

Do sugary drinks contribute to obesity in children?

A report completed by the
Scientific Committee of ANA

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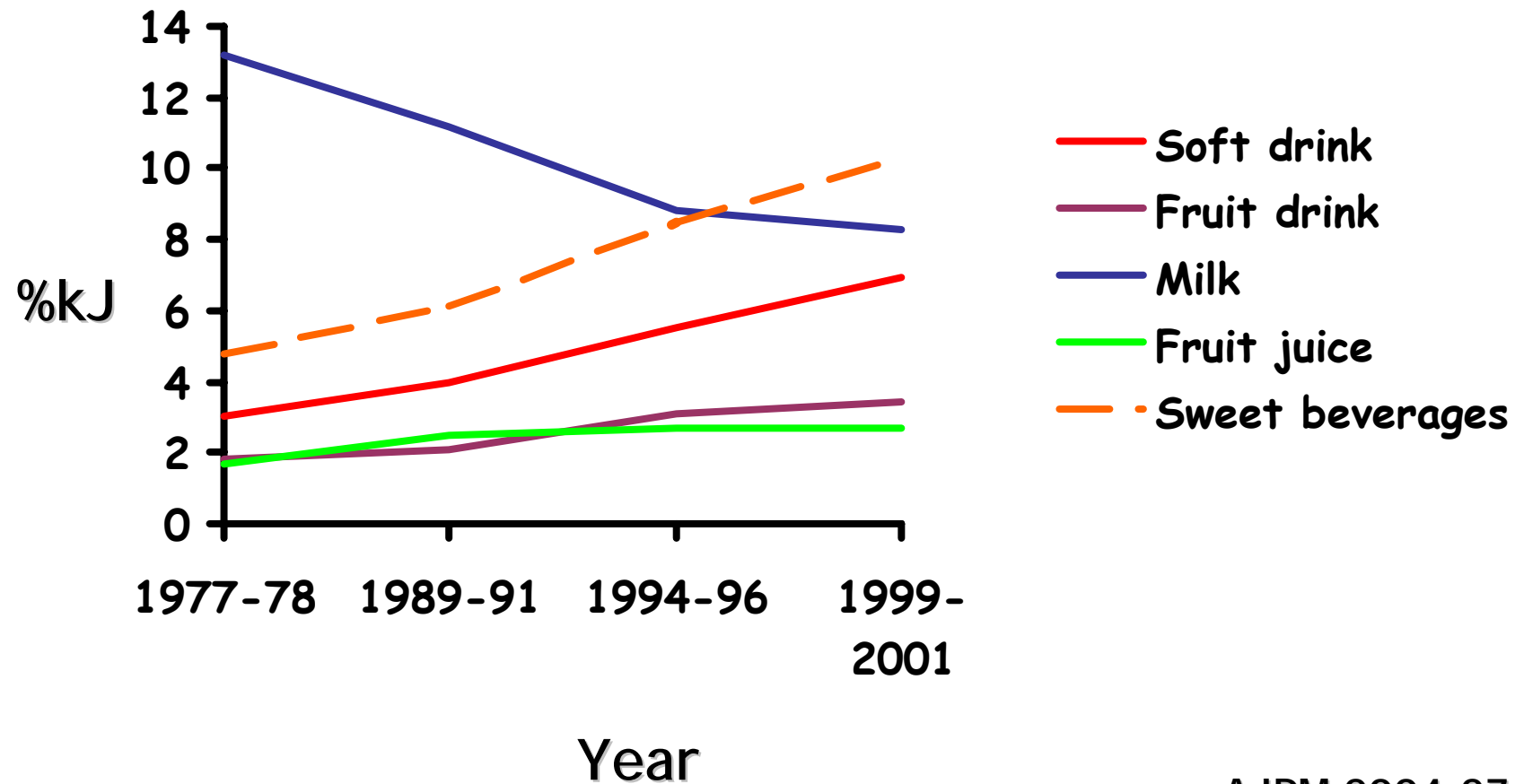
Robert Scragg

on behalf of:

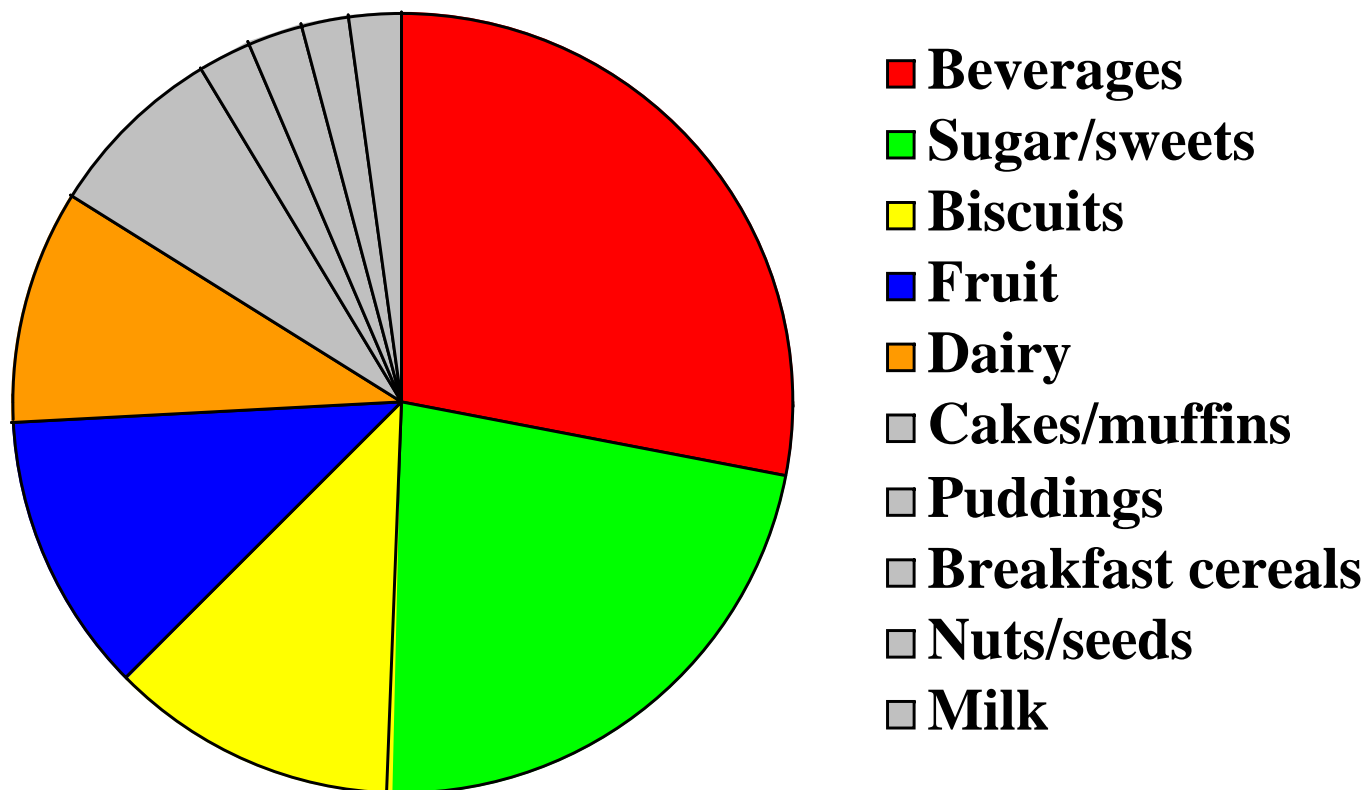
Rachael Taylor
Robert Quigley



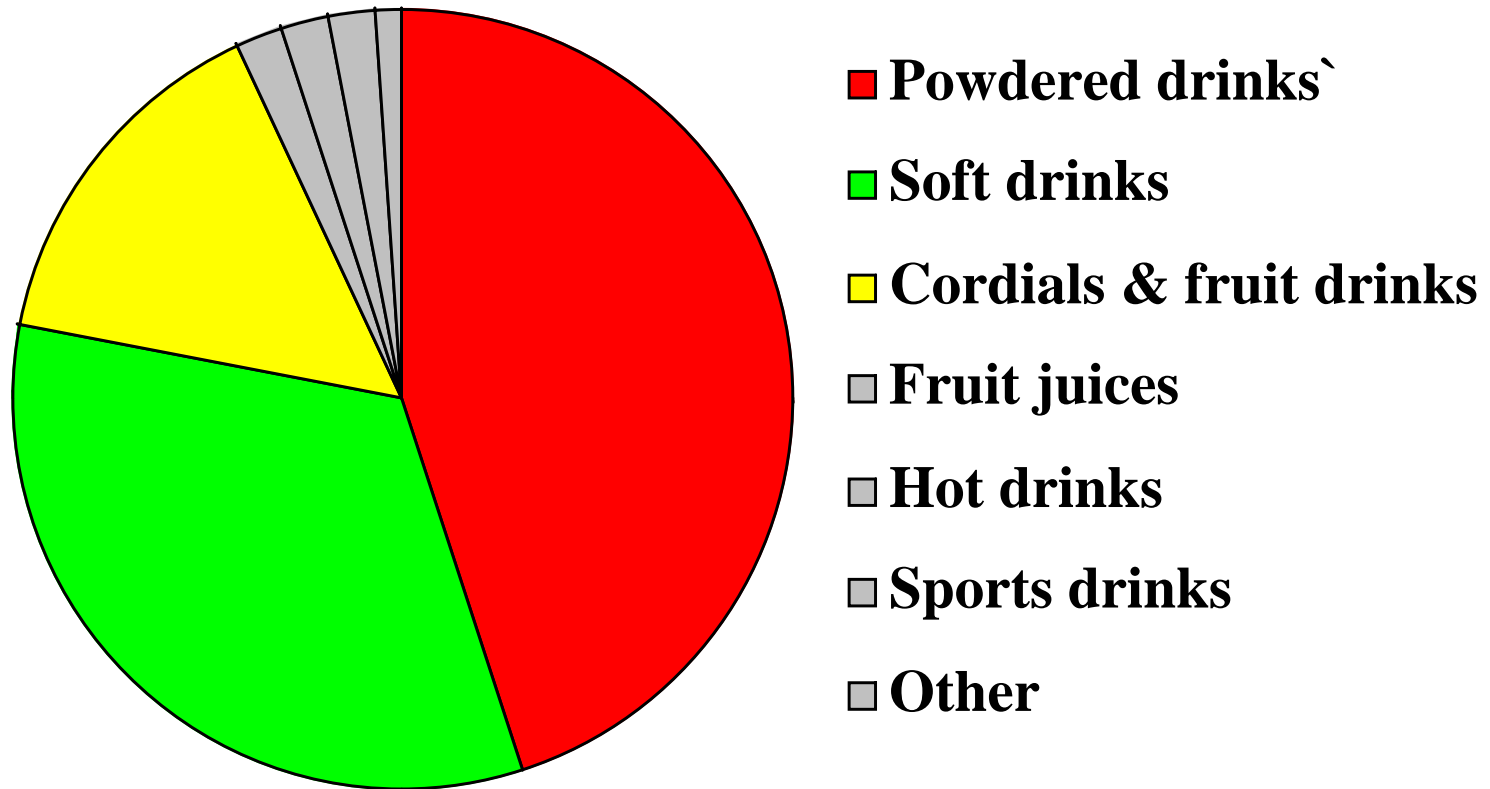
Trends in beverage consumption in US over time (2-18 yr olds)



Sources of sucrose in NZ children



Contribution of different beverages to sucrose intake in NZ children (within beverage category)



CNS 2002 data, N Wilson

Energy and sugar content of drinks in NZ (per 250ml)

	Energy (kJ)	Sugar (g)
Regular soft drinks	452	26
Diet soft drinks	7	0
100% fruit juice	441	25
Fruit drinks	415	25
Flavoured milk	729	23
Energy drinks	492	28
Sports drinks	338	18
Flavoured waters	129	7

Aim

- To critically evaluate the published scientific literature in order to answer the following question:

“Do sugary drinks contribute to obesity in children”?

