The Australian Longitudinal
Study on Male Health

Technical Report # 5
January 2016

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Executive Summary

2015 was a busy year for Ten to Men, Wave 1 data were processed and analysis and reporting activities commenced, ongoing cohort maintenance activities implemented, study infrastructure was consolidated, and with the development, testing and commencement of Wave 2 data collection, the longitudinal phase of the study got underway.

Cohort retention is a critical ongoing activity and a program of participant recontacting and tracking protocols were developed and implemented. At the time tracking ceased in preparation for Wave 2 fieldwork, 661 paticipants were in tracking.

Wave 2 data collection commenced. A three phase mixed-methods protocol was developed for Wave 2 – online, then mail-out, then face-to-face (drop and collect) data collection. As in Wave 1 age specific instruments are used, and participants under 15 years of age are interviewed face to face. Pilot testing showed good results using this method with a 75% retention rate.

Extensive data cleaning, quality assurance, and processing generating derived variables and confidentialisation procedures has been conducted to prepare the Wave 1 analytical datasets for internal and external use. A suite of supporting documentation has been produced to support data users. The confidentialised public release dataset has been finalised and will be available to researchers via the Australian Data Archives as soon as the necessary administrative mechanisms and procedures are finalised. Documentation regarding data access is currently available on the Ten to Men website and requests for Data Access are currently being accepted and assessed via that avenue.

The majority of analysis of Wave 1 data undertaken in 2015 concerned methodological matters, including analysis of missing data, development of sample weights and methods for adjusting for sample design. Missing data analysis found low levels of missing data in the Adult questionnaire for missing data for individual data elements (mean: 4.3%), survey topics (mean: 5.1%) and applicable variables per participant (mean: 4.9%).

The first tranche of analysis and reporting on the cohort and baseline data has begun. A Cohort Profile has been submitted to the International Journal of Epidemiology, and a suite of 10-12 papers is being prepared by Ten to Men Investigators to be published as a Special Supplement in the BMC Public Health in 2016. Other communication and dissemination activities have included conference presentations and media interviews. As findings from Wave 1 become available it is anticipated that dissemination activities will increase.

The experience gained from fielding Wave 1 has meant that Wave 2 development and implementation has proceeded with few major difficulties to date. The major difficulty encountered has been delays in preparation of the analytical datasets and thus undertaking analysis and making the data available. This is due to the size and complexity of the datasets and competing priorities related to fielding Wave 2 on time. However, the Wave 1 data are now available, interest in the study is strong and we anticipate a rapid increase in outputs in 2016.

1 Introduction

Background

In 2011 the School of Population and Global Health at the University of Melbourne was contracted to establish the infrastructure and conduct the first wave of data collection for a new national longitudinal study on male health. Funded by the Department of Health, the Australian Longitudinal Study on Male Health (Ten to Men), was initiated in response to the key priority area identified in the 2010 National Male Health Policy – building a strong evidence base on male health and using it to inform policies, programs and initiatives.

The aims of Ten to Men are:

- Examine male health and its key determinants including social, economic, environmental and behavioural factors that affect the length and quality of life of Australian males.
- Address key research gaps about the health of Australian males such as men's health and risk behaviour in life, while accounting for social, economic and environmental changes.
- Identify policy opportunities for improving the health and wellbeing of males and providing support for males at key life stages, particularly those at risk of poor health.

Following the commissioning of the study in August 2011, an intensive development and testing program in preparation for Wave 1 occurred. Technical Reports 1 and 2 (January 2012 and January 2013 respectively) and Major Reports 1 and 2 (June 2012, June 2013 respectively) detail those activities. Recruitment of the main cohort and collection of baseline data commenced in October 2013 and concluded in in mid-2014. Technical Report # 3 (February 2014, updated in October 2014) reported on Wave 1 recruitment and presented interim response rates and cohort socio-demographic characteristics. In January 2015 the final Wave 1 dataset was delivered and following extensive quality assurance and data preparation analysis is underway. Wave 2 was commissioned in September 2014, and preparation immediately commenced including seeking ethics approval, questionnaire development, engaging a research services organisation and data collection protocol design. The Wave 2 pilot study was conducted from April to June 2015, and in November 2015 the main Wave 2 fieldwork commenced.

This Report

The 2015 Technical Report covers activities conducted in the calendar year 2015 including preparations for and commencement of Wave 2, Wave 2 pilot results, data processing and analysis of Wave 1 data including development of the sampling weights and preliminary findings.

2 Methodological Matters

2.1 Cohort Retention

Cohort retention is crucial to the ability of the study to meet its objectives. Reflecting this in 2015 a restructure of the study team saw the appointment of a dedicated Cohort Manager.

Maintaining contact and engagement with participants is the key to retention. Based on research and consultation, a re-contacting schedule was developed based on two contacts every 12 months by either mail or email. Additional cohort maintenance activities continued in 2015 such as ongoing development of the website and the use of social media.

Scheduled Re-contacts

1. May-June 2015

Participants from both the Testing Group and the Main Cohort were re-contacted. The participants were sent an 'Update Your Contact Details' digital postcard, or physical postcard (Appendix A). Participants with a valid email address were sent the digital postcard; all others were sent the physical postcard. For the Testing Group this postcard also acted as the Wave 2 pilot pre-notification informing them that Roy Morgan Research would soon be in contact to conduct the next wave of data collection.

The postcard encouraged participants to update or confirm their contact details by completing the online form on the Ten to Men website, completing and returning the physical postcard , or by calling the study hotline. A chance to win the prize of an Apple Watch (valued at $579) was offered as an incentive to all Main Cohort participants who updated their contacts details. Outcomes of this recontact event are summarised in Table 1.

Table 1. Re-contact Outcomes

ACTIVITIES	Number
SENT	
Emails	11,151
Physical postcards	4,742
RETURNED	
Emails 'bounced back'	657 (5.9%)
Physical postcards 'Returned to sender'	164 (0.35%)
PARTICIPANT CONTACT	
Website visits in 2 weeks following mailout	2,570
Contact detail updates via website	1,019
Contact detail updates via postcard	474

2. October-December 2015

Only main cohort participants were included in this re-contact as the testing group had recently participated in the Wave 2 pilot study. As in the May/June contact, participants were sent an 'Update Your Contact Details' digital or physical postcard. This postcard also served as pre-notification for main Wave 2 data collection. Outcomes of this recontact event are summarised in Table 2.

