# Infographic Use Amongst Public Health Workers in Aotearoa, New Zealand

**by**

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## Abstract — Traditional Version

**Research problem:** Infographics are a popular way to disseminate public health information, but they present many challenges in terms of search, retrieval, access, and storage. This research aimed to discover the challenges Auckland public health workers currently face in finding, disseminating, and storing infographics. Additionally, it critiques some popular online infographic sources and proposes a custom metadata schema for a potential future online repository for NZ health infographics.

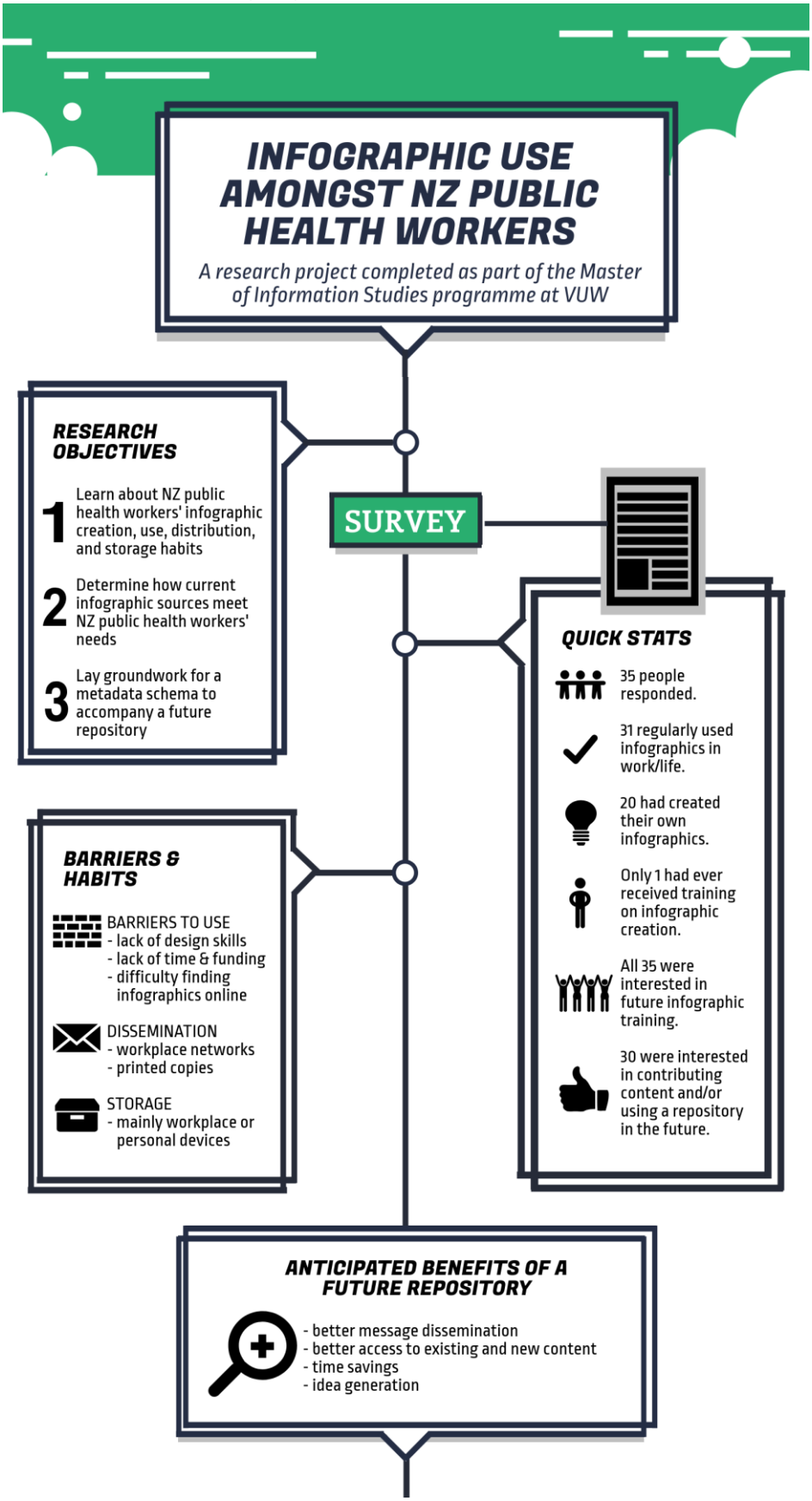
**Methodology:** A survey was designed in Qualtrics and emailed out to 65 individuals and organisations across the Auckland public health sector. Numerical and framework analyses were conducted on the responses. Website and infographic critiques were conducted using Smith's criteria (1997) and Stones and Gent's guidelines (2017) for public health infographic design.

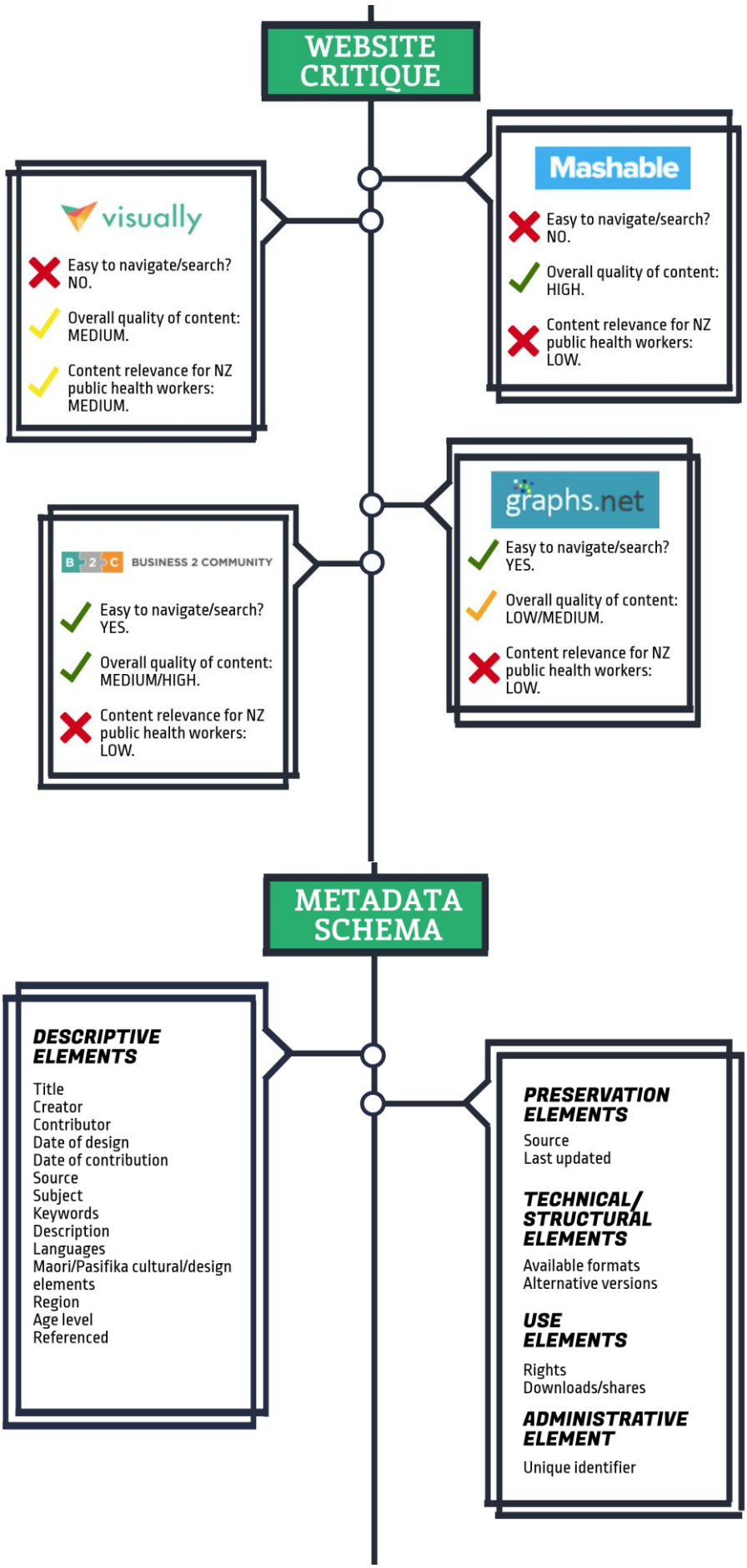
**Results:** The survey received 35 responses. 31 of these use infographics to inform themselves or others. 20 have created their own infographics. Only one had ever received training on infographic design/creation, and all 35 were interested in receiving training in the future. Infographics were disseminated largely via internal workplace networks and printed copies and stored mainly on personal or work devices. Barriers to use included lack of design skills, insufficient time and funding, and difficulty locating infographics online. 30 respondents expressed interest in accessing and/or contributing content to a future repository. Anticipated benefits of a future repository included better message dissemination, better access to existing and new content, time savings, and idea generation.

**Implications:** Building an online repository would be an excellent solution to the current problems of infographic access, dissemination, and storage, which would in turn enable valuable health information to reach broader audiences. Future research needs to be done on public health workers' information-searching behaviour in order to best design the repository to meet their needs.

**Keywords:** New Zealand, infographics, public health, repository, information science

## Abstract — Infographic Version (full image available in Appendix 4)




WEBSITE CRITIQUE
visually
Easy to navigate/search? NO.
Overall quality of content: MEDIUM.
Content relevance for NZ public health workers: MEDIUM.
Mashable
Easy to navigate/search? NO.
Overall quality of content: HIGH.
Content relevance for NZ public health workers: LOW.
BUSINESS 2 COMMUNITY
Easy to navigate/search? YES.
Overall quality of content: MEDIUM/HIGH.
Content relevance for NZ public health workers: LOW.
graphs.net
Easy to navigate/search? YES.
Overall quality of content: LOW/MEDIUM.
Content relevance for NZ public health workers: LOW.
METADATA SCHEMA
DESCRIPTIVE ELEMENTS
Title
Creator
Contributor
Date of design
Date of contribution
Source
Subject
Keywords
Description
Languages
Maori/Pasifika cultural/design elements
Region
Age level
Referenced
PRESERVATION ELEMENTS
Source
Last updated
TECHNICAL/ STRUCTURAL ELEMENTS
Available formats
Alternative versions
USE ELEMENTS
Rights
Downloads/shares
ADMINISTRATIVE ELEMENT
Unique identifier


IMPLICATIONS
• Building an online repository would be an excellent solution to the current problems of infographic access, dissemination, and storage, which would in turn enable valuable health information to reach broader audiences.
• Future research needs to be done on public health workers' information-searching behaviour in order to best design the repository to meet their needs.
Source:
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My family and friends have been cheering me on from the get-go, and their support has meant the world to me. Thank you Kat, Gary, Dad, Clan Anderson, the Schmidt House Book Club, Suz, Jo, the Gamer Mamas, and the Summer Stunners Lunch Club. Also cheers to Jerome and Rachael, whose guidance and advice regarding all things library has been a godsend for me.

To my little superNova: thank you for bringing me joy every day and for being your good-natured, feisty, excited, independent self. I can't imagine my life without you. It will be amazing to see you grow into your new role as big sister in just a few months. The future holds such wonderful things for you, and I can't wait to watch you grow up and discover it piece by magical piece. You inspire me to work hard and learn new things every day; I hope I will inspire you to follow your passion while doing your best to make the world a better, kinder, more tolerant place.

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# Table of Contents

## 1. Introduction & Topic Statement

Infographics are becoming an increasingly popular way to communicate information about a wide range of subjects (Toth, 2013; Stones, 2017), from the diversity gap in science fiction and fantasy films[1] to the benefits of donating blood[2]. For the purposes of this project, infographics can be defined as information graphics that use a combination of text, pictures, charts, and graphical design elements to inform an audience about a particular topic in a quick and engaging manner (Toth, 2013; Burke, 2017). The public health sector has begun exploring infographics' usefulness in a number of areas (Stones & Gent, 2015a), such as efficacy in disseminating information to communities with varying levels of health literacy (Arcia et al., 2016) and communicating health information to at-risk groups (Parrish, Briones, Johnson, Messner, & Patton, 2016; Damman, Vonk, van den Haak, van Hooijdonk, & Timmermans, 2018). Recent research in Aotearoa, New Zealand (hereafter NZ) has shown that incorporating culture-specific designs (e.g., traditional Māori and Pasifika imagery, colours, and ideology) into print and digital health media has a positive impact on community uptake of health messages and adoption of lifestyle changes (Te Morenga et al., 2018; Sa'uLilo, Tautolo, Egli, & Smith, 2019). While a number of websites currently offer collections of infographics, there is no single, easily searchable repository or database for NZ-specific, health-related infographics of reliable, high quality.

Personal discussion with a colleague currently working in health education has revealed that some public health workers in NZ struggle to find relevant, reliable infographics, and therefore expend valuable time and resources creating new infographics which a) may already exist and b) cannot then be easily disseminated to others who might benefit because there is no designated distribution platform (V. Egli[3], oral communication, 22 June 2018). If this problem is widespread for public health workers across NZ, there is a critical information need that is not currently

[1] https://visual.ly/community/infographic/entertainment/diversity-gap-sci-fi-and-fantasy-films

[2] https://visual.ly/community/infographic/health/benefits-donating-blood

[3] Research Fellow, Faculty of Medical and Health Sciences, University of Auckland

being met. There is also potentially a significant duplication of effort by those creating and using infographics in their work. A thorough search of the literature has revealed no previous research in this area.

I have therefore investigated public health workers' current use of infographics, analysed the suitability of current infographic websites in meeting NZ public health workers' needs, and proposed a health infographic metadata schema to facilitate use and access to health infographics in the future—not only for public health workers, but for the wider NZ public health sector (and potentially also the public).

# 2. Literature Review

Extensive searching and scanning has revealed a dearth of literature on infographic use in New Zealand. This literature review will therefore break new ground by providing a novel overview of several relevant aspects of infographic use in the NZ context: first, an introduction to infographics and the challenges they present to information professionals and researchers; second, an overview of infographic research in the global public health arena; third, providing examples of university programs that include infographic creation as part of their public health education curricula; fourth, a summary of current research on infographic search and retrieval; and finally, a discussion of potential alignment of these findings with the *New Zealand Health Strategy*. The section concludes with a critical discussion of the issues raised during the course of this review.

## 2.1 Infographics: Overview & Unique Challenges

Featherstone (2014) offered an overview of infographics, their recent history, and the unique challenges they present to researchers and information professionals. Although there is a long history of using graphics to simplify and present ideas, the term "infographic" did not gain popularity until 2010. A current Google search provides 348 million results for the term "infographic" – this is an enormous rise in usage over the course of nine years. Featherstone (2014) highlighted infographics' pervasiveness in contemporary society, noting their usefulness in communicating research data but emphasising that the sheer volume of available infographics "makes classification, description, access, and preservation challenging" (p.147). The importance of social media in disseminating infographics and how health organisations have taken advantage of this communication method to spread promotional messages to the public, and improve their awareness of inequalities is also noted. This article also offered an overview of some online infographic creation tools and resources; however, as this article is now five years old, many of these sites are no longer available or have broken links.

While Featherstone noted that infographics are a hot topic for libraries, she mentioned that this has more to do with libraries creating infographics to promote their own brand rather than approaching infographics from a classification or accessibility standpoint. It is clear that the lack of long-term preservation efforts for

quality infographics is a problem. As Featherstone (2014) notes, “Infographics are difficult to find and often too ephemeral to capture” (p.149). The author brought attention to discrepancies among various taxonomical efforts at infographic classification, calling for information professionals to step in and offer a more organised approach of subject headings and specific metadata sets that will aid in preservation and access efforts.

## 2.2 Infographic Use in the Public Health Sector

Research on the use of infographics in public health research and health promotion is emerging. Stones (2017) conducted a cross-disciplinary literature review on infographics’ impact on readers in five key areas: “attention, comprehension, recall and adherence (behavioural change) and appeal” (p.1). The author noted that much of the research reviewed covers simpler style infographics, such as pie charts and bar graphs, as opposed to the more complicated infographics often used in health communication, and that large portions of the population still have difficulty decoding even these simpler styles. However, embellished infographics have been shown to help with recall, decision-making, and appeal. Arcia et al. (2015) conducted focus groups with community members of varying levels of health literacy and English-language ability to determine what aspects of infographics best supported comprehension and were most likely to influence behaviour. Findings revealed that infographics that allowed for comparison and used familiar colour analogies were the best aids to comprehension, and that “it is possible to create an accessible health message without sacrificing information richness” (p.181). Furthermore, the potential for infographics to motivate positive behavioural change, support comprehension, and help patients be more involved and informed about their own health was shown. Stones and Gent (2015a) conducted semi-structured interviews with 15 public health professionals in the United Kingdom with a goal of understanding the current issues around infographic creation and use within the public health sector. Overall, 14 out of the 15 interviewees had positive attitudes toward infographics’ potential for communicating with decision-makers and the public. The interviews also revealed a number of similarities between issues faced by the journalism and public health sectors, including “software availability, time,

budgets, and access to designers" (p.5, para.4). Issues unique to the public health sector also emerged, including concern with "dumbing down" content too much, and fears that overdesigning infographics would undermine perceptions of content reliability and authority. The authors also mentioned a current lack of established collection and storage practices of infographics within public health organisations; however, this section is quite brief and lacking in detail. Meppelink and Bol (2015) used eye-tracking software to study how different aspects of infographics (images and text) affect comprehension and recall in people with different levels of health literacy. They found that people with lower health literacy were assisted more by images, whereas people with higher health literacy were assisted more by text. They therefore recommended that images and text be used to complement each other and ensure that the health message imparted by an infographic can be understood by as broad a base of target subjects as possible. Faisal and Blandford (2012) systematically evaluated literature on how information visualisation is used in making sense of personal health, and identified three key areas covered by research: data visualisation, gathering user data, and supporting users' goals and tasks. However, they found that "more work needs to be done on incorporating sensemaking processes into the design and evaluation of these tools" (p.214), and there is still much unused potential in employing information visualisation to help people make sense of their personal health.

Together, these articles highlight the diversity of possible research facets within the area of infographics and public health. The exact details of *how* infographics may affect target audiences is still under discussion; however, it is clear that their use is becoming more widespread in the public health arena regardless. Little to no mention is made of storage (e.g., personal computers, company servers, cloud services, repositories) or retrieval practices in any of these articles, hence the rationale for this research. If infographic use continues to be a popular method of communicating public health messages, attention must be paid to how people will find, access, and use them in future.

## 2.3 Infographic Creation in University Public Health Curricula

Falk (2016) outlined an undergraduate nursing program that requires its students to research a current medical issue and create an infographic about it. The objective of this assignment was to teach nursing students how to create evidence-based public health infographics that can be disseminated to the public with an end goal of positively influencing the health of the general population. Student feedback about the program was largely positive, with particular mention made of students valuing the opportunity to bring skill sets from other areas of study and experience into their nursing education. Shanks et al. (2017) designed and tested an infographic assignment for first-year undergraduate students. The research objective was to research the effectiveness of an infographic assignment in teaching students about health science issues. Four themes emerged from the focus groups: communicating science-related topics to non-experts, developing professional skills, understanding health issues, and overall experience. This article lays a solid base of evidence to support the importance of teaching future public health workers about infographic creation; however, as with Falk (2016), little discussion is conducted about dissemination or storage guidance given to class participants. Both articles demonstrate a recent rising trend in infographic inclusion in public health training programmes and lack of appropriate repositories to store them.

## 2.4 Methods of Infographic Search & Retrieval

Li (2016) proposed a new methodology for more effective infographic search and retrieval, as existing methods (e.g., keyword search; related image search) were determined to be insufficient for user requirements. The main findings showed that using full-sentence queries provided the best context for comparison between user requirements and infographic relevance, and that using a faceted search improved the relevance of search results. Proposed future research directions included improving the accuracy of full-sentence query analysis and application of these new methodologies to more complex types of infographics. Li also noted (p.1) that while a good deal of research has been conducted on text and picture retrieval, there is a gap in the research on infographic retrieval, which my research aims to address. While Li's specific area of study is simple infographics such as line charts and bar graphs, the focus of this study will be the complex infographics produced to deliver

public health messages. The points Li's dissertation raised regarding careful metadata preparation and choice of faceted search design are equally relevant to both of our targeted infographic formats. Saleh, Dontcheva, Hertzmann, and Liu (2015) researched design similarities among infographics to create and test a more effective retrieval process than keyword searching, which they found to be inadequate for user requirements. Results showed that "a combination of colour histograms and Histograms-of-Gradients (HoG) features is most effective in characterizing the style of infographics" (p.1). Their research offers an alternative perspective on how users might be searching for infographics (users requesting results based on design aesthetic/style as opposed to topic or content), which may need to be taken into account when creating a metadata schema for NZ-specific infographics (e.g., health workers wishing to browse all infographics with a Pasifika design aesthetic).

