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Medicine in Australia: Balancing Employment and Life (MABEL)

MABEL User Manual: Wave 9 Release

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1. Overview of the MABEL Survey

1.1 Background, Focus and Goals

The Medicine in Australia: Balancing Employment and Life (MABEL) survey is a longitudinal panel survey of medical practitioners in Australia, with a particular focus on work–life balance issues (Joyce, et al. 2010). While there is a considerable body of research and data describing aggregate trends in Australian medical labour supply, there is little research, nationally or internationally, examining the determinants of labour supply decisions. Longitudinal data and appropriate statistical analysis are essential for exploring the links between labour supply and its determinants. However, few examples of this type of data exist. The dynamic nature of medical labour markets makes the use of longitudinal panel data especially important.

The primary aim of MABEL is to investigate labour supply decisions and their determinants among Australian doctors. Key outcome measures are the number of hours worked and decisions to change job, relocate, enter a particular medical specialty or leave the medical workforce. MABEL seeks to describe and understand key determinants of these outcomes, including working conditions, job satisfaction, family circumstances and financial and non-financial incentives. The study is the largest panel survey of the Australian medical workforce. It offers opportunities to explore workforce dynamics over time and thereby inform policies for workforce support and management.

In response to the critical lack of data, the Medicine in Australia: Balancing Employment and Life (MABEL) study was developed by researchers at the Melbourne Institute of Applied Economic and Social Research at the The University of Melbourne and at the School of Rural Health, Monash University.

This release of MABEL data should further facilitate and enhance the use of the unit record data by researchers, government, and other organisations. All users of this data should have an appropriately high level of statistical and database management skills in order to manage this large and complex dataset. Those interested in using the data should visit our website www.mabel.org.au/data.html. Users are welcome to visit the Melbourne Institute by prior arrangement. MABEL data is fully supported by PanelWhiz, which is a collection of Stata/SE Add-Ons, specifically created to make using panel datasets easier (see www.panelwhiz.eu for further details).

The data are most useful for national-level analyses of a range of doctors' attitudes to work, job characteristics, work settings, finances and family circumstances that can be tracked over time. Analyses of specific specialties and sub-groups could encounter small sample sizes.

1.2 The Population of Doctors in Australia and the baseline MABEL cohort

The Australasian Medical Publishing Company's (AMPCo) Medical Directory is a national database of doctors that is used extensively for mailing purposes (e.g. the Medical Journal of Australia). The Directory is updated regularly, using a range of sources, to maintain accuracy. AMPCo makes around 58,000 updates per year through biannual telephone surveys, updates from the Medical Board of Australia, Australian Medical Association membership lists and Medical Journal of Australia

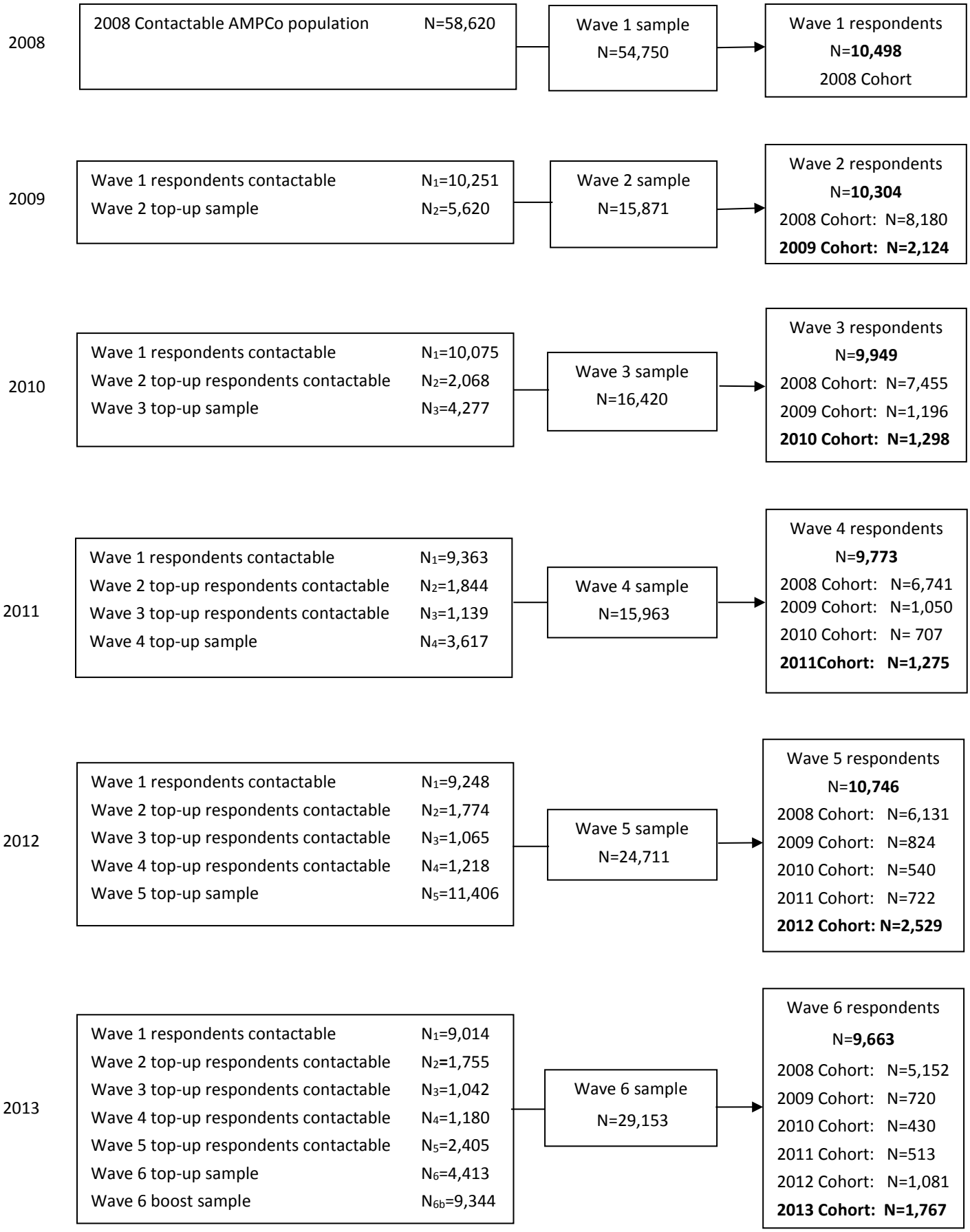
subscription lists. The directory includes key characteristics which can be used for checking the representativeness of the MABEL samples and to adjust for any response bias in sample weightings; these include age, gender, location, doctor type, place and year of graduation and specialty.

