VG08000 (31.5.2009)

Consumer insights on vegetable consumption to guide industry response and measure trends on successive years

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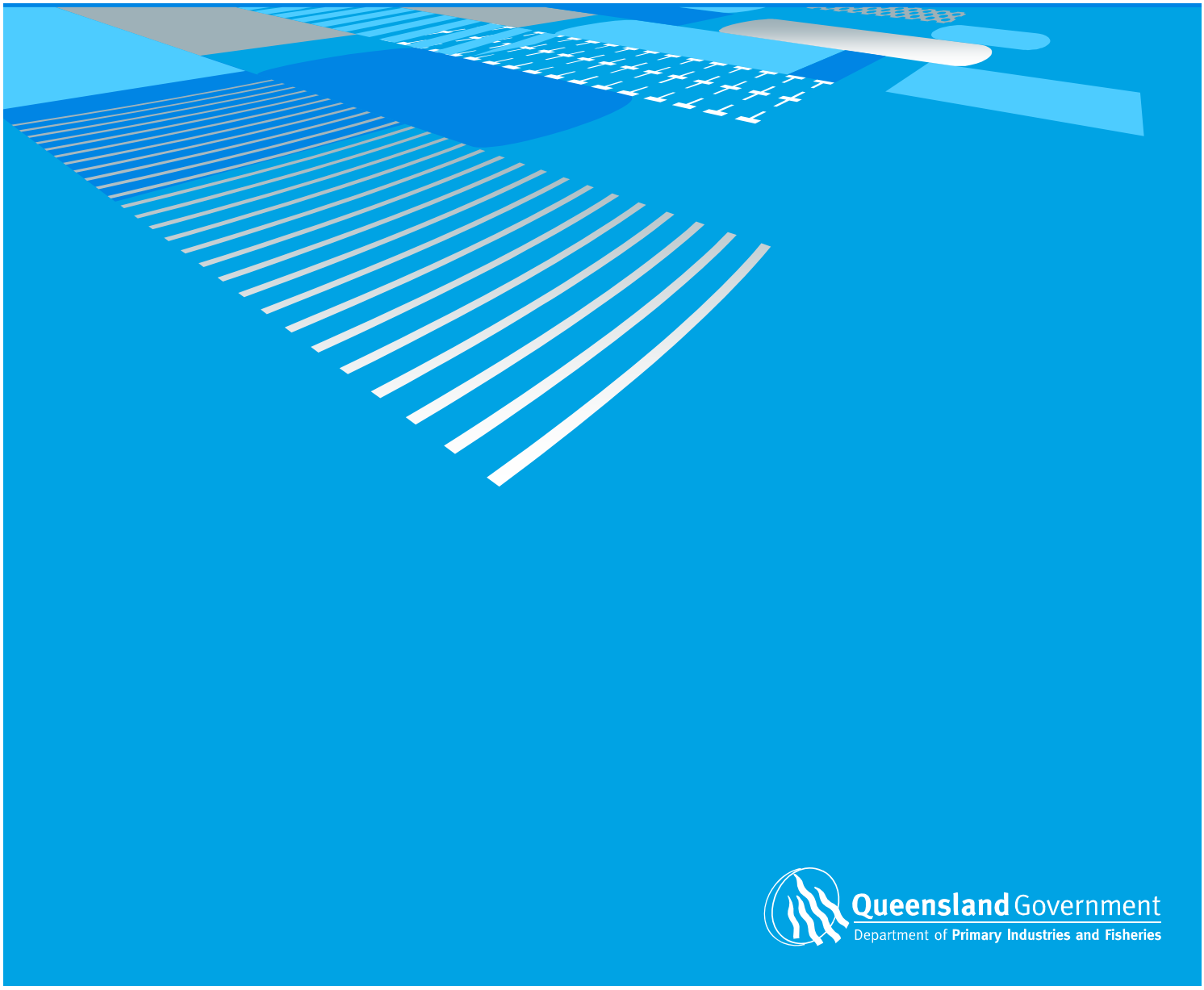
Queensland Primary Industries and Fisheries



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VG08000 (31.5.2009)

This document reports on findings from the Horticulture Australia Ltd (HAL) funded project "Consumer insights on vegetable consumption to guide industry response and measure trends on successive years" VG08000.

The two stages of this project include:

- Stage 1: Identification of key consumer criteria: Literature review (*completed and submitted to HAL in Nov 2008*), supported by consumer study (*focus group research, the current report*) to design a quantitative study (*longitudinal survey*),
- Stage 2: Evaluation of consumer behaviour toward vegetable consumption: Survey of the Australian population (*longitudinal survey*).

The submission of this report completes stage 1 of this project.

Project Team

This project was conducted in collaboration between Queensland Primary Industries and Fisheries' (QPI&F) Innovative Food Technology group, Hamilton Qld, and the Plant and Food Research Institute of New Zealand.

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Media Summary

Research conducted by the Innovative Food Technology group, Queensland Primary Industries and Fisheries has led to significant insights into vegetable consuming behaviours. Key outcomes from the project are:

- information to guide breeding programs and new product development,
- information to improve marketing strategies for the vegetable industry.

The focus group study conducted in Brisbane confirmed there is a general movement toward buying vegetables at grocers, markets and Farmer's Markets rather than supermarkets. Markets are thought to provide fresher produce of a higher quality. Medium and high vegetable consuming groups favour shopping at Farmer's Markets for the atmosphere and to support local farmers.

Positive consumer attitudes are grounded in the role vegetables have in maintaining human health. For families, this translates chiefly into the desire to be a good parent. Mental acuity, increased energy and better skin and hair are also associated with increased vegetable consumption. Message strategies formed around these attitudes may reach target audiences by increasing emotional involvement in the selection, purchase, and consumption frequency of vegetables.

Many young professionals have self-indulgent eating behaviours. Food is a pleasure-seeking activity for which vegetables play no part. However, most people would like to eat more vegetables than they actually consume. Although they agree on the health benefits of eating vegetables, several factors lead low and medium vegetable consumers to purchase competing products. These include:

- price,
- convenience factors,
- expected preparation time,
- storage and wastage.

Other barriers include the perception of vegetables as solely an evening meal accompaniment, the perceived monotony of eating vegetables and consumers' lack of cooking skills and knowledge. The influence of others such as family (particularly children) and peers, and past negative experiences in vegetable purchase and consumption also affect low and medium vegetable consumer behaviours. High vegetable consumers' health consciousness tends to diminish the significance of barriers to consumption.

Beliefs about safety issues, fears for the environment and the availability of Australian produce are of increasing concern to almost all consumers.

General suggestions for new products and marketing strategies include:

- having reliable cues that can be used as indicators of vegetable quality such as a "gold standard" labelling,
- exploiting health benefits of vegetables and avoiding association with preservatives, additives and genetic modification,
- being convenient without losing perceptions of freshness and naturalness, use green packaging,
- include easy recipes with vegetable produce - particularly versions palatable to children,
- direct marketing efforts at markets and Farmer's Markets.

Consumer attitudes toward food in general are apt to change in direction and intensity. Understanding these fluctuations will help to plan for a more sustained demand for vegetables and vegetable products. Consequently, it is recommended that information collected from the current study be used to design an ongoing survey study of the Australian population's vegetable attitudes.

Technical Summary

In 2004-2005, the National Health Survey revealed that approximately 90 per cent of the Australian population does not consume five serves per day of vegetables as recommended by Australian dieticians. This suggests that considerable opportunity exists for expansion in the domestic market. There is also potential to harness the momentum created by current social marketing campaigns designed to increase vegetable consumption.

Effective expansion strategies require in-depth knowledge of the market. However, the potential vegetable consuming market includes a very large population for whom different needs and wants for vegetable produce and products exist. Successfully and profitably designing products and effective marketing messages would require a sophisticated segmentation technique such as those based on behavioural and psychographic variables.

Segmentation of this kind is generally based on a combination of qualitative and quantitative data. The qualitative research phase uncovers the consumer experience. However, to accurately assess the features and size of markets a set of quantitative data is required based on the behavioural and attitudinal factors identified in the qualitative phase. Qualitative insights therefore inform the optimal structure of the survey design.

This document reports on the findings of an in-depth focus group study designed to provide insight into Australian vegetable consumers' behaviours, attitudes and values. Of particular concern was determining if any differences exist for low, medium and high vegetable consumers. The analysis targeted two socio-demographic segments identified by industry representatives as having potential for development: young families and young professionals. Focus group guidelines were developed along behavioural lines such as shopping and cooking scripts, and psychographic enquiries such as participants' attitudes and values toward vegetables. A line of enquiry was also based on the Theory of Planned Behaviour - a psychological theory that links attitude to behaviour.

Major Findings

There is a general movement toward buying vegetables at grocers, markets and Farmer's Markets. Medium and high vegetable consuming groups prefer to shop at Farmer's Markets for the atmosphere and to support local farmers. Markets are thought to have fresher produce of a higher quality than supermarkets.

Women have reduced the amount of time spent in meal preparation, whereas men have increased theirs. Many low and medium vegetable consuming women revealed their partners did the majority of the cooking and some male participants acknowledging it was a shared activity.

Low vegetable consumption is related to hedonistic attitudes toward food and a general dislike of cooking. Subsequently, take-away food is a favourite for this group. Low and medium vegetable consumers perceive vegetables to be an evening meal accompaniment. Consequently, these participants have difficulty in contemplating an increase in their vegetable consumption. Despite self-selecting into low and medium vegetable consuming groups, these participants perceive their meals as balanced and their vegetable consumption as adequate.

In contrast, vegetables are cited as a favourite food and an essential part of most main meals for high consuming groups. Medium and high vegetable consuming groups are educated about nutrition and have a good health vocabulary.

Consumers value vegetables for "occasion" type meals such as roast dinners, and to a lesser extent, salads for barbeques.

Children's tastes and preferences are a considerable barrier to increasing vegetable consumption in low and medium consuming parents. For these groups, children are an obvious factor in the consumer decision making process and shopping behaviours. The children of high vegetable consuming parents are involved in all aspects of meal behaviours including growing vegetables, planning meals, and preparing and cooking meals.

Parents own food phobias and preferences influence their children's eating behaviours. Vegetables disliked by an adult as a child, are rarely purchased and so do not become a part of their children's eating routine.

Health, energy, mental acuity and identifying as a good parent are motivators for increasing vegetable consumption. These positive attributes are weighed against conflicting barriers such as cost and convenience.

Intention to eat more vegetables can be said to be mitigated by family, workplace peers, professionals in the health and education sectors, and by media images and "heroes" such as sports and reality television stars. The need to manage close relationships is of particular concern for families with young children as conflict avoidance impacts the consumer decision process for vegetables.

Credence issues such as food safety, fears for the environment and the availability of Australian produce are of increasing concern to almost all groups. However, the intensity varies amongst vegetable consuming groups.

Recommendations

General recommendations for products and marketing include:

- reduce purchase risk by having reliable cues that can be used as indicators of vegetable quality such as a "gold standard" labelling,
- associate products with a healthy and natural image,
- avoid association with preservatives, additives and genetic modification,
- be convenient without losing perceptions of freshness and naturalness,
- include easy recipes with vegetable produce - particularly versions palatable to children,
- direct marketing efforts at markets and Farmer's Markets,
- be targeted to particular segments and consumption moments, for example fathers and barbeques, or mothers and weekend roasts.

Research recommendations include:

- performing a quantitative study based on focus group data to effectively segment the market,
- ensuring any resultant segments be assessed as to consumers' state of involvement in vegetable consumption, segment profitability and whether opportunities exist to target the segments,
- ensuring a quantitative study be undertaken on a regular basis to track themes and emerging trends.

Background and Introduction

The aim of this project is to understand, evaluate and follow consumer behaviour including their expectations (drivers) and their requirements (barriers) towards the purchase and consumption of vegetables. Understanding consumer expectations will promote vegetable incorporation in the daily diet of consumers in terms of diversity and quantity.

The overall project VG08000 'Consumer insights on vegetable consumption to guide industry response and measure trends on successive years' is organised into two stages and has been developed to address the 2007 Industry Priority Reference '*Consumer Insights. Undertake behavioural theory based quantitative research that identifies how to facilitate consumers' increased consumption of vegetables by understanding competing and complementary products, attitudes and food behaviours. To undertake segments in the population that may require differential approaches*'.