Methods

- Search of the literature using several databases 1998-2005 (Feb)
- Yielded 157 possible articles
- 46 were found to be potentially relevant
- The committee discussed each document and agreed on inclusion/exclusion
- Additional references were found using reference lists from each article and further more specific searching of Medline

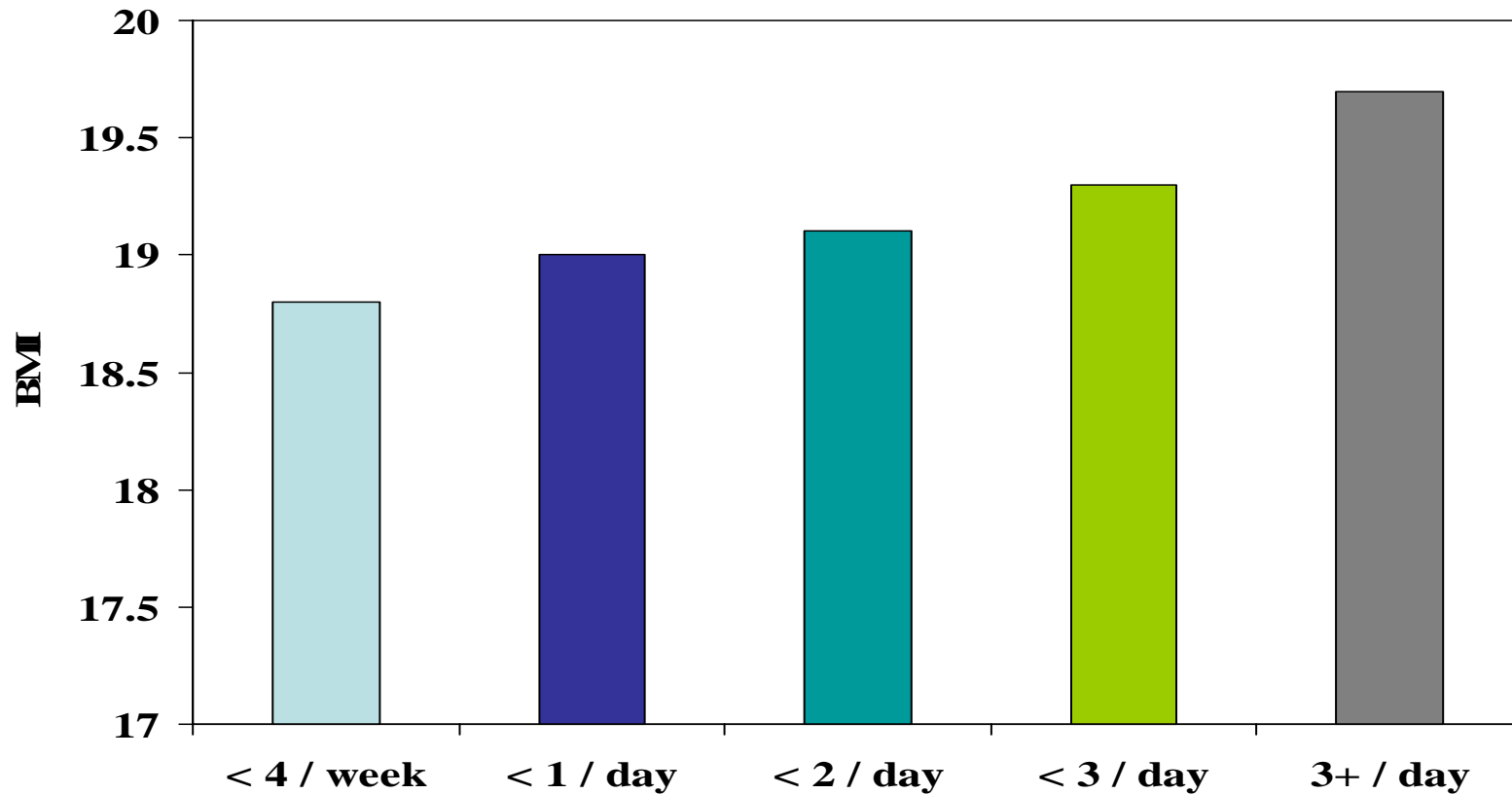
Summary of studies

Association	X-sect	Cohort	Intervention	Total
Positive $p < 0.05$	7	4	1	12
None $p > 0.05$	4	1	0	5
Negative $p < 0.05$	0	0	0	0

Analyses from the National Children's Nutrition Survey (2002)

