

The Meke Meter™: Exploring the wellbeing and quality of life of New Zealanders during the COVID-19 pandemic in 2020.

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Abstract

Aim: The coronavirus disease (COVID-19) originated from Wuhan, China in 2019. The pandemic has had a significant impact on the world today. While the national 2020 lockdown in Aotearoa New Zealand (NZ) was successful from a disease containment perspective, its impact on the wellbeing of individuals must be explored. The aim of this study was to explore the quality of life (QoL) and wellbeing of New Zealanders during the COVID-19 pandemic in 2020 using the online Meke Meter™ app. The Meke Meter™ is a subjective hauora (holistic health and wellbeing) self-assessment tool developed in consultation with indigenous communities. As part of the research, participants were also asked about the usefulness of the Meke Meter™ and whether they intended to continue using it.

Methods: A mixed-methods approach was employed and involved the collection of quantitative data using the Meke Meter™ and qualitative data collection from Meke Meter™ users through two online questionnaires and several focus groups (both online and face-to-face). The qualitative data was analysed for emergent themes and categories using a general inductive approach. To analyse the quantitative data, one-way analysis of variance (ANOVA) and general linear mixed-effects models (GLMMs) were used to explore associations, if any, between the demographic data, time intervals and the participant Meke Meter™ scores.

Participants: A total of 692 individuals completed the Meke Meter™ (81.8 percent female, 17.3 percent male; 62.4 percent Māori, 37.6 percent tauiwī/non-Māori). Seventy people completed the SurveyMonkey© questionnaires, and a total of 33 people participated in the focus groups.

Results: The quantitative results showed that in general approximately three-quarters of the participants only filled in the Meke Meter™ once. Higher Meke Meter™ scores are desirable, and as age increased, so did the Meke Meter™ scores; females had lower scores than males, and Māori had higher scores than tauiwī/non-Māori for the Mental and Social domains. The thematic analysis identified key themes: whānau/family and friends, mental distress, exercise, kai/food, and work/income. The qualitative data revealed that COVID-19 had a range of

impacts on the respondents. In some cases, it brought families closer together facilitated by technology while for others confinement, isolation, and financial insecurity caused distress. A dichotomy of responses regarding the impact of COVID-19 on exercise, diet and weight was evident, as were the responses about mental wellbeing with some respondents being happy and relaxed while other experienced increased stress and anxiety, and/or substance abuse. The qualitative data suggested that several factors may have contributed to lower Meke Meter™ scores for females, including increased workload, multiple household jobs, unstable relationships, and a decrease in exercise. Māori had higher scores than tauwi/non-Māori for the Mental and Social domains, which was most likely related to cultural factors. The Meke Meter™ was better at engaging Māori and males than other online platforms recently used in NZ to collect convenience samples for research. Most people found the Meke Meter™ easy and useful, but they lacked the self-motivation to fill it out regularly. Accordingly, the most frequently suggested improvements to the online Meter Meter™ app included notifications.

Conclusion: The national 2020 COVID-19 lockdown negatively affected many New Zealanders' physical, mental, social wellbeing thereby effecting their QoL. This study reports a broad range of negative impacts on people's wellbeing and highlights the need for targeted, community-appropriate post-COVID-19 wellbeing interventions. A key recommendation from this study would be to ensure the achievability, accessibility, and affordability of physical activity during a lockdown and post-lockdown. Decreasing the digital divide and improving equity to ensure all households and communities have equal opportunities to digitally connect to work, study and/or socialise is also vital in the context of a pandemic. This study also highlights the importance of culturally appropriate tools and instruments built by indigenous people, for increasing a greater response from indigenous communities particularly for research purposes.

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I have thoroughly enjoyed this journey. It got me out of my comfort zone, it tested me and pushed me to limits I did not think I would reach. I hope to use my knowledge to help many more whānau and communities across Aotearoa.

Whāia te iti kahurangi, ki te tuohu koe, me he maunga teitei

Seek the treasure that you value most dearly,

if you bow your head, let it be to a lofty mountain.

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Preface

On March 25 at 11.59 pm, 2020, the Aotearoa New Zealand (NZ) Government shut down the entire country due to the coronavirus disease 2019 (COVID-19) pandemic leaving some New Zealanders anxious and nervous. These were and continue to be unprecedented times in global history. What began with several cases in the small town of Wuhan, China has wreaked havoc exponentially and left a trail of mortality and economic disaster in its wake. A pandemic like this has not been seen since the 1918 influenza (flu) outbreak. COVID-19 has swept through the globe and forced an abrupt halt to normal life as we know it. The negative impact of COVID-19 may take years, even decades, to recover from. NZ, as a country, has had its fair share of disasters, and although entirely isolated from the rest of the world, there was no hiding from COVID-19 as it entered the borders. The NZ Government acted quickly, 'Go hard and go fast', sending the country into lockdown. As businesses, cafes, gyms, schools, and many other non-essential services dimmed the lights for an unknown period, New Zealanders united to fight this war; the mission was to 'stay home, save lives'. The country came to an abrupt halt; possibly due to a cough that originated in a Chinese food market. The lives of many New Zealanders were suddenly compromised. The impact of COVID-19 is evident with the death of loved ones, separation, and isolation due to travel restrictions, businesses struggling to stay afloat and many closing their doors which has resulted in major job losses across the country. These factors, among others, could impact the wellbeing of New Zealanders now and for years to come.

Chapter One: Introduction

1.1. **Background**

1.1.1. **The COVID-19 Pandemic**

A pandemic is a large-scale outbreak of infectious disease that can increase morbidity and mortality worldwide and cause significant economic, social, and political disruption (Madhav et al., 2018). Academics had anticipated the current pandemic. In 2007, scientists warned of a novel coronavirus outbreak and identified that:

Coronaviruses are well known to undergo genetic recombination, which may lead to new genotypes and outbreaks. The presence of a large reservoir of SARS-CoV-like viruses in horseshoe bats, together with the culture of eating exotic mammals in southern China, is a time bomb. (Cheng et al., 2007, p.683)

A study from Jones et al. (2008) suggested that an increase in global travel and climate change would increase the likelihood of a global pandemic occurring this century. The 2003 severe acute respiratory syndrome (SARS) and the 2009 H1N1 Swine flu outbreaks showed that the catch-and-isolate policy in the early stages of the emerging pandemics allowed containment limiting the spread of the diseases but that there was a need to maintain essential services and continue everyday activities as far as possible (Watkins, 2020). Madhav et al. (2018) stated that a further focus on policy and preparedness was needed to limit the likelihood of a pandemic outbreak.

The virus responsible for the current pandemic originated in Wuhan, China, in December 2019 and was quickly identified as a novel beta-coronavirus that caused coronavirus disease 2019 or COVID-19 (Whitworth, 2020). According to Whitworth (2020) and consistent with previous research (Cheng et al., 2007), this virus likely originated from bats. The World Health Organization (WHO) made a definite statement on 11th March 2020: "... we are deeply

concerned by the alarming levels of spread and severity, and by the alarming levels of inaction. We have therefore assessed that COVID-19 can be characterized as a pandemic" (Ghebreyesus, 2020). Once the disease was recognised as a global pandemic, nations, commerce, and healthcare were able to move into a much more rational phase with resources targeted at those most in need (WHO, 2009). Nevertheless, by the end of 2020, the WHO estimated that the total number of global deaths attributable to the COVID-19 pandemic was at least 3 million (WHO, 2021). Furthermore, severe, and critical COVID-19 patients who survived would often develop post-intensive care syndrome and require ongoing rehabilitation (Simpson & Robinson, 2020; Smith et al., 2020). Thus, the significant impact on physical health and care for COVID-19 patients placed considerable stress on health care resources.

In NZ, the Civil Defence Emergency Management Act 2002 states that a Minister can declare a national state of emergency when an emergency is severe and is most likely to go beyond the resources of the Civil Defence Emergency Management Groups whose areas may be affected by the emergency (Civil Defence Management Act, 2002). This legislation allowed the NZ Government to declare a state of emergency in response to the rapid spread of the novel beta-coronavirus and COVID-19 throughout the country. In May 2020 the COVID-19 Public Health Response Act 2020 was created to allow the NZ Government to respond and act accordingly to the COVID-19 pandemic and replaced the State of Emergency Order (COVID-19 Public Health Response Act, 2020).

NZ is a geographically isolated country, between the Pacific and Tasman Oceans, with a population of five million (Worldometer, 2020). It is a smaller and less densely populated country than other countries affected by the COVID-19 pandemic. The first COVID-19 case was reported on the 28th of February 2020, and a nationwide state of national emergency was declared in NZ on March 25, 2020, with the entire nation required to go into self-isolation or lockdown (Civil Defence, 2020). The COVID-19 lockdown forced the closure of businesses, education facilities, gyms, and many more services that were deemed 'non-essential'. The lockdown also required the New Zealanders to stay at home for six weeks. These

enforcements saw a significant shift in everyday life and had an immediate impact on the quality of life (QoL) and wellbeing of the NZ population.

The effect of the COVID-19 pandemic on mental wellbeing is of growing concern in NZ. Every-Palmer et al. (2020) identified about one-third of its participants in a NZ study reported moderate or high psychosocial distress during the COVID-19 lockdown, in comparison to previous population surveys. Every-Palmer et al. (2020) suggest that this increase in psychological distress was due to reduced social contact, limited recreational opportunities, job losses and financial insecurity among young people; people with poor health status, and those who had past diagnoses of mental illness reporting poorer outcomes. The impact of the pandemic and strategies employed to limit the spread of COVID-19 on mental health have also been reported internationally. According to a global review by Fiorillo and Gorwood (2020), lockdowns, quarantines, social distancing, and self-isolation can negatively impact mental health. These authors also noted that the COVID-19 pandemic can cause trauma similar to that of natural disasters and international mass conflicts or wars. Fiorillo and Gorwood (2020) highlighted that several groups might feel the impact of the COVID-19 pandemic more than others. These include those people who have been in contact with the virus, vulnerable populations such as the elderly, people in abusive relationships, those who already suffer from some form of mental illness, frontline staff, and essential workers, and even people who are following the news through numerous media channels.

The economic impact of COVID-19 is also of global concern. The United Nations (UN) have established a founding document outlining the effects of the pandemic at a global level (United Nations, 2020). It found that poverty will rise significantly, with 100 million people expected to feel the full force of the pandemic (United Nations, 2020). It is anticipated that the COVID-19 pandemic will result in the first rise in global poverty since 1998 (United Nations, 2020). The impact of COVID-19 can be felt across the globe. The World Bank (2020) forecasted a 5.2 percent contraction in global gross domestic product (GDP) in 2020, labelling it as the "deepest global recession in decades" (para. 2) and highlighted the need to urgently respond to the

pandemic's negative health and economic outcomes, protect vulnerable populations, and implement recovery plans (World Bank, 2020). Recently the World Bank (2021) reported a fast post-recession recovery but one that is uneven due to the COVID-19 pandemic still spreading in parts of the world, exacerbating existing economic disparities. Research, such as that by König and Winkler (2021), has concluded that all efforts should be undertaken to avoid lockdowns as they have severely negative effects on economic activity. Taken collectively, the COVID-19 pandemic impacts on the physical, mental, and social wellbeing of individuals and the social and economic wellbeing of communities and countries.

1.1.2. The Aotearoa New Zealand response to the COVID-19 Pandemic

The NZ Government monitored the COVID-19 outbreak closely even before it was classified as a pandemic, and in the face of criticism from the tertiary education sector, from the 3rd of February 2020 only permitted NZ citizens and permanent residents to enter NZ (Hendrickson, 2020). It was a NZ resident returning from Iran that was NZ's first case of COVID-19 reported on 28 February 2020 (Strongman et al., 2021). Elimination of the COVID-19 required a lockdown of the NZ borders and for people to isolate themselves in their home 'bubble' (Figure 1-1). Research conducted some years before the COVID-19 pandemic had provided proof-of-concept around the closure of NZ borders as an intervention during a severe pandemic providing a net societal benefit (Boyd et al., 2017). However, this research assumed the intervention prevented the pandemic from arriving in NZ. Further overseas studies had also provided evidence that home confinement was an appropriate prevention strategy against the spread of a pandemic (Orset, 2018; Paleshi et al., 2017). Many countries employed similar lockdown protocols to NZ, such as Italy, the United Kingdom (UK), the United States of America (USA), and Iran with international leaders and governments having to act accordingly and under immense pressure (Nicola et al., 2020). While significantly impacting life in NZ, the restrictions limited the number of new COVID-19 cases (which would have continued growing exponentially with no lockdown), flattened the curve (indicating the spread of COVID-19 had ceased) followed by a downward slope which saw a reduction in community cases to zero

cases and achieved the Government's goal to eradicate and eliminate COVID-19 from the country (Fouda et al., 2020).

NZ was well equipped to close its borders. Boyd et al. (2017) found that NZ has a well-developed and protected border control system, and that NZ was relatively well organised in disease control. NZ has successfully eradicated several animal-related epidemics including sheep scab, *Mycoplasma bovis* disease, bovine brucellosis, hydatids, and Aujeszky's disease (Boyd et al., 2017; Corbel 2020; Davidson, 2011; Dudek et al., 2020). With regards to human diseases, the catch-and-isolate policy which involved a person who tested positive for a disease to stay home and isolate for an allocated period of time had been proven effective and had some definite success containing the SARS outbreak in NZ in 2003 (Watkins, 2020). The international response to COVID-19 required a halt to international tourism and visits to NZ. This, alongside the restrictions on domestic movement, has devastated the tourism sector. NZ like the rest of the world is highly dependent on tourism and export revenues, and border restrictions have negatively impacted the global economy (Carr, 2020; Fotiadis et al., 2021; Ioannides & Gyimóthy, 2020).

The NZ Government (2020) developed an alert level system based on scientific evidence and measurable outcomes over time: Level 1 (Prepare), Level 2 (Reduce), Level 3 (Restrict - lockdown); Level 4 (Eliminate - strictest lockdown) (Figure 1-1). The alert level system enabled the country to move through the alert levels based on the severity of an outbreak and location. A timeline of events is shown below in Table 1-1. Between March and April 2020, NZ was moved into Alert Level 4 (a strict national lockdown), moving to Alert level 3 on the 27th of April and into a less restrictive lockdown and the State of National Emergency to Alert level 2 on the 13th May 2020 (Table 1.1). The COVID-19 Public Health Response Act 2020 was developed, NZ appointed a Minister for COVID-19 Response, and on the 1st of July 2020, the COVID-19 Group was established as a business unit of the Department of the Prime Minister and Cabinet (DPMC)(Table 1.1). The DPMC COVID-19 Group is responsible for the integration of strategy and policy, system readiness and planning, insights and reporting,

system risk and assurance, and public engagement and communications to ensure a sustainable economy and social cohesion (DPMC, 2021).

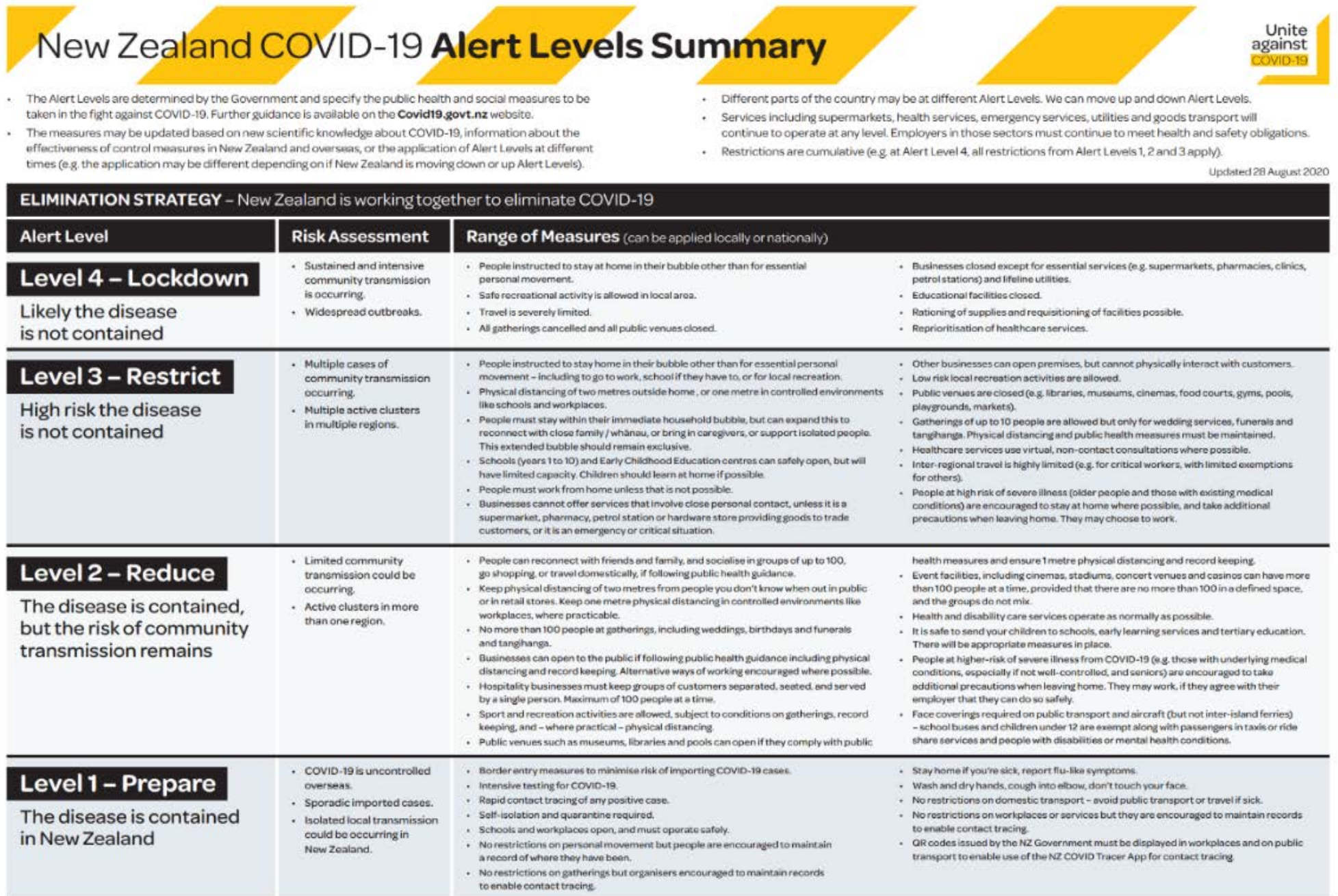
Internationally, NZ has been commended on its evidence-based COVID-19 response of closing its borders, locking-down people in their 'bubble', contact tracing and testing, and financial assistance for employers, with a strong and empathetic Prime Minister that communicated regularly with the 'team of 5 million' developing a common sense of purpose (Bloomfield, 2021; Henrickson, 2020). Nevertheless, COVID-19 exacerbated the impact of social inequalities which already existed in vulnerable populations (Social Policy & Parliamentary Unit, 2020). Hendrickson (2020) noted that "the COVID-19 crisis again has highlighted inequalities and weaknesses in the health, public health, economic and social policy infrastructures in which vulnerabilised populations are embedded" (p. 129). The impact of COVID-19 on the health and wellbeing of the people of NZ, especially vulnerable populations, is therefore an important issue.

Table 1-1 *Timeline of Key COVID-19 Events in Aotearoa New Zealand in 2020**

Date	Event
28-Feb-20	First COVID-19 case reported in New Zealand.
14-Mar-20	The Government announces anyone entering New Zealand must self-isolate for 14 days, except those arriving from the Pacific.
19-Mar-20	All indoor gatherings of more than 100 people are to be cancelled. Borders close to all but New Zealand citizens and permanent residents.
21-Mar-20	The Government introduces the 4-tiered Alert Level system to help combat COVID-19. The Prime Minister announces that New Zealand is at Alert Level 2.
23-Mar-20	At 1:30pm the Prime Minister announces New Zealand has moved to Alert Level 3, effective immediately. In 48 hours, New Zealand will move to Alert Level 4.
25-Mar-20	At 11:59pm, New Zealand moves to Alert Level 4, and the entire nation goes into self-isolation. A State of National Emergency is declared at 12:21pm.
29-Mar-20	New Zealand reports its first COVID-19-related death.
31-Mar-20	The State of National Emergency is extended at 9:27am. Further extensions are made at: 9:25am on 2 April 2020, 12:21pm on 8 April 2020, 12:21pm on 15 April 2020, 12:21pm on 22 April 2020, 12:21pm on 29 April 2020, 12:21pm on 5 May 2020.
20-Apr-20	The Prime Minister announces New Zealand will remain at Alert Level 4 for an additional 5 days. Then New Zealand will remain at Alert Level 3 for 2 weeks, before the status is reviewed.
27-Apr-20	New Zealand moves to Alert Level 3 at 11:59pm.
4-May-20	No new cases of COVID-19 are reported in New Zealand.
11-May-20	The Prime Minister outlines the plan to move to Alert Level 2.
13-May-20	New Zealand moves to Alert Level 2 at 11:59pm. The State of National Emergency expires at 12:21pm.
8-Jun-20	The Ministry of Health reports that there are no more active cases of COVID-19 in New Zealand. At 11:59pm, New Zealand moves to Alert Level 1.
11-Aug-20	Four new cases of COVID-19 are recorded in the community.
12-Aug-20	At 12 noon, Auckland region moves to Alert Level 3. The rest of New Zealand moves to Alert Level 2.
14-Aug-20	The Prime Minister announces that Auckland will remain at Alert Level 3 and the rest of New Zealand will remain at Alert Level 2 for 12 more days.
30-Aug-20	Auckland moves to Alert Level 2 at 11:59pm, with extra restrictions on travel and gatherings. The rest of New Zealand remains at Alert Level 2.
21-Sep-20	All regions except Auckland move to Alert Level 1 at 11:59pm.
23-Sep-20	Auckland moves to Alert Level 2 without extra restrictions on travel and gatherings at 11:59pm.
7-Oct-20	Auckland moves to Alert Level 1 at 11:59pm. All of New Zealand is now at Alert Level 1.

*Adapted from <https://COVID-1919.govt.nz/alert-levels-and-updates/history-of-the-COVID-19-alert-system/#timeline-of-key-events>

Figure 1-1 The Aotearoa New Zealand COVID-19 Alert Level System. Source. New Zealand Government (2020).



1.1.3. Health and wellbeing and hauora in the context of a pandemic

A pandemic can have a range of negative social, economic, and political consequences that will affect the health, education, transport, tourism and financial sectors impacting on people's wellbeing and QoL (Qiu et al., 2017). Governments worldwide are prioritising wellbeing, especially in the wake of COVID-19, however, terminology clarification is required with regards to health, wellbeing and QoL (Karimi & Brazier, 2016; Salvador-Carulla et al., 2014). Currently, there is not one definition of health, wellness, or wellbeing and often the definitions overlap. The WHO (2020) defines health as a combination of physical, mental, and social wellbeing rather than just the absence of disease or infirmity. Studies have found that wellbeing should centre on a state of equilibrium or balance and is affected by a range of social, economic and environmental forces (Dodge et al., 2013; La Placa et al., 2013). Wellbeing could also determine what value someone perceives their life to be and how it could be considered as an index of societal progress (Voukelatou et al., 2021). Thus, the holistic nature of health and wellbeing has been widely accepted.

Taking a holistic approach to health and wellbeing aligns well with hauora. Hauora is a Māori view of health and wellbeing unique to NZ, and encompasses the physical, mental, social and spiritual needs of an individual. Sir Mason Durie who developed Te Whare Tapa Whā, a model of health which focuses on the four pillars (pou) of a house (whare) representing mental (hinengaro), physical (tinana), social (whānau), and spiritual (wairua), respectively (Rochford, 2004). Te Whare Tapa Whā translates as the four sides of a house, each linked and co-dependent to create a sustainable structure (Durie & Kingi, 1997). Optimal health and wellbeing is achieved by ensuring all pillars of Te Whare Tapa Whā are maintained and complement each other (Durie & Kingi, 1997). Another model of Māori health is Te Wheke (The Octopus), where each tentacle of the octopus represents a certain strand of life (Love, 2004). The Te Wheke model was developed by Rose Pere and proposes that sustenance is required for each tentacle/dimension if the organism is to attain waiora or total wellbeing and identifies the eight tentacles of an octopus represent eight dimensions of life. These include:

wairua (spiritual), mana ake (unique identity), mauri (lifeforce), whanaungatanga (whānau or whānau-like connectedness), tinana (body), hinengaro (mental wellbeing) whatumanawa (emotion), and ha a koro ma a kuia ma (breath of life) (Love, 2004). Due to their holistic nature, each model of health although unique has many overlapping features. These holistic views of health are embraced by Te Pae Mahutonga which utilises the Southern Cross constellation to create a health promotion model (Durie, 1999). Te Pae Mahutonga, which is closely associated with the discovery of NZ by Māori, brings together six key components: mauri ora - access to te ao Māori and promotion of cultural identity, waiora- environmental protection, toiora - healthy lifestyles, te oranga - participation in society, ngā manukura – community leadership, and te mana whakahaere - autonomy (Durie, 1999).

Gowan (2014) believes that promoting actions and models of health can support people to become more resilient, empower adversity against possible future events, and increase and improve preparedness and readiness for a likely disaster. Given that the COVID-19 pandemic has highlighted and negatively impacted health inequities, the co-design of health promotion interventions in collaboration with Māori is paramount (Harding et. al, 2021), however, to evaluate the effectiveness of such interventions, measures of wellbeing and QoL are needed.

1.1.1 Measuring quality of life

While wellbeing typically refers to an individual's subjective evaluation of how their life is going, QoL generally involves an objective measure of an individual's position, relative to their environment including their culture, values, goals, and expectations in life (Skevington & Böhnke, 2018; WHO, 2012). There are a variety of QoL measurement tools that are used today. The Flanagan Quality of Life Scale is composed of 15 items covering five domains: (1) physical and material wellbeing, (2) relations with other people (3) social, community and civic activities; (4) personal development and fulfilment; and (5) recreation (Flanagan, 1978), The Short Form Survey otherwise known as the SF-36 survey has been designed to focus on eight dimensions of an adult's perception of their own health and wellbeing including (1) physical functioning, (2) physical and emotional limitations, (3) social functioning, (4) bodily pain, (5)

general and (6) mental health (National Center for Interprofessional Practice and Education, 2016). The Health-Related Quality of Life Questionnaire (HRQoL) is an individual's or a group's perceived physical and mental health over time (WHO, 2012). The EQ-5D is a popular instrument used globally and defines health in five dimensions: (1) mobility, (2) self-care, (3) usual activities, (4) pain/discomfort, and (5) anxiety/depression (Heardman et al., 2011). These QoL tools have been used extensively worldwide to provide data and information to researchers, service providers, and institutions on how individuals and groups perceive their life satisfaction. However, applying these instruments to an indigenous population may not be appropriate as many QoL tools operate from a Euro-centric viewpoint and have a Western influence or colonised approach (Crouch, 2017).

Research has highlighted the need for culturally appropriate tools to assess the QoL of indigenous populations with either the adaptation of existing wellbeing instruments being required or the development of tools with indigenous populations (Angell et al., 2016; Crouch, 2017; Le Grande et al., 2017). Furthermore, a good outcome in one culture may not be regarded positively in another (Durie & Kingi, 1997), therefore, a universally appropriate wellbeing or QoL tool is unlikely. The development and design of indigenous tools should include consultation with the very population it aims to measure (Angell et al., 2016; Crouch, 2017; Le Grande et al., 2017). In order for the NZ Government to prioritise people's wellbeing, it is vital that the perception of their wellbeing and QoL is captured in a culturally appropriate way to provide an immediate and effective response to minimise the negative impacts of the COVID-19 pandemic.

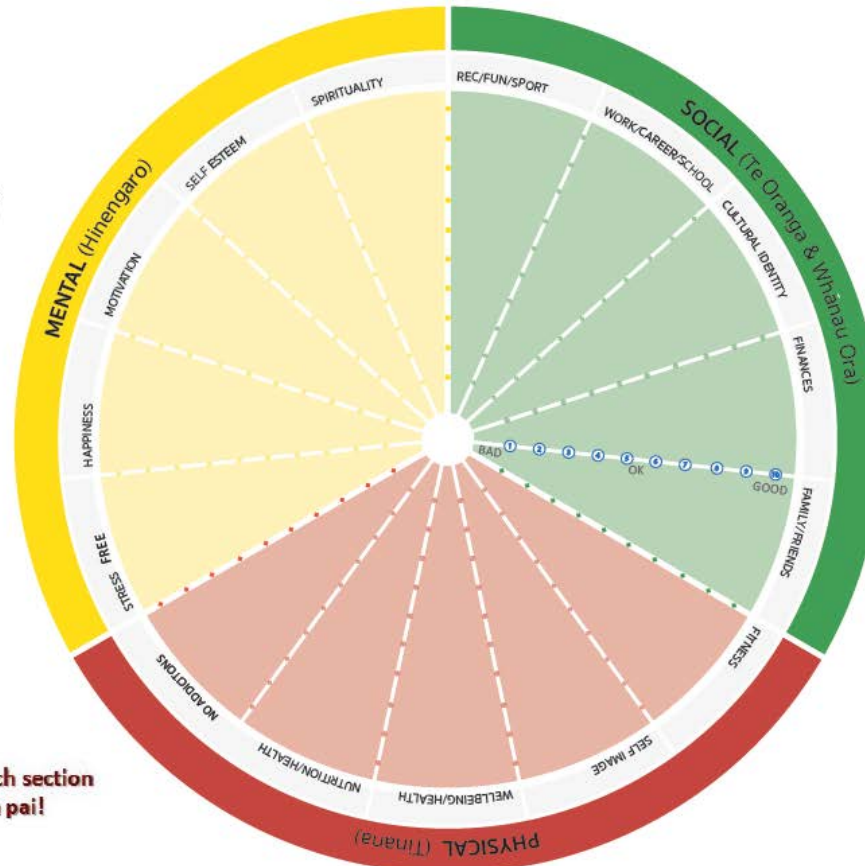
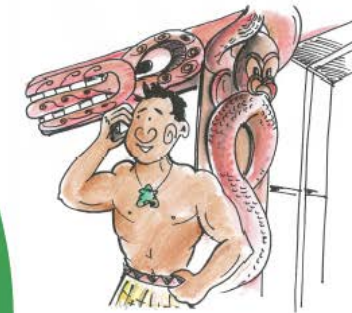
1.1.2 The Meke Meter™

Angell et al. (2017) suggested that it is vital that QoL instruments are based on the most important domains to the indigenous groups themselves. The Meke Meter™ is a subjective hauora self-assessment tool developed in consultation with indigenous communities who attended PATU™ (Forrest et al., 2019). PATU™ is a group exercise regime developed for Māori and Pasifika communities to improve health and wellbeing (Forrest et al., 2016). The 'patu' is a weapon that is traditionally used to fight off or *hit* enemies. PATU™ uses group exercise and high-intensity interval training (HIIT) approaches to combat ill health and wellbeing associated with sedentary behaviours (Forrest et al., 2016). In early research assessing the effectiveness of PATU™ as a healthy lifestyle intervention, the Short Form 12 was utilised but it was identified that the use of this literacy-based, non-indigenous tool was not appropriate and there was a need to develop an instrument in collaboration with the PATU™ members and staff (PATU™ whānau). The result was the Meke Meter™, a culturally appropriate, holistic, self-assessment tool with minimal text (Figure 1-2). The Meke Meter™, and its development, reflects the holistic nature of hauora and the Māori models of health and health promotion. The PATU™ whānau embraced the use of the Meke Meter™ which does not require the user to write but instead score themselves on a scale of 1 to 10, where 1 is the lowest score and 10 is the highest across three domains: mental wellbeing, social wellbeing, and physical wellbeing each with five subdomains (Figure 1-2). As well as being used in the PATU™ gym setting, Forrest et al. (2019) found that the Meke Meter™ was a simple and versatile tool to use in an education setting for both students and teachers.

Figure 1-2 The Meke Meter™ (Trade Mark is owned by the author)



The MEKE meter!



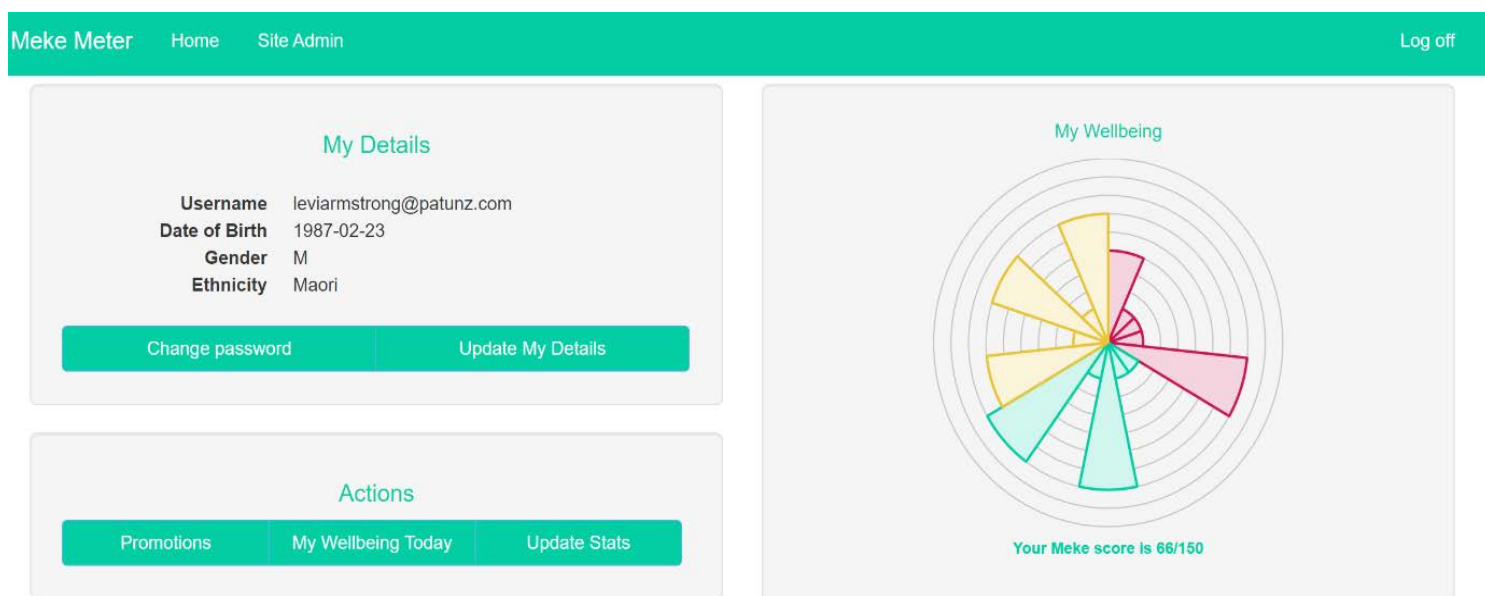
Tēnā koe!
 Rate yourself (honestly) for each section
 A big slice of pie = very Ka pai!

Name: _____

Date: _____

In 2019, an online platform was established for the Meke Meter™ to capture basic demographics, including age, ethnicity, and location, along with the score for each section. The Meke Meter™ has a digital equity policy. It aligns with the NZ Ministry of Health Vision for health technology (Ministry of Health, 2019) to provide equal access and opportunity to individuals and diverse groups of races, ethnicity, socio-economic class, language, gender, and other culturally diverse groups. Once the Meke Meter™ is completed, the user receives an overall wellbeing score, along with a graphical representation of their Meke Meter™ which allows the identification of areas of strength and those that may require support (Figure 1-3).

Figure 1-3 The online Meke Meter™ user interface (Trade Mark is owned by the author)



1.2 Research Questions, Aim and Objectives

This project aimed to better understand how the COVID-19 pandemic and the March 2020 lockdown has impacted on New Zealander's QoL and to provide data (both quantitative and qualitative) to facilitate informed decisions on the partitioning of resources required to support New Zealanders during and post-pandemic.

The research objectives were to:

- Track people’s perception of their wellbeing during COVID-19 pandemic and the March 2020 lockdown using the Meke Meter™.
- Ask participants how they feel the pandemic has impacted on their QoL and wellbeing.
- Ascertain how participants found the usefulness of the Meke Meter™ and whether they intend to continue using it.

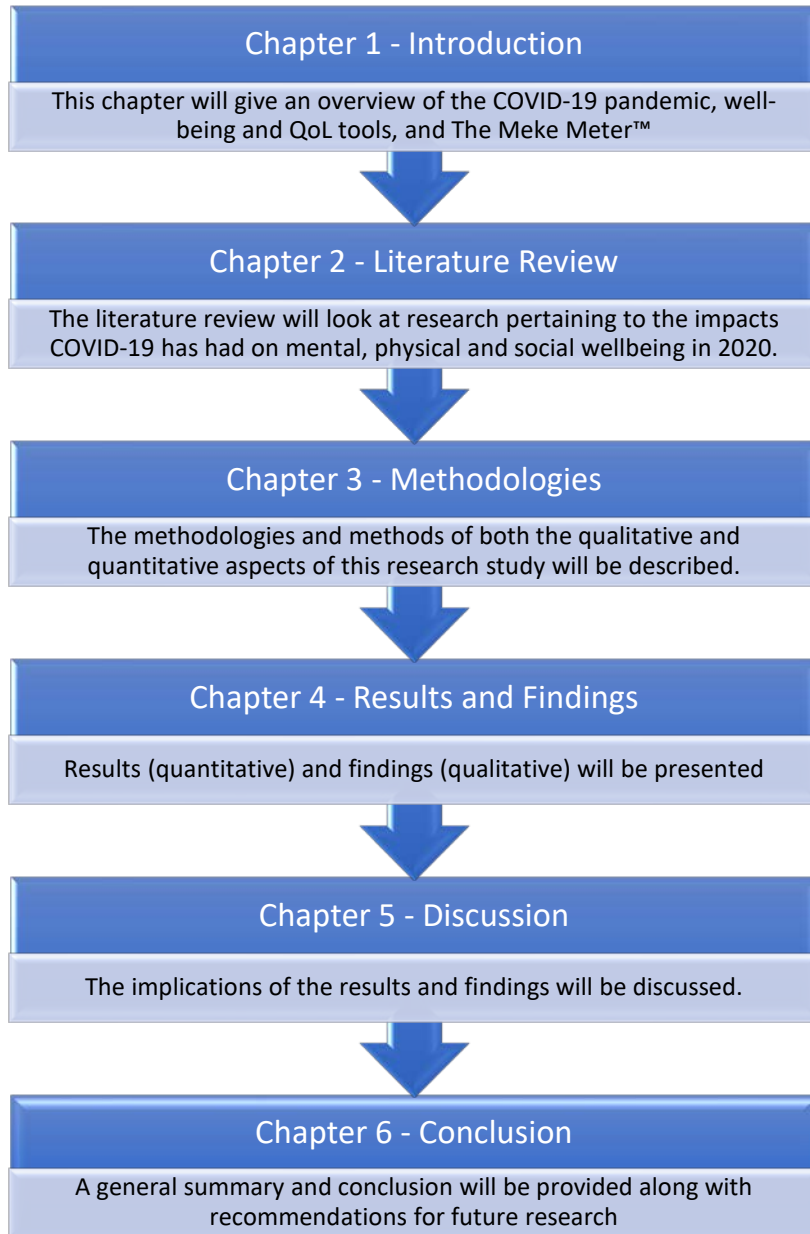
1.3 Research Rationale

The COVID-19 pandemic and resulting lockdowns, undoubtedly, have consequences on the hauora of New Zealanders. The way New Zealanders respond to these will determine the impact of COVID-19. A pandemic can cause human trauma similar to what individuals experience in a natural disaster (Fiorillo & Gorwood, 2020). After the Christchurch earthquakes, data from the Christchurch Wellbeing Survey identified those vulnerable communities as being people with physical health issues, with low income, and those in temporary accommodation, all of which were slower to recover (Morgan et al., 2015). Morgan et al. (2015) also highlighted the ongoing need for psychological support, especially in vulnerable communities. During the response and recovery from the Christchurch earthquakes, data was considered a powerful tool to inform policymaking and inventions to address the needs of the nation after a significant negative event. The data gathered from the Christchurch study supported the decision by the NZ Government to invest funding for four further years into psychological services (Morgan et al., 2015). Likewise, data collected during the COVID-19 pandemic will better inform inventions that aim to aid the recovery of individuals and communities in NZ. This research presents data collected during the COVID-19 pandemic using culturally appropriate methods and discusses the implications of the findings.

1.4 Thesis Outline

Figure 1-4 provides an outline of this thesis, providing a brief description of what will be covered in each chapter.

Figure 1-4 Chapter outline for this thesis



Chapter Two: Literature Review

2.1 Introduction

The early history of pandemics dates back to the Antonine plague (suspected to be smallpox) back in 165 AD, with the Spanish Flu in 1918, and some of the most recent pandemics including SARS (2002–2003), human immunodeficiency virus infection and acquired immunodeficiency syndrome or HIV/AIDS (2005–2012), swine flu (2009–2010), Ebola virus disease (2014–2016), Middle East Respiratory Syndrome Coronavirus or MERS-CoV (2015), and COVID-19 (2020-present) (Munnoli et al., 2020).

