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PROGRAMME

Carbon Neutral Red Meat Brand

Vision and Viability

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Executive Summary

This paper examines whether there is demand for a carbon neutral attribute on a red meat brand offering.

The vision for how supply criteria of this product would need to be met is modelled on milk and wool supplier criteria from added value brands. The certification of the carbon neutral status of the product would be determined by an external auditor, in this case, carboNZero administered by EnviroMark.

In order to establish demand for this product attribute, Google Trends and BuzzSumo were searched for relevant interest levels from worldwide consumers. These searches showed that little interest existed in carbon neutral food, let alone red meat products. Consumers were more likely to link red meat to climate change in a negative association, than to be seeking out products that could be carbon neutral.

Domestic, New Zealand-based demand for this type of product offering was measured using a Minimum Viable Product Approach. This researcher used a website landing page complete with email address catcher, a Facebook business page and a series of targeted Facebook and Instagram advertisements that reached over 22,000 individuals measured the response and interest from kiwi consumers. The result of this testing generated some strong emails of interest, but broadly little traction or active interest.

Finally, a literature survey was used to assess the idea of creating and marketing a carbon neutral red meat product to send offshore. Pivotal to this research was a Beef + Lamb New Zealand study of consumer preferences in California, USA and Shanghai, China. Further studies had looked at the concept of carbon labelling, with the assumption that this will be widespread in the medium term. This research highlighted that while a segment of consumers are interested in buying carbon neutral or low carbon food, they may not be interested enough to spend more to buy it, and also that on its own the carbon neutral attribute does not meet enough consumer needs to be an attractive offering and needs to be combined with other attributes that consumers are demanding.

So the recommendations are for market testing to continue to overseas and domestic markets to gauge the moment that consumers are looking for this type of product offering. New Zealand needs to make sure that our companies are adopting internationally recognised standards for determining carbon neutrality. As this awareness matures, it could quickly affect our access to overseas markets.

Acknowledgements

I would like to thank my husband, Christopher, for creating the space in our multitasking lives for me to work on this idea. Thanks to my three beautiful and busy children who were tolerant when Mum had to do her homework.

Thanks to Genna and Alistair Bird for providing me with photos and allowing me to take photos on their sheep and beef farm at Oxford. Also, for the sharing of ideas about how it might work.

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Introduction

To know which way the wind blows: To understand what is happening in changing circumstances and to be able to anticipate the future.

Taking a macro perspective and looking at consumers around the world, at governments in most developed nations and at wider media narratives, the focus is on supplying more protein – to meet the needs of the growing global population – but using less inputs and with less impact on the natural environment.[1] Emerging markets and developed markets are concerned about human impact on the environment and are increasingly focused on agriculture's role in sustainable food supplies for a growing population. The public concern about water quality has had widespread awareness in New Zealand, particularly for the last five years. This has resulted in a range of mitigation methods and increasing amounts of technology available to farmers to reduce their operation's impact on water quality. The Next Big Thing for those in agriculture is to address the warming impact or greenhouse gas emissions of their farming operation. This paper is concerned with one aspect of how our red meat industry might evolve to meet those changing consumer expectations, with an emphasis on carbon footprint, and to increase their product value while doing it.

As the government consulted the New Zealand public in 2018 for the Zero Carbon Bill before parliament, Kiwi farmers felt anxiety about the future of their industry and the potentially punishing regulations that might result from the proposed legislation. "The agricultural leader [Federated Farmers dairy sector chair Andrew Hoggard] said farmers have "some trepidation" that taking steps to protect the environment may have an unnecessary impact on the farming community."[2] Farmers are potentially worried that the changes required of them will be massive upheavals and, at the heart of their concerns, that the changes required will render their farming businesses unsustainable. Farmers are not against doing a better job for the environment, rather, they fear that the expectations placed on them will be financially ruinous. Yet with any challenge comes opportunity for some. This research came from applying opportunistic thinking to the challenges presented by the current government's focus on greenhouse gas emissions. What if NZ could construct a new, unique, high value product attribute that was carbon neutral production? What if NZ could produce carbon neutral red meat? Could this could create a world leading point of difference? What if we could take this value proposition to the world of high value, environmentally conscious, global consumers? The Minister for Climate Change, James Shaw, described this as the "holy grail" – certifying and investing in measuring our farms, with a purpose-built calculator to find out which farming systems are meeting the carbon neutral standard and marketing premium products based on carbon neutral production.[3]

After all, consumers want more production with less impact. Smartphones enable a more educated consumer, who is more demanding and exacting, and can increasingly verify product claims and shop online. Social media gives greater voice to consumers, producers and special interest groups. This is equal the world over.[4] Our opportunity is both a domestic one and a global one: To be **carbon-neutral or warming-neutral food producers to the world.** The Australian Red Meat industry announced that from 2005-2015 there was a 45% reduction in greenhouse gas (GHG) emissions associated with their red meat industry. They have expressed an industry goal to be carbon neutral by 2030.[5] The Australians have concluded that low carbon agriculture is inevitable.

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[1] Lisa Sharp to MLA "Beef Australia" June 2018 https://www.youtube.com/watch?v=qF--BrhgWTU viewed 30.09.2018

[2] https://www.radiolive.co.nz/home/articles/rex/2018/06/climate-change--its-economic--not-environmental--says-james-shaw.html accessed 30.09.2018

[3] https://www.radiolive.co.nz/home/articles/rex/2018/06/climate-change--its-economic--not-environmental--says-james-shaw.html accessed 30.09.2018

[4] Lisa Sharp to MLA "Beef Australia" June 2018 https://www.youtube.com/watch?v=qF--BrhgWTU viewed 30.09.2018

[5] https://www.youtube.com/watch?v=-Ca7FhrHkgU 30/09/2018 MLA Meat & Livestock Australia, Published 25 July 2018 and given that Australia and NZ are the world's biggest lamb exporters, this is a market move we cannot ignore (Food and Beverage Information Project 2011 Sector Stream – Meat (2011) 50. Retrieved from www.foodandbeverage.govt.nz)

This paper explores the idea of a vision for a Carbon Neutral Red Meat Brand. How would it look? What would the priorities be? How would it work? Then the paper looks at measuring demand for this type of product offering. Are people interested in this? Is there existing demand? Is this a viable business case to explore further?

What this paper does **not** explore is the science. It is beyond the scope of this paper to discuss the exact accounting methods to determine what is and is not carbon neutral, and whether warming neutral is the better option, and whether or not NZ farms are already meeting this standard. This science is contentious and best described as "under development" across the government, the primary industries and the commercial sector. The belief of Beef + Lamb New Zealand is that Kiwi farming methods need to be investigated in their own right, rather than using the data from overseas trials to determine the emissions based on averages set in countries and systems diverse from our own. For this reason, they are currently investigating and initiating some NZ based trials.[6] With a proposed government goal of a Carbon Zero Economy by 2050, we have time to get the science right and to teach our farmers and our processors the best practices to lower their emissions as well as to develop technology to support these changes. With that in mind, this paper makes the assumption that for some farm operations, carbon neutral food production is a technical possibility. This paper also uses the term "carbon neutral" as a short-hand for all the possible greenhouse gas impact neutral options, and chose to use this term as the one most widely recognised by the consumer. There is debate about methane's place in the greenhouse gas equation with livestock and debate surrounding soil carbon sequestration. This paper does not address these debates, as this paper is concerned with consumers and their perceptions of environmental stewardship for the planet, rather than technical points about how to account for greenhouse gas emissions.

This paper does not discuss at any length the complexity of red meat processing. This paper could be picked up by a meat processing company who is innovative, concerned with their sustainability, has a disruptor mindset and a long term vision for their company's profits and survival. They could develop their supplier group and then their brand offering based on the information put together here. This is not an idea that can be trademarked or patented – although the method of carbon accounting and mitigation methods might be able to be – so it is really an opportunity ready for the right visionary to pick up and run with. Some red meat companies may be currently developing offerings in this space, this was suggested by the reluctance to discuss some of the points of this research under the grounds of commercial sensitivity.

This paper also does not address the farming practices that would mitigate greenhouse gas emissions on farm. Each farming operation is unique and to give any advice in this sense would be so vague and bland as to be unhelpful. In addition, the exclusion of the science of carbon and greenhouse gas accounting makes any advice lacking in evidence. Academic analysis to date suggests that increased on farm efficiencies have already reduced the emissions profile of our beef sector.[7] But this would be an excellent future topic for Kellogg projects or academic theses in helping various primary sectors to take the first steps to reduce their footprints and move to an inevitable low carbon agricultural future.

This paper seeks to take the temperature of consumers and their relationship with carbon zero food production by making some assumptions about which way the wind is blowing when it comes to low carbon or carbon zero consumption.

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[6] One study completed for reference is Lieffering, M., Ledgard, S.F., Boyes, M., and Kemp, R. (AgResearch). A Greenhouse Gas Footprint Study for Exported New Zealand Beef. (2012, February) *Report prepared for the Meat Industry Association, Balance Agri-Nutrients, Landcorp and MAF*. Retrieved via email from Beef + Lamb New Zealand with thanks.

[7] Between 1990 and 2011, on farm emissions have decreased 12%. Lieffering, M., Ledgard, S.F., Boyes, M., and Kemp, R. (AgResearch). A Greenhouse Gas Footprint Study for Exported New Zealand Beef. (2012, February) *Report prepared for the Meat Industry Association, Balance Agri-Nutrients, Landcorp and MAF*. 22. Retrieved via email from Beef + Lamb New Zealand with thanks.

What is the Vision? How a Carbon Neutral Meat Brand Could Operate

The Elevator Pitch

Within the farm's boundaries exist enough trees, shrubs and flora to offset the emissions generated by the lifetime of the livestock and the transport, processing, refrigeration, packaging and storage of that meat product until it reaches the consumer. We create a supply chain from a producer group that produces premium red meat, with a carboNZero certified footprint.

The Nitty Gritty

There would be a group of farmer suppliers, who farm properties (private land) which contain within their boundaries enough carbon soaking trees to offset the emissions of the meat growth and supply process. The greenhouse gas (GHG) emissions, such as methane, cannot and likely should not be eliminated from livestock, but they can be offset. Those on-farm trees might not meet the technical definition of the Emissions Trading Scheme (ETS)[8], so they might include, for example, shelter belts and non-contiguous groves smaller than one hectare, but nonetheless they would in reality be a recognisable tree to any human definition. These trees could not be in a separately owned forestry block, sometimes known as a carbon sink, but must be part of the farming operation as it stands. The practice of carbon sinks is not bad per se, but for the transparency of this brand attribute to the consumer, it is important that should they visit the farm – either in reality or virtually – where their meat originates, that they can look around and see the trees. If, in the future, agriculture is brought into the ETS, and farmers are liable for carbon taxes, this might also result in the incongruous position of a farmer supplying livestock to a carbon neutral red meat brand, while paying the government a carbon tax as their particular trees will not meet the strict interpretation of the ETS. The supplier criteria could set their own definitions around what is a tree.

The farm, within its boundaries, must be carbon positive according to the supplier criteria definition, to offset the emissions created by the animals but also the processing, transport and packaging that follow the farm gate. Those stages of the supply chain must still be working to reduce their emissions at every point, for example, meat processing plants run on renewable energy and hybrid or electric transportation where possible. Some businesses around the world are moving towards marketing themselves as carbon positive, for example Max Burgers in Scandinavia.[9] It seems that the macro trend will be that all businesses will increasingly benchmark their sustainability performance in relation to carbon footprint, and as a consequence, seek ways to decrease their carbon footprint.

In the United Kingdom, following their introduction of the Climate Change Act (2008), the Carbon Trust developed a Carbon Neutral definition in 2009 with the objective of increasing transparency of carbon neutrality claims by providing a common definition and recognized method of achieving carbon neutral status. This is known as British Standards Institution (BSI) Publicly Available Specification (PAS) 2060. The BSI PAS 2050 (revised in 2011) describes the method of calculating the carbon footprint of a good or service. In New Zealand, Enviro-Mark Solutions (wholly owned by government owned Landcare Research) have developed the carboNZero verification. Their clients get to use a specific carboNZero certification logo and are certified against ISO 14064-1 for an organisation or PAS 2050 for a product or service. This meets the criteria recommended by Apostolidis & McLeay in their study on consumer habits that recommended "a public labelling authority", not a commercial organisation, create and monitor the food labelling in order to build consumer trust.[10]

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[8] The ETS definition of a forest is outlined at http://www.laurieforestry.co.nz/Defining-a-Forest (14.10.18)
[9] For a network of businesses choosing to be carbon positive (offset 110% of their emissions) see the website https://www.clipop.org/ (15.10.18)
[10] Chrysostomos Apostolidis & Fraser McLeay (2016). Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy* 65. 84

This group of suppliers would be audited once (at least) per year by an external verifier. Enviro-Mark currently perform this function with their carboNZero mark – seen on Yealands wine bottles for example. Enviro-Mark design a product specification for the entire product to market process and then check that all parts of the supply chain meet the standard of the carboNZero mark. The requirements of this assessment involve an aspect of continuous improvement to prevent slippage. For example, although a farm may have met the carboNZero standard the year before, they are required to demonstrate ways they are reducing their footprint all the time, such as reducing petrol and diesel use, switching to more solar power or planting new areas into forest. The methodology of the science involved in assessing the footprint is therefore sitting with an external auditor, in this case Enviro-Mark (carboNZero), to develop the calculator and product specification in order to make a judgement about the emissions footprint of each farm. This would, of necessity, be a moving target as the science and technology, both of measuring and of mitigation, evolve.

In addition to the external carboNZero audit, the farmer supplier would have to meet a set of criteria to supply, set by the brand itself. This set of criteria would ask them to record specific data of interest to the brand's customers and report on their own procedures and policies. Some examples might include grass-fed evidence or restrictions on use of particular sprays in the system, such as glyphosates. As a result of meeting the required standard, the farmer could supply their livestock to the brand, and in return receive a premium of a set amount of cents per kg supplied. This premium is important as the brand is asking for *more* than the ordinary amount of mandated recording and information, and that it be supplied in a timely manner. The criteria to supply may from time to time undergo changes, as new consumer concerns are expressed. For example, a farmer may have to carefully record all drug use and tag it to a particular animal, such as an anti-inflammatory for a lame animal, and report this to the brand. The premium is also important to encourage the maintenance, growth and preservation of existing treed areas on the farm. The Lead With Pride accreditation in the Synlait milk supply programme or the ZQ wool suppliers are directly comparable visions for suppliers.[11] The Lead With Pride programme encompasses aspects of not just environmental practice but caring for people and quality product. Lead With Pride qualifying suppliers are paid a premium on their milk price for maintaining their adherence to a particular standard, set in consultation with Synlait's customers. Consumer centred criteria are important to achieve the premium prices and secure markets.[12]

This could represent an enormous opportunity for farms which are low impact and may contain some less than productive areas. The vision would be that as the brand's sales increase, and the premium to supplier farmers increases, other farms may choose to remove some of their less productive areas from pastures and put them into trees or forestry in order to qualify and meet the criteria for supply. Thus, as demand for the product with this attribute increases, the number of farms encouraged to come onboard also increases, and the overall social and environmental benefit increases. This aligns well with the present government's expressed policy to see a billion trees planted in New Zealand.[13] Furthermore, what an opportunity to see the primary sector as an environmental leader in this space? Rather than being reactive to urban finger pointing about the proportion of NZ's emissions that sit in agriculture,[14] red meat suppliers could be the first food production companies to proudly display their environmental

[11] More information can be found at https://www.synlait.com/about/supplying-synlait/lead-with-pride/ (14.10.18) or for wool see http://www.zqmerino.co.nz/ (16.10.2018)
[12] Proudfoot, I. KPMG. (2018). *Agribusiness Agenda: We need to tell you our stories*. Auckland, NZ: KPMG. 58. Consumer centred agri-food network.
[13] Retrieved from https://www.mpi.govt.nz/funding-and-programmes/forestry/planting-one-billion-trees/ (14.10.18)
[14] Hon. James Shaw at Intergovernmental Panel on Climate Change (2018, March). Retrieved from https://www.stuff.co.nz/environment/102510601/changing-agricultural-practices-key-to-cutting-greenhouse-emissions--shaw (14.10.18)

credentials with this product attribute and lead to urban consumers asking their other product suppliers for carboNZero options or carbon footprint information.[15] Leading the awareness and response to the carboNZero challenge might be a way to re-establish the trust in the farming profession from Kiwis, who do not live on or understand farming.

