



Computer
Assisted
Telephone
Interviewing
Technical
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Population Health Monitoring and Surveillance:
Question Development Background Paper

Demographic Characteristics

May 2003

CATI Technical Reference Group
National Public Health Partnership

Computer Assisted Telephone Interviewing (CATI) is a methodology widely used for surveillance of health behaviours and health outcomes in populations in Australia. The National CATI Health Survey Technical Reference Group (CATI TRG) is an advisory committee to the National Public Health Information Working Group under the National Public Health Partnership. Members of the CATI TRG include representatives from State/Territory Health Departments, the Commonwealth Department of Health and Ageing (DoHA), the Australian Bureau of the Statistics, the Australian Institute of Health and Welfare and the Public Health Information Development Unit at the University of Adelaide. Since its inception in 1999, the CATI TRG has been a forum for the development and promotion of national standards, valid methods and capacity for CATI health surveys and health surveillance.

To embark in the efforts towards 'harmonisation' of CATI health surveys in Australia, the CATI TRG has identified the need to develop question modules for behavioural risk factor and chronic disease topics based on well-developed conceptual frameworks that underpin the data requirements for health surveillance. The proposed question modules are set to undergo a rigorous process of cognitive and field-testing under the guidance of the CATI TRG and the results will be published in a question module manual as a key reference to those interested in CATI health surveys in Australia.

This paper has been prepared by the CATI TRG as part of a series, with funding predominantly from the DoHA. Its preparation has involved input from all State and Territory jurisdictions, DoHA, the Australian Bureau of Statistics, the Australian Institute of Health and Welfare and the Public Health Information Development Unit at the University of Adelaide as well as recognised content experts.

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Content

1	Introduction	1
2	Effects of age and sex on health	2
2.1	Age	2
2.2	Sex	2
3	Health differentials by selected demographic characteristics.....	4
3.1	Marital status	4
3.2	Household size and structure.....	4
3.3	Immigration and ethnicity	4
3.4	Indigenous Australians.....	5
3.5	Socio-economic status (SES)	5
3.6	Rural-urban differences in health	6
4	Data requirements and concepts to be measured	7
4.1	Personal characteristics of age, sex and marital status and household size and structure	7
4.2	Ethnicity	10
4.3	Indigenous status.....	13
4.4	Socio-economic status.....	14
4.5	Locality.....	15
	Appendix 1 Data elements on demographic characteristics in the National Health Data Dictionary Version 10.....	16
	Demographic characteristics	16
	Social characteristics	18
	References	20

Demographic characteristics

1 Introduction

The purpose of this background paper is to present the conceptual framework that underpins the concepts and data requirements for the ongoing monitoring and surveillance of demographic characteristics in Australia. This will assist in the development of nationally agreed computer assisted telephone interview (CATI) survey questions to monitor the prevalence of demographic characteristics and its associated impact on individuals.

The development of nationally agreed health survey questions on demographic characteristics will help increase our understanding of trends in health inequality among populations of different social and economic status (SES) groups, cultural and language backgrounds and geographic areas of usual residence. Demographic data are fundamental core information for all surveys. There are two main reasons for collecting demographic characteristics of the respondent sample in health surveys. The first is to collect information on important demographic characteristics so the survey sample can be accurately described. Often, the information is collected in a manner as close as possible to that of the ABS Census, so that the demographic characteristics of the survey sample can be consistently and validly compared to the reference census data. The second reason is to collect data for demographic characteristics known to be associated with health. Of particular concern in Australia is the widening gap in health status between Indigenous and non-Indigenous populations, SES groups and geographic areas. This paper focuses on the second reason for collecting demographic characteristics of respondents.

This paper is divided into four sections. Following the first introductory section, Section 2 highlights the effects of age and sex on key health indicators and points to the importance of controlling for these factors in health analysis in order to assess the impact of other health determinants. Section 3 describes health differentials by selected demographic characteristics holding the effects of age and sex constant. Section 4 identifies the data requirements that need to be measured for the ongoing monitoring and surveillance of health inequality in Australia.

This paper will provide information and guidance to those interested in measuring demographic concepts in the development of relevant questions for the purpose of health differentials monitoring and surveillance.

2 Effects of age and sex on health

This section reviews evidence on the effects of age and sex on a wide range of health measures including mortality, morbidity and disability and examines the underlying reasons for the use of these variables in health monitoring and surveillance. Unlike other 'demographic factors' except for an individual's race, age and sex are biologically determined and hence their effects on health cannot be modified or prevented. However, there are other life style and behavioural patterns associated with age and sex, which underlie the complex differences in health.

