



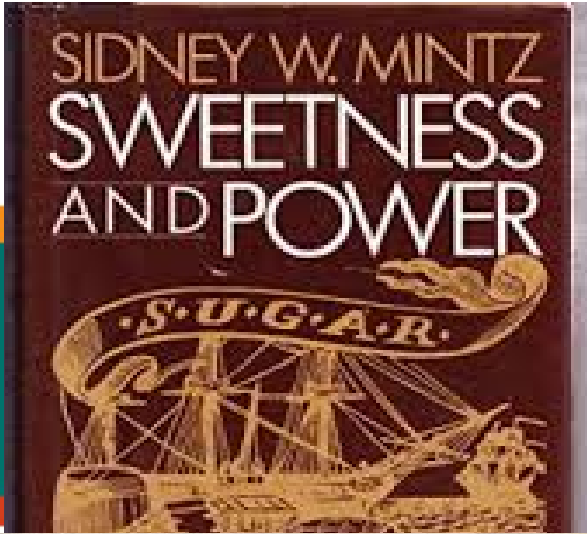
# Cariogenic food and drink consumption and dental problems in 3 and 5-year olds

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# Cariogenic Food and Drink



SEARCH 'CHANGE4LIFE' TO DOWNLOAD THE SUGAR SMART APP AND FIND OUT HOW



## Health returns with LUCOZADE

people all over the country have cause to be grateful for this wonderful drink

**People with homes and families**  
When sickness strikes at the heart of a family there's worry in the home — and its happy organization is upset. This is the time when Lucozade is such a blessing at the bedside. Over and over again its remarkable energy-giving qualities have been proved — in sickness, convalescence and in plain, everyday tiredness. Proved by doctors, proved by nurses, proved by people in every walk of life.

**People like us!**  
We can find priceless benefits for ourselves and our children in Lucozade. The benefit of resistance to illness and, if it does strike, the benefit of aid to speedy recovery. Yes, Lucozade is a remarkable drink, winning eager acceptance even when nothing else can be kept down, stimulating the reluctant appetite of a listless patient. So do be wise this winter — keep Lucozade by you always! Doctors and Nurses use Lucozade in Clinics, Hospitals, Nursing Homes and Schools.

**We receive letters like this every week**  
"I have two young children who have just recovered from measles and who owe their speedy recovery to the fact that when jaded appetites were the order of the day we introduced Lucozade to their diet and this did the trick completely... and they picked up wonderfully." Mr. H. Northfield, Norwich, Norfolk.

**LUCOZADE**  
the sparkling glucose drink  
**REPLACES LOST ENERGY**





# Dental Public Health Relevance

- Dental caries main reason for “dental problem visits”  
(Declerck, 2008; Leroy, 2013; Luzzi, 2013)
- Primary dentition dental caries: 620 million children worldwide in 2010 (Kassebaum, 2015)
- Main source oral pain through childhood (Selwitz, 2007)
- Best predictor of future caries in permanent dentition  
(Tinanoff, 2009;Gussy, 2006)
- First dental visit before 12months (AAPD, 2016)



# Simple dental health model

Early Childhood Caries: The presence of one or more decayed, missing or filled teeth in children aged up to 71 months

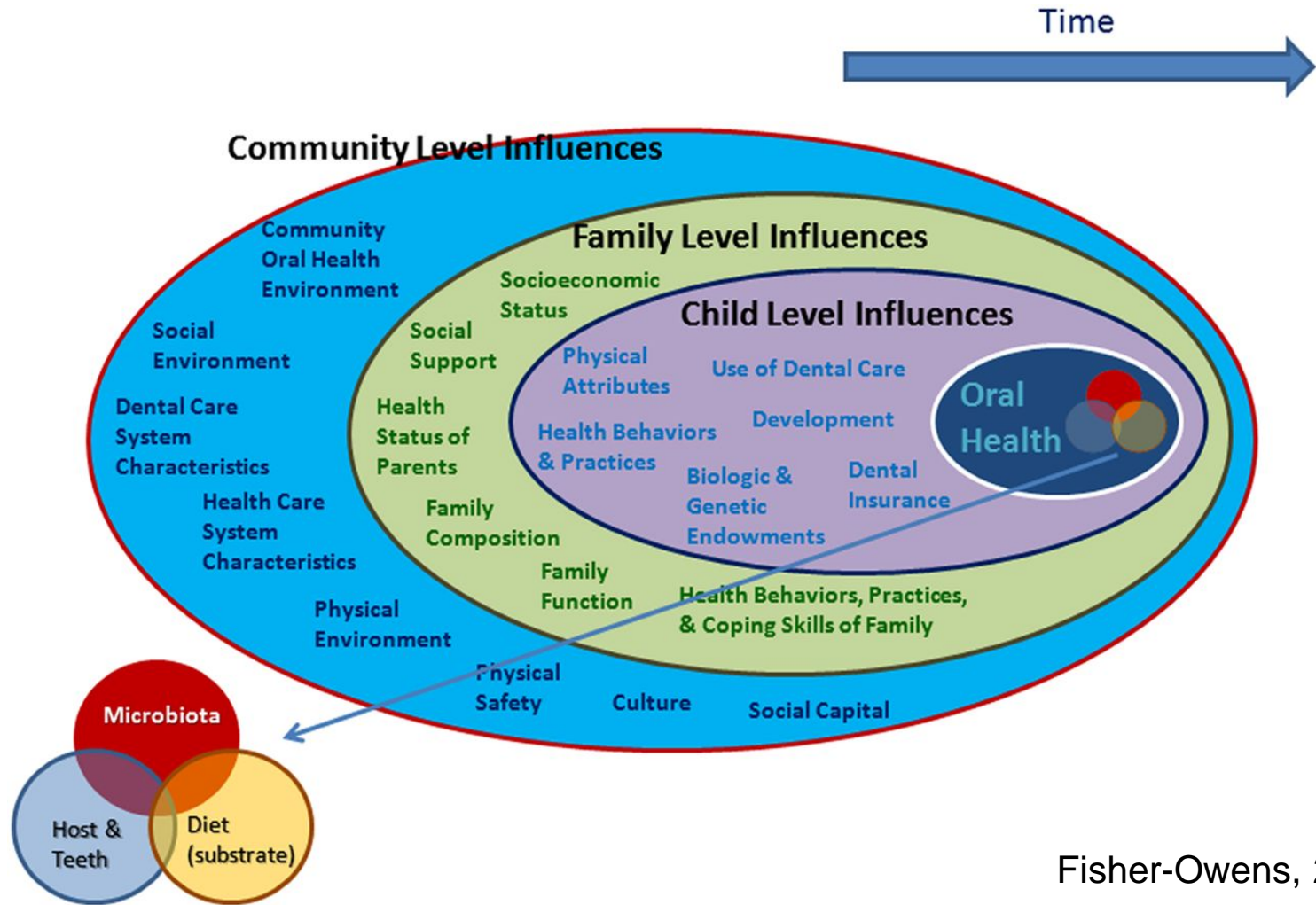
biofilm

Dental caries

surface

Time

# Dental Problems



# Cariogenic food and drink



**DENTIST'S WARNING**  
ON SMOOTHIES AND JUICES

OnDietAndHealth.com



**SUGARY CEREALS**  
Sugar content per 100g  
Adult recommended daily sugar intake is 90g (Dieticians Association of Australia)