## 2.5 NZ Public Health Initiatives

The *New Zealand Health Strategy* document outlines the NZ government's long-term plan of improving health outcomes for all New Zealanders. The Information Management and Technology section specifically notes:

> *"Communities with access to better (non-personal) information about their health or health care services are better able to play a greater role in maintaining their own health and accessing appropriate health services, and in contributing to decision-making on local health services. For example, ethnicity-related information will ensure that Māori communities and the Government are better informed."* (King, 2000, p.26)

The results of the research presented in this project may be used to assist dissemination of health messages and facilitate ease of access to health-related information. It is anticipated that those who will most benefit from increased access to health messages are those with low levels of health literacy, those on low household incomes, as well as Māori, Pasifika, and ethnic minorities communities.

## 2.6 Summary

The recent rise in infographic popularity is evident in the scarcity of literature available prior to 2010. The body of knowledge critically discussed in this review represents literature available between 2012-2017. Despite this short timeframe, some common, noteworthy themes emerge upon closer examination. First, it is

agreed that infographics have some useful benefits, including: helping with recall, decision-making, and appeal (Stones, 2017); motivating positive behavioural change, supporting comprehension, and helping patients be more involved and informed about their own health (Arcia et al., 2015); and communicating a health message (Featherstone, 2014; Stones & Gent 2015a; Falk, 2016; Shanks et al., 2017). Second, researchers agree that there are some challenges inherent in infographic use, such as: concerns with content quality/reliability (Stones & Gent, 2015a); and issues with content complexity in infographics, and how this can present problems for both creators and target audiences (Arcia et al., 2015; Meppelink & Bol, 2015; Stones & Gent, 2015a; Li, 2016). Third, problems with search and retrieval of infographics are noted across disciplines (Featherstone, 2014; Saleh, Dontcheva, Hertzmann, & Liu, 2015; Li, 2016;). Fourth, Featherstone (2014) and Li (2016) both emphasise the importance of new schemas of infographic-specific metadata. Fifth, many of the articles above touch on the importance of information accessibility (King, 2000; Faisal & Blandford, 2012; Arcia et al., 2015; Meppelink & Bol, 2015; Saleh, Dontcheva, Hertzmann, & Liu, 2015; Li, 2016), highlighting the need for improvement in this area, and therefore validating the goals of this project.

## 3. Research Questions

This research explored the following questions:

1. How prevalent is infographic use amongst public health workers in Auckland?

   1.1 Do public health workers search for existing infographics before spending time and money to create their own? If so, where do they search? If not, why not?

   1.2 How do public health workers disseminate and store infographics they have created?

   1.3 In the future, under what circumstances would public health workers be willing to contribute content to an NZ health infographic repository? Would they also use it to search for infographics?

   1.4 What are the types of barriers to infographic use amongst public health workers?
2. How well do existing online infographic databases meet the needs of NZ public health workers in terms of ease of use and content relevance?
3. What metadata will enable future ease of use of the infographic repository for public health professionals?

## 4. Research Objective & Design

The objectives of this research were to 1) learn about public health workers' infographic creation, use, dissemination, and storage, 2) determine how current infographic resources meet these needs, and 3) lay initial groundwork for a future infographic repository. These were achieved by:

- Distributing a survey to determine local public health practitioners' current use of infographics (and barriers to use), infographic creation behaviours, interest in an NZ-based health infographic repository, and willingness to contribute content to such a repository
- Analysing and critiquing a selection of existing infographic websites
- Proposing a suitable metadata schema for NZ health infographics based on a sample of existing content

Each of these three research activities is divided up into sections below – survey, website critique, and metadata schema creation. Each individual section will include the methodology, results, and a discussion of the implications.

A broader discussion will follow, which will synthesise the connections between the sections and address future implications of this research.

# 5. Survey

## 5.1. Methodology

### 5.1.1 Population & sample

While the initial ultimate goal of this research was to discover the prevalence of infographic use across all of NZ, this proved too large a scope for this project and therefore a smaller sample was chosen. This project therefore focused on understanding infographic use amongst public health practitioners in Auckland. My goal was to cast the survey invitation widely within the Auckland region to achieve diversity in respondents' areas of work (e.g., health promoters, nurses and doctors, nutritionists, community health workers, programme coordinators, etc.) while simultaneously limiting the data set to a manageable size. The survey was initially distributed to the following recipients:

- Auckland Regional Public Health Service
- Auckland District Health Board's Department of Research
- Auckland University's School of Population Health
- AUT's School of Public Health
- Health Promotion Agency's Northern Regional Office
- The National Institute for Health Innovation
- Healthy Families Waitakere
- Tamaki Healthy Families Alliance
- Hapai Te Hauroa
- The Asian Network Incorporated

In my survey invitation email, I also requested that the survey be forwarded on to anyone else who might be interested in this topic (a technique known as snowball sampling) to gain further distribution within these public health networks. As it was not possible to record the snowball sampling, it is unknown how many participants were from the original email and how many were from subsequent distributions within networks.

### 5.1.2 Data collection

I collected my data via a mixed-methods online survey (QUAN/qual). Quantitative questions related to RQs 1, 1.1, and 1.3, and the qualitative questions related to RQs 1.1, 1.2, and 1.4. Stokes and Urquhart (2013) endorsed the use of mixed methods research, stating that two differing data sets will serve to complement one another. The quantitative questions provided statistical data on infographic use and attitudes toward future contribution to a repository, and the qualitative questions were intended to give a more detailed picture of the factors currently affecting infographic use and storage. The goal with survey was to understand current trends in infographic use in the Auckland public health sector.

The survey was created and distributed via Qualtrics. Initial invites were emailed out to 65 addresses sourced from the publicly accessible websites of the organisations listed above. The access link was open from 1 March 2019 to 31 March 2019. Reminders to participate were sent out the third week of March. A full copy of the survey is available in Appendix 1.

### 5.1.3 Ethical considerations

As this survey required data attained from real people, ethics approval was obtained from the Victoria University School of Information Management Human Ethics Committee prior to survey distribution. Before starting the survey, participants were presented with an informed consent form, which included all the information suggested by Leedy and Ormrod (2015), including purpose of the research, assurances that all data gathered would remain anonymous, the potential benefits of the study, and a reminder that participation was voluntary and could be stopped at any time.

### 5.1.4 Data analysis

The Framework Analysis Method (Gale, Heath, Cameron, Rashid, & Redwood, 2013) was used to analyse the qualitative data collected from the survey. This method has been used in many disciplines, including health science, and is well suited to interdisciplinary research like mine. It was also the analysis method used by Stones and Gent (2015a), which is the research approach most closely aligned with the one presented in this research project. This method uses Microsoft Excel to code data

both horizontally within a single survey participant as well as vertically across multiple survey participants. Themes and trends are located within the data set and context is provided in multiple dimensions. My hope was that using Excel to sort and cross-code data would allow for interesting insights into this uncharted area of research. As the authors cited above note (p.6):

> *"If done well, qualitative studies can shed explanatory and predictive light on important phenomena, relate constructively to quantitative parts of a larger study, and contribute to the improvement of health services and development of health policy. The Framework Method, when selected and implemented appropriately, can be a suitable tool for achieving these aims through producing credible and relevant findings."*

As research into public health workers' use of infographics is in its infancy, it was important to rigorously sort and analyse the data to provide a solid base upon which others can build in the future.

## 5.2 Results

### 5.2.1 Demographics

35 responses were received from the survey. All but six respondents were from Auckland (three left this question blank, and three stated that they lived or worked outside of Auckland). As the Auckland region was chosen as a limiting factor purely for purposes of scale, and the questions in the survey are just as relevant to health workers outside the Auckland area as those within, these responses have been included in the final report. All respondents rated themselves as having some level of comfort with using technology (15 extremely comfortable, 16 moderately comfortable, 1 slightly comfortable). This likely signifies a limitation of my results pool, as people who are uncomfortable with technology are unlikely to have responded to a digital survey. The age range of respondents was 18–74, with the most respondents between the ages of 35 and 44 (please see Figure 1 for the full breakdown of respondents' ages). Respondents were asked to select which aspects of public health their work entails; a very diverse range of selections was made by the sample size and can be seen in Figure 2.

**Fig. 1: Respondents' ages**

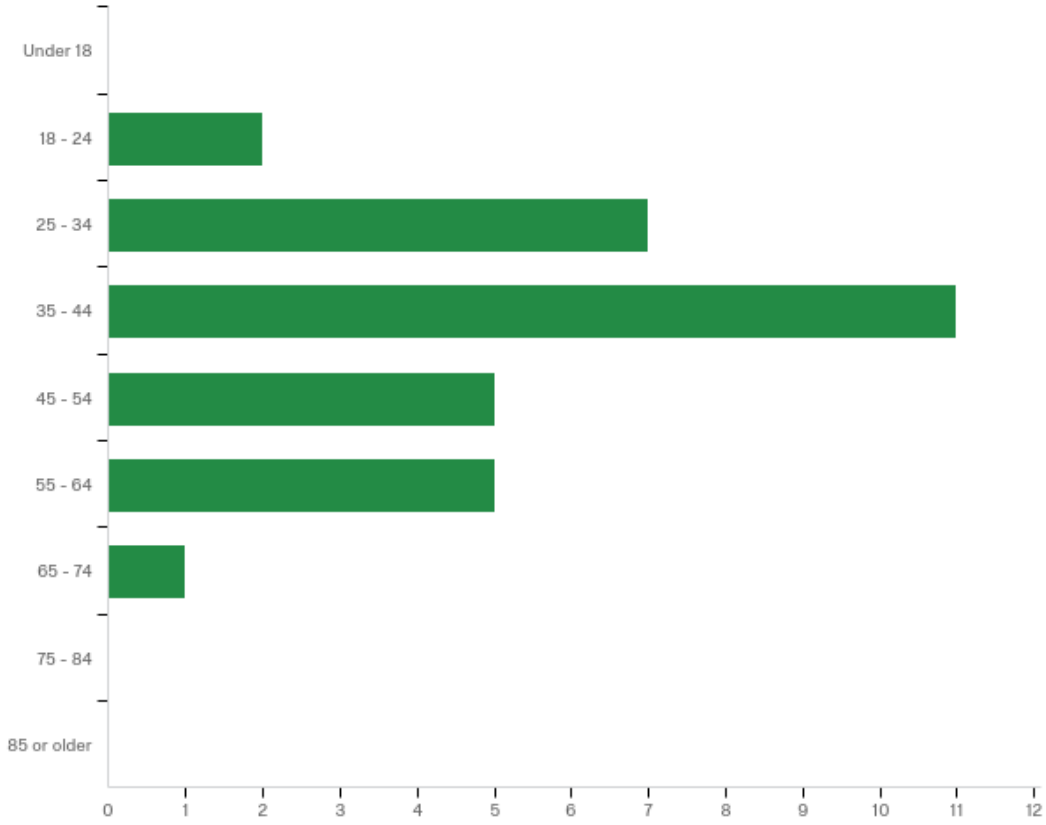
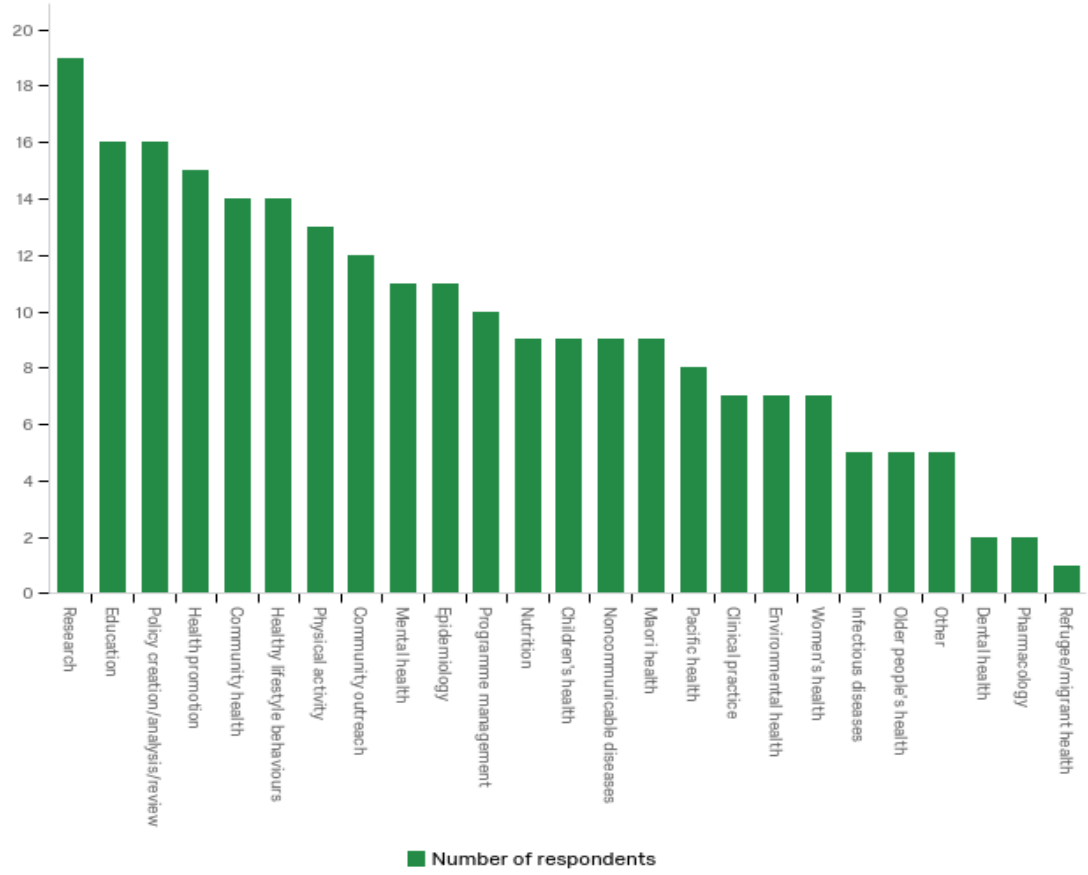

Under 18
18 - 24
25 - 34
35 - 44
45 - 54
55 - 64
65 - 74
75 - 84
85 or older
0
1
2
3
4
5
6
7
8
9
10
11
12

**Fig. 2: Aspects of public health covered by respondents' work**




### 5.2.2 Infographic users

31 respondents use infographics in their work or study, either to inform themselves or others. Infographics were used for a number of reasons, including: "to gain quick attention"; "easy to convey a lot of information in a way that is easy to read and informative"; "disseminate research to laypersons"; and "to present information attractively and clearly, thus drawing in the reader/viewer." The most common frequency of use (15 respondents) was "a few times per year" (see Fig. 3), and the most common sources of infographics were self-created (20 respondents), social media (13 respondents), a public-health-specific database or website (12 respondents), colleagues (10 respondents), and professional journals/literature (10 respondents) (see Fig. 4).

**Fig. 3: Frequency of infographic use**

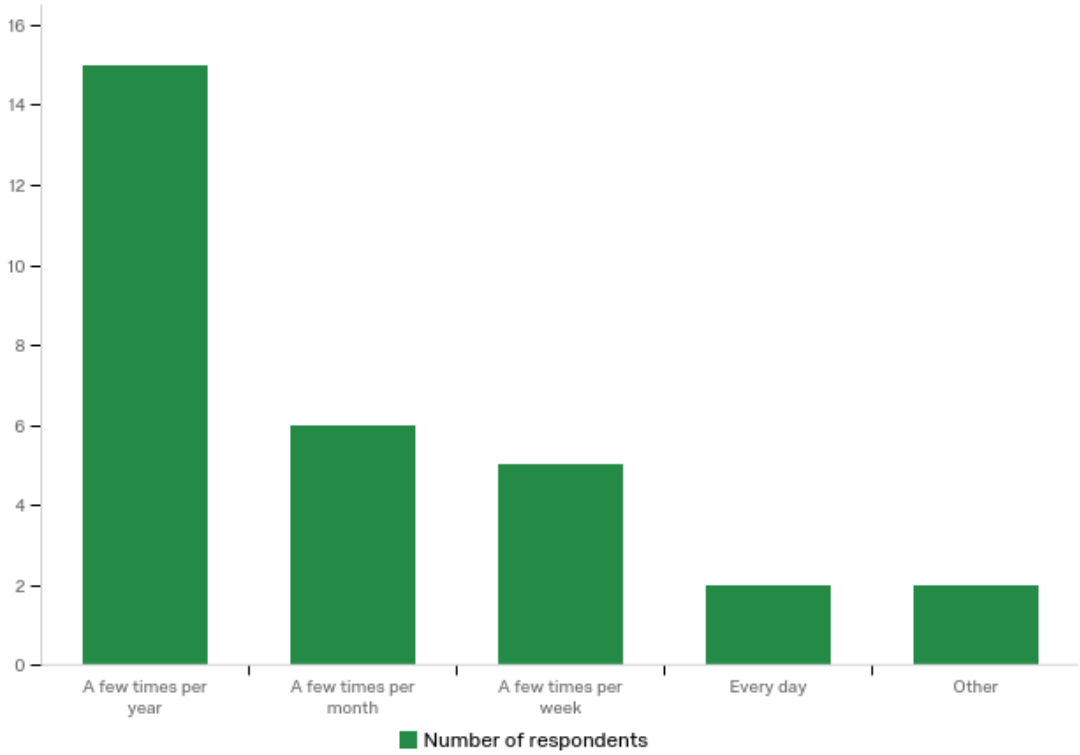
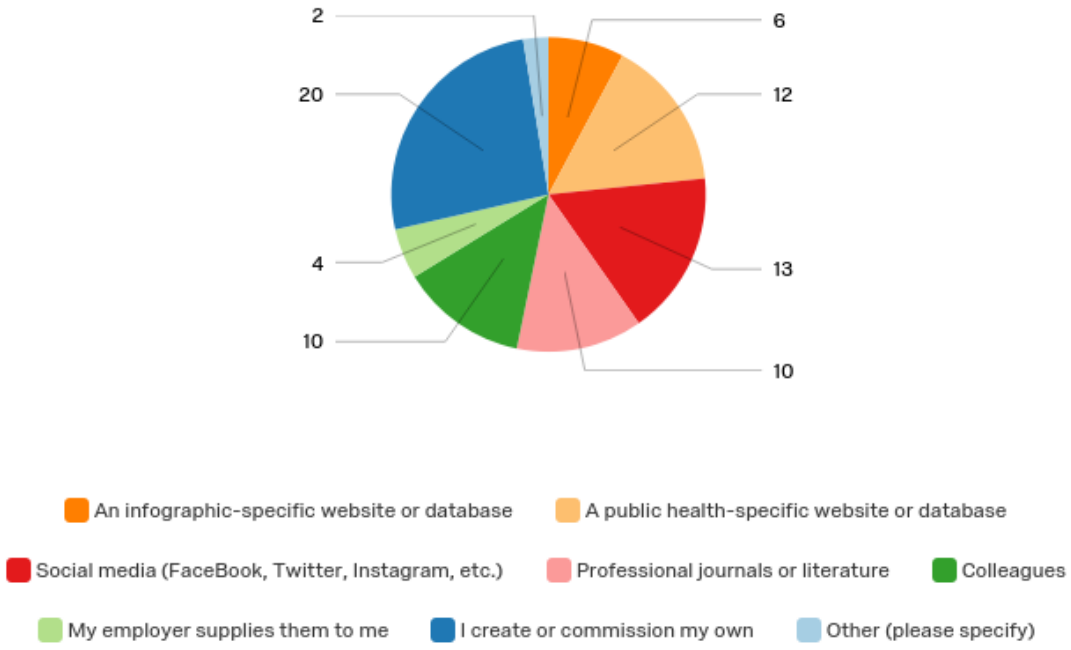



**Fig. 4: Sources of infographics used by respondents**



### 5.2.3 Infographic non-users

Four respondents did not use infographics at all. The most common reason given was "I don't know where to search for relevant infographics" (three respondents). Additionally, two respondents did not have enough funding/support to create their own infographics, and one did not know the copyright laws around infographics use. One respondent was entirely unaware of what infographics are. This indicates another possible limitation in my results pool, as people who are unfamiliar or disinterested in infographics may not have responded to the invitation.

### 5.2.4 Infographic creation

Twenty respondents (58%) had created or commissioned an infographic. Of these, 15 searched for existing infographics prior to creating their own. The most commonly used search location was Google/Google images (8 respondents). Other search locations mentioned were infographic websites, open-access image searches, university and local libraries, and scans of existing documents. Reasons given by those who did not do prior searching before creation were:

- "Was not aware there were sample infographics that are publicly available"
- "Commissioned someone to undertake that"
- "Had a good concept in my head"
- "The infographics I create are very specific to our DHB population/activity/results"
- "I tend to draw inspiration from other designs sometimes but then create them fit-for-purpose. Often people come to me with ideas already, and we work on those together."