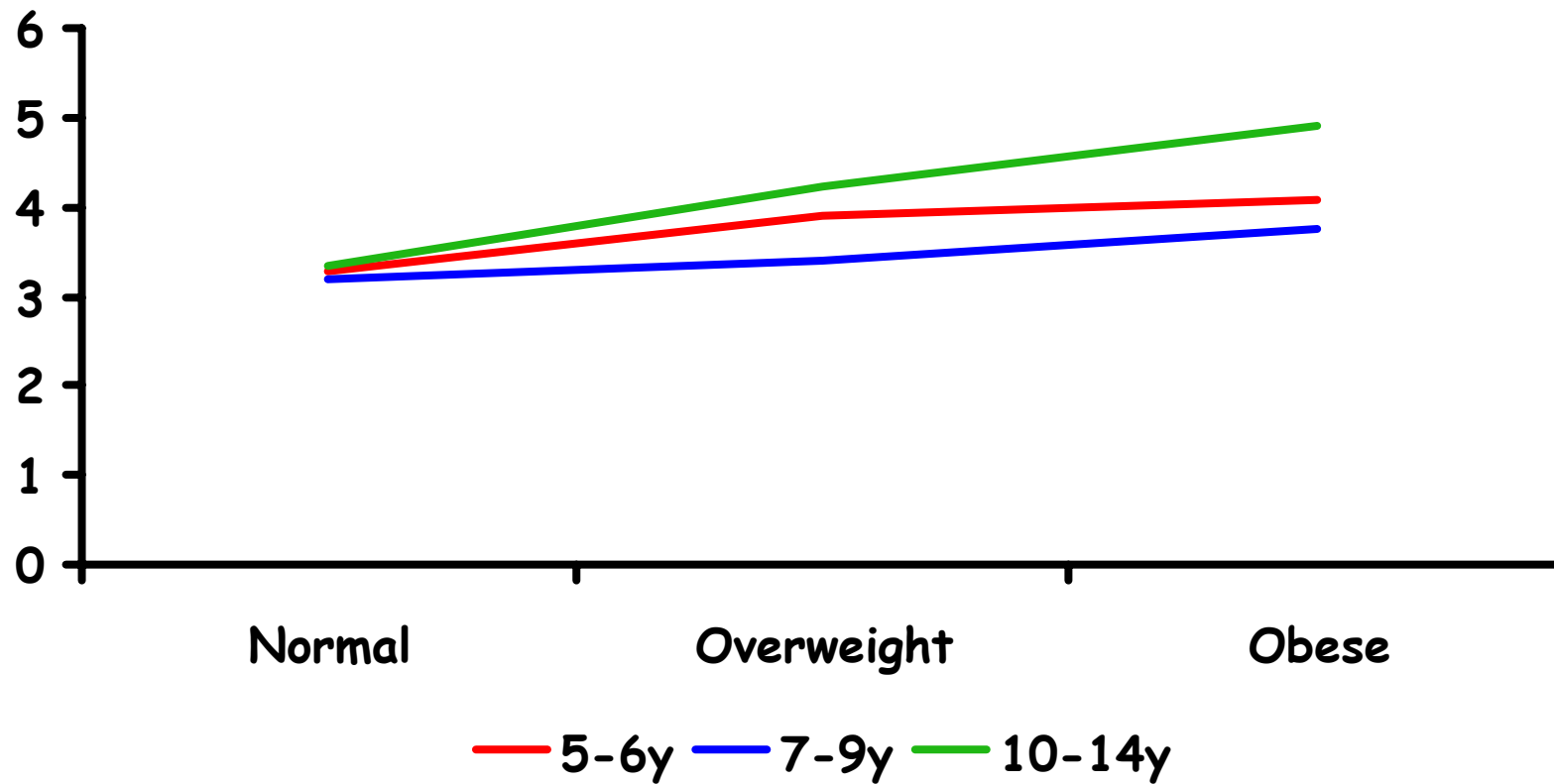
- **Utter et al** analysis used the **FFQ data** to investigate whether increased frequency of soft drink intake was related to **BMI**, adjusting for confounders
- **Wilson et al** analysis used the **24-hour recall** data to investigate whether all beverages containing sugar combined as a % of kJ was related to **obesity & overweight**, adjusting for confounders

Mean BMI by Intake of *All Sugary Drinks* adjusted for age, sex, ethnicity, NZDep



