



Final report

Carcase Mapping for Wellness – Opportunity Analysis

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Abstract

This project was undertaken to explore an opportunity for new value associated with wellness attributes of individual cuts of red meat. Alternative ways of valuing cuts of meat have been achieved with the Meat Standards Australia eating quality system and so it is a reasonable hypothesis to test for other claims. There are several challenges in realising this commercially, such as determining the underlying meat science (wellness attributes) of individual cuts of meat. Moreover, any new wellness claims must not undermine the current value of higher eating quality cuts, while increasing the value of lower eating quality cuts. The method for this project involved reviewing past and current projects to determine whether there is a realistic opportunity associated with mapping the cuts of a carcase for certain attributes and constructing a cost benefit analysis model. Unsurprisingly, results derived from consumer testing, surveys, and product claims showed that there is some interest in purchasing red meat with wellness attributes. However, no definitive cost benefit analysis can be completed until further investigation into the wellness properties of individual cuts and the willingness of consumers to pay is validated. Hence, further research is recommended as a first step, which needs to include a detailed breakdown of carcase cuts and their associated meat science with differentiation between cuts based on wellness claims. Following this is to realise the opportunity and potential business models that could arise from alternative cut valuation that increases cut valuation above current eating quality and cooking occasion claims.

[Note: refer to AgResearch report for further information relating to carcass mapping data which can be found on MLA's website under project P.PSH.1224 Meat Wellbeing]

Executive summary

Background

The purpose of this research was to determine whether there is new value to be created from wellness attributes of individual cuts of red meat. If so, Australian red meat processors and producers may be able to develop new business models to capture value associated with consumer wellness benefits.

Methodology

The method for this exploratory project involved reviewing past and current projects to determine whether there is a realistic opportunity associated with mapping the cuts of a carcase for certain attributes that may contribute to consumer wellness. Following the review, the Consultant was to construct a cost benefit analysis model to understand the potential value associated with wellness attributes.

Results/key findings

The Consultant was able to aggregate the qualitative results across all the previous projects reviewed. Many of these findings are based on claims made on product packaging or from consumer testing. The three highest claims were ‘immunity boosting’, ‘sustainable meat’ and ‘joint health’. There are also interesting country specific findings on reduced fat claims and nutritional benefits.

The results from AgResearch in section 4.2 for this project were not as anticipated. Because there were no research/interview questions aligning emotion to wellness benefits of each individual cut (and the differential wellness benefits between cuts), there is no conclusion about whether consumers are prepared to pay more for wellness at the expense of eating quality. Hence, there was no basis from which to develop a cost benefit analysis.

Future research and recommendations

Future research will need to integrate the questions and steps outlined below:

1. What are the biological / wellness differentials between cuts?
 - a. There must be existing research (meat science literature review) about the wellness of individual cuts such as minerals and trace elements, bioactives, collagen, saturated and unsaturated fats.
 - b. Consumer trials need to incorporate underlying meat science and re-design emotion-based questions in line with it
 - c. Also need to include ‘willingness to pay’ for wellness attributes
2. Are the secondary cuts better in wellness concentration? If not, then this will further devalue secondary cuts. If Yes, then there may be an opportunity to elevate secondary cut value.
3. Will consumers pay more for wellness?
4. Will they pay more for wellness, even with lower eating quality?
5. Can high wellness/low EQ cuts be value-added to create new consumer value proposition? For example, is there an ability to value-add lower eating quality cuts such as burgers or mince, but with a wellness claim based on selecting cuts high in that wellness element?
6. If Yes, then what are the business models, messaging, communication to realise this value.

Most importantly, question one above needs to be answered first, which is yet to be done.

Benefits to industry

People buy food for a range of reasons including health benefits. Chinese medicine has viewed food as medicine for centuries. More and more, consumers globally are viewing food as medicine. It stands to reason that grouping cuts with higher concentrations of wellness elements to meet a consumers wellness needs will attract a new level of demand from a new type of consumer, and therefore deliver value to industry.

At this stage, the benefits to industry cannot be quantified. Specifically, the trade off in value between wellness claims, existing eating quality claims, cooking methods and shifts in value between these different value systems cannot be modelled with any meaning. Once cuts-based differentiation of wellness claims, and willingness to pay trade-offs are collected, the benefit to industry can be estimated. This should also take into consideration the trade-off in buying decisions between other food sources.

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1. Background

The purpose of this research was to determine whether there is new value to be created from wellness attributes of individual cuts of red meat. If so, Australian red meat processors and producers may be able to develop new business models to capture value associated with consumer wellness benefits.

The objectives were to interrogate some past and current red meat wellness projects to understand desirability, feasibility, and viability. Having understood learnings from these projects the objective was to extrapolate the forces, drivers, costs and returns in this opportunity space and construct a cost benefit analysis model. Unfortunately, the objectives were not able to be achieved as hoped due to the need for further research.

2. Objectives

1. Interrogate past/current MLA activities in personalised nutrition and preventative wellness innovations – including AgResearch carcass mapping project and “desirability-feasibility-viability” assumptions and market feedback to date. As directed by MLA discuss with research partners their outcomes to capture key insights and data to report on.
2. Extrapolate the forces, drivers, costs and returns in this opportunity space and construct a CBA model to demonstrate what value is created and captured for Australian red meat industry. In particular, this is to include commentary for future modes of operation where carcasses maybe objectively graded and efficiently fabricated based on key quality cues and mapping for wellness traits and size of an addressable market who desire this type of merchandising through to a value chain where this maybe in addition to, or in place of, MSA for value-based marketing.
3. Final report to MLA summarising key findings and assumptions along with CBA model to demonstrate measurement and evaluation metrics

3. Methodology

The method for this exploratory project involved reviewing past and current projects to determine whether there is a realistic opportunity associated with mapping the carcass for certain attributes that may contribute to consumer wellness. The Consultant is seeking to understand the following:

- Is there a value proposition/opportunity for red meat attributes to increase consumption?
- What are the current top health attributes for key Australian markets?
- Are there any price differentials for the top health attributes for key Australian markets?
- How might red meat differ in value from other proteins regarding the health attributes?
- Are there any value differences depending on fat types in proteins?
- Are there price differentials across different markets and cultural practices?
- What financial benefits, if any are related to separating meat cuts to attract a premium for wellness attributes? Is there a big enough difference?
- How does any underlying science on red meat health attributes align with customer expectations and price differentials for Australian brands?

Activities undertaken:

- Meeting with AgResearch regarding research into health attributes mapping to emotions and meat carcase mapping (regarding MLA project P.PSH.1224; P.PSH.1163; P.PSH.1164)
- Review of DIJ Strategy on customer personas and opportunity areas.
- Requested Mintel to run report on retail red meat product claims with health benefits, price differential, countries, channels. Analysed Mintel dataset and written up explanation
- Review of Watch Me Think project (regarding MLA project V.RMH.0113)
- Review of MLA Strategic Growth Drivers
- Review of AgResearch Meat Mood Map
- Synthesis of data across past projects

4. Results

4.1 Customer desirability opportunities

Synthesis of data from across projects

This section of the report summarises the results from across all projects included in the methodology. All statements in the following tables (Table 1, 2, 3, 4) were rated using a 1 to 5 opportunity scale, with 1 being very low opportunity and 5 very high opportunity.

Claim opportunities - Table 1 shows the list of potential claims and opportunity areas that can be made on different carcase cuts. Not all claims relate to health and wellness, such as 'sustainable meat' and 'carbon neutral'.

There is no definitive underlying meat science associated with meat cuts and wellness benefits to support the list in Table 1. The claims and opportunities were derived mostly from exploratory and qualitative market research. AgResearch is currently undertaking a project to determine whether there is any scientific basis to health and wellness attributes on a carcase.

The three highest rated claims and potential opportunity areas are: 1) immunity boosting, 2) sustainable meat, and 3) carbon neutral. There was also a moderate level of interest in claims of muscle strength and joint health.

There are many reduced fat products and meal formats being sold in significant quantities, particularly in the US and Australian markets. It may be an opportunity to link these products with MSA graded fat scores as a way of objectively verifying fat reduction. Japan and to a lesser extent China, tend to emphasise other nutritional benefits.

To date AgResearch have not identified any direct link between mood/emotion relative to wellness attributes and different meat cuts. As such, it is unclear whether there is a value proposition for further research in this area. If there was further research funded, the methodology needs to incorporate commercial testing to link to different customer segments and meat science. This a major gap identified during this research and needs to be addressed in further research prior to completing a detailed cost benefit analysis.

Table 1. Claim Opportunities.

Physical energy	2
Improved mood	2
Muscle strength	3
Cognitive function	2
Joint health	3
Calmer mood/less anxiety	2
Immunity boosting	4
Digestive health	2
Ageing wellness	2
Sustainable meat	4
Carbon neutral	4
Reduced fat claims make up 70% of claims compared to 30% of non-fat claims on products sold across US, China, Japan, NZ & Australia (Mintel)	4

Table 2, 3 and 4 relate to consumer desirability for health, wellness, and sustainability attributes. They are divided into segments, value propositions, and consumer relationships.

Customer segments - under 'Segments' there is a mixed list of information related to customer segments and country specific information in Table 2. According to AgResearch's project, a general finding is that New Zealand (70%), Australia and United States (90%) consumers are willing to pay more for red meat with health and wellness claims. The DIJ (2020) project identified a consumer persona called 'Proactive Health Managers' that may be worth targeting. These senior Australians are older than 55, earn above \$40,000 and are likely to purchase red meat products with health and wellness benefits.

Japan stands out as a potential segment to target because they tend to de-emphasise fat content and emphasise added calcium, reduced sodium, vitamins, and reduced sugar. This contrasts with brands in the US and Australia who are more likely to make claims about fat reduction.

Table 2. Initial Customer Segment Concepts.

