Mihail Davidovski, Caleb Ryder, Virana Lini

GEOG402 Group Assignment

Abstract:

With the onset of climate change and global food shortages, food security is becoming increasingly important. In modern times society tends to rely on food sources such as supermarkets. However, access to these food sources is limited if a disaster occurs, highlighting the necessity to have access to a broad range of food sources. Ensuring this access means all members of society can consume a variety of nutritious food. The purpose of the research conducted in this report was to investigate whether policies and educational systems exist surrounding food security in a wider New Zealand context and then more explicitly focusing on Christchurch. This study involved both qualitative and quantitative methods to determine the scope of the current framework and, additionally, the role of the education sector in teaching sustainable food production and recycling methods to the next generation. Results from these methods demonstrated that official regulations and policies particular to food security do not exist. Despite these conclusions, food security is a part of other goals and is frequently achieved by focusing on other policies that encompass it.

Introduction:

Food security is defined as existing only if all people have physical, social, and economic access to adequate and healthy food that meets their dietary needs and food preferences for active and holistic life (World Food Summit, 1996 as cited in Upton et, 2016).

Research on this topic revolved around three key research questions which the methodology attempted to answer. These questions were: Are there any policies/ planning framework that governs food security in New Zealand. How accessible is Christchurch's food, and is there any variation/disparities around food accessibility across different suburbs, and finally, what does the education system/teachers do to educate students on how to minimize food waste and produce food. Focusing on these three questions allowed for an understanding to be gained of the current and future needs of communities. Interestingly a large number of survey respondents commented in the survey, especially during COVID-19 times that this scenario allowed them to focus on healthier eating. These responses primarily arose due to reduced access to fast food; therefore, this perspective with reducing access to fast food encourages Participants to eat healthier.

The wicked problem of food security:

Key findings in the literature review conducted in the *Food Security Policy: A review of literature and synthesis of key recommendations for Toi Te Ora- Public Health Service, 2013* suggest that food security is an issue that has been at the forefront of the developed world for some time. Currently there is no explicit policy or framework that addresses the issue of food security. Instead multiple policies exist such as local government acts with the aim of promoting social, cultural, economic, and environmental wellbeing including food. As it stands food security as defined by the World Food Summit, 1996 will not be fully achieved without a targeted approach which is aimed at ensuring all people have access to nutritious food at all times. Throughout the food security policy review findings show that an appropriate way to tackle food insecurity is through the formation of a food policy council. The key goal of this council would be to resolve the multiple foundations that result in this dynamic issue. This food policy council would work in collaboration with local government in relation to their associated needs and capacity to solve food security problems throughout the various communities. As also mentioned in this literature the use of community gardens are effective in minimising disparities in food security. In turn by minimising disparities the key goal of achieving food security will become more attainable.

Methodology

Two survey questionnaires were formulated to answer the research questions and were shared online through the survey monkey platform to gather responses. The first survey aimed at finding out the accessibility and security of food in Christchurch, with some added questions relating to the current COVID-19 pandemic to see if there are challenges in accessing food throughout this crisis. The second survey was designed and aimed at educators to see what the education system does to promote sustainability and reduce food waste. The education survey was also sent out online and emailed toward public schools directly to see if they would like to participate in the survey.

Through the guidance of our professor Rita Dionisio, we created a focus group of professionals in relevant fields that would be of huge assistance to help answer the research questions. The focus group comprised of Tony Moore, principal sustainability advisor at the Christchurch City Council, Sara Tolbert, associate professor at the University of Canterbury School of education, Bek Perry from the nutrition sector and the Canterbury District Health Board and our community partner Matt Morris, sustainability advisor and member of the Otakaro Orchard.

Lastly, wider research was conducted on food resilience through the appropriate literature, which would help us understand the issue of food resilience in a local context of Christchurch and how to assess the current and future needs which can address this problem.

Limitations

This research was undertaken during the COVID 19 Pandemic and lockdown. This situation massively affected the quality and quantity of data collected that was needed for the successful completion of this research. In the best-case scenario, through traditional methods, research would have been done by having a face-to-face interview with the people. Still, all the data had to be gathered online due to health issues and lockdown, which does not fully represent all levels of the Christchurch suburb. There are fewer audiences, and data was only from those who came across the survey online.

Being the smallest group of three made it difficult for the research team to research the topic of food security. Time had to be prioritized to answer the main questions as in-depth as possible, without the luxury of time to get a thorough knowledge of the broader issue.

Discussion

Policies/ Planning frameworks governing food security in New Zealand.