This work is aligned with the first strategic imperative investment (The Vegetable Industry Strategic plan – VegVision 2020): '*Delivering to changing consumer preferences and increasing demand: trends in consumers*'. This extract from the rationale further illustrates this strategic investment: '*In order to achieve the vision… This includes trends in consumers' food values and preference, shopping preference, meal prep habits, food consumption patterns, observational research that discovers why consumers buy the industry's products and how they use them; shows how vegetables are used with complementary products; quantifies the experiences from consuming particular vegetable products; and identifies opportunities for creating new experiences through vegetables as a food or beverage.*'

The need for '*establishing the capacity to track and quantify consumer responses to vegetables products*' has also been identified and is recommended by the marketing study prepared by Brand Story Pty Ltd and delivered to HAL and the vegetable industry in June 2008.

The objective of stage one is the identification of key consumer criteria. This consisted of an in-depth literature review (*completed and submitted to HAL in Nov 2008*), to determine consumer insight techniques and past world research into factors that influence vegetable consumption. Information from the literature review was used to inform the design of a qualitative study. Stage two of the project is the evaluation and tracking of consumer behaviour via a survey of the Australian population. The survey will be developed from insight revealed in the qualitative stage. This report constitutes the final component of stage one.

The review revealed several methods for recording vegetable consumption including reported purchase, daily food recall, and a seven day consecutive food diary. A seven day food diary was chosen as appropriate to this study. Considering this study was concerned with consumers' vegetable behaviours, it was reasoned a food diary would allow participants to reflect on their food choices in preparation for the focus groups.

An overview of consumer barriers and drivers for vegetable consumption was provided. The main determinants found were age (Lea & Worsley 2002; Thompson et al. 1999), gender (Thompson et al. 1999) and the influence of family (Brand Story Pty Ltd 2008; Lea, Worsley & Crawford 2005;Yadav 1998;Yeh et al. 2008).

Perceived quality of vegetables, convenience, price and availability can be perceived as barriers to vegetable consumption for low vegetable consuming groups (Brand Story Pty Ltd 2008; Lea et al. 2006, 2005; Yadav 1998;Yeh et al. 2008), whereas these factors become drivers for high vegetable consumers (Cox et al. 1998; Lea et al. 2005, 2006; Yadav 1998). In the same manner, meat seems to influence vegetable consumption. Low consumers of vegetables consider the meat as the centre of the plate (Dixon et al. 2004), whereas high vegetable consumers are more sensitive to animal welfare and do not consider meat as central to the meal (Lea & Worsley 2002).

The health benefit of vegetables is acknowledged by all consumers, even though barriers include the presence of chemicals and residues and that vegetables are not filling.

Barriers such as the lack of knowledge and time, and the perception that pre-packaged foods and fast foods are more convenient, seem important for young people (Lea & Worsley 2002). The same criteria will turn into drivers with increasing age of the respondents. Yeh et al., 2008, proposed that the combination of low perceived threat and low perceived benefit, coupled with high perceived barriers, could explain why younger people did not think eating fruit and vegetables was a priority for them now. Appendix A provides an overview of the literature review.

As mentioned previously, the current project has been developed to address the 2007 Industry Priority Reference to undertake behavioural theory based quantitative research. The literature review revealed several models and theories related to understanding people's behaviour and beliefs concerning food consumption (see Appendix B). Of these, the Theory of Planned Behaviour (TPB) provided a thorough model of consumer behaviour based on attitudes, subjective norms and perceived behavioural control (Ajzen 1991). In order to construct a TPB questionnaire, the components of the behaviour must first be established, ideally through some type of qualitative study (Ajzen 2006). For these reasons, a standard TPB questioning route was used for focus groups (Francis et al. 2004).

Expected Outputs

Outputs from this project include the following:

1. Provide an authorative review on past world research into factors that influence vegetable consumption and summarise this information with recommendations for the Australian vegetable industry.
2. Describe Australian key market segments and their characteristics based on the role that vegetables play in their diet including diversity and quantity.
3. Identify the reasons for and against the use of particular vegetable families in Australian households, particularly those that serve to differentiate between the selected market segments.

Information will be available to horticulturalists, breeders, growers and supply chain through QPI&F reports for HAL after completion of this one year project.
Information will be delivered for the benefit of:

- industry through submission of article to both academic and industry journals.
- consumers through website publications and popular media.
- scientists through publication written in collaboration with the Plant and Food Research Institute of New Zealand.

Expected Outcomes

This project focuses on consumer insights and is in direct support of VegVision 2020 *to double the 2006 value of fresh, processed and packaged vegetables in real terms by stimulating and meeting consumer preference for Australian products in domestic and global markets.*
At completion of stage one, the results will provide in-depth understanding of market segments based on their frequency of vegetable consumption. This will:

1. Provide information to orientate breeding programs and / or new product development focused on consumer expectations and perceptions of added value in vegetable products and minimise risk in vegetable product development.
2. Improve marketing communication strategies to increase vegetable consumption based on an understanding of consumer behaviour.
3. Provide key attributes to characterise the Australian population and determine the layout of the survey to follow its evolution.

Method

Development of focus group guidelines

A focus group guideline (see Appendix C) was developed along five distinct enquiries to deliver project outcomes. Section one was designed to provide an understanding of consumer shopping and cooking scripts and the decision making process. Focus group members were asked to respond to four questions based on their favourite foods, food preparation skills, shopping and meal decision making process.

The second section of the focus group guidelines was developed to provide insight into attitudes toward vegetables. Focus group members were asked to respond to a number of scenarios:

1. a time poor evening meal,
2. a restaurant meal,
3. a snack meal,
4. a relaxed evening meal at home.

Responses to scenarios provided information on consumer attitudes to vegetables, identify competitors to vegetables, ideas relating to vegetable alternatives to compete with usual meal choice, and the role that vegetables play in meals.

Section three of the focus group guideline was based on Theory of Planned Behaviour (TPB) using a basic qualitative format for TPB construction (Francis et al. 2004). Focus groups were asked to consider increasing their vegetable consumption by one serve a day and to respond to questions designed to elicit behavioural, normative and control beliefs about this behaviour.

The fourth section of the focus group guidelines was based on a grouping activity using cards depicting various vegetables. Members were asked to group vegetables into similar families and to give an exhaustive set of reasons for grouping. Participants were asked to respond to a set of questions designed to understand perception of potatoes, and to group vegetables according to meal occasions. Responses to this section gave information on how and why consumers buy vegetables, how they incorporate them into meal planning and what associations they make with different vegetables.

Section five of the guideline included general questions about food beliefs and practices. Information gathered from this section identified where consumers could increase their vegetable consumption in their diet and generated ideas of convenience vegetable formats

Participants and Recruitment

Participants were segmented according to socio-demographic variables and low, medium and high vegetable consuming behaviours. After consulting with Queensland Health representatives, vegetable consumption for this study was defined as:

1. low vegetable consumption – 0-1 serves a day
2. medium vegetable consumption – 2-3 serves a day
3. high vegetable consumption – 4 and above serves a day

This definition represents a slight lowering of the usual vegetable consumption levels for segmenting consumers. According to Queensland Health, nine per cent of the Queensland population are categorised as high vegetables consumers as defined by five and more serves a day. This was considered too small a population from which to recruit. Considering an objective of this research is to investigate differing behaviours, attitudes and values between higher and lower vegetable consumption groups in the Australian population, it was considered appropriate to lower the parameters of vegetable consumption groups.

This study aims to investigate a variety of motives and barriers from different consumer segments with behaviours likely to impact the vegetable industry in the long term. Two target groups were considered to have potential for increased vegetable consumption: young professionals and parents with young children. Targets were defined for recruitment purposes as:

1. Young professionals – full-time employed people less than 40 years old who have obtained a level of tertiary qualification.

2. Parents with young children – parent with at least one dependent child (including foster) aged less than 16 years of age still living in the household.

Recruitment of focus group participants was outsourced to a market and social research data collection agency. An initial pool of potential respondents was identified via a government health study based on random sampling. Respondents of this study were asked to self-select into a vegetable consumption category, and if they would agree to be contacted for a further food study. Those that agreed were contacted and screened according to target definitions.

An incentive payment of $100 was offered and the focus group process was explained to screened participants. Participants were advised that a seven-day food diary would need to be completed prior to attending groups. Due to the narrow screening criteria, further recruitment via online and internal methods was required. Actual response rate for recruitment was 23 per cent with a total of 97 participants over all target groups.

Focus group session format

A week prior to the ninety minute focus group sessions, a research pack containing a cover letter detailing the participant's focus group date and time, the seven-day food diary (Appendix D), a map of the focus group site and a fridge magnet detailing food groups and serves (Appendix E) was delivered to participants. A follow up call was made the day immediately before the agreed session.

Three time options were made available for participants over a two week period:

Afternoon: 1:00pm – 2:30pm
Evening: 5:30pm – 7:00pm alternating with 6:00pm – 7:30pm.

Data collection and analysis

Data collection was achieved in two stages. Stage one consisted of a self-completed seven-day food diary. Diet recollection amongst samples can be unreliable (Birgisdottir 2008), and so a seven-day food diary was used to aid recall amongst focus group participants. The diary also served as a validation tool for respondent's initial self- report into vegetable consumption groups, and to provide demographic, food behaviour and food satisfaction data.

Stage two of data collection was in the form of focus group discussions. Conversations were recorded for transcription and content was analysed according to frequency and extensiveness of comments as well as context.

Results

Demographics

Of the 97 focus group participants, 31 per cent were male, and 69 per cent female. Table 1 provides a breakdown of gender numbers according to vegetable consumption and target group membership.

Table 1 Focus group gender

	Vegetable consumption groups			Target group	
	low	medium	high	parents young children	Young professionals
Male	11	12	7	15	15
Female	19	22	26	38	29
Total	30	34	33	53	44

A higher number of low vegetable consumers occupied the lower income brackets. A higher number of medium vegetable consumers occupied the middle income brackets and more high income households were likely to be high vegetable consumers. This is illustrated in table 2.

Young professionals generally enjoy a higher household income than parents with young children (see table 2).

Table 2 Focus group participant income levels

Income	Vegetable consumption groups			Target type	
	low	medium	high	parents young children	young professionals
20 000 - 40 000	4	2	3	7	2
40 001 - 60 000	8	6	6	12	8
60 001 - 80 000	2	5	3	6	4
80 001 - 100 000	5	9	4	9	9
Over 100 000	11	11	16	17	21
Total	30	33	32	51	44

Seventy-six per cent of participants had some type of post-secondary school education. Sixty-seven per cent had completed a graduate or post-graduate university degree, indicating a well-educated group.

Food diaries

This qualitative study has shown food diaries to be a useful device for prompting focus group responses. However, as was revealed by previous studies (Birgisdottir et al. 2008) respondents - particularly young professionals - tend to self-select into socially desirable vegetable consumption groups that were not indicative of their actual vegetable consumption.

Behaviours, values and attitudes

Consumer behaviours, values and attitudes to vegetables were assessed. Within each segment and target the dominant themes were judged according to group consensus as well as the number of times a theme was visited. Behaviour was defined as the search, purchase, use and evaluation of vegetables. Attitudes were defined as the consumer's positive, negative or neutral view of vegetables. Consumer values were defined as those beliefs that consumer's hold toward vegetables that have some form of emotional investment. Results of analysis are arranged first according to target type and secondly to vegetable consumption group.

Families with young children

Low vegetable consumption

Behaviour

Shopping scripts were varied amongst all groups. Some participants shopped daily for fresh produce whereas others shopped fortnightly or monthly with frequent shops for perishables and frequently consumed products. Vegetables were included in the group of frequently purchased consumables together with milk, bread and fruit. Consumers who shopped fortnightly or monthly tended to be highly organised and tending toward bulk buying. The disparity between shopping scripts is evident in the following quotes:

"I walk the aisle and just see what's there and think, 'okay that'll do.' I mean I don't mind shopping, but ... I hate shopping for food because I hate cooking it." (female).

and

"My wife, she's very organised. She's got meal plans worked out for the next two weeks." (male).

More so than for other parental groups, shopping motivations for low vegetable consuming (LVC) parents were linked to children's likes and dislikes:

"It's all got to come down to what the kids will eat and what they won't in terms of vegies. We probably eat the basic vegies but anything outside of that it's pretty hard to influence the kids I guess."