70% of NZ consumers are willing to pay more (AgR)	2
90% of Australians & Americans are willing to pay more (AgR)	5
Consumers who choose food to improve their wellness (emotional state/mood) (AgR)	2
Proactive health managers (older 55+, <\$40K, retired (MLA)	4
Brands in US & Australia more likely to make claims about reduced fat & health benefits (Mintel)	3
Japan & China less likely to make claims about health benefits (Mintel)	3
Japan made no claims about reduced fat - rather emphasised added calcium, reduced sodium, vitamins & reduced sugar (Mintel)	3
Japan average amount of fat per 100g is 19.35g (Mintel)	2
US average amount of fat per 100g is 15.05g (Mintel)	2
Australia average amount of fat per 100g is 12.03g (Mintel)	2
NZ average amount of fat per 100g is 10.81g (Mintel)	2
China average amount of fat per 100g is 9.59g (Mintel)	2

Customer relationships - there was not a lot of information across the projects reviewed on what type of relationships that customers may desire from brands, summarised in Table 3. MLA research stated that customers want nutritional and health benefit information on packaging. AgResearch stated that customers may be interested in packaging with mood improvement claims but there is no evidence for this yet.

Table 3. Customer Relationships.

Provide nutritional information & health benefits on packaging / second most important to price	4
Packaging featuring mood improvement claim based on nutrients may align with consumers' growing interest in mental wellness (AgR)	2
May help to attach specific emotions to packaging	2

Table 4 presents potential value proposition concepts. Some of these concepts have been developed into prototypes and tested with consumers which has generated some initial evidence. However,

these prototypes now need commercial testing. Commercial tests may produce different results because they involve paying customers. Early indications are that concepts with a rating of 3 and above are likely to be worth further developing as value propositions.

Table 4. Value Proposition Opportunities.

Beef that enhances immunity (DIJ)	4
Enhanced vitality beef (DIJ)	3
Joint health beef (DIJ)	3
Build lean muscle beef (DIJ)	3
Australia could make a health claim that their meat products on average contain 3% less than the US and 7% less than Japan. (Mintel)	2
Seen as having functional health benefits, but not strongly associated with healthy meals (MLA)	3
Sustainable meat (WMT)	3
Carbon neutral (WMT)	4
Meat as a Superfood (WMT)	2
Consumers want to adopt a healthier & more sustainable diet that includes meat (WMT)	4
Consumers were very enthusiastic about the idea of Sustainable Meat and Carbon Neutral beef (WMT)	4
According to MSA, although marbling is typically associated with a higher eating quality score, it is also possible to achieve good eating quality without marbling. For example, young cattle with low marbling can also have good eating quality. (MLA)	3

Revenue opportunities - There was not a lot of information from across projects on the potential revenues that might be possible for selling cuts with health and wellness benefits, summarised in Table 5. DIJ completed some 'back of envelope' revenue scenarios which are listed in Table 5. The highest potential revenue was for 'Immunity boosting beef' which may attract up to \$46.8M if it was sold to 300,000 households annually.

According to the Mintel database on products sold, there is not a significant price differential for products with health-related claims, \$2.10 compared with standard products \$1.96. This contrasts with information gathered from various qualitative surveys where between 70% and 90% of consumers say they are willing to pay approximately 40% margin for red meat products that benefit physical and mental wellness (AgResearch 2020).

Table 5. Unproven revenue opportunities

Price differential between health related claims & non-health related claims is not much \$1.96 compared to \$2.10 per 100g (Mintel)	4
Japan price per 100g was 50c higher than other countries for health related claims	2
Immunity boosting beef 300K households x frequency of consumption 2 x Incremental value of \$1.50 = \$46.8M	4
Enhanced vitality beef 220K households x frequency of consumption 2 x Incremental value of \$1.50 = \$32.9M	3
Joint health beef 195K households x frequency of consumption 2 x Incremental value of \$2 = \$30.4M	3
Build lean muscle beef 215K households x frequency of consumption 2 x Incremental value of \$2 = \$33.5M	3

4.2 Meat mood map: Investigate sensory red meat cues (by cut) and their effect on consumer choice and wellness (mood) (AgResearch 2020)

This project (P.PSH.1164) was co-funded by MLA Donor Company and AgResearch.

The aim of this research was to identify consumers who seek to choose food to improve their physical and mental (emotional state/mood) wellness.

Project objectives

1. Evaluation of consumers who seek to choose food (experience) to change/improve wellness/mood - understanding for red meat to address this “pain point” and consider if red meat can be positioned as delivering wellness and mood change in addition to current eating profile cue such as tenderness, juiciness, and flavour.
2. Final report of key findings and testing of proof of concept and value proposition and recommended next steps plan – stage 2 research.

Background

Meat mood map aims to identify consumers who seek to choose food to improve their wellness (emotional state/mood). Results from this work will provide preliminary data to demonstrate how red meat can be positioned to deliver wellness and mood change in addition to current eating hedonics such as tenderness, juiciness, and flavour.

Initial survey results from New Zealand have shown that **70% of consumers would pay more** for red meat products that would improve wellness (mood) which represents an opportunity to create and capture higher value for the red meat industry. The work summarized in Milestone 2 involved collection of qualitative data (on-line screening survey with 113 responses followed by phone interviews of 11 participants) to explore the desirability of the concept that red meat can have a

positive impact on wellness (mood) and consumers are willing to pay more for meat that enhances wellness.

This survey did not identify a specific target group, although menopausal women were later postulated as a potential target group. To be more specific about target segments, the research team decided to undertake a more detailed market research survey to more clearly identify types of respondents interested in eating meat for wellness benefits.

Quantitative data were collected through two on-line surveys with high numbers of respondents and more detailed questions, specifically focussed on gathering additional demographic information in Australia and the USA. This market research survey aimed to provide quantitative evidence of desirability for the preliminary value proposition that consumers are willing to pay more for meat that improves wellness (mood).

A major feasibility component of the business model involves the development of methodologies to measure consumer emotional responses to meat, by initially implementing/adopting in the meat context established techniques for other food products. Emotional associations to meat were studied using a previously developed emotion circumplex approach and applied to a Chinese consumer panel in Auckland, New Zealand. Emotional responses were analysed to provide insightful emotional meat profiles.

The viability of the concept of merchandising meat based on improved wellness (mood) was explored by identifying the willingness to pay of respondents for this value proposition and identifying a target segment(s) that would indicate the potential size of the market.

Methodology

To gather quantitative data and be more specific about target segments, two on-line surveys were carried out in Australia and the USA with high numbers of respondents.

Table 6. Summary of age and gender characteristics of respondents and by country.

	TOTAL	USA	AUS
N	1,523	1,000	523
Gender (%)			
Female	767 (50%)	520 (52%)	247 (47%)
Male	756 (50%)	480 (48%)	276 (53%)
Age, years old (%)			
18-24	186 (12%)	104 (10%)	82 (16%)
25-34	494 (32%)	402 (40%)	92 (18%)
35-44	343 (23%)	260 (26%)	83 (16%)
45-54	210 (14%)	130 (13%)	80 (15%)
55-64	165 (11%)	82 (8%)	83 (16%)
65 or older	125 (8%)	22 (2%)	103 (20%)

Results

- Initial results showed that 70% of New Zealand respondents (n=113) would pay more for red meat products that would improve wellness (mood).

- Australian (n=523) and United States (n=1000) results showed that over 90% of respondents indicated that they were interested (mildly, moderately, or very interested) in purchasing and eating red meat that would improve their physical or mental wellness.
- In addition, 85% indicated they were willing to pay more for red meat that would provide physical/mental wellness benefits, with an average margin 38% & 41% respectively.
- Americans were more willing to pay more than the Australian respondents – there were no other demographic differences other than country of origin.
- The type of improvements sought by consumers were improvement in physical energy (77%), improved mood (56%), muscle strength (56%), cognitive function (55%), joint health (50%) and calmer mood/less anxiety (50%).
- Emotional consumer responses to red meat showed association with emotional activation and pleasure, mainly ‘Energetic-Excited’, ‘Enthusiastic-Inspired’, and ‘Happy-Satisfied’. This contrasts with tofu (‘Secure-Ease’ and ‘Relaxed-Calm’) and boiled chicken breast (‘Dull-Board’ and ‘Passive-Quiet’).
- There is a unique opportunity to position red meat outlining qualities that support improved mood and mental health. Packaging meat featuring perceived mood improvement nutrients may align with consumers’ growing interest in mental wellness.

A further interesting finding in this research was the fact that Roast Lamb scored high on frequency of use of emotion words by Chinese consumers (Figure 1). Previous research undertaken by Greenleaf found that Chinese consumers eat lamb because they believe it has warming attributes to keep warm in winter. However, this is at a carcase level, and does not differentiate between cuts of meat. Chinese cooking methods also tend to devalue cut differentiation compared to Western methods.

If the objective is to develop an alternative to cuts based on eating quality (i.e., cuts based on health and wellness) then future research needs to consider health and wellness cultural practices across different cuts.

Figure 1. Frequency of use (%) for emotion words by Chinese consumers (n=160) for 14 different food sources