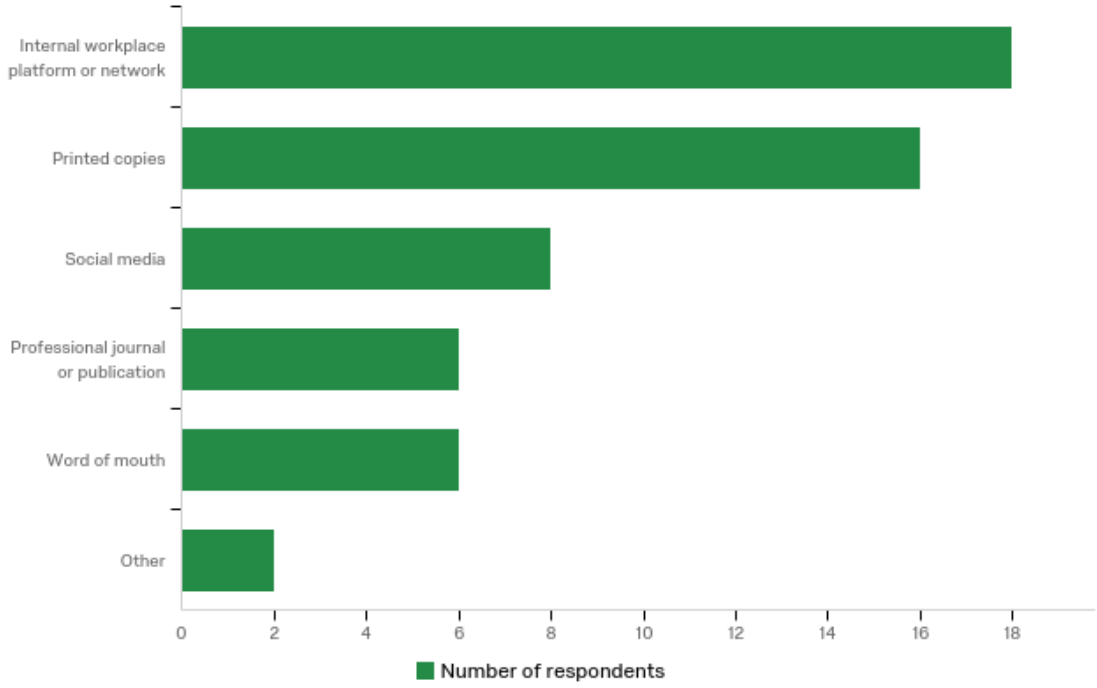
Only one respondent had ever received training in infographic creation, and all respondents were interested in receiving future training on infographic creation. Twenty-five respondents saw themselves either definitely (12) or probably (13) creating or commissioning an infographic in the future.

### 5.2.5 Infographic distribution and storage

In terms of infographic distribution, the two most common methods were internal workplace platform/network and printed copies (see Fig. 5). In terms of storage, the most common location for storage was a workplace device or network (13

respondents), followed closely by a personal device (12 respondents), and lastly an online database or website (7 respondents).

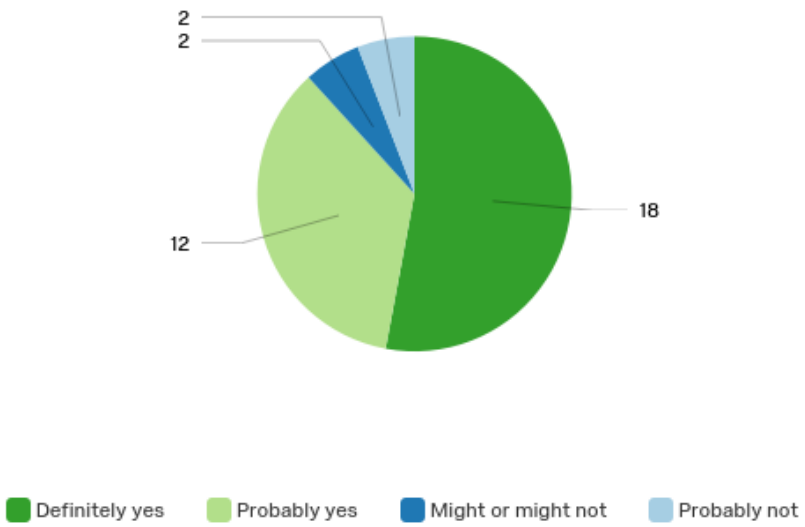
**Fig. 5: Methods of infographic distribution**




### 5.2.6 Future interest in an infographic repository

Responses to the question, "In the future, would you be interested in using an online repository or database to search for NZ-specific health infographics to use in your work?" were overwhelmingly positive (see Fig. 6).

**Fig. 6: Future interest in using an infographic repository**




Respondents foresaw numerous, varied benefits of using such a repository, including:

- "Would save me time and money, would ensure the message reaches a wider range of people (Māori, children)"
- "Many infographics are designed for overseas (US) audiences. Would be good to have access to NZ and culturally appropriate ones."
- "This would make it easier to find suitable infographics based on the content or target population. It also means that you can check if the content you want to share has already been turned into an infographic."
- "Cross-fertilisation of ideas is likely to create better results, and hopefully be clearer and more informative for patients."
- "It would enable easy access to best practice infographics and support consistency across health services"
- "It would make my life easier in that I could easily search and find examples of other peoples' work, I imagine it would also make my infographics more easily accessed by others"

## 5.3 Discussion

### 5.3.1 Why use infographics?

When using the framework method to analyse the qualitative responses to the question "Why do you use infographics?", common themes emerged into two main divisions: what infographics are and what infographics can achieve.

**Infographics are:**

- *Engaging*: 8 respondents used infographics because they are especially engaging or attention grabbing.
- *Convenient*: 4 respondents used infographics because they are easy or convenient to use and/or share.
- *Aesthetically pleasing*: 4 respondents mentioned the importance of an infographic being easy to read and/or pleasing to the eye.
- *Pictorial*: 3 respondents used infographics specifically because of their pictorial nature.

**Infographics can:**

- *Inform*: 21 respondents used infographics to educate or inform themselves or an audience.
- *Disseminate a message*: 16 respondents used infographics as a means to spread or communicate a message.
- *Simplify information*: 6 respondents used infographics as a means to simplify new or complex information, or make it more accessible.

While this is a novel way to categorise the reasons why health workers use infographics, these themes parallel those identified in the wider literature. In alignment with the *Inform*, *Disseminate a message*, and *Simplify information* themes, Wright (2016) noted that "Well-designed infographics can communicate facts and data quickly and meaningfully" (p.73), and Featherstone (2014) touted infographics' usefulness in increasing the impact of scholarly research. Burke (2017) found that infographics are powerful because they make data memorable and are easily shared, which corresponds to the *Engaging*, *Convenient*, and *Disseminate a message* themes. Heer, Bostock, and Ogievetsky found that "By making data more accessible

and appealing, visual representations may also help engage more diverse audiences in exploration and analysis" (2010, para.2), which supports the *Engaging*, *Aesthetically pleasing*, and *Simplify a message* themes. Miller and Barnett (2010) echoed the *Engaging* theme when they noted infographics' "ability to draw readers into stories," (2010, p.54), while also noting that it is a combination of graphics AND text that is most effective in communicating a message, which reflects the *Pictorial* theme. Some benefits of infographics mentioned in the literature, such as increased memorability (Borkin et al., 2016), or their ability to organise ideas, show complex relationships, compare information, make data meaningful, and tell a story (Lamb & Johnson, 2014), were not mentioned by respondents and therefore did not have parallels in the themes identified above.

### 5.3.2 Barriers to infographic use/creation

Three sets of survey questions aimed to discover what was limiting public health workers' use of infographics. These were:

- Do you use infographics in your daily work, either to inform yourself or others? If not, why not?
- Have you ever created or commissioned an infographic? If not, why not?
- Do you see yourself creating or commissioning an infographic in the future? If not, why not?

Some interesting themes emerged in the responses to these questions. One respondent was put off creating their own infographics due to a lack of personal knowledge concerning image rights. Four respondents didn't know where to search for infographics or had unsuccessfully searched for relevant infographics. These barriers highlight a potential gap in the services offered by information professionals. Relevant infographics can be difficult to find and information professionals have the potential skills and experience to help address this issue (Featherstone, 2014).

Lack of time and funding were mentioned as barriers 11 times in responses to the questions above; however, low confidence in personal skills was the single most common reason given by people who have never created or commissioned an infographic. This relates to the fact that all but one of the respondents had never

received any training on infographic creation (survey question #12). (Interestingly, though, no respondents felt that lack of employer support was an issue – did respondents therefore feel as though they were responsible for upskilling themselves in this area?) All respondents were interested in receiving training in infographics in the future. Public health organisations and employers might find it beneficial to make efforts to gauge their staff's interest levels in learning infographic skills and look into providing training opportunities to reduce this barrier in the future. Alternatively, ongoing professional development is a requirement of some professional regulatory bodies in New Zealand, such as the Nursing Council of New Zealand (n.d.) and the Physiotherapy Board of New Zealand (2019), so infographic training methods could be offered by these organisations as well.

Offering training opportunities to public health workers would also help address concerns in the wider literature regarding the dangers of bad design on infographic quality and efficacy (Bouquin & Epstein, 2015; Featherstone, 2014). Interestingly, no respondents made any mention of concerns with design or the quality of information present in infographics. This can be a serious issue with infographics (Featherstone, 2014), and should be a concern for those using infographics to convey health information to the public. The importance of assessing the quality in an infographic before use was a key consideration that led to the inclusion of the infographic quality reviews in the website critique below (see Section 6).

### 5.3.3 Infographic creation, dissemination, and storage

Just over half (58%) of respondents had created or commissioned their own infographics. Dissemination was achieved mostly through a workplace network or via printed copies. Both of these methods imply a limited potential audience, which would mean the information in these infographics is likely not spread as far as it might via an online distribution platform or social media (Featherstone, 2014), which was the third most popular method of dissemination used by respondents. If the infographic creators are generating content that has relevance for a wide population (e.g., effects of urban design on schoolchildren's health), inefficient distribution methods and limited audience represent a major problem. If, however, as one respondent noted, the infographic content is relevant only to a small community

(e.g., an infographic relating to an internal workplace's population/activity/results), these limited dissemination methods represent less of a problem. This is a possible direction for further research, as the survey did not explore whether or not respondents felt their infographics were reaching the target audience.

After creation and dissemination, respondents stated that their infographics were stored mostly on personal or work devices. This means that after initial dissemination, there is no way for others to access this content – these infographics that public health workers have spent time and money to create are trapped in storage on personal devices with no further lifespan. Those who wish their infographics to have a longer lifespan or reach broader audiences may have better success achieving this if there were a purpose-built repository.

### 5.3.4 Benefits of a future repository

30 out of the 35 respondents were interested in using a repository in the future. The follow-up question, "How would using or contributing content to an NZ-specific health infographic repository or database benefit you and/or your patients?" was used to gain insight into the reasons behind their interest. A framework analysis on this question revealed the following common themes of foreseen benefits within the answer pool:

**Most commonly anticipated benefits:**

- *Message dissemination*: 10 respondents felt a repository would result in improved message dissemination to wider/at-risk audiences.
- *Review existing content*: 9 respondents felt a repository would allow them to better review and utilise existing infographic content.
- *Better access*: 9 respondents felt a repository would allow them or their patients better access to information.
- *Time savings*: 7 respondents felt a repository would save them time.
- *Idea generation*: 6 respondents felt a repository would help generate new ideas for their own content creation.

**Less commonly anticipated benefits:**

- *Minimise double creation*: 4 respondents felt a repository would help minimise double creation (re-creating an infographic that already exists).
- *Improve content quality*: 4 respondents felt a repository would result in overall improvement in the quality of infographics available to them.
- *Money savings*: 3 respondents felt a repository would save them money.
- *Support consistency*: 3 respondents felt a repository would help support the consistency of health messages within their workplace or DHB.
- *Cultural relevance*: 2 respondents felt a repository would result in more culturally relevant infographics reaching their patients.

These benefits would affect not only the public health workers themselves, but their workplaces and employers, patients, and the wider community at large. Workplace/employer benefits would include *Time savings*, *Money savings*, *Supporting consistency*, and *Message dissemination.* Benefits to patients and the wider community would include *Better access, Improved content quality*, and *Content relevance*. Repositories are an established way to achieve benefits in line with those above; for example, Revere, Bugni, and Fuller describe the creation of a public health repository with the specific goals of "improv[ing] access to and use of digital information sources in support of evidence-based public health practice" (2007, p.3). Similarly, the Repository on Maternal Child Health was founded in India with a goal "to provide one-stop access to efficiently search, organise, and share maternal child health information relevant from public health perspective in India" (Khanna et al., 2013, p.2). A purpose-built infographic repository for NZ public health workers would likely have similar goals, and would help address the current issues with access and use.

### 5.3.5 Limitations

Because of the anonymous nature of the survey, I was unable to follow up with individual respondents and ask for more detail where it would have been pertinent to do so. For example, responses to the question "Where did you search before creating your own infographics?" were more vague than I was anticipating (e.g., "Google" or "online health database"). It would have been beneficial to be able to go back to these respondents and ask for more detail regarding their searching

behaviour (e.g., keywords used, time spent browsing) to gain more insight into how current resources are not fulfilling their information needs. The same goes for the survey question regarding infographic storage; I did not ask about backups or what creators do with their infographics after the initial dissemination takes place aside from storing them. These unexplored areas could offer future avenues of research.

# 6. Website Critique

## 6.1 Methodology

In addition to the survey, it was also pertinent to explore how well the current sources of infographics meet the needs of NZ health workers. Thus, I reviewed a selection of popular infographic-collection websites to highlight existing challenges NZ health workers face in finding and accessing relevant infographics. This section related to RQ 2.

### 6.1.1 Sample

The Infographic Database website contains a list of the top 70 infographic websites and accompanying metrics; this was used to gather a sample set of websites to review[4]. I selected the top three most popular websites using two different criteria – Likes and Tweets (see Fig. 7).

**Fig. 7: Website rankings by popularity (from www.infographicdatabase.com, as of 18 Feb 2019)**

| Top Three Ranked Websites by # of Likes | Top Three Ranked Websites by # of Tweets |
|---|---|
| 1. visual.ly (33,000+) | 1. mashable.com (219,000+) |
| 2. mashable.com (17,000+) | 2. visual.ly (12,000+) |
| 3. graphs.net (15,000+) | 3. business2community.com (7,000+) |

The same two websites were the highest ranked in both groups, which resulted in a total of four websites being selected for this critique. This sample size provided a snapshot overview of the types of infographic websites currently available, and provided an opportunity to showcase similarities, differences, strengths, and weaknesses. I also allowed for the possibility that survey participants might mention

[4] The layout of this website has since changed; the statistics data is retrospectively viewable here, via the Internet Archive's Wayback Machine: https://web.archive.org/web/20180919160637/https://infographicdatabase.com/list-of-infographic-submission-websites/

specific websites that might be prudent to add into the critique sample; however, this did not occur, and so the critique set was limited to the original four selections.

### 6.1.2 Ethical considerations

As these websites were publicly available, there were no ethical considerations for this section.

### 6.1.3 Analysis

I used aspects of Smith's (1997) toolbox of criteria for Internet resource evaluation as a framework. The following criteria were used:

- Scope
- Content
- Accuracy
- Authority
- Currency
- Uniqueness
- Quality of writing
- Purpose and audience
- Workability
- User friendliness
- Searching
- Browsability and organisation
- Cost

Taken together, and supported by illustrative screenshots, these allowed me to give a comprehensive critique on how each website meets the needs of public health workers searching for NZ-specific health infographics. As this framework was created before the rise in infographic popularity, I also used Stones and Gent's guidelines[5] on public health infographic creation (2015b) as a basis for evaluating two samples of infographic content from each of these websites. A summary of their guidelines is available in Appendix 2.

## 6.2 Results

Below is a summary critique of each website. The full critiques are included in Appendices 3a–3d.

### 6.2.1 Visual.ly

Visual.ly is an online platform whose main purpose is to connect people/companies who want to commission media (e.g., infographics, videos, ebooks, illustrations, etc.) with designers. Parties interested in commissioning a product must create an

[5] https://visualisinghealth.com/design-guidelines/

account and get a quote, and then can use the platform to manage the project and provide feedback to the designer. The website includes basic articles on content/product/social media marketing, data visualisation and infographics, and publishing, PR, and communications. It also provides a portfolio of past projects that you can browse and embed/share on social media. In addition, there is a community gallery (it is unclear how this differs/compares to the portfolio portion of the website).

Visitors (such as NZ health workers, for example) who come to the website in search of existing infographics to use will likely be frustrated by the maze-like layout of the landing page and its main offshoots, which all seem to be designed to market the creative services available through the platform. The excess of “Get a Quote” buttons present (multiple times) on every page seems overly redundant. Browsing the portfolio by “Health” topic will be useful to some, but by far the most useful section to this type of user will be the “Community Gallery,” which is accessible through a link at the footer of the landing page. This section has 26 categories of infographics to browse (one of which is Health). There is an option to search within the community gallery. Results can be filtered by media type and category and sorted by six metrics. People who have an account can “fave” an infographic to save it for later access/viewing. A few infographics on this site are directly relevant to NZ health workers (e.g., “Health, Fitness, and Nutrition in New Zealand,” “Immunisation rates for Auckland's (NZ) under two-year-olds”); however, by and large the infographics of most use here will be infographics that cover broader health topics such as “Smoking Cessation Timeline: What Happens When You Quit” or the “Hand Guide to Portion Control.” Assuming NZ health workers don't get put off by the marketing-heavy landing page and take the time to find the community gallery page (which is not particularly easy to find), they may be able to find relevant content to meet basic information needs; however, the lack of higher-level searching functions and dearth of NZ-specific content mean that this website is not particularly well suited to this audience.

### 6.2.2 Mashable.com

Mashable is a media platform that focuses on technology, digital media, and entertainment. In terms of layout, it has seven major sections (Video, Entertainment, Culture, Tech, Science, Social Good, Shop), accessible through drop-down menus at the top of the homepage. Each of these is laid out on a grid design, with most recent articles displayed at the top, going back in time as the user scrolls down. There is a lot of advertising content along the top and interspersed with articles within its pages. The articles are written by Mashable staff for the platform and often contain links to external sites. The "Terms and Conditions" page acknowledges that Mashable receives compensation from click-throughs to sponsor sites; therefore, users should be aware that there may be some bias in the reporting/content of these articles. The website content is searchable via a search bar in the top right side of the webpage; results are displayed by "most recent" and cannot be further sorted or refined. The first result displayed is always an advertisement for an external website.

In terms of finding infographics, this website presented a number of issues. Upon initial exploration, it took me two hours to locate an infographic, and four hours total to locate the section of the website that is specific to infographics (the website does not feature a sitemap or similar navigation aid). Initial keyword searches using various combinations of *infographic*, *New Zealand*, and *health* retrieved zero relevant results. After a second visit, I discovered the shortcut to the Infographics section: when typing in the search bar, after a few seconds a drop-down box will appear with potential article matches; to the right of these suggestions is another drop-down box with Topic match suggestions, which the user can click to visit. It is not possible to search or refine results within these topics; the user must browse from the top (most recent) back through less recent results. In order to find relevant infographics to review, I had to click through to each article and then scan for infographic content. Often, an infographic should have been present within an article but had a broken image link and therefore did not display. The final two

infographics chosen for review were therefore relatively old (March 2015[6] and May 2014[7], respectively). These infographics (once they were finally located) were of a high standard with good design and content. However, the site's overall lack of good search and refine/sort results functions make infographics far too difficult to locate and therefore not much use to NZ health workers. Additionally, no NZ-specific content was found at all. This website is therefore not much use to NZ health workers looking for relevant infographics to use in their work.

### 6.2.3 Graphs.net

Graphs.net is cleanly designed and relatively easy to navigate, which will suit laypeople and novice users. Higher-level users may be frustrated by the lack of result-sorting options once a search is conducted. Results are displayed in sets of 12. An NZ health worker using this website would likely be frustrated by the lack of relevant content; the 8 results for a keyword search "*New Zealand+health*" would not be of much help to someone looking for NZ-specific infographics. The "relevant" results included "Top 5 Uses for Cherry Pickers", "20 Interesting Infographics on Australia", "Australian Travelling Records", and "Interesting Egg Facts". Each of these only mentioned NZ in brief passing, and none were relevant to public health issues. The top relevant result, "Healthy People in the World[8]", contained some statistics of New Zealand as one of the top 5 healthiest countries of the world (life expectancy, number of deaths per 1000 live births, specific facts thought to contribute to population health). This infographic was well designed and contained much interesting information, although it is out of date (2012). The next most relevant result (as deemed by the researcher) was "Countries with Highest Obesity[9]", of which NZ is one. (The irony of this dichotomy in infographic content is not lost on the researcher.) This infographic contained minimal statistics on the top 10 countries

[6] https://mashable.com/2015/03/21/world-hunger-infographic/#KxSpa8po5qq0
[7] https://mashable.com/2014/05/28/menstrual-hygiene-day/#1A98jp8N.gqC

[8] https://graphs.net/healthy-people-in-the-world.html
[9] https://graphs.net/top-countries-with-highest-obesity-infographic.html

ranked highest for obesity by population percentage. The infographic was poorly designed, did not contain much information, had no references, and is likely out of date (2013). Overall, while the cleanliness of the design and the ease of navigation were benefits of this website, the content is not particularly useful for NZ health workers looking for high quality, relevant infographics with NZ-specific content.

