



Department
of Health

South Australian Monitoring and Surveillance System (**SAMSS**)

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Survey Methodology

Population Research and Outcome Studies

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Introduction

This paper details the survey methodology employed for the South Australian Monitoring and Surveillance System (SAMSS). SAMSS is an initiative of the Population Research and Outcome Studies Unit, Department of Health. It is an epidemiological monitoring system that aims to detect and facilitate understanding of trends in the prevalence of chronic conditions, risk and protective factors, and other determinants of health.

Aim and Objectives

The aim of the system is to monitor departmental issues, key risk factors and population trends in priority chronic disease and related areas so that the department has data that will guide investments, identify target groups, provide important program and policy information, and assess outcomes. These data will monitor departmental, state and national priority areas and will be linked to key indicators.

The monitoring and surveillance objectives of SAMSS are achieved via systematic collection, analysis and dissemination of high quality, valid, reliable, representative, timely and relevant population data on persons of all ages in the South Australian community.

The system has been designed to meet the highest standards of population surveillance methodology with rigorous adherence to formal statistical techniques.

Questions

Topics included in the SAMSS questionnaire are intended to provide appropriate data on key indicators for national and state priority health areas. A core set of questions is asked every month with additional questions asked in alternate months. SAMSS can also include exploratory questions or questions related to particular Department of Health initiatives or strategies. Thus, SAMSS is a flexible system.

A SAMSS Advisory Committee, including relevant experts, is responsible for selection of key indicators and the development of SAMSS. Where possible, questions that have previously been included in other surveys, and have indicated their reliability/validity were used or modified¹.

The full list of questions asked in SAMSS can be obtained at <http://www.dh.sa.gov.au/pehs/PROS/samss.html>.

The following topics are included in the SAMSS questionnaire:



Demographics



Health Conditions

Arthritis / Osteoporosis

Asthma

Chronic Obstructive Pulmonary Disease

Cardiovascular Disease

Diabetes

Injury

Depression / Mental Health

¹ Department of Health Population Research & Outcome Studies. The Health Omnibus Survey. <http://www.dh.sa.gov.au/pehs/HOS.html>

Department of Health Population Research & Outcome Studies. SERCIS (Social, Environmental and Risk Context Information System). <http://www.dh.sa.gov.au/pehs/SERCIS.html>

Disability



Risk factors

Body Mass Index

Cholesterol

High Blood Pressure

Alcohol Consumption

Immunisation

Nutrition (Breastfeeding, Food consumption, Food security)

Physical Activity

Smoking

Sun protection



Child Development



Health Service Utilisation



Social Capital



Economic indicators



Socio-demographics

1. SURVEY METHODOLOGY

1.1 Survey design

1.1.1 *Sample selection*

All households in South Australia with a telephone number listed in the Electronic White Pages are eligible for selection in the sample. For the period July 2002 to December 2003, 860 South Australian residential telephone numbers per month were randomly selected. Since January 2004, 1000 South Australian residential telephone numbers per month have been randomly selected.

Within each household, the person who had their birthday last, is selected for interview. If the person selected is aged 15 years or less, then the most appropriate adult in the household is selected to answer questions regarding the child. There are no replacements for non-contactable persons.

1.1.2 *Introductory letter*

A letter introducing SAMSS is sent to the household of each selected telephone number. The letter informs people of the purpose of the survey and indicates that they can expect a telephone call within the time frame of the survey. During July 2002 to June 2004, 84.6% of those who participated indicated that they received a letter.

1.1.3 *Pilot testing*

The survey was pilot tested on randomly selected households (n=100), to test question formats and question sequence, and, to assess survey procedures. The original questionnaire was amended slightly on the basis of information obtained from the pilot testing process.

1.2 Data collection

Data is collected by a contracted agency and interviews are conducted in English. Table 1 lists the dates that data has been collected for SAMSS as of June 2004.

Table 1: Dates of data collection

| Year / Month | Start date | Finish date |
|--------------|--------------|--------------|
| 2002 | | |
| July | 7 August | 18 August |
| August | 25 August | 10 September |
| September | 18 September | 9 October |
| October | 23 October | 5 November |
| November | 20 November | 8 December |
| December | 9 December | 20 December |
| 2003 | | |
| January | 22 January | 4 February |
| February | 19 February | 2 March |
| March | 19 March | 30 March |
| April | 2 April | 14 April |
| May | 21 May | 30 May |
| June | 18 June | 30 June |
| July | 17 July | 27 July |
| August | 20 August | 30 August |
| September | 17 September | 29 September |
| October | 15 October | 29 October |
| November | 12 November | 24 November |
| December | 10 December | 22 December |
| 2004 | | |
| January | 14 January | 28 January |
| February | 18 February | 1 March |
| March | 17 March | 30 March |
| April | 14 April | 28 April |
| May | 19 May | 1 June |
| June | 16 June | 27 June |

1.3 CATI

The CATI III (Computer Assisted Telephone Interview) system is used to conduct the interviews. This system allows immediate entry of data from the interviewer's questionnaire screen to the computer database. The main advantages of this system are the precise ordering and timing of call backs and correct sequencing of questions as specific answers are given. The CATI system enforces a range of checks on each response with most questions having a set of pre-determined response categories. In addition, CATI automatically rotates response categories, when required, to minimise bias. When open-ended responses are required, these are transcribed exactly by the interviewer.