Table 2. October to December 2015 Re-contact Outcomes

ACTIVITIES	Number
SENT	
Emails	10,483
Physical postcards	4,951
RETURNED	
Emails 'bounced back'	201 (1.9%)
Physical postcards 'Returned to sender'	96 (1.9%)
PARTICIPANT CONTACT	
Website visits in 2 weeks following mailout	940
Contact detail updates via website	221
Contact detail updates via postcard	83

Tracking

As we become aware that the contact details for a participant are no longer valid, that participant enters into our tracking system. Outside of data collection periods, this primarily occurs with a 'return to sender' of study mail or an email bounce-back following a re-contact attempt.

Tracking is a systematic process to obtain updated contact information for the participant using the range of contact information supplied by the participant. In 2015 the study employed two dedicated tracking staff. During data collection periods tracking activities are conducted by the data collection agency. Tracking activity in 2015 is summarised in Table 3.

Table 3. 2015 Tracking activity

Tracking Activity	Number
Total participants placed in tracking	1,523
Participants successfully tracked	862
Participants in active tracking as at Nov 2105	661

Overall sample loss

At the time of commencing Wave 2 there were 661 participants in active tracking. A participant may be placed into tracking when a single piece of contact data is found to be invalid (such as an email address), but this does not mean that the participant's other contact information is necessarily invalid (such as their mobile phone number, alternative contacts' details). Thus it is

expected that contact will be re-established with a majority of these participants over the course of Wave 2 fieldwork.

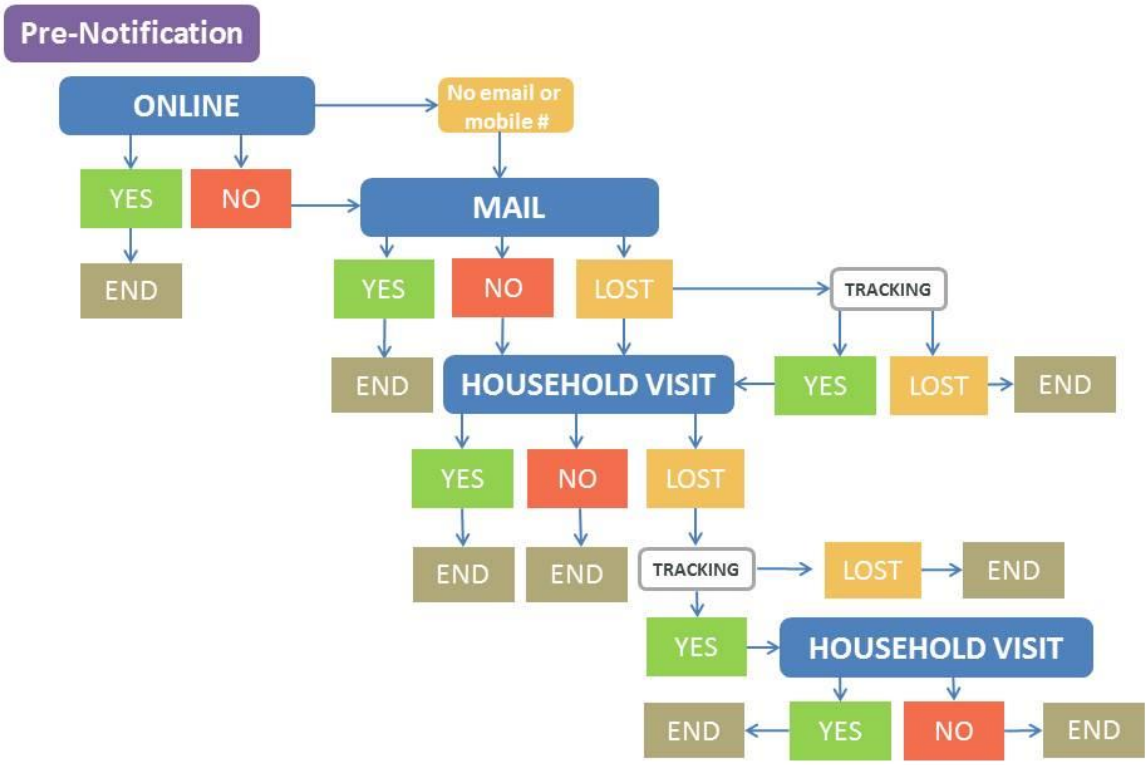
Withdrawals and Deceased participants
In 2015, 38 participants contacted the study and withdrew and notification was received that four participants were deceased.

2.2 Wave 2

2.2.1 Wave 2 methods

The interval between Waves 1 and 2 is the period of highest attrition in longitudinal studies. Thus the principal design consideration for Wave 2 data collection was maximising cohort retention. After consultation with co-investigators, the scientific advisory group, data collection organisations and DoH, a three phase data collection protocol was designed that initially used lower-cost methods (online and mail-out) to collect data from participants who are easily located, engaged with the study and committed to participating, then moving to the more costly labour-intensive face-to-face drop and collect method known to be more effective for collecting data from difficult-to-reach/retain participants. In the mail and fact-to-face phases of the protocol participants were entered into tracking as soon as invalid contact details were identified. This design directed maximum resources possible toward retaining participants most at risk of being 'lost'. Figure 1 shows Wave 2 data collection protocol. This protocol was trialled in the Wave 2 Pilot study (details in section 3.2.5) and adopted with minor modifications around timing and reminder frequency for the main data collection which is currently in progress.

Figure 1. Ten to Men Wave 2 data collection protocol



Protocol Details

Pre-notification

Approximately 3 weeks prior to the commencement on the online fieldwork participants aged 15 years and older receive a postcard or email from the study informing them that Wave 2 data collection is about to start and that they will shortly be contacted by the research organisation with information on how to participate online. Updated contact information including email addresses are requested. For participants aged 14 years and younger the letter is sent to the parent and advises them on the forthcoming mail or face-to-face contact as the online option is not available for this group.

Phase 1 – Online (Adults and Young Men only)

Participants for whom the study has an email address or a mobile phone number (~69% of all participants) are sent an email and/or a text message with the link to the online questionnaire website and log-in information. The Plain Language Statements, instructions on how to complete the questionnaire and other relevant information are provided on that site. Reminder emails/text messages are sent after 3-7 days.

Phase 2 – Mail-out

Adults and Young Men

Three to four weeks after the initial invitation study documents and hard copy questionnaires are sent by mail to all Adults and Young Men who have not completed the questionnaire online, or for whom no email or mobile phone number was available. Instructions on how to complete online are also included for the benefit of participants who did not receive emails or text messages in Phase 1. After a reasonable period a reminder (email, text message, and/or mail) will be sent to all participants who have not yet completed the questionnaire.