This narrative (traditional) literature review will examine the impact that the COVID-19 pandemic has had on individuals and communities across the world in 2020 and in NZ using the three main domains of the Meke Meter™ (mental, physical and social wellbeing) as a broad framework within which to survey the literature. COVID-19 is not the first time a pandemic has affected the NZ population. Māori, the indigenous people of NZ or Aotearoa (the land of the long white cloud), discovered the land in the 1600s. Dutch navigator Abel Tasman spotted NZ on December 13, 1642, by Dutch navigator Abel Tasman, but NZ was not explored until 1769 by Captain James Cook and with the arrival of James Cook and Europeans also came the introduction of diseases that would impact the Māori population (Lange, 2011). These diseases included measles, influenza, typhoid fever (enteric fever), dysentery, and tuberculosis (Taonga, 2020). The 1918 Spanish Flu was one of the most widespread natural disasters in modern history and is comparable to COVID-19 in terms of rate of transmission, global spread, and mortality rates (Arthi & Parman, 2021). Given its similarities to COVID-19, much literature and research frequently refer to the 1918 pandemic as a useful example. The Spanish Flu 1918 (Influenza) pandemic quickly spread throughout NZ and had very high mortality rates, claiming a total of 8831 New Zealanders' lives and 40percent of the population infected (Rice, 2018). Health inequities were evident, and the death rate in Māori was more than eight times that for non-Māori (Rice, 2018). Literature from around the world will be

presented in the following sections with the impact of the COVID-19 pandemic on people in NZ, in particular Māori, being highlighted.

2.2 *Mental Wellbeing*

The WHO (2004) defines mental health as "a state of well-being in which every individual realizes his or her potential, can cope with the normal stresses of life, can work productively and fruitfully, and can contribute to her or his community" (p. 10). There has been a real sense of the unknown as the COVID-19 pandemic unfolds, coupled with social isolation and financial insecurity resulting from the lockdown, which has affected people's mental and physical health (Sibley et al., 2020). Many studies have explored the impact of the COVID-19 pandemic on mental health. The following subsections will examine the topics of psychological distress, addiction and substance abuse, suicide and COVID-19's impact on essential workers, in particular, health professionals and will conclude with an NZ-specific section and a brief summary. The link between mental and physical wellbeing will be explored in section 2.3.

2.2.1 *Psychological distress*

Stress responses are the body's reaction to adjust when an event or change occurs and serve to promote physiological and psychological adaptation (Kemeny, 2003). Stressful experiences can have significant effects on a variety of physiological systems, including the autonomic nervous system and the immune system (Cleveland Clinic, 2020; Kemmeny, 2003; Perlin et al., 1981). These can contribute to altering moods and depression (Perlin et al., 1981). Distress occurs when stress is severe, prolonged, or both. The COVID-19 pandemic is associated with highly significant levels of psychological distress, with relatively high rates of anxiety, depression and other mental health problems being reported (see reviews by Serafini et al., 2020; Xiong et al., 2020). An investigation into the psychological effects of COVID-19 found an increase in negative emotions (anxiety, depression, and indignation) and sensitivity to social risks, as well as a decrease in positive emotions and life satisfaction after the

declaration of COVID-19 in China (Song et al., 2020). This impact of COVID-19 on wellbeing in China has led to a 74 percent drop in overall emotional wellbeing (Yang & Ma, 2020).

Several factors have been reported to contribute to higher levels of distress. Kalil et al. (2020) found a strong association between job and income losses and depressive symptoms. Relatively high anxiety and depression levels were reported in China due to the COVID-19 pandemic, particularly among those who perceived themselves as having poor health before the outbreak already (Qiu et al., 2020; Song et al., 2020). Socioeconomic deprivation at both the person-level and neighbourhood-level has also been associated with a higher prevalence of mental health problems (Annequin et al., 2015; Klijs et al., 2016). COVID-19-associated factors have impacted sleep health on a global level with poorer sleep health being strongly associated with greater depression and anxiety symptoms and domestic conflict (Yuksel et al., 2021).

In addition to socioeconomic status, the presence and severity of these affective disorders has also been associated with other neighbourhood factors including physical factors such as air pollution, traffic noise and availability of green space and water, and social factors such as social cohesion and safety (Generaal et al., 2019). Concerns for personal safety have had a negative effect on mental health with evidence showing that factors like fear of contracting the disease, the potential harm the virus can have on the body, and relational concerns such as encountering someone who has the virus, detrimentally impact on psychological wellbeing and happiness (Yang & Ma, 2020).

Lucchetti et al. (2020) investigated the association between religion and spirituality and mental health during social isolation in Brazil. They found that religion and spirituality have an important role in reducing suffering, influencing health outcomes and minimising the consequences of social isolation. Spiritual wellbeing is about our inner life and its relationship with the wider world, our relationship with the environment, our relationships with others, and ourselves (Ribeiro et al., 2020). According to Dienstmann (2018), understanding one's purpose in life is a common theme when understanding spirituality and evidence shows that

religiosity and spirituality are highly used in critical moments of life. These beliefs are associated with clinical outcomes but are yet to be tested during a pandemic (Lucchetti et al., 2020). Aligning with this research are studies that have revealed that medical staff in hospitals pay more attention to patients who are diagnosed with COVID-19 and implement a spiritual and religious strategy to improve patients' calmness and wellbeing (Fardin, 2020). Fardin (2020) suggests that while the consequence of social isolation was the closure of churches and religious meetings, spirituality and faith promote mental relaxation during the COVID-19 outbreak.

2.2.2 Addictions and substance abuse

Psychological distress associated with the pandemic is driving unhealthy patterns of substance use (Enos, 2020). Furthermore, for those individuals who suffer from substance use disorders, their conditions have been exacerbated during the pandemic (Ornell, 2020). Those people with substance use disorders also have a heightened risk to contract COVID-19 (Dubey et al., 2020). In their review Dubey et al. (2020) highlight that "addiction and COVID-19 fuel each other to cause a global public health threat" and that "psychiatrists must be prepared for an imminent hike in withdrawal symptoms and addictive behaviors" (p. 817). People were advised to stay at home during the lockdown and isolate away from society, which also restricted meetings, celebrations, and parties, and in turn reduced the opportunities to obtain and use illicit substances (Kar et al., 2020). While on the surface this might seem beneficial, people with substance addictions experienced severe withdrawal symptoms during lockdown which were sometimes life-threatening (Kar et al., 2020).

COVID-19 lockdowns resulted in a significant increase in online alcohol sales and have been associated with heavier and excessive drinking (Enos, 2020; Huckle et al., 2021). Researchers believe that alcohol use can reduce emotional discomfort, but neuroadaptations in the brain result in the need for higher doses and a heightened sense of emotional discomfort when the alcohol wears off (Enos, 2020). Increased alcohol consumption is associated with increased risk of severe lung infections, non-communicable diseases, domestic violence, child abuse,

depression and other mental health problems, and suicide; these risks being amplified by people being confined at home and living closely together (see reviews by Ramalho, 2020; Stockwell et al., 2020). The increase in alcohol consumption and associated problems has led to some governments restricting alcohol sales, for example, in South Africa and Belgium (Matzopoulos et al., 2020; Schmits & Glowacz, 2021). Kar et al. (2020) suggest that while there is a required emphasis on containing the virus with the associated changes in health service priorities, there are limited services for substance users and hence enforce that there is an urgent need to address the mental health issues of people during the pandemic. Similarly, Ornell (2020) believes that to avoid complications of both substance use disorders and COVID-19 and to reduce the transmission of coronavirus (as those under the influence of drugs are less likely to comply with social restrictions), addiction care must be reinforced rather than postponed or deprioritised.

Social media has become an increasingly popular leisure activity over the last decade with a small number of users appearing to engage in social media excessively and/or compulsively (Andreassen et al., 2017). Social media usage is known to be highly addictive due to its psychological, social, and neurobiological basis. Humans are thought to possess a fundamental drive to compare themselves with others, which serves various functions, such as fulfilling affiliation needs (Schachter, 1959). Social media platforms such as Facebook, Instagram, and Snapchat provide abundant social comparison opportunities (Vogal et al., 2014). Vogal et al. (2014) conducted a study to compare the impact of social media usage on self-esteem and the results showed that participants who used Facebook most often had poorer trait self-esteem. A study conducted in Norway using the Bergen Social Media Addiction Scale (BSMAS) identified that lower age, being a woman, not being in a relationship, being a student, lower education, lower income, lower self-esteem, and narcissism scored at the higher end of the addiction spectrum while highlighting that women may tend to develop more addictive use of activities involving social interaction than men (Andreassen et al., 2017). In March 2020, BusinessToday.In (2020) reported a 87 percent increase in social media usage during lockdown

The COVID-19 pandemic has also had a negative impact on the prevalence and severity of behavioural addictions such as social media use and comfort eating (Panno et al., 2020). During the pandemic, social isolation and lockdown led to an upsurge in time spent on social network sites with connecting and engaging people and comparing how the rest of the world is living in confinement (Ruggieri et al., 2021). Vall-Roqué et al., (2020) explored the impact of COVID-19 on social network sites with body image disturbances and low self-esteem during lockdown for young women living in Spain. These researchers found that there was a significant increase in the frequency of use of social network sites during the lockdown and in the number of women following appearance-focused Instagram accounts suggesting that there is an increased drive for thinness and eating disorder-risk women (Vall-Roqué et al., 2020). An increase in the consumption of social networks with significant incidences of addiction was also observed in university students during the first wave of the pandemic (Gómez-Galán et al., 2020). A recent study by Zhoa and Zhou (2021) revealed that individuals who experience more COVID-19 stress were at increased risk of addictive social media use. COVID-19-related distress was also associated with higher food addiction symptoms (Panno et al., 2020).

Gaming is a growing industry and has experienced exceptional growth during COVID-19. Sales of gaming consoles were up 285.6 percent in Australia (New Zealand Herald, 2020), a 39 percent increase in mobile game downloads in China (Sensor Tower, 2020), and a 75 percent increase in gaming data use in the USA (Stuff, 2020). Fernandes et al. (2020) found that adolescents who scored highly on gaming addiction, compulsive internet use and social media use also reported high scores of depression, loneliness, escapism, poor sleep quality and anxiety related to the pandemic. A recent systematic review found that an increase in Internet-based addictive behaviours during the COVID-19 pandemic was associated with financial hardships, isolation, problematic substance use, and mental health issues such as depression, anxiety, and stress (Masaeli & Farhadi, 2021).

2.2.3 Suicide

The impact of the COVID-19 pandemic on public mental health has major suicide and suicide prevention implications (Niederkrötenhaler et al., 2020). It is anticipated that the COVID-19 pandemic will kill via the disease as well as through its impact on mental wellbeing and suicide. The phrase 'deaths of despair' stems from unprecedented economic pressures and a breakdown in social support structures, leading to death in the form of suicide or drug overdose (Allik et al., 2020). Deaths of despair should be seen as the epidemic within the COVID-19 pandemic (Pettersson et al., 2020). The true impact of the pandemic on suicide rates will not be known until 2021 and beyond.

2.2.4 Mental wellbeing in essential workers

Healthcare and other essential workers are on the frontlines, battling the COVID-19 pandemic and this is having a significant impact on the mental wellbeing of these individuals and their families (Bell et al., 2021; Cai et al., 2021; De Boni et al., 2020; Gaitens et al., 2021; Gribble et al., 2020; Raj et al., 2020; Toh et al., 2021). During the COVID-19 pandemic healthcare professionals are exposed to several stress factors, in particular those in close contact with patients with the virus which can affect mental and physical health, decreasing performance and efficiency at work (Maffoni et al., 2021). Furthermore, it has been suggested that essential workers who live in middle-income countries with higher rates of inequality may face additional challenges (De Boni et al., 2020). For essential workers, a profound psychological dilemma exists between meeting their professional obligations versus self-preservation and protecting their family and friends against exposure to this deadly virus. Confirming this, an Australian study found that the main COVID-19 related concerns of essential workers were primarily associated with the health and wellbeing of loved ones (Toh et al., 2021). Windarwati et al. (2021) indicated that family support is the main factor motivating healthcare workers to provide healthcare services during the COVID-19 outbreak. These concerns are on top of the already high rates of stress and burnout commonly reported by healthcare workers. Maffoni et al. (2021) recommend that an emphasis on health promotion and developing strategies and

policies along with diet tips for stress management and to satisfy nutritional requirements in the health sector will enhance resilience among healthcare professionals exposed to the virus.

2.2.5 Mental wellbeing in Aotearoa New Zealand

Human behaviour has and will play a decisive role in the spread of COVID-19 across the world (Miller et al., 2020). While the rest of the world waited, NZ chose to 'go hard and go early' (The Mental Wellbeing of New Zealanders during and Post-Lockdown, 2020). The approach needed the support and compliance of five million people to go into isolation, and the motivation of NZ as a nation was required. Motivation is the process that initiates, guides, and maintains goal-oriented behaviours providing the reasons for acting or behaving in a particular way (Cherry & Mattiuzzi, 2010). There are two distinct forms of motivation: intrinsic which comes from within a person and extrinsic, which is the external factors activating and maintaining how a person acts or behaves (Tovmasyan & Minasyan, 2020). Different motives drive how people participate in lockdowns and quarantines; while some may see value in a lockdown or quarantine, others may feel forced into it by authorities or the government (Weinstein & Nguyen, 2020). While self-isolation and lockdown was an effective strategy to 'flatten the curve' of coronavirus infections by preventing the risks of contracting the virus, the psychological consequences are still being ascertained with forced solitude thought to be the most detrimental form of solitude (Weinstein & Nguyen, 2020). Furthermore, "during the pandemic lockdown, essential workers (those in healthcare and those providing 'other' essential work) were at increased risk of anxiety compared with those in nonessential work, with those in healthcare also being at increased risk of poor wellbeing" (Bell et al., 2021, p.1). Increased uptake of digital mental health services has been documented following the outbreak of COVID-19 in Australia and NZ (Mahoney et al., 2021).

During the first 10 weeks of the COVID-19 pandemic, the NZ population reported higher levels of depression and anxiety than normal but reported lower levels of anxiety and stress than a UK sample, when adjusting for differences in age and gender (Gasteiger et al., 2021). Faulkner et al. (2021) also found that New Zealanders reported better mental health and

wellbeing than the UK, Ireland, and Australia. An Every-Palmer et al. (2020) study of 2010 demographically representative participants found that one-third reported moderate or high psychosocial distress which is well above baseline measures. Younger people and those most at risk of contracting COVID-19 reported poorer mental health along with those who had lost their jobs or had a past mental health diagnosis (Every-Palmer et al., 2020; Gasteiger et al., 2021). Addictive behaviours such as smoking and alcohol were associated with a poorer mental health status (Gasteiger et al., 2021). Every-Palmer et al. (2020) also reported that the levels of family harm were between three times higher, and that suicidal ideation was reported by six percent of the respondents, with two percent reporting making plans for suicide and two percent reporting suicide attempts with those aged 18–34 being in the most at-risk age group. This is consistent with the mental health presentations to the Christchurch Hospital Emergency Department during COVID-19 lockdown in 2020 which showed an increase in overdoses and self-harm (Joyce et al., 2021).

The link between physical activity and mental health was explored by several researchers. Meiring et al. (2021) examined the motivation to exercise, physical and mental health, and feelings towards physical activity during the March-May 2020 COVID-19 lockdown in NZ. They reported that 85 percent of the respondents exercised regularly before lockdown occurred and half maintained physical activity levels during the lockdown. It was identified that respondents felt that physical activity had more benefits for their mental health than body image and fitness (Meiring et al., 2021). Meiring et al. (2021) concluded that during lockdowns, strategies to increase or maintain engagement in physical activity should be encouraged to promote positive mental health during the COVID-19 pandemic. Similarly, Faulkner et al. (2021) found that participants who reported exercising less during COVID-19 restrictions compared to their normal level of exercise had poorer mental health and wellbeing compared to those who maintained or increase their exercise levels. Likewise, Gasteiger et al. (2021) found that exercise was a protective factor and concluded that population-based interventions during the remainder of the COVID-19 pandemic should promote exercise and target loneliness, excessive alcohol and smoking.

NZ saw a significant increase in alcohol consumption during COVID-19 lockdown (Stuff, 2020). An online study using Facebook sampled 2173 New Zealanders and found that 75 percent of respondents purchased alcohol from supermarkets, 40 percent used online alcohol delivery services, and 56 percent of the total participants reported that alcohol was easier to get delivered than fresh food (Huckle et al., 2021). Schmits and Glowacz (2020) identified that 49.1 percent of its 2871 adult participants reported stable alcohol consumption, 24.5 percent reported a decrease in alcohol consumption since the beginning of the lockdown and 26.4 percent reported an increase in consumption and that specific populations that were older, working from home, more likely to have children, higher educated would consume alcohol more frequently and in higher quantities and have higher levels of anxiety and depression. Gendall et al. (2020) conducted an online survey with adults within NZ during the COVID-19 lockdown and found that nearly half of daily smokers reported smoking more during the lockdown than prior to and that an increase in daily cigarette consumption was associated with loneliness and isolation. Gendall et al. (2020) suggested that interventions to support recent quitters and those attempting to quit should form a key component of future pandemic planning while also increasing cessation outreach strategies that promote and support smoke-free practices.

Sibley et al. (2020) found that overall New Zealander's displayed resilience during the first national lockdown. Sibley et al. (2020) reported that Māori were proud of their ability to cope and reported higher whānau resilience than non-Māori. While one in three New Zealanders reported moderate or high psychosocial distress during the first national lockdown, only one in five Māori said they suffered adverse psychological outcomes (Houkama et al., 2021). These findings highlight the importance of key values such as whanaungatanga (connectedness - whereby whānau gravitate to and support one another) and matauranga (understanding the knowledge within indigenous communities) when it comes to negotiating unprecedented events.

While it is too soon to evaluate the long-term effects of the COVID-19 pandemic, lessons can always be learned from past events. Over the past decade, NZ has had many life-changing events including the 2010-2011 Christchurch earthquakes. Fiorillo and Gorwood (2020) compared the COVID-19 pandemic to natural disasters, such as earthquakes or tsunamis. Spittlehouse et al. (2014) found that mental health was significantly worse post-earthquake than pre-earthquake population norms for the Canterbury population and highlighted that the greatest impact was on middle-aged men and women who suffered mental health issues such as depression and bipolar post-disaster. Thus, in the wake of COVID-19, long-term provisions will need to be made to support the mental health of New Zealanders.

2.2.6 Summary

The COVID-19 pandemic continues to represent an unprecedented threat to mental health globally and within NZ. While lockdowns and social restrictions have been important for flattening the curve of viral transmission, it has become evident that these strategies have had significant impacts on mental health resulting in higher levels of mental disorders (e.g. anxiety, depression, post-traumatic stress disorder [PTSD] as well as suicide). Governments have therefore had to develop policies that minimise the risk of viral transmission within communities but also mitigate the risk to mental health in both the short and long term. Mental health is interconnected with physical and social wellbeing, and therefore necessitates a holistic approach. The following sections will explore some of the aspects of physical and social wellbeing affected by the COVID-19 pandemic.

2.3 Physical Wellbeing

Physical wellbeing is an integral component of achieving optimal health and wellness ensuring good health and enough energy to get things done daily (Rath & Harter, 2010). Physical wellness is achieved when the body's physical attributes are in a constant steady state. A positive emotional state may promote healthy perceptions, beliefs, and physical wellbeing (Salovey et al., 2000). As discussed in the preceding section, the reverse is also true. The physical environment such as open green spaces and external factors, such as toxins and air pollution, can also affect optimal physical health. According to the WHO, approximately seven million people die per annum due to air pollution alone (Guerreiro et al., 2018). In addition, the world has experienced physical changes due to climate change; therefore, we need to remember that we face another major crisis that threatens human prosperity (Rosenbloom & Markard, 2020). In this section, the impact of COVID-19 in 2020 on physical wellbeing will be examined using both an environmental and individual lens (the latter including physical activity, nutrition, and disparities) and the section will conclude with an NZ-specific section and a brief summary.

2.3.1 Environmental impacts

While COVID-19 has undoubtedly had negative impacts on human wellbeing, Verma and Prakash (2020) believe that because of the restrictions on global economic and transport activity during the COVID-19 pandemic lockdowns, the environment has recovered to a large extent having a positive impact on global climate change and thus on humanity in the future. Chen et al. (2020a) reported substantial human health benefits related to cardiovascular disease morbidity and mortality can be achieved with aggressive control measures for air pollution. Air pollution reductions from COVID-19 lockdowns in China and Europe have been thought to have resulted in tens of thousands of premature deaths from air pollution being avoided (Giani et al., 2020). These findings align with those of Zander et al. (2020) who report the dramatic short-term effect of global reductions in transport and economic activity that COVID-19 lockdowns had on air quality mitigating the public health risk.

2.3.2 Physical activity

At the individual level, physical activity is a key health behaviour and is associated with physical benefits, including enhanced physical functioning and mental health benefits (Biddle et al., 2021; Kim et al., 2017; Meiring et al., 2021). In addition, Anton and Miller (1998) identified anger was associated with less aerobic exercise in older adults living in residence. Furthermore, physical activity contributes to a reduction in the comorbidities such as, diabetes, heart disease, depression, and cancer) that increase susceptibility to severe COVID-19 (Dwyer et al., 2020). Thus, physical activity and exercise have a positive effect on overall wellbeing and could be a protective measure for psychological wellbeing during confinement (Carriedo et al., 2021).

According to App Annie (Sydow, 2020), the use of fitness apps increased globally by 40 percent during the week of March 22, 2020. Constandt et al. (2020) examined adults' exercise levels and patterns during the COVID-19 lockdown in Belgium through an online survey and found that a segment of the population reported having exercised less than others; these included those above 55 years old, those with low education, those that used to exercise with friends or in a sports club, and those who were not using online tools to exercise. Carriedo et al. (2021) examined the psychological wellbeing of older adults between the ages of 60 to 92 years and whether meeting the WHO's global recommendations on physical activity for health was associated with their resilience, affect, and depressive symptoms during the lockdown period. The study found that older people participating in minimum levels of physical activity during the lockdown reported higher scores in resilience and scored lower in depressive symptoms (Carriedo et al., 2021). Conversely, a study found that a perceived decrease in physical activity or exercise was associated with negative mental health outcomes, higher stress and anxiety amongst adult twins living in the USA (Duncan et al., 2020).

Several studies have suggested that given the health risks associated with physical inactivity, implementation of strategies to increase or maintain physical activities by the government during lockdowns should be encouraged to promote positive mental health during the COVID-

19 pandemic (Carriedo et al., 2021; Constand et al., 2020; Duncan et al., 2020, Faulkner et al., 2020; Meiring et al., 2021). Faulkner et al. (2021) and Duncan et al. (2020) suggest that physical activity interventions should target specific groups (e.g. men, young adults) as they were most likely to be affected and are more vulnerable to the negative effects of physical distancing and self-isolation. While the entire world is impacted by the COVID-19 pandemic, the minority groups such as the elderly, high deprived communities and those with underlying medical conditions will be at the greatest risk (Butler & Barrientos, 2020). Dwyer et al. (2020) suggest that specific recommendations to address home-based training during lockdowns and quarantining are highly important and that they need to be specific to age, clinical conditions, and level of fitness.

2.3.3 Nutrition

COVID-19 has forced a new set of challenges on individuals across the globe to maintain a healthy diet (Naj & Hamadej, 2020). The impact a pandemic has on the global economy has a serious effect on the food supply chain, one of the most important sectors of the economy. This includes movement restrictions of workers, changes in consumer demands, closure of food production facilities, restricted food trade policies, and financial pressures in the food supply chain (Aday & Aday, 2020). Naj and Hamadej (2020) explained that supermarkets remained open during lockdown but with certain criteria, including social distancing policies and procedures which affected people such as the older population who require support to do their shopping. The health and safety measures required during the pandemic also had the capacity to lead to an increase in food prices due to supply and demand for particular items (Aday & Aday, 2020). However, research suggests having wider access to healthy foods should be a top priority and that it is the responsibility of individuals to make an effort to maintain a healthy lifestyle by consuming fruits and vegetables, increasing exercise, maintaining a healthy weight, and getting an adequate amount of sleep (Butler & Barrientos, 2020; Naj & Hamadej, 2020). The WHO announced COVID-19 dietary guidelines highlighting the importance of a balanced diet to maintain a strong immune system and to avoid or

minimise chronic diseases and infections (Jayawardena & Misra, 2020). However, COVID-19 lockdown promoted unhealthy dietary changes with negative diet habits being associated with other poor lifestyle outcomes including weight gain, mental health issues, and limited physical activity (Bennett et al., 2021; Clemente-Suárez et al., 2021). In addition, hospitalised COVID-19 patients presented malnutrition and deficiencies in vitamin C, D, B₁₂ selenium, iron, omega-3, and medium and long-chain fatty acids (Clemente-Suárez et al., 2021). Therefore, a balanced diet appears to be important for not only supporting the immune system and minimising the likelihood of hospitalisation, but also protecting against negative lifestyle changes associated with COVID-19.

However, during the COVID-19 pandemic, food choices depended heavily on product availability and restrictions on how many products consumers bought. While online shopping provided a safe alternative that aligned well with lockdown and lockdown restrictions, the demand for online shopping exceeded the capacity of supermarkets in many countries (Martin-Neuning & Ruby, 2020). Many of the food chains restricted their online service to only those particularly in need including people over 70 years of age, people with chronic illness, people who are in self-isolation, and people with disabilities (Martin-Neuning & Ruby, 2020).

Butler and Barrientos (2020) suggest that an increase in the consumption of diets high in saturated fats, sugars, and refined carbohydrates (comfort foods) across the globe during lockdowns and lockdowns would contribute to the prevalence of obesity and type 2 diabetes and could place these populations at an increased risk for severe COVID-19 pathology and mortality. In addition, higher saturated fat consumption has been positively associated with increased levels of depression (Anton & Miller, 1988). Laguna et al. (2020) describes the impact of COVID-19 on the interests, opinions, and behaviour towards food on the Spanish population. The study identified that products purchased more often such as pasta and vegetables were purchased as a result of health motivations, nuts, cheese, and chocolates were purchased to improve consumer mood while there was a reduction in the purchasing of sugary baking goods and dessert as it contributed to an increase in body weight. Overall, fresh

fruits, vegetables, and high-quality, protein-rich food intake has decreased worldwide, while the consumption of high fat, high sugary foods and snacks have increased (Jayawardena & Misra, 2020). In their review, Jayawardena and Misra (2020) concluded that a balanced diet and food security were major casualties of the COVID-19 pandemic and that deterioration of dietary habits during lockdown and lockdown periods had a major impact on the health system of developing countries by contributing to the worsening non-communicable diseases associated with increased risk of contracting and the severity of COVID-19.

The COVID-19 pandemic is expected to have long-term negative effects on the economy. Interestingly, Ruhm (2000) found that in general, physical health improves when the economy stagnates, and suggested that obesity may decline because people have more time to exercise and prepare healthy meals. According to Ruhm (2000), studies tend to focus on psychological rather than physical determinants when there is a negative shift in the economy, but their study found that individuals are more likely to be in the healthiest weight ranges in bad economic times.

2.3.4 Access to health care and disparities

The lockdowns have affected access to essential services such as general practices, dentists, and surgeries. A recent report, 'UN Research Roadmap for the COVID-19 Recovery', found up to 80 million children under one year of age would miss their routine vaccination due to COVID-19 (United Nations, 2020). Those who suffer from medical conditions or significant injuries may be subject to long waits for treatment. According to the British Journal of Surgery (2020), it has been estimated that 28,404,603 operations had been cancelled or postponed worldwide during the peak 12-week COVID-19 disruption in 2020.

COVID-19 has magnified the existing health disparities for marginalised populations. Individuals with underlying medical conditions such as cancer, respiratory, and cardiovascular conditions are more susceptible to contracting COVID-19 including the elderly, indigenous communities compounded with socio-economic disadvantage and structural racism within the

health system (McClead et al., 2020; Steyn et al., 2021). The pandemic has significantly influenced the public health system in low-middle income countries, including global health security, economic, and healthcare delivery (Okereke, 2021). The inability of health services and facilities to cope with the significant increase of patients was found in a study conducted in Ireland, with over 1700 deaths from COVID-19 and 3000 hospital admissions (Kennely et al., 2020). A slow response rate to the rise in COVID-19 cases and a lack of attention during the early phase of the pandemic by health facilities (nursing homes and residential centres) was the main cause of death in a high proportion of those killed by the virus (Kennely et al., 2020). Data collected through publicly available databases of COVID-19 death rates across US counties found death rates had a higher proportion of Black American residents and greater levels of adverse social determinants of health and concluded that social determinants of health contribute to COVID-19 mortality for Black Americans at the county level (Dalsania et al., 2021).

2.3.5 Physical Wellbeing in Aotearoa New Zealand

Te Ao Māori (the Māori worldview) acknowledges the interconnectedness and interrelationship of all things living and non-living and, thus, recognises that the wellbeing of the whenua (land) is integral to the wellbeing of humankind. From an environmental perspective, during the national lockdown in 2020 a significant decrease in motor vehicle use in NZ was observed (Patel et al., 2020). Patel et al. (2020) conducted a study to understand air quality implications during the 2020 lockdown in Auckland, NZ. They found that once key emission sources (on-road combustion-powered vehicles) were removed/reduced, air pollution across Auckland reduced substantially (Patel et al., 2020). The pandemic also affected air transport as national and international flights were grounded. Air NZ announced a new international schedule and between March 30 to May 31, 2020, the airline saw a 95 percent drop in international flights (New Zealand Herald, 2020). While the reduction in air pollution may have a positive effect on overall wellbeing in NZ in the years to come, this is not reflected in the literature yet.

At the individual level, COVID-19 had both positive and negative effects on QoL. Meiring et al. (2021) examined the motives to exercise and the feelings towards physical activity during the national lockdown in 2020 in adults living in NZ through online surveys. The study found that of the 238 respondents, 51.5 percent reported not being able to maintain their usual level of physical activity due to the closure of their gym facilities. Faulkner et al. (2020) conducted a similar study and found that participants who reported a negative change in exercise behaviour during COVID-19 restrictions reported poorer wellbeing and mental health than those who reported a positive change. As well as changes in physical activity, dietary behaviours also shifted. Hall et al. (2020) evaluated the shift in consumption that occurred when consumers experienced a change in the availability of goods and services because of COVID-19 in the Canterbury region of NZ and identified an increase in spending in some consumption categories and an indication of stockpiling behaviours, while the hospitality sector experienced a sharp decline in consumer spending over lockdown. Angell et al. (2020) observed that food banks were overrun with the increasing demand for emergency supplies because of the additional financial stress imposed by the COVID-19 lockdown and consequent job losses.

There was also a dramatic shift toward online shopping during the 2020 lockdown in NZ which provided consumers with an alternative and safer option to purchase food online (Martin-Neuninger & Ruby, 2020). According to Anderson (2020), there was a 50 percent increase in purchases online through e-commerce stores My Food Bag and HelloFresh (meal kit companies) while in lockdown. When shopping in stores, consumers in NZ found that they had fewer opportunities to interact with retail staff and felt pressure to shop quickly, while minimising the contact time with others in the supermarket (Martin-Neuninger & Ruby, 2020). Thus, food access became challenging for older people or those with disabilities.

From a physical wellbeing perspective, Māori were substantially more likely to have comorbidities relevant to COVID-19 and are therefore at greater risk of serious COVID-19 outcomes compared to non-Māori in NZ (McLeod et al., 2020). In addition, Māori have existing inequities accessing current medical services and higher unmet health care needs compared

to non-Māori, which the pandemic could widen (Steyn, 2021). Steyn et al. (2021) concluded: “that Māori and Pacific people have substantially higher risk of hospitalisation for COVID-19, after controlling for age, presence of underlying health conditions, and socioeconomic deprivation” (p. 20). Lockdowns have had a marked effect on health service provision and up to 10,000 New Zealanders had surgeries cancelled or postponed during the 2020 nationwide lockdown (Newshub, 2021).

2.3.6 Summary

COVID-19 has impacted on physical wellbeing at several levels, at the environmental level with reduced air pollution, at the individual level with changes in physical activity and dietary behaviours, and also at the organisational level due to shop closures and changes in access to health services. The individual and organisational level impacts have amplified existing health disparities and inequities, many of which are also linked to socioeconomic factors. Social wellbeing is the topic of the next section.

2.4 Social Wellbeing

Social wellbeing has been defined in many ways but all of them highlight the importance of positive relationships at different levels of society, for example from life partners, friends and family to places of education and work, and culture and religion. Having a variety of meaningful social connections has impacts on wellbeing through behavioural influences, support networks (psychosocial), and physiological (positive relationships enhance body system response) pathways (Umberson & Karas Montez, 2010). Thus, our place in society has a direct impact on health. Social determinants of health include poverty and income, education and employment, the physical environment (housing density, pollution), social support, and race or ethnicity, all of which can have a considerable effect on COVID-19 outcomes (Singu et al., 2020). Poorer wellbeing outcomes have been associated with vulnerable groups, including women, children, the elderly, especially those of lower socioeconomic status, and minority groups (Armitage & Nellums, 2020; Green et al., 2021; Singu et al., 2020; Upshaw et al., 2021).

In the following subsections the impact of COVID-19 on interpersonal relationships, places of education and work, sporting and recreational activities, and culture and religion will be reviewed. These topics will be followed by a separate subsection focused on social wellbeing in NZ and a brief summary.

2.4.1 Interpersonal relationships

Marriage/partnership relationship quality was related to mental health during COVID-19 and research found that when compared to no relationship, good relationship quality was a protective factor and a poor relationship quality was a risk factor for COVID-19 (Pieh et al., 2021). During the lockdown, marriage and divorce rates declined, however, this may not have reflected the true relationship status of many as COVID-19 can add multiple layers of complexity to a situation and has created very limited support mechanisms such as facilitators, councillors, and lawyers (Smyth, 2020). There is no doubt that COVID-19 lockdown and

lockdown restrictions put an extra strain on relationships, from overcrowding resulting in family members living in very close quarters to difficult choices about who is included in a close contact bubble and who is excluded (Lebow, 2020). Lebow (2020) highlights heightened risks in couples and families already at risk of violence, conflict, or other forms of relational difficulty, contact issues between separated parents and their children, and challenges for those who have had support that can no longer be accessed in dealing with troubled family members. COVID-19 has resulted in gender inequalities and family violence has been exacerbated by COVID-19, leading to diminished wellbeing among women and children; mandatory lockdowns having trapped vulnerable individuals in their homes, isolating them from the people and the resources that could help them (Green et al., 2021; Pereda & Diaz-Faes, 2020; Sánchez et al., 2020).

While online technologies provided social support, networks, and a sense of belonging by maintaining social connections with friends, family, social networks, and the broader community, unfortunately, there were disparities in digital access especially for those with low incomes and older adults (Angell et al., 2020; Newman & Zainal, 2020). In contrast to those living in close quarters with others, social isolation and social disconnection also placed individuals at risk. Loneliness put older populations at greater risk of depression and anxiety and was a public health concern due to the risk of having heightened cardiovascular, autoimmune, neurocognitive, and mental health problems (Armitage & Nellums, 2020). Armitage and Nellums (2020) suggested that simple interventions like frequent telephone contact with significant others and cognitive behavioural therapies delivered remotely can decrease loneliness and improve mental wellbeing in older adults. Liu et al. (2020) identified that loneliness due to COVID-19 increases a person's risk of stroke by 30 percent. Yang and Ma (2020) also found that dementia increased by 40 percent due to loneliness. For children and adolescents, school closures, social isolation and loneliness increased the risk of depression and possibly anxiety (Loades et al., 2020).

2.4.2 Sporting and recreational activities

Stephens and Butler (1996) found that emotional wellbeing is positively associated with participation in sport and vigorous recreational activity. Participating in and watching sports and sports events play a crucial social role even under normal circumstances (Grix et al., 2020). Although many citizens within western countries have encouraged governments to ease restrictions, research has shown that recreational activities (including sporting events, restaurant, and bar visits) enable super-spreading events (Deforche et al., 2021). COVID-19 restrictions left playing courts, fields, and stands empty affecting participation and spectating rates and affecting the financial stability of national sporting organisations (Mohr et al, 2021).

The impact of the COVID-19 pandemic across the world's sporting organisations, both participation-wise and economically, has been vast, according to Skinner (2021). Skinner (2021) describes the losses in the USA sporting industry of US\$13b in the sporting leagues including US\$28.6b in wages and earnings and nearly 1.5 million jobs, while in the UK, there have been substantial losses of revenue approximate to 1 billion euros among some of Europe's biggest football clubs. Likewise, Grix et al. (2021) found that COVID-19 negatively impacted three areas of sport in the UK, including elite sport, sport in high-deprived communities, and the socioeconomic aspect of sport. Similarly, dire outcomes were reported in Japan when major events and competitions were cancelled, postponed, and shortened, including Wimbledon and the Olympic Games, the latter polarising the residents of Tokyo with limited hope of hosting the biggest spectacle in sports (Sato et al., 2020).

During lockdowns and quarantines, many athletes, including football players, were forced into training in solitude and as restrictions were eased, training in smaller groups was a recommendation followed by a return to competitive play (Mohr et al., 2021). However, because the symptoms of COVID-19 varied among individuals with some athletes being affected with no apparent sign of the disease, returning to usual training and competitive sport could be a real danger for amateur or professional athletes (Fabre et al., 2020). Therefore, athletes have had to make difficult choices with regard to training and competing. COVID-19

has had a significant negative impact on the mental health of high-level professional athletes and amateur athletes (Pons et al., 2020; Reardon et al., 2021).

Reduced participation in sport has also affected the spectator and social distancing has affected crowd attendance at sporting events (Wiguna et al., 2020). Wann (2006) suggests that once a fan has developed a sense of identification with a particular team, the identification is believed to impact their social-psychological health positively. Thus, not being able to attend sporting events may have impacted negatively on spectators' social-psychological wellbeing.

2.4.3 Educational facilities

There is a plethora of research exploring the impacts of the COVID-19 pandemic on the education sector. The COVID-19 lockdowns across the globe caused many disruptions and challenges for teachers and students alike with a move to distance learning such as online and correspondence learning (Cohen et al., 2020). Chaturvedi et al. (2021) found that during lockdowns across all ages of learners, poor timetable scheduling and limited class interaction affected the satisfaction levels among students. They highlighted the importance of peer-to-peer interactions in motivating students to work and develop social skills, and how these aspects of the educational environment can be constrained in the online setting (Chaturvedi et al., 2021). Furthermore, they reported that the "biggest challenge for online learning is the requirement of efficient digital infrastructure and digital skillset for both students and teachers" (Chaturvedi et al., 2021, p. 6), and the appropriate provision of mental health support as many students are likely to suffer from stress, anxiety, and depression.

Many studies from around the world report similar findings with regards to the impact of COVID-19 on education and students. Wiguna et al. (2020) analysed the understanding of adolescents' emotional and behavioural problems in students between the ages of 11-17 years from Indonesia and found that mental wellbeing was significantly worse during COVID-19 lockdown than pre-pandemic times and adolescents were at risk for having emotional and behavioural problems. Similarly, Elmer et al. (2020) investigated the social networks and

mental health of post graduate students living in Switzerland before and at the time of the COVID-19 pandemic in April 2020, using longitudinal data collected since 2018. Researchers identified students' levels of stress, anxiety, loneliness, and depressive symptoms worsened during COVID-19 compared to pre-pandemic, while female students' mental health appeared to be impacted more than males (Elmer et al., 2020). A study in Italy and France found that lockdown had a stronger negative effect on boys, on children attending kindergarten (in Italy) or secondary school (in France), and on children whose parents have a lower education level (Champeaux et al., 2020). They also found that screen time was correlated to worse learning achievement and emotional status while reading hardcopy material was correlated to better achievement and emotional status with the use of interactive distance learning methodologies appearing to attenuate the negative impact on lockdown on the learning. Researchers recommended maintaining clear mental health information and support and enhancing the school-student connection by designing an optimal tele-education, tele-consultation, and virtual activity programmes to accommodate adolescents' biopsychosocial needs (Singh et al., 2020; Wiguna et al., 2020). Samji et al. (2021) found that physical activity, access to entertainment, positive familial relationships, and social support were associated with better mental health outcomes. An alternative approach was taken in the USA as some high schools allowed their students to continue to participate in sports, with those participating reporting fewer symptoms of anxiety and depression and higher physical activity and QoL scores than adolescent athletes who did not play a sport (McGuine et al., 2021).