Similarly, meal decisions were often made in consultation with children. A "good meal" for low vegetable consuming parents was most often associated with their children's satisfaction. This "child-centric" attitude to vegetables was also evident in the vegetable card sorting exercise. Vegetables were primarily sorted according to children's likes and dislikes. When trying to consciously include vegetables in an evening meal, one parent found "it just doesn't work" as kids are fussy and complain, adding to the stress already associated with meal times. These results confirm children are a key component in the family decision making process for vegetable purchase within low vegetable consuming families.

Studies have shown that married women have reduced the amount of time spent in meal preparation, whereas men have increased theirs (Douthitt 2004). This trend is also evident amongst this group, with some women revealing their partners did the majority of the cooking and some male participants acknowledging it was a shared activity. Women in this segment were more likely

than other segments to admit a dislike for cooking. Those who admitted to having above average cooking skills used a wider repertoire of cooking methods. Those with average and limited skills tended to purchase convenience sauces and packets to assist in meal preparation.

When deciding on an evening meal, low vegetable consuming parents consciously include meat. However, inspection of diaries revealed many parents of young children missed the evening meal or resorted to take-away options. Not surprisingly, those low in vegetable consumption are also more likely to cite take-away or restaurant type meals as a favourite food than are higher vegetable consuming families. Although still a favourite, the "meat and three veg" staple has been replaced to some degree with ethnic versions of meat based dishes such as stir fries and pasta dishes. This may be due to the lower socio-economic status of the group and their subsequent reliance on meals using budget meat options such as mince and sausages.

Australian's are struggling to accommodate the demands of work and family life. When faced with a time poor situation, this segment relied on take-away meals or convenient store bought 'helpers' such as pasta sauces. This group was averse to including vegetables in a time poor situation.

When dining at a restaurant, this group would typically choose an animal protein based meal and would not try a vegetable based meal option. Exceptions to this may be an ethnic style meal that included vegetables such as some Chinese meals.

When asked to imagine a relaxed evening meal at home members of this group often cited a "family event" type meal rather than a "relaxed" one. These were typically a roast or BBQ for which vegetables played little or no role. When asked how they would increase vegetables, respondents would increase the size of the overall plate serving rather than substitute meat or carbohydrate for vegetables. This suggests that for this group, meat is an essential part of main meals, and vegetables are peripheral.

Attitudes

Vegetables are considered an accompaniment to evening meals. For this reason and despite occupying the low vegetable consumption group, participants experienced difficulty in imagining where they would increase their daily consumption of vegetables. Although these participants were somewhat aware of social marketing strategies designed to promote vegetable consumption, many felt that eating vegetables solely at the evening meal was adequate. Barriers to increasing vegetable consumption at lunch included the lack of convenience, motivation and organisation, taste and because they "just don't think about it". When participants were asked how they might increase vegetable consumption at lunch, most felt they would consider a salad sandwich – only if they "could be bothered". Lack of discipline and "running out of vegies" were cited as reasons for not increasing their vegetable serves in the evening meal.

Low vegetable consuming families tend to display negative attitudes toward vegetables. This negative attitude was shown to be the result of many factors including cost, convenience, children's tastes and parents own experience with vegetables as a child.

Perceived cost of vegetables is a considerable barrier for this group. Meat, as the centrepiece of meals, is an essential cost. Vegetables are seen as a marginal component and therefore an added and unnecessary cost to meals:

"We have a budget every week and if we're over budget my wife would just say well we didn't get this, this week which is normally more vegies because it's just too expensive."

A considerable factor influencing parents negative attitudes are their children's general dislike of vegetables as well as some evidence of parents' own experience of vegetables as a child. Parents own dislike of vegetables is a barrier to children's consumption:

"Well (our children) would never know (if they like certain vegetables) because we, we don't buy them for ourselves…"

Convenience is a further barrier to increasing vegetable consumption:

"I think – I don't eat a lot of vegetables myself. I just find it inconvenient and time consuming and if I really do feel like eating vegetables I'll go and buy the ready-made packs and just bring it home and put them together and then put the dressing on." (female)

Attitudes toward processed vegetables were mixed. One female's negative attitude toward processed forms of vegetables was related to sensory attributes:

"I found some old tin vegetables in the cupboard. I don't know how long they've been there. Must have been years because I never bought them before…So – tinned beans and carrots, they're just awful. They don't have the nutrients there. They taste terrible."

However, others felt that pervading negative attitudes to frozen vegetables are unjustified:

"If it's frozen snap fresh, it's fresh. But your made to believe that fresh is better…the way I see it you're made to feel bad if you're buying it that way and not fresh".

Positive attitudes included the perception that frozen vegetable formats allowed seasonal vegetables to be available year round. Despite this, most participants felt that a trade off between taste and convenience was inevitable when choosing frozen foods.

Vegetable beliefs were primarily linked to health benefits such as better eyesight, and to children's welfare. However, these beliefs lack consistency with participant's attitudes and behaviour. This suggests that LVC parents beliefs toward the health benefits of consuming vegetables are related to ideal behaviour and not to actual behaviour.

Certain vegetables elicited more favourable attitudes. Commonly bought vegetables such as potatoes, corn, carrots, pumpkin, and broccoli were described as available, tasty, well priced and versatile.

Values

Although meat is invariably the core meal item, vegetables do have value for family "event" type meals. Roast dinners were often cited as a relaxed type meal for which vegetables have a more prominent role than usual. However, other event type meals such as barbeques were associated with few vegetables other than potatoes.

Other values were associated with parenthood:

"Yeah, probably for me as to why I'd increase my vegie consumption is knowing I can be healthy for my boys, because I've got three boys so being quite active and being healthful…last on the list would be doing it for my benefit."

And,

"Giving the kids the right food so they can learn…and grow…It gives you a warm fuzzy feeling if your feeding the family the right food".

Once again, these values are contrary to LVC parent's actual behaviour. These participants believe they "should" be including more vegetables in their family's diet, yet they are not. As the previous quotes suggest, the key to translating LVC beliefs about the health benefits of vegetable consumption into actual behaviour change may lay in communications that have familial rewards as their central message.

Product and marketing ideas

Participants gave several suggestions when asked to provide ideas to promote vegetable consumption:

- have pre-prepared options (peeled, cut, cooked, additional flavour),
- ensure vegetables are fresh /moist,
- have better tasting vegetables,
- have better looking/more colourful vegetables,
- have appropriate serving sizes,
- need convenience options to be comparable in price to fresh whole vegetables (frozen vegetables are overpriced),
- give people reasons for eating vegetables (medical benefits, more energy).

Further suggestions were to make snack size vegetables with condiments available at fast food outlets such as *Subway*. Some surprising enthusiasm was found for a vegetable fast-food franchise which provided cooked or raw cut vegetables in meal sized packages.

Although shopping behaviours were influenced by children's likes and dislikes, parents did suggest that ways for encouraging children to eat vegetables might be to provide some type of palatable dressing with convenience options. This would suggest that convenience formats of vegetables would include toppings such as cheese sauces for cauliflower, or garlic tomato sauce with zucchini.

Medium vegetable consumption

Behaviour

Like the low vegetable consumption groups, shopping scripts varied with some medium vegetable consuming (MVC) parents shopping frequently through the week, with others shopping on a fortnightly or monthly basis. Differences were observed with relation to "budget" shopping. MVC parents were more likely to engage in catalogue searches and were acutely aware of supermarket routines for discounting goods. Like the LVC family group, shopping for fruit and vegetables at a grocer was thought of as preferable over purchasing vegetables at supermarkets. Vegetables found in markets were thought to be cheaper and of a superior quality to supermarket vegetables.

Unlike LVC parents, MVC parents were inclined to enjoy cooking. Those that described their skills as good are often inspired by cooking shows, are motivated to be better cooks and are adventurous. Many describe the cooking process as "adlib" with meals evolving through the cooking process. Those that describe themselves as having average or low cooking skills have simple cooking styles and cook through necessity rather than for pleasure.

When deciding on what to cook for an evening meal, MVC families had highly planned cooking scripts. Other alternatives were to use a convenient meal base such as a store bought convenient meal helpers, or tinned meals. This group was considerably more knowledgeable about protein, fibre and vegetables than were the low consumption group and consciously included these when planning meals. For men, meat was consciously included in a meal.

As with LVC parents, ensuring a vegetable component in a time-poor situation was not a priority as "one night now and then (without vegetables) won't hurt". However, if they were to consciously try to include vegetables, some would include a side dish of vegetables or salad or would add frozen vegetables to their quick meals.

Dining out was considered a treat and meals were chosen according to novelty factor. Restaurant meals for MVC parents are meat protein based and more likely to be ethnic in style. If trying to increase vegetable intake, this group would order a side salad or side-dish of vegetables. Alternatively, a dish that included both protein and vegetables such as some Asian or Italian dishes were given as examples. Although one person mentioned choosing vegetarian, a vegetable based dish was not an attractive option for this group. However, some vegetarian dishes that were mentioned as somewhat appealing were vegetable lasagne, frittata or quiche and exotic salads.

A relaxed evening meal at home was a family event. In contrast to LVC families, vegetables and salad play more of a role in this meal for this group. Vegetables were generally thought of as "just part of the meal" with participants perceiving no extra effort required to ensure an adequate vegetable component. MVC families were asked to imagine consciously increasing their vegetable intake in this meal. Similar to LVC parents, the majority of this group would not substitute meat or carbohydrates for vegetables but would make the overall meal larger by adding more vegetables.

Attitudes

Medium vegetable consuming (MVC) parents related vegetable consumption with health on a much deeper level than LVC parents. MVC parents had a readily accessible language with which to describe the health benefits of vegetables. This group associated specific vegetables with vitamins such as Vitamin C and minerals such as folate. This group also connected vegetables to particular health benefits such as the prevention of colon cancer. This suggests that MVC parents are better educated about the benefits of eating vegetables than are LVC parents. The children of MVC parents were more likely to eat vegetables willingly and to have them as snacks.

Like LVC parents, vegetables were primarily thought of as a component of evening meals with little acceptance of vegetables components for other meal times. Meat and three vegetables are more likely to be cited as a standard evening meal than LVC parents, yet diary entries revealed that standard family meals are more likely to include budget type meals such as tuna pasta, burritos or lasagne. However, unlike LVC parents, MVC parents consciously try to include vegetables in evening meals.

Perceptions of vegetable are not as structured as LVC parents (for whom vegetable groups are either liked or disliked), with MVC parents not easily able to reach consensus with grouping exercises. Certain vegetables such as the 'carbohydrate' group of potatoes, sweet potatoes and corn were less of a staple with portions more likely to be regulated.

Similar to LVC parents, MVC parents were influenced by their own childhood experiences with vegetables. This was a conscious rather than an underlying factor for MVC parents:

"If you had rubbish cooked vegetables as a kid it kind of sticks in your head…"

and

"…back when I was a kid everything was quite bland".

Cost is a barrier to eating vegetables. For MVC parents, this perceived cost is associated primarily with wastage and shelf-life of vegetables. In contrast to LVC parents, some MVC parents consciously associate vegetables with being cheaper to buy than meat.

A further barrier to increasing vegetable consumption is convenience, with vegetables described as time consuming:

"We used to eat more vegetables in the old days because we had more time".

When asked to consider vegetables as a snack food, participants felt they did not provide enough energy, and required too much preparation to be considered suitable. A pre-cut vegetable snack option was deemed too expensive and there was a general perception that processed vegetables were not "good for you". This attitude points to a disparity in consumer thinking. Despite the fact that chocolates, biscuits, cakes and custard were spontaneously suggested as suitable for an afternoon snack, pre-cut vegetables were considered over-processed.

Poor motivation and negative family attitudes were named as further barriers to increasing vegetable consumption.

Values

As with LVC parents, parental responsibility was associated with increasing vegetable consumption:

"I feel it a bit now as a parent. I suppose before I was a parent I didn't feel I was obligated to eat vegetables but now I feel like I need to set the right example. So we will eat more vegetables now because I have a child."

MVC parents were also concerned with other credence attributes such as the environment and buying Australian:

"Well like the oranges – buying Australian oranges these days is really hard to try and find Australian."

A perceived increase in vegetable prices due to drought conditions was also a factor for this group to consider. In relation to more convenient or fresh cut vegetable options, MVC parents were also concerned with:

- safety and food poisoning,
- recyclable packaging,
- freshness,
- and preservatives.

MVC parents ideally value balance, flavour and good company and these were associated with a good meal experience.

