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Evaluation of the Australian Health Survey 2011-13

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Executive Summary

This paper presents the results of an evaluation into the Australian Health Survey 2011-13 (AHS) including findings from a detailed stakeholder consultation relating to the AHS. It provides evidence on the ongoing and far reaching usefulness of the data and the need for a regular schedule of similar surveys into the future.

The AHS is the largest and most comprehensive health survey ever conducted in Australia. This survey, run throughout Australia, was designed to collect a range of information from Australians about health related issues, including health status, risk factors, actions, and socioeconomic circumstances. In 2011-13, the AHS collected new information on nutrition and physical activity, as well as the first national biomedical information collection to address long standing information gaps.

Since 2012, there have been many new policies in the population health field from tobacco, nutrition, through to chronic disease. The rich data from the AHS has been and continues to be used to inform these and many other contemporary health challenges.

The AHS has provided a strong infrastructure for health research in Australia. Over the past 5 years, information from the AHS has been widely used across a range of settings. Information from the AHS is regularly cited in the media and used by policy makers and others in decision making. A number of publications, and products used to facilitate access to fine level data have been released by the ABS. They have been recognised by stakeholders as being of high quality, thorough and addressing relevant needs. Website hits and stakeholder feedback indicate high use of these products. The release of a wide range of microdata products and custom requests continues to result in further use of this data which is far reaching from national, state and local government policy use to academic reports and international guidelines.

Data has been used to fill many identified population health data gaps, in particular around the prevalence of undiagnosed chronic disease and nutrition deficiencies.

Feedback from stakeholders indicated keen enthusiasm and appreciation of the uses of the data. While suggesting a number of options for improvement, the key message was that there was a need for regular ongoing collection for the additional components of biomedical, nutrition and physical activity.

Key findings

1. The data collected in the AHS is considered invaluable and unable to be obtained from other sources;
2. The data has been used extensively to support a wide range of health policy and research questions;
3. The new components provided valuable previously unavailable data.
4. Stakeholders recommended that a regular schedule of surveys be established including:
    - Nutrition;
    - Biomedical;
    - Physical Activity; and

    - General health status information as traditionally collected in the National Health Survey.
5. The thoroughness of the collection and analysis of the AHS was recognised and appreciated by stakeholders;
6. Stakeholders appreciated the additional breakdowns that were possible due to the larger than usual sample size for a wide range of core data items;
7. There is a need for consistency in data collected between the NHS and the NATSIHS, as well as between the remote and non-remote samples of the NATSIHS;
8. The potential of data linkage projects with administrative datasets was raised;
9. Interest was expressed in exploring longitudinal options for the nutrition, biomedical and other AHS data;
10. Stakeholders recommended that new methods and options for biomedical and other content be investigated prior to a future AHS to ensure that data collected remains relevant and that new and emerging data priorities are considered;
11. Interest was expressed in the need for data at smaller areas and populations whether via direct collection or through modelling;
12. Stakeholders recommended that the ABS continue to prioritise wide stakeholder consultation and engagement, especially in the development stages of the survey;
13. Stakeholders recommended that the ABS continue to focus attention towards wide data access and supporting users with technical documentation.

1 Evaluation

1.1 Background

The ABS has conducted regular National Health Surveys since 1989 and Indigenous equivalents since 2001. ABS funding allows for a National Health Survey every six years, and additional funding from the Department of Health enables it to be run every three years. The National Aboriginal and Torres Strait Islander Health Survey is funded completely by users. These surveys have been providing regular information around the health status of Australians, in particular in relation to self-reported health conditions, health risk factors, health service usage and medication use.

The AHS was the largest and most comprehensive health survey ever conducted in Australia. This collection was designed to address identified population health gaps in the areas of nutrition, physical activity and biomedical measures for the whole Australian population including Aboriginal and Torres Strait Islander people.

These new components were made possible by additional funding from the Australian Government Department of Health and the National Heart Foundation of Australia. Altogether the AHS cost $54.5 million comprising $9.8 million from the ABS, $40.7 million from the Australian Government Department of Health and $4 million from the National Heart Foundation of Australia.

Some of the key drivers for the development of the AHS were:

- Increasing focus on non-communicable diseases (NCDs) and risk factors domestically and internationally through the World Health Organization.
- Need to monitor prevalence, trends and inequalities relating to NCDs and risk factors to inform program and policy development, monitoring and evaluation.
- Need to identify undiagnosed NCDs such as diabetes and risk factors such as high cholesterol.
- Need to update nutrition data from the 1995 National Nutrition Survey due to changes in food supply and eating behaviors.
- Up-to-date data required for food regulation activities.
- National Healthcare Agreement established which included targets for smoking, obesity, and diabetes.

The AHS was a nationally representative survey of the health of all Australian adults and children, including a specific sample of Aboriginal and Torres Strait Islander people. The survey as a whole covered all urban, regional, rural and remote areas. For the specific sample of Aboriginal and Torres Strait Islander people, the survey also included very remote areas and discrete Indigenous Communities.

The Australian Health Survey (AHS) comprised the National Health Survey (NHS), the National Nutrition and Physical Activity Survey (NNPAS), the National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) and the National Aboriginal and Torres Strait Islander Nutrition and Physical

Activity Survey (NATSINPAS), all with a voluntary biomedical component (the National Health Measures Survey or NHMS). Face to face interviews were conducted in households including both children and adults. The interview components of the NHS, NATSIHS, NNPAS and NATSINPAS were conducted under the Census and Statistics Act (CSA) 1905. The interviews comprised a series of questions plus physical measurements of height, weight, waist circumference and blood pressure.

At the completion of interview questions, interviewers invited respondents to participate in the voluntary biomedical component. Ethics approval was sought and gained (for the biomedical component only) from the Australian Government Department of Health and Ageing's Departmental Ethics Committee, and various local Aboriginal and Torres Strait Islander ethics committees. In addition a Privacy Impact Assessment was completed. See http://abs.gov.au/websitedbs/D3310114.nsf/home/Australian+Health+Survey+-+Privacy+Impact+Assessment.