2.1 Age

In health monitoring and surveillance, age is a very significant factor underlying differences in the health of a population. For example, the Australian mortality data in 2000 show that death rates for infants (aged less than 1 year) are over 10 times greater than those for the 10-14 year age group. The data on age-specific death rates also show a wide variation between age groups ranging from a low death rate of 0.3 per 1,000 in the same calendar year for males aged 5-14 years to a high death rate of over 165.3 per 1,000 for the very old (aged 85 years and over). A similar pattern is found for females of corresponding age groups.

Prevalence rates of many diseases including non-communicable chronic diseases also vary by age. Evidence from the 1995 National Health Survey indicates self-report conditions such as asthma is more prevalent in young people (under 25 years old) while chronic conditions such as cardiovascular diseases and malignant neoplasms steadily increase with age (ABS 1998a).

The effect of age is sometimes eliminated to enable comparisons in health measures between or among populations. For example, age-standardised rates (based on direct or indirect methods) are used in comparing differences in mortality and/or morbidity levels among Australian States and Territories or smaller geographical areas, which have different age structures by relating them to a standard population.

It is also a common practice to control for age in performing descriptive and more complex analyses of the relationships between independent (explanatory) variables and health. Epidemiological studies of associations between "exposure" variables and diseases of interest are often controlled for age of individuals.

2.2 Sex

There has long been interest in the relative health of women and men (Hunt & Annandale 1999, Gallin 1993). Past empirical evidence seems to support the generalisation that women experience more ill-health, but on average die later than men.

In Australia, sex differentials in health for various age groups have previously been reviewed and documented by AIHW (1994a; 1994b; 1995 & 1996). It was found that, like other developed countries, Australian men have higher mortality than Australian women at all ages and the major contributors are ischaemic heart disease, lung cancers, accidents and other violence. Men's higher mortality from these causes is possibly due to both intrinsic biological sex differences and a wide range of sex differences in life style and behaviours (eg smoking, excess alcohol consumption, risk-taking behaviours and occupational hazards).

Demographic characteristics

In addition to mortality, sex differences in disability particularly profound/severe core activity restriction have also been observed in Australia. Based on the data from 1998 Survey of Disability, Ageing and Carers, it was found that among the elderly (65 years and over), the rates of severe and profound core disability were markedly greater for females, (ABS 1998b).

In conclusion, while the effects of sex on a variety of health measures are usually directly monitored, this variable is sometimes controlled in more complex analyses in order to assess the independent impact of other variables such as SES, marital status, and geographic areas.

3 Health differentials by selected demographic characteristics

This section reviews the literature on health differentials by other demographic characteristics beyond age and sex. The focus is on specific variables, which have been previously demonstrated to be associated with health measures.

3.1 Marital status

An association between marital status and health as measured by mortality has been observed in a number of industrialised countries including Australia for a long period of time. There appears to be a consistent pattern that married men and women have greater longevity than their unmarried counterparts (i.e. never married/single, divorced, separated, widowed) and this is true even when age is taken into consideration. Moreover, evidence from a cross-country study shows that the excess mortality of unmarried men (relative to married men) greatly exceeds that of unmarried women suggesting the marriage health effects are greater for men. Among the three unmarried groups (single, widowed, divorced/separated), divorced men have the highest death rates (Hu & Goldman 1990).

Males and females who had never been married had death rates almost twice those of their married counterparts and this is true even when the different age structure of each population is taken into account. This may, to some extent, relate to behavioural risk factors such as smoking and excess alcohol consumption. Evidence from the 1995 National Health Survey and the 1998 National Drug Strategy Household survey shows that divorced and separated men and women are more likely than their married counterparts to be smokers (AIHW 2000b). For excess alcohol consumption, it was found that unmarried men, but not unmarried women, were twice as likely to be risk drinkers (AIHW: Mathers 1994a).

3.2 Household size and structure

There is evidence that people living in some types of households have better health than persons residing in other forms of living arrangements. A review of previous studies by Hughes & Waite (2002) show the health advantages of households with the presence of a spouse and this is consistent with the positive relationship between being married and health as described above. Households headed by a single parent, on the other hand, are commonly found to be at a health disadvantage. Living alone is also found to disadvantage individuals on a range of health measures. Information on household size is used in health surveys for the weighting purpose. In addition, this variable can be used as a proxy for overcrowding. There is evidence that household overcrowding diminishes mental and physical health (Gove et al. 1979).

3.3 Immigration and ethnicity

The relationship between immigration status, ethnic origins and health has been an area of interest in health monitoring and surveillance particularly for major migrant-receiving countries such as the United States, Canada, New Zealand and Australia (Frisbie et al 2001). As Young (AIHW 1992b) pointed out the wide cultural diversity and the many different sets

Demographic characteristics

of customs and behaviours which immigrants bring to Australia present challenges for health care delivery. Hence, data relating to immigration status as measured by country of birth of a person are important as they can be used to monitor health and welfare service needs among population groups with various ethnic backgrounds.