Cereal	Sugar Content (per 100g)
Frosties	41.3g
Froot Loops	38g
Coco Pops	36.5g
Nutri-Grain	32g
Crunchy Nut Clusters	28.9g

**SALTY CEREALS**  
Pinches of salt per 100g  
Adult daily recommended salt intake is 6g or 24 pinches (National Medical and Health Research Council)  
Source: Obesity Policy Coalition

Cereal	Salt Content (per 100g)
Crispix	1.1
Nutri-Grain	0.9
Cornflakes	0.8
Rice Bubbles	0.8
Special K	0.8



SUGAR

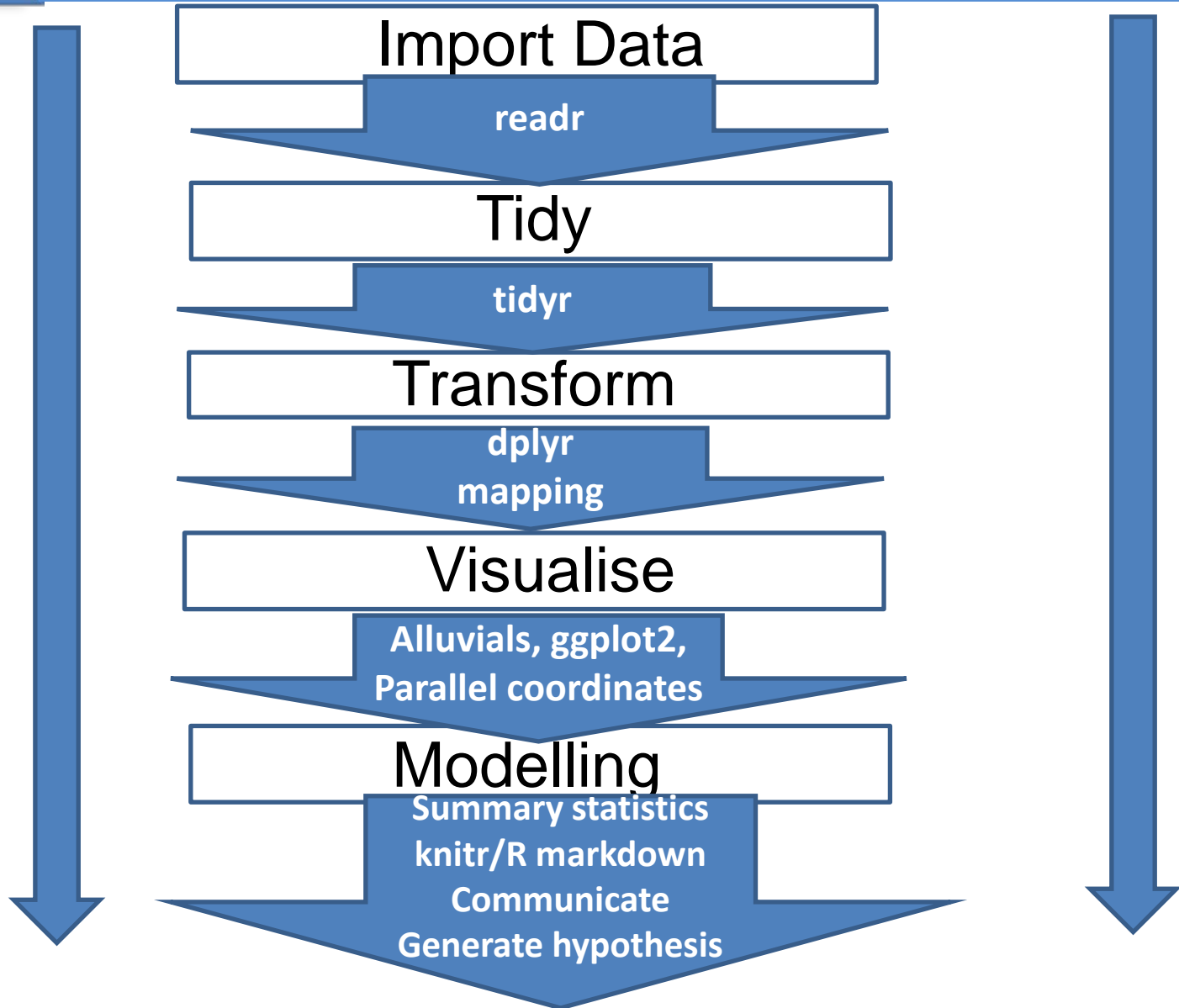


SUGAR SWEETENED BEVERAGES

# Methods

- GUI Infant cohort: 3 years (n=9,793) and 5 years (n=9001)
- Frequency Questionnaires- SFQ v FFQ
- Dental problem requiring visit to dentist
- Secondary data analysis, waves 2 and 3 GUI
- R studio/R markdown (<http://cran.us.r-project.org>  
<http://rmarkdown.rstudio.com>)
- Data visualisation: Parallel coordinates/Alluvials

# Data Pipeline







# Data Mapping

var5YO	Description5YO	var3YO	Description3YO		
opc3C26a	C26a. Ready to eat breakfast cereals				
opc3C26b	C26b. Other breakfast cereals e.g. porridge				
opc3C26c	C26c. White bread and rolls				
opc3C26d	C26d. Wholemeal,brown bread and rolls				
opc3C26e	C26e. Other breads e.g. scones, croissants				
opc3C26f	C26f. Savoury breads, e.g. pizza				
opc3C26g	C26g. Rice, pasta, noodles				
opc3C26h	C26h. Cakes, pastries, buns	bpcn09g	C25g. Biscuits, doughnuts, cake, pie or chocolate		
opc3C26i	C26i. Biscuits - any	bpcn09g	C25g. Biscuits, doughnuts, cake, pie or chocolate		
opc3C26j	C26j. Chocolate or confectionery	bpcn09g	C25g. Biscuits, doughnuts, cake, pie or chocolate		
opc3C26k	C26k. Other sweets	bpcn09h	C25h. Sweets		
opc3C26l	C26l. Ice cream or ice lollies	bpcn09h	C25h. Sweets		
opc3C26m	C26m. Puddings & chilled desserts	bpcn09h	C25h. Sweets		*
opc3C26n	C26n. Yoghurt (flavoured or plain but not fromage frais)	bpcn09i	C25i. Full fat cheese/yoghurt/ fromage frais		*
opc3C26o	C26o. Fromage frais (e.g. Petit Filous)	bpcn09i	C25i. Full fat cheese/yoghurt/ fromage frais		*
opc3C26p	C26p. Cheese or cheese spread	bpcn09i	C25i. Full fat cheese/yoghurt/ fromage frais		*
opc3C26q	C26q. Milk (cow's)	bpcn09n	C25n. Full cream milk or full cream milk products		
opc3C26r	C26r. Eggs (include in home cooking)				
opc3C26s	C26s. Fruit squash (tropical fruit, lemon barley, etc)	bpcn09m	C25m. Fizzy drinks / minerals / cordial / squash (not diet)		
opc3C26t	C26t. Fruit juice (not squash)	bpcn09m	C25m. Fizzy drinks / minerals / cordial / squash (not diet)		
opc3C26u	C26u. Blackcurrant only drinks	bpcn09m	C25m. Fizzy drinks / minerals / cordial / squash (not diet)		
opc3C26v	C26v. Fizzy drinks (not mineral water, sugar-free or diet)	bpcn09l	C25l. Fizzy drinks / minerals / cordial / squash (diet)		Remove this (DIET)