Several researchers have noted significant disparities related to schooling and COVID-19. Singh et al. (2020) found that the severity of the impact on the mental health of children and adolescents is determined by vulnerability factors like developmental age, educational status, pre-existing mental health conditions, being economically underprivileged or being lockdown due to infection or fear of infection. Bayrakdar and Guveli (2020) found that children who received free school meals, children from lower-educated and single-parent families, and children with ethnic backgrounds did less schoolwork at home but that most of the disparities

could be mitigated by the schools' provisions of offline and online distance teaching and homework checking.

The COVID-19 pandemic has also significantly impacted on the wellbeing of teachers. Many teachers across all levels of education have experienced higher levels of distress due to the closure of educational facilities and the need to adapt to different teaching modalities thereby increasing their workload during the lockdown (Aperribai et al., 2020; Ozamiz-Etxebarria et al., 2020). The re-opening of schools has also caused teachers a great level of uncertainty adding to the accumulation of psychological symptoms (Ozamiz-Etxebarria et al., 2021). Teachers' wellbeing is important to ensure high-quality education can be delivered.

2.4.4 Workplaces

Infectious diseases rank amongst the leading causes of death and disability worldwide along with wars and famine and are a significant burden on global economies directly impacting on workforce numbers (Jones et al., 2008; Morens et al., 2004). Economies and businesses across the world were also negatively impacted by lockdowns and closures, and other organisations transitioned and adapted to working from home (Jaiswal & Arun, 2020). Chen et al. (2020b) explored the economic impact of COVID-19 in Europe and the USA during the early phase of the pandemic and found that when larger outbreaks occurred in these countries, larger economic losses occurred. Mann et al. (2020) identified personal economic anxiety which is a combination of low collective self-esteem, low conscientiousness, and low openness, in response to COVID-19 and found a significant effect on younger adults compared to older adults. Prickett et al. (2020) surveyed the economic and social effect of lockdown in Australia and found 28 percent of all respondents experienced an economic loss due to losing their job or a reduction in their wages or salary. COVID-19 lockdown policies in Germany had an immediate negative effect on work satisfaction and family life (Möhring et al., 2021). Jaiswal and Arun (2020) examined the impact of working from home on employees in India and highlighted an increase in working hours, major changes in their roles, reduced levels of productivity, and increased levels of stress. While the long-term effects of the COVID-

19 pandemic are yet to be determined, Frاسquilho et al. (2016) conducted a systematic literature review to understand the mental health impacts of the 2008 global recession and found significant correlations between unemployment, job loss and unmanageable debts, mental health disorders, suicide, and substance-related behaviours such as alcohol and drug use.

Many disparities relating to working during the pandemic were also reported. Yildirim and Eslen-Ziya (2021) believe lockdowns will impact both male and female employees differently due to the traditionally gendered division of labour in society. Further research found a general decrease in family satisfaction as well as an overall decline in work satisfaction, most notably in mothers while fathers' wellbeing and family satisfaction was less likely to be impacted negatively (Möhrling et al., 2021). Yildirim and Eslen-Ziya (2021) identified that having children disproportionately affects women in terms of the amount of housework during the lockdown.

Kansiime et al. (2021) highlighted disparities in the levels of income shock experienced due to the COVID-19 which included food security. Fruit consumption decreased by 30 percent during the COVID-19 pandemic, compared to before the pandemic with those households with low income and part of the labour workforce being more vulnerable to income shock compared to other respondent categories (Kansiime et al., 2021).

2.4.5 Culture and religion

During the COVID-19 pandemic, many academics discussed the need for a multifaceted approach to ensure public health and safety that involves culture, religion, and the state governments (see review by Gozum et al., 2021). Culture is defined as a set of customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation (Guiso et al., 2006). Cultural traits influence the decisions of an individual (Deopa & Fortunato, 2020). Culture can therefore impact on the transmission of the virus through the beliefs of that individual's religion and culture and the aiding of vaccinations (Gozum et al., 2021).

Culture, religion and the governments' initial reactions, whether of caution or indifference, greatly contained or contributed to the virus' transmission. In many Eastern countries where Confucianism is a common religion in the region which greatly emphasizes the importance of respect for rulers, family, and social harmony, all precautionary measures were followed with little opposition (Li & Lau, 2020). In Western countries, churches moving to online practices helped the containment of the virus and served to disseminate accurate information about COVID-19 (Gozum et al., 2021). Conversely, Christian nationalism in the USA fueled the far-right response to COVID-19 that disregarded precautionary recommendations (Perry et al., 2020). Dein et al. (2020) further highlighted the link between mental health and religion, and the increased use of prayer as a coping strategy throughout the pandemic, especially during lockdowns.

Cultural disparities also exist with regards to transmission and severity of infections. Indigenous peoples across the world face a greater affliction of diseases such as cardiovascular disease, HIV/AIDS and other infectious diseases than non-Indigenous peoples (McClead et al., 2020; Steyn et al., 2021). Racial disparities coupled with attitudes and practices towards COVID-19 in the USA have exposed the significant disparity within different ethnic communities (Lagman et al., 2021). In addition, the global gap between male and female infection and death rates for COVID-19 can be in part predicted by cultural practices. In their review, Muurlink and Taylor-Robinson (2020) conclude that "women may be afforded some protection by customs relating to traditional clothing; they may be placed at less risk of contracting infection through distancing from men or separation from the broader workforce and community" (p. 174).

2.4.6 Social wellbeing in Aotearoa New Zealand

The NZ Government's strategy to eliminate COVID-19 in 2020 was delivered through a tiered alert level system from Level 1 - Level 4, with Levels 3 and 4 being a form of lockdown (Unite for Recovery, 2020). During the lockdown, Long et al. (2020) found an increase in stress and anxiety, particularly between parents and solo parents, and suggests being confined with

others in a space can pressure relationships, as many New Zealanders juggled working life and family life under one roof. Domestic violence figures from the NZ Police showed a 22 percent increase in callouts for domestic violence during lockdown compared to the week before lockdown (Foon, 2020). Zhang (2020) suggested that government, non-governmental organisations, and agencies working within the family violence sector needed to provide immediate and appropriate services to victims of family violence requiring new modalities of care and support.

National Sports Organisations (NSO) have lost significant revenue streams, including broadcasting, sponsorships, sports betting, Class 4 gambling, and membership fees (Robertson, 2020). In NZ, lockdown and border restrictions impacted negatively on the mental and physical wellbeing of many elite athletes and their support personnel (such as coaches and physiotherapists) due to the cessation of all domestic and international sport, including the postponement of the 2020 Olympic Games and the disruption to training and competition schedules (Hamilton et al., 2020).

In the NZ context, the COVID-19 pandemic has been described as “the greatest disruption to the educational system in our lifetimes” and the response as “...an enormous experiment, executed at very short notice” (Flack et al., 2020, p. 34). Education providers in NZ have had to think innovatively to engage with students from pre-school through to tertiary level. The Ministry of Education implemented physical and online resources, including dedicated television channels for students during the lockdown period (“Distance Learning”, 2020). School closures have exacerbated disparities for students from low-socioeconomic communities, due to poor access to digital technologies and the internet along with an increase in food insecurity for children living in poverty who participate in school lunch programmes (Abrams & Szeffler, 2020). The Digital Divide (2020) highlights that households with higher incomes generally have easier access to the internet than households with lower incomes. A survey conducted by Te Whatua Orakei during lockdown found a lack of digital devices for rangatahi (young people) within their iwi (tribe). It was highlighted that this may significantly

impact their emotional wellbeing and learning for the rest of the year (Hunia et al., 2020). Rochford (2004) states that Māori suffered social and economic deprivation through land confiscation and inequalities because of colonisation and that they are a lot worse off than non-Māori. Sibley et al. (2011) explored the impact of the 2008 economic-financial crisis on New Zealanders and found that, between 2007-2011, the unemployment rate for Europeans rose from 3.9 to 4.4 percent, while the rate for Māori rose from 10.7 to 14.2 percent. The study also indicated that Māori, on average, perceived their wellbeing to be less satisfying than NZ Europeans (Sibley et al., 2011). As the pandemic has evolved, families in the Auckland region were impacted through sickness, deaths, job losses, and financial hardship as Ngāti Whātua Ōrākei have identified as they surveyed community members within their iwi and found that 51 percent have had financial losses, and up to 34 percent face job losses (Ngāti Whātua Ōrākei. n.d.).

According to leading economist Sharon Zollner, the coronavirus's economic consequences are developing at an "exponential speed" and will likely impact every sector of NZ, while economic loss was widespread, some groups were harder hit, particularly those with lower incomes (Fletcher et al., 2021). Sectors within NZ that were most affected were self-employed business owners, retail, tourism, and hospitality (Poulton et al., 2020). The impact of COVID-19 on the NZ labour market found that the unemployment rate doubled from 5.2 percent pre-lockdown March 2020 to 10.5 percent by week three of lockdown while close to 44 percent of individuals lived in a household where members experienced job and/or income loss (Fletcher et al., 2021). Fewer hours allocated to staff and a reduction in hourly pay were identified as the leading causes (Fletcher et al., 2021). In forestry alone, 75 percent of forestry workers in NZ are Māori and up to 1500 workers have lost their jobs through demand shortage and limited access to China (McLachlan, 2020). Although the pandemic has impacted job losses, there has also been a significant increase in essential workers required. There was also an association between those who suffered job and income loss and greater anger, depression, stress, worry, loneliness, and reduced happiness (Ruengorn et al., 2021). On the other hand, supermarkets, gas stations, and health practices were kept open to benefit their communities

during the lockdown and these essential workers endured additional stress (for example, personal health and safety care, public abuse, long hours) accompanying frontline work, although they remained poorly remunerated (Angell et al., 2020).

The COVID-19 social distancing impacted many traditional Māori practices such as hongī, hugging, marae visits and tangihanga (funerals), all of which ceased during the lockdown period (Dawes et al., 2021). For many Māori, a marae is a place of belonging (turangawaewae) (Austin, 2011). Tangihanga and funerals have been impacted by lockdown restrictions and iwi, hapu and marae have adapted to the social distancing restrictions impacting whānau and loved ones (Dawes et al., 2021). Bans on visiting marae were put in place to ensure the safety of kaumatua (elder) (Pihama & Lipsham, 2020). Strengthening and restoring whānau cultural identities and traditional values is crucial to halting family violence normalisation and intergenerational transmission (Wilson, 2016). Rules and regulations appeared to neglect communities' cultural and historical specificity (Blake, 2020). According to Lagman et al. (2021) the cultural diversity of each community should not take a one size fits all approach. It was asserted that the COVID-19 pandemic would require a prompt response by the government to ensure equity is served, particularly for Māori and that Te Tiriti o Waitangi is honoured (Poulton et al., 2020). In addition to the NZ Government's response, Māori imposed additional responses to COVID-19 exercising tino rangatiratanga through self-determination, independent of the government's measures and policies which were important in maintaining the wellbeing of Māori (Pihama & Lipsham, 2020; Te One & Clifford, 2021). Looking forward, in a commentary about tourism, though applicable to all sectors of NZ, there was a call:

...for government agencies at national and local levels to advocate for and resource community and environment-centred tourism planning approaches that incorporate local or indigenous values; thus resilient and involved communities can directly influence the post-COVID response. Indigenous values and aspirations would underpin a renewed, resilient and

caring global tourism industry for future generations and ecosystems world-wide. (Carr, 2020, p. 499)

2.4.7 Summary

Minority groups and those with low incomes have been disproportionately affected by COVID-19 not only in terms of mental and physical wellbeing as reviewed in the previous sections, but also in social wellbeing. Socioeconomic, ethnic, and gender inequalities have been exacerbated by COVID-19. Increased family violence has led to diminished wellbeing among women and children, loss of employment and income has exacerbated disparities in social class leading to lack of access to health care, education, housing instability, food insecurity, homelessness, and difficulties in social distancing. The restrictions imposed during March 2020 lockdown have impacted traditional Māori practices requiring considerable adaptation and tino rangatiratanga to maintain wellbeing.

Chapter Three: Methodologies and Methods

3.1 Introduction

This study aimed to explore and understand how the COVID-19 pandemic has impacted on New Zealanders' QoL during 2020 and to provide data (both quantitative and qualitative) to facilitate informed decisions on the partitioning of resources required to support New Zealanders during and post the pandemic. The research employs a mixed-methods approach which involves the collection of two data types: quantitative data collected using the online Meke Meter™ and qualitative data collection, through two online questionnaires and several focus groups (both online and face-to-face).

The impact of the COVID-19 pandemic has been likened to natural disasters such as earthquakes (Fiorillo & Gorwood, 2020). According to Morgan et al. (2015), there were significant gaps in available datasets during the Christchurch earthquakes used to inform the provision and the development of interventions. This has highlighted the importance of gathering data to facilitate and monitor the wellbeing of New Zealanders during the recovery phase of the earthquakes. For this study, COVID-19 lockdown restrictions provided data collection challenges and necessitated an online approach. The internet is increasingly being used as a method to target and survey individuals about health-risk behaviors. The internet has many benefits for researchers and participants while online data collection, through e-mail and web-based surveys, is becoming an increasingly popular research methodology, while the cost-effectiveness of face-to-face interviews and the inclusion of low-incidence or "hidden" population groups become more convenient for respondents (Granello & Wheaton, 2004; Shconlau, 2004; Wright, 2005). Although there are many advantages of the internet when collecting data, there are a variety of limiting factors that can result in a low response rate, such as poor survey design, excessive survey length, and lack of participant interest (Lynn, 2009). Additional factors include representativeness of the sample, whereby demographics and populations may not be technologically literate, the lack of anonymity in e-mail surveys

which can contribute to lower response rates, and technical difficulties with internet speed and selected device adaptability (Granello & Wheaton, 2004). This chapter will briefly describe the methodological approaches used to underpin the methods used in this study, which are described subsequently.

3.2 Methodologies

This section outlines the philosophical frameworks that underpinned how the methods were chosen for this study. This will include an overview of the following: Quantitative Methodology, Qualitative Methodology and Kaupapa Māori Research.

3.2.1 Quantitative methodology

Quantitative research examines phenomena by collecting numerical data that are analysed using mathematically based methods, such as statistics (Gall et al., 1996). Quantitative research is guided by a deductive approach whereby a theory is tested with a positivist's philosophy (Bryman, 2012). While the positivist paradigm guides the quantitative approach, positivism assumes that reality exists independently of humans and that the researcher is an objective observer (Greenfield, 2016).

In population-based studies, large data sets are favourable and the results obtained from any statistical analyses will be more representative (Biernacki & Waldorf, 1981). Using an online data collection platform to collect quantitative survey data (using yes/no, scoring, ranking and or Likert scale questions) and the snowball effect, allows participants to share the invitation to participate within their networks via online platforms, Facebook, Instagram, and Twitter and email networks (Biernacki & Waldorf, 1981). Furthermore, Biernacki and Waldorf (1981) considered the snowball method as an effective method to reach a wider audience through sharing within a cluster while also being suitable for studies focused on sensitive issues. Klagge's (2018) *Guidelines for Conducting Surveys* states that when collecting data online, at least three to four reminders need to be provided to participants and that each contact should be different eg, email, text, call.

Facebook is a social networking website where users can post comments, share photographs, post links to news or other interesting content on the web, chat live, and watch short-form videos (Mirabite, 2019). A study conducted by Ramo (2012) found that Facebook was a successful recruitment source for young adult smokers to complete a survey about tobacco and other substance use. Social media is a vehicle to build engagement for businesses, organisations, and researchers. According to NapoleonCat (2019), there are over 2,905,000 Facebook users in NZ in March 2019. A recent study to understand the effects of living in a bubble (your household members) in NZ, incorporated an online public survey and applied a digital marketing and social media campaign with positive effect with 1770 valid responses received between 7 April and 27 April 2020 (Long et al., 2020)

3.2.2 Qualitative methodology

The qualitative component of the study consisted of a subjective approach. Phenomenology seeks to understand the lived experiences among people who have had a shared experience (e.g., living during a COVID-19 lockdown) and write a coherent account of the meaning of those experiences (Thomas, 2006). Lived experiences are often captured in the participants' own words using individual interviews, focus groups, and questionnaires with open-ended questions (Grossoehme, 2014); the latter two are used in this research and are discussed below.

Focus group discussions capture participant experiences from a first-person viewpoint with the aim to understand their shared lived experience (Barbour, 2013; Smith, 2018). Kite and Phongsavan (2017) found that the use of video-enabled online focus groups provided the opportunity to meet the requirement of gathering data from geographically-dispersed participants. Recent developments in online tools such as Zoom© and Skype (© Microsoft) have prompted researchers to explore alternate means of facilitating focus group participation (Matthews et al., 2018). A study to determine if online communication tools were more appropriate for users participating in an online focus group found that video-enabled online focus groups can provide a useful mechanism for research in geographically-dispersed

populations compared to face to face (Matthews et al., 2018). It enabled the instant recording of participants' video and voice, and video and audio file storage went direct to the researcher's computer immediately after the session. A focus group size of between 7-10 participants was used by Tobin and Whiteford (2002) to assess the impact of a volcanic eruption on survivors in Ecuador and they found this number manageable. According to van Eeuwijk (2017), the focus group's moderator needs to be a thinker, a great listener, and good at managing time. Dawson et al. (1993) believed a focus group should begin with (1) a round of introduction of participants, (2) introduction of the topic of discussion and the overall research question (e.g., orally, on a poster, or as a projected presentation), (3) specific questions with high flow and limited downtime, and (4) thank participants for their time.

Online questionnaires with open-ended questions are another approach used to capture data from a participants' perspective. SurveyMonkey© ([SurveyMonkey.com](https://www.surveymonkey.com)) is a popular online platform that enables its users to develop a survey that can be shared via a link and email to potential participants while collecting the necessary data (Waclawski, 2012). There are many advantages with online tools which enable an effective and efficient form of collecting data reducing time, resources, and the difficulty in collecting and processing data (Wright, 2005). They also allow for researchers to abide by COVID-19 restrictions put in place to reduce the transmission of the virus.

3.2.3 Kaupapa Māori

Kaupapa Māori research was developed as a way of challenging the dominance of the Westernised worldview and debate the Westernised notions of knowledge, culture, and research while endorsing rangatiratanga and mana motuhake to guide Māori research (Hoskins & Jones, 2017; Walker et al., 2006). The renaissance of Kaupapa Māori research emerged following the urbanisation of Māori post World War Two (Bishop, 1995). Kaupapa Māori research has been described as a methodological strategy, a theory, and an analysis of the context of research involving Māori, whereby research is conceived, developed, and carried out by Māori, and the end outcome is to benefit Māori (Smith, 1999; Walker et al,

2006). Smith (1999) describes Kaupapa Māori as the philosophy and practice of being and acting Māori. A critical element of Kaupapa Māori research is Māori identifying as both Māori and a researcher (Smith, 1999). A Kaupapa Māori lens can be applied across a wide range of projects and enterprises.

The Whānau Tuatahi framework is an example of Kaupapa Māori methodology and can be used as an effective means of engaging with whānau and is shaped by the following concepts (Jones et al., 2010):

- whakawhirinaki (trust) - for the researcher to build a connection and relationship with the community and to prove they were trustworthy,
- whakawhanaungatanga (building relationships) - to build on the relationship between researcher and participant creating a bond,
- whakamana (empowerment) - to allow whānau to contribute towards the functioning of the focus groups/interviews,
- ngāwari (flexibility) - allowing the participants to guide the focus groups/interviews and ensure participants are content in their own setting,
- utu (reciprocity) - the understanding that participants are providing the researcher with a taonga (gift), and
- hurihuringa (reflexivity) - to ensure that the processes were culturally-appropriate and effective.

This framework was applied to guide the qualitative part of the study allowing whānau to control the research process and to ensure the most accurate representation of information, stories and the issues participants faced during COVID-19 were heard, while enhancing their self-determination.

This study was conducted by a researcher of Māori descent and employed the use of a QoL indigenous tool developed by Māori for Māori (the Meke Meter™) to collect quantitative data and engaged directly with whānau to collect qualitative data using Te Ao Māori and thus a Kaupapa Māori research approach. Furthermore, Forrest et al. (2014) identified that

indigenous communities co-operate and engage better with Kaupapa Māori tools such as the Meke Meter™ when compared to other tools used to measure wellbeing or QoL as they are created by Māori for Māori.

3.3 Methods

The aim of this study was to explore the impact the COVID-19 pandemic and the lockdown in March 2020 had on New Zealanders' wellbeing. This chapter outlines the design, participant recruitment, data collection, and analysis of the quantitative and qualitative methods. It also contains the ethical considerations for this applied research project.

3.3.1 Quantitative data collection and analyses

Participant recruitment

A social media advertising campaign was established to target adults (over 18 years of age) that use social media platforms and lived in NZ. The advertisement complied with the Facebook Ads policy and was an approved campaign (Facebook, n.d.). The advertisement contained a 30-second video clip outlining the research project with a link to the Meke Meter™, and public sharing permissions enabled users to distribute within their networks. Anyone that created a Meke Meter™ account login from March 2020 received a research invitation, along with participant information and a consent sheet, via the mekemeter.org website to their email account. The informed consent was collated into the mekemeter.org database and a participant number was designated by a third party to keep research participation anonymous. When users established a Meke Meter™ account, they were advised that all data "may be used for research purposes" (The Meke Meter™ Privacy Policy, 2020, p.1) and they were able to withdraw from the study at any time but could still continue using the Meter Meter™ if they wished to do so.

Data collection

Data was collected via the Meke Meter™ on many devices, e.g., smart phones, tablets, laptop computers, and desktop computers, in real-time. Quantitative data was collected from March

2020 to March 2021. All participants received an email notification every two weeks to remind them to fill in the Meke Meter™. The Meke Meter™ data was stored and accessed via the Azure Cloud (public cloud computing platform) where it was stored securely, and data was then exported and collated into Microsoft Excel and SPSS spreadsheets following the Eastern Institute of Technology (EIT) research policies and guidelines (EIT Code of Research Ethics – Guideline AG210-2).

Data analyses

Analysis of the quantitative data collected from the Meke Meter™ was completed by using IBM SPSS Statistics version 25. Quantitative data in the form of demographic data (age, sex, ethnicity) and Meke Meter™ scores were analysed using descriptive statistics including frequencies, means (reported with their standard error) and correlations (Pearson's and Spearman's Chi-square). Individuals were able to complete the Meke Meter™ whenever they chose to throughout the research period. The Meke Meter™ scores for each individual were averaged by month and also by 3-month intervals (the first of the 3-month intervals being the nation-wide lockdown period in 2020). For each of the time intervals (i.e. by month or by 3-month intervals), boxplots of each of the Meke Meter™ score totals (Mental, Physical, Social, and Overall) were constructed and exploratory univariate (one dependent, one factor) analyses were performed using one way analysis of variance (ANOVA) for each of the Meke Meter™ Score totals against sex (female, male), ethnicity (Māori, tauiwi/non-Māori) and time interval, and all four Meke Meter™ score totals were also correlated against age. General linear mixed-effects models (GLMMs) were then employed to detect associations, if any, between the demographic data, time intervals and the participant Meke Meter™ scores. Only main effects were tested. The estimated marginal means (i.e., means corrected for sex, ethnicity, and age) from the GLMMs were imported into Microsoft Excel and graphed along with their 95 percent Confidence Intervals (CI). Individual item scores were investigated where totals (Social, Mental, Physical) showed trends of interest.

3.3.2 Qualitative Data Collection and Analyses

Participant recruitment

Those participants that consented to participate in the research project and had completed the Meke Meter™ were eligible to participate in the qualitative part of the study. Qualitative data collection in the form of an online questionnaire and focus groups were conducted between August 2020 and February 2021. The Meke Meter™ participants received an email inviting them to participate in the online questionnaire. The email included a brief letter outlining the study objectives and the explanatory statement along with a link to the online questionnaire.

Data collection

Two online questionnaires were administered via SurveyMonkey© in August 2020 and February 2021. Both questionnaires contained the same open-ended questions except for Question 8 which was only included in the second round to explore the wellbeing of participants post-Christmas 2020. The questions were as follows:

1. How has the pandemic (including lockdown) impacted on your social wellbeing eg, family, work, school, finances, culturally?
2. How has the pandemic (including lockdown) impacted on your physical wellbeing eg, fitness, nutrition, addictions?
3. How has the pandemic (including lockdown) impacted on your mental wellbeing eg, stress, motivation, self-esteem, spirituality, happiness?
4. How would you describe your quality of life during the pandemic?
5. How did you feel about filling in the Meke Meter™ during the pandemic (including lockdown)?
6. How useful did you find the Meke Meter™ for self-reflection about your wellbeing and quality of life?
7. How do you plan to assess and track your wellbeing and quality of life in the future?

8. Have you done or are you doing any specific activities or programmes to improve your wellbeing during the COVID-19 pandemic? If so, why and what did you do?
9. Would you like to part of an online focus group (group discussion) for more in-depth discussions about these questions?

At the conclusion of the questionnaire, the participants were also invited to take part in a focus group interview (using audio or video conference). If the participant accepted the invitation, another short questionnaire was administered on the SurveyMonkey© platform to ascertain what days and times suited the participants to participate in the focus group. An online focus group was formed from this data, and participants were identified and sent the relevant details and the online focus group link.

The focus groups were of mixed gender, age, and ethnicity. This part of the research was facilitated by the author and an EIT researcher with experience in facilitating focus groups. One of the focus groups had nationwide participants and was facilitated over Zoom© (a video conferencing, reliable cloud platform) in October 2020, while three focus groups were performed in-person and held locally in Hawke's Bay during February 2021. The following semi-structured questions, which were approved by the EIT Ethics and Approvals Committee, guided the focus group discussions:

- How has/did the pandemic impact your:
 - Social and family Health and wellbeing?
 - Physical Health and wellbeing?
 - Mental Health and wellbeing?
 - Your QoL?
- How did you feel about filling out the Meke Meter™ during the pandemic?
- How useful did you find filling out the Meke Meter™ for:
 - Self-reflection about your wellbeing?
 - Reflecting on your quality of life?
 - Are you tracking your wellbeing?

- How do you plan to assess and track your wellbeing and quality of life in the future?

All sessions were recorded. Participants were aware of being recorded and written consent was obtained. All information was stored securely, and transcripts were anonymised by participant number. Audio and Zoom© session were transcribed by Otter.ai and then checked and corrected to ensure accuracy by the author. Otter.ai is an artificial intelligence transcription service (<https://otter.ai/about>). No information will be presented that might identify any of the project participants.

Data analysis

The qualitative data was analysed by the author (who is of Māori descent) for emergent themes and categories using a general inductive approach (Thomas, 2006). The inductive approach is a systematic procedure for analysing qualitative data in which the analysis is likely to be guided by specific evaluation objectives (Thomas, 2006). The primary purpose of the inductive approach is to allow research findings to emerge from the various, dominant, or significant themes inherent in raw data without the restraints imposed by structured methodologies (Thomas, 2006). According to Norris (2006), the most commonly used qualitative analytic approach is distinguished by a process in which data is coded and themes are elicited from the meanings and consistencies embedded in these codes.

For each questionnaire the data was separated into two sets of data; the “Impact of COVID-19” questions and “Use of the Meke Meter™”. Each set of data was analysed for themes for each collection point (SurveyMonkey© August 2020, SurveyMonkey© February 2021, Zoom© October 2020) separately and then a pooled analysis was performed.

3.4 Ethical Approval

Ethical approval was obtained for the project from the EIT Research and Ethics Approval Committee Ref PG20/05 (Appendix A).

Chapter Four: Results and Findings

4.1 Introduction

In this chapter, the quantitative results from the statistical analyses (both descriptive and inferential) and qualitative findings from the thematic analyses will be presented separately and then compared. The key results and findings will be discussed in Chapter Five.

4.2 Quantitative Results

A total of 692 individuals completed the Meke Meter™ at least once from March 2020 to March 2021. The 692 individuals collectively filled in the Meke Meter™ 1003 times from March 2020 to March 2021 (Table 4-1) with most individuals completing the Meke Meter™ just once (76.7%, $n = 531$). Higher numbers of completion corresponded with the two social media campaigns, April and August 2020, with the former which occurred during lockdown generating the most completions (Figure 4-1). Table 4-1 provides the frequencies of completion. Where an individual filled in the Meke Meter™ multiple times, it predominantly occurred over a very limited period, for example, one individual filled in the Meke Meter™ 10 times in April 2020.

Of those that chose to disclose their sex ($n = 658$), 81.8 percent were female ($n = 538$) and 17.3 percent were male ($n = 120$). A total of 651 individuals disclosed their ethnicity with 62.4 percent identifying as Māori or of Māori descent ($n = 406$), 8 percent identifying as Pacifica ($n = 52$), 6.3 percent as European ($n = 399$) and 2.5 percent as another ethnicity ($n = 16$). Individuals could identify with more than one ethnicity. For Māori and tauiwī/non-Māori, the proportions of males and females were not significantly different at $\alpha = 0.05$ (z-test, $P < 0.05$) therefore these factors were not confounded and could be used together in the GLMM analyses. The average age of those willing to share this information ($n = 629$) was 39.9 ± 0.517 years, with sex (female, male, $P = 0.346$) and ethnicity (Māori, tauiwī/non-Māori, $P = 0.562$) not being a main effect, therefore age is not confounded by either of these factors. Thus age, sex, and ethnicity can be included in the GLMM analyses.

When all the total scores (Mental, Physical, Social, and Overall) for each individual for the March 2020 to March 2021 period were correlated with age, all were weakly but significantly correlated (n=629; Overall total score $r = 0.135$, $P = 0.001$; Mental total score $r = 0.138$, $P = 0.001$; Physical total score $r = 0.109$, $P = 0.006$; Social total score $r = 0.107$, $P = 0.001$).

Figure 4-1 Number of Meke Meters™ completed online by month from March 2020 to March 2021.

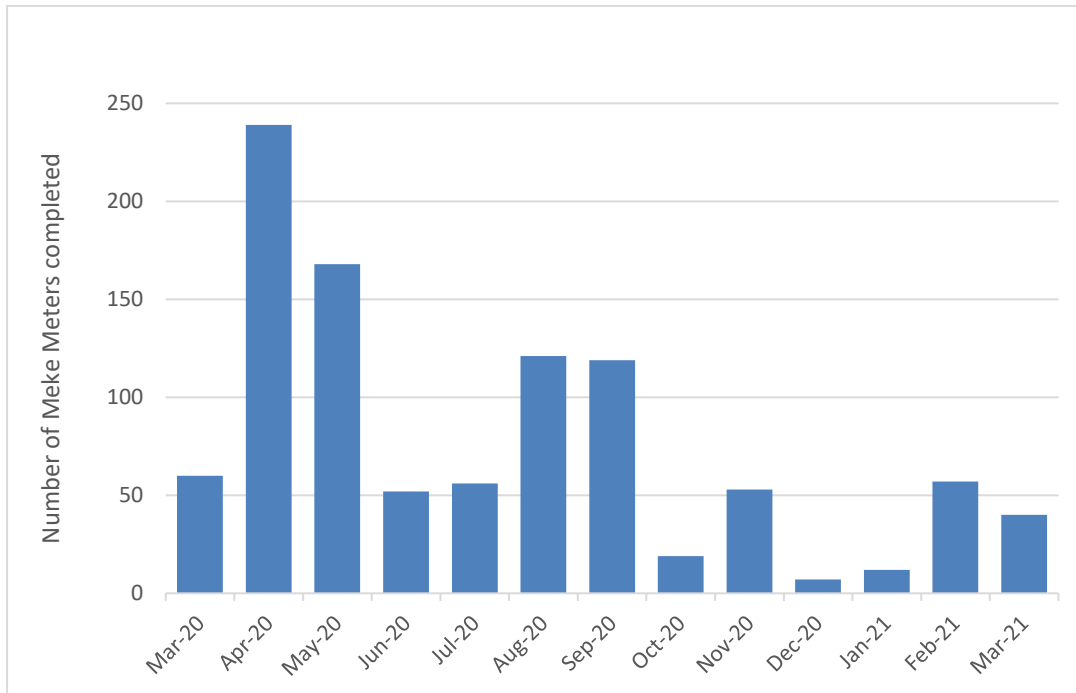


Table 4-1 Number of Meke Meters™ completed per user online from March 2020 to March 2021.

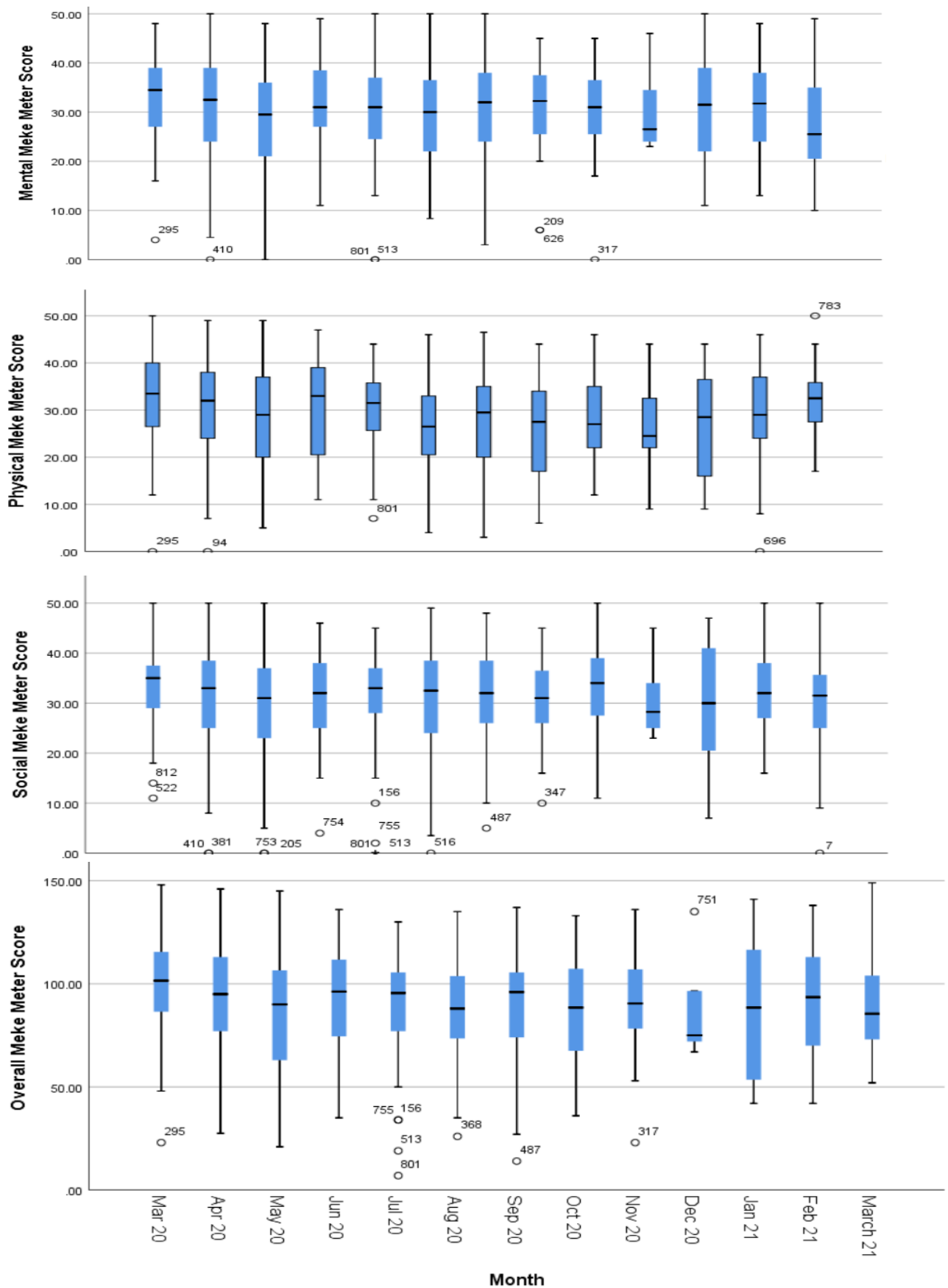
Number of Meke Meters completed	Count of individual users	Percentage of users
1	531	76.73
2	96	13.87
3	37	5.35
4	9	1.30
5	8	1.16
6	6	0.87
7	1	0.14
10	1	0.14
11	1	0.14
14	1	0.14
15	1	0.14
692		100.00

4.2.1 Analyses by month (Meke Meter™ scores aggregated by individual and month)

When the Meke Meter™ scores for those individuals that had multiple completions within the same month were averaged, the data set reduced from 1003 completions to 830 sets of Meke Meter™ score data for the 692 individuals. Figure 4-2 shows the boxplots for the mean Meke Meter™ total scores (Mental, Physical, Social and Overall) by month for users of the online application from March 2020 to March 2021. The exploratory univariate (one dependant, one factor) analyses did not detect any significant differences between the mean total scores by month for the Overall total score ($P = 0.209$), Social total score ($P = 0.720$) or the Mental total score ($P = 0.195$) but did detect a significant difference for the Physical total score ($P = 0.006$).

The exploratory univariate (one dependant, one factor) analyses also revealed significant differences between the mean total scores by sex for Overall total score (females 89.6 ± 1.01 , males 96.2 ± 2.18 , $P = 0.004$), Physical total score (females 28.8 ± 0.39 , males 31.4 ± 0.81 , $P = 0.003$) and Mental total score (females 29.9 ± 0.40 , males 32.4 ± 0.81 , $P = 0.005$), with Social total score means tending to be different (females 30.9 ± 0.37 , males 32.4 ± 0.81 , $P = 0.076$). Significant differences between the mean total scores by ethnicity were also detected for Mental total score (Māori 31.1 ± 0.46 , tauwiwi 29.0 ± 0.61 , $P = 0.006$) and Social total score (Māori 31.9 ± 0.42 , tauwiwi 30.0 ± 0.59 , $P = 0.006$), with the Physical total score means tending to be different (Māori 28.7 ± 0.45 , tauwiwi 30.0 ± 0.57 , $P = 0.074$) but no difference in Overall total score was detected (Māori 91.7 ± 1.16 , tauwiwi 89.0 ± 1.59 , $P = 0.157$). As expected, all the total scores were weakly but significantly correlated with age ($n = 762$; Overall total score $r = 0.127$, $P < 0.001$; Mental total score $r = 0.131$, $P < 0.001$; Physical total score $r = 0.099$, $P = 0.006$; Social total score $r = 0.105$, $P = 0.004$). Given the results of the univariate analyses all the factors (time interval, sex, ethnicity) and the covariate (age) were used in the GLMM analyses.

Figure 4-2 Mean Meke Meter™ total scores (Mental, Physical, Social and Overall) by month for users of the online application from March 2020 to March 2021.



The GLMMs revealed time interval was found not to be a significant main effect for Mental ($P = 0.679$), Physical (0.133), Social ($P = 0.743$) and Overall Meke Meter™ total scores ($P = 0.574$) (Figure 4-3). Sex/gender was found to be a significant main effect for Mental, Physical, and Overall Meke Meter™ Total scores with a strong trend for Social domain being evident (Table 4-2). Ethnicity (Māori, tauiwī/non-Māori) was found to be a significant main effect for Mental and Social Meke Meter™ Total scores but not the Overall or Physical Meke Meter™ total score, and age was a significant main effect for Mental, Social and Overall Meke Meter™ Total scores with a strong trend for Physical domain total score (Table 4-2). In general, as age increased so did the Meke Meter™ scores, females had lower scores than males and Māori had higher and mostly positive scores than tauiwī/non-Māori for the Mental and Social domains.

4.2.2 Analyses by month (Meke Meter™ scores aggregated by individual by 3-month time intervals)

Due to the very small sample numbers for some of the months, the data was aggregated into 3-month time intervals with the first 3-month interval corresponding to the nationwide lockdown (Figure 4-4). Aggregation of Meke Meter™ scores by individual and 3-month time intervals resulted in 740 sets of Meke Meter™ score data for the 667 individuals. Figure 4-5 shows the boxplots of the mean Meke Meter™ total scores (Mental, Physical, Social and Overall) for each time interval for users of the online application from March 2020 to February 2021. The exploratory univariate (one dependant, one factor) analyses did not detect any significant differences between the mean total scores by month for the Overall total score ($P = 0.476$), Social total score ($P = 0.797$) or the Mental total score ($P = 0.834$) but did detect a significant difference for the Physical total score ($P = 0.011$).

Figure 4-3 Estimate marginal mean Meke Meter™ total scores (Mental, Physical, Social and Overall) corrected for age (evaluated at = 39.5 years), sex (female, male) and ethnicity (Māori, tauiwī/non-Māori) by month for users of the online application from March 2020.

