Government of South Australia
Department of Health

Use of a risk factor surveillance system to assess detailed nutritional intake

Mixed mode methodology

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Mixed mode surveys

- Combining data from at least two modes of data collection (e.g. telephone, postal, internet, personal interviewing)
- Telephone surveillance system + mail out questionnaire
- Food Frequency Questionnaire (FFQ)

Problems with mixed mode surveying

- Different answers to be given to socially desirable questions
- Different levels of agreement to questions
- Differences in question format, question wording and other sources of variation between modes (eg pictorial vs aural, interviewer-based vs self-administrated) affects responses
- Introduces bias into the estimates obtained

Other considerations

- The increased use of multiple modes of data collection will require use of more complex weighting strategies and research into this area is also required
- The careful analysis of the biases associated with the measurement and responses will have to be monitored

Other considerations

- Is it better to have
  - a lower response rate (and the inherent bias from non-response errors) or
  - to use mixed-mode methodology (with the inherent bias from measurement errors) to increase response rates?
- Which mode is best for certain topics or groups (for example internet for the young, telephone for the capable older persons)

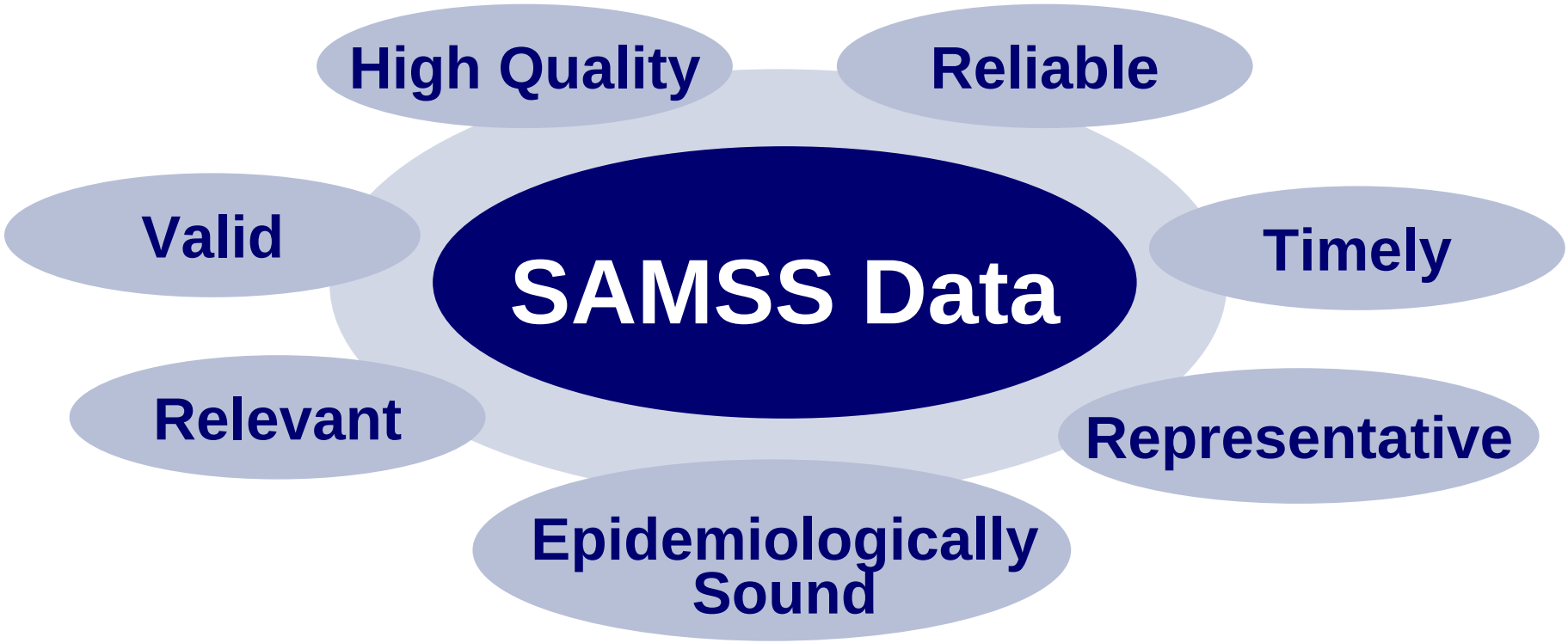
Aim of research

- To use a mixture of methods
  - Telephone for the primary interview
  - Postal for subsequent information
- To assess the response rates
- To assess the biases
- To examine data quality and comparability

