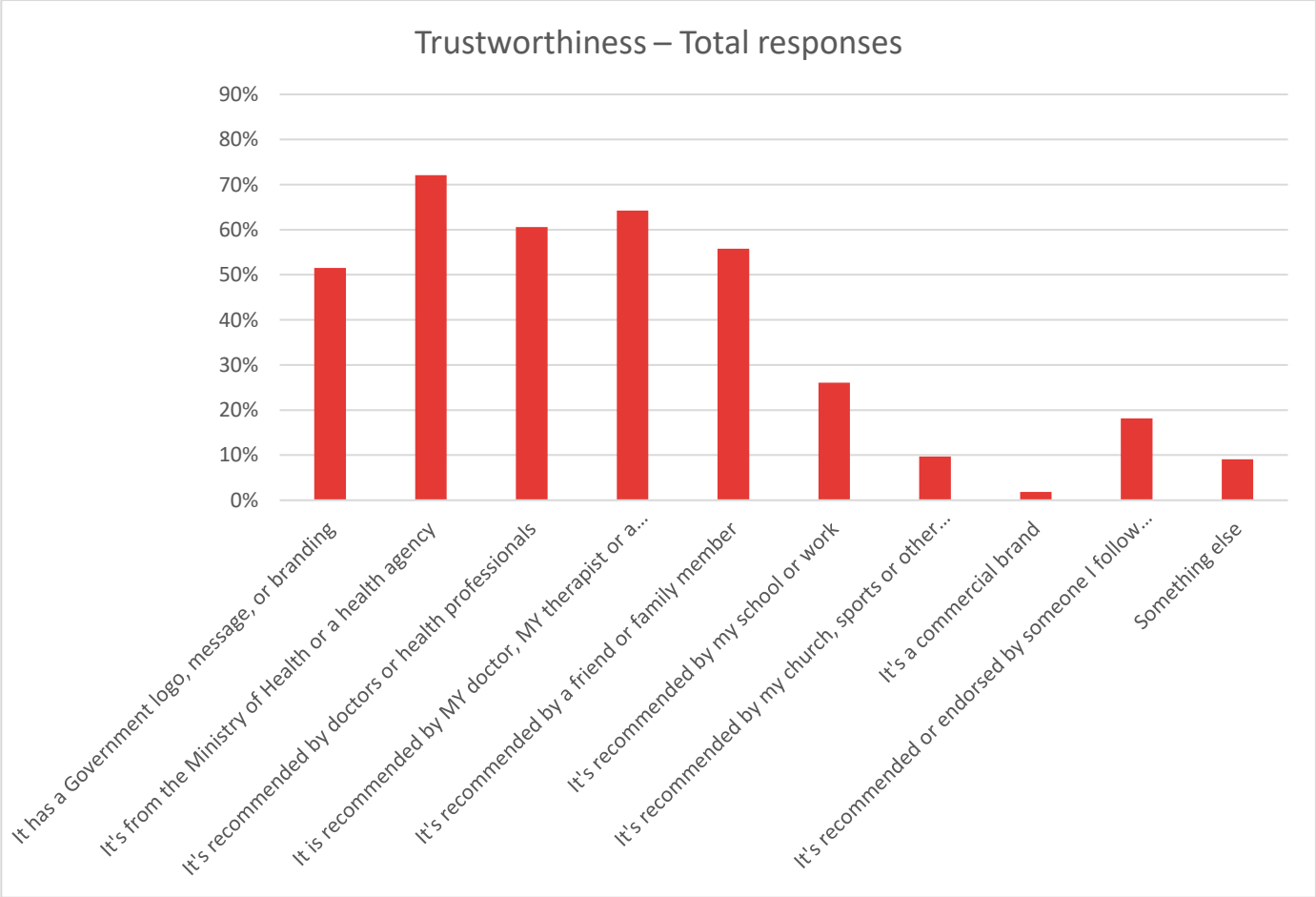
g) It's recommended by my church, sports or other community group