Product and marketing ideas

When asked to provide ideas to help people incorporate vegetables into meals, MVC family respondents felt people's perceptions needed to be changed. Suggestions included appealing to "our selfish side":

> *"we matter, (we) need to do it for ourselves"*.

Other suggestions were for better education about the benefits of increasing vegetable consumption, better recipes for vegetables, and education about farming practices including:

- short sharp information at point of sale,
- the use of clear terminology,
- labelling,
- time stored,
- pesticides used.

Participants also indicated they wanted organic produce at prices comparable to conventional produce. An option for time poor members included the delivery of fresh vegetables with recipes included:

> *"give us boxes of vegetables with recipes inside box for the products"*.

Medium vegetable consuming parents felt that the most obvious meal in which to increase vegetable consumption was breakfast. This was due to many participants skipping the meal. The most acceptable form of breakfast vegetables was a juice product.

Vegetarian product options were more appealing to women in this group and included vegetable stacks, quiches, flans and exotic salads.

A number of demands for the acceptability of processed vegetables were noted. Pre-packaged snack foods would need to be in recyclable packaging, guaranteed safe, Australian, perhaps with a nutritional accompaniment, preservative free, and as fresh as home-made and at a comparable price to unhealthy snacks. These would need to be readily available at convenient places such as near the checkouts of supermarkets, and convenience shops.

High vegetable consumption

Behaviours

Shopping tended to be a planned activity for high vegetable consuming (HVC) families, with many respondents shopping from a list for core items but exercising a degree of freedom with a view to purchasing specials. Once again, a trend for shopping at specialty grocers was evident:

"I guess our shopping habits have changed. (We used to) go to big chains…but I reckon over the last twelve months I haven't bought meat, fresh vegies, fruit through them. I go to a market…".

Specialty stores were seen as providing better quality, fresher and cheaper product. However, shopping for quality and freshness was more of a priority than price for this group.

Most HVC parents described themselves as good, confident cooks. A variety of methods were named, with several respondents saying they "cooked from scratch". Highly planned activities such as cooking and freezing homemade vegetables for time poor situations, and freezing home-made dinners were a feature.

This group enjoyed cooking and it was more likely to be a family activity. Although vegetables and salad are consciously included in evening meals, providing adequate vegetables for children was a primary concern for this group. Inventive ways of ensuring children's vegetable consumption included cooking and pureeing vegetables such as cauliflower and broccoli and add to cake mixes, provide crudités as snacks, and adding pureed pumpkin to the white sauce of lasagne. To increase vegetable consumption, this already high vegetable consuming group would consider juicing vegetables. For some, an alternative might be to add vegetables to traditionally non-vegetable dishes such as spaghetti bolognaise.

Meals were often highly planned and a family decision:

"Our (meals) are always predetermined. We have a set menu each night of the week. There's only one night a week that we decide to do something different and then we plan it a week in advance".

HVC parents are experimental in their food tastes:

"when (my children) were growing up I would get them to choose a country and we would choose meals from that country".

Vegetarian meals are likely to be included in the family meal repertoire and a wider range of vegetables were consumed raw in comparison to other family groups.

In a time poor situation, those with high planning behaviours have homemade frozen meals, including vegetables. Others would use store bought frozen vegetables rather than fresh. Meal options in this situation were likely to include vegetables such as broccoli and pasta or stir fries. Vegetable consumption was a factor in the decision process for buying and using convenience meal helpers:

"…especially the pasta sauce. I can cram peppers and mushrooms and garlic and all sorts of things into one sauce…"

However, like other parent groups, ensuring an adequate vegetable component was not a priority in a time poor situation:

"(not having vegetables) for one (home cooked) meal its better than Maccas (Macdonald's)".

Like other parents, dining at a restaurant was considered a 'treat', with animal protein a usual centrepiece of the meal. However, unlike other parent groups, this group also wanted healthy meal options and meals would always include a vegetable component.

Similar to other parent groups, snacking was usually in the form of sweet or savoury staples such as cheese and crackers or fruit. For some participants, vegetables represent a viable competitor to these snacks:

"We started substituting all our chips and stuff like that with carrots and stuff like that. And it's worked well."

Barriers to eating snack vegetables are the perception that they are too difficult to prepare, not filling, and are considered a main meal component.

Attitudes

HVC parents expressed a positive attitude toward vegetables with many citing them as a favourite food. Parents were also proactive in promoting a good attitude amongst children. Strategies included having children help grow vegetables and plan meals. Children are likely to enjoy food, be adventurous and be involved in the cooking process:

"I have one son who loves food and loves to cook. So he's my inspiration…he hates steak and salad and vegetables on their own. It's got to be tasty".

HVC parents tended to deride parents who did not promote healthy eating in children.

A relaxed meal at home was alternately one with family, or one without children present. As with other family groups the relaxed meal was usually an event meal such as a BBQ or a roast. However, in line with this group's more exotic food preferences, choices such as rabbit, slow cooked casserole and a "platter of deli foods" were also mentioned as a relaxed evening meal. Vegetables play a major role in this meal. While meat was the "star" of the meal, it was described as a smaller portion of the dinner plate compared to other groups.

Unlike LVC families, but similar to MVC families, a good meal for this group was described as balanced. This meal was also tasty, included quality ingredients, was satisfying and was a good family experience where the family interacted during the meal, and complimented the parent who cooked.

HVC parents displayed positive attitudes to market shopping and this was considered a relaxing weekend event:

"That's my escape time. I go before (my children) wake up on Sunday mornings. And I go and have coffee up there".

Unlike other parents, HVC parents did not equate increased vegetable consumption with parental responsibility - possibly due to their perception that they were already providing adequate vegetables for their children's needs. They did associate vegetable consumption to mental acuity, health and energy.

Values

HVC parents differ to other parental groups in that they *want* to eat vegetables, rather than merely acknowledging they *should* eat more vegetables.

Participants' values were linked primarily to familial responsibility and the quality of food. Cooking is valued as a family activity, used to promote bonding as well as to encourage healthy attitudes to eating:

"(I) have a young family…like to introduce them to new things – baking with the kids".

Food quality is a much greater concern for this group. Consumers want to know how long a product is stored for and they want a visible supply chain:

"I don't like eating an apple that's 18 months (old)".

Parents are also concerned with preservatives and additives, particularly with relation to processed foods:

"Our kids are getting enough chemicals, preservatives and that sort of stuff that they breathe in, they take through their skin…They don't need it as well in their food…".

For these reasons, organic food options are valued. This poses a considerable barrier to processed foods for this market with many of the opinion that processed foods are related to behavioural changes in children.

Parents were also concerned with vegetable origin, were averse to buying imported goods and preferred to support local and small producers through Farmers Markets.

Product and marketing ideas

Suggestions for targeting these consumers include:

- snap frozen vegetable products,
- products with natural/no preservative,
- exotic products,
- products with a "food story" ie. locally grown, few food miles, local farmers story of interest,
- marketing communications that suggest family bonding over food behaviours,
- marketing communications based on target's aversion to packaged/pre-prepared foods,
- marketing communications that provide unusual recipes for vegetables.

Young professionals

Low vegetable consumers

Behaviours

For low vegetable consuming (LVC) young professionals, shopping scripts were more likely to be based on past behaviour and choices rather than a planned activity. LVC young professionals tend to shop at supermarkets rather than at specialty stores. Paradoxically, consumers had negative perceptions of vegetables bought in these stores:

"Vegetables at Coles (are) not nice, expensive and they don't support local growers/farmers",

These shoppers are more likely to engage in impulse buying and actively sought prepared sauces and convenience options.

Compared to other groups, cooking skills were fairly limited amongst this target. When deciding what to cook for an evening meal, some respondents would plan the night or afternoon before the meal. Others would purchase meals or ingredients on the way home from work or consciously "go

for the easy stuff". Meat was consciously included and respondents would "aim" for vegetables. However, most believed including a vegetable component in meals was not always achievable.

In a time poor scenario, LVC young professionals were more likely than any other group to choose take-away. Alternatives were frozen convenience meals such as *Lean Cuisine* or left-overs.

When asked to consider consciously including more vegetables in their meals a number of respondents indicated they "wouldn't bother". Others are likely to purchase frozen vegetables or fresh-cut salad products to add to meals.

Like other groups, dining at a restaurant was considered a 'treat' and vegetable consumption was not a factor in the decision making process. Meals chosen were centred on muscle foods and the majority of this group would not consider increasing the vegetable component of this meal

A relaxed evening meal was enjoyed with family or partners, and was likely to consist of a roast for couples. Unlike other meals, vegetables played a major role in roast dinners with some describing the vegetable share of plate as 50 per cent. In order to increase the vegetable proportion respondents in this group would add more green vegetables to the dish, as root vegetables are seen as the obvious usual meal accompaniment. For single LVC young professionals, a relaxed evening meal was not a typical consideration.

Attitudes

Low vegetable consuming young professionals revealed negative attitudes toward cooking in general:

"I hate cooking, I hate preparing, I hate cleaning, I'd rather get take-away".

This negative attitude also applied to vegetables, particularly with males. Males did not like vegetables, could not see any reason for eating them and expressed the need for marketing messages to provide tangible benefits to their consumption in order to change attitudes. Females were constrained in their vegetable consumption by time and motivation. Fast-food was cited as a favourite food due to its taste and convenience.

Ensuring a good proportion of vegetables in meals is not a concern for this group as they "wouldn't bother (and) wouldn't feel guilty". Not surprisingly, a good meal had little to do with balance or nutrients and more to do with sensory evaluation - participants revealed a hedonistic attitude toward food where food choices were based on taste and pleasure:

"eating is not a regimented activity but more what I want",

and vegetables were perceived as a functional food rather than something eaten for enjoyment:

"vegetables aren't that tasty".

Young professionals have sophisticated food demands and are less inclined to increase vegetable consumption through perceived health needs.

A "good meal" for this group was fresh, tasty, satisfying and had different textures. Despite reliance with take-away, these participants revealed a sophisticated palate. LVC young professionals exhibit

more positive attitudes toward convenience products and processed vegetables, particularly packaged salads and stir-fry mixes.

Participants also felt that increasing their vegetable component would result in reducing other food groups such as milk products for calcium.

Values

Values associated with vegetables for this group were primarily associated with credence issues. Participants felt eating more vegetables would help the environment, reduce packaging waste, avoid additives/preservatives, and had moral implications associated with eating less meat such as greenhouse effects. Group members were concerned with food miles, genetic modifications and cold storage of vegetables. Vegetable storage was negatively associated with food quality.

Body image was also a particular consideration for this group. Males consider vegetables as not useful in "bulking" up unless they are a starchy vegetable such as potatoes. Females see these starch vegetables as fattening. Females did, however, link higher vegetable consumption to better looking skin, feeling better about themselves and eating less undesirable foods.

As with other targets, childhood experiences were mentioned during sorting exercises and were a factor in current likes and dislikes.

Although LVC young professionals believed eating vegetables was within their control, they lacked motivation and believed increasing vegetable intake "isn't going to happen". This is likely due to participants "sophisticated" needs outweighing the perceived health benefits of eating more vegetables.

Product and market suggestions

This target is a happy consumer of convenience options such as frozen vegetable, fresh cut salads and pre-cut stir fry packs. Convenience vegetable meal options that would appeal to this group included Mexican, pizza, stir fries and curries.

Convenient snack options should be convenient in shop placement as well as packaging. Snacks should be ready to eat, colourful in packaging and be in the form of crudités with dip or cheese and look fresh. An alternative to crudités would be hot, microwavable snacks with sauce or butter and herbs. Snacks would need to be comparable to other snack options in price. One essential criterion was that they be easy to take to work, eat at a desk, and on the go. A final product option was a vegetable drink.

Vegetables need to be positioned according to tangible benefits that speak to consumer's personal image in marketing communications. These include linking vegetable products to consumer's physical appearance such as strength in males, and glowing skin and healthy hair in females.

Convenience options should be positioned on environmental factors including:

- the use of recyclable packaging,
- be sourced from local farmers,
- be free of preservatives.

Medium vegetable consumers

Behaviours

As with all groups, shopping scripts were varied. However there was a tendency to shop more frequently for fresh produce and Farmers Markets were mentioned as a source of vegetables. Unlike LVC young professionals, shopping was not considered a chore. MVC young professionals are buyers and users of convenience meal helpers and options.

Cooking skills for this group were average to very good with single MVC young professionals tending toward simpler cooking styles or relying on convenience options. Once again, a standard meal for this group is protein and vegetables. People in this group were more knowledgeable about food groups and consciously tried to include vegetables, carbohydrate and animal protein.