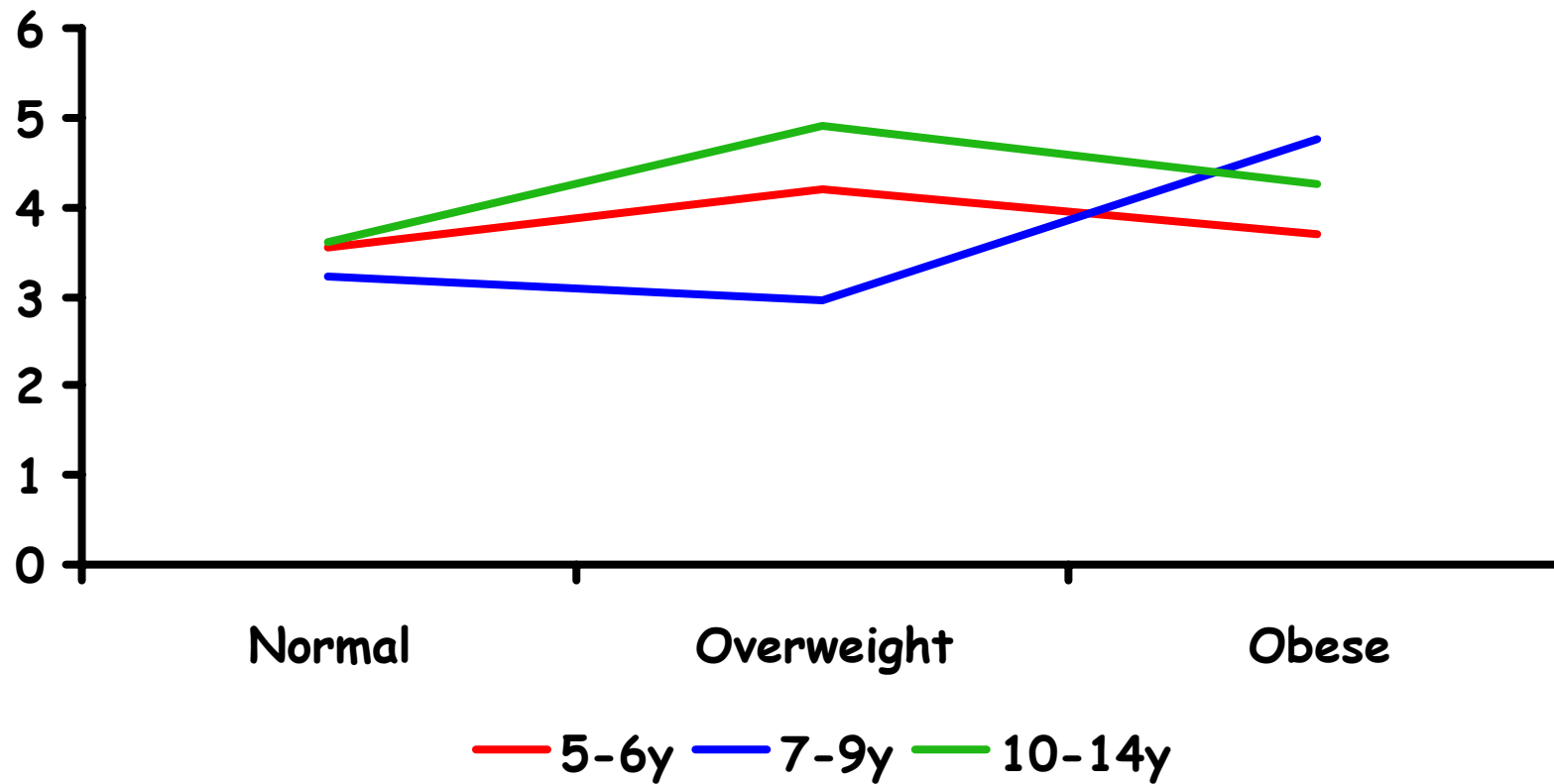
%kJ from sugary beverages in boys

Wilson analysis, $P > 0.01$



%kJ from sugary beverages in girls

Wilson analysis, $P > 0.01$



Potential explanations for discrepant CNS results

- Different **dietary** methods
 - FFQ **v.** 24 hr recall
 - Number of servings **v.** %kJ
- Different **statistical** methods
 - Combined **v.** stratified

Conclusions

- **Extensive evidence** exists that sugary drinks play a role in promoting weight gain in children
- Advisable to **limit/reduce** the intake of all high **sugar** drinks
- Increase **promotion** of **water** and **milk** as suitable beverages for children

A tax on sugary drinks?

Sugar drinks are **price sensitive**, particularly in heavy drinkers:

- Price elasticity = - **1.60** in heavy drinkers (Norway)
- 10% tax would decrease their consumption by 16%
- Gustavsen 2004

- Many US states have tax eg. in **Arkansas**
- 2c tax per can generates **\$40 million** per year
- Spent on Medicaid
- Jacobson: Am J Publ Health 2000.

In NZ could be spent on '**fruit in schools**'.

Does watching TV contribute to increased body weight and obesity in children?

www.ana.org.nz

Robert Scragg

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for the ANA Scientific Committee



NZ children are watching large amounts of TV

Study	Age	Year	Average mins/day	% watching 2 or more hours/day
DMHDS	5-15y	197	144 M	61%
		7-87	132 F	
CNS 2002	5-14y	200 2		27% weekday 40% weekend
NZTVBC	5-13y	200	127	40%
Census AtScho	10- 15y	200 ⁵ 5		43%

When do children watch TV?

- Of the top 60 programmes watched by children aged 5-13 years, only four screen in designated children's time slots
- **Peak viewing time** for children aged 5-13:
 - 6.30-9.00pm in **weekends**
 - 6.30-8.45pm on **weekdays**;
 - not 2.30-5.00pm.
- Significant numbers of children watch TV until 10.00pm on weeknights and 10.30pm on weekends

Methods

- Search of the literature using several databases Jan 1999-June 2005
- The committee discussed each document and agreed on inclusion/exclusion
- Additional references were found (back to the 1st report in 1985) using reference lists from each article

Is TV viewing associated with increased body weight or obesity in children?

	Direction of association			Total
	+ve	None	-ve	
X-sectional	31	10	0	41
Case-control	1	1	0	2
Cohort	9	5	0	14
Intervention	4	3	0	7
Total	47	19	0	66

Potential explanations of the link between TV viewing and obesity

- TV causes a **reduction** in the resting metabolic rate
- TV **displaces** more **active** past-times
- TV **increases** consumption of food, particularly more **energy-dense** foods

Does watching TV replace more active pursuits?

	Direction of association			Total
	+ve	None	-ve	
X-sectional	1	14	15	31
Case-control	0	0	0	0
Cohort	1	1	1	3
Intervention	0	2	0	2
Total	2	17	16	36

Is TV viewing associated with dietary intake?