Given the ethos of the carbon neutral attribute, the vision for this product sees biodegradable or compostable packaging as highly desirable. The use of single use plastic would be incompatible with the vision and even "recyclable" plastic trays have a question mark over them in the NZ context when it seems that no one can demonstrate exactly how they are recycled.[16] Bostocks Organic Chicken have recently introduced biodegradable packaging for their production in the Hawkes Bay successfully, so the technology exists and is in the market already.[17] The emissions profile of biodegradable packaging would need to be calculated and included in the product specification. It is possible that it would emit more via biodegrading than a "recyclable" plastic tray and single use cling-film would "cost" in an emissions equation, but it would still be the right thing to do to use packaging with a minimal overall impact on the planet.

The very nature of examining a product and asking the question about its GHG emissions footprint encourages you to look for a local market for this product, assuming that emissions are impacted by the distance a product has to travel. That is why much of the research in this paper was dedicated to investigating the domestic market for a carbon neutral premium product. However, the impact of "food miles" on a carbon accounting system is proven to be greatly overestimated[18] and, as a consequence, a short section on international demand has been included, to explore whether this may prove to be a viable export product as well.

Meat processing companies would need to curate the group of suppliers and optimise their supply chain by allocating specific periods in the plant to processing that product and have packaging and markets ready for the delivery. Again, lessons on how to do that effectively and at scale could be learned from milk processor Synlait, who process A2 milk, grassfed milk and other limited supply processing. Equally, traceability demands on red meat should mean an animal can be tracked from origin into branded packaging.

Indeed, it is hard to find a downside to a story where farmers do better for the environment, get paid for it, and consumers know about it. But of course… we need to know if consumers want this? And will they pay more for it?

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[15] A Chinese study concluded that carbon neutral production would benefit from a "typical example" that would "effectively facilitate behavioral initiatives". NZ agriculture could be that "typical example" product to domestic consumers and lead their awareness of carbon zero production. Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1246. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production

[16] Moorby, C. & Huffadine, L. (2018, May). *China has stopped taking our recycling and waste. Here's where it is ending up.* Retrieved from https://www.stuff.co.nz/environment/103503306/china-has-stopped-taking-our-recycling-and-waste-heres-where-its-ending-up (16.10.18)

[17] Econic high barrier packaging https://bostocksorganic.co.nz/compostable-packaging/ (14.10.18) certified as compostable to European and American standards (EN 13432 and ASTM6400). http://www.econicpack.com/ (14.10.18). This researcher also contacted Innocent Packaging who are unable to currently supply packaging for meat products, but are growing their product range https://innocentpackaging.co.nz/ (14.10.18). Both compostable packaging companies started supplying coffee supplies.

[18] Saunders, C. & Sorenson, L-C. (2009, February). Food miles, carbon footprinting and their potential impact on trade. Paper presented at AARES 53rd annual conference, Cairns, Australia. Retrieved from https://researcharchive.lincoln.ac.nz/bitstream/handle/10182/4317/food_miles.pdf (13.10.18) and Ledgard, S.F. Lieffering, M. Coup,D. O'Brien, B. (2011, July). Carbon footprinting of New Zealand lamb from the perspective of an exporting nation. *Animal Frontiers* Vol. 1. No. 1. And Lieffering, M., Ledgard, S.F., Boyes, M., and Kemp, R. (AgResearch). A Greenhouse Gas Footprint Study for Exported New Zealand Beef. (2012, February) *Report prepared for the Meat Industry Association, Balance Agri-Nutrients, Landcorp and MAF.*

Agriculture that fed the world population without negatively impacting the environment would be an ideal, so it is tempting to think that this idea would market itself. However, there are some difficult aspects to the marketing of a product with a carbon neutral attribute. There is an education aspect for consumers who are likely basing their view of agricultural environmental impact from dominant news media narratives[19] and Netflix documentaries like "Cowspiracy"[20], which profiles US farming systems that are wildly different from the traditional Kiwi methods of farming livestock. Consumers would fairly ask – is me buying this product really going to be better for the world? As a brand, the decision making around the supply chain would have to ask that question repeatedly. One marketing approach might be to use this "knowledge" or negative impression consumers might be carrying about red meat production to offer them a way to have their environmental conscience and eat meat too. Not everyone who viewed "Cowspiracy" became a vegan, but maybe they feel bad about eating red meat when they do, and maybe they don't have to by eating this brand. Rather than seeking a radical change in behaviour, such as adopting vegetarianism or veganism, this brand offers a smaller change in purchasing behaviour, which may seem more achievable and less dramatic. By extension, a major competitor in the market could be meat substitute products that are marketed to consumers wanting to reduce their own environmental impact via the purchasing decisions they make, rather than competing solely against other red meat products.[21]

A concept that requires development in a New Zealand context is carbon-labelling products, "for guiding low-carbon consumption by residents in order to actively respond to global climate change."[22] This idea is being developed by UK company Provenance[23] to try and raise awareness, however, carbon footprint labels have existed in the UK since 2007, as well as in Japan, USA, Germany, Sweden, Canada and Korea.[24] The EU market is set to require carbon footprint labelling in the next ten years, and this will then become a barrier to entry for our export products wanting to access this market. The vision for this brand would see clear carbon labelling on both the products and the supplier farms at the farm gate.

With this particular environmental attribute and product transparency being concerns of the younger demographic,[25] and with Millennials being the largest consumer group,[26] future sales can be anticipated with optimism. This consumer profile would also expect social media to play a large role in the marketing of this product. The brand could build a social media community of suppliers (such as a closed group on Facebook)[27] in order to share ideas, resources, products and farming practices to reduce their GHG footprints. The brand could also build a hashtag following on Instagram (suggested examples

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[19] https://www.theguardian.com/commentisfree/2017/dec/04/animal-agriculture-choking-earth-making-sick-climate-food-environmental-impact-james-cameron-suzy-amis-cameron (accessed 13.10.2018). "Animal agriculture is choking the Earth, and the longer we turn a blind eye, the more we limit our ability to nourish ourselves, protect waterways and habitats, and pursue other uses of our precious natural resources."

[2020]Anderson, K. Kuhn, K. Greenbaum, J. DiCaprio, L. (Producers), & Anderson, K. & Kuhn, K. (Co-Directors). (2014). *Cowspiracy: The Sustainability Secret* [Documentary]. The Netherlands: Netflix.

[21] Chrysostomos Apostolidis & Fraser McLeay (2016). Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy* 65. 74-89

[22] Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1237. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production

[23] https://www.provenance.org/ (accessed 07.10.2018)

[24] Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1238. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production

[25] Agrifood Skills Australia. (2015). *Environmental scan of the agrifood industry*. (ISSN 1835-7539). Kingston, ACT: Australian Government Dept of Education and Training. "Growing importance of provenance and transparency for the Millennial generation (15 – 35 years) who are tech-savvy, experience-driven and less brand loyal than older consumers" 15

[26] Fry, R. (2018, March). Millenials projected to overtake Baby Boomers as America's largest generation. *Pew Research Center*. Retrieved from http://www.pewresearch.org/fact-tank/2018/03/01/millennials-overtake-baby-boomers/ (14.10.18)

[27] As utilised by the Lead With Pride team at Synlait Emma Brand, Investigating the Impact of Social Media on the Primary Industry in New Zealand. *Kellogg 35* (2017)

#carbonzerofarming – no results found 30.09.18 or #zerocarbonfarming – 2 posts 30.09.18 or #zerocarbonag – no results found 30.09.18) so that interested consumers and producers could see images of low emissions farming in practice and the tasty meals that result. Clever social media marketing for this brand would also build network of people who value eating in a way that is mindful of the environment and tell them where our suppliers are so they can build a consumer base, or better yet sell directly to them. To do this the brand might use Facebook and Instagram networks to market paid advertisements directly to people with "Green" interests as well as "clean eating" and "healthy" mindsets. The brand could also invest in social media influencers – for example cooking based Instagram accounts – to showcase the product and associate it with fine cuisine and "clean eating" influencers.

Challenges with Executing this Idea – What's the Hold Up?

Barriers to entry for a new player in the New Zealand red meat market are very high. These barriers include a lack of toll processors - companies prepared to slaughter and process meat on behalf of other companies. The toll processors that do exist are expensive, effectively pricing competitors out of the market, or at a geographically unfavourable location relative to suppliers, which adds carbon or GHG cost to the product and creates a negative animal welfare issue due to the distance and the long transport time. Sending animals from the West Coast to Wellington just to get processed when there are processors virtually next door is neither carbon nor cost effective.

Also, the scientists are going to disagree about the methodology – for example, it may be carbon neutral, but what about methane? Or to calculate the carbon footprint of a farming operation the trees on the property are the wrong age, so it is not "warming neutral". Or how are we taking account of the soil carbon, the soil sequestration? There is a potential for well-meaning scientists to sabotage a brand because they disagree with the methodology used, even when the premise and the overall outcome of people adopting this brand over other farming and production methods is beneficial to their causes. From the extremist or activist point of view there seems little support for moving the needle to anywhere short of their particular goals, such as total eradication of livestock farming. This is a potentially vocal minority who could sabotage the brand's offering if they view it as an inadequate or misguided response.

Most importantly, New Zealand (and indeed, the world) lacks a common language, a common standard and a common framework for assessing carbon footprints. An industry-wide agreed standard and common measure to use on carbon footprint would enable a clear pathway to creating this a product attribute. It would also enable investment and technology to develop to meet the standard. MPI would ultimately have to certify this attribute in order to supply overseas markets with this attribute accepted. They are therefore a logical body to initiate and manage the process of this standard and audit.

Meat processors and brands have identified a number of barriers in putting together a product programme or offering of this nature.

- The costs and resource required to profile each farm and work with farmers to meet the standards
- The requirement for the premium market to supply chilled cuts, which means processors need access to meat supply 52 weeks of the year, rather than seasonal supply
- Price based barriers include the difficulty of generating a premium return from 40% of the carcass (due to yields and trim cuts) to cover a premium paid to suppliers on a whole carcass
- The difficulty of hitting a price ceiling for consumers of a premium product, for example, if the commodity product price rises, for example the recent lamb prices have been high as a commodity, which reduces the amount of price premium on the top that is available before consumers will not pay any higher

The commitment of both consumers and suppliers to this programme has also been at issue.

- European and UK consumers asked for carbon footprint information and looked for suppliers willing to meet their requirements prior to the Global Financial Crisis in 2008. Their interest in

carbon footprint waned as they concentrated on different market forces following the changes in financial markets

- Changing Consumer Ideologies: the consumer's idea of what good environmental management looks like is constantly changing, from a focus on water quality, to greenhouse gas emissions, to air pollution. As all businesses need to be consumer led in their offerings, a lack of interest from consumers necessitates a shift away in focus for producers
- Commitment of farmers (suppliers) to a programme is also difficult to guarantee, as even where farmers might be better off over a longer term staying with a premium programme, if the base commodity prices rise, the farmer is likely to send his product away in order to capture the immediate higher prices
- Ultimately, the pricing and costs of the programme need to provide a win to farmers and a win to processors at a price that consumers are willing to pay, and this is a difficult tension to maintain in a changing environment

The need to educate consumers about low carbon products as well as the willingness of consumers to buy these products is another barrier, dealt with directly by this project. Specifically there are difficulties in putting together a low carbon or zero carbon supply chain,[28] such as the effort and costs of measuring emissions, lack of standardisation in calculating emissions which means comparison with product peers is difficult, lack of awareness or understanding of green products by the consumer, and lack of government or regulatory oversight of this area. Blockchain technology could eventually resolve this if a standardised measure were adopted and authenticated records could accompany products to their purchaser.[29] The supply chain costs of separating this product from main supply lines, especially while initial volumes are low, would add costs to this brand in the beginning. There is also a need to go to market and find or create demand for the various cuts of beef and lamb in order to sell all the parts of the carcass.[30] This might mean a split between branded carboNZero cuts and standardly marketed cuts while markets are developed. Constructing a supply chain with year-round supply options for chilled cuts would also be a challenge.

Viability Research – Is this something that consumers want?

Methodology

I was influenced heavily by Eric Ries' book "The Lean Startup" in my thinking of launching this product idea onto the market. Before I invested the time, energy and money required to set up the whole supply chain and retail, I needed to ascertain whether there was existing demand for this product. Also, I wanted to learn more about who the potential customer was, what they wanted from my product and the best way to reach them.

With this in mind I set up a website, www.carbonneutralmeat.org (as an environmentalist entrepreneur had already nabbed www.carbonneutralmeat.com and was selling this web address for US$990). This website was my Minimum Viable Product (MVP) to test consumer interest in the idea of a carbon neutral meat brand. I set up the site with a landing page and a built-in MailChimp form to allow collection of email addresses of interested parties, as well as a contact form asking for general feedback on how this brand might work for them.

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[28] Banerjee, A. Infosys. (2018). *Re-engineering the carbon supply chain with blockchain technology*. Bengaluru, India: Infosys. 4.

[29] Banerjee, A. Infosys. (2018). *Re-engineering the carbon supply chain with blockchain technology*. Bengaluru, India: Infosys. 5.

[30] Food and Beverage Information Project 2011 Sector Stream – Meat (2011) 62f. Retrieved from www.foodandbeverage.govt.nz returns on beef have been "erratic" due to revenues from boneless frozen cuts (majority of exported beef) and B+LNZ. (2017, December) What importance do consumers place on different product attributes? Shanghai vs. California. 15. Shanghai and California preferences for which cuts of beef preferred by the different consumers.

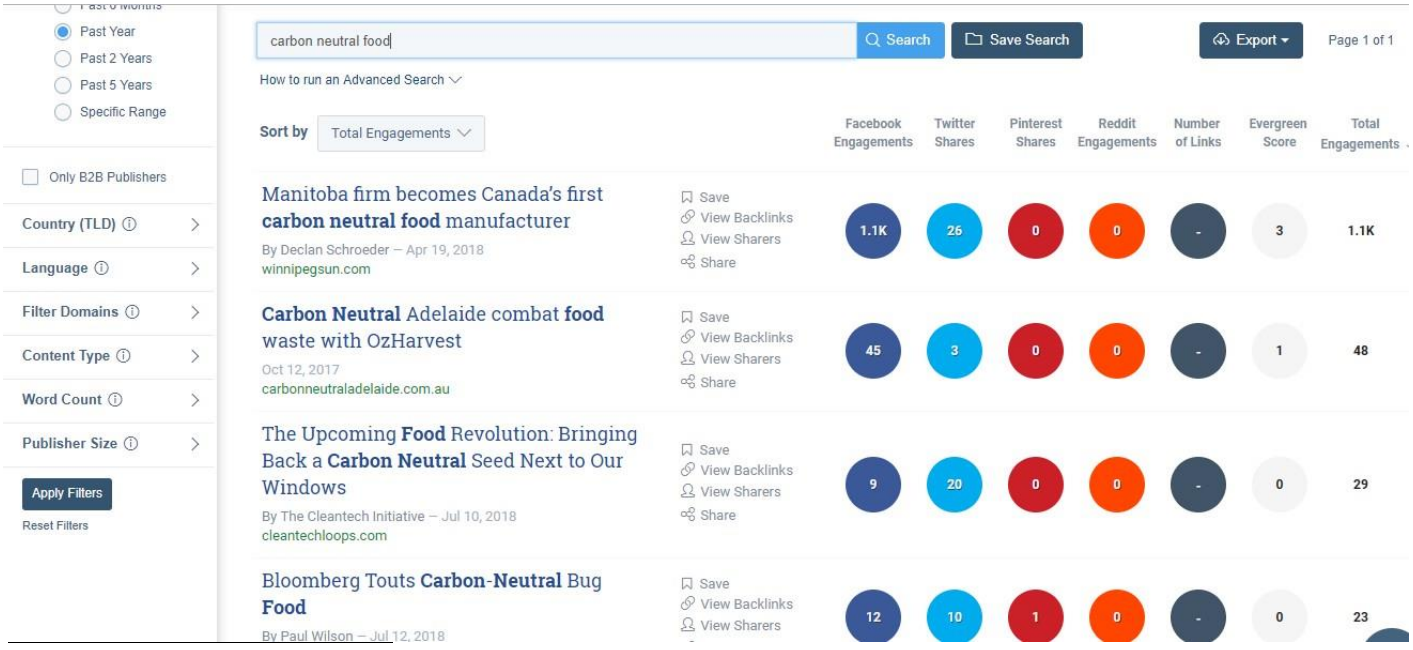
In order to drive traffic to this landing page, I ran a campaign using social media. Firstly, I set up a Facebook business page, then I used a programme called AdEspresso to create an effective advertisement and used the Facebook and Instagram platforms to run the refined, targeted, paid advertisement that drove interested potential customers to the landing page. It would measure how many people engaged with the advertisements themselves, the Facebook page and the landing page, all for a relatively low monetary investment and without setting up all the pieces to generate supply of an actual product.