More than any other group, this group displayed sporadic eating patterns. Many missed breakfast, some missed dinner. This group also tended to overestimate their vegetable consumption.

Planned meal and shopping behaviours were less obvious for this group. When deciding what to prepare for an evening meal, most in this group would look to what was in their own stores at home for inspiration, typically choosing ingredients that “need to be eaten first”.

In a time poor situation, this group would not consciously try to include vegetables in this type of meal, but would choose to increase vegetable consumption in other meals instead. When asked to consider increasing vegetable consumption, MVC young professionals tend to choose fresh cut salads and frozen vegetables in stir fries, as well as convenience meal helpers, frozen convenience meals and take-away.

As with other groups, dining out was seen as a treat and therefore no effort was made to include vegetables into a typical meal choice. If consciously trying to include vegetables, this group would generally add a side dish of vegetables or salad. Choosing a vegetarian option was also mentioned. Many respondents were willing to try a vegetable based meal option and gave examples such as vegetable stacks. Others would not replace their typical restaurant meal with a vegetable based one, but would have a meal with a vegetable component. In response to trying vegetarian meals, one respondent declared he “never tried, never will, wouldn’t pay”. For another, “vegies aren’t thought of as the star of the show”.

Attitudes

Although this group did not have an entirely negative attitude, many felt they were already eating an adequate amount of vegetables. This can be linked to the groups’ view that vegetables are a dinner component - a meal where vegetables are consciously included. Of vegetables, potato plays the major role in meals. Consequently, when asked where in their weekly eating pattern they could include more vegetables, many group members were unsure.

Despite a fairly unenthusiastic attitude, MVC young professionals did connect vegetable intake with health, energy and mental acuity. Similar to LVC young professionals, these benefits to eating vegetables did not enter the meal decision process. One participant framed this attitude as “mood over food”.

MVC young professionals felt they had a healthy attitude to food and a ‘good meal’ was typically described as balanced and nutritional, tasty and filling. When choosing snacks, healthier options were spontaneously given including muesli bars, fruit and avocado. Yet vegetables were not a first choice as a snack food. Because vegetables are included in the evening meal, respondents felt that

including vegetables as a snack would be monotonous. As with other groups, variety is important in the daily diet. One respondent viewed vegetables as 'unsnack like' because "you can't pair them with a hot drink".

Many meal attitudes stemmed from learned behaviour. For example, share of plate was described by one person as ½ meat, with the remainder of the plate mainly potato with some vegetables. Increasing the vegetable component for this meal would mean adding green vegetables as "leafy greens" are not always included in meals. If trying to consciously increase vegetable intake some respondents would reduce the meat portion of the plate and increase the vegetable component. However, this was not seen as a positive outcome.

Attitudes to convenience options were not negative and MVC young professionals are likely to use them in many situations.

Values

No real emotional food value is associated with vegetables for this group. However, this group might be motivated by messages detailing the long-term benefits of eating vegetables. Further motivation is likely to occur when participants think of "slowing down and eating well" or their responsibility to others. Participants were influenced by their peers, and also by sports stars.

Product and market suggestions

Suggestions from group members for vegetable products included improving the bags which pre-cut salad came in. Current packaging was thought to encourage products to sweat and to "rot".

Participants want better/ longer shelf life and access to recipes for creative ideas. They also wanted vegetables products to be available at fast-food outlets and in the workplace.

Many pointed out the need to change people's perceptions of vegetables, rather than change vegetables themselves.

High vegetable consumers

Behaviour

High vegetable consuming (HVC) young professionals have highly planned food scripts. This group plan their shopping, avoid supermarkets, and are market shoppers. Participants in this group are self-confessed "fussy" vegetable shoppers with high standards of produce.

Self-proclaimed cooking skills for HVC young professionals were above average to excellent. These respondents tend to cook from scratch, liked to cook and displayed a positive attitude to cooking.

Evening meal decisions were generally a result of a complex decision making process which included other house members, moods, seasons and the shelf life of foods in store. Although meat was included, respondents were also more likely to consciously include salad and vegetables.

In a time poor situation, this group tended to plan ahead for this scenario with home-made frozen meals on hand. Other options were to choose a frozen convenience meal, or a convenience sauce to add to protein. Fresh or frozen vegetables would be added to provide an adequate vegetable component to the meal. Those with high planning behaviours indicated they would have home

made cooked frozen vegetables available. A variety of behaviours were offered to consciously include vegetables in their current diet, including adding blended vegetables to snacks and meals, adding 'steam fresh' frozen vegetables to casseroles and convenience sauces.

High vegetable consuming young professionals would generally choose an animal protein based meal when dining out. However, this was usually teamed with vegetables and salad. Vegetable based or vegetarian options were a viable option for some in this group. However, for others "not having meat while dining out is a waste of a night out".

Snacks for this target were more varied than for other groups and included healthier options such as fruit, yoghurt and dried fruit and nuts. Vegetables were not a snack food of choice for several reasons including the preparation required, the self- consciousness of eating vegetables at ones desk, vegetables not being a comfort food, and other foods not being "messy". General attitudes towards vegetables as snack foods were obviously negative with vegetables seen as bland and not filling.

A relaxed evening meal for this group included friends and family as well as other house members, depending on the life situation. This would typically be an event type meal, and include treat or comfort foods such as wagyu beef, or roast or barbeque. For single respondents the meal was typically simple and might include fish and salad or take away pizza. For many of the respondents vegetables were an essential part of the meal. Ensuring an adequate vegetable intake would require having a variety of vegetables on the plate and entail cooking vegetables in interesting ways. For others, including vegetables was "just what you do".

Attitude

HVC young professionals have positive attitudes to vegetable consumption and enjoy the taste of vegetables. As with the high vegetable consuming parents, vegetables were cited as a favourite food for this group. Unlike the low and medium vegetable consuming young professionals, takeaway foods were not mentioned and these foods were generally derided by this group.

HVC young professionals can be described as having "healthy" attitudes to food and vegetables in general:

"I see vegetables as a springboard to a healthy lifestyle…I think of them as a reward".

This group consciously include vegetables in all meals including restaurant meals and are not averse to ordering vegetarian in restaurants. Snacks are more likely to be health oriented such as fruit or cheese, and vegetables are considered a snack food. Vegetables are seen as an essential component to main meals:

"(Vegetables are) almost a prime ingredient and meat just falls a second one".

Because of this attitude, HVC young professionals see buying vegetables as cost effective. As a high vegetable consuming group, participants felt they were already eating enough vegetables. However, when pressed to consider consciously increasing the vegetable component of meals, some would replace meat with vegetables, or have a wider variety of vegetables.

Values

HVC young professionals associate vegetables with comfort food, particularly in winter. These comfort foods are generally hearty soups and components of roast meals. Participants valued

nutrition and balance in meals and believed people needed to be educated on the positive attributes of vegetables. This group also felt that people should be encouraged to "give (eating more vegetables) a go", and that it shouldn't be perceived as a chore.

Credence attributes of vegetables were a major factor for this group. HPV young professionals are concerned about the source of products and want to buy Australian first and local product second:

"You feel really righteous and you go to the markets and you buy it from the guy who produced it".

and,

"I haven't bought garlic for so long because I couldn't find garlic that wasn't (from China)".

Paradoxically, this group felt that imported gourmet products were acceptable:

"…there are some vegetables I would prefer to get from other countries. Like tomatoes from the south of France".

For HVC young professionals, organic produce was important but its cost was prohibitive:

"I would probably eat more vegetables if the cost of organic products weren't so expensive. I try to buy organic…".

Food and marketing suggestions

HVC young professionals use convenience frozen meals that are positioned as healthy. Convenience meal helpers are also bought. These are more likely to appeal if marketing messages provide hints on how to add fresh vegetable components to these dishes. This group has exotic tastes and convenience meals that appeal to this group would reflect that.

Other appealing convenience products are high quality snap frozen vegetables. Particular frozen vegetables that are appealing are peas and corn.

A fresh, convenient snack option is attractive for this group. These would be pre-packaged portions of crudités with a dip or dressing.

Convenient salad products would be exotic in nature. Suggestions include a warm vegetable salad that can be microwaved. HVC young professionals are enthusiastic about vegetable retail concepts:

"I mean if you want to go out and get some nice steamed vegetables for lunch I'd love to know where you need to go to get those".

Theory of planned behaviour

The current project has been developed to address the 2007 Vegetable Industry Priority Reference to undertake behavioural theory based research. In the marketing and consumer behaviour literature, attitudes are linked to consumer intentions to perform a particular behaviour (for e.g. Baker 2003; Foxall 2002). Intentions are assumed to capture the motivational forces that influence behaviour. Intention is measured by indications of how hard people are willing to try and how much effort they are planning to exert in order to perform the behaviour (Mullen & Johnston 1990). However, good intentions do not always result in the successful performance of a given behaviour.

The literature review revealed several models and theories related to understanding people's behaviour and beliefs concerning food consumption (see Appendix B). Of these, the Theory of Planned Behaviour (TPB) provided a thorough model of consumer behaviour as it relates to intention and had been successfully used within health research.

According to the TPB, people evaluate performing a given behaviour according to their attitudes to it (behavioural beliefs), how they perceive others will react to the behaviour (normative beliefs), and also how much control they believe they have in successfully completing the behaviour (control beliefs) (Ajzen 2006). By understanding these "predictors" as they relate to vegetable consumption, evidence-based recommendations can then be forwarded to industry that will inform product and marketing innovations.

Current social marketing campaigns conducted by Queensland Health aim to increase the fruit and vegetable consumption of all Queenslanders by one serve a day. The following paragraphs and figure provide the results of focus group discussions based on TPB that asked participants to consider increasing their vegetable consumption by one serve a day.

Behavioural beliefs

A behavioural belief is the subjective probability that a behaviour will produce a given outcome (Ajzen 2002). Beliefs may be negative or positive. In evaluating these beliefs, consumers produce a favourable or unfavourable attitude to the behaviour. Alternatively, when faced with several simultaneously positive and negative beliefs, consumers may develop ambivalence toward the behaviour.

Health and nutrition was the foremost advantage cited by all groups for increasing vegetable consumption by one serve a day. General positive feelings of well being were also an advantage with particular themes of increased energy and weight loss visited by most groups. A belief that increasing vegetable consumption would mean the displacement of unhealthy foods was also recorded across many groups.

Self-identity was closely related to attitudes about vegetables. Many female consumers equated a higher vegetable intake with better body image (for instance better hair and skin). Males equated a lower "bulking up effect" to eating more vegetables and this was perceived to be a negative affect. The self-concept of being a good parent was linked to parents of young children.

Attitudes toward quality and freshness of vegetables were likely to influence consumption. Many participants believed supermarkets did not provide a high quality, fresh product. These respondents were likely to shop at markets. Low and medium consuming participants perceived vegetables as unsatisfying. In contrast, high vegetable consuming participants felt they would be more satisfied with meals if they were to increase their daily vegetable consumption.

Normative beliefs

Normative beliefs refer to the perceived expectations or social pressure from referent groups and family members for an individual to engage or not engage in a particular behaviour. For the purpose of this study, collectively held and evolving values are included. Behaviours that are inconsistent with normative beliefs are likely to be inhibited.

For low and medium vegetable consumption parents, social expectations of ‘good parenting’ were a strong force. However for these groups, their children’s distaste for vegetables was a considerable barrier to increasing consumption leading to considerable ambivalence. Avoiding conflict was therefore a negative affect. This was not an issue for high vegetable consumption parents.

Workplace peers were also cited as an influence, with several members mentioning fruit baskets purchased by their place of employment as an influence despite the study being concerned with vegetable consumption.

For parents, their children’s child care or primary school teachers were a positive influence, and other people’s children were a negative influence. Experts such as doctors, nutritionists and personal fitness trainers were given as a positive influence.

Felt moral obligations toward the environment were factors across most groups. Consumers felt quite strongly about Australian produce with several med/high groups citing farmers markets and local produce availability as positive factors leading to increased vegetable consumption.

Health “consciousness” was positively related to intention. This included the rejection of preservatives and additives, and included product as well as packaging.

The media, with reference to reality television shows that have weight loss as a criterion, cooking shows, sports heroes, celebrity chefs as well as social marketing and commercial marketing efforts were cited as both a positive and negative influences.