Food security or resilience has received increased publicity in New Zealand as a nation over its legislation, policies, frameworks, and plans forming the basis and encouraging people to access nutritious food. With the help of Tony Moore, the Principal Sustainability Advisor from Christchurch City Council, we found that food security is governed on a national and local government scale. There are existing policies that govern food security at the national government. These policies include the Treaty of Waitangi, Health Act, Biosecurity, Food safety regulation, Civil Defence Emergency Act, Local Government Act.

In addition to the national governing policies and plans, the local Christchurch government also some policies and plans which overlook food security in this region. This policy and plans include CCC Food Resilience Policy, CCC Health Food Action Plan, and CCC District Plan.

By looking into these policies and frameworks, we have observed that there are several types of policies and planning frameworks that include some aspects of food security as part of the policy. There are no explicit policies or planning frameworks that address food security as a primary issue; somewhat nutritious food is always part of an overarching policy or framework which aims to promote health and nutrition.
From the government perspective, food in New Zealand is regulated as public health and food safety issue rather than treating it as a security and equity issue. This is likely due to food security being a 'wicked' problem as the issue of food security is not based around the food itself, making it hard to make policy and framework which can solve this wicked problem. To address the food security problem, multiple issues such as inequalities, income, education and physical accessibility must be resolved which could in turn, provide a clearer approach required from government to create framework or policy that will solve the wicked problem of food security.

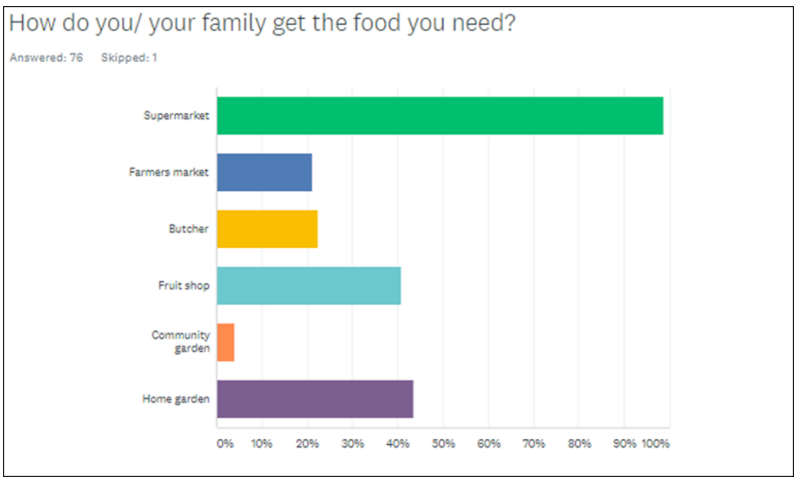
2. Accessibility of food across suburbs in Christchurch.

Food supply in New Zealand is more than enough to meet the dietary needs of the country as a whole (Public Health Commission, 1993). However, Christchurch after the earthquake have experienced food insecurity due to different level of damage affecting peoples access to food; therefore food resilience has become one of the significant components of community resilience(Tracy Berno, 2017). This experience has taught the city the need for self-sufficiency, which resilient local food systems can help address (Saxon and Hepburn, 2014). Over this past year's peoples interest in accessing nutritious food have an increase in the Christchurch suburbs and this has seen the rise of a range of agri-ecological systems initiatives such as organic/biodynamic agriculture, urban agriculture, community-supported agriculture, farmers markets, community gardens and locavore and hyper-local restaurants (Franklin et al., 2011; King, 2008). This led to the establishment of Edible Canterbury portal in 2013 with the mandate to support community projects to increase food resilience in greater Christchurch by increasing number of community food growing spaces, resulting in more people having access to healthy, organic and locally grown food with the vision of food shared as a public resource to support food economy within the Christchurch community (Giles, 2016).

However, according to a current survey carried out it shows that despite all these efforts to encourage people to access nutritious food through the local food system (gardens) that were set up, more people in Christchurch preferred to access nutritious food from the supermarkets.

However, according to a current survey carried out it shows that despite all these efforts to encourage people to access nutritious food through the local food system (gardens) that were set up, more people in Christchurch preferred to access nutritious food from the supermarkets.