Prior to running any New Zealand specific testing of individual consumers, I checked for similar products elsewhere in the world (using Google and Bing search engines). There were none that I could locate. BuzzSumo and Google Trends were then consulted to check the macro data on consumer interest in this topic.

Search Engine Research: Methodology and Results – Is anyone looking for this already?

It was important to check some internet search metrics prior to running any testing – just in case the viability testing skewed the current state of interest in the topic. First, I ran a search on **BuzzSumo**[31], which is a site that measures a topic's appearances and engagement on various social media platforms. This search demonstrates whether this is a topic under discussion and if so, which platforms are most active in the discussion or narrative at the present time. This would allow a targeting of consumers on the most likely platform to attract their interest in the subsequent, planned test advertisements.

A number of different search terms and related words were searched and given various time frames to try and capture any data on the existing interest in a carbon zero food concept. Only one search term yielded enough data for a result, "carbon neutral food". The screenshot below shows the data from this search. Given the massive volume of data present on those platforms from all over the world in the past 12 months, the results were not encouraging. For context, a search on "kombucha" (another niche food product) generated 32,100 Facebook engagements just for the top three listed articles on the results page, and "grass fed meat" had an item with 6,000 Facebook engagements on the first item. The "carbon neutral food" search provided references to an article from Canada about a company – Manitoba Harvest - making hemp food products, certified by a Toronto based carbon zero company. They make hemp snacks, protein powders and oils.[32]



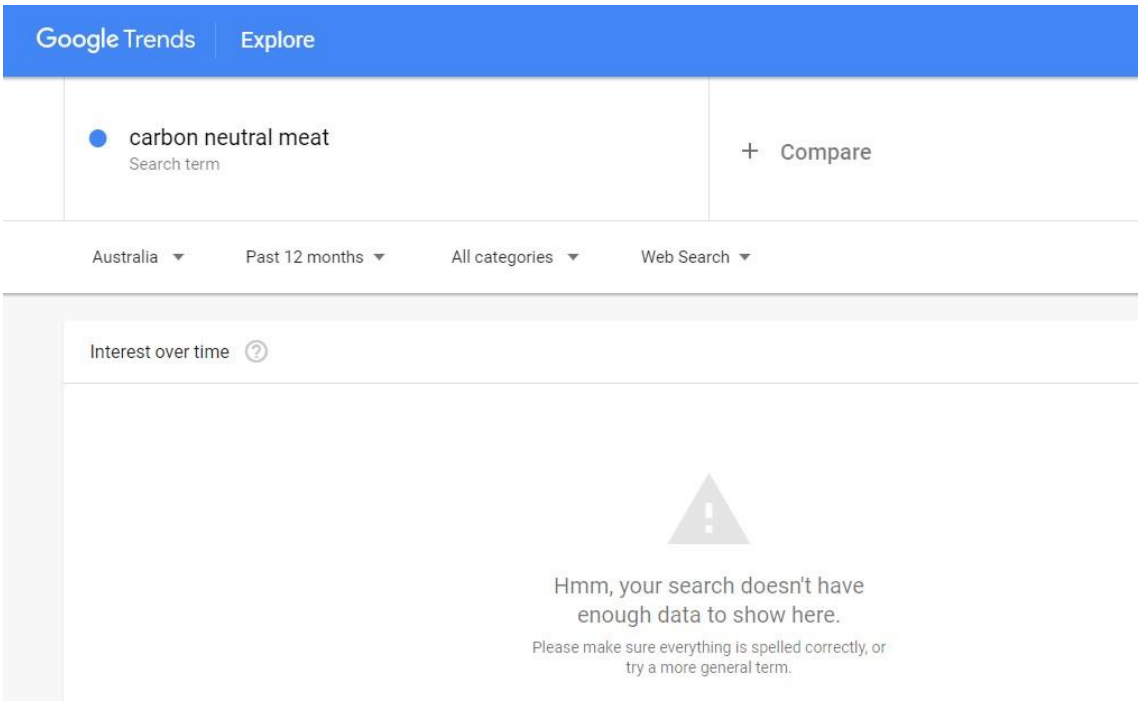
[31] https://app.buzzsumo.com/research/content?type=articles&result_type=total&num_days=365&general_article&infographic&video&how_to_article&list&what_post&why_post&q=carbon%20neutral%20food&page=1 30.08.2018

[32] Schroder, D. (2018, April). Manitoba firm becomes Canada's first carbon neutral food manufacturer. *Winnipeg Sun* Retrieved from: https://winnipegsun.com/news/provincial/0420-earth-day (30.08.2018)

It was evident that there is not huge engagement worldwide in this concept via social media at the time of testing. Attempting to determine consumer interest in the product meant asking was this because the media's main narrative is that food production cannot be carbon neutral? Or was it that people did not care enough or have interest enough to search it yet?

A BuzzSumo search conducted on 23.09.2018 (after social media viability testing) revealed no change in the results. The limited testing campaign had not set the internet on fire.

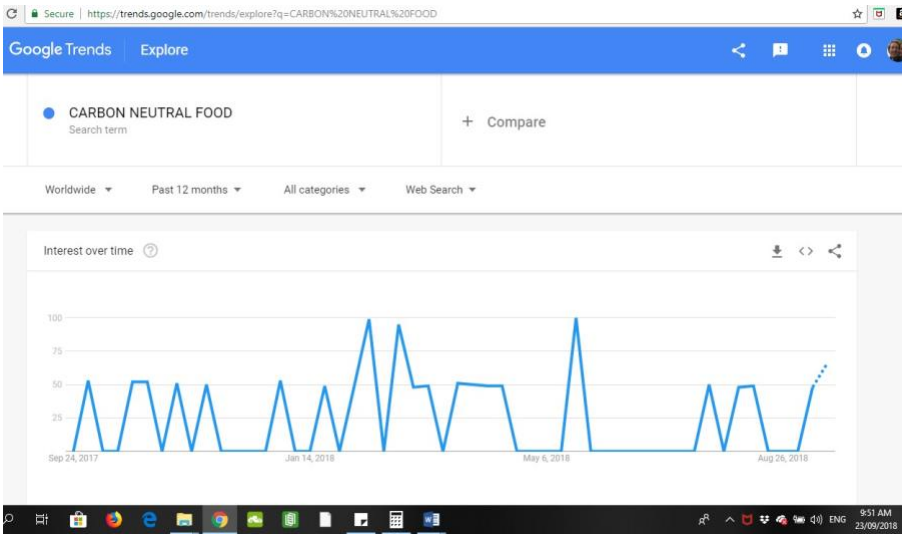
The **Google Trends** website was searched on 30.08.18 to determine whether people where using Google to search for carbon neutral food related topics. Most results pages for the various search terms I tested looked like this screenshot:



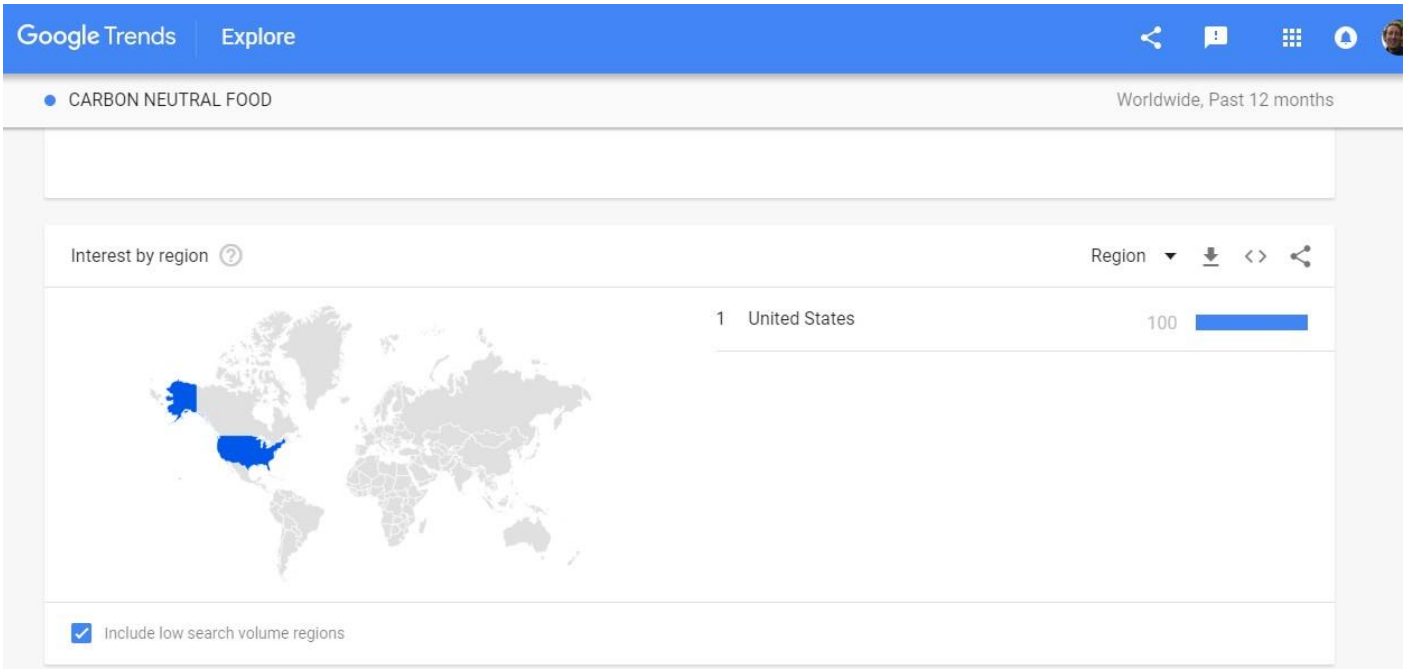
This screenshot is a search of all searches done in Australia for "carbon neutral meat". "carbon neutral food" returned the same outcome. Australia was used to provide a bigger sample size due to larger population.

So I widened the geographical search and checked "worldwide" to see if anyone, anywhere, was searching for carbon neutral food or meat or related terms. Still nothing.

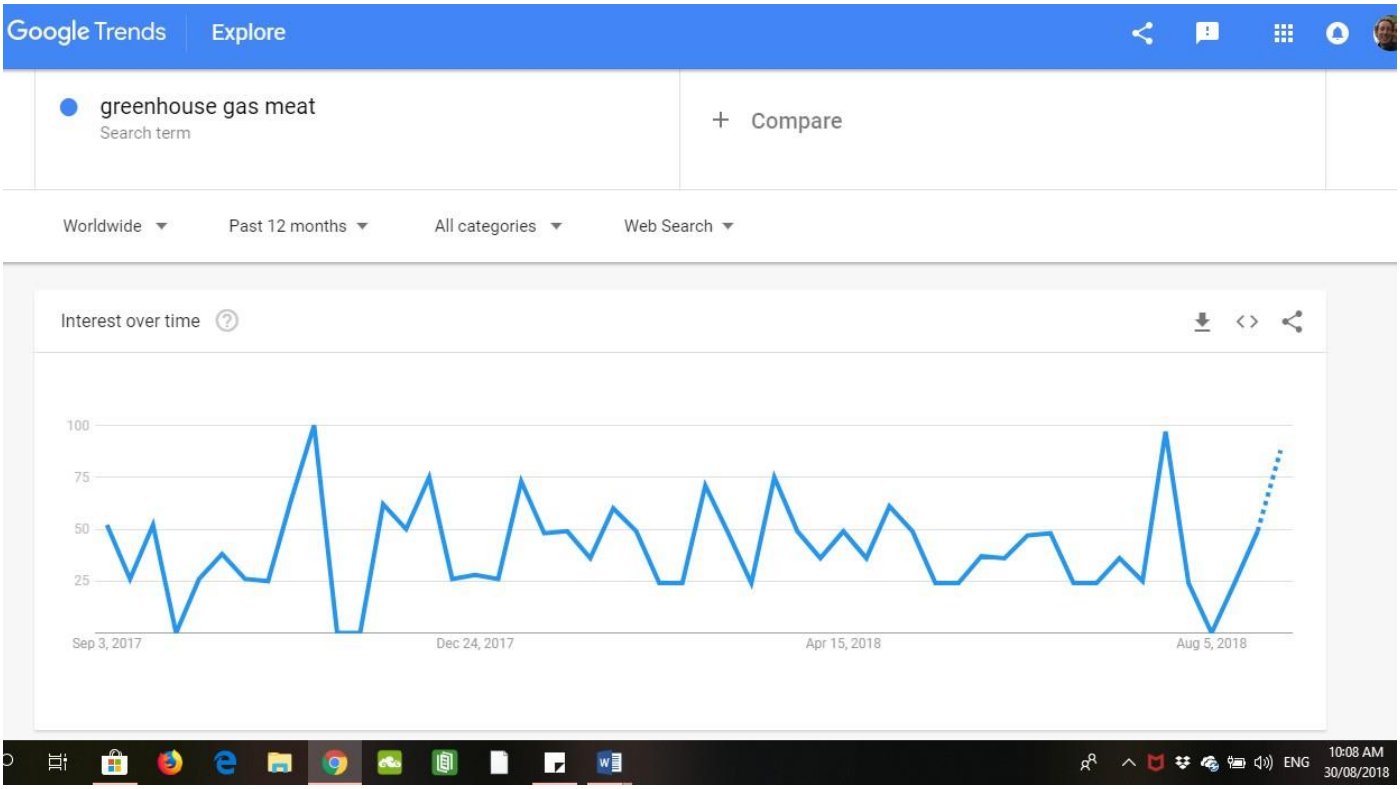
A repeat of this Google Trends search a month later yielded different results (see screenshots below). This illustrates that even though only a short time frame had passed, the discussion had grown to the point where it could be picked up by Google's tracking metric. The Google Trends analysis also picked up that the United States was the origin of the searches it registered. This potentially identifies an early export market emerging for the proposed product that could be explored further using market testing. Off the record chats with existing meat companies in November confirmed North America as the most likely destination for a carbon neutral food product to be exported successfully.



