



Department of Health

Government of **Western Australia**

# **The WA Health and Wellbeing Surveillance System (WAHWSS)**

## **Design and Methodology**

### **Technical Paper Series No 1**

**Health Outcomes Assessment, Epidemiology Branch  
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## 1. BACKGROUND

The Health Administration Review Committee (HARC) report, released in 2001, made a specific recommendation about population health and its status within the health system.

"Recommendation 10: Population Health

The HARC recommends that: Population health be seen as a high priority for the entire Western Australian health system...".<sup>1</sup>

On the basis of the HARC report, among other measures, a Population Health Division was formed. In February 2002, the Minister for Health launched the WA Health and Wellbeing Surveillance system as an important vehicle for supplying information necessary to monitor population health status. More recently the Report of the Health Reform Committee reiterated the need for good public health policy and committed funding.<sup>2</sup>

This commitment is in line with national initiatives. As early as 1996, the Australian Health Ministers Advisory Council (AHMAC) created the National Public Health Partnership Group (NPHPG) as a subcommittee whose role was to identify and develop strategic and integrated responses to public health priorities to guide and support governments and service providers; establish two-way exchange with key stakeholders on the development of national public health priorities and strategies; develop better coordination and increased sustainability of public health strategies; and strengthen public health infrastructure and capacity nationally.<sup>3</sup>

### 1.1 Introduction

The WA Health and Wellbeing System began its development in 2000. As part of an Australian Government Department of Health and Ageing funding initiative, a health and wellbeing survey was conducted collaboratively by three jurisdictions: SA, NT, and WA.

There was an opportunity to increase the sample size in WA as the collaborative survey coincided with the next planned state health survey. Accordingly, the Health Department of Western Australia (HDWA) funded an additional 7,500 interviews.

Over 500 people were re-called in order to establish test retest reliability on the questions being asked on the survey.

In addition to providing information about the WA population in its own right, the data from this survey informed many aspects of the development of the surveillance system. The data were used to decide which questions were best to capture a particular piece of required information (such as smoking); they were used to establish sample sizes; they were used as a basis for examining the 'cover' of the content areas; and, they were used to populate health status indicators and identify gaps.

The survey questions have been chosen in conjunction with experts both within the Department of Health, the TVW Telethon Institute for Child Health Research and other jurisdictional health bodies, principally the NSW Health and the SA Department of Health, to address national and state health guidelines and priority areas. Four versions of the questionnaire have been created, a child version for parents/carers to answer on behalf of children aged up to fifteen years; a young adults version targetted at those aged sixteen to twenty-four years; an adults version which focuses on those aged between twenty-five to sixty-four years; and, an older adults version which is designed for those aged sixty-five years and older.

This report describes the development of the content of the questionnaires and the methods used to collect the data, as current at April 2005. It also describes the different sampling techniques used over the years and the weighting used to adjust for those. The WA Health and Wellbeing Surveillance System began collecting data in February 2002.

## References

1. Health Administrative Review Committee Report (2001). WA DOH report. URL: <http://intranet.health.wa.gov.au/newsflash/attachments/HARC-ReportFinal.pdf>.
2. Health Reform Committee (2004). A Healthy Future for Western Australians. WA DOH report. URL: [http://www.health.wa.gov.au/hrc/finalreport/docs/Final\\_Report.pdf](http://www.health.wa.gov.au/hrc/finalreport/docs/Final_Report.pdf).
3. National Public Health Partnership Work Program. URL: <http://www.nphp.gov.au/workprog/index.htm>

## 2. SURVEY OBJECTIVES

A health and wellbeing surveillance system based on collecting data by self report has some constraints. The WA Health and Wellbeing Surveillance System (as most surveillance systems) collects the data by Computer Assisted Telephone Interview (CATI). Therefore, only questions which have been shown to be reliable and valid over the telephone are in the scope of the survey. The willingness of the people of Western Australia to respond to the survey is crucial. Unless the response rate is good, the data will not be representative of the population. Finally, the data is being collected from those who are well enough to respond, who have a telephone, who speak English and who are resident at the time of the call.

Within these constraints, the general objectives of the WA Health and Wellbeing Surveillance System are to:

1. Monitor the health and wellbeing of Western Australians using validated reliable indicators
2. Identify health status and lifestyle trends over time
3. Identify emerging and salient issues in a timely manner
4. Identify and report on health-enhancing behaviours as well as risk factor behaviours
5. Ensure that the data collected reflects the need for information within a particular age group.