Boys/Parents (out-of-area)

For participants aged 14 years and younger who have relocated to areas outside of, or not in close proximity to, Wave 1 areas, study documents and the Parent questionnaire are mailed and the parent followed-up by phone to arrange a time for a computer-assisted telephone interview (CATI) with the boy. The parent is requested to complete and return the Parent questionnaire by mail.

Phase 3 – Face-to-Face Drop and collect

Approximately six weeks after the commencement of Phase 2, all remaining Adult and Young Men participants who have not returned a questionnaire, and all Boys residing in or close to Wave 1 SA1s will be assigned to field interviewers for drop and collect data collection. The drop and collect method is generally similar to that used in Wave 1 with the addition of in-field tracking activities undertaken by the interviewers.

Interviewers will make a minimum of three attempts to contact with the participant at the current address held by the study. Having made contact, for participants aged 15 years and older they will drop the relevant questionnaire, provide information on the option to completing the questionnaire online and arrange a time to return to collect the completed questionnaire. For participants 14 years and younger the interviewer will make an appointment to conduct a face-to-face computer-assisted personal interview (CAPI) at the boy's home or other agreed location. If the interviewer is unable to make contact with the participant they will leave the study materials in a sealed envelope with another household member or in the mailbox. If the interviewer determines the address is no longer valid, they will undertake in-field tracking including calling all phone numbers provided by the participant, calling secondary contacts provided by the participants, making enquiries of the current residents of the household and so on. If the interviewer cannot locate the participant, they will refer them to the main office for further tracking.

After dropping off the appropriate study documents for participants aged 15 years and older the interviewer will make up to three return visits to the household to pick-up the completed questionnaires - after which, if they have not retrieved the questionnaire, reply-paid envelopes will be left. Participants whose questionnaires are not collected after two attempts will receive a telephone call reminder. If the participant has completed the questionnaire online, no pick-

up visits will be made. For participants 14 years and younger, the interviewer will return to the household at the agreed time and conduct the face-to-face interview. They will also collect completed Parent questionnaires at that time.

2.2.2 Wave 2 ethics

Approval for cognitive testing of the Wave 2 instruments was given by the University of Melbourne Human Ethics Sub-Committee (Health Sciences) on 19 February 2015.

Wave 2 data collection was approved by University of Melbourne Human Ethics Sub-Committee (Health Sciences) on 18th of February 2015.

Approval was obtained to amend the consent procedures used in Wave 1. Given that at the time of recruitment into the study participants had consented to participate in a longitudinal study, including repeated contacts to collect follow-up data, submission was made to move to an 'implied consent' model for participants of all ages. Under this model, participants do not provide an explicit written consent/assent, but by completing and returning the questionnaire, or interview in the case of Boys, indicate that they consent to participate in the Wave 2 data collection. It was considered that this change alleviate burden on the participant and result in lower data loss due to incorrectly completed consent documentation.

Parental consent for participants under the age of 18 at the time of Wave 2 is still requires, and approval was granted to collect parental consent in verbal or in written form either on paper or directly captured onto the interviewer tablet. It was felt that these provisions would minimise data loss due to invalid consent.

2.2.3 Wave 2 instruments

As in Wave 1 three age group-based questionnaires (Boys =<14 years, Young Men 15-17 years, Adults 18+ years) and a supplementary Parent questionnaire for the youngest group were developed to collect Wave 2 data. Questionnaires are self-complete with an online and paper-based completion options for participants aged 15 years and older, and paper only for Parents. The online and paper-based questionnaires have exactly the same content. Boys aged 14 years and younger will be interviewed face-to-face or by telephone. Approximate completion times are: Adults - 40 minutes, Young Men - 20-30 minutes, Boys - 20 minutes, Parents - 10 minutes.

The Wave 2 instrument development process was of necessity different from Wave 1. The importance of having repeat measures over time to capitalise on the strengths of the study's longitudinal design meant that the default approach to questionnaire items was to retain them, unless they fell into one of the following categories:

1. Poor performance – evidenced by substantial missing data.
2. No meaningful variation in the responses in the data.
3. A one-off measurement of an exposure or outcome is required at baseline only.

4. The construct being measured is one that will not change substantively in the time between Waves 1 and 2 and so repeat measurement can be deferred to a future Wave.
5. Exposures or outcomes for which very low prevalence is reported in the cohort and which are thus unlikely to yield data suitable for analysis.
6. The measure was suboptimal and a better measure has since become available.

Based on these criteria, 43 questions were removed from Adults, 16 from Young Men, 7 from Boys, and 17 from Parents.

Given the Wave 1 questionnaires were fairly lengthy it was decided that Wave 2 questionnaires should be shorter if possible, and if not no longer. With this decision and the necessity of retaining most items there was limited scope for including additional material. However the removal of some questions did allow the inclusion of several new items.

A small number of additional items were included in the Wave 2 questionnaires including two constructs that had been removed in the Wave 1 instruments due to lack of space (sleep quality and transport to work) and additional items to more fully assess two important constructs only briefly assessed in Wave 1 (suicidal behaviour, health literacy and help seeking, food allergies, sexual relationships). Finally, two new constructs were include: a measure of resilience was added to enhance the capacity to assess protective factors; and a small number of questions on fatherhood as this is an important transition point and social role for most males.

The process for identifying specific questions or scales to assess the new constructs was the same as in Wave 1 – experts were identified and provided recommendations based on the guidelines developed for the Wave 1 questionnaires (described in Technical Report # 1).

New questions are marked in the attached Wave 2 questionnaires (Appendices B-H). Unmarked questions are unchanged from those used in Wave 1.

2.2.4 Wave 2 questionnaire testing

Cognitive testing was conducted by social research organisation Ipsos IView in February 2015. Cognitive testing allows us to be confident that the questions posed are being interpreted in the manner in which they are intended, and that accidental ambiguity is eliminated prior to the data collection phase.

Questions

Given that the majority of items in the Wave 2 questionnaire have already been tested and that those that performed poorly have been eliminated, the scope of questionnaire testing in Wave 2 was appreciably reduced from Wave 1. Some testing was still required to assess comprehensibility, clarity and age-appropriateness of new questions introduced in Wave 2. As there was negligible change in the 10-14 years and Parents of Boys questionnaires, no testing was be conducted in those groups.

A number of new questions were subject to cognitive testing as they are from well validated scales, have been widely used, or were previously tested but ultimately not used in Wave 1.

Twenty-two questions from the Adult questionnaire and 13 from the Young Men questionnaire were tested. Table 4 gives an overview of new Wave 2 questions and indicates if they were included in cognitive testing.

Table 4. Wave 2 Questions included in cognitive testing.