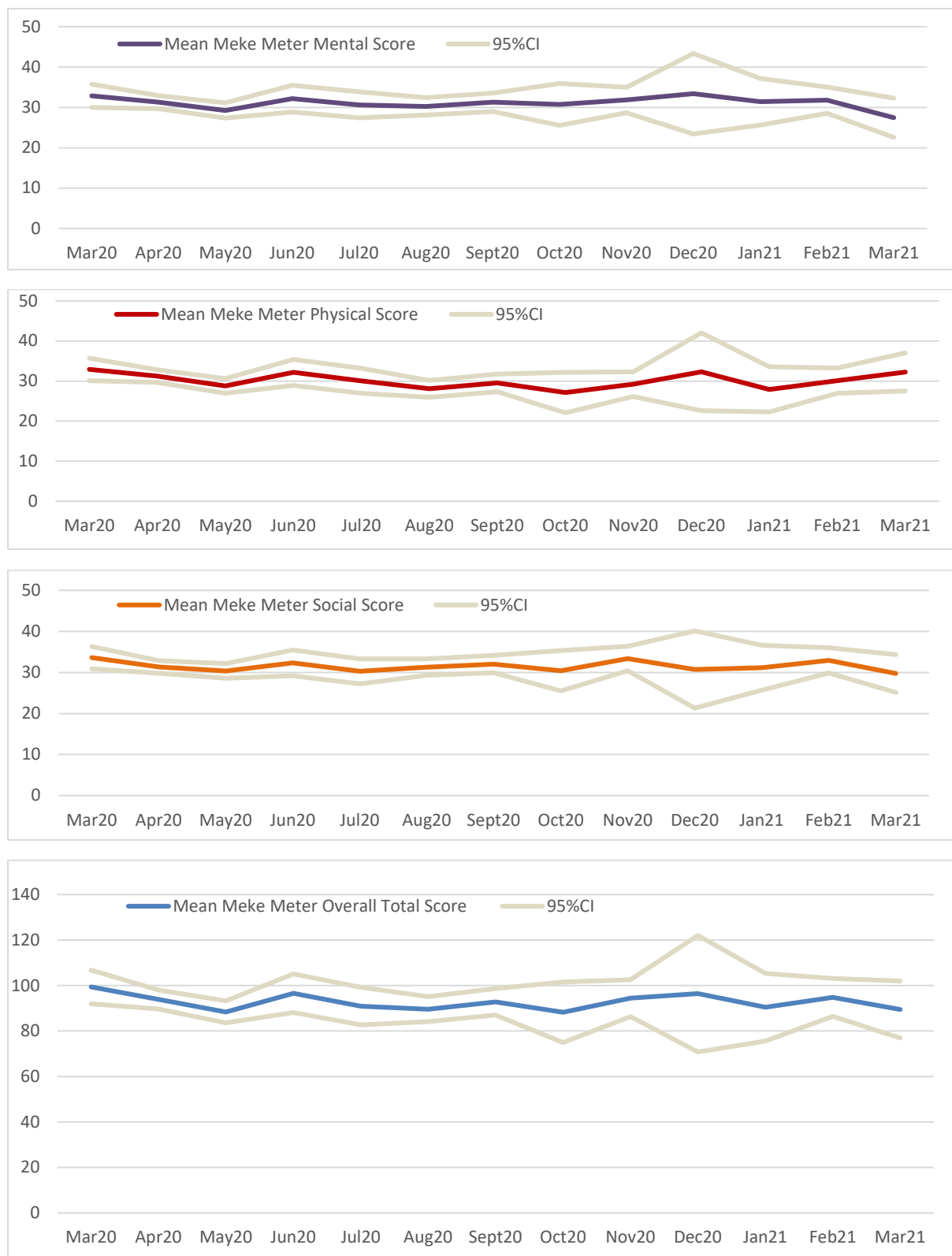


Figure 4-4 Number of individuals with Meke Meter™ data by month (a) and by 3-month (b) time intervals.

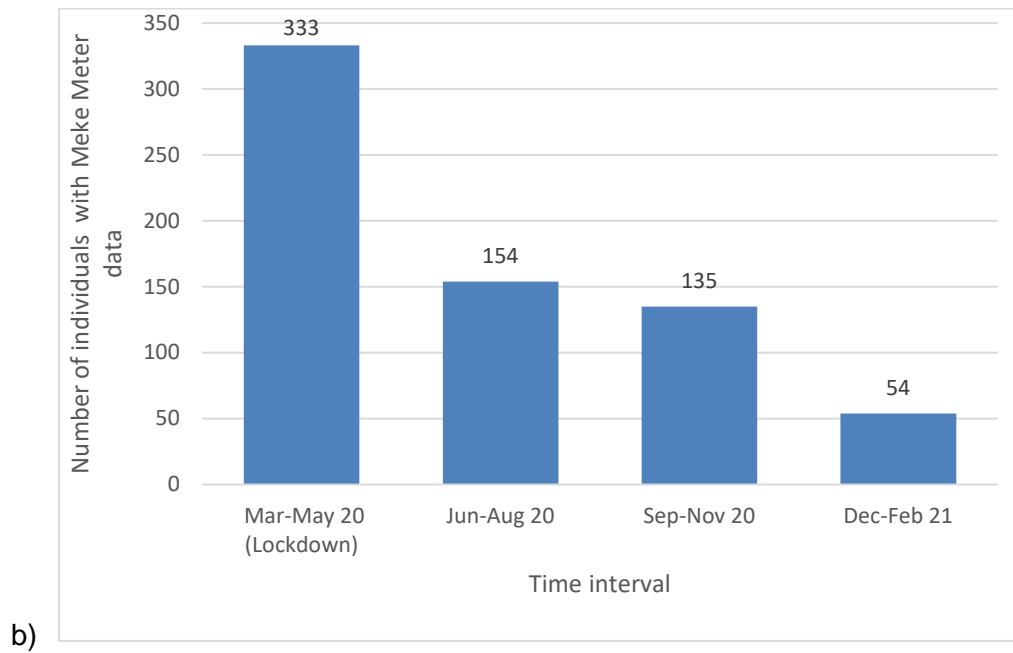
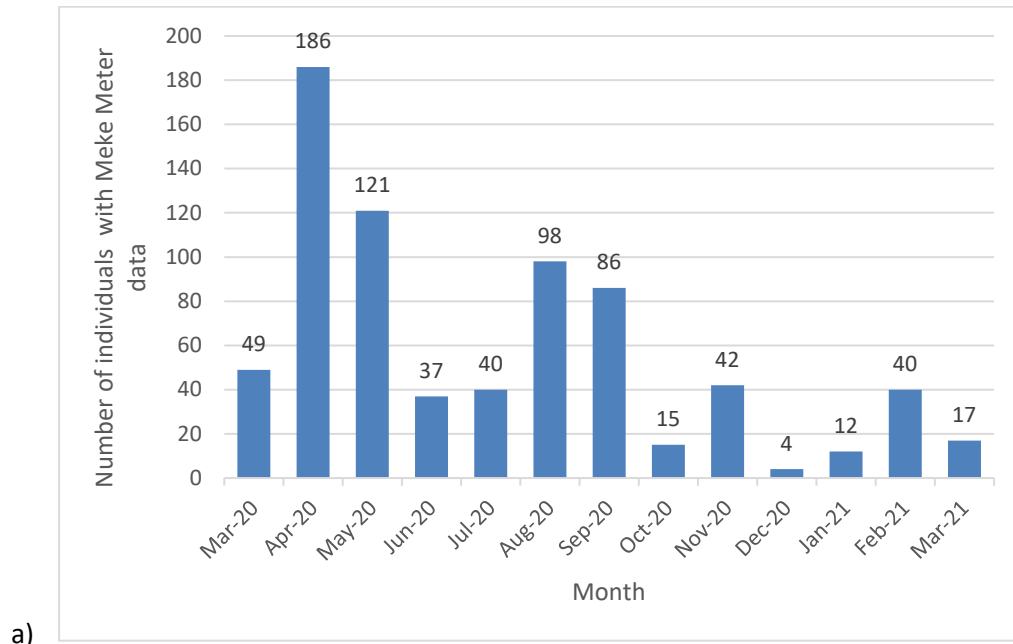
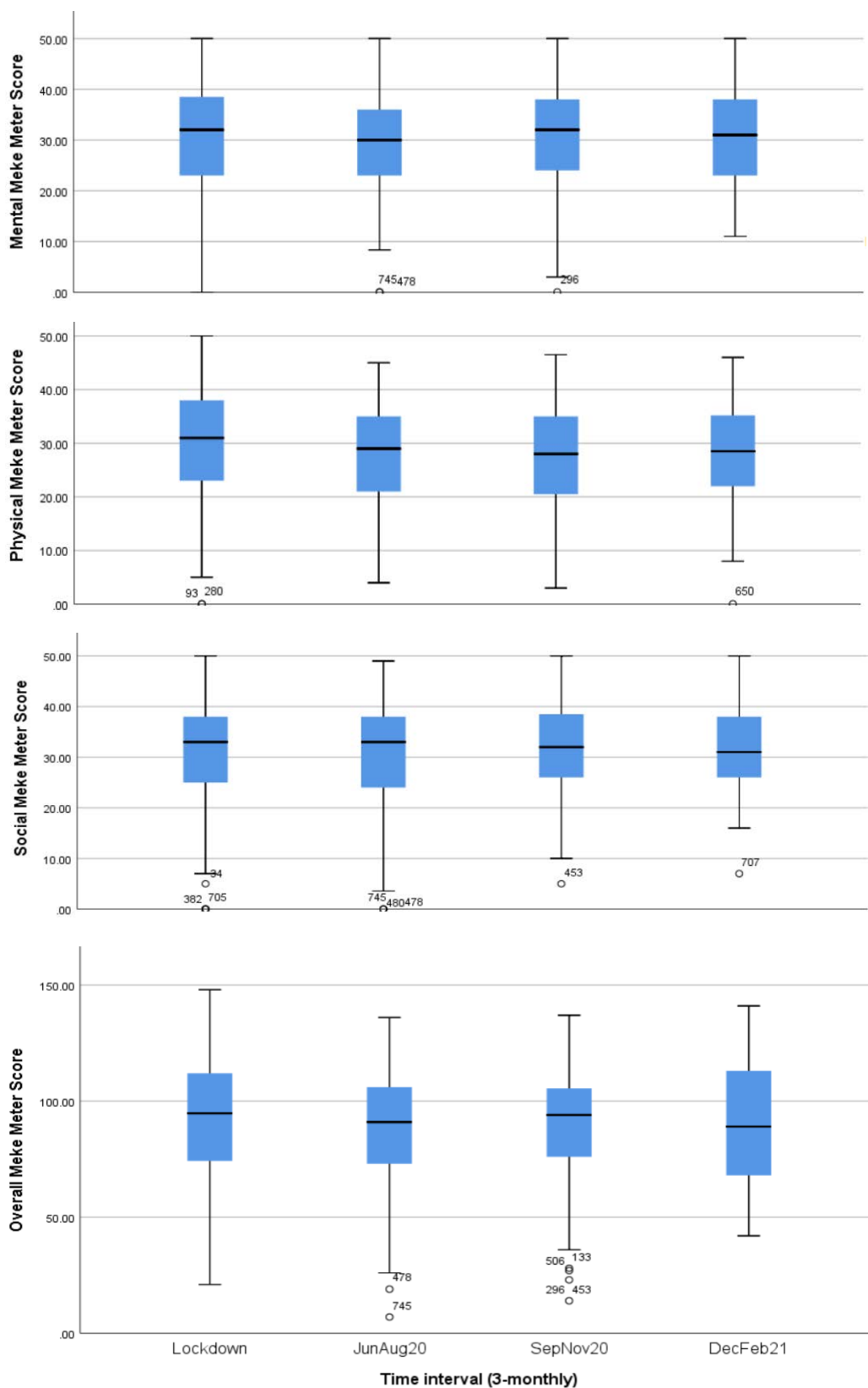


Figure 4-5 Mean Meke Meter™ total scores (Mental, Physical, Social and Overall) by a 3-month time interval of for users of the online application from March 2020 to February 2021.



The exploratory univariate (one dependant, one factor) analyses also revealed significant differences between the mean total scores by sex for Overall total score (females 89.4 ± 1.05 , males 97.3 ± 2.21 , $P = 0.001$), Physical total score (females 28.6 ± 0.40 , males 31.7 ± 0.84 , $P = 0.001$), Mental total score (females 29.9 ± 0.42 , males 32.8 ± 0.83 , $P = 0.002$), and Social total score (females 30.9 ± 0.39 , males 32.9 ± 0.82 , $P = 0.024$). Significant differences between the mean total scores by ethnicity were detected for Mental total score (Māori 31.1 ± 0.47 , tauwiwi 29.0 ± 0.64 , $P = 0.007$) and Social total score (Māori 31.9 ± 0.43 , tauwiwi 30.0 ± 0.61 , $P = 0.006$), with the Physical total score means tending to be different (Māori 28.7 ± 0.47 , tauwiwi 30.0 ± 0.59 , $P = 0.078$) but no difference in Overall total score was detected (Māori 91.7 ± 1.19 , tauwiwi 89.0 ± 1.66 , $P = 0.174$). As expected, all the total scores were weakly but significantly correlated with age ($n = 708$; Overall total score $r = 0.136$, $P < 0.001$; Mental total score $r = 0.134$, $P < 0.001$; Physical total score $r = 0.111$, $P = 0.003$; Social total score $r = 0.112$, $P = 0.003$). Given the results of the univariate analyses all the factors (time interval, sex, ethnicity) and the covariate (age) were used in the GLMM analyses.

The GLMMs revealed time interval was found not a significant main effect for Mental ($P = 0.740$), Physical ($P = 0.300$), Social ($P = 0.629$) and Overall Meke Meter™ Total scores ($p = 0.755$) (Figure 4-6). Sex was found to be a significant main effect for Mental, Physical, Social and Overall Meke Meter™ total (Table 4-3). Ethnicity (Māori, tauwiwi/non-Māori) was found to be a significant main effect for Mental and Social Meke Meter™ total scores but not the Overall or Physical Meke Meter™ total score. Age was a significant main effect for Mental, Social and Overall Meke Meter™ Total scores with a strong trend for Physical domain total score (Table 3). In general, as age increased so did the Meke Meter™ total scores, females had lower scores than males for each of the Meke Meter™ total scores, and Māori had higher scores than tauwiwi/non-Māori for the Mental and Social domains (Table 4-3).

Although time interval was found not a significant main effect for any of the Meke Meter™ Total scores, exploratory univariate (one dependant, one factor) analyses for each of the subdomain by time interval indicated that the Physical subdomains of Self-Image/Appearance, Physical health, and Nutrition, along with the Social subdomains of Recreation/Sport/Fun and

Finances ($P < 0.100$) might warrant further investigation. A GLMM analysis (factors: time interval, sex, ethnicity; covariate: age) did not find time interval to be a significant main effect for Self-Image/Appearance ($P = 0.363$), Physical health ($P = 0.248$), or Nutrition ($P = 0.265$). Time interval was found to be a significant main effect for Recreation/Sport/Fun ($P = 0.018$) and tended to be a main effect for Finances ($P = 0.054$). Not surprisingly, the estimated marginal means (corrected for sex, ethnicity, and age) for the Recreation/Sport/Fun subdomain score were lower during the lockdown and the Jun-Aug 2020 time intervals (5.1 ± 0.18 and 5.0 ± 0.25 , respectively) when compared with the Sep-Nov 2020 and Dec-Feb 2021 time intervals (5.7 ± 0.27 and 6.0 ± 0.40 , respectively). The converse was observed for the Finances subdomain score with the estimated marginal mean score (corrected for sex, ethnicity, and age) tending to be higher during lockdown (6.4 ± 0.17), than the three subsequent 3-month time intervals (Jun-Aug 2020 6.0 ± 0.23 , Sep-Nov 2020 5.8 ± 0.25 , and Dec-Feb 2021 5.7 ± 0.37).

Figure 4-6 Estimate marginal mean Meke Meter™ Total scores (Mental, Physical, Social and Overall) corrected for age (evaluated at = 40.1 years), sex (female, male) and ethnicity (Māori, tauiwī/non-Māori) by a 3-month time interval for users of the online application from March 2020 to February 2021.

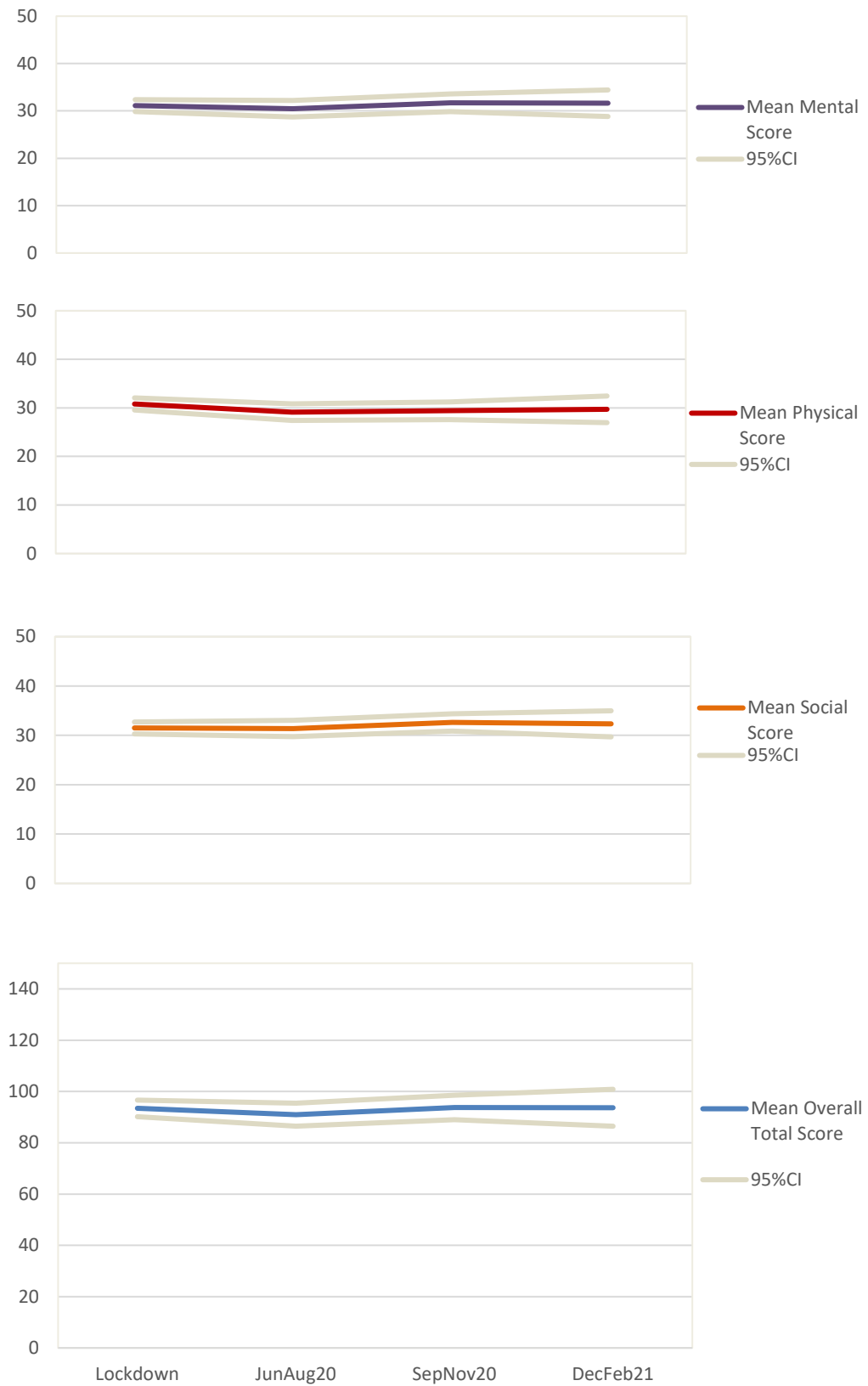


Table 4-2 The effect of gender, ethnicity, and age on average Meke Meter™ scores over monthly intervals. Estimated marginal means with their associated standard error (SE) from general linear mixed effect models (GLMM) for each of the Meke Meter™ total scores (Mental, Physical, Social and Overall) as the dependent variable, and time interval (month), sex (female, male) and ethnicity (Māori, tauiwī/non-Māori) as factors, and age as a covariate (evaluated at = 39.5 years) for users of the online application from March 2020 to March 2021.

GLMM Factor	Overall				Mental				Physical				Social			
	n	Mean	SE	P value	n	Mean	SE	P value	n	Mean	SE	P value	n	Mean	SE	P value
Female	599	89.5	1.67	0.007	599	29.8	0.65	0.007	599	28.9	0.63	0.009	599	30.7	0.61	0.063
Male	148	96.0	2.48		148	32.4	0.96		148	31.3	0.94		148	32.3	0.91	
Māori	473	93.8	1.88	0.303	473	32.0	0.73	0.027	473	29.5	0.71	0.126	473	32.3	0.69	0.041
Tauiwī/Non-Māori	274	91.7	2.14		274	30.2	0.83		274	30.7	0.81		274	30.8	0.78	
Age (co-variate)				0.006				0.003				0.076				0.011

Table 4-3 The effect of gender, ethnicity, and age on average Meke Meter™ scores over 3-month intervals. Estimated marginal means with their associated standard error (SE) from general linear mixed effect models (GLMM) for each of the Meke Meter™ Total scores (Mental, Physical, Social and Overall) as the dependent variable, with time interval (3-month), sex (female, male) and ethnicity (Māori, tauiwī/non-Māori) as factors, and age as a covariate (evaluated at = 40.1 years) for users of the online application from March 2020 to February 2021.

GLMM Factor	Overall				Mental				Physical				Social			
	n	Mean	SE	P value	n	Mean	SE	P value	n	Mean	SE	P value	n	Mean	SE	P value
Female	549	89.0	1.37	0.002	549	29.7	0.53	0.003	549	28.4	0.52	0.005	549	30.8	0.50	0.016
Male	127	96.9	2.44		127	32.7	0.95		127	31.1	0.93		127	33.1	0.90	
Māori	442	94.1	1.61	0.274	442	32.2	0.63	0.023	442	29.2	0.62	0.170	442	32.7	0.59	0.047
Tauiwī/Non-Māori	234	91.8	2.05		234	30.3	0.80		234	30.3	0.78		234	31.2	0.76	
Age (co-variate)				0.002				0.002				0.018				0.007

4.3 Qualitative Findings

4.3.1 Response rates

A total of 106 Meke Meter™ users participated in the qualitative part of the study. This was either through the online survey or focus groups. On Monday, August 10, 2020, an email was sent to the email addresses provided by all those that had completed the Meke Meter™ Quality of Life Indigenous Instrument and had consented to be part of this research. A total of 1000 participants received the email, 423 opened the email, and 60 clicked on the link to the online questionnaire. There were 29 respondents: 7 males, 22 females; 14 Māori, 14 Pakeha, 1 Cook Island, and the average age was 43.6 years. Of the 29 respondents from the first questionnaire, 13 indicated that they would like to participate in an online focus group. An email including the link to the Zoom® meeting was sent out to the 13 respondents on Tuesday, October 13, 2020, with five making themselves available for the focus group. The focus group took place on Wednesday, October 28, at noon and went for approximately 1.5 hours. There was one male and four female participants, with four participants being of Māori descent and one NZ European.

A second email was sent out to email addresses provided by those that completed the Meke Meter™. The email was sent out on Monday, February 1, 2021. A total of 1000 participants received the email, 522 opened the email, and 71 clicked on the link. A total of 41 participants completed the online questionnaire; 5 males, 29 females, 19 Māori, and 15 European, the average age was 43.7 years.

From those who indicated that they would be willing to participate in a focus group along with other Meke Meter™ users who volunteered, three in-person focus groups were conducted locally in Hawke's Bay. The first focus group was conducted on Saturday, February 13, in Awatoto, Napier, at 9 am. The focus group ran for 1 hour 52 minutes. There were 12 participants, four male, eight female, with 10 of Māori descent. The second focus group was conducted on Wednesday, February 17, in Awatoto at 11 am. The session ran for 1 hour 28 minutes and had 10 participants, three males, seven females, with eight of Māori descent. The

third focus group was conducted on Friday, February 19, in Awatoto at noon. The session ran for 1 hour 35 minutes and there were 6 participants, one male, five females, with five of Māori descent. All focus groups were conducted by the author as the researcher and supported by a senior researcher.

4.3.2 National findings (SurveyMonkey© and Zoom© focus group thematic analyses)

Nationwide data was collected at three time points (SurveyMonkey© questionnaire August 2020 and February 2021, Zoom© Focus Group October 2021) and the findings for each are presented with regards to the impact of COVID-10 during 2020, in particular the lockdown, and the use of the Meke Meter™. Otter.ai was only moderately successful at transcribing the NZ accent and local dialects in the Zoom© audio and the transcript required significant editing to ensure accuracy. This was incredibly time consuming. The full thematic analyses are in Appendix B.

The impact of COVID-19 themes are framed within the Meke Meter™ domains (which were reflected in the semi-structured interview questions) of Social, Physical and Mental Wellbeing which form the main categories that the themes and subthemes emerge within. The use of the Meke Meter™ themes emerged from three main categories (also determined by the semi-structured interview questions) which were Accessibility/Acceptance, Wellbeing and Future Wellbeing. In general, COVID-19 and the March lockdown 2020 had a range of impacts on the respondents (Tables 4-4, 4-6, 4-8). In some cases, it brought families closer together facilitated by technology while for others confinement, isolation and financial insecurity caused distress. A dichotomy of responses regarding exercise, diet and weight were also evident, as were the responses about mental wellbeing with some respondents being happy and relaxed while other experienced increase stress and anxiety. Views on the usefulness of the Meke Meter™ were varied (Table 4-5, 4-7, 4-9), with some finding it a good tool to promote self-awareness and reflection, facilitating goal setting and tracking change. Outside of this research project,

some of the research participants were going to incorporate the Meke Meter™ into their long-term wellbeing plan, while other were using other strategies. However, many of the respondents were unsure about their wellbeing moving into the future.

Table 4-4 Thematic findings from the participant written responses to the SurveyMonkey® questionnaire August 2020 about the impact of COVID-19 (particularly the lockdown).

Category	Theme (Subtheme/s)	Representative Quote/s
Social Wellbeing	Whānau (Subthemes: quality time, blessing/spiritual, challenging)	I felt that it actually brought our family closer. We spent time doing things that normal life prevents us from doing due to time restraints. P7 My spirit was lifted because we were all together in harmony. P21 Less contact with whanau. P10 During lockdown I was mad at my partner a lot for no good reason. P3
	Tech connect	Culturally engaged via facebook and facebook live where I participated in karakia, waiata, te reo. P10
	Illness/sickness and death	Being separated from my elderly father was the most stressful part. Dad is living at home with stage 4 cancer. P3
	Work/income (Subthemes: lost job/income, increased workload, saved money)	Lost my job because the business had to close down due to COVID. P16 Financially it was good to be able to save some money while working from home. Showed where you spend money though which was food for thought! P28 Massive workload increase meant very little time to do anything socially. P29
Physical Wellbeing	Weight (Subthemes: lost, gained)	Our nutrition was increased because we couldn't 'pop to the shops for chocky' and other bad foods. I lost 4.5kg! P10 mmmm not so good here - I notice that I have consumed more alcohol, and have gained some weight -covid creep! P23
	Exercise (Subthemes: more time, less motivation)	I felt like I had more time to exercise and enjoyed taking the kids out for walks. P7 Not too good. Lockdown interrupted a regular exercise/gym routine I had and the lack of motivation has carried through. P20
	Food choice (Subthemes: healthier, ate more, increased alcohol intake)	It had a positive impact on my nutrition as there was no temptation to buy takeaway foods. We cooked more and spent time preparing meals that were healthy and nutritious. P7 We ate too well at every mealtime. We had lots of opportunity.... I told myself it was okay that we were comfort eating but it was excessive. P3 Probably ate too much food and definitely drank more alcohol. P24
Mental-Emotional Wellbeing	Relaxed and happy	Less stress - better work/life balance. P28 I was generally pretty happy and grateful ... P16
	Stress and anxiety	pretty stressful, was always watching the news at the start, got grumpy at people that weren't from here coming out to the beach, The schooling at home was very stressful given some schools had unrealistic expectations. Going to town (we live in the country) was stressful, having to have my system down pat with the mask, gloves, sanitiser etc. We had no sanitiser or toilet paper in stock at the start. We were able to get toilet paper all good but didn't get any sanitiser for a few weeks. That was stressful. I also was pretty stressed about getting sick afterwards - I thought I might have covid (but I didn't) but I didn't get a test done for a week coz I was scared that I had it and I had to go into town for it. P11

Table 4-5 Thematic findings from the participant responses to the SurveyMonkey© questionnaire August 2020 about the use of the Meke Meter™.

Category	Theme (Subtheme/s)	Representative Quote/s
Meke Meter™ Accessibility/ Acceptance	Useful/engaging (Subtheme: reminders/notifications)	It is an excellent self-reflection tool. Easy to use. P29 I only looked at it once or twice, its a great tool - reminders to use it would be good! P16
	Not useful/not engaging	Not very useful .. nothing I didn't already know. P13 I haven't used it since the first time. P14
	IT literacy	I tried but couldn't use it for some reason. However it wouldn't have been a problem to use it if I could. I think it's about my IT literacy. P21
	Kaupapa Māori	It's better than the dumb apps out there that are obsessed with BMI, fat loss, calories burned and fail to recognise the inherent mana in every person on a haerenga hauora. The Meke Meter is kaupapa māori and very validating to see and use for our people. P16
Wellbeing and the Meke Meter™ during 2020	Promoted self-awareness	It kept my mind on point for a while, opened eyes to things. P2 Puts everything into perspective and you can see where you need to put more focus. P28
	Promoted self-reflection (Subthemes: helpful tool, goal setting)	We never seem to take onboard how we actual feel until we are asked or fill in something as easy as the meke meter and start questioning ourselves about how we really are mentally, physically, spiritually, emotionally or culturally. P25 Very useful, especially for goal setting. P7
	Tracking change	I found it very useful to be able to visualise areas of my life which needed improvement, and track variations in these. P6
Future Wellbeing Plan	Use of the Meke Meter™ (Subtheme: In combination)	Personal goals and discipline, as well as using quality tools like the Meke Meter. P20 Journals and the Meke Meter. P8 I use the Meihana model and mātauranga maramataka, the Meke Meter fits in nice with this -I would love to use both. P16
	Unsure	Hmmm not sure. I need a plan. Lots of plans. P4 I'm pretty bad at this in general! I need to make it more a priority. P28
	Journaling	Maybe keep a diary to fill in at bedtime; definitely start some exercise. P3 I have started keeping a journal on my phone. P12
	Accessing support, using lifestyle tools	I'm accessing as much help as I can through the relevant agencies, and continuing to seek work. P9 Samsung Health. Noom. P11 Talking to my support systems. P14
	Adjust/change attitude and lifestyle	Stop and think. Be honest with myself- 'coasting' too much and need to prepare to make changes. P17 By the interactions I have with my whanau. Being thankful and great full. Slowing down. Not being greedy. Getting up each morning with purpose and a can do attitude. P2

Table 4-6 Thematic findings from the participant responses to the SurveyMonkey© questionnaire February 2021 about the impact of COVID-19, particularly during the 2020 lockdown.

Category	Theme (Subtheme/s)	Representative Quote/s
Social Wellbeing	Whānau and friends (Subthemes: introverts vs extroverts, isolation, increased support/connection)	I didn't have any problems as I have anxiety around alot of people so the less people around me the safer I felt, and I was happy. P58 I was alone. I couldn't attend church my only social outlet. P65 ... found it hard not being able to socialise with friends and family. P53 For our family, the positive was that we all were able to stay home together and really care for each other. We got stronger as a family unit as we learnt, cleaned, cooked and relied on each other without the interruption of school and work life. P57 My social, family and cultural life has been enhanced from the lockdown. Lockdown gave us back what is important which is whānau and our whare. P37
	Tech connect	...we were able to keep in touch with whānau online. P30
	Travel	I haven't been able to travel to see my family, i haven't seen my parents in a year now. I am 5 months pregnant with my first child and my family will probably not see me while I'm pregnant. I also was new to the place I'm living so I haven't really been able to make close connections. P61 Stress increased and happiness reduced due to lack of travel to people of significance especially during times of loss and not being able to attend funerals away from home town. P43
	Work/income (Subthemes: lost job/income, stressful for essential workers saved money)	I lost my job and I went on the unemployment benefit I became unable to afford very much food P33 I found it a very stressful time as I was a essential worker during the lockdown. My mental health, physicalhealth and spiritual health suffered. P60 Saved money, because I wouldn't go anywhere. P40
Physical Wellbeing	Exercise (Subthemes: more exercise/walking, cancelled memberships, less motivation)	we got heaps more exercise and don't drink etc so all good on that front. P52 The initial lockdown period had a major impact on my physical health. I struggled to sleep, and my sleep schedule got completely screwed up. I struggled to get enough exercise. In 2019 I was a regular gym-goer, did yoga multiple days a week, and was on track to reach my running goal (20km/2 hours). However, my gym use is still not what it was in 2019 as I avoided it until we reached Level 1 again and have struggled to get back. I've been running a bit but haven't been getting much back into yoga, which I need to do as part of treating a back injury, because I struggle to do yoga when stressed and I feel like I'm always at a low level of stress. P54
	Weight (Subthemes: loss, gain through less exercise, gain through more food)	I can't afford to eat every day so I am getting quite skinny. P33 I put on weight. Stopped exercising and I was drinking alcohol a lot more. P60 Less fit, gained weight because food is now more of a pleasure. Same with addictions. P32
	Food choices (healthier meals, more snack food)	We ate better, less take aways, more time to cook, P52 A bit we didn't get out as much and got lazy and ate more crap food like snack food over the period. P30
Mental/Emotional Wellbeing	Addictions	I became a little more dependent on alcohol to pass my time. P43 I smoked alot more weed as I was home alot more. P61

	Motivation	Motivation was hard at times with the cabin fever but connecting online with whānau helped. P30 My motivation is near zero. P33
	Stress and anxiety (less vs more, fear and uncertainty)	I actually feel more mentally well now. I found a lot of people focused on mental health promotion and I think that led me to getting help and on medication. P61 Was more stressed because work was busier and more uncertain. P46 The stress levels were high during this time, the uncertainty, the fear of anyone we loved getting covid and how fast it was spreading everywhere had a huge impact on us all mentally. P57
	Wairua/spirit	I found myself more connected to my spirituality and found more happiness with myself. P51

Table 4-7 Thematic findings from the participant responses to the SurveyMonkey© questionnaire February 2021 about the use of the Meke Meter™.

Category	Theme (Subthemes)	Representative Quote/s
Meke Meter™ Accessibility/ Acceptance	Ease of use (Subthemes: good, simple, motivation)	Kei te pai. P37 I enjoyed it. It's very simple and short to fill out, so it was easy to do even if I felt terrible. P33 ...it was helpful but struggled to fill it in each day. P41
	Improvements (Subthemes: notifications for regular use, mobile app)	I kept forgetting it even existed. I think it would have been easier as an app. I use my phone daily but I mostly only use my laptop for assignments. P54 I didn't do it often enough - no prompts. P55
Wellbeing and the Meke Meter™ during 2020	Reflection (Subthemes: useful tool, tracking, goal setting)	It's really useful! I didn't realise how low I felt until I filled in the meke meter and saw it all together in the graph. When I filled it in more recently after setting goals and following the small steps to improving my well-being after reflecting on my results from the first one, I could see the improvements on my results and instantly felt good about where I am at now. P57
	Wellbeing awareness	It was very depressing to use earlier in the year as the results were showing a poor quality of life and it reminded me how generally low I was feeling. I think I last used it in June, because I forgot about it. It was nicer to fill out today, as I'd had a significant improvement in my wellbeing and that felt good to see. P54
Future Wellbeing Plan	Continue using the Meke Meter™	No problem at all, and I really liked to see the results. I am very happy to keep going. P63
	Track changes	I found it quite useful to track my moods, as my moods were/are fluctuating a great deal. P33
	Goal setting/plan	... it was very useful, I was able to make significant changes to my physical wellbeing through focusing on it, which helped with other areas of my wellbeing. P62

Table 4-8 Thematic findings from the participant responses in the Zoom© Focus Group October 2020 about the impact of March lockdown 2020.

Category	Theme (subtheme/s)	Representative Quote/s
Social Wellbeing	Whānau/family and friends (Subthemes: isolated, distress, adaptation, support/connection)	So, so isolated...A lot of families were home, you could hear a lot of arguing. People yeah children crying. Nobody could get out of the homes. So it was really, really hard. Z4 We adapted by, you know, using Zoom© a lot more. ... we felt a lot more connected with our whanau. So like my extended family, my cousins and aunties and that we actually got together a bit more often we had, you know, regular Zoom©, Zoom© hui. Z1 I'm lucky enough to have whānau in the area. And, you know, I had other people helping me or doing my shopping for me. And I had all that sort of support, which did help. Yeah. Z3
	Work/income (Subthemes: loss of work, financial stress, working from home)	Very challenging, I think I would probably say that would be for a lot of our low lower income families because we rented a housing New Zealand home. Z4 It ended up that we, the gym, actually went under because of the financial issues around running small businesses here in Auckland Z5 And for us, we can continue working we worked right through, because we've got our offices [at home], as you can see, I'm sitting in right now it's on our property. Z2
	Study/school (subthemes: challenging, first vs second, Auckland participants only)	But so we had our other three children at home with us as well. It did become a bit of a challenge when it came to the kids during the school work because we had to share devices with them as well. So it was hard for me to keep up with my studies. Z1 Yeah, I guess by the second lockdown, we knew what to do. Like we had a blueprint for things. So it was kind of easier but also people were really over it specially teaching classes and stuff, how lectures got shorter and shorter. Z5
	Tech connect (subthemes: doing everything online – shopping, learning, working, Lack of devices and appropriate spaces, Zoom©)	Yeah, that was really cool to be able to use technology in ways where we hadn't previously like pushed it to its full potential. So it was a positive. Z5 And then we had a lot of internet issues and they, the school, expected us to get a device, we never, we didn't have devices. We didn't have laptops. We only had my phone. Z4 Yeah, [husbands name] did a lot of Zoom© meetings in the car. And, you know, you, you just I felt like we had to think outside the box a lot to get things done. Z1 Well, I found the Zoom© thing remarkably easy. I'm, you know, I've got smart things that are smarter than I am. So they seem to be, you know, you hit the right button and it works. Z3
Physical Wellbeing	Exercise (Subthemes: gardening, walking, social restrictions)	I actually did a lot of work in the garden. Z3 And we also went for walks every day, which was quite nice Z1 ... the other class I do is Tango therapy. And one cannot do that without partner. Z3
	Food choices (Subthemes: less takeaways, more food and alcohol)	Yeah, missed the takeaways couldn't just turn up at work all day and stop at McDonald's on the way home and grab a fed. Z4 We ate more food and drink more alcohol in the evenings. Z2
Mental-Emotional Wellbeing	Restrictions	I feel like, I've lost a lot of a bit of autonomy. You know, like, we now have rules put on us. Z1
	Stress and anxiety/fear	It really interrupted our schedules for the year but it also everyone was quite anxious I guess I'd describe people as a lot more heightened at the moment like their mental health is not great. Z5 ...very anxious, stressed. Just overwhelmed. Very overwhelmed. Z4

	Support (subthemes: prayer, social contact)	We did a lot of praying to you know that we were praying, they would get through this and pray that our families and our community are going to get through this thing. Z4 I actually contact a lot of people that I don't normally, you know, ring up to say, how are you? And they all really appreciated that. And that was quite good. So I was quite pleased about that. Yeah, so. Yeah. wasn't that bad Z3
	Relaxed/happy	But yeah, I'll be honest, I actually really enjoyed lockdown. It was nice to spend time with my kids and not feel pressured to have other things that needed to be done. We actually got to do things that we don't normally have time to do which is you know, baking and going for walks and things like that. So yeah, it was good, Z1
	Changing attitudes	Yeah, I guess by the second lockdown, we knew what to do. Like we had a blueprint for things. So it was kind of easier but also people were really over it... Z5

Table 4-9 Thematic findings from the participant responses in the Zoom© Focus Group October 2020 about the use of the Meke Meter™.