### 6.2.4 Business2community.com

Business2Community.com is an online platform for business professionals to contribute and share content, market themselves and their business, and stay up-to-date on current issues and news in the business sector. It offers articles, webinars, webcasts, videos, infographics, research papers, and industry whitepapers. The site is well-designed and maintained, with sections on Digital & Social, Sales & Marketing, Business & Finance, Life & Entertainment, Technology & Innovation, US & World News, and Brandviews. Each of these is further organised into subsections. The site is broadly searchable, but no advanced search options exist. The site is largely designed for browsing, with content displayed by most popular and most current as a default setting. The infographics contained on this website[10, 11] are of high quality, with good design, content, and references. Unfortunately, there is little to no content that will be relevant to NZ health workers. A few infographics cover broad health issues (e.g., "Spotlight on Men's Health" and "The Health Benefits of Laughing") and may therefore be of some use to health workers, but those looking for specific issues or NZ-specific content will not find much of use on this site.

## 6.3 Discussion

There were some interesting similarities, differences, strengths, and weaknesses among the four websites critiqued above. Figure 8 offers an at-a-glance summary of

[10] https://www.business2community.com/infographics/your-startup-is-about-to-fail-here-are-20-reasons-why-infographic-02185261

[11] https://www.business2community.com/infographics/spotlight-on-mens-health-infographic-0350740

the main relevant points to NZ health workers, followed by a more in-depth discussion.

**Fig. 8: Website comparison overview**

| Website | Easy to navigate/ search? | Overall quality of content | Content relevance for NZ health workers |
|---|---|---|---|
| Visual.ly | No | Medium | Medium |
| Mashable.com | No | High | Low |
| Graphs.net | Yes | Low/Med | Low |
| Business2community.com | Yes | Med/High | Low |

### 6.3.1 Ease of navigation/search

Three of the websites, Mashable.com, Graphs.net, and Business2community.com, had search bars on the landing page. However, only the latter two of these websites were relatively straightforward to navigate and search overall. The clean, simple design of Graphs.net was the easiest to use, followed by the busier (but still intuitive) Business2community.com (see Figs 9 & 10). The results returned from test searches on both these sites were easy to browse. Of these two websites, results from a search of Business2community had the best relevance to the search keywords used, as well as the most results returned.

**Fig. 9: Screenshot of Graphs.net search results**

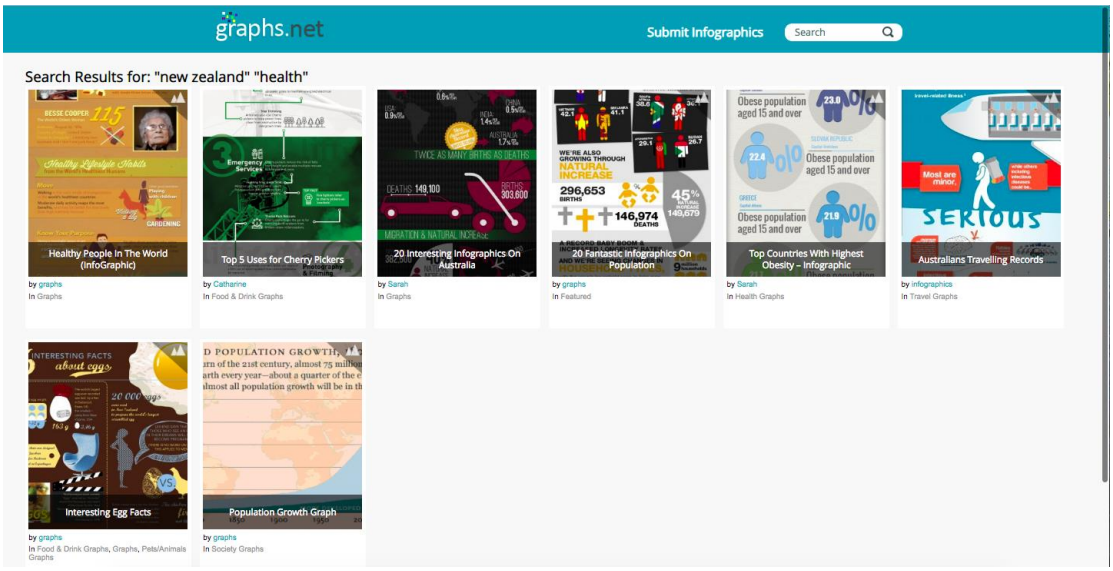
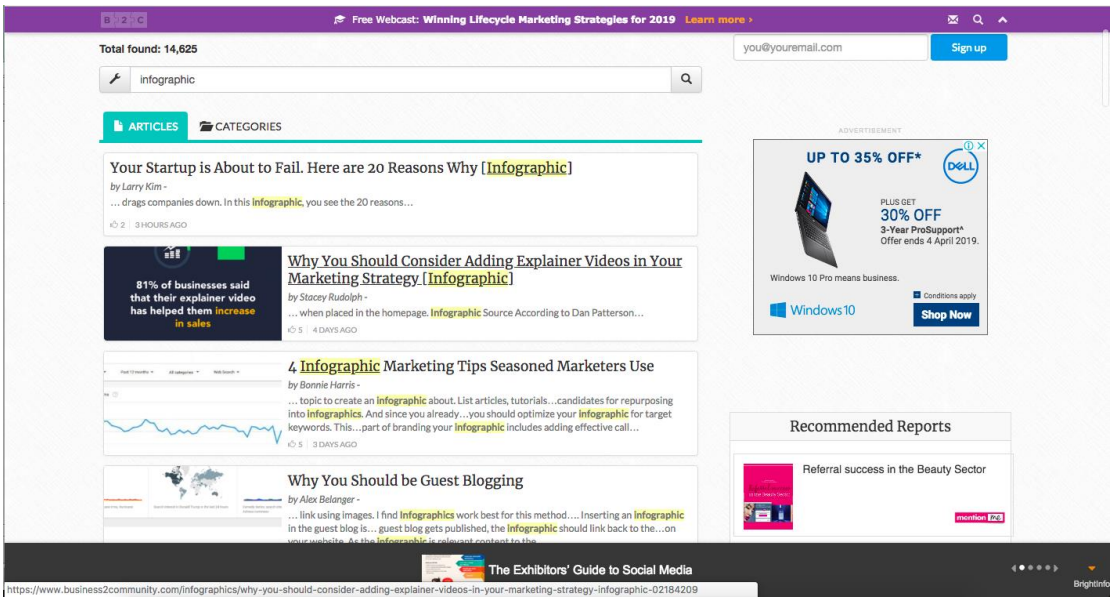



**Fig. 10: Screenshot: Business2community.com search results**




In contrast, Visual.ly and Mashable.com were not easy to navigate. The amount of time it takes a user to reach desired content on a website is called *website service time*, and is accepted as a major quality-of-service measurement for web design (Postelnicu, Raviv, & Ben-Gal, 2016). The website service time required to locate the infographic-specific sections of these websites was excessive (3 hours for Visual.ly, 4 hours for Mashable.com), although to be fair I was taking notes and conducting my critique while simultaneously exploring the website. (In comparison, the website service time for the infographic sections of the other two websites was less than 5 minutes of browsing/conducting my critique.) On Visual.ly, the infographics section

is accessible through the “Community Gallery” link at the bottom right-hand footer of the landing page. On Mashable.com, the infographics section is accessible if you type “infographics” into the search bar and wait for a few seconds until a secondary drop-down menu pops up with a direct link to the designated section of the website. (This seems easy once the user knows where to look, but these locations were counterintuitive to me during my initial exploration and therefore might be to other website visitors as well.) On the plus side, once located, the Community Gallery of infographics at Visual.ly was easy to browse, and there were good filters available for refining returned results (see Fig. 11). Mashable.com was the worst in terms of browsing the Infographics section; search results were returned as a list of articles whose relevance to the search terms was dubious (see Fig. 12). The only way to determine whether an article contained an infographic was to click through and scan it, then return to results if it did not. Of the articles that did contain infographics, many of the links were broken and thus the images did not appear.

**Fig. 11: Screenshot of Visual.ly search results**

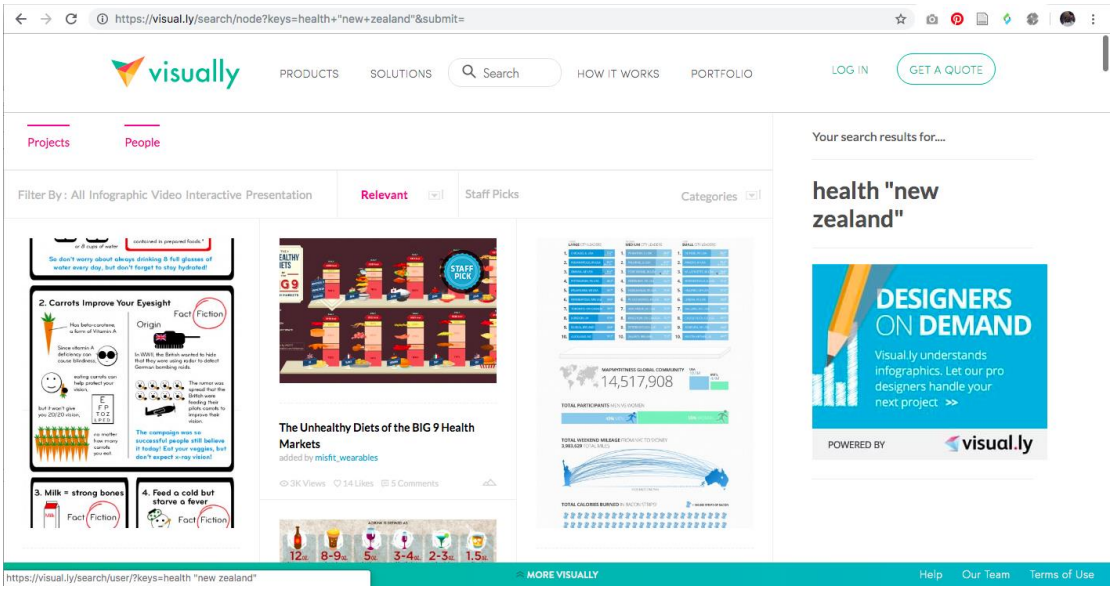
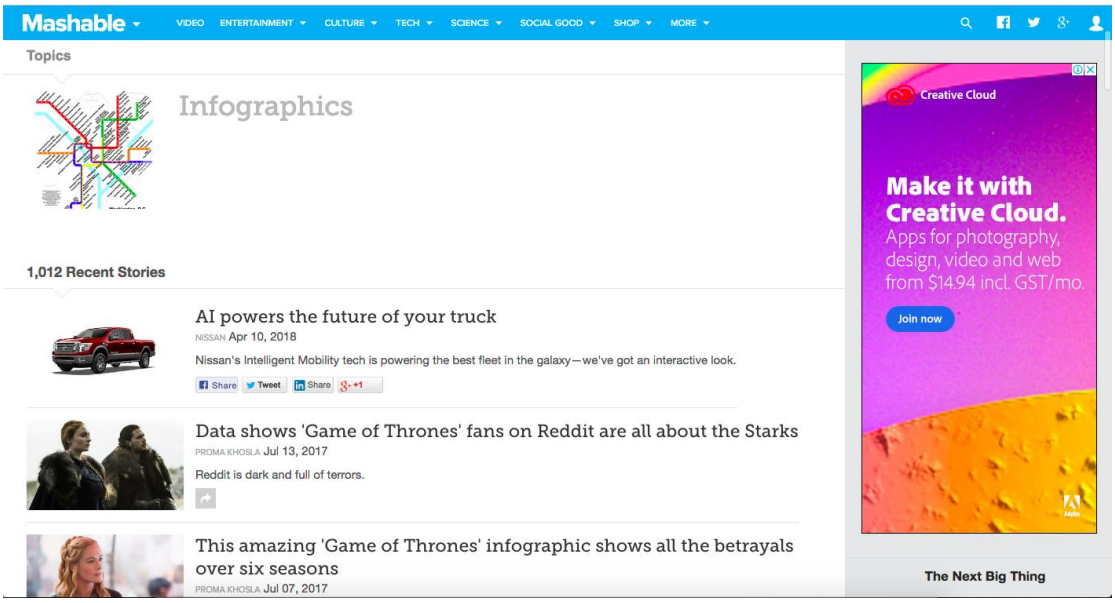



**Fig. 12: Screenshot of Mashable.com search results**




### 6.3.2 Overall quality of content

I selected and critiqued two sample infographics from each site to get a feel for the quality of content offered, using Stones and Gent's criteria for public health infographic creation (2017b) as a critique framework (see Appendices 3a–3d for the full critiques). In terms of selection, I used the first result returned from a keyword search *health + "New Zealand"* and then chose what I discerned to be the next most relevant result. There was a mix of content quality across all four platforms (from Low to High), but a few themes emerged overall that proved interesting. All but one of the infographics used a limited colour scheme, which helps to focus attention and limit distraction (Stones & Gent, 2017b). They also were all aligned on a grid pattern, used a clear structure, and did a good job of highlighting the heading. The highest quality infographics made excellent use of charts and images to highlight and expand the meaning of the text. They also had a clear message and good referencing. The lowest quality infographics had poor use/choice of charts, images, colour, and fonts, as well as an ambivalent or unclear message and little or no referencing.

A word of caution to users interested in exploring these websites with a hope of finding relevant infographics: keep in mind that many designers/users have contributed content and that each infographic is unique. Infographics should therefore be evaluated on a case-by-case basis before use in order to establish the quality/reliability of the information contained therein. The quality rating assigned to each website's content at the beginning of this section is merely a rough guideline

based on a snapshot of data from each; users should ascertain an infographic's quality of content for themselves before using or sharing it with a wider audience.

### 6.3.3 Content relevance for NZ health workers

Visual.ly was the only one of the four websites reviewed that contained content that would be of any relevance to NZ health workers. While the Health section of Visual.ly contained a reasonable depth of content, the infographics available there would only be useful to workers searching for non-NZ-specific content such as the health benefits of quitting smoking[12], the complications of finding a cure for cancer[13], or childhood cavity prevention[14]. Health infographics were in such limited quantities on the other three websites that NZ health workers are not likely to find much of value there.

### 6.3.4 Recommendations

NZ health workers can search the Community Gallery on Visual.ly for health infographics on broad topics and will likely find some useful resources there. For more NZ-specific content, infographics can be found at the following websites:

- NZ Stats' Infographics page (http://archive.stats.govt.nz/browse_for_stats/snapshots-of-nz/infographics.aspx)
- Community & Public Health/Te Mana Ora (https://www.cph.co.nz)
- The Nutrition and Activity Hub (https://www.nutritionandactivity.govt.nz/)

On each of these websites, a bit of browsing and hunting is required to locate the infographics, and they are spread out over multiple pages (i.e., not particularly easy to locate quickly). To reduce effort for NZ health workers in the short term, I have curated a Pinterest page with all the NZ-specific health infographics I found throughout the course of this project (currently 200+; this includes all those I could find on the websites listed above), which I will keep updating as I find new resources.

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[12] https://visual.ly/community/infographic/health/how-quitting-smoking-changes-your-body
[13] https://visual.ly/community/Infographics/health/looking-cure-cancer
[14] https://visual.ly/community/infographic/health/preventing-childhood-cavities

This website is available at: https://www.pinterest.nz/jbbolstad/nz-health-infographics/.

# 7. Metadata Schema Creation

## 7.1 Methodology

This section will provide high-quality examples of NZ health infographics and offer a corresponding metadata schema. Providing a sample set of NZ-specific health infographics will help to 1) demonstrate what relevant content looks like and 2) determine what a comprehensive metadata schema should contain. This section relates to RQ 3, and has been guided by Glushko's view that "the more effort put into organizing information, the more effectively it can be retrieved" (2013, loc.415).

### 7.1.1 Sample

Five sample NZ health infographics on a variety of topics and with varied designs were chosen to demonstrate the variability of the target content for a future repository. These were sourced from NZ public health or governmental websites.

Next, five existing websites containing health infographics were examined to determine what metadata typically accompany this kind of media. These were used to create a very basic starting point for this schema, which then expands to suit the unique qualities of NZ health infographics and the information needs of NZ health workers.

### 7.1.2 Ethical considerations

Selected sample infographics and metadata schemas were available to the public and therefore no ethical considerations were necessary.

### 7.1.3 Data analysis

The sample infographics were examined and compared to determine key characteristics that must be included in the proposed metadata schema. Existing websites with health infographics were used as examples of current practice. A combination of the following metadata standards were then used to create a comprehensive new metadata schema to enable efficient future infographic storage and retrieval:

- Dublin Core[15]
- ORE[16]

Due to the varied and unique nature of NZ health infographics, some additional unique metadata criteria were required in addition to the abovementioned standards.

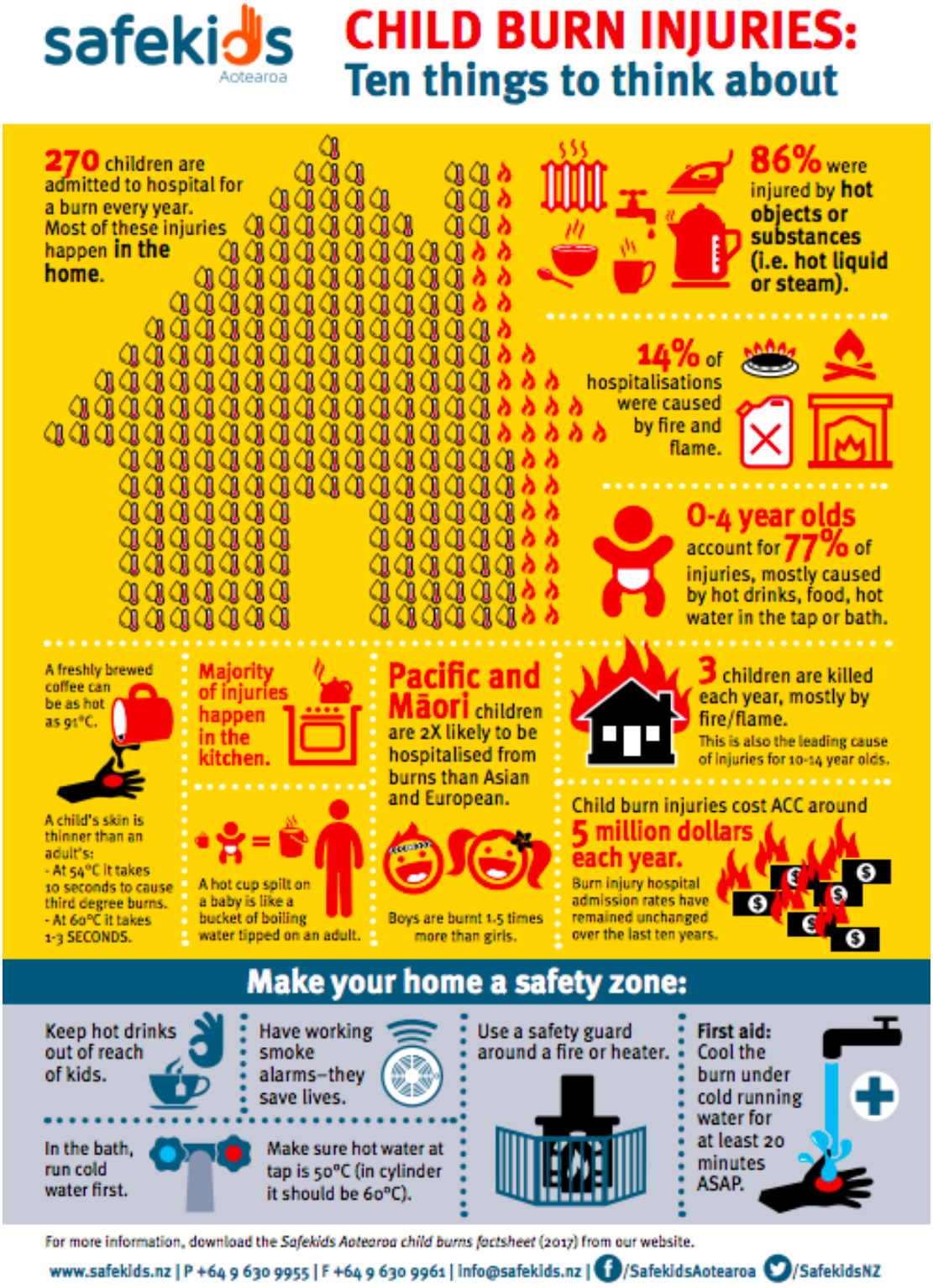
## 7.2 Sample NZ Health Infographics

The following infographics (Figs 13–17) represent a cross-section of quality NZ health infographics that are currently available online, but are buried within NZ public health or governmental websites that are difficult to search and navigate. These are the types of infographics that would be stored in a future repository. They vary in design style, layout, language, and subject.

