

National evaluation of nutritional serve pricing

Nov 2025

A/Prof Fiona Newton¹, Prof Josh
Newton², Prof André Bonfrer²

¹Department of Marketing, Monash Business School, Monash University

²Department of Marketing, Deakin Business School, Deakin University

Background

Guidelines

Long-term health benefits from regularly consuming fruits and vegetables include reduced risks of coronary heart disease and stroke¹. Australia has consequently developed recommended daily intakes (RDIs) for fruits and vegetables², with adults encouraged to consume:

- 2 daily serves of fruit (1 serve = 150g)
- 5-6 daily serves of vegetables (1 serve = 75g)

Reality

Most Australians do not currently meet the RDIs for fruit and vegetables. For example, 2022 data indicate that only 6.5% of Australian adults met the RDI for vegetables, with 44.1% meeting the fruit RDI³.

Increasing the rate of fruit and vegetable consumption among Australians could therefore play a key role in enhancing the health and wellbeing of the broader Australian community.

Nutritional serve pricing

What is it?

Fruits and vegetables are traditionally priced by weight (example: apricots priced at \$6.99 per kg), which does not match how much people would normally consume of these items in a single sitting. By contrast, many other food products are priced around implicit or explicit serving sizes (example: single-serve apricot muesli bar priced at \$2.94), which help people better assess the cost of consuming those products.

Applying per serving size pricing approaches to fruit and vegetables – which we term *nutritional serve pricing* – might help increase fruit and vegetable consumption by better signalling actual consumption costs (example: apricots priced at \$1.05 per serve), thereby addressing a key barrier to their consumption – their perceived (un)affordability⁴.

What effect does it have?

Our previous Phase One research⁵ has shown that nutritional serve pricing increases:

- Actual vegetable purchasing
- Intention to purchase fruits and vegetables
- The perceived value for money of fruits and vegetables

What do we still need to know?

Our Phase One research was based on findings from a small field trial and a series of online experiments. What remains unclear is whether nutritional serve pricing can increase fruit and vegetable purchase patterns when rolled out across an entire supermarket chain.

Footnotes

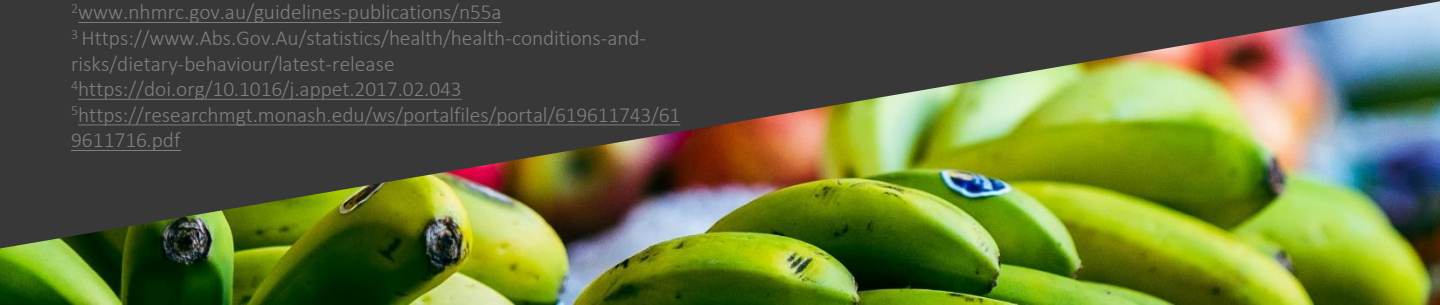
¹ www.nhmrc.gov.au/guidelines-publications/n55

² www.nhmrc.gov.au/guidelines-publications/n55a

³ <https://www.Abs.Gov.Au/statistics/health/health-conditions-and-risks/dietary-behaviour/latest-release>

⁴ <https://doi.org/10.1016/j.appet.2017.02.043>

⁵ <https://researchmgt.monash.edu/ws/portalfiles/portal/619611743/619611716.pdf>



Phase Two methodology

Store selection

On 13 March 2024, the Australian supermarket retailer Ritchies launched nutritional serve pricing across all of their 70+ stores nationally.

We evaluated the effect of this launch of nutritional serve pricing on sales of fresh fruits and vegetables by comparing pre- and post-launch sales from 2022-2024. The post-launch evaluation spanned 16 weeks (March 13th to July 2nd, 2024). However, for period-on-period comparisons, a 13-week period anchored to the March 13th launch date was used to more closely align with a standard quarterly timeframe.

To control for variations in sales volumes across this period from factors like store openings and renovations, we identified 56 'stable stores' that traded across this full period.



Example of nutritional serve pricing.