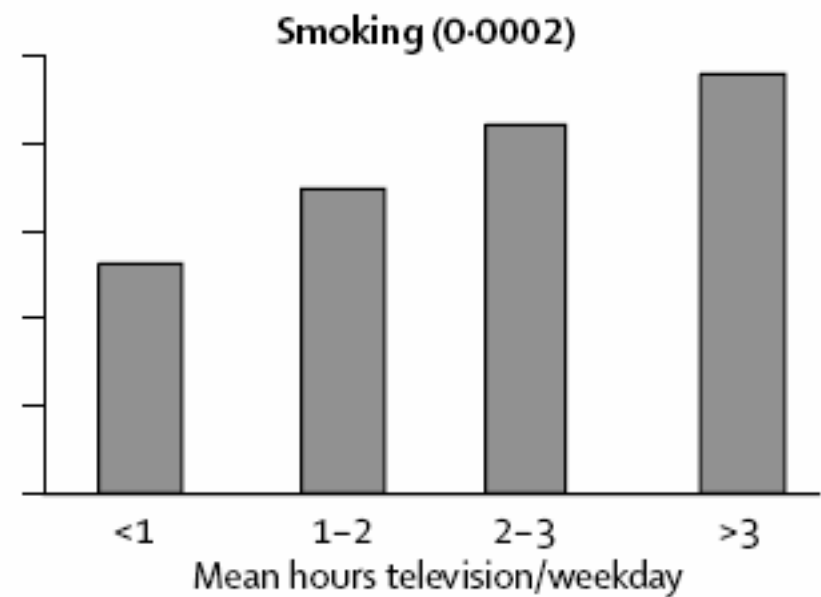
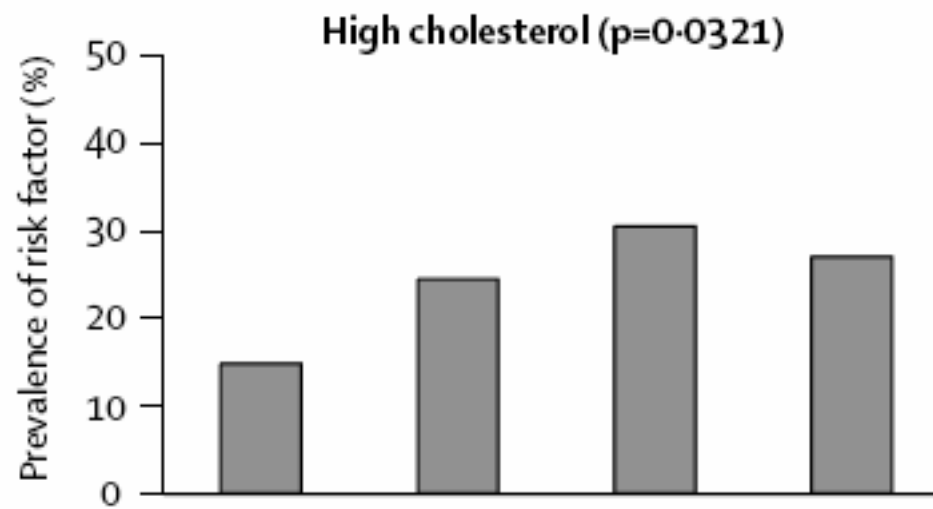
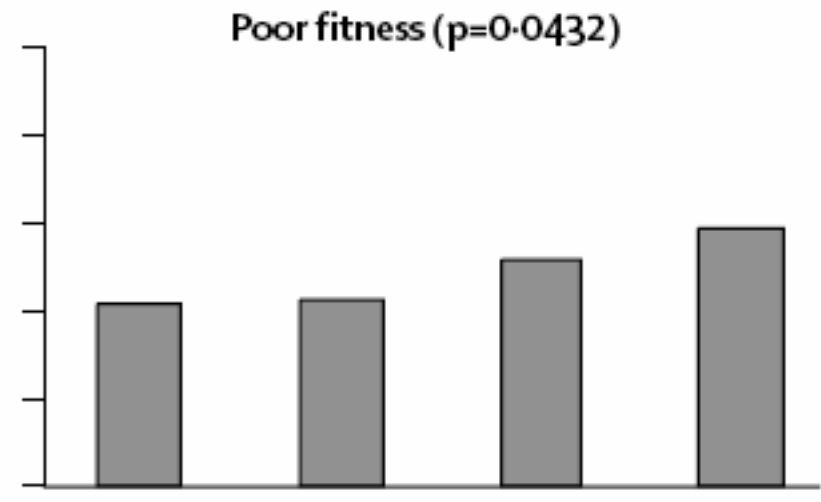
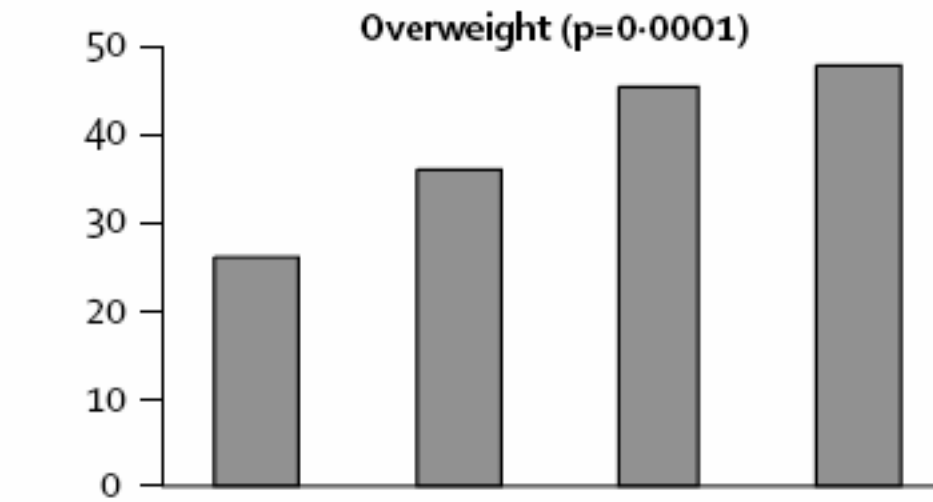
	Type of diet			Total
	Adverse	None	Beneficial	
X-sectional	15	3	1	20*
Case-control	0	0	0	0
Cohort	3	1	0	4
Intervention	1	0	0	1
Total	19	4	1	25

*Includes one x-sectional study where statistics were not reported

What is the NZ evidence?