South Australian Monitoring & Surveillance System (SAMSS)

- Commenced July 2002
- Continuous chronic disease and risk factor surveillance system
- CATI (Computer Assisted Telephone Interviews)
- Random selection of South Australians of all ages

SAMSS



- Monitor departmental, state & national priority areas
- Linked to key indicators

SAMSS - Methodology

- 600 interviews monthly
- Cradle to tomb
- Surrogate interviews 0 to 15 year olds
- CATI (Computer Assisted Telephone Interviewing)

SAMSS - Adult questions

- Psychosocial events
- Mental health
- Social capital
- Health care utilisation
- Co-morbidity (asthma, diabetes, arthritis, osteoporosis, disability, injury)

- Risk factors - BP, cholesterol, BMI, alcohol, smoking
- Protective factors - physical activity, sun protection, nutrition
- Food security
- SF1, K10

Methodology

- October & November 2006
- SAMSS interviews with adults (18+ years)
  - Ask permission to send FFQ
- If not returned within 2 weeks – reminder telephone call
- Funding from Australian government
- In partnership with Western Australian Dept of Health

Food Frequency Questionnaire (FFQ)

- Broad food groups
  - Dairy foods
  - Bread & cereals
  - Meat, fish & eggs
  - Vegetables
  - Fruit
  - Baked goods & snacks
  - Sugar, spread & dressings
  - Non-milk beverages

Food Frequency Questionnaire (FFQ)

- Average number of times food consumed in last 12 months
  - Never
  - < once per month
  - 1-3 times per month
  - Once per week
  - 2-4 times per week
  - etc
  - to 4+ times a day

Response rates

	n	%
Eligible to complete FFQ (18+ years)	**1061**	**100.0**
Refused to complete FFQ	229	15.8
Agreed to complete FFQ	832	84.2
Refused after being sent FFQ	24	2.9
Completed FFQ of those who agreed	634	76.2
Completed FFQ of those eligible to participate		**59.8**