Construct	Adult Questionnaire		Young Men Questionnaire	
	Number of new / modified questions	Included in cognitive testing?	Number of new / modified questions	Included in cognitive testing?
Sleep quality	1	No		
Sleep disorder	2	Yes		
Food allergy			4	Yes
Sexual relationships	6	Yes	2	Yes
Suicide	3	No		
Fatherhood/ relationship with father	6	Yes	4	Yes
Transport	2	No		
Health Literacy	2	No	1	Yes
Resilience	1	Yes	1	Yes
Help Seeking	1	No	1	No

Sample

A total of 32 interviews were conducted. Participants (or their fathers in case of the young men) were recruited using quotas from a mix of education categories, household income categories and family / household situations. Table 5 describes the numbers and characteristics of participants.

Table 5. Cognitive Testing Participant sample

	Young males age range	Young males age range	Adult males age range	Adult males age range
	15-17 *total n=8*	18-24 *total n=8*	25-44 *total n=8*	45-55 *total n=8*
Highest level of education				
School leaver / Year 12 or below	2	3	4	5
TAFE / trade qualification	2	4	3	-
University degree	4	1	1	3
Approximate annual household income (before tax)				
Less than $33,000	-	2	1	-
$33,001 – $64,000	2	1	3	2
$64,001 – $115,000	3	4	2	3
More than $115,000	3	1	2	3
Household description				
Single person (or people – e.g. share-	-	7	2	2

	Young males age range	Young males age range	Adult males age range	Adult males age range
	15-17 *total n=8*	18-24 *total n=8*	25-44 *total n=8*	45-55 *total n=8*
house), no children				
Single person (or people – e.g. share-house) with children	1	-	1	-
Married / de facto couple with children	7	1	5	6
Married / de facto couple, no children	-	-	-	-

Method

Participants first completed the relevant test questionnaire observed by the interviewer, any difficulties in completing the questionnaire were noted, any requests for clarification are noted and responded to

Following completion of the questionnaire, the interviewer followed a semi-structured set of questions to:

- Examine participants' interpretation and understanding of the new questions
- Explore where there is variation between intended and interpreted meaning
- Check that key words / terminology was comprehended
- Assess the suitability of the response options provided
- Investigate whether (and what) alternative wording or phrasing would increase comprehension for any questions where there is uncertainty or confusion
- Canvass participants' views regarding the content and relevance of the questions

Finally, the participant was then invited to make any other comments regarding the questionnaire.

All participants were provided with Coles / Myer gift vouchers ($50 for young males and $75 for adult males) as compensation for taking part.

Results

Overall there were no substantive issues identified with the new questions, or the questionnaire in general. Most participants had little trouble in completing the questionnaire, even questions that did not seem to read quite right to participants or seemed a bit repetitive or confusing were sufficiently clear to enable participants to provide an answer.

Some adult males found the questions about the quality of the respondent's relationship with their father / father-figure a bit sensitive, however the young men did not find this question as sensitive. Several instances of overlapping timeframes were identified.

Based on the testing, no questions were excluded and minor revisions were made to a number of questions for clarity.

2.2.5 Wave 2 pilot testing

Wave 2 pilot testing took place from June to September 2015. The pilot testing was design to evaluate selected elements of the data collection protocol including consent protocols, documentation, uptake and completion rates of the online questionnaire and mail-out components, and the timing and effectiveness of reminders and incentives. It also tested the performance of the Wave 2 instruments, and assessed the quality of data obtained from the online version. Information on operational matters regarding staffing, materials, training, sample management, communication and logistics were also trialled in the pilot study. Roy Morgan Research conducted the pilot study.

Sample

No new participants were recruited for the pilot study. The pilot study sample included 292 individuals recruited from the two Wave 1 pilot studies and a number of males who joined the study at Wave 1 but were subsequently found to be out of the age-range, or recruitment area. To achieve a reasonable sample size for pilot testing 12 SA1s from the main cohort were included in the pilot data collection, adding an additional 384 Adults, 24 young men and 21 boys to the pilot sample. The final sample was 740 (631 Adults, 49 Young Men and 60 Boys).

Methods

The data collection protocol described above was trialled. Data collection instruments are described above.

Results

An overall response of 75.9% was achieved. By age group, the response was Adults – 73%; Young Men – 86%; Boys – 90%. Table 6 details response by data collection method. The face-to-face method achieved the highest response, followed by online completion with hardcopy mail the lowest response.

Table 6. Percentage response by mode of completion, total sample (n =740)

	ONLINE	MAIL	Face-to-Face	Total
ADULTS	23%	13%	38%	73%
YOUNG MEN	29%	14%	43%	86%
BOYS	-	-	90%	90%

Among those who participated in the pilot, adults and young men had similar rates of completion for each mode of data collection (Table 7).

Table 7. Percentage Response by mode of completion, responders (n=553)

	ONLINE	MAIL	Face-to-Face	Total

	ONLINE	MAIL	Face-to-Face	Total
ADULTS	31%	18%	51%	100%
YOUNG MEN	33%	17%	50%	100%
BOYS	-	-	100%	100%

With respect to data quality by mode of collection, online respondents had slightly lower missing data with the average 'not answered' for online questionnaires being 0-2 responses per question compared to 2-4 per question in the hardcopy in adults. A similar pattern was observed in the young men. There were no differences in participation rates or in missing data between phone and face-to-face interview in the boy group.

Approximately 20% of participants had moved since Wave 1, with 54% of those having moved within 50 kilometres of their Wave 1 address. Twenty-seven participants were in tracking at the commencement of fieldwork, 18 of whom were successfully tracked, and 11 went on to complete the questionnaire. At the close of field 38 participants had been unable to be located and were in tracking.

Recommendations:

The main recommendations based on the pilot outcomes were:

- The three phase protocol be adopted for the main data collection with some minor amendments.
- A longer duration be given to Phase 2 before commencing Phase 3 face-to-face fieldwork to allow participants to return the questionnaire by mail.
- The two stage protocol for Phase 3 be retained as it resulted in an additional 8.2% of Adults males completing.
- Additional activities to increase response be adopted, including:
    - Leaving a hardcopy with participants who request the online linking Phase 3 and following-up to collect the hardcopy should the participant not complete the questionnaire online within 7 days.
    - making an additional reminder phone call to participants who have requested in the online link in Phase 3.

3 Key Research Findings

At the time of writing analysis of Wave 1 data has focussed on core methodological work required to prepare the dataset for public use. This work has included calculating final response fractions, examining data quality, preparing sample weights and addressing study design issues and is described in Section 5.

At this time there are no key research findings on male health to report. Analysis of Wave 1 data is underway and more than ten manuscripts are in various stages of preparation as

described in Section 7 Publications. It is anticipated that this first tranche will be published in 2016, however as a condition of publication these cannot be reported elsewhere prior to publication.