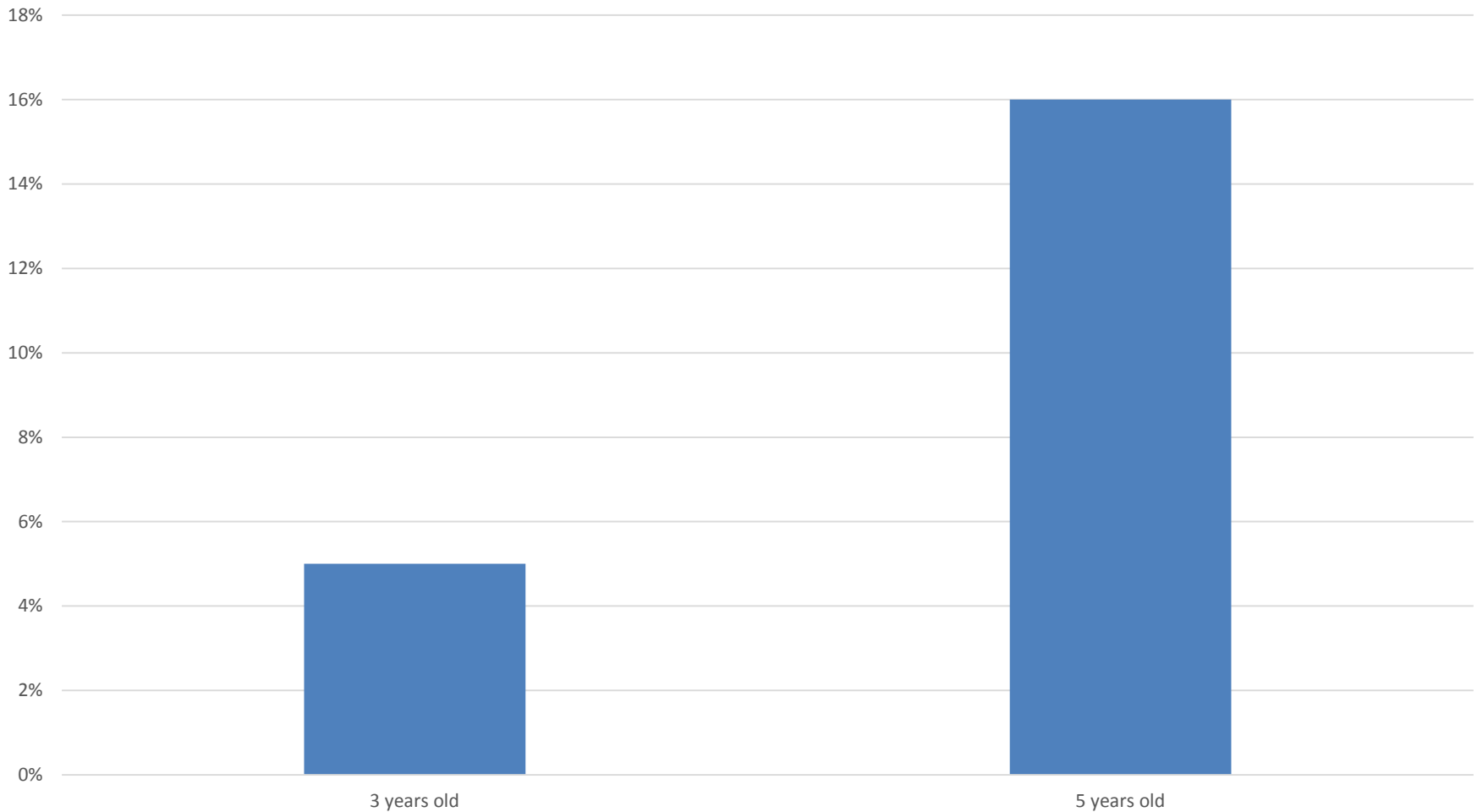
# Objectives

- Prevalence of Dental problem visits
- Cariogenic food intake at 3 and 5 years of age
- Cariogenic food at 5 years V dental problem
- Cariogenic food change from 3 to 5 years