Past studies have shown that immigrants as a whole tend to fare better with regard to their health than their native counterparts (AIHW 2001). This pattern is believed to be attributable to “migration selectivity”. Immigrants who are admitted to their host countries are usually required to pass certain health screening procedures, which eliminate those unhealthy ones from most international migration streams. Moreover, it is generally hypothesized that individuals with ill-health are less likely to immigrate.

It has also been observed that duration of residence in the receiving country is an important variable affecting health status of immigrants. As duration of residence in the host country increases, health differentials between immigrants and native-born individuals are less pronounced (Marmot & Syme 1976).

In Australia, differences in mortality and prevalence of risk factors among birthplace groups and between Australian born and immigrants have been examined (see for example, AIHW: Donovan et al. 1992a). It was found that most ‘ethnic groups’ as measured by country of birth, have lower, and in many cases significantly lower, total mortality than the Australian population as a whole or Australian born population. These findings apply across all age groups.

3.4 Indigenous Australians

The Indigenous population experience much poorer health than other Australians. The life expectancy at birth for Indigenous Australians in the period 1998-2000 was estimated to be 56 years for males and 63 years for females, considerably lower than the all Australians estimates of 77 years for males and 82 years for females (ABS 2001).

3.5 Socio-economic status (SES)

There is consistent evidence in many countries including Australia that people at a lower socioeconomic status (SES) have poorer health than their better-off counterparts (Lynch et al. 1996, Mackenbach & Kunst 1997, AIHW 1994a, AIHW 1994b, Turrell & Mathers 2000a, Turrell & Mathers 2000b, Yu et al 2000). This association holds true regardless of SES measures used or health variables employed. The available trend data also suggest that these SES health differentials have persisted or even become wider in some countries (Mackenbach & Kunst 1997a).

SES can be measured in a number of ways, using each indicator such as the highest level of attained education, occupation or household income or combine these variables into an index of SES. In Australia, information on SES is available at both individual and small area levels. The ABS National Health Surveys, for example, collects data on social and economic characteristics of individuals. While administrative data sources such as mortality and hospital morbidity data do contain some SES data, the quality of such information is generally poor.

3.6 Rural-urban differences in health

There is convincing evidence that there are disparities in health among SES groups and geographic areas in Australia. At the individual level, people with low SES have been found to fare worse with regard to their health for a number of health measures (for a summary of evidence see Turrell & Mathers 2000a). Similarly, at the aggregated level, the data show that the highest socio-economic status of Statistical Local Areas (SLAs) have the most advantageous health measures (Glover et al. 1999) and the most disadvantaged fifth of the population experienced a death rate which is 23% higher than for the least advantaged fifth of the (ABS 2001).

Geographic area differences in health particularly between metropolitan and rural/remote areas have been important for health surveillance and monitoring. In Australia, people residing in rural and remote areas are found to have poorer health than those living capital cities and other metropolitan areas (AIHW 1998). Some of the issues related to the poorer health in rural and remote areas that include poor access to health services, lower socioeconomic status and employment levels, exposure to comparatively harsher environments, occupational hazards. Moreover, the issue of rural-urban differences relate to a large proportion of the population in the rural areas of Australia being Aboriginal and Torres Strait Islander peoples who have poorer health status. All these factors have implications for health program interventions aiming at reducing these rural-urban inequalities.

In Australia, various rural-urban classifications have been developed and used in health monitoring and surveillance. For example, the Accessibility/Remoteness Index of Australia (ARIA) provides a geographical measure of remoteness from service centres for all places and points in Australia (for details regarding calculation of ARIA, see DHAC 2001). Each of the 11,340 populated localities across Australia has been calculated an ARIA score ranging between 0 to 15. Based on the ARIA score, there are five categories of remoteness including highly accessible, accessible, moderately accessible, remote and very remote.

4 Data requirements and concepts to be measured

The data requirements for the ongoing monitoring and surveillance of health differentials are based on a wide range of measures of population characteristics, which can be grouped into the following categories:

- personal characteristics of age, sex and marital status and household size and structure;
- ethnicity (Indigenous origin, country of birth, year of arrival, language spoken, English proficiency);
- socio-economic status (education, income, occupation); and
- geographic area of usual residence.

4.1 Personal characteristics of age, sex and marital status and household size and structure

4.1.1 Age

The concept of age “describes how old a person is at a particular point in time. It is defined as the measure of the time elapsed from date of live birth to a specific point in time, usually the date of collection of the data” (ABS 1999). This variable is used for both living and deceased persons (e.g. in mortality statistics, age refers to age at death of a person).

The data requirements to monitor the effects of age on health call for the statistical information on the exact age of each person either at the time of data collection for health surveys or age at death for registered mortality statistics. To obtain this information, a question on date of birth may be asked. In Australia, the National Health Data Dictionary also specifies date of birth as one data element required to derive age for demographic analyses (AIHW 2000a).