These broad objectives are further defined into the following aims:

1. To provide timely high quality information to inform policy, planning, purchasing and provision of services
2. To provide information at local health region level, with the eventual goal of making small area data available (SLA level or better)
3. To provide information that is used for population performance indicators
4. To provide information that can be used to evaluate long-term effects of programs and interventions

5. To provide information about trends over time as well as seasonal trends
6. To provide a robust set of baseline health status and lifestyle information for health service managers
7. To provide quality data to researchers and health professionals which can be used to support programs, interventions and future initiatives.

The aims direct the focus of the data collection and the analysis of the data.

### 3. SURVEY CONTENT

A list of the topics<sup>a</sup> covered in the WA Health and Wellbeing Surveillance System are listed in Table 1 below. Some of the questions are copyrighted<sup>b</sup> and would need formal permission for use by other agencies.

**Table 1 List of topics covered on the WA Health and Wellbeing Surveillance System**

<b>Topic</b>
A. Demographics
B. Quality of life (SF-12 up to 2002 and SF8 from then)
C: Disability
D. Selected chronic health conditions
E. Injury
F. Health service use
G. Kessler 10 scale
H. Risk factors – physical activity
I. Risk factors – body mass index
J. Risk factors – alcohol
K. Risk factors – smoking
L. Risk factors - nutrition
M. Perceived control of life events
N. Psychosocial events
O. Mental health specific questions
P. Social networks
<b>Total</b>

\* Person responding on behalf of child answers these questions about him/herself.

\*\* Person responding on behalf of child answers questions about household and also about partner.

The emphasis on social and demographic questions reflects the large body of research which shows that these factors are more important in disease etiology than risk factors per se. The surveillance questionnaires are divided into four major age ranges and questions change to reflect the life course of individuals. All four questionnaires contain questions in common such as weight and height, for estimating the Body Mass Index, as well as questions that pertain only to that age range.

<sup>a</sup> As the surveillance system is a developing system, the topic areas may change slightly over time.

<sup>b</sup> The SF8 is one example of a copyrighted set of questions.

The first questionnaire form is for people aged up to fifteen years, for whom answers are given by parents or carers. The questions on this form place an emphasis on the parent's background and parenting style as well as on the child's physical and mental wellbeing indicators. The second questionnaire form is for people aged sixteen to twenty-four (young adults). Questions on this form ask about areas such as drug use and sexual practices as well as indicators of physical and mental wellbeing. The third questionnaire form is for people aged twenty-five to sixty-four years (adult). Questions on this form place emphasis on psychosocial factors as well as indicators of physical and mental wellbeing. The fourth questionnaire form is for people aged sixty-five years and over. The emphasis in this form is on chronic diseases, health service utilisation and social isolation as well as indicators of physical and mental wellbeing.

Questions for inclusion in the survey were drawn from a number of sources including publications on national indicators,<sup>1,2,3,4,5</sup> specific content area publications<sup>6,7,8,9,10,11,12,13,14,15</sup> and any State based information<sup>16</sup> available. Questions that are used have been properly developed and tested.

A list of the questions that have been asked since 2002 are presented in Appendix 1.

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16. Population Health (2003). A paper prepared by population health Division, Department of Health for the Health Reform Committee to facilitate public discussion.

## 4. SURVEY DESIGN

### 4.1 Sampling

The survey collects information about people of all ages who are currently resident in WA. The selected respondent is the person who has had the most recent birthday. There is no replacement for people who cannot be contacted or who refuse to participate.

Prior to January 2005, the continuous nature of the data collection over the year meant that someone who was not available at first contact was placed back in the queue and repeatedly tried until either contact was made or a proxy refused on behalf of the selected respondent. This method increased the likelihood of getting interviews from people who were away or on holiday when the household was first contacted. At June 30 for the years 2002, 2003 and 2004, the sample was allowed to run out completely so that a response rate could be calculated over a twelve month period.

A new sample frame was extracted in July of each year and used until the following June. The sample frame was calculated using a 60% contact rate of households, that is, a household where someone answers the telephone. Up to six calls to each household were made to establish initial contact. Once a respondent was selected, up to eight calls were made to obtain an interview.

From January 2005, the surveillance system moved to monthly sampling to allow for time series analysis. Monthly samples are extracted using a 55% contact rate of households. The rate decreased by 5% because the Electronic White Pages which had been produced twice yearly is no longer available. New methods of sample determination and extraction are being examined. Up to ten calls are made to establish contact with a household. Once a household has been contacted, up to eight calls are made to obtain an interview unless the selected respondent has refused to participate prior to that.

Although in 2000, in order to encourage culturally and linguistically diverse residents to participate, the Collaborative Health and Wellbeing questionnaire was translated into five languages, this practice is no longer followed. The reason for discontinuing this practice is based on Table 2, which presents a breakdown of respondents by *Australian born* and *language of interview* for the Collaborative Health and Wellbeing Survey conducted in 2000.