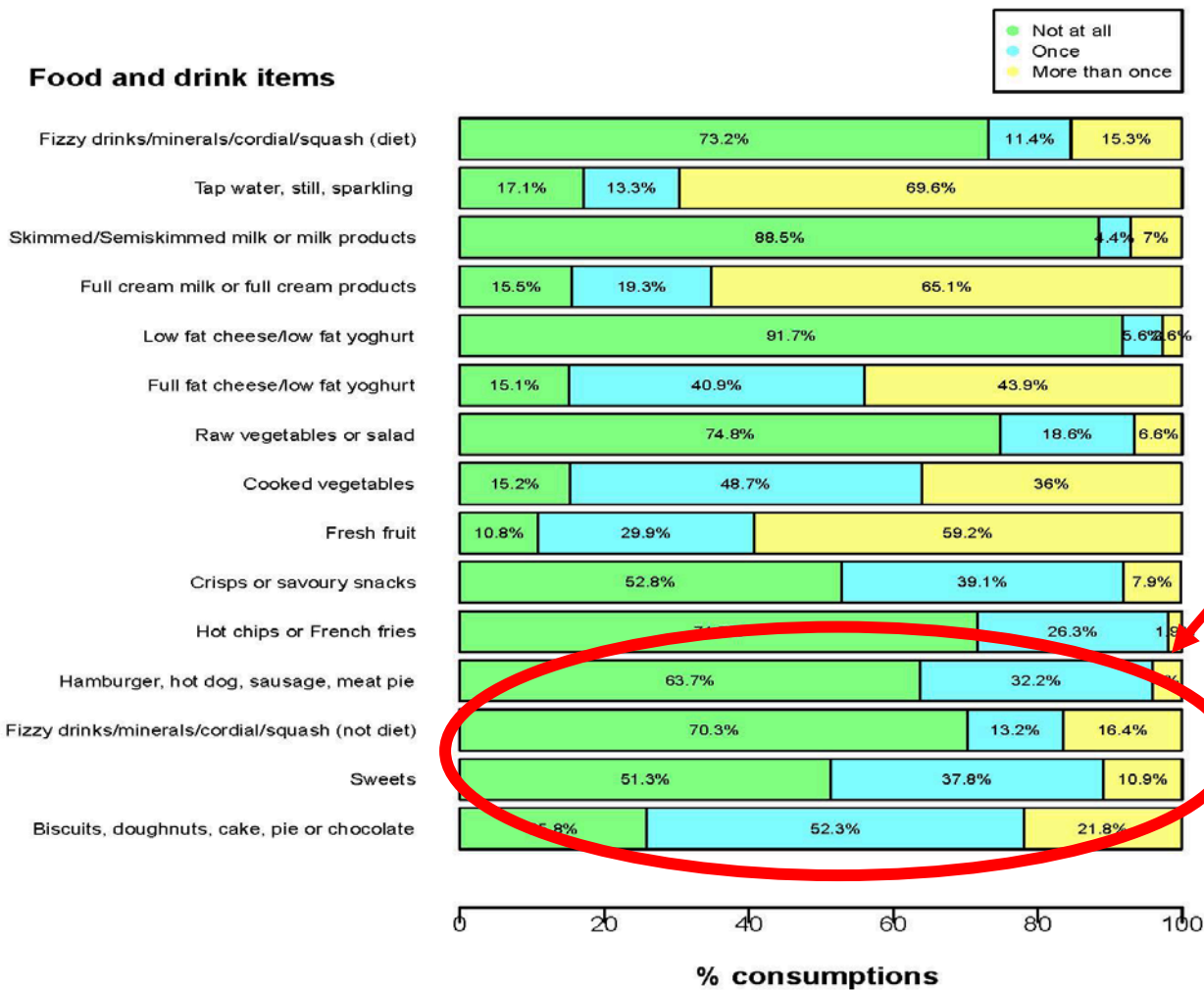


# Prevalence Dental problem

Dental Problem



# Short Food questionnaire at 3 Years

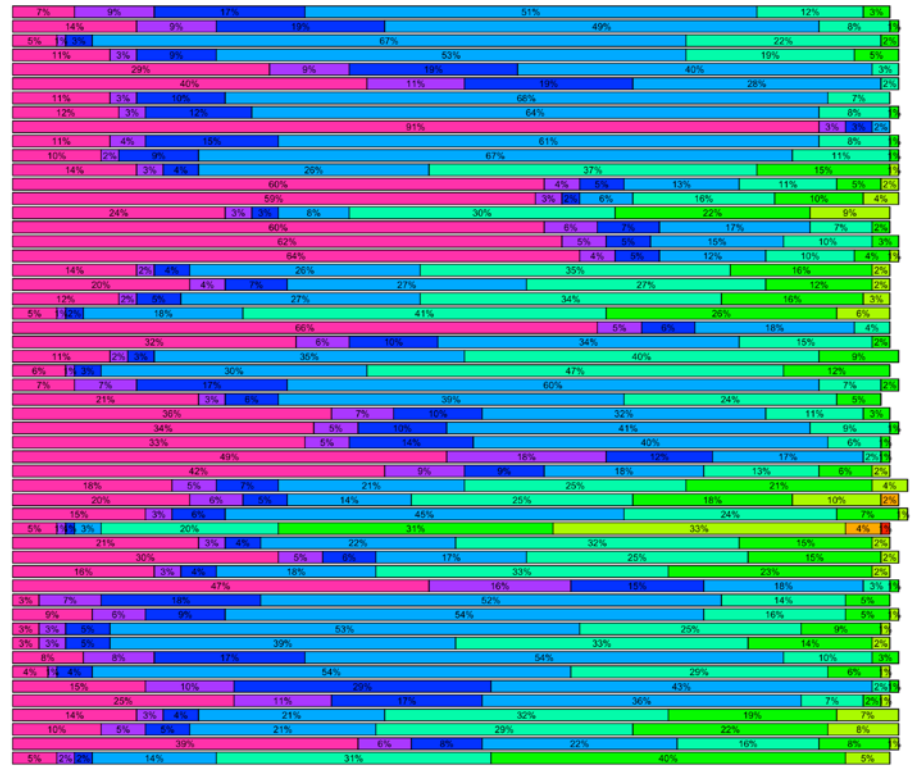
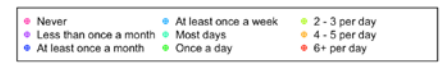


Crowe, M., et al. *JDR Clinical & Translational Research* (2016)