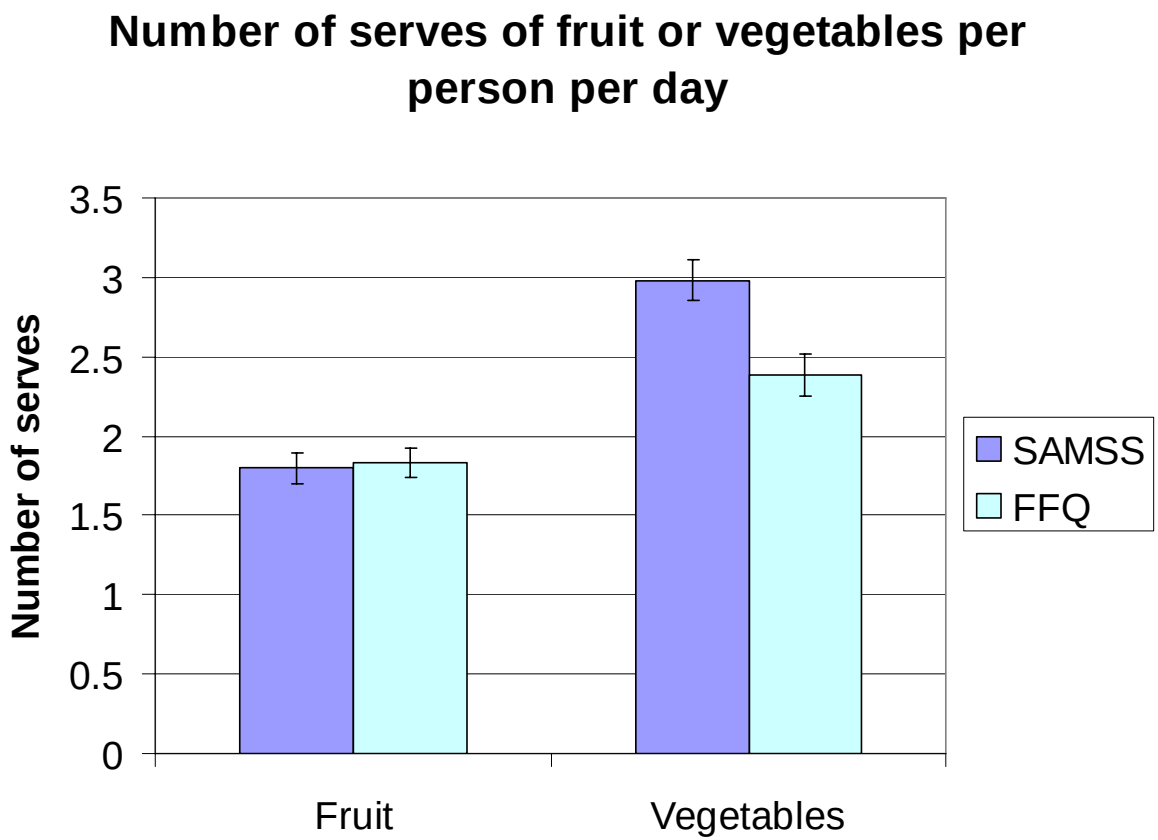
Mean daily equivalence frequency of the broad food groups

	Mean (95% CI)
Dairy foods	**3.61** (3.45 - 3.78)
Bread and cereal foods	**2.77** (2.66 - 2.89)
Meat, fish and egg	**2.08** (2.00 - 2.17)
Vegetables	**6.91** (6.59 - 7.22)
Fruit	**2.27** (2.13 - 2.41)
Baked goods and snacks	**1.52** (1.42 - 1.62)
Sugar, spread & dressings	**2.84** (2.68 - 3.01)
Non-milk beverages	**7.64** (7.41 - 7.86)