Figure1: **Graph showing percentage of families accessing food through 6 different means.**



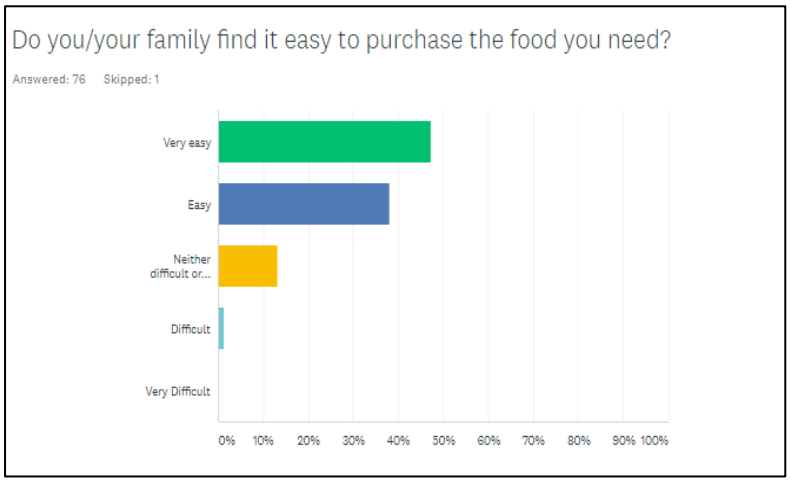
A survey carried out reveals that a high percentage of people accessing food from the supermarket compared to the community gardens with the lowest rate.

Most people accessing food from the supermarket are people who are busy and do not have time to prepare meals from scrap or food obtained from the community gardens. They prefer to select from a wide range of ready to eat or processed foods specifically designed to reduce the time people spent to prepare food; this then leads to tremendous changes in peoples eating behaviour and pattern in New Zealand. (Brian Pink, 2004).

Christchurch is made up of different Ethnic group's with 83.9% percent of people in Christchurch City belong to the European ethnic group, 8.5% (2013 census). With the presence of these different ethnic groups and their different eating needs and demands, most people in Christchurch find it easier to purchase food in the supermarkets, farmers' markets, butchers, fruit shops, and community gardens. New Zealand, including Christchurch supermarkets, has increased the volume of their ethnic food products in the past two decades to make it easy for everyone to access and purchase what they are after (Adam Lindgreen & Martin K, Hingley, 2009). Another factor that affecting people's purchase of food is their income; most people find it easy to buy food due to their financial capacity.

The graph below shows that more people purchasing food earn a good income and less have financial difficulties.

Figure 2: **Graph showing percentage of families purchasing food.**

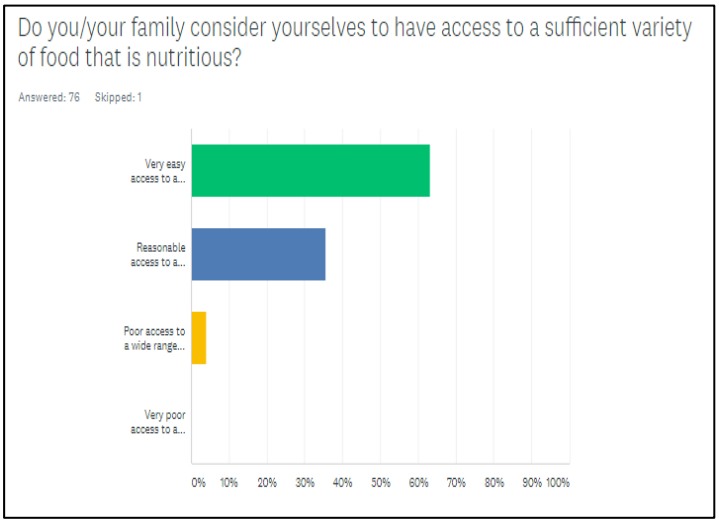


The graph shows that on regular days 47.37% of people find it very easy to purchase food, while 1.32% finds it difficult and none reported to find it very difficult to access food on regular days

The analysis of information displayed in Figures 1 and 2 shows that most families in Christchurch have access to food through supermarkets. By accessing this food, it is shown in