Low and medium consuming parents felt that the general mindset concerning vegetables was insurmountable, and that it would be easier to increase vegetable consumption on a weekly basis.

Control beliefs

Control beliefs are an individual's belief about the presence of factors that may facilitate or impede performance of a given behavior (Ajzen, 2001).

The primary barrier for all groups was time, including the increased need for planning, preparation and cooking time and because of the need to shop more often due to the short shelf life of vegetables. A related barrier to short shelf life was wastage. Consumers felt that the average available fridge space was inadequate for storing the amount of vegetables required for a family to eat five serves of vegetables a day. These factors come under the general banner of convenience.

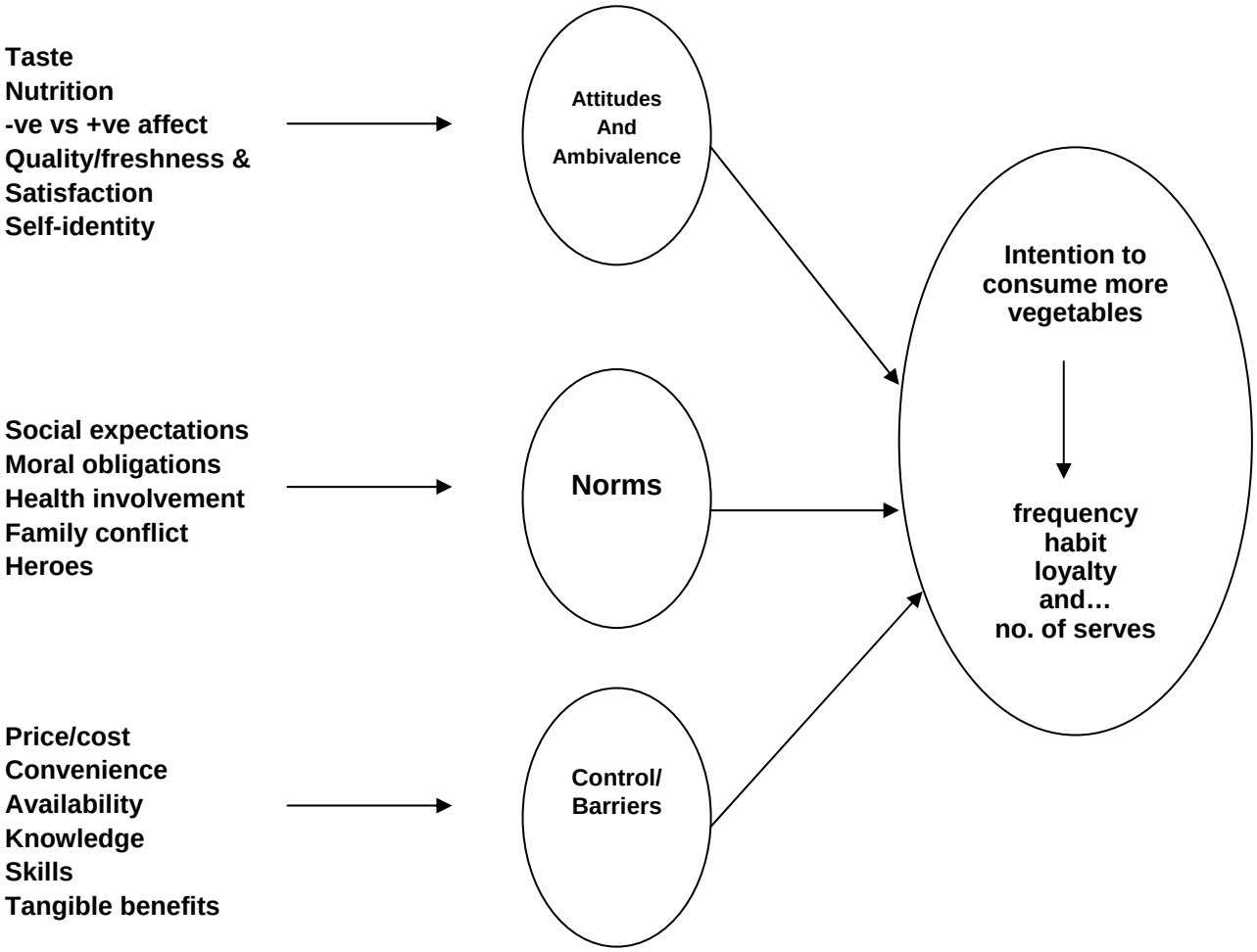
Cost was a primary barrier for low vegetable consuming groups. Interestingly, only medium and high vegetable consuming young professional thought that an advantage of eating more vegetables would be less expense. This outcome may be related to the idea of substitution. When asked to consider increasing the vegetable component of a meal, higher vegetable consuming groups were more likely to consider substituting meat for vegetables whereas lower vegetable consuming groups were likely to add more vegetables to a standard meal, thereby making the meal larger and more expensive. Wastage is also an issue of some concern for many lower consuming groups as well as for the time poor, who equated the relatively short shelf life of vegetables with cost.

Most groups cited availability of vegetables as a considerable barrier. This was linked to droughts and other natural disasters. A limited variety of vegetables to choose from was also cited.

Social marketing campaigns featured heavily in control beliefs. Participants felt more education about the positive aspects of increasing vegetable consumption and education about cooking vegetables would influence their control beliefs. Having access to recipes to be able to serve up appetising vegetable dishes was seen as a positive factor.

Amongst some low and medium vegetable consuming males, no real advantages to increasing their vegetable consumption were noted. Males felt they needed to be communicated a tangible benefit for them to consider increasing vegetables.

Figure 1 TPB model increasing vegetable consumption by one serve a day



Vegetables as snack foods

Studies show a pervading perception of vegetables as an evening meal component (for e.g. Dixon et al. 2004), and this is confirmed by the current project. In order to increase vegetable consumption, it would therefore be useful to understand where vegetables may be successfully introduced into other areas of the Australian diet. An increasingly "time-poor" society would suggest that snack type vegetable products may both fill a need in the market, and provide an avenue for industry expansion. As part of the focus group questioning route, participants were asked to consider a vegetable type snack.

Vegetables were not perceived as snacks by the majority of participants. Notable exceptions include MVC and HVC parents, and HVC young professionals. However, even amongst these groups, vegetables were not a preferred choice. Consumers related convenience, taste, satisfaction and an instant 'energy hit' with conventional snack foods but did not equate these attributes to vegetable-type snack foods.

The price of pre-cut vegetables was a factor and there was a general feeling that processed vegetables were dry, unappealing and not "good for you". Furthermore, many respondents believed that vegetables were primarily an accompaniment to main meals - eating vegetables as a snack was considered monotonous for participants.

When asked to consider an appealing vegetable snack product, consumers presented an assortment of snack food options. A typical product included peeled and sliced vegetables in snack sized portions accompanied by a dip or accompaniment (see Appendix D for vegetable groupings according to meals). These would ideally be:

- fresh and not dried out,
- packaged in safe, colourful and recyclable materials,
- comparable in cost to other snacks,
- be free of additives and preservatives,
- available in convenient locations.

Alternative forms were packets of freeze dried vegetables with flavouring such as wasabi peas, or a puffed or baked vegetable chip. A further option was a microwavable, hot vegetable snack with cheese sauce. Fresh vegetable juices were also revealed to be a suitable snack drink. Some families prepared sweet snacks for children that were prepared with pureed vegetables, such as muffins or cakes.

Vegetable groupings and consumption times

Vegetables consumption varies according to category with some vegetables proving more popular with certain consumer groups than others. For this reason it is important to establish who eats what vegetables, where, and how much.

Focus group members were asked to perform a grouping exercise with cards depicting vegetables from different families. Overall the young family segment tended to group vegetables according to what their children would and would not eat. This suggests that vegetable purchase and consumption decisions are made in order to avoid conflict.

All other targets grouped vegetables according to end use, cooking style or what is consumed on a regular basis vs never eaten. For most groups, comments based on childhood experiences were a factor in vegetable groupings. Appendix G provides an overview of vegetable groupings.

Diaries revealed that vegetables were primarily eaten in the home. Table 3 provides the mean number of serves of vegetables eaten over the course of the diary week per meal event.

Table 3 Mean servings of vegetables per week during meal events

Meal event	LVC group mean servings per week	MVC group mean servings per week	HVC group mean servings per week
Breakfast	.23	.5	.76
Snack 1	.1	.12	.12
Lunch	3	5.2	6.8
Snack 2	.1	.1	.6
Dinner	7	9.4	10.5
Snack 3	-	-	-

Discussion and recommendations

Outcomes associated with this project are:

1. The provision of information to orientate breeding programs and / or new product development focused on consumer expectations and perceptions of added value in vegetable products and minimise risk in vegetable product development,

2. The improvement of marketing communication strategies to increase vegetable consumption based on an understanding of consumer behaviour,

3. The provision of key attributes to characterise the Australian population and determine the layout of the survey to follow its evolution.

Outcome one

This report confirms there is a tension between participants' increasing concern for environmentally sound practice along the food chain and the need for convenience products. Consumer's desire Australian produce, are concerned with quality and are experiencing familial conflict in relation to increasing vegetable consumption. Several recommendations for product have been included in this report. In addition, general suggestions for products include:

- reduce purchase risk by having reliable cues that can be used as indicators of vegetable quality such as a "gold standard" labelling,
- associate products with a healthy and natural image,
- avoid association with preservatives, additives and genetic modification,
- be convenient without losing perceptions of freshness and naturalness,
- include easy recipes with vegetable produce - particularly versions palatable to children,

Outcome two

Successful marketing communications will provide solutions for the various problems consumer's experience in relation to vegetable consumption. This report has suggested several consumer motivations that can be appropriated within marketing activities.
Irregular vegetable quality is an oft-quoted problem for consumers. As a result, there is a general movement toward buying vegetables at grocers, markets and Farmer's Markets which are perceived to have fresher produce of a higher quality than supermarkets. It is therefore suggested that industry direct marketing efforts at markets and Farmer's Markets.

Other important results include:

- low vegetable consumption is related to low enjoyment with the cooking process,
- consumers perceive vegetables to be an evening meal accompaniment,
- low/medium vegetable consumers are hedonistic in their food attitudes and do not eat vegetables for pleasure,
- low/medium vegetable consumers perceive their meals as balanced and their vegetable consumption as adequate.

It is suggested that marketing communications be designed with a "balanced meal" message together with family friendly hints on how to cook vegetables in ways palatable to children and to more sophisticated tastes.

Children's tastes and preferences are a considerable barrier to eating more vegetables in LVC and MVC parents. The children of HVC parents are involved in all aspects of meal behaviours including growing vegetables, planning meals, and preparing and cooking meals. It is suggested that communication campaigns encourage parents to include children in the cooking process – with a particular emphasis on vegetables.

Health, energy, mental acuity and being seen as a good parent are drivers for increased vegetable consumption. Women associate eating vegetables with good skin and hair. These positive attributes are weighed against conflicting barriers such as cost and convenience. It is suggested that key marketing messages be created around the role of vegetables in promoting these attributes.

Meat is considered an essential component for most meals and most LVC and MVC participants would not consider replacing animal protein with vegetables. Increasing vegetables for this group would therefore mean an increase in overall plate size and therefore cost. Marketing communications in the current economic climate might benefit from messages suggesting that reducing the amount of meat on the dinner plate and substituting with vegetables would profit consumers both financially and health-wise.

Positive experiences with vegetables were linked in the consumer's mind to certain special events such as roasts. Targeting marketing messages to particular segments and consumption moments, for example fathers and barbeques, or mothers and weekend roasts, may provide an avenue with which to develop awareness of vegetable products.

Outcome three

Results from the TPB section of the focus group analysis provide the key attributes with which to characterise the Australian population. These include both positive and negative attitudes displayed

by participants such as taste, quality and nutritional attributes – as well the ambivalence felt by consumers when "weighing" these components against each other. These together with consumer's *felt* norms and barriers to consumption can be used to predict consumption habits amongst Australians. Consumer's social expectations with regard to family, the moral or environmental implications, their level of health involvement and family conflict, as well as the influence of media and media and sports heroes are all influences on vegetable consumption. Finally, barriers to consumption such as cost, convenience, availability, knowledge and skills take on great importance when considering increasing vegetable consumption.