It has been widely accepted that collecting actual date of birth gives the best data quality. Other methods such as collecting age in complete years may not yield accurate information. This is partly due to the round off of their age by some respondents and some reporting “adjacent” age. Past demographic analysis of age data shows patterns of age heaping or digit preference at ages ending 0 and, to a less extent, 5. Age heaping is more pronounced among populations or population subgroups with a low educational status (Shryock & Seigel 1973).

For the purpose of health surveillance, it is important to get the most exact age possible for describing the sample characteristics (eg by age groups) and to use as a basis for weighting (usually in conjunction with sex and number of persons in household) if such analysis is based on survey data. Weighting is calculated in order to adjust each selected case in the survey sample according to its probability of being chosen.

With regard to the code structure for the variable age, ABS (1999) uses two fields beginning with age 0 to 99 that include those who are over this age. However, this coding practice should be re-considered in health surveillance to extend the field size to three so that those aged beyond 99 could be captured. There is a need for such information due to a rising trend in people living beyond 99 years old in many developed countries including Australia. It is important to understand factors associated with their longevity.

Age structure

Age structure of a population is also an important concept in explaining differences in health status at an aggregate level (eg among different population groups or populations of certain geographic areas). It refers to (percentage) distribution of each population by age groups. For example, a population with a high proportion of elderly is likely to have a higher rate of overall mortality as compared with a younger population, other things being equal. Hence, it is important to calculate age-standardised rates in order to assess if there are any remaining differences in health status indicators of interest between populations under investigation. In this way, the effect of age is eliminated or held constant. (If data permit, age-sex standardised rates are favourable over age-standardised rates as both variables are simultaneously controlled in the analysis).

The data requirements for calculating age standardised mortality and morbidity rates include:

Direct method

- age specific mortality /morbidity rates of a population of interest
- age distribution of a standard population

Indirect method

- age distribution of a population of interest
- age-specific mortality/morbidity rates of a standard population

The direct method of age standardisation is preferred to the indirect method. However, for some small areas where mortality and morbidity rates are not reliable or available, it is recommended to use the indirect method (Shyock & Siegel 1973).

4.1.2 Sex

Both the ABS (1999) and the National Health Data Dictionary (AIHW 2000a) use the term sex rather than gender as it is well understood across population groups. In terms of data classification, the National Health Data Dictionary lists four categories for this variable: male; female; indeterminate and not stated/inadequately described. This recommended classification is important for data collections such as perinatal statistics and hospital morbidity data. However, most health surveys contain only two categories (i.e. male and female).

4.1.3 Marital status

In Australia the information on marital status is collected for those aged 15 years and over, and is in line with the UN recommendation (UN 2000). As there are two concepts to be measured surrounding marital status, the ABS has recommended two separate variables, namely, registered marital status (to replace the old 'marital status' variable) and social marital status.

In mortality data, marital status relates to registered marital status which refers to formally registered marriages or divorces for which the partners hold a certificate. Four categories of marital status are identified: never married, married, widowed and divorce (ABS 1999).

Social marital status

Registered marital status measures only the legal aspects of marriage while social marital status is a derived variable based on the concepts of living arrangements and relationship in

Demographic characteristics

the household including de facto or partnership marital status. There are five output categories with the following coding structure: never married; widowed; divorced; separated and married.

The ABS uses the term social marital status to refer to a person's relationship status with a particular reference to whether she or he forms a couple relationship with another person. The focus is a consensual union which means residing in the same household, sharing a social, economic and emotional bond and respondents consider their relationship to be a marriage or marriage-like union. A couple relationship includes both registered marriage and de facto living arrangements. Social marital status is a derived variable using the following variables: usual residency, relationship in household, age, sex, and sex of the person's partner.

Marital status in the National Health Data Dictionary

The National Health Data Dictionary uses only one variable to measure marital status of an individual aged 15 and over. The marital status variable in NHDD incorporates the two concepts of registered marital status and social marital status together and the classification categories are:

- 1 Never married
- 2 Widowed
- 3 Divorced
- 4 Separated
- 5 Married (including de facto)
- 6 Not stated/inadequately described

Data requirements for marital status

Health surveillance requires data on marital relationship (either identified by registered marriage or de facto relationship). Such information can be used as a proxy for social support that has previously been shown to have favourable health outcomes. Moreover, it is important to collect information on marital dissolution (either through the break-up of marriage or loss of spouse) to monitor if this has any significant adverse health effects 'unattached' individuals such as the never married are also of interest in terms of their risk-taking behaviours and their consequences on health. Hence, in health surveillance, the emphasis is more on living arrangements and social, economic and emotional bonds rather than legal marriages.