[15] http://dublincore.org/documents/dces/

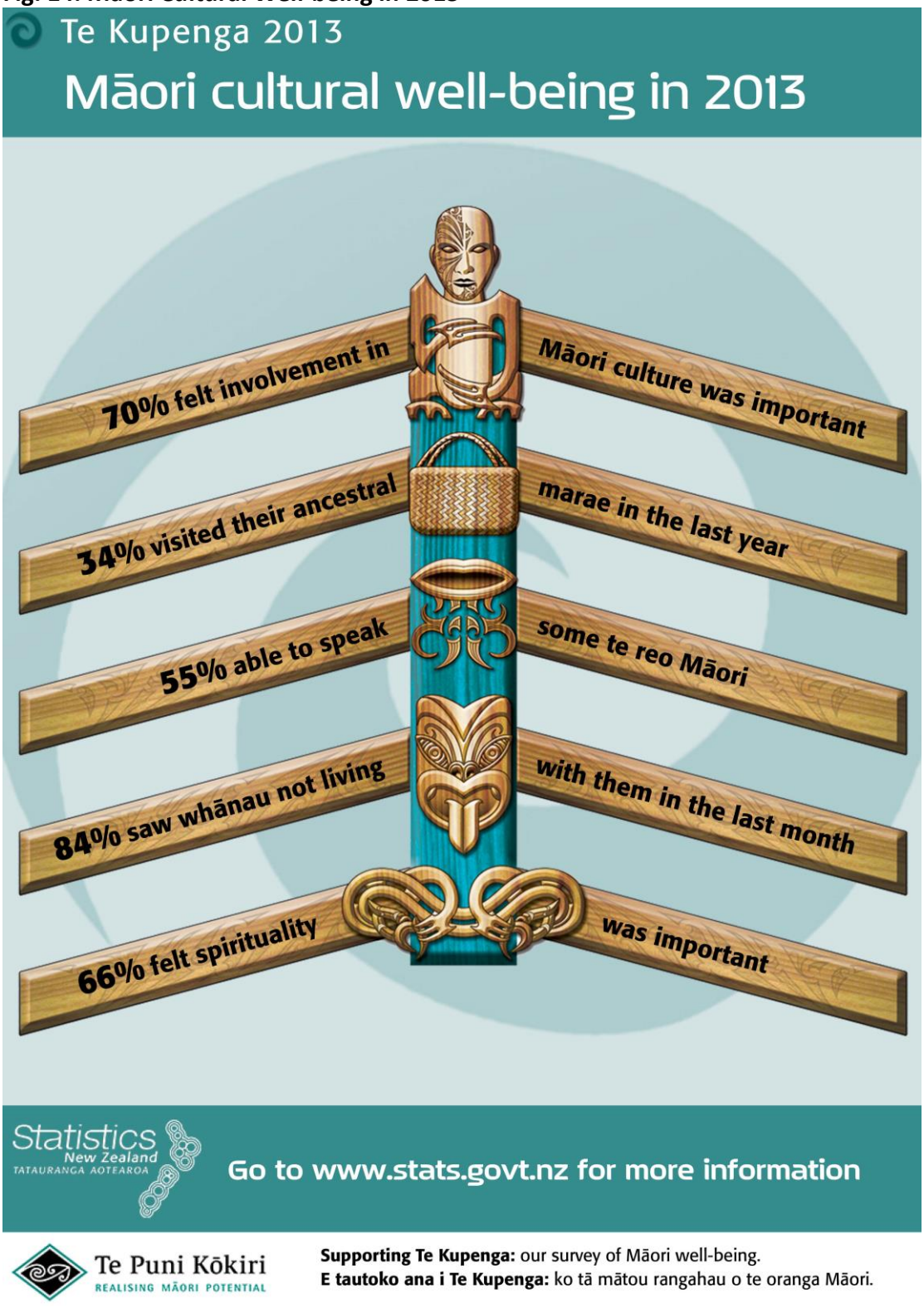
[16] http://www.openarchives.org/ore/1.0/primer

**Fig. 13: Child Burn Injuries in Aotearoa**[17]




[17] http://www.safekids.nz/Resources/ProdID/172/CatID/24

**Fig. 14: Māori Cultural Well-being in 2013**[18]




[18] http://archive.stats.govt.nz/browse_for_stats/people_and_communities/maori/te-kupenga/cultural-wellbeing-poster.aspx

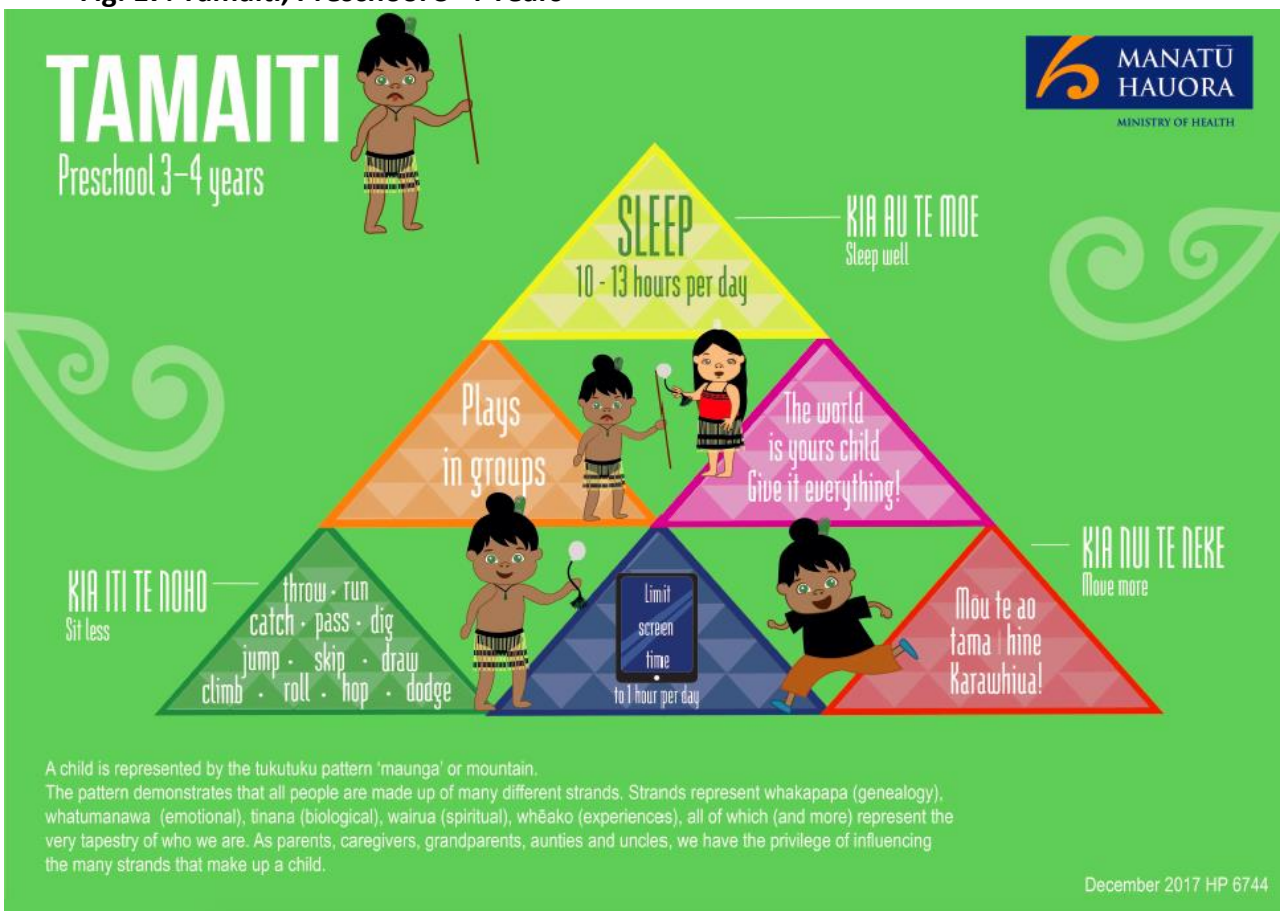
**Fig. 15: Got Time To Move?**[19]


[19] https://www.nutritionandactivity.govt.nz/activity/got-time-move-easy-ways-be-more-active

**Fig. 16: How Much Sugar Do You Drink? (Te Reo version)**[20]


[20] https://www.nutritionandactivity.govt.nz/nutrition/te-reo-m%C4%81ori-sugary-drink-infographics

**Fig. 17: Tamaiti, Preschool 3–4 Years**[21]




## 7.3 Related Metadata Schemas

The following are five examples of metadata schemas for health infographics from a variety of infographic websites. They all use Title, Author, Date, and Category. Beyond this there is some variation among websites, but these schemas are not particularly comprehensive or detailed and therefore do not provide maximum discoverability to searchers. The NZ health infographics above require a fuller set of descriptive metadata to account for the variances in design, language, and subject.

[21] https://www.cph.co.nz/wp-content/uploads/chh0079.pdf

**Fig. 18: Existing Metadata Schemas for Health Infographics**

| https://visual.ly | www.infographicdatabase.com | www.allinfographics.org | www.dailyinfographic.com | https://infographicjournal.com |
|---|---|---|---|---|
| Title | Title | Title | Title | Title |
| Shared by | Author | Author | Author | Author |
| Date | Date | Date | Date | Date |
| Category | Category | Category | Category | Category |
| Blurb | Blurb | Blurb | Blurb | Blurb |
| Source [link] | Source [link] | Source [link] | Source [link] | |
| Comments | Comments | Comments | | |
| Tags | | Tags | | |
| Views | | | Views | |
| Faves | | | | |
| Shares | | | | |
| Publisher | | | | |
| Designer | | | | |
| | | | Related infographics | |

## 7.4 Proposed Metadata Schema for NZ Health Infographics

Below is the initial list of proposed metadata elements to accompany infographics that will be entered into a future repository. Each proposed metadata item follows this format:

- **Element:** (*metadata type*[22]) Brief description. (criteria details)

This list is by no means a final, unchangeable version; rather, it is intended as a foundation that can be added to and updated in the future as best practices in this area evolve and new research is conducted on the information-seeking behaviour and needs of NZ public health workers.

- **Title:** (*descriptive*) What is the title of this infographic?
- **Creator:** (*descriptive*) Who is the original creator of this infographic? (individual; organisation)
- **Contributor:** (*descriptive*) Who contributed this infographic to the repository? (individual/username)

[22] (Gilliland, 2008; Riley, n.d.)

- **Date of design:** (*descriptive*) When was this infographic initially published? (day/month/year)
- **Date of contribution:** (*technical*) When was this infographic added to the repository? (day/month/year)
- **Source:** (*descriptive; preservation*) Where is the original source of this infographic? (website, organisation, journal article, etc.)
- **Subject:** (*descriptive*) What subject(s) does this infographic address? (multiple selection from a predetermined list of subjects – e.g., nutrition; mental health; kids' health; dental health; epidemiology)
- **Keywords:** (*descriptive*) What keywords describe the content within the infographic? (free text entry by user; potential for display of previous keywords used by others to facilitate matching language)
- **Description:** (*descriptive*) What is this infographic about? (<100 words)
- **Available formats:** (*technical*) What other formats is this infographic available in? (digital file formats – e.g., .jpg, .tif, PDF; print versions – e.g., A4 printout; A3 poster; card)
- **Alternative versions:** (*structural*) Are there other versions of this infographic available? (e.g., versions in other languages; previous versions)
- **Languages:** (*descriptive*) What language(s) are included in the infographic? (multiple selections possible)
- **Māori/Pasifika cultural/design elements:** (*descriptive*) Does the infographic contain elements of Māori or Pasifika culture or design? (yes/no)
- **Region:** (*descriptive*) What region(s) of New Zealand does this infographic cover? (select all that apply from a predetermined list, including "All NZ")
- **Age level:** (*descriptive*) What ages is the content aimed at? (select from a predetermined list)
- **Referenced:** (*descriptive*) Does the infographic contain referenced data? (yes/no)
- **Rights:** (*use*) What are the legal rights around accessing/using this infographic? (open source/restricted use)
- **Downloads/shares:** (*use*) How many times has this infographic been downloaded or shared? (repository should log this automatically)

- **Unique identifier:** (*administrative*) A unique identification number given to each infographic as it is added to the repository
- **Updated:** (*preservation*) When was this page most recently updated? (day/month/year)

## 7.5 Discussion

The main goal of the above metadata schema is to enhance discoverability. This schema could be combined with a faceted search system[23], as proposed by Li (2016), to create a powerful and flexible tool for NZ health workers to use. The metadata items could be combined in many ways to enable different types of users to make the best use of the repository. Example 1: a nutritionist might be looking for a free infographic on healthy drink choices that is available in English and Te Reo. They might use a faceted search to select the following combination of metadata items to find relevant results: Subject – nutrition, Keywords – drinks, Languages – English, Te Reo, Referenced – yes, Rights – Creative Commons. Example 2: A researcher might use the repository slightly differently; for example, they might be looking to compare how different regions of NZ approached vaccination awareness in 2018. The following metadata combination could be used: Date of design – 2018, Subject – vaccines, Available formats – select all, Region – multiple selections. The Region facet could be toggled to select various regions, thereby allowing the researcher to compare and contrast results from different regions. Example 3: a graphic designer with Auckland DHB might be commissioned to design an infographic on Pasifika children's dental health. They might use the repository as inspiration and might therefore just use the Māori/Pasifika design elements facet and browse through all results. Those who contribute their infographics would also have the benefit of seeing how much use their content is gaining through the metadata item Downloads/shares. The schema above would allow users to customise their searches

[23] For a good example of a faceted search, see the facets down the left-hand side of this Auckland Libraries search page: https://discover.elgar.govt.nz/iii/encore/search/C__Sinfographics__Orightresult__U?lang=eng&suite=def

in many different ways, thereby ensuring the repository's use by a wide variety of users.

Creating a repository has potential to improve retrievability and extend the use and lifespan of NZ health infographics. Featherstone (2014) addresses the ephemeral nature of infographics and highlights issues with preserving this challenging media, stating that, "Efforts to categorize and describe information visualizations could benefit from the expertise of information scientists and librarians" (Featherstone, 2014, p.149). Heer, Bostock, and Ogievetsky (2010) concur that graphical representations of data (such as infographics) present a unique set of organisational challenges. Revere, Bugni, and Fuller (2007) highlight the importance of specifying a metadata schema prior to repository creation in order to achieve efficient results recall and display. Creating a tailored metadata schema for NZ health infographics now, prior to repository creation, will provide an opportunity to apply an organisational scheme from the very beginning, thereby reducing the information-seeking burden on NZ health workers in the future.

## 8. Synthesis & Future Considerations

The aims of this research were threefold:

1) to discover NZ health workers' current usage habits and views regarding infographics, and attitudes toward a future repository (RQ1);
2) to determine the usefulness of current online infographic sources (RQ2);
3) to propose a new metadata schema for a potential NZ health infographic repository (RQ3).

The findings from Section 5 (relating to RQ1) show that although NZ health workers use infographics because they are engaging, convenient, informative, and good at disseminating and simplifying information, infographics are also a very challenging medium to access. Popular infographic websites present a number of challenges to users, including cluttered displays, complex or unintuitive navigational layouts, and a severe lack of relevant or trustworthy content (RQ2). Survey respondents showed a clear interest in learning more about infographic creation, yet had received few or no opportunities to do so. This presents an opportunity for universities with Schools of Public Health, public health organisations, and professional bodies to step in and rectify this problem. Universities could consider adding course content on infographic creation (see Falk, 2016; Shanks et al., 2017), dissemination, and storage, while public health organisations and professional bodies could offer professional development opportunities to staff and members. Should organisations adopt the recommendation to provide training opportunities to staff who are interested and/or involved in creating infographics, they will also need to take into consideration the dissemination and storage of the created infographic content. Otherwise, they will risk putting time and money into a product that will languish in the depths of personal computers and hard drives instead of providing long-term access via a searchable online repository. Long-term storage and accessibility are key points to consider when creating infographic resources, although this has not been of much interest in infographic-related literature up to this point. This gap in knowledge and access is a clear problem that could be addressed by both public health organisations and information professionals, who can offer guidance on best practices for future storage and access to quality NZ health infographics that are produced.

From survey responses, NZ health workers' interest in using and contributing to a future repository for NZ health infographics was clear. As explored in Section 6 (relating to RQ2), current online infographic databases are insufficient in providing access to quality, relevant infographic content that NZ health workers require. A repository will help achieve accessibility for a much broader audience as well as grant valuable health content a much longer lifespan. Infographics can make health data accessible and simpler to understand, but this is useless if no one can find them in the first place. The metadata schema offered above in Section 7 (relating to RQ3) contains a combination of descriptive, technical, structural, use, administrative, and preservation metadata and will assist with discovery and ease of access. A purpose-built repository with a comprehensive metadata schema and faceted search capabilities would go a long way toward assisting NZ health workers in their quest for easily accessible, reliable, relevant infographics.

This project lays a foundation that future researchers can hopefully build on. An updated survey could be distributed nationwide, with the intent of gaining a more complete picture of infographic use, storage, and dissemination throughout public health networks in NZ. Should plans for a repository move ahead, the information-seeking behaviour of NZ health workers will need to be studied and taken into account to ensure that the repository design will be best-suited to a variety of users' needs and wants. There are many considerations that will need to be taken into account with the design – for example, will the repository be free to access? Who will host it? Will it be a standalone resource or incorporated as part of an existing resource? Who will manage content and ensure that copyright and content standards are maintained to a suitably high quality? Will the public have access? Should work in this direction take place, Design Science Research may be a valuable framework for future researchers to consider utilising (Vaishnavi, Kuechler, Petter, & De Loez, 2017), as it offers guidance in information artefact creation from proposal (for which this project lays the groundwork) through to creation, performance measurement, and results delivery. It will be crucial to ensure that 1) the repository is designed in line with NZ health workers' real information needs and habits, 2) the infographic content is accompanied by a comprehensive metadata schema, and 3) the hosting and access conditions are favourable for a variety of users. Doing so will

help set a strong example for the rest of the information profession on how to enable accessibility to the challenging-yet-valuable medium of infographics.

## 9. Further Resources

Over the course of this project it became clear that infographic resources currently available to NZ health workers are limited and difficult to navigate. In the interest of providing a short-term solution for those who would like immediate resources, the following websites may be of some value. During the course of this research, I curated a Pinterest page containing all the NZ health-related infographics I came across. This is available at: https://www.pinterest.nz/jbbolstad/nz-health-infographics/

In addition, the following is a list of LibGuides on infographic creation, addressing both design theory and tools for infographic creation:

- https://guides.lib.unc.edu/infographics
- https://guides.himmelfarb.gwu.edu/c.php?g=73089&p=540353
- https://libguides.library.drexel.edu/infographics

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# 12. Appendices

## Appendix 1: Survey

## Infographic Use Amongst Public Health Workers

Start of Block: Information Sheet & Respondent Agreement


***INFORMATION FOR PARTICIPANTS***
*You are invited to take part in this research. Please read this information before deciding whether or not to take part. If you decide to participate, thank you. If you decide not to participate, thank you for considering this request.*

***Who am I?***
*My name is Berit Anderson and I am a Masters student in the School of Information Management at Victoria University of Wellington. This research project is work towards my Masters final report.*

***What is the aim of the project?***
*This project aims to learn how and why Auckland public health workers currently use infographics in their work. It will explore the reasons behind the lack of use by those who are interested in using or creating infographics but don't currently do so. For those who do currently use infographics, it also aims to discover how infographics are disseminated and stored for future use. Gathering this information will help us determine whether or not a repository for NZ public health infographics would be a useful resource for people working in the public health sector. Should the data indicate that a repository would be a useful resource, work towards building the repository will begin.*

*This research has been approved by the Victoria University of Wellington Human Ethics Committee (#0000027224).*

***How can you help?***
*You have been invited to participate because you work in the public health sector in Auckland. If you agree to take part, you will complete a survey. The survey will ask you questions about how and why you use (or don't use) infographics in your work. The survey will take you about 5 minutes to complete. You may withdraw from this survey at any time or leave any questions unanswered that you do not wish to complete.*

***What will happen to the information you give?***
*This research is anonymous. This means that nobody, including the researchers, will be aware of your identity. By answering it, you are giving consent for us to use your*

*responses in this research. Your answers will remain completely anonymous and unidentifiable. Once you submit the survey, it will be impossible to retract your answer. Please do not include any personal identifiable information in your responses.*

*Personal details will be collected at the end only for those who wish to request a copy of the final report. All personal details will be received separately from the survey data. This ensures that your answers to the survey questions are anonymous.*

**What will the project produce?**
The information from this research will be used in my final Masters report and possibly a report to academic publications. A copy of the final report will be sent to those who request it by 31 July 2019. A copy of the final report will also be stored in Victoria University of Wellington's research repository.

**If you have any questions or problems, whom can you contact?** If you have any questions, either now or in the future, please feel free to contact either:
**Student:** Name: Berit Anderson andersberi@myvuw.ac.nz
**Supervisor:** Name: Brenda Chawner Role: Senior Lecturer School: School of Information Management Phone: (04) 463 5780 *brenda.chawner*@vuw.ac.nz

**Human Ethics Committee information**
If you have any concerns about the ethical conduct of the research you may contact the Victoria University HEC Convenor: Dr Judith Loveridge. Email hec@vuw.ac.nz or telephone +64-4-463 6028.