Emotion Circumplex	Active Alert	Energetic Excited	Enthusiastic Inspired	Happy Satisfied	Secure At ease	Relaxed Calm	Passive Quiet	Dull Bored	Blue Uninspired	Unhappy Dissatisfied	Tense Bothered	Jittery Nervous
Beef Steak (Bloody)	7 _{abc}	13 _{abc}	5 _{ab}	14 _{ab}	3 _a	9 _{abc}	8 _{ab}	5 _{ab}	2	5	12 _a	18
Beef Steak (Internally Pink)	10 _{ab}	16 _{ade}	16 _{cde}	25 _{def}	5 _{abc}	12 _{abcd}	3 _{acd}	1 _{cd}	0	2	5 _{abcd}	5
Boiled Chicken Breast	5 _{abc}	2 _{fg}	1 _a	6 _g	10 _{bcd}	18 _{ade}	13 _{be}	30 _e	7	6	2 _{bce}	0
Lamb Sausage	5 _{abc}	5 _{fgh}	11 _{bcd}	16 _{abce}	8 _{abcd}	15 _{abd}	18 _e	6 _a	3	2	5 _{abcd}	5
Pork belly	8 _{abc}	14 _{abd}	9 _{bc}	31 _{df}	6 _{abc}	8 _{bc}	7 _{ab}	5 _{abc}	3	5	3 _{bcd}	3
Pork Mince	2 _c	1 _f	7 _b	18 _{abce}	14 _d	27 _e	7 _{ab}	9 _a	6	5	3 _{bcd}	1
Raw Oyster	12 _a	22 _{de}	6 _{ab}	12 _{ag}	3 _a	8 _{bc}	7 _{ab}	3 _{abcd}	1	2	8 _{ad}	16
Roasted Duck	10 _{ab}	23 _e	20 _{de}	31 _{df}	5 _{abc}	6 _{cf}	1 _c	1 _{bcd}	0	1	1 _{bce}	1
Roasted Lamb	12 _a	38 _i	22 _e	21 _{abcde}	3 _a	2 _f	1 _{cd}	0 _d	0	0	1 _{be}	0
Steamed bull Frog	3 _{bc}	7 _{bcgh}	5 _{ab}	14 _{abc}	5 _{ab}	8 _{bc}	12 _{be}	4 _{abc}	3	5	10 _a	22
Steamed Prawns	12 _a	14 _{abd}	12 _{bcd}	33 _i	7 _{abcd}	12 _{abcd}	1 _c	6 _a	1	1	0 _e	0
Steamed Tofu	5 _{abc}	6 _{gh}	8 _{bc}	24 _{bcdef}	26 _e	21 _{de}	4 _{acd}	5 _{abc}	0	1	2 _{bce}	0
Stewed Carp	5 _{abc}	10 _{abch}	8 _{bc}	26 _{def}	12 _{cd}	16 _{abd}	5 _{ad}	6 _a	5	4	1 _{be}	1
Stewed Pigeon	5 _{abc}	5 _{gh}	5 _{ab}	18 _{abce}	12 _{cd}	20 _{de}	7 _{ab}	8 _a	1	3	6 _{acd}	10

^{a,h,i,j,k,l,m,n}Frequencies within a column with different letters are significantly different (P<0.05).

Pink colour represents a combination of positive and active feelings, Yellow colour represents a combination of positive and passive/quiet feelings, Blue colour represents a combination of negative and passive/quiet feelings while Green colour represents a combination of negative and active feelings.

The business model canvas presented in Figure 2 provides a good starting point, however the core value proposition of the link between emotion/mood and carcase cuts and associated price differential is not yet clear.

Figure 2. Business Model Canvas

Key Partners Psychologists Consumer Scientists Processors Butchers Retailers Marketing & Communications	Key Activities Regulatory landscape Intervention studies Methods to measure wellness (mood)	Value Proposition Meat Cues: Positive impact on wellness (mood) What is their problem and Why? Growing interest in mental health Willingness to improve mental wellness (improved mood, cognitive function, calmer mood-less anxiety) Lack Information: Meat - Mood	Customer Relationships Package information at retail	Who will benefit? Consumers who choose meat for wellness benefits 88% USA 78% AUS 70% NZ
	Key Resources Marketing & Communications		Channels Supermarkets or e-commerce	
Cost Structure Complete research Scale-up cost for an early adopter: 3-10 x research cost		Revenue Streams 41% extra for wellness benefits from meat		

4.3 Strategic Growth Drivers: Summary Slides related to Wellness (MLA)

The following slides relate to an Australian persona, called ‘Healthy You’. Other countries (China, SEA, MENA, Korea, Japan, and the US) also have similar personas related to health and wellbeing. More Australians are more often choosing beef because it is understood to be healthy in nutrition and for everyday consumption.

Figure 3. Healthy You.

Driver Definition: Choosing beef is understood to be healthy both in nutrition and everyday consumption

Growth Opportunity: More people & More often


Target Consumers: Pro-active Health Managers (Older 55+, <\$40K, retired)

Behaviour Change:

✗
 Seen has having functional health benefits, but not strongly associated with healthy meals

➔

✔
 Beef provides convenient healthy meal solutions and is seen as a necessary part of a healthy diet



mla
MEAT & LIVESTOCK AUSTRALIA

Of those surveyed, 37% of Australian’s indicated that health and wellbeing is influential when choosing food products (Figure 4). Nutritional value and health benefits ranked second and third respectively when consumers consider what is for dinner (Figure 5).

Figure 4. Health has growing role in Australian’s lifestyle.

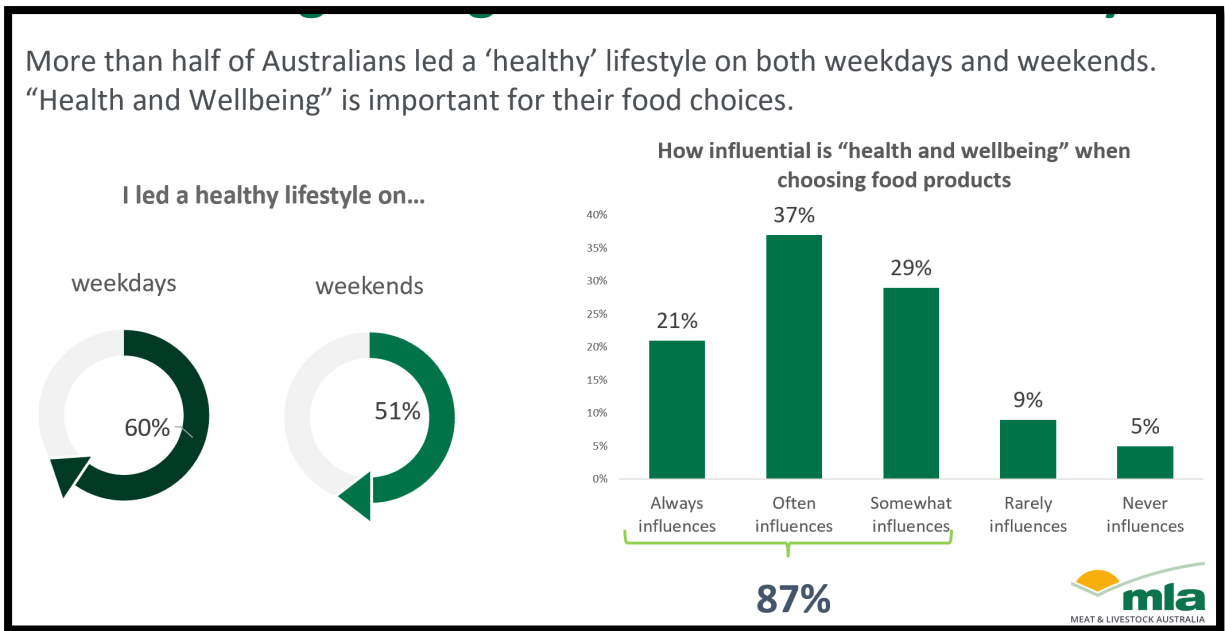


Figure 5. Consumer considerations when buying dinner.

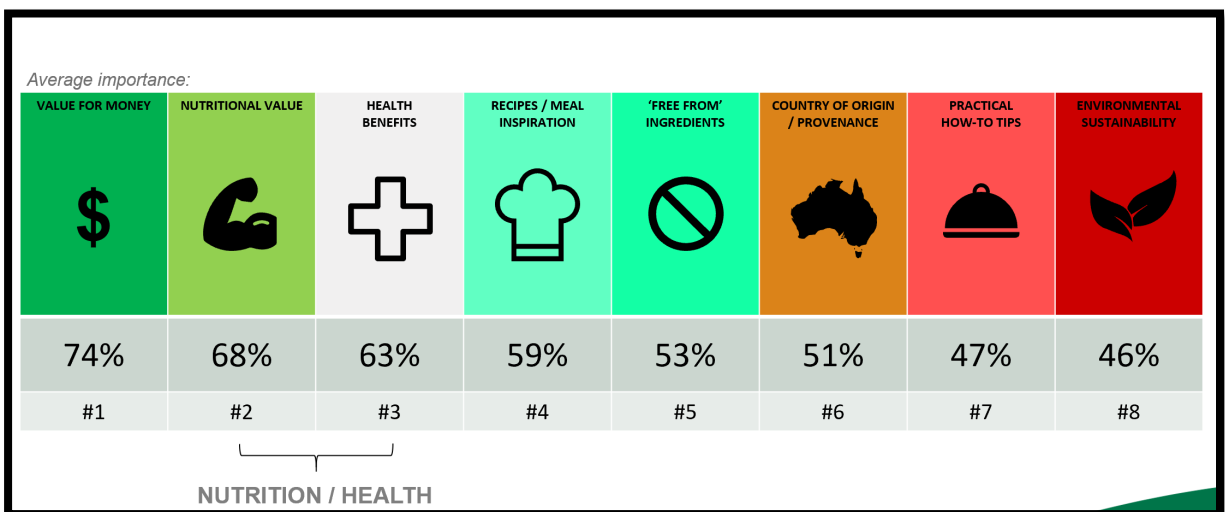
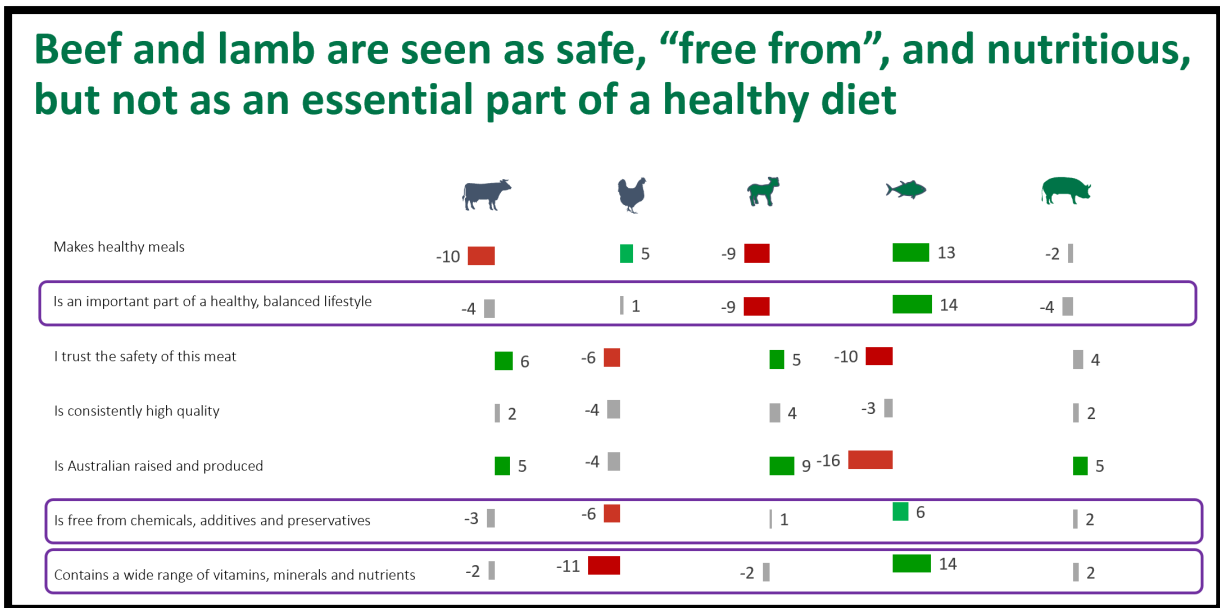


Figure 6 shows that respondents do not believe that red meat is an essential part of a healthy diet. If there was scientific research that could challenge this belief, there may be an opportunity to challenge this assumption. This survey also indicates that consumers are not too confident about the degree to which red meat is free from chemicals, additives, and preservatives. Moreover, consumers do not see red meat as a protein that contains a wide range of vitamins, minerals, and nutrients.