4.1.4 Household size and composition

According to the definition given by the United Nations (as cited in Shryock & Siegel 1973) "a household may be either: (a) a *one-person household*, that is, a person who makes provision for his own food or other essentials for living without combining with any other person to form part of a multi-person household or (b) a *multi-person household*, that is, a group of two or more persons who make common provision for food or other essentials for living. The persons in the group may pool their incomes and have a common budget to a greater or lesser extent; they may be related or unrelated persons, or a combination of both."

Distinction is also made between the two concepts, namely *private households* and *collective households* or *institutional households*. While private households correspond to the above UN given definition, collective or institutional households refer to various kinds of living

Demographic characteristics

quarters such as military barracks, penal institutions, college dormitories, nursing homes, hostels and hospitals. Most household surveys include only private households while censuses cover all households.

Household size

Household size is used to weight the survey sample. Hence, it is necessary to collect information on the number of persons in the household, number of adults (defined as those 18 years or over in many collections) and number of persons aged 0 to 17. For health surveys focusing on the adult population only, the Number of Adults in Household is used for weighting the results.

Household composition

The ABS adopts concepts related to household composition, household type and relationship in the household.

4.2 Ethnicity

In Australia, the Council of Ministers of Immigration and Multicultural Affairs (COMIMA) has recommended that the measurement of cultural and language diversity be based on the use of the Standard Set of Cultural and Language Indicators in statistical and administrative collections across all states and territories. The Minimum Core Set of Cultural and Language Indicators consists of the following four variables:

- Country of birth of person
- Main language other than English spoken at home
- Proficiency in spoken English
- Indigenous status (see section 4.3)

4.2.1 Country of birth

In Australia, country of birth is one of the three Minimum Core Indicators of the standard set of indicators for use in measuring cultural and linguistic diversity. This variable is sometimes used in conjunction with other variables (for example, main language spoken at home, main language other than English spoken at home, religion and ancestry). Moreover, this variable is used to distinguish native-born population from those immigrating to Australia (i.e. country of birth is not Australia). Based on this concept, a person born outside Australia is regarded as an immigrant although this person may have Australian-born parents. Conversely, a person born in Australia but has parents born elsewhere is counted as a native-born or Australian-born regardless of whether he/she has Australian citizenship or permanent residence status.

Both the ABS and the NHDD adopt the same definition of Country of Birth, that is, the country in which the person was born. The ABS also adopts the Standard Australian Classification of Countries (SACC) when collecting, aggregating and disseminating data relating to the variable country of birth of a person.

Country of birth is also used in classifying migrants into those from English and non-English speaking backgrounds (NESB). Migrants from NESB are often identified as a disadvantaged group as the language barrier is hypothesised to adversely affect access to government services and labour force participation in the society. It is therefore necessary to monitor the

Demographic characteristics

relationships between NESB migrants and health care utilisation as well as their health outcomes.

4.2.2 Year of arrival in Australia

The variable Year of Arrival in Australia, can be used to derive duration or period of residence in Australia. It is an indicator of adjustment to the host society as length of residence implies degrees of familiarity with Australian society and practices a migrant would have. It is also an indicator of “exposure” to the Australian physical and social environments as well as life styles, which may be linked to health outcomes. The concept to be measured is length of residence in Australia for those who reported that they were born overseas.

There are a number of problems associated with this concept and measure. First, for those born overseas who have multiple arrivals in Australia, it is difficult to derive their period of residence based on the above single question. The ABS practice is to record first year of arrival and period of residence is measured by “subtracting the year of first arrival in Australia from the year of the collection and expressing the result in completed years” (ABS 1999). Without additional questions, it is not possible to further subtract from the initial result significant time periods spent living outside of Australia. Hence, the result may overestimate period of residence in Australia.

Secondly, the concept “to live in Australia” is arbitrarily defined. The ABS adopts the definition of year of arrival in Australia as “the year a person (born outside Australia) first arrived in Australia, from another country, with the intention of living in Australia for one year or more.”

For the purpose of health surveillance and monitoring, it is more important to measure the period of residence in the receiving country based on length of stay regardless of their current migration status (eg naturalised citizens, permanent residents, people with temporary visas). The concept of “intention to live in Australia” is important for an examination of the relationship between immigration and health as it excludes those who are not considered themselves as immigrants (eg foreign students, multinational employees). Nevertheless, it is not clear if the criterion of “one or more year” in the above question is necessary.

The ABS (1999) outlines standard output categories for Year of Arrival in Australia as follows:

- the year of collection;
- the previous four single years;
- a time period covering the years between the last single year listed and the previous census year;
- two standard five year intercensal time periods, and
- an open-ended time period (eg ‘Arrived before 1981’).

The above categories can be collapsed to indicate whether migrants are recent or long-term. For example, those who arrived in the past five years are usually considered recent arrivals. By distinguishing migrants by length of residence in Australia, it is useful for analysis of health outcome differentials among overseas born population.