Outcome evaluation

We examined sales data across:

- Fresh fruits and vegetables
- Selected non-produce categories (examples: canned vegetables, canned fruit, frozen savoury pastries, dried fruit & nuts, frozen meals, frozen vegetables)

For the fresh fruits and vegetables category, we excluded stock keeping units (SKUs) that:

- Are not covered by fruit and vegetable nutritional serving sizes (dried/fresh herbs, spices, ginger, garlic, dried fruits/vegetables)
- Typically represent special commercial orders rather than regular customer purchases (large boxes of fresh produce)
- Did not display weight to permit the calculation of nutritional serve pricing (fruit/vegetable platters/trays or packs)

Analysis approach

To account for changes in consumer spending power across the analysis period (28 February 2022 – 2 July 2024), we adjusted sales revenue data for inflation using CPI (consumer price index) data from the Australian Bureau of Statistics, unless otherwise noted.



Findings: Individual-level outcomes (all shopper groups)

Approach

The effect of nutritional serve pricing on individual-level purchase volumes was tested across three consumer groups:

‘Semi-regular’ fresh produce shoppers: Loyalty card members who had purchased fruits and vegetables more than five times within the 60 days prior to nutritional serve pricing launch.

‘Ever’ fresh produce shoppers: All loyalty card members who had purchased fresh produce more than once in the previous two years.

‘All’ shoppers: All loyalty card members.

We analysed the full set of purchase data from 2022-2024 (850 consecutive trading days, excluding trading days when all stores are closed) to control for potential seasonal trends. The full set of variables that we controlled for included:

- Seasonal effects
- Category-specific time trends
- Category-specific effect of the number of transactions
- Deflated sales revenues
- Deflated price per quantity
- Average price per volume
- Promotions

Only filtered fruit and vegetable SKUs for which weight could be computed were analysed. These results therefore exclude items sold by item (example: avocados) or pack (example: packs of avocados).

Findings were based on aggregated transactions to provide an average purchase volume **per loyalty card holder** per day.

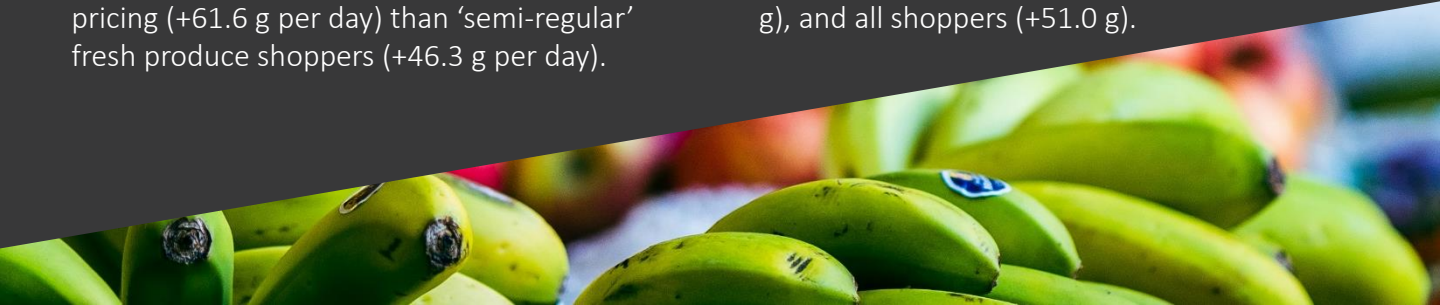
	Individual outcomes (daily)
	Purchase volumes
‘Semi-regular’ fresh produce shoppers	
Vegetables	+46.3 g**
Fruits	+49.7 g***
‘Ever’ fresh produce shoppers	
Vegetables	+61.6 g ***
Fruits	+49.6 g***
‘All’ shoppers	
Vegetables	+60.6 g***
Fruits	+51.0 g***

p < .01, *p < .001

Interpretation

Vegetables: The introduction of nutritional serve pricing significantly increased vegetable purchase volumes across all three customer groups, with the ‘ever’ fresh produce shoppers’ responding more strongly to nutritional serve pricing (+61.6 g per day) than ‘semi-regular’ fresh produce shoppers (+46.3 g per day).

Fruit: Significant increases in fruit purchase volumes were also observed, with similar purchase volume levels observed for all groups: ‘semi-regular’ fresh produce shoppers (+49.7 g per day), ‘ever’ fresh product shoppers (+49.6 g), and all shoppers (+51.0 g).



Findings: Individual-level outcomes (‘semi-regular’ shoppers)

Approach

Using the same set of purchase data from across 2022-2024 and the same set of control variables, we examined whether the effects of nutritional serve pricing varied with the unit price of fruits and vegetables.

To assess this, vegetable and fruit unit prices were divided into three tiers – low, medium, and high – based on terciles.

Analysis was conducted on loyalty card holders who were ‘semi-regular’ fresh produce shoppers. Once again:

- Only filtered fruit and vegetable SKUs for which weight could be computed were analysed.
- Findings were based on aggregated transactions to provide an average purchase volume per loyalty card holder per day.

	Individual outcomes (daily)
	Purchase volumes
Vegetables	
Low price	+48.7 g***
Medium price	+58.1 g***
High price	+37.5 g
Fruits	
Low price	-77.1 g***
Medium price	+49.7 g***
High price	+57.4 g***

*** $p < .001$

Interpretation

Vegetables: Nutritional serve pricing significantly increased purchase volumes for low-priced (+48.7 g per day) and medium-priced (+58.1 g per day) vegetables. A non-significant increase was also observed for high-priced vegetables.