The content of the AHS was developed with the assistance of an advisory group comprised of experts in health issues. Members of this advisory group were drawn from Commonwealth and State/Territory government agencies, non-government organisations and academic institutions. In addition, specific expert panels were set up to assist in the development and output of specific topics, such as nutrition, physical activity and chronic disease.

1.2 Evaluation Process

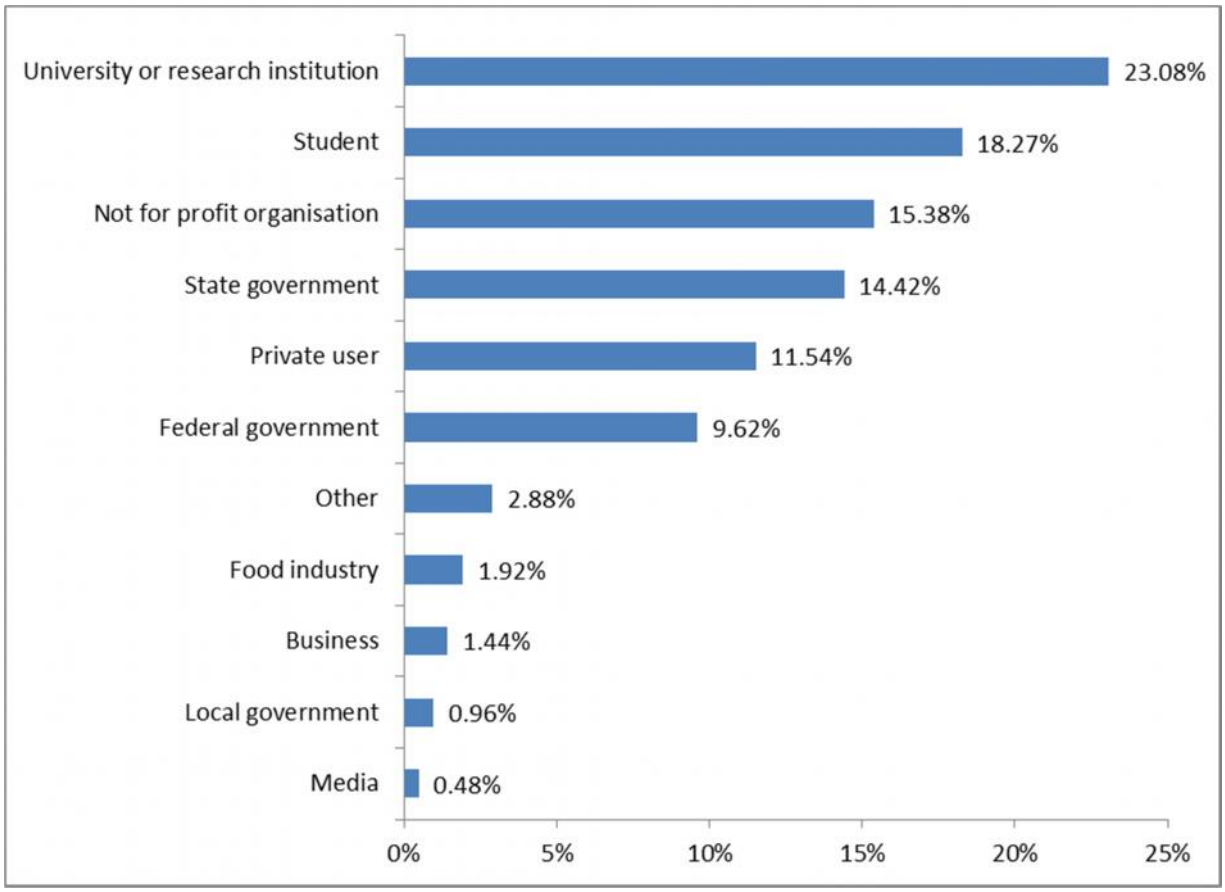
The Australian Government Department of Health commissioned the ABS to conduct the AHS Evaluation to investigate the following:

- Whether expectations regarding the population health information gaps were met;
- How the data have been used, particularly with respect to the inter-relationships between the NHS data items and those in the AHS;
- The perceived value and expected impact of the AHS data;
- Future data requirements and frequency with which the information is required; and
- Improvements with respect to collection, quality and outputs that should be considered in the future.

A multi-level approach was taken, seeking feedback from stakeholders and data users through workshops held in all capital cities as well as a widely circulated electronic evaluation questionnaire which was also publicly available on the ABS website.

AHS Stakeholder Evaluation Workshops were held throughout June and July 2015 and were attended by a range of stakeholders from Commonwealth and State/Territory government departments, universities and other key data users totalling around 150. In addition, approximately 400 stakeholders (both individuals and organisations) completed the evaluation questionnaire. A copy of the questionnaire is included in Appendix 1.

1.3 Chart 1: Organisational profile of evaluation respondents



1.4 Objectives of the AHS

The objectives of the AHS were to collect nationally representative data for both the general population and the Aboriginal and Torres Strait Islander population relating to:

- Diagnosed health conditions;
- Health service usage;
- Health risk behaviours and factors including physical measures and blood pressure;
- Medication use;
- Food and nutrient intake (including dietary supplements);
- Physical activity; and
- Biomedical measures of nutrition status and chronic disease risk markers.

Stakeholders agreed that the objectives for the AHS had been met and were enthusiastic in their support for the usefulness of the information for policy and research purposes. They noted analyses that had not been able to be performed before, including headline indicators that were previously unavailable from a national source or have not been available for a considerable period of time.

Nutrition information in particular was noted as being vital to monitor impacts such as maximal exposure of pesticides and contaminants or food fortification.

In order to:

- Enable monitoring and reporting against national food, nutrition and physical activity guidelines;
- Inform the development of food regulatory standards;
- Determine how these data vary for different population sub-groups of interest;
- Provide adequate and accessible data for researchers to interrogate; and
- Enable comparison with previous data collections.

2 Summary information on the AHS

More detailed information about the structure and content of the AHS is provided in Appendix 2.