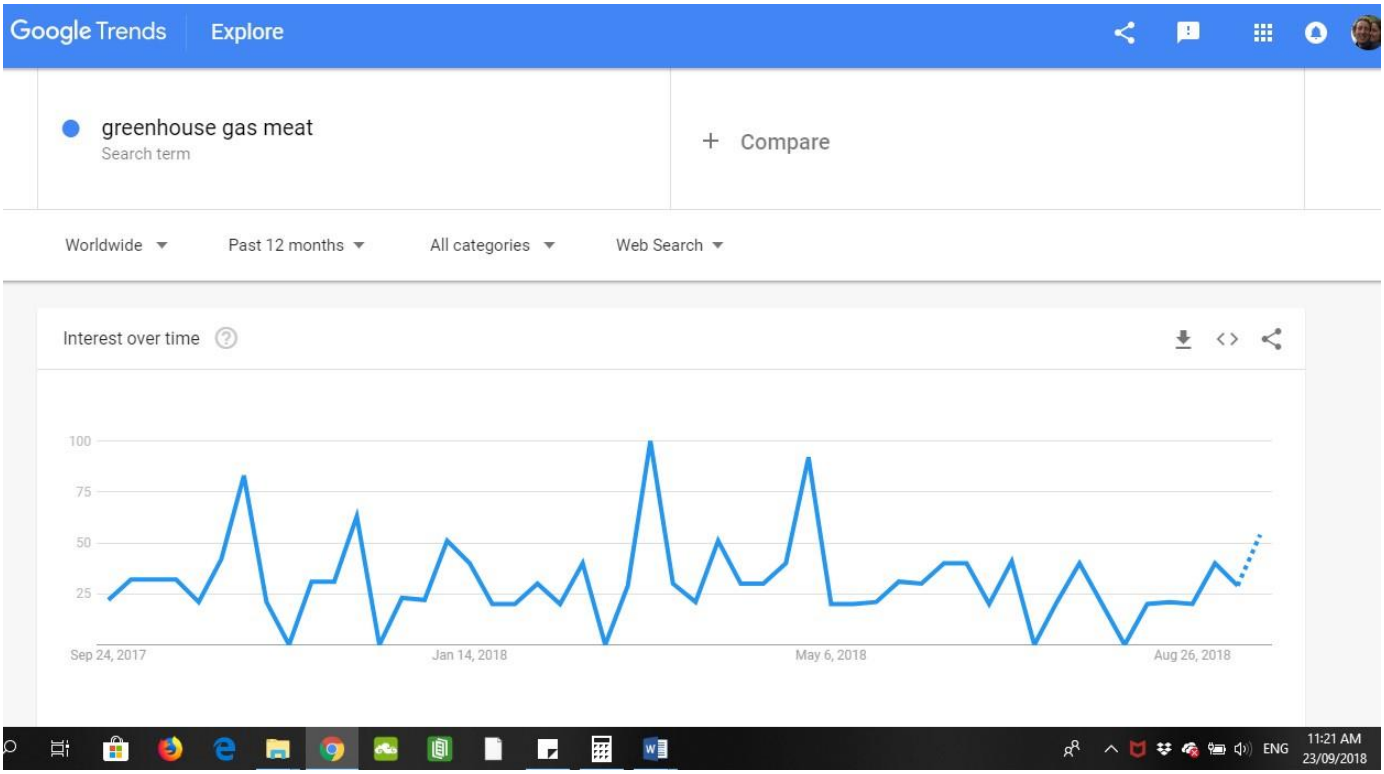
This screenshot is a search of all searches done Worldwide for "carbon neutral food" and reveals low levels of interest as individual searches are recorded.



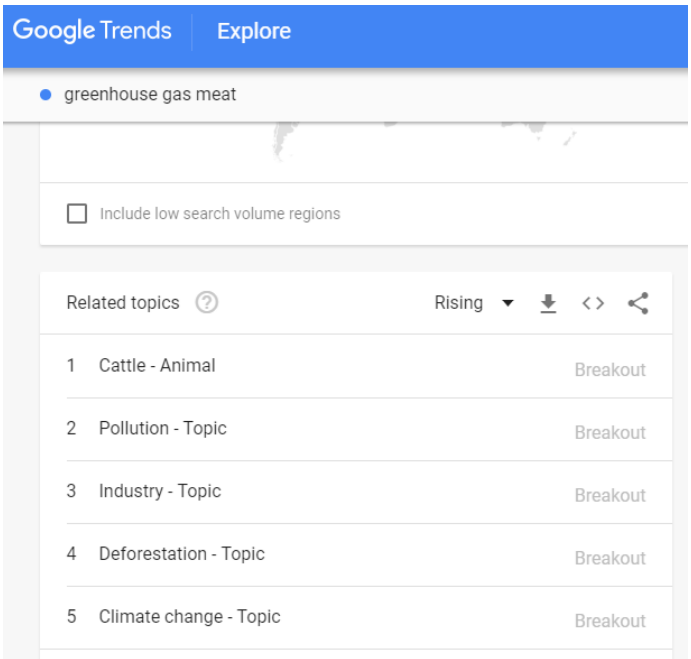
In August, I tested the association of GHG and meat but testing the results for the search term "greenhouse gas meat". The results showed google searches for these associated terms were more prevalent than the "carbon neutral meat" alternative. This illustrated there is a narrative in searches about GHG emissions and meat production, but without the positive statement associations of "carbon neutral". This existence of a certain narrative and discussion around emissions and meat production does allow space for a brand offering. If consumers are already talking about this topic, it provides a space to enter the discussion. If consumers are concerned about GHG emissions and livestock agriculture, there is an opportunity to solve the "problem" of conscience for consumers, without asking them to change their behaviours radically.



Repeating the search on 23 September showed an ongoing pattern of low global interest in "greenhouse gas meat".



In the September test, Google Trends also identified some related search terms that paint a picture of the negative associations of livestock agriculture from the key words people were searching, such as, Pollution, Deforestation and Climate Change.



So overwhelmingly, the whole internet worldwide seemed relatively uninterested in the idea of Carbon Neutral Food. The most relevant searching and discussions occurring are associated with the negative environmental impact that livestock agriculture is associated with. This is discouraging when considering the viability of a cerboNZero red meat brand. But as Henry Ford is rumoured to have said, “If I had asked people what they wanted, they would have said faster horses.” It is possible that consumers are unaware that carbon neutral food production is possible and therefore are not seeking it. It is equally possible that they do not want it.

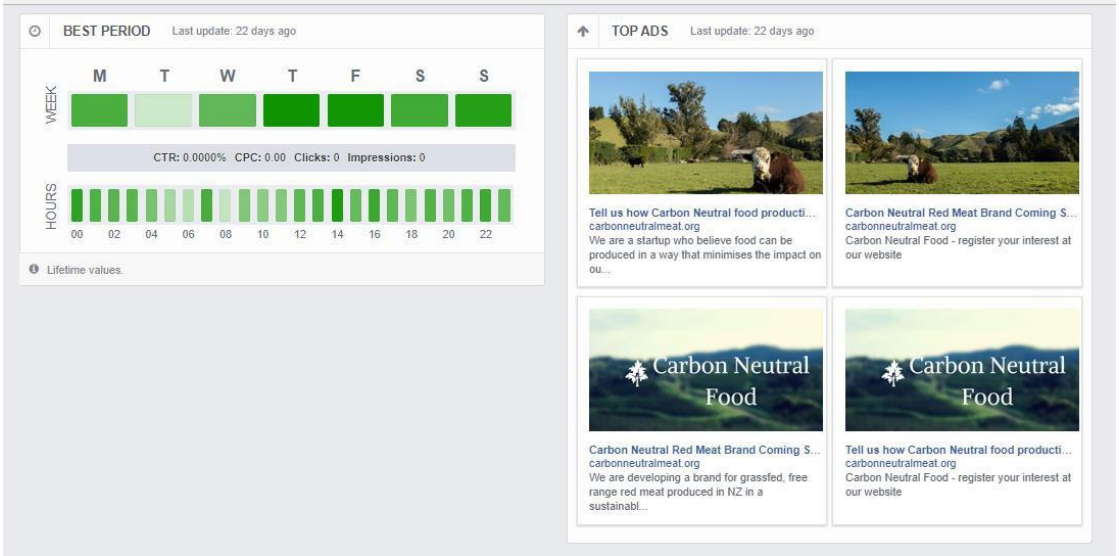
Do we proceed with the special kind of conceit that tells us we know that consumers will want this product, they just don't know they can have it yet? Or do we listen to this lack of interest, and determine that this isn't a viable product right now?

New Zealand Consumer Testing Methodology

In order to measure domestic consumer interest in a carbon neutral meat, I used a process involving paid advertisements on social media platforms and the Minimum Viable Product (MVP) website landing page. I designed an advertisement to deploy on social media, tested the effectiveness of that advertisement, then ran the advertisement across the social media platforms at the times that had been identified (during the effectiveness testing) as being the most engaging and then measured the response. Engagement was measured in interaction with the advertisement via "likes", comments, shares and click throughs to the MVP landing page.

Advertisement Design Methodology

Initially I used adespresso.com to design an effective and engaging Facebook advertisement. I provided a selection of different copy, headlines and photos, that was taken by AdEspresso and tried in 48 combinations including different placements within Facebook with the goal of determining which was the most effective and engaging version of the advertisement. This ensured that when I ran a test advertisement on a larger scale, I would be running the best version and therefore any failure to engage customers would be a result of genuine lack of interest rather than poor execution of advertisement design by myself. The screenshots in Appendix Three are the detailed results of the AdEspresso testing.



AdEspresso identified the best performing times and combinations of the advertisement before the official testing campaign ran (above). The winning combination advertisement shown – in action – (to the right).

Social Media Advertisement Campaign Methodology

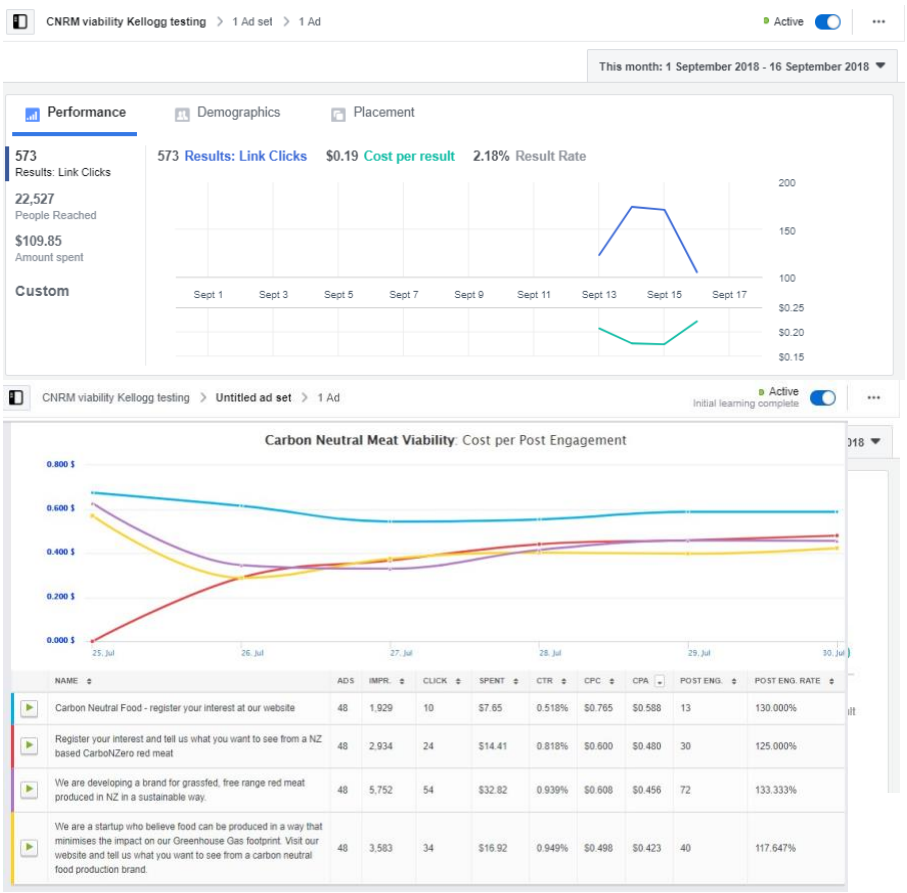
Taking the recommendations from AdEspresso on advertisement design and timing for maximum engagement, I created the most engaging combination possible and ran it in a targeted Facebook campaign as a paid advertisement in Facebook and Instagram newsfeeds. The advertisement ran on Thursday, Friday, Saturday, Sunday (to achieve maximum engagement at times identified by AdEspresso). The selected audience were people aged 25-65+, living in Auckland, with an interest in Sustainability. This audience was deliberately left broad enough to enable a wide sample size, especially as Facebook advertising audience guidelines are set up for large, USA populations, so going too specific meant the audience size was not large enough for Facebook's algorithm.

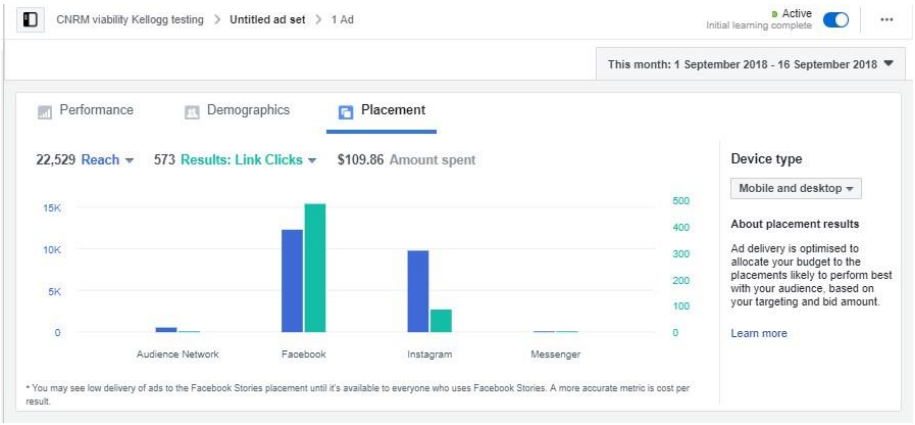
Results

Some rich data came from the people who engaged with this advertisement that produced information about the customer profile with interest for this type of offering in New Zealand's domestic market. Over 22,500 people engaged with or viewed the content of this advertisement. 573 people were interested enough to click on the link contained within the ad to "Learn More" (which took them to the MVP landing page). Seven people "shared" the ad to their own circle of peers, extending the reach of the ad and demonstrating a higher level of engagement and interest in the concept than others who merely viewed or 'liked' the advertisement. By mid-October the Facebook page for the brand had 152 followers and 149 likes. The Facebook page likes had to be generated by choosing to click on the banner at the top of the advertisement, rather than the link or Learn More button.

A number of people "commented" on the post to ask questions or voice their opinions about the concept, which provided valuable insights into customer preferences and concerns. Unfortunately, many comments stemmed from vegan perspectives who were captured by the targeting of "sustainable" interests, but who were uninterested in purchasing red meat. Some farmers commented that this sounded like their own production methods.

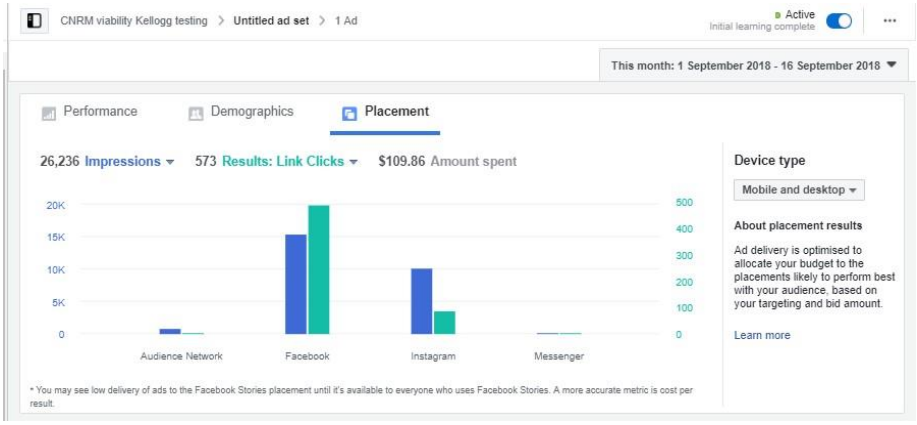
The demographics of the consumer engaging with the test advertisement were skewing male and largely within the ages of 25-44 years. Men completed more than two and half times the views of the test advertisement than women and men were also 65% of the people who clicked to Learn More.