**Table 2 Respondents by ethnicity in the 2000 Collaborative Health and Wellbeing Survey**

Language of Interview	Australian born	
	Yes	No
English	7507	2535
Italian	1	10
Greek		1
Vietnamese		2
Croatian		1
Chinese		1
<b>Total</b>	<b>7508</b>	<b>2550</b>

Given the extremely low number of interviews that were conducted in a language other than English, it was decided not to have translated copies for the surveillance system, until such time as the situation changed in WA.

In 2005, there is growing evidence<sup>c</sup> that an increasing number of people are being screened out of the survey due to language difficulties. Plans are being developed to phase in interview translations and interviewers for non-English-speaking respondents.

#### 4.1.4 Sample frame

The survey is conducted as a Computer Assisted Telephone Interview (CATI). The sample is selected from the latest version of the WA Electronic White Pages (EWP) up to 2004. The decision to use EWP rather than a random digit dialling (RDD) procedure was based on two reasons. The first was that there are fewer non-operational numbers and this cut costs considerably. The second was that although the chance of selecting a silent number is less than with RDD, it is not non-existent as previously listed numbers can be re-assigned as silent numbers.

<sup>c</sup> Each month, the response rates with disposition codes are given to the DOH. The proportion of people who are coded as being unable to respond due to language difficulties has risen from 0.1% to 1.8% over the last two years.

The effect of RDD versus EWP sample frames on estimates of prevalence is unclear. South Australia found no effects<sup>1</sup> whereas Victoria found significant differences between listed and silent number prevalence estimates<sup>2</sup>. However, in June of 2004, the last producer of Electronic White Pages was shut down by Telstra Australia over disputes to do with copyright. If there are no new producers of EWP, then WA, as all jurisdictions, will be forced to move to some form of RDD.

A number of potentially important groups are not covered using any CATI methodology. These include households with no telephone (about 2.5%)<sup>d</sup>, people who are unable to speak the level of English necessary (about 1.8%)<sup>e</sup>, and people who are disabled in a way that precludes response to a telephone survey (between 1.8 and 6.7%)<sup>f</sup>. In addition, some Aboriginal Australians may choose not to respond if they don't consider a telephone survey culturally appropriate.

The sample selection for the WA Health and Wellbeing Surveillance System uses a variety of stratified random sampling techniques. Table 3 outlines the stratum used in each wave of the survey since it began in 2002.

**Table 3 Stratum used in sampling for WA Health and Wellbeing Surveillance System**

Months	Year	Stratum	Purpose
Feb to June	2002	Geographic area	To oversample rural and remote parts of WA so that reliable estimates can be produced.
Sept to Dec	2002	Age group	To oversample people aged 0-15 and 16-24 so that reliable estimates can be produced in less than a year.
Feb to June	2003	SLA localities	To oversample four areas of metropolitan Perth so that comparisons can be made on the health status of these areas.
Sept to Dec	2003	Health region	To oversample the new health regions so that reliable estimates can be produced.
Jan to August	2004	Health region	To oversample the new health regions so that reliable estimates can be produced.
Nov to Feb	2004/5	Area Health	To oversample the newly formed area

<sup>d</sup> Figure supplied by the Australian Bureau of Statistics, 2001

<sup>e</sup> Figure supplied by the Office of Citizenship and Multicultural Interests, 2001

<sup>f</sup> Figure supplied by Disabilities Services Commission based on ABS data and includes assessment of ear problems - the lower figure represents the ear as main disability and the upper represents ear as secondary condition, 2001.

		Service	health services so that reliable estimates can be produced.
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Within each stratum, the sample is randomly extracted using the EWP, except for the age oversampling. For the age oversampling, a special table was constructed so that a person within a particular age group was selected on a ratio basis calculated to yield the numbers desired within that age group. For subsequent years, the adjustment to the age and sex distribution of the Estimated Resident Population (ERP) for the year of the data collection took care of the age oversampling for 0-15 and 16-24 year old respondents.

It is possible that sometime in 2005/2006 there will be a change to Random Digit Dialing. At that time, an addendum will be added to this document explaining the new sampling procedure.

## References

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## 5. SURVEY METHODOLOGY

### 5.1 Training

All personnel who have contact with the public, telephone interviewers, the supervisors or help desk contacts, are experienced and have been trained in how to deal with respondents from the public. They are particularly trained in how to deal with people who may have an issue over the survey procedure or the questionnaire. A log is kept of all incoming calls with reasons for the call and action taken. All callers are responded to promptly and to date there have been no unresolved issues.