2.1 Table 1: AHS- Enumeration Information

Component	Fully responding Sample Size (persons)	Response rate	Scope	
National Health Survey (NHS), 2011-12	20,426	84.8%	Persons aged 0+	Usual residents of private dwellings in urban and rural areas of Australia. Excludes very remote areas, discrete Indigenous Communities and non-private dwellings.
National Nutrition and Physical Activity Survey (NNPAS), 2011-12	12,153 overall 7,735 day 2[1] 6,061 pedometer	77.7% overall 63.6% day 2[1] 52.8% pedometer	Persons aged 2+ (5+ pedometer)	
Core (general) (combined sample from NHS and NNPAS)	31,837	81.6%	Persons aged 2+	
National Health Measures Survey (NHMS), 2011-12	17,682 consented 11,246 participated	58.3% consented 37.1% participated	Persons aged 5+	
National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), 2012-13	9,317	80.2%	Persons aged 0+	Usual residents of private dwellings in urban, rural, remote, very remote areas of Australia and discrete Indigenous Communities. Excludes non-private dwellings.
National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey (NATSINPAS), 2012-13	4,109	79.2%	Persons aged 2+	
Aboriginal and Torres Strait Islander Core, 2012-13 (combined sample from NATSIHS and NATSINPAS)	12,947	79.5%	Persons aged 2+	
National Aboriginal and Torres Strait Islander Health Measures Survey (NATSIHMS), 2011-13	6,039 consented 3,293 participated	74.0% consented 40.4% participated	Persons aged 18+	

[1] participated in 2nd day of dietary recall.

3 Outputs

The first publication from the AHS was published in October 2012, four months after the end of the collection period in time to meet key reporting requirements and seven months earlier than the 2007-08 results.

All ABS outputs from both the general wave and the Aboriginal and Torres Strait Islander wave can be found on the following webpage: www.abs.gov.au/australianhealthsurvey and are listed in Appendix 3.

An output strategy was prepared and consulted with a wide range of stakeholders. This output strategy covered the release of publications, microdata and other means of engagement. The results from the AHS have been accessed by a large number of users. The table below shows the number of ABS publications and ABS products together with known users. In addition, the AHS data has been incorporated into publications and products produced by other organisations.

3.1 Table 2: AHS- Product users and website views

Type of Product	**Number of products**	**Number of website views/ downloads**[1]
Summary publications	21	2.2 million
Data Cubes	300	183,000
Type of Product	**Number of products**	**Number of Users**
Table builder products	6	70 organisations 42,138 registered users
Expanded Confidentialised Unit Record Files	7	40 organisations 27,829 registered users
Basic Confidentialised Unit Record Files	3	46 organisations
Customised client data request	More than 300[2]	-

[1] includes website visits from October 2014 to December 2016 only

[2] excludes unpaid advice and information requests.

The individuals and organisations accessing AHS products include State and Federal Government departments, universities, and private organisations. Throughout these organisations, these microdata products have been accessed by thousands of individual policy makers, researchers and interested parties, feeding into critical research, informed decision making and policy development.

The ABS has also been involved in presenting the data in all States and Territories both in specific fora as well as at a range of conferences and workshops attended by representatives from federal and state government agencies, non-government organisations, universities and other research organisations, industry and more.

One of the key requirements of the Aboriginal and Torres Strait Islander biomedical measures was to ensure that this data was returned to the Aboriginal and Torres Strait Islander community. As part of the strategy to achieve this, a short video was produced which has been circulated widely throughout Aboriginal Medical Centres and other Aboriginal and Torres Strait Islander organisations. Stakeholders appreciated the process for the return of biomedical results to Indigenous communities.

Detailed monitoring of media coverage of the AHS during the peak period of use between July 2014 and December 2015 showed that the AHS had been referred to over 1500 times in broadcast, print and online media. Many years after the survey, the AHS continues to be a reference source used by media.

The wide range of output through both summary publications and microdata was well received by stakeholders. They felt that the spread of information reflected their different needs. Many government agencies including state and territory government departments indicated that they had limited time to do their own analysis so made extensive use of both the commentary and tables in publications. Other users such as government agencies and many universities indicated keen interest in access to microdata so that they could perform their own analysis.

What can we do better?

Regarding the publications, stakeholders appreciated the promptness with which data was released, however some stakeholders expressed concern at the delay in release of microdata. At the time, in order to ensure that the microdata was released in a safe way that did not limit the usability of the data, release of items such as CURFs was delayed until all the data had been processed. In some cases, data needs were able to be satisfied with tailored consultancies or government staff were able to be in-posted to the ABS to facilitate access to the microdata in advance of the general release.

ABS has subsequently conducted a Microdata Access Review and has identified a number of recommendations including adopting the Trusted Access Model.

Stakeholders appreciated the ability to access AHS microdata, but there were concerns that some of the products were slow, difficult to use and did not have sufficient functionality. ABS has subsequently conducted a Microdata Access Review and has identified a number of recommendations including adopting the Trusted Access Model, adapted from international best practice.

It is built on the recognition that mutual benefits flow from researcher access to public data and the value of partnerships that reflect trust and shared accountability. The model is being implemented in the ABS using the Five Safes Principles for the assessment of disclosure risk.

Perturbation was raised as impacting on the usefulness of the health data available by both being overly restrictive and, in some cases, confusing. It was suggested that these provisions be reviewed to determine whether there is any scope for reducing restrictions without compromising confidentiality. Stakeholders requested that the ABS ensures that sufficient supporting documentation and training is provided in relation to facets such as perturbation. Stakeholders acknowledged that while the data does need to be confidentialised, this needs to be done in a way which ensures that the results still make sense, and that clear explanation needs to be provided regarding the differences in numbers between published data, data requests, TableBuilder and CURFs in order to make the most effective use of the information.

Further output was also requested including:

- More thematic publications;
- More detailed breakdowns in tables;
- Data visualisations, interactive graphics, infographics;
- Output actual physical activity distributions instead of 'mean minutes of activity' for various types of activity. Output data on participation at physical activity level and how much was organised participation; and
- Make biomedical data available as a Basic CURF.

