

## **Final Report**

# **Market Opportunity for Vegetable Juices**

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Horizon Consumer Science

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**Project:**

Market Opportunity for Vegetable Juices VG16016

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## Summary

Hort Innovation and the Australian vegetable industry are seeking to understand the market opportunity for vegetable juices.

### Methodology:

Stage 1 of this project involved qualitative research (desk research and focus groups) to explore consumer behaviour and identify strategies that might increase vegetable juice consumption.

In Stage 2, an online survey was administered with a representative sample of Australian consumers to estimate the size and composition of the Australian vegetable juice market and to assess potential to increase consumption among consumers and non-consumers of vegetable juice.

Stage 3 concluded the project with one-on-one qualitative interviews with growers and industry stakeholders to assess which of the opportunities to increase vegetable juice consumption identified in Stage 2 offer the most potential, and how growers and the industry can best realise these opportunities.

### Key findings:

**At present, the vegetable juice market in Australia is small:** consumption is the equivalent of 3% of annual vegetable production in Australia. Only a small number of vegetables are being juiced (carrots, celery, beetroot, cucumber, kale, spinach, and capsicum), while the broad array of vegetables that could be used in juice are either not used or are not popular.

**Most Australians (80%) have tried vegetable juice, but only a small minority (15%) consume it regularly. Regular drinkers of vegetable juice are not mainstream consumers – they tend to have higher disposable incomes, reside in urban centres, and be more health conscious.** Thus, the vegetable juice market is more likely to be a “mature” market than one with high growth potential, because there aren't are few Australians that haven't tried vegetable juice.

There are some significant barriers to vegetable juice consumption and broaden the consumer base. On its own, with the exception of perhaps carrot and tomato juice, **there is a perception that vegetable juice does not taste good. In addition, vegetable juices available for purchase are expensive, often costing significantly more than the other drinks consumers perceive as substitutes.**

However, the research suggests there are a variety of opportunities to increase consumption. A plan has been developed to help industry stakeholders think about the market strategically and, we hope, prompt cooperation and collaboration among the industry, which appears crucial if vegetable juice is to become more than a niche market.

### Key elements of the plan to increase consumption of vegetable juice are:

- Proposed POSITION: Vegetable juice is an easy way to get more vegetables into your diet.
- PRODUCTS that have the potential to succeed with Australian consumers:
  - Products that entice consumers to consume freshly made vegetable juice.
  - Bottled products with low vegetable juice content.
  - Bottled products designed specifically with convenience in mind.
  - An “Australian Farmers' Juice” brand.
- Ways the PRICES of vegetable juices could be improved:
  - Developing products that entice consumers to make juices themselves.
  - Developing bottled products with low vegetable juice content may help to lower prices.

- Growers working directly with juice brands (rather than through intermediaries), setting a fixed 12-month price for supply, and developing an industry plan for how to sell more production that doesn't meet size/shape standards.
- The creation of an Australian grower juice brand.
- Activities and methods that are best utilised to PROMOTE vegetable juice:
  - Increased media investment through collaboration to raise awareness and consumption.
  - Long term tastings required for consumers to acquire taste and develop a consumption habit.
- Opportunities to improve WHERE vegetable juices are sold.
  - Relocate vegetable juices to the fresh fruit and vegetable section of supermarkets

## Keywords

Vegetable juice;

Market size;

Market opportunity;

Consumption;

Carrots;

Celery;

Beetroot;

Cucumber;

Kale;

Spinach;

Ginger;

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## Introduction

This project has been undertaken to help Hort Innovation and the Australian vegetable industry to understand the market opportunity for vegetable juices.

Very little was known about the Australian vegetable juice market, what drives consumption, and what potential, if any, the vegetable juice market offers to growers. Moreover, external evidence suggested vegetable juice consumption was growing in Australia. For example:

- Media reports on the beverage industry have noted that Australian consumers are shifting away from large bottle long lasting fruit juices, and towards smaller, fresh juice blends that include fruit AND vegetable juice, resulting in processors moving away from large bottles, plastic and long lasting juice products.
- The visible increase in brands, products and drinks that include vegetable juice appearing within Australian supermarkets, convenience stores and cafes.

The objectives for this project were to:

1. Estimate the size and composition of the vegetable juice market in Australia
2. Identify consumer attitudes toward vegetable juice that are relevant to understanding what drives current juicing behaviour and what might lead to increases in consumption
3. Identify opportunities to increase consumption of vegetable juice in Australia and consider how Australian growers and other stakeholders in the market can best take advantage of these opportunities
4. Provide any other relevant evidence-based information around the potential value of the vegetable juice market to assist with strategic investment decisions in this area.

Expected outcomes for this project were:

- To provide Australian vegetable growers and Hort Innovation with new knowledge about the vegetable juice market in Australia – the size of the vegetable juice market in Australia, the segments it is divided into, and consumer attitudes/motivations/behaviours that are relevant in driving/deterring consumption of vegetable juice in Australia.
- By identifying opportunities to increase the consumption of vegetable juice consumption in Australia and exploring adoption options with growers/relevant stakeholders, enable Australian growers to make informed investment decisions related to vegetable juice opportunities and recommendations from this research.

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# Methodology

This project was conducted in three stages, with each stage of research informing the next.

## **STAGE 1**

In Stage 1, qualitative research was conducted to explore vegetable juice behaviour and identify strategies that might increase vegetable juice consumption.

Stage 1 consisted of two components:

- Secondary research
  - Online desk research and retail audits to identify the types of vegetable juice products that are available for consumers to purchase and what publicly available commentary and advice exists for vegetable juice.
- Focus groups with vegetable juice consumers and non-consumers (who consume vegetables in other forms) to:
  - Provide insight into how vegetable juice consumers consume vegetable juices, what motivates them to do so, and things they do with vegetable juice that could be packaged/marketed to other consumers.
  - To find out what stops those who do not consume vegetable juice from doing so and what might persuade non-users to consume vegetable juice.
  - Use the contrast between those who are consuming vegetable juice with those who are not, to identify likely barriers that might be overcome.
- A total of 20 focus group discussions were held in five capital cities in Australia (see below).

FOCUS GROUP LOCATIONS AND COMPOSITION	Vegetable juice consumers		NON-vegetable juice consumers		TOTAL
	Men	Women	Men	Women	
Melbourne	1	1	1	1	4
Sydney	1	1	1	1	4
Brisbane	1	1	1	1	4
Adelaide	1	1	1	1	4
Perth	1	1	1	1	4
<b>TOTAL</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>20</b>

## **STAGE 2**

In Stage 2, quantitative research was conducted to:

- Estimate the size of the vegetable juice market and what segments the market is divided into.
- Identify what motivates consumers to consume vegetable juice separately for each segment of the market.
- Identify what potential exists to increase consumption of vegetable juices in Australia.

To achieve this goal, an online survey was administered with:

- A representative sample of Australian consumers to estimate the incidence of vegetable juice consumption in Australia and assess what potential exists to increase consumption among both consumers AND non-consumers of vegetable juice.
  - A total of 2138 Australian consumers, sampled and weighted to match ABS statistics (age, gender, residency, education levels, and household income), were surveyed.
- Australians who have consumed vegetable juice, to estimate the quantity of vegetable juice consumed in Australia, the various ways in which vegetable juice is consumed and the different user segments within the market.
  - A total of 1,801 vegetable juice consumers were surveyed, 864 who had consumed in the past month, 937 who have past experience consuming vegetable juice.

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The questionnaire covered the following topics:

- “Vegetable juice” was defined for respondents at the beginning of the survey as:  
*Any liquid that includes uncooked vegetables or herbs as one of its ingredients, even if it only makes up a small part. It might contain other things, such as fruit or flavours or protein powders or water. It might turn the whole vegetable into a liquid or just extract the juice from the vegetable and remove the pulp. As long as it is liquid and contains at least one uncooked vegetable or herb, it is what we mean by “vegetable juice” in this survey.*
- Consumption of vegetable juice
- When was the last time, if ever, vegetable juice has been consumed
- If consumed vegetable juice in the past month:
  - How many times in the past month
  - Whether vegetable juice consumption changes according to the season
  - For the most recent occasion when vegetable juice was consumed:
    - Type of vegetable juice consumed – juice, smoothie, ingredient etc.
    - Purchased vs. home-made
    - If purchased, where from and what brand
    - If home-made, equipment used to make the juice
    - Quantity consumed
    - Vegetables and herbs included and % of total volume accounted for
    - Other ingredients and % of total volume accounted for
    - Consumption day part
    - Consumption occasion (meal accompaniment, meal replacement, snack etc)
- Vegetables consumed in the past month, in any form, likes and dislikes of eating each, desire to consume more, perceptions of how well would go in juice
- Estimated number of servings of vegetables consumed in an average day, by meal occasions
- Reasons for consuming vegetable juice
- Satisfaction with commercially available vegetable juices
- Barriers/potential drivers of consumption/increased consumption of vegetable juice
- General attitudes surrounding juice consumption – lifestyle factors, self perceptions
- Demographic characteristics

Please refer to the Stage 2 report for details surrounding sampling, weighting, and how the market size estimates were calculated.

### **STAGE 3**

In Stage 3, qualitative research was conducted to:

- Assess the ability of growers and relevant stakeholders to adopt the opportunities identified in Stage 2.
- Identify which vegetable juice opportunities offer the most potential for growers, either directly or through increased demand from the supply chain (juicers).

A total of 10 industry stakeholders were interviewed via phone in Stage 3:

- 4 Australian vegetable growers from a variety of states across Australia that grow vegetables prominent in vegetable juice (carrots, cucumber, spinach, kale, etc.)
- 6 industry stakeholders responsible for:
  - Chilled juices at a major supermarket chain
  - A national chain of juice bars that also retails bottled juices and juice packs in supermarkets
  - Vegetable juice brands that are sold in a variety of retail locations
  - Health and nutrition advice/advocacy – CSIRO’s Food and Nutrition Flagship

Industry stakeholders were sent the Stage 2 report in advance of the interview to review. Interviews took 30-40 minutes and explored reaction to the outputs from the research and the requirements/capabilities/interests of growers and the industry.

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## Outputs

The project outputs for this project are:

1. The Stage 1 report, which explores the following topics:
  - a. How Australian consumers consume vegetable juice and the motivations that drive this usage
  - b. The types of vegetable juice products that are available for consumers to purchase
  - c. What publicly available commentary and advice exists for vegetable juice
  - d. If there are qualities that lead to perceptions of certain vegetables considered to be more appealing for juicing than another, and if there are opportunities to change these perceptions.
  - e. What, if anything, differentiates vegetable juice consumers from those that consume vegetables in non-juice form.
  - f. If consuming vegetable juice leads to increased consumption of vegetables overall, or cannibalises consumption of vegetables in non-juice form
  - g. What might persuade consumers to consume more vegetable juice and what the effects of this additional juice consumption would be on their other vegetable consumption.
2. The Stage 2 report, which estimates:
  - a. The size and composition of the Australian vegetable juice market
  - b. The potential to grow the Australian vegetable juice market
3. The Stage 3 report, which:
  - a. Identifies which vegetable juice opportunities identified by the consumer research in Stage 2 offer potential increase vegetable juice consumption.
  - b. Provides a plan for how growers and the industry can best realise these opportunities. The plan for vegetable juice considers the following elements:
    - i. POSITION– Position happens in the minds of the consumers – it is what vegetable juice represents to them. It requires an understanding of what needs vegetable juice can fulfil for consumers and emphasizing these as much as possible.
    - ii. PRODUCT – Vegetable juice products that have the potential to succeed with Australian consumers. This includes which vegetables, product types (do it yourself vs bottled vs made fresh), branding and packaging have the most potential to appeal to consumers.
    - iii. PRICE – How vegetable juice prices are set and how well they match consumer expectations. Which, if any, cost elements of vegetable juices can be developed/improved/made more efficient?
    - iv. PROMOTION – Which activities and methods are best utilised to increase consumption of vegetable juice.
    - v. PLACEMENT – Where (physical locations) are vegetable juices sold currently and whether there are opportunities to improve on this.

All three reports in their entirety are included as appendices of this final report.

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## Outcomes

The findings from this research (as outlined in the Stage 1, 2, and 3 reports that are attached to this final report) achieved all outlined objectives for this project, by providing Australian vegetable growers and Hort Innovation with new knowledge about the vegetable juice market in Australia. More specifically:

- The size of the vegetable juice market in Australia
- The segments it is divided into
- Consumer attitudes/motivations/behaviours that are relevant in driving/deterring consumption of vegetable juice in Australia
- Opportunities that exist to increase vegetable juice consumption
- A plan for how the industry can best realise the opportunities.

The potential long-term outcome of this project will be an increase in vegetable juice consumption. However, an increase in consumption attributable (at least in part) to this project will only occur if industry stakeholders and/or growers, act on the project findings.

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## Evaluation and discussion

This project has been very effective in addressing the key objectives to:

1. Estimate the size and composition of the vegetable juice market in Australia
2. Identify consumer attitudes toward vegetable juice that are relevant to understanding what drives current juicing behaviour and what might lead to increases in consumption
3. Identify opportunities to increase consumption of vegetable juice in Australia and consider how Australian growers and other stakeholders in the market can best take advantage of these opportunities
4. Provide any other relevant evidence-based information around the potential value of the vegetable juice market to assist with strategic investment decisions in this area.

To maximize the project's relevance to the vegetable industry, a project reference group of industry representatives was established at the beginning of the project to convene at critical points in the project to provide industry feedback and direction for the project. The reference group had three members – a vegetable grower, an executive from a vegetable juice brand, and the Vegetable Consumer Alignment Specialist from Hort Innovation. The research design devised for this project (conducting the project in three stages, with each stage informing the next) ensured that the valuable and relevant feedback received from the project reference group supported and enhanced the data collected throughout the project. For example, after completing the qualitative research in Stage 1, the project reference group was convened to discuss the key insights from the focus groups/secondary research. The advice and opinions of the group from this session were incorporated when designing the questionnaire for Stage 2, which had the important task of estimating the size and the composition of the vegetable juice market in Australia.

The staged approach of this project also enabled the understanding gained from focus groups with consumers in Stage 1 to be taken into account when designing the quantitative survey in Stage 2. The questionnaire in Stage 2 had the difficult task of estimating the size and the composition of the market. Insight from consumers in Stage 1 was instrumental in providing direction for how best to ask consumers questions about their vegetable juice consumption. For example, in focus groups in Stage 1, we trialed a variety of ways to ask about the volume and content consumed in vegetable juices. Identifying that consumers vary considerably in their ability to recall ingredients and volumes, we designed questions in such a way that consumers who knew the details could include them and those that couldn't could provide a general sense.

To increase the relevance of the research findings further, in Stage 3, growers and industry stakeholders were interviewed about their perspectives on, and their ability to act on, the key findings and opportunities to increase vegetable juice consumption. This final stage of research added weight and industry perspectives from relevant stakeholders to the final recommendations.

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## Recommendations

Topline findings:

Approximately **93,000 tonnes** of vegetables (or **3% of total annual vegetable production** in Australia) are consumed in juice form each year in Australia. The majority of this consumption is via commercial products. **48% is pre-packaged and 23% made fresh to order. The balance of 29% goes to home made juices.**

Tomatoes (29%), carrots (24%), celery (11%), beetroot (10%), cucumber (6%) and kale (4%) account for the vast majority of vegetables consumed as juice. All other vegetables and herbs account for the balance of 16% of consumption.

**About 50% of daily consumption occurs in the morning**, with about 1/3 of those consuming in the morning having it with breakfast and about one quarter of these people actually having it as a meal replacement. Overall, about 30% of consumption is as an accompaniment to a meal and about 20% is as a meal replacement.

The majority of Australian consumers have some experience of vegetable juice:

- 15% are frequent drinkers, consuming vegetable juice 2-4 times each week or more often. Frequent drinkers account for nearly 80% of current consumption.
- 36% are occasional drinkers, consuming every 2-3 months.
- 30% of consumers have tried it, but not in the past year.
- 20% of consumers aged 16 and over have never tried vegetable juice.

**Our recommendations for the vegetable juice market are:**

### **POSITION**

*Position happens in the minds of the consumers – it is what vegetable juice represents to them. It requires an understanding of what needs vegetable juice can fulfil for consumers and emphasizing these as much as possible.*

Proposed position: Vegetable juice is an easy way to get more vegetables into your diet.

Positioning vegetable juice as an easy way to get more vegetables into the diet, even if it is only a small increase, provides the industry with the scope to challenge key barriers to consumption (taste/cost) and leverage the key strengths (convenience/speed of consumption and suitability for occasions that aren't usually associated with vegetables - breakfast/snacks) of vegetable juice.

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## PRODUCT

*Consider vegetable juice products that have the potential to succeed with Australian consumers. This includes which vegetables, product types (do it yourself vs bottled vs made fresh), branding and packaging have the most potential to appeal to consumers.*

Products that entice consumers to consume freshly made vegetable juice have the best chance of changing perceptions surrounding taste and cost. For example:

- Frozen fresh fruit and veg juice mixes that simply need to be dropped into a juicer
  - These types of packs are already entering the Australian market and, according to supermarkets, are selling well. They are convenient (just drop the pack into a blender), easy (no need to think about how much to put in of each ingredient), are cheaper than bottled juices, and are likely to taste better than bottled alternatives, as the fruit and vegetables are fresh, providing a great platform through which to normalise the inclusion of vegetable in juices.
- Wonky fresh vegetable packs (that include vegetables that don't meet supermarket standards for size and shape) at a discount to higher standard vegetables.
  - Utilising what would otherwise go to waste, these packs could be advertised as being suitable for soups and juices, providing supermarkets with good publicity, Australian growers with another avenue for selling misshapen vegetables, and help to entice Australian consumers to self-make vegetable juice.

Bottled products with low vegetable juice content, to help normalise perceptions of vegetables as a juice ingredient.

- Working with mainstream ambient juice brands to develop fruit juice products that include a small amount of vegetable juice in them (and don't alter the taste markedly or at all) and aren't characterised as "vegetable juice", could help normalise the inclusion of vegetable juice in drinks, and increase acceptance of vegetables as an ingredient in juice.
- The aim of these products will be to get vegetable juice out of the niche corner and nudge people in that direction, by getting them to consume slightly healthier versions of what they are currently drinking, without thinking they are drinking a full fledge vegetable juice.

Bottled products designed specifically with convenience in mind to appeal to mainstream consumers. For example:

- Vegetable juice shots similar in size to Yakult
  - There is an opportunity to develop vegetable juice products for consumers that don't like vegetables. Smaller volume products could be sold at a lower cost, that compares better with fruit juices, and could be positioned as a drink that is quickly consumed in the morning to start off the day on the right foot. Products could come in packs of 5 and include a variety of different vegetable/herb combinations – one for every day of the work/school week.
  - This product aims to generate the following behaviour and attitude:
    - *Flip the lid, drink it down in one gulp, out the door.*
    - *It doesn't matter what it tastes like because you know you are getting x/y/z benefits from it!*
- Multi-packs with variety to suit varying family tastes or allow individuals to consume 1 per day
  - Bottled vegetable juices are usually sold individually, which doesn't seem to take into account varying household tastes, nor do single bottle options help to develop a regular consumption habit. With this in mind, 4 or 6 packs of vegetable juices (one per day) may appeal more to consumers. In addition, mixed packs with juices that have varying levels of vegetable juice content and different mixes will enable consumers to trial a variety of different flavours to assess what mixes suit their tastes, to have different juices each day, and for families to buy packs that will appeal to varying taste preferences in the household (while still adding more vegetables into their diet).

An "Australian Farmers' Juice" brand would have potential if it can lead to lower cost bottled products

- Satisfaction with commercially made juices is reasonably low, even among frequent vegetable juice consumers. An area of potential for increasing consumption involves the creation of a "Australian farmers' brand" that would guarantee the use of only Australian products in vegetable juice.

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- To minimise risk, collaboration among growers within a region to create a multi-function plant would likely make the most financial sense. For example, the proposed Lockyer Valley fruit and vegetable processing facility has been on the cards for a number of years and is yet to come to fruition, it is this type of facility (if built as a multi-purpose operation of which creating “Australian farmers’ brand” vegetable juices is one aspect of production) that could:
  - Pave the way for an Australian grower juice brand to be created.
  - Lower the cost of bottled vegetable juice to consumers, by minimising the number of stakeholders in the process
  - Provide significant benefits to growers in generating revenue from sub-standard produce AND from retail sales.

## PRICE

*Concerns how vegetable juice prices are set and how well they match consumer expectations. Which, if any, cost elements of vegetable juices can be developed/improved/made more efficient?*

The consumer research has confirmed that cost is a strong barrier to consumption for consumers, so any successful efforts to bring down costs are likely to help to broaden the customer base. For example:

- Developing products that entice consumers to make juices themselves (for example, wonky fresh vegetable packs, and freezer juice packs) have the benefit of lowering the cost to consumers (because the vegetables are fresh/not processed and as a result cheaper to buy) and generating a better taste.
- Developing bottled products with low vegetable juice content may help to lower prices, as the majority of the juice content will be fruit juice which is lower cost.
- While most of the cost associated with bottled juices appears to be added once the vegetables leave the farm, growers could help to bring down the cost to consumers by agreeing on a 12-month fixed price for supply with juice brands, working directly with juice brands rather than through intermediaries, and as an industry, reviewing the % of crops being unsold and develop a plan for how to offload more of it (retailing “wonky vege packs”, setting a lower price for juicing vegetables, etc.).
- The creation of an Australian grower juice brand has the potential to remove a lot of inefficiencies in the system and deliver a much lower cost to the consumer (and more revenue to growers). Creating an Australian farmer juice brand would likely require it to be one part of a larger cooperative investment between growers and government/industry stakeholders to create a multi-function plant within a growing region. It will be important to run financial modelling to assess whether lowering the shelf price is possible with an Aussie farmers’ brand.

## PROMOTION

*Which activities and methods are best utilised to promote vegetable juice?*

Increased media investment through collaboration required to raise awareness and consumption.

- All industry stakeholders recognise that without a marketing levy, there is a lack of media investment in the industry to raise awareness and educate Australian consumers about vegetable juice.
- Collaboration is required. Juice brands should consider how they can advocate and educate for vegetable juice as an industry (as no brand can afford to do it on their own). If the horticulture industry were to have a marketing levy, brands could co-invest to grow consumption.
- If the horticulture industry were to have a marketing levy, media could focus on emphasising the position – educating consumers how vegetable juices are an easy way to get more vegetables into their diet.

Long term tastings required for consumers to acquire taste and develop a consumption habit.

- Most Australians have tried vegetable juice before and, for many, their frame of reference is not a positive one, so the task of changing perceptions will not be an easy one, and require consumers to re-evaluate the taste of vegetable AND acquire it.
- Short bursts of in-store tasting are unlikely to have the desired effect and supermarkets confirm that the return on

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investment on in-store tastings has not been good.

- Juice brands could consider collaborating to enable longer term tastings to occur in high traffic areas of big cities, and during the tastings, communicating the position that vegetable juice is an easy way to get more veg into the diet by consuming vegetable juice as a healthy snack or to enhance breakfast. If tastings are conducted over an extended period of time, it increases the likelihood that consumers will acquire the taste, as well as the habit of consuming vegetable juice.

## PLACEMENT

*Where (physical locations) are vegetable juices sold currently and whether there are opportunities to improve on this.*

Relocating vegetable juices to the fresh fruit and vegetable section of supermarkets could be pivotal to raising awareness and consumption.

- Within supermarkets, most vegetable juice products are located in the chilled juices section, mixed in with the fruit juices in the same aisle as yoghurt, cheese, etc. In this aisle, vegetable juices are easily mistaken for fruit juices and if a consumer is avoiding fruit juice because of sugar content concerns, not noticed at all.
- If a fridge full of vegetable juices was located between celery and carrots for example in the fresh vegetable section of the supermarket, it is likely that vegetable juices will be more likely to be noticed, more clearly identified as vegetable juices, and will more clearly emphasise the position – that vegetable juices are a way to get more vegetables into the diet.
- If the major supermarkets could be convinced and/or incentivised to trial the relocation of vegetable juices, it could provide great awareness for the category, help to shift perceptions of it, and increase consumption.

Please review the Stage 3 report at the end of this document, which provides support of the abovementioned recommendations.

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## Scientific refereed publications

None to report.

## Intellectual property/commercialisation

No commercial IP generated.

## Appendices

There are three reports attached to this report:

- Stage 1 report
- Stage 2 report
- Stage 3 report

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# Investigating the Market Opportunity for Vegetable Juices

## Stage 1 Report

Project Number: VG16016

Authors:  
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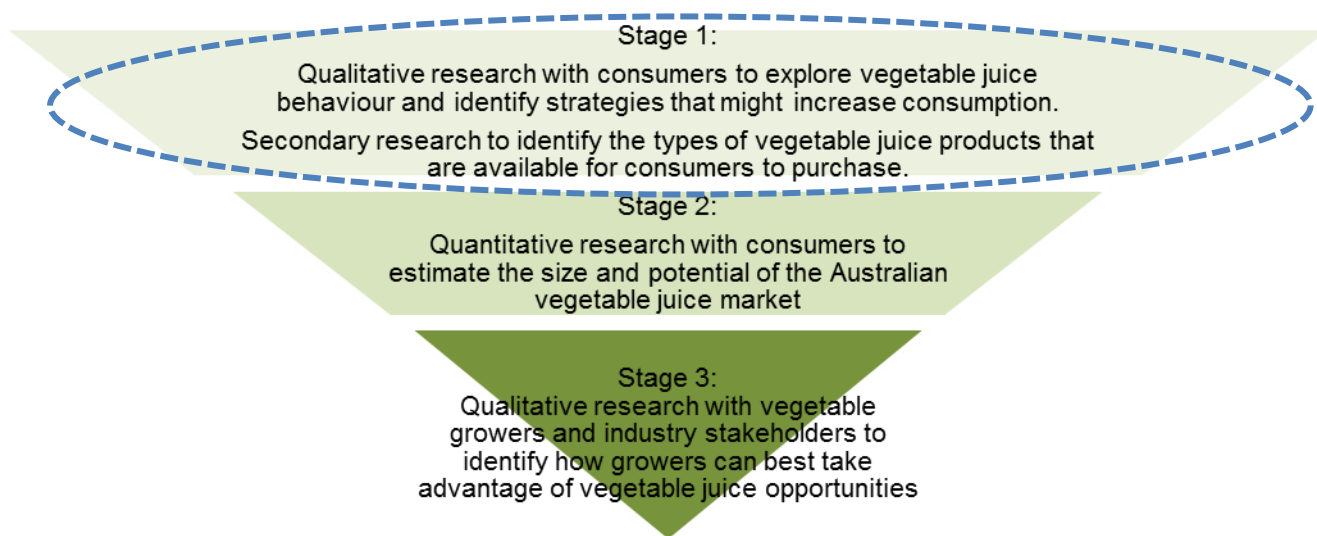
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# OVERALL Project Objectives

1. Estimate the size and composition of the vegetable juice market in Australia
2. Identify consumer attitudes toward vegetable juice that are relevant to understanding what drives current juicing behaviour and what might lead to increases in consumption
3. Identify opportunities to increase consumption of vegetable juice in Australia and consider how Australian growers and other stakeholders in the market can best take advantage of these opportunities
4. Provide any other relevant evidence-based information around the potential value of the vegetable juice market to assist with strategic investment decisions in this area.