4.2.3 Languages spoken

The language data in health surveillance is needed for classifying the whole population into various ethnic or cultural population groups to enable the monitoring of their differences in health related behaviours, outcomes and use of services. As described by the ABS (1999), language spoken is an indicator of 'active' ethnicity and the availability of such data may help providers of language, welfare and community services to effectively target the geographic areas of population groups that need those services. There are a number of variables, which have been used to measure different aspects of language usage in Australia. Examples include:

- First Language Spoken;
- Preferred Language;
- Language Usually Spoken;
- Languages Spoken at Home;
- Main Language Spoken at Home;
- Main Language Other than English Spoken at Home; and
- Proficiency in Spoken English

4.2.4 Main language spoken at home

The Standing Committee on Immigration and Multicultural Affairs endorsed the variable Main Language Spoken at Home as one of the standard set of indicators for use in measuring cultural and linguistic diversity. The ABS (1999) defines this variable as "the main language spoken by a person in his/her home, on a regular basis, to communicate with other residents of the home and regular visitors to the home."

4.2.5 Main language other than English spoken at home

The Ministerial Council of Immigration and Multicultural Affairs endorsed the variable Main Language Other than English Spoken at Home as one of the three minimum core indicators for use in measuring cultural and linguistic diversity. The aim is to provide data to determine, measure and monitor service needs (access and equity requirements) and provide a measure of cultural diversity (ABS 1999).

In the health field, the variable Main Language Other than English Spoken at home can be used as a measure of ethnicity that may be linked to specific health practices and outcomes. The concept surrounding this variable to be measured is the main language other than English used by a person to interact with other members in the home on a regular basis. It does not refer to foreign language skills acquired outside the home (eg some people may learn foreign languages from schools, other institutions or community groups). The purpose is to identify population groups of various cultural and linguistic backgrounds. The health surveillance priority for this variable is not to capture a range of languages spoken in the home and therefore, the most often used language should be emphasised. The ABS standard question module and standard classification as outlined in the Australian Standard classification criteria (ASCL) fulfil data requirements for this variable.

4.2.6 Proficiency in spoken English

In health surveillance, data relating to Proficiency in Spoken English are useful for identifying people who may experience disadvantage because of their lack of spoken English competence. As described by the ABS (1999), "this information can be used to target the provision of services to people whose lack of ability in spoken English is potentially a barrier to gaining access to government programs and services and participating equitably in Australian society." The Ministerial Council of Immigration and Multicultural Affairs endorsed the variable Proficiency in Spoken English as one of the standard set of indicators for use in measuring cultural and linguistic diversity. The key concept relating to Proficiency in Spoken English to be measured in health surveillance is the self-assessed ability of a person to verbally communicate in English.

The ABS (1999) points out that "Proficiency in Spoken English is a variable used to assess the ability in spoken English of people whose first language spoken is a language other than English, or who speak a language other than English at home." The sequence of the question on Proficiency in Spoken English should come after First Language Spoken or Main Language Other than English Spoken at Home. People whose answers are that "their first language is English or they speak only English at home" should not be asked about their Proficiency in Spoken English.

4.3 Indigenous status

The ABS adopts the variable name Indigenous Status and this term is preferred by peak bodies representing Indigenous peoples in Australia. As outlined by the ABS (1999) the Indigenous status of persons has two concepts which are:

- Aboriginal Origin
- Torres Strait Islander Origin

According to the ABS, a definition of an Aboriginal or Torres Strait Islander person is based on a High Court judgement in the case of *Commonwealth v Tasmania* (1983) 46 ALR625. This definition states that an Aboriginal or Torres Strait Islander is a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives. According to this definition, there are three aspects to be measured:

- Descent
- Self identification
- Community acceptance

However, in practice, the ABS (1999) acknowledges that "it is not feasible to collect information on the community acceptance part of this definition and therefore questions on Indigenous Status relate to descent and self-identification only."

Data requirements

The ongoing monitoring of the health and wellbeing of the Indigenous population requires consistent and reliable data on Indigenous status from various sources (e.g. surveys and administrative data collections, census) and time periods. There is also a need for good quality population data with Indigenous identification to calculate rates for this specific group. Based on analysis of past censuses, it has been found that the increases in the number of Indigenous peoples between the inter-censal periods are beyond those estimated in the

Demographic characteristics

natural increases and this raises the question of quality of data relating to Indigenous identification.

There is also an issue of small sample size in analysing health survey data on the Indigenous peoples. Hence, there may be a need to over-sample the Indigenous population group in order to make meaningful analysis and comparisons with the non-Indigenous population.

4.4 Socio-economic status

There are several concepts relating to socio-economic status (SES) of an individual. The variables commonly used to measure each individual's SES are education, income and occupation. These variables can be used separately or combined as an index of SES.