3.2 Use of data

In addition to ABS specific output, the AHS provides a strong infrastructure for health research with results being used to report against a number of guidelines and indicators as well as contribute to a wide variety of other publications and products. In particular the AHS has been used to:

- Report against the following:
    - Commonwealth Department of Health National Physical Activity guidelines for adults and children;
    - National Health and Medical Research Council (NHMRC) Dietary Guidelines 2003 and Australian Dietary Guidelines 2013;
    - World Health Organisation (WHO) Non Communicable Disease (NCD) indicators;
    - Organisation for Economic Cooperation and Development Health Care Quality Indicators; and
    - Aspects of government reporting that were unable to be reported previously from reports such as the Report on Government Services, Overcoming Indigenous Disadvantage report, and Health Performance Framework.
- Inform the development of food regulatory standards including
    - fortification of breakfast cereals with vitamin D;
    - impacts and safety of changes to the food supply; and
    - impacts of pesticides and other contaminants.

- Contribute to the Burden of Disease Study through data on nutrition and biomedical information on risk factors and undiagnosed disease prevalence;
- Contribute to a range of national and international studies around key risk factors including dietary behaviours as well as prevalence of diagnosed and undiagnosed chronic conditions;
- Monitor food and nutrient intake and other dietary behaviours;
- Further understand the association between risk factors and disease; and
- Further understand the gap in health outcomes between Aboriginal and Torres Strait Islander people and non-Indigenous people particularly around nutrition and biomedical risk factors.

Information from the NHS and NATSIHS components of the AHS continued to be used to:

- Report against the following:
  - NHMRC alcohol life time and single occasion risk guidelines for 2001 and 2009; and
  - Government reporting such as Report on Government Services, Overcoming Indigenous Disadvantage report and Health Performance Framework.
- Provide results by state, age, sex, country of birth, remoteness, socio economic status, labour force status, household type and more;
- Provide results in a range of formats for different users including a range of publications with excel tables as well as a number of microdata products such as TableBuilder and Confidentialised Unit Record Files (CURFs);
- Compare with results from previous time points where comparable data was collected;
- Compare national data with State/Territory or locally collected data;
- Develop and evaluate health policy and programs;
- Understand the association between risk factors and disease; and
- Understand the gap between Aboriginal and Torres Strait Islander people and non-Indigenous people and how it has changed over time.

Stakeholders provided very positive feedback regarding the usefulness of AHS data. Stakeholders indicated that they had used the information for a wide range of purposes including addressing long standing information gaps in the areas of nutrition and physical activity as well as in measuring rates of undiagnosed conditions, gaps unable to be filled by other means.

Publications using the AHS

- Report on Government Services;
- National Healthcare Agreement;
- National Indigenous Reporting Agreement;
- Reports such as the Chief Health Officer's Report by State/Territory health departments;
- Medicare local and Primary Health Network specific reports;
- Reports on specific topics or specific areas by not for profit organisations such as the National Heart Foundation and the Kidney Foundation;
- Industry reports on topics such as the consumption of particular food groups
- Closing the Gap reports;
- Overcoming Indigenous Disadvantage;
- Health Performance Framework
- Publication in journals including the Medical Journal of Australia;
- International reporting by the OECD and the World Health Organisation; and
- Reports released by Commonwealth Government departments including the Department of Health, the Department of Infrastructure and Regional Development and others.

A number of stakeholders commented on the value of having information about health risk factors, long term health conditions and other items collected in the NHS cross classified by AHS items such as nutrition, physical activity and biomedical risk factors. More output analysing these associations was requested. One major project by data users that has demonstrated the wealth of information is the *Absolute risk for Cardiovascular disease* project which calculates a person's absolute risk of having a cardiovascular event in the next 5 years based on their biomedical and other risk factors[1].

Stakeholders commented that the new components of the AHS provided more comprehensive data than other available data and also noted the high response rates for the AHS. They did however note the limitation that AHS data is collected less frequently than State/Territory level collections, which are collected annually or bi-annually.

There have been numerous cases of positive feedback about the collection of nutrition data. At evaluation workshops, there has been considerable praise by stakeholders, both in relation to the collection of the data as well as in relation to the rigour around the work in respect of the discretionary foods, usual intakes, under reporting and dietary guidelines. In recognition of this, the ABS has been invited to speak at a number of fora to provide information about the results, particularly how best to access and use the data. These have included a day specifically set up by the Charles Perkins Centre at the University of Sydney, twice at the Dietitians Association of Australia conference including two specific workshops, many times at events held by the Nutrition Society of Australia including their annual conference and at many smaller events in all states and territories.

What can we do better?

However there are still aspects of these guidelines that are unable to be measured, such as the WHO Non Communicable Disease (NCD) Indicators for recommended levels of physical activity due to the absence of workplace physical activity and an objective measure of salt consumption for the NCD target for relative reduction in consumption. Furthermore, all of these indicators and guidelines have ongoing reporting requirements to monitor change over time which are not met by a one-off survey.

3.3 Scope

In general, stakeholders were happy with the scope of the AHS, particularly the coverage of all states, territories, remote and non-remote locations. The inclusion of very remote areas and discrete indigenous communities made the Aboriginal and Torres Strait Islander population wave unique in its ability to provide representative information about this population.

What can we do better?

[1] https://www.mja.com.au/journal/2016/204/8/absolute-risk-cardiovascular-disease-events-and-blood-pressure-and-lipid-lowering?utm_source=mja&utm_medium=web&utm_campaign=related_content

Some comments about possible changes for the future included the addition of non-private dwellings (in particular hospitals, nursing homes and prisons) as the exclusion of these could potentially result in a lower estimate of prevalence for some health conditions, particularly in relation to the very old. However at the same time, others noted, that even for the very old, this population makes up a small proportion.

The Northern Territory (NT) raised the particular example of the need to provide estimates which cover their whole jurisdiction. In the AHS, two estimates were available for the NT, one based on the general population and one on the Aboriginal and Torres Strait Islander population. Neither of these could be used to estimate the whole of the NT. The ABS is considering options for providing this information into the future.

The inclusion of children 0+ in the NHS part of the survey and 2+ in the NNPAS part of the survey was seen as essential. However in other parts of the AHS, the inclusion of children was seen as less useful. In particular physical activity data for children under 5 and biomedical data for children under 18 were both difficult to collect and report on the results. Therefore, it was suggested that these age groups be removed from future surveys for these items.

