

Using supermarket sales data to estimate nutrient intakes

A comparison with repeat 24-hour recalls

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Dietary assessment

- Traditional methods
 - strengths and weaknesses
 - no ideal method
- Supermarket sales data
 - can be collected routinely
 - do not rely on participant memory or adequate reporting
 - no participant burden
 - suitable for use with all age groups and literacy levels



Collection of supermarket sales data

- Approximately 65% of food expenditure in NZ undertaken in supermarkets
- Household-level data
- Need means of collecting individual customer purchases
 - E.g. loyalty card



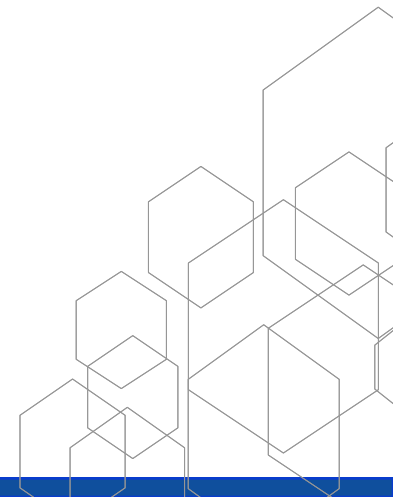


Aim

- Compare household purchased nutrients estimated using electronic supermarket sales data (3-months)

with

- Individual nutrient intakes measured using a traditional dietary assessment method (repeat 24-hour recalls)





Methods



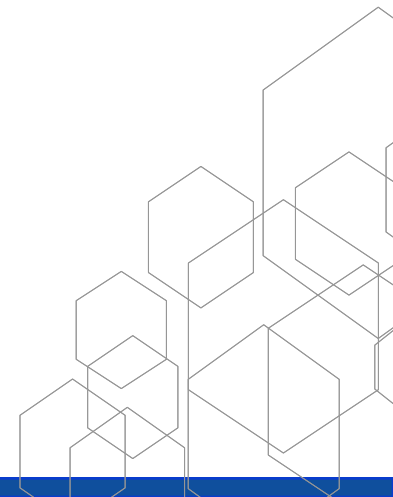
- Random sample of 50 from the SHOP trial
- Three months baseline electronic data collected via hand-held barcode scanners
 - merged with food and nutrient database
- Four 24-hour dietary recalls over same time period
 - three week days, one weekend day
 - methods based on US and NZ national nutrition surveys
 - data also collected on where food purchased/obtained





Methods

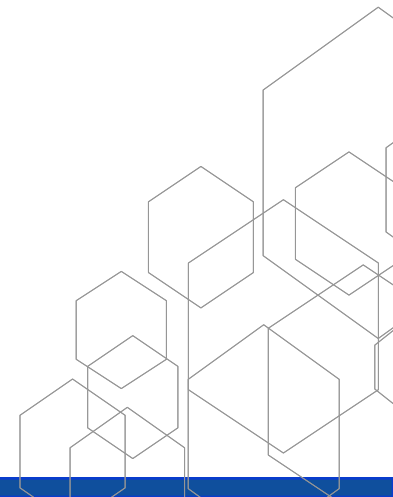
- Seven nutrients relevant to nutrition-related disease
 - Energy density assessed separately
- Percentage-based denominators to account for 3 months purchases vs. 4x dietary recalls
 - E.g. % energy total fat, and mg/MJ sodium
- Spearman rank correlations
 - associations between purchases and intakes
- Paired t-tests
 - differences between purchases and intakes





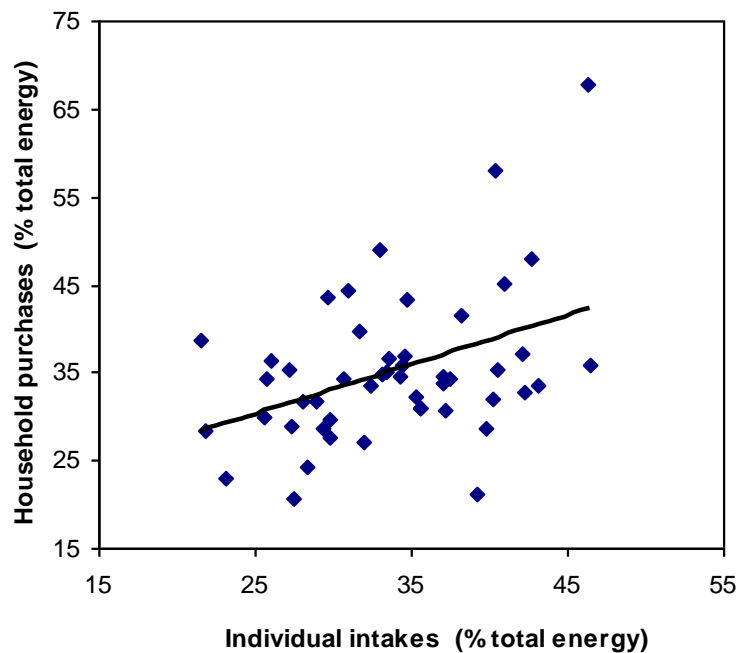
Results

- Data from 49/50 participants included
- Complete data (four diet recalls) collected for 47/49 participants
- Predominantly female (84%)
- Educated (53% tertiary qualifications)
- Higher incomes (39% HI \geq 100,000)