My initial expectation for this brand was that it would be more appealing for younger, more environmentally-aware generations (such as Millennials). Across the two social media platforms I conducted testing on, Instagram has the younger, more social media engaged audience[33] so I expected to see a higher level of engagement with users on Instagram than on Facebook. However, Facebook was the dominant market for engagement with the advertisement. Interesting to note that greater engagement achieved on Facebook, although in the younger demographic of Facebook users. Given the Millennials are heavier Instagram users and more likely to be interested in the concept according to early stage research, this strong preference for Facebook was useful information for future marketing or testing campaigns.

Note: Reach represents the number of different individual Facebook accounts who saw the advertisement, whereas Impressions is a measure of the number of times an advertisement was seen, possibly multiple times by the same individual account. Link Clicks are people who have seen the advertisement and clicked on "Learn More" (thereby going to the website landing page).



At close of campaign…

Engagement

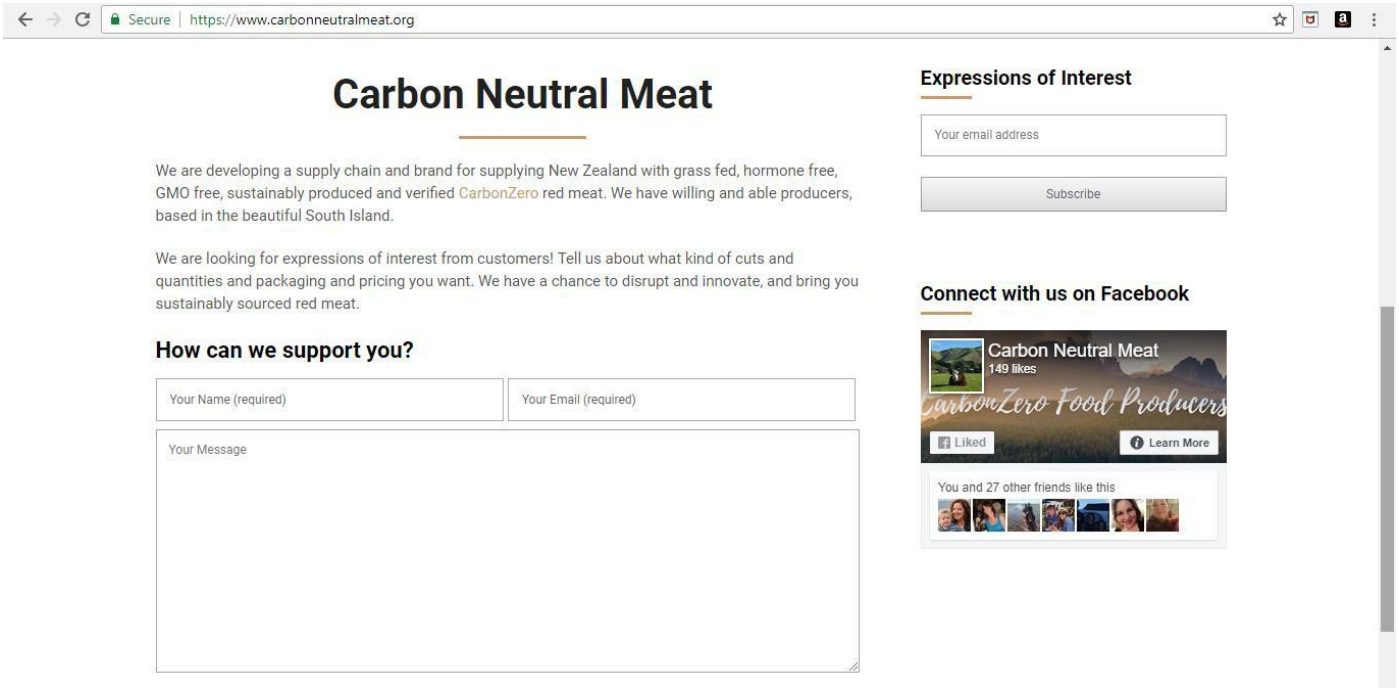
FACEBOOK BUSINESS PAGE LIKES: 148

These were generated by clicking on the Carbon Neutral Meats Facebook page banner on the ad or organically finding the page and then choosing to 'like' the page.

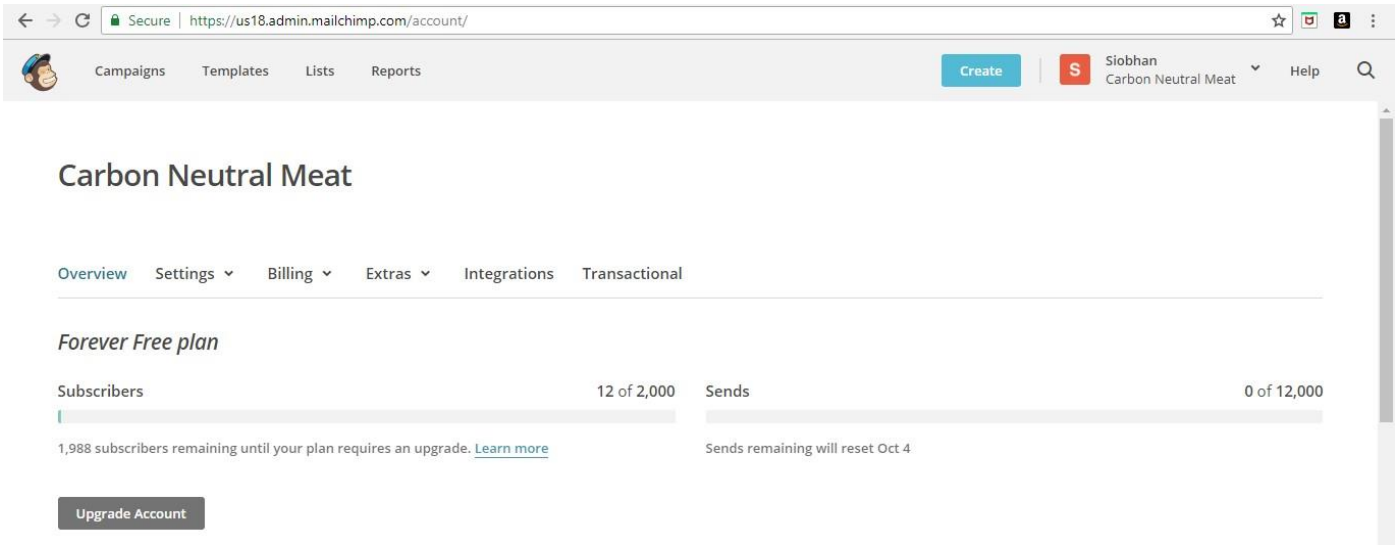
ADVERTISEMENT ITSELF: 64 LIKES (2 X HEARTS, and surprisingly no ANGRY FACES considering the comments from vegans); 7 SHARES; MULTIPLE COMMENTS

[33]70% of Instagram users are under 35. (2018, September) Top Instagram Demographics That Matter to Social Media Marketers. Retrieved from https://blog.hootsuite.com/instagram-demographics/ (14.10.18)

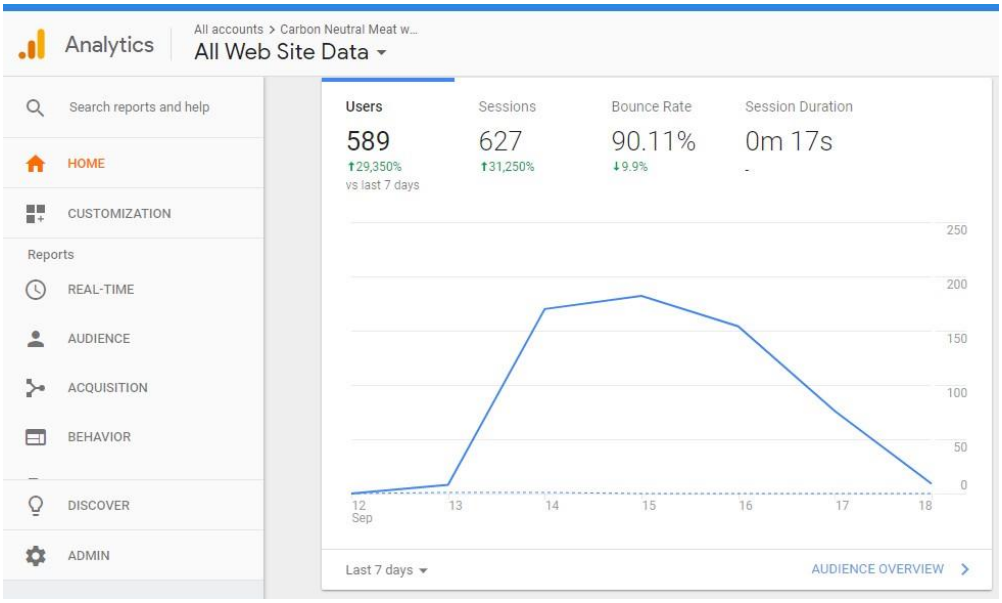
Landing Page Results



EMAIL ADDRESSES 12 people provided their email addresses for updates about Carbon Neutral Meat.



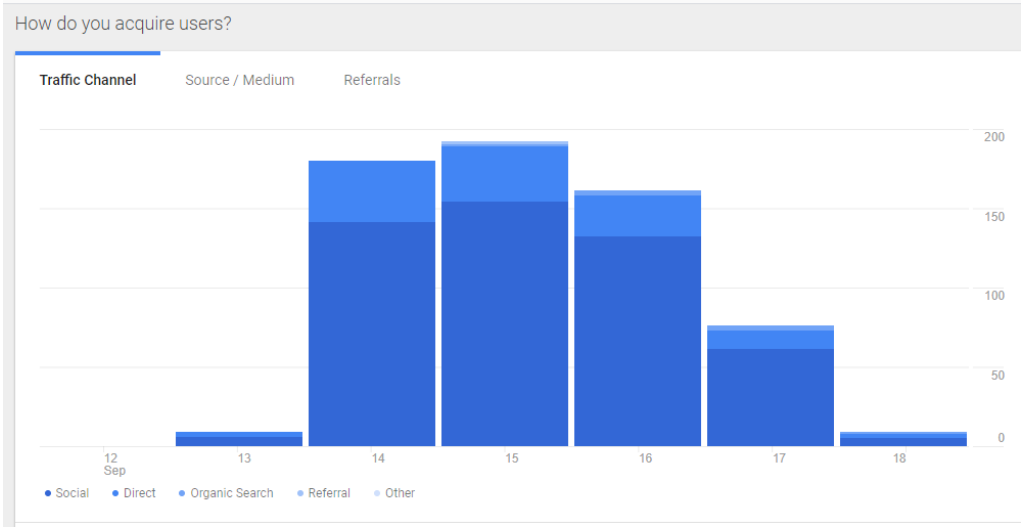
Google Analytics from carbonneutralmeat.org relating to Facebook Promotion

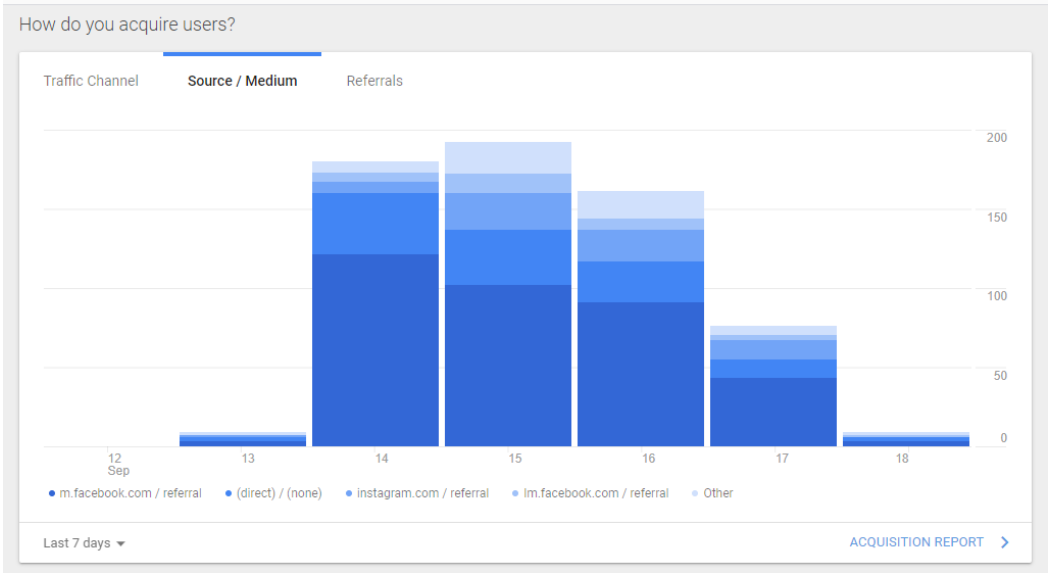


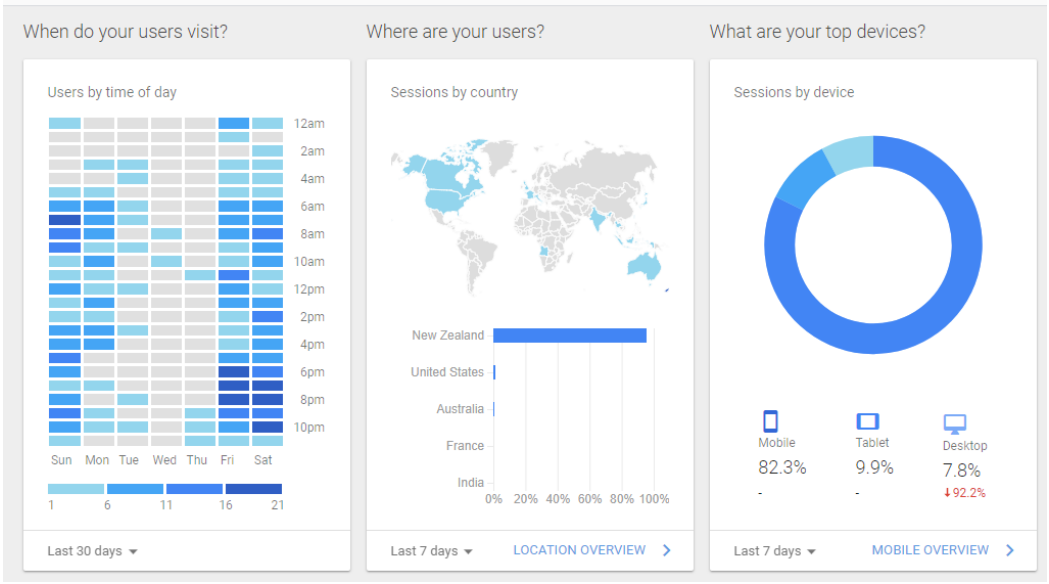
Friday and Saturday were peak days to generate interest or engagement.

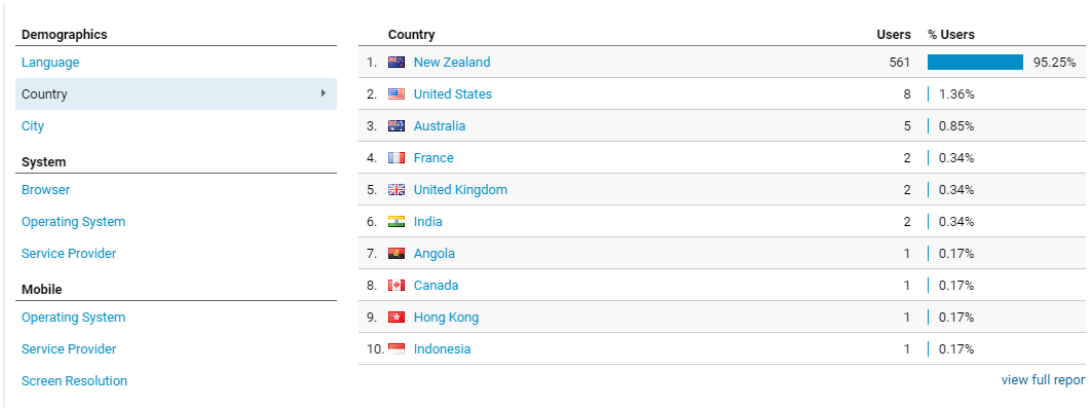
Social Media played a huge role in the source of leads to the landing page and as the traffic controller of people visiting the landing page. In other words, all this traffic was a direct result of the tester campaign on social media and not organic search.