Fruit: While nutritional serve pricing significantly decreased purchase volumes for low-priced fruit (-77.1 g per day), significant increases were observed for medium-priced (+49.7 g per day) and high-priced (+57.4 g per day) fruits. This pattern may suggest that some consumers ‘traded-up’ from lower- to higher-priced fruits in response to nutritional serve pricing. Our analysis of store-level outcomes are consistent with this interpretation.



Findings: Store-level outcomes

Approach

We examined the effect of nutritional serve pricing on two store-level outcomes (daily purchase volumes; daily deflated sales revenue) over the same time periods – and using the same controls – as for our analysis of individual-level outcomes.

Once again, only filtered fruit and vegetable SKUs for which weight (in grams) could be computed were analysed.

However, unlike our analysis of individual-level outcomes, our analysis of store-level outcomes included both loyalty card holders and non-card holders.

	Store outcomes (daily)	
	Purchase volumes	Sales revenue
Vegetables	+7.5 kg**	+\$82.52***
Fruits	-0.6 kg	+\$40.49*

* $p < .05$, ** $p < .01$, *** $p < .001$

Interpretation

Vegetables: The introduction of nutritional serve pricing significantly increased daily store-level purchase volumes (7.5kg) and deflated sales revenues for vegetables (\$82.52). These values equate to a 3.3% increase in purchase volumes and a 6.7% increase in deflated sales revenues.

Fruit: Daily store-level deflated sales revenue for fruit increased by \$40.49 following the introduction of nutritional serve pricing, representing a 3.6% increase.

No significant effect – positive or negative – was observed for store-level fruit purchase volumes. This suggests that the introduction of nutritional serve pricing may have encouraged consumers to ‘trade-up’ by purchasing higher-priced fruits.



Findings: Period-on-period sales revenue

Approach

Equivalent 13-week time periods were compared across 2022-2024, with the start of each period set to coincide with: (i) the date of the 2024 launch of nutritional serve pricing; and (ii) the beginning of the retailer’s promotion week, which is set for the Wednesday of each week. These periods were:

- 16 March 2022
- 15 March 2023
- 13 March 2024

Two sets of period-on-period sales revenue comparisons were analysed:

- Deflated sales (accounting for changes in CPI across each period) and filtered SKUs.
- Non-deflated sales (not accounting for changes in CPI) and filtered SKUs.

The deflated sales/filtered SKUs values are our preferred measure for assessing the effect of nutritional serve pricing on period-on-period sales.

We conducted these analyses twice: for the 56 ‘stable’ stores that were trading across the entire data period, and for all stores for which we had data.

	Period-on-period sales revenue (stable stores)		Period-on-period sales revenue (all stores)	
	2022-3	2023-4	2022-3	2023-4
Deflated sales, filtered SKUs				
Produce (fruits and vegetables)	-10.7%	+1.2%	-11.1%	+6.0%
- Vegetables only	-15.2%	+0.7%	-15.4%	+5.7%
- Fruits only	-4.2%	+1.8%	-4.9%	+6.5%
Non-deflated sales, filtered SKUs				
Produce (fruits and vegetables)	-5.1%	+4.9%	-5.5%	+9.9%
- Vegetables only	-9.8%	+4.4%	-10.0%	+9.6%
- Fruits only	+1.9%	+5.5%	+1.2%	+10.4%

Interpretation

Relative to the corresponding period in the previous year, deflated sales revenue in the 13-week evaluation period (that is, 2023-4) increased for produce (fruits and vegetables) as well as for vegetables only and fruit only.

Notably, the same pattern was observed for non-deflated sales revenue as well as when analysis was expanded to include all stores for which we had data.



Conclusions

Nutritional serve pricing

This Phase Two study broadly supports our earlier Phase One findings that nutritional serve pricing provides benefits for: (i) stores that implement it; and (ii) the individuals who shop at those stores. For example, nutritional serve pricing:

- Increased individual-level purchase volumes for fruits and vegetables.
- Increased store-level sales revenues for fruits and vegetables.

Limitations

Because of the whole-of-chain rollout of nutritional serve pricing, it was not possible to compare longitudinal effects with control stores, thereby limiting the causal inferences that can be drawn from the Phase Two findings. These findings should therefore be interpreted alongside our earlier Phase One studies, which provide stronger causal evidence.

Implications

Nutritional serve pricing is a low-cost approach that can be applied at scale to improve fresh produce consumption and, by extension, the health of Australians.



Contact

A/Prof Fiona Newton

T: +61 3 9904 4501

E: fiona.newton@monash.edu

Prof Josh Newton

T: +61 3 9251 7830

E: j.newton@deakin.edu.au

Prof André Bonfrer

T: +61 3 9246 8475

E: andre.bonfrer@deakin.edu.au

Funding disclosure statement

No external sources of funding were received by the research team to undertake this research.



MONASH
University