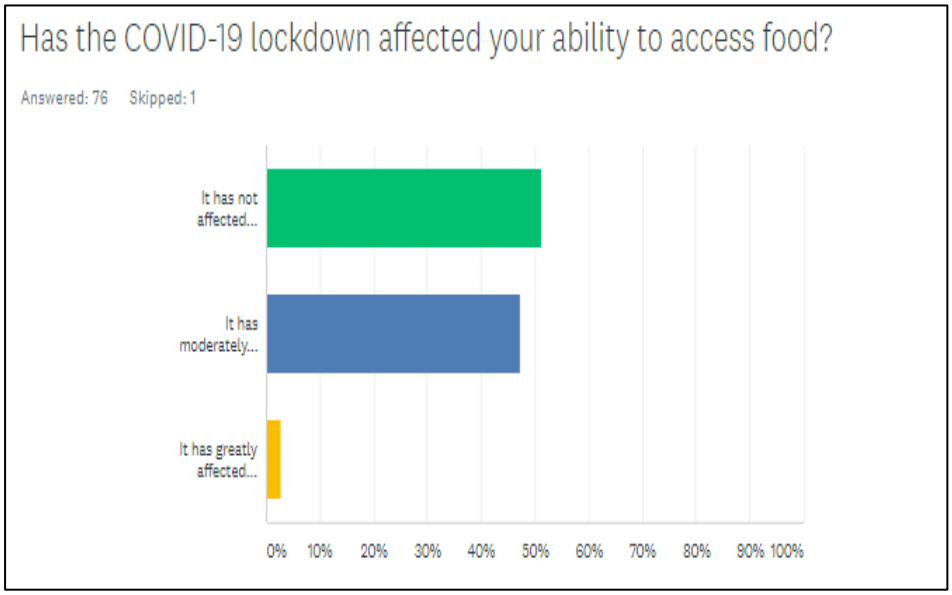
figure 3 below that 63.16% of people have very easy access to a sufficient variety of nutritious food, with 35.53 percent have easy access to adequate nutritious food and 3.95 percent have poor access to a variety of adequate nutritious food.

Figure: 3



People in Christchurch have become more resilient after the earthquake. Despite the level of stress caused by COVID 19, these people have worked together to address COVID 19 and still have access to food despite all level of stress is going through. The survey has shown a graph in figure 4. This graph shows 51.32% of people have not been affected at all, 47.37 percent of their food access has moderately been affected, and 2.63 percent of people have greatly been affected.

Figure: 4



People taking part in this survey have indicated that their access to food had become a challenge due to reasons like; shopping process has changed, making it uncomfortable for people to queue in long lines before entering the shop. The local dairy shops were closed during the lockdown, making it hard for people depending on them to access food. Some family prefers bulk shopping from closed shops, forcing them to control their food as much as possible until the shops were opened again. A slight increase in food prices has also affected access to food for some people. People who depend on food from farms during this lockdown have difficulty accessing this food due to travel limitations. Even a limited range of products from the

supermarket discouraging people from going out shopping and also family sizes like a single mum with 4 to 5 children who are under the age of 15, the older adults, and people with medical conditions have difficulty to access foo in this period.

Evaluation of current literature on food production reveals that 1/3 of globally produced food is wasted annually (Pleissner, 2018). Consequently, the early education of methods that address this major issue and allow for the education of production techniques are vital for the future of food systems.

The definition of food reuse is stated as being the repeated use of food material as food (Pleissner, 2018). In comparison, recycling is the conversion of food waste into raw materials that can be subsequently used for bio-based processes such as composting (Pleissner, 2018). Currently, the presence of a formal framework for production and recycling in Christchurch schools does not exist; however, many programs are being carried out and encouraged in the area. One such example is the Enviroschools program, which aims to reduce waste in schools. Enviroschools are a charitable trust who have a number of partnerships with organizations such as Environment Canterbury. There key Kauapapa (principle) regards creating a peaceful and sustainable world through the use of learning and collaborative action (Enviroschools, 2020).

Additional findings from our study on this topic revealed that the majority of schools have simple recycling systems in place that include wheelie bins and rubbish skips for collecting green waste. The contents of these are then delivered to the Christchurch City Councils' purpose-built composting facility in Bromley. Once processed, this material is sold to farmers in order to drive crop production. This product is formed over 12 weeks through storage in tunnels maintained at a high temperature allowing biogenic processes to take place at a relatively rapid rate. This compost loop, which originates with food waste from Christchurch Schools as well as residential green waste, can be directly related to the concept of a circular economy. The idea of a circular economy is a scenario where goods are reprocessed, ensuring waste is minimized, and resource consumption is reduced (Stahel, 2016). Furthermore, this term revolves around the perspective that the circular economy provides inspiration to guide public and private sectors towards practices that guarantee zero waste (Franco- García et al., 2019).

In an education context, this begins with the reuse of resources that create waste, which in the case of Christchurch can be observed through the use of bokashi bins, which aid in the decomposition of food waste. These bins can produce a fertilizer which can be applied to vegetable gardens. Also, the associated organic matter remains once decay occurs can be placed on these gardens and act as compost. Studies have also shown that methods in the first instance that reduce waste can minimize the need for extensive programs that target waste reduction. Increased time allocated to lunchtime, smaller portion sizes, and increased choice encourage food consumption and lead to decreased food waste in primary and middle school (Schupp et al., 2018).