Figure 6. Red meat is not essential part to a healthy diet.



4.4 Superfood & Sustainable Meat: Qualitative In-home Concept Test (WMT)

Watch Me Think were engaged by MLA in 2020 to find better ways to connect with the authentic experiences of consumers. Two new ideas that could add value to the overall category are a concept around Sustainable Meat and Meat as a Superfood. MLA wants to test these ideas with target consumers in their context to gauge the level of appeal before investing more time and money in developing them.

The business objectives grounding this research were:

1. Witness what consumers think about meat, its benefits and sustainability and hear it in their words so that future messaging is credible and relevant
2. Understand where this ethnographic approach provides the most benefit during the innovation process (i.e., concept testing, product testing with physical samples or both)

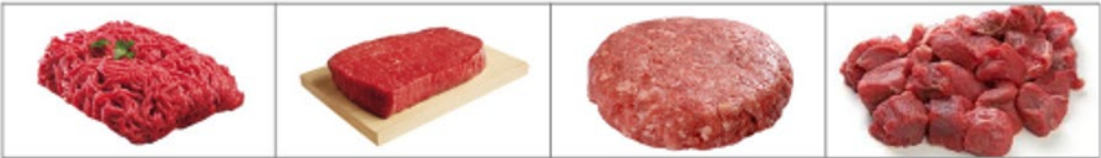
Figure 7. Stimulus 1.

Red Meat is one of the most nutrient dense foods, both as a **complete protein source**, and as a **provider of important vitamins and minerals** like: Iron, Zinc, Potassium, Vitamins D & B12 and Omega 3, plus many more. Many of these nutrients are **lacking in the modern diet**, leading to health and wellness issues.

Closer inspection of different cuts of red meat has revealed there are significant **natural variations in the concentration** of these nutrients.

With careful selection, it's possible to produce cuts of red meat with superior nutritional properties (20+% more) that can **naturally address a health & wellness issue**.

These red meat products are 100% Beef / Lamb, are all natural and deliver the **same taste and texture** that we currently enjoy and in the forms we're used to.



A

Figure 8. Stimulus 1.

INTRODUCING JOINT HEALTH BEEF

Rejuvenate wearing joints and revitalise cartilage to free yourself of the aches and pains associated with age-related degradation.

When compared with regular cuts, **Joint Health Beef** contains superior nutritional properties like:

- **Collagen** a building block of connective tissue
- **Vitamin D** aids absorption of Vitamin C needed for collagen synthesis
- **Zinc** reduces joint inflammation
- **Omega 3** provides joint lubrication

All-natural benefits with the same great taste and texture you love.



JH

INTRODUCING MUSCLE BEEF

Build muscle strength, enhance your fitness, accelerate injury recovery and boost brain development.

When compared with regular cuts, **Muscle Beef** is found to be higher in key amino acids, vitamins and minerals like:

- **Creatine** for muscle development & performance
- **Vitamins D & E** to boost hormone production to feel rejuvenated
- **Zinc** to accelerate tendon repair for injury recovery

All-natural benefits with the same great taste and texture you love.



MB

INTRODUCING VITALITY BEEF

Energise your circulatory system and sharpen your mind, overcoming feelings of tiredness and lethargy and replacing them with feelings of wellness and vitality.

When compared with regular cuts, **Vitality Beef** is found to be higher in key vitamins and minerals critical to healthy blood flow:

- **Iron & B12** boosts red blood cell production and enriches oxygen levels throughout your body
- **Potassium** makes your nervous system work effectively
- **Omega 3 & B12** accelerate brain cell regeneration and enhance feelings of positivity

All-natural benefits with the same great taste and texture you love.



VB

INTRODUCING IMMUNITY BEEF

Power up your immune system to fight off colds, the flu and other viruses. Reduce the risk of being struck down by chronic disease while enhancing wellness and slowing down the process of cell damage that comes with aging.

When compared with regular cuts, **Immunity Beef** contains higher concentrations of those elements your body needs to fight sickness:

- **Protein** the key building block needed to create antibodies
- **Zinc & Vitamin D** critical for enabling an immune response
- **Iron** helps immune cells to multiply
- **Vitamin E** a key antioxidant, slowing down the ageing process of cell damage

All-natural benefits with the same great taste and texture you love.



IB

Figure 9. Stimulus 2.



The Footprint Meat CO²

Sourced from local farms, accredited by the Australian Carbon Neutral Standard, we are a 100% carbon neutral meat company. We were founded on the basis of caring for animals, people and the land and in doing so deliver a range of premium meats that are good for you and better for the planet.

Results

- Clear messaging from consumers in this research is that they want to adopt a healthier and more sustainable diet that includes meat. However, red meat products are not generally positioned that way.
- Presenting meat as a superfood was perceived as a ‘long bow’ but may help combat some of the negativity toward red meat.
- Consumers struggled to understand how one piece of meat contains more nutrients than another.
- Consumers were very enthusiastic about the idea of Sustainable Meat and Carbon Neutral beef - a very clear message.

4.5 AgResearch Emotion/Mood Research

Research Premise

Consumer satisfaction is based on overall liking or eating quality. However, the behaviours that influence purchase decisions including emotions/wanting to originate in a different part of the brain. The research concluded that these emotions do have a significant influence on a person’s purchase decision making process.

The premise is that factors such as wellness attributes, which may not correlate with eating quality, could generate a range of desirable emotional responses in consumers. These positive emotions

towards new red-meat value propositions could increase demand from both existing and new red-meat consumers.


The following slides summarise the hypothesis Ag Research tested as the basis of this value proposition.

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Why Emotions?

- Liking rarely predicts food choice in real environments (Dalenburg et al., 2014)
- Liking gives a good indication of immediate enjoyment but not choice processes (Thomson, 2010)
- Multivariate approaches proposed
- Food evoked emotions significantly improve food choice prediction over liking (Dalenburg et al., 2014)

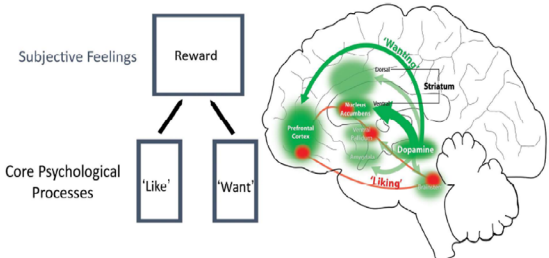
LIKING
partial contribution to food choice



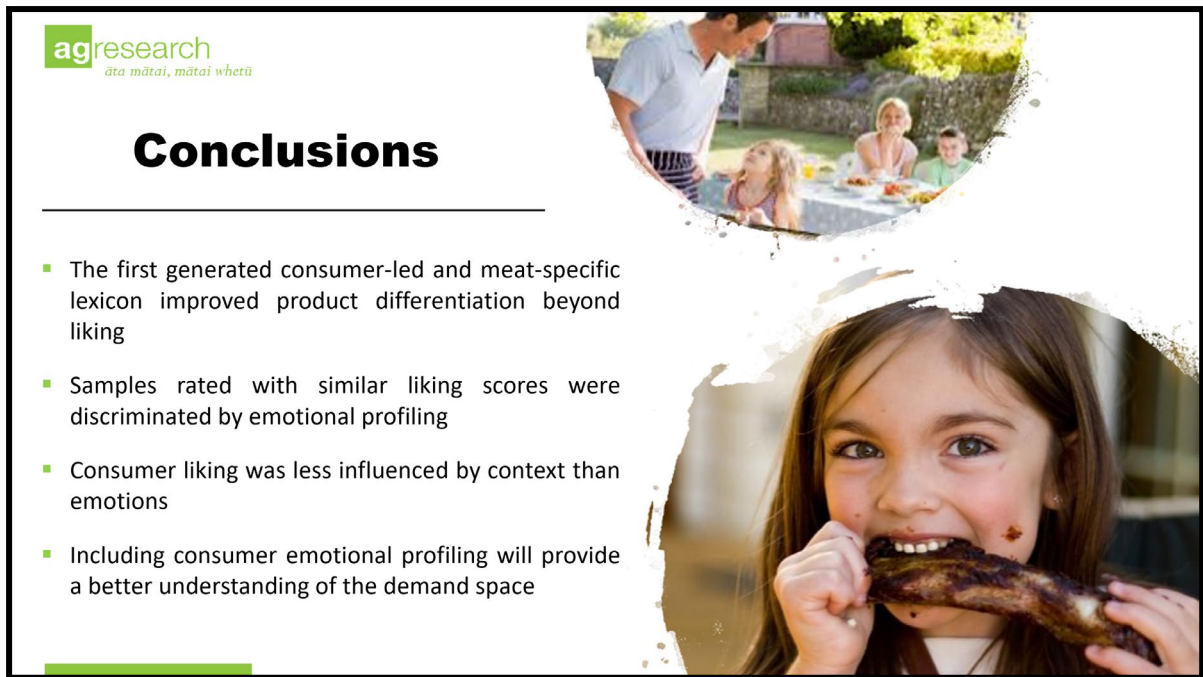
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Liking vs Wanting

- Liking related to palatability
- Wanting drives towards behaviours
- Liking and Wanting are processed differently in the brain (Berridge 1996, 2018)
- Both are important



Berridge, 2018



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āta mātai, mātai whetū

Conclusions

- The first generated consumer-led and meat-specific lexicon improved product differentiation beyond liking
- Samples rated with similar liking scores were discriminated by emotional profiling
- Consumer liking was less influenced by context than emotions
- Including consumer emotional profiling will provide a better understanding of the demand space

Main discussion points between the collaborators

The following information was based on notes taken during a meeting on the 25th of November 2020 between AgResearch, MLA and Greenleaf. The purpose of the meeting was to provide an update on AgResearch's progress on their emotion research project and to discuss how the results might uncover opportunities for red meat.