Aboriginal and Torres Strait Islander children were excluded from the Aboriginal and Torres Strait Islander biomedical measures, and this caused concern about the usefulness of data among some stakeholders. This decision was made in conjunction with a large number of Aboriginal and Torres Strait Islander stakeholders[2] on the basis that the collection of biomedical information was new and innovative and it would be best to trial this with adults before trying with children. In the event of another biomedical collection, this aspect would need to be reviewed. However, as noted above, the lack of guidelines for many of the biomarkers for children makes it difficult to interpret this data.

3.4 Structure

The structure of the AHS ensured that different components of the survey could be compared with other components. In particular, all data items collected as part of the core could be compared across all the NHS, NNPAS and biomedical components and the biomedical components could be analysed with either the core, the NHS or NNPAS.

This aspect of the structure was considered invaluable by stakeholders as the combination of objective data obtained via the biomedical component with self-reported information enables a better understanding of undiagnosed rates of conditions, a key output from the AHS that cannot be obtained from other sources. The combination of dietary recall data from the NNPAS with the biomedical component has expanded the ability to understand the association between dietary behaviours and disease alongside other risk factors, such as nutrient levels.

[2] https://www.mja.com.au/system/files/issues/194_10_160511/jel10409_fm.pdf?0=ip_login_no_cache%3Dd6c98d3a9b2f9d2396868b14ef3ea1e7

In addition, as indicated earlier, the structure of the AHS was designed to ensure that a large amount of data was able to be collected without undue respondent burden. This was achieved through only collecting a selection of data items, known as the core, from all respondents with the remaining data items split between respondents.

What can we do better?

While reducing respondent burden and allowing improving outputs, this resulted in added complexity in both the published outputs and interpretation of the data. As indicated previously, first results were produced seven months earlier than usual. In order to achieve this, the smaller NHS sample was used for core items such as rates of smoking, overweight/obesity and diabetes in the First Results publication. More detailed and accurate results based on the whole core AHS sample (NHS and NNPAS) were then published in the Updated Results publication. While considerable effort was made to explain this concept, there was still some confusion about the two estimates for same data item.

Also as a result of this structure, there were multiple TableBuilder products and CURFs and within each of the TableBuilder products and the CURFs there were multiple sampling weights in order to facilitate analysis by both the whole sample as well as only those who participated in the biomedical component.

These aspects caused confusion amongst stakeholders and while considerable effort was put into communicating both via printed documentation accompanying publications on the ABS website as well as through both general and targeted seminars, stakeholders noted that there could be more clarity around how best to interpret and reference the data.

3.5 Quality

3.5.1 Response rates

3.5.1.1 Overall component

Overall response rates were high at around 80% for components collected within households for both the general wave and the Aboriginal and Torres Strait Islander wave. See Table 1 for more information. Response rates varied a little by age, sex and location and weighting was applied at this level to adjust for this. For more information see Australian Health Survey: Users' Guide.

3.5.1.2 Physical Measures

Within different components, response rates varied. Of the respondents who participated in the interview as a whole, around 80% agreed to have their physical measurements (such as height, weight, blood pressure) taken for both the general and the Aboriginal and Torres Strait Islander wave.

What can we do better?

No separate weight was given to adjust for this non-response, meaning that the estimated number of people who for example, were overweight or obese was only 80% of the true number. While this was explained clearly in tables and explanatory notes, this approach was not desirable. After some investigation into the best way forward, in NHS 2014/15, imputation was used for non-respondents, enabling easy calculation of estimates of the number of people who were overweight or obese or had high blood pressure. The collection of self-reported height and weight in future collections was also recommended to facilitate better imputation as well as to build up our knowledge about the relationship between measured and self-reported height and weight.

From NHS 2014/15 onwards, imputation was introduced to enable easy calculation of estimates of the number of people who were overweight or obese or had high blood pressure.

For NHS 2017/18, self-reported height and weight has been added to the survey content.

3.5.1.3 Biomedical Measures

The response rate to the biomedical component was around 37.1% overall which was higher than other previous similar studies. Despite this, this was lower than hoped for; especially considering 58% of respondents consented to participate. A small follow-up project was undertaken for a sample of respondents who had consented but not participated in the biomedical component. The overwhelming response was more that people had just not got around to attending the pathology clinic rather than that they had any other impediment or objection to participating.

The low response to the biomedical component was investigated to determine whether there was any bias that might have impacted the quality of the results. Due to the design of the AHS, information from the face to face interview was able to be used to assess the level of any bias as a result of the lower response to the biomedical component. This analysis showed that there was no bias towards any particular population group or people with particular health characteristics and that the sample would have to be quite different for this to have any effect on final estimates.

What can we do better?

Stakeholders indicated their appreciation of the quality and amount of analysis in this space, but recommended investigation of alternatives such as pin prick tests within the household in the future which potentially might increase the response rate. It was noted that these options would need to be carefully investigated to fully understand the usefulness of such results, as well as comparability to the initial AHS.

There was also discussion around whether future collections could take account of information that is already collected including the biomedical tests conducted as part of Indigenous health check.

However stakeholders also noted that this needs to be carefully managed as the people who participate in this health check are not randomly selected.

3.5.2 Misreporting

A major issue for the nutrition component of the survey, as in all nutrition surveys was under-reporting and how best to account for it. Extensive analysis was undertaken to understand the impact this was having and particularly how it affected comparisons with data from the previous nutrition survey in 1995. The results confirmed the validity of the nutrition data with limited impacts of under-reporting identified.

As indicated earlier, stakeholders were very appreciative of the thoroughness of the analysis of this phenomenon and the clarity with this was explained both in written publications and through workshops and seminars. This ensured consistency of interpretation across all users.

What can we do better?

In respect of future collection of nutrition data, under-reporting will be a key consideration. In recognition of this, a further project is currently being undertaken to build the knowledge around food consumption more generally with an investigation into the feasibility of using food purchase data from the point of sale. This will enable understanding of foods available for consumption and therefore provide further insight into the under-reporting in a dietary recall survey. Partnerships are also being established with key researchers in this area.