Word of mouth and shares generated additional visits to the webpage, but only once the tester campaign was underway.









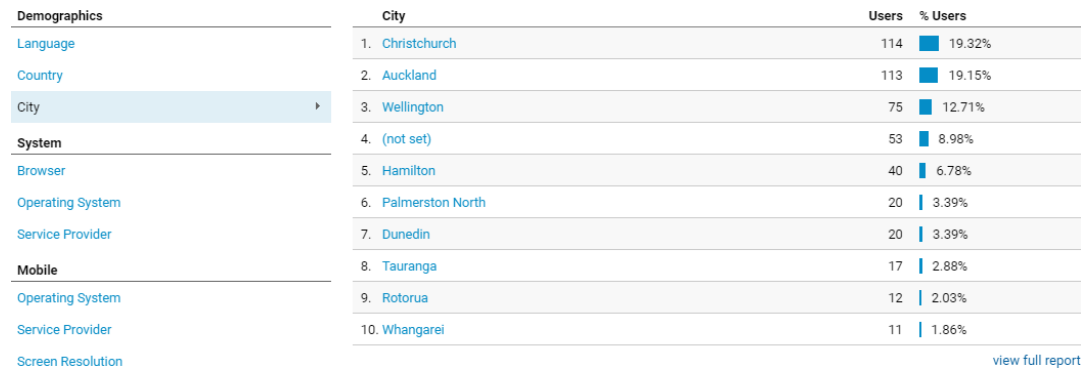
Demographics
- Language
- Country
- City

System
- Browser
- Operating System
- Service Provider

Mobile
- Operating System
- Service Provider
- Screen Resolution

	Country	Users	% Users
1.	New Zealand	561	95.25%
2.	United States	8	1.36%
3.	Australia	5	0.85%
4.	France	2	0.34%
5.	United Kingdom	2	0.34%
6.	India	2	0.34%
7.	Angola	1	0.17%
8.	Canada	1	0.17%
9.	Hong Kong	1	0.17%
10.	Indonesia	1	0.17%

view full repor



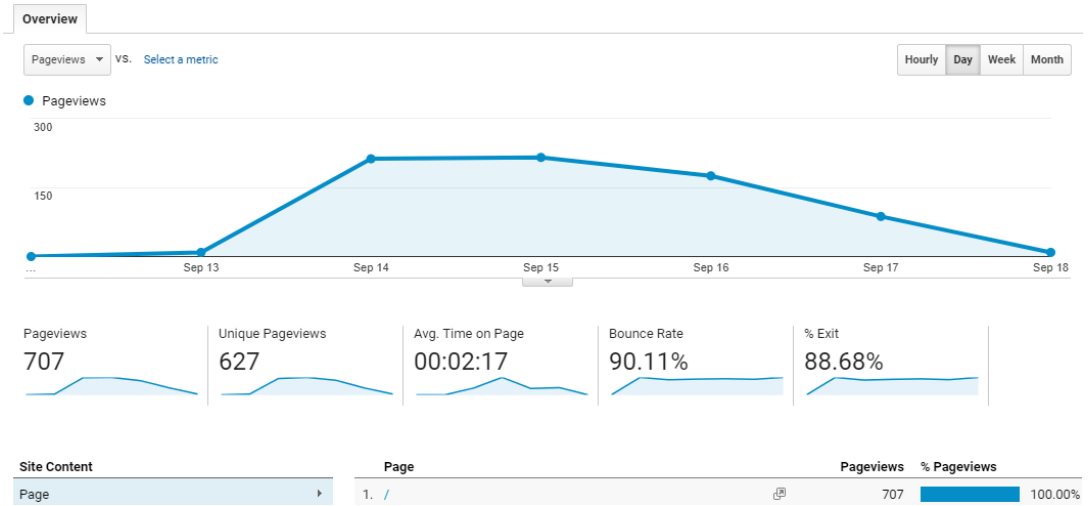
Demographics
- Language
- Country
- City

System
- Browser
- Operating System
- Service Provider

Mobile
- Operating System
- Service Provider
- Screen Resolution

	City	Users	% Users
1.	Christchurch	114	19.32%
2.	Auckland	113	19.15%
3.	Wellington	75	12.71%
4.	(not set)	53	8.98%
5.	Hamilton	40	6.78%
6.	Palmerston North	20	3.39%
7.	Dunedin	20	3.39%
8.	Tauranga	17	2.88%
9.	Rotorua	12	2.03%
10.	Whangarei	11	1.86%

view full report



Site Content
- Page

	Page	Pageviews	% Pageviews
1.	/	707	100.00%

6-9pm Friday and Saturday and 7-8am Sunday were peak interest times.

Mobiles were dominantly the way people consumed the information on the landing page.

Although the campaign targeted an audience in Auckland, New Zealand, it quickly expanded and acquired international viewers, with dominant organic interest in the USA (identifying interest for an early export market to explore?).

Christchurch also overtook Auckland as the main centre for viewers, even though the advertisements were set to Auckland. Overall urban centres dominated to interest. This could simply be a reflection of population.

Ask the Meat Processors

As a last step in the methodology, email enquiries were sent to current meat processors to check their views of the domestic market for this type of brand attribute. The response was they expected domestic demand to be "lukewarm".

New Zealand Market Recommendations

- The New Zealand market is not showing intense demand or interest in this promotion at this time. Only 12 consumers out of 22,500 impressions were interested enough to enter their email addresses. Even this commitment is not a guarantee of purchase intent either.
- Interest is growing in low carbon or low greenhouse gas emissions products as a result of the discussion around the Carbon Zero Bill before parliament and as awareness grows in New Zealand around this issue, demand for this product will grow. The repetition of this testing at intervals might provide a picture of interest and any growth in demand. A higher spend on Facebook advertising (say $1,000 instead of $100) might generate a bigger effect and sample size due to the compounding effects of "sharing" posts. This spend could be more targeted than the more general audience engaged by this test campaign, using the customer profile generated.
- Based on the responses in this study, the recommended consumer profile to target with future advertising to test the market would have "Green" interests, including sustainability, but excluding those who are interested in vegetarianism or veganism or animal activism. Those excluded consumers are not going to be consumers of the brand and so keeping them out of the testing segment allows a better test of the market.
- The identified characteristics of the consumer profile with current interest in this brand offering is male aged 25-44 years.
- New Zealand farmers should concentrate on incremental greenhouse gas emissions and mitigations on their properties at this stage. If low carbon agriculture is inevitable, then any measures taken today will be boosted by technology development over time and the ability of NZ farmers to meet the consumer's expectations in the future will be more likely. Red meat faces competition not just from other suppliers but from meat alternatives, each claiming to be lower in environmental impact.[34]
- The New Zealand primary sector needs to develop and embrace an internationally-standardised comprehensive accounting method for measuring carbon footprints of on farm operations and processing. Producers and purchasers can then make valid comparisons of products using a common metric.[35]

[34] Anzilotti, E. (2018, June) If you're going to eat meat, try this "climate positive" burger. Retrieved from https://www.fastcompany.com/40581541/if-youre-going-to-eat-meat-try-this-carbon-positive-burger (14.10.18)
[35] Lieffering, M., Ledgard, S.F., Boyes, M., and Kemp, R. (AgResearch). A Greenhouse Gas Footprint Study for Exported New Zealand Beef. (2012, February) *Report prepared for the Meat Industry Association, Balance Agri-Nutrients, Landcorp and MAF*. 28.

International Consumer Appetite for Carbon Zero Beef and Lamb: Literature Review

While the methodology of this study initially focused on testing Kiwi consumers' appetite for carbon neutral beef and lamb, an export product could get producers and processors more excited. New Zealand Beef and Lamb exports were worth over US$3 billion in 2010.[36] Our red meat industry thrives on exports, although we are relatively minor players in the global market.[37] Investigating a red meat brand concept with carbon neutral attributes necessitates consideration of whether this brand has any global export potential. The concept of innovative practices reducing our greenhouse gas footprint on farm was mooted as a potential opportunity for this sector in a 2011 government report.[38] New Zealand's opportunity is that our systems can be adapted to this change as they are already aligned with lower emissions production.

International trends show that corporates are increasingly focused on their sustainability and carbon footprint is a quantitative measure of one company or product against another. In the USA, General Electric has introduced a credit card to help consumers earn GHG emissions credits to reduce their personal carbon footprint. The world's largest retailer Wal-Mart initiated an early-stages Sustainability Index Consortium as well as multiple efforts to reduce waste and emissions through their Project Gigaton. Walmart launched Project Gigaton in April 2017, seeking to work with suppliers to reduce emissions from the company's value chain by a gigaton, or one billion metric tons, by 2030.[39] NZ exporters can identify and target supply chain partners who are actively reducing their carbon footprints who may welcome suppliers who can help lower their overall footprint.

While the overall interest in a low carbon footprint food product may currently be low, one segment of consumers have a proven inclination to purchase based on this attribute. One study conducted in the UK in 2015 measured consumers' attitudes towards various attributes of meat products and included the carbon footprint attribute.[40] The results demonstrated that the carbon footprint held a relatively low importance as an attribute for decision-making for consumers when purchasing, apart from the consumer group who identified themselves as "Green", who placed the most importance on the carbon footprint of the product.[41] The "Green" consumer segment accounted for 17% of the consumers surveyed, including high income female respondents.[42] This is in

[36] Food and Beverage Information Project 2011 Sector Stream – Meat (2011) 11. Retrieved from www.foodandbeverage.govt.nz
[37] Food and Beverage Information Project 2011 Sector Stream – Meat (2011) 10, 17. Retrieved from www.foodandbeverage.govt.nz
[38] Food and Beverage Information Project 2011 Sector Stream – Meat (2011) 12. Retrieved from www.foodandbeverage.govt.nz
[39] Groening, C., Inman, J.J., & Ross, Jnr, W.T. (2014). Carbon Footprints in the sand: Marketing in the age of sustainability. *Customer Needs and Solutions* Vol 1 Issue 1. 40-51 Retrieved from https://link.springer.com/article/10.1007/s40547-013-0005- and for Project Gigaton see Sturken, E. (2017) Why Walmart's project gigaton is corporate America's 'mooshot'. *Greenbiz.com* retrieved from https://www.greenbiz.com/article/why-walmarts-project-gigaton-corporate-americas-moonshot (15.10.2018)
[40] Chrysostomos Apostolidis & Fraser McLeay (2016). Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy* 65. 78-79, 81
[41] Chrysostomos Apostolidis & Fraser McLeay (2016). Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy* 65. 81-82
[42] Chrysostomos Apostolidis & Fraser McLeay (2016). Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy* 65. 82 (Table 6), 83

contrast to the results of the NZ testing completed for this project that identified younger males as a market. However, the UK study did not provide a red meat option with a carbon neutral label, rather it showed the range of carbon footprints whose values were informed by red meat produced via UK production methods (see Appendix 2 for table and references), which is a relatively high footprint and therefore could be a disincentive to purchase. A further takeaway of note for this brand offering from the study was that the "Green" consumer group was more concerned with the carbon footprint attribute than with price, reinforcing the idea that this could be a premium product and pay both farmers and processors a premium.[43]

The importance of this product attribute was investigated in two export markets: Shanghai, China and California, USA. B+LNZ did a product attribute study comparing the preferences of consumers in these two markets in December 2017.[44] The report lead to a recommendation that educating consumers about the attributes that make NZ red meat special in the market would enhance our already strong reputation. Using a carbon neutral (or low carbon) attribute on the world market could be a memorable point of difference for New Zealand red meat and an amelioration of emerging, complementary attributes such as grass-fed and GMO feed free and growth-hormone free. The key market of North America was worth US$910 million and the Asian markets were worth US$933 million in 2010.[45]

Furthermore, empirical research carried out at a Chinese university of Chinese consumers in 2016 found a "high willingness of consumers to buy low-carbon products" including an interest in carbon labels, and willingness to try the system of carbon footprint labelling, as well as a "positive attitude toward low-carbon consumption and the belief that it is beneficial for the environment".[46] The 2017 B+LNZ study, just one piece of some wider research looking to identify and market directly to the consumers most aligned with the proposition represented by NZ production systems,[47] concluded that consumers were all looking for sustainability. The study commented that, "The opportunity [exists] for New Zealand to link the unique taste and eating experience with sustainable farming practices to build customer loyalty and capture greater premiums."[48]

In Shanghai, carbon neutral production was important to 43% of consumers, and very important to 23% (or 66% total beef consumers). In California, carbon neutral production was important to 27% of consumers and very important to 17% (or 44% total beef consumers).[49] The same research highlighted that although it was important, carbon neutral production rated lower on the "willingness to pay"

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[43] Chrysostomos Apostolidis & Fraser McLeay (2016). Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy* 65. 84. "'green' consumers have the most positive view on the environmental impact of their food
consumption and are less influenced by the type of mince or the price of their meat than consumers in other segments."

[44] B+LNZ. (2017, December) What importance do consumers place on different product attributes? Shanghai vs. California.

[45] Food and Beverage Information Project 2011 Sector Stream – Meat (2011) 45. Retrieved from www.foodandbeverage.govt.nz

[46] Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1246. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production

[47] B+LNZ. (2017, December) What importance do consumers place on different product attributes? Shanghai vs. California. 4.

[48] B+LNZ. (2017, December) What importance do consumers place on different product attributes? Shanghai vs. California. 5.

[49] B+LNZ. (2017, December) What importance do consumers place on different product attributes? Shanghai vs. California. 7.

attributes, when compared with food security attributes such as antibiotic free, GM feed free, and no added growth hormones.[50] So while export consumers in those markets feel good about carbon neutral and understand it is important, they prioritise other attributes when it comes to purchasing. This highlights the importance of any carboNZero offering in this space also offering the other attributes that consumers are demanding. It cannot be the only attribute supporting the sale.

One further consideration for taking this brand to an export market is the clarity of the branding and labelling. Universal carbon footprint labels are predicted to be ubiquitous in the near future.[51] The 2016 Chinese study found that understanding and experience of carbon labelling was low amongst Chinese consumers.[52] This is not necessarily a barrier to the brand offering under discussion here, as the carbon neutral or carboNZero label requires little explanation, compared with other labels which effectively offer a score for the footprint of the product that means little unless the consumer is familiar with the scale and the relative scores. "Carbon Neutral" only requires an understanding that products have a carbon footprint related to their production and consumption. The study identified the characteristics of the Chinese customer who is interested in purchasing low carbon products. "Consumers with ecological values were the most willing to buy low-carbon products."[53] They concluded, where consumers understand and accept the veracity of carbon labelling on products, they are willing to purchase them. [54] Herein lies a key issue for a carboNZero brand. Consumers need to understand the process of

[50] B+LNZ. (2017, December) What importance do consumers place on different product attributes? Shanghai vs. California. 16.
[51] Groening, C., Inman, J.J., & Ross, Jnr, W.T. (2014). Carbon Footprints in the sand: Marketing in the age of sustainability. *Customer Needs and Solutions* Vol 1 Issue 1. 40-51 Retrieved from https://link.springer.com/article/10.1007/s40547-013-0005-
[52] Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1242-43. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production
[53] Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1248. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production
[54] Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1237. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production

accreditation and also the worth of it. Consumers need to be predisposed to care about the greenhouse gas footprint of various aspects of their own lives to be motivated to purchase a product being marketed as low or zero carbon. The good news is that social media marketing is able to target the precise consumers who fit the likely consumer profile in order to generate interest and sales from a niche group.