Figure 10. Meeting agenda for AgResearch

Meeting agenda
Project V.RMH.0106 - Carcass Mapping for Wellness
Date: Wednesday 25th November

Attendees: Michael Lee, John Marten, Tania Brown, Li Day, Carolina Realini, Mustafa Farouk, Tracy Nelson, Phil Green, Matt Flynn

Hypothesis being tested by Ag Research: MLA in partnership with AgResearch are exploring the possibility for mapping carcasses based not on the traditional meat cut plate profile or Meat Standards Australia (MSA) eating quality traits, but rather, wellness, mood or nutritive values.

Consumer Pain this could address: Consumers where holistic wellness is a key driver currently are not able to be supplied specific fit for purpose meat products as beef and sheepmeat is not fabricated that way. That is, whilst red meat is a good source of protein, iron and zinc it is not known or at least not merchandised product by product based on wellness or mood cues.

Consumer Value Proposition to be validated by Greenleaf: Interrogate the assumptions and insights derived from various MLA projects and market intelligence in the form of a Cost Benefit Analysis (CBA). The key approach is to answer, "should we do this, and what is the value creation/capture if we can do this".

Meeting Objectives: Project update on research findings / alignment with market-side
It is requested that Ag Research present the data collected to date in a way that Greenleaf can use to answer "Whats this worth and should we do it?".
We understand there may still be further data analysis required. In which case, a discussion around the content of the data collected and how it may or may not help answer the objectives will be helpful to ensure everyone is aligned.

0.00	Research project update	Ag Research
30min	Emerging research findings? Are there wellness, mood or other nutritive attributes present in red-meat as compared to other food sources? Is there enough differentiation in concentrations present in different meat cuts to warrant new grading methods?	Ag Research
1hr	Are there any research applications to consumers & or demand? What type of evidence/data supports claims?	Ag Research
1hr 30	Linkages to Greenleaf project Is there a value proposition/opportunity for red meat associated with the research? Are there any price differentials (willingness to pay) associated with research findings? Are there price differentials across different markets and cultural practices? Next steps	Discussion as a group to further unpack the findings
2hr	Finish	

Emotional response

- Emotions help us to understand impact of the context
- Emotion of the person purchasing a cut of meat vs those eating the meat at a BBQ is completely different
- May help with marketing approach to attach certain emotions

Project implications for AgResearch method

- no willingness to pay information/findings
- no demographics/ethnicity information
- who are the participants – scenario based; imagine you were invited to a BBQ. Imagine your emotional response.
- Linkage of taste panel data to emotional scores is based on eating quality parameters rather than claimed wellness attributes such as health, immunity, vitality. Linkage of differences in chemical composition to liking and emotion were based on taste rather than perceived wellness benefits.
- Emotional lexicons tested validate EQ grading as a measure of satisfaction (mood) but don't differentiate those from wellness (health) claims.

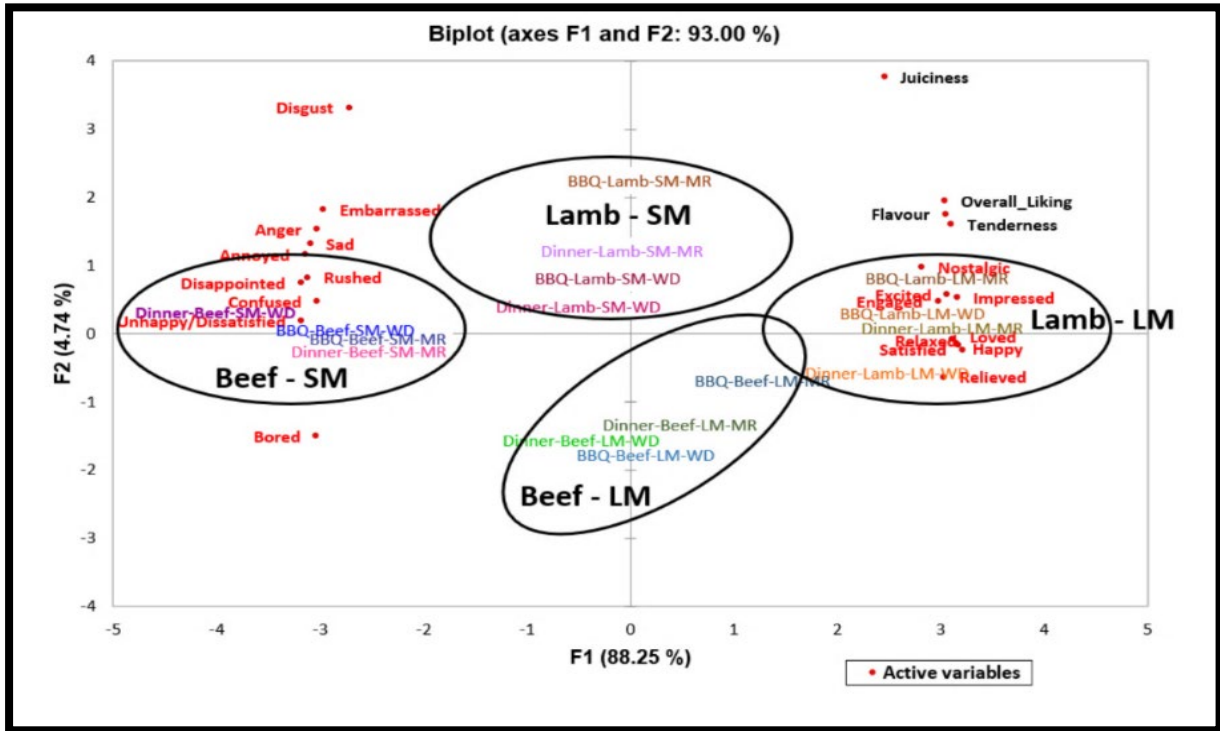
Value proposition

- Features of what a product should look like
- Sustainability, environment, animal welfare, wellness
- Category growth drivers x country

Results to date

The results presented in Figure 11 are consistent with MSA grading. For example, the SM = semi tendinous (Topside) is a roast, low EQ cut compared to the Longissimus (LM) Striploin. You would expect the negative emotions in red to align to low quality and the positive emotions to high quality, which they do. This confirms very well the MSA EQ grading system and alignment of value/positive emotion, based on EQ.

Figure 11. Emotional responses plotted for Lamb and Beef Cuts (8 Products – Species, Muscle, Degree of doneness in two contexts of BBQ and Dinner).



Next steps and further research

Because there were no research/interview questions aligning emotion to wellness benefits of each cut (and the differential wellness benefits between cuts), there is no conclusion about whether consumers are prepared to pay more for wellness at the expense of EQ.

Future research will need to integrate the questions and steps outlined below:

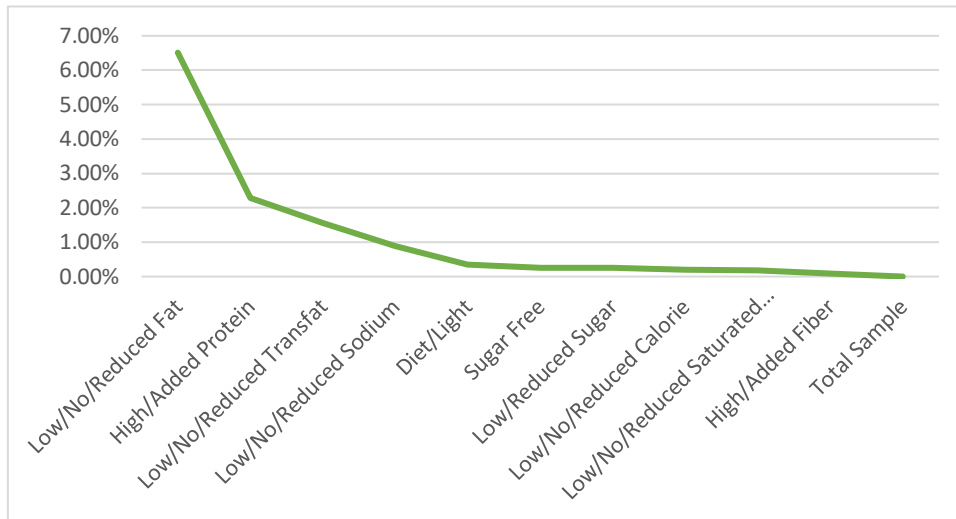
1. What are the biological / wellness differentials between cuts?
2. Are the secondary cuts better in wellness concentration? If not, then this will further devalue secondary cuts. If Yes, then there may be an opportunity to elevate secondary cut value.
3. Will consumers pay more for Wellness?
4. Will they pay more for wellness, even with lower EQ?
5. Can high wellness/low EQ cuts be value-added to create new consumer value proposition?
6. If YES, then what are the business models, messaging, communication to realise this value?

Most importantly, question one above needs to be answered first, which is yet to be done.

4.6 Global health attribute product claims (Intel / Greenleaf)

Figure 12 shows the global results in health-related claims on meat products during 2015-2020. The total sample of products is 9845. A significant percentage of products make claims about fat reduction and added protein.

Figure 12. Global Health-related Claims on Meat Products (Source – Mintel GNPD database).