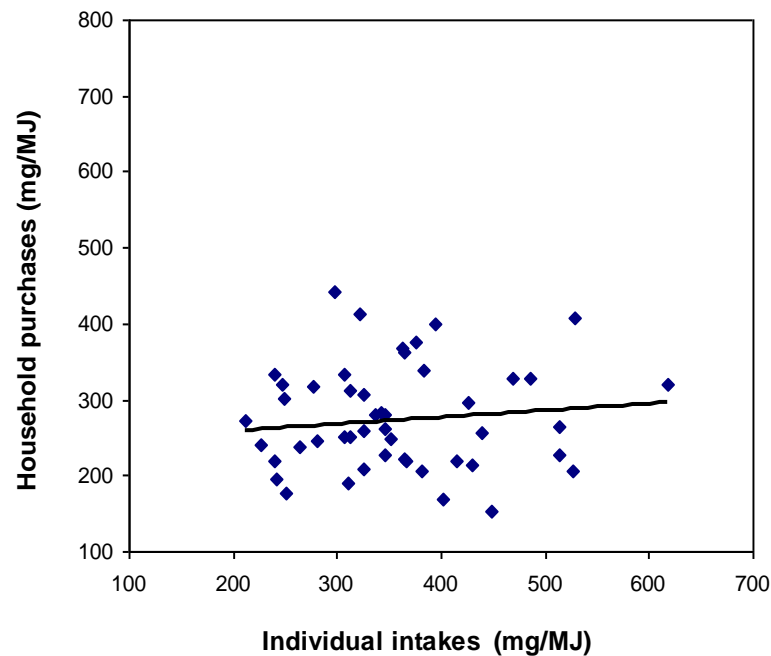


Results - correlations



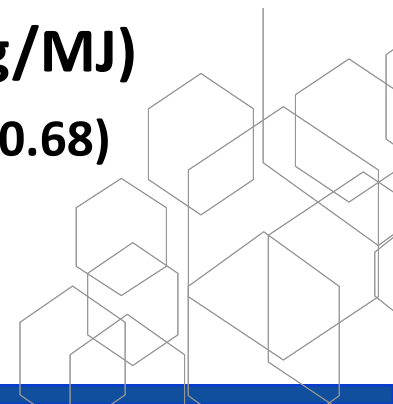
% ENERGY SATURATED FAT

$r=0.54$ ($p<0.001$)



SODIUM (mg/MJ)

$r=0.006$ ($p=0.68$)





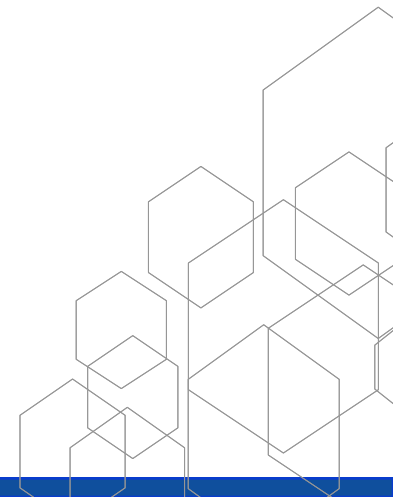
Results - correlations

Nutrient	r	P-value
Saturated fat (% total energy)	0.54	0.001
Carbohydrate (% total energy)	0.48	0.001
Protein (% total energy)	0.44	0.001
Energy density non-beverages (KJ/kg)	0.37	0.009
Total fat (% total energy)	0.34	0.017
Sugar (g/MJ)	0.33	0.02
Energy density of beverages (KJ/kg)	0.09	0.578
Sodium (mg/MJ)	0.06	0.68



Results - differences

- No significant differences (~1% TE) between purchases and intakes for
 - % energy saturated fat
 - % energy total fat
- Differences for other five nutrients larger and statistically significant ($p < 0.05$)





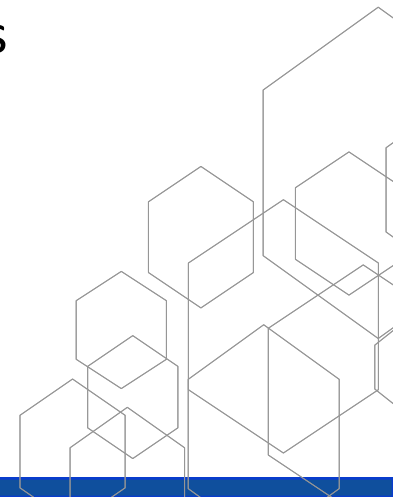
Conclusions

- Correlations generally expected
- Electronic sales data useful surrogate measure of some nutrient intakes
- In the case of a supermarket intervention
 - Effect on sales of % energy from saturated and total fat likely to also impact individual intakes of these nutrients



Potential limitations

- Electronic data
 - specific to one food retailer only
 - data owned by retailer
 - purchases not intakes
 - household-level not individual level
 - common limitations of all nutrient databases
- Current study
 - supermarket sales database 3,000 products
 - different food and nutrient databases for purchases and intakes
 - use of the hand-held self-scanner





Funding and acknowledgements

Manufactured Food Database

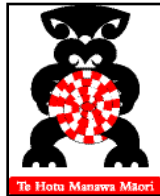


Manufacturers



Foodstuffs Wellington Pak N Save

SHOP team



Kokiri Marae Keriana Olsen Trust



Health Research Council



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Reference and contact

Reference: Eyles H, Jiang Y, Ni Mhurchu C. Use of household supermarket sales data to estimate nutrient intakes: a comparison with repeat 24-hour dietary recalls. *Journal of the American Dietetic Association* [In press]

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