4 Analysis of Wave 1 data

Missing data

An analysis of missing data has been completed for the Wave 1 Adult Questionnaire by Ms Tianshu Wei, a Masters of Public Health, Professional Placement student.

The full report is available as Appendix F. Briefly, the analysis found that the Wave 1 Adult questionnaire had low levels of missing data for individual data elements (mean: 4.3%) (Table 8), survey topics (mean: 5.1%)(Table 9) and applicable variables per participant (mean: 4.9%)(Table 10).

Table 8. Descriptive statistics of proportion of missing data elements. (n[1]=396)

Descriptive statistics	Number of applicable respondents	Overall % Missing	Don't Know (-3)	Refused / Not Answered (-4)	Invalid Multiple Response (-5)	Value Implausible (-6)	Unable to Determine Value (-7)
Mean	12163.2	4.3	0.1	4.1	0.0	0.1	0.1
Standard deviation	3679.8	9.0	0.6	8.9	0.2	0.5	0.8
Median	13,884	2.5	0.0	2.3	0.0	0.0	0.0
Min	54	0.0	0.0	0.0	0.0	0.0	0.0
Max	13,884	61.5	8.2	60.8	2.6	4.6	14.8

[1]total number of data elements in the questionnaire

Table 9. Proportion of missing data elements by topic. (n[1]=396)

Domain and Topics	Descriptive statistics of proportion of missing data (% unless otherwise specified)		
	Number of variables	Mean (Standard Deviation)	Median (Range)
HEALTH BEHAVIOURS			
Alcohol	12	2.0 (1.9)	1.1 (0.8-6.2)
Drugs	25	3.4 (1.8)	3.6 (0-9.5)
Nutrition	2	2.2 (0)	2.2 (2.1-2.2)
Physical activity	19	19.6 (21.1)	6.1 (1.7-60.8)
Risky and antisocial behaviour	1	1.1 (NA)	1.1 (1.1-1.1)
Sexual behaviour	8	15.9 (20.6)	5.6 (2.6-50.4)
Sun exposure	9	32.1 (26.3)	18.2 (2.5-61.5)
Tobacco	6	1.8 (1.2)	1.7 (0.1-3.4)
Weight	3	6.2 (4.7)	7.3 (1.1-10.4)
HEALTH STATUS			
Diagnoses	42	2.4 (0.3)	2.5 (1.1-2.8)
Health status	12	1.1 (0.6)	1.0 (0.4-2.4)

Domain and Topics	Descriptive statistics of proportion of missing data (% unless otherwise specified)		
	Number of variables	Mean (Standard Deviation)	Median (Range)
Injury and disability	11	1.8 (1.7)	1.0 (0-5.9)
Prostate problems	7	2.9 (0.1)	3.0 (2.7-3.1)
Sexual function	8	3.6 (0.3)	3.7 (2.9-3.9)
HEALTH KNOWLEDGE			
Health information sources)	8	0 (0)	0 (0-0)
SOCIAL DETERMINANTS			
Family and household structure	7	3.5 (1.6)	3.6 (1.1-6.1)
Gender roles and sexuality	24	2.2 (0.5)	2.0 (1.8-4.0)
Housing and tenure	3	6.7 (7.1)	2.8 (2.4-14.8)
Interpersonal relations	21	3.7 (0.4)	3.6 (3.2-4.7)
Life events	24	3.5 (0.1)	3.5 (3.3-3.8)
Socio-economic status	60	2.4 (3.3)	1.6 (0-16.2)
Work satisfaction	12	2.2 (0.3)	2.2 (1.9-3.0)
HEALTH SERVICES			
Access to health services	12	2.7 (1.0)	2.7 (0-4.2)
Satisfaction and preferences	9	4.5 (0.3)	4.6 (4.0-5.0)
Service use	28	0.5 (1.4)	0 (0-4.8)
WELLBEING			
Life satisfaction	8	2.3 (0.2)	2.2 (2.2-2.9)
Mental health diagnoses	10	2.3 (0.8)	2.1 (1.9-4.7)
Self-injury	5	7.5 (7.6)	2.4 (2.3-19.2)
	AVERAGE:	5.1	

Table 10. Proportion of applicable variables not answered by adult participants. (n^1=13,884)

	Descriptive Statistics
Total number of variables in survey instrument	407
Number of variables that are applicable to a participant:	
Mean (SD)	352 (16.73)
Median (range)	357 (282-399)
Proportion of applicable variables not answered by respondents (%)	
Mean (SD)	4.91 (8.72)
Median (range)	2.81 (0-87.17)
	Number of participants (cumulative %)
0 - <10%	12609 (90.82%)
10 - <20%	783 (96.46%)
20 - <30%	150 (97.54)
30 - <40%	109 (98.32%)
40 - <50%	71 (98.83%)
50 - <60%	39 (99.11%)
60 - <70%	82 (99.70%)

	70-·<80%¤	14·(99.81%)¤
	80-·<90%¤	27·(100%)¤
	90-·100%¤	0¤

Of 23 data elements with concerning levels of missing data (missing proportion greater than 10%) 11 were from questions requesting an hours and minutes responses where 'hour' data was present but 'minutes' data was missing.

Analysis of the associations between participant characteristics and higher levels of missing data in the remaining 12 (including height as represented by BMI) found that being born overseas, being widowed, being unemployed, having poorer self-rated health, and lower level of education were associated with higher levels of missing response. Age and depression severity score were not effectively associated with level of missing response.

Overall, the majority of missing response in data elements with numerical fields can be assumed to be equivalent to a response of zero and recoded as such for subsequent analyses. Further investigation will be undertaken for the remaining variables with concerning levels of missing data.

Missing data for the Young Men and Boys/Parent's questionnaires will be undertaken in 2016.

Weighting and dealing with study design issues

Sample weights were developed to adjust the probability of selection and variation in participation fractions. Associate Professor Lyle Gurrin from the Biostatistics Unit in the Centre for Epidemiology and Biostatistics developed the weights with guidance from the Statistical Methods and Analysis Group. That group also oversaw the preparation of additional guidance to address other survey design issues including the clustering by SA1/SA2 and oversampling of regional areas. Detailed information on the calculation of sample weights and adjustments for survey design are available in the Ten to Men Data User Manual (Appendix G, also available at www.tentomen.org.au). A methodology paper discussing these issues is in preparation and will be included in the BMC Public Health Special Supplement.

5 Data Management

5.1 Confidentialisation

The public release dataset has undergone confidentialisation to minimise the risk of participant confidentiality being breached. With a dataset containing the number and variety of variables as Ten to Men it is impossible to confidentialised such that all possible cross-tabulations that might result in very small cell sizes are not possible. This would result in such a high level of data loss that little meaningful research could be undertaken.