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Please select "I agree to participate" to continue on to the survey. If you choose not to participate, please close the survey tab. Thank you for your time.

○ I agree to participate. (1)

End of Block: Information Sheet & Respondent Agreement

Start of Block: Defining Infographics

For the purposes of clarity and accuracy in completing this survey, three example infographics will be shown here to give you an idea of the type of infographics we are referring to in this survey. These infographics use a combination of text, pictures, and graphical design elements to communicate information quickly and easily in an interesting and engaging manner.

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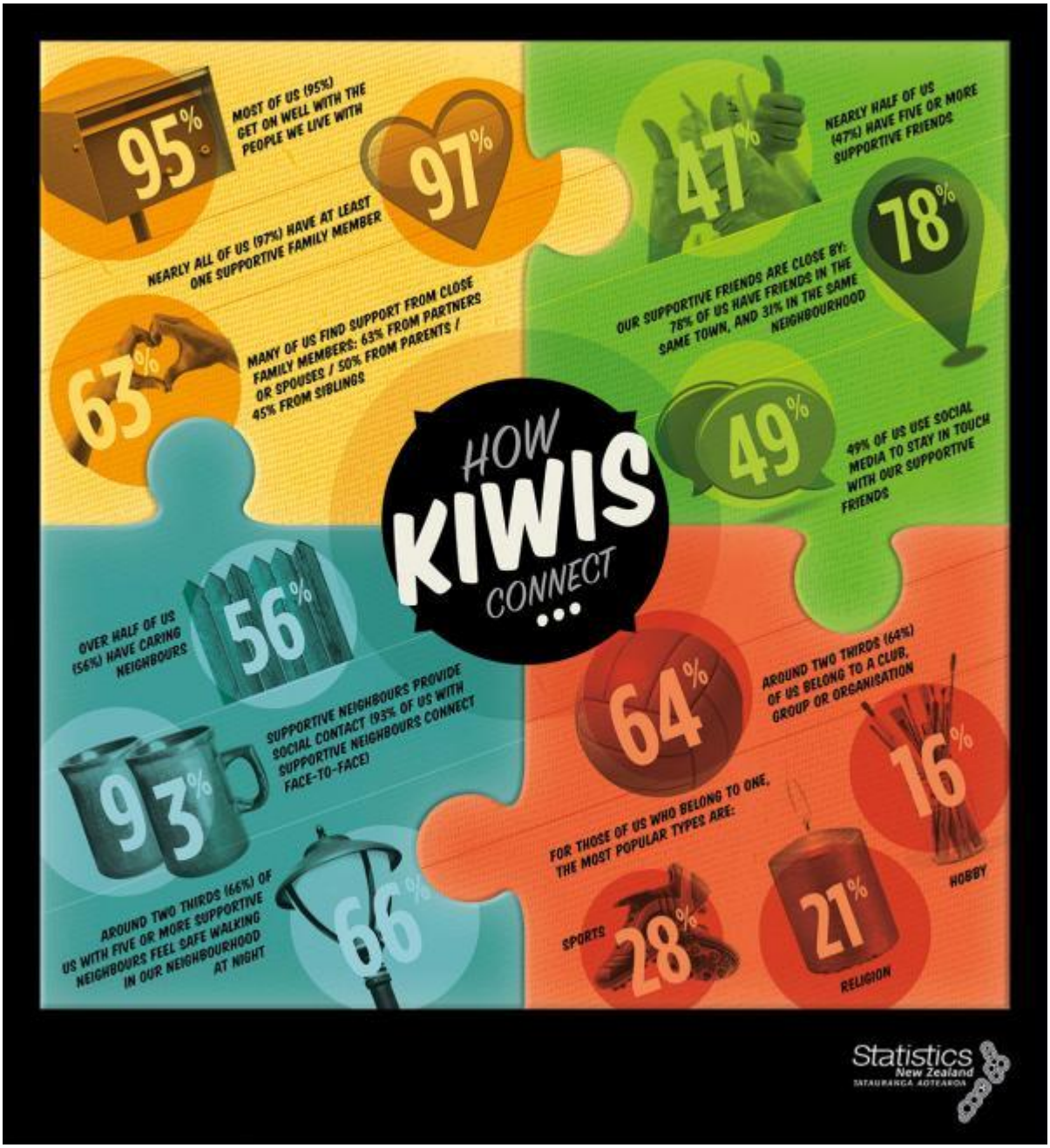
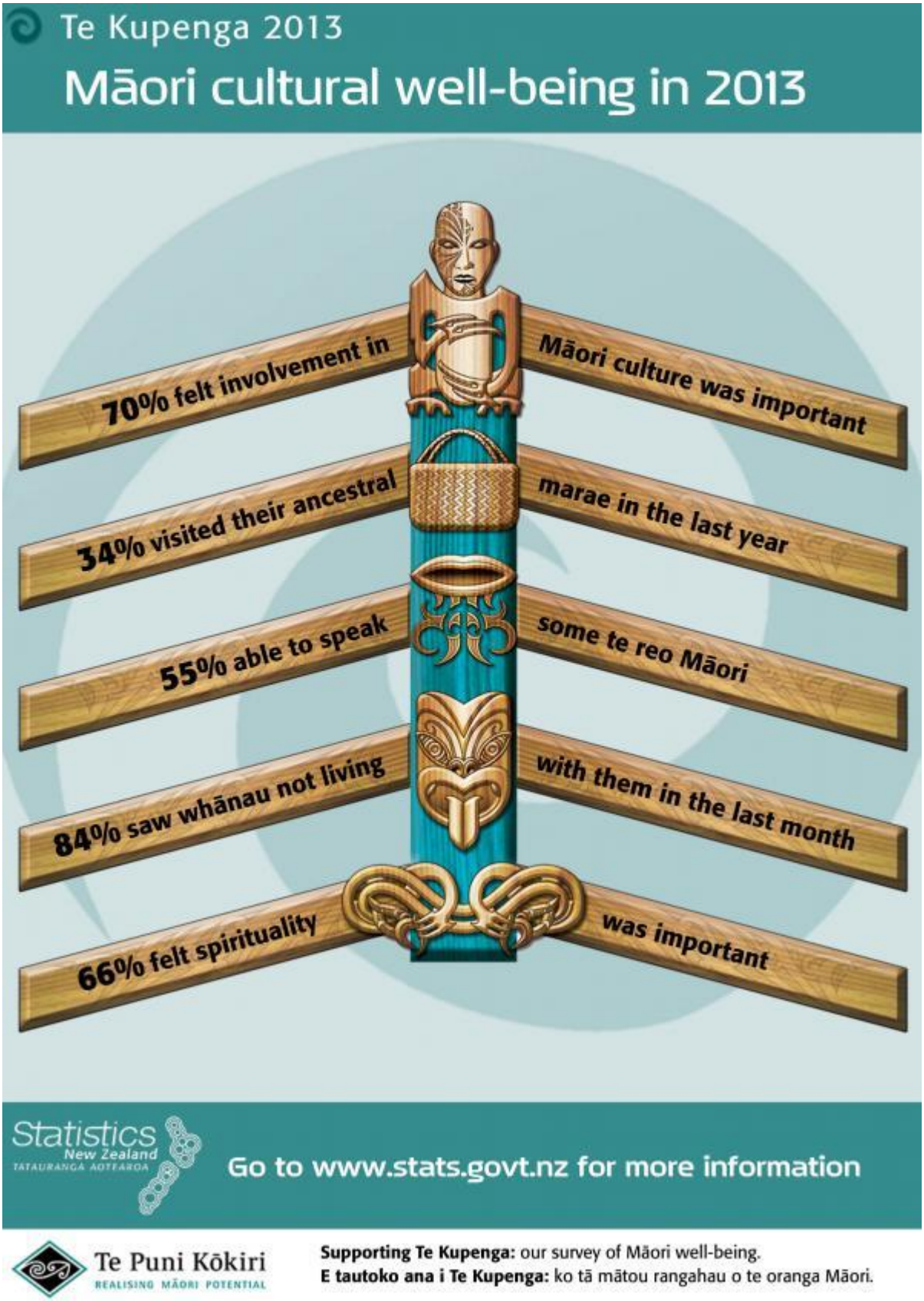
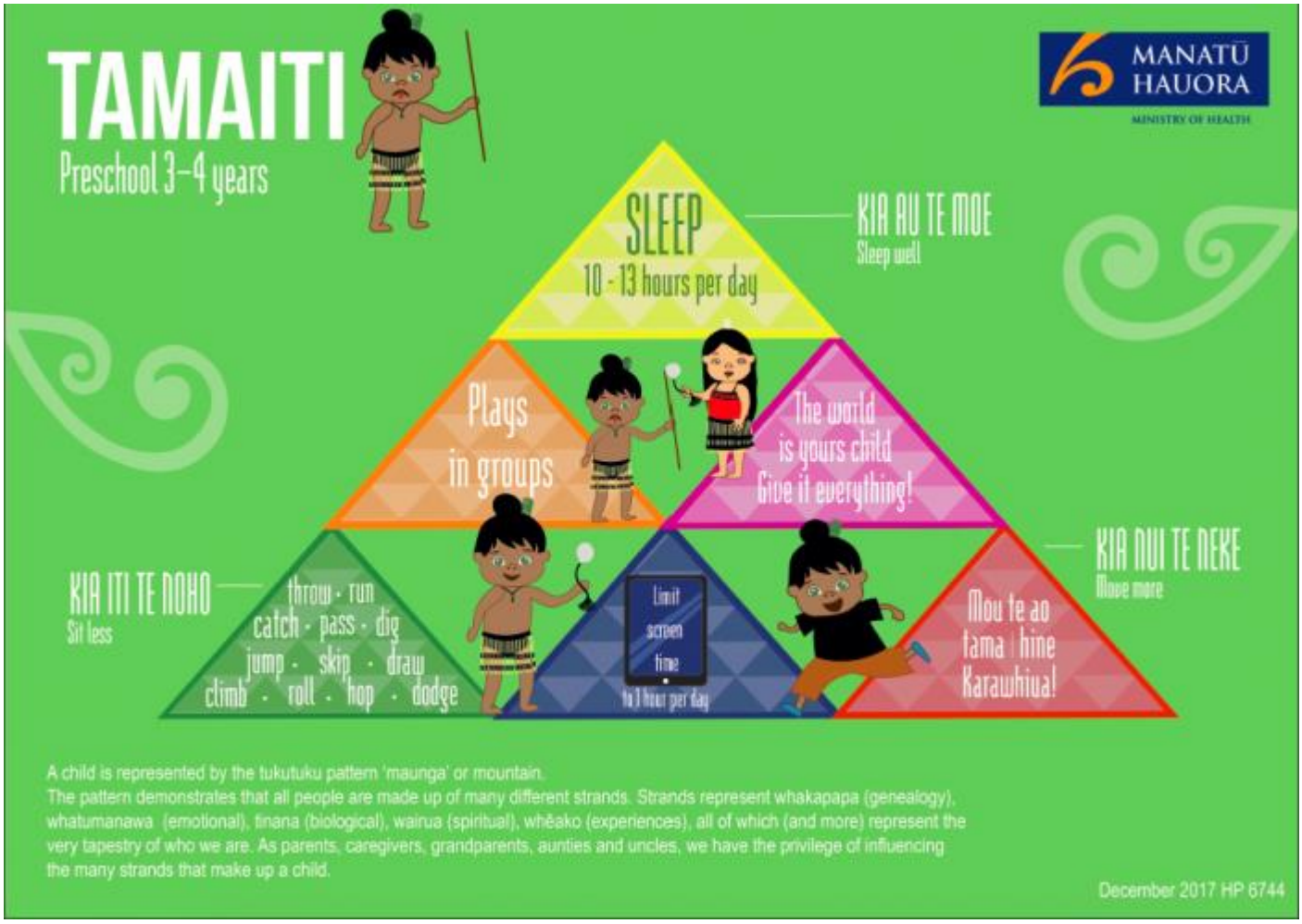

HOW KIWIS CONNECT
95%
MOST OF US (95%) GET ON WELL WITH THE PEOPLE WE LIVE WITH
97%
NEARLY ALL OF US (97%) HAVE AT LEAST ONE SUPPORTIVE FAMILY MEMBER
63%
MANY OF US FIND SUPPORT FROM CLOSE FAMILY MEMBERS: 63% FROM PARTNERS OR SPOUSES / 50% FROM PARENTS / 45% FROM SIBLINGS
47%
NEARLY HALF OF US (47%) HAVE FIVE OR MORE SUPPORTIVE FRIENDS
78%
OUR SUPPORTIVE FRIENDS ARE CLOSE BY: 78% OF US HAVE FRIENDS IN THE SAME TOWN, AND 31% IN THE SAME NEIGHBOURHOOD
49%
49% OF US USE SOCIAL MEDIA TO STAY IN TOUCH WITH OUR SUPPORTIVE FRIENDS
56%
OVER HALF OF US (56%) HAVE CARING NEIGHBOURS
93%
SUPPORTIVE NEIGHBOURS PROVIDE SOCIAL CONTACT (93% OF US WITH SUPPORTIVE NEIGHBOURS CONNECT FACE-TO-FACE)
66%
AROUND TWO THIRDS (66%) OF US WITH FIVE OR MORE SUPPORTIVE NEIGHBOURS FEEL SAFE WALKING IN OUR NEIGHBOURHOOD AT NIGHT
64%
AROUND TWO THIRDS (64%) OF US BELONG TO A CLUB, GROUP OR ORGANISATION
FOR THOSE OF US WHO BELONG TO ONE, THE MOST POPULAR TYPES ARE:
SPORTS 28%
21%
RELIGION
16%
HOBBY
Statistics New Zealand
TATAURANGA AOTEAROA


Te Kupenga 2013
Māori cultural well-being in 2013
70% felt involvement in
Māori culture was important
34% visited their ancestral
marae in the last year
55% able to speak
some te reo Māori
84% saw whānau not living
with them in the last month
66% felt spirituality
was important
Statistics New Zealand
TATAURANGA AOTEAROA
Go to www.stats.govt.nz for more information
Te Puni Kōkiri
REALISING MĀORI POTENTIAL
Supporting Te Kupenga: our survey of Māori well-being.
E tautoko ana i Te Kupenga: ko tā mātou rangahau o te oranga Māori.




End of Block: Defining Infographics

Start of Block: Infographic Use, Searching, & Storage

Do you use infographics in your work or study, either to inform yourself or others?

- ○ Yes
- ○ No

If not, why not? (Please select all that apply.)

- [ ] I don't know where to search for relevant infographics.
- [ ] I have searched but cannot find relevant infographics.
- [ ] I do not think infographics contain reliable information.
- [ ] I think infographics are too complicated for me to understand.
- [ ] I think infographics are too complicated for my patients to understand.
- [ ] I have been discouraged from using infographics by others.
- [ ] I don't have enough funding or support to create my own infographics.
- [ ] Other reasons. (Please specify.)

_____

---

If so, how often?

- ○ A few times per year
- ○ A few times per month
- ○ A few times per week
- ○ Every day
- ○ Other (please specify)

_____

---

Where do you get your infographics from? (Please select all that apply.)

- ☐ An infographic-specific website or database
- ☐ A public health-specific website or database
- ☐ Social media (FaceBook, Twitter, Instagram, etc.)
- ☐ Professional journals or literature
- ☐ Colleagues
- ☐ My employer supplies them to me
- ☐ I create or commission my own
- ☐ Other (please specify)

_____

Why do you use infographics?

_____

End of Block: Infographic Use, Searching, & Storage

Start of Block: Infographic Creation

Have you ever created or commissioned an infographic?

- ○ Yes
- ○ No

Why not? (Please select all that apply.)

- [ ] I don't have enough time.
- [ ] I don't have enough funding.
- [ ] I don't have enough employer support.
- [ ] I don't have the knowledge or skills to create or commission an infographic.
- [ ] I am not interested in using infographics in my work.
- [ ] Other reasons. (Please specify.)

_____

Did you search for existing infographics before you created/commissioned your own?

- ○ Yes
- ○ No

Why not?

_____

Where did you search?

_____

How do you distribute infographics you have created or commissioned? (Please select all that apply.)

- [ ] Professional journal or publication
- [ ] Social media
- [ ] Internal workplace platform or network
- [ ] Word of mouth
- [ ] Printed copies
- [ ] Other (please specify)

_____

---

How do you store infographics you have created or commissioned? (Please select all that apply.)

- [ ] Personal device (computer, USB, hard drive, etc.)
- [ ] Workplace device or network (computer, internal server, intranet, etc.)
- [ ] Online database or website
- [ ] Other (please specify)

_____

---

In the future, would you be interested in contributing infographics you had created or commissioned to a repository or database for others to use?

- ○ Definitely yes
- ○ Probably yes
- ○ Might or might not
- ○ Probably not
- ○ Definitely not

If not, why not?

_____

Do you see yourself creating or commissioning an infographic in the future?

- ○ Definitely yes
- ○ Probably yes
- ○ Might or might not
- ○ Probably not
- ○ Definitely not

Why not? (Please select all that apply.)

- ☐ I don't have enough time.
- ☐ I don't have enough funding.
- ☐ I don't have enough employer support.
- ☐ I don't have the knowledge or skills to create or commission an infographic.
- ☐ I'm not interested in using infographics in my work.
- ☐ Other reasons. (Please specify.)

_____

End of Block: Infographic Creation

Start of Block: Infographic Training/Education

Have you ever received training about infographic use or creation in your career or education?

- ○ Yes
- ○ No

Would you be interested in receiving training about infographic use or creation in the future?

- ○ Yes
- ○ No

End of Block: Infographic Training/Education

Start of Block: Future Interest in Repository

In the future, would you be interested in using an online repository or database to search for NZ-specific health infographics to use in your work?

- ○ Definitely yes
- ○ Probably yes
- ○ Might or might not
- ○ Probably not
- ○ Definitely not

How would using or contributing content to an NZ-specific health infographic repository or database benefit you and/or your patients?

_____

If not, why not?

_____

End of Block: Future Interest in Repository

Start of Block: Demographics

Do you live and/or work in the Auckland area?

- ○ Yes
- ○ No

What is your job?

- ○ Nurse
- ○ Doctor
- ○ Pharmacist
- ○ Dentist/Orthodontist
- ○ Pharmacist
- ○ Midwife
- ○ Surgeon
- ○ Psychologist/Psychiatrist
- ○ Physiotherapist
- ○ Chiropractor/Osteopath
- ○ Other (please specify)

_____

What aspects of public health does your job involve? (Please select all that apply.)

- [ ] Education
- [ ] Community health
- [ ] Clinical practice
- [ ] Community outreach
- [ ] Policy creation/analysis/review
- [ ] Research
- [ ] Programme management
- [ ] Health promotion
- [ ] Nutrition
- [ ] Mental health
- [ ] Physical activity
- [ ] Healthy lifestyle behaviours
- [ ] Dental health
- [ ] Children's health
- [ ] Infectious diseases
- [ ] Noncommunicable diseases
- [ ] Environmental health
- [ ] Older people's health
- [ ] Epidemiology
- [ ] Pacific health
- [ ] Women's health

- [ ] Pharmacology
- [ ] Maori health
- [ ] Refugee/migrant health
- [ ] Other (please specify)

_____

---

Generally, how comfortable are you when using technology?

- ○ Extremely comfortable
- ○ Moderately comfortable
- ○ Slightly comfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly uncomfortable
- ○ Moderately uncomfortable
- ○ Extremely uncomfortable

---

What is your age?

- ○ Under 18
- ○ 18 - 24
- ○ 25 - 34
- ○ 35 - 44
- ○ 45 - 54
- ○ 55 - 64
- ○ 65 - 74
- ○ 75 - 84
- ○ 85 or older

---

Any other comments?

_____

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You will now be directed to another page where you will have the option to enter in your name and email address should you wish to receive a report on the results of this research.

End of Block: Demographics

# Contact Info for Data Reporting

Start of Block: Default Question Block

If you would like to receive a report of the research results, please enter your name and email address below. This information will be kept confidential and completely

separate from your survey responses. The report will be sent out to you by the July 31, 2019. Thank you again for your time.