The thought of shipping or flying this brand across the ocean to export markets immediately conjures up thoughts of heavily increased emissions profiles negating the carboNZero production methods. "Food Miles" are a concept that suggests that the further food (or any product) travels, the more energy is used in supplying it, and therefore the carbon footprint of that food (or product) is higher. A study presented in 2009 compared UK produced food and NZ produced food exported to the UK and concluded that, "due to the different production systems even when shipping was accounted for NZ dairy products used half the energy of their UK counterpart and in the case of lamb a quarter of the energy."[55] In other words, our production is so efficient in NZ, from an GHG emissions standpoint, that even the addition of freight of a considerable distance could not bring the carbon footprint of our red meat products close to the footprint of locally produced UK red meat suppliers. A further study in 2011 highlighted the low contribution of transport to the Life Cycle Analysis of lamb products, and was confirmed by a study in 2012 on export beef.[56] Given the relatively low impact the freight to the UK had on the carbon footprint of our products, this carboNZero brand concept could therefore become an export product. If it was not possible to provide the brand as carboNZero to consumers in an export market, at least it would be a very low carbon footprint product compared with the other offerings in the same market. This represents an opportunity to be a first mover in the export markets and to position for premium pricing.

Conclusions – Export Market

While worldwide Google and social media searches for carbon neutral meat products are lacking in interested potential consumers, the studies presented in this paper suggest an interest in carbon neutrality as an attribute for an export product. Carbon neutrality was not the defining product attribute in these studies, particularly the recent study by B+LNZ, so any export product would also need to feature the other attributes that international consumers expect (such as grass fed, GMO feed free, antibiotic free and added growth hormone free). Luckily, these are relatively easy to achieve in a NZ farming production system, but would need to be carefully marketed in order to maximise the premium price achievable. If the brand cannot maintain a carboNZero mark in reaching export markets, then the exporter would need to think carefully about adopting a clear, well understood label, or clarifying the carbon neutral status. For example, if the shipping and refrigeration caused the emissions to ride above neutrality, the labelling could make it clear that the product was carbon neutral until it departed NZ.

Recommendations

- **Sector Cooperation:** major players in the red meat sector were identified in the 2011 Food and Beverage report as being Anzco, Alliance Group, Silver Fern Farms and Affco. Any one of these companies could adopt this idea and make it a reality, or better yet, they all could. This brand could transcend individual meat companies and be deployed as a joint venture, single marketing

[55] Saunders, C. & Sorenson, L-C. (2009, February). Food miles, carbon footprinting and their potential impact on trade. Paper presented at AARES 53rd annual conference, Cairns, Australia. Retrieved from https://researcharchive.lincoln.ac.nz/bitstream/handle/10182/4317/food_miles.pdf

[56] Ledgard, S.F. Lieffering, M. Coup,D. O'Brien, B. (2011, July). Carbon footprinting of New Zealand lamb from the perspective of an exporting nation. *Animal Frontiers* Vol. 1. No. 1. "Contributors to the carbon footprint of New Zealand lamb exported to the United Kingdom across the life cycle were the cradle-to-farm-gate (80%; mainly animal-related emissions), processing (3%), retail/consumption/waste (12%), and shipping (a small component at 5%)." Lieffering, M., Ledgard, S.F., Boyes, M., and Kemp, R. (AgResearch). A Greenhouse Gas Footprint Study for Exported New Zealand Beef. (2012, February) *Report prepared for the Meat Industry Association, Balance Agri-Nutrients, Landcorp and MAF*. 6. Which shows that transport for beef constituted 4.2% of the emissions profile of exported beef, and "Oceanic shipping of meat in refrigerated containers from New Zealand to overseas markets (based on the relative global distribution), made up nearly 2.6% of the total GHG footprint." At page 7.

desk export product (like Zespri or the New Zealand Lamb Company that combines exports to the USA), that unites Kiwi red meat offerings under a single branding exercise. Cooperation could help carbon neutrality be achieved more efficiently and effectively, if suppliers could send their livestock to a regionally proximal processor, as this would reduce the transport emissions associated with their production. It would help avoid a situation where a farmer supplier must send their stock long distances from home, and send them past more local processing facilities, in order to achieve a price premium. Historically the Kiwi red meat processors have been reluctant to work together, however, one single joint venture brand offering might be a less threatening option than full-scale business mergers. For an export focused strategy, reducing local competition could help prevent the meat companies undercutting each other in the market, cutting the premium or losing their suppliers to each other. The nature of the supply criteria mean that meat processors may be able to offer this to their lowest impact suppliers, and therefore provide more options to supply and support for those suppliers and/or shareholders.

- **Create a market** - It could be beneficial to commission a marketing campaign to promote low-carbon products and educate the public about the environmental impact of their consumption, and in this way improve the general level of low-carbon consumption social ethos.[57] B+LNZ research also highlighted the increasing demand for information to make purchase decisions and the increasing proportion of red meat purchases made online by our international customers, so any future supply chain may benefit from more direct online marketing and direct supply from the business to the consumer.

- **Regulation** - third-party regulatory agencies can perform supervision, certification and management. This is likely to more effectively build consumer trust in the labelling system and product claims. When exporting, any third party certification of product and labelling needs to be consistent with what the consumer expects to see on their own, local product labelling to prevent confusion and to save the effort educating the consumers in a new system. Investigation into the opportunity to use Blockchain technology to record and track carbon emissions across the supply chain could also add value and transparency.[58] New Zealand must meet the expectations of their export markets to gain access to those markets and to have their attributes recognised, and therefore paid a premium for. The agency who must certify NZ product attributes, for example to the USA market, is Ministry for Primary Industries (MPI). MPI can lead and audit a common standard and common measure for New Zealand producers to adhere to and which can be certified for export markets.

- **Government Intervention** – Government has stated intentions of moving NZ to a low carbon economy and it is plausible that, in order to meet those goals, Government should encourage enterprises to develop low carbon products and services. Governments have a number of direct and indirect mechanisms to support industries they wish to promote, whether it is tax incentives or subsidies can be used to reduce the price of low-carbon products, increasing the willingness to purchase low carbon products. Price is still a driver for consumers, and a premium is expected for this product given that the farmer/producer is making an extra effort to meet additional burdens of supply (even if the farm meets the criteria with little change, there is the burden of proving the accreditation and completing paperwork and regulation above and beyond "normal" supply). Any assistance that the government can provide to narrow the gap between conventional and the

[57] Qianwen Li, Ruyin Long, & Hong Chen, School of Management, China University of Mining and Technology, Xuzhou, Jiangsu Province, China (2017). Empirical study of the willingness of consumers to purchase low-carbon products by considering carbon labels: A case study. *Journal of Cleaner Production* 1248. Retrieved from https://www.journals.elsevier.com/journal-of-cleaner-production

[58] Banerjee, A. Infosys. (2018). *Re-engineering the carbon supply chain with blockchain technology*. Bengaluru, India: Infosys.

carbon neutral brand offering will increase the uptake from consumers. Legislation may also be required to support initiatives such as the single-desk marketing concept.

- **A whole country attribute** – New Zealand producers gain a commercial advantage from the fact of New Zealand being GMO free. The GMO attribute has more weight and is more strongly accepted in international markets due to the fact that it is nationwide and legislatively mandated. One possibility for rapid advantage to Kiwi producers would be the quick and common adoption of a mandated carbon footprint measure that is a government requirement. This would mean that all New Zealand exporter brands had a national standard that was ubiquitous and had government backing to both resource and enforce its application. It might mean short term radical change for producers, but as a **first mover advantage** on a global marketplace and a government endorsed policy, it could have the impact of presenting NZ products as low carbon (due to our relatively low impact farming systems) and associate that attribute with New Zealand products with consumers for its novelty as being first in market with those claims. An extension of that idea would be a government mandated carbon neutral requirement for farms or primary products, that again would generate a country attribute that is synonymous with New Zealand products, just as GMO operates now. This would be even more radical and disruptive, and require government investment, but could generate clear premiums. Whether the premiums would balance the disruption and financial investment required to meet the standard would have to be examined carefully by any policy makers attempting this course of action.

- **Who to target: The Consumer** - due to their higher educational and income levels, young environmentally conscious consumers are more motivated toward low-carbon consumption, and thus the brand should focus on low-carbon "Green" consumer groups to foster a low-carbon consumption social ethos and create demand.

- **Inter-Sector Cooperation** – Commentators have identified that Beef products derived from the dairy sector are lower in emissions as the emissions profile of the animal is split between milk and meat products.[59] This highlights the importance and the opportunity of the beef and dairy sectors collaborating to produce the products that the consumer wants. Systemwide inter-sector planning could quickly add value in all the right ways, if there were clear goals and methods for measuring GHG footprints for our whole Primary Sector.

[59] Lieffering, M., Ledgard, S.F., Boyes, M., and Kemp, R. (AgResearch). A Greenhouse Gas Footprint Study for Exported New Zealand Beef. (2012, February) *Report prepared for the Meat Industry Association, Balance Agri-Nutrients, Landcorp and MAF*. 21, 23. Retrieved via email from B+LNZ with thanks.

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https://www.youtube.com/watch?v=-Ca7FhrHkgU 30/09/2018 MLA Meat & Livestock Australia, Published 25 July 2018

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https://www.theguardian.com/commentisfree/2017/dec/04/animal-agriculture-choking-earth-making-sick-climate-food-environmental-impact-james-cameron-suzy-amis-cameron (accessed 13.10.2018).

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Appendices

Appendix One: Email Inquiries

From: colin douglas <cooterdoug01@gmail.com>

Message Body:
Hello,
Very interested in what you are doing.
Would the food be delivered direct to the customers door or supplied to the supermarkets?
Would be interested in scotch fillets, mince and rump steaks.

From: Sarah Perriam <sarahperriam@mediaworks.co.nz>

Message Body:
Hey Team,

Love to have a yarn about what your working on with Carbon Neutral Meat and how we could organise an interview on Rural Exchange.

Cheers,
Sarah

From: Matthew Schaeffer <matagascar@gmail.com>

Message Body:
Hello, I am a kiwi chef, currently on transition to bay of plenty where I am taking over a restaurant as the owner and chef. Takeover will be mid to late November.
I am a big fan of environmentally mindful farmers and suppliers.
I love using various cuts, the popular ones and not so popular ones.
Not sure yet on quantities, but if you had a product list with prices I will be very keen to trial some of your product, in hope of a great supplier/restaurant partnership,
Cheers,
Matt

From: Your Name (required)John King <john@succession.co.nz>

Message Body:
Hi Carbon Neutral Meat,

Fantastic initiative. As a farm consultant I've been working with New Zealand and Australian graziers for 20 years helping them change their grazing, cropping, and other management practices to accelerate carbon sequestration. I currently work with RMPP groups facilitating on-farm innovation and problem solving to lift farmer confidence to try regenerative farming practices - using livestock and crops to improve soil function. This also includes new decision-making perspectives and techniques as well as financial budgeting routines. To check out my authenticity google "John King stuff farming" to access 20+ articles on the ideas I promote and their benefits. You'll find a lot synergy and uncommon sense.

If your suppliers are not in Red Meat groups they should be. For you it removes the cost of consultants for helping your suppliers develop new techniques. It'll gel your suppliers together where they can learn off one another and create their own vibrant community of learners. Naturally I'd be more than happy to

discuss setting up this possibility if you haven't done it already.

I look forward to seeing this initiative grow. You have my email or contact me on 027 6737 885 if you or your suppliers wish to discover paths that make switching to carbon neutral easier

Regards - John King

From: Sam <sam@latcom.co.nz>

Message Body:
Hi

I am a meat exporter www.latcom.co.nz we market beef and lamb to various international markets. I am also farming beef and lamb in North Canterbury.

I had a look into a carbon neutral lamb brand about 12 months ago wiht a friend who owned a carbon neutral courier company in the UK. We ended up putting it on ice as we didn't feel the on farm carbon accounting was up to audit level scrutiny, however Victoria Lamb of Beef + Lamb New Zealand is doing some work on this.

I would be interested in having a chat with you on how you are going, and I could be of some assistance with processing and marketing.

Sam Clark-Hall

From: Michele <burkespassfarm@xtra.co.nz>

Message Body:
Hi
We would love to find out more about being part of your supply chain.
Pure bred Hereford herd and coopdale sheep property near Lake Tekapo. Do you have more information please
Kind regards
Steve and Michele
03 6858190 home
0274761723 cell - limited coverage

From: Cameron Craigie <Cameron.Craigie@agresearch.co.nz>

Message Body:
Hi there,

Great initiative. At Agresearch we are looking at developing a grass factor index for meat. Keen to connect.

Kind Regards

Cameron Craigie (AgResearch, based in Lincoln) 0212899063

Message Body:
Kia ora Siobhan,

I am out of the country till 13th October. Would love to have a conversation.

Nga mihi
Geneva Hildreth

From: Randy <Randy@TalkWithLead.com>

Message Body:
Hi,

My name is Randy and I was looking at a few different sites online and came across your site carbonneutralmeat.org. I must say - your website is very impressive. I found your website on the first page of the Search Engine.

Have you noticed that 70 percent of visitors who leave your website will never return? In most cases, this means that 95 percent to 98 percent of your marketing efforts are going to waste, not to mention that you are losing more money in customer acquisition costs than you need to.

As a business person, the time and money you put into your marketing efforts is extremely valuable. So why let it go to waste? Our users have seen staggering improvements in conversions with insane growths of 150 percent going upwards of 785 percent. Are you ready to unlock the highest conversion revenue from each of your website visitors?

TalkWithLead is a widget which captures a website visitor's Name, Email address and Phone Number and then calls you immediately, so that you can talk to the Lead exactly when they are live on your website — while they're hot! Best feature of all, we offer FREE International Long Distance Calling!

Try the TalkWithLead Live Demo now to see exactly how it works. Visit: https://www.talkwithlead.com/Contents/LiveDemo.aspx

When targeting leads, speed is essential - there is a 100x decrease in Leads when a Lead is contacted within 30 minutes vs being contacted within 5 minutes.

If you would like to talk to me about this service, please give me a call. We do offer a 14 days free trial.

Thanks and Best Regards,
Randy

gotbeef <gotbeef@virginaustralia.com> Fri 7 Sep, 11:31

Dear Siobhan,

On behalf of Virgin Australia, our staff and our guests, thank you very much for taking time to share your story with us. We have been overwhelmed with the number of impressive applications from across the country and we've now reviewed all applications against our requirements which include quality, sustainability and product origins.

We were very impressed with the high standard of all applications, which made it very difficult to select our final shortlist. Unfortunately on this occasion, your application has not progressed to the shortlist but we are extremely grateful to you for showing us the wonderful local produce available in New Zealand.

Thank you again for taking the time to send us your story, and hopefully our paths may cross again in the future.