As some of the content of the questionnaire has the potential to be upsetting to some respondents, interviewers are provided with telephone numbers that they can give to respondents who either express distress or ask for assistance. Feedback from the interviewers is that few seem overly distressed. However, in a very small percentage of cases, the respondent consistently answered in categories that revealed psychological distress or hardship, and in these cases the interviewer read the following sentence.

*As some of the questions we have asked may have been distressing or caused some concern for some people, we suggest that you contact Mental Health Direct on 1800 220 400 if you feel that you need to discuss some of these concerns with a qualified health professional.*

### 5.2 Pilot testing

The questionnaires have been pilot tested over two years (adult 2000, child 2001, young adult and older adult 2002). Minor changes in wording and flow were made on suggestion from the interviewers. The final questionnaire proved easy to administer and there were no complaints from respondents over content or length.

## 5.3 Procedure

An introductory letter (Appendix II) is sent to a household for each selected telephone number with a complete address. It explains the purpose of the survey and alerts the residents that someone in the household might be asked to participate in the survey anytime over the next couple of weeks. The letter provides a name and a telephone number for people to call if they have any concerns.

A small brochure which explains what the WA Health and Wellbeing Surveillance System is all about is included in the letter. The brochure contains a website address so that people can go online and see what information is being provided from the survey (Appendix III).

Ten calls are made to establish contact. The calls are timed for different hours of the day and days of the week. If there has been no contact made after the tenth call, a non-contact disposition code is assigned to that number. The non-contact disposition codes are further broken down (eg. engaged, no answer etc).

All other numbers are coded as completed, partially completed, refused or unable to participate. If the person can't be interviewed immediately, then a rescheduled interview time is made to suit their schedule. Some States code refusals into 'soft' and 'hard'. Soft refusals are then recalled in order to attempt to obtain an interview. In WA, if the refusal can't be converted during the initial call, no further attempts are made. No substitutes are interviewed. If the respondent selected is unavailable to interview at any time during the survey period, or unable/unwilling to participate, the call is terminated and coded appropriately.

### 5.3.1 Data collectors

Since its inception, the University of Western Australia Survey Research Centre in WA has done the data collection<sup>9</sup>. Experienced interviewers conduct the survey under supervision. The disposition codes are monitored by the contractors and the Health Department of WA gets a copy of disposition codes weekly.

### **5.3.2 The introduction to the interview**

Upon contact with a household, all interviewers identify themselves and introduce the survey. They ask if the introductory letter had been received and if not, offer to have it sent and to call again later. Sometimes the introductory letter is faxed immediately to the respondent and the call proceeds. Sometimes the respondent decides to proceed or not to proceed anyway. The large number of requests to have a letter sent/faxed if the respondent has no recollection of a letter or has not received a letter, confirm its importance to the survey process.

### **5.3.3 The CATI system**

The data is collected using the SurveyCraft CATI system. This type of system has many advantages over the traditional telephone interview. These include the management of the timing of calls and call backs, correct sequencing of questions, checks on entered responses, and, if required, automatic rotation of response categories to minimise response bias. Any open-ended responses can be entered directly and verbatim onto the computer during the interview.

### **5.3.5 Validation of data and quality control**

Ten percent of each interviewer's work is randomly selected for validation by the supervisor. As well, the UWA Survey Research Centre adheres to the National Health and Medical Research Council (NHMRC) guidelines for conducting research with humans and is a member of the Market Research Society of Australia. Their Project Manager is a Qualified Practising Market Researcher and annually the UWA SRC provides a summary of the report on interviewer standards conducted by Interviewer Quality Control Australia (IQCA).

### **5.3.6 Reliability testing**

In 2000, over 500 people who agreed to be recontacted (see 5.3.5) were called back and given parts of the WA Health and Wellbeing Surveillance interview again. The purpose of re-interviewing people was to test the reliability of the estimates produced. The questions were analysed using Kappa, Weighted Kappa and Interclass Correlations as appropriate. All questions met the minimum reliability

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<sup>9</sup> The tender process is a rigorous one in Western Australia. All procedures required by Health Supply were followed and independent evaluations made on tenders submitted. In every tender process, the decision was unanimous to

standard of 'good' (.6) and most were in the 'excellent' range (.8 or better). A fuller discussion of the reliability testing will appear in a separate report.

In addition, three field tests have been conducted as part of the National Computer Assisted Telephone Interview Technical Reference Group (NCATI TRG). The first two were done collaboratively by WA and SA specifically examining reliability and validity of selected questions typically used on surveillance systems.<sup>1,2</sup> The third was conducted by the NSW Department of Health on other areas identified as important for producing national indicators.<sup>3</sup> The WA Health and Wellbeing Surveillance System uses the information provided by these field tests to refine questions where necessary.