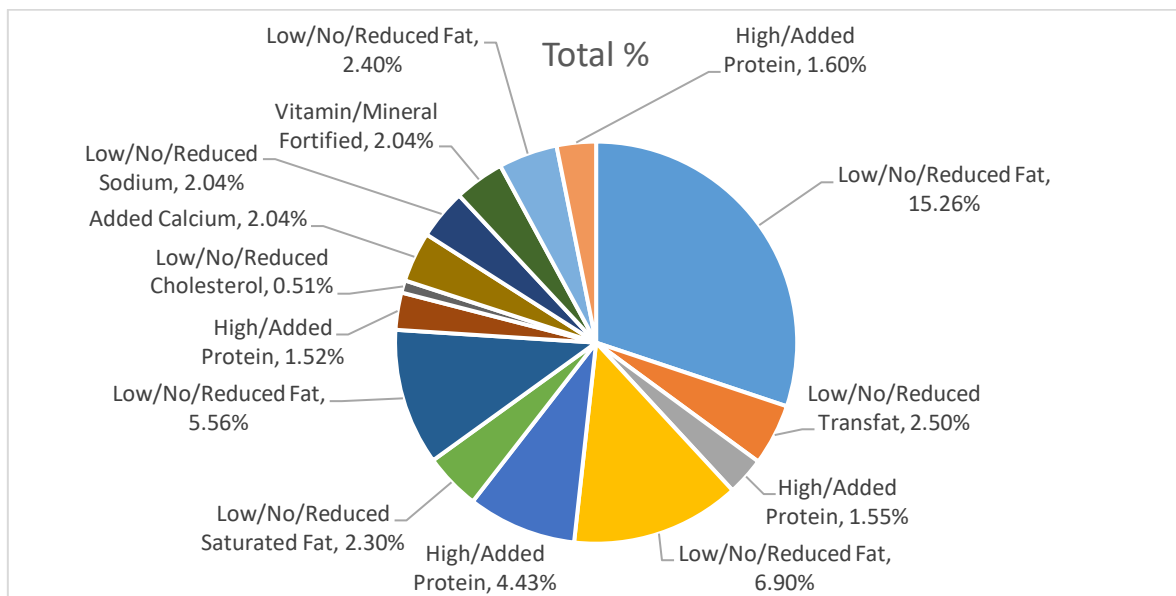


Markets of interest

This section shows health attributes data for international markets of specific interest to Australia, which include the US, China, Japan, New Zealand and Australia. The total dataset includes 1918 products.

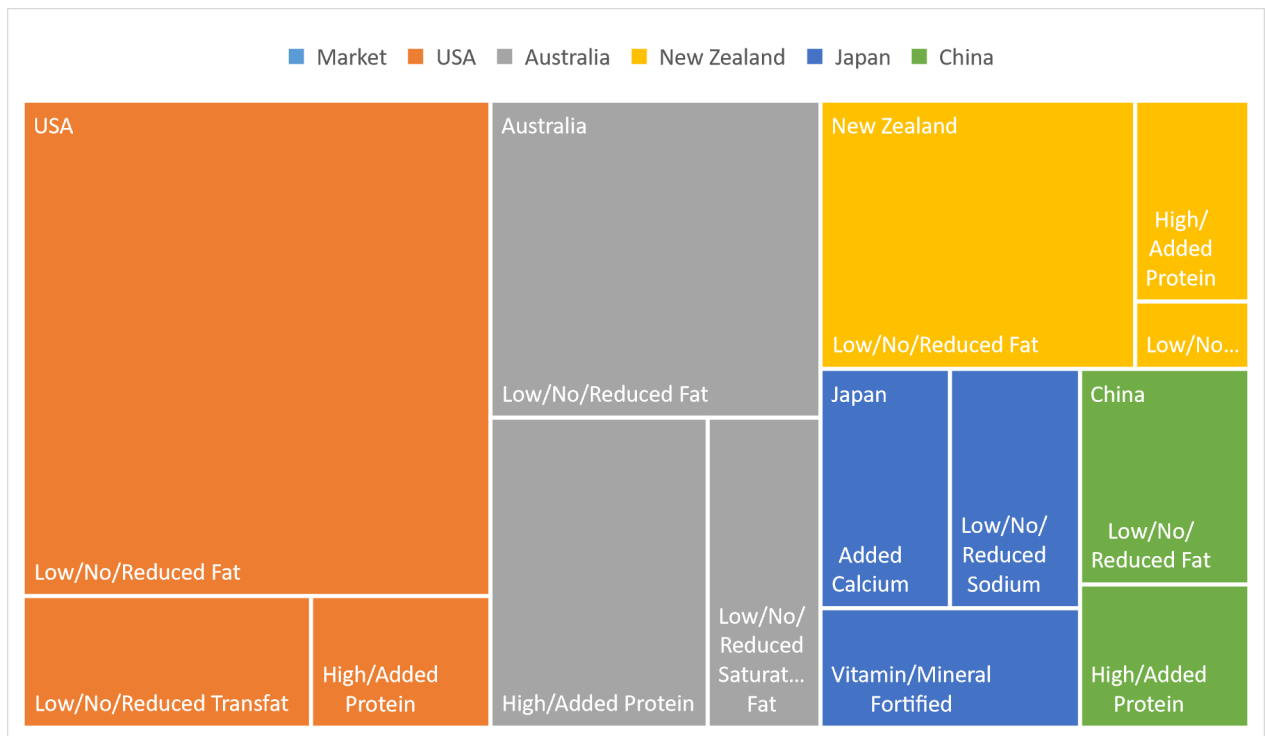
Figure 13 shows the top health related claims on meat products across the markets of interest over the last five years. When combined, claims related to low, no and reduced fat of different fat types make up approximately 70% of claims, compared to approximately 30% of non-fat related claims.

Figure 13. Percentage of Health-related Claims of Meat Products across all Markets (Source – Mintel GNPD database).



Insights from Figure 14 show that brands in the US, Australia and to a lesser degree New Zealand are more likely to make claims about the health attributes of meat products than brands in Japan and China. The top claim for the US, Australia, NZ and China was Low/No/Reduced fat. Unlike these countries, Japanese products (in this dataset) made no claims about reduced fat, rather they emphasised added calcium, reduced sodium, vitamins and reduced sugar. Although brands in China did make claims about reduced fat, the percentage was significantly lower than that of brands sold in the West.

Figure 14. Top Health-related Claims by Country.



Price differential

Figure 15 and 16 compare USD price per 100g for non-health and health product claims. Across both datasets there is not much difference, with \$1.96 for health attributes and \$2.10 for non-health. Notably, Australia has the lowest average price for health and non-health claims. Japan’s price is at least 50 cents higher than other countries for health claims and \$1.20 for non-health claims. Given that products sold in Japan tend to make different health-related brand claims compared to the other countries (see Figure 13), there may be an opportunity for Australian brands to attract a premium if they can produce products to meet consumer demands in Japan.

Figure 15. USD Price per 100g for Health Claims between 2015-2020.

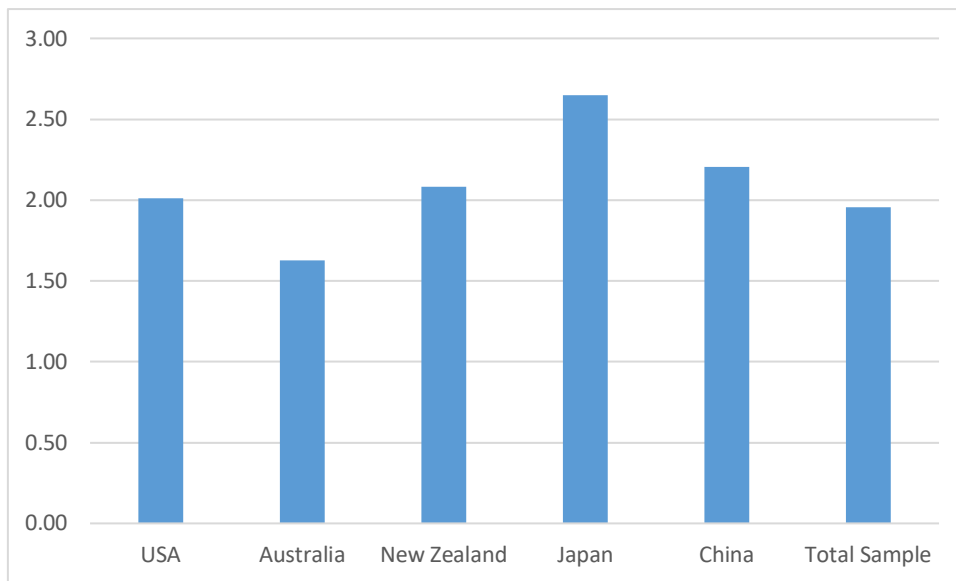
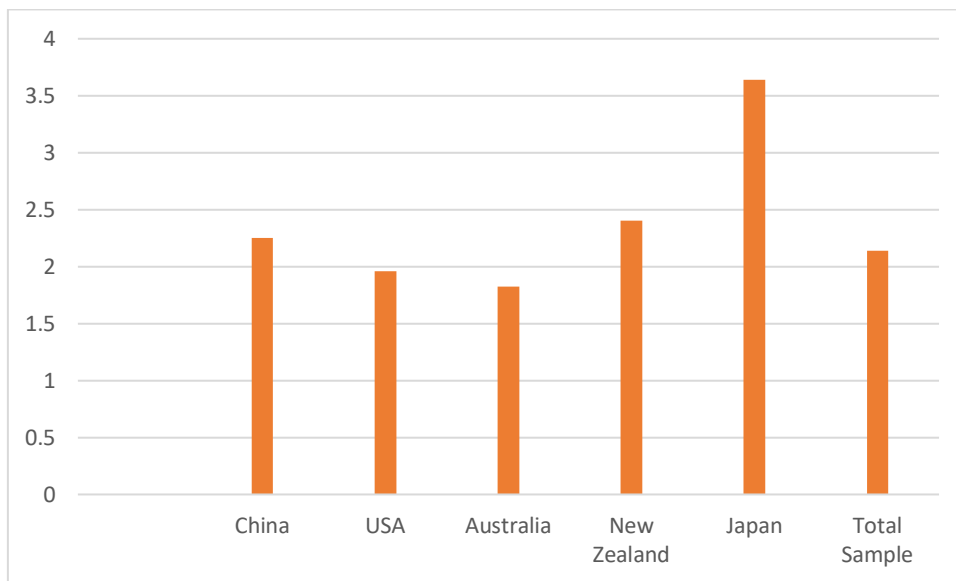