3.6 Content

The content was considered comprehensive, relevant and appropriate. The new content was considered essential in filling information gaps.

The following sections go through each of the modules and discuss usefulness of the data, required frequency and further information needs.

A comment regarding general frequency for all data items was that stakeholders would like to have a future timeline of planned health data collections for the next 10-20 years. This would then enable them to plan whether they need to run smaller surveys in the interim.

3.6.1 Health Conditions

Current topics
There was continued interest in chronic and non-communicable diseases data, such as prevalence, comorbidities, management and prevention.

Frequency

- From annually to 5 yearly, although there was recognition that the prevalence of most health conditions do not generally change quickly.

Further information needs:

- Mental health and wellbeing (particularly dementia);
- Conditions associated with the ageing population;
- Dental/oral health; and
- Prostate cancer detection and treatment.

3.6.2 Risk Factors

Current topics

Measurement of health risk factors is a key output of both the NHS program and the AHS.

Frequency

- Smoking and alcohol consumption were requested to be measured annually in order to measure the high rate of change, however it was also recognised that this may be too frequent to detect any change.

Further information needs:

- Illicit drug use;
- Retrospective information on risk factors; and
- Quantity of tobacco smoked.

3.6.3 Physical measures including height, weight, waist, hip and blood pressure

Current topics

Continued need for measured information.

Further information needs:

- Maximum value of scales be increased from 150kg to 200kg;
- Self-reported height and weight as well as measured height and weight; and
- No need for hip measurement.

These are all being implemented in NHS 2017/18 and NATSIHS 2018/19

3.6.4 Health Related Actions

Current topics

There was continued interest in health related actions including medication use and impacts, under and over prescribing and breastfeeding.

Further information needs:

- Medication use for Aboriginal and Torres Strait Islander component;
- Interest in estimates of adult vaccine coverage (e.g. influenza, pneumococcal, pertussis) for evaluating adult vaccination programs in Australia; and
- Health care (e.g. continuity of care, health care expenditure, private versus public health care).

Medication use for the Aboriginal and Torres Strait Islander component is being implemented in NATSIHS 2018/19

3.6.5 Nutrition

Current topics

A number of stakeholders noted that it was essential that the policy makers have up to date, quality evidence about what Australians are eating and how this compares with the most up to date evidence for healthier Australian diets (the Australian Dietary Guidelines (ADG)).

Frequency

Stakeholders expressed that the frequency needs for nutrition data varied from 3 yearly to 10 yearly, however the overwhelming comment was that some certainty about timing was required to enable planning. The collection of these data also needs to be timed in such a way that it can inform the next review of the Australian Dietary Guidelines and ideally to coincide with the collection of biomedical measures data in order to compare nutrient and chronic disease biomarkers with what people actually eat.

Further information needs:

- Short form dietary behaviour questions such as consumption of discretionary food, sugary drinks, dairy, grains and other ADG foods in addition to fruit and vegetable consumption;
- Contextual and environmental factors impacting on dietary behaviours;
- Information on how and where food is eaten including food choice, food habits, how food is accessed, when and where we eat;
- Improved salt consumption information;
- Interest in measuring change of habits as a result of policies such as the Health star rating;
- More information on less severe food insecurity and under nutrition;
- Second day of data for Aboriginal and Torres Strait Islanders in remote areas
- Food supply/availability of food data; and
- Food literacy.

Consumption of sugary drinks short form question included in NHS 2017/18 and NATSIHS 2018/19

While all the above items were required for the general population and the Aboriginal and Torres Strait Islander population, the last four were particularly raised in the context of the Aboriginal and Torres Strait Islander population.

3.6.6 Physical Activity

Current topics
Continued need for objective and subjective measures of physical activity

Frequency
Stakeholders indicated a continued interest in consistent estimates of volume, frequency and intensity of physical activity every three years as currently collected in the NHS.
Further information needs:

- Work related activity (sedentary and non-sedentary) for key indicators required by the World Health Organisation (WHO) and the Organisation for Economic Cooperation and Development (OECD);
- Children's physical activity;
- Actions that people took to increase their activity such as using the stairs; and
- Use of accelerometers, fitbits, etc.

Workplace physical activity being collected in NHS 2017/18

3.6.7 Biomedical Measures

Current topics
Biomedical data is a key feature of AHS. It is not available at population level from any other source.

Frequency
Stakeholders recommended that regular biomedical collection occur every 5-10 years.

Further information needs:

- Interest in storage of samples for testing in future collections;
- 8 hour or 24 hour urine collection was suggested for sodium or potassium; and
- Stakeholders mentioned that it would have been preferable to have done an Oral Glucose Tolerance Test (OGTT) to test for diabetes in order to more clearly investigate impaired fasting glucose, however many said that HbA1c was sufficient for their uses and recognised that OGTT was not suitable for a population survey.
- Stakeholders reported the need in future for being able to compare biomedical results with self-reported conditions and medications data to investigate possible under-treatment.
- A number of new tests were suggested for inclusion particularly around nutrients such as indicators of fat and sugar levels.

3.6.8 Comparability

Stakeholders noted that it was important to be able to compare estimates over time, between the Aboriginal and Torres Strait Islander and non-Indigenous population, and between areas such as remote and non-remote.

What can we do better?

While this was largely achieved through the AHS, there were some instances where it was thought more appropriate to have different question wording either for the Aboriginal and Torres Strait Islander population as a whole or for these people living in remote areas. While this may have resulted in more appropriate questions for these population groups it meant that it was difficult or in some cases impossible to compare results for these groups. It was recommended that this approach be reviewed.

Comparability is a key element of the NATSIHS 2018-19 design.

For the majority of data items, questions were consistent over time, thus enabling comparisons, however for the first time in the Aboriginal and Torres Strait Islander population, height and weight were measured for use in rates of overweight and obesity. As previously only self-reported height and weight had been collected, this meant that the results were not comparable.

3.6.9 Other Topics of Interest

Stakeholders were interested in understanding environmental impacts on health, such as the impact of climate change on health and health behaviours of Australians.