4.4.1 Education

In health surveys, the key concepts relating to education are age at which the person left (primary and secondary) school and highest qualifications obtained. These two concepts form the level of education for each individual.

Age left school

Age left (primary and secondary) school reflects level of education of an individual. Those left school before aged 15 and has no other educational qualifications since are categorised as having low education (AIHW: Mathers 1994a; 1995).

Educational attainment

The concept of educational attainment refers to the highest level of education completed. In 2001 National Health Survey, this variable refers to the highest level of post-school educational attainment and it is a derived item for persons aged 18 years and over. A separate question is asked for highest year of school completed. While there are some problems in ranking vocational education (TAFE) and high school, this does not present a major problem for analysis based on data of broad categories. However, for analysis, which requires continuous variables, it may be necessary to convert educational qualifications into number of years of schooling.

4.4.2 Occupation

Labour force statistics are relevant to health monitoring and surveillance. Information on occupation is used as an indicator of SES and it is often observed as being correlated to health status of individuals. Moreover, data on occupational diseases and injuries are also of interest to those concerned with the occupational health and safety. Past studies have examined the relationship between unemployment and health (Morris et al. 1994; Martikainen & Valkonen 1996, 1998; Stewart 2001).

Employed persons

For the economically active population who are employed, it is important to collect the following variables in health surveys:

- occupation (major/minor);
- industry;
- hours of work (usual vs actual); and

Demographic characteristics

- work status – employee, self-employed.

A series of labour force related questions included in the 2001 National Health Survey are included in Appendix 2.

Unemployed persons

- Duration of unemployment.

4.4.3 Income

Income is one of the most important measures of economic wellbeing, and it vies with educational attainment and occupation as a measure of socio-economic status. Household income has long been recognised as having a positive correlation with a number of measures of physical and mental health (see Feinstein 1993 and Adler et al. 1993 as cited in Ettner 1996).

The development of statistics on income by the ABS is based on the conceptual guidelines recommended by the United Nations (1989, In ABS 1995) and the International Labour Organisation (1971, 1993, In ABS 1995). Details of the concept and definition of income are described in the ABS publication entitled: A Provisional Framework for Household Income and Consumption, Saving and Wealth, chapter 8 (1995).

4.5 Locality

The data requirements for this concept are geographic areas of usual residence at a detailed level, which can be aggregated to larger areas within the Australian Standard Geographical Classification (ASGC). In Australia, the most detailed level of a geographical area in non-census years is Statistical Local Area (SLA). There are 1331 SLAs in Australia in 1999 (ABS 1999). As mentioned in the NHDD (AIHW 1999), “the use of Statistical Local Areas also allows analysis relating the data to information compiled by the Australian Bureau of Statistics on the demographic and other characteristics of the population of each statistical Local Area”. Health information collected for each SLA can be linked to population characteristics of that particular SLA and allows calculations, for example, of disease prevalence and rates of health care utilisation.

To obtain the information on locality of usual residence, it has been recommended by the ABS that full address detail of usual place of residence be asked.

Appendix 1 Data elements on demographic characteristics in the National Health Data Dictionary Version 10

The National Health Data Dictionary (NHDD), coordinated by the National Health Data Committee, is an authoritative source of health data definitions used in Australia. The Dictionary is developed under the National Health Information Agreement with the aim of improving national consistency in health information. Hence, it is an important reference for health data standards used in Australia. The current version of the National Health Data Dictionary (Version 10) contains the following data standards on demographic characteristics.

Demographic characteristics

Country of birth

This data item identifies the country in which the person was born. NHDD adopts the Australian Standard Classification of Countries for Social Statistics (ASCCSS) which is a 4-digit (individual country) level (ABS 1993a).

Date of birth

This data item is defined as the date of birth of the person. It is required to derive age for analysis by age at a point of time and for use to derive a Diagnosis Related Group (admitted patients) (ABS 1993b).

Indigenous status

The definition used in the National Health Data Dictionary follows a High Court judgement in the case of *Commonwealth v Tasmania* (1983) 46 ALR 625. That is, an Aboriginal or Torres Strait Islander is a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives. Although there are three components to the definition (descent, self-identification and community acceptance), it is not possible to collect the three components of this definition using a single question. The NHDD follows the ABS in measuring only one component of the definition, that is, descent.

Period of residence in Australia

NHDD defines this data item as length of time in years. The National Committee on Health and Vital statistics recommended this data item as a second-level data set.

Sex

NHDD follows the standard used by the ABS (1993b) in terms of name of this variable, the definition used and the concept to be measured. The term 'sex' is preferred over 'gender' for the variable name. This data item is defined as the sex of the person. The term 'sex' refers to

Demographic characteristics

the biological differences between males and females, while the term 'gender' refers to the socially expected/perceived dimensions of behaviour associated with males and females – masculinity and femininity (ABS 1993c). It is recommended in the NHDD (AIHW 1999) that “information collection for transsexuals and people with transgender issues should be treated in the same manner. To avoid problems with edits, transsexuals undergoing a sex change operation should have their sex at a time of hospital admission recorded”.