1.3.1 Call backs

At least six call-backs are made to the telephone number selected to interview household members. Different times of the day or evening are scheduled for each call-back. If a person cannot be interviewed immediately they are re-scheduled for interview at a time suitable to them. Where a refusal is encountered, another interviewer generally (at the discretion of the supervisor) calls later, in an endeavour to obtain the interview(s). Replacement interviews for persons who cannot be contacted or interviewed are not permitted.

1.3.2 Validation

Of each interviewer's work, 10% is selected at random for validation by the supervisor. The contracted agency is a member of Interviewer Quality Control Australia (IQCA).

1.4 Data processing

After each occurrence of data collection, the raw data from the CATI system is imported into SPSS for analysis. Open-ended responses are saved in Excel format and the responses are either coded numerically and brought into the main SPSS database, or brought into SPSS as a string variable if necessary.

1.4.1 Weighting

The data are weighted by age, sex and area (metropolitan / rural) of residence to reflect the structure of the population in South Australia to the latest Census or Estimated Residential Population and probability of selection in the household. Probability of selection in the household is calculated on the number of adults in the household and the number of listings in the White Pages. Weighting is used to correct for disproportionality of the sample with respect to the population of interest.

This weighting formula is based on a randomly selection of households and one person within the household.

Areas, regions or boundaries are usually determined by postcode. Age is recoded into either 5 or 10 year age groups.

Thus, let

- N_h The population size of stratum h
- n_h The sample size in stratum h .

From this information the following can be derived:

- N The total population size
- n The total sample size

The weighting formula for a particular region, where there are different probabilities of selection within each household i for each strata h (strata is area, gender and age). The weighting applied is:

$$w_{h,i} = d_{h,i} \times \frac{N_h}{\sum_{i=1}^{n_h} d_{h,i}} \times \frac{n}{N}$$

where

$w_{h,i}$ is the weighting value for respondent i in stratum h .

$d_{h,i}$ is the household size of people for respondent i in stratum h .

1.5 Response rates

Overall the response rate for SAMSS during 2002/2003 and 2003/2004 was 69.3% and 68.4% respectively..

Table 2: Response rate by year

| | 2002/2003 | | 2003/2004 | |
|------------------------------|-----------|------|-----------|------|
| | n | % | n | % |
| Original sample | 10320 | | 11300 | |
| Less out of scope households | | | | |
| Non-connected | 1087 | | 1099 | |
| Non-residential | 218 | | 229 | |
| Fax/modem | 142 | | 114 | |
| Eligible sample | 8873 | | 9858 | |
| Less | | | | |
| Refusals | 988 | 11.1 | 1012 | 10.3 |
| Non-contact 6 attempts | 856 | 9.6 | 957 | 9.7 |
| Foreign language | 195 | 2.2 | 245 | 2.5 |
| Incapacitated | 300 | 3.4 | 328 | 3.3 |
| Terminated | 9 | 0.1 | 17 | 0.2 |
| Respondent unavailable | 380 | 4.3 | 426 | 4.3 |
| Completed interviews | 6145 | 69.3 | 6738 | 68.4 |
| Response rate | | 69.3 | | 68.4 |
| Participation rate | | 76.6 | | 77.2 |

1.6 Average time

The average time for a person to complete the interview was 16.4 minutes for the July 02 to June 04 period.

Table 3: Average length of the interviews by month (minutes)

| Year / Month | Mean | Minimum | Maximum | Median |
|----------------|------|---------|---------|--------|
| 2002 | | | | |
| July | 18.4 | 10 | 44 | 17.0 |
| August | 18.7 | 10 | 43 | 18.0 |
| September | 17.5 | 7 | 51 | 16.0 |
| October | 18.2 | 8 | 48 | 17.0 |
| November | 17.1 | 9 | 40 | 16.0 |
| December | 17.5 | 10 | 57 | 16.0 |
| 2003 | | | | |
| January | 16.9 | 9 | 42 | 16.0 |
| February | 16.6 | 8 | 39 | 16.0 |
| March | 16.7 | 8 | 40 | 16.0 |
| April | 16.5 | 9 | 37 | 16.0 |
| May | 16.5 | 9 | 42 | 16.0 |
| June | 17.0 | 8 | 36 | 16.0 |
| July | 16.1 | 9 | 51 | 15.0 |
| August | 16.9 | 9 | 38 | 16.0 |
| September | 16.5 | 9 | 49 | 16.0 |
| October | 16.4 | 8 | 49 | 16.0 |
| November | 16.0 | 8 | 39 | 15.0 |
| December | 16.0 | 8 | 38 | 15.0 |
| 2004 | | | | |
| January | 16.0 | 8 | 47 | 15.0 |
| February | 15.3 | 7 | 39 | 15.0 |
| March | 14.6 | 7 | 43 | 14.0 |
| April | 13.8 | 6 | 39 | 13.0 |
| May | 16.5 | 6 | 45 | 16.0 |
| June | 13.7 | 6 | 35 | 13.0 |
| Overall | 16.4 | 6 | 57 | 16.0 |

2. FURTHER DETAILS

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