3.6.10 Small area data and small population groups

There were many comments by stakeholders indicating a need for information for smaller geographic areas such as sub state regions and local government areas.

There were also requests for the ability to break data down into finer groupings such as for people from Culturally and Linguistically Diverse backgrounds and for people with less prevalent long term health conditions.

Some modelled estimates at smaller geographic areas such as SA2 are already produced by the ABS for the Public Health Information Development Unit at Torrens University. These estimates use information from the census together with information from the AHS to improve the quality at the smaller area level. The ABS is currently exploring ways to utilise more administrative data to further improve the quality of the modelled estimates.

3.6.11 Longitudinal data

Stakeholders raised the need to understand how people change over time in relation to risk factors and conditions and how this relates to access to services and other items.

3.7 Planning and stakeholder consultation

Stakeholders generally agreed that the consultation and governance of the project was appropriate and well organised. Most were appreciative at the opportunities that they had had to contribute throughout the whole project.

What can we do better?

At the same time, despite a rigorous engagement strategy at the beginning of AHS planning, there were some stakeholders who would have liked to have been involved in earlier stages of the project. Stakeholders sought more information about how they could be involved in the early stages of planning for what is collected in the AHS and indicated an interest in being involved in the future.

3.8 Future opportunities for data collection and use of administrative data

Stakeholders indicated interest in investigating alternative collection methods for future ABS Health collections. These included:

- Online or telephone components (e.g. collection of a subset of the population via these);
- Targeted surveys for topics or populations of interest;
- Use of GPS based technologies and accelerometers for the collection of physical activity data;
- Use of a pin prick test to collect biomedical measures including iron levels, cholesterol and blood sugar;
- Collection of urine samples over a 24 hour period from a small sample to allow accurate measurement of sodium and potassium levels;
- Other possible options for the collection of Nutrition data including the combined use of a Food Frequency Questionnaire (FFQ) with the 24 Hour Recall method; and
- Use of smart phone applications to monitor food intake and physical activity including photos of food.

3.8.1 Administrative Data/Data Linkage

There is a large amount of interest by stakeholders in investigating future opportunities for data linkage with datasets including:

- Medicare Benefits Scheme (MBS);
- Pharmaceutical Benefit Scheme (PBS);
- Cancer Registers;

- National Diabetes Services Scheme (NDSS);
- Supermarket/scanner data; and
- Hospital morbidity data.

Incorporation of this information would considerably increase the value of the data in a range of areas including:

- Enhancement of the data through addition of new variables;
- Expansion of the data to produce estimates for smaller population groups, such as smaller geographic areas and people from a Culturally and Linguistically Diverse background;
- Availability of longitudinal information by following people over time; and
- Reduced respondent burden.

4 Conclusion

The AHS fulfilled its purpose in filling a number of information gaps in health. This information has been widely used both nationally and internationally and there is a recognised need to collect this information into the future. The learnings from this cycle will be invaluable in planning potential future surveys. Investment in a future AHS needs to be considered by the key Government Departments and users in the light of future reporting requirements, need for national information on risk behaviours, health outcomes, coordination of health care and the availability of a range of administrative and other data. The AHS is a strong mechanism to support this information need.

The NHS 2017/18 is in the field as of July 2017. Funding has been received from the Department of Health and the Department of Prime Minister and Cabinet to allow the next NATSIHS to be conducted in 2018/19. Both of these surveys will incorporate a number of the suggestions mentioned in this paper as listed above.

For more information contact the National Information and Referral Service on 1300 135 070 or the Health Statistics Section at health@abs.gov.au.

Appendix 1 – Stakeholder Evaluation Questionnaire

Please refer to the Downloads tab of publication 4364.0.55.013 to view Appendix 1.

Appendix 2 – Structure and Content of the AHS

Please refer to the Downloads tab of publication 4364.0.55.013 to view Appendix 2.

Appendix 3 – ABS Outputs from AHS

2011-12 AUSTRALIAN HEALTH SURVEY

Publications/Microdata	Date	Description
Australian Health Survey: First Results (cat. no. 4364.0.55.001)	Released 29 October 2012	Focus on long-term health conditions and health risk factors from NHS.
Australian Health Survey: Health Service Usage and Health Related Actions (cat. no. 4364.0.55.002)	Released 26 March 2013	Focus on health service usage, health related actions and medication use from NHS.
Australian Health Survey: Users' Guide (cat. no. 4363.0.55.001)	Released 26 March 2013	Users' Guide for Australian Health Survey
Australian Health Survey: Updated Results (cat. no. 4364.0.55.003)	Released 7 June 2013	Focus on key items from the core based on the full AHS sample. Includes new estimates for those indicators published in the AHS First Results publication.
Australian Health Survey: Physical Activity (cat. no. 4364.0.55.004)	Released 19 July 2013	Focus on physical activity, sedentary behaviour and pedometer steps data from NNPAS.
Australian Health Survey: Biomedical Results for Chronic Diseases (cat. no. 4364.0.55.005)	Released 5 August 2013	Focus on high level results for chronic diseases from the biomedical measures collected in the NHMS.
Microdata: Australian Health Survey, National Health Survey, 2011-12 (cat. no. 4324.0.55.001)	Released 24 September 2013	TableBuilder release for NHS. Updated to include NHMS data in late 2014.
Australian Health Survey: Biomedical Results for Nutrients (cat. no. 4364.0.55.006)	Released 11 December 2013	Focus on high level results for nutrients from the biomedical measures collected in the NHMS. Vitamin D data was added to this publication on 15 April 2014.