### **5.3.7 Permission to call again**

Each respondent is asked whether or not they would agree to being called again on health issues. Over 90% agree to this request and give their first name as a point of contact. The use of this database is strictly controlled and priorities are set to types of usage. The highest priority and main use of the database is for case control studies in emergency situations, such as a food poisoning outbreak; the second priority is for research on surveillance issues (such as the validity and reliability of questions and recruitment for answering extra questions on specific areas); the last priority is for research projects. There are strict protocols in place regarding access to the database, which follow the Health Department of WA's Confidentiality of Health Information Committee (CHIC) guidelines<sup>4</sup> as well as NHMRC guidelines.<sup>15</sup> A database of this nature has proved extremely valuable in SA where a food poisoning outbreak was identified and contained within 48 hours.

Respondents are also asked whether or not their survey information can be linked with other health data held by the Department of Health. If they agree – and consistently 80% do – they are asked to provide their full name and date of birth for linking purposes. By agreeing to both parts of the request, a double form of consent is obtained. All interviewers are provided with detailed information for any respondent who wishes to know more about the data that will be linked and how the

information will be used. To date there have been no complaints about this process.

Any data linkage project will be required to have an Ethics Committee approval as well as a CHIC approval.

### 5.3.8 Response rates

The response rate considered optimal for population based estimates is 80% but this level is rarely achieved if raw response rates are used. Table 4 shows the disposition codes used in WA to calculate response rates. The information in the table is about the sample used for the month of January 2005.

**Table 4** Response rate for January 2005 from the WA Health and Wellbeing Surveillance System

<b>A. INITIAL SAMPLE</b>	999
<b>UNUSED NUMBERS = A-(B11+B19+B21)</b>	0
<b>B. OUT OF SCOPE</b>	221
B1. Not connected	179
B2. Not residential	13
B3. Fax/modem	10
B4. Out-of-scope/ineligible	19
<b>C. ELIGIBLE SAMPLE (A - B)</b>	778
<b>D. NON CONTACTS AFTER 10 ATTEMPTS</b>	74
<b>E. ELIGIBLE CONTACTS</b>	704
E1. Refusals	84
E2. Terminated	0
E3. Foreign language	9
E4. Incapacitated	8
E5. Respondent unavailable	16
E6. Completed interviews	587
<b>F. RESPONSE RATE: E6/(E+D)</b>	75.5%
<b>G. PARTICIPATION RATE: E6/E</b>	83.4%

The eligible sample is calculated in two stages. The first stage is found by subtracting all 'out of scope' numbers from the initial sample frame (line C) and second stage eliminates all numbers that have been called ten times and were not answered at any one of those ten calls (line D). Some researchers recommend that

the number of calls should be 20 before being considered a 'non contact', but research has shown that the prevalence estimates of surveys with very good response rates differ very little from prevalence estimates of surveys with quite low response rates.<sup>6</sup> Similarly, increasing the times a number is called to establish contact does increase the response rate but does not change the prevalence estimates.<sup>7</sup> Given the very high raw response rate, it is not considered necessary to increase contact calls.

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## 6. WEIGHTING

The sampling strategy used in the WAHWSS means that the data collected is not representative of the distribution of the population in WA. The data are weighted to compensate for this. The data are also adjusted to make the sample approximate the age and gender distribution of the sample strata. The details of how this is done are explained in the following sections.

### 6.1 Adjustments to the sample to compensate for differential probability of being selected

Each year, the data are weighted to compensate for over-sampling in the country areas compared with the metropolitan areas. The adjustment is based on Cochran's<sup>1</sup> technique. The formula used to weight the data is:

$$\text{SFwght} = \frac{\text{Total sample/Total WA population}}{\text{Sample of area/Total area population}}$$

The data are also weighted to account for probability of being selected as respondent in the survey. As the survey is actually a survey of households from which one respondent is selected, the probability of selection is influenced by the number of adults within each household contacted and the number of listings in the Electronic White Pages (EWP) the household has. Each listing increases the probability of the household being selected and each eligible person in the household decreases the probability of being selected. The formula used to adjust for this is:

$$d = \frac{\text{Number in household}}{\text{Listings in the EWP}}$$

## 6.2 Standardising the sample

Age and gender can influence any estimates of the prevalence of any health-related data. For example, age is a powerful associate of illness and certain conditions are more likely to be found in one gender rather than another. There are two methods used to standardise data.

The first method is used to calculate the 'burden' on WA within the year of data collection. This method involves adjusting the age and sex distribution of the sample to the age and sex of regions (when regional estimates are needed) and to the State as a whole (when State estimates are needed or when comparisons across areas are needed).

