The South Australian Health Omnibus Survey 15 years on: has public health benefited?

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Introduction
Cross-sectional surveys are the most commonly used method of assessing health-related behaviours, determinants of behaviour, and prevalence estimates for non-registry based chronic diseases in the population. These types of survey can also be used to identify preferences, satisfactions, perceptions and attitudes, and how these may vary across subgroups and situations.

The South Australian Health Omnibus Survey (HOS) is a representative, cross-sectional survey that has been in operation since 1990. It is administered by the Population Research and Outcome Studies unit (PROS) of the South Australian Department of Health, in conjunction with a private Health Research company (Harrison Health Research). The goal of HOS is to collect, analyse and interpret data, which can then be used to plan, implement and monitor health programs and other initiatives. HOS is a ‘user-pays’ service, but each organisation pays only for questions that have direct relevance to their information requirements. This allows several organisations to share the operating costs of undertaking and administering such a survey. HOS is used by a number of government and non-government organisations to obtain data on a range of health issues in South Australia (SA). Surveys have been conducted annually each October/November. On occasions, to satisfy customer demand, a second survey has been undertaken (as in 1996, 1998, 2004) and is nominally called the ‘autumn’ HOS. Methodology for the Autumn HOS is identical to that of the yearly ‘spring’ survey.

This paper addresses the HOS methodology, the range of uses of the survey vehicle over the years, and the benefits to South Australia of having the ability to satisfy, under one umbrella, a wide range of public health data needs.

Method
HOS has been designed to meet the highest standards of population survey methodology with rigorous adherence to formal statistical techniques.

Sampling
The survey sample is a clustered, multi-stage, systematic, self-weighting area sample. Each survey samples 4,400 households. The observed response rate during the years 1991-2003 has been approximately 70%, resulting in a minimum of 3000 interviews (with persons aged 15 years and over) per survey. The large sample size and high response rate facilitates a high level of confidence that the results and trends noted from the survey are applicable to the South Australian population as a whole.

Seventy-seven percent of the sample is selected from the Adelaide metropolitan area, with the remainder being drawn from those country towns with a population of 1,000 or more (based on Australian Bureau of Statistics [ABS] latest Census information). Country towns with smaller populations are not included because of the additional cost of interviewing people living in remote areas. Within the selected metropolitan and country areas, the ABS Collection Districts (CDs) are the basis of the sample frame. A CD is a geographical area comprising approximately 200 dwellings. Cluster sampling means that some, but not all, of these CDs are included in the sample. To achieve a sample of 4,400 households, 10 households are selected from each of 440 selected CDs. Table 1 details the sample procedure and other sampling criteria.

| Stage 1 - Selection of CDs | • 340 metropolitan and 100 country CDs are selected | • Skip interval = the number of households divided by the number of CDs required |
| Stage 2 - Selection of households within CDs | • Ten households per selected CD are chosen using a fixed skip interval from a random starting point. | • Starting point = random number between one and the skip number |
| Stage 3 - Selection of individuals within households. | • The person who was last to have a birthday (aged 15 years or over). |  |
| Additional criteria | • Selected persons are non-replaceable | • 6+ visits are made to each household before the selected individual is classified as a non-contact. |
| | | • Selections found to be hotels, motels, hospitals, nursing homes and other institutions are excluded from the survey. |
Questionnaire administration
Clients are offered assistance to develop questions where required. Background demographic questions are included free of charge to users. HOS is a personal interview survey, which is considered to be the ‘Gold Standard’ of interview techniques. Interviewers read out the questions and, if necessary, prompt cards are used. The questionnaire is designed to take approximately 30-40 minutes for respondents to complete. Prior to the main survey, a pilot study of 50 interviews is conducted to test questions, validate the survey instrument and assess survey procedures. A quality control committee chaired by an epidemiologist oversees all facets of HOS. Committee members consist of a representation of prior users of the survey.

Data collection
The company undertaking the data collection component is a member of Interviewer Quality Control Australia (ICQA), a national quality assurance initiative of the Market Research Society of Australia. Accredited organisations must strictly adhere to rigorous quality assurance requirements and are subject to regular audit in this regard. Interviewers are trained extensively, and ten percent of the interviewers’ surveys are selected for validation. Validation involves re-contacting survey respondents to ensure that they meet the selection criteria within that household, that they were interviewed, and that their recorded responses to selected questions agree with their original responses. Data entry is fully verified to ensure accuracy of data capture. Recorded data is edited for accuracy and consistency.

Weighting
The survey data is weighted by sex, five-year age groups, geographic area and probability of selection within the household to provide estimates that apply to the South Australian population.

Results
A major use of the data has been to estimate the prevalence of chronic conditions or health related behaviours. This has included asthma, diabetes, arthritis, postnatal depression, hearing loss, hormone replacement therapy (HRT), palliative care, osteoporosis, eating disorder, hysterectomies, urinary incontinence, pelvic floor disorders, smoking, body mass index (BMI), complementary and alternative medicine use and mental health issues.