## Project Status

This project will be conducted over three stages. Stage 1 of the project is now complete.



## Stage 1 Objectives

Stage 1 aims to explore the following topics:

- How Australian consumers consume vegetable juice and the motivations that drive this usage
- The types of vegetable juice products that are available for consumers to purchase
- What publicly available commentary and advice exists for vegetable juice
- If there are qualities that lead to perceptions of certain vegetables considered to be more appealing for juicing than another, and if there are opportunities to change these perceptions.
- What, if anything, differentiates vegetable juice consumers from those that consume vegetables in non-juice form.
- If consuming vegetable juice leads to increased consumption of vegetables overall, or cannibalises consumption of vegetables in non-juice form
- What might persuade consumers to consume more vegetable juice and what the effects of this additional juice consumption would be on their other vegetable consumption.

For detail surrounding the research methods employed to address the Stage 1 Objectives, see Appendix.

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# Findings from Stage 1

## 1. How Australians consume vegetable juice

Although there are other potential ways of using vegetable juice (such as a flavouring in cooking for instance), vegetable juice consumers are mostly considering it as a straightforward drink. As a drink, they consume in the following ways:

- As a meal replacement (most often breakfast or less commonly, as lunch)
- As a meal accompaniment (with breakfast/lunch/dinner)
- As a snack between meals
- As a healthy alternative to other drinks (coffee, soft drinks, fruit juice, etc.)
- As a way to conceal vegetables in a drink for children.
- As part of a detox diet, where juices are the only food consumed for a few days at a time.

It's important to note that most vegetable juice consumers in the focus groups did not engage in vegetable juice detox diets. Using vegetable juice as a meal replacement for one meal only (usually breakfast) on a regular basis was much more common.

Very few consumers seem to use, or would consider, using vegetable juice in food preparation.

*"I have vegetable juice every morning instead of breakfast. Carrot, apple, lemon, spinach, chia seeds. I make it myself at home."*

*"People in my family take it with them in the car when they're running late, and they'll add a handful of oats into it and say, "Oh, that will keep me from getting hungry."*

*"It can fill you up. Sometimes I skip lunch, as a big veg juice is enough for me."*

*"I jumped on the green smoothie bandwagon. I drink on the way to work as my breakfast and sometimes as a snack on the weekend."*

*"Lunch. Carrot, celery, and apple juice. I had it with a salad sandwich"*

*"I often have vegetable juice in the afternoon as a snack. I go to Boost. I am a sales rep, on the go all the time, so it works for me."*

*"It is a good alternative to having high sugar drinks."*

*"I was drinking a lot of coffee, got hooked on it. Two a day was a lot. So I started juicing for energy and health, and to limit my coffee intake."*

*"I tried it because I was trying to find a healthy drink option rather than a soft drink."*

*"It's a great way to smuggle vegetables into fruit juice for the kids!"*

*"Sometimes my wife and I go a day or two drinking only vegetable juice, as a sort of detox."*

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## 2. The motivations that drive vegetable juice consumption

Most people are drinking vegetable juice not because they like it, but because they believe it benefits their health. Because they believe it benefits their health, there are also psychological benefits, which appear to be significant motivators to underpin long-term/sustained vegetable juice consumption.

The most common psychological benefits are:

- After consuming a vegetable juice, consumers feel better about themselves.
  - o There is broad agreement that consuming more vegetables is good for your health, so in consuming vegetable juice, consumers feel they are doing the right thing for their body. This, and consuming vegetable juice instead of less healthy foods or drinks that are at their disposal, generates a positive frame of mind, and is a significant motivator for most vegetable juice consumers.
- There is a sense of satisfaction in starting the day off on the right foot by having a vegetable juice as the breakfast meal.
  - o Drinking a vegetable juice as or with your breakfast appears to be the most common way of consuming vegetable juices. While not all consumers enjoy the experience of drinking vegetable juice itself, feeling better about yourself because you have done so right at the beginning of the day is a significant motivator. For some, it's about ticking off their 5 daily serves of vegetables immediately (and not having to focus on it for the rest of the day), while others just like feeling healthier in the morning and avoiding the unhealthy breakfast food options.
  - o Consuming vegetable juice in the morning it is not the only time vegetable juice is consumed, so this benefit is not a motivator for all vegetable juice consumers.
- A genuine feeling that a burst of energy is received after drinking vegetable juice, that is on par or superior to stimulants such as coffee.
  - o This psychological benefit appears to be less commonly experienced by vegetable juice consumers than the benefits noted above.

*"Makes me feel good. Not like if I have chocolate – when I feel gross."*

*"You feel you are doing the right thing for your body, it is satisfying."*

*"I feel like I am on track for the day if I have a vegetable juice for breakfast."*

*"It's a good feeling to know you have ticked off your 5 serves of vegetables at the start of the day."*

*"I feel healthier in the morning if I've had a vegetable juice"*

*"I try to not overeat in the morning and avoid bread, but I can do juicing every morning and feel good about myself."*

*"You actually feel a lot better once you've had a good juice. You don't need caffeine."*

*"It's guilt free energy that lasts a lot longer than coffee."*

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Most begin consuming vegetable juice with their health in mind, and those that continue to consume vegetable juice do so primarily because they feel their consumption achieves tangible health benefits.

The perceived health benefits of vegetable juice consumption, according to those that regularly consume vegetable juice, are many and varied. For example, vegetable juice consumption can help to:

- Lose or maintain weight
  - o Consumers note considerable success in losing weight by using vegetable juice as a meal replacement for one meal in the day (and find that it is filling enough to act as one) or consuming vegetable juices instead of soft drinks.
  - o Vegetable juice is also noted as effective for people who have been told by medical professionals that they need to lose weight, by increasing exercise and improving their diet. Whether the vegetable juice is utilised as a way to increase vegetable intake or reduce intake of unhealthy foods, many consider it an effective strategy in losing weight.
- Increase immunity / recovery from illness
  - o Much like having a vegetable soup when sick, some consumers turn to vegetable juices when they are feeling unwell and consider them to be helpful with recovery.
  - o There are also consumers who believe their vegetable juice consumption has helped them to recover from, and manage, serious health issues (cancer, blood pressure, liver, etc.).
  - o In addition, TV documentaries such as "Fat, Sick, and Nearly Dead" that espouse the healing powers of vegetable juice are influential in prompting consumers to try vegetable juice to improve their health.
- Ensure the recommended daily intake of vegetables (5 serves) is being consumed
  - o Awareness of the recommended daily intake of vegetables (5 serves) is reasonably high, but achieving this is not considered easy for many, particularly consumers who don't like eating vegetables or are not active cooks. For many, vegetable juice is the quickest and easiest way to consume 5 serves of vegetables each day, and as the vegetables are juiced in raw form, it ensures more of the nutrients are retained than they are when cooked. In addition, consumers who don't like eating vegetables consider a juice more palatable as it can be quickly consumed.
- Recover from a hangover.
  - o Vegetable juice is not considered a cure as such, but more so something healthy to consume when you are feeling the effects of excessing alcohol consumption, that makes you feel like you are taking positive steps to make up for the unhealthy consumption that has taken place.
- Follow medical advice and reach diet goals
  - o Medical advice to consumers that have gained considerable weight often suggests changes in lifestyle that are difficult to adjust to – increasing exercise and improving diet. For consumers that don't enjoy eating vegetables or find meal preparation challenging, pre-made meals are often not healthy options. Making or buying vegetable juice however, is a much simpler process, and more importantly a quick and efficient way to consume more vegetables and less processed food, which is almost always a component of professional advice.
- Give the body a break
  - o There is a train of thought (which doesn't seem to be back up by medical evidence) that the food we consume in modern life is too much for our liver, organs and/or immune system and that our body needs a break once in a while. As the vegetables are already broken down as juice, drinking rather than eating food is considered a way to provide the body with that break.

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*"I gained a lot of weight, so shifted to drinks more. I've lost 20kgs in the past 6 months or so."*

*"I find that I don't get hungry until lunch time if I have a vegetable juice for breakfast. It's a way to add more vegetables to my diet and keep the weight off."*

*"I've lost about 7kgs in the past 6 weeks. I haven't been as active and gaining weight, and my doctor told me to change things. I've been swimming, walking, and changing what I eat and juicing has helped me to lose that weight and keep it off."*

*"I've had health issues with my liver, and juicing detoxing has helped me. After about 6 months of juicing, I've now had nearly 6 months of headache free."*

*"My blood pressure was a little high about 10 years ago. Found out beetroot is good for that, so that's one of the reason why I started. I enjoy the taste. It isn't a meal replacement for me. It limits the sugar of fruit juice."*

*"I had the flu and started buying V8, I think it helps when I am sick."*

*"I watched the documentary by Joe Cross on Netflix. It's called Fat, Sick, and Nearly Dead. He just drank juice for 60 days. He went to American and did a road with a juicer, and all he did was juice. He got rid of diseases that he had, and I was like, "I wanna get on this juice.""*

*"When my brother got cancer and he got into juicing, he was told he had only 6 months to live and has been doing well for 18 months now. It really is good for you."*

*"It is a way to cram in 5 (vegetables) / 2 (fruits) in one hit."*

*"The best way to achieve the required daily vegetable intake is through juice. I'm pretty sure that there will not be research that says drinking vegetables will be bad for you!"*

*"It's healthy - vegies are boiled to death when cooked and the goodness is thrown out"*

*"Vegetable juice is an easy way to eat more vegetables if you are not a big veggie eater like me."*

*"I drink juice when I'm hung over. A green juice makes me feel less like a horrible human being!"*

*"Good for a hangover. You have a juice to feel human again"*

*"I packed on the weight, my doctor said you gotta change that, so I went to Boost initially, then I got a blender and started making juices, and lost about 10 kgs in 3 months, just by avoiding soft drinks."*

*"Juicing makes it easy for me to eat all the vegies I need to in 1 day. The dietician gives you a wheel and tells you what you need to eat and they don't care how you do it."*

*"Gives the body a break because it is already broken down for you"*

*"When I feel run down, I juice frequently to recover."*

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For vegetable juice consumers, there are also practical reasons to drink vegetables rather than cook, prepare, or eat them. Vegetable juice is:

- Convenient and portable
  - o Particularly in the morning, consumers are often rushing off to work and don't have much time for breakfast. Vegetable juice can be made quickly on the spot (or the night before) and easily consumed on the way to, or while at, work. As it is a drink, there is no cutlery required and consumption can take place while doing other things (driving, working at a computer, etc.). In addition, consumers who are on the road a lot with their work can consume vegetable juice when they are on the road between appointments.
- Quick to make and consume
  - o For some, making a vegetable juice is quicker than cooking/preparing vegetable as meals.
  - o For others, there is appeal in juicing vegetables that they know they should be eating due to their health benefits but they either don't like to eat them or find them difficult to cook with. In these cases, the process of juicing the vegetable and consuming it is quicker than alternative ways to prepare and consume.
- An effective strategy to avoid wasting vegetables
  - o An advantage of juicing is that vegetables don't need to be at their best, so some consumers use juicing as a good strategy to juice leftover vegetables in their fridge that would otherwise be thrown out.
- For parents, a useful strategy to employ to get their kids to eat more vegetables
  - o Parents often find it challenging to get their children to eat vegetables, so creating juices that are a mix of fresh fruit and vegetables is considered as a good strategy to "hide" vegetables in sweet drinks.

*"So easy – just whack everything in a blender and whiz it. That's it!"*

*"If in a hurry, it is a good way to get some nutrition, even if you are not going to have a proper meal."*

*"It's breakfast in the car for me!"*

*"You can take it in the car. It is acceptable to take on the run and still consume in the workplace."*

*"I drink vegetable juice on way to work, for breakfast, if I'm running late. It gives you a bit of a shot, like natural caffeine."*

*"I started juicing for health benefits. Because I don't eat a lot of veggies on a plate I wasn't getting enough. Whereas with my Nutri Bullet I can put in all sorts of vegetables and just drink it. It's so quick, easy, I know I'm getting all my goodness."*

*"Celery is hard to eat raw. Drinking it is much faster, because you don't have to chew."*

*"I juice veggies that I wouldn't cook – beetroot is an effort to cook"*

*"Kale is ordinary, I don't like the taste, so it's easier to drink as a juice"*

*"I try to use what I have left in the fridge. It doesn't taste good sometimes, but at least I don't waste vegetables like I used to."*

*"Juicing reduces waste – I use all the veggies and fruit that are left over in my fridge."*

*"I use whatever is in the fridge that needs juicing, I drink it in the car on the way to work"*

*"I think I started because of my kids, when they were little. I thought juicing was a good way to get some vegetables into them."*

*"Even if the kids drink half a glass that's ok. Kids don't eat enough veg these days, so anything is good."*

*"I got a nutribullet, it's been fantastic, a great to hide veg for the kids."*

*"My kids don't really like vegetables. If you can make it when they aren't looking, maybe they will drink it!"*

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It doesn't appear that anyone likes the taste of vegetable juices when they first start drinking them. Consumers often start consuming vegetable juices that have a reasonably strong fruit component and once the taste is acquired, start exploring higher vegetable content juices. Experimentation with vegetable juice can lead to undrinkable results, as the stronger/savoury flavours of vegetables in juice form can make it difficult to predict whether certain mixes of vegetable juice will suit someone's personal tastes.

Those who do like the taste of vegetable juice come to acquire a taste for them over time. It's worth noting though that not all vegetable juice consumers acquire the taste for vegetable juice even after long term consumption. The feeling after consumption (that you are doing something good for your body) and over time, noting tangible health benefits is what seems to drive longer term consumption of vegetable juices. Taste appears to be a peripheral issue for most vegetable juice consumers. Once a palatable mix is found, it is often stuck to. And even after long time consumption, many vegetable juice consumers add at least a small fruit component to improve the taste of vegetable juice.

*"Over time, we started to like the taste, felt the health benefits, so increased our consumption"*

*"It's good for you. It doesn't matter what it tastes like."*

*"Since starting, I have built up my taste buds so that I can have vegetables with stronger flavours. I started with carrot and apple, but can now do beetroot."*

*"It's definitely an acquired taste. When I started, I had to force spinach and kale down, now I quite like it."*

*"I'm doing it for my health but I need to enjoy it. I can't just keep saying that it is good for me. Luckily over time, I found a balance that worked for me."*

*"If it was purely on taste, I would be drinking coke and milkshakes."*

*"Some vegetables are overpowering. And, some of the watered down ones taste like the water you washed your vegetables in. It's tough in the beginning."*

*"It is the only reason I drink it is because I want to know that I have started the day off on the right foot. I don't really like the taste."*

*"If I want it to taste good, I'll just go for another type of drink."*

*"It is a health, nutritious thing. Fruit juices taste a lot better but that's not why we drink vegetable juice."*

*"It may not taste good in your mouth but it makes you feel good afterwards. A milkshake is the opposite – tastes great at the time, but you feel crap afterwards"*

*"It's risky being adventurous, and better to stick to a small number of ingredients like spinach, kale, banana, mango, berries, cherries. One time I put everything that I could find in the fridge in and it was disgusting!"*

*"I started experimenting, but made so many bad ones."*

*"I experiment a little so end up with a couple of shockers a week!"*

*"Mucked around a little to find something I like and now that I've found it I stick with that."*

*"Tend to stick to combinations that you know work. Once it clicks, you tend to stick with it."*

*"I've wasted a lot of vegies with experimenting going wrong. You have to be familiar. It takes a bit to learn and is easy to make it bad."*

*"When you find a blend that you like, you stick with it."*

*"If you follow recipes, you can create good tastes, but if you experiment, you don't always succeed."*

*"I always have some fruit in the mix. It is too earthy otherwise."*

*"Eliminating the sugar starts off for health reasons and then gradually becomes like you prefer it. Tea is a good example – start to drink it with sugar and then gradually prefer it without sugar. I still have a small amount of fruit in my juices however. 100% vegetable juice is not very nice usually."*

*"When I make juice for my kids, I make them more sweet, but for me I go for stronger vegetable juices that only have a small amount of fruit in them. I don't care too much about what it tastes like, as long as it's good for health. I feel good."*

*"You're drinking for the health benefits, so the taste isn't essential. But you experiment to find ones that are at least mostly to your taste and often you need a small portion of fruit to be involved."*

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There are some additional drawbacks to vegetable juice for consumers that consume them regularly:

- Vegetable juice consumers feel some level of social stigma against vegetable juice
  - o For those that consume vegetable juices in public or while dining with others, there is a sense that many do not understand the benefits of vegetable juice and that others can voice negativity towards the colour, odour and the rationale of drinking vegetable juice at all. Perhaps because of this, many vegetable juice consumers do so on their own, rather than with colleagues and/or friends.
- Commercially made juices are expensive
  - o The cost of vegetable juices is high relative to other drinks and can even be high relative to meals that can be purchased from cafés, takeaway and casual restaurants. This can be a barrier for consumers that have a tight food budget and make regular vegetable juice consumption unappealing from a cost perspective, particularly if they are being purchased as a refreshment or an accompaniment to a meal.
- Like experimenting at home, commercially made juices can be hit and miss
  - o The vast majority of consumers that make their own vegetable juices have made juices that really don't suit their tastes and are difficult to finish. It appears difficult to be certain how a certain mix of vegetables and fruits will taste before trying them. And, that minor variations in proportions can have significant impact on taste. The same applies to commercially made juices. It is difficult to know if you will like it before you taste it. However, the difference is that making a juice yourself doesn't cost as much and you can add flavours to the juice to make it more palatable (you can't do this for a purchased juice). As a result, the high cost of commercial juices can even turn regular vegetable juice consumers off trying/buying them.
- There are concerns about wastage and health benefits of juicers that separate out the pulp
  - o There appears to be a growing sentiment among vegetable juice consumers that juices that remove the pulp (traditional juicers, cold pressed juices, etc.) are inferior to those that retain the pulp in the juice (blenders, etc.) as more nutrients and fibre are retained and there is less waste. As the majority of commercial juices remove the pulp, this can make them less desirable to vegetable juice consumers that have this sentiment.

*"Sometimes are judged for having juice with vegetables in it. Stigma associated with it. All healthy food has this problem."*

*"It's not really a social thing – more of a thing you do alone. It's not something you have when meeting friends out for breakfast or lunch."*

*"People don't understand it – the benefits"*

*"Expensive if you buy it out – 10-15 bucks for a juice!"*

*"I'm not going to pay \$9 for something that tastes like !@#\$. " (from a vegetable juice consumer)*

*"Tend to use the blender these days because there is such a waste from juices that don't include the pulp."*

*"Using a cold press, the pulp is very dry. You can use it for soups, but I don't get around to it often."*

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### 3. The types of vegetable juice products that are available for consumers to purchase

Online and in-store audits of a variety of retail and food service locations in Australia identified fairly broad availability of vegetable juices for purchase. For example, Coles and Woolworths stock a variety of brands that offer vegetable juice products, juice bars and cafes have vegetable juice options, specialist juice stores are present in major cities, and vegetable juices can be purchased online for delivery around Australia. However, it's important to note that the most readily available products for purchase have a strong fruit component – very few are predominantly vegetable juice.

Café juices



Vegetable juices (small bottles) at supermarket cashier



Vegetable juice options at Specialist Juice Bars



Supermarkets: Vegetable juices with fruit juices



#### Online purchase and delivery options for vegetable juices

**ORDER ONLINE FOR DELIVERY TO SYDNEY, BRISBANE, MELBOURNE, CANBERRA, WOLLONGONG, THE GOLD COAST, THE CENTRAL COAST, GEELONG... and more news soon 😊**



Welcome to our 100% Australian organic drinks store.

Home Delivery within 2-4 working days.

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The most readily available vegetable juice products appear to be positioned as “light” vegetable juices and an alternative to “high sugar” and overly processed fruit juices.

Brands stocked by major supermarkets and convenience stores (Nudie, Impressed Juices, The Juice Lab, Real Wholesome Juices, Sommer Naturals, etc.) that have vegetable juice product lines tend to:

- Imply vegetables in their product names (“veggie nudie”, “hail kale”, “green keeper”, etc.) even though these juices include significant fruit juice content (40% or more of the juice content is fruit)
- Highlight what’s not in the juice (no added sugar, preservatives, concentrates, artificial flavours), the freshness of the ingredients and how the natural vitamins/minerals/enzymes are retained through their juicing method (cold pressing, counter current extraction, etc.).

These products appear to be targeting consumers who are purchasing fruit juice less often than they used to, and would consider a healthy alternative that still tastes refreshing and familiar to fruit juice.



Juices that are primarily vegetable juice (that have little or no fruit content) tend to be offered by brands that are less readily available (can only be purchased online or in specialist stores).

These brands (Pressed Juices, Parker’s, Karmic Cold Pressed Juices, Finn, etc.) appear to be targeting consumers who are looking for specific health or wellness benefits from juice rather than a specific taste or a refreshment.

- These vegetable juices tend to be attached to 2-5 day cleanse and/or detox programs. The rationale for these programs is that modern life and consumption is too much for our liver, organs and/or immune system and that our body needs nourishment once in a while to flush toxins, hydrate cells, nourish the body and make you feel better.
- For the individual products and cleanse/detox packs, the messaging focuses on the health properties of the juice (vitamins, antioxidants, iron, magnesium, etc.) and the overall wellness benefits gained (skin, liver, digestion, weight, energy, anti-inflammatory, mood, metabolism, etc.).
- These brands also note the freshness of their ingredients and how their juicing method retains natural characteristics, vitamins, minerals and enzymes.



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A total of 74 different vegetable juice products (from 15 brands) that are available for purchase by the bottle in Australia were evaluated to assess which levy paying vegetables are most prominently included in vegetable juices. Among the products evaluated, the most utilised levy paying vegetables are carrots (31 products), celery (27 products), beetroot (22 products), spinach (21 products), ginger (21 products), cucumber (20 products), and kale (17 products). The majority of products evaluated included fruit content.

Brand/Product Name	VEGETABLES														FRUITS/SPICES/HERBS														
	Carrot	Celery	Beetroot	Ginger	Spinach	Cucumber	Kale	Parsley	Zucchini	Lettuce/Salad Greens	Capsicum	Fennel	Radish	Rhubarb	Apple	Lemon	Pineapple	Banana	Spices (Turmeric, etc)	Coconut Water/Milk	Orange	Pear	Mint	Mango	Spirulina	Blueberries	Lime	Watermelon	Chia Seeds
	31	27	22	21	21	20	17	7	2	3	2	2	1	1	33	22	14	12	13	11	10	10	9	5	5	4	4	3	3
<b>Nudie</b>																													
Veggie Nudie 1	X	X													X	X							X						
Veggie Nudie 2	X			X											X						X								
Super Nudie Green						X	X										X					X		X					
Super Nudie Refresh			X													X						X	X					X	
<b>Boost Juice</b>																													
Mint Condition		X			X	X									X								X						
Veggie Garden	X	X			X	X															X							X	
Two & Five Juice	X	X	X		X	X									X						X								
Pure Eden						X	X								X	X	X	X		X			X						
Red Royale			X												X	X	X		X							X			
Caribbean Green					X												X		X				X						
Grape Escape					X											X	X		X										
<b>Sommer Naturals</b>																													
Hail Kale				X			X								X	X	X												
Carrot Cleanse	X			X											X	X													
Beetroot Sunrise			X	X											X	X													
<b>Parker's Juicery</b>																													
Cleanse I		X			X	X	X	X							X	X									X				
Cleanse II									X						X	X	X	X											
Detox I		X			X	X	X	X								X									X				
Detox II		X			X	X	X	X								X									X				
Nourish II														X	X														X
Nourish III	X			X																	X								
<b>Top Juice</b>																													
Easy Green		X													X	X	X							X					
Green Grin		X				X	X																					X	
Purple Power	X	X																										X	
Super Veg	X	X	X					X																					
Red Rush	X	X	X	X																							X		
Slim Grin		X			X		X								X														
Ruby Green	X	X	X	X																									
Minty Mix		X			X										X								X						
Mango Green Shake					X		X										X		X					X					
Chia Green Protein Shake					X		X												X										X
<b>Karmic Cold Pressed Juice</b>																													
Leafy Green		X			X	X	X									X													
Red Raw	X	X	X													X													
Sun Glow	X	X		X						X						X													
<b>Finn Cold Press</b>																													
Botanica				X	X	X	X								X	X													
Mother Nature		X		X	X	X		X		X						X							X						
Golden Sunrise	X			X												X			X										
Roots	X	X													X	X					X		X						

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Brand/Product Name	VEGETABLES														FRUITS/SPICES/HERBS														
	Carrot	Celery	Beetroot	Ginger	Spinach	Cucumber	Kale	Parsley	Zucchini	Lettuce/Salad Greens	Capsicum	Fennel	Radish	Rhubarb	Apple	Lemon	Pineapple	Banana	Spices (Turmeric, etc)	Coconut Water/Milk	Orange	Pear	Mint	Mango	Spirulina	Blueberries	Lime	Watermelon	Chia Seeds
	31	27	22	21	21	20	17	7	2	3	2	2	1	1	33	22	14	12	13	11	10	10	9	5	5	4	4	3	3
<b>Nutrition Bar</b>																													
Zen						X			X											X									X
Clean & Lean		X		X	X	X		X												X		X							
Loving Earth					X												X						X						
King Kale																	X		X						X				
<b>Sunraysia</b>																													
Organic Carrot Blend	X														X					X									
Bright Eyes	X			X											X					X									
Heart Beet			X												X														
Heads Up	X																				X				X				
<b>Impressed Juices</b>																													
Summer greens					X	X	X								X		X						X						
Ginger ninja	X			X											X			X											
The works		X				X	X	X				X			X	X													
Sunny side up			X													X			X	X									
Glow J	X																			X									
Unearthed	X	X	X									X			X														
<b>Juice Lab</b>																													
Gimme Green					X	X	X								X	X	X	X			X								
Green Light				X	X										X	X					X						X		
I Dream of Greenie		X		X					X									X	X	X	X								
Carrot Top	X															X				X									
Green Keeper	X	X				X		X																					
Unbeetable																			X		X								
Cool Beets			X													X	X	X							X				
Super Power		X		X		X									X	X					X								
<b>Bickford's</b>																													
Harvest Blend Green		X		X	X		X								X														
Harvest Blend Crimson	X		X															X											
<b>Biotta</b>																													
Breuss Vegetable Juice	X	X	X									X																	
Vegetable Juice Cocktail	X	X	X															X											
Carrot Juice	X																												
Beet Juice			X																										
<b>Beet It</b>																													
Sports/Stamina Shot			X													X													
Beetroot/Apple			X												X														
Beetroot/Ginger	X	X	X													X													
Carrot	X																												
<b>Real Blend</b>																													
Spinach & More		X			X										X	X	X							X					
Celery & More		X				X									X	X					X						X		
Red capsicum & More	X			X						X						X		X		X									
Mango & More	X														X			X											
Black Carrot & More	X														X		X	X					X						

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## 4. Perceptions of Commercially Available Vegetable Juice Products

As noted through the retail audits, many of the vegetable juice products available for purchase in general retail and food service (supermarkets, cafes, juice bars, etc.) include a significant fruit component (often 40% or more of the juice content is fruit). High vegetable juice content drinks are available, but they tend to be found in specialist juice stores (for example, Pressed Juices), online, or are possible in juice bars that offer the “make you own” service (for example, Boost).