The second adjustment is used when comparisons across years are needed (or trends over time). In this case the data are adjusted against what is known as a 'standard population'. The standard population in use at this time is the 2001 Estimated Resident Population for Australia<sup>2</sup> when national comparisons are being made; and the 2003 Estimated Resident Population for Western Australia<sup>3,h</sup> when within-State comparisons are being made.

By standardising on one population across time, the data can be truly compared for changes that are not related to a changing age structure. Areas, regions or boundaries are usually determined by ABS Collector District and when that information is not available, by ABS Statistical Local Area. Age is recoded into five year age groups.

The formula used for this procedure is:

$$ASP = \frac{\sum_i (P_i * O/T_i)}{\sum_i P_i}$$

where:

ASP = Age Standardised Prevalence

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<sup>h</sup> The 2003 ERP was selected as, at April 2005, it is the latest ABS-produced population estimate for WA.

- $P_i$  = The number within the age and gender group of the standards population (e.g. Males 20 - 24 yrs)
- $O$  = The proportion of the sample within that age group with the condition (e.g. diabetes) adjusted for sampling strategy
- $T$  = Total who answered the question (e.g. Has a doctor ever told you that you had diabetes?) adjusted for sampling strategy

In practice, the three formulae are combined into the following weighting formula which is based on a random selection of households and one person within the household. This formula weights so that the sum of the weights add up to the size of the sample. There are other methods that sum to the size of the standard population.

In the formula<sup>i</sup>:

- $R$  = The sampling strata (i.e. age, sex and area)
- $P_r$  = The population size of each of the sampling strata  $r$
- $p_r$  = The sample size in each of the strata  $r$
- $N$  = The total population size of the standard population, which is the sum of  $P_r$
- $n$  = The total sample size, which is the sum of  $p_r$
- $d$  = The probability of being selected
- $i$  = Number of strata

$$wght_{r,i} = d_{r,i} \times \frac{P_r}{\sum_{i=1}^n d_{r,i}} \times \frac{p}{P}$$

In all reports, when the overall prevalence of an estimate is compared with another estimate from another area, the data is standardised against age and gender. When genders are compared, the data is standardised against age only.

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<sup>i</sup> This formula is adapted from the South Australian Monitoring and Surveillance System (SAMSS) Technical Paper Series No 1/04. September 2004.

When population estimates are produced, they are weighted to approximate the health service, region or State gender and/or age distribution. These estimates are the most accurate for planning purposes.

## References

1. Cochran, W.G. (1963) Sampling Techniques, Second Edition. John Wiley & Sons Inc. New York.
2. Australian Bureau of Statistics. June 1987 to June 1992. Estimated Resident Population by Sex and Age States and Territories of Australia Catalogue No. 3201.0. July 1993.
3. Australian Bureau of Statistics. December 2004. Estimated Resident Population by Sex and Age in Western Australia. Catalogue No. 3201.5. December 2003.

## Appendix I

These are the areas that questions have been asked about since 2002. At any one time, not all the areas are covered.

MODULE	QUESTIONS
<b>General Health</b>	SF8 SF9 Comparison of health now with health twelve months ago Disability and Burden – some-one in the family has disability Disability and Burden – extent of burden of disability Disability and Burden – use of special equipment
<b>Chronic Conditions &amp; Co-Morbidity</b>	ADHD - ever diagnosed Developmental Problems - ever diagnosed Arthritis - ever diagnosed Heart Disease - ever diagnosed Stroke - ever diagnosed Cancer - ever diagnosed Osteoporosis - ever diagnosed Cholesterol - last measured Cholesterol – high cholesterol ever diagnosed Cholesterol - still have high cholesterol Cholesterol – take medication for high cholesterol Blood pressure – last measured Blood pressure – high blood pressure ever diagnosed Blood pressure - still have high blood pressure Blood pressure – take medication for high blood pressure Respiratory problem other than asthma – ever diagnosed Respiratory problem other than asthma – still have Diabetes – ever diagnosed Diabetes – diagnosed while pregnant Diabetes – diagnosed other than when pregnant Diabetes – type of diabetes Asthma – ever diagnosed Asthma – symptoms in the last 12 months Asthma – treatment in the last 12 months