Analysis of the comments provided by school teachers in the survey conducted for this research revealed that schools have various approaches and anecdotal evidence of recycling initiatives that involve not only the students but also teachers and parents. Examples of these include lunch clubs that maintain vegetable gardens and worm farms, which aid in breaking down food waste into a form where it can be reapplied to gardens. Additionally, one primary

school mentioned gardening in barrels adjacent to the classrooms as well as a minor garden planted by one of the parents and maintained by junior school children.
The presence of online tools can also be employed to enable the education sector to minimize waste with an example being SmartView, which was created by the Christchurch City Council. This represents an online map that displays fruit and nut trees available to the public. For some time, the council has been planting trees in strategic locations such as in close proximity to schools, which ensures easy access for students. By picking fruit as required instead of buying it, the fruit is less likely to be wasted because people will only collect as much as they need.
Community Public Health which is an organization that provides public health services in Canterbury, South Canterbury, the West Coast, and the Chatham Islands have produced a document called *Nourishing Futures with Better Kai.* This document outlines ways in which communities can create meals utilizing leftovers. Most importantly, when people have some knowledge and understanding of the importance of reducing food waste, it is likely that they are more likely to adhere to waste sorting standards than those without composting systems that are unaware of waste reduction techniques. In a study conducted by (Schupp et al., 2018), it investigated whether there was any correlation between the presence of composting systems in classrooms and whether some missorting of waste was occurring with results carried out in Washington. Schools are showing that schools with compost systems had 7% incorrectly sorted compost compared with schools without compost bins, which had 30% incorrectly sorted compost (Schupp et al., 2018).

Conclusion

In conclusion our research evidence shows that there is a need for policy or framework that guarantees the security of food or makes it more readily accessible to ensure people can attain nutrients required to live a healthy and active life. The promotion of early education on sustainable food production and recycling should be at the forefront of attempts to make food inequality an issue of the past.

Furthermore, the perception of food security needs to change in order to start managing food security as an individual issue, rather than through the public health lens in relation to other problems. By addressing food security as a product of other key goals, the primary issue will never be resolved.

Bibliography

Enviroschools, 2020, *About us*, Retrieved from https://enviroschools.org.nz/about-us/

Franco-García, M., Carpio-Aguilar, J. C., Bressers, H., & SpringerLink (Online service). (2019;2018;). Towards zero waste: Circular economy boost, waste to resources (1st 2019. ed.). Cham: Springer International Publishing. doi:10.1007/978-3-319-92931-6

Franklin, A., Newton, J. and McEntee, J.C. (2011), "Moving beyond the alternative: sustainable communities, rural resilience and the mainstreaming of local food", Local Environment: The International Journal of Justice and Sustainability, Vol. 16 No. 8, pp. 771-788.

Giles, D.B. (2016), "Food security: ethnographic perspectives on food environments, urban food systems, and principles for action in post-quake Christchurch", in Maidment, J. and Beddoe, L. (Eds), New Zealand Social Policy for Social Work and Human Services: Diverse Perspectives, University of Canterbury Press, Christchurch.

Pink, B. (2004). Household Economic Survey: Year ended 30 June 2004 – Media Release, Stats NZ, Cat 01.500 Set 04/05 – 091

Pleissner, D. (2018). Recycling and reuse of food waste. Current Opinion in Green and Sustainable Chemistry, 13, 39-43. doi:10.1016/j.cogsc.2018.03.014
Christchurch City Council, 2020, *Rubbish and recycling*. Retrieved from https://ccc.govt.nz/services/rubbish-and-recycling/greenbin

Public Health Commission, (1993). Our health our future= Hauora pakari, koiora roa: the state of the public health in New Zealand, 1993. Wellington: Public Health Commission.

Saxon, S. and Hepburn, R. (2014), "Identify ways in which the St. Albans community can increase their local food resilience in an ever increasing urban environment", available at: www.geog. canterbury.ac.nz/community/402/2014/GEOG402%202014%20-%20Food%20resilience%20in %20St%20Albans.pdf (accessed 04 June 2020).

Schupp, Courtney, Katherine Getts, and Jennifer Otten. "An Evaluation of Current Lunchroom Food Waste and Food Rescue Programs in a Washington State School District." Journal of Agriculture, Food Systems, and Community Development 8, no. 1 (2018): 1-20.

Stahel, W. R. (2016). The circular economy. Nature, 531(7595), 435-438. doi:10.1038/531435a

Tracy Berno, Journal of Enterprising Communities: People and Places in the Global Economy, ISSN: 1750-6204, Publication date: 13 March 2017

2013 Census, Quick stats about Christchurch City, retrieved from archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=14758&parent_id=14703&tabname=&sc_device=pdf (accessed on 4th June 2020)