The power of the HOS, and one of the major benefits of the survey, is the ability to share the data amongst public health users. This has encouraged collaboration between researchers, and enables identification and detailed explanation of associations in the data in a cost-effective way. Examples include assessing behaviours amongst people with chronic diseases such as diabetes and smoking, asthma and smoking, diabetes and cardiovascular risk factors, psychosocial and traumatic events, depression and diabetes, HRT and risk of cardiovascular disease, and HRT and osteoporosis. In addition, various studies have shown the relationship between quality of life and chronic diseases, chronic conditions and behaviours.

Repeated cross-sectional surveys that exhibit a high level of consistency in methodology constitute a surveillance system and present opportunities for trend analysis. As an outcome of the consistency of the HOS methodology, changes in health problems and disease trends have been monitored. In particular over the past 15 years, asthma prevalence, BMI, diabetes prevalence, HRT use and smoking trends have been established and reported. The trend series produced from HOS are amongst the longest in Australia. Figure 1 highlights the increasing prevalence of diabetes since data was originally collected in 1991 with projections until 2016.

HOS has also been used to evaluate the effectiveness of public health programs and practices, to gain information on perceptions towards, and acceptability of, health services and programs or organisations, or to support changes in legislation within the state. This has included the evaluation of health interventions, and programs such as asthma management plans and smoke-free dining. The data has also been used to gain information on the acceptability and uptake of new initiatives, and to inform program directions. Examples of these are uptake of nicotine replacement, assessing the degree of confidence in the community that healthcare providers keep and use information responsibly, and asking men who have had a blood test for prostate cancer about their understanding of the test.

Perceptions of the risk of disease have also been assessed, and an evaluation has been conducted on the effect of media on health behaviours. Data has also been used to gain information that identifies target groups for public health interventions and campaigns, including early detection and prevention of osteoporosis, prevention of
incontinence, postnatal depression, smoking, obesity, suicidal ideation, depression and arthritis.

Information on knowledge, attitudes and behaviours that are related to public health problems have also been collected, including knowledge about osteoporosis and the associated risk factors, adults’ understanding of depression and beliefs about its appropriate treatment, mental health literacy, and the influences behind treatment-seeking behaviour. HOS has been used to evaluate survey methodologies, to provide cost analyses, and to compare hospital patients with the general community or with metropolitan and country respondents.

**Discussion**

HOS is a large, representative sample that provides reliable estimates for chronic conditions, health risk behaviours and a range of other public health related issues including health service use, health management, health outcomes and policy support. As a result of its stability and the methods employed, the survey is fully subscribed (and often over subscribed) each year, with little formal marketing. Use of the data has been widespread and frequent, and the analyses well disseminated.

Many Australian state and community based data collection tools are fragmented, and the benefit of having major policy-makers, planners, promoters and researchers under one umbrella has been shown to be beneficial to the users and the community. Policy makers, health planners and health promoters require best available evidence and timely, accurate data, for decision-making. The SA HOS conforms to best practice methods in providing that evidence. Along with the user’s personal area of interest, consistent, reliable indicators on economic, social and demographic correlates of health are routinely collected – adding to the benefit and comparability of the data.

There are acknowledged limitations with HOS. Unlike computer assisted telephone interviewing (CATI) methodology, there is less control/supervision with face-to-face interviewing, and it is difficult to monitor each interview. Owing to cost pressures, interviews are conducted only in English, and only towns with over 1,000 people are incorporated into the sampling strategy. In addition, along with other self-reported methodologies, self-reported conditions and behaviours may produce under- or over-reporting.

Challenges lie ahead for HOS. Response rates over the past decade have been respectable (70%+), but with increasingly inaccessible buildings (e.g., locked gates), busy lifestyles, and security and privacy concerns, an impact on response rates is expected, following patterns and trends interstate and overseas. There is also an increased concern with the quality and safety of the interviewers. Future challenges include adapting the methodology to ensure continued receipt of high-quality, representative, timely data so that the HOS users of South Australia can have access to this data. This may require incorporating the latest technology to make HOS more efficient, including using computer assisted personal interviewing (CAPI), computer assisted self-interviewing (CASI) or audio computer assisted self-interviewing.

HOS is an effective tool for obtaining public health information for community based planning and activities. The methodology has been designed to meet the highest standards of cross-sectional survey design (including sampling, response rate, data quality and validity) so as to provide measures of the health status of the South Australian population and to guide understandings of the determinants of health. Although a plethora of data sources are available to public health professionals, the value of a regular, reliable, methodologically sound, community based survey is worthwhile, and valuable in the provision of a different but complementary and timely public health data source.

**References**