Kind regards,

Justin Cook
In-flight Services Catering Manager
Virgin Australia

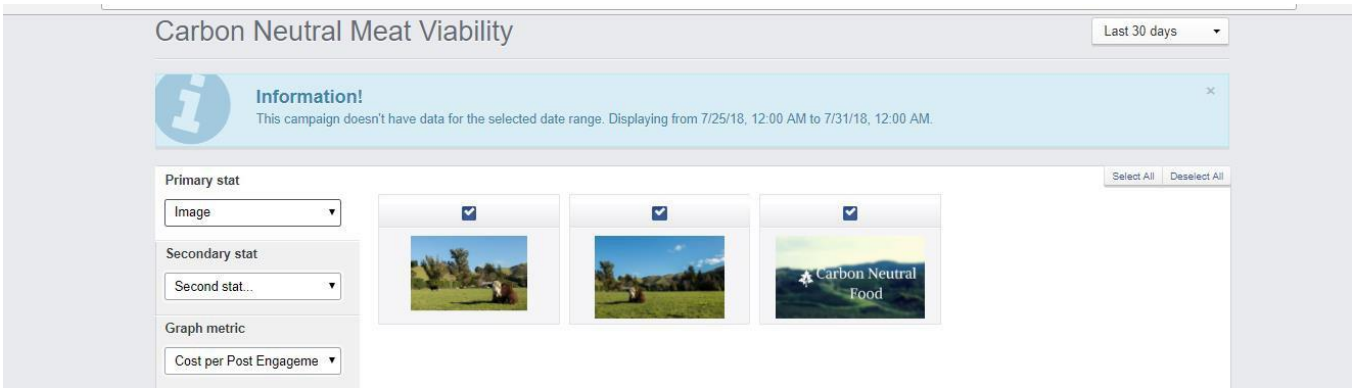
Appendix Two: UK-based Meat Carbon Footprints

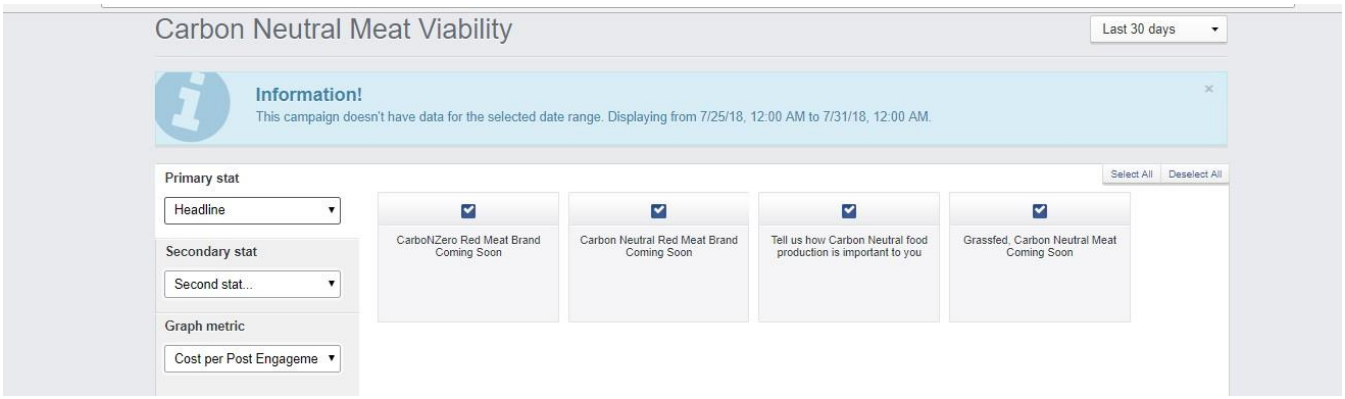
(from Chrysostomos Apostolidis & Fraser McLeay (2016). Should we stop meating like this? Reducing meat consumption through substitution. *Food Policy* 65. Page 79)

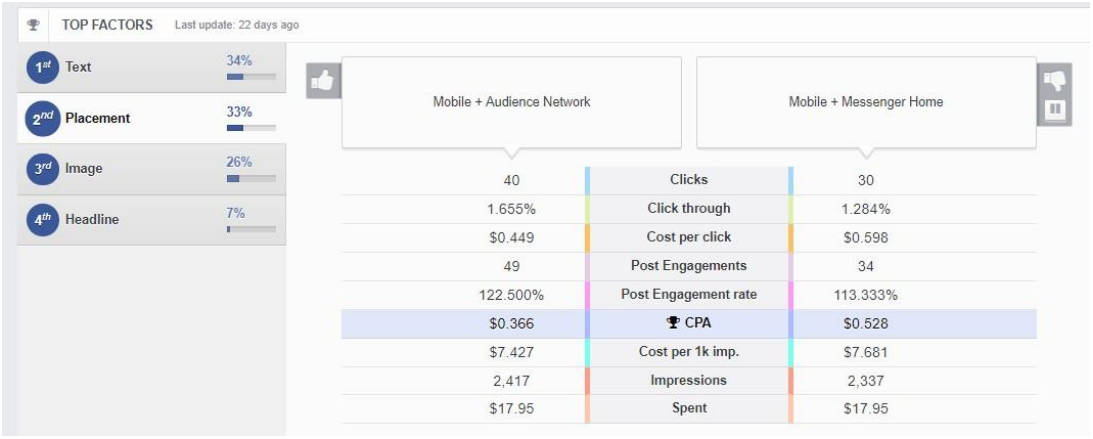
Table 2
Carbon footprint ranges per type of product in the literature.

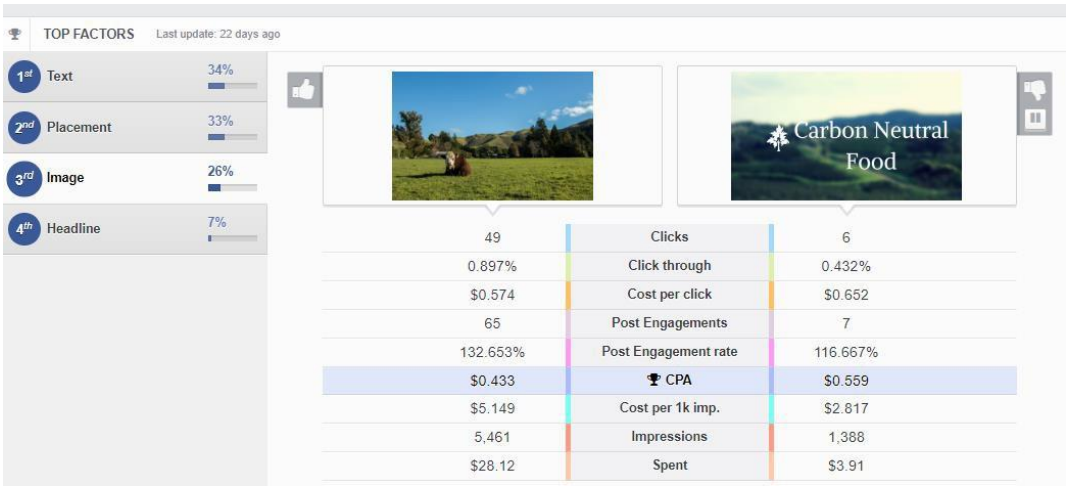
Type of meat	kg of CO_2 per kg of product	Authors
Beef	14–39 kg	Röös et al. (2013), Hamerschlag and Venkat (2011) and Nguyen et al. (2010)
Pork	4.1–8.9 kg	Röös et al. (2013) and Hamerschlag and Venkat (2011)
Lamb	39–51.7 kg	Ripoll-Bosch et al. (2013) and Hamerschlag and Venkat (2011)
Turkey	4–10.9 kg	Hamerschlag and Venkat (2011)
Meat Free	2–6.8 kg	Röös (2012), Hamerschlag and Venkat (2011) and Finnigan et al. (2010)

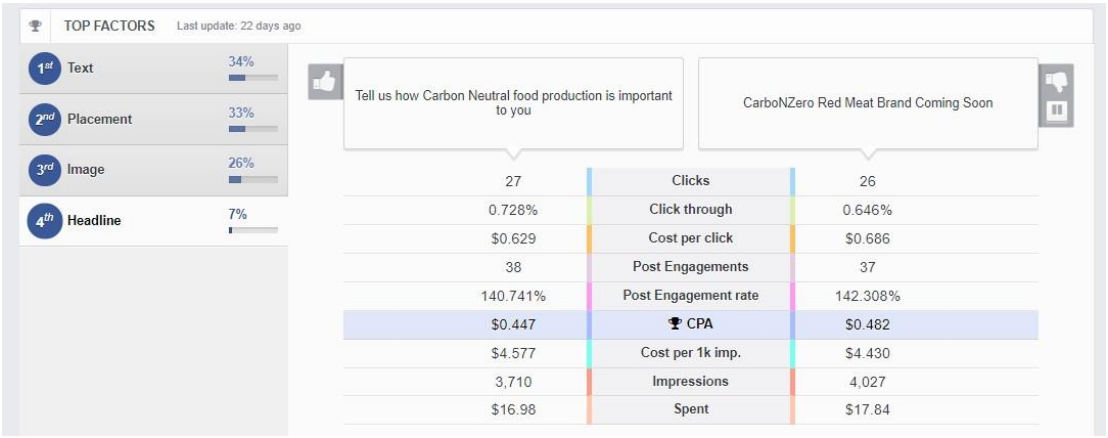
Appendix Three: AdEspresso Screenshots Results of Testing

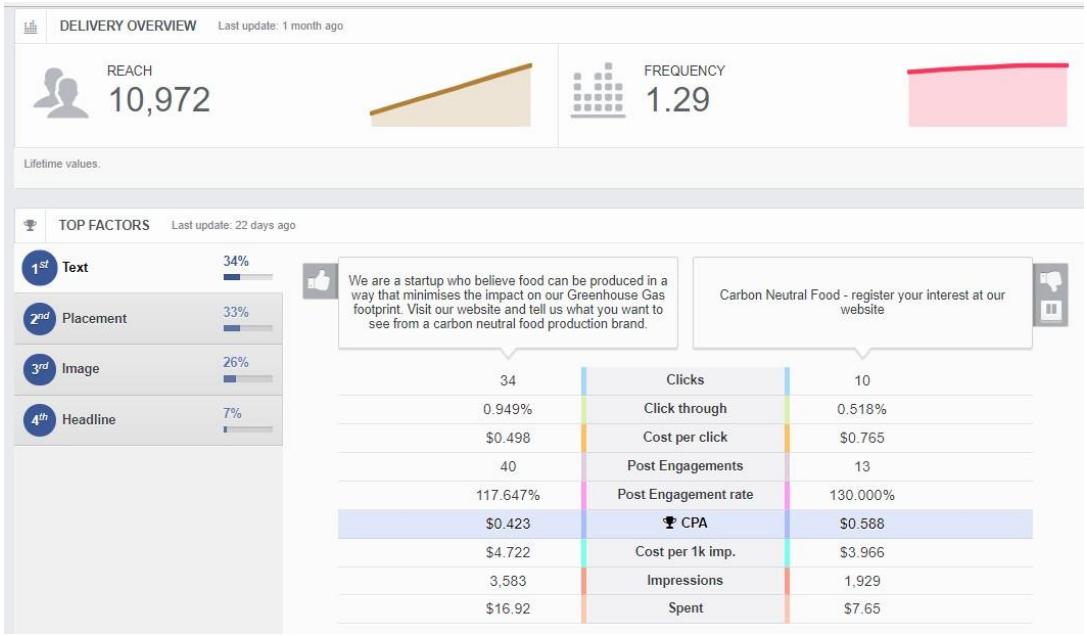

Carbon Neutral Meat Viability
Last 30 days
Information!
This campaign doesn't have data for the selected date range. Displaying from 7/25/18, 12:00 AM to 7/31/18, 12:00 AM.
Primary stat
Image
Secondary stat
Second stat...
Graph metric
Cost per Post Engageme
Select All
Deselect All
Carbon Neutral Food

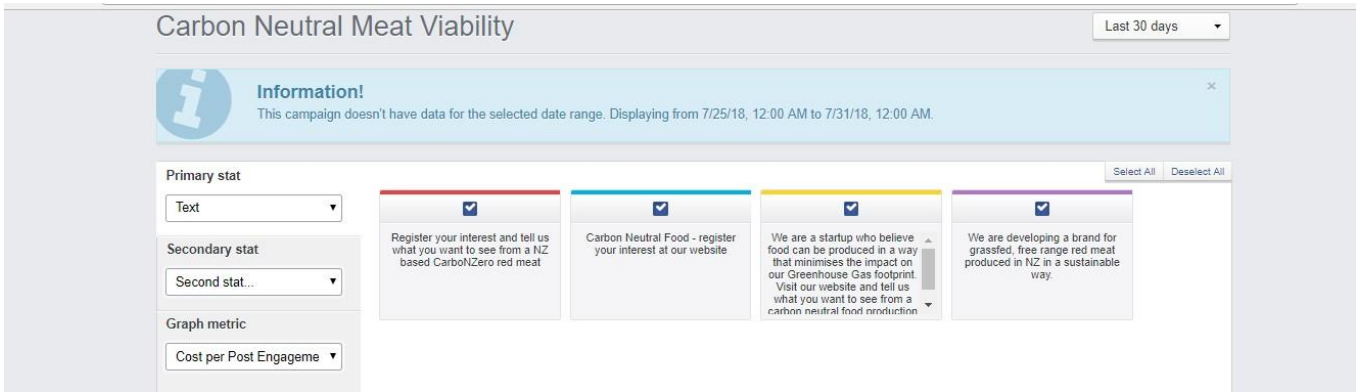

Carbon Neutral Meat Viability
Last 30 days
Information!
This campaign doesn't have data for the selected date range. Displaying from 7/25/18, 12:00 AM to 7/31/18, 12:00 AM.
Primary stat
Headline
Secondary stat
Second stat...
Graph metric
Cost per Post Engageme
Select All
Deselect All
CarboNZero Red Meat Brand Coming Soon
Carbon Neutral Red Meat Brand Coming Soon
Tell us how Carbon Neutral food production is important to you
Grassfed, Carbon Neutral Meat Coming Soon


TOP FACTORS
Last update: 22 days ago
1st Text 34%
2nd Placement 33%
3rd Image 26%
4th Headline 7%
Mobile + Audience Network
Mobile + Messenger Home
40 Clicks 30
1.655% Click through 1.284%
$0.449 Cost per click $0.598
49 Post Engagements 34
122.500% Post Engagement rate 113.333%
$0.366 CPA $0.528
$7.427 Cost per 1k imp. $7.681
2,417 Impressions 2,337
$17.95 Spent $17.95


TOP FACTORS
Last update: 22 days ago
1st Text 34%
2nd Placement 33%
3rd Image 26%
4th Headline 7%
Carbon Neutral Food
49 Clicks 6
0.897% Click through 0.432%
$0.574 Cost per click $0.652
65 Post Engagements 7
132.653% Post Engagement rate 116.667%
$0.433 CPA $0.559
$5.149 Cost per 1k imp. $2.817
5,461 Impressions 1,388
$28.12 Spent $3.91


TOP FACTORS
Last update: 22 days ago
1st Text 34%
2nd Placement 33%
3rd Image 26%
4th Headline 7%
Tell us how Carbon Neutral food production is important to you
CarboNZero Red Meat Brand Coming Soon
27 Clicks 26
0.728% Click through 0.646%
$0.629 Cost per click $0.686
38 Post Engagements 37
140.741% Post Engagement rate 142.308%
$0.447 CPA $0.482
$4.577 Cost per 1k imp. $4.430
3,710 Impressions 4,027
$16.98 Spent $17.84


DELIVERY OVERVIEW
Last update: 1 month ago
REACH
10,972
FREQUENCY
1.29
Lifetime values.
TOP FACTORS
Last update: 22 days ago
1st Text 34%
2nd Placement 33%
3rd Image 26%
4th Headline 7%
We are a startup who believe food can be produced in a way that minimises the impact on our Greenhouse Gas footprint. Visit our website and tell us what you want to see from a carbon neutral food production brand.
Carbon Neutral Food - register your interest at our website
34 Clicks 10
0.949% Click through 0.518%
$0.498 Cost per click $0.765
40 Post Engagements 13
117.647% Post Engagement rate 130.000%
$0.423 CPA $0.588
$4.722 Cost per 1k imp. $3.966
3,583 Impressions 1,929
$16.92 Spent $7.65


Carbon Neutral Meat Viability
Last 30 days
Information!
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Primary stat
Text
Secondary stat
Second stat...
Graph metric
Cost per Post Engageme
Select All
Deselect All
Register your interest and tell us what you want to see from a NZ based CarboNZero red meat
Carbon Neutral Food - register your interest at our website
We are a startup who believe food can be produced in a way that minimises the impact on our Greenhouse Gas footprint. Visit our website and tell us what you want to see from a
We are developing a brand for grassfed, free range red meat produced in NZ in a sustainable way.