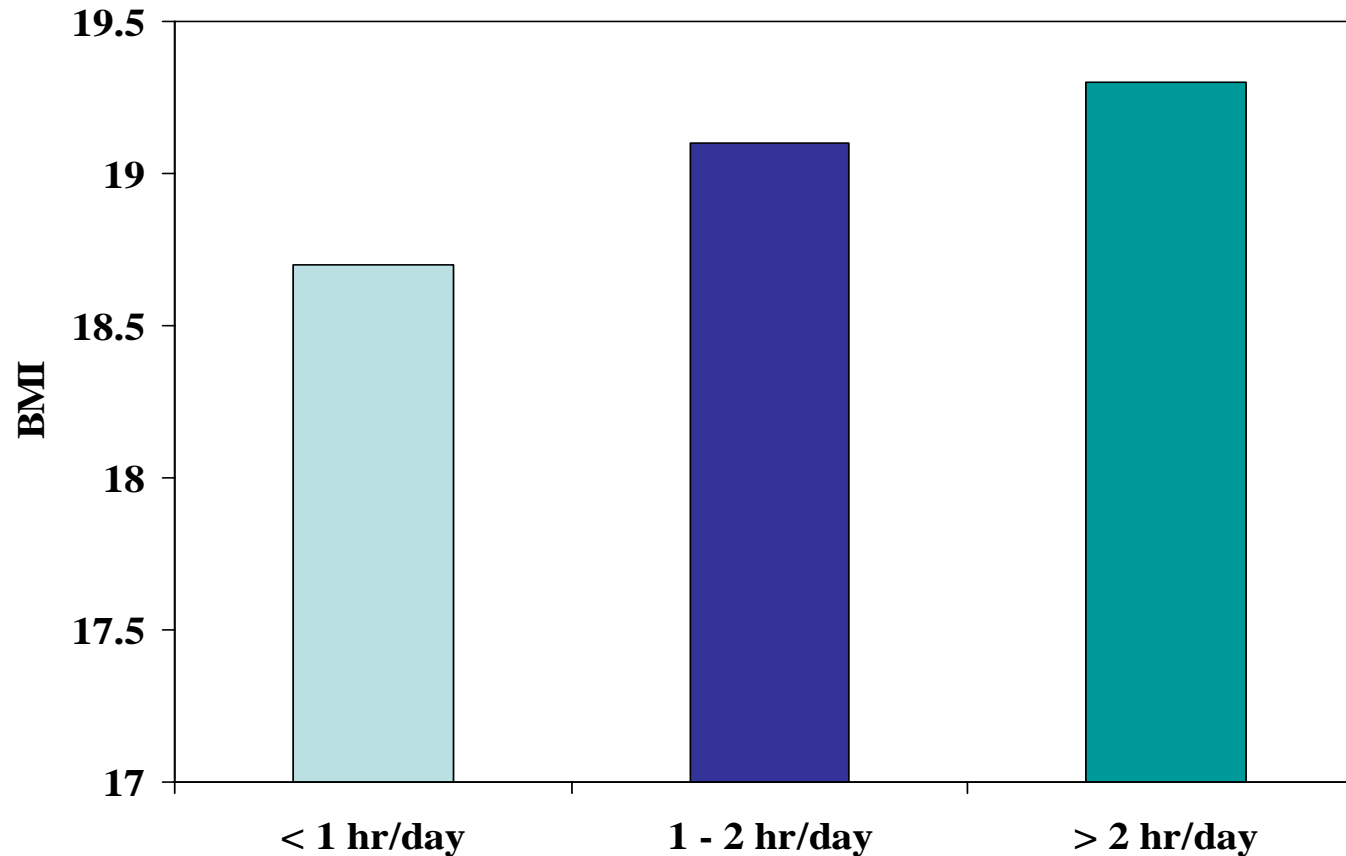
Dunedin Multidisciplinary Health & Development Study

- 61% watched 2 or more hours of TV each day at age 5-15 years
- TV related to obesity in both cross-sectional and longitudinal analyses
- Effects long-lasting: 17% of overweight, 15% of high cholesterol, 17% of smoking and 15% of poor fitness at age 26 explained by watching more than 2 hours of TV per day during childhood