<b>Chronic Conditions</b>	<p>A problem with coordination and clumsiness – ever diagnosed</p> <p>Deformity and stiffness – ever diagnosed</p> <p>Developmental delay – ever diagnosed</p>
<b>Injuries</b>	<p>Injuries – number requiring treatment in last 12 months (type of injury unspecified)</p> <p>Injuries – broken bones in last 12 months</p> <p>Injuries – a head injury causing unconsciousness in last 12 months</p> <p>Injuries – a stay in hospital because of accident burn in last 12 months</p> <p>Injuries – a stay in hospital because of accidental poisoning in last 12 months</p> <p>Injuries – any other injury requiring treatment in last 12 months</p> <p>Falls – number of injuries that were the result of a fall in last 12 months</p>
<b>Health Service Utilisation</b>	<p>Primary health services – number of times used in last 12 months</p> <p>Hospital based services – number of times used in last 12 months</p> <p>Allied health services – number of times used in last 12 months</p> <p>Dental services – number of times used in last 12 months</p> <p>Mental health services – number of times used in last 12 months</p> <p>Alternative health services – number of times used in last 12 months</p> <p>Flu vaccination in the last 12 months</p> <p>Pneumonia vaccination in the last 12 months</p>
<b>Child Development</b>	<p>Birth weight</p> <p>Low birth weight – prevalence</p> <p>Breastfeeding – length of time child breastfed</p> <p>Introduction of water – age of child</p> <p>Introduction of liquids other than water – age of child</p> <p>Introduction of solids – age of child</p> <p>Children late in talking – prevalence (<i>age 2+</i>)</p> <p>Children needing professional help with speech – prevalence (<i>age 2+</i>)</p>
<b>Psychosocial</b>	<p>Kessler K10</p> <p>Psychosocial Life Events</p> <p>Family Functioning – McMasters Scale</p> <p>Parental Discipline Style</p>
<b>Physical Activity</b>	<p>Self-rated level of physical activity (<i>age 5+</i>)</p> <p>Vigorous physical activity among children – number of times per week (<i>age 5+</i>)</p> <p>Moderate physical activity among children – number of times per week (<i>age 5+</i>)</p> <p>Walking – number of times per week (<i>age 16+</i>)</p> <p>Walking – Estimated total time per week (<i>age 16+</i>)</p>

	<p>Vigorous physical activity – number of times in last week (<i>age 16-64</i>)</p> <p>Vigorous physical activity – estimated total time in last week (<i>age 16-64</i>)</p> <p>Moderate physical activity – number of times in last week (<i>age 16-64</i>)</p> <p>Moderate physical activity – estimated total time in last week (<i>age 16-64</i>)</p> <p>Physical activity among older adults – number of times per week (<i>age 65+</i>)</p> <p>Physical activity among older adults – estimated total time in last week (<i>age 65+</i>)</p>
<b>Sedentary Activity</b>	<p>Watching TV/video, playing computer games or using computer - number of hours per week</p> <p>Sedentary hours including work hours</p> <p>Sedentary hours excluding hours</p>
<b>Body Measurements</b>	<p>Height without shoes (<i>age 5+</i>)</p> <p>Weight (<i>age 5+</i>)</p>
<b>Body Measurements</b>	<p>Waist measurement (<i>age 5+</i>)</p> <p>Hip measurement (<i>age 5+</i>)</p>
<b>Sun Protection</b>	<p>Sunburn – number of times in last 12 months</p> <p>Use of adequate sun protection</p>
<b>Alcohol Consumption</b>	<p>Number of days per week usually drink alcohol</p> <p>Number of standard drinks usually consumed on a drinking day</p> <p>High risk drinking – number of times in past 4 weeks</p> <p>Risky drinking – number of times in past 4 weeks</p> <p>Alcohol causes problems in the home – prevalence</p>
<b>Tobacco Smoking</b>	<p>Smoking in the home – prevalence</p> <p>Smoking status</p> <p>Smoking during pregnancy (either mother, father or both) – prevalence</p>
<b>Nutrition</b>	<p>Serves of fruit – usual number of serves per day (<i>age 1+</i>)</p> <p>Serves of vegetables – usual number of serves per day (<i>age 1+</i>)</p> <p>Type of milk usually consumed (<i>age 1+</i>)</p> <p>Type of soft drink usually consumed (<i>age changed from 12+ to 1+ in November 2004</i>)</p> <p>Fast food takeaways – number of times per week on average (<i>age 1+</i>)</p> <p>Number of meals per day</p> <p>Condition of teeth and affect on eating</p>
<b>Perceived lack of control</b>	