Concerns about commercial juices in general (relating primarily to fruit juices), that are held by both vegetable juice consumers AND non-consumers, can lead to a bias against, or at least trust issues, with commercial vegetable juices due to most having significant fruit content.

Two factors drive this negative perception of commercial juices:

- Sugar content
  - There is a strong concern about the high levels of sugar in fruit juices which has implications for any commercial vegetable juices that include a fruit component (as noted in the previous section, most commercial vegetable juices do). This can lead to the perception that positives from the vegetable component are cancelled out by the negatives of other aspects of the juice (sugar from fruit, preservatives, not fresh, removal of fibre from the vegetable).
- Nutritional value
  - Among regular juicers, there appears to be agreement that juicing methods that separate the pulp from the juice (cold pressing, centrifugal juicers) are inferior to blending (where the whole fruit/vegetable is juiced) from a health perspective, which means many commercial juices (most tend to be cold pressed and/or free of pulp) are looked on less favourably than eating the fruit/vegetable in whole form. And, among consumers that are not regular juicers, there is confusion about the different juicing methods.

*"The ones you can buy are often too watery or fruity – they taste like lolly water."*

*"Of the commercial juices that I've seen and tried, it's hard to find good ones."*

*"The commercial ones are too sweet. Too much sugar. Reconstituted stuff."*

*"You can't trust the statements of commercial juices. There is a lot of sugar. You have to read the labels."*

*"It's deceptive advertising. You look at the ingredients and it is mostly fruit, not healthy."*

*"A "green smoothie" can be 70% apple, which is alarming."*

*"Boost smoothies are mostly sugar."*

*"Fruit juice has too many calories, we know that."*

*"I don't trust juice in bottles. I'm trying to lose weight and my dietician said to keep away from all juices."*

*"There is probably a lot of sugar in vegetable juice."*

*"Commercial juices are trying to make them taste good more than anything, so you can't trust Boosts and companies like that to make them healthy."*

*"Pressed Juices are getting too mainstream. When you can see them in IGA, then you wonder what is in it if everyone loves it."*

*"Vegetable juices without the pulp are not really popular anymore because the nutrients are taken out. So, now people want the smoothie type – to get the fibre and nutrients."*

*"I'm unclear about the different ways of juicing – does cold pressed mean you keep the fibre or not? I drink fruit juice because I like it, but I'd be drinking vegetable juice for health reasons, so I'd want to know that I am getting a benefit from it."*

*"Juice is better if it is blended. It is filling and has fibre in it."*

*"Because of what you see in media – you are cautious about what you consume and the commercial juices that are available. Is the nutrition there, are the vitamins there, what happens with oxidation? Freshness is an issue."*

*"I tend to buy juices from cafes or places where I can see them being made in front of me, because that way, at least I know what's going in the juice. You can't be sure with the pre-made juices."*

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## 5. Publicly available commentary and advice surrounding vegetable juice

When searching for vegetable juice recipes or diets, there is a lot of information available online to help consumers to make their own vegetable juices.

"I think there are lots of good books, where you can find good recipes."  
 "On the internet you'll find lots of nice recipes, too."

### Do it yourself cleanse recipes



### Vegetable juice recipes from celebrity chefs (Donna Hay, Jamie Oliver, etc.)








DIY juice recipes focussed on specific health benefits – weight loss, heart health, cancer combating, immunity, antioxidants, skin, etc.

Turnip Fennel Juice	Parsnip Carrot Juice	Parsley Energy Explosion
Red Pepper Beauty Juice	Swiss Chard Kale Juice	Eggplant Carrot Juice Recipe
Popeye's Green Juice	Sweet Broccoli Weight Loss Juice	Green Carrot Juice
Cucumber Protein Juice	Tummy Saver Cabbage Juice	Heart Beet and Carrot Juice
The Cancer Killer	Fabulous Fennel Juice	Spicy Tomato Juice
Red Ice	Carrot Onion Zip	Carrot Apple Juice Plus
Ginger Garlic Immune Booster Juice	Allium Antioxidant Juice	Garlic Breath Juice
Red Pepper Bomb Juice	Green Juice Detoxifier	Race Runner
The Hyper House Cleaner	Carrot Sunscreen Juice	Cucumber Wrinkle Reducer Juice
Virgin Caesar Recipe	Tomato Orange Age Restorer Recipe	Broccoli Orange Juice Recipe

Ingredients	Nutrients	Health Benefits
<ul style="list-style-type: none"> <li>• 1/2 turnip</li> <li>• 3 carrots</li> <li>• 1 apple</li> <li>• 1/4 fennel bulb</li> </ul>	<ul style="list-style-type: none"> <li>• Vitamin A (beta-carotene)</li> <li>• Manganese</li> <li>• Vitamin C</li> </ul>	<ul style="list-style-type: none"> <li>• Benefits Eyesight</li> <li>• Detoxifies Liver</li> <li>• Lowers Cholesterol Levels</li> <li>• Prevents Kidney Stones</li> <li>• Reduces Risk of Cancer</li> </ul>

Each recipe makes enough for two portions unless otherwise stated.

<p><b>easy morning</b></p>  <ul style="list-style-type: none"> <li>- 3 carrots</li> <li>- 1 apple</li> <li>- 1/2 orange</li> <li>- 1 celery stick</li> <li>- 1/2 inch (1cm) ginger root</li> </ul> <p>This juice provides you with an invigorating start to the day.</p>	<p><b>NUTRIENTS</b></p> <p>Beta-carotene, folic acid, vitamin C, calcium, magnesium, manganese, phosphorus, potassium, sodium, sulphur</p> <p><b>ENERGY</b> ★★★★★</p> <p><b>DETOX</b> ★★★★★</p> <p><b>IMMUNITY</b> ★★★★★</p> <p><b>DIGESTION</b> ★★★★★</p> <p><b>SKIN</b> ★★★★★</p>
<p><b>carrot cleanser</b></p>  <ul style="list-style-type: none"> <li>- 3 carrots</li> <li>- 1/2 apple</li> <li>- 1/2 orange</li> <li>- 1/4 beet (beetroot)</li> <li>- 1 celery stick</li> <li>- 2 large kale leaves</li> </ul> <p>Any juice using beet or kale can take some getting used to, but once you've had it, you can appreciate its cleansing properties.</p>	<p><b>NUTRIENTS</b></p> <p>Beta-carotene, folic acid, vitamins B3, B6 and C, calcium, iron, magnesium, manganese, phosphorus, potassium, sodium, sulphur</p> <p><b>ENERGY</b> ★★★★★</p> <p><b>DETOX</b> ★★★★★</p> <p><b>IMMUNITY</b> ★★★★★</p> <p><b>DIGESTION</b> ★★★★★</p> <p><b>SKIN</b> ★★★★★</p>
<p><b>cold war</b></p>  <ul style="list-style-type: none"> <li>- 4 carrots</li> <li>- 1 orange</li> <li>- 1/2 inch (1cm) ginger root</li> <li>- 2 cloves garlic</li> </ul> <p>The garlic in here is purely for therapeutic use- to give your immune system a powerful punch in the face of a cold or any other infection. If your chest is feeling congested you could add half an onion.</p>	<p><b>NUTRIENTS</b></p> <p>Beta-carotene, folic acid, vitamin C, calcium, magnesium, phosphorus, potassium, sodium, sulphur</p> <p><b>ENERGY</b> ★★★★★</p> <p><b>DETOX</b> ★★★★★</p> <p><b>IMMUNITY</b> ★★★★★</p> <p><b>DIGESTION</b> ★★★★★</p> <p><b>SKIN</b> ★★★★★</p>
<p><b>veggie carotene catapult</b></p>  <ul style="list-style-type: none"> <li>- 3 carrots</li> <li>- 1 red bell pepper</li> <li>- 1 spear broccoli</li> <li>- 1/2 sweet potato</li> </ul> <p>Superbly rich in anti-ageing and cancer-protective carotenes.</p>	<p><b>NUTRIENTS</b></p> <p>Beta-carotene, folic acid, vitamins B5, C and E, calcium, magnesium, phosphorus, potassium, sodium, sulphur</p> <p><b>ENERGY</b> ★★★★★</p> <p><b>DETOX</b> ★★★★★</p> <p><b>IMMUNITY</b> ★★★★★</p> <p><b>DIGESTION</b> ★★★★★</p> <p><b>SKIN</b> ★★★★★</p>
<p><b>cool'n'pale</b></p>  <ul style="list-style-type: none"> <li>- 1 cucumber</li> <li>- 2 apples</li> </ul> <p>A dreamy shade a green, with a taste to match- this refreshing combination of two highly juicy ingredients is very cleansing on the palate.</p>	<p><b>NUTRIENTS</b></p> <p>Beta-carotene, folic acid, vitamin C, calcium, magnesium, phosphorus, potassium, sulphur</p> <p><b>ENERGY</b> ★★★★★</p> <p><b>DETOX</b> ★★★★★</p> <p><b>IMMUNITY</b> ★★★★★</p> <p><b>DIGESTION</b> ★★★★★</p>

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However, there appears to be negative commentary surrounding vegetable juice detox diets, which may be overshadowing any positives associated with consuming vegetable juice in other ways. For example:



Article title: "Good Food road-test: 'Reboot With Joe' 5-day juice cleanse diet"

*Like everyone, I've read a lot of theories around food, but not a lot of hard facts. About the only thing most people can agree on is that vegies are chockful of good stuff. So why not eliminate everything else and treat my insides to the colonic equivalent of a spring clean?*

**The pros:** *Proved a great conversation starter and talking point among friends.*

**The cons:** *It's expensive (around \$50 a day for the produce); time-consuming (two hours a day in prep/clean-up); and uncomfortable (diarrhoea attacks, wind pains, vegie burps and furry teeth).*

**How hard is it to eat out?** *Utterly impossible - unless you enjoy watching other people eat, and apologising to the next table for the stricken gurgles of your tortured stomach.*

**Did it work?** *Not really. By Day three my energy levels seemed a little higher than normal, and overall I lost a moderate amount of weight (1.9kg), about half of which came back in the first 24 hours afterwards. But I was looking for a far more tangible effect, good or bad.*

**What will you keep?** *I may not eat another vegetable for the next six months. After that, I will probably choose more salads and vegies, and fewer stodgy, processed foods.*

Source: <http://www.goodfood.com.au/eat-out/news/good-food-roadtest-reboot-with-joe-5day-juice-cleanse-diet-20140915-3fq3g>



Article title: "Fancy juice doesn't cleanse the body of toxins"

*"People are interested in this so-called detoxification, but when I ask them what they are trying to get rid of, they aren't really sure," said Dr. James H. Grendell, the chief of the division of gastroenterology, hepatology and nutrition at Winthrop-University Hospital in Mineola, N.Y.*

*"It's hard to understand because there is no good scientific evidence that a juice cleanse, or any other food for that matter, is particularly relevant to removing toxins," he said.*

*This isn't to say that drinking vitamin-rich, antioxidant-filled vegetable juice can't be beneficial for one's health, he added, or function as an effective tool for weight loss or resetting one's habits.*

*And then he got to the inevitable detox claim: Juicing "allows the body to have more of the resources it needs to support the phases of detoxification, and even to begin to help remove the cumulative toxins stored in the body."*

*"What does that even mean?" he said. Exasperated, he stopped reading.*

Source: <http://thenewdaily.com.au/life/wellbeing/2016/04/30/do-juice-cleanses-work/>

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And, there is also plenty of conjecture surrounding the merits of different methods of juicing or of juicing at all, which may confuse consumers about the benefits of vegetable juice.

Article title:

"Health Check: the low-down on eating vs juicing fruit and veg"

*The one clear downside from drinking rather than eating fruits and vegetables is the loss of fibre and other nutrients found in the skin and pulp. But juicing is certainly better than not eating them at all.*

*One other potential downside is that juice is not as filling as eating solid food. And it's easier to drink the equivalent of many pieces of fruit in a few seconds when eating the same amount would take a lot longer, meaning there is more chance of over-consuming unneeded kilojoules.*

*Eating whole fruits and vegetables helps keep appetite in check by making you feel full. These same foods are also nutrient powerhouses, and on a weight-by-weight comparison, have much fewer kilojoules per gram than most other foods commonly eaten.*

*For someone who is battling to keep their weight in check, then two simple positive changes to make are to eat more fruit and vegetables, and to eat them from a plate, not a glass.*

Source: <http://theconversation.com/health-check-the-low-down-on-eating-vs-juicing-fruit-and-veg-18054>

Article title:

"Cold-Pressed Juice: Is It Healthier Or Hype?"

*"There's little to no research that shows whether cold-pressing juice has a significant impact on nutrients overall, or whether it's healthier than regular cold juice.*

*One clear benefit of cold-pressed juice, which could make it live up to its hype, is that the juices are typically wholly made from fruit and vegetables, and are free from added sugars and preservatives.*

*While the nutritional levels in cold-pressed juices could potentially be slightly higher, according to Di Prima (accredited practising dietitian and spokeswoman for the Dietitians Association of Australia), the whole debate is focusing on the wrong point. In fact, drinking juice -- whether it's cold-pressed or regular -- is not as great as we think.*

*"If you eat the whole piece of fresh fruit, you're eating the skin, flesh and possibly the seeds, so you're getting all the fibre and the juices in a controlled portion -- you're not getting the excess sugar from three or four pieces of fruit at one time. If you drink juice you're not going to have the lovely fibre."*

*"When people say to me they want to detox and cleanse their body, I say give up coffee, alcohol, chocolate. Go for just absolute natural, clean foods and drink plenty of water -- that's going to cleanse your body more than a juice cleanse."*

Source: [http://www.huffingtonpost.com.au/2016/04/21/cold-pressed-juice-healthier\\_n\\_9735322.html](http://www.huffingtonpost.com.au/2016/04/21/cold-pressed-juice-healthier_n_9735322.html)

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Finally, general commentary from mainstream sources surrounding how to achieve a healthy diet or how to increase vegetable consumption, situations where vegetable juice could play a positive role, appear to provide vegetable juice with minimal, modest or negative coverage. For example:

- Nutrition Australia has two articles posted on their website in which vegetable juice could feature:
  - “Solutions for using up leftover or ageing vegetables”
    - Of the 18 vegetables covered in the article, only for cucumber and spinach was juicing mentioned as an idea for using leftover or aging vegetables. We know from talking to vegetable juice consumers in the focus groups that helping to avoid waste is a big benefit of juicing.



Source: <http://www.nutritionaustralia.org/national/resource/simple-solutions-using-vegetables>

- “Easy ways to get more vegetables into your diet”
  - This article focuses on different meals in the day and how to increase vegetable consumption in each one.
  - For breakfast, there is no mention of vegetable juice, despite vegetable juice consumers suggesting in the focus groups that consumption of vegetable juice is perhaps at its highest during breakfast.
  - For snacks, there is mention of vegetable juices and a recipe for one:
    - “Make a green smoothie (spinach, finely chopped broccoli, cucumber, carrot and some ginger). Add vegetables to fruit smoothies – avocado adds smoothness; cucumber or cos lettuce work well as water; and spinach adds loads of nutrition without affecting the flavour.”

Source: <http://www.nutritionaustralia.org/national/resource/easy-ways-get-more-fruit-and-veg-your-day>

- On a well-known celebrity chef website, Jamie Oliver, there is an article titled:
  - “Top tips & recipe ideas to reduce your sugar intake”
    - The article focuses on different consumption occasions and provides advice for each.
    - For Breakfast, Snacks and Sweets, and for “How to Make Veggies Exciting for Kids” there is no mention of vegetable juice, despite vegetable juice consumers in the focus groups suggesting that vegetable juice is consumed for all of these reasons.
    - For Drinks, the recommendation is to avoid juicing altogether:
      - “Drink water, limit fruit juice intake, water it down. It’s best to opt for whole fruit and veg most of the time as they contain extra fibre that’s typically removed during the juicing process”



Source: <http://www.jamieoliver.com/news-and-features/features/top-tips-recipe-ideas-to-reduce-your-sugar-intake/>

- In a high circulation food magazine in Australia called Delicious, there are two articles worth noting:
  - “Healthy ways to clean up your diet this summer”
    - The focus of the article is on how to improve your diet and your health. There is no mention of consuming vegetable juice as a way to increase intake of vegetables or avoid unhealthy options. Instead, the article suggests that detox or cleanse diets are not effective and vegetable juice appears to be tarred by this.



- “January is the perfect time to spruce up your diet and spring-clean your health, but that doesn’t mean having to starve yourself or live off green juice, says nutritionist Kate Skinner.”

- “It’s a myth that we need to periodically detox or cleanse”

- Interestingly, the article goes on to suggest that swapping sugar laden snacks and meat for fruit and vegetables and trying to eat a broader array of different vegetables is important. Vegetable juice consumers tell us in the focus groups that vegetable juice helps them to do this, but vegetable juice is not noted here as a viable option.

- “So you take your meat grass-fed and your coffee bullet-proofed”
  - This article provides a tongue in cheek criticism of popular diets (Paleo, Dukan, Vegan, 5:2, etc.) through which vegetable juices are associated, perhaps unfairly.
    - “That virtuous feeling you get after imbibing a metric ton of kale in a single NutriBullet beaker won’t compensate for a bout of explosive diarrhoea.”

Source 1: <http://www.delicious.com.au/food-files/health/article/spring-clean-healthy-ways-tydy-up-diet/0af78c10-7d91-4318-85a0-4502152f65e1>

Source 2: <http://www.delicious.com.au/food-files/health/article/food-fads/943e4345-0d1c-4236-a219-c4fd7f7d65cd>

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## 6. Making your own vs purchasing vegetable juices

Most of the vegetable juice consumers we spoke to address their concerns about the healthiness of commercial juices by making their own juice.

The benefits of do it yourself juicing are:

- Knowing what's going in the juice
  - Consumers can ensure sugar content from fruit is kept to minimum (within 2 serves), there are no preservatives or chemicals included, and they know fresh vegetables are being used.
- A better tasting result
  - This can be achieved because fruit can be included without being concerned that too much sugar is included and it's possible to experiment to find a mix of vegetables that suits the personal tastes of the consumer. It appears that personal tastes can vary considerably and that commercial juices can struggle to meet these, as only slight changes in proportion can change the taste of juices considerably. In addition, most commercial juices have a mix of vegetables and fruits. If one of the ingredients is disliked, it can turn someone off. Making the juice yourself, it is easy to not include that ingredient.
- It's more affordable than buying juices

When purchasing vegetable juices, regular vegetable juice consumers tend to favour blended/make your own juices from juice bars that are made fresh or, if buying pre-made juices, high vegetable content juices (carefully taking note of sugar content on the label) as there appears to be some lack of trust about the healthiness of commercial juices.

*"I make my own. You know what is in there. You can control the quality."*

*"I have two fruits, and the rest veg."*

*"Every morning I'll have a cleansing green juice. I have baby spinach, fresh ginger, celery, parsley, fresh mint, some water, I put some cinnamon in there as well because that's good for your digestion, and I have fresh pineapple, and green apple."*

*"I think it's hard for commercial juices to get the balance to suit, as people's tastes vary so much."*

*"There's no comparison. What you make yourself is fresher and tastes better."*

*"You can control the flavour if you do it yourself."*

*"There is a distinct fresh flavour when you do it yourself or it is made on the spot. When you get it out of the carton or bottle, it's very concentrated and it's got this weird taste."*

*"Some of the juices that you buy have a funky taste. Homemade tastes more refreshing, a cleaner taste."*

*"You need to have the fruit with the veggies because otherwise it's too sour, too bitter."*

*"It is a lot cheaper. I can spend on veggies for whole week what I spend in one day on bought juice."*

*"Coffee costs less than a juice – so can't afford it every day."*

*"\$9.50 for a vegetable juice! How can you charge \$10 for carrot and ginger? I prefer to make it myself."*

*"The juice bars that use fresh fruit and veg are pretty good, but I'm concerned about the products you can buy in the supermarket."*

*"I avoid juices that have fruit in them. Too much sugar."*

*"At Boost Juice, I chose the two fruit and five veggie option, instead of all the other sugary ones."*

*"Cafes that are trying – they are experimenting. Some are very good."*

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## 7. Qualities that lead to certain vegetables being considered more “juice worthy” than others

Vegetables that are consumed raw (salad vegetables), those that have high water content and those that have a sweet/mild flavour are considered “juice worthy” by vegetable juice consumers and non-consumers. These types of vegetables are perceived to be suitable as the main ingredient for a vegetable juice. For example, the following levy paying vegetable suit the main ingredient criteria (consumed raw, water content, sweet/mild flavour):

Carrots



Beetroot



Cucumber



Spinach



Celery



Lettuce/greens



*"They liquefy easily, have sweetness, and are commonly known as good for juicing."*

*"These are the most common used for juicing because they have a subtle flavour, can be eaten raw, have juice content, and are good for your health"*

*"These vegetable taste great as juice, are cheap to buy and are readily available all year."*

*"I've seen them in juices. They have water content, are eaten raw, and their texture may work as a juice."*

There are also vegetables that are considered to have potential as flavour enhancers, that are expected to play a relatively minor role within a juice due to their strong flavour. Ginger is the most readily noted as a flavour enhancer and its popularity seems to be based on its perceived medicinal qualities of ginger and an expectation that in small amounts, its flavour would enhance a juice. There are other strong flavoured vegetables and herbs that are considered appropriate as flavour enhancers, but perceived suitability of these is mixed due to the strong flavours when raw and a lack of experience in tasting them in juices.

Ginger



*"Ginger has good medicinal properties and in the right amounts, adds great flavour to a juice."*

Chilli



Garlic



Parsley



Radish



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There are some differences in the way vegetable juice consumers and non-consumers perceive “juice worthiness” that suggest that perceptions may be influenced somewhat by commercial messages related to vegetable juicing/superfoods and through juicing experience. For example:

- Kale is almost invariably considered a “juice worthy” vegetable by those that consume vegetable juice, even though 5 years ago it was relatively unknown, is not normally eaten raw, has a strong taste, and doesn’t have a high water content. In contrast, non-consumers of vegetable juice are unlikely to consider Kale as “juice worthy” based on their experience of cooking and eating it.

Kale



*"Kale is a super food, and is better than expected in a juice."*  
Vegetable juice consumer

*"Kale is hard to eat when cooked. I can't imagine it being good in a juice."*  
Non-consumer of vegetable juice.

- Rhubarb, pumpkin, and/or sweet potato were much more likely to be considered “juice worthy” by non-consumers of vegetable juice than they were by vegetable juice consumers. For non-consumers of vegetable juice, the sweet taste of these vegetables (based on their eating/cooked experience) qualified them as “juice worthy”, while for vegetable juicers the hard and fibrous quality of these vegetables in raw form counted against them.

Pumpkin



Sweet Potato



Rhubarb



These differences in perception highlight the foreignness of vegetable juice for those who don’t consume it and the difficulty in predicting which vegetables are suitable for juicing. For vegetables that aren’t obvious candidates for juicing, tasting them in juice form (in combinations with other things) will likely be required to alter consumer perceptions. Even vegetable juice consumers recognise that not all vegetables are juiceable and even if they are, the quantity used and what it is combined with is often very important.

*"Fruits call all be juiced, but with vegetables you have to be careful. A lot of vegetables you have to use in moderation. Some you have to avoid completely."*

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Vegetables that are unlikely to be considered “juice worthy” are those that are cooked for practical reasons (rarely eaten raw), so the prospect of drinking their raw juice can be a challenging thought. For example:

- Hard vegetables may not have much juice or flavour if raw

Pumpkin



Sweet Potato



- Fibrous/dry vegetables may lead to an unappealing texture as juice

Eggplant



Leek



Fennel



Green Beans



Sweet Corn



Cauliflower



Broccoli Artichoke



Cabbage



- For some, vegetables that have a strong flavour when raw (garlic, chilli, parsley, etc.) that are used in small amounts in cooking would need to be utilised even more sparingly if used as flavour enhancers in vegetable juice

Chilli



Garlic



Parsley



Radish



Interestingly, Capsicum and Zucchini, which have qualities that tend to align with “juice worthiness” (high water content, subtle flavour, can be eaten raw) were unlikely to be considered juice worthy by vegetable juice consumers and non-consumers. This highlights that even frequent vegetable juice consumers are not experimenting heavily, and that there may be unrealised juicing potential for any levy paying vegetable that has high water content, a subtle flavour, and can be eaten raw.

Capsicum



Zucchini



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## 8. Barriers to consuming vegetable juice

The benefits of vegetables are not in dispute. There is general acceptance that vegetables are one of the few things you can consume without feeling guilty about and that consuming vegetables helps you to feel better. Both vegetable juice consumers and those who eat vegetables only are actively aware of the importance of including vegetables in their diet and most know the daily intake recommendations (5 serves). In addition, many recognise the versatility of vegetables in terms of the different ways you can prepare them and their suitability across a variety of meals – primarily dinner, lunch, and to a lesser extent, snacks.

Vegetable juice consumers seem to differ vegetable juice non-consumers in the sense that they reach a trigger point where they are looking at ways to improve their diet (they need to lose weight, their metabolism is slowing down, they are having health problems, they want to provide a good example for their kids, they want their kids to eat more vegetables, etc.), they identify vegetable juice as an option, and persevere with it for long enough to acquire the taste, find a combination that suits their tastes or experience/feel health and wellbeing benefits that consumption of vegetable juice can offer. There are some consumers who are exceptions to this – they grew up with vegetable juice, particularly tomato, V8 and carrot juice, and over time, their consumption has just morphed into something more.

*"Vegetables are the only thing left that you can eat without feeling guilty about it."*

*"I feel better when I eat vegies. Junk food doesn't feel good."*

*"I can tell the difference in my health if I go a few days without vegies."*

*"You can only eat so much junk food and it all ends up tasting the same. But, vegies have their own unique flavour and there are so many different ways to prepare so they taste different. Also, the cost is lower than the processed junk food."*

*"Vegies do certain things for different parts of your body – nervous system, bones, hair."*

*"It is the whole package with vegies. You eat for the taste, but they are healthy"*

*"Vegetables are the most satisfying low calorie meal you can have"*

*"Every time you see something on TV about health it says to eat more vegetables"*

*"As you get older, you think I'll do it for the greater good. When you are younger you can be more free!"*

*"It's a great way to undo the damage done to my body in my teens, 20s and 30s!"*

*"I'd just had kids and wanted to get healthier and provide a good example for them, so vegetable juice seemed like a good idea."*

*"If you think there is a benefit, you will stick to the task. Protein shakes taste disgusting, but people still drink it because they think it has a positive effect on their body. The same goes with vegetable juice. I don't love the taste of them, but I feel like I am getting a benefit from them."*

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While all consumers agree there is nothing bad about vegetables for your health, consuming vegetables as juice is not intuitive. To engage in vegetable juice consumption is a conscious decision because, for most people, it is against what you normally do or have grown up consuming. So much so, that many struggle to identify how vegetable juice would, or could, fit into their current diet. For example, vegetables are most often an accompaniment to meat/fish or the main meal itself, and vegetable juice doesn't feel like it would work as part of a main meal.