Category	Theme	Representative Quote/s
Accessibility	Motivation	Um there was one limit I did find it useful but I'm the type of person I am, I only ever wanted to record it when I was having a good day. Z1
	Ease of use (Subthemes: easy, internet vs mobile app, useful for understanding others)	my thought is good simplistic, easy to do, so encourages you to do a bit of self-reflection Z3 I can't really do it on the internet. I would like to see it maybe on an app on my phone. Z4 I think it'd be really cool to use it with my clients. Z5
	Inclusive	...so what I find really refreshing about this tool is that it's, it's clearly been made for the community by the community and it's quite inclusive, like the measures aren't you know, they're not too specific people can interpret what spirituality or cultural identity or other aspects of wellbeing mean to them Z5
Wellbeing	Self-reflection/self awareness	I think it was useful as a focus. You know, that that yeah it's something to actually sort of actually stop and think about, well, how you know, to reconsider just when you're just going blah to really check out how you are where you are mentally Z3
	Track changes	Very useful. Tracking my well being Z4
	Kaupapa Māori	... there's more of a balance in terms of the things that could be going wrong in people's lives, as well as their strengths so that when you look at it, you're getting a more balanced image of their hauora or well being, which is nice, because you can identify the things that are going right. You know, and look at the areas that you might want to improve while you've got those strengths onboard. So that's what I like about it. That seems to be coming from a place of potential rather than looking for problems. Z5
Upgrades/ Improvements	Goal setting/ solutions	I think it'd be cool to have a goal center sort of area Z5 ...solutions peppered throughout the questions and checks and that sort of things. Z4
	Whānau-based	... definitely more wrapped around the whanau. encouraging the whānau more. Z4
	More engaging (Subthemes: aesthetics, goal notifications, gamification, mobile app)	... probably a bit more visual. Z1 So if you were to work on a goal, say you wanted to set a goal to exercise every day, maybe getting a notification from the meke meter to say, Have you how many steps did you take today? Or have you exercise today, or just a little reminder to keep you on track? Z2 I think if you can make it more game orientated gaming, gamification, that would help in terms of people's engagement Z2 I can't really do it on the internet. I would like to see it maybe on an app on my phone. Z4

4.3.3 Regional findings (local focus group thematic analysis)

The themes that emerged from the focus groups for local participants were similar to those found in the national data, however, the emphasis was more on the negative aspects of COVID-19 and its impact on people's lives and wellbeing. The local participants were largely from lower socioeconomic areas of the Hawke's Bay. Table 4-10 collectively summarises the three individual thematic analyses (Appendix B, Tables S7-S9). Whānau ora (family wellbeing) and mahi ora (work wellbeing – split into work/income and study) were the major themes within Social Wellbeing. With the theme whānau/family and friends, many people suffered adversity (a subtheme that emerged) during the COVID-19 lockdown such as death, illness and or injury and the restrictions precipitated some of the situations (suicide, for example). They also created challenges for dealing with the situations. Some families experienced the birth of a new child (another subtheme) but with this came worries about visiting the hospital and opting for birthing at home and the restrictions making it difficult for people to provide support. Two contrasting subthemes that emerged were enhanced family connection, and increased family stress/distress. Some found that the lockdown provided time to spend together, work on and improve relationships while others found being in lockdown with the members of their household caused family relationships to grow worse. Within mahi ora, essential workers felt duty-bound to carry on, while those at home had to take on other roles (side-jobs) such as teaching children, while still others were not sure if they would lose their job or did lose their job. Those trying to study at the tertiary level also found it challenging as lectures were moved online and assessment time frames were extended. Within the category of Physical Wellbeing, there were positive and negative subthemes around both food and exercise and many people took up gardening which contributed positively to both these things. Within Mental Wellbeing some found lockdown a positive experience but most found that it impacted negatively on their mental health, with their levels of distress increasing and also addictions to drug and alcohol becoming worse.

Table 4-10 Thematic findings from the participant responses in the Awatoto Focus Groups February 2021 about the impact of March lockdown 2020.

Category	Theme (subtheme/s)	Representative Quote/s
Social Wellbeing	Whānau/family and friends (Subthemes: Adversity, new life, isolation, family connection, family stress/distress)	<p>2020 was a shit year for me mentally suffered severe depression this was before COVID and then going on into covid lost a lot of family members during the time locked down a few of my bros committed suicide we have just lost a lot of loved ones during that period so in my mind was already really fucked up then I had to fight through all of it. A13</p> <p>There was me her and my two kids and her kids. She was watching my kids while I went to work. And yeah, we pop that bubble a few times...and I helped her give birth to her son. A15</p> <p>And we were trying to heal from [person's name] and just was like, he then everyone goes we all be here for each other and then no one could be there for you and I think yea like [person's name], you just go into this real dark place. A5</p> <p>I think me my partner grew husband grew a lot more closer together because we had the time together. Yeah, just for us was just about working on our relationship with each other a our three boys because my youngest is a real angry, angry boy so it gave us more time to spend with him and see where he was. A18</p> <p>um For me it was a struggle I having my kids at home. Three of them and then their dad like wrapped himself around the pole - crashed the car so we couldn't go work with them but then my son put a popcorn kernel all the way in his ear. I had to take him to hospital a break our bubble to get someone help with my other two which is just a mess ... A19</p>
	Mahi ora - Work/income (Subthemes: essential worker, side jobs /responsibilities, job insecurity)	<p>I was a essential workers New World Greenmeadows so I had to push my shit aside to carry on with what I had to do it was hard was trying to focus my mind and to getting back into work with all the shit that was going on outside. A13</p> <p>They all had the school stuff to do so I had to try and be a teacher as well, which was really difficult. A3</p> <p>The other thing was that his job was like it was on threat that you might not be able to work when we come out. So in my mind, I'm thinking. how are we going to get through afterwards? A3</p>
	Mahi ora - Study	<p>The COVID has itself didn't affect me but I have to study at the same time to and we did Zoom© classes which we found was real hard so I just use the so turn my screen off and do other shit and we also had to do I am exam online so that was pretty difficult learning wise and stuff. A17</p>
Physical Wellbeing	Exercise (Subthemes: positive impacts, negative impacts)	<p>...my stepdad he started up like a little group thing on Facebook. Oh, me and my sisters and stepbrothers. And it was cool but like he was doing like 300 press ups a day. but yea that was cool. A19</p> <p>...because I like pretty much lived at the gym its just constants, and then having to stay home on my own from what I prefer and motivate myself to be around people. And then over that, I didnt want to leave home, gained heaps of weight ended up on medication. A10</p>

	Kai/food (Subthemes: positive impacts, negative impacts)	You didn't even need all the takeaways like it actually made you appreciate the little stuff like rice or like the essential kai instead of like takeaways. A6 We'll be straight up I was fat I was overweight the way I was eating crap. Mental state wasn't the um I wasn't focused. I was just all over the place I just ate and ate and ate. there was really no physical activity going on at all. A13
	Gardening/hobbies	So during lockdown, I started doing a vege garden and my mokos got my mokos involved. Even, my little princess, she was only two. So I've got her planting herbs. So she's quite happy that when she's home, that's her herb garden that she planted. So for us it was teaching them you know, be outside get the fresh air. And normally they're on the devices. Well, I've got my mokos digging a garden. So we've got a huge tyre for my garden. Because during lockdown, it was like trees everywhere. So I rip the whole lot out. Cut the trees down and I decided that I had to start fresh. With this tyre I told my mokos well dig a wishing well for here. So we call it aunty Dom's corner. So the boys actually are getting in and digging out the hole themselves. And we're making our wishing well together. A1
Mental- Emotional Wellbeing	Positive impact	So for, for me personally, loved locked down. absolutely loved it. Totally believed the world needed to stop and think about what they were doing. And in just for the mind that was Yeah. loved it Yes, that's what COVID did for me. A1
	Mental distress	probably the darkest place I have ever been over COVID I did covid on my own it was hard. A10
	Drugs and alcohol	I lost myself completely. shut myself in the room. I didn't want my kids around me. And lots of - smoke heaps of drugs but I would have lines I will help turn with meth. I will give it to him with the green stuff. Just do everything that I felt like I wanted it back. How do I do? I didn't have ease. A24

4.3.4 Pooled thematic analyses

Across the national and regional thematic analyses of each data collection point, common themes emerged and are presented using a narrative approach below, framed within the Meke Meter™ domains (Social, Physical and Mental Wellbeing).

Social Wellbeing

From the participant comments, social wellbeing was seen as an opportunity to reconnect with whanau:

“Positive - got to spend more time with my whanau, was able to appreciate my kid's education better and get more involved in what they are learning, got to spend more time with husband and do things together as a family (like walks) that we do not usually do.” P11

A common theme was that participants felt isolated and lonely during lockdown, affecting their mental wellbeing. Many families were forced to stay apart during tough times:

“I had just split with my partner, so I became pretty lonely and isolated.” P78

“Being separated from my elderly father was the most stressful part. Dad is living at home with stage 4 cancer, but fortunately, my brother is his carer and lives with him.” P3

There was the reality of losing a loved one during the lockdown and the effect on the QoL:

“Me and my partner were essential workers. I had just lost my nanny the first week of lockdown. I was going through cancer shit, and she was helping me a lot. I hated myself inside and out. She brought me up at the age of 4. I wanted to kill myself, to be fair. I have never had anyone else to go to but my nan. I lost myself completely; I shut myself in the room. I would try heaps of drugs just to numb everything; I had

lines, meth, and the green stuff. I didn't like my kids around me. Whanau are starting to kill themselves just so they could see our nan. I try to keep myself smiling. I was destroyed inside." P102

"Not much time for myself and looking after my tinana and wairua, culturally made us look at tangihanga - very tough as a very important person to me passed away on day 1 of lockdown and this was tough on my dad and me." P11

The travel restrictions that were in place affected those family members split from their loved ones, as demonstrated in the participant comment below:

"Over the holiday period it's had a small impact in that I'm worried about my overseas friends but I've been checking in on them as much as possible." P54

"Although we were happy as a family to spend that time together it was hard to keep positivity up as we normally travel a lot and see our family and friends and go out to play to get what we need to stay well." P57

"I haven't been able to travel to see my family; I haven't seen my parents in a year now. I am 5 months pregnant with my first child, and my family will probably not see me while I'm pregnant. I also was new to the place I'm living, so I haven't been able to make close connections." P61

For some who were not used to constantly living near others, tensions grew. The resulting lockdown disrupted normal working life, and many people were so used to working hours that they struggled with staying at home with family:

"We had some pretty hard-out arguments." P88

"A lot of tension and frustration within our whanau, we had to adapt to our new way of life, living old school." P76

"Lockdown for me was stressful having all my kids home. My partner wrapped himself around the pole in a car accident crashed the car to visit him. My son put a popcorn kernel in his ear, so I had to take him to the hospital and had to break our bubble to get someone to come with my kids. My partner was trying to tell me how to do it for the kids, like me trying to tell you how to lay concrete. He was waking us up at 6. It was hard for him to stay home." P94

"Before lockdown, we had moved down south. he went down there for mahi. He was a tree faller. We wanted to get away from the bay. We went down there and didn't have anyone else. I come from a big whanau. I closed up down there. My husband is a hunter, so he couldn't do much of that, and he was going out. It tested our relationship. I was very lonely. Being lockdown took its toll on us; we had a very big relationship problem. I wanted to move home asap." P104

During the lockdown period many participants were either studying or employed and had shifted to either studying online or employers allowing staff to work from home respectively. The following participant comments highlight the issues:

"Didn't affect us. We worked from home. We were busier and moved a lot of our work online. We had a lot of interaction online." P74

"I was studying at the time, and we did Zoom© classes which I found was real hard, and I ended up with my screen off and did other shit. I had to do the exam at the time and found that difficult learning-wise. My oldest had to do learning online as well, and it was hard to keep up. I felt guilty because he fell off the wagon". P97

There was an element of unpreparedness for what the lockdown restricted:

"We had a lot of internet issues, and this affected our kid's learning. We didn't have any devices, and I had to become the teacher. Our kids struggled." P76

"Interrupted our study schedule, and our lectures got shorter." P72

Unfortunately, some participants suffered from job loss, and eventually, this affected their overall QoL:

"I have not been eating well and have lost 10kg since I lost my job." P6

"I lost my job because the business had to close down due to COVID-19." P16

"I had also lost my job and found it hard not to socialise with friends and family." P53

Many suffered a reduction in work hours:

"My hours got decreased for one month, so that was a bit of a strain financially, but we are grateful to still have a job." P67

Anxiety levels increased when participants were unsure of whether they would have a job:

"As our workplace sent regular emails stating that they thinking of reducing the number of employees to be able to keep the business afloat was worrying for us." P57

Participants also identified themselves as essential workers and explained how this may have affected their QoL. Many of these workers would rely on extending their bubble to ensure they could work the hours required:

"During COVID-19, I was working right through the lockdown. I had my sister living with me and had all our kids there. I was always occupied. I was an essential worker. We popped our bubble a few times. I helped her give birth to her son during the lockdown. My lockdown was all right." P96

"I was an essential worker, so I had to keep pushing on. I had to juggle family help to start work extra early. Had family help with kids was tiring days doing school work as well. I was kept busy, so that helped not lock down completely." P38

For some, the lockdown saw an increase in monetary savings as there were restrictions on shopping and purchasing of products:

“Increased savings.” P10

“Financially it was good to be able to save some money while working from home. It showed where you spend money, though, which was food for thought!” P28

However, many suffered financially either through job loss or limited income from small businesses:

“It's impacted financially and work-wise through loss of work as a single woman with a mortgage in a house where I need to renovate to bring it up to a standard where I can rent two rooms out. My lockdown experience included living next door to a rented house with multiple gang associates visiting daily throughout all levels of lockdown with no response from the police to my repeated calls, including four emergency calls about potentially violent/situations.” P9

“So finances were okay although we lost some income on our holiday rentals (baches).” P11

Despite the struggles during lockdown, it allowed participants to explore different income and work options:

“Financially we've thankfully had no impact as our mahi goes on regardless. We did have a drop in some tourist-related income we used to get but barely, and it's helped us to decide to change our business model and focus on more favorable and reliable income.” P34

As resources such as food and household products became a priority, it was highlighted that an increase in prices had a financial impact on whanau:

"Financially it was hard as everything skyrocketed especially food and people as we were going into lockdown were panic buying, so it made it hard to be able to do your normal fortnightly shop." P58

A participant believed the COVID-19 pandemic was an Atua (Māori God) telling the world to slow down:

"I believe the aria has decided to slow the world to combat the greed that has accumulated by those who take advantage; of our time and natural habitat." P37

"I believe the virus was given to us by the atua. It was to slow the world down and send us to our homes to be with our whānau in our whare." P21

Many Tikanga and Māori protocols were affected, but to some, it was a positive:

" Having the elbow bump hariru is so much faster! Lol, and it gives you a bit more personal space during the hongiri / hariru (which I welcome coz we powhiri so many strangers onto our marae, who knows who they are or where they've been coz you don't get that detail over the whaikorero)." P34

Culturally appropriate safety measures were put in place to ensure whānau were still connected:

"Culturally engaged via Facebook and Facebook live where I participated in karakia, waiata, te reo." P10

"Having the elbow bump hariru is so much faster! lol and gives you a bit more personal space during the hongiri / hariru (which I welcome coz we powhiri so many strangers onto our marae, who knows who they are or where they've been coz you don't get that detail over the whaikorero)." P34

"...not much time for myself and looking after my own tinana and wairua, culturally made us look at tangihanga - very tough as a very important person to me passed away on day 1 of lockdown and this was tough on me and my dad." P11

Physical Wellbeing

The impact of COVID-19 on participants' physical activity levels varied. While many were affected by closure of gyms, some took it as an opportunity to create a lifestyle change:

"Less time to do personal workouts, so I've adopted more of the sprint-interval training or HIIT to squeeze it in." P34

*"The pandemic had us exercising at home. I watch my adult children exercise together."
P37*

Participants also saw lockdown as an opportunity to involve the rest of the whanau:

"Did more walking to keep Mokopuna engaged." P38

"I felt like I had more time to exercise and enjoyed taking the kids out for walks." P7

"Neutral. Husband and son did more daily walks... son has kept it up, the husband hasn't. I am the same level of fitness before and after I think." P17

It was quite common that many of the participants who became sedentary were not overly happy with their self-image:

"I used to be a very active, fit person, but I have become extremely sedentary and lazy; I have lost about 10kg of muscle in the last year. I already used to work out at home, but I also had physically active jobs. When I lost my job and went on the unemployment benefit, I became unable to afford very much food and was motivated to stop working out because I couldn't afford to feed my increased appetite." P33

"The initial lockdown period had a major impact on my physical health. I struggled to sleep, and my sleep schedule got completely screwed up. I struggled to get enough exercise. In 2019 I was a regular gym-goer, did yoga multiple days a week, and was on track to reach my running goal (20km/2 hours). However, my gym use is still not what it was in 2019 as I avoided it until we reached Level 1 again and have struggled to get back. I've been running a bit but haven't been getting much back into yoga, which I need to do as part of treating a back injury because I struggle to do yoga when stressed, and I feel like I'm always at a low level of stress." P54

A common trend was that other vices like alcohol and food intake increased:

"I put on weight. I stopped exercising, and I was drinking alcohol a lot more. P60...I managed to do online training during lockdown but soon after, I lost my job (as a Personal Trainer) as our gym had to close. This severely impacted my motivation and self-confidence, and I ended up being inactive for almost ten weeks; I gained weight and became injured." P16

While the lockdown impacted many small businesses such as takeaway stores and restaurants, it allowed participants to start eating at home, while preparing and eating healthy meals:

"I ate better as we couldn't have any takeaways." P5

"It had a positive impact on my nutrition as there was no temptation to buy takeaway foods. We cooked more and spent time preparing meals that were healthy and nutritious." P7

"Our nutrition was increased because we couldn't 'pop to the shops for chocky' and other bad foods. I lost 4.5kg!" P10

Eliminating unhealthy food temptations and making healthier food choices occurred in some families:

"Maintained healthier nutrition because we kept to the basics fruit vege and meat and didn't lose sight of what we were doing nutritional wise. I couldn't take kids in the supermarket for the old junk fix, so it was easier having my way or the high way lol."

P25

In contrast many saw comfort in food and alcohol, while a trip to the supermarket became an arduous task. Lockdown enlightened participants to become conscious of their wellbeing during the COVID-19 pandemic while some feared for their safety and whether they may catch the disease:

"We ate too well at every mealtime, and we had lots of opportunities - we just didn't. I told myself it was okay that we were comfortable eating, but it was excessive." P3

"I could no longer afford to buy enough food to feed my increased appetite and was unwilling to visit the supermarket frequently." P6

"I put on some weight. Did exercise but ate more food as well." P46

"Ate more, though not healthy food all the time, relied on daughter to purchase food as I wouldn't go out due to my age." P40

"I worry what will happen to me anyway and if I got coronavirus because I am morbidly overweight at the moment and unfit." P3

"I gained 9 kg during the lockdown and became very fatigued and unfit." P8

"Massive workload meant physical activity was deprioritised, which had a negative impact on my physical well-being." P29

“My mental well-being seems okay, but others surround me that the pandemic has affected more than me, often bringing me down with them.” P20

“Because we had a newborn baby in the house, everyone had to wash down. You need to wash down because you have COVID-19; to me, everyone was paru. I became very anxious. I needed to protect my niece.” P87

“I see the whole thing as an exercise in well-being for all. Showing care and space for our fellow locals, smiling and waving, made me feel grounded in a community with a shared aim and being in it together.” P19

Feedback from participants showed an increase in alcohol consumption:

“Honestly, we consumed more alcohol during lockdown than normal and had many empties to get rid of once lockdown ended, and we could start recycling again. I still enjoy a glass of wine 2-3 times a week, but I don't feel it's excessive. I would be healthier without it, but I'm not concerned about it and don't think it negatively affects my work or home life.” P3

“Mmmm not so good here - I notice that I have consumed more alcohol and have gained some weight -COVID-19 creep!” P23

An increase in electronic device use was also highlighted:

“I remained alcohol-free the whole time but felt my device use increased a lot.” P7

“Found tv my addiction.” P65

*“I was getting a headache from being on the computer for so long during the lockdown.”
P72*

A participant found that the lockdown created a more sedentary lifestyle and increased recreational drug use:

"Initially, my drug addiction became much worse due to having nothing else to do all day. Due to having no spare money and using up all my savings, I have had to give up my drug addiction which in some ways is good; however, I was using cannabis daily to cope with anxiety and depression, and I have noticed a marked increase in both of these since ceasing smoking." P6

"I smoked a lot more weed as I was home a lot more." P61

Mental Wellbeing

There was a great response to the participants' mental wellbeing. To some, their mental wellbeing had improved during the lockdown. Daily life can become very fast and rushed, and this was an opportunity for them to slow down:

"I have felt much more relaxed during periods of lockdown because I struggle with social anxiety and maybe agoraphobia. I found that removing social pressures to work and leave the house has left me feeling extremely content and relaxed. I really like that during lockdown periods there are not many people out, on the roads or at the supermarket, so it is much less stressful for me when I do go out." P6

"Less stress because there was less rush here, there, and everywhere." P21

"More relaxed and whānau were better too." P2

"Less stress - better work/life balance." P28

Participants showed faith in the decisions government were making during the lockdown, which eased stress levels for them:

"Mostly positive - I am glad to live in this country and feel reassured by the approach undertaken by the government and people around me. I can manage my stress levels pretty well." P23

“After the initial uncertainty (pre-lockdown) around what would happen, it's had a positive impact, but halfway through lockdown, I regained calmness.” P26

Although there were positives, there was a greater response highlighting the negative impact of COVID-19:

“It impacted a great deal with a neglected mameae; the lockdown made all walls collapse. I was stressed to the max.” P2

“Having a full house added stress, our routine went out the window, and the house was often untidy.” P7

“The motivation was on point, and so was self-esteem; it got a bit stressful having the old teens wanna bash each other or play up, and that was stressful in itself! Stress is usual, and my motivation comes and goes since COVID-19.” P25

As people's workloads increased during the lockdown, so did stress and anxiety levels:

“The massive increase in workload caused a huge increase in stress and anxiety levels”. P29

“I noticed there was a lot more stress in my job, and I took on other people's stress”. P72

The fear of the unknown caused much anxiety and fear:

“pretty stressful, I was always watching the news at the start, got grumpy at people that weren't from here coming out to the beach, and the schooling at home was very stressful some schools had unrealistic expectations. Going to town (we live in the country) was stressful, having to have my system down pat with the mask, gloves, sanitiser, etc. We had no sanitiser or toilet paper in stock at the start. We were able to get toilet paper all good but didn't get any sanitiser for a few weeks. That was stressful.

I was also pretty stressed about getting sick afterward - I thought I might have COVID-19 (but I did not), but I did not get a test done for a week because I was scared that I had it, and I had to go into town for it.” P11

“All the above am aware that the fear of the unknown is still possible.” P18

“The stress levels were high during this time; the uncertainty, the fear of anyone we loved getting COVID-19 and how fast it was spreading everywhere had a huge impact on us all mentally.” P57

“Some stress due to friends in the USA behaving in unsafe ways likely to spread the virus.” P68

“I felt quite anxious, I felt panicked, and I felt my mental resilience decline. I also felt a lot of stress from lining up at the supermarket. I felt nervous about coughing because of what people might say.” P75.

“I was very anxious during the lockdown. My stress levels were very high, and I felt overwhelmed.” P76

The death of loved ones effected participants before and during the lockdown, and some still suffer from the loss of a significant loved one:

“We had just lost a close friend before the lockdown, and many of us were still trying to heal. It was hard for me. At times I would go into a really dark place as I was still grieving. COVID-19 took over my life. I manage other people's anxiety, and I had to put my shit to the side and worry about others.” P85

“I had just lost my daughter over Xmas time before the lockdown. It was good for the mind. I believed the world needed to stop and think about what they were doing.” P77

A participant was also affected through losing loved ones to suicide and had their struggles to deal with:

“2020 was a shit year for me. I suffered severely from depression before lockdown, and then going into COVID-19, I lost a lot of whānau during the lockdown. A few bros committed suicide; I lost many loved ones during that period, so my mind was already fucked up. I was an essential worker in new world, so I had to push my shit to the side to carry on with what I had to do. To focus my mind was pretty hard. I spent a lot of time looking in the mirror. Something out there wanted me to be here. Those dark thoughts didn't overtake me.” P92

Some participants did not appear to consider the seriousness and potential consequences of COVID-19 or breaking lockdown restrictions and would roam freely and continue life as normal:

“I never took it seriously. I was smoking p every day. I hardly ever stayed home. My mum would always kick me out, so I didn't go home. It impacted my mum and my kids. I would try and sneak in. Park up in the shed.” P105

“While I was down there, my mental health was in the gutter. The four walls were just killing us. I would take my tamariki for a walk to help myself.” P104

“My self-esteem levels were at an all-time low. P88...I had heaps of mental breakdowns. I use to smoke cannabis hard out before lockdown, so I tried to give it up. I had cold sweats in bed and had mean withdrawals.” P89

It became more difficult for some with health disabilities and those that suffer from mental health issues:

“I struggled with mental illness long before the pandemic, especially social anxiety and depression. Unfortunately, the initial lockdown allowed me to lapse into a state of chronic agoraphobia, and I still have barely left the house a year later, despite lockdown

lifting long ago. It is an incredibly difficult place to be, and I cannot access relevant mental health support or treatment due to cost and its nature (i.e., making appointments and leaving the house) and still am stuck in my house to this day. I feel that previous to lockdown, I was getting by socially out of habit.” P33

“Again the initial lockdown was difficult. I have ADHD, and this is accompanied at times by depression and anxiety. I did struggle with symptoms of depression right through until mid-late 2020 due to self-esteem issues regarding how I dealt with the lockdown, anxiety about another one returning, and the brief return to Level 2. Over this holiday period, I've still had that low level of stress about the what-ifs, and I'm always worried about overseas friends and friends/family in Auckland.” P54

Participants were quite happy but seemed frustrated when others would breach the lockdown conditions:

“I cannot say that any aspect of the pandemic or lockdown has negatively impacted any aspect of my mental well-being other than being frustrated and disheartened by others' behaviour.” P6

Travel restrictions hindered people's holiday plans:

“Although we were happy as a family to spend that time together, it was hard to keep positivity up as we normally travel a lot and see our family and friends and go out to play to get what we need to stay well.” P57

The family and home were a safe place for many, which made it a lot more comfortable:

“I was pretty happy, though, as I spent lots of time with my whānau (which I love).” P11

“Neutral as most of that stuff was in a good place anyway- or maybe positively since I enjoy being at home more.” P17

Motivation levels for exercise and physical activity decreased for some participants during lockdown:

"I'm not motivated enough to start changing anything except, as I said, I have just enrolled in the PATU™™™™ 100-Day Challenge." P3

"I felt it impacted my motivation as I didn't get out of my pyjamas. I was happy to spend more time with my children and husband with us all together." P7

"Exercise motivation less." P22

"I was less motivated and slightly more stressed due to having three adults and two children home all day with two essential workers to also cater for." P53

"The motivation was hard at times with the cabin fever but connecting online with whānau helped. P30...My motivation is near zero." P33

"Motivation varies, but I think that's my pre-menopausal hormones. P34. It was easy to fall into the comfort of being home and resting, taking the time to relax, so motivation was quite low." P57

While positively, lockdown allowed people to set goals for themselves and their whanau:

"I do not think that it changed too much for me. Mentally I feel fine, but it has made me reconsider some short-term and longer-term goals." P24

"As much as I hated lockdown, I could do with having lockdown again as I bonded with the kids and got more into their likes and had an understanding of where they were going futuristic wise." P25

There was a decrease in self-esteem levels:

"I find I'm less tolerant of others, but I'm aware of that and try to keep a lid on my emotions (successfully some of the time). My sleep was never great (I lost my mum and sister within a short period), and my ability to fall asleep and stay asleep went out the window. Previously, exercise has helped a lot. I often just nap on the couch at night and don't go to bed, so I know that's making me store fat, and my thinking isn't as sharp as it could be on days when I'm still tired." P3

"It affected my self-esteem a lot due to job loss." P16

"Self-esteem is bk to been dumb." P25

"My self-esteem dropped as I was not eating well...Not sleeping well either." P60

"I am a lot more kind to myself. My self-esteem and stress have increased but so has my kindness towards myself and my ability to reach out more and talking to my support systems." P14

Some participants felt they were a lot more spiritually-connected and felt a sense of freedom during lockdown.

"Spirituality is kai te pai - having a bit more home time to read spiritually uplifting material is good." P34

"I found myself more connected to my spirituality and found happier with myself." P51

"Prayed more." P65

"My spirit was lifted because we were all together in harmony." P21

While there were limited social gatherings in place, participants took to online platforms to connect:

"Church Zoom© was good, especially the small group chats with 4-6." P1

However, some were frustrated with the government's policies:

“Kept up our taha wairua via online church at home but feel now that it was a bit stupid the govt was capping church/tangihanga at ten initially where the pubs were allowed to have 50 or 100. This shows our society's priorities are a bit shot. I clung to my spiritual beliefs to help me stay balanced and feel okay amidst worldwide and NZ-wide turmoil.” P11

4.3.5 Use of the Meke Meter™

A thematic analysis was used to find common themes that were constructed by participants regarding the usage of the Meke Meter™ and how people perceived the tool. The Meke Meter™ allowed participants to stop and self-reflect on how their QoL was at a certain point in time.

A common theme was that the Meke Meter™ enabled participants to become more aware of their current health and wellbeing status, while self-reflecting and becoming self-aware:

“It kept my mind on point for a while, opened my eyes to things.” P2

“Helpful! Good to reflect on how I was feeling and check-in with myself.” P26

“I was kinda hoha at first, but it did say a lot as I went thru it on self-awareness that I wouldn't come out and say or realise! It's a great way of self-realization. It's a great way to utilize our mental health.” P25

“It was very useful, I mean, not every day u take time out and self reflect, but this meke meter had me thinking a lot of my well-being after. We never seem to take on board how we feel until we are asked or fill in something as easy as the Meke Meter™ and

start questioning ourselves mentally, physically, spiritually, emotionally, or culturally.”

P25

“It was useful to stop and think about and check out how you are and where you are. I try and check in where I am going every day; some days are a bit black. What can outside influences be controlled?” P73

Participants found that it enabled them to identify key areas that may need some improvement but also allowed participants to record their progress:

“It was very good and helpful to be able to visualise aspects of my life which perhaps needed some work or improvement and keep a record of these. It is something that I feel would be helpful in normal life.” P6

“It gave me a chance to look at low areas and create a plan to work on fixing them. E.g., exercising more to improve my mental well-being. Getting out of the house and going for a run was a great way to take time out and get some fresh air.” P7

“It's a good tool because it tracks, and you can see a shift over time.” P23

“It puts everything into perspective, and you can see where you need to put more focus.”

P28

“It helped me think about myself a little. Since lockdown, I've started meditating a bit. I tried it once during the pandemic on a FB group that I'm part of run by a couple of wahine Māori who like to help whānau to cope amidst the pandemic etc.” P11

“Good. Looking after ourselves and one another was more important than usual, so The Meke Meter™ was useful to keep ourselves on track.” P20

"I filled it out every week and found it useful. Although I would only record if I was having a good day. When I had a low moment, I started to take it more seriously. It has been good to see other areas and where I have improved." P75

"Very useful for tracking my well-being. My energy levels are high and low and were hard to measure. It sought of helped me plan out my day. Mentally you have to be prepared to attack the day. I realised that I didn't have enough time. I should have gone for that run around the block rather than eating potato chips. I would like to see it as an app on my phone." P76

The Meke Meter™ provided participants with a voice:

"Fine - good to have the opportunity to be heard." P9

"Good. It gave me a platform to express my feelings during stressful times." P14

Participants would also compare the Meke Meter™ with other health tools. One participant enjoyed that the Meke Meter™ is a kaupapa Māori tool and encompasses Te Whare Tapa Whā:

"It's better than the dumb apps out there that are obsessed with BMI, fat loss, calories burned, and fail to recognise the inherent mana in every person on a haerenga hauora. The Meke Meter™ is kaupapa and very validating to see and use for our people." P16

"I use to work on a quantitative tool with Dr. Carla Houkamou, so I have a little understanding of well-being tools. The community has made the Meke Meter™ for the community. The Meke Meter™ is quite inclusive and is not too specific, which is great. A place of potential rather than looking for problems. I like that it is strength-based." P72

Participants also provided feedback on how they would like to see future developments of the Meke Meter™:

"I only looked at it once or twice; it's a great tool - reminders to use it would be good!"

P16

"Through this app, but need notifications to create a habit." P27

"I would like to see it as an app on my phone." P73

"Making it more game-orientated would be awesome. Earning points by completing achievements." P74

"I would like some prompts on how to improve that area." P75

Participants felt that they could use the Meke Meter™ continuously over time to enable them to put a plan in place to track their well-being:

"The Meke Meter™ could help combined with self-care and reflection, and supervision."

P1

"By using the tools and resources that are available to me. Meke meter is one, and Te Whare Tapa Wha." P2

"I will continue to use the Meke Meter™ and have conversations about how I'm feeling with others. Checking in is important." P7

"I will keep using the Meke Meter™ as even comparing well-being from month to month and year to year will be interesting." P29

"Mindfulness of the key components that the Meke Meter™ had asked about and always referring bk to it!" P25

Participants commented that the Meke Meter™ was convenient and easy to access:

“Very useful. I was able to see more clearly contributing factors to why I was tired.” P7

“I mean, who was is we, so it's always that you go for whatever's best and my thought is good simplistic, easy to do, so encourages you to do a bit of self reflection. That was good for that.” Z3

“I have used an app called Daylio, which I think I will download again and attempt to use. However, Meke Meter was good because it is a bookmark on my desktop computer, and I am more likely to be reminded to use it than an app on my cellphone.” P6

When it came time to fill out the Meke Meter™, some participants were quite anxious and nervous. At the same time, some had already predicted the outcome of their Meke Meter:

“Anxious.” P13

“I avoided it as I knew my scores would be bad due to the work stress, but I could not change the situation, so wasn't much point in making myself feel worse.” P29

“I avoided it as I did not want to track what I knew would be negative changes.” P29

“Not as motivated to fill it in.” P1

A barrier for users was the lack of digital literacy and some had trouble using the Meke Meter™:

“I tried but couldn't use it for some reason. However, it wouldn't have been a problem to use it if I could. I think it's about my IT literacy.” P21

“Not something I could easily understand and felt a bit simplistic for me personally.” P12

4.4 Summary

In this chapter the quantitative results and qualitative findings have been presented. Below is a summary of the key findings that will be discussed in the next chapter.

The quantitative results showed that in general approximately three quarters of the participants only filled in the Meke Meter™ once and as age increased, so did the Meke Meter™ scores; females had lower scores than males, and Māori had higher scores than tauwiwi/non-Māori for the Mental and Social domains. Although time interval was found to not be a significant main effect for any of the Meke Meter™ Total scores (the 3-month lockdown period was not significantly different subsequent 3-month periods post-lockdown) it was conceivable that subdomains moving in different directions within a main domain would reduce the ability to detect effects at the domain level. At the subdomain level, time interval was found to effect for Recreation/Sport/Fun and Finances. The Recreation/Sport/Fun subdomain score were lower throughout the lockdown and the Jun-Aug 2020 time intervals when compared with the Sep-Nov 2020 and Dec-Feb 2021 time intervals. The converse was observed for the Finances subdomain score with the score (corrected for sex, ethnicity, and age) tending to be higher during lockdown, than the three subsequent 3-month time intervals.

The qualitative data revealed that COVID-19 had a range of impacts on the respondents. In some cases, it brought families closer together facilitated by technology while for others confinement, isolation and financial insecurity caused distress. A dichotomy of responses regarding exercise, diet and weight was also evident, as were the responses about mental wellbeing with some respondents being happy and relaxed while other experienced increased stress and anxiety and substance abuse.

While people generally found the Meke Meter™ easy and useful they lacked the self-motivation to fill it out regularly and most participants only filled it out once during the research period. The most frequently suggested improvements to the Meke Meter™ included notifications and a mobile/phone app (as opposed to the web-based app).

Chapter Five: Discussion

5.1 Introduction

This study presented an opportunity to explore the impact of the COVID-19 pandemic on the QoL and wellbeing of New Zealanders; a pandemic that has affected and continues to affect countries across the world. In this chapter, the impact of COVID-19 and the lockdown in 2020 on the lives of New Zealanders will be discussed along with the use of the Meke Meter™ platform. The latter was not only used as a tool for collecting QoL and wellbeing data with high levels of Māori engagement but also for recruiting participants for focus group discussions via its membership. During the COVID-19 pandemic in 2020, there was a rapid rise in research being conducted. Subsequently, insights from the demographic data collected highlighted the need to improve accessibility and promotion, not only to Māori but also to male audiences. How to successfully engage males to participate in research that is conducted with online convenience sampling approaches needs further study.

In this study, 692 individuals filled out the Meke Meter™ and of these 81.8 percent were female, while 62.4 percent were of Māori descent. The over-representation of female respondents is not uncommon with online convenience sampling approaches to research (Smith, 2008). In a recent national survey carried out before the COVID-19 pandemic using an online approach with social media recruitment similar to this study, almost all the participants (92.3%) were female and only 8.3 percent were Māori (Forrest et al., 2021). During the pandemic, Gasteiger et al. (2021) recruited participants for their COVID stress study using a social media campaign and had a total of 681 respondents, with 89 percent of the participants being female and 74 percent being NZ European with only 2.1 percent identifying as Māori. Similarly, Kearns et al. (2021) conducted an online survey study with 14,876 responses and also found the majority were female (84.3%) and of European descent (87.8%)

with 6.8 percent of the respondents identifying as Māori. In comparison to these studies, the online approach via the Meke Meter™ platform used in this study was successful in recruiting more males and an over-representation of Māori well above the 16.7 percent of the national population estimate in 2020 (StatsNZ, 2020). Other studies that have obtained samples more representative of the NZ population have employed cross-sectional approaches such as sampling using the NZ electoral roll. For example, Sibley et al. (2021) surveyed 1003 participants about trust and attitudes towards the government and wellbeing from March 26 to April 12, 2020, with 11.8 percent of respondents identifying as Māori and 34.8 percent being male. A cross-sectional study conducted by Every-Palmer et al. (2020) about psychological distress, anxiety, family violence, suicidality, and wellbeing in NZ during the COVID-19 used a commercial survey platform and incentivised participants by earning cash credits in online accounts. Using this approach 65.6 percent of participants were classified as European while 13.9 percent were of Māori descent, and 48.9 percent were male. Taken together, when funding is a constraint and more costly cross-sectional sampling approaches are not viable, this study supports the use of a culturally appropriate platform to get a greater response from indigenous users and to reduce gender bias. However, additional strategies need to be employed to engage more males when using convenience-based online approaches for participant recruitment.

In the following sections, the implications of the results and findings presented in Chapter Four with regards to wellbeing and the use of the Meke Meter™ will be discussed.

5.2 Implications from the Findings – Wellbeing

In 2020, the COVID-19 pandemic presented many wellbeing challenges. The qualitative data revealed that COVID-19 had a range of impacts on the participants of this study. For some, the lockdown was a positive experience allowing more time to spend with family, engage in leisure activities, and reconnect on a social, environmental, and spiritual level. These participants also found that they ate healthier and did more exercise. For most, however, there

were greater levels of distress, and this observation is consistent with the findings of Gasteiger et al. (2021) who found that the NZ population had higher depression and anxiety during the pandemic, especially during the 2020 nationwide lockdown, compared to pre-pandemic. The research evidence suggests factors like fear of contracting the COVID-19 and the potential harm the virus can have on the body, the uncertainty of change and lockdown, and relationship issues within bubbles have had an impact on psychological wellbeing and happiness (Choi et al., 2021a,b; Yang & Ma, 2020). For the participants of this study, along with the fear of the unknown and contracting the disease, several contrasting factors such as increased workloads or loss of work, living more closely with others, or isolation, contributed to increased stress and anxiety. In addition, participants who had suffered from ailments pre-COVID, especially mental health issues such as depression, attention deficit hyperactivity disorder (ADHD) and anxiety, found that these were exacerbated once the pandemic started. Additionally, those participants who identified as essential workers during lockdown also faced increased stress levels due to the perceived increase in responsibility and obligation associated with their work. Ghebreyesus (2020) acknowledges that essential workers were under exceptional stress, facing increased workloads, and those in health professions are being confronted with great suffering and high mortality rates.

This study highlighted the significant impact of QoL on participants who suffered job losses, a reduction in hours and financial loss during the lockdown, increasing stress, anxiety, and addictions. This aligns well with the findings of Choi et al. (2021a) who noted that NZ's welfare system ensured participants had access to health services and welfare payments, but that the welfare payments did not fully meet people's needs, and they required additional support from charitable organisations. Pre-COVID-19, Frasquilho et al. (2016) had reported significant correlations between unemployment, job loss and unmanageable debts, mental health disorders, suicide, and substance-related behaviours. Similarly, during the COVID-19 pandemic, Prickett et al. (2020) found an association between those who suffered job and income loss and greater anger, depression, stress, worry, loneliness, and lower happiness.

Poulton et al. (2020) identified the sectors most affected by the lockdown were self-employed business owners, retail, tourism, and hospitality. Poulton et al. (2020) noted that where jobs were not lost, fewer hours were allocated to staff and or there was a reduction in hourly pay. The study also highlighted that those between 18-24 years old and those who earn less than \$30000 per annum were most likely to significantly impact their wellbeing (Poulton, 2020). Mann et al. (2020) explored the personal economic anxiety in response to COVID-19 and found a significant effect on younger adults compared to older adults. Age-related aspects of the impact of COVID-19 on mental health are discussed in further detail below.