It is recommended that an ongoing longitudinal quantitative study be undertaken to track these and emerging trends, and to provide more detailed insight into important motives and barriers to vegetable consumption. A National, Internet based, self-complete survey will be an efficient manner in which to study consumer segments. Essential components of this survey would include:

1. Demographic information,

2. Shopping scripts including place of vegetable purchase, frequency and purchase of convenience vegetable products,

3. Meal scripts including vegetable share of plate,

4. Self report of vegetable consumption day immediately before survey completion,

5. Single item measuring consumers intention to increase vegetable consumption by one serve a day/week,

6. Behavioural beliefs based on qualitative data – weighted as to importance,

7. Normative beliefs based on qualitative data – weighted as to importance,

8. Credence issues based on qualitative data – weighted as to importance.

Technology transfer

Information will be available to horticulturalists, breeders, growers and supply chain through QPI&F reports for HAL. Information will be delivered for the benefit of:

- industry through submission of an abstract to the biennial AusVeg conference in 2010,
- consumers through website publications and popular media,
- scientists through publication written in collaboration with Plant and Food Research Institute of New Zealand.

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Appendix A – Overview of vegetable consumption literature review

Studies	Barriers	Drivers	Determinants
Yeh et al., 2008	- high cost of F&V, - perceived lack of time (fatigue + preparation time), - convenience of pre-packaged foods, - high spoilage rate of F&V (=frustration and purchase food with longer shelf life), - media promoting fast foods, - lack of cooking skills - ethnic specific= limited access to fresh produce, quality, - not open to unknown F&V, - pesticide contamination	- health benefits, concern over child's health, importance of growing up with F&V	- mother is the one who cooks at home - combination of low perceived threat and low perceived benefit coupled with high perceived barriers could explain why younger people did not think eating F&V was a priority for them now
Yadav, 1998	Fresh vegetables: - price - availability not important, Green leafy vegetables: - family do not like it, - not very convenient to manage	Fresh vegetables: - liking of the family, - nutritive value, - change in taste, - variety, - convenient to use Green leafy vegetables: - nutritive value Processed vegetables: - change in taste, - convenience, - availability round the year	decision made by wife influenced by children choice
Lea and Worsley, 2002	- enjoying eating meat - unwillingness to alter eating habits	- health, e.g. increase F&V intake, decreased saturated fat intake, weight control, disease prevention - vegetarians motivation: animal welfare and environmental issues	Age difference more important than sex difference
Dixon et al., 2004	- perception that vegetables are for evening meals, - preference for meat, meat is the centrepiece, - believes that recommended quantities were too big, - lack of preparation time and time consuming, - messy and boring - less tasty and less filling than other foods		Pleasure-seeking rather than nutrition knowledge is the major driver of people's eating behaviour

Studies	Barriers	Drivers	Determinants
Lea et al., 2006	- irregular working hours, - belief that one's diet is already healthy, - lack of information and grouped in personal, - family, - convenience, - health (lack of iron and protein), - junk food+ shopping+ eating out - financial barriers, - information	- health: weight control, being healthy, improve quality of life, disease prevention, decreased saturated fat intake and grouped in well-being benefits, - ethical benefits, - convenience, - financial benefits	
Lea, Worsley and Crawford, 2005	- lack of knowledge/ skills for preparation, - lack of willpower, - family influences, - time consuming, - poor quality, - expensive, - dislike taste, prefer other foods, - lack of availability when eating out, - need to eat large quantity, - chemical residues, - stereotype and social pressure, - perishable, - dull, - hard to eat 5 servings, over processing affects taste, decrease beneficial properties (vitamins), add unwanted chemicals	- health, well-being, - taste, color, - enjoyment, - variety, versatility, - creativity, experimentation, - environmental, - reduced cost, - convenient, - ability to grow them at home, - convenience of processed, prepared plant food	- health not enough, need to include sensory properties - family influences
Thompson et al., 1999			low fruit & veges consumers: age (16-24 years), sex (men), smoking status (current smokers) - Impact of knowledge seemed less important than attitudes for low F&V consumers.
Cox et al., 1998	- cost of F&V	-health, - cost, - taste	Consumers overestimate their consumption of F&V
Verbeke and Pienak, 2006		- health and prevention, - hedonism, - nutrition	Target to increase consumption=young males
Brand Story Pty Ltd, June 2008	- children pref - convenience (storage, flexibility, time saving) - unlikely to pre-plan their entire shop, plan focus on the protein centre of the plate - vegetables are a confusing category, - little invitation to explore and experiment, - perceived variable taste, storage and quality.	- health for disease prevention, immunity, energy, wellness, - seeking transparency in food production - value of local, unique offerings, - Australian grown	family, trial of vegetables particularly difficult with children and routine around vegetables based on children pref

Appendix B – Overview of behavioural theory literature review

Study	Aim	Theory	Factors, hypothesis
Medeiros et al., 2004	Develop scales to assess consumer education level in food safety	Theory of Reasoned Action	Knowledge + attitude = preconditions for behaviour change Attitude=mental readiness to act + predict the likelihood that a person will be motivated to move to action
Lea et al., 2006	examine the readiness to change to a plant-based diet among a sample of Australians	Transtheoretical model	Stages of change are associated with the perceived benefits and barriers, or decisional balance of dietary change. The benefits of change need to outweigh the barriers for behavioural change to occur. Classification of the population in 5 separate stages: (1) precontemplation, (2), contemplation, (3), preparation, (4) action, (5) maintenance
Lea, Worsley and Crawford, 2005	Examine consumers' perceived barriers and benefits of plant food	Food lifestyle model	Key components: shopping scripts(price, attitude to advertising, importance of product information), higher order attributes of foods (quality, health, taste, freshness), meal preparation scripts (convenience), usage situation (social occasion), desired consequences (self-fulfilment in food, including sensation)
Mahon, Cowan, McCarthy, 2006. Cox et al., 1998	Examine the consumption of ready meals and purchase takeaways To assess attitudes, predictors of intention and identify perceived barriers to increase F&V consumption	Theory of Planned Behaviour	Attitude+ subjective norm+ perceived behavioural control will explain intention which will predict behaviour Attitude measure the extent to which an individual has a favourable or unfavourable evaluation of the behaviour in question, Subjective norm measures the influence of other people in respect of the behaviour=normative beliefs+ motivation to comply Perceived behavioural control=beliefs regarding the access to resources and opportunities needed to perform a behaviour= availability of resources needed to engage in the behaviour (access to money, time, other resources) + focal person's self-confidence in their ability to conduct the behaviour.
Wadolowska et al., 2007	Identification and characterization of models describing food choice factors and analysing their effects on preferences and eating frequency	Based on Shepherd approach	Food choice factors divided into 3 main groups (1) product related factors: physical, chemical, sensory, functional, nutrient factors… (2) consumer related factors: personality (age, gender, education, psychological effects (satiety, hunger, appetite)… (3) environmental-related: economic (price, income), cultural (beliefs), social factors (fashion, society)…
Petrovici and Ritson, 2006	To identify the factors that impact the factors that impact on the individual decision to engage in Dietary Health Preventive Behaviour	Theory of Health Preventive behaviour	Preventive health behaviour depends on the health motivation (passive and active) and health ability
Moorman and	To develop and test a model of the	Health Belief Model	Health behaviours are dependent upon the perceived threat of disease which depends on the

Study	Aim	Theory	Factors, hypothesis
Maturlich, 1993	individual and joint effects of various consumer characteristics on health information acquisition behaviours and health maintenance behaviours		perceived susceptibility to getting a disease and the perceived seriousness (severity) of suffering the particular disease. Main assumptions: 1. the subjective valuation of a particular goal 2. the individual's estimate of the likelihood that a given action will achieve that goal

Appendix C – Focus group guideline

VG0800 Consumer Insights on Vegetable Consumption Focus Group Guideline

March 9th – March 19th 2009-02-19

Checklist

1. Paper and pens for group members
2. Locked box for members to place their diaries
3. Recorder (test day before and hour before focus group)
4. Registration a) someone to mark list and give name tags b) someone to greet people and make them feel comfortable
5. During focus group a) notetaker b) group facilitator c) third person for late arrivals
6. List of group members
7. Name tags
8. Set up room
9. Refreshments
10. Vegetable cards
11. Book laptop
12. Retest laptop

Registration

1. Mark people of the member list and give name tags.
2. Ask group members if they have completed the last page of the food diary, and if they haven't, then ask them to please fill this out now.
3. Instruct group members to deposit diaries in locked box.
4. People greeter to lead group members to refreshment table and then to chairs (unless we are doing the blue tongue dye experiment)

Introduction

Welcome and thank you for making the time to join us as at Hamilton DPI.

My name is _____ and I work as a research scientist with the Department of Primary Industries and Fisheries. I will be your facilitator and am joined by my colleagues _____who will be taking records and assisting me today.

Make reference to recording (video and audio) to accurately capture what is said. Your identity and any contribution you make will remain confidential.

We're seeking your opinion and comments on a range of issues relating to increasing peoples vegetable intake. You will be asked a series of questions to which there is no right or wrong answers. In fact today I am interested in hearing a range of views so no matter how different your perceptions or opinions are on a particular topic I encourage you to speak up and make your contribution. We assure you that any views expressed will remain anonymous and we will not be recording names or who made individual comments.

Rules and Housekeeping

1. While the session is in progress I ask that only one person talks at a time to:
    - permit an accurate detailed record of today's exchange, and
    - allow other members of the group to hear what is being said.
2. Housekeeping
    - Please turn mobile phones off unless you are expecting an urgent call in which case we ask that you quietly leave the room to answer the phone outside in the corridor and then re-enter quietly.
    - Toilets are out this door and to the left.
3. The focus group today will take no longer than one and a half hours and includes questions about your attitudes toward vegetables, a vegetable grouping exercise, and a bit more discussion about peoples vegetable eating habits.
4. We have asked you to fill out a 7-day food diary and bring it with you. If you haven't already done so, please ensure you have completed the final page of the diary and placed it in the locked box (indicate where it is).
5. The completed food diary and the information we collect today will help us to plan large scale research into vegetable consumption.

Part One: General (5 minutes)

1. Just to get started, let's start with your name and favourite food. ['Spontaneous' importance of vegetable (proposition: High segment should naturally name vegetables more often as favourite food or as part of favourite meal)]
2. How would you describe your cooking skills? [self assessment of the ability to prepare a meal]
3. What sort of a process do you go through when you're shopping for food? [Conscious planning with a list, Have a few key items in mind and then whatever appeals at the time, Much of the shopping items stem from my family's favourite foods like biscuits, etc]
4. If you were coming home from work (or picking up children from school) and you are deciding what to cook that night for dinner.
    - How would you make that decision? (eg go shopping and see what appeals, get take-away, heat up a frozen meal, wouldn't happen to me because I plan my meals in advance and shop once a week with this in mind, use whatever is in the cupboard and bang something up)
    - Is there anything that you would consciously include? [eg meat, dessert etc, or fries if take-away]. Why?

Part Two: Attitude (20 minutes – 5 min per scenario)

I am going to give you several scenarios to think about and we would like you to write down your answers to some questions about how you would react.

Scenario 1

You've had a really busy day, are arriving home later than usual and have little time to prepare an evening meal. If someone else usually prepares the evening meal, imagine that they are away for that night.

1. Write down what you would typically choose for that meal. (respond to this meal), why?
2. How do/would you ensure you include a good proportion of vegetables.
3. If you were to consciously try to increase your vegetable intake, what would you do?

If the group members respond with fast foods, frozen foods, grilled sandwiches, pasta for question 1., then challenge these choices systematically.

Scenario 2

You are out dining with your partner, friends or family at a favourite restaurant.

1. What would you typically choose from a menu? [Potential competitors: meat + chips, poultry, seafood, pizza, pasta]. *Challenge competitive meal answers.*
2. How would you consciously/deliberately try to increase your vegetable intake?
3. What sort of vegetable based meal might you find an attractive alternative to your usual restaurant choice?

Scenario 3

It is the afternoon, you are hungry and you feel like a snack before your next meal.

1. What would you choose? [Potential competitors: chocolate, chips, fruit, 5 min noodles]
2. If competitor Why would you choose that over a salad or vegetables in some form? [eg. because I don't think of veges as a snack food]
3. Why don't you think of them as snack foods [eg. because salads and vegetables are traditionally served with/as a main meal].
4. If they were a snack food, how would you see them packaged, cooked, presented?

Scenario 4

You are having a relaxed evening meal at home.