	<p>Life in general</p> <p>Personal life</p> <p>Health</p>
<b>Perceived lack of control</b>	<p>Money</p> <p>Job security</p> <p>Work life</p>
<b>Mental Health</b>	<p>Anxiety – ever diagnosed</p> <p>Depression – ever diagnosed</p> <p>Stress-related problem – ever diagnosed</p> <p>Other mental health problem – ever diagnosed</p> <p>Currently have a mental health problem</p> <p>Currently receiving treatment for any mental health problem</p> <p>Child emotional problems – prevalence (<i>age 1-15</i>)</p> <p>Children needing special help with emotional problems – prevalence (<i>age 1-15</i>)</p> <p>Children ever treated for emotional or mental health problem – prevalence (<i>age 1-15</i>)</p>
<b>Suicide</b>	<p>Thought about suicide in last 12 months</p> <p>Tried suicide in last 12 months</p> <p>Friends tried suicide in last 12 months</p>
<b>Perceived Social Support</b>	<p>Someone to confide in</p> <p>Someone to relax with</p> <p>Someone to help in a crisis</p> <p>Someone who appreciates you</p> <p>Someone to count on for comfort</p> <p>Someone who will listen</p>
<b>Social support</b>	<p>Self-reported level of social activity</p> <p>Perceived state of loneliness (one question taken from Life Satisfaction Index)</p> <p>Mobility (see Quality of Life)</p> <p>Transport limitations (see Quality of Life)</p>
<b>Social Capital</b>	<p>Group membership</p> <p>Perceived safety in the home (see )</p> <p>Perceived safety in the neighbourhood (see )</p>
<b>School Connectedness</b>	

	<p>Absenteeism from school – number of days in last 12 months (<i>age 5-15</i>)</p> <p>Overall school performance (<i>age 5-15</i>)</p> <p>Attitude towards school (<i>age 5-15</i>)</p> <p>Child victim of bullying in last 12 months (<i>age 5-15</i>)</p> <p>Child has been a bully in last 12 months (<i>age 5-15</i>)</p> <p>Child has special friend or mate (<i>age 5-15</i>)</p> <p>Child has group of friends (<i>age 5-15</i>)</p>
<b>Drug Use</b>	<p>Current use of drugs</p> <p>Unsafe needle practices</p>
<b>Demographic &amp; Social Characteristics</b>	<p>Age</p> <p>Sex</p> <p>Child's name</p> <p>Born in Australia</p> <p>Aboriginality</p> <p>Overseas country of birth</p> <p>Year of settling in Australia</p> <p>Highest level of education</p> <p>Currently studying</p> <p>Current employment status</p> <p>No. of hours in paid employment</p> <p>Looking for employment</p> <p>In paid employment (older adults only)</p> <p>Volunteer work (older adults only)</p> <p>Family structure</p> <p>Seeing other parent – number of times per month</p> <p>Current living arrangements</p> <p>Marital status</p> <p>Home occupation status</p> <p>Household money situation</p> <p>Household income before tax</p> <p>Personal weekly income after tax</p> <p>Government pension</p> <p>Health care card</p> <p>Private health insurance</p>

<b>Child Respondent Characteristics</b>	Relation to child
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Born in Australia
Aboriginality
Overseas country of birth
Self-rated general health status (sf1gen)
Mental health condition – ever diagnosed
Mental health condition – currently have
Mental health condition – currently receiving treatment
Lack of control – life in general
Lack of control – personal life
Lack of control – health
Perceived safety in the home
Perceived safety in the neighbourhood
Highest level of education
Currently studying
Current employment status
No. of hours in paid employment
Looking for employment
Health care card

## Appendix 2

Dear <<Name of householder>>

### **The WA Health and Wellbeing Surveillance Survey System**

I am writing to ask you to take part in an important Department of Health initiative, the WA Health and Wellbeing Surveillance Survey. The University of Western Australia Survey Research Centre will be conducting the survey on our behalf. We have randomly selected households to be part of the survey by using the most recent electronic version of the telephone book. Your household has been selected to take part.

In the next few weeks, an interviewer from the UWA Survey Research Centre will telephone your house. The interviewer will ask to speak with one of the people who live in the house. We choose people within age groups, so it may be anyone living in the house from the youngest person to the oldest person.

The interviewer will ask the chosen person to take part in an interview over the telephone. If the person is under 16 years, the interviewer will ask the parent/guardian to answer on his/her behalf. The interview will last about fifteen minutes. All information collected will be strictly confidential.

We will use the results from the survey to keep an eye on the health and wellbeing of all Western Australians. For the first time we will have really up-to-date information about our health status. We can use this information to better plan and develop our health services. We want to be more responsive to local needs and it is your response that will help us form a picture about the health of your local community.

If you have any queries about the survey, please call Ms Caroline Harte on (08) 9380 7991, if you are calling from Perth, or on 1800 799100 if you are calling from outside Perth. She will be happy to answer your questions.

I would like to thank you in advance for your support and participation in this important initiative.

Yours sincerely

Dr Neale Fong

**ACTING DIRECTOR GENERAL**