# Full food frequency questionnaire at 5 Years

## Food and drink items

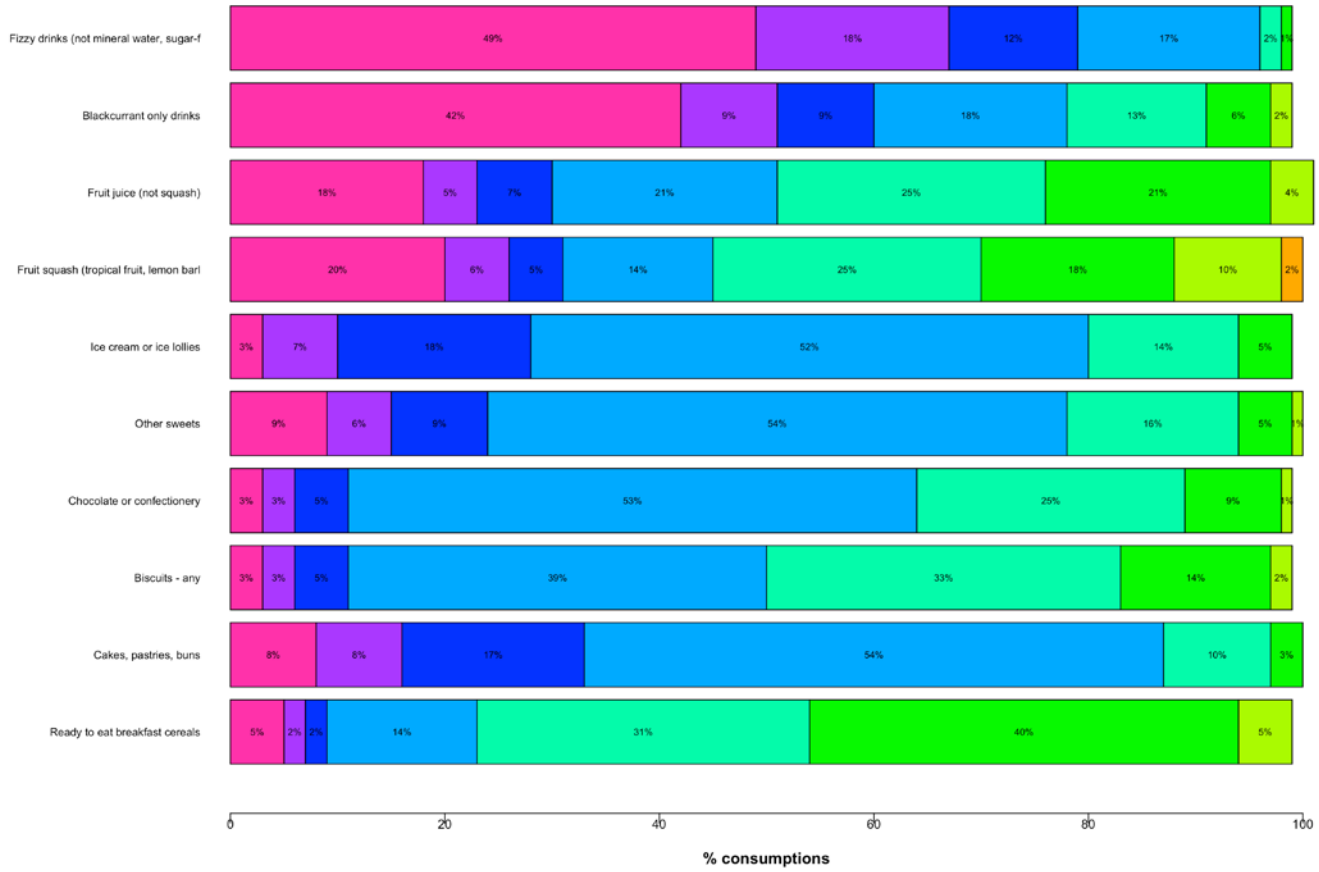
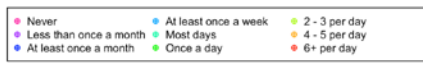
- Crisps or other packet snacks
- Chicken and poultry, e.g. as nuggets or Chicken and poultry, e.g. as a roast, in Bacon, rashers, ham
- Pork, e.g. as a roast or chops in stir f Lamb, e.g. roast, steak, in stews
- Beef, e.g. minced, burgers
- Beef, e.g. roast, steak, in stews
- Liver (but not liver products e.g. pâté Sausage, frankfurters
- Fish or shellfish including fish fingers
- Oils (e.g. vegetable, olive sunflower)
- Other spreads
- Low fat spread
- Butter
- Salad (e.g. lettuce)
- Fresh tomatoes
- Cucumber
- Bananas
- Citrus fruits (e.g. orange, tangerines, Soft fruits (e.g. peaches, nectarines, g Apples or pears (fresh)
- Mushrooms
- Other root vegetables apart from carrots
- Carrots
- Other potatoes
- Chips, fried potatoes (e.g. waffles etc)
- Other green vegetables e.g. green beans, Leafy green vegetables e.g. spinach, cab Peas, in any form
- Baked beans - canned
- Fizzy drinks (not mineral water, sugar-f Blackcurrant only drinks
- Fruit juice (not squash)
- Fruit squash (tropical fruit, lemon barf
- Eggs (include in home cooking)
- Milk (cow's)
- Cheese or cheese spread
- Fromage frais (e.g. Petit Filous)
- Yoghurt (flavoured or plain but not from Puddings & chilled desserts
- Ice cream or ice lollies
- Other sweets
- Chocolate or confectionery
- Biscuits - any
- Cakes, pastries, buns
- Rice, pasta, noodles
- Savoury breads, e.g. pizza
- Other breads e.g. scones, croissants
- Wholemeal, brown bread and rolls
- White bread and rolls
- Other breakfast cereals e.g. porridge
- Ready to eat breakfast cereals