On the advice of the members of the Statistical Methods and Analysis Group it was decided not to set a universal minimum cell count threshold, but rather identify specific variables were identified where a small cell size might pose a risk to confidentiality and undertake confidentialisation measure on those. The variables and measures taken are described in Table 11.

Table 11. Ten to Men confidentialisation procedures.

Variable	Confidentialisation action
SA1	SA1 identifiers replaced with non-identifiable codes.
SA2	SA2 identifiers replaced with non-identifiable codes. Codes were generated that maintained the relationship between SA1 and SA2 codes.
Country of Birth	Original variable reported as captured. Derived variables created coding free text 'other' to Australian Bureau of Statistics country codeframe 1- and 2-digit categories. Cell sizes smaller than 50 collapsed into 'other'
Main Language Spoken	Original variable reported as captured. Derived variables created coding free text 'other' to Australian Bureau of Statistics language codeframe 1-, 2--digit categories. Cell sizes smaller than 50 collapsed into 'other'
Occupation	Derived variable created coding free text to Australian Bureau of Statistics occupation codeframe 1-, and 2-digit categories. Cell sizes smaller than 50 collapsed into 'other' Original variable reported as captured.
Industry	Derived variables created coding free text to Australian Bureau of Statistics industry codeframe 1-, 2-digit categories. Cell sizes smaller than 50 collapsed into 'other'

5.2 Hardcopy records management

Wave 1 recruitment and data collection generated a considerable amount of hardcopy records requiring secure management. In keeping with best practice and University of Melbourne guidelines on records management a structured hardcopy records management plan has been developed and implemented. The cornerstone of the plan was the development and sign-off of a digitisation plan that complies with University standards. That plan covers the capturing of data from hardcopy, the storage and the protocol for eventual destruction of hardcopies after the designated period of retention.

Roy Morgan Research produced PDFs of completed questionnaires and consent forms in compliance with the digitisation plan, and the University of Melbourne Digitisation Unit was contracted to digitise the household booklets – a key set of para-data relating to recruitment. Quality Assurance checks of the digitized documents have been carried out following which all hardcopies have been consigned to a secure document storage facility where they will remain for a minimum of 5 years.

5.3 Wave 2 data management

Based on conventions and procedures implemented in Wave 1 provisional data dictionaries and data cleaning, coding and verification rules were developed for Wave 2, trialled in the pilot study and are currently being refined for the main Wave 2 data collection.

There is no household form in Wave 2, however the data collection agency has implemented a 'Respondent Form' which is an electronic capture of information relevant to the conduct of the fieldwork including contact details, contact attempts and outcomes, refusal reasons, tracking activities, consent details, document numbers and so on. A Data Dictionary is being developed to extract relevant para-data from that data.

5.4 Public Access Dataset

The Public Access Dataset is an abridged version of the Administrative dataset held by the study. It includes almost all variables captured in the questionnaire – the exception being open text field data which has to be transcribed, coded, clinically evaluated or otherwise processed. These data are time-consuming and costly to process and in many cases too sparse to be of broad analytic interest. It was decided to retain this data and should a researcher be specifically interested in working with it provide it on a case by case basis. The Public Access Dataset also includes consolidated variables for data elements such as time, height, weight in lieu of the multiple questionnaire responses that capture this information.
The dataset also includes derived variables including summed scale scores where a validated scale was included, Body Mass Index, and so on. Geographical variables have been added included participant State of residence and recruitment SA1 and SA2, the latter confidentialised. SEIFA codes were also added. A Public Release Data Dictionary has been prepared that reflects this dataset. It is available at www.tentomen.org.au/researchers.html.

6. Data Access

Wave 1 data access is being implemented in a staged manner due to the legal, logistic and data management issues that need to be addressed. The first tranche of Data Access Requests has been processed and data made available. Those requests are from 'internal' researchers (University of Melbourne employees, students or affiliates). With the finalisation of the Data User Agreement requests are now being accepted from external researchers.

The study website has been updated to provide information on the process and all relevant documents including:

- Ten to Men Data Access Policy
- Ten to Men Data Access Terms and Conditions
- Data Access Request Form
- Data User Manual
- Wave 1 Data Books
- Wave 1 Data Dictionary
- Wave 1 Questionnaire sources and acknowledgements
- Currently approved projects register

The Public Access Dataset will be housed at and made available for approved research projects by the Australian Data Archive. The ADA has possession of the dataset and are currently finalising their documentation and procedures. By the time requests received in early 2016 are processed and approved the ADA distribution mechanisms will be in place. In the interim requests are being accepted via the study website however it is planned to establish the Australian Data Archive as the principal portal for finding information on data access, lodging requests and distribution of data.

Currently approved data access projects

Dr Alison Milner. Occupation, psychosocial job quality and suicide ideation among Australian men: evidence from the Ten to Men cohort study.

Dr Greg Armstrong. Suicidality and engagement in risky behaviours that carry health and social risks.

Louise Keogh. What do boys and men say about their health and relationships in an open-ended survey question?

Marnie Downes (PhD project). Multilevel regression and post-stratification for addressing participant bias in health survey data

Remy Lindner (MPH project). Exploring the relationship between physical activity and depression in Australian men.

An additional project which requested permission to include Ten to Men data in a funding application has been funded.

Katherine Lee, et al. Implementing multiple imputation with sensitivity analysis in large-scale longitudinal studies (In principle grant application approval. NHMRC Project Funded 2017)

7. Dissemination and Communication Activities

The study has numerous and varied stakeholders who interact with the study in different ways and have very different needs with regards to information and engagement with the study. In 2015, the main communication activities involved the study website, social media, mail/email contacts, and academic research presentation and publications. Community and research engagement activities were also undertaken in 2015.

7.1 Ten to Men website

Initially launched in September 2012, The Ten to Men website is a key communication tool for the study and is reviewed continuously to ensure it meets the needs of the varied study stakeholders and reflects the current phase of study development and implementation. The website has content aimed at three broad groups: 1) the general public and male health community; 2) participants; and 3) researchers.

General Public

For website users seeking global content a new General Information section of the website commenced development in 2015. This section will provide information to users who may not fall into the categories of Participant or Researcher. Amongst other general content such as background, objectives, recruitment etc., this section will include information for media outlets and male health groups. The new General section is currently under development and will go live in mid-2016.