Even if they can envisage how vegetable juice would fit into their diet, consumers who eat vegetables but don't juice them often need convincing about the merits of consuming vegetables in this way. They often enjoy eating vegetables and feel that it would be a waste to juice them. Or, they feel as though they get enough vegetables in their diet, have never really thought about vegetable juice or noticed vegetable juices for purchase. In addition, perceptions of how raw vegetables will taste when juiced lead many to the feeling that consuming vegetables as juice is going to be unappealing, as the savoury/earthy/bitter/spicy/neutral flavours of many vegetables jar with the perception of juice, which is supposed to be sweet and refreshing.

*"Raw vegetables often don't have a distinct flavour whereas fruit works really well as a juice. I can't imagine vegies tasting nice."*

*"When I see kale/spin added to juices I think it's going to be too overpowering. I haven't tried them. Would rather eat vegetables and they taste good that way."*

*"I think of vegetables as hot, comfort food. Not a cold drink."*

*"Feel like vegetables are hard so as juice it's going to be chunky rather than smooth like fruit juice."*

*"Mentally I think vegetables are savoury, so not good a juice. I can't get past that in my mind"*

*"I can't imagine having a veg juice with my cereal"*

*"Sitting down to a drink as your meal is a little weird. Maybe it's ok if you are a single person, but not if you are sitting down with other people."*

*"I would much rather have a Nudie orange juice instead of a vegetable juice. It tastes better and as I don't drink fruit juice much anymore it would only be a treat. Otherwise, I'd rather drink water than a bitter vegetable juice."*

*"If I have to prepare vegies I would much rather make a soup out of it than juice it and drink it. Soup seems like a meal rather than drink. Vegetable juice is drink, not a meal."*

*"When would you eat 10 carrots in a day? Never. I feel like it's wasteful, you can feed 2-3 people for that much, that may only get you 1 cup of juice."*

*"There is no enjoyment in eating them if you drink them."*

*"Eating a raw carrot provides great texture and crunch. If you drink it you lose that."*

*"Vegies don't belong in juice. They are part of a meal."*

*"Chewing is a sense of satisfaction"*

*"I can't imagine the flavour being as good as it is when cooking in a meal."*

*"It's never occurred to me to drink vegetables. I've heard the juicers are hard to clean and I don't need another large appliance."*

*"In the cold drinks section – it is not something that appeals as much as a fruit juice, when I am thinking of a "cool drink." And health is not a thing you think of when you want a thirst quencher."*

*"Juice is mostly a breakfast thing. So, vegetable juice is mostly a breakfast thing too, and I can't imagine having vegetables for breakfast."*

*"I've never noticed any vegetable juices for sale."*

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There are other practical reasons why consumers who eat vegetable but don't juice may not seriously consider consuming vegetable juice. For example:

- They think the health benefits are better if they eat vegetables whole rather than juicing them. It appears that concerns about the health qualities of vegetable juices stem from concerns related to fruit juice – that juices have hidden ingredients, high sugar content, and lack the fibre you get from eating whole fruits/vegetables.
- They feel that consuming vegetable juice is for a specific type of person that differs from themselves – people who don't eat enough vegetables, are looking for quick/easy fixes, or for those with a specific health goal or issue to deal with.
- They balk at the cost of vegetable juices, which are considered high compared to other drinks. The premium pricing makes the prospect of consuming vegetable juices on a regular basis cost prohibitive.

*"Isn't all the goodness in the pulp and that's taken out of the juice?"*

*"You might drink it if you knew 100% that you weren't missing any properties of the vegetables."*

*"Fruit juices are different from the whole fruit. They have more sugar, no fibre. It probably applies to vegetable juice as well. Not as healthy as the whole veg and probably has preservatives."*

*"I prefer to get the goodness of the full vegetable – you don't get that from a juice"*

*"If there was one that had all vegies all mixed up and was chunky then I would probably buy it."*

*"There must be preservatives and sugar in the vegetable juices you can buy. I think that they have hidden ingredients."*

*"If I can buy vegetable juice in its natural form, nothing added or taken away, I would consider it."*

*"Eating vegetables takes longer to digest, so you feel fuller for longer."*

*"I'm conscious of the amount of sugar in my diet. I don't drink fruit juice because of the sugar. There are 6 oranges in one glass, when you'd never eat more than 2. I'm worried about the same thing for vegetable juice"*

*"Of the vegetable juices I've tried, the salt and sugar content seems high"*

*"I don't feel like I have a need or a purpose to drink vegetable juice. I feel that's why people do it, they have a specific health goal."*

*"Personally, I think I eat enough vegetables."*

*"You probably need to target people who don't get enough vegies, or couldn't be bothered cooking, or don't have any time."*

*"I've had some in café and they are nice but it's expensive. Seems like a fad."*

*"The cost puts me off. Cold pressed juices are \$8-\$10 each!"*

*"You probably need to drink it consistently to be a contribution to health. As a premium product I can't afford to buy it regularly."*

*"I would pay for a vegetable juice if it is \$2-\$3, but not \$9."*

*"If vegetable juices were the same price as fruit juices I'd consider it."*

*"It's expensive – 10 carrots for one glass of juice could feed the whole family twice if eaten whole!"*

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There are also consumers who have tried vegetable juice but have not continued doing so because:

- They tried a vegetable juice at some point in their life and really disliked the taste and decided that vegetable juice in any form is not appealing.
- Or, they tried juicing for a period of time, but did not stick with it because they didn't feel the benefits of it and didn't enjoy the taste.

The taste and appearance of vegetable juices can prove a challenge for consumers if they do decide to try them, particularly if they are questioning the health benefits of vegetable juices. Juices that are mostly vegetable juice tend to attract strong negative reactions. As vegetable juice consumers profess to having to work their way up to high vegetable content juice, this is not surprising. In addition, the colour of vegetable juices may impact perceptions as well, with orange juices tending to gain better reactions than green or red juices. Vegetable juices that have fruit content are more acceptable to the palette for non-consumers than 90-100% vegetable juices, but they too receive mixed reactions. It appears that if the fruit component is too noticeable or sweet, it leads to a negative perception based on concerns about the sugar content of fruit juices. However, if the vegetable/fruit combination is refreshing and doesn't leave a residue in the mouth, it tends to lead to a positive perception.

The other challenge for first time consumers is the combinations available for purchase. In general, most juices available on the market tend to include a mix of at least 3-4 vegetables and fruits. Consumers seem to struggle with juice combinations, as there will often be one vegetable present they don't like or the combination of flavours doesn't suit their tastes.

*"After trying one, I couldn't think of anything worse than drinking vegetables."  
"I didn't like the taste. It's hard to find a good taste."  
"I've tried commercially available vegetable juices and haven't liked them"  
"It's a texture thing. I prefer vegetables in a meal. I'd rather drink water or beer."  
"The flavour of vegetable juice is too dominating and concentrated for me"  
"If vegetable juice is sweet, I'm concerned about the sugar"*

*"I have a nutribullet and went crazy with it and dietician said you still have good teeth, don't juice your food, you'll end up overeating and putting on weight. Because you put in too much."  
"I did juicing and I just prefer to eat vegetables"  
"My juicer is like a foot massager! You use it, like it for a short time, but then don't bother with it"*

*"This smells like dirt. I feel I'm drinking dirt."  
"Has anyone bought that a second time? It tastes like dishwater. I would never drink this for pleasure."  
"That's gross. Tastes like the juice in the beet can. Makes you feel a bit sick. That puts you off beetroot altogether and I like beetroot!"  
"Ghastly. Green slime. Who would drink that. I'd drink it if they said it would make me look 5 years younger. People cant do this for pleasure, do it to feel virtuous. It's like a punishment!"  
"It's horrible, so it's clearly good to you!"*

*"The colour green is off putting."  
"The colour (Green) is horrible. It looks like Chlorophyll."  
"Beautiful colour (Orange). All I can taste is the ginger though. If they toned it down, I'd like it."  
"It looks like blood...(Red)."*

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*"I like it. You can actually taste the carrot – that was important to me."*

*"It's very sweet. I'd need to water this down."*

*"This tastes too sweet to be healthy"*

*"Geez, that's nice but is it that healthy? With that much fruit juice, there will be a lot of sugar. You are not actually drinking much vegetable juice."*

*"In combination with fruit, these are generally good but I would look at the nutrition guide before buying."*

*"It's too sweet. It just tastes like apple juice"*

*"This tastes like fruit juice with carrots, so it doesn't feel healthy"*

*"No. I couldn't drink that. It is a mismatch of flavours. Strong toward the end."*

*"I like that. The cucumber especially. I think that would quench my thirst. Definitely not as sweet as the first one. This is clean whereas the first one left a residue on my tongue."*

*"The fruit lifted it. Cucumber and celery – I quite like that taste."*

*"I like it. It's fresh and light. Orange is really good at covering things that don't taste good!"*

*"There are strange combinations in the pre-packaged juices. They seem arbitrary combinations – not necessarily what I like (e.g. I don't like ginger. Or, I don't like tomatoes). It is a drawback to have a lot of different things in it because you are likely to have at least one thing you don't like."*

*"I feel like I've cringed through every juice. Why is that?"*

*"With all of these I think, maybe the ratio is all wrong? I like most of these vegetables but they don't seem to combine well."*

*"If I'm buying juice, I'm going to buy the juice I like. If I want to be healthy, I'll just buy vegies and cook them up and avoid juice altogether. None of these I like enough to buy."*

*"The problem is that only 1 in 5 of these I might drink. If I go to the supermarket and select one and get one I hate, I'd never buy a veg juice again. I'd need to know what combos I'd like."*

*"The ones that are healthiest taste the worst. Fruit juice is naturally sweeter. And, with the added sugar it can very easily sneak up on you."*

*"When you eat vegetables, you get to choose the balance of this and that that you put in your mouth or on your plate. With a commercial juice, you don't have the choice."*

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Finally, there appears to be negative perceptions of vegetable juice and the people that consume it, that for some, lead them to believe that vegetable juice is for other people, not them. For example:

- Vegetable juice is often considered a fad more so than a positive lifestyle/diet choice. That it's more for people who are trying to look "cool" or "trendy" than it is for people to receive health benefits from.
- It's an activity attached to people who are very health conscious, people who are extremists when it comes to being healthy and keeping fit.
- It's an activity engaged in for the wrong reasons – for people who want a quick fix or to feel better about the unhealthy aspects of their consumption/lifestyle.
- Vegetable juice is only required if you have serious health issues or low vegetable intake

*"A large % of people who drink vegetable juice are doing it for a fad."*

*"It's all about image."*

*"I picture someone leaving yoga with their green juice."*

*"It was a fad a couple of years ago, I think it's died away a bit"*

*"The cult of celebrity. It is fashionable on social media. People are looking to be seen, to stand out."*

*"Everyone I know who has done it (vegetable juice), have only done it for a short period of time."*

*"They tend to be health freaks."*

*"People who are ready to compromise on taste if convinced of benefits"*

*"Organic, health conscious, love the gym, and have the time to do it (make juices)"*

*"Young health nut"*

*"Gym goers. Body builders. I see people in gym clothing with fresh vegetable juice all the trim."*

*"Disciplined people would do it!"*

*"They think vegetable juice in the morning justifies the 2 bottles of champagne they had the night before! I've had my juice, so I can do whatever."*

*"Vegetable juice drinkers are under a lot of misconceptions."*

*"For people who go on crash diets. They want their quick fix of veggies. They don't care to have it in a meal. It is a meal replacement."*

*"People want quick and easy ways to be healthy."*

*"People with serious health problems drink vegetable juice."*

*"Health issues or aware they aren't eating enough veggies and need to up their daily intake"*

*"I sometimes think about the 5 serves of veg a day and that I need to eat more. Maybe people drink for that reason."*

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## 9. Likelihood that consuming vegetable juice will cannibalise vegetables consumption overall

Vegetable juice consumers suggest that vegetable juice increased their consumption of vegetables overall, and it did not cannibalise other ways they consume vegetables. For many, reaching 5 serves of vegetables daily was not happening before juicing and juicing is the best way for them to maintain the recommended level of daily consumption.

*"It is good to know you have already ticked that off during breakfast (5 serves of vegetables for the day) but it doesn't mean I stop eating vegetables in other meals."*

*"I also cook vegetables a lot and have them in many different ways, not just in juice."*

*"I have vegetable juice between meals as a refreshment or when I'm tired, so I still eat vegies in other meals as well."*

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## 10. What might persuade Australians to consume, or consume more, vegetable juice

In Stage 1, we focussed on two specific groups of consumers:

- Frequent consumers of vegetable juice
- Consumers who eat a lot of vegetables, but don't consume vegetable juice

While these groups were most relevant to address the objectives of the Stage 1 investigation, they aren't representative of Australian consumers overall. It's also likely that there are Australian consumers that don't eat many vegetables at all (in addition to not consuming vegetable juice). These consumers weren't included in Stage 1, but will be in Stage 2. These consumers may not like vegetables or have other reasons for not eating many vegetables. From what we have seen in Stage 1, it appears likely that all Australians know that vegetables are good for you, are a necessary part of a healthy diet and that they should be eating 5 serves of vegetables per day. In addition, most non-juicers appear to at least be familiar with vegetable juice (many have tried it) and many have the equipment to make it themselves if they so choose. It appears bad taste experiences or expectations, a lack of confidence that they can make acceptable vegetable juices themselves or know what juices to buy, cost, and queries as to the benefits of vegetable juice are the main barriers to tackle to get more people to begin juicing. The Stage 1 investigation suggests that persuading Australians to consume, or consume more, vegetable juice will increase their vegetable consumption overall (not cannibalise other ways they consume vegetables), whether they are coming from a high or a low level of vegetable consumption overall.

Potential avenues to increase vegetable consumption may be:

- Tastings, to enable consumers to try different variations of vegetable juice. Importantly, helping consumers to recognise if there are vegetable juice combinations that they like the taste of. We know that drinking vegetables is not intuitive for those who haven't tried it before. With immediate perceptions often being that many vegetables won't work well as juice and the cost of buying vegetable juices relatively high, it's possible that for those without experience, a purchase is considered too risky. For consumers that have tried vegetable juice, often one bad experience with vegetable juice (it could have been 20 years ago) has put them off all vegetable juice. In both these situations, enabling consumers to taste vegetable juices before buying may increase uptake by enabling them to assess if there are combinations that suit their tastes.

*"Ask them (non-consumers of vegetable juice) to try it more than once, because you might not like it the first time, but it is worth it in the end"*

*"Vegetable juice is not as intuitive as fruit juice. People have to try them. If they try the ones that are sweeter first, then they will be more likely to keep drinking and maybe try the higher concentration juices."*

- Clear information surrounding the benefits of vegetable juices. As noted throughout this report, vegetable juices tend to attract similar criticisms that fruit juices do, perhaps unfairly. Plus, there is limited knowledge about the pros and cons of different methods of juicing. All this can lead to consumers avoiding buying and trying vegetable juices.
- Making it easy for people to make their own – with "juice packs" that contain the required ingredients for a palatable and healthy vegetable juice (that might include fruit). As noted within this report, many vegetable juice consumers make their own juice and include fruits to improve the flavour. As they are making the juice themselves, they include fruit to improve the taste without being worried about the sugar content. In addition, considering that drinking vegetables is not intuitive for many, it's likely that knowledge and confidence in how to make a nutritious and tasty vegetable juice is also low among those not consuming vegetable juice or only purchasing vegetable juices.
- Vegetable juices may be more noticeable and better sellers in different locations within a grocery store. For example, next to or within the fresh fruit and vegetable section rather than with other drinks. As there is a general move away from fruit juices, consumers may not be visiting these shelves of the store as frequently and the proximity with fruit juices may heighten the concerns about the healthiness of the vegetable juices.

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- Considering the concerns surrounding the sugar content of fruit juices and what's missing from juices, perhaps a range of vegetable juice products that are marketed based on their nutritional benefit only may generate demand by being distinctly different to other commercial juices. As noted throughout this report, the most readily available vegetable juices for purchase appear to be positioned as "light" vegetable juices and an alternative to "high sugar" and overly processed fruit juices. However, by including significant fruit content, these juices attract similar concerns that fruit juices do. It's possible that vegetable juice products marketed to provide the following health benefits, ignoring taste, may increase consumption. For example:
  - A range of products that include 5 serves of vegetables and 2 serves of fruit in them. The pulp is included, and there are no other additives. These juices may not taste great, but they are healthier than consuming cooked vegetables and enable you to fulfil the daily recommended serves of vegetables and fruit in one go.
  - A vegetable juice product that is specifically designed for weight loss / weight management. The drink is to be consumed as your breakfast each day. It may not taste great, but it is filling enough to get you to lunch, is all natural, and it provides you with important vitamins and nutrients.
  - A vegetable juice product that is specifically designed to increase immunity or help you recover from illness. The drink is to be consumed at any time, while you are well or sick, and provides you with important vitamins and nutrients to ward off and recover sickness.
  - A vegetable juice product that is specifically designed to help you recover from a hangover. The drink is to be consumed at any time during a hangover and provides you with vitamins and nutrients needed after excess alcohol.

*"Red bull tastes disgusting, but they made a fortune out of it. So maybe vegetable juice doesn't need to taste good. Maybe they need the "red bull gives you wings" type of tag line for vegetable juice that convinces people that it's worth drinking even though it tastes crap. Probably need to avoid sugar as much as possible."*

- In stage 1, we have only talked to people who like vegetables or consume vegetable juice regularly. It's possible there may be an opportunity for people who actually don't like eating vegetables – because vegetable juice is a convenient way to get a lot of vegetables without having to spend much time on the experience. Products designed to specifically target this segment of consumers may increase vegetable juice consumption. For example:
  - A vegetable juice product that is specifically designed for people who do not like eating, or don't eat enough, vegetables. The drink may not taste nice, but it enables you to quickly consume the equivalent of 2-3 serves of vegetables in one go, minimising the time you spend tasting vegetables.

*"If you can concentrate down to shot glass – and I was getting everything I needed for a day – then that would be compelling. I would drink it."*

- Offering an economic incentive to juice vegetables may increase consumption and enable the Australian horticulture industry to generate revenue from vegetables that don't meet the standards of supermarket chains. We know that consumers often juice vegetables to use vegetables that are past their prime in the fridge and close to being thrown out. We also know that a reasonably sizeable proportion of all the vegetables grown in Australia do not meet retailer standards and are not sold as a result. As the vegetables are being transformed into juice, the size and the shape of the vegetable itself is not relevant. If it were possible to provide a display of "juicing vegetables" in supermarkets that are not quite right (don't meet supermarket display standards) but are fine for juicing, and these are sold at a discount to other vegetables, that this might prompt consumers to try juicing.

*"We all came in saying wouldn't drink vegetable juice but now we have tasted it, we would try it. However, people won't experiment much at \$8 - \$9 a bottle. If there are more affordable ways to drink vegetable juice we might be more open to it."*

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- It is possible there is an opportunity for Australian vegetable growers to create their own juice brand, considering trust in the health/quality claims made by current juice brands appears low. There does not appear to be a brand leader in this category and many brands are either negatively impacted by their direct connection to fruit juices or the significant fruit content within their vegetable juices.
- For those already eating a lot of vegetables, they might be persuaded to add some vegetables to their fruit juice or to drink their vegetables at breakfast (i.e. more meal occasions) if they are provided with guidance. As noted, drinking vegetables is not intuitive, so recipe ideas and directions for how to make nutritious and tasty vegetable juices yourself may prompt consumers who like eating vegetables, to explore drinking them as well.
- There might be an opportunity to grow uses other than drinking, although this appears to offer less potential than drinking vegetable juice does, as even frequent consumers of vegetable juice are unlikely to use vegetable juice in other ways as an ingredient in food.

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## Appendix – Stage 1 Method

Stage 1 consisted of two components:

1. Secondary research
  - a. Online desk research and retail audits to identify the types of vegetable juice products that are available for consumers to purchase and what publicly available commentary and advice exists for vegetable juice.
2. Focus groups with vegetable juice consumers and non-consumers (who consume vegetables in other forms) to:
  - a. Provide insight into how vegetable juice consumers consume vegetable juices, what motivates them to do so, and things they do with vegetable juice that could be packaged/marketed to other consumers.
  - b. To find out what stops those who do not consumer vegetable juice from doing so and what might persuade non-users to consume vegetable juice.
  - c. Use the contrast between those who are consuming vegetable juice with those who are not, to identify *likely* barriers that might be overcome.

A total of 20 focus group discussions were held in five capital cities in Australia (see below).

FOCUS GROUP LOCATIONS AND COMPOSITION	Vegetable juice consumers		NON-vegetable juice consumers		TOTAL
	Men	Women	Men	Women	
Melbourne	1	1	1	1	4
Sydney	1	1	1	1	4
Brisbane	1	1	1	1	4
Adelaide	1	1	1	1	4
Perth	1	1	1	1	4
<b>TOTAL</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>20</b>

Each focus group discussion was 2 hours in duration and contained 8 participants. The discussions covered the following topics:

- Perceptions of vegetables overall
- Uses of vegetable juice and the products available for purchase
- Pros and cons of vegetable juice
  - Reasons why people consume vegetable juice
  - Reasons why people don't consume vegetable juice
- Perceptions of specific vegetables and their "juice worthiness"
- Tasting of a range of commercially available vegetable juices, from no fruit content to high fruit content.
- Advice for the vegetable industry to increase vegetable juice consumption

It is important to note that in Stage 1, it is not necessary to ensure the groups are representative of the Australian population. Rather, the priority is to engage with vegetable juice consumers (who could be a very small subset of the Australian population), to understand what drives their behaviour and what might prompt non-juice consumers to engage in the same behaviour. It's only when sizing the market and assessing the opportunity (what we will be doing in Stage 2) when it is important for the sample to be representative of the Australian population.

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# HORIZON

## CONSUMER SCIENCE

### Market Opportunity for Vegetable Juices (VG16016 )

This project has been funded by Hort Innovation, using the Vegetable research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture.



## Stage 2 Report: Estimating the size and potential of the Australian vegetable juice market

18 September, 2017

Prepared by:  
HORIZON CONSUMER SCIENCE

Prepared for: **Hort  
Innovation**

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# Executive Summary

- Approximately 98,000 tonnes of vegetables are consumed in juice form each year in Australia
  - This is approximately 3% of the total annual production of vegetables in Australia.
  - The majority of this consumption is via commercial products – 48% is pre-packaged and 23% made fresh to order. The balance of 29% is home made.
  - Tomatoes (29%), carrots (24%), celery (11%), beetroot (10%), cucumber (6%) and kale (4%) account for the vast majority of vegetables consumed as juice. All other vegetables and herbs account for the balance of 16% of consumption.
  - Juices with vegetables in them account for 59% of consumption occasions. Smoothies account for 29% of consumption occasions. Ingredient uses, e.g. in sauces, soups, marinades, alcoholic drinks or other flavouring uses account for a total 12% of consumption occasions.
  - Australians consume about 325ml of vegetable juice at each consumption occasion. This is made up, on average, of 56% of vegetables, 25% fruits, 6% herbs and 12% other ingredients, which can include other liquids such as water, coconut water, soy milk, almond milk as well as additives such as protein powders and other flavourings etc.
  - There appears to be fairly minor seasonal variation in consumption of vegetable juice with consumption slightly higher in Spring and Summer than in Autumn and Winter.
  - About 50% of daily consumption occurs in the morning, with about 1/3 of those consuming in the morning having it with breakfast and about one quarter of these people actually having it as a meal replacement. Overall, about 30% of consumption is as an accompaniment to a meal and about 20% is as a meal replacement.

3

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# Executive Summary

- The majority of Australian consumers have some experience of vegetable juice:
  - Only 20% of consumers aged 16 and over have never tried vegetable juice. 30% of consumers have tried it, but not in the past year. 36% are occasional drinkers, consuming every 2-3 months. 15% are frequent drinkers, consuming vegetable juice 2-4 times each week or more often. Frequent drinkers account for nearly 80% of current consumption.
- The primary motivation for drinking vegetable juice is to feel healthy by choosing a healthy alternative to other drinks and as a quick and convenient way of consuming the quantity of vegetables that most people know they should be consuming.
  - More frequent consumers of vegetable juices tend to be more health conscious and more active physically than those who don't.
- There are also significant numbers of consumers who are motivated by a specific goal or triggering event in their lives such as the desire to lose weight, to detox, or to recover from illness.
- The primary barriers to consuming vegetable juice, or consuming more of it, are the taste, the expense of store-bought products, the perceived effort involved in making the juice at home. Interestingly, vegetable juices seem to be an acquired taste, one that frequent consumers have taken the trouble to develop.
- Lack of access to the right equipment is rarely a barrier to the consumption of vegetable juice. 70% of those who have never tried have access to some kind of device that could be used to make vegetable juice, with a food processor or an electric blender being the most likely pieces of equipment.
  - There are some attitudinal barriers related to equipment, however, with more non-consumers feeling that it is wasteful to consume vegetable juices that exclude the pulp.
- Consumers who rarely or never drink vegetable juice express a preference for eating their vegetables. And, although they believe they are getting enough vegetables in their diet, it appears that they are not. Only frequent vegetable juice consumers appear to be getting 5 servings per day in their diet, across vegetable juice and eaten vegetables.