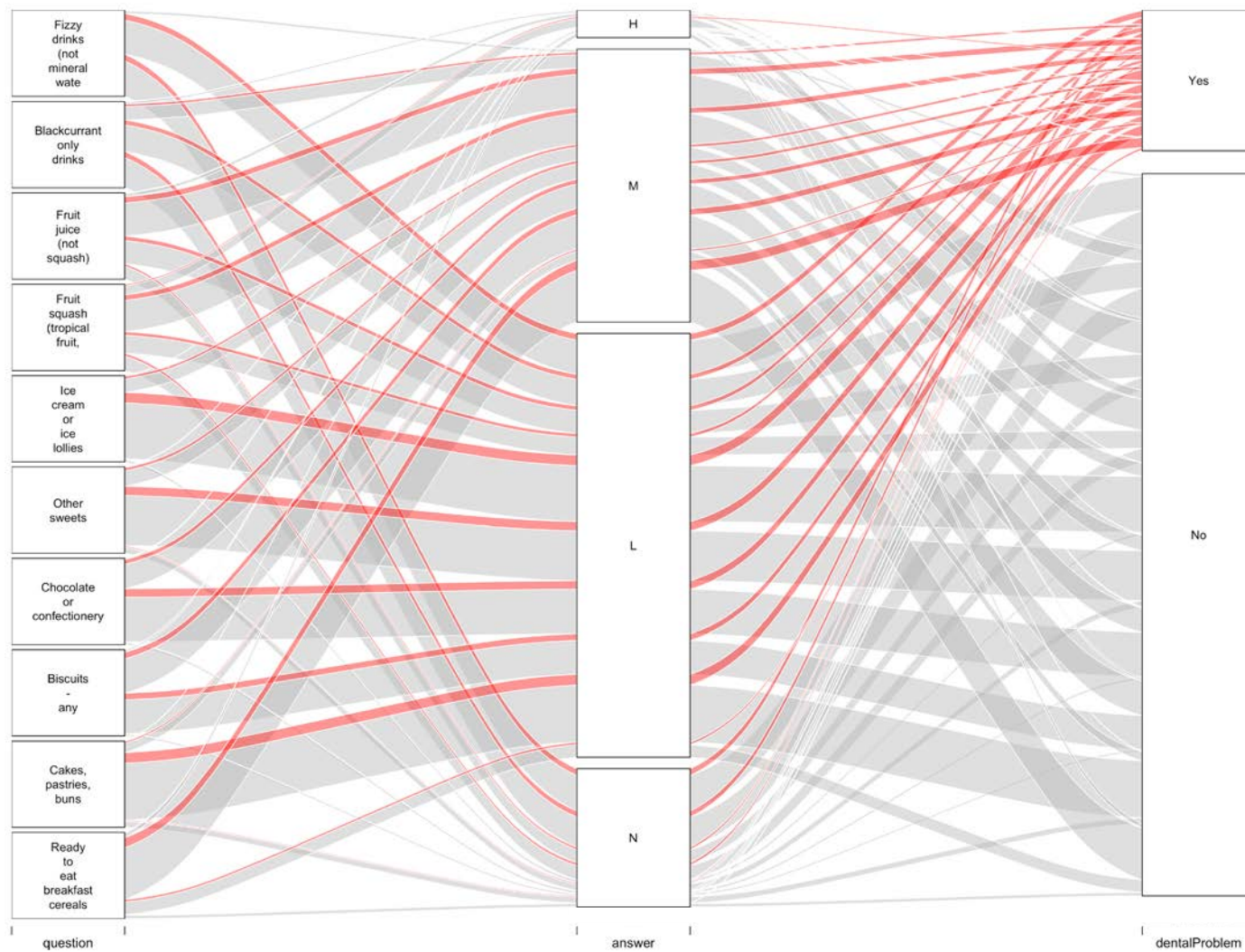
0 20 40 60 80 100  
% consumptions

# Cariogenic food at 5 years

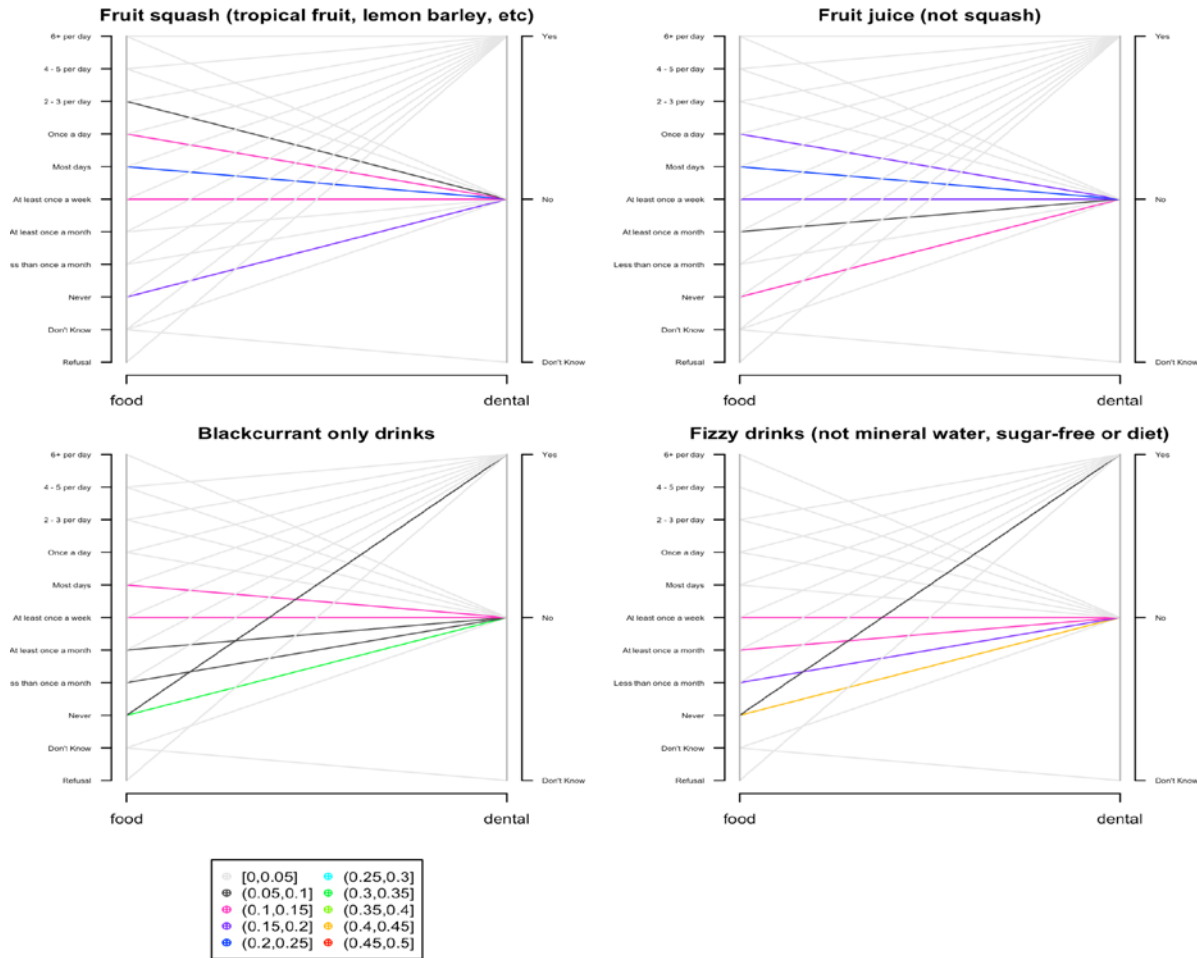
**Food and drink items**



# All Cariogenic food 5 years

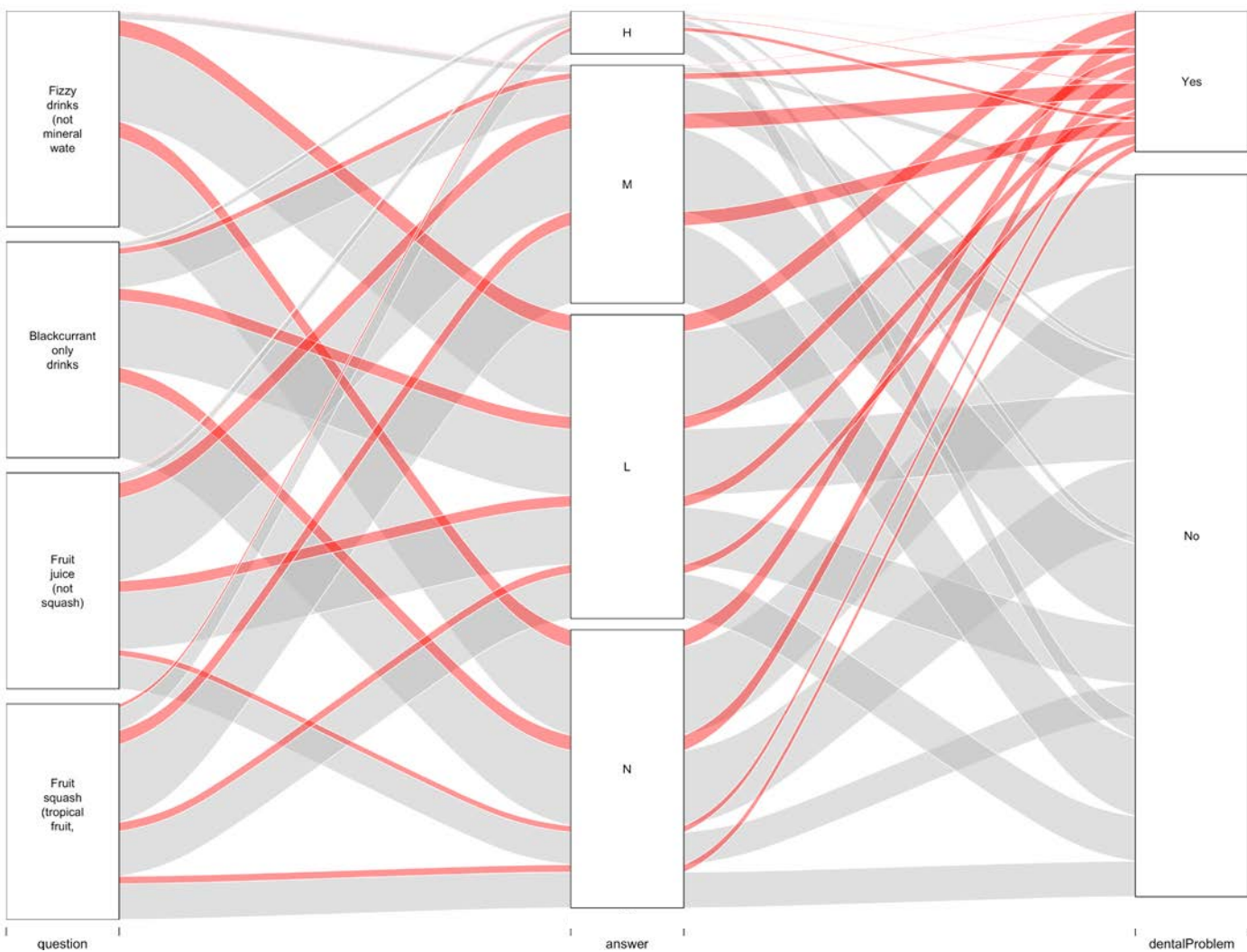


# Sugary drinks 5 yo and dental problem



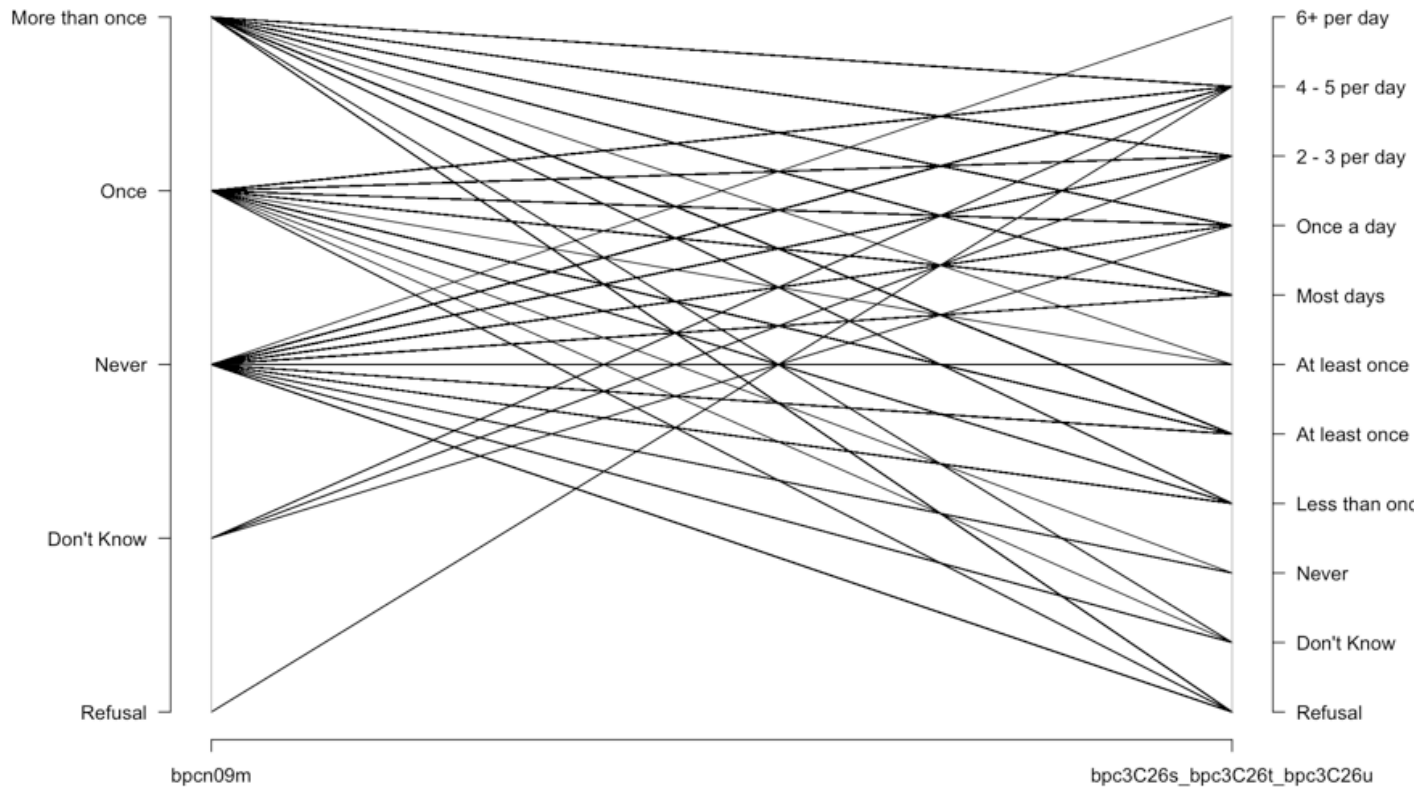


# Sugary drinks 5 yo and dental problem



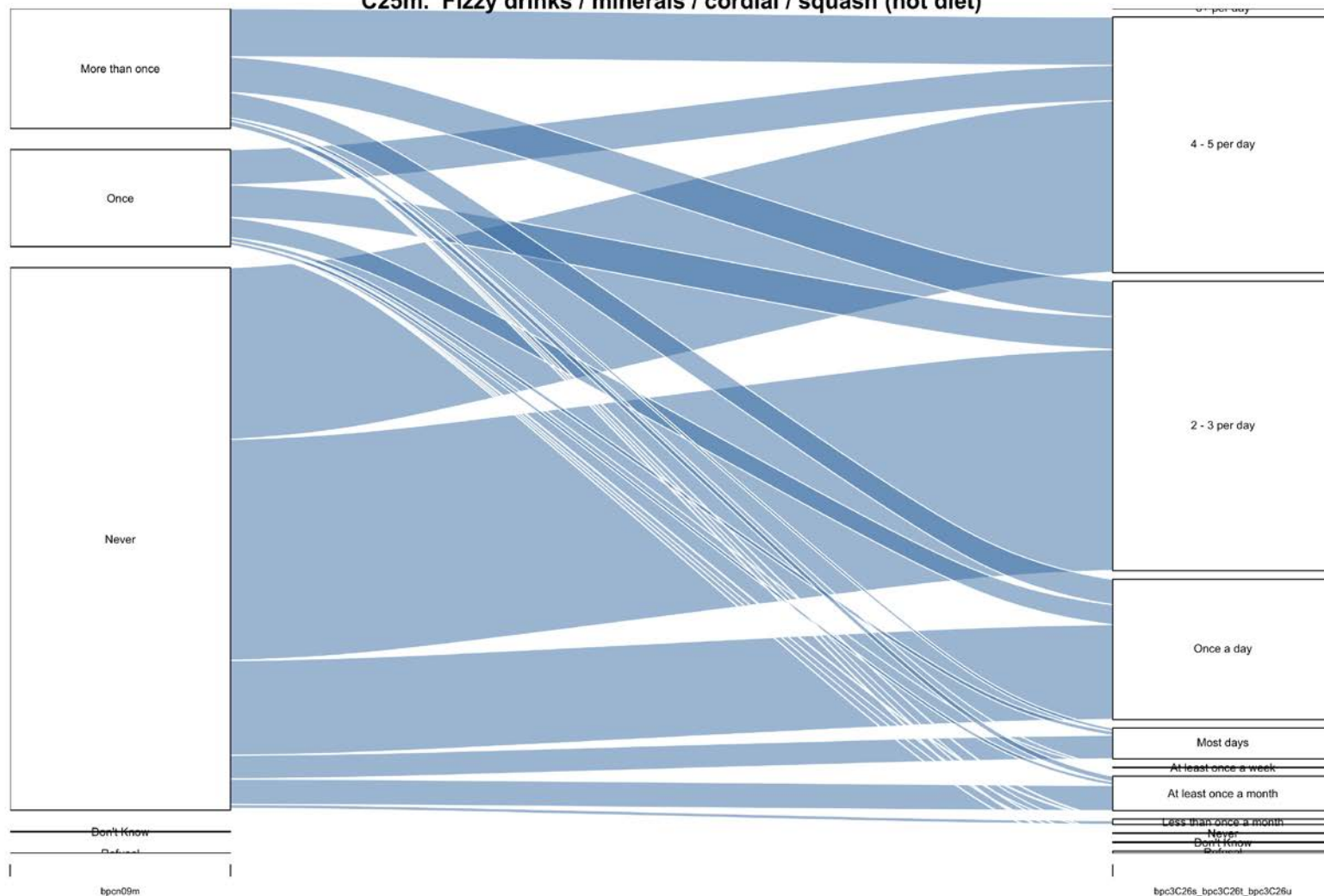
# Sugary drinks: 3 to 5 years

C25m. Fizzy drinks / minerals / cordial / squash (not diet)



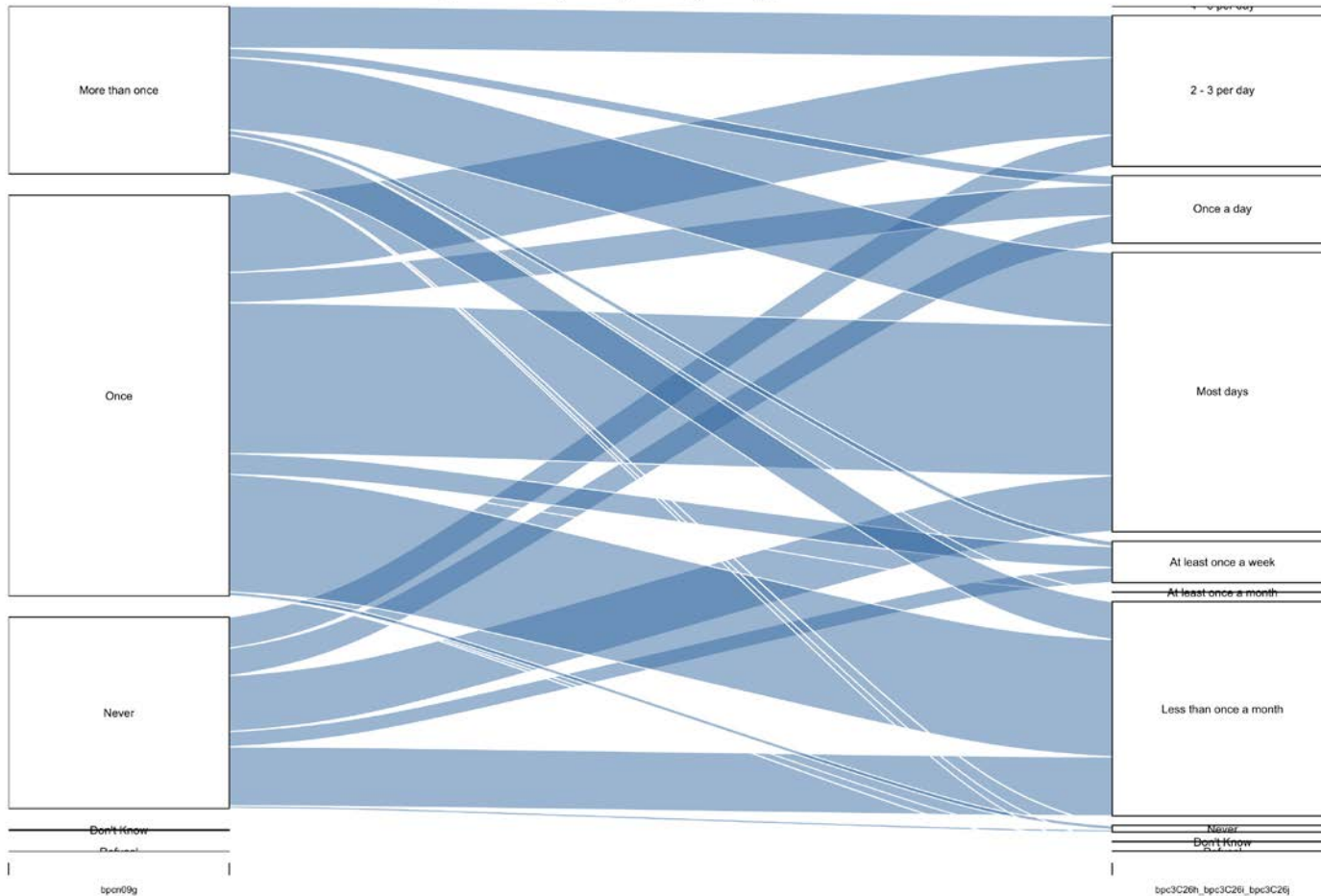