In NZ, Ngāti Whātua Ōrākei surveyed within their iwi and found that 51 percent have had financial losses, and up to 34 percent face job losses (Ngāti Whātua Ōrākei, n.d.). Interestingly, Choi et al. (2021a) reported that NZ adults felt safe at home during the lockdown and were coping financially even though experiencing financial stress. The qualitative results from this study would suggest, however, that those participants (mostly Māori) who lived within a higher-deprived community were impacted more severely than those who did not. It was also of note that the participants in this study of Pacific ethnicity had the lowest scores across finances and work/study. These figures correlate with the latest labour market trends, which saw Pasifika unemployment rates rise, higher than any other ethnicity, with 3.5 percent fewer Pacific Peoples employed from December 2019-2020 (Pacific Peoples in the Labour Market, 2020). During 2020, there were 78,600 Pacific Peoples aged 15 to 24 years in NZ and of these, approximately 15,100 (19.2%) were either not engaged in employment or education (NEET), which is an increase of 2,600 from December 2019 (Pacific Peoples in the Labour Market, 2020).

The observations made in this study with regards to mental health align with those reported in the international and national literature. Qiu et al. (2020) and Wang et al. (2020) confirmed that relatively high anxiety and depression levels were caused by the COVID-19 pandemic, particularly those who perceived themselves as poor health before the outbreak. Several

systematic reviews confirmed that the COVID-19 pandemic has negatively impacted mental health and wellbeing globally (Rajkumar, 2020; Vindegaard & Benros, 2020; Wu et al., 2021; Xiong et al., 2020). High rates of stress and anxiety, depression, and psychological distress along with PTSD were reported in the general population worldwide including both the general public and healthcare workers (Rajkumar, 2020; Wu et al., 2021; Xiong et al., 2020). It was noted that people with existing mental health disorders experienced a worsening of their symptoms with a significantly higher level of post-traumatic stress and depressive symptoms (Rajkumar, 2020; Vindegaard & Benros, 2020). In this study, the quantitative results indicated that for adults, as participant age increased, so did the Meke Meter™ total scores (Social, Mental, Physical and overall). This agrees with research that found that younger adults were more negatively affected in 2020 due to COVID-19 (Choi et al., 2021b; Gasteiger et al., 2021; Gray et al., 2020; Groakes et al., 2020). With regards to mental health, research indicated that the most negatively affected were young people, women, and those in deprived areas (Choi et al., 2021b; Gray et al., 2020), and that younger people were more at risk of loneliness, depression, anxiety and stress (Gasteiger et al., 2021; Groakes. et al, 2020).

According to Niederkrotenthaler et al. (2020), among other researchers, the COVID-19 pandemic has major implications for suicide and suicide prevention. By increasing the risk of isolation, fear, stigma, abuse, and economic fallout, COVID-19 has increased the risk of psychiatric disorders, chronic trauma, and stress, eventually increasing suicidality and suicidal behaviour (Banerjee, 2021). The qualitative data from this study highlighted that some of those participants who struggled during the 2020 lockdown suffered from depression and anxiety, had a difficult time navigating their emotions and dealing with others, felt a lack of support and would isolate themselves from others, and participants acknowledged either thought of taking their own life or knew of someone who had. Unfortunately, these age-related mental health struggles were also reflected in the concurrent suicide data in NZ where younger adults were more at risk of taking their own lives than older age groups (Coronial Services of New Zealand, 2020). The period of July 2019 and June 2020 showed a total of 80 people took their own lives

between the ages of 25-29 (63 male – 19 Māori, 17 female – 3 Māori), with the second-highest was those aged between 30-34 years of age with 69 deaths (57 male – 25 Māori, 12 female - 3 Māori) (Coronial Services of New Zealand, 2020).

The effects of developing a sedentary lifestyle have impacted on all aspects of health and wellbeing. Research has acknowledged that lower levels of physical exercise are linked to higher levels of depression and anxiety when compared to population norms (Craft & Perna, 2004). Low levels of self-reported physical exercise are linked to lower levels of psychological wellbeing in teenagers (Ussher et al., 2007), while an increase in physical activity levels can positively improve mental health (Asztalos et al., 2010). Given the widely acknowledged positive association between physical exercise and mental health, it is not surprising that the data from this study showed that many participants who scored low in the Mental Wellbeing domain also scored themselves low in fitness. This aligns with pre-COVID research that shows that exercise makes people feel good and can boost self-esteem (Biddle, 2016).

The link between mental and physical wellbeing is also reflected indirectly by the fact Sydow (2020) found that the download rates of fitness apps increased globally by 40 percent during the lockdown even though physical activity levels reportedly dropped. It would be reasonable to speculate that users lacked the motivation to complete exercise sessions or were constrained to their bubble with limited equipment. This is consistent with the findings of Meiring et al. (2021), who found that before lockdown, 85 percent of participants would participate in some form of regular exercise and approximately half were able to maintain their fitness during the lockdown. Meiring et al. (2021) found that 60 percent of respondents reported that physical activity positively affected their overall wellbeing. Constandt et al. (2020) also found that a segment of the population reported exercising less during Belgium's lockdown. Furthermore, Zachary et al. (2020) found that 91 percent of respondents said they now spend more time at home than they did before to COVID-19 as 22 percent of the sample stated they gained 5–10 pounds.

Mental health was not only associated with exercise in this study but also with eating. On the positive side, during lockdown, there was no access to takeaways and limited access to convenience food which encouraged families to prepare healthier food while saving money. However, the qualitative data in this study indicated that for many food intake increased (along with alcohol intake) and many participants gained weight during the lockdown and that a contributing factor to excessive eating for participants was stress, anxiety, and lack of exercise. These results confirm the conclusions of Ghanemi et al. (2020) who believed a combination of home confinement with related mental problems (like anxiety and depression) would lead to increased food intake, therefore, contributing to weight gain and perhaps an obesity pandemic. Similarly, Sánchez-Sánchez et al. (2021) identified that those who suffered from high-stress levels during the COVID-19 pandemic reported increased food consumption leading to greater weight gain. Other people turned to alcohol, drugs or other potentially addictive behaviours such as gaming and gambling (Ghebreyesus, 2020).

In this study, the quantitative results also indicated that female participants had lower total scores Meke Meter™ scores than male participants, and interestingly the subdomain scores for motivation and fitness were a lot lower. Gender differences in wellbeing during the COVID-19 pandemic in 2020 have been highlighted in international and national literature, with the results from this study adding to the body of knowledge and being consistent with other research findings worldwide. In a recent review by Fortier (2020), it was acknowledged that “research shows that women are disproportionately negatively affected by a variety of socio-economic hardships, many of which COVID-19 is making worse” (p.77) with single-mother households facing even greater risks. Fortier (2020) argues that women’s jobs tended to be part-time, lower-income and less secure and they typically had greater caregiving obligations which negatively impacted wellbeing. This is consistent with research that shows women had higher mean scores of depression, loneliness, and daily life fatigue (Bartoszek et al., 2020). An increase in workload for females in their house and bubble could be a leading cause for a reduction in physical activity level. Nowak et al. (2009) highlighted several factors and barriers

that limit females' participation in exercise are work-related and family-household responsibilities. In NZ, a study of couples during the 2020 COVID-19 lockdown found that there was an unfair division of labour with couples agreeing that the female experienced a greater domestic burden (housework and parenting) and had less personal time which resulted in decreased relationship satisfaction and an increase in relationship problems (Waddell et al., 2021). Figures from the NZ Police showed a 22 percent increase in callouts for domestic violence during lockdown compared to the week before lockdown (Foon, 2020). While participants did not disclose information on domestic violence, a range of participants described their households as very volatile and stressful. Collectively, this suggests that COVID-19 has impacted negatively on the lives of women and children who live in already volatile relationships. Another finding of this study was an increase in alcohol consumption (along with other substance abuse). An increase in alcohol consumption may have been a way of coping with stress (Enos, 2020). Unfortunately, increased alcohol consumption can lead to distress. Murthy and Narasimha (2020) reported there had been a significant increase in alcohol consumption during the COVID-19 lockdown due to changes in alcohol consumption patterns and alcohol rules around sales, resulting in an increase in alcohol-related emergencies and a negative effect on vulnerable groups (such as women and children).

In this study, the subdomain of Addiction-free scored lowest for Māori compared to other ethnicities. Research suggests that substance abuse disorders (most commonly cannabis and alcohol) are second only to anxiety disorders in prevalence for Māori (Baxter, 2007). Substance abuse disorders were a leading cause of mental health disorders among Māori males (Ministry of Social Development, 2010). Increased alcohol consumption increases the likelihood of self-harm or harm to others, according to Professor Doug Sellman from the University of Otago " People who are able to secure a large supply of alcohol and then consume it in this stressful situation will be a significant risk of causing themselves (personal injury) and the people around them (violence and potential Coronavirus spread) considerable harm" (Deguara, 2020, para. 10). According to Hawton et al. (1989), suicidal individuals also

have high alcohol use rates and abuse and there is a correlation between alcohol consumption and homicide. Thus, increased alcohol consumption can impact mental, physical and social wellbeing.

Colonisation has played an influential role in mental distress in today's society including, intergenerational trauma, lack of identity and social inequities (Gordon et al., 2017). High unemployment, low income, and poor education are all factors that contribute to poor Māori mental wellbeing (Kingi et al., 2018). Over 50 percent of the Māori population will suffer from mental illness during their lifetime (Baxter, 2007). Interestingly, in this study the quantitative results revealed that on average Māori had higher Meke Meter™ scores than tauiwi/non-Māori for the Mental and Social domains, although lower for the Physical domain. Given there are clear synergies between mental wellbeing and physical wellbeing, the mental wellbeing of Māori participant may be affected over time, leading to higher mental illness rates. Nevertheless, the quantitative data from the study shows that Māori were more content and happier in their QoL during the pandemic than non-Māori/tau iwi. On the surface these findings seem to contrast the discussion so far and appear to be in conflict with the suicide statistics recorded in 2020 for NZ. However, it could be speculated that for Māori, especially Māori males, those who perceived themselves as not coping well not only felt they had let themselves down but also their whānau and communities as a whole and that this burden for some was too great to bear. While this is speculation, it aligns with this study's findings that highlighted the importance placed on having a positive connection with whānau (family) and friends during the lockdown. In this study, Māori scored higher in cultural identity than other ethnicities, which also is consistent with research by Russell (2018), who highlights the importance of whanaungatanga and that keeping in contact with whānau and friends is important for Māori mental wellbeing. Other research shows that cultural identity is one of three key components when measuring Māori wellbeing and that Māori who are strongly connected to their turangawaewae (land or home base), whakapapa (identity), and te reo have a higher degree of happiness and improved wellbeing scores (William et al., 2018).

Nicolson and Flett (2020) also found Māori and Pasifika had a more positive experience during the lockdown than other ethnicities and reported higher whānau resilience. This may have, in part, been due to the need for communities to come together to adapt customary practices such as hongi, hugging, and marae visits in order to abide by the social restrictions put in place to reduce the transmission of COVID-19. In general, the participants (majority Māori) of this study were overwhelmingly positive about the NZ Government's response and advised the NZ Government to take the same approach in the future. This sentiment is echoed in the paper by Te One and Clifford (2021) who concluded that the Māori COVID-19 response was integral to the success of the NZ response and that:

...it is clear that Māori communities reacted with innovative, decisive, and robust decision making, that enacted tino rangatiratanga which was driven in part by tikanga Māori. Furthermore, these Māori philosophical perspectives which resulted in swift and concise actions, demonstrate the close links between tino rangatiratanga and well-being. In other words, each is necessary for the other, and that the health of our communities is dependent on the health of our tino rangatiratanga. (p. 9)

This is a particularly reassuring finding about some of the most vulnerable New Zealanders (Choi et al., 2021a).

Another contributing factor to the more positive experience of Māori and Pasifika could be the larger bubble sizes for these ethnicities. While Kearns et al. (2021) found that typical bubble sizes in NZ were small, and limited to a single household, those of Māori and Pasifika people were larger and contained more households with bubble members leaving home on average twice a day. This is consistent with a key finding in this study which was the importance of whānau (family); participants highlighted the importance of having a connection with whānau and friends during the lockdown. In addition, some participants living in a highly-deprived community admitted to not complying with all the restrictions set in place by the New Zealand Government. This is perhaps not surprising as Huppert et al. (2004) suggested that social

capital is strongly linked to subjective wellbeing and that family and friends contribute significantly to happiness and life satisfaction.

Several whānau-related themes emerged in this study such as Adversity (including loss of loved ones or loved ones affected by COVID-19), New life, Isolation, Family connection (including tech connect), and Family stress/distress. The death of loved ones before and during lockdown affected some of the participants in this study and impacted negatively on their wellbeing. Some participants found it a time to grieve with family in a bubble, while some struggled to navigate the loss of loved ones, particularly while Level 4 restrictions were in place. The personality traits displayed by individuals when losing a loved one often include sadness, emotional instability, introversion and cause an onset of depression (Cardenal et al., 2005). During the lockdown, those participants who lost a loved one sought the comfort of whānau and connection. However, the COVID-19 pandemic restrictions due to lockdown disrupted traditional funeral processes and collective ways of mourning further impacting on wellbeing (Enari & Rangiwai, 2021). During Alert Level 4 in NZ, the importance of social media was anecdotally recognised by whānau, hapū and iwi as integral to how they managed and coped with grief during a lockdown (Tangiwai, 2021). Despite the disruption caused by COVID-19, digital innovation has meant funerals have been able to remain socially connected via live link at a physical distance while maintaining collective interconnectivity with their family and friends during times of grief (Enari & Rangiwai, 2021). However, some of the participants required extra support to develop coping mechanisms to deal with grief and unfortunately the closure of many services, including support services and counselling sessions, negatively affected this vulnerable population.

Those participants who had loved ones affected by COVID-19 faced worry due to separation and isolation. Choi et al. (2021a) found that NZ people were resourceful and resilient and coped with lockdown by using technology, self-help techniques, and support from others. Participants in this study adapted well to using technology to interact with their whānau and friends, particularly the older population. However, many whānau had struggled with having to

share devices within their bubble or having limited internet access or no devices. The lockdown has seen increased internet usage as more people work and learn from home. This study would support these findings as there was an increase in device time and many participants working from home using the internet. According to Vodafone NZ (2020), data usage had increased by 50 percent and Netflix streaming sites increased by 25 percent for March.

During the lockdown, new life (as well as loss of life) was a source of mental anguish. Participants of this study who gave birth were very sceptical about going to their general practitioner or hospital because of the lockdown restrictions and the possibility of contracting the COVID-19, not only impacting on the birth but also impacting the ability for young babies to obtain appropriate health care if needed and be immunised. According to the 'UN Research Roadmap for the COVID-19 Recovery', (United Nations, 2020) up to 80 million children under one year of age would miss their routine vaccination due to the COVID-19 pandemic. Children and adolescents under the age of 18 were not included in the current study, however, a recent systematic review concluded that children and adolescents are highly vulnerable during the COVID-19 pandemic and that the extent of vulnerability was dependent on several factors including developmental stage, educational status, pre-existing mental health conditions, socioeconomic status, and being in lockdown (school and activity centre closures) with the underprivileged being at higher risk of mental distress, exploitation and abuse (Singh et al., 2020). Ngati Whatua Orakei (n.d.) report that their survey during lockdown found a lack of digital devices for rangatahi (young people). Hunia et al. (2020) highlighted that students who had a lack of device time, free time or sufficient teaching support (from teachers and or parents) may experience significant negative impacts on their emotional wellbeing and future learning.

The importance of whānau and having a connection with whānau and friends during the lockdown was emphasised by the participants in this study, however, many participants noted that lockdown created tension with household relationships as they were confined to one another's space or bubble. Bubbles and households that exceeded capacity experienced increased tension, especially when household members were not used to staying home. For

some participants who were experiencing relationships issues pre-COVID, lockdown put more pressure on the existing relationship. Zhang (2020) explored the impacts of the COVID-19 pandemic on family violence in China and identified that family violence had surged during the pandemic. The study found that lockdowns tended to aggravate family conflicts, coupled with economic distress and tension (Zhang, 2020), while further research suggested the COVID-19 crisis may cause physical and mental harm to children of low-income and less-educated parents (Kalil et al., 2020). Compared to those households without children, additional pressure was placed on parents and families due to school closures, which led to distress in many families not accustomed to being so closely confined for a long period (FAME-RN Group, 2020). From a NZ perspective, Long et al. (2020) suggested there were increased stress and anxiety during the lockdown, particularly between parents and also between solo parents, and that being confined with others in a small space put pressure on relationships due to having to balance work and family life.

The COVID-19 pandemic is a threat to physical, mental, and social wellbeing, and numerous researchers across the globe have reported study findings that support this. During the lockdown, many bubbles and households had to evolve and increase their capability and capacity. Working from home while having a full house and becoming teachers increased workloads and increased stress levels. When faced with the COVID-19 pandemic, it is natural for individuals to feel fear, sadness and anxiety (Ghebreyesus, 2020). While continuous attempts to monitor COVID-19 reactions and contain the disease will be critical, early intervention that promotes societal and psychological health should be a priority (Sibley et al., 2020). Compared to the rest of the globe, NZ is currently in a unique position where there are high vaccination rates, low community transmission, and access to research data that can be used to focus on developing and implementing interventions that will address the needs of the various communities within the national population, as there is no 'one size fits all' solution to improve the wellbeing of people in the wake of the COVID-19 pandemic. In a COVID-19 recovery state, those solutions to the challenges faced by whānau and indigenous

communities should ensure that they can reclaim and or maintain their power of self-determination to guide their aspirations and claim tino rangatiratanga (sovereignty, self-determination) and control their destinies in line with matauranga Māori.

5.3 Implications of Findings – Use of the Meke Meter™

Forrest et al. (2019) stated that:

The Meke Meter™ embraces reflective practice and the interdependence of life elements and it allows the user to apply the skill of self-reflection and examine many facets of their life without the enhanced proficiency in numeracy and literacy expected in other modes of self-reflection. (p. 340)

The feedback from the participants in this study was very similar to that reported by Forrest et al. (2019). The participants from both studies found the Meke Meter™ to be easy to use and that it enhanced self-awareness by compelling the participant to take time to stop and self-reflect which enabled them to identify key areas in their lives that they needed to work on and set goals. A goal is defined as anything that one wishes to achieve; it refers to a desired future outcome (Latham & Locke, 1991). Interestingly, some of the participants noted that the Meke Meter™ also allowed participants to understand areas of strength and the holistic approach to wellbeing was acknowledged as a positive. Self-monitoring provides insight for personal growth and goal planning, as well as the potential for identifying the need for assistance (Rickard et al., 2016). In the context of 2020, this meant that participants were able to put a wellbeing plan in place during the pandemic and post the 2020 COVID-19 lockdown.

A limitation of the study by Forrest et al. (2019) was that the cultural relevance of the tool was not investigated. The results of this study highlighted the positive engagement of the Meke Meter™ by Māori being almost two-thirds of the participants. Digital equity is a state where all people and communities have access to the information technology they need to participate fully in society, democracy, and the economy (National Digital Inclusion Alliance, 2021). Thus, it is important for the development of accessible, easy-to-use kaupapa Māori tools that connect

to Te Ao Māori to get maximum engagement with indigenous communities in NZ. Within the wellbeing space, the Meke Meter™ provides Māori with an alternative to other Eurocentric digital wellbeing apps.

Along with providing a person with a 'snapshot' of their current wellbeing, the Meke Meter™ platform securely stores data that allows participants to access past information and Meke Meter™ scores. Longitudinal data from self-tracking instruments offers a great opportunity to stimulate profound self-reflection and allow people to ask questions and analyse their data (Choe et al., 2017). Bakker and Rickard (2018) studied an emotional self-awareness app called MoodPrism used for tracking mood and found that long term engagement with the app predicted mental health improvements. Unfortunately, this study identified a lack of intrinsic motivation to regularly engage with the Meke Meter™ which was mostly attributed to forgetting about the app. In line with this, participants also provided feedback on how the Meke Meter™ could be improved through notifications. Interestingly, notifications were sent to participants throughout this study but they were via email, thus it could be speculated that the Meke Meter™ users were referring to the notifications they received on their mobile phones via various apps. Such notifications keep users up to date on a range of events, however, depending on the importance of the message and their present context, users may take quick action or ignore it (Sahami et al., 2014). This coupled with feedback that highlighted a mobile phone app would be more accessible than a web-based app, suggested that the next phase of the Meke Meter™ development should focus on these aspects. This notion is consistent with other research that concludes that mobile apps represent a very attractive and rapidly growing industry for disseminating health behaviour change (Lister et al., 2014). Participants also identified the potential for gamification of the Meke Meter™ to increase engagement, incentivisation, and create a sense of achievement and milestones if certain tasks were achieved to improve QoL. Lister et al. (2014) acknowledged that gamification in health and fitness apps has become immensely popular. Edwards et al. (2016) screened health and fitness apps in the Apple and

Google Play stores and identified that 64 of 1680 (4%) health apps included gamification. These findings suggest an opportunity to explore the gamification of the Meke Meter™.

Another important theme that emerged from the feedback about the use of the Meke Meter™ was that the app lacked the capacity to formally set and track goals and also did not provide supporting resources either directly or indirectly (via links) that could be used to help facilitate users to reach their goal/s. This feedback is consistent with the findings of a recent study by McKay et al. (2018) who identified 344 behaviour change mobile smartphone apps, which they reviewed and rated. The study assessed the extent to which the apps incorporated behaviour change techniques and basic functionality and they stated:

...it is disappointing to note that only around one-third of apps included an option for users to set and change goals, with many of the apps only allowing for the review of automatic goals. It is also interesting to note that the ability to plan for barriers, export data from the app (for example, to a health care professional), or gather background on willingness for behavior change were not prominent in the apps reviewed, despite the technology being readily available for these features and other research highlighting such features as important in encouraging positive behavior change. (McKay et al., p. 7)

McKay et al. (2018) found that those apps that were associated with positive behaviour change had around eight behaviour change techniques. Future research into ways in which various behaviour change techniques could be incorporated into the Meke Meter™ would therefore be beneficial.

The COVID-19 pandemic had a considerable impact on the QoL of New Zealanders, in particular on taha hinengaro/mental wellbeing, with heightened stress levels reported by many of the participants in this study. The utilisation of technology has the potential to become a lead intervention for users who may suffer from stress, anxiety, depression and many other health-related issues. Many people who would not otherwise have access to treatment could

benefit from mobile phone applications that give cutting-edge psychotherapies in a non-stigmatising manner (Morris et al., 2010). Research has shown that mental health and wellbeing apps can be helpful and increase treatment accessibility dramatically (Donker et al., 2013) and if they contain some self-monitoring features and are engaged with regularly can improve mental health outcomes (Bakker & Rickard, 2018; Bakker et al., 2018). In addition to the self-monitoring aspects provided by the Meke Meter™, future development could provide users with well-incorporated mental wellbeing resources in the form of real-time interventions and coping strategies to improve mental wellbeing.

In addition to providing a pro-equity online wellbeing app, the Meke Meter™ was an important data collection tool from a researcher's perspective. During the response and recovery from the Christchurch earthquakes, Morgan et al. (2015) also highlighted that data was a powerful tool to inform policymaking and inventions to address the needs of the nation after a significant negative event and there was an ongoing need for psychological support, especially in the vulnerable communities. The COVID-19 lockdown restrictions made it challenging to gather information via paper surveys and face-to-face conversations, thus online tools such as the Meke Meter™, SurveyMonkey©, and Zoom© reinforced the use of technology to gather data and information in a contactless way. The Meke Meter™ platform enabled clear and concise information via the communication strategies implemented by the Meke Meter™ platform to inform and engage with the Meke Meter™ users. As a data collection tool, the Meke Meter™ was easily accessible through its online platform, and it eliminated any need for face-to-face contact when surveying participants. The data collected by the Meke Meter™ also provided leverage for the implementation of culturally-appropriate and relevant local interventions within the Hawke's Bay regions as part of the pro-equity response to the COVID-19 pandemic (Hogan, 2021). The study highlighted the evolution of technology and its importance in the future of healthcare and research.

5.4 Limitations

Digital equity is a term used to ensure that everyone has the best opportunity to participate online (Ministry of Health, 2019). This study's limitations may include the accessibility of the internet and devices such as laptops and computers for many elderly and low-income populations. Another barrier to some people participating was the need for access to social media.

A further limitation of this study is bias sampling through the Snowball effect and leveraging off networks that the author has built through social media platforms. If using a snowball method, there is no guarantee about the representativeness of samples, and it is impossible to determine the population's actual pattern of distribution (Snowball Sampling, 2020). According to Greenfield and Greener (2016), oversampling a particular network of peers can lead to bias. However, one of the objectives of this study was to engage Māori therefore the peers' bias was exploited and a sample that was reflective of the NZ population was not sought.

The online focus group had both advantages and disadvantages. Advantages include lower costs and greater participation from those located in other regions (Evidence Based, 2006). In these circumstances, online focus groups were essential, as in-person contact with participants was restricted. According to Evidence Based (2006), disadvantages of an online focus group include limited opportunity to observe the participants and their body language. Also, the technical skills required and the potential for technical difficulties may have been a barrier to some wanting to participate, and some participants may be too shy to interact via the online platform and, therefore, be less willing to participate. The Awatoto focus groups were done in person and the participants, as well as being Meke Meter™ users, were all engaged in a physical wellness programme led by the researcher. Given the participants had this in common their views represent a small and well-defined cohort of the NZ population. For all of the focus groups, there were several limitations regarding the participant's demographic

information; this included the participant's location, occupation, and income level and therefore many potential useful comparisons to the quantitative data could not be made. Given NZ's low case numbers, the impact of COVID-19 on those who had suffered from the COVID-19 disease or who may have spent time in quarantine, self-isolation or Managed Isolation Quarantine (MIQ) was not explored.

The COVID-19 pandemic was an unknown and therefore the study had to be agile. The 2020 lockdown period was undeterminable and dependent on case numbers and whether NZ eliminated the virus. When this study was undertaken, there was limited research literature to inform appropriate methodology during a pandemic and the associated restrictions.

Lastly, the primary researcher is a co-founder of the Meke Meter™ tool (a potential conflict of interest), and therefore the study could have author bias elements. The academic supervisors and mentors for this project were mindful of this and provided objective feedback during each part of this study.

Chapter Six: Summary, Recommendations and Conclusion

This study aimed to better understand how the COVID-19 pandemic has impacted on New Zealander's QoL and to provide data (both quantitative and qualitative) that could be used to facilitate informed decisions on the partitioning of resources required to support New Zealanders during and post-pandemic. This project had three research objectives. The first research objective to track people's perception of their wellbeing during the COVID-19 pandemic using the Meke Meter™ was achieved at a collective user level but not at the individual user level as most of the participants only filled in the Meke Meter™ once during this study. This emphasised the importance of the third objective of this study which was to ascertain how participants found the usefulness of the Meke Meter™ and whether they intend to continue using it. Participants were very constructive in their feedback, and this is reflected in the recommendations for the further development of the Meke Meter™ below. The second objective was to ask Meke Meter™ users how they felt the pandemic had impacted on their QoL and wellbeing. This objective was met in full, with rich narrative data being collected and thematically analysed. Using the Meke Meter™ platform to recruit focus group participants was very successful, especially for engaging Māori. Although 17.3 percent was higher than many online studies, better strategies are required to recruit more male participants.

With regards to the wellbeing findings, this study together with the wider academic literature report a broad range of negative impacts on people's wellbeing and highlight the need for targeted, community-appropriate post-COVID-19 wellbeing interventions. Target groups need to include (but should not be limited to):

- Tamariki (children) and rangatahi (young people) – general wellbeing, educational support, physical activity, developing resilience and suicide prevention (rangatahi)
- Women – general wellbeing, physical activity, domestic/home/family wellbeing
- Men – general wellbeing, suicide prevention, domestic/home/family wellbeing

- Māori – general wellbeing, maintaining resilience, physical activity
- Pasifika – general wellbeing, maintaining resilience, physical activity
- Non-Māori and non-Pasifika, older adults – forming connectedness/social wellbeing

Lockdowns and social distancing restrictions have impacted greatly on the physical wellbeing of New Zealanders, which in turn influences mental and social wellbeing. A key recommendation from this study would be to ensure the achievability, accessibility, and affordability of physical activity during a lockdown and post-lockdown. Ensuring communities, marae, hapu and iwi are self-sustaining and resilient during the COVID-19 recovery, promotion of physical activity, in particular, group-based activities, can improve overall wellbeing and preparedness for future lockdowns and pandemics.

Accessibility to technology and resources for New Zealanders forced or encouraged to work or study at home is essential. Decreasing the digital divide and improving equity to ensure all households and communities have equal opportunities to digitally connect and work, study and socialise, is vital. Adopting online business and online study options to futureproof NZ will ensure a business as usual approach that is sustainable during subsequent events that require confinements and quarantines. Extra educational support structures need to be developed for tamariki and rangatahi, and for parents, to mitigate the negative impact of lockdowns on their learning experiences. Unfortunately, many parents felt disempowered as they could not provide tuition or a positive teaching environment for their children.

Another important recommendation supported by the findings of this study is to review what is deemed an "essential service", particularly with regards to alcohol. Alcohol consumption increased during the lockdown and contributed to the negative experiences of many participants, in particular those who already suffered from mental health issues. For some, it contributed to weight gain, while for others it exacerbated mental health issues and, sadly, for others it resulted in domestic abuse and emergencies. It is recommended that sales restrictions are reviewed and that significant education and support be provided that is easily

accessible (e.g. at the point of sale). Other the other hand, many drug addicts also suffered during the lockdown, and developed withdrawal symptoms. A recommendation is for further support in alcohol and drug counselling.

With regards to the Meke Meter™ recommendations include the development of a mobile phone app with the capacity for notifications and goal setting. Research and development around the potential for gamification are also recommended.

Conclusion

This research aimed to explore the impact the COVID-19 pandemic had on New Zealanders' QoL and wellbeing. Based on the quantitative and qualitative data analyses in this study, it can be concluded that good relationships with family and friends, daily physical activity, and job security are important factors to consider when ensuring a positive QoL experience during the lockdown and the ongoing pandemic. Furthermore, the results indicate that the lockdown, social distancing restrictions, and alert levels requirements have negatively affected the mental, physical and social wellbeing of many and that targeted community-specific pro-equity interventions are needed to mitigate these effects and develop resilience for any future pandemic-related events. This study also supports the Meke Meter™ as being a simple online tool that can benefit individuals and communities through increased awareness and knowledge about QoL and wellbeing throughout the COVID-19 pandemic. The power of data and knowledge may empower iwi, local council and government to understand the QoL of the people they serve to better inform responses. The use of the Meke Meter™ in this study has provided an important snapshot of the wellbeing of New Zealanders during a significant event in NZ's history.

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Appendices

Appendix A: Ethics and Approvals Documentation

Appendix B: Supplementary Tables – Thematic Analyses

Appendix A: Ethics and Approvals Documentation



Our Ref: **Ref PG20/05**

4th May, 2020

Dear Levi,

Thank you for your application for your research project *"The quality of life and wellbeing of New Zealanders during the COVID-19 Pandemic: Self-reporting using the Meke Meter"* – our Ref PG20/05, received by the Research Ethics and Approvals Committee.

I am pleased to inform you that your research application has been approved.

As you continue with your research, please refer to the EIT Code of Research Ethics. As a reminder, if your proposal changes in any significant way, you must inform the Committee. Please quote the above reference number on all correspondence to the Committee. Please send all correspondence to RECAApprovals@eit.ac.nz.

The Committee wishes you well for the project.

Yours sincerely

Catherine Hines
Secretary - Research Ethics & Approvals Committee

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Date:	April 2020
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Project Title:	The quality of life and wellbeing of New Zealanders during the COVID-19 Pandemic: Self-reporting using the Meke Meter
To:	Metermeter.org member
Researcher(s):	Levi Armstrong
Affiliation:	Eastern Institute of Technology

Description of the research:

As a member of Mekemeter.org, you are invited to participate in this research which will contribute to my Master's degree. My research aims to better understand how the pandemic has impacted on individual's quality of life and to provide data (both quantitative and qualitative) to facilitate informed decisions on the partitioning of resources required to support New Zealanders wellbeing during and post-pandemic. My research objectives are to:

1. Track people's wellbeing during the COVID-19 Pandemic using the Meke Meter
2. Ask participants, in three, six and nine months-time, how they feel the pandemic has/did impacted on their quality of life and wellbeing
3. Ascertain how participants found the usefulness of the Meke Meter and whether they intend to continue using it.

What will participating in the research involve?

If you agree to participant in this research, you will be asked for you consent to use your mekemeter.org data in an anonymous form. I will use the mekemeter.org data collected between April 2020 until February 2021. As a research participant you will also be invited to participate in either an online questionnaire (using Google-forms), a one-to-one interview (by phone or video chat), a focus group interview (using audio or video conference), or online discussion group (using a closed Facebook group), whichever you prefer. The presence of a support person during interviews is welcomed and interviews will be audio recorded and transcribed. The question you will be ask are as follows:

- How has/did the pandemic impact on your:
 - Social and family health and wellbeing?
 - Physical health and wellbeing?
 - Mental health and wellbeing?
 - Your quality of life?
- How did you feel about filling in the Meke Meter during the pandemic?
- How useful did you find the Meke Meter for:
 - Self-reflection about your wellbeing?
 - Reflecting on your quality of life
 - Tracking our own wellbeing?

- Have you done or are you doing any specific activities or programmes to improve your wellbeing during the COVID-19 pandemic? If so, why and what did you do? What was it's impact on your wellbeing?
- How do you plan to assess and track your wellbeing and quality of life in the future?

What are the benefits and possible risks to you in participating in this research?

You will not be paid for being part of this study, however, your use of the Meke Meter will be free via mekemeter.org. I will strive to provide a caring and safe research environment. There are no foreseeable risks to you as a result of being part of this study.

Your rights:

- You do not have to participate in this research if you do not wish to and you can withdraw your information before the completion of this study in June 2021.
- You are welcome to have a support person present (this may be a member of your family/whanau or other person of your choice) during ant of the data collection.
- You may request a summary of the completed research.

Confidentiality:

All information will be stored securely in password protected electronic files. Meke Meter data and interview and discussion transcripts will be anonymised by participant number. No information will be published that might identify any of the project participants.

If you wish to participate in this research, or if you wish to know more about it, please contact

Contact Person:	Levi Armstrong		
EIT School/Section:	Faculty of Education, Humanities and Health Science		
Mobile phone #	0278496800	Email address	LArmstrong@eit.ac.nz

Supervisor Name(s):	Rachel Forrest		
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Programme Coordinator:	Patrick Lander		
Work phone #	+64 6 974 8000 x 5471	Email address	plander@eit.ac.nz

For any queries regarding ethical concerns, please contact: Chair, Research Approvals Committee, EIT.
Ph. (06) 974 8000

This study has been approved by the EIT Research Ethics and Approval Committee 4 May 2020 Ref PG20/05.

Project Title: The quality of life and wellbeing of New Zealanders during the COVID-19 Pandemic:
Self-reporting using the Meke Meter

Researcher: Levi Armstrong

I have read and I understand the Information for Research Participants sheet dated April 2020 provided for volunteers taking part in this study. I have had the opportunity to ask questions about this study and am satisfied with the information I have been given.

I understand that taking part in this study is voluntary (my choice) and that I may withdraw at any time. I understand I am able to withdraw all of my information until June 2021.

I understand that my participation in this study is confidential and that no material which could identify me will be used in any reports on this study.

I have had time to consider whether to take part, and know who to contact if I have any questions about the study.

I agree to take part in this research.

	Yes	No
I consent to my Meke Meter data collected by mekemeter.org being used in this research		
I consent to my interview being audio recorded and transcribed		
I wish to receive a summary of the results		

Signed: _____

Name: _____

I/We as researcher(s) undertake to maintain the confidentiality of information gather during the course of this research.

Signed _____

Dated _____

This study has been approved by the EIT Research Ethics and Approval Committee 4 May 2020 Ref PG20/05.

First page of the online survey

COVID19 QoL

The impact of COVID19 on quality of life and wellbeing of New Zealanders

You are invited to participate in a research project being conducted by Levi Armstrong a Master of Health Science student at the Eastern Institute of Technology.

This project aims to better understand how the COVID-19 pandemic has impacted on New Zealanders quality of life and to provide data (both quantitative and qualitative) to facilitate informed decisions on the partitioning of resources required to support New Zealanders during and post-pandemic. My research objective are:

1. Track New Zealanders wellbeing during the COVID-19 Pandemic using the Meke Meter.
2. To ask New Zealander, in three and six months-time, how they feel the pandemic has/did impacted on their quality of life and wellbeing
3. To ascertain how participants found the usefulness of the Meke Meter and whether they intend to continue using it.

The title of the study is: The quality of life and wellbeing of New Zealanders during the COVID-19 Pandemic: Self-reporting using the Meke Meter

This questionnaire is anonymous. No one, including the researcher, will be able to associate your responses with your identity. Please do not indicate in your responses your name, institution or geographic region. Your participation is voluntary, and you may choose to stop responding at any time during the survey.

The completion of the questionnaire indicates your voluntary agreement to participate in this research project and that you are a New Zealand resident and are over 18 years of age.

Ethical approval has been granted by Research and Ethics Committee ref PG20/04

Questions regarding this study can be directed to Levi Armstrong at LArmstrong@eit.ac.nz or Assoc. Prof Rachel Forrest at rforrest@eit.ac.nz

This survey will close on Monday 31st August

OK

Last page of the online survey

11. I consent to participate in this survey:

Yes

No

DONE

Appendix B: Supplementary Tables – Thematic Analyses

The following pages contain:

Table S1: Thematic Analysis of feedback from participants from Nationwide SurveyMonkey© August 2020 about the Impact of COVID-19

Table S2: Thematic Analysis of feedback from participants from SurveyMonkey© August 2020 about The Meke Meter.

Table S3: Thematic Analysis of feedback from participants from Survey Monkey© February 2021 about the Impact of COVID-19

Table S4: Thematic Analysis of feedback from Survey Monkey© participants February 2021 about the use of the Meke Meter.

Table S5: Thematic Analysis of feedback from participants Zoom© Focus Group October 2020 about the Impact of COVID-19

Table S6: Thematic analysis of feedback from participants in Zoom© Focus Group October 2020 about the use of the Meke Meter.