1. Who are you with?
2. Write down what you would typically prepare.
3. What role (if any) does vegetables play in this typical meal.
4. How would you ensure you have an adequate vegetable intake.
5. If you were to consciously try to increase your vegetable intake, what would you do?

Part Three: Theory of Planned Behaviour (15 minutes)

Behavioural Beliefs

If you were to increase your vegetable consumption by one serve a day…

1. What do you see as the advantages?
2. What do you see as the disadvantages?
3. Is there anything else you associate with increasing your daily vegetable consumption by one serve daily?

Normative Beliefs

If you were to increase your vegetable consumption by one serve a day…

1. Are there any people, or groups of people that might influence you positively?
2. Are there any people, or groups of people that might influence you negatively?
3. Are there any other groups or people who come to mind when you think about increasing your daily vegetable consumption by one serve daily? What about on a wider scale?

Control Beliefs

I'm going to ask you about factors or circumstances surrounding any decisions to eat more vegies. These might be internal (as in how much control/motivation you have) or external such as certain situations that might encourage or prevent you from eating veg.

1. What factors or circumstances enable or encourage you to increase your vegetable consumption by one serve a day or weekly?
2. What factors or circumstances prevent or make it difficult to increase your vegetable consumption by one serve a day?
3. Are there any other issues that come to mind when you think about increasing your daily vegetable consumption by one serve a day? What sort of things might influence you ie television advertising, government health initiatives.

Or direct questions

1. *How difficult is it to increase your veg intake on a daily basis?*
2. *How confident are you that you could increase your vegetable intake daily.*
3. *Do you think increasing your vegetable intake is up to you?*

4. *What factors beyond your control would prevent you from increasing your vegetable intake daily.*

Part Four: Vegetable Grouping (15 minutes)

We have picture cards of a variety of vegetables.

1. We would like you to put the vegetables into whatever groups you think they belong to.
    - please describe these groups, why do these vegetables belong with each other
2. We would like you to think of potatoes in whatever form you like.
    - When you picture potatoes, what form are they in? (mashed, steamed fried, hasselback etc)?
    - What are your perceptions of potatoes? Do you think they are a vegetable?
    - Lets look at the group of vegetables that includes potatoes. Why have you included the other vegetables with them? Do you see these vegies as a substitute or an accompaniment?
3. Now we would like you to sort the vegie cards into those you associate with breakfast, lunch, dinner and snacks
    - In what form would they come for these meals (raw, frozen, tinned, ready-to-eat pack.
    - How would you typically prepare them, and how big a serve would you usually prepare.

Part Five: General Diet (10 minutes)

Now we would like to have a general discussion about food.

For low & medium veg consumers

1. As part of this study we asked you to record your meals for the week. We would like you to take a step back now and think where in your weekly eating pattern could you increase your vegetable intake. i.e. breaky, lunch, dinner & snacks.
2. How would you incorporate this?
    - Why would that work for you? What's holding you back from doing that now?
    - If vegetables were in a different (more convenient) form would that make it easier for you to incorporate into your meal?
    - What form would that be?

For Everyone

At the beginning of this session we asked you about your favourite meal.

1. a) What is your standard family meal? b) How often would you have such a meal?
2. What is a good meal?
3. When vegetables are a part of your meal are they a minor or major part?
4. Do you like to try new types of vegetables? Or do you have standard veges that you like to stick to?

Appendix D – Seven-day food diary

Cover letter

XXth February 2009

Dear XXXXX,

Food Consumption Study Focus Group

Thank you for agreeing to participate in our research. This letter confirms that you will be taking part in a focus group session at:

Department of Primary Industries & Fisheries
Innovative Food Technologies
19 Hercules Street, Hamilton,

On XX March 2009, at XXXXpm

Please arrive at least 15 minutes prior to your assigned session and report to reception. There is a map of the venue location over the page.

If you require **glasses for reading,** please bring them with you as there will be documents to read and questions which will require a written response. The focus groups will take no longer than one and a half hours and will include discussion and questions about your attitudes and beliefs about food as well as your food eating, shopping and preparing habits.

Please be aware that this session will be recorded for the purpose of accurately recording all information presented during the discussion. Your identity and any contribution you make will remain confidential.

If for some reason you are unable to attend, are delayed in traffic or if you have any further questions, please do not hesitate to contact I-view on 3016 7600.

Yours sincerely Katrina Gething

Consumer scientist

Appendix E – Fridge magnet

What is a serve? Here are some examples

Cereals, breads etc		
2 slices of bread	1 medium bread roll	1 cup cooked rice, pasta, noodles
1 cup porridge	1 cup breakfast cereal flakes	or ½ cup muesli

Vegetables and legumes (choose a variety)		
Starchy vegetables		
1 medium potato or yam	½ medium sweet potato	1 medium parsnip
Dark green leafy vegetables		
½ cup cabbage, spinach, silverbeet, brocolli, cauliflower or brussels sprouts		
Legumes and other vegetables		
1 cup lettuce or salad vegetables	½ cup broad beans, lentils, peas, green beans, zucchini, mushrooms, tomatoes, capsicum, cucumber, sweetcorn, turnips, swede, sprouts, celery, eggplant etc	

Fruit		
1 piece medium sized fruit eg apple, orange, mango, mandarin, banana, pear, peach etc		
2 pieces of smaller fruit eg apricots, kiwi fruit, plums, figs		About 8 strawberries
1 cup diced pieces or canned fruit	½ cup fruit juice	¼ medium melon (rockmelon, honeydew)
Dried fruit eg 4 dried apricots	1½ tablespoons sultanas	About 20 grapes or cherries

Milks, yoghurt, cheese & alternatives		
250 ml glass or one cup of milk (can be fresh, longlife or reconstituted milk)		
½ cup evaporated milk	40g (2 slices) of cheese	250ml (1 cup custard)
200g (1 small carton) of yoghurt, plain or fruit, *or, as an alternative try:*		
a cup of calcium-fortified soy milk	1 cup almonds	½ cup pink salmon with bones

Meat, fish, poultry & alternatives		
65-100gm cooked meat or chicken (eg ½ cup mince, 2 small chops or 2 slices roast meat)		
80-120g cooked fish fillet, *or, as an alternative try:*		
2 small eggs	½ cup cooked (dried) beans, lentils, chick peas, split peas or canned beans	1/3 cup peanuts or almonds

Extras Foods which we can occasionally include for variety. They are generally higher in fat and/or sugar, kilojoules, salt etc		
1 medium piece of plain cake or 1 bun	3-4 sweet biscuits	Half a chocolate bar
60g jam, honey (1 tablespoon)	30g potato crisps	Slice pizza = 2 extras
1 can soft drink or 2 glasses cordial	2 scoops icecream	1 meat pie or pasty = 3 extras
2 standard glasses of alcohol (for adults only)		

Appendix F – Meal specific vegetables

		Comments
Breakfast	Mushroom Tomato Potato Spinach Onion Asparagus	Also juicing vegetables Anything that can be fried and served with eggs
Lunch	All vegetables except brassica, squash and starchy vegetables such as potato	Mostly raw in summer, in a soup for winter, or in a frittata/quiche
Evening meal	All vegetables	
Snacks	Carrots Celery Cucumber Beans Capsicum Corn Cherry tomatoes Snow peas Asparagus zucchini	Anything that can be dipped Anything that doesn't have to be cooked

Appendix G – Vegetable grouping

	Common grouping descriptions	Main grouping	Groupings
Parents with young children			
Low vegetable consumers	What children dislike/what we eat Colour Preparation/cooking style Raw Carbohydrate Traditional vs modern Knowing how to cook them	What children dislike/what we eat Other descriptions of this group included: common, available, taste good, cheap, Other descriptions include: need to be inventive, disguise in cooking. Other descriptions include: unfamiliar, taste funny,	**What children like** *Pumpkin* *Cucumber* *Capsicum* *Sweet potato* *Peas* *Snowpea* *Potato* *Tomato* *Corn* *Salad* *Carrot* **Outside chance children will eat them** *Zucchini* *Beans* *Broccoli* *Cauliflower* *Spinach* **Children hate them and parent dislike them** *Onions* *Asian greens,* *Mixed vegetables* *Brussel sprouts* *Turnips* *Squash* *Cabbage* *Beetroot* *Asparagus* *Eggplant*

	Common grouping descriptions	Main grouping	Groupings
Medium vegetable consumers	Colour Root vegetable Carbohydrate What I like/dislike What goes together in a recipe	What goes together in a meal Other descriptions include: readily available, easy to eat raw, colour, easy to prepare, deteriorates quickly. Other descriptions: yummy, the Jaimie Oliver pile, real English food, high carbohydrate, comfort food. Other descriptions: gross, mundane.	**Salad** *Salad leaves* *Beetroot* *Cucumber* *Snow peas* *Capsicum* *Celery* *Spinach* *Tomato* *Carrot* *Mushroom* **Roasted** *Turnip* *Sweet potato* *Potato* *Pumpkin* **Steamed** *Peas* *Cauliflower* *Broccoli* *Corn* *Asparagus* *Brussle sprouts* *Squash* *Beans*
	Common grouping descriptions	**Main grouping**	**Groupings**
High vegetable consumers	Cooked/raw Seasonal Starchy/leafy Colour What kids will/will not eat Flavourful Grown above/below ground Preparation	Preparation/cooking Other descriptions: green Other descriptions: lighter vegetable, a bit gassy	**Not cooked** *Salad leaves* *Cucumber* **Can be cooked or raw** *Spinach* *Asian greens* *Broccoli* *Peas* *Cabbage*

			Beetroot *Asparagus* *Carrot* *Snow pea* *Capsicum* *Pumpkin* *Beans* *Mushrooms* **Cooked** *Mixed vegetables* *Zucchini* *Brussle sprout* *Corn* *Squash* *Cauliflower* *Turnip* *Eggplant* *Potato* *Sweet potato*
		Other descriptions: heavy vegetables, for roasts, mashed, traditional, staple, not too expensive, filling, hearty, long shelf life.	
Young professionals			
	Common grouping descriptions	**Main grouping**	**Groupings**
Low vegetable consumers	Colour Root/leafy vegetable How to cook/ease of cooking Raw/cooked Storage method	Primarily end use Other descriptions: made to eat as a child Other descriptions: frsh or raw, goes with everything, can't go wrong	**Yuck** *Turnips* *Brussle sprouts* *Cabbage* *Beetroot* **Versatile** *Onions* *Broccoli* *Sweet potato* *Tomato* *Mushroom* *Capsicum* *Salad leaves* *Snow peas* *Corn*

		Other descriptions: not a staple	*Carrot* *Peas* *Potato* *Beans* *Pumpkin* **Occasional use** *Squash* *Celery* *Spinach* *Zucchini* *Cauliflower* *Eggplant* *Asian greens* *Asparagus* *Cucumber*
	Common grouping descriptions	**Main grouping**	**Groupings**
Medium vegetable consumers	Vegetable type How it is grown Colour Fibre Starchy Preparation Shelf life/storage Sald/cooked Central veg or accompaniment Common/novel	End use & like/dislike Other descriptions: fibrous, core vegetable Other descriptions: green Other descriptions: wide range of colour, cooked/uncooked.	**Roast/require cooking** *Pumpkin* *Potato* *Sweet potato* *Turnip* *Squash* *Cauliflower* *Eggplant* *Zucchini* *Brussel sprout* **Raw/green** *Salad leaves* *Celery* *Cucumber* *Tomato* **Versatile** *Capsicum* *Mixed vegetables* *Peas* *Broccoli*

			Asparagus *Beetroot* *Snow peas* *Corn* *Onion* *Carrot* *Celery* *Mushroom* *Cabbage* *Spinach* *Asian greens* *beans*
	Common grouping descriptions	**Main grouping**	**Groupings**
High vegetable consumers	Greens/root vegetables End use Texture (high carb/mushy) Storage Seasonality English traditional/novel	End use Other descriptions: green, good for you, flash cook	**Salad** *Cucumber* *Salad* **Stir fry** *Asparagus* *Asian greens* *Spinach* **Slow cook** *Potato* *Sweet potato* *Pumpkin* **Quick cook** *Peas* *Beans* *Zucchini* *Eggplant* *Corn* **Multi use** *Mixed vegetables* *Celery* *Capsicum* *Tomato* *Mushroom*

		Other descriptions: hated as a child, windy	*Carrots* *Beetroot* *Snow peas* **Brassica** *Cauliflower* *Broccoli* *Brussel sprouts* *Cabbage*