# Sugary drinks: 3 to 5 years

**C25m. Fizzy drinks / minerals / cordial / squash (not diet)**



# Biscuits, cake: 3 to 5 years

Q259. Biscuits, doughnuts, cake, pie or chocolate



# Conclusions

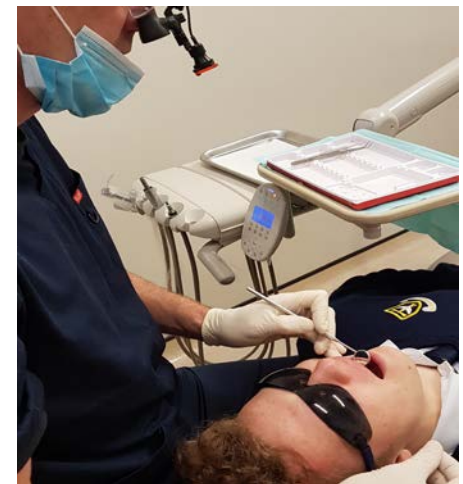
- Overall intake CF groups high compared to recommended dietary guidelines
- Appears to be increased frequency intake of CF from 3 to 5 years
- Those “never consumed” sugary drinks at 3 years increased to 53% consuming 2-5/day at 5 years
- No association found with dental problem visits
- Different pattern intake with different CF items

# Limitations

- Assumed dental problem outcome ECC
- Assumed all CF had same impact on dental problem visit
- Mapping due to different food questionnaires
- Limitations with all dietary assessment methods

# Current/Future work

- Meal V Snacks- frequency V amount
- Association analysis CF components (in press)
- Child cohort GUI: diet and dental variables
- Match/link datasets national food surveys
- Nested study- clinical dental examinations





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# Questions?



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