Table S7: Thematic Analysis of feedback from participants from Awatoto Focus Group one (Participants A0-12)

Table S8: Thematic Analysis of feedback from participants from Awatoto Focus Group Two (Participants A13-A22)

Table S9: Thematic Analysis of feedback from participants from Awatoto Focus Group Three (Participants A23- A30)

Table S1: Thematic Analysis of feedback from participants from nationwide SurveyMonkey© August 2020 about the Impact of COVID-19

Category	Theme	Quotes
Social Wellbeing	Whānau.	<p>I felt that it actually brought our family closer. We spent time doing things that normal life prevents us from doing due to time restraints. P7</p> <p>positive - got to spend more time with my whanau, was able to appreciate my kids education better and get more involved in what they are learning, got to spend more time with husband and do things together as a family (like walks etc) that we don't usually do. P11</p> <p>Positive in terms of unity within the whanau. P27</p> <p>was pretty happy though as I was spending lots of time with my whānau (which I love). P11</p> <p>As much as i hated lockdown i could do with having lockdown again as i bonded with the kids and got more into their likes and had a understanding where they were going futuristic wise.P25</p> <p>I am an introvert, and since we live in a small space we made sure to give each other space/spaces to be so we weren't on top of each other. P17</p> <p>Spiritually i was more at peace and welcomed our time together locked down. Now i feel i'm losing touch as the kids can just jump to a mates and go up the road. P25</p> <p>I believe the virus was given to us by the atua. It was to slow the world down and send us to our homes to be with our whānau in our whare. P21</p> <p>I am a lot more kind with myself. My self esteem and stress has increased but so has my kindness towards myself and my ability in reaching out more and talking to my support systems. P14</p> <p>My spirit was lifted because we were all together in harmony. P21</p> <p>Less contact with whanau. P10</p> <p>During lockdown I was mad at my partner a lot for no good reason. But that evened out. P3</p> <p>My mental wellbeing seems ok but I'm surrounded by others that the pandemic has affected more than me, which can often bring me down with them. P20</p> <p>I find I'm less tolerant of others but I'm aware of that and try to keep a lid on my emotions (successfully some of the time). My sleep was never great (I lost my mum and sister within a short period of time) and my ability to fall sleep and stay asleep went out the window. Previously, exercise has helped a lot. I often just nap on the couch at night and don't go to bed so I know that's making me store fat and my thinking isnt as sharp as it could be on days when I'm still tired. P3</p>
	Tech Connect	<p>Culturally engaged via facebook and facebook live where I participated in karakia, waiata, te reo. P10</p> <p>Church Zoom© was good especially the small group chats with 4-6. P1</p> <p>kept up our taha wairua via online church / church at home but feel now that it was a bit stupid the govt was capping church / tangihanga at 10 initially where the pubs were allowed to have 50 or 100. Shows our society's priorities are a bit shot. Clung to my spiritual beliefs to help me stay balanced and feel okay amidst all the worldwide and NZ wide turmoil. P11</p>
	Illness/ Sickness and Death	<p>Being separated from my elderly father was the most stressful part. Dad is living at home with stage 4 cancer but fortunately my brother is his carer and lives with him. P3</p> <p>not much time for myself and looking after my own tinana and wairua, culturally made us look at tangihanga - very tough as a very important person to me passed away on day 1 of lockdown and this was tough on me and my dad. P11</p> <p>My children are sick more often though and my son's schooling for ncea level 2 is way behind which is worrying. P13</p> <p>Initially my drug addiction became much worse due to having nothing else to do all day. Due to having no spare money and using up all my savings I have had to give up my drug addiction which in some ways is good however I was using cannabis daily to cope with anxiety and depression, and I have noticed a marked increase in both of these since ceasing smoking. P6</p>
	Work/Income	<p>I have not been eating well and have lost 10kg since I lost my job. P6</p> <p>Lost my job because the business had to close down due to COVID. P16</p>

		<p>...but has created a lot more work pressures that are impacting on my wellbeing (e.g. tired, lack motivation and bad eating habits). Considering circumstances though, I am grateful to be able to retain my job. P20</p> <p>It's impacted financially and work wise through loss of work as a single woman with a mortgage in a house where I need to do renovations to bring it up to a standard where I can rent 2 rooms out. P9</p> <p>It affected my personal self-esteem a lot due to job loss. P16</p> <p>Initially my drug addiction became much worse due to having nothing else to do all day. Due to having no spare money and using up all my savings I have had to give up my drug addiction which in some ways is good however I was using cannabis daily to cope with anxiety and depression, and I have noticed a marked increase in both of these since ceasing smoking. P6</p> <p>...increased savings. P10</p> <p>... finances were okay although we lost some income on our holiday rentals (baches), P11</p> <p>Our finances were unaffected as we could both work. P17</p> <p>Financially it was good to be able to save some money while working from home. Showed where you spend money though which was food for thought! P28</p> <p>Massive increase in workload caused a huge increase in stress and anxiety levels. P29</p> <p>Massive workload increase meant very little time to do anything socially. P29</p> <p>Massive workload meant physical activity was deprioritized which had a negative impact on my physical wellbeing. P29</p>
Physical Wellbeing	Weight	<p>Our nutrition was increased because we couldn't 'pop to the shops for chocky' and other bad foods. I lost 4.5kg! P10</p> <p>I didn't put on any weight but I didn't have the time to really focus on losing any either. P11</p> <p>Yes have put on weight through lack of exercise. P18</p> <p>I worry what will happen to me anyway but also if I got corona virus because I am morbidly overweight at the moment and unfit. P3</p> <p>I gained 9 kg during lockdown and became very fatigued and unfit. P8</p> <p>I managed to do online training during lockdown but soon after I lost my job (as a Personal Trainer) as our gym had to close. This severely impacted my motivation and self-confidence and I ended up being inactive for almost 10 weeks, I gained weight and also became injured. P16</p> <p>mmmm not so good here - I notice that I have consumed more alcohol, and have gained some weight -covid creep! P23</p>
	Exercise	<p>I felt like I had more time to exercise and enjoyed taking the kids out for walks. P7</p> <p>The lockdown has had a positive effect on my fitness and nutrition. P9</p> <p>It hasn't. I was walking every day in lock down due to having spare time but now there is none. P13</p> <p>Neutral. Husband and son did more daily walks... son has kept it up, husband hasn't. I am the same level of fitness before and after I think. P17</p> <p>We take the necessary things for granted like going out to the beach and playing sport or working out, or just sight seeing but yeah definitely couldn't wait to get back into it! P25</p> <p>I have had more time to engage in my hobbies without feeling guilty about wasting time or not having a job, and I have found I am able to connect with friends and nature more easily. P6</p> <p>Not too good. Lockdown interrupted a regular exercise/gym routine I had and the lack of motivation has carried through. P20</p> <p>My life was fully impacted no gyms open, zero group workouts. P2</p> <p>Massive workload meant physical activity was deprioritized which had a negative impact on my physical wellbeing. P29</p> <p>Clearly, I'm not motivated enough to start changing anything except, as I said, I have just enrolled in the PATU™ 100-Day Challenge. P3</p> <p>I felt it impacted on my motivation as there were times I didn't get out of my pyjamas. I was happy spending more time with my children and husband with us all together. P7</p> <p>Exercise motivation less. P22</p> <p>lost my confidence in training and looking after myself due to disconnection with the whaiora I work with as well as my wider community. P16</p>
	Food choices	Probably ate too much food and definitely drank more alcohol. P24

		<p>Honestly, we consumed more alcohol during lockdown than normal and had a lot of empties to get rid of once lockdown ended and we could start recycling again. I still enjoy a glass of wine 2-3 times a week, but don't feel its excessive. I would be healthier without it but I'm not concerned by it and don't think it is negatively affecting my work or home life. P3</p> <p>I ate better as we couldn't have any takeaways. P5</p> <p>It had a positive impact on my nutrition as there was no temptation to buy takeaway foods. We cooked more and spent time preparing meals that were healthy and nutritious. P7</p> <p>Improved my nutrition as I didn't have access to takeaways for 6 weeks and I have been able to keep that going and not eat McDonalds, KFC, Burger King etc. P12</p> <p>... maintain a healthier nutrition because we kept to the basics fruit vege and meat and didnt lose sight of what we were doing nutritional wise. Couldnt take kids in super market for the ol junk fix so it was easier having my way or the high way lol. P25</p> <p>Also, we had to do better coz the husband had a heart attack a week into the rahui. He is only 50 so it was a fast shift into better living. P10</p> <p>I remained alcohol free the whole time but felt my device use increased a lot. P7</p> <p>We ate too well at every mealtime . We had lots of opportunity.... I told myself it was okay that we were comfort eating but it was excessive. P3</p> <p>I could no longer afford to buy enough food to feed my increased appetite, and also was unwilling to visit the supermarket frequently. P6</p> <p>Nutrition hasn't been the best either as I've gone away from my 'calories control' dieting. P20</p>
Mental-Emotional Wellbeing	Relaxed and Happy	<p>It has made me more grateful for what I have. The unknown aspect of it at the beginning of lockdown was stressful, but towards the end it was not as worrisome. P12</p> <p>I have felt much more relaxed during periods of lockdown because I struggle with social anxiety and maybe agoraphobia, and I found that the removal of social pressures to work and leave the house has left me feeling extremely content and relaxed. I really like that during lockdown periods there are not many people out, on the roads or at the supermarket, so it is much less stressful for me when I do go out. P6</p> <p>Less stress because there was less rush here there and everywhere. P21</p> <p>Mostly positive - I am glad to live in this country and feel reassured by the approach undertaken by government and people around me. I am able to manage my stress levels pretty well. P23</p> <p>More relaxed and whānau were better too. P27</p> <p>Less stress - better work/life balance. P28</p> <p>t's had a positive impact after the initial uncertainty (pre-lockdown) around what was going to happen, but half way through lockdown I regained calmness. P26</p> <p>I cannot say that any aspect of the pandemic or lockdown has negatively impacted any aspect of my mental wellbeing other than being frustrated and disheartened by others' behaviour. P6</p> <p>I was generally pretty happy and grateful but unmotivated. P16</p> <p>Neutral as most of that stuff was in a good place anyway- or maybe positively since I enjoy being at home more. P17</p> <p>I see the whole thing as an exercise in well-being for all. Showing care and space for our fellow locals, smiling and waving really made me feel grounded in a community with a shared aim and being in it together. P19</p> <p>I was happy as Larry. P5</p> <p>and happiness is ticking away ok! P25</p> <p>Being kind has meant that I have maintained that perspective on myself so been more kind and thus not given into previous addictions (cigarettes). P14</p> <p>no addictions other than addictive behaviours so kei te pai on that front. P11</p> <p>My son who is a student enjoys studying online too. P17</p> <p>Mostly positive -I have been able to continue working Less work related travel. P23</p> <p>I was still able to work whicjh meant that there was not a lot of change except social occasions were minimal. P24</p> <p>I do not think that it changed too much for me. Mentally I feel fine but it has made me reconsider some short term and longer term goals. P24</p>
	Stress and anxiety	<p>bit more stressed but enjoyed time at home. P1</p>

	<p>It impacted a great deal, with a neglected mamae, the lockdown made all walls collapse. I was stressed to the max. P2</p> <p>My current stress levels are high but that's also because my dad who had been doing well is starting to decline. I've uploaded two apps about reducing stress and I'm conscious about doing deep breathing a lot more than I used to, to calm my stress levels. P3</p> <p>Having a full house added stress, our routine went out the window and the house was often untidy. P7</p> <p>pretty stressful, was always watching the news at the start, got grumpy at people that weren't from here coming out to the beach, The schooling at home was very stressful given some schools had unrealistic expectations. Going to town (we live in the country) was stressful, having to have my system down pat with the mask, gloves, sanitiser etc. We had no sanitiser or toilet paper in stock at the start. We were able to get toilet paper all good but didn't get any sanitiser for a few weeks. That was stressful. I also was pretty stressed about getting sick afterwards - I thought I might have covid (but I didn't) but I didn't get a test done for a week coz I was scared that I had it and I had to go into town for it. P11</p> <p>My lockdown experience included living next door to a rented house which had multiple gang associates visiting daily throughout all levels of lockdown with no response from the police to my repeated calls, including 4 emergency calls about potentially violent situations. P9</p> <p>All the above am aware that the fear of the unknown is still possible. P18</p> <p>Motivation was onpoint and so was self-esteem, got a bit stressful having the ol teens wana bash each other or play up and that was stressful in its self! Stress is usual and my motivation comes and goes since covid. P25</p> <p>Massive increase in workload caused a huge increase in stress and anxiety levels. P29</p> <p>Self esteem is bk to been dumb. P25</p> <p>I found working from home meant I was never not at work. Initially, that was cool, but as time passed it became tedious and wearying - physically, emotionally and spiritually. P8</p> <p>When I started back at my studies it was very heavy on my wairua and continues to be that way. P16</p> <p>Massive workload increase meant very little time to do anything socially. P29</p> <p>When our office re-opened I was scared to come back to work and stayed working from home as long as I could. I think that's an age-related thing because some of my older colleagues felt like that too. P3</p>
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Table S2: Thematic Analysis of feedback from participants from SurveyMonkey© August 2020 about the Meke Meter™.

Category	Theme	Quotes
Meke Meter Accessibility/Acceptance	Useful/Engaging (Subtheme: reminder notifications)	<p>very helpful. P1 great love it. P2 Orsm device. P2 Very useful. P4 Very [useful]. P6 Fairly useful. P8 Very useful. P14 On to it. P18 A little [useful]. P19 I have always found it a good reflective tool. P24 Was onpoint! P25 Pretty useful! P26 It is an excellent self-reflection tool. Easy to use. P29 Good as a feedback tool. P27 All good...good tool to help self-reflect. P20 Very useful. I was able to see more clearly contributing factors to why I was tired. P7 I have used an app called Daylio in the past which I think I will download again and attempt to use. However Meke Meter was good because it is a bookmark on my desktop computer and i am more likely to be reminded to use it than an app on my cellphone. P6 I'd like to give meke meter another go, also use journals and time out in nature to check in with my wellbeing state. P23 By using the tools and resources that are available to me. Meke metre is one, and Te Whare Tapa Wha. P2 I am looking forward to the 3 month challenge coming up and the meke meter will be an integral part of that. I am already in pre challenge mode so my challenge is probably 4 months. P24 Mindfulness of the key components that the meke meter had asked about and always referring bk to it! P25 Through this app but need notifications to create a habit. P27 I will keep using the Meke Meter as even comparing wellbeing from month to month and year to year will be interesting. P29 I will continue to use the Meke meter and have conversations about how I'm feeling with others. Checking in is important P7 mildly amusing/interesting. Good tool. P15 Ok when remembered - needed more notifications. P27 I only looked at it once or twice, its a great tool - reminders to use it would be good! P16</p>
	Not useful/ Not engaging	<p>I only looked at it once. P12 didn't use it during the pandemic. P23 I didn't really use it for tracking. P5 Not too useful. I use a couple of other apps (Samsung health and Noom) that are much more user friendly and easier to use. P11 Not useful. P12 Not very useful .. nothing I didn't already know. P13 I haven't used it since the first time. P14 I didnt use that much to be honest. I should have shared it with husband and son. P17 No use. P22 I don't think I use it enough. P28 I like the idea of it, just let it slipped off my radar. Need to build in regular time to use. P23 Don't remember now- that was weeks ago lol. P10 Not something I could easily understand and felt a bit simplistic for me personally. P12 Didn't like it. P13 No use. P22 not as motivated to fill it in. P1 I wasnt aware of it then, this is the first survey I have participated in. P3 Anxious [about filling in the Meke Meter]. P13</p>

		Not especially [useful], I am fairly self aware anyway, and have employers/colleagues who are also aware and we checked in on each other. P17
	IT literacy	I tried but couldn't use it for some reason. However it wouldn't have been a problem to use it if I could. I think it's about my IT literacy. P21 Hmm still learning. P4
	Kaupapa Māori	It's better than the dumb apps out there that are obsessed with BMI, fat loss, calories burned and fail to recognise the inherent mana in every person on a haerenga hauora. The Meke Meter is kaupapa māori and very validating to see and use for our people. P16 I use the Meihana model and mātauranga maramataka, the Meke Meter fits in nice with this. P16
Wellbeing and the Meke Meter during 2020	Promoted Self-Awareness	It kept my mind on point for a while, opened eyes to things. P2 Fine - good to have the opportunity to be heard. P9 I only did it a couple of times, if that. I wasn't really that active on it. Felt fine. Nice to think about myself for a change. P11 Good. It gave me a platform to express my feelings during a stressful time. P14 Can't remember. Probably would have been fine. There was an adjustment period at first. P19 Good - personally I could have looked after myself better, but having the Meke Meter helped me not steer too far off track. P20 confirms my gut feeling. P15 It's a good guide for understanding balance with our taha wairua, taha tinana, taha hinengaro and so forth. I might've adjusted better post-lockdown if I did use it!. P16 Puts everything into perspective and you can see where you need to put more focus. P28 I avoided it as I knew my scores would be bad due to the work stress but I was not able to change the situation so wasn't much point making myself feel worse. P29
	Promoted Self-Reflection (Subthemes: helpful tool, goal setting)	Good to reflect on how I was feeling and check in with myself. P26 I was not a regular user of the meke meter but when I did complete it, it made me reflect on how I and we (whānau) were doing. P24 It was very useful, i mean not everyday u take time out and self reflect but this meke meter had me thinking alot of my own wellbeing after. We never seem to take onboard how we actual feel until we are asked or fill in something as easy as the meke meter and start questioning ourselves about how we really are mentally, physically, spiritually, emotionally or culturally. P25 I was kinda hoha at 1st but it did say alot as i went thru it on self awareness that i wouldnt come out and say or realise! Its a great way of self realization. a great way to utilize out mental health. P25 A good chance to reflect. P28 Like I said I didn't use it. Although I'd say it would have been a good tool to use for self reflection. P21 Good to reflect, but makes me feel a bit powerless. P9 Helped me think about myself a little. Since lockdown I've started meditating a bit. I tried it once during the pandemic on a FB group that I'm part of run by a couple of wahine Māori who like to help whānau to cope amidst the pandemic etc. P11 I remember thinking it was reflective and thoughtful- helps being present. P19 ...the mekemeter could help combined with self-care and reflection and supervision. P1 It was very good and helpful to be able to visualise aspects of my life which perhaps needed some work or improvement, and keep a record of these. It is something that I feel would be helpful in normal life. P6 It gave me a chance to look at areas that were low and create a plan to work on fixing them. Eg exercising more to improve my mental wellbeing. Getting out of the house and going for a run was a great way to take time out and get some fresh air. P7 Very useful, especially for goal setting. P7
	Tracking Changes	good to compare week to week. P15 It was very good and helpful to be able to visualise aspects of my life which perhaps needed some work or improvement, and keep a record of these. It is something that I feel would be helpful in normal life. P6

		<p>Good. Looking after ourselves and one another was more important than usual, so the Meke Meter was useful to keep ourselves on track. P20</p> <p>Its a good tool because it tracks and you can see shift over time. P23</p> <p>I found it very useful to be able to visualise areas of my life which needed improvement, and track variations in these. P6</p> <p>I avoided it as I did not want to track what I knew would be negative changes. P29</p>
Future Wellbeing Plan	Use of the Meke Meter (Subtheme: In combination)	<p>Personal goals and discipline, as well as using quality tools like the Meke Meter. P20</p> <p>Journals and the Meke Meter. P8</p> <p>I use the Meihana model and mātauranga maramataka, the Meke Meter fits in nice with this -I would love to use both. P16</p>
	Unsure	<p>Hmmm not sure. I need a plan. Lots of plans. P4</p> <p>Unsure. P13</p> <p>May or may not. P15</p> <p>Need to pick myself up. P18</p> <p>Hadn't thought about this. Working on being in the now! P19</p> <p>No idea. P22</p> <p>I'm not sure P26</p> <p>I'm pretty bad at this in general! I need to make it more a priority. P28</p>
	Journalling	<p>Maybe keep a diary to fill in at bedtime; definitely start some exercise. My worries for my own health I plan to do something about. The worry for my dad and his impending passing to cancer is a part of life. I just need to be aware of my stress levels and the simple tools I can use (like deep breathing) and taking time out. More recently, we're undergoing a restructure at work so that's a big worry/fear. I'm participating which is good, rather than checking out of the process. I still look for joy everyday and that helps. I worry how I will cope if something more is added to my plate. Sometimes when I get annoyed or find situations at work stressful, I want to tell people what I'm feeling and thinking and that wouldn't be good because it's not kind or tolerant. P3</p> <p>I have started keeping a journal on my phone. P12</p>
	Accessing support, using lifestyle tools	<p>I'm accessing as much help as I can through the relevant agencies, and continuing to seek work. P9</p> <p>Samsung Health. Noom. P11</p> <p>Talking to my support systems. P14</p>
	Adjust/change attitude and lifestyle	<p>Stop and think. Be honest with myself- 'coasting' too much and need to prepare to make changes (moving house especially, considering whether my job as it is will suit me much longer). P17</p> <p>By the interactions I have with my whanau. Being thankful and great full. Slowing down. Not being greedy. Getting up each morning with purpose and a can do attitude. P2</p> <p>I am building a house and when I get into that, my health will be much better. Currently living in a standard home from the 50s which is actually sub-standard by today's measures. P10</p>

Table S3: Thematic Analysis of feedback from participants from Survey Monkey© February 2021 about the Impact of COVID-19

Category	Theme	Quotes
Social Wellbeing	Whanau and Friends	<p>I was socially reclusive before the pandemic anyway so it has had absolutely no impact on me socially whatsoever, in fact I really enjoy the heightened alert levels because it makes going out in public spaces more bearable with enforced social distancing etc, and also is a great excuse to cancel social plans with friends or family. P33</p> <p>Kind of positively because we've grown closer as a whānau and I like being a bit isolated from the world. Forces us all to breathe a bit deeper and relax a bit more. Having kids around more has been stressful but the most rewarding kind of stress - that which comes of the ones you love the most. P34</p> <p>My social, family and cultural life has been enhanced from the lockdown. Lockdown gave us back what is important which is whānau and our whare. P37</p> <p>Was awesome family time. P47</p> <p>We had a positive experience, being a new family it was nice being close to each other without many other responsibilities and things to go and do. We're introverts and it felt like heaven, everything was calm and quiet and peaceful for us. P52</p> <p>For our family, the positive was that we all were able to stay home together and really care for each other. We got stronger as a family unit as we learnt, cleaned, cooked and relied on each other without the interruption of school and work life. The negative side for our family was that we had new stresses introduced, the pandemic caused a lot of uncertainty, fear and anxiety with our health and safety being threatened which made it hard to re-socialise with others outside of our bubble when let out of isolation. Our children struggled being away from their peers and school teachers and found online learning distant making them feel detached from their normal school life. Not being able to attend family gatherings was a big one as we had people who passed away during this time and we were unable to attend and be around our extended family. Overall, there was a lot that we had to adapt to where we had to think and do things in different ways and in a lot of ways caused stress, but the time spent with our family in our home was the positive and we were given the chance to reflect on things we can live without. But socially we need the connection with our friends, family and wider social groups. P57</p> <p>It was good for me as my anxiety levels came right down and I didn't have to be around a lot of people. I was really lucky to have my family support around me. P58</p> <p>it has stressed out one of our kids. P41</p> <p>unable to meet ā kanohi or attend whānau events. P42</p> <p>The only time this has impacted on my mental wellbeing is when we were in a total lockdown level 4 and I was not able to physically be with my family (outside of household) P43</p> <p>Home life was difficult at times as 3 out of the 5 adults were home along with 2 young children. P53</p> <p>I was alone. I couldn't attend church my only social outlet. I had to think. P65</p> <p>Having the elbow bump hariru is so much faster! lol and gives you a bit more personal space during the hongī / hariru (which I welcome coz we powhiri so many strangers onto our marae, who knows who they are or where they've been coz you don't get that detail over the whaikorero). P34</p> <p>I believe the ariā have decided to slow the world in an effort to combat the greed that has accumulated by those who take advantage of our time and natural habitat. P37</p> <p>For myself personally being an introvert I enjoyed the social distancing....less people around, more peace and quiet. Less interaction which was great in my opinion lol. P48</p> <p>Increased happiness due to being able to spend more time with whanau. P47</p> <p>We were happy and calm. P52</p> <p>I didn't have any problems as I have anxiety around a lot of people so the less people around me the safer I felt and I was happy. P58</p> <p>We always have taken things as they come and trusted, that we can adapt and cope. The guidelines from the NZ government are so clear and easy to follow, that I don't feel stressed by it. I feel we were still in control of our lives and adjusted to make the best of the situation. There was so much support from physically distant, but nevertheless caring family, friends and neighbours. We certainly did never feel lonely or indeed alone. P63</p>

	<p>Well you can not plan further from a week cause we are pretty much rules by the govt and what they says goes so the all of the top ain't good. P49</p> <p>Motivation was hard at times with the cabin fever but connecting online with whānau helped. P30</p> <p>i had also lost my job and found it hard not being able to socialise with friends and family. P53</p> <p>They enjoyed being able to work through their schoolwork activities which the school provided. P57</p>
Tech Connect	<p>Not to badly we were able to keep in touch with whānau online. P30</p> <p>During the Level 4 lockdown I did miss my family and friends physically, but we stayed in touch via Zoom©. This was an experience we did not have before and it actually brought our immediate family, that lives at greater distances much closer, as we had "family meetings". So, all up the positive outweighs the negative. We are all good and happy. P63</p> <p>Over committed, needed to supervise Tamariki on-line schooling, including other Whanau Tamariki. Cared for Mokopuna as parents were Essential Workers. P40</p>
Travel	<p>Over the holiday period it's had a small impact in that I'm worried about my overseas friends but I've been checking in on them as much as possible. P54</p> <p>We found travelling restrictive, as the boarders are closed, family members were unable to travel home, nor were we able to travel to see them, There were more people holidaying locally which increased the prices of accommodation and decreased availability. P62</p> <p>I haven't been able to travel to see my family, i haven't seen my parents in a year now. I am 5 months pregnant with my first child and my family will probably not see me while I'm pregnant. I also was new to the place I'm living so I haven't really been able to make close connections. P61</p> <p>Although we were happy as a family to spend that time together it was hard to keep positivity up as we normally travel a lot and see our family and friends and go out to play to get what we need to stay well. P57</p> <p>No friends visiting from overseas. P68</p> <p>Stress increased and happiness reduced due to lack of travel to people of significance especially during times of loss and not being able to attend funerals away from home town. P43</p>
Income	<p>Financially we've thankfully had no impact as our mahi goes on regardless. We did have a drop in some tourist related income we used to get but barely and actually it's helped us to make the decision to change our business model and focus on more favourable and reliable income. P34</p> <p>Saved money, because I wouldn't go anywhere. P40</p> <p>Financially we were able to save during the pandemic as we didn't need to spend much on anything besides food but the uncertainty of whether we would have jobs or not did add to stress. P57</p> <p>I do not feel that we were impacted financially that much. P62</p> <p>and were lucky that in our house our jobs meant we could still work full time from home. P30</p> <p>I was an essential worker so had to keep pushing on. Had to juggle family help to start work extra early. Had family help with kids was tiring days doing school work as well. Was kept busy so that helped not lockdown completely. P38</p> <p>Positively, more business opportunities, a feeling of gratitude is more commonplace. P66</p> <p>School hard to keep up. P31</p> <p>My anxiety and depression heightened, and I was not able to perform my Eldest sibling duties for my younger sisters and their children. P43</p> <p>i had also lost my job and found it hard not being able to socialise with friends and family. P53</p> <p>couldn't keep up with uni work, P54</p> <p>As our work place sent regular emails stating that they thinking of reducing the number of employees to be able to keep the business afloat was worrying for us. P57</p> <p>I found it a very stressful time as I was a essential worker during the lockdown. My mental health, physicalhealth and spiritual health suffered. P60</p>

		<p>My hours got decreased for one month so that was a bit of a strain financially but am grateful to still have a job. P67</p> <p>Financially it was hard as everything sky rocketed especially food and people as we were going into lockdown were panic buying so it made it hard to be able to do your normal fortnightly shop. P58</p> <p>I lost 25 percent of wages. P65</p> <p>I used to be very active, fit person but I have become extremely sedentary and lazy, I have lost about 10kg of muscle in the last year. I already used to work out at home, but I also had physically active jobs and when I lost my job and I went on the unemployment benefit I became unable to afford very much food and was motivated to stop working out because I couldn't afford to feed my increased appetite. P33</p>
Physical Wellbeing	Exercise	<p>Physical good. P31</p> <p>Less time to do personal workouts, so I've adopted more of the sprint-interval training or HIIT to squeeze it in, P34</p> <p>The pandemic had us exercising at home. I watch my adult children exercise together. P37</p> <p>Kept semi fit with work. Did the workouts on TV which was awesome and took kids around the block for fresh air. P38</p> <p>Did more walking to keep Mokopuna engaged. P38</p> <p>good! started cycling again. P42</p> <p>we got heaps more exercise and don't drink etc so all good on that front. P52</p> <p>We still went for walks, as we always do, just kept some more distance. P63</p> <p>Better fitness walking outside. P65</p> <p>Positively. More fitness habits. P66</p> <p>Maybe a bit more sedentary. P35</p> <p>i have stopped running. P41</p> <p>Fitness none, nutrition have to watch where the money went so not that great, addictions drink lucky slowed it right down. P49</p> <p>I have done minimal physical fitness. P51</p> <p>The initial lockdown period had a major impact on my physical health. I struggled to sleep and my sleep schedule got completely screwed up. I struggled to get enough exercise. In 2019 I was a regular gym-goer, did yoga multiple days a week, and was on track to reach my running goal (20km/2 hours). However my gym use is still not what it was in 2019 as I avoided it until we reached Level 1 again and have struggled to get back. I've been running a bit but haven't been getting much back into yoga, which I need to do as part of treating a back injury, because I struggle to do yoga when stressed and I feel like I'm always at a low level of stress. P54</p> <p>One of our children did not achieve their sporting goals this year due to events being cancelled. P62</p> <p>I also cancelled my gym membership after it was put on hold during level 4 as I couldn't get into the routine again. P61</p> <p>I suspended my gym membership to save some money and intended on doing home workouts which I didn't actually do much at all. So it made me less motivated. P67</p> <p>I was unable to attend my regular Kapa haka practices, sports and Zumba classes during this time so my physical well being impacted greatly. It was difficult to keep up any type of physical activity as having my family home meant more work for me as I had to make sure everyone was getting their school work done, meal prep and cleaning was a bigger job with everyone home. I was able to get everyone into a routine which included fitness but it died out after awhile as not everyone enjoyed it so it was hard to keep up with it. P57</p> <p>Over the lockdown I initially managed to do some at-home workouts but very quickly lost the motivation to keep these up and my nutrition fell by the wayside too. Since then I've slowly been able to regain my fitness and build my healthy eating habits back. Over the holiday period my nutrition has been good and I haven't felt the pandemic has impacted that lately. P54</p> <p>I used to be very active, fit person but I have become extremely sedentary and lazy, I have lost about 10kg of muscle in the last year. I already used to work out at home, but I also had physically active jobs and when I lost my job and I went on the unemployment benefit I became unable to afford very much food and was motivated to stop working out because I couldn't afford to feed my increased appetite. P33</p>

	Weight	<p>Put weight on. Am disabled but try. P45</p> <p>I have lost alot of weight and become very weak. P58</p> <p>I put on weight. Stopped exercising and I was drinking alcohol a lot more. P60</p> <p>Less fit, gained weight because food is now more of a pleasure. Same with addictions. P32</p>
	Food Choice	<p>Nutrition has been slightly better actually because I stopped going on junk food missions to the supermarket and had to focus more on cooking, but as per the previous statement I can't afford to eat every day so I am getting quite skinny. P33</p> <p>We cooked and ate together. My young adult son wasn't going to the pub and parties and doing the Arya knows what at those parties. P37</p> <p>definitely eating more healthy meals P39</p> <p>We ate better, less take aways, more time to cook, P52</p> <p>For the most part our food was good as we had to buy fresh ingredients, there was no option to buy takeaways which worked in our favour but we also did want more comfort foods so we did often get confectionery foods. P57</p> <p>We had weekly deliveries of fresh fruit and veges. It was a pre-pack with no individual choice. We had some vegetables in there that we had never cooked with before, like parsnips. It was a yummy challenge to find recipes and we have added more fresh veges now, then what did before. P63</p> <p>confident food fruit veg good foods P65</p> <p>A bit we didn't get out as much and got lazy and ate more crap food like snack food over the period. P30</p> <p>nutrition not so good alcohol wise. P31</p> <p>nutrition has suffered a little but in the holidays our overall nutrition is better because there aren't all these crap unhealthy but very quick to pack lunchbox thingys that we stuff in the kids bags and then when they're at school we stuff them in our mouths.</p> <p>More time in the kitchen for me (mum) getting healthier kai together for group lunches for our whānau of 6+ but healthier nonetheless. P34</p> <p>I put on some weight. Did exercise, but ate more food as well. P46</p> <p>ate more, though not healthy food all the time, relied on daughter to purchase food as I wouldn't go out due to my age. P40</p> <p>Eating prob a few extra snacks lol P38</p> <p>Some overeating/ mindless eating - did a 'course - correction' and walked a lot more than any time in last 10 years. P55</p> <p>Perhaps the cost of watermelon was more expensive than usual. This is a food that I eat a lot of in the summer. Strawberries and other berries were not as abundant on Christmas Day due to lack of pickers. P62</p> <p>My self esteem dropped as I was not eating well...Not sleeping well either. P60</p> <p>Over the lockdown I initially managed to do some at-home workouts but very quickly lost the motivation to keep these up and my nutrition fell by the wayside too. Since then I've slowly been able to regain my fitness and build my healthy eating habits back.</p> <p>Over the holiday period my nutrition has been good and I haven't felt the pandemic has impacted that lately. P54</p>
Mental-Emotional Wellbeing (including Spiritual Wellbeing)	Addictions	<p>Addictions have been more or less unchanged. P33</p> <p>No susbtance addictions except for sugar and chocolate and those are just the same as always. P34</p> <p>I smoked 3-extra cigarettes per day but other then that it was fine. P55</p> <p>Smoked more tobacco a bit stressed. P40</p> <p>I became a little more dependent on alcohol to pass my time. P43</p> <p>my addictions went out of control. P44</p> <p>my addition increased. P51</p> <p>We did drink alcohol more often than usual as we didn't have to go to work we took it as a time to relax and have a couple beers at the end of the day. P57</p> <p>I smoked alot more weed as I was home alot more. P61</p> <p>found tv my addiction. P65</p>
	Motivation	<p>I was less motivated and slightly more stresses due to havin 3 adults and 2 children home all day with 2 essential workers to also catter for. P53</p>

		<p>Motivation was hard at times with the cabin fever but connecting online with whānau helped. P30</p> <p>My motivation is near zero. P33</p> <p>Motivation varies but I think that's my pre-menopausal hormones. P34</p> <p>It was easy to fall in to the comfort of being home and resting taking the time to relax so motivation was quite low. P57</p>
	Stress	<p>Okay, not as stressed as not physically at work P42</p> <p>Felt less stressed than working at beginning of covid before any lockdown. P65</p> <p>I actually feel more mentally well now. I found alot of people focused on mental health promotion and I think that lead me to getting help and on medication. P61</p> <p>Being an essential worker got me out of the house so it was ok didnt think too much about catching the virus following the hygiene rules. Got a little boring on the weekends. P38</p> <p>Was more stressed because work was busier and more uncertain. P46</p> <p>Stressed, had to motivate myself daily, no time to analyse happiness, possibly no feelings to busy to ascertain. P40</p> <p>bit more anxious and relationship issues. P41</p> <p>Stress increased and happiness reduced due to lack of travel to people of significance especially during times of loss and not being able to attend funerals away from home town. P43</p> <p>lost my job which become a huge stress relief. A lot more sensitive if being left out of activities my friends are invovled in. P55</p> <p>The stress levels were high during this time, the uncertainty, the fear of anyone we loved getting covid and how fast it was spreading everywhere had a huge impact on us all mentally. P57</p> <p>Some stress due to friends in the USA behaving in unsafe ways likely to spread the virus. P68</p> <p>Didn't at all over the holiday period. Slight increase in stress and mood swings during lockdown P69</p> <p>More stress. P71</p> <p>I struggled with mental illness long before the pandemic, especially social anxiety and depression. Unfortunately the initial lockdown allowed me to lapse into a state of chronic agoraphobia and I still have barely left the house a year later, despite lockdown lifting long ago. It is an incredibly difficult place to be and I am unable to access relevant mental health support or treatment due to cost and the nature of it (ie. making appointments and leaving the house) and still am stuck in my house to this day. I feel that previous to lockdown I was getting by socially out of habit, but since lockdown broke that habit I have become unused to these uncomfortable situations and currently I struggle to go to the shop to buy milk and will only leave the house about once a fortnight. This has not been very good for my sense of self worth, but it has been good for my anxiety which has been very relaxed as long as I don't have to go anywhere. P33</p> <p>Again the initial lockdown was really difficult. I have ADHD and this is accompanied at times by depression and anxiety. I did struggle with symptoms of depression right through until mid-late 2020 due to self-esteem issues regarding how I dealt with the lockdown, anxiety about another one returning, and the brief return to Level 2. Over this holiday period I've still had that low level of stress about the what-ifs, and I'm always worried about overseas friends and friends/family in Auckland. I've also been very concerned about the vaccine rollouts happening too slowly and overseas countries not taking this pandemic seriously enough, leading to the mutated forms of the virus which transmit more readily and against which the vaccines may not even be as effective due to changes in the spike protein (the South African variant). So while the impact is not as significant as it was, I still have this constant low level of anxiety. P54</p>
	Wairua	<p>Spirituality is kai te pai - having a bit more home time to be able to read spiritually uplifting material is good. P34</p> <p>I found myself more connected to my spirituality and found more happiness with myself. P51</p> <p>Prayed more. P65</p>

Table S4: Thematic Analysis of feedback from Survey Monkey© participants February 2021 about the use of the Meke Meter.