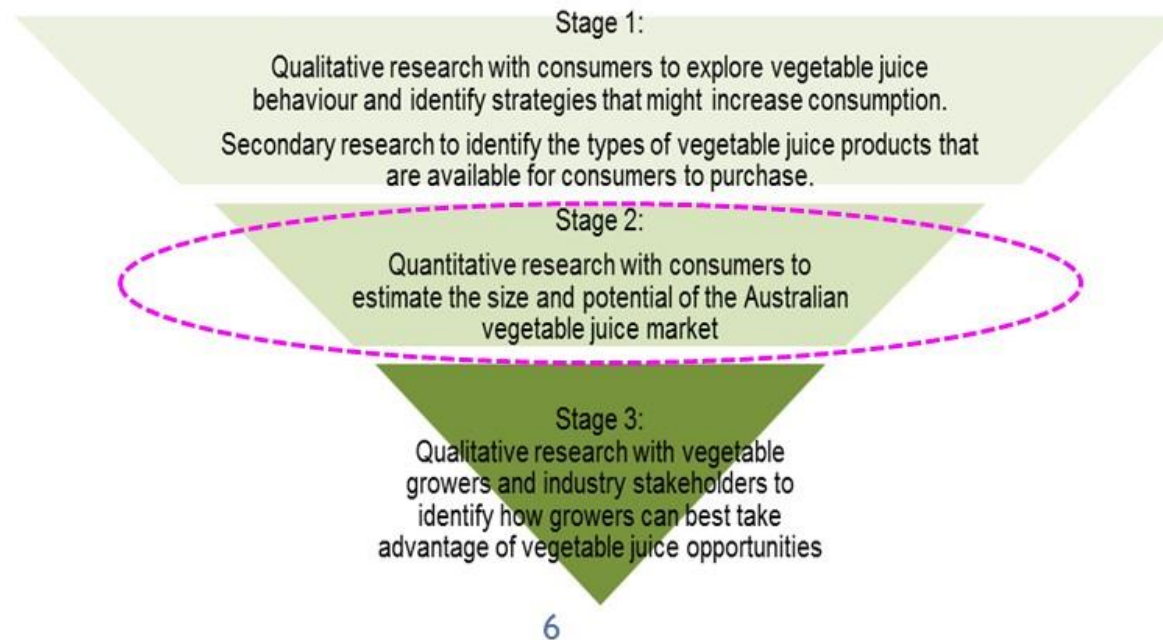
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# Executive Summary

- A substantial opportunity for increasing the consumption of vegetable juice appears to be in convincing consumers that it is an easy way to get their daily requirement of vegetables
  - Frequent consumers of vegetable juice believe it is a quick way of consuming lots of vegetables.
    - The results of this research bear them out. Non-consumers of vegetable juice are unlikely to be achieving their 5 serves of vegetables per day, but consumers of vegetable juice, even if only occasionally, are more likely to achieve the 5 a day goal.
  - All consumers seem to have a fairly clear idea that a healthy diet involves consumption of 5 servings of vegetables per day, so for those who struggle to do this, especially those who do not like vegetables, vegetable juice is an efficacious way of doing it.
- There also appears to be an opportunity to grow the consumption of herbs through vegetable juice. Among the vegetables and herbs that non-consumers would like to consume more of, herbs such as mint, basil, coriander, parsley and chives.
- Perhaps the key barrier to overcome, however, is the perception that vegetable juices do not taste good.
  - Consumers at all different levels of experience say they would respond most to tastings in supermarkets
- Another area of potential for increasing consumption involves the creation of a “farmer’s brand” that would guarantee the use of only Australian products in vegetable juices.
  - The appeal of such a concept highlights the fact that consumers of vegetable juice are among the consumers who believe most strongly that what they eat determines their health. As a result, they want to ensure that what they are doing to sustain their health is not undercut by anything they are getting in their vegetable juice. They feel like they can trust the Australian grower in this regard.

# Background & Objectives

- Hort Innovation and the Australian vegetable industry is seeking to understand the market opportunity for vegetable juices.
- This project has been designed to be conducted in 3 stages, with each stage informing the next.
- [This report outlines the findings from Stage 2.](#)



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# Background & Objectives

- The objectives of Stage 2 are to:
  1. Estimate the size and composition of the vegetable juice market in Australia
  2. Identify consumer attitudes toward vegetable juice that are relevant to understanding what drives current juicing behaviour and what might lead to increases in consumption
  3. Identify opportunities to increase consumption of vegetable juice in Australia that Australian growers and other stakeholders in the market can action

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# Research Methods Overview

An online survey was administered with:

- A representative sample of Australian consumers

- To estimate the incidence of vegetable juice consumption in Australia and assess what potential exists to increase consumption among both consumers AND non-consumers of vegetable juice.
- A total of 2138 Australian consumers, sampled and weighted to match ABS statistics (age, gender, residency, education levels, and household income), were surveyed.



- Australians who have consumed vegetable juice

- To estimate the quantity of vegetable juice consumed in Australia, the various ways in which vegetable juice is consumed and the different user segments within the market.
- A total of 1,801 vegetable juice consumers were surveyed, 864 who had consumed in the past month, 937 who have past experience consuming vegetable juice.



For more details regarding the research <sup>8</sup> methods, please refer to the Appendix.

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# Estimating the size and composition of the Australian vegetable juice market

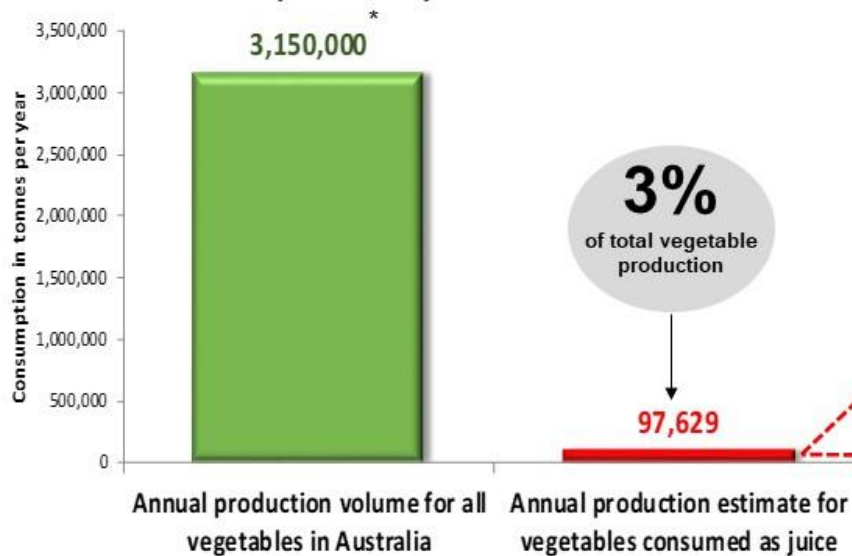
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# The Australian vegetable juice market accounts for 3% of annual vegetable production in Australia

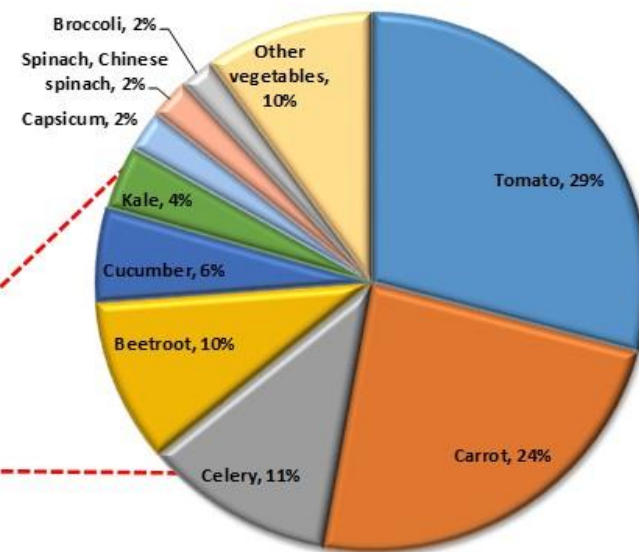
- The vegetable juice market concentrates heavily on 6 vegetables, which helps to explain its small share (3%) of total vegetable production in Australia.
  - Tomato, carrot, celery, beetroot, cucumber, and kale account for 84% of all vegetables consumed as juice by Australians.

**Market size estimate for Vegetable Juice in Australia (in tonnes)**



\* Sourced from the 2014/15 Australian Horticulture Statistics Handbook

**Vegetable juice market share by vegetable**

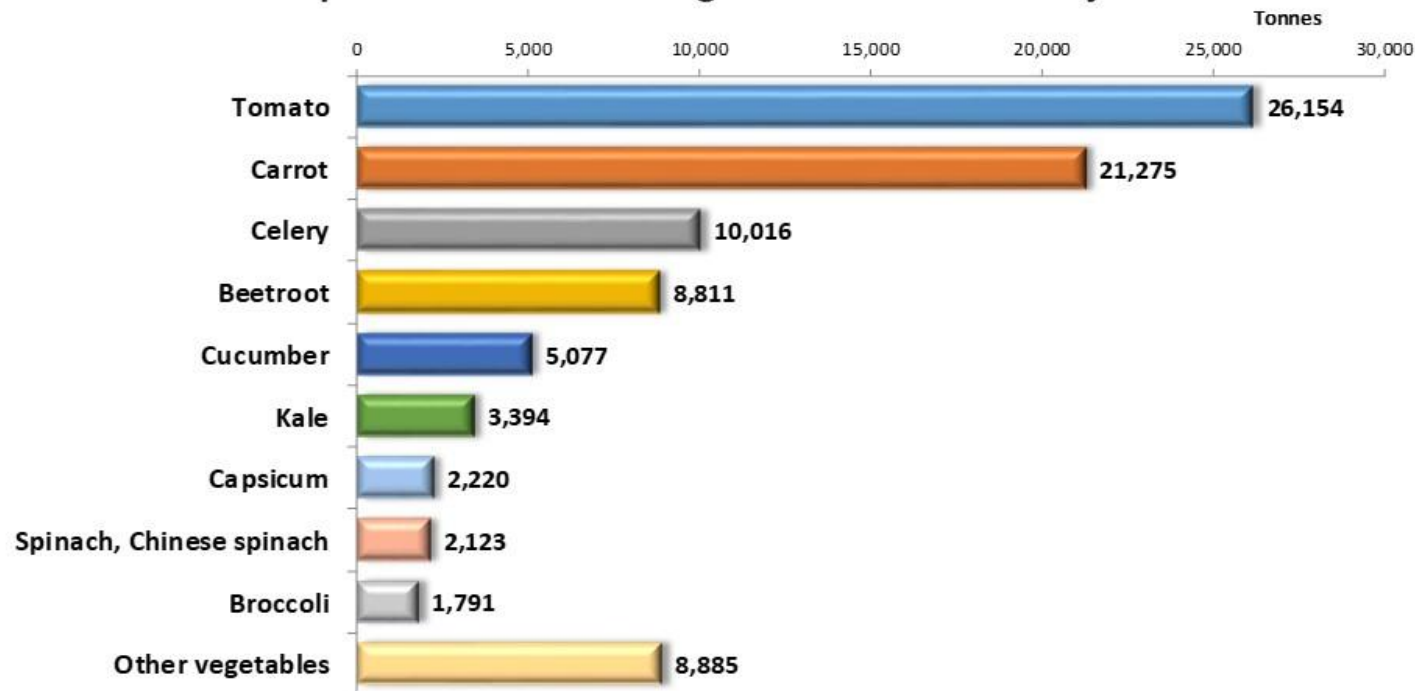


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## Tomatoes and carrots are by far the most utilised vegetables as juice

- For vegetables other than tomatoes, carrots, celery, beetroot, cucumber and kale, annual production volume consumed as juice is 2,000 tonnes or less.

### Annual consumption estimates for vegetables consumed as juice

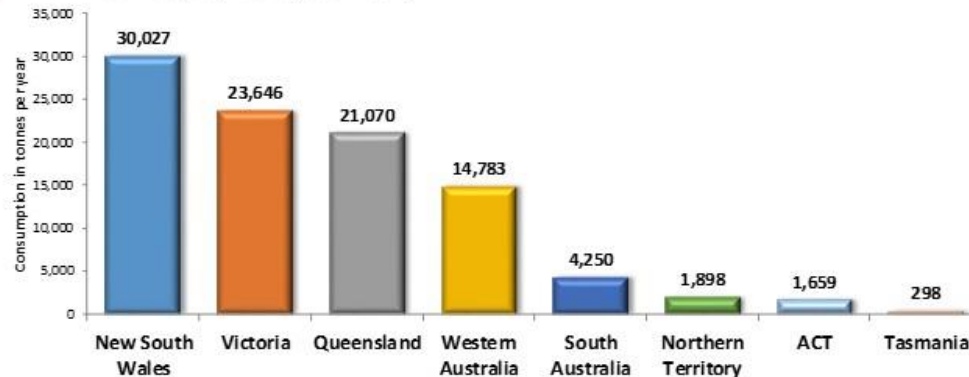


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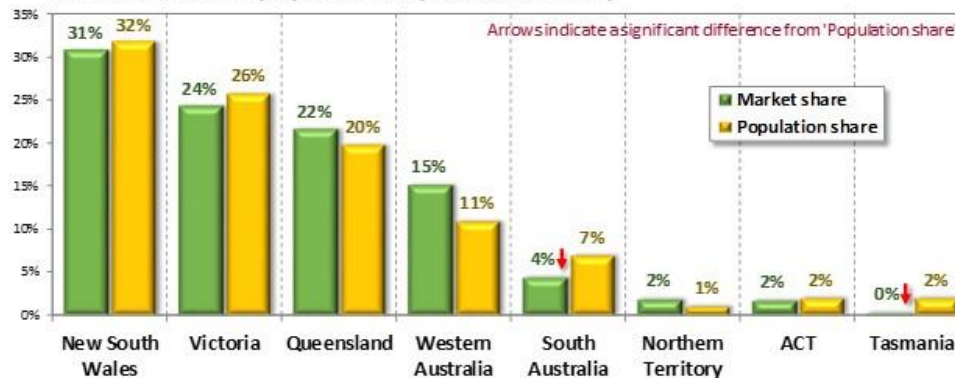
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# QLD and WA residents over-index on vegetable juice

Market size estimate for vegetable juice in Australia (in tonnes) by state/territory



Share of total vegetable juice consumption and share of Australia's 2016 population by state/territory



- Vegetable juice consumption in Australia follows closely the population size of each state.
- However, the share of total consumption accounted for by NSW, VIC, SA and TAS is lower than would be expected given the population and consumption in QLD, WA and NT are higher.

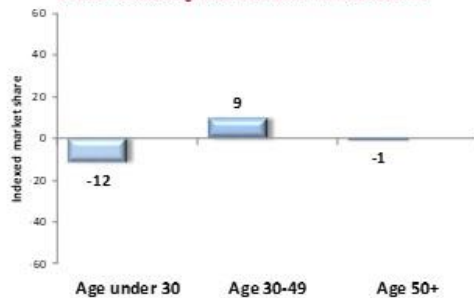
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# Vegetable Juice consumption higher than expected among better educated, more affluent, urban residents, people aged between 30-49 and men.

**Indexed market share by age**

Arrows indicate a significant deviation from the base line

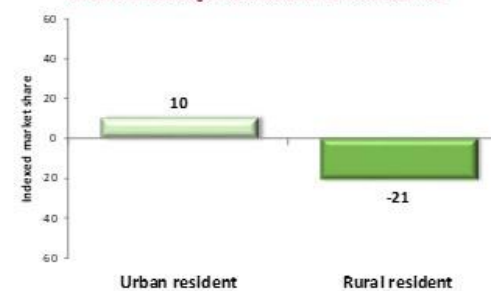


Indexed market share is computed as  $100 \times (MS - PS) / PS$ , where MS is the market share (or share of total juiced vegetable consumption) and PS is the share of Australia's 16+ population.

- Vegetable juice consumption appears to be a characteristic of more affluent, urban dwellers. Also, men and people aged between 30 and 49 outperform their numbers in the population in terms of vegetable juice consumption

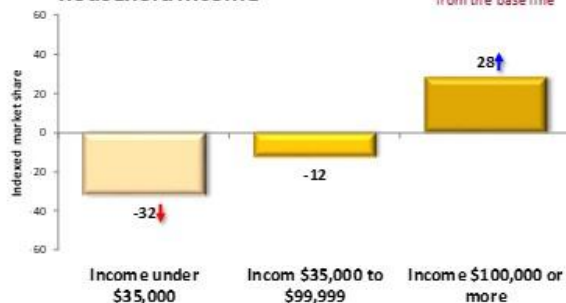
**Indexed market share by residency**

Arrows indicate a significant deviation from the base line



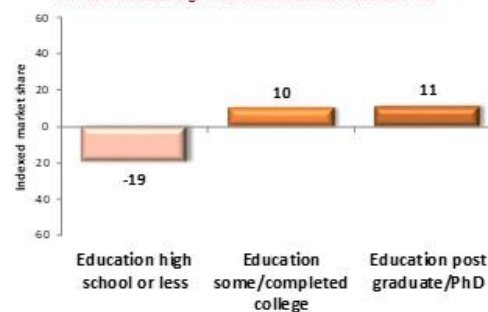
**Indexed market share by annual household income**

Arrows indicate a significant deviation from the base line



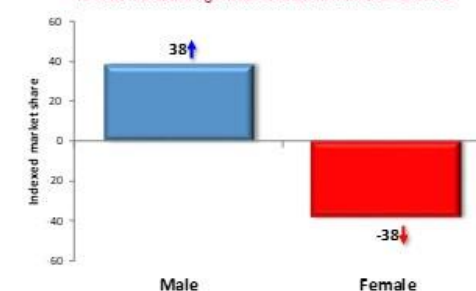
**Indexed market share by education**

Arrows indicate a significant deviation from the base line



**Indexed market share by gender**

Arrows indicate a significant deviation from the base line

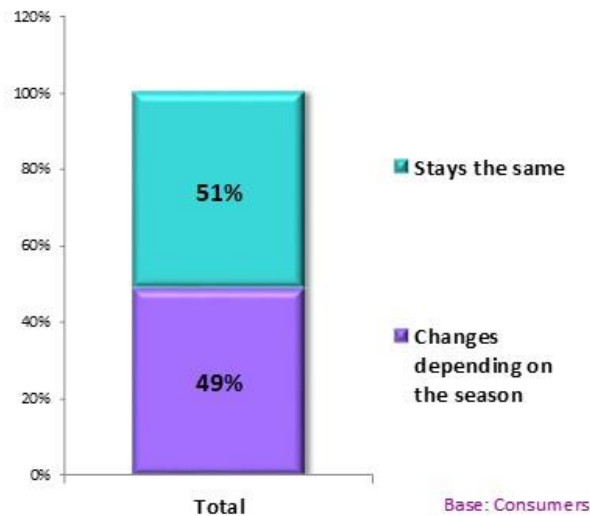


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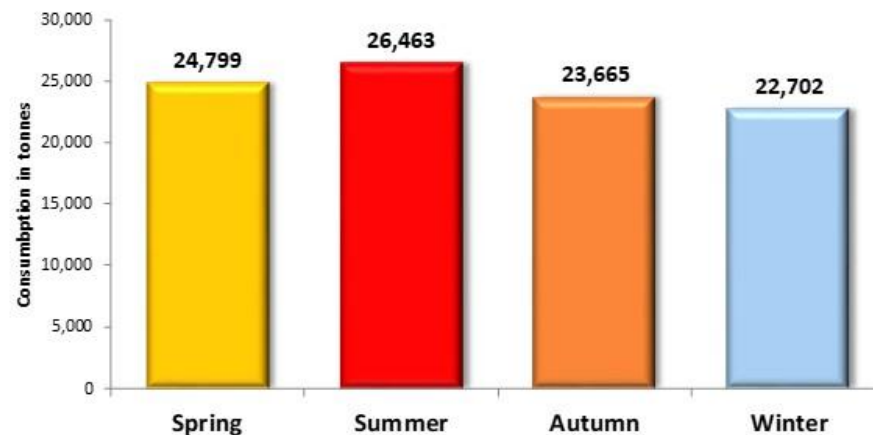
## Vegetable juice consumption is relatively consistent throughout the year

- Vegetable juice consumption is at its highest in summer and at its lowest in winter. However, consumption levels do not vary considerably according to the season, as half of all vegetable juice consumers maintain a consistent level of consumption throughout the year. And, for those that do vary their consumption according to the season, the changes are not dramatic.

### Does vegetable juice consumption changes or stays the same all year?



### Seasonal variation of vegetable used for vegetable juice (in tonnes per quarter)



14

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## Most Australians have tried vegetable juice before, but only 1-in-7 consume it frequently

1-in-7 Australians are  
**frequent drinkers**  
**of vegetable juice**

Drink vegetable juice 2-4 times each week  
Most often in the morning  
As or with breakfast

1-in-3 Australians are  
**occasional drinkers of**  
**vegetable juice**  
Drink every 2-3 months  
During business hours (9am-6pm) As a snack  
between meals or an accompaniment to lunch.  
More likely to be aged under 35

1-in-3 Australians have  
**tried vegetable juice, but**  
**lost interest in it**  
Haven't consumed in the past year  
Not satisfied with juices available for  
purchase in Australia

1-in-5 Australians have  
**never tried**  
**vegetable juice**

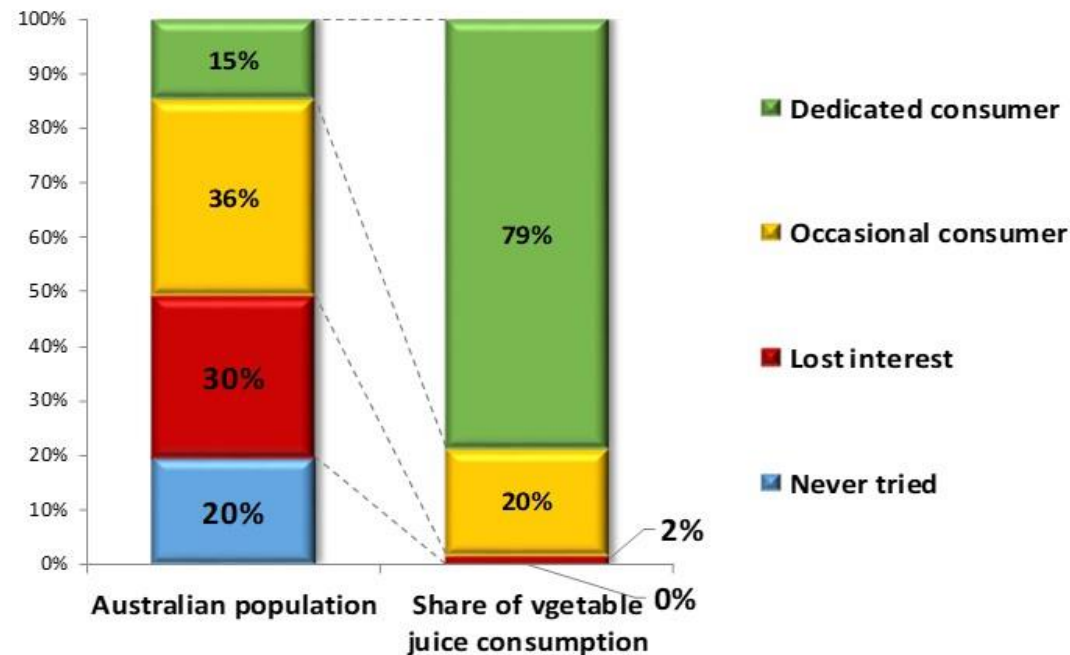
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## Frequent consumers account for the majority (79%) of vegetable juice consumption in Australia

- While Australians are more than double as likely to drink vegetable juice occasionally (1-in-3 Australians do so), they do so infrequently (once every 2-3 months), which means they account for a small proportion (20%) of overall vegetable juice consumption.

**Vegetable juice segments: Australian population proportion and share of annual vegetable juice consumption in Australia**



16

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# How Australians Consume Vegetable Juice

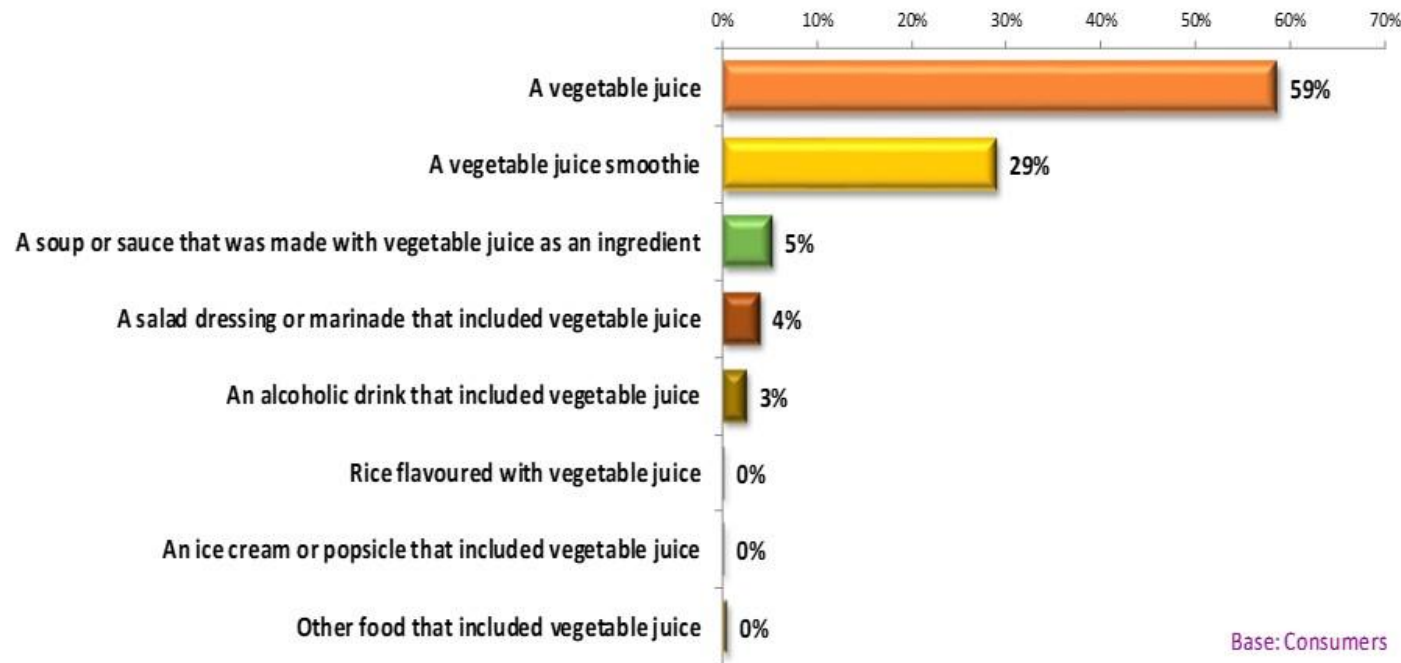
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## Vegetable juice is almost always consumed as a drink

- The majority of vegetable juice consumption is a straightforward juice. This juice might contain the pulp or remove the pulp but is not specifically prepared to be thicker like a smoothie, but rather like a juice.
- Vegetable juice is very rarely used as an ingredient in food.

### How did you consume vegetable juice the last time you did so?



18

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# Vegetable Juice is, on Average, 56% vegetables

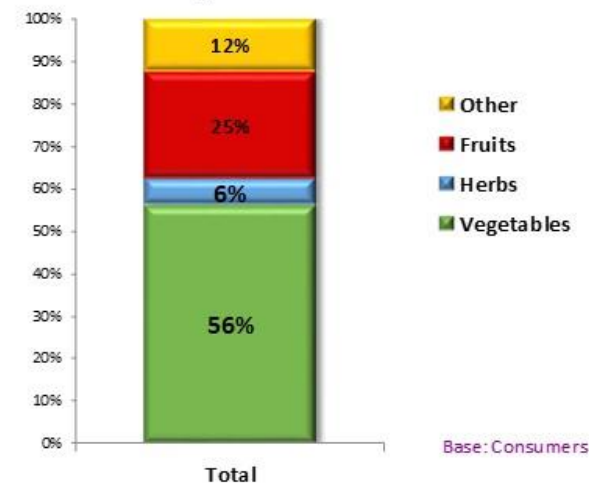
- On each consumption occasion, Australians consume a 300-350ml juice or smoothie of which, vegetable juice accounts for around half of the drink being consumed. Vegetable juice is most often mixed with fruit juice.

Average amount of vegetable juice consumed per occasion ...