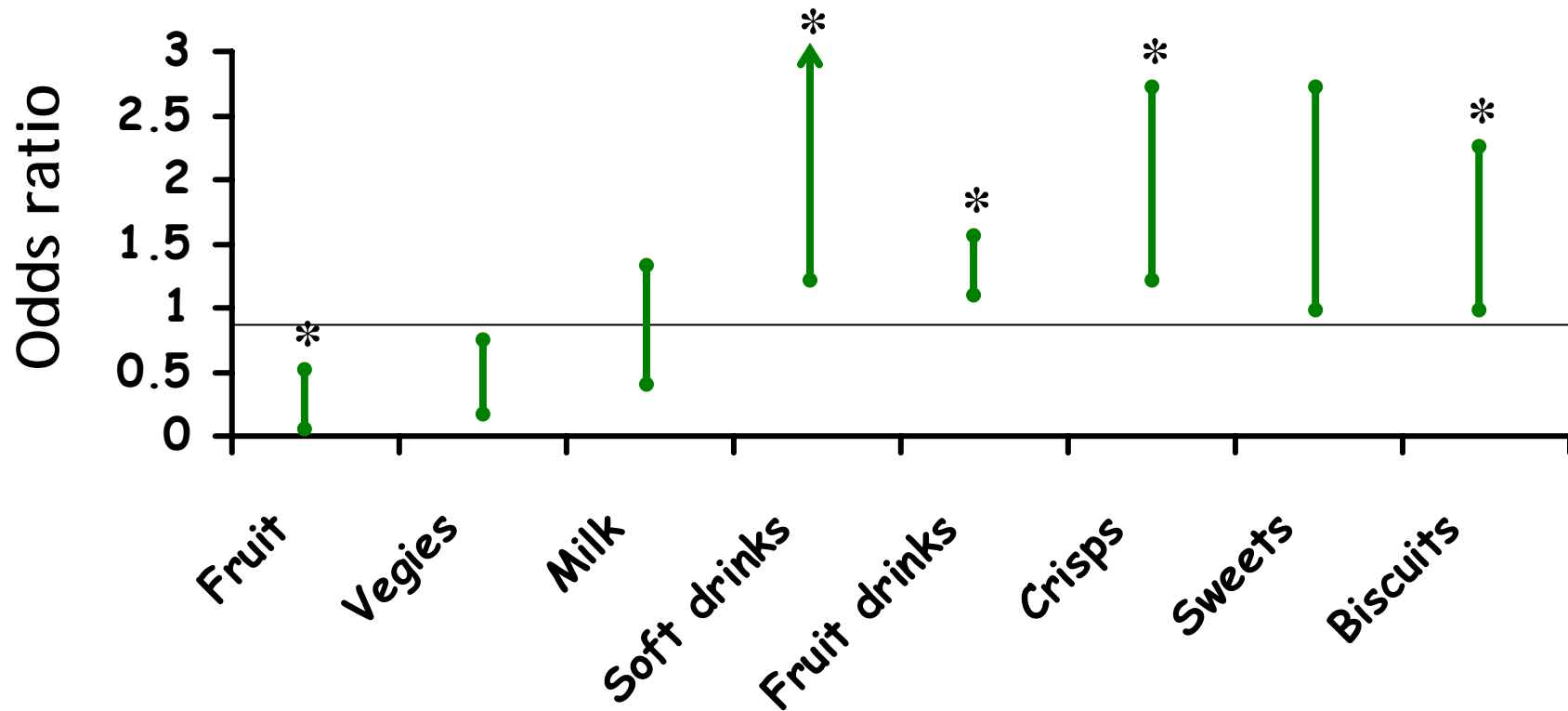


Lancet 2004; 364: 257-62

CNS: Mean BMI by *TV hours/day* adjusted for age, sex, ethnicity, NZDep



ORs for the association between high consumption of some foods and TV viewing: 2+ vs < 1 h/d



CNS2002: 5-10 year old children

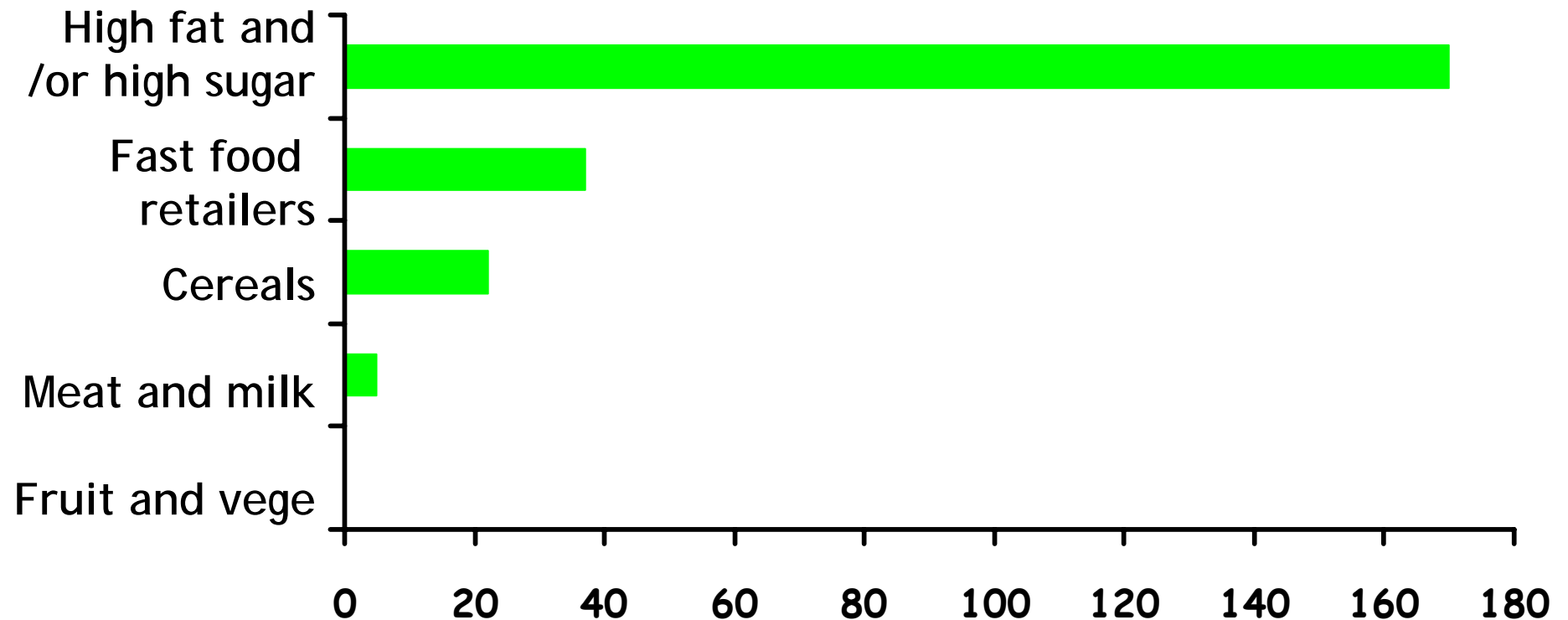
Public Health Nutrition 2006; 9: 606

TV advertising content in NZ

Surveys in 1997 and 2005

- Increased number and proportion of food advertisements over time (29% to 42%)
- NZ has more advertisements for food “high in fat and/or sugar” than Australia
(69%TV2 and 80%TV3 vs 54% in Oz)

Number of food advertisements by food category in NZ



Conclusions (1)

- NZ children are watching large amounts of TV
- Most viewing occurs outside designated children's programming
- Children are exposed to large amounts of food advertising counter to improved nutrition
- 71% of studies investigating the relationship between TV and obesity in children report a positive relationship

Conclusions (2)

- 19 of 25 studies report that increased TV viewing is associated with a less nutritious diet
- International reports have identified marketing as a probable cause of childhood obesity

Recommendations

- **Children and families**
 - Reduce TV viewing to 1 hour per day or less
- **Health Professionals**
 - Educate parents & children about TV
- **Schools**
 - Include curriculum to reduce TV viewing
- **Government**
 - Ministry of Education support curriculum development
 - Legislate against marketing of energy-dense foods & beverages via TV and its characters