Category	Theme	Quotes
Meke Meter Accessibility/ Acceptance	Ease of Use (subthemes: good, motivation to use)	<p>Good. P30 Good to go. P31 Fine, part of community effort. P32 I enjoyed it. It's very simple and short to fill out, so it was easy to do even if I felt terrible. P33 I almost didn't but then I did it coz I know how important research is to make change happen, and get funding where it needs to go etc. P34 Fine. P35 Kei te pai. P37 it was helpful but struggled to fill it in each day. P41 Felt fine just wanted to get it done. P43 Sweet. P45 It was good, however, it does take some time to fill in. P46 All good. P47 was an easy tool to use. P50 It was great. P52 I think I only used it once - great idea though! P70 Relatively useful. P46 I found it amazing. P53</p>
	Improvements (subthemes: notifications for regular use, mobile ap)	<p>I kept on forgetting to log on and do the meke meter may need reminders to notify me. P51 Also not hugely useful - I kept forgetting it even existed. I think it would have been easier as an app. I use my phone daily but I mostly only use my laptop for assignments. P54 Better if done on a regular basis. P55 I didn't do it often enough - no prompts. P55</p>
Wellbeing and the Meke Meter during 2020	Reflection (subthemes: useful tool, tracking, goal setting)	<p>Needed it, only time I had to analyse feelings, thoughts. It helped me re-focus on my commitments during the pandemic. It gave me time to reflect. P40 It made me realise I had some areas I needed to improve on. But I forgot to fill it out as often as I'd like. P61 Good, it gave me the opportunity to reflect on my life holistically, this made me see that my mental wellbeing was impacted more than other areas, was good to gain insight into why this was happening. P62 It helped me to see how I REALLY WAS during this time. P43 Its good to keep track on how your feeling. P38 Yep made me think. P45 It's really useful! I didn't realise how low I felt until I filled in the meke meter and saw it all together in the graph. When I filled it in more recently after setting goals and following the small steps to improving my well-being after reflecting on my results from the first one, I could see the improvements on my results and instantly felt good about where I am at now. I felt a big sense of achievement having improved in all areas of my well-being and have also been able to set more goals to work improve in the areas that still need some work to becoming healthier. P57</p>
	Wellbeing awareness	<p>I tried to use it, but kept forgetting it was there. It was very depressing to use earlier in the year as the results were showing a poor quality of life and it reminded me how generally low I was feeling. I think I last used it in June, because I forgot about it. It was nicer to fill out today, as I'd had a significant improvement in my wellbeing and that felt good to see. P54 I felt low when I first filled out the meke meter with all areas of my well-being taking a negative hit. It was eye opening to see where I was at in that point in time and made me realise that I did need to make some positive changes in my lifestyle to improve my overall wellbeing. P57 I felt good as I was looking at my wellbeing. P60</p>

		<p>Ok I think it should incorporate a bit more of the spiritual side and the whenua area. P48</p> <p>It was very reassuring, when I did get a bad cold, then test just in case - happy it was negative. P63</p>
Future Wellbeing Plan	Continue to use the Meke meter	No problem at all, and I really liked to see the results. I am very happy to keep going. P63
	Track Changes	<p>I found it quite useful to track my moods, as my moods were/are fluctuating a great deal. It was nice to be able to fill it in AFTER a period of depression and see that I was doing better that day</p> <p>I only used it once so didn't take advantage of tracking. P70</p>
	Goal Setting/ Plan	... it was very useful, I was able to make significant changes to my physical wellbeing through focusing on it, which helped with other areas of my wellbeing. P62

Table S5: Thematic Analysis of feedback from participants Zoom© Focus Group October 2020 about the Impact of COVID-19

Category	Theme	Quotes
Social Wellbeing	Whanau/family and Friends	<p>We adapted by, you know, using Zoom© a lot more. ... we felt a lot more connected with our whanau. So like my extended family, my cousins and aunties and that we actually got together a bit more often we had, you know, regular Zoom©, Zoom© hui. So as a family there's so many of us in our extended family that we don't get together a very often that's usually tangy where we get together but we felt a lot more connected through Zoom© meetings and that so that was one way that we actually adjusted I guess, to keep connected and keep in touch. And funnily enough, though, now that lockdowns, we no longer in lockdown, or any you know, passed level 2 we don't communicate again. So its a bit crazy how how that happened? Um, yeah, yeah, that's me for now. Z1</p> <p>We were affected negatively, though, with um because [husband's name] mum is quite a prominent part of our life. And our kids stay here every weekend. And we all have dinner every Sunday...So yeah, we found it hard having to stay away from her for four weeks, but we kept up with the Zoom© meetings and you know, the face to face time. Contact and that. Z1</p> <p>Yeah, we did tend to go overseas once a year as a whānau that's not this year which is cool with getting back to seeing our in country again. But also, we traveled extensively with kids sport which we haven't done this year as much obviously because most of it was canceled. Z2</p> <p>... there was seven in our bubble. And on our property, we have a six acre block fronting onto the beach. So we've got a space there, and we've got a batch on the property where a young guy was living and we had our family, and everyone was home. Z2</p> <p>No, they [other people] were definitely useful for maintaining well being. I'm lucky enough to have whānau in the area. And, you know, I had other people helping me or doing my shopping for me. And I had all that sort of support, which did help. Yeah. Z3</p> <p>Yeah, yeah. I mean, for me, it was quite strange, because my main social contacts are in things like, um, dance classes, or therapy, dance classes for other folks, for me and other folks. And I help out at a local food Co Op. And, you know, we have a big team of volunteers that, you know, does all the packing and distribution and all the rest of it. And so I was used to sort of seeing all these people and all the people collecting their food packs, and so it was quite strange for me locked down. And yet, in some ways, I quite enjoyed the quietness... I did miss the social contact, so I had to make point of calling people more often. And then one of our dance therapy teachers she organized a Zoom© meeting. We all felt it was nowhere near as good but at least it got us up and move Z3</p> <p>Yeah, and I guess in terms of family well being and whānau Yeah, it was. I was away from my whānau on the other side of Auckland when the lockdown occurred so I ended up staying with my partner in South Auckland. My family are in Far West. But that's okay. They did well without me. Z5</p> <p>A lot of families were home, you could hear a lot of arguing. People yeah children crying. Nobody could get out of the homes. So it was really, really hard. And then we're all over the fence to our neighbors like, Oh, we got this guy's we got this, if yous need anything let us know we'll go to the shop for you guys adn stuff. But yeah, it was very hard. Z4</p> <p>And but I mean obviously it affected how people were feeling like they couldn't just jump in the car and go out or mates and stuff. But in the sense we have no complaints compared to other people. We're very lucky. Z2</p> <p>I'm quite an introverted person anyway. So I like my own my own sort of familiar space and so to speak. So for me, it wasn't much different, I guess. Z1</p>
	Work/Income	<p>Very challenging, I think I would probably say that would be for a lot of our low lower income families because we rented a housing New Zealand home. A lot of properties around our area. Z4</p> <p>Okay. So I was working as a personal trainer in a gym here in Auckland a coach. So we had to convert to online. And that was quite a lot of it was fine. Like it was good for our members. But it wasn't good for our team. It ended up that we, the gym, actually went under because of the financial issues around running small businesses here in Auckland. So I decided to resign from that work because it was quite stressful. Z5</p> <p>And for us, we can continue working we worked right through, because we've got our offices [at home], as you can see, I'm sitting in right now it's on our property. Z2</p> <p>When happen in level four, we were businesses normal if anything we were busier because we run a lot of PD, PLD for teachers throughout the country. And a lot of the stuff was face</p>

		to face workshops, but all went online. So we were busy converting a lot of stuff on to online that we had online platform, which we usually use but was like busy and put in a lot of stuff on Z2
	Study	<p>Because this year in particular, I'm studying with [husband's name] anyway. So it was usually just him, myself and [child's name] at home. But so we had our other three children at home with us as well. It did become a bit of a challenge when it came to the kids during the school work because we had to share devices with them as well. So it was hard for me to keep up with my studies. Z1</p> <p>Yeah, I guess by the second lockdown, we knew what to do. Like we had a blueprint for things. So it was kind of easier but also people were really over it specially teaching classes and stuff, how lectures got shorter and shorter. Yeah, second lockdown just being aware of spending so much time online and getting away from not being outside at all sitting in a computer for eight hours straight. Z5</p> <p>Yeah. I guess because I'm a student as well and we had to be on placement in the hospitals and then other places. It really interrupted our schedules for the year but it also everyone was quite anxious I guess I'd describe people as a lot more heightened at the moment like their mental health is not great. Z5</p> <p>And yeah. It was, was hard with the kids, you know, having to keep them up to date with their learning. I found in the end, we just had holidays a lot. You know, we knocked off, we had the two our two weeks at the start of the lockdown. And then I let the kids just have the last week of lockdown off. Because there was no point in fighting with them. Z1</p> <p>And then we had a lot of internet issues and they, the school, expected us to get a device, we never, we didn't have devices. We didn't have laptops. We only had my phone. The learning, all online learning for the girls was, now it's become a teacher. So my old school learning wasn't cool with them. They didn't enjoy one bit. Storytime reading books, all done on iPads currently is what they keep telling me. Well we dont have i pads sorry. Z4</p>
	Tech connect (subthemes: doing everything online – shopping, learning, working, Lack of devices and appropriate spaces, Zoom©)	<p>And, you know, when you order things online, it doesn't come until three weeks. ...Z1</p> <p>Yeah, [husbands name] did a lot of Zoom© meetings in the car. And, you know, you, you just I felt like we had to think outside the box a lot to get things done. Z1</p> <p>And then we had a lot of internet issues and they, the school, expected us to get a device, we never, we didn't have devices. We didn't have laptops. We only had my phone. Z4</p> <p>When happen in level four, we were businesses normal if anything we were busier because we run a lot of PD, PLD for teachers throughout the country. And a lot of the stuff was face to face workshops, but all went online. So we were busy converting a lot of stuff on to online that we had online platform, which we usually use but was like busy and put in a lot of stuff on Z2</p> <p>Yeah... I converted my garage, so I was a gym coach. So we were doing classes online. And I usually when I teach in person, I don't have to do the whole class with the class. So I was getting a lot fitter initially, because I was having to yell at my computer in my garage. But yeah, I was also meant to go overseas for a few conferences. So we ended up doing webinar stuff online, which was a nice way to connect with people that might not have been able to access upon conference. So a lot. Yeah, sort of allowed people better access to knowledge and thinking Z5</p> <p>Yeah, that was really cool to be able to use technology in ways where we hadn't previously like pushed it to its full potential. So it was a positive. Z5</p> <p>Well, I found the Zoom© thing remarkably easy. I'm, you know, I've got smart things that are smarter than I am. So they seem to be, you know, you hit the right button and it works. Z3</p> <p>I did miss the social contact, so I had to make point of calling people more often. And then one of our dance therapy teachers she organized a Zoom© meeting. We all felt it was nowhere near as good but at least it got us up and move Z3</p> <p>We adapted by, you know, using Zoom© a lot more. ...Z1</p> <p>But I used to go to an astronomy club. And we've have speakers. But when we turned it on to Zoom© speakers, it was great. We had people from like in Australia, that people that have been to events elsewhere, and they didn't actually have to travel. So I quite enjoyed that. But I did miss the social time we also share. Z3</p>
Physical Wellbeing	Exercise	So that's a good thing I guess now we're gonna we've made a garden. We don't like going to take aways as much. So taking advantage of using those hills and trees and stuff and running around, but yeah, that's pretty much about it. Z4

		<p>I was dedicated, you know, a couple of hours each day to doing some exercise and, and I was just purely in front of the TV, I had that and downloaded this app and the girls joined in and you know, better yoga or better weight training with me. So I felt you know, that form of kept my physical well being quite up there. And we also went for walks every day, which was quite nice Z1</p> <p>I've been doing [trainer's name] 100 day challenge I saw it as a good opportunity just to make some changes. But I trained anyway I trained three or four mornings a week with a mate in the gym we've got here and so it hasn't really I've done more variety of exercise but it definitely have restricted what I've been eating and drinking it like I said I've given up all alcohol for the 100 days Z2</p> <p>... the other class I do is Tango therapy. And one cannot do that without partner. Z3</p> <p>Yeah, you know, I don't live in a tightly packed city. Porirua is quite lovely and spacious. And but there were definitely more people out taking walks, you know, what else was there for them to do? And there was just lovely things like, you know, parents teaching kids how to ride bicycles. And, you know, so they would very much be interacting with anyone else that was walking around. And other pet owners of course, and yeah, Z3</p> <p>But I've got a little of dog and I love the fact there was no traffic, suddenly, I could explore a whole area of the town, which I hadn't explored before, because it's on the other side of a busy road, but I could cross it. Now I'm campaigning for a new crossing, so everyone can get across. Yeah, and people I found were really friendly. I mean, I love where I live, we have large berms. And so it's always easy for people to sort of avoid each other as they were out walking. And people would just really friendly from a distance Z3</p> <p>Um, I, I got into the garden a lot more, you know, the first lockdown started and sort of summer or the end of summer. And then and finished when we were really going into winter. So I actually did a lot of work in the garden. Z3</p>
	Food Choice	<p>Yeah, missed the takeaways couldn't just turn up at work all day and stop at McDonald's on the way home and grab a fed. Had to go straight home. You had to delegate the shopper you had to... Yeah, it was just almost everything was Boom, boom, boom and bullet pointed. And these are the bullet points and don't miss one because then you've got to go back and isolate. Z4</p> <p>I have definitely been eating more out of my garden since consequently... Well, yes. I mean, I had the time I was stuck at home. I figured it was the sensible thing to do. I since haven't quite kept up with it. But I'm getting on top of it now. I'd given up alcohol some years ago due to health issues. But I did try it a bit, I even bought a bottle of wine or ordered it from the people that were shopping for me. Took me about a week to get through and I don't think enhance my quality of life at all. So that was a good experiment. Z3</p> <p>We ate more food and drink more alcohol in the evenings. Z2</p> <p>And yeah, I felt really fortunate to be in a household where we had plenty of food and plenty of resources and masks and we had allocated people to do the shopping and and stuff like that. So that was a positive especially in the community I live in with a lot of people are really struggling to get kai Z5</p> <p>Health wise turned in to unfit and drank a lot of alcohol and a lot of food. Z4</p>
Mental-Emotional Wellbeing	Restrictions	<p>I feel like, I've lost a lot of a bit of autonomy. You know, like, we now have rules put on us. You know, yeah, not strict rules. But they're they kind of are and you feel I don't know. There's a lot of neighborhood, you know, policemen out there to that tell you off for no reason well, for, for not, I don't know, Z1</p> <p>I um I remember one incident in the warehouse. And this woman was leaning over a... It was before we went to level four. And she was just leaning over an employee and the employee, the employee had a big argument with her telling her off and it was public. And I really felt sorry for the girl, but she was a young girl and you know, just leaning over within two meters. But it felt like there's a lot of a lot more policing of other people. And yeah, just I guess that made me feel uncomfortable, because it felt like a lot of rules put on you on how you need to live your life? And it makes sense because if you are safe, then you're keeping others safe. And yeah, but I felt really out of control, I guess of me and my own family and myself and yeah. Z1</p>
	Stress and Anxiety/Fear	<p>...but my mental well being I felt anxious quite a bit Z1</p> <p>I don't know why I wanted to buy flour, but because it wasn't available. And I wanted flour and toilet paper and toothpaste and you know it wasn't there. And that I felt my mental sort of resilience, I think it was really decline. Felt stressed with having to line up to you know, go</p>

		<p>to the supermarket and you know, you felt like a little itchy cough and you didn't want to cough because other people might get stressed out or on something so yeah, I felt out of all three areas my mental well being was probably the one that suffered the most. Z1</p> <p>Certainly, yeah, friends that I asked or teaching, were telling me how stressful it was. And I yeah, I guess that was your new learning curve? Z5</p> <p>Yeah. I guess because I'm a student as well and we had to be on placement in the hospitals and then other places. It really interrupted our schedules for the year but it also everyone was quite anxious I guess I'd describe people as a lot more heightened at the moment like their mental health is not great. Z5</p> <p>Mentally Yeah, very anxious. Upsetting. The struggle was real. I've really felt for a lot about our neighborhood our community being in a lower this area and Napier Mareanui yeah um very anxious, stressed. Just overwhelmed. Very overwhelmed. Z4</p>
	Support (including prayer)/ Wairua	<p>We did a lot of praying to you know that we were praying, they would get through this and pray that our families and our community are going to get through this thing. Pray that this illness or whatever diseases is and how the hell it came about, would just disappear. And then we moved to Auckland and we went back into lockdown again. I was thinking Oh, man. That was stressful, but we were, this time we were prepared. Z4</p> <p>Yeah, I sort of had to monitor my own mental health and my thoughts and try and make a point of contacting everyone. I actually contact a lot of people that I don't normally, you know, ring up to say, how are you? And they all really appreciated that. And that was quite good. So I was quite pleased about that. Yeah, so. Yeah. wasn't that bad Z3</p>
	Relaxed/Happy	<p>No we're in Whakatane that cool kei te pai so we know we're we only had the one. So from level four level three level two out that was like I said we didn't impact on us significantly apart from its definitely change the way we perceive the world now obviously and perceive what we do and what our options are for relaxation and where we go and what we can do. Z2</p> <p>Yeah. But it was interesting how other people reacted you know, not everyone found it delightful. But I think a lot of people did Z3</p> <p>I'm quite an introverted person anyway. So I like my own my own sort of familiar space and so to speak. So for me, it wasn't much different, I guess...But yeah, I'll be honest, I actually really enjoyed lockdown. It was nice to spend time with my kids and not feel pressured to have other things that needed to be done. We actually got to do things that we don't normally have time to do which is you know, baking and going for walks and things like that. So yeah, it was good, Z1</p>
	Changing Attitudes	<p>Yeah sick of it. Wish COVID would just go away all together, not come back. Hygenically sanitizing when you can and all that stuff. I've never sanitised so much in my life. Z4</p> <p>We definitely weren't prepared for it. But we've learned from it. We hoha the cover, if she decides to wake up tomorrow and somebody another 20 people of caught it in our cluster or somewhere in Auckland, will probably go back to level with two or three or something and then it's almost to a point where Oh, really, we don't care anymore Z4</p> <p>I think at the beginning, it was fine. But as it came into the second lockdown it was it wasn't great. Z5</p> <p>Yeah, I guess by the second lockdown, we knew what to do. Like we had a blueprint for things. So it was kind of easier but also people were really over it... Z5</p>

Table S6: Thematic analysis of feedback from participants in Zoom© Focus Group October 2020 about the use of the Meke Meter.

Category	Theme	Quotes
Accessibility	Motivation.	<p>Um there was one limit I did find it useful but I'm the type of person I am, I only ever wanted to record it when I was having a good day. And because I like to track and but I'd like to see progress. And there were times when it went down. And it wasn't until I actually filled on when I was having a really low moment that I started to actually take seriously the things I wanted to put in place to improve. And so that was for me the areas were nutrition. Yeah, so what I ate, exercise, and what was the other one? Also, I incorporated a bit of meditation to see how that would affect my mental even though it wasn't one of the categories. But yeah, it wasn't till I had a low moment that I started to actually take it seriously and put some strategies in place. Z1</p> <p>Okay. For me, usually meke meter, in some ways, I mean, eternal optimists and if I have a down moment its about 30 seconds, and I'm ready to go again. So in some ways, I didn't probably use it as much as I would. But in terms of that and I am also at a stage of my life, where I'm pretty complacent pretty happy with exhibiting, and, you know, in an age where I am content really I suppose in some ways my I don't go up and down as much. I tell you where I have used a lot more is monitoring even though everyone around me and when we COVID we have a lot of people who work with us and when we're online, we my wife and I would just internally monitoring where people were at. Z2</p>
	Ease of Use	<p>I mean, who was is we, so it's always that you go for whatever's best and my thought is good simplistic, easy to do, so encourages you to do a bit of self-reflection. That was good for that. Z3</p> <p>Yeah, I found it easy. Yeah. Personal. Yeah. Just on yourself. Good. Z4</p> <p>Pretty much I think they're making me to sorta was something it's a tool that I can't really do it on the internet. I would like to see it maybe on an app on my phone. Z4</p> <p>Yeah, I like this model. And I think it should be integrated across other health systems and use more generally, because we only get a part of the picture when we're only looking for problems. So I would use it in other places like in mental health, I think it'd be really cool to use it with my clients. I'm aware we've got hardly any time. So back to you. Thank you for waiting. Z5</p> <p>And I was definitely using that whole using the making meter as my thinking around you know, where people were at and when talking with them and have a yack you could tell people who were down and we could pick people up so we did that quite a bit. So for me, you know, that was been really helpful I still use it and like I said, I tend to be score myself on the opposite I tend to score myself top end all the time on most things. But it definitely has made me more aware of the health and stuff and I mean, not that Match Fit program the All Blacks at the moment I've not anyone seen it, I think some must be should be a must watch for most males in New Zealand because I think it's it's got a hell of a lot going for it in terms of just make people saying, am I okay? Or is my mate okay? Or, and that's where I think the meke meer was for me was is very much about watching everyone around me and our family and our whānau making sure everyone's okay. Z2</p>
	Inclusive	<p>But yes, so what I find really refreshing about this tool is that it's, it's clearly been made for the community by the community and it's quite inclusive, like the measures aren't . you know, they're not too specific people can interpret what spirituality or cultural identity or other aspects of wellbeing mean to them. And there's more of a balance in terms of the things that could be going wrong in people's lives, as well as their strengths so that when you look at it, you're getting a more balanced image of their hauora or well being. Z5</p>
Wellbeing	Self-Reflection/ Self Awareness	<p>I think it was useful as a focus. You know, that that yeah it's something to actually sort of actually stop and think about, well, how you know, to reconsider just when you're just going blah to really check out how you are where you are mentally Z3</p> <p>Yeah, yeah, I think it's sort of what's happening me plan, be better prepared. I could tell if my day was gonna be shit day as soon as you woke up you know? Even the weather can bring you down. But mentally you have to be, you have to be well enough to get through your day. To understand why the kids are behaving the way they are. Maybe they're hungry, you know, maybe they don't want to go to school today because someone's</p>

		<p>yeah. And I would like to see maybe. And I guess the more data that gets put into it, I understand, you know, data and the more data you have the trend start to happen, but some prompts or suggestions on what you could do to improve that area. So yeah, even getting a notification. So if you were to work on a goal, say you wanted to set a goal to exercise every day, maybe getting a notification from the meke meter to say, Have you how many steps did you take today? Or have you exercise today, or just a little reminder to keep you on track? Z2</p> <p>Um, yeah, I'd like for me, I'm a bit more of an artistic, creative, visual person. So my goal, and I'm probably a bit biased, because I'm also using the meke meter for my studies. But my goal is to make it probably a bit more visual. So instead of having the slide across things, I'd like to see you know, something grow. Z1</p>
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		<p>neighbourhood and down the greenbelt. Like, yeah, just use things around the home. A6</p> <p>Short sharp one, my darling pretty much said it the highlight of COVID for me was my family time spending time with my kids. A9</p> <p>but yeah it was just made me appreciate life a bit more and having that little life in a whare just made you appreciate that time and I have a better relationship with my in laws to now I used to be really not nice. it just made me appreciate my partner and his whānau and them they appreciated us too because we had to take her and then having our niece with us that they knew we were there for them not just for I don't know how I around things when we look at them but yeah just made them appreciate us when I have a better relationship with them. A6</p>
	Family stress	<p>So actually I'm finished mahi after a long day from work id work probably over the lockdown was probably 14-15 hours per day. I still have to go back in and attend to to my kids and my family. and Yeah. A8</p> <p>And then we had 12 in our household. And then for all my siblings came back home, and we all don't really get along. So there was a lot of like tension in the house arguing and then trying to deal with my raru. A7</p>
	Isolation	<p>I had no one at home because my family were away. A5</p> <p>So then locked down just have lots of like mental breakdowns of not being with my partner found out I was pregnant and then the whole like being a single mom. And cuz I had kind of planned out my whole future and I was getting married and I was gonna have kids. Yeah, so that all came in and then I was having the meanest withdrawals like not smoking, dope. It was like, I couldn't sleep having the mean like, sweating like cold sweats in bed like it was really really hard. A7</p> <p>And we were trying to heal from [person's name] and just was like, he then everyone goes we all be here for each other and then no one could be there for you and I think yea like [person's name], you just go into this real dark place. A5</p>
Mahi Ora	Essential Worker	<p>And I worked, but it was really stupid hours because I work at the hospital. So it was there when you know, the hospital went into crazy. So we worked to the 12-14 hour days. A5</p> <p>so locked down for us was I was an essential worker to inA9 ended up staying home with our babies. I think that would have been a journey for him. A6</p> <p>Now I value that time. But yeah, I was like [person's name] essential woker, I'm basically working in pregnancy with our hapu mama trying to access care and trying to navigate that space, like we didn't rest. So I worked remotely from home, I had an area where dont come in here, those door shut dont coming here on need to still help, these other mums, that were having babies who really didn't want to go to hospital and have the baby. And so some of them are high risk pregnancies, they needed to go there, but they wouldn't because they couldn't take any body. So they couldn't take the partner or have C sections alone. They had to I basically had to navigate the space for them to have the baby but there's less stress so charge your phone you can take your phone in the room with you You can video your call your family while you're having your baby just to ease some of the stress because they had to go in there they had to go on me so that was really hard to navigate to and also the social services like if they were getting an income if they lost the job working through one so that the hair care packages if they didn't have any money like it was quite a stressful time so everything that encompasses a happy mama there was me into that but not in the clinical aspect but more social services how services that they could access and showing that the children can see the GP by the foreign prescription means so that the drop offs for nappies the ease some of the stress. A6</p> <p>and then im the head kaiako at our kohanga reo so I had to kinda like totally, like push all my shit to the side. And then had to get all these care</p>

		<p>packages out to our whānau always checking up because we deal with our low income whanau. So most of them had no kai. I ended up making like rongoa packs for whānau so um, because most of them couldn't afford like vicks, cough mixtures or that kind of stuff. So we before I think it was the day before lockdown, we went into go kohanga, just maori rongoa packs and got those out and everyday I had to do the online learning with our whanau. A7</p> <p>So for me, it was actually good. I was living in over in Australia, got the call from my parents and then to come back with our kids. So I just made it in time I pretty much got a job within the first month being back. career van driver. So I've worked for the whole lockdown. A8</p>
	Side Jobs	<p>But yeah, just anything for the mama that we are on set, which I enjoyed oceans had at home when you're trying to be a teacher I'm trying to cook with basically, like all like honestly, there was no not only was no food but everyone was in crazy mode, that they would fill the trolley up and there's like another 100 people behind me and you're like, well, what are we having? You know, what are we gonna eat? A6</p> <p>Well, you know, they like the devices I had to get us all. good routine. They all had the school stuff to do so I had to try and be a teacher as well, which was really difficult. But we worked on a good team. So we made sure that they had time outside of doing schoolwork. A3</p>
	Job insecurity	<p>So it was pretty dumb because then I worked for Australia, so they were a bit more delayed, but they forced me to take two weeks and annual leave, I like to work so had to keep busy. So just doing nothing for two weeks for me was a bit of a struggle, because I'm very social as well.</p> <p>then COVID hit in Australia and they went into lock down. And they we're like, we've got to reduce your hours, or you can lose your job. And it was like, well, I'll lose my hours Monday to Friday. So I just took Mondays and Fridays off. And I was just like praying that I would still have a job because that's, you know, stressful. So if u didn't have a job, it's really sad. But I'm so grateful to be working for them. They still like he heavily, like we do so much for them every day. A11</p> <p>For me, yea I was one of those ones they be effective for the job, lost my job. A2</p> <p>The other thing was that his job was like it was on threat that you might not be able to work when we come out. So in my mind, I'm thinking. how are we going to get through afterwards? Because life is gonna carry on probably the same afterwards. So that was always in my head. How are we gonna? Yeah, I suppose I'll think about everything all the time. So in my head, it probably wasn't as good or relaxing because I was just thinking how can we get through after this. A3</p> <p>So, you know, it was hard to live again. Just even living living life and thinking he's gonna lose his job or when I need to work harder to get more money like, how are we going to live life? Yeah, but it was actually all good. A6</p>
Taha Tinana	Exercise	<p>But what I loved while it was hard physically, because I always like keeping fit in trying to get my kids to do any exercises such a big one because they're not. A3</p> <p>...because I like pretty much lived at the gym its just constants, and then having to stay home on my own from what I prefer and motivate myself to be around people. And then over that, I didnt want to leave home, gained heaps of weight ended up on medication. A10</p> <p>I put my gym membership on hold, save some money. And yeah, it was just I just couldn't like I just didn't want to exercises that I didnt want to do anything. A11</p> <p>go for a walk every day down to the river the dartmore will be this is about four and a half kms run down walk back. A12</p> <p>COVID break two downfalls though coming out of COVID was iv gone and put a big COVID coat on big one actually. A9</p>

		<p>I'm like, Oh, dont smoke, dont smoking, don't smoke. I hate smoking. I hate the smell of it. And it's on you. So I've better I'm not all anti about it, just to protect our niece, and she's beautiful. A6</p>
	<p>Drugs and Alcohol</p>	<p>my niece's reckon I became an alcoholic because I had liter a liter of Kahlua a liter of Canterbury like Irish whiskey and ginger beer ginger wine and I thought what can I do with this right I'll celebrate every birthday until they unlock so everyone's birthday got on the Zoom© here major and I called it the COVID instead of a Martini who's only had those martini glasses hit so for me and my husband we celebrate them the roof on and so I got through that it you're gonna be an alcoholic? A12</p> <p>So when I found out one of I was hard out dope smoker like I was never sober. And I always had to be stoned. So when I found out I was pregnant, I just suddenly just nah fuck like I'm going to stop smoking dope. I just couldn't keep up with the guilt that came with smoking while I was hapu. I made the decision that I was going to give up smoking dope. So I was like, Okay, I'm not gonna just like drop it because then I'm just gonna have withdrawal. So I'll just slowly wean myself off. So I was doing that and then it came into lockdown. And then I just made the decision that I was going to go straight cold turkey. A7</p>

Table S8: Thematic Analysis of feedback from participants from Awatoto Focus Group Two (Participants A13-A22)

Category	Theme	Quotes
Whanau Ora	Adversity (Illness, death or injury)	<p>2020 was a shit year for me mentally suffered severe depression this was before COVID and then going on into covid lost a lot of family members during the time locked down a few of my bros committed suicide we have just lost a lot of loved ones during that period so in my mind was already really fucked up then I had to fight through all of it. A13</p> <p>physically it was firstly good thing being the shopper I could travel on my bike also pulled a muscle on my back that was a bloody nightmare getting a virtual doctor's consult and they getting the prescription because they bugging it up trying to call through the pharmacy so I had to wait a whole weekend for my muscle relaxants couldn't move it was just a big bloody nightmare and a half but mostly physically I was good just not being able to do the exercise I wanted to because I was stupid back. A14</p>
	Tihei Mauri Ora (new life)	<p>There was me her and my two kids and her kids. She was watching my kids while I went to work. And yeah, we pop that bubble a few times. And helps me and I helped her give birth to her son. A15</p> <p>I kind of figured out like heaps about myself during the lockdown. Like I was able to see what I wanted to do, rather than just doing same stuff. Yeah, had my baby in April. And we had to go to the hospital. But we had him at home at first and then he had complications, so we had to go to the hospital. And I wasn't allowed any visitors so that kinda was hard. We were there for like three days but then the shopping was hard shopping trying to shop for my babies I waited till last minute to get anything and then all the shops were closed, Kmart was closed. A16</p>
	Family connection	<p>..my mom stays with me, she was an essential worker so she wasn't really home ...By now actual household there was just four of us. So not too big. Yeah. But like did a lot of video calls and stuff like that, it was all right and just like go for walks and stuff like that A17</p> <p>And I had my sister. She was living with me. And we had all our kids we're had a full house. I was always occupied. A15</p> <p>I think it went alright no one got sick or anything after a while It was just normal for the kids to come over anyway, we had a few birthdays husbands 50th in lock down that was a quiet one for him but um nah it's was alright. A18</p> <p>I think me my partner grew husband grew a lot more closer together because we had the time together. Yeah, just for us was just about working on our relationship with each other a our three boys because my youngest is a real angry, angry boy so it gave us more time to spend with him and see where he was. A18</p> <p>... we ended up staying home and being like movie people when they're yea not wanting to go out to the COVID thing and because we got a baby didn't want to be too he was being extra cautious with it. we grew a lot closer to together. A21</p>
	Family stress	<p>mentally and spiritually, those are pretty rough because I was breaking up the Mrs at the time. So I was just trying to find myself. A22</p> <p>Who was yes oh there was heaps of people, my partner didn't stay home. He was out all the time he popped everyone's bubbles yeah. A16</p> <p>um For me it was a struggle I having my kids at home. Three of them and then their dad like wrapped himself around the pole - crashed the car so we couldn't go work with them but then my son put a popcorn kernel all the way in his ear. I had to take him to hospital a break our bubble to get someone help with my other two which is just a mess but like we didn't go to the roaming thing. We just stayed home. A19</p>

		<p>...their dad he would leave and come home Oh yeah. Tell me how to do the kids, that me come in to lay concrete and tell you what to do. It was like a bootcamp right yeah, it was hard for him. A19</p> <p>Well, just uh, just a few weeks before locked down my old man. came to live with me because he had been living overseas for a while. So it was interesting having him in my bubble because you know, he hadn't quite got out of dad mode even though even the my House kind of told me Excuse me, you wasn't the boss of me anymore. A14</p> <p>Lockdown for us was hard ...had 4 kids so it was hard. Yeah, I was breaking up with the father and it was hard trying to leave someone you couldn't actually leave like couldn't go anyplace. A20</p>
	Isolation	<p>mentally it was a bit of a bit thing on the wairua, and all that because we're way down in Wellington and baby and Mrs were up here and in the everything got locked down from not allowed to travel and that. A21</p> <p>At that stage, I wasn't with my partner that I am with now. I was a loner. that's how I liked things I didn't like to be around people because I wasn't I wasn't there. I was there physically but not mentally. I didn't like to be around people. So lockdown was good for me. And that was I spent a lot of time looking at myself in the mirror thinking that I don't like you but how am I going to change that spent a lot of time talking to families that that I couldn't do talk to face to face. messages and video calls. And something out there out there wanted me to still be here. A13</p>
Mahi Ora	Job/Study	<p>Also mentally it was pretty rough cos still had to mahi. A22</p> <p>The COVID has itself didn't affect me but I have to study at the same time to and we did Zoom© classes which we found was real hard so I just use the so turn my screen off and do other shit and we also had to do I am exam online so that was pretty difficult learning wise and stuff. A17</p> <p>I was working through the whole lockdown. A15</p> <p>... study side of things in it like yeah, that was quite draining. A17</p> <p>And at the same time, my oldest had to do online learning and I couldn't actually keep up with them because the classes were at the same time. So I feel pretty guilty too because he fell off the wagon on his side of things in he had to catch up. A17</p>
	Essential Worker	<p>my husband was in the essential workers so he worked right through. A18</p> <p>get back into work at that stage I was a essential workers new world Greenmeadows so I had to push my shit aside to carry on with what I had to do it was hard was trying to focus my mind and to getting back into work with all the shit that was going on outside. A13</p>
Taha Tinana	Exercise (Subthemes: positive impacts, negative impacts)	<p>Or I was on a roll in at the gym going like I was at my lowest weight I was like in my Peak motivation. Stuff like that and it kind of ruined it. So yeah, they affected me physically as well. Away from the top of my game like and I was doing it all on my own. A22</p> <p>Ruined my gym, shut the gym down and, had to my own workouts at home. First two weeks I was all good and then I got sick and after that got lazy. A22</p> <p>I just used to go for walks and stuff like that in the gym that I was with they did online class and I they could tell if you were online letting them know. A17</p> <p>...my stepdad he started up like a little group thing on Facebook. Oh, me and my sisters and stepbrothers. And it was cool but like he was doing like 300 press ups a day. but yea that was cool. A19</p> <p>...there wasn't much physical activity going on. But before lockdown I went out and bought like medicine ball and a weight belt, they're all you know, but nothing really came out of it. A18</p>

		So you know I had run down the road. He's got all these pakehas looking at you like the only Māori in the area looking at me like awesome. A20
	Kai/food (Subthemes: positive impacts, negative impacts)	<p>nutritious we were air frying everything's instead of deep frying Well, we're stop just stop deep frying really. I've gone back to deep frying. A21</p> <p>nutritional wise and stuff like that to like buy stuff that I usually wouldn't buy like you know prawns at like 17 bucks and stuff like that. A17</p> <p>and then food wise I went out shopping every day I suppose because there's nothing as to spend the money on so we brought a lot of food that we wouldn't normally eat. Not so much junk food otherwise, A18 We'll be straight up I was fat I was overweight the way I was eating crap. Mental state wasn't the um I wasn't focused. I was just all over the place I just ate and ate and ate. there was really no physical activity going on at all. A13</p> <p>Anyway, and nutritionally really good because I was designated shoppers so I just took my notes I didn't we had to have real meals. Here we're sharing food so yeah, but I noticed when locked down and locked down unlocked. A14</p> <p>nutritionally, it was great. Because I've got four kids and one daughter, she's now older so it was like cooking, but we were like Martha Stewart do it every single day. A20</p> <p>Eating, mentally it was a real struggle with kids being stuck at home yeah. A20</p>
Taha Hinengaro	Drugs and Alcohol	<p>But I also drank a lot to during lockdown. A17</p> <p>... we also picked up another habit that we had dropped before which was smoking so picked that up again. A18</p>
	Wairua	<p>mentally it was a bit of a bit thing on the wairua, and all that because we're way down in Wellington and baby and Mrs were up here and in the everything got locked down from not allowed to travel and that. A21</p> <p>mentally and spiritually, those are pretty rough because I was breaking up the Mrs at the time. So I was just trying to find myself. A22</p>
	Mental distress	<p>So we alright I guess my immediate was me and my husband in three boys at home, but I've got ten and 14 mokos so a few bubbles. I waited for two weeks that really mess with my head that I couldn't get to hold them and hug them and so they had to go live like every day. A18</p> <p>2020 was a shit year for me mentally suffered severe depression this was before COVID and then going on into covid lost a lot of family members during the time locked down a few of my bros committed suicide we have just lost a lot of loved ones during that during that period so in my mind was already really fucked up then I had to fight through all of it. A13</p> <p>Eating, mentally it was a real struggle with kids being stuck at home yeah. A20</p> <p>Also mentally It was pretty rough cos still had to mahi. A22</p> <p>And at the same time, my oldest had to do online learning and I couldn't actually keep up with them because the classes were at the same time. So I feel pretty guilty too because he fell off the wagon on his side of things in he had to catch up. A17</p>

Table S9: Thematic Analysis of feedback from participants from Awatoto Focus Group Three (Participants A23- A30)

Category	Theme	Quotes
Whanau Ora	Adversity (Illness, death or injury)	<p>But then I'm just having people were out buying groceries for my dad trying to keep them locked in because he had no idea what's going on on his bike and on may not bear out vulnerable, you know, you'll get sick, but he was. A23</p> <p>I lost my mother first week of lockdown. I was going through cancer shit. She was always helping me And then it's coming up to a year. I hate it myself. I had always been my nans go to and she was always my go to so my name is my dad's mom. But I was brought up with him from the age of four years old. So I sort of got an old spirit and I tried to make myself young because I was ripped off my young years I don't think I could I just wanted to kill myself to be fair. because I don't never had anyone for me to go to but my nan and the way she does to awhi this is literally how I got off. So I know that these some traits that i have kept of hers. A24</p> <p>But yeah, Anyways, I was actually dealing with this cancer thing. In that moment you will say that's a lot you will have a mass in my back. But it was due to me not looking after myself or the outcome a lot of people call myself. A24</p>
	Family connection	<p>And my parents when the COVID hit, they were in Mexico, they decided to still go on the holiday even though it was hitting. They knew it was there. But no one knew how serious anyway, and then they got back right in time before they just got stuck over there because I was shutting all the borders, so you know, leave anywhere. So I couldn't really see them for two weeks, but I helped them out with shopping and I felt like I didn't get it like everyone else because I was still going about my daily day. A23</p> <p>I'm actually grateful because it's a lot of whānau in my family that easily clean themselves they've got to go back to see my name six feet on the route. I've done all these lives and therefore my family and my brothers and their cars we will pull up so my nan brought up like 23 mokos and almost like the motherfucker too. So it's like a natural thing when whānau I see family struggling I will help even if I need help. A24</p> <p>I felt like we needed in our family at that time we needed to work together because that's what we were lacking and still to this day were looking but yeah, that was really important. A25</p> <p>...actually really good. So I pretty much worked all my life, my mom and dad workaholics. so for to have all of us at home for longer than a day is kind of a big thing for our family. So like, when I had Grace, I was back to work day two. So yes, so like, that's our life. So to be locked down all together and actually have time with my daughter, which I've never had. And at the whole time, is kind of was huge for us. See, my husband ended up working. So he would go to work. And I had her all the time. So it was awesome. And just being able to have just get quality time together and not have the pressure of having to go out and do stuff. A26</p>
	Family stress	<p>Yeah. But being locked down, that was really hard. That took a big deal on our relationship. And that's we know, our problems really started. And so I had relationship problems within the COVID time. We've decided to, oh, actually, I decided that I was coming back as soon as we come out of lockdown. We moved home. A27</p> <p>Yeah, it doesn't say that much he's still cabbage totally get him to grow up but only knows how long it will take. So sometimes he doesn't pay me so he is quite far away but whether or not he wants to keep making efforts instead of rucking and me rucking him because they've been doing it for me but I'm doing it with my kids. So it's a follow on circle I just wanted to delete. leads to the encounter carry on will be all good but it's not fair for them. I see him and then they don't. A23</p> <p>And so it was just me home from like because he would leave 530 in the morning be home at five in the afternoon just working because he had to</p>

		<p>like print stuff for the hospitals and the doctors the government in it. And so he was like essential worker and but yea i was just at home bored as and yea just and then he will just come home to domestics because he be like what the fuck have you done all day. What is there to do? You just thought of the cleaning, dude. Oh, I'll get you some sugar soap aye. Fucking so i could clean more i dont want to fuckn clean. so started more domestics, I just stayed in my room. Barely left my room stopped associated with my dad and then just was stuck to my phone and my Chromebook like glue, watch TV heaps. And then yea only like, I'll get out of my room to have a shower just to get into new pajamas. wasn't even got into my classes while still trying to get work done. A28</p>
	Isolation	<p>their time now how do you stay home? And do you probably go home? My mother didn't want to bar of it. It effected the family quite a bit it impacted my mum and my kids i wasnt allowed to see my kids for long. If i left the house i wasnt allowed back in. Park up in the ol shed It had a big impact on how they go about life anyway. A29</p> <p>He was he was caught up in some stuff he shouldn't have so we sort of we moved for our family getaway away from here and Yep. If we went into lockdown down there and we went down to no one. A27</p> <p>So getting caught up in the lockdown, man, I felt I felt alone. I was, you know, very lonely. A27</p> <p>Yeah, I was last year, I was Oh. My dad was like paranoid. So he locked the gate. Because I'm a social person. And you live with the guy and you're fucking out. A28</p>
Mahi Ora	Essential Worker	<p>I feel like mines not that interesting. But anyway, I was in an essential worker. So I keep going to work when COVID hit because I'm looking at supermarkets, you know, and I didn't, I wasn't worried about getting sick or really be easy to follow the rules, wash your hands. We did lockdown for about four days until school opened up and daycare for them to go back for me so I can still carry on working and stuff. A23</p> <p>Me and my partner were essential workers as well. A24</p> <p>Oh, I was working as well. At Crasborns in Hastings, yeah, I was staying with my mum at the time and I was working and know exactly what [person's name] said. To do the distance in sanitize and all that. But I was in the boxing area. So I was away from distancing. A25</p>
	Side Job	<p>But trying to fit in school we wanted to start extra really like 4am in the morning. Once mum could look after my kids and they made my bubble bigger. She ended up staying the night with her then go pick them up a team and then try and do schoolwork and my day was extra long anyway without having any kind of break. But we just walk around the block. Stuck to the rules. And yeah, it really was just you and your family. A23</p> <p>I was good. But you my downfall was when I finished work. I'll go home in my god. There's no shopping done. You know, my mom's gonna eat kind of thing. And I'm like looking at everyone. Thats not working. What are you fellas doing? oh sitting on your phones. So I'm like, who's doing the shopping? No one. So that's what I was doing me and my nephew's partner do it together, A25</p>
Taha Tinana	Exercise (Subthemes: positive impacts, negative impacts)	<p>I wasn't doing nothing. Now probably throughout those 5 weeks or probably slept five times. A29</p> <p>And then just i was trying to workout because I'm just before happened our wakaama girls it I was training I was for secondary nats. And we're also gonna go on. So I still want to try out my posts in there pull the girls so that we could still keep our training up. A28</p> <p>I mean, we built our little gym and did things like that. So we knew we were really lucky. And it was more of a blessing for us. A26</p>
	Hobbies	<p>And yeah, yeah, in Rick, he's a hunter. So he wasn't a we lived on a farm down there. So he had access to everything. Okay, we weren't we weren't.</p>

		We weren't allowed to go out. You weren't allowed to hunt. You got in trouble down there. A27
Taha Hinengaro	Minimal impact	like I was just going to work and I'm not too worried about the disease COVID like I'm not a sickly person. A23
	Mental distress	<p>But what I was telling them my mental health was she was on the gutter. But I was only lucky that we sort of lived on a farm too. So we you know, I was I started just go for walking my babies for getting out of the house. Because the four walls were just killing us. And then you know, just been in a place I wanted to be in home with my whanau. No, I want to be locked down like this. A27</p> <p>But you know that COVID time was shit. hate you know, every time it comes too much. Now I'm just going to hate it. And then hearing COVID agains coming out lockdown, but here we go. A24</p> <p>...it was actually serious because you had to cover up and all that in because I was with her shopping with her shes really thing about germs and stuff. So it was good, though in a way but. Like why am I now when you're in a supermarket and walking passing the distance? I had one customer walk past me when he was like going to be on like this to me, im not germy. But yeah, I think there was one time for about a we got there in the end, we were still alive. A25</p> <p>And then and then the depression started to set in and then I stopped talking to my dad, because he was so I'm working on that. A28</p>
	Drugs and Alcohol	<p>I never took a serious lockdown of making P all the time. Actually, I quite enjoyed it because the prices went up. The pockets got fuller. A30</p> <p>But sometimes when I need to recap myself with what I grew up. I lost myself completely. shut myself in the room. I didn't want my kids around me. And lots of smoke heaps of drugs but I would have lines I will help turn with meth. I will give it to him with the green stuff. Just do everything that I felt like I wanted it back. How do I do? I didn't have ease. A24</p>