324

Percent of the juice accounted for by vegetables, herbs, fruits and other ingredients



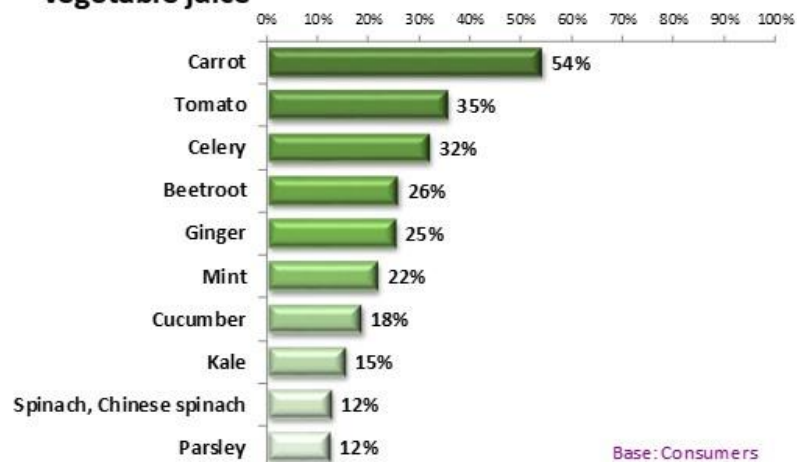
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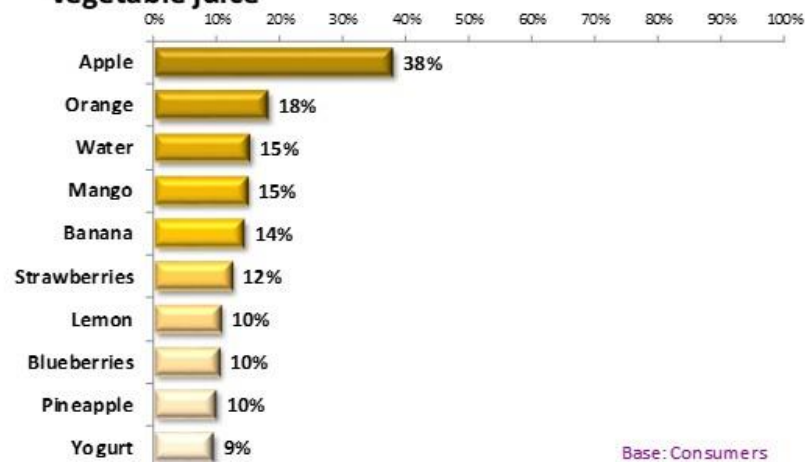
## While sweet/subtle tasting vegetables are prominent, strong flavoured vegetables/herbs also play a role in juice

- Strong flavoured vegetables and herbs like ginger, mint, and parsley are often included in vegetable juices in small quantities to provide flavour.
- The most likely fruits to be combined with vegetable juice are apples and oranges.
- Otherwise, water (for juices) and yogurt (for smoothies) are common.

Top 10 vegetables/herbs included in vegetable juice



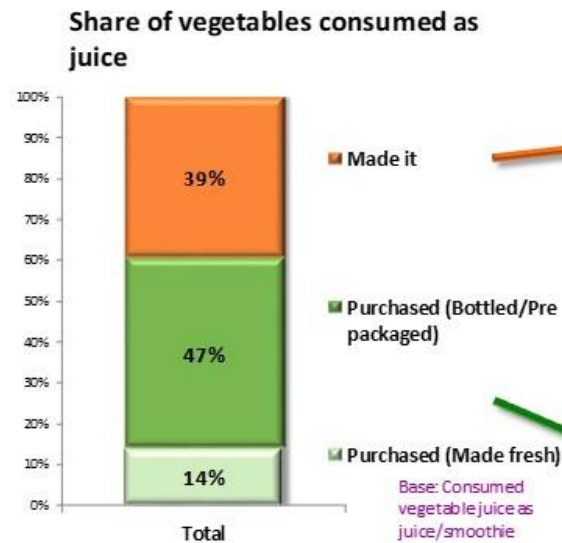
Top 10 other ingredients included in vegetable juice



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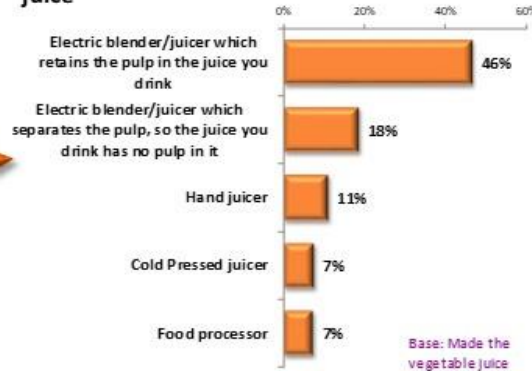
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# 40% of Vegetable Juice is home made



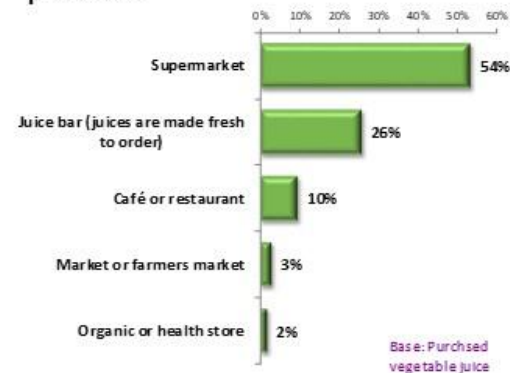
- Nearly half of the vegetable juice consumed in Australia is commercially available product that is pre-packaged. A further 14% is made to order product that is purchased.
- Nearly 40% of the vegetable juice consumed in Australia is home made

## Equipment used to make vegetable juice

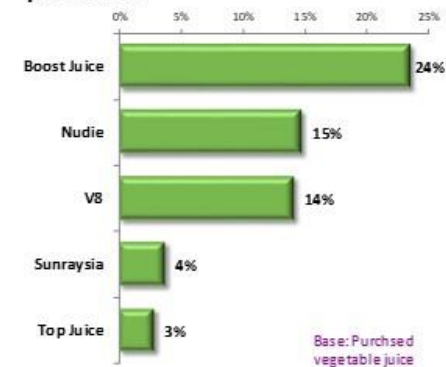


- For self-made juices, Australians favour equipment that enables them to retain the pulp of the vegetable in the juice.

## Location where vegetable juice was purchased



## Brands of vegetable juice purchased

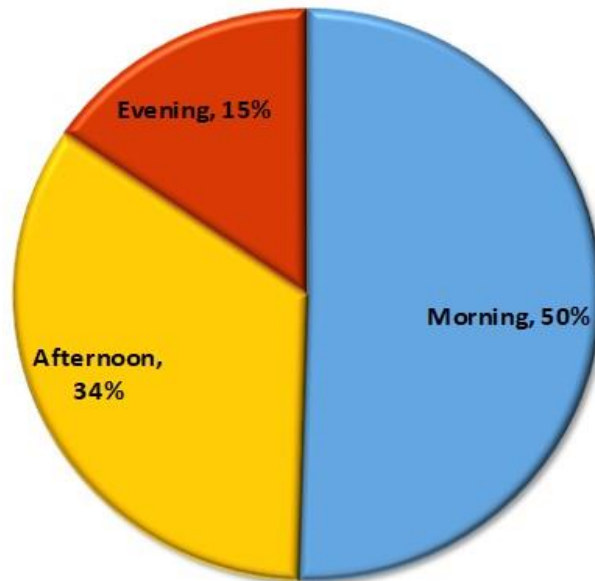


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# Vegetable juice is most often consumed in the morning, as, or with, breakfast

- Consumption in the morning, either as breakfast, or as an accompaniment to breakfast, is the most common consumption scenario.
- If consumed in the afternoon, vegetable juice is more likely to be consumed as a snack between meals than it is to be consumed at lunch. Vegetable juice is rarely consumed in the evening. If it is, it is most often consumed as an accompaniment to dinner.

## Consumption of vegetable juice by time of day



## Thinking about the most recent time you consumed vegetable juice, how was it consumed?

	Total	Time of day		
		Morning	Afternoon	Evening
Full Base: Consumers	864	433	351	154
As an accompaniment to a main meal	30%	33%	24%-	37%
As a snack between main meals	27%	25%	36%+	19%-
As a main meal	20%	26%+	14%-	19%
As a drink to quench your thirst	14%	10%-	19%+	11%
As part of a detox or cleanse diet	6%	6%	6%	6%
As an alcoholic cocktail	2%	0%-	0%	7%+
Other	0%	0%	1%	1%

Tes ted to 0.950 s ignificance level.

+/- Indicates s ignificantly higher/lower value from the comparison.

Comparing to 'Total'

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# Consumer attitudes to vegetable juice consumption in Australia

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# Cost and taste of purchased vegetable juices are considerable barriers for all Australians

- For Australians who have consumed vegetable juice, a preference for freshly made juices and the added cost associated with these is an additional barrier and highlights limitations with commercial juices.
- For Australians who haven't tried vegetable juice before, the taste of vegetable juice relative to other drinks and a preference for eating vegetables (rather than drinking them) holds them back from consuming vegetable juice.

## What, if anything, holds you back from consuming, or consuming more, vegetable juice?

	Percent saying 'Yes' Top 20 reasons	Vegetable juice segment	
		Never tried	Consumer
<b>Full Base: Respondents</b>		<b>337</b>	<b>1269</b>
When I'm buying drinks, I favour other drinks over vegetable juice	77%		56%-
If I have vegetables at home, I prefer to eat them, so juicing them is a last resort	75%		53%-
I like eating vegetables, so there is not much need to drink them	75%		50%-
I don't like the taste of vegetable juice enough to make them myself	69%		31%-
Vegetable juices are expensive	68%		62%
I don't like the taste of vegetable juices you can buy	64%		33%-
It's a lot of effort to make vegetable juices yourself	64%		51%-
The juices you can buy have strange combinations of vegetables (and fruits)	64%		46%-
I consume enough vegetables already	60%		49%-
I rarely think of juicing when I am shopping, so I don't have the ingredients to make vegetable juices myself at home often	60%		45%-
The colour of vegetable juice is off putting	56%		29%-
Juices you can buy often have vegetables in them that I don't like	56%		41%-
I don't have the time to make vegetable juices myself	56%		37%-
It is hard to find juices to buy that include the vegetables that I want to consume	53%		45%
If making myself, I worry I'll make an undrinkable juice, and have to throw it out	51%		35%-
I don't have the right equipment to make juices myself	51%		38%-
I'm concerned about hidden ingredients in vegetable juices you can buy	50%		49%
I feel it is wasteful to consume vegetable juices that exclude the pulp	49%		41%
I feel vegetable juice is only for people who want quick and easy ways to be healthy	49%		26%-
I prefer freshly made vegetable juices, which are more expensive	25%		49%+

Tested to 0.950 significance level.

+/- Indicates significantly higher/lower value from the comparison.

Comparing 'Consumer' to 'Never tried'

This reason was forced into the table, despite the fact that it is not within top 20 reasons

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# Consumers who have lost interest in Vegetable Juice prefer to eat their vegetables

- Consumers who have tried Vegetable Juice but have lost interest seem to have done because, on balance, they prefer to eat their vegetables rather than drink them:
  - Commercial vegetable juices are expensive and they are concerned about sugar and hidden ingredients
  - Making vegetable juices is a lot of effort
  - They feel like they consume enough vegetables already

## What, if anything, holds you back from consuming, or consuming more, vegetable juice?

	Percent saying 'Yes' Top 20 reasons	Vegetable juice segment	
		Lost interest	Consumer
<b>Full Base: Respondents</b>		<b>532</b>	<b>1269</b>
When I'm buying drinks, I favour other drinks over vegetable juice	73%		58% <sup>-</sup>
If I have vegetables at home, I prefer to eat them, so juicing them is a last resort	70%		53% <sup>-</sup>
Vegetable juices are expensive	65%		62%
I like eating vegetables, so there is not much need to drink them	65%		50% <sup>-</sup>
It's a lot of effort to make vegetable juices yourself	57%		51%
I consume enough vegetables already	56%		49%
I'm concerned about the sugar content in vegetable juices you can buy	55%		55%
I rarely think of juicing when I am shopping, so I don't have the ingredients to make vegetable juices myself at home often	54%		45% <sup>-</sup>
I'm concerned about hidden ingredients in vegetable juices you can buy	52%		49%
Juices you can buy often have vegetables in them that I don't like	51%		41% <sup>-</sup>
There are only a small number of vegetables that I can create a nice juice with myself	50%		42% <sup>-</sup>
I don't like the taste of vegetable juice enough to make them myself	49%		31% <sup>-</sup>
Most of the juices you can buy have the pulp removed, so they are not very healthy	49%		42%
I'm concerned about the freshness of vegetable juices you can buy	48%		44%
I don't like the taste of vegetable juices you can buy	47%		33% <sup>-</sup>
The juices you can buy have strange combinations of vegetables (and fruits)	47%		46%
I feel it is wasteful to consume vegetable juices that exclude the pulp	47%		41%
It is hard to find juices to buy that include the vegetables that I want to consume	47%		45%
I don't trust the health claims that vegetable juice brands make	46%		39%
<b>I prefer freshly made vegetable juices, which are more expensive</b>	<b>43%</b>		<b>49%</b>

Tested to 0.950 significance level.

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Comparing 'Consumer' to 'Lost interest'

This reason was forced into the table, despite the fact that it is not within top 20 reasons

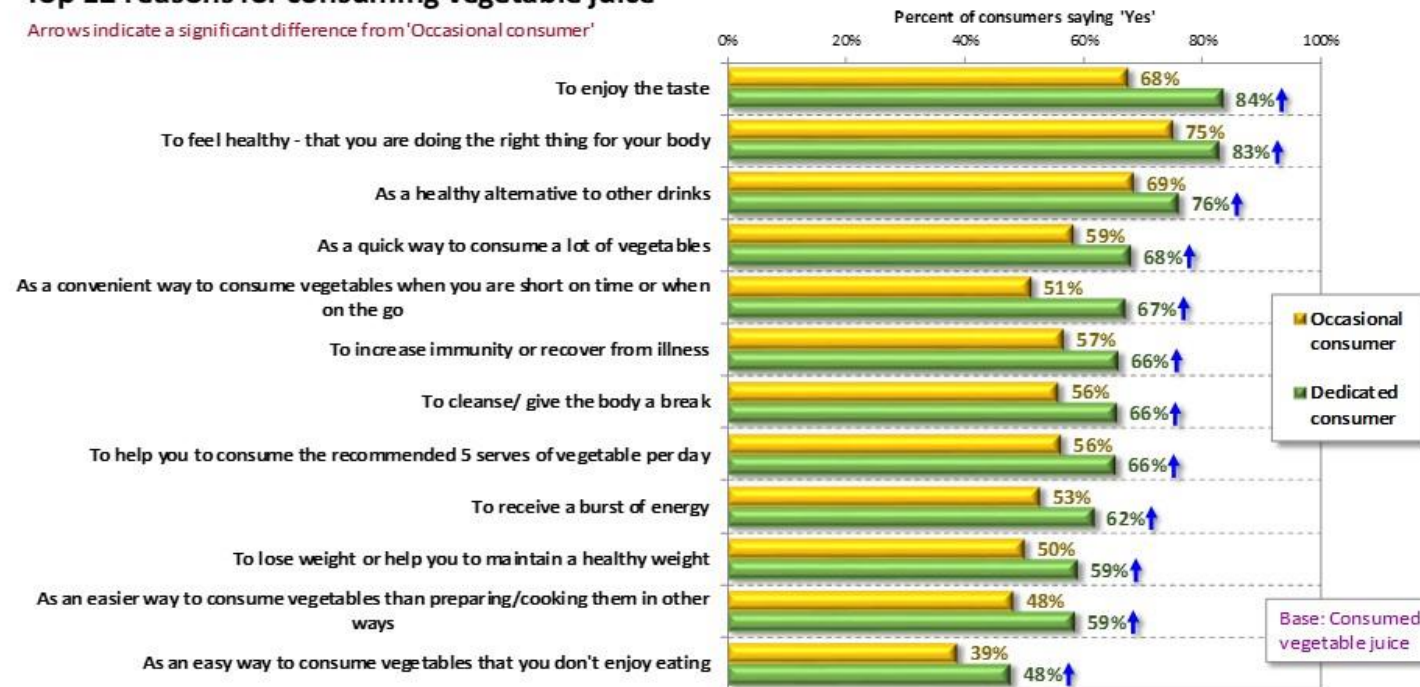
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# Perseverance to acquire/find a taste that appeals and valuing portability distinguishes frequent consumers

- All vegetable juice consumers do so to feel healthy, to feel that they are doing the right thing for their body. The difference between frequent and occasional users is that frequent consumers have persevered enough to acquire the taste for vegetable juice or find a mix that suits their taste and they appreciate the portability of vegetable juice (can be consumed on the go or when time is short). In contrast, occasional consumers are much less likely to enjoy the taste of vegetable juice or appreciate the portability of vegetable juice.

## Top 12 reasons for consuming vegetable juice

Arrows indicate a significant difference from 'Occasional consumer'



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## Frequent vegetable juice consumers are more health conscious and active than other Australians

- Dedicated vegetable juice consumers are also more dedicated to being healthy and fit and more conscious of the effects on their health of what they consume.
- Interestingly, frequency of consumption is not strongly related to willingness to sacrifice taste for a healthier diet – even the majority of frequent vegetable juice consumers are not willing to do this.

How much do you agree with these statements about health and life in general as they relate to you personally

Percent saying 'Agree completely/very much'	Vegetable juice segment			
	Never tried	Lost interest	Occasional consumer	Dedicated consumer
<b>Full Base: Respondents</b>	<b>337</b>	<b>532</b>	<b>746</b>	<b>523</b>
I take vitamins and/or supplements on a regular basis	24%	28%	37%+	41%+
I exercise three or more times per week	29%	31%	36%	50%+
I'm not willing to sacrifice taste in order to have a healthier diet	33%	19%-	22%-	26%
Right now I am in good physical shape	25%	19%	28%	39%+
I am more concerned now than in the past about the nutritional value of the foods and drinks that my family and I consume	36%	37%	44%	53%+
I consciously act as a role model for the healthy eating habits of other family members, especially children	23%	18%	31%+	42%+

Tested to 0.950 significance level

+/- Indicates significantly higher/lower value from the comparison.

Comparing to 'Never tried' segment

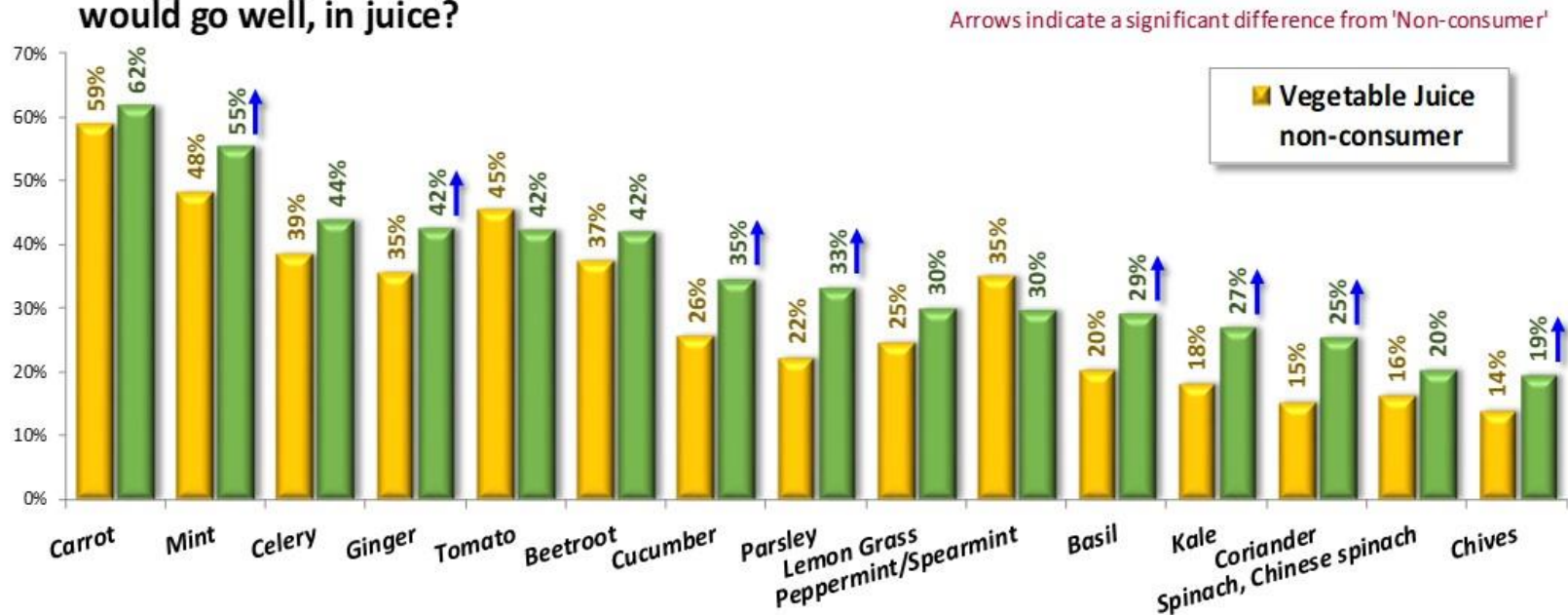
27

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## Vegetable juice consumers believe more strongly in the role of herbs

- Carrot, celery, tomato, beetroot, cucumber, kale have easy acceptance as part of a vegetable juice.
- Consumers of juice are more convinced than non-consumers of the role that spices and herbs play in achieving a desirable taste.

Which, if any of the following vegetables/herbs, do you think go well, or would go well, in juice?



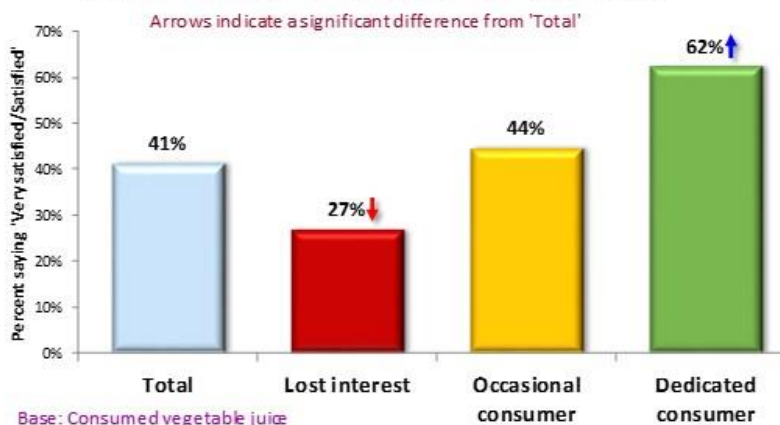
28

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# Less than half of Australians are satisfied with commercially made vegetable juices

- Even among frequent consumers, satisfaction with commercially made vegetable juices is mixed, perhaps due to concerns about hidden ingredients in the juices you can buy. It appears frequent consumers deal with this concern by making juices themselves – on average, half of their vegetable juice consumption is accounted for by home made juices.
- Occasional consumers and those that have lost interest in vegetable juice are much less likely to be satisfied with commercial juices. And, as they are unlikely to make their own at home, it is not surprising that they have lost interested or consume irregularly.

How satisfied are you with the vegetable juices that are available for purchase by the bottle or made-to-order, here in Australia



## Percent worrying about hidden ingredients and making vegetable juice at home

	Total	Vegetable juice segment		
		Lost interest	Occasional consumer	Dedicated consumer
<b>Full Base: Consumed vegetable juice</b>	<b>1801</b>	<b>532</b>	<b>746</b>	<b>523</b>
I worry about hidden ingredients in any of the juices that you can buy	41%	38%	41%	47%+
Of the vegetable juices you have consumed, % that has been made at home	38%	31% <sup>-</sup>	38%	51%+

Tested to 0.950 significance level.

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## Opportunities to increase consumption of vegetable juice in Australia

30

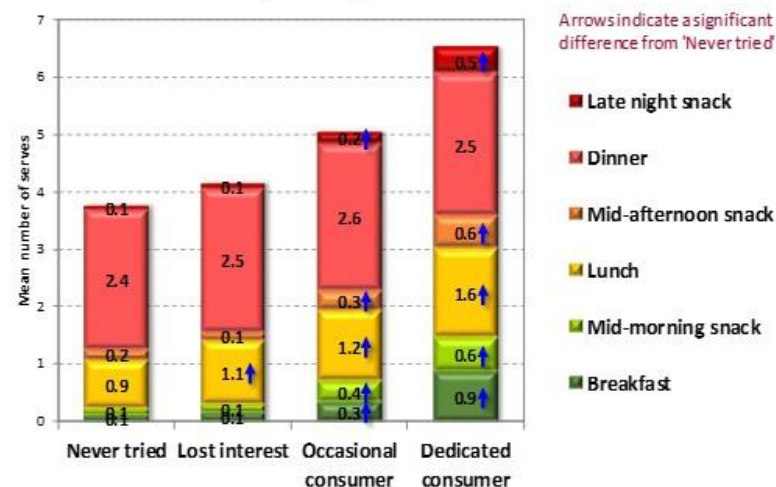
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# Consuming 5 serves of vegetables per day is much more achievable with vegetable juice in the morning

- Frequent consumers of vegetable juice exceed the recommended 5 daily serves of vegetables, while other Australians do not.
- What separates frequent vegetable juice consumers from other Australians is that, through consuming vegetable juice, it is possible to consume 1.5 serves of vegetables before lunch. It appears that without vegetable juice, consuming vegetables before lunch is very unlikely.

On average, how many serves of vegetables do you consume each day during these meal occasions?



## How much do you agree with these statements about health and life in general as they relate to you personally

	Vegetable juice segment			
	Never tried	Lost interest	Occasional consumer	Dedicated consumer
Percent saying 'Agree completely/very much'				
Full Base: Respondents	337	532	746	523
I feel that my family and I consume enough vegetables in our diet	51%	32% <sup>-</sup>	40% <sup>-</sup>	46%
Consuming the recommended 5 serves of vegetables per day is an easy goal to accomplish in my household	34%	27%	38%	55% <sup>+</sup>

Tested to 0.950 significance level.

+/- Indicates significantly higher/lower value from the comparison.