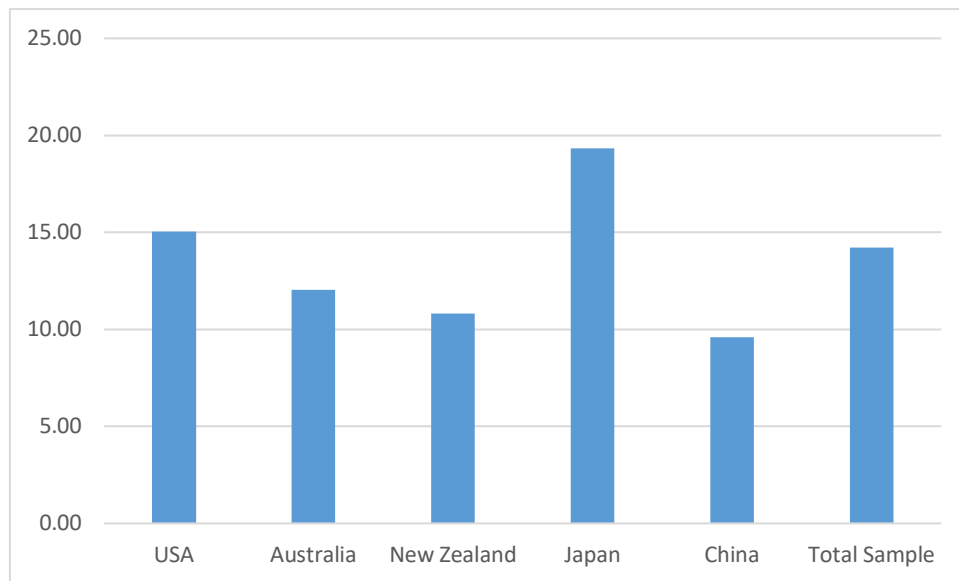
Figure 16. Average Price per 100g for Non-Health Claims on Meat



Fat Related Claims

The differences in fat content by country may be a value proposition for specific consumer segments and an underutilised competitive advantage for countries and brands. Figure 17 shows the average amount of fat per 100g by country with Japan at 19.35g, US 15.05g, Australia 12.03g, NZ 10.81g and China 9.59g. The sample includes beef, lamb, venison, and pork. Based on this dataset Australia could make a health claim that their meat products on average contain 3% less than the US and 7% less than Japan. This maybe a value proposition that is attractive to some customer segments if Australian brands can consistently produce meat with high eating quality and lower levels of fat. According to MSA, although marbling is typically associated with a higher eating quality score, it is also possible to achieve good eating quality without marbling. For example, young cattle with low marbling can also have good eating quality.

Figure 17. Average Fat per 100g x Country x Year.



4.7 Wellness carcase map meat and Size of the prize value proposition identification (DIJ Strategy 2020)

Consumers recognise the role of key nutrients in their diet, to achieve health and wellness. Whilst a balanced diet provides a foundation, they increasingly seek nutritional solutions that address specific health and wellness goals, such as digestive health, or ageing wellness. There are several ways consumers can incorporate these nutrients into their diet – through supplements, superfoods or nutritionally rich wholefoods. The collective term for these foods is Functional Foods – where they are consumed for the purpose of a specific health and wellness functional benefit.

This project therefore aims to un-pack this opportunity space and define what, if any, value proposition exists for Australian red meat cuts/components, positioned based on wellness/mood or nutritive cues. Identifying product-market fit desirability and via a series of customer journey mapping and interviews, validate the target market and consumer personas. Ultimately identify who are the early adopters and define the potential market size.

The outcomes of this research will be an input into MLA and AgResearch partnership project that is currently exploring the technical feasibility in mapping the carcass for wellness and nutritive cues against sensory profiles of various red meat cuts. This builds on the recently completed MLA project P.PSH.1163, P.PSH.1164 and seeks to address “should we do this and for whom (the why), rather than simply can we do this (what/how)”.

Several health and wellness opportunity spaces have been identified as having potential for an enhanced red meat offering and partially validated, as commercially attractive. The leading opportunity, Beef that enhances Immunity, is estimated to deliver incremental Value Creation of \$47M. Solutions for some of the other opportunity spaces appeal to a more focused customer segment but offer similarly attractive value creation. The opportunity spaces were identified through customer interviews and estimates of value creation through quantitative research.

Figure 18. Immunity Boosting Beef.

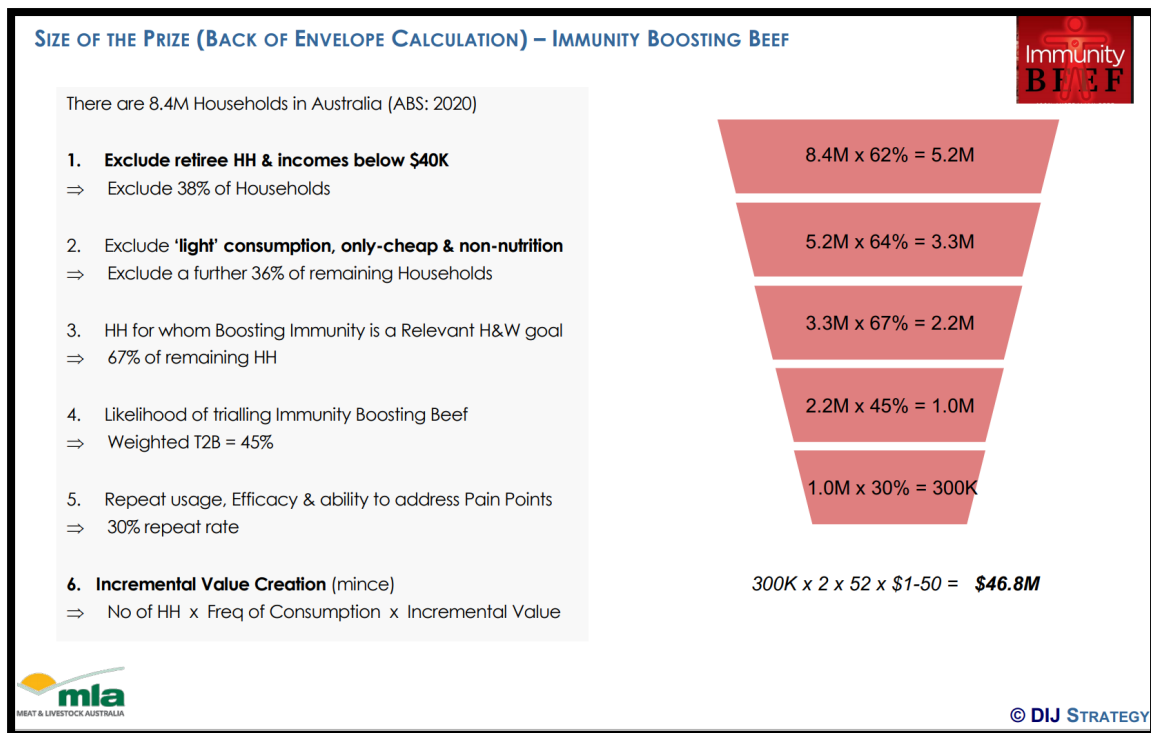


Figure 19. Enhanced Vitality Beef

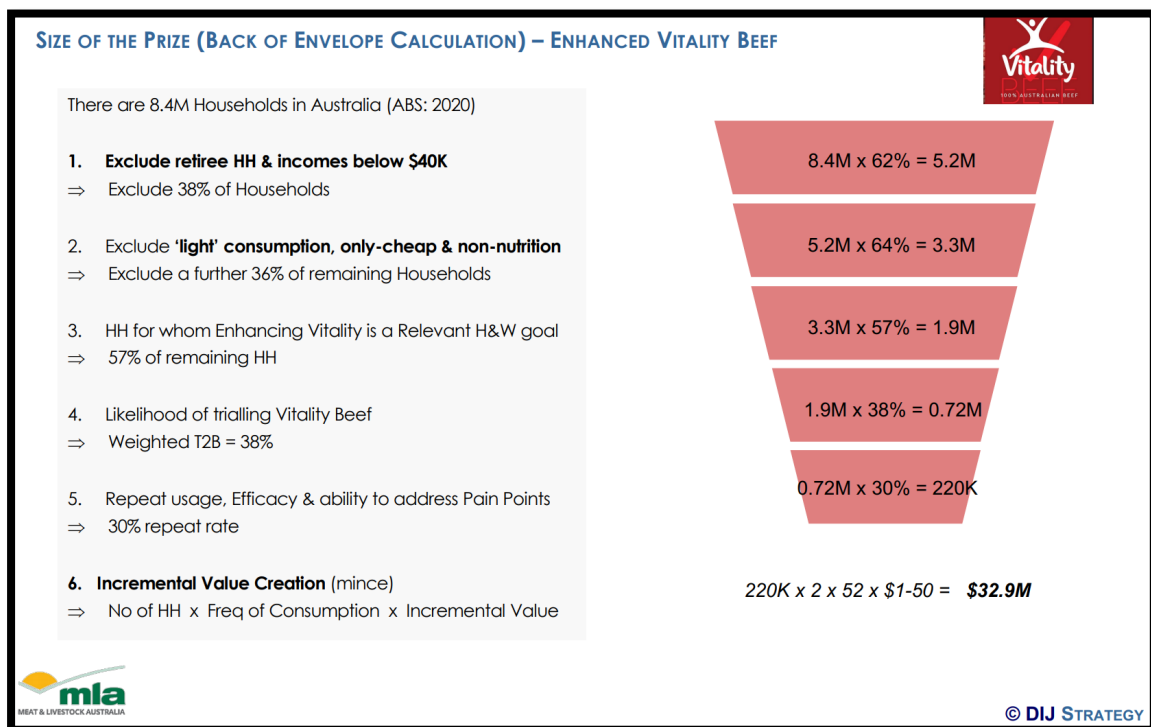


Figure 20. Joint Health Beef.