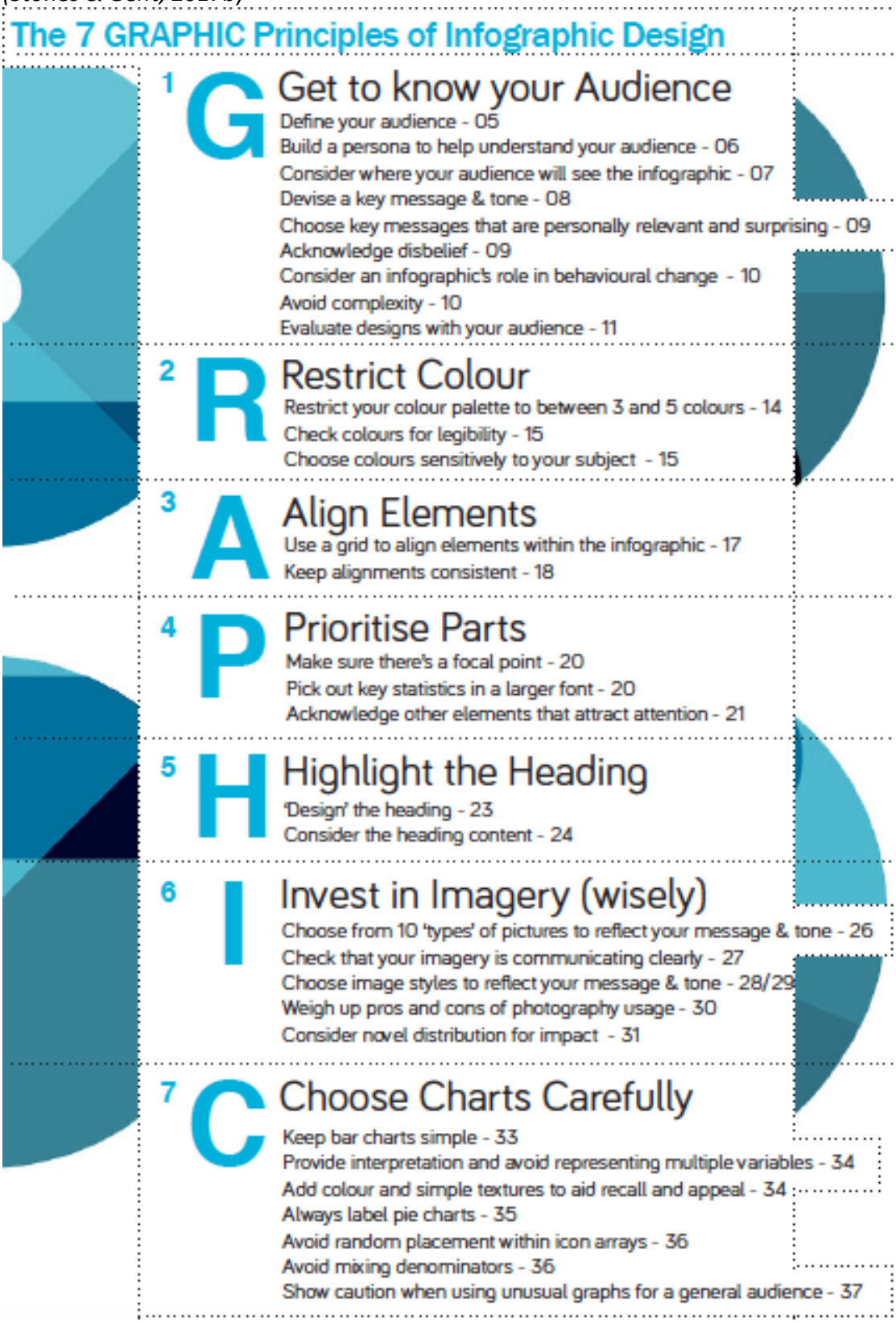
○ Yes, I'd like to receive a report of the results of this research. My name/email address: _____

○ No, I don't want to receive a report of the results of this research.

End of Block: Default Question Block

## Appendix 2: The 7 G.R.A.P.H.I.C. Principles of Infographic Design

*(Stones & Gent, 2017b)*



## Appendix 3a: Website Critique – Visual.ly

| | |
|---|---|
| **URL** | Visual.ly |
| **RANK**<br>(infographicdatabase.com (Likes/Tweets) as of 18 Feb 2019) | Likes: 33,112 (Rank #1)<br>Tweets: 12,133 (Rank #2) |
| **DATES OF REVIEW** | 08.04.2019; 12.04.2019 |
| **INITIAL THOUGHTS/IMPRESSIONS** | Landing page is all advertising/marketing material for creative services offered by website. Doesn't look like a database of infographics – if I were coming here looking for health infographics, I would think I had the wrong website and probably leave.<br><br>3 hours in – the website is a little like a maze, in that pages and content continually keeps redirecting you back to "Get a quote" or "Work with us." Hard to navigate with ease, I feel like I keep going in circles. No search function is super annoying.<br><br>At last! I found section where users can browse infographics, buried at the bottom in the footer links – Visual Content Gallery.<br><br>Another Health Infographics section accessible through the sitemap. |
| **SCOPE**<br>- Defined in Intro/About page?<br>- Breadth<br>- Depth<br>- Time period (limitations?) | The "Our Team" page is accessible from a link in the "About Us" section at the footer of the landing page. Visual.ly is owned and operated by a Canadian company called ScribbleLive, whose purpose is to provide "global brands with the insights and solutions they need to better attract, convert, and retain their audiences." The Visual.ly platform is one of a few that the company operates. Its main goal is to connect clients and designers to facilitate content creation by providing services such as "membership opportunities, project workflow, collaboration, and file management" (from the Terms and Conditions page). Users must be 18 years of age (Terms & Conditions).<br><br>Content in the Community Gallery covers 26 categories. Number of results in each category is not stated, so depth unknown; results load on a rolling basis. Content is timestamped with date posted. |
| **CONTENT**<br>- Fact/opinion<br>- Original content; links to other sources | Provides some good information for those interested in visual content creation (e.g. the "Create Infographics" page: https://visual.ly/m/create-infographics/) of all kinds – infographics, motion graphics, data visualisation, charts, etc. To be fair, many of these have a marketing slant (contact us today and we can help you create the best product for you!) but there is still good info here. A few broken links (Infographic Software, Create Visually), and some pages seem incomplete or unfinished (Data visualisation software: https://visual.ly/m/data-visualization-software/). No idea how to get to these pages from the main page; I wasn't able to locate them aside from through the Sitemap. |
| **ACCURACY**<br>- Check against other content<br>- Bias (political/ideological/advertising/ marketing/other) | Huge marketing bias – core purpose of website is to attract customers. |
| **AUTHORITY**<br>- Reputable host/creator (expert in field?)<br>- Referencing<br>- Easy to contact author? | Visual.ly has largely positive reviews from other sites (www.sitejabber.com; www.trustradius.com; aea365.org). It has worked with big-name organisations such as National Geographic, VISA, Twitter, and The Economist.<br><br>On the "Create Infographics" page, it states the importance of using the most up-to-date data and references when creating an infographic. Whether or not this is adhered to by designers is unknown and must be assessed on an individual basis by infographic/creator.<br><br>There is a "Get a Quote" button on every single page on this website, often in multiple locations on the same page. This seems to be the most touted form of contact, though there is a "Contact Us" link included in the footer links that allows you to submit a support request directly to the company as well. |

| | |
|---|---|
| **CURRENCY**<br>- Content updated/static?<br>- Ongoing maintenance/stability<br>- Date stamps | Content is added and updated. Individual media/infographic pages contain date stamps and the user who uploaded/contributed the content. |
| **UNIQUENESS**<br>- Content available in other forms/places? | Content is unique. May be cross-posted by users across other platforms. |
| **QUALITY OF WRITING** | Some typos present in the blurbs that accompany the infographics. Also a typo in the first line of the "Our Team/About Us" page. Not a great look. |
| **PURPOSE/AUDIENCE**<br>- Clearly stated?<br>- Fulfilled by content?<br>- Target audience – expert/student/layperson | To persuade potential customers to sign up/commission work through this website. |
| **WORKABILITY**<br>- Convenient/effective to use?<br>- User-friendly?<br>- Menu design<br>- Help/sitemap? | Four links across top of landing page: Products, Solutions, How It Works, Portfolio. There's an "Infographics" link under "Products" that looks promising. Takes you to another page stating statistics about attention spans and marketing techniques. Some examples of infographic-related projects are displayed halfway down the page. These are clickable. Health infographic is one of them: (https://visual.ly/m/design-portfolio/effects-of-quitting-smoking-cvs/). This page also contains another list of links 2/3 down the page: one of these is "Infographics" again. Takes you to a new page (v_infographics2_landing page). Page contains stats on benefits of infographics, samples of infographics, and links to portfolio of others created on the site.<br><br>No Search bar on landing page. Bottom of landing page has more useful links (Products, Solutions, About Us, Community, Sitemap, Help).<br><br>Clicking the "Portfolio" button takes you to a page where you can filter products by media type (of which infographics is one), industry (health & biotech is an option here), and audience. Applying the Infographic & Health filters produces 9 results on various topics, including quitting smoking, how to keep produce fresh, and allergies. |
| **SEARCHING/BROWSABLITY/ ORGANISATION**<br>- Search feature?<br>- Organise/filter results? (sort by)<br>- Save for later?<br>- Navigation ok?<br>- Browsing logical? | Display of Health Infographics changes each visit because default display is by "Trending."<br>Option to "Favourite" an infographic and therefor view at a later time. Good. (How is data stored…I haven't logged in?)<br><br>Finally! A search bar appears when you access the Visually Community Visual Content Gallery.<br><br>Results are displayed by default in order of relevance. Other display options include Trending, Recent, Viewed, Faved, Commented; Staff Picks; Media Type (All; Infographic, Video, Interactive; Presentation). Results can be refined by category. Results can also be displayed by User (People) as opposed to Project.<br><br>TEST SEARCH #1:<br>Keywords: health + "new zealand"<br>Results: sorted automatically by relevance. First results displayed are relevant to health but have no connection to New Zealand. The second-to-last infographic is the most relevant to the search (Health and Fitness in New Zealand).<br><br>TEST SEARCH #2:<br>keyword: "New Zealand", then results refined by Category:Health<br>Results: top result is same "Health and Fitness in New Zealand" infographic found above. |

| | |
|---|---|
| **COST** | Free to access and view portfolio/community infographics; payment required for creative services (infographic commission). |

| | INFOGRAPHIC #1: https://visual.ly/community/infographic/health/health-myths-debunked | INFOGRAPHIC #2: https://visual.ly/community/infographic/health/health-and-fitness-new-zealand |
|---|---|---|
| **G (Get to know your Audience)** | Target audience:<br>- What do you want the audience to understand? Commonly accepted health sayings are not necessarily based on facts<br>- How do you want the audience to feel? Surprised<br>- What do you want the audience to do? Change behaviour | Target audience:<br>- What do you want the audience to understand? How important health is to New Zealanders<br>- How do you want the audience to feel? Interested? Informed?<br>- What do you want the audience to do? Unknown |
| **R (Restrict Colour)** | Colour palette is restricted to mostly black and white with limited colours used to highlight images and some text. Some callout text is highlighted in blue, which gives the mistaken initial impression of a clickable link (this is not the case). | Colour palette is restricted to 4 main colours, with smaller pops of more diverse colours used in the pictograms. |
| **A (Align Elements)** | Elements are aligned on a grid pattern, with sections clearly defined in black borders. Eyes move naturally through the graphic from top to bottom. | Elements are aligned on a grid pattern and separated with dashed lines. The eye moves easily from top to bottom. |
| **P (Prioritise Parts)** | The structure is clear and easy to follow. Sections are clearly defined by black boxes. Structure is as follows:<br>Heading<br>Myth 1<br>Myth 2<br>Myth 3/Myth 4<br><br>Notes:<br>There is a typo in the red box within Myth 1.<br>No references present to document sources, although some are mentioned within the text itself (e.g. The Food and Nutrition Board of the National Research Council) | The structure is clear and easy to follow. Sections are delineated by pale blue slashed lines. The structure is as follows:<br>Heading<br>How interested are you in health/fitness?<br>Top sports for women/men<br>When exercising and eating well, what is your main goal for end results?<br>Top leisure activities<br>Statistic on percentage of men/women that participate in sport<br>What is your main source of exercise?<br>Disclaimer<br><br>Notes:<br>There is a typo in the last line of text at the bottom of the page. |
| **H (Highlight the Heading)** | Heading is clearly separated from body of infographic. Words are clearly descriptive of content. | The heading is clearly set at the top of the page. The wording accurately sums up the content that follows. The inset question is a little jarring where it is. |
| **I (Invest in Imagery (wisely))** | No photographs are used. Pictograms are used to highlight/supplement the text. These are fairly simple stick figure-type drawings that are easy to interpret. | No photographs are used. Simple pictograms are used to add visual interest, but they do not add extra depth of meaning to the text. Choice of images seems a bit simplistic; the figures do notclosely align with the text (e.g. the man on the lounger is not doing any exercise at all). |
| **C (Choose Charts Carefully)** | This infographic uses a map and picture charts to help get the message across. These replace some text and you must be able to read them in order to comprehend the whole message. This could pose a challenge for some readers. | The statistics given below each question are given in differing orders of size (Q1: most -> least; Q2: least -> most; Q3: most -> least). This is jarring and required multiple eye scans to gain full comprehension of the content. |
| **Overall Rating** | **3/5** | **3/5** |

## Appendix 3b: Website Critique – Mashable.com

| URL | Mashable.com |
|---|---|
| **RANK**<br>(infographicdatabase.com (Likes/Tweets) as of 18 Feb 2019) | Likes: 17,829 (Rank #2)<br>Tweets: 219,607 (Rank #1) |
| **DATES OF REVIEW** | 25.03.2019; 29.03.2019 |
| **INITIAL THOUGHTS/IMPRESSIONS** | Landing page: So busy! More like a news/entertainment site than a database. Full of ads. Where are the infographics? Tried Science page. Also super busy. One infographic-style image (colour-coded map) visible on main science page. Part of article on US Midwest flooding.<br><br>Two hours in. Haven't found any infographics yet.<br><br>Four hours in! Finally stumbled upon the topic "Infographics" by clicking through a link in this article. https://mashable.com/2012/09/26/smartphones-health-care-infographic/#q9Ab6FbDekq3 Contains infographics on many different topics. https://mashable.com/category/infographics/ 1,012 "recent" stories retrieved. Latest is from April 10, 2018. Subsequent results are 2017 and earlier.<br><br>Second visit/review: figured out how to get to infographics. When you type in the search bar, after a few seconds a drop-down box of suggested topics appears to the right and under the search bar. These include: Infographics (1,012 results); Mashable infographics (56 results); Superhero-infographics (6 results); Social Media Infographics series 7 (results); Main Event infographics (1 result) |
| **SCOPE**<br>- Defined in Intro/About page?<br>- Breadth<br>- Depth<br>- Time period (limitations?) | The "About" page states that Mashable is "a global, multi-platform media and entertainment company" that is the "go-to source for tech, digital culture and entertainment content."<br><br>Intended audience: "dedicated and influential" (from About page). Users must be 13 years of age or 16 years of age in parts of the EU (defined in Terms of Use page).<br><br>Breadth: tech, digital culture, entertainment content (from About page)<br><br>Depth: number of articles per section undefined; uses a load-as-you-scroll function for older content (results automatically displayed by 'most recent')<br><br>No set time period given. Copyright date is 2019. |
| **CONTENT**<br>- Fact/opinion<br>- Original content; links to other sources | Mix of ads, opinions, reviews, informative articles. Covers five main topics: entertainment, culture, tech, science, social good. Articles are written for the website by designated writers. Clicking on an author's name takes you to a page with a brief bio and a collection of their published articles, sorted by 'most recent.' Articles often contain external links to other sources. |
| **ACCURACY**<br>- Check against other content<br>- Bias (political/ideological/advertising/ marketing/other) | Bias: website acknowledges in Terms of Use page that it receives compensation for some click-throughs to other websites; therefore there may be some bias in the reporting to encourage these clicks.<br><br>According to mediabiasfactcheck.com, Mashable has a strong left bias with a factual reporting rating of High. |
| **AUTHORITY**<br>- Reputable host/creator (expert in field?)<br>- Referencing<br>- Easy to contact author? | Website owner (Ziff Davis LLC) is also owner of an array of other websites of different types, including: IGN websites, PCMag websites, AskMen websites, as well as coupon and discount websites, IT websites, media websites, and others. A complete list of these can be found on the Terms of Use page. |
| **CURRENCY**<br>- Content updated/static?<br>- Ongoing maintenance/stability<br>- Date stamps | Articles are current and new content is posted frequently.<br><br>Infographics are out of date – most recent result in the Infographics topic is from April 2018, with subsequent results starting from 2017. |

| | |
|---|---|
| **UNIQUENESS**<br>- Content available in other forms/places? | Links to external websites are common. Articles are written specifically for the Mashable website by designated writers. |
| **QUALITY OF WRITING** | Standard of writing within the articles is high. Few typos/grammatical errors. Many links to exterior sites given. |
| **PURPOSE/AUDIENCE**<br>- Clearly stated?<br>- Fulfilled by content?<br>- Target audience – expert/student/layperson | Audience not stated or defined. Content seems to be directed toward laypeople interested in tech, digital culture, and entertainment. Lack of direction/interest in attracting an expert audience would explain the "latest news first" choice in results display (ideal for casual browsing), as opposed to offering a more targeted topic-specific search & display function. |
| **WORKABILITY**<br>- Convenient/effective to use?<br>- User-friendly?<br>- Menu design<br>- Help/sitemap? | No Help or Sitemap sections available.<br><br>Took me 4 hours to find the Infographics topic. (Still unsure how one would find it from the main page.) Keyword searches for various combinations of "infographic(s), New Zealand, health" were unsuccessful. Once in the Infographics topic, no further refinement or sorting possible. Not user friendly. |
| **SEARCHING/BROWSABLITY/ ORGANISATION**<br>- Search feature?<br>- Organise/filter results? (sort by)<br>- Save for later?<br>- Navigation ok?<br>- Browsing logical? | Seach bar in top right corner (magnifying glass icon).<br>TEST SEARCH 1:<br>Keyword: infographic<br>Results: List of articles. At first glance, no infographics. Unsure if articles contain infographics within the text themselves – exploration necessary.<br>Top result: Ad for Gusto Design – Infographics. Takes you to external website for an NZ graphic design firm.<br>2nd result: https://mashable.com/article/opportunity-rover-dead-mars/#lSxF4bFszZqM<br>Article on the death of the Mars Opportunity Rover. Does not contain any infographics.<br>3rd result: https://mashable.com/shopping/millennial-guide-saving-money-personal-finance-app/<br>Article on how Millienials can learn to budget and save money. Does not contain any infographics.<br><br>TEST SEARCH 2:<br>Keywords: New Zealand+health<br>Top result: Ad for nib.co.nz, a NZ health insurance provider. Takes you to an external site.<br>2nd result: https://mashable.com/2017/05/02/maori-haka-baby-warrior/<br>Article on Maori toddler doing the haka. No infographics included. (Embedded content & links broken.)<br>3rd result: https://mashable.com/2016/12/06/buzz-aldrin-new-zealand-doctor-david-bowie/#gDNn0Mn9emqL<br>Article on Buzz Aldrin in NZ hospital getting treated by a doctor named David Bowie. Does not contain any infographics.<br><br>TEST SEARCH 3:<br>Keywords: infographic+health<br>Top result: Ad for info.com.au, an Australian search site that proclaims to have medical infographics. Takes you to an external site.<br>2nd result: https://mashable.com/2014/09/22/most-popular-time-for-porn-infographic/#SlKJyQJc5sqU<br>Article on the rise in popularity of porn in America. Supposedly contains an infographic, but the image link is broken.<br>3rd result: https://mashable.com/2013/08/15/healthcare-and-it-health-informatics-infographic/#Bv5ViEVX5aqp<br>Article on the rise of health informatics. Does contain an infographic! First one. |
| **COST** | Free to access. |

| | | |
|---|---|---|
| | INFOGRAPHIC #1:<br>Third choice (first and second choice infographic links were broken):<br>https://mashable.com/2015/03/21/world-hunger-infographic/#KxSpa8po5qq0 | INFOGRAPHIC #2:<br>https://mashable.com/2014/05/28/menstrual-hygiene-day/#1A98jp8N.gqC (had to go back to May 2014 to get a relevant, working link) |

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| **G (Get to know your Audience)** | Target audience:<br>- What do you want the audience to understand? "With the right financial approach, tackling the cost of world hunger becomes more manageable." (subhead quote)<br>- How do you want the audience to feel? Shocked, sympathetic, hopeful<br>- What do you want the audience to do? Share the message, provide finances, use the Digit financial app | The target audience seems to be the general public; the layout is designed to make the reader first notice the topic, then goes into greater detail about different elements of the topic (Stones & Gent, 2017). Goals of the infographic seem to be:<br>- What do you want the audience to understand? Current global menstruation issues facing women<br>- How do you want the audience to feel? Shocked, sympathetic, motivated<br>- What do you want the audience to do? Discuss, share the message, change behaviour |
| **R (Restrict Colour)** | A limited, 3-colour palette has been used across the infographic, making it consistent and clean looking. The sparing use of yellow as a highlighting feature is effective. | A limited 4-colour palette has been used across the infographic, making it consistent and clean looking. The colour is effectively used to bisect the infographic into distinct sections. |
| **A (Align Elements)** | A grid pattern is used throughout to align and separate elements, improving readability. | A grid pattern is used throughout to align and separate elements, improving readability. |
| **P (Prioritise Parts)** | The structure is clearly defined using design elements, fonts and font sizes, grid patterns, and subheadings. It is as follows:<br>Heading<br>Subheading & explanatory text<br>Worldwide malnourishment statistics<br>Contextual cost comparisons for what could be done with & required to end world hunger problems<br>Potential solutions<br>Follow-up action recommendations & organisation links<br>Ad for creator company/app (Digit)<br>References | The structure is clearly defined using design & colour elements, fonts and font sizes, grid patterns, and subheadings. It is as follows:<br>Heading<br>Impacts of menstrual hygiene<br>Menstrual Hygiene Management: Ideals vs. Realities<br>Actions to change behaviour<br>Further info<br><br>NB: no references |
| **H (Highlight the Heading)** | While the play-on-words used in the heading are clever, they do not accurately or quickly describe the content of the infographic; the reader must read the subhead paragraph to understand what will follow. | Heading is clearly defined, with straightforward text choice that explains content that follows. |
| **I (Invest in Imagery (wisely))** | Photographs are used only as background images. Pictograms are used to highlight/expand statistics and key messages. Chosen pictograms are clearly representative and well chosen, perhaps with the exception of the last three; these are thematic but don't add deeper meaning/explanation to text. | No photography used.<br>A variety of pictograms are used to supplement the text; these are well-chosen and serve to highlight and add meaning to the message. |
| **C (Choose Charts Carefully)** | Uses only 1 chart type: a dot size comparison of undernourished populations by geographical area. I found the this statistics section to be a bit unclear; I had to look back and forth a few times to see what the 526 million referred to. It stands out visually but isn't immediately decodable. | Chart elements used: picture charts; donut charts. All charts were easy to understand at a glance. |
| **Overall Rating** | **4/5** | **4/5** |