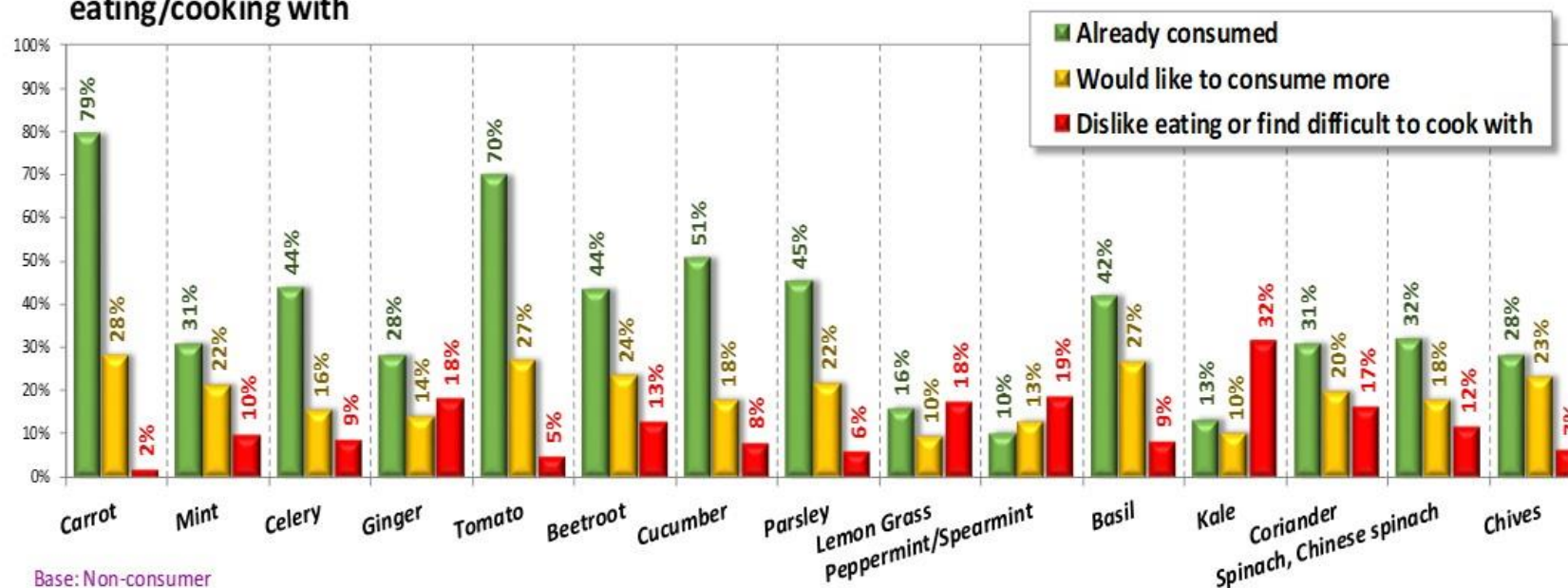
Comparing to 'Never tried' segment.

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## There is potential with non-consumers with familiar vegetables and herbs

- Non-consumers would tend to gravitate to vegetable juices that are common and readily available – including carrot, celery, tomato, cucumber.
- There may be a role for more herbs and spices with non-consumers.

### Non-consumers: Vegetables they consume, would like to consume more, and dislike eating/cooking with



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# Most Australians have the equipment to make vegetable juices themselves

- Lack of the proper equipment for making vegetable juice at home is not a barrier.
- Only a minority of all consumers, and also a minority of non-consumers, do not have access to at least one piece of equipment for turning vegetables into a juice.
- A standard electric blender is the most common piece of equipment.

Within your household, do you have access to any of the following equipment?

	Total	Vegetable juice segment			
		Never tried	Lost interest	Occasional consumer	Dedicated consumer
<b>Valid Base: Respondents</b>	<b>1775</b>	<b>337</b>	<b>517</b>	<b>608</b>	<b>313</b>
Electric blender/juicer which retains the pulp in the juice you drink	49%	35%-	52%	53%	54%
Food processor	38%	39%	44%+	34%	28%-
Hand juicer	26%	24%	27%	28%	25%
Electric blender/juicer which separates the pulp, so the juice you drink has no pulp in it	20%	12%-	22%	24%+	22%
Cold Pressed juicer	7%	4%-	5%-	10%+	8%
Thermomix	5%	6%	4%	5%	7%
Other	1%	1%	1%	1%	1%
DK/ Not sure/ Can't remember	3%	2%	4%	2%	2%
None of these	18%	29%+	18%	14%	4%-

Tested to 0.950 significance level.

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Comparing to Total

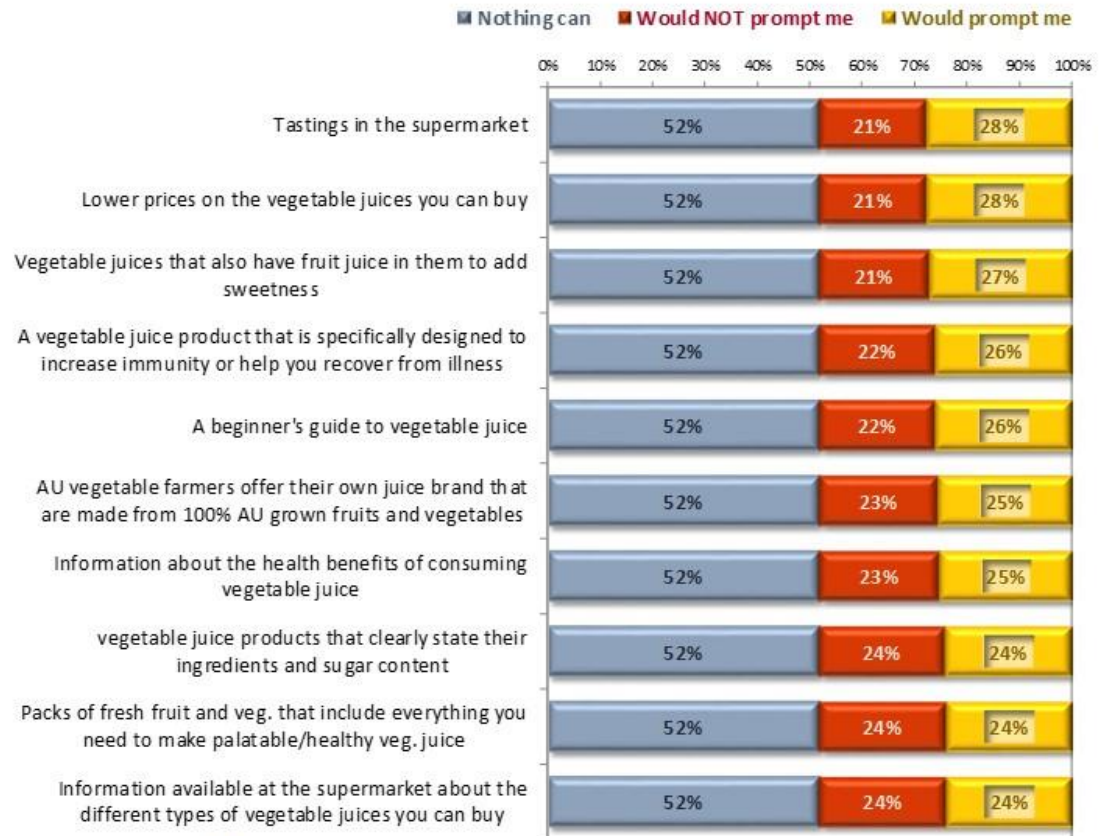
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# Very limited potential from consumers who have never tried – familiarization and trial inducements are key

- Small percentage gains from trying to get those who have not tried vegetable juice to do so.
- Tastings to convince them that vegetable juices are enjoyable and lower prices on vegetable juice would have the strongest impact

Which, if any, of the following would prompt you to start consuming, or to consume more, vegetable juice?

Base: NEVER TRIED segment



34

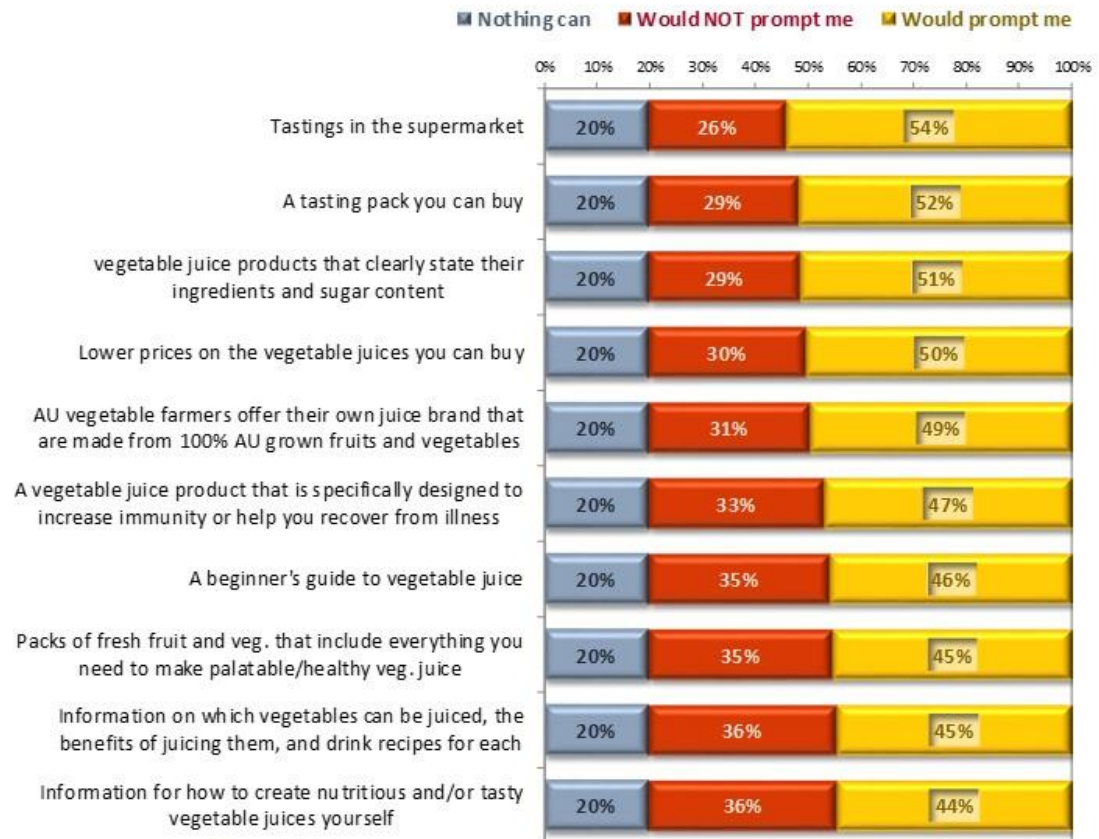
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# Lapsed Consumers need convincing that vegetable juice is as enjoyable as eating their vegetables

- The taste barrier is the key to winning back those who have lost interest in vegetable juice.
- Beyond taste is the price on commercial vegetable juices.
- Those who have given up on vegetable juice after trying it do not need to be convinced again of the benefits of juicing vegetables. Rather, they need to be convinced that, on balance, vegetable juice is at least as enjoyable as eating their vegetables.

Which, if any, of the following would prompt you to start consuming, or to consume more, vegetable juice?

Base: LOST INTEREST segment



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# Concerns about commercial juices may be an opportunity for Australian vegetable growers

- For occasional consumers, taste and price are the key issues to work on.
- Also emerging is the possibility that a “farmers” brand – ensuring 100% AU grown fruits and vegetables, would have some appeal.

Which, if any, of the following would prompt you to start consuming, or to consume more, vegetable juice?

Base: OCCASIONAL CONSUMER segment



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# Concerns about commercial juices may be an opportunity for Australian vegetable growers

- For frequent consumers, the price of commercially available products is the key barrier.
- However, there is also strong potential for a “farmers” brand – made with 100% AU grown fruits and vegetables.
- The interest in a “farmers brand” highlights the concerns that vegetable juice consumers have about commercially available food products, not just vegetable juice but others as well – those consumers who are especially health conscious are also conscious of the origin and the growing conditions of their food and they pay attention to it themselves. They don’t rely on what companies say about themselves

Which, if any, of the following would prompt you to start consuming, or to consume more, vegetable juice?

Base: DEDICATED CONSUMER segment



37

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## Appendix: Detailed Research Methods

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# Sample

- A total sample of 2138 Australian consumers was surveyed for this research. This total sample was comprised of:
  - A sample of 1879 Australian consumers aged 16 and older were surveyed for the purpose of estimating the incidence of consumption of vegetable juice
    - This sample was weighted to match the distribution of the Australian population for age, gender, residency, education levels and household incomes
  - An additional 259 consumers who had consumed vegetable juice in the past month were oversampled via internet survey, thus providing a final sample of 864 past month consumers of vegetable juice
- All respondents recruited from reputable internet panels and surveyed via a web-based self completion interview. This web-based self completion interview was powered by Triton Survey™ Systems, our proprietary system of data collection and processing.

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# Survey

- On average, the survey took 16 minutes to complete and covered the following topics:
  - “Vegetable juice” was defined for respondents at the beginning of the survey in the following way:
    - By “vegetable juice” we mean any liquid that includes uncooked vegetables or herbs as one of its ingredients, even if it is only makes up a small part. It might contain other things, such as fruit or flavours or protein powders or water. It might turn the whole vegetable into a liquid or just extract the juice from the vegetable and remove the pulp. As long as it is liquid and contains at least one uncooked vegetable or herb, it is what we mean by “vegetable juice” in this survey.
  - Consumption of vegetable juice
    - Most recent occasion
    - Type of vegetable juice consumed – juice, smoothie, ingredient etc.
    - Purchased vs. home made?
    - Purchased from?
    - Brand purchased?
    - Equipment used to make – home made
    - Quantity consumed?
    - Vegetables and herbs included and % of total volume accounted for
    - Other ingredients and % of total volume accounted for
    - Consumption day part
    - Consumption occasion (meal accompaniment, meal replacement, snack etc)
  - Vegetables consumed in the past month, in any form, likes and dislikes of eating each, desire to consume more, perceptions of how well would go in juice
  - Estimated number of servings of vegetables consumed in an average day, by meal occasions
  - Reasons for consuming vegetable juice
  - Satisfaction with commercially available vegetable juices
  - Barriers/potential drivers of consumption/increased consumption of vegetable juice
  - General attitudes surrounding juice consumption – lifestyle factors, self perceptions
  - Demographic characteristics

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# Weighting

- To compute weights necessary for the market size estimates, the proportion of the vegetable juice consumers had to be estimated first from the random sample.
- Then the random sample was marginally weighted to reflect the proportion of Australian population on their state/territory residency, rural-urban residency, age, education, gender and income, while keeping the marginal proportion of consumers unchanged.
- Finally, the combined sample (random + boosted) was weighted to match the proportion of consumers and non-consumers observed in the weighted random sample. Then for each group (consumers/ non-consumers), this sample was further weighted to match the marginal proportions of all demographics mentioned above to observed proportions in the random weighted sample for the relevant group.
  - Lastly, the weights of the total sample were adjusted to sum to the total Australian population aged 16+ (19,299,700 people).

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# Calculating the market size

- The market size estimate provides the amount of raw vegetables in tonnes per year consumed as vegetable juice. This estimate is the weighted sum of per person yearly consumption of raw vegetables consumed as juice.
  - Per person consumption is a product of juice volume consumed per last occasion in milliliters, last month frequency of consuming occasions, the number of months per year, actual proportion of the vegetable content of the juice, the vegetable juice yield (milliliters from grams of raw vegetable), and finally conversion of grams to tons.
    - An adjustment to the 'number of months' was made for seasonal variation as reported by the consumers and it ranged from 3 to 21, with mean being 13.05 and median 12. The seasonal variation was derived from quarterly estimates of consumption relative to the winter quarter during which the survey was conducted. As the winter quarter had generally the lowest consumption rate, the mean higher than 12 is reasonable.
    - The vegetable juice yield was obtained for about the half of the vegetables from '<http://www.juicingcollection.com/juicing-calculator/>' website. The yield for vegetables not available on this website was estimated based on similarity to vegetables for which information was available. For more details, see 'Vegetable Juice Yield Table' further on.
    - The remainder of the components for the per person consumption were obtained directly from the survey.

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# Calculating the market size

- Adjustment made to 'proportion of the vegetable content of the juice' variable
  - Because respondents did not seem to provide the proportion of the total juice attributed to various vegetables in terms of actual juice (milliliters) but rather in terms of raw vegetable input (grams), an adjustment had to be made to this proportion to convert it from gram-based to milliliter yield-based proportion. This was accomplished by dividing the proportion for each vegetable with the 'gram' value and multiplied by the 'milliliter' value in the 'Vegetable Juice Yield Table' for that vegetable. Further, these new proportions were rescaled to sum to the same total over all vegetables as before the adjustment.
    - This adjustment essentially shrank the proportion allotted to low yield vegetables such as ginger and expanded it for high yield vegetable such as tomato.
  - In order not to counteract the adjustment made above, 'the vegetable juice yield' variable was redefined from a milliliter to gram conversion for each vegetable to a constant conversion used for all vegetables. This constant was based on more typical, middle ground vegetable beetroot (see the 'Vegetable Juice Yield Table'). The value of 2.2 grams of raw input to yield 1 milliliter of juice was used.

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# Vegetable Juice Yield Table

- For vegetables with red numbers, the ounce/milliliter figures were estimated conservatively based on similarity with vegetables for which these figures were available.

Vegetable Category	Raw Veg.	Juice Yield	
	GRAM	OZ	ML
Artichoke	162	2.49	73.64
Beans, Butter Beans, Broad Beans, Snake Beans, Soybean	88	0.39	11.53
Beetroot	136	2.09	61.81
Bok Choy, Pak Choi, Choi sum, Tat Soi	136	2.09	61.81
Broccoli	151	1.99	58.85
Brussels Sprouts	88	0.39	11.53
Cabbage	89	1.17	34.60
Capsicum	164	1.8	53.23
Carrot	128	1.97	58.26
Cauliflower	588	7.76	229.49
Celery	101	2	59.15
Chilli	164	1.8	53.23
Cucumber	301	5.3	156.74
Endive/ radicchio	89	1.17	34.60
Fennel	234	3.6	106.46
Ginger	88	0.39	11.53
Horse Radish	136	1.49	44.06
Kahlrabi	136	1.49	44.06
Kale	67	0.74	21.88
Lemon Grass	88	0.39	11.53
Lettuce	89	1.17	34.60
Peas, Snowpeas	88	0.39	11.53
Pumpkin	116	1.02	30.17
Radish, Diakon	136	1.49	44.06
Rhubarb	89	0.39	11.53
Rocket	89	1.17	34.60
Silverbeet	89	1.17	34.60
Spinach, Chinese spinach	340	2.99	88.42
Swede	136	1.49	44.06
Sweet Corn	136	2.09	61.81
Sweet Potato	133	1.17	34.60
Tomato	123	2.44	72.16
Water cress, Cress, Upland Cress	34	0.22	6.51
Zucchini, Squash	196	3.45	102.03

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# Investigating the Market Opportunity for Vegetable Juices

## Stage 3 Report

Project Number: VG16016

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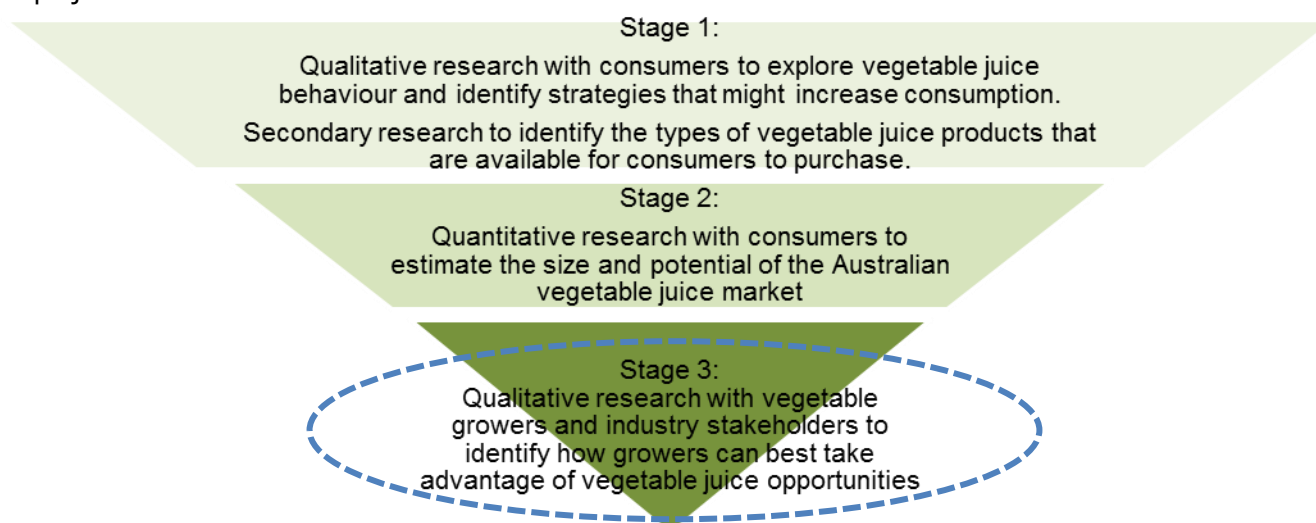


## OVERALL Project Objectives

1. Estimate the size and composition of the vegetable juice market in Australia
2. Identify consumer attitudes toward vegetable juice that are relevant to understanding what drives current juicing behaviour and what might lead to increases in consumption
3. Identify opportunities to increase consumption of vegetable juice in Australia and consider how Australian growers and other stakeholders in the market can best take advantage of these opportunities
4. Provide any other relevant evidence-based information around the potential value of the vegetable juice market to assist with strategic investment decisions in this area.

## Project Status

This project has been conducted over three stages. This document reports on the final stage of research for the project.



## Stage 3 Objectives

Increased vegetable juice consumption will benefit growers whether they are the parties actively adopting the recommendations or not, so acting on the opportunities identified by this project will be the main priority.

Stage 3 objectives are to:

- Identify which vegetable juice opportunities identified by the consumer research in Stage 2 offer potential to increase vegetable juice consumption.
- Provide recommendations for how growers and the industry can best realise these opportunities.

To achieve this goal, perspectives from a variety of industry stakeholders were sought:

- Australian vegetable growers – growers from a variety of states across Australia that grow vegetables used most in vegetable juice (carrots, cucumber, spinach, kale, etc.)
- Industry stakeholders – Executives responsible for:
  - Chilled juices at a major supermarket chain
  - A national chain of juice bars that also retails bottled juices and juice packs in supermarkets
  - Vegetable juice brands that are sold in a variety of retail locations
  - Health and nutrition advice/advocacy – CSIRO's Food and Nutrition Flagship

For more detail surrounding the research methods employed in Stage 3, see Appendix.

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## What the consumer research in Stages 1 and 2 tell us about vegetable juice consumption in Australia

The vegetable juice market in Australia is small.

- Vegetable juice consumption is the equivalent of 3% of annual vegetable production in Australia
- Only a small number of vegetables are benefitting from vegetable juice consumption (carrots, celery, beetroot, cucumber, kale, spinach, and capsicum), while the broad array of vegetables that could be used in juice are either not used or are not popular, making it hard to expand beyond this small number of vegetables.

Most Australians (80%) have tried vegetable juice before, but only a small minority (15%) consume it regularly. Regular drinkers of vegetable juice are not mainstream consumers – they tend to have higher disposable incomes, reside in urban centres, and be more health conscious. Based on these characteristics, the vegetable juice market is more likely to be a “mature” market than one with high growth potential, because there aren’t that many Australians who have not yet tried vegetable juice.

There are some significant barriers to overcome to increase vegetable juice consumption and broaden the consumer base:

- On its own, with the exception of perhaps carrot and tomato juice, there is a perception that vegetable juice does not taste good
- Vegetable juices available for purchase are expensive, often costing significantly more than the other drinks that consumers perceive as substitutes, such as fruit juices, coffee, etc.

While the current market for vegetable juice is small in Australia and there are significant barriers to overcome to increase consumption, the consumer research suggests that these aren’t insurmountable and that there are a variety of opportunities to increase vegetable juice consumption. For example:

- Convincing consumers that vegetable juice is an easy and efficacious way to help achieve their recommended daily intake of vegetables (5 serves).
  - Consuming a vegetable juice in the morning, and achieving 1- ½ serves of vegetable before lunch, could be the difference between achieving the 5 daily serves or not.
- Despite poor taste perceptions, many Australian have an interest in tastings, suggesting an openness to change one’s mind about vegetable juice.
- There appears to be an opportunity to grow the consumption of herbs through vegetable juice, most notably mint, basil, coriander, parsley and chives.
- An area of potential for increasing consumption involves the creation of a “Australian farmer’s brand” that would guarantee the use of only Australian products in vegetable juice.
  - Consumers want to ensure that what they are doing to sustain their health is not undercut by anything they are getting in their vegetable juice. They feel they can trust the Australian grower in this regard.

While the consumer research suggests that there are a variety of opportunities to increase vegetable juice consumption, it’s quite possible that some of the opportunities have already been tried before by industry, while others may not be realistic or practical considering the realities and regulations of the Australian market. With this in mind, in Stage 3, growers and executives from supermarkets, juice brands, juice bars, and opinion leaders have been engaged to explore the consumer research from an industry perspective.

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# Plan to Increase Vegetable Juice Consumption in Australia

Rather than creating a list of recommendations and actions, we have developed a plan for vegetable juice, to help industry stakeholders think about the vegetable juice market strategically and, we hope, prompt cooperation and collaboration among the industry, which appears crucial if vegetable juice is to become more than a niche market.

Our plan for vegetable juice considers the following elements:

1. Position
  - a. Position happens in the minds of the consumers – it is *what* vegetable juice represents to *them*. It requires an understanding of what needs vegetable juice can fulfil for consumers and emphasizing these as much as possible.
2. Product
  - a. Vegetable juice products that have the potential to succeed with Australian consumers. This includes which vegetables, product types (do it yourself vs bottled vs made fresh), branding and packaging have the most potential to appeal to consumers.
3. Price
  - a. How vegetable juice prices are set and how well they match consumer expectations. Which, if any, cost elements of vegetable juices can be developed/improved/made more efficient?
4. Promotion
  - a. Which activities and methods are best utilised to promote vegetable juice.
5. Placement
  - a. Where (physical locations) are vegetable juices sold currently and whether there are opportunities to improve on this.

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## 1. Position

PROPOSED POSITION:

Vegetable juice is an **easy way to get more vegetables into your diet.**

The concept of **getting more vegetables into the diet** is something that most Australians are motivated to achieve – all are convinced of the health benefits of vegetables and more than half recognise that they don't consume enough of them in their diet. There is strong awareness of the daily recommendation of 5 serves of vegetables, but few Australians achieve it.

- Consumers of vegetable juice are much more likely achieve the 5 daily serves of vegetables goal, primarily because vegetable juice enables them to consume 1-1 ½ serves of vegetables during breakfast or as a snack between meals. When added to vegetables eaten at dinner and/or lunch, they are much more likely to achieve 5 serves in total for the day.
- In contrast, non-consumers of vegetable juice are unlikely to be achieving their 5 serves of vegetables per day, because they tend to only consume vegetables during dinner and lunch. For consumers who don't like vegetables or consume them reluctantly, a potential benefit of vegetable juice is it can potentially provide a big hit of vegetables in a very painless and quick way.

While the ability of vegetable juice to help consumers achieve their 5 daily serves of vegetables would appear to be an ideal positioning strategy for vegetable juice, there are a variety of reasons why we recommend against a focus on serves and rather, a focus on how easy it is to get more vegetables into your diet with vegetable juice:

- A focus on daily serves is unlikely to gain traction with consumers
  - Supermarkets and vegetable juice brands have tried a variety of communication strategies surrounding the 5/2 daily serves recommendations without any success. Learnings from these campaigns, which in cases lasted 2-3 years, are that consumers don't think about their consumption in such a regimented way, often feel that 5 daily serves is unrealistic, don't care that much about achieving 5 serves, and perhaps more importantly, don't like being dictated to. There is a feeling that sentiment is shifting, and consumers react more positively to messaging focused on achieving a balanced/varied diet. As a result, simple and positive communication focused on getting more fruit and veg into the diet and on adding variety to it has been having more success. Interestingly, the only area where the communication relating to serves has had some success is for children's products purchased by adults who dictate (as much as they can) what their children consume!
- Health bodies and nutritionists are much more likely to advocate for vegetable juice as a way to get vegetables into the diet at times when they aren't usually consumed, than they are to advocate broadly for vegetable juice as a strategy to achieve 5 daily serves.
  - There is so much variation in what different vegetable juice products, juicing methods and mixes provide from a nutritional perspective that it would be difficult to equate vegetable juice in general to a serve of a whole vegetable consumed cooked or raw. For example:
    - In many juices, the pulp (fibre) of the vegetable is removed, which from a nutritional standpoint questions whether a serve of juiced vegetables is equal to a serve of vegetables eaten whole.
    - Bottled vegetable juices vary considerably in their vegetable content (some have more fruit content than others), so the amount of serves they equate to could be very little to substantial.