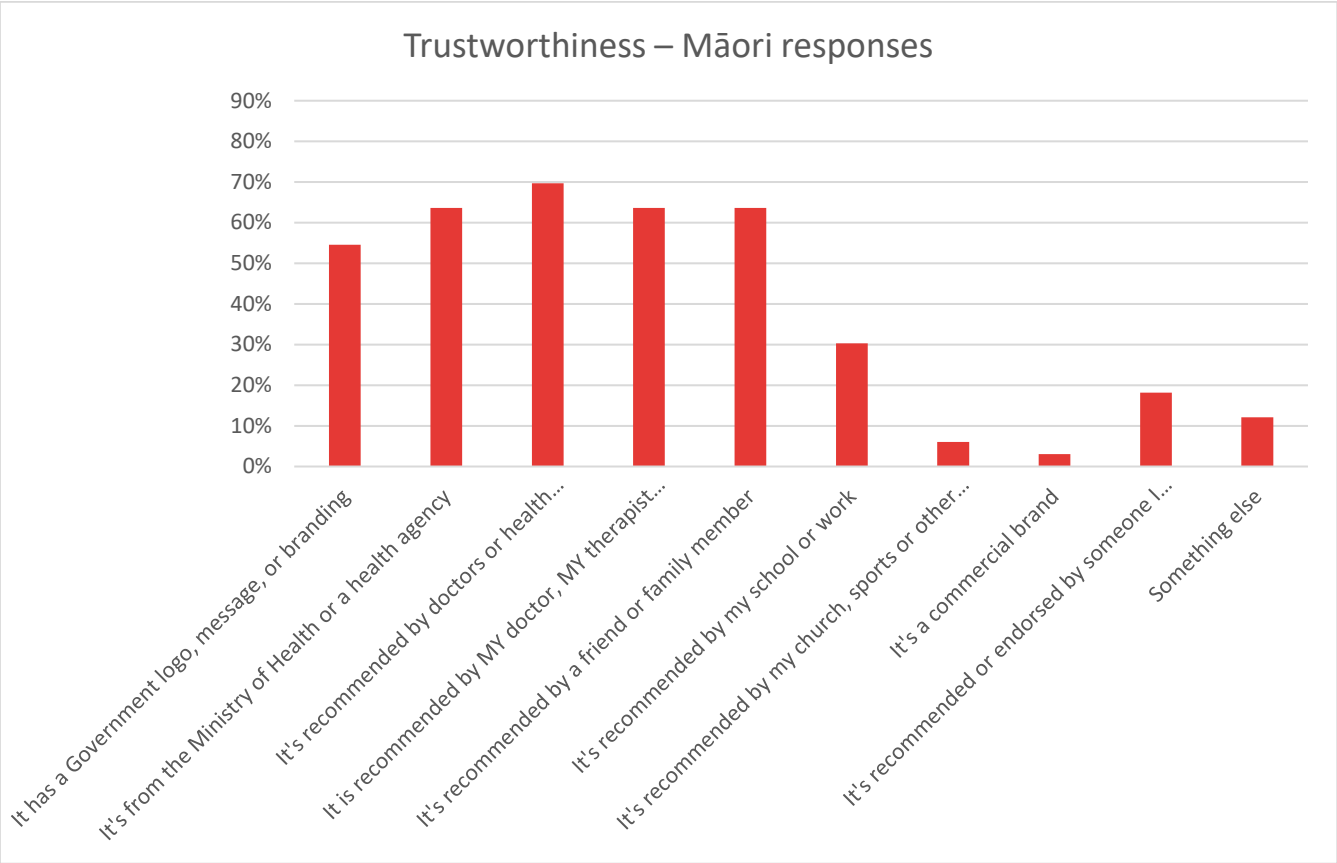
h) It's a commercial brand

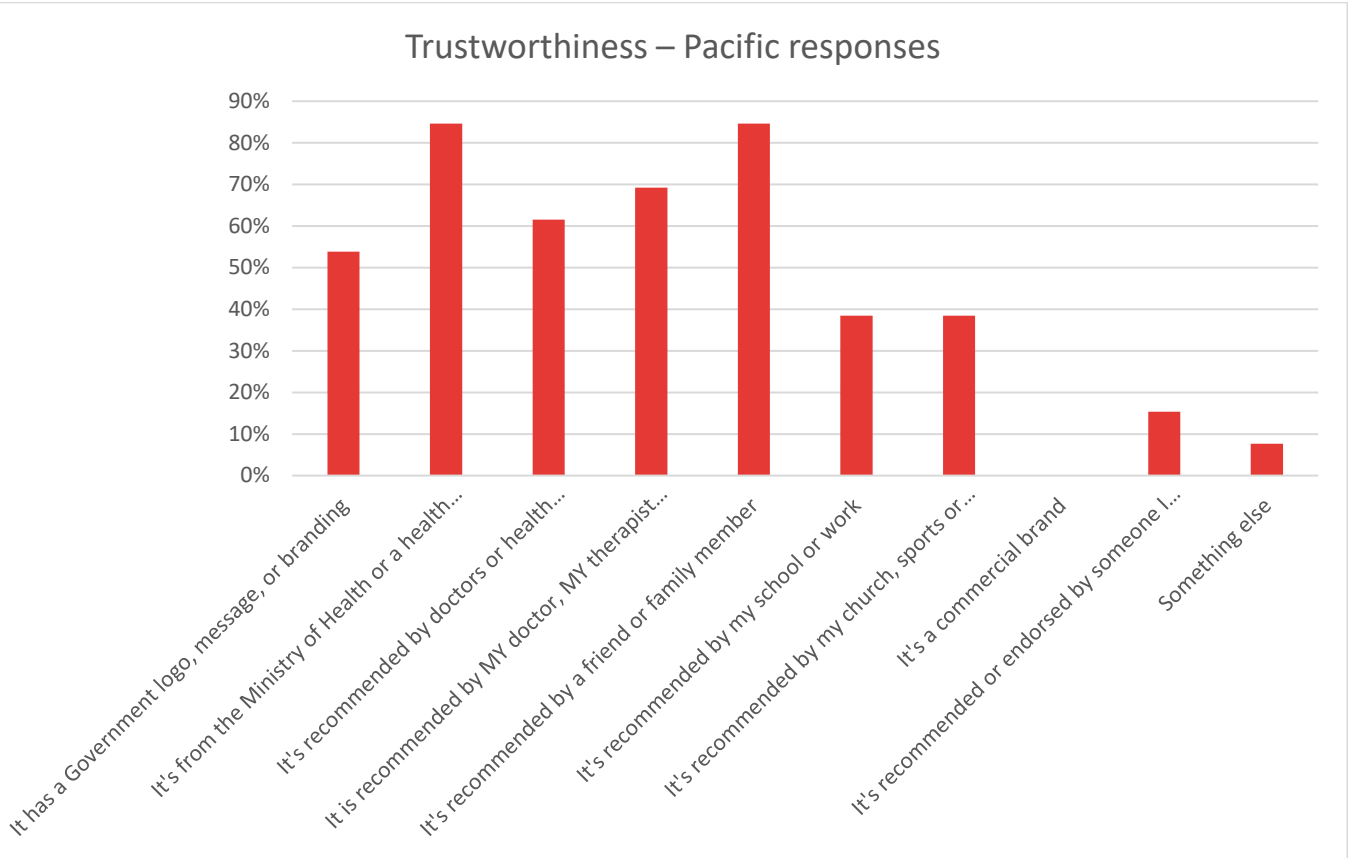
i) It's recommended or endorsed by someone I follow or admire

j) Something else

There was high interest in health agency/ health professional branding, with significant numbers of people interested in recommendations from their health professional or families and friends. There was notably low interest in commercial branding.




Trustworthiness – Māori responses
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
It has a Government logo, message, or branding
It's from the Ministry of Health or a health agency
It's recommended by doctors or health...
It is recommended by MY doctor, MY therapist...
It's recommended by a friend or family member
It's recommended by my school or work
It's recommended by my church, sports or other...
It's a commercial brand
It's recommended or endorsed by someone l...
Something else


Trustworthiness – Pacific responses
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
It has a Government logo, message, or branding
It's from the Ministry of Health or a health...
It's recommended by doctors or health...
It is recommended by MY doctor, MY therapist...