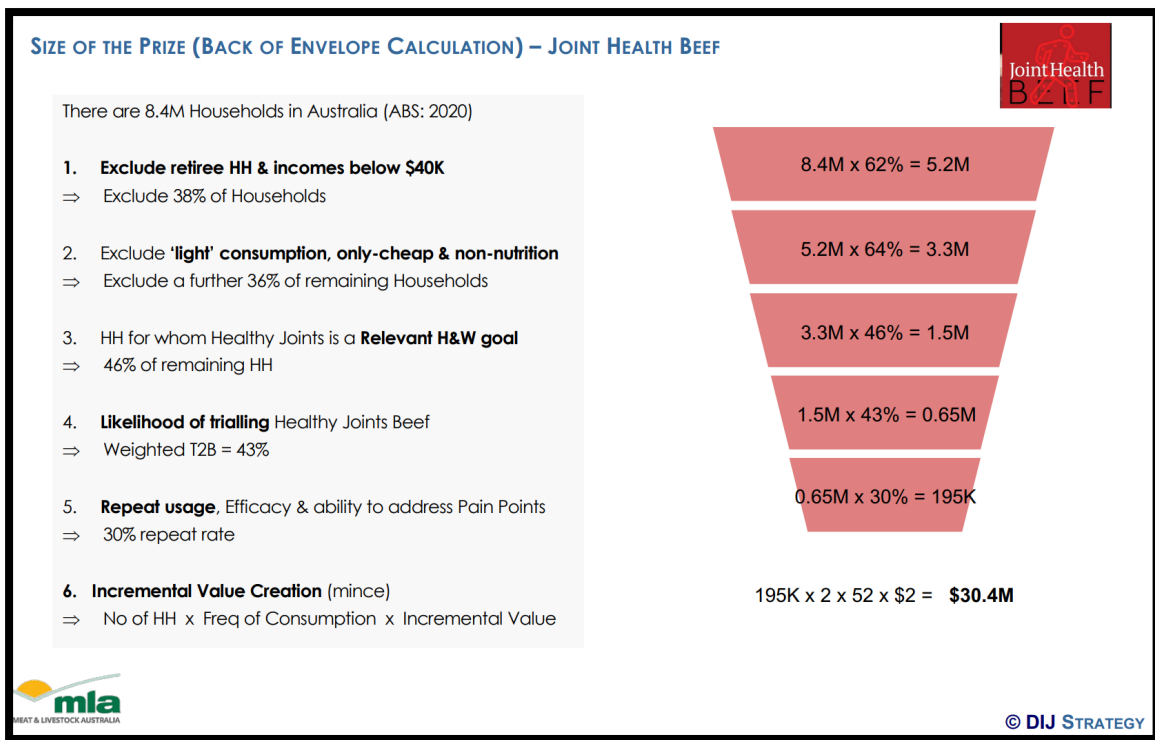
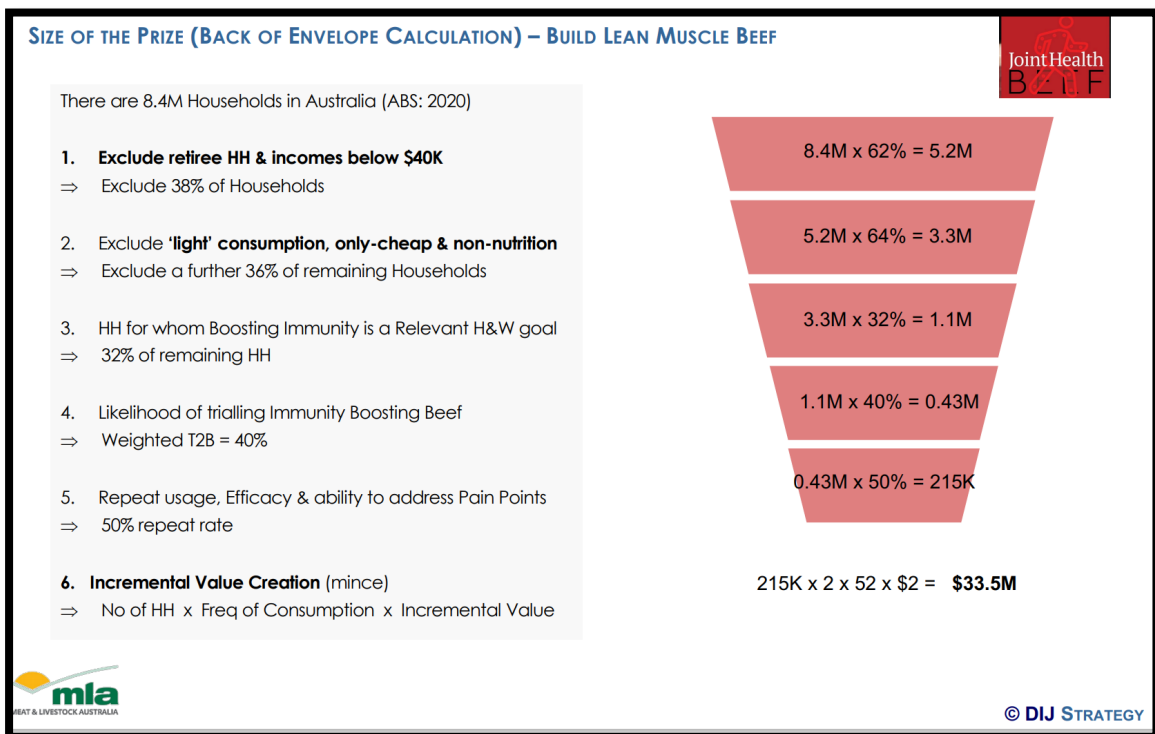


Figure 21. Build Lean Muscle Beef.



The functional food market is believed to be worth US \$154Bn, with the Asian region leading the way. There are multiple consumer trends driving market growth – heightened expectations of being healthier, education as to the role of different nutrients and the accessibility of the online channel to

fuel our desire to know more. Thus, the market is forecast to grow to US \$260Bn by 2025, a CAGR of 6.8%.

Analysis of functional food offerings from across a variety of food sectors reveals they only need to deliver a 20% incremental improvement over a standard version to justify a functional claim. As a result, they can command a premium of up to 80%, depending on the degree to which they focus on a segment of customers.

To successfully deliver on these opportunities requires a red meat offering that does not compromise on other dimensions that consumers love about red meat. Thus, any solution needs to be just as enjoyable to eat and easy to prepare. A nutritionally enhanced offering would in most instances need to appeal to all members of a household, as red meat is typically the cornerstone ingredient of the shared main meal. Target customers also expect that an enhanced red meat offering would be 100% beef / lamb and All Natural.

The Australian red meat industry will benefit from the findings of this project by designing and testing modified business models that aim to capture significant incremental new value, based upon the opportunities identified. Companies with a willingness to build rapid prototypes, explore modified business models and provide more choice for consumers will benefit most from this project. Positioning red meat as a solution for health and wellness goals will likely have an overall halo effect, enhancing perceptions of red meats health credentials, benefitting the entire Australian red meat industry.

Given the encouraging results, it is recommended to undertake a deeper assessment of Desirability, Feasibility and Viability. To date, target customers have assessed these offerings as if they had encountered them on the supermarket shelf – a good indication of trial. We need to go further, developing tangible, prototype offerings which allow target customers to use / experience them, so assessing its efficacy and ability to address their existing pain points, both of which are critical to evaluating repeat usage. Determining which opportunities should be prioritised and how many should be developed requires further exploratory work also. Finally, the Value Propositions have been tested as branded solutions, based on an underlying positioning, but alternatives need to be explored, as this can impact barriers to trial and usage.

The work being undertaken by AgResearch needs to be concluded, referencing the identified opportunity spaces; mapping the red meat carcass to identify what nutrient properties new novel cuts are able to deliver. This will provide the platform for the development of a 'cuts-based' solution that addresses a health and wellness goal. Further feasibility assessment should be carried out into manufactured offerings (i.e., mincemeat, burgers), given the greater scope to deliver a desired array of nutritive properties, through a blended product offering.

Through a cross-functional group, with the likes of AgResearch, a completed Business Model Canvas needs to be developed to fully validate the commercial viability of nutrient enhanced red meat. This would form the basis for an industry pitch on the desirability-feasibility-viability of wellness / nutrition / mood carcass mapping. In particular, what Customer Relationship are we seeking and what Channels are to be utilised? What Key Activities are required, what Key Resources are needed and what Strategic Partners are required? Ultimately, what Costs are incurred vs. what Revenues are realised.

5. Conclusion

5.1 Key findings

- Research has provided preliminary evidence that wellness attributes, underpinned by a lexicon for categorisation of emotions could have substance in defining alternative ways to market red meat to consumers.
- To date, research has not established the link between the biological elements of meat cuts and wellness attributes.
- The projects reviewed have established to some degree a level of interest from consumers for health and wellness red meat products.
- The size of this global market remains unclear although US and Australian consumers indicate a strong (~90% of the population) importance on health attributes of food.
- Work on customer segments and personas has provided areas that are worth testing further.
- The problem/solution fit likely requires more work and the collection of evidence from consumers.
- The size of the opportunity remains unclear in terms of potential revenues.

5.2 Benefits to industry

- At this stage of the R&D process the benefits to industry are yet to be confirmed.
- There needs to be some indication of increased profitability to demonstrate value for industry.
- Further research would be required to either confirm or deny potential benefit to industry.

6. Future research and recommendations

- Future R&D in this area with partner universities needs to focus on broader application of scientific underpinnings to health and wellness and red meat carcase mapping.
- Business model R&D needs to move to a validation phase to prove interest and indications of profitability. This can only be achieved after carcase wellness attributes linked to different meat cuts have been established.
- Additionally, there will need to be further value proposition evidence, financial evidence, and feasibility evidence i.e. How could this be implemented in a value chain?
- If the objective is to develop an alternative to cuts based on eating quality (i.e., cuts based on health and wellness) then future research needs to also consider health and wellness cultural practices across different countries. Further to this point, the value generated from existing eating quality attributes would need to be enhanced, not eroded.

7. References

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