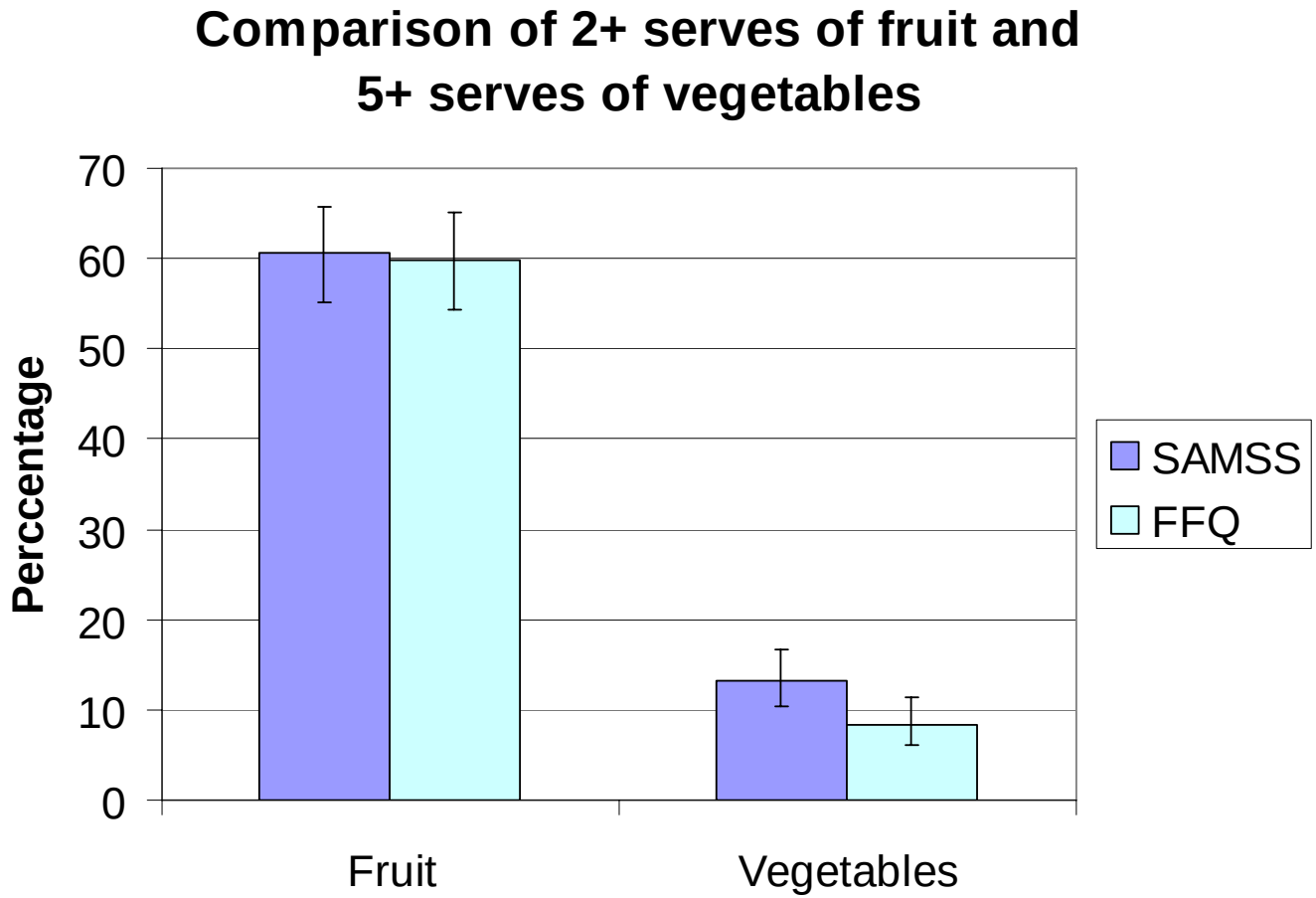
Comparison of responses to type of milk consumed, SAMSS and FFQ

	SAMSS	FFQ
	% (95% CI)	% (95% CI)
Full fat or whole milk of any kind, including soya	33.8 (29.7 - 38.1)	33.3 (29.3 - 37.6)
Low/reduced fat milk of any kind, including soya	36.0 (31.9 - 40.4)	37.0 (32.9 - 41.4)
Skim milk	24.7 (21.0 - 28.7)	25.2 (21.6 - 29.3)
Other	0.7 (0.2 - 1.9)	0.5 (0.2 - 1.7)
Don't drink milk	4.9 (3.3 - 7.2)	3.9 (2.5 - 6.0)

Comparison of fruit/vegetables usually eaten (SAMSS & FFQ) - Mean number of serves



Comparison of fruit/vegetables eaten (SAMSS and FFQ) Proportion eating recommended serves per day



Self reported height and weight

	SAMSS	FFQ
	mean (95% CI)	mean (95% CI)
Height (cm)	**170.1** (169.2 - 171.0)	**169.8** (168.8 - 170.7)
Weight (kg)	**75.7** (74.1 - 77.2)	**75.6** (74.0 - 77.2)

Conclusion

- Mixed mode surveying is seen as a future option for surveying of populations
- Research is needed on the wide variety of conceptual issues associated with this methodology
- The future lies in using different survey vehicles based on what topics are being covered and on what population the research is being undertaken

Conclusion

- Research on the methodological practices, especially in terms of procedures, measurements and non-responses will need to be carefully monitored and assessed
- Rapid change is upon the health survey methodology discipline and the need for high quality scientific research is required now, more than ever before

Contact Details

Population Research & Outcome Studies (PROS)

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PROS Website:

http://www.health.sa.gov.au/PROS/