It's recommended by a friend or family member
It's recommended by my school or work
It's recommended by my church, sports or...
It's a commercial brand
It's recommended or endorsed by someone l...
Something else

Trustworthiness – All responses

	Government logo, message, or branding	Ministry of Health or a health agency	Recommended by doctors or health professionals	Recommended by MY doctor, MY therapist or a professional I know	Recommended by a friend or family member	Recommended by my school or work	Recommended by my church, sports or other community group	Commercial brand	Recommended or endorsed by someone I follow or admire
Total population	52%	72%	61%	64%	56%	26%	10%	2%	18%
Māori	55%	64%	70%	64%	64%	30%	6%	3%	18%
Pacific	54%	85%	62%	69%	85%	38%	38%	0%	15%
35 and under	54%	73%	59%	70%	60%	30%	11%	0%	17%
36 and over	45%	70%	62%	55%	48%	18%	7%	5%	18%
Female	53%	75%	61%	63%	53%	26%	7%	2%	16%
Male	41%	65%	53%	71%	62%	26%	18%	0%	18%
Non-binary	57%	57%	86%	57%	71%	14%	14%	0%	43%
Felt down	50%	69%	60%	63%	57%	24%	7%	2%	16%
Not sure	53%	80%	73%	73%	53%	53%	20%	0%	33%
Not felt down	58%	83%	58%	63%	50%	21%	17%	4%	21%

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