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Positioning vegetable juice as an easy way to get more vegetables into the diet, even if it is only a small increase, provides the industry with the scope to challenge key barriers to consumption (taste/cost) and leverage the key strengths (convenience/speed of consumption and suitability for occasions that aren't usually associated with vegetables - breakfast/snacks) of vegetable juice.

Perceptions that vegetable juices don't taste good are prominent, well founded and are a significant barrier to consumption. The majority (80%) of Australians have tried vegetable juice before, but only a small segment (15%) consume them regularly. Even frequent consumers of vegetable juice admit that it takes persistence to acquire the taste for vegetable juice, and that it is still possible for them to buy or make a vegetable juice that is undrinkable. Most frequent users include some fruit content in their juice to improve the taste and flavour of freshly made juices (self-made or purchased from juice bars/cafes) and, as they can be tailor freshly made juices to their tastes, they are more likely to achieve a desirable taste. Supermarket sales and research bear this out. Behavioural data suggests that consumption of freshly made juices (self-made and juice bar/café) is growing more strongly than consumption of bottled juices. In the bottled juice category, the most growth is coming from juices with less than 30% vegetable juice content. Vegetable juice brands feel their products with higher fruit content, that have an appealing taste, are tarred by past bad experiences with vegetable juice and/or the perception that all vegetable juices don't taste good and are only consumed by people with specific health issues. Positioning vegetable juice as an easy way to get more vegetables into the diet, even if it is only a small increase, enables the industry to consider creating "light" vegetable juice products, where the addition of vegetable is very subtle, as a way to help consumers to acquire the taste slowly and normalise the inclusion of vegetables in juices.

Another significant barrier to consumption of vegetable juices that requires addressing is the perception that vegetable juices are expensive. This perception is primarily based on the high cost of bottled vegetable juices relative to other juices. Supermarkets and juice brands agree that the high unit cost of bottled vegetable juices are prohibitive for mainstream consumers, so industry wide cooperation to lower the costs of bottled vegetable juices or convincing more consumers to make juices themselves (through education and convenience products) will be important factors to increase consumption.

Positioning vegetable juice as an easy way get more vegetables into the diet leverages key strengths of vegetable juice – convenience/speed of consumption and suitability for consumptions occasions that aren't usually associated with vegetables (breakfast/snacks).

- The majority of Australians consume all their vegetables at dinner and, to a lesser extent, during lunch. The consumer research in this project highlights that the bulk of vegetable juice consumption takes place at breakfast or as a snack between main meals. Vegetable juice products and communications that focus on starting the day off on the right foot and enhancing breakfast will reinforce the position.
- Vegetable juice is also very portable, enabling vegetables to be consumed in situations where they rarely would be when cooked or raw. For example, consumed on the commute to work (in the car, on the train) or while on the go (in between meetings, during a long drive). Vegetable juice products and communications that focus on vegetable juice as a healthy snack option and/or a nutritious and filling drink to consume on the go will reinforce the position.

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## 2. Product

### Products that entice consumers to consume freshly made vegetable juice have the best chance of changing perceptions surrounding taste and cost

Vegetable juice does not keep well. If not consumed soon after juicing, it can separate and if not consumed within 24 hours, can develop bacteria and cause sickness (due to vegetables having low pH levels, whereas fruits tend to be more acidic and can keep longer as a result). When juicing vegetables in a factory to be bottled, regulations and issues present themselves due to this volatility, requiring the vegetable juice to be pasteurized, be exposed to high pressure sterilisation, or for preservatives to be added to keep the product shelf stable. After these processes (which often require expensive machinery and increase the cost of bottled juices), the juice is different to what it was when fresh and, according to consumers, often doesn't taste as good. Even after these processes, bottled juices are still volatile and require being stored at 4 degrees or less to stay in optimum condition. If they aren't stored correctly in store (store audits have suggested this isn't always the case in supermarket fridges), the juice can turn, and provide a poor taste experience for the consumer. Drinking fresh vegetable juice is likely to provide a better experience from a taste and relative cost perspective for consumers:

- Buying fresh vegetables and making vegetable juices at home enables consumers to tailor juices to suit their tastes and also do so at a lower cost (although this requires effort on the part of the consumer). This research highlights the consumer appeal of fresh made juice, as half of all vegetable juice consumption of frequent consumers is self-made. And, the research suggests that the vast majority of Australian consumers already have appropriate equipment to make juices themselves, so it's a case of convincing them of the ease of doing so, making it easier for them, or convincing them that it is a worthwhile thing to do.
- Vegetable juices in juice bars or cafes are expensive, but consumers can tailor them to suit their tastes and these juices are often priced at the same level as freshly made fruit juices/smoothies in these locations, as the cost of raw materials (vegetables and fruit) do not differ considerably. In contrast, in a supermarket, bottled vegetable juices sell at a significant premium to fruit juices. And, as noted, the volatility of bottled juices can lead to consumers purchasing products that taste worse than they should due to incorrect storage in store or in transit to the store.

Due to the volatility of bottled vegetable juice and the potential health issues if the juice isn't consumed soon after purchase, ideas for retail that involve vegetable juices being made fresh on the spot and bottled are risky and unlikely to be supported by major retailers. However, there are some product ideas that could entice Australian consumers to increase their consumption of self-made vegetable juices.

### Frozen fresh fruit and veg juice mixes that simply need to be dropped into a juicer

These types of packs are already entering the Australian market and, according to supermarkets, are selling well. They are convenient (all consumers have to do is drop the frozen fruit and veg into the blender), easy (the consumer does not need to think about how much to put in of each ingredient), are cheaper than bottled juices, and are likely to taste better than bottled alternatives, as the fruit and vegetables are fresh frozen, providing a great platform through which to normalise the inclusion of vegetable in juices. While a key barrier to consuming vegetables is poor taste perceptions, there is also a strong interest among Australians to taste test vegetable juices, which suggests while the vegetable juice market in Australia may be "mature" in terms of consumer experience, because of the need to consume vegetables, consumers who have tried and rejected

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it may be open to other ways of consuming vegetable juice. Products such as this, enable consumers to easily make juices themselves and increase the chance of a good taste experience as the juice is being made fresh.

### Wonky fresh vegetables packs

Thanks to increased media coverage, there is growing community awareness of how much Australian vegetable production goes to waste due to supermarket regulations relating to size and shape. While the juicing industry provides Australian growers with one avenue to generate some revenue from their not to standard produce, there remains significant produce that goes to waste (which often costs growers money to dispose of). In the UK, a variety of supermarkets are successfully selling “wonky” fresh vegetables at a discount to higher standard vegetables. Utilising what would otherwise go to waste, Australian growers and supermarkets could collaborate to create mixed packs of “wonky” fruit and veg, that are sold at a discount. These packs could be advertised as being suitable for soups and juices, providing supermarkets with good publicity, Australian growers with another avenue for selling misshapen vegetables, and help to entice Australian consumers to self-make vegetable juice.

It will be important for these wonky packs to be positioned as multi-purpose, not specifically for juicing. Packs of fresh fruits and vegetables in right proportions for juicing have been tried before with limited success. These packs were tried when the uptake of the Nutribullet was at its peak. The packs included pasteurised fruit and veg and coconut juice, so that consumers could just throw the contents of the pack into their blender/juice and easily create a juice. The problem was that the packs cost too much (around \$4) which is not much different to what the costs are of bottles juices or fresh juices at juice bars. Juice packs seem to work best in the freezer (as recommended above), as consumers can buy 3 serves for around \$6, they are easy for consumers to use, and they offer better quality (as the vegetables are unpasteurised).

The aim of this product would be for consumers, in addition to buying supermarket standard vegetables as they normally would, to also buy a wonky pack to do other things they weren't planning on – like make a soup or create some juices.

For more information on the wonky vegetable packs in the UK, see the following articles:

<https://www.thegrocer.co.uk/home/topics/waste-not-want-not/is-the-wonky-veg-revolution-happening-at-last/539812.article>

<https://www.thegrocer.co.uk/home/topics/waste-not-want-not/morrisons-adds-new-varieties-to-wonky-fruit-and-veg-range/547330.article>

<https://www.thegrocer.co.uk/home/topics/waste-not-want-not/wonky-veg-up-but-are-supermarkets-digging-deep-enough/558235.article>

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## Bottled products with low vegetable juice content to help normalise perceptions of vegetables as a juice ingredient

In a supermarket context, to begin consuming vegetable juice, consumers often need to leave the ambient category (characterised by large bottle, long lasting, heat treated juices), move to fresh/chilled juices (which cost more and have less shelf life), and then begin to consider low sugar/healthier options like vegetable juices (which cost more again, and have even less shelf life). Most supermarket customers are still in the ambient category due to heavy discounting and the low cost of these juices. In the current marketplace, for these customers to make it all the way to vegetable juices, they need to be prepared to spend much more on juice.

The issue for vegetable juice is that if it's too healthy it tastes like the ground. In juice bars, fruit and veg combination juices (which are primarily fruit) account for 12% of sales, while veg only juices account for 1%. So, fruit is required to generate an appealing taste, perhaps calling for even lighter vegetable juices than are currently on the market.

Working with mainstream ambient juice brands to develop fruit juice products that include a small amount of vegetable juice in them (and don't alter the taste markedly or at all) and aren't characterised as "vegetable juice", could help normalise the inclusion of vegetable juice in drinks, and increase acceptance of vegetables as an ingredient in juice. These types of "light" vegetable juice products would also help consumers to acquire the taste for vegetable juice, at a lower cost. We know from the consumer research that even frequent vegetable juice consumers admit that it takes time to acquire the taste for vegetable juice and that persistence is required. Small inclusions of vegetable juice in mainstream juice products will help consumers to acquire the taste slowly and gain confidence in moving to higher content, and higher cost, vegetable juices. New products like these may also help vegetable juice to shrug off the perception that it is a specialty product for those with specific health problems or for the super health conscious.

The aim of these products will be to get vegetable juice out of the niche corner and nudge people in the direction of vegetable juice, by getting them to consume slightly healthier versions of what they are currently drinking, without thinking they are drinking a full fledged vegetable juice.

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### Bottled products designed specifically with convenience in mind to appeal to mainstream consumers

Research studies have shown that consumers will eat more vegetables in a sitting if vegetables are easier to eat (if they require less chewing due to longer cooking time). This suggests that ease of consumption is a factor in the amount consumers will consume at one time, and it can't get any easier than consuming vegetables in liquid form. While bottled vegetable juice products on the market in Australia are convenient in the sense that they can be consumed fairly quickly, the introduction of packs and products that suit the lifestyle and preferences of consumers that won't allocate the time to make juices themselves, don't like vegetables, and aren't consuming many vegetables at all in any form could entice consumption. According to supermarkets, juice brands and juice bars, mainstream consumers are health conscious but need products to be convenient and taste good. In contrast, current vegetable juice consumers prioritise health and don't care as much about taste and convenience. If products can address taste and convenience, more mainstream consumers may be enticed by vegetable juice.

### Vegetable juice shots similar in size to Yakult

There is an opportunity to develop vegetable juice products for consumers that don't like vegetables. Vegetable juice can be consumed in seconds if desired, while eating the equivalent amount of vegetables in raw or cooked form would take considerably longer. This speed of consumption has the potential to appeal to consumers who don't enjoy eating vegetables and to minimise the perceived unpleasantness of the consumption experience. In this situation, products could be intense, small and heavy on vegetables, rather than attempting to improve the taste with other ingredients. Smaller volume products could be sold at a lower cost, that compares better with fruit juices, and could be positioned as a drink that is quickly consumed in the morning to start off the day on the right foot. Products could come in packs of 5 and include a variety of different vegetable/herb combinations – one for every day of the work/school week. This product aims to generate the following behaviour and attitude:

*Flip the lid, drink it down in one gulp, out the door.*

*It doesn't matter what it tastes like because you know you are getting x/y/z benefits from it!*

### Multi-packs with variety to suit varying family tastes or allow individuals to consume 1 per day

According to juice brands, families are often the buyers of vegetable juice and, while adults are often ok with the taste, it's really hard to get kids to consume. Bottled vegetable juices are usually sold individually, which doesn't take into account varying household tastes, nor do single bottle options help to develop a regular consumption habit.

Positioning vegetable juices as convenient snack options, that are good alternatives to unhealthy options, even if only a small portion of the juice is vegetable juice, means that juices of varying vegetable content are suitable. Supermarkets have had significant success with making fresh fruit and vegetables smaller and creating convenience packs (for example, a pack of small apples). While these fresh vegetable packs are costly for consumers by weight, sales have been good because consumers feel they are more likely to consume them (not waste them). With this in mind, 4 or 6 packs of vegetable juices (one per day) may appeal more to consumers than single bottle options. Mixed packs with juices that have varying levels of vegetable juice content and different mixes will enable consumers to trial a variety of different flavours, to assess what mixes suit their tastes, to have different juices each day, and for families to buy packs that will appeal to varying taste preferences in the household (while still adding more vegetables into their diet).

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### An “Australian Farmers Juice” brand has potential if it can lead to lower cost bottled products

In the bottled vegetable juice market, supermarkets believe brand saturation is high, but that loyalty is not strong. This leads to brands changing their packaging and even their brand names when sales start to lag, and suggests that no one brand is completely capturing the market. The research supports this, with satisfaction of commercially made juices reasonably low, even among frequent vegetable juice consumers. This appears to be related to concerns Australians have about the healthiness of juices (due to sugar content) and the risk of hidden ingredients. An area of potential for increasing consumption involves the creation of a “Australian farmer’s brand” that would guarantee the use of only Australian products in vegetable juice. Consumers want to ensure that what they are doing to sustain their health is not undercut by anything they are getting in their vegetable juice. They feel they can trust the Australian grower in this regard.

While this is an opportunity for growers, it would likely require significant collaboration between growers of all relevant fruit and vegetables in a region for it to be realistic. In addition, it is likely that the level of investment in plant and equipment would be too high and risky if it were to focus only on developing a capability to produce vegetable juices, which account for 3% of annual production in Australia. So, collaboration among growers to create a multi-function plant would likely make more financial sense. For example, the proposed Lockyer Valley fruit and vegetable processing facility has been on the cards for a number of years and is yet to come to fruition, but it is this type of facility (if built as a multi-purpose operation) that could pave the way for an Australian grower juice brand to be created. The Lockyer Valley boasts one of the most fertile growing regions in the world, and has the ability to grow two crops per year for each type of produce. If growers in the region were all to collaborate to fund and supply produce to this facility, it has the potential to lower the cost of bottled vegetable juice to consumers, by minimising the number of stakeholders in the process, and to provide significant benefits to growers in generating revenue from sub-standard produce AND from retail sales. However, such is the cost associated with such a facility, that outside investment would likely also be required to realise this concept (see more detail on this in the “Price” section of the plan).

For more information about the Lockyer Valley fruit and vegetable processing facility, visit the following website:

<http://www.lockyervalley.qld.gov.au/our-council/news/Pages/Lockyer-Valley-Cannery-Project.aspx>

### Developing “Australian Farmer” juice products may be an easier way to enter markets like China

There are a lot of barriers to getting fresh vegetables into China, but with bottled juices it may be easier. If growers are producing their own juice brand at a reasonable cost, the numbers may also stack up for export to China, whose consumers consider Australian products to be natural and trustworthy, much more so than those that are produced locally.

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Packaging should emphasise the Position and impart a few key health/quality messages.

In addition to emphasising that the product is an easy way to get more vegetables into the diet, product packaging should note the following (where possible):

- No added sugar
- The local content story – 100% Australian
- If pulp is included in the juice

If the colour of the juice is unappealing or the juice is prone to separating, consider having the packaging cover most of the bottle, minimising visibility of the juice.

Product formulations (except those purposely designed to be small and intense) should prioritise look and flavour

Juice bars and juice brands believe there are plenty of ways to make vegetable juice look and taste better, but this usually involves bringing other ingredients like fruit into the juice. Creating a superior taste, even if it requires low vegetable juice content, is likely to generate more sales.

- The base of a vegetable juice usually needs to be root vegetables like carrots/beets that on their own taste like the ground. And greens, if added, often taste tart.
- Herbs and ginger are great to offset these flavours (if balanced correctly) and our research suggests there is an opportunity to increase the use of herbs in vegetable juice.
- Beets and carrots are good for colour, while greens are less so.
- Adding fruit is an instant sweetener that makes the juice taste better (no one dislikes strawberries for example) and some fruits are well known as being healthy due to antioxidants, so are useful additives.

Consumers seem to have a fairly limited array of vegetables that they perceive as being appropriate for vegetable juice and these perceptions drive their use. Vegetables with most potential for vegetable juice tend to be those that can be eaten raw, have significant water content and/or a sweet/mild taste. For example:

- Carrots
- Celery
- Beetroot
- Cucumber
- Spinach
- Capsicum
- Broccoli

The above 7 vegetables account for over 90% of all vegetables consumed as juice by Australians.

Flavour enhancers (ginger and herbs such as mint and parsley) and vegetables that offer significant health benefits (super foods like kale) have potential as well, particularly in addressing poor taste perceptions, but these are generally only included in small amounts in vegetable juice.

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### 3. Price

Bottled vegetable juices are always likely to be more expensive than bottled fruit juices, due to more costly processing and a larger volume of produce required to create the same amount of juice. Supermarkets believe the key to enticing mainstream consumers to vegetable juice is lowering prices so that they compare more favourably with fruit juices. As a result, a major Australian supermarket retailer investigated the possibility of sourcing fruit and vegetables themselves and working with certain suppliers to make their own vegetable juice label. However, their analysis suggested they could not get anywhere near meeting the price of fruit juice due to needing a larger volume of produce to create a vegetable juice, so the supermarket did not move forward with it.

Our research has confirmed that cost is a strong barrier to consumption for consumers, so any successful efforts to bring down costs are likely to help to broaden the customer base. We believe there are a number of opportunities to bring down the cost of vegetable juice.

- Developing products that entice consumers to make juices themselves (for example, wonky fresh vegetable packs, and freezer juice packs) have the benefit of lowering the cost to consumers (because the vegetables are fresh/not processed and as a result cheaper to buy) and generating a better taste.
- Developing bottled products with low vegetable juice content may help to lower prices, as the majority of the juice content will be fruit juice which is lower cost.
- While most of the cost associated with bottled juices appears to be added once the vegetables leave the farm, growers could help to bring down the cost to consumer in the following ways:
  - Agree on a 12-month fixed price for supply, so that juice brands can be more aggressive with their pricing. Juice brands are often unable to secure fixed prices over 12 months with growers and as a result, have to expect significant variations when working on their shelf price (which increases the cost to the consumer).
  - Juice brands often don't work directly with growers, which leads to parties in the middle taking a cut of the profits and adding to the shelf price. If brands and growers work with each other directly, the closeness of the relationship would likely produce a better result from a cost perspective for all parties – grower, brand, and consumer.
  - As an industry, the horticulture sector could evaluate what % of crops are being dumped/unsold (even with juicing, there remains significant unsold produce and this can cost farmers to dispose of) and develop a plan for how to offload more of it. This could involve negotiating with supermarkets to create and retail "wonky vege packs" or as an industry, setting a lower price for juicing vegetables, which may lower the cost to the consumers for bottled vegetable juices, and increase demand for produce that growers ordinarily struggle to generate any revenue from.

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- The creation of an Australian Grower juice brand has the potential to remove a lot of inefficiencies in the system and deliver a much lower cost to the consumer.
  - From a grower point of view, juicing vegetables are already sold cheap to juice brands, so growers are not making much profit out of it. Growers could sell more of their sub-standard crops for less if they had an ownership stake in a juice brand and were generating revenue from retail sales as well.
  - By bringing everything closer to the farm gate (for example, a growing region cooperating to create and fund a multi-function plant, that could have juicing as one function) could remove a number of cost elements:
    - Juice brands often have their plants in urban areas which are subject to higher rents and labour costs.
    - Produce needs to be transported from farms to juice brand facilities and then onto retailers. If a region has a multi-function plant, transport costs will be lowered as growers will be nearby the plant, can send their produce for a variety of processing needs to the one location, and the products from the multi-function plant can all be sent off together to supermarkets.
    - Juice brands have to pay to dispose of the waste (pulp not included in juice), whereas farmers could put it back into the soil, or in a larger plant with other things going on, could possibly use the pulp in other products (canned soup, etc.).
    - With farmers working direct with retailers, there are less intermediaries, which could further decrease prices.

It will be important to run financial modelling to assess whether lowering the shelf price is possible with an Aussie Farmers brand. An Aussie farmers brand, while offering appeal to Australian consumers, will have much more chance of success if it can result in bottled vegetable juices that are priced significantly lower than they currently are. Retailers and juice brands feel Australians all prefer to buy Australian but only will do so to a point. For example, Australian garlic is double the price of Chinese garlic, and in this situation consumers don't worry about buying Chinese. Vegetable juice is perhaps in a similar situation when compared to fruit juice, so lowering shelf prices may be key to enticing mainstream consumers.

The creation of an Australian Farmer juice brand would be a significant undertaking for growers and will likely require cooperative investment. The cost of equipment is expensive, as is manufacturing in Australia. While many growers want to add value and diversify, they often don't have the funds on their own to do so. In this situation, growers will need to combine together and likely also receive financial support from government or other parties. Ideally, outside investors would take up to a 49% share of the business, with growers having a controlling stake of at least 51%. Further, with vegetable juice consumption accounting for 3% of annual production, the industry may not be big enough on its own to justify the level of investment required, so a multi-purpose plant developed within a growing region makes the most sense (as noted earlier in this report).

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## 4. Promotion

### Increased media investment through collaboration required to raise awareness and consumption

To increase vegetable juice consumption, and transform perceptions of vegetable juice as a niche/expensive/poor tasting product to an accepted juice ingredient, significant media investment will be required.

All industry stakeholders recognise that there is a lack of media investment in the industry to raise awareness and educate Australian consumers about vegetable juice:

- Supermarkets believe that lack of media investment by juice brands is helping to ensure awareness and sales remain low. Other brands in the sector (juices, chilled drinks) spend much more on media/PR, while vegetable juice brands tend to do all their communication on their packs, as they don't have the funds required to do media.
- Vegetable juice brands that are part of a larger organisations suggest they are always fighting for media funds, as they are small parts of the business overall, while brands that focus exclusively on vegetable juice simply do not have enough funds for extensive media activities.
- In much the same way, growers and health advocates believe it's great that the horticulture industry conducts research and develops valuable insights, but with no money to invest in commercialising the research (on machines, processes) and no funds allocated to marketing, it makes it hard to execute on insights and for growers to benefit.

To address the lack of investment, collaboration is required. Juice brands should consider how they can advocate and educate for vegetable juice as an industry (as no brand can afford to do it on their own), while the horticulture industry should consider creating a marketing levy, which could co-invest with brands to grow consumption.

Media could focus on emphasising the position – educating consumers how vegetable juices are an easy way to get more vegetables into their diet. This could include raising awareness of:

- The types of products available
- What to mix with what to make a good tasting juice
- How vegetable juice can enhance breakfast or be a healthy snack option
- How consuming wonky veg is saving produce destined for dumping, is cheaper, and is just as good as well shaped veg

### Long term tastings required for consumers to acquire taste and develop a consumption habit

Most Australians have tried vegetable juice before and, for many, their frame of reference is not a positive one. In these situations, the task of changing perceptions will not be an easy one, as it will require consumers to re-evaluate the taste of vegetable AND acquire it (as noted, consumers are not immediately sold on vegetable juice. Often, persistence is required to acquire the taste). With this in mind, short bursts of in-store tastings are unlikely to have the desired effect.

Supermarkets suggest that the return on investment on in-store tastings has not been good. Over short periods of time, tastings don't appear to generate significant sales, so supermarkets are pushing back on requests from brands for in-store tastings and rather, suggesting that brands do tastings in high traffic environments (stations, etc.), provide consumers with full bottles (rather than the small shots they usually give out in-store), and consistently run the tastings over a longer period of time. The suggestion is that running tastings regularly rather than scatter gun, has a much stronger chance of developing consumption

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habits and emphasizing the convenience of vegetable juice.

Juice brands are more positive about the impact of in-store tastings (feel it does generate purchases), but they agree that it takes time to be effective (often takes 3 months to see results) and is expensive.

Juice brands could consider collaborating to enable longer term tastings to occur in high traffic areas of big cities, and during the tastings, communicating the position that vegetable juice is an easy way to get more veg into the diet by consuming vegetable juice as a healthy snack or to enhance breakfast. If tastings are conducted over an extended period of time, it increases the likelihood that consumers will acquire the taste, as well as the habit of consuming vegetable juice.

## 5. Placement

Relocating vegetable juices to the fresh fruit and vegetable section of supermarkets could be pivotal to raising awareness and consumption

Within supermarkets, most vegetable juice products are located in the chilled juices section, mixed in with fruit juices in the same aisle as yoghurt and cheese. In this aisle, vegetable juices are easily mistaken for fruit juices and if a consumer is avoiding fruit juice because of sugar content concerns, not noticed at all. If a shopper is looking for the drinks section, the “drinks” section is in another aisle of the supermarket and is dominated by other drinks (carbonated drinks, long lasting fruit juices, water, etc.). The vegetable juices in the “drinks” section are usually small in number and placed next to specialist drinks.

If a fridge full of vegetable juices was located between celery and carrots for example in the fresh vegetable section of the supermarket, vegetable juices have a better change of:

- Being noticed at all
- Being correctly identified as vegetable juice
- More clearly emphasising the position – that vegetable juices are an easy way to get more vegetables into the diet.

If the major supermarkets could be convinced and/or incentivised to trial the relocation of vegetable juices, it could provide great awareness for the category, help to shift perceptions of it, and ultimately, increase consumption.

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## Appendix – Stage 3 Method

A total of 10 industry stakeholders were interviewed via phone in Stage 3:

- 4 Australian vegetable growers from a variety of states across Australia that grow vegetables prominent in vegetable juice (carrots, cucumber, spinach, kale, etc.)
- 6 industry stakeholders responsible for:
  - Chilled juices at a major supermarket chain
  - A national chain of juice bars that also retails bottled juices and juice packs in supermarkets
  - Vegetable juice brands that are sold in a variety of retail locations
  - Health and nutrition advice/advocacy – CSIRO’s Food and Nutrition Flagship

Each industry stakeholder reviewed the Stage 2 consumer research report before the interview.

Each phone discussion was 30-40 minutes in duration, during which industry stakeholders provided their perspectives on the findings and opportunities identified in the Stage 2 research.

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