## Appendix 3c: Website Critique – Graphs.net

| URL | Graphs.net |
|---|---|
| **RANK**<br>(infographicdatabase.com (Likes/Tweets) as of 18 Feb 2019) | Likes: 15,735 (Rank #3)<br>Tweets: 440 (Rank #12) |
| **DATES OF REVIEW** | 22.02.2019; 25.02.2019; 1.3.2019 |
| **INITIAL THOUGHTS/IMPRESSIONS** | Landing page: Initial displayed content all by same author (Catherine)…questionable. Perhaps organised by latest upload? -> YES – default initial content is 'most recent' and may therefore be biased towards latest active user's contributions<br><br>Clean, clutter-free design, easy to navigate. |
| **SCOPE**<br>- Defined in Intro/About page?<br>- Breadth<br>- Depth<br>- Time period (limitations?) | No "About" or Intro information available. The Terms and Conditions section states that the website and its content may not be used by anyone under 13 years of age.<br>Breadth: Covers 37 categories of infographics.<br>Depth: Limited by user submissions in each category. Number of infographics available in a category not given.<br>No set time period given. Copyright date is 2018 (so slightly out of date). |
| **CONTENT**<br>- Fact/opinion<br>- Original content; links to other sources | Core metadata included with each infographic:<br>Title; Description; Published by; Date; Categories; Source (includes external links); Tags<br><br>As defined by the website's Guidelines (https://graphs.net/submit/), the title must be descriptive without promotional language. The description must be a 'fresh summary' of not less than 150 words. It is not stated whether these submitted descriptions go through any review or editing process by the website owners before publication on the site.<br><br>The Terms and Conditions section states that any content submitted to the website becomes the property of graphs.net, even if the initial agreement is later terminated. Users are responsible for all uploaded content, "including its legality, reliability, appropriateness, originality, and copyright." |
| **ACCURACY**<br>- Check against other content<br>- Bias (political/ideological/advertising/ marketing/other) | Content is cross-posted onto other platforms (Facebook, Twitter, Google+, Pinterest, Flickr). The website claims it has the "largest infographic gallery" (Submissions page).<br><br>Accuracy of the content within the infographics themselves is the responsiblity of the users who upload it (Terms and Conditions).<br><br>This website is not reviewed on mediabiasfactcheck.com. |
| **AUTHORITY**<br>- Reputable host/creator (expert in field?)<br>- Referencing<br>- Easy to contact author? | No content on website host/creator.<br><br>Users who upload content are linked to their uploads, so you can see who is uploading what. Users' names look like links; however, clicking them for further info does not provide any further information.<br><br>Inquiries to the graphs.net website owners can be sent here:<br>https://graphs.net/contact-us |
| **CURRENCY**<br>- Content updated/static?<br>- Ongoing maintenance/stability<br>- Date stamps | An infographic's date of upload provided as part of the core metadata, along with title, brief description, and link to original source.<br><br>Users may submit content at any time. |
| **UNIQUENESS**<br>- Content available in other forms/places? | Links to original sources provided as part of each individual infographic's metadata. |
| **QUALITY OF WRITING** | Each infographic submission must be accompanied by an original title & description, provided by the user (however, the website owners do offer to provide this service for a small fee). Quality of writing therefore relies on user ability. Some descriptions have typos and other errors; others are error-free. By and large the descriptions have a decent standard of writing. |

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| **PURPOSE/AUDIENCE**<br>- Clearly stated?<br>- Fulfilled by content?<br>- Target audience – expert/student/layperson | Audience not stated or defined. Content consists of various types of infographics onmany topics. Infographics are generally designed to be accessible to the general public and, therefore, the website design should be designed for a layperson to use. I would say this website fulfills that purpose, in that it is relatively simple and uncomplicated to navigate. |
| **WORKABILITY**<br>- Convenient/effective to use?<br>- User-friendly?<br>- Menu design<br>- Help/sitemap? | No sitemap. The FAQs section pertains only to infographic submission.<br><br>Website is relatively simple to use and easy to navigate. Higher-level users might be frustrated by the lack of functionality in sorting or refining results beyond an initial search.<br><br>Menu design is straightforward; see next evaluation criteria for further description/review of this aspect. |
| **SEARCHING/BROWSABLITY/ ORGANISATION**<br>- Search feature?<br>- Organise/filter results? (sort by)<br>- Save for later?<br>- Navigation ok?<br>- Browsing logical? | Search bar in top right corner of landing page. Good.<br>TEST SEARCH:<br>Keywords: "new zealand" + health<br>Results: 8 (see screenshot gdn_search_nz health)<br>Top result: https://graphs.net/healthy-people-in-the-world.html; uploaded 11 July 2012; blurb has some typos<br>Most relevant result: https://graphs.net/top-countries-with-highest-obesity-infographic.html<br>-A repeat search provides identical results.<br><br>Content is browsable by 3 drop-down menus:<br>1) Categories (37 options, including Health)<br>2) Type (static/interactive)<br>3) Browse All (Most Viewed – zero results), Most Liked (12 initial results; one broken image), Featured (results are compilations of infographics, e.g. "Top 10 Infographics on Adoption), Most Recent – all uploaded by same user, as suspected by initial impression)<br><br>When HEALTH Category is selected, first 42 results all by same user (Catherine). Default display organisation is by 'Most Recent.'<br>Results are displayed in sets of 12; total number of results in category not given. |
| **COST** | Free to access; fees required to submit content (though there is a cost-free option with limitations). |

| | INFOGRAPHIC #1 (first result): https://graphs.net/healthy-people-in-the-world.html | INFOGRAPHIC #2 (most relevant): https://graphs.net/top-countries-with-highest-obesity-infographic.html |
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| **G (Get to know your Audience)** | The target audience seems to be the general public; the layout is designed to make the reader first notice the topic, then goes into greater detail about different elements of the topic (Stones & Gent, 2017). Goals of the infographic seem to be:<br>- What do you want the audience to understand? Trends in longer-lived people's behaviour and habits.<br>- How do you want the audience to feel? Positive & motivated<br>- What do you want the audience to do? Change behaviour and share the message. | The target audience seems to be the general public; the layout is designed to make the reader first notice the topic, then goes into greater detail about different elements of the topic (Stones & Gent, 2017). Goals of the infographic seem to be:<br>- What do you want the audience to understand? Prevalence of obesity worldwide<br>- How do you want the audience to feel? Unknown<br>- What do you want the audience to do? Unknown – perhaps share the message? |
| **R (Restrict Colour)** | A limited colour palette has been used across the infographic, making it consistent and clean looking. | Colour palate is somewhat varied. No real pattern – e.g. the highlight colour for "Hungary" is the same of that used for the world map, so the two blend together. |
| **A (Align Elements)** | A grid pattern is used throughout to align and separate elements, improving readability. | Elements are aligned on a grid pattern. They are clearly separated and easy to see. |

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| **P (Prioritise Parts)** | The structure is clearly defined using design elements, fonts and font sizes, grid patterns, and subheadings. It is as follows:<br>Heading<br>5 Countries with the Healthiest People in the World<br>The World's Oldest Man and Woman<br>Healthiest Lifestyle Habits from the World's Healthiest Humans<br>References<br><br>While the content is clearly laid out, the infographic is quite long and not everyone will stick with it till the end. | The structure is clearly defined in sections on a grid pattern. It is as follows:<br>Heading<br>Map<br>Individual country statistics (country name; country capital; % of population that is obese)<br><br>Font sizes are oddly chosen and therefore do not help portray a clear message. The country highlights in the map are not organised in any particular order. The same data statement "Obese population 15 and Over" is in large font, repeated ten times in the 3rd section of the infographic. By the third or fourth read you begin to skim over it. Better design could have mitigated the need for repetition.<br><br>Additional information would have been more helpful, rather than the same statistics repeated in the top and bottom sections, e.g. what are the most common causes of obesity in each country? What are the population sizes of each country (as the US is one of the largest and Luxembourg is one of the smallest countries by population size, the statistics may be deceptive in terms of actual numbers). |
| **H (Highlight the Heading)** | This is well done; the heading is at the top of the infographic, highlighted with colour, font, and design elements. Clear wording gets the message across. | The heading is at the top; font colour and size is used to make it stand out. However, the wording could be clearer. |
| **I (Invest in Imagery (wisely))** | Pictograms are mostly used to illustrate and highlight points of advice/warnings throughout. All pictograms are clearly representative and well chosen.<br>Two photographs are used to show the oldest living man and woman. These serve to highlight a point and make the subjects more real and sympathetic (they may be 100+ but they are still happy). | One photograph is used in the top left corner. Initially I had trouble figuring out what it was – I thought it was a baby hand holding onto something. The skin colour chosen could potentially indicate that this infographic refers only to Caucasians.<br>A map and pictograms are also used. The same pictogram is repeated for each country, no variance in size, shape, or design.<br>The grey/coloured lines in between the capital and "Obese Population 15 and over" are irrelevant and confusing; initially I thought they might be showing the statistic in a different form, but it appears they are merely decorative. |
| **C (Choose Charts Carefully)** | The following chart elements are used: maps, pictograms, pie charts, picture tables. Despite the variety used, they are separated into sections within the infographic and therefore do not appear overwhelming. | The infographic uses a map and pictograms to convey information. Neither is particularly well used. The same stick figure/person pictogram is used for each of the 10 countries, and the only variation is colour. This is not indicative of anything in particular. |
| **Overall Rating** | **4/5** | **1/5** |

## Appendix 3d: Website Critique – Business2community.com

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| **URL** | Business2community.com |
| **RANK**<br>(infographicdatabase.com (Likes/Tweets) as of 18 Feb 2019) | Likes: 728 (Rank #10)<br>Tweets: 7,252 (Rank #3) |
| **DATES OF REVIEW** | 01.04.2019 |
| **INITIAL THOUGHTS/IMPRESSIONS** | Looks like a news-for-business website. Quite a lot going on. Initial scroll revealed an infographic within the first third.<br>https://www.business2community.com/infographics/marketing-to-consumers-emotions-infographic-02184665<br><br>Business-focused content has low/no relevance to NZ health workers. A few articles/infographics may overlap in terms of relevant content, but overall not the right destination for this audience. Most infographics are business- or marketing-related. |
| **SCOPE**<br>- Defined in Intro/About page?<br>- Breadth<br>- Depth<br>- Time period (limitations?) | Website's stated goal is to "create an open community where business professionals can establish their thought leadership, increase exposure for their business/organization, and network with others" (from About Us page). Provides varied content including articles, opinion pieces, webcasts, and whitepapers. Current form of website was launched in 2012. |
| **CONTENT**<br>- Fact/opinion<br>- Original content; links to other sources | Content is largely unique – contributed by guest bloggers & writers specifically for the site. Attributing content to original authors is mentioned specifically as a fundamental part of owner's ideology in the About page; referencing is provided for infographics. Very good. |
| **ACCURACY**<br>- Check against other content<br>- Bias (political/ideological/advertising/ marketing/other) | Website is a self-proclaimed marketing platform for business-minded individuals.<br><br>According to mediabiasfactcheck.com, it rates as 'Least Biased' and has a factual reporting rating of High. |
| **AUTHORITY**<br>- Reputable host/creator (expert in field?)<br>- Referencing<br>- Easy to contact author? | Website history and creator bios are available on the About page. Contact info for staff provided here as well. Creators are reputable & knowledgeable. |
| **CURRENCY**<br>- Content updated/static?<br>- Ongoing maintenance/stability<br>- Date stamps | Content is current and freuently updated. Articles contain time stamps. Website maintentence is ongoing (stated on About page). |
| **UNIQUENESS**<br>- Content available in other forms/places? | Content is unique to website – articles are purpose-written specifically for platform. Any works from other sources are clearly attributed. |
| **QUALITY OF WRITING** | Quality of writing is high – few typos or errors. |
| **PURPOSE/AUDIENCE**<br>- Clearly stated?<br>- Fulfilled by content?<br>- Target audience – expert/student/layperson | Target audience is clearly stated in About page as "business professionals"; content is clearly created for and marketed toward this group. |
| **WORKABILITY**<br>- Convenient/effective to use?<br>- User-friendly?<br>- Menu design<br>- Help/sitemap? | Landing page is quite busy but laid out on a grid pattern for easy navigation. A menu bar across the top provides links to 9 sections of the website, which are: Home, Most Popular, Digital & Social, Sales & Marketing, Business & Finance, Life & Entertainment, Technology & Innovation, US & World News, and Brandviews. Above and to the right of this in a smaller bar is the search function, which searches the whole website (no advanced search option available). Scrolling down the landing page reveals further detail in each of these sections for browsing purposes. This page is quite extensive and contains headings, subheadings, articles, advertising, and multiple lists of |

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| | suggested readings or clickthroughs. Once you reach the bottom, you can access other links: Privacy & Terms of Use, Webinars & Free Online Learning, Industry Research & Whitepapers, About B2C, For Advertisers, and Login. Links to B2C's social media accounts are also here. There is no Sitemap.<br><br>Clicking on one of the main 9 section links displays a dropdown bar with a sample of 3 current most popular articles, as well as a list of the subtopics included in each section (very useful!). From this dropdown box, you can navigate to view more content on a new page.<br><br>Navigation is relatively straightforward, as long as you know which section you'd like to peruse. |
| **SEARCHING/BROWSABLITY/ ORGANISATION**<br>- Search feature?<br>- Organise/filter results? (sort by)<br>- Save for later?<br>- Navigation ok?<br>- Browsing logical? | Search icon (magnifying glass) in the top right corner. Good.<br><br>TEST SEARCH 1:<br>keyword: infographic<br>results returned: 14,625<br>high relevance of results to query. All articles either contain infographics or are about their use. Results are divided into articles and categories; there is a specific Infographics category (available here: https://www.business2community.com/infographics) within the Digital & Social section of the website. Not possible to search within this section.<br>Results can be sorted by Latest Articles or Most Popular.<br><br>TEST SEARCH 2:<br>keywords: health+infographc<br>results returned: 550<br>medium relevance of results to query; all returned results contained the words 'health' and 'infographic' but weren't necessarily relevant subject-wise<br>Top result: Financial Education Content Can Enhance Customer Loyalty (article)<br>2nd result: Which Social Media Platform is Right For Your Business in 2019? (article)<br>3rd result: 23 Productivity Hacks That Will Actually Make You Happy (article)<br>7th result was most relevant to query:<br>https://www.business2community.com/infographics/spotlight-on-mens-health-infographic-0350740<br><br>TEST SEARCH 3:<br>keywords: "new zealand"+health<br>results returned: 22<br>high relevance of results to query<br>Top result: 4 Alternative Work Schedules That Actually Work (article)<br>2nd result: Health Benefits of Active Honey (article)<br>3rd result: The World's Heaviest Countries (article) |
| **COST** | Content is free to access. |

| | INFOGRAPHIC 1 (top result): https://www.business2community.com/infographics/your-startup-is-about-to-fail-here-are-20-reasons-why-infographic-02185261 | INFOGRAPHIC 2 (most relevant): https://www.business2community.com/infographics/spotlight-on-mens-health-infographic-0350740 |
|---|---|---|
| **G (Get to know your Audience)** | Target audience: people preparing to start a new business or understand why their startup might be failing<br>- What do you want the audience to understand? It's not easy to succeed with a startup for X reasons<br>- How do you want the audience to feel? Surprised; Informed; Hopeful<br>- What do you want the audience to do? Change/moderate behaviour, Plan ahead, share the message | Target audience: anyone interested in helping men live longer, healthier lives<br>- What do you want the audience to understand? Overall men have shorter life expectancies than women and do not take care of themselves well enough<br>- How do you want the audience to feel? Shocked; Thoughtful; Motivated<br>- What do you want the audience to do? Change behaviour; spread the message |
| **R (Restrict Colour)** | Colour palette is varied but effective; dark background serves to highlight the colourful illustrations that accompany each reason. | Colour palette is restricted and effectively utilised. |

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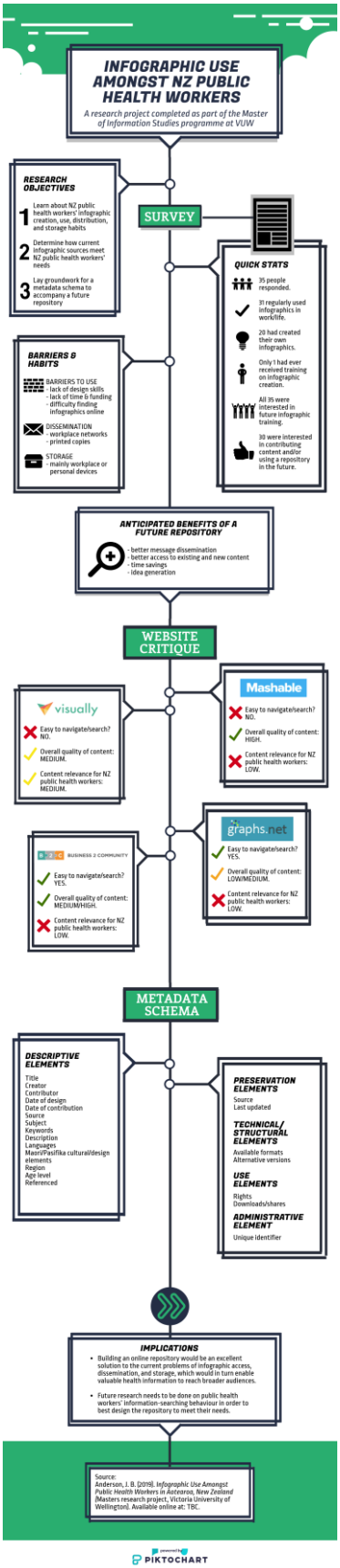
| **A (Align Elements)** | Elements are visually distinct and laid out on a grid pattern. Easy to look at and navigate. | Elements are clearly separated from one another; grid patterns are used where appropriate. |
| **P (Prioritise Parts)** | Structure is clear:<br>Heading<br>Reasons 1–20, with statistics, illustrations & explanations<br>Ad<br>References/Author<br><br>Font is easy to read. Good colour choices. Very tidy design. | Structure is clear:<br>Heading; explanatory text<br>Life expectancy of men v women<br>Afflictions men are more likely to experience than women<br>Top 10 causes of death in American men<br>Health statistics – men v women<br>Steps to improve men's health<br>Medical tests men should be getting & when<br>Disclaimer<br>Sources/Author<br><br>Not every section has a heading, but each section is clearly separated from others and the design choices make interpretation easy.<br><br>Some of the font gets very small and hard to read. There is A LOT of information crammed in here, especially in the Medical Tests section.<br><br>Colour choices in the "Steps to improve men's health" section are a little confusing – hard to tell if there is purposeful differences in the red v blue circles |
| **H (Highlight the Heading)** | Heading is highlighted, clear, and concise. | Heading is highlighted and concise. The subhead paragraph is quite long; not everyone will read this part. |
| **I (Invest in Imagery (wisely))** | No photography is used.<br><br>Themed illustrations are used throughout; a rocket represents the startup, and each reason has its own thematic illustration that serves to illustrate the point and add interest and depth to the message. These are cleverly done. | No photography is used.<br><br>Pictograms are largely used to add design interest rather than add deeper layers of meaning to the text. |
| **C (Choose Charts Carefully)** | Statistics are used to complement each reason; these are illustrated by simple bar charts. Good colour choice and design; easily interpreted at a glance. | A few different chart types are used, including picture charts, donut graphs, and circle charts. These are relatively straightforward to understand at a glance; the complex donut chart utilises very small callout font to explain and this might cause issues for some people. |
| **Overall Rating** | **5/5** | **3/5** |

## Appendix 4: Infographic Abstract (full image)



**INFO580**

**J. Berit Anderson**

**Word count:** 10,914