Microdata: Australian Health Survey, Nutrition and Physical activity, 2011-12(cat. no. 4324.0.55.002)	Released 18 December 2013	TableBuilder release for NNPAS. Focus on physical activity. TableBuilder was updated to include data from the nutrition component and the NHMS in 2015.
Microdata: Australian Health Survey, Core Content - Risk Factors and Selected Health Conditions, 2011-12 (cat. no. 4324.0.55.003)	Released 30 April 2014	TableBuilder release for the core content based on the full AATSIHS sample. Includes biomedical measures collected in the NHMS.
Australian Health Survey: Nutrition First Results - Foods and Nutrients (cat. no. 4364.0.55.007)	Released 9 May 2014	Focus on high level results from the nutrition component of NNPAS including foods and nutrients consumed and selected dietary behaviours.
Microdata: Australian Health Survey, Nutrition and Physical activity, 2011-12(cat. no. 4324.0.55.002)	Released 23 June 2014	Basic CURF release for NNPAS. Focus on nutrition.
Microdata: Australian Health Survey, National Health Survey, 2011-12 (cat. no. 4324.0.55.001)	Released 5 November 2014	Expanded CURF release for NHS. Includes biomedical measures collected in the NHMS. Also, TableBuilder was updated to include data from the NHMS.
Microdata: Australian Health Survey, Nutrition and Physical activity, 2011-12(cat. no. 4324.0.55.002)	Released 13 November 2014	Expanded CURF release for NNPAS. Includes both physical activity and nutrition data, and includes biomedical measures collected in the NHMS.
Microdata: Australian Health Survey, Core Content - Risk Factors and Selected Health Conditions, 2011-12 (cat. no. 4324.0.55.003)	Released 13 November 2014	Expanded CURF release for the combined NHS and NNPAS core content. Includes biomedical data collected in the NHMS.
Australian Health Survey: Usual Nutrient Intakes, 2011-12 (cat. no. 4364.0.55.008)	Released 6 March 2015	Focus on usual intakes of selected nutrients including comparisons with Nutrient Reference Values where relevant.
Australian Health Survey: Nutrition - Supplements, 2011-	Released 29 April 2015	Focus on consumption of dietary supplement data from the NNPAS.

12 (cat. no. 4364.0.55.010)		
Australian Health Survey: Nutrition - State and Territory results, 2011-12 (cat. no. 4364.0.55.009)	Released 10 June 2015	Focus on state and territory level results for consumption of selected foods and nutrients from the NNPAS.
Australian Health Survey: Consumption of Added Sugars, 2011-12 (cat. no. 4364.0.55.011)	Released 27 April 2016	Focus on the usual intakes of added sugars and free sugars using data collected in the NNPAS.
Australian Health Survey: Consumption of food groups from the Australian Dietary Guidelines, 2011-12 (cat. no. 4364.0.55.012)	Released 11 May 2016	Focus on consumption of foods from the 2013 Australian Dietary Guidelines food groups using food consumption data from the NNPAS.

2012-13 AUSTRALIAN ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH SURVEY

Publications/Microdata	Date	Description
Australian Aboriginal and Torres Strait Islander Health Survey: First Results (cat. no. 4727.0.55.001)	Released 27 November 2013	Focus on long-term health conditions and health risk factors from NATSIHS.
Australian Aboriginal and Torres Strait Islander Health Survey: Users' Guide (cat. no. 4727.0.55.002)	Released 11 December 2013	Australian Aboriginal and Torres Strait Islander Health Survey Users' Guide
Australian Aboriginal and Torres Strait Islander Health Survey: Updated Results(cat. no. 4727.0.55.006)	Released 6 June 2014	Focus on key items from the core based on the full AATSIHS sample. Includes new estimates for some topics not previously published in the AATSIHS First Results publication.
Microdata: Australian Aboriginal and Torres Strait Islander Health	Released 28 August	TableBuilder release for NATSIHS. This initial release does not include data on remote or

Survey, Detailed Conditions and Other Health Data, 2012-13(cat. no. 4715.0.30.001)	2014	child physical activity collected as part of NATSIHS or data from the NATSIHMS.
Australian Aboriginal and Torres Strait Islander Health Survey: Biomedical Results(cat. no. 4727.0.55.003)	Released 10 September 2014	Focus on high level results for chronic disease and nutrients from the biomedical measures collected in the NATSIHMS.
Australian Aboriginal and Torres Strait Islander Health Survey: Physical Activity(cat. no. 4727.0.55.004)	Released 5 December 2014	Focus on physical activity, sedentary behaviour and pedometer steps data from the NATSINPAS and AATSIHS sample as applicable.
Australian Aboriginal and Torres Strait Islander Health Survey: Nutrition Results – Food and Nutrients (cat. no. 4727.0.55.005)	Released 20 March 2015	Focus on high level results from the nutrition component of NATSINPAS.
Microdata: Australian Aboriginal and Torres Strait Islander Health Survey, Nutrition and Physical activity, 2012-13 (cat. no. 4715.	Released 17 July 2015	TableBuilder and Expanded CURF product release from the NATSINPAS. The Expanded CURF includes biomedical measures collected in the NATSIHMS.
Microdata: Australian Aboriginal and Torres Strait Islander Health Survey, Core Content - Risk Factors and Selected Health Conditions, 2012-13 (cat. no. 4715.0.30.003)	Released 28 July 2015	TableBuilder and Expanded CURF product release for the combined NATSIHS and NATSINPAS Core content. Both products include biomedical measures collected in the NATSIHMS.
Microdata: Australian Aboriginal and Torres Strait Islander Health Survey, Detailed Conditions and Other Health Data, 2012-13(cat. no. 4715.0.30.001)	Released 28 July 2015	Expanded CURF product release from the NATSIHS, including biomedical data collected in the NATSIHMS.
Microdata: Australian Aboriginal and Torres Strait Islander Health Survey, Detailed Conditions and Other Health Data, 2012-13(cat. no. 4715.0.30.001)	Released 14 August 2015	TableBuilder product release from NATSIHS updated to include additional remote and child physical activity data.
Australian Aboriginal and Torres	Released 2	Focus on amounts of foods consumed from

Strait Islander Health Survey: Consumption of food groups from the Australian Dietary Guidelines, 2012-13 (cat. no. 4727.0.55.008)	November 2016	the Australian Dietary Guidelines food groups from the nutrition component of NATSINPAS.
Australian Aboriginal and Torres Strait Islander Health Survey: Consumption of Added Sugars (cat. no. 4727.0.55.009)	Released 2 November 2016	Focus on the amounts of 'Free' and 'Added' sugars consumed from foods, from the nutrition component of NATSINPAS.

INQUIRIES

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070.