Location

Under the heading location, NHDD provides standards for the following variables:

Area of usual residence

This data item is defined as the geographical location of usual residence of the person. NHDD recommends that geographical location be reported using Statistical Local Area (SLA) to enable accurate aggregation of information to larger areas within the Australian Standard Geographical Classification (ASGC) (ABS 2002) as well as detailed analysis at the Statistical Local Area Level.

The geographical location is reported using a five digit numerical code. The first digit is the single-digit code to indicate States and Territories. The remaining four digits are the numerical code for the SLAs within the State or Territory. The single digit codes for the States and Territories and the four digit codes for the SLAs are defined in the ASGC.

Geographical location of establishment

In addition to the geographical location at the person level, NHDD incorporates the variable on geographical location of establishment. For establishments with more than one geographical location, NHDD defines the location as that of the main administrative centre. This variable is viewed in the context of health services analysis. It is reported using the standards outlined in ASGC.

State/Territory of birth

NHDD includes the variable State/Territory of birth to enable analysis of perinatal statistics by State/Territory of delivery. This variable is defined as the State/Territory in which the birth occurred.

Labour characteristic

Under labour characteristics, NHDD lists the following variables: occupation of person, employment status – acute hospital and private psychiatric hospital admission, employment status – public psychiatric hospital admissions, health labour force, principal area of clinical practice, profession labour force status of health professional, hours worked by health professional, hours on-call (not worked) by medical practitioner, hours worked by medical practitioner in direct patient care, total hours worked by a medical professional, principal role of health professional and surgical specialty.

For labour characteristic of an individual, the following variables are listed in NHDD:

Occupation of person

The NHDD points to the demand for data on occupation related injury and illness. The variable Occupation of person is defined as the current job or duties in which the person is

Demographic characteristics

principally engaged. NHDD adopts the Australian Standard Classification of Occupation (ABS 1997), which has five levels:

9	Major groups	1-digit codes
35	Sub-major groups	2-digit codes
81	Minor groups	3-digit codes
340	Unit group	4-digit codes
986	Occupations	5-digit codes

Employment status

NHDD refers to employment status of patients immediately prior to admission to (1) acute or private psychiatric hospitals or (2) public psychiatric hospitals.

The data domain is as follows:

- 1 child not at school
- 2 student
- 1 Employed
- 2 Unemployed
- 3 Home duties
- 4 Other

The classification recommended by NHDD does not classify those who are retired or unable to work due to disability or illness.

Social characteristics

Marital status

In NHDD, marital status is defined as the current marital status of the person. It is identified as a core data element in social, labour and demographic statistics. The NHDD emphasises the need of this information to establish the living arrangements of individuals rather to identify legal bonds between individuals in terms of marital unions. Use of data on marital status is seen in the analysis of need for and use of health services by marital status categories. The data domain in NHDD incorporates both the legal and social concepts of marital status. The classification recommended by NHDD is different from that used by the ABS. The NHDD classification of marital status includes the following categories:

- 1 Never married
- 2 Widowed
- 3 Divorced
- 3 Separated
- 4 Married (including de facto)
- 5 Not stated / inadequately described

Preferred language

There are a number of language variables which can be used to measure ethnicity. These include: Main Language Spoken at Home, Main Language Other than English Spoken at Home and First Language Spoken. However, NHDD recommends the variable Preferred Language which is defined as the language (including sign language) most preferred by the person for communication. This may be a language other than English although the person is fluent in English.

The classification of the variable Preferred Language is a modified version of the 2 -digit level Australian Standard Classification of Languages developed by the ABS. (The ABS developed a detailed four-digit language classification of 193 language units.) (ABS 1997).

NHDD notes that this information may be collected using different methods such as using a predetermined shortlist of languages that are most likely to be encountered from the ASCL code list accompanied by an open text field for 'other language' or by using an open ended question that allows for recording of the language nominated by the person. Regardless of the method used for data collection, NHDD recommends coding the preferred language nominated by the respondent using the ASCL.

Need for interpreter service

In conjunction with the Preferred Language variable, NHDD recommends the use of the variable Need for interpreter service. This is defined as need for interpreter services as perceived by the person. The purpose is to assist planning for provision of interpreter services. The data classification comprises two categories, namely:

- 0 Interpreter not needed
- 1 Interpreter needed

It is noted in the NHDD that "this data element has not been included in the National minimum data set – institutional health care because of reservations about its utility in assessing demand for interpreter services and concerns that a question of this nature might raise expectations of service provision which could not always be fulfilled" (p.97).

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