Participants

The Participant section was initially established to provide relevant information for potential participants by recruitment age group and also for parents of under-aged participants In late 2014 the participant pages were updated to reflect the fact that the study had moved from recruitment to now addressing a defined participant cohort, and to provide the cohort an avenue to communicate with the study, particularly regarding changes of address or other personal details..

In 2015 this section was further developed to include study findings and other information supporting cohort retention. Information was streamlined in order to reflect content that was now most relevant to the participants and to inform on the current status of the study. New graphics used on the website have mirrored those used for post and email communications to create an appealing and consistent visual presentation.

Researchers

The Researcher section pages provide researchers and collaborators with information required to request access to Ten to Men data, and provide detailed technical information about the study design. It includes:

- Researcher Home Page – Information on how to access Ten to Men data for Research projects.
- Policy Documents – Ten to Men Data Access Policy and the Ten to Men Terms and Conditions of Data Access and Use
- Data Documentation – Wave 1 Questionnaires, Questionnaire Sources and Permissions, Wave 1 Data User Manual, Wave 1 Data Dictionary, Wave 1 Data Books
- Approved Projects – An up-to-date list of research projects using Ten to Men data
- Ten to Men Data Request Form

Table 12 presents summary statistics for visits to the Ten to Men website in 2015.

Table 12. Summary of Ten to Men Website Traffic

2015	Sessions	Users	Page views	Pages/ Sessions	Av. Sess. Duration	% New Sessions
Jan-Mar	1,017	818	3,748	3.69	00:03:08	77.97%
Apr – May	3,158	2,650	7,802	2.47	00:02:05	83.06%
Jun – Sep	1,763	1,431	4,000	2.27	00:01:46	77.25%
Oct – Dec	4,891	3,874	9,182	1.88	00:01:15	73.71%
Total	10,829	8,390	24,732	2.28	00:01:45	77.11%

In terms of location of visitors to the Ten to Men website, 83.61% were located in Australia, 4.28% in the USA, 1.85% in the Brazil and 10.26% in other countries.

7.2 Ten to Men social media

Social media is an important part of the Ten to Men communication strategy. Social media provides a forum to connect directly and immediately with the cohort, other researchers, the male health community and the general public.

Social media platforms are used to:

- Create awareness of the study;
- Build community – both with individuals and related bodies – connect with participants, researchers, other studies/organisations, health care professionals and the general public;
- Promote health initiatives and events that are relevant to the study;

- Connect to, and position alongside, the wider world of health organisations, researchers and health studies.
- Provide an extra communication channel for users to engage with the study

Facebook and Twitter are the initial social media platforms and Ten to Men continuously used both platforms in 2015. A Ten to Men team member maintains activity on these sites and interlinks these activities with the Ten to Men website.

Using these two platforms enables us to reach a broad range of males and also females across all age groups and backgrounds. Ten to Men social media followers include participants, researchers, other studies/organisations, health care professionals and the general public. Likewise we are building our community by following (and following back) the above types of users. Social media fosters a public connection to, and positions Ten to Men within, the wider sphere of health organisations, researchers and health studies.

Another important aspect of our social media is that it creates a constant presence for Ten to Men in the user's news feeds. This helps to build a relationship for the user and functions as a reminder of the study.

Ten to Men posts and messages generally translate to both platforms and have relevance to male health. Our aim is to post twice a week on Facebook and more often on Twitter due to its brief and immediate format. To date, posts have included:

- Study News – e.g. Press releases, Minister's announcements, links to media articles, videos, photos, website updates, marketing material etc.;
- News about health events such as Movember, Men's Health Week, RU OK Day, related health surveys, etc.;
- Information about conferences, forums and other events;
- Initiatives from male health organisations;
- Images - study promotional photos et.c;
- General health news and information - specifically in relation to Men's Health;
- Information and links related to nutrition and exercise.

Ten to Men posts are designed to inform, educate and entertain in a style that is conversational, friendly, polite and engaged. The study engages with other accounts via @ messages, comments and retweets. Likewise, Ten to Men posts are retweeted and commented on by others. Response to Ten to Men posts has been 100% favourable with sharing and retweeting of content and we have received messages of appreciation for our support from groups such as *beyondblue*, Andrology Australia and Movember.

Ten to Men Facebook Page

Ten to Men Twitter Site

7.3 Participant communications

The primary goals of study communications with the cohort are to inform, engage, and retain. In 2015, using email, the website, and hardcopy mailing materials we sought to reinforce the importance of the study with the aim of maintaining the participants' interest in the study and its aims and thereby support retention.

As preliminary data and findings were not available for most of 2015, limiting our ability to provide direct research feedback, communications centred on consolidating the cohort's sense of belonging to the study. This was achieved by the sending of half-yearly postcards or e-postcards, reminding the participants of their being a part of the study and asking them to update us with any changed contact information.

As more data and findings become available the cohort communication strategy will shift to one of directly feeding back study information to the participants to inform them and maintain their interest.

Details of communications with participants in 2015 are provided in the Section 2.1 Cohort Retention.

7.4 Presentations in 2015

Presentation: Centre for Epidemiology and Biostatistics Work in Progress –Ten to Men 4 Years On.
Dallas English and Dianne Currier
19 Nov 2015
Melbourne, VIC

Presentation: Centre for Mental Health Work in Progress – Masculinity and Suicidal Behaviour.
Jane Pirkis
1 November 2015
Melbourne, Vic

Presentation: Australian Men's Health Gathering - Ten to Men: the Australian Longitudinal study on male health (Ten to Men Annual Workshop).
Dallas English
22 Oct 2015
Terrigal, NSW

Presentation: Commonwealth Department of Health.
Dallas English, Jane Pirkis and Dianne Currier
1 July 2015
Canberra, ACT

Presentation: Mental Health Services Summer Forum - Depression and suicidality in males.
Jane Pirkis

19 February, 2015
Sydney, NSW

7.5 Publications

A contract has been signed with BMC Public Health to produce a Special Supplement on Ten to Men. Professors Dallas English and Jane Pirkis and John MacDonald. The purpose of the Special Supplement is to present a first look at the study data to appraise researchers and others of the scope and depth of Ten to Men data in order to encourage broad use of the data. Currently 12 papers are in planned. Members of the Steering Committee and/or Technical Advisory Committee are the principal authors of the papers. Several papers are already undergoing peer review and others still being finalised. It is anticipated that the Supplement will be published online in mid-2016. The proposed papers include:

1. The Australian Longitudinal Study on Male Health – Methods
2. Ten to Men sampling design and weighting: Implications for analysis and interpretation
3. Studying the social determinants of male health: Ten to Men's Conceptual Framework.
4. The lives of disabled Australian men: Findings from Ten to Men
5. Comorbidity between substance use and mental health in men: What can Ten to Men tell us?
6. Life stress and thoughts of death: the relationship between life events and suicidal ideation in men.
7. Sexual Difficulties in Australian adult males – correlations with physical and psychological factors
8. Sleep Apnoea in Australian Men: Disease burden, co-morbidities, and correlates from Ten to Men study
9. Early-onset diabetes in men: Social and health-related correlates
10. Exploratory cluster analysis of health and lifestyle behaviours
11. Psychosocial working conditions among Australian men: Evidence from the Ten to Men Cohort Study
12. Why do men go to the doctor? Socio-demographic and individual health and lifestyle factors associated with healthcare utilization among a cohort of Australian men

Other publications in preparation include:

Koelmeyer R, et al. Age Matters – Behavioral Medicine Special Issue Men's Health (accepted for publication, due Sept 2016)

Pirkis, J. et al Cohort Profile – (under revision) International Journal of Epidemiology

7.6 Community engagement

The Ten to Men Community Reference Group met in 2015 on November 24th in person in Melbourne. Attending were:

- Greg Millan (Men's Health Services) Co-chair
- Tass Mousaferiadis (Men's health consultant) – Co-chair
- Jonathan Bedloe (Australasian Men's Health Forum)
- Peter Kelly (Male Health Victoria)
- Gary Green (Australian Men's Shed Association)
- Gary Misan (National Rural Health Alliance)
- Gávi Ansara (National LGBTI Health Alliance)
- Atari Metcalfe (ReachOut.com by Inspire Foundation)
- Julian Krieg (Men's Health Forum)
- Jane Pirkis (Ten to Men)
- Dianne Currier (Ten to Men)
- Dallas English (Ten to Men)
- Robert Lukins (Ten to Men)
- Wayne Davidson (Ten to Men)
- Alan Philp (Department of Health)

The meeting was very productive with members providing a range of feedback on analysis and data collection priority areas, and input and suggestions on increasing engagement and knowledge exchange. The minutes of the meetings are available as Appendix H.

Dianne Currier participated as a member of the Australian Foundation for Men's Health working party and contributed to the drafting of a 'call to action'.

8/9/2015, ABC Radio Central Coast, Interview Dallas English

8. Study Materials

Wave 2 questionnaires

Wave 2 Questionnaires are attached as Appendices B-E.

Wave 2 collateral documents

Study brochures were produced for Adults, Young Men, Boys and their Parents. Copies are attached as Appendix I.

Cohort retention materials

Copies of the postcards sent to participants are attached as Appendix A.

9. Difficulties Encountered and Strategies to Address Them

In Wave 1 we encountered and managed difficulties in most aspects of the development and implementation of the study. That experience has meant that at Wave 2 we have been able to foresee most potential difficulties and implement strategies to avoid their occurrence. Moreover, over the course of the project we have established firm relationships within and outside the University which has helped us very much in terms of dealing with the administrative and technical complexities involved in managing a study of this scale and complexity. Due to both these factors there were no major difficulties encountered over this past 12 months of work.

Minor difficulties included:

- Insufficient sample size in our Pilot testing group which was resolved by reallocating a group of participants from the main cohort to the pilot study for Wave 2.
- The extended preparation time of the analytical dataset has resulted in a very high quality resource, but has delayed the production of research findings. The dataset is now ready and we plan to maximise research outputs by actively encouraging researchers outside the study team to make use of the data. Preparation of the Special Supplement has involved a large number of Ten to Men co-investigators and their colleagues providing wide exposure to the available data as well as engaging these investigators who are leading researchers in areas relevant to male health with the study as resource for their ongoing research work.
- The delay in the availability of the data for general use, due to the above, and also the longer than anticipated process of determining the optimal Data Access approach, negotiations with the Australian Data Archive and preparation of extensive supporting documentation. We attempted to mitigate this by having a more limited 'internal' release of data. This allowed us to trial many of the request and evaluation processes and documentation, as well as broadened the set of researchers engaged with the study.
- Insufficient time for analysis of Wave 1 data before Wave 2 has meant that full analyses of questionnaire performance could not be completed, nor could research questions generated from the data be addressed in Wave 2. With respect to questionnaire performance, subsequent analysis of the Adult Wave 1 questionnaire has found no significant issues and the availability of Wave 2 data in 2016 will permit further analysis such as test-retest reliability. In terms of inability to pursue research questions generated from the Wave 1 data, we will be able to do so in Wave 3. Moreover, given that the focus of Wave 2 was to capture repeat measures and augment existing measures of priority constructs there was little scope to include additional material at that Wave.

10. Achievement of Timeframes and Objectives

Wave 2 in on track according to timelines.

For the Period between Technical Report #4 (January 2015) and Technical Report #5 (2016): the following objectives have been achieved:

- Implementation of Data Management Infrastructure plan
- Meeting of the Community Reference Group (November 2014 in person)
- Conduct of Annual Workshop (October 2014)
- Production of a Major Report
- Production of the 2014 Annual Report
- Delivery of the Wave 1 final dataset
- Completion of data cleaning, verification, quality assurance and discrepancy resolution procedures for the final dataset
- Preparation of Public Release Dataset including confidentialisation and preparation of the supporting documentation (Data books, Data Dictionary, Data User Manual)
- Finalizing of the Data Access Policy, Data User Agreement, acceptance and processing of first data access requests
- Development of Wave 2 questionnaires
- Cognitive testing of Wave 2 questionnaires
- Securing Ethics approval for cognitive testing and for Wave 2 data collection
- Securing the services of a research organisation to conduct Wave 2
- Wave 2 pilot test
- Commencement of Wave 2 data collection
- Contract with a publisher for the Ten to Men compendium
- Compendium papers review process underway
- Cohort Profile paper submitted and accepted pending minor revisions
- Sample weights developed
- Recontacting participants and tracking those with invalid contact information

Timeframes not met

Full data access was been delayed due to legal review (DoH and UoM) of the necessary documents, extensive quality assurance and data preparation activities, the competing demands of getting Wave 2 into the field.

Data linkage with the MBS and PBS has not occurred due to limited study team capacity. A linkage project is planned for 2016.

The full implementation of the Respondent Management System has been delayed due to the departure of the team member responsible and the onset of Wave 2 pilot and data collection

activities. With the handover the Wave 2 sample to the data collection agency work on implementation will resume.

11. Data Books and Data Dictionaries

Wave 1 data books are available at www.tentomen.org.au/index.php/Researchers/data-doc.html

The Wave 1 Data Dictionaries are available at www.tentomen.org.au/index.php/Researchers/data-doc.html

Wave 2 Data Dictionaries are under development and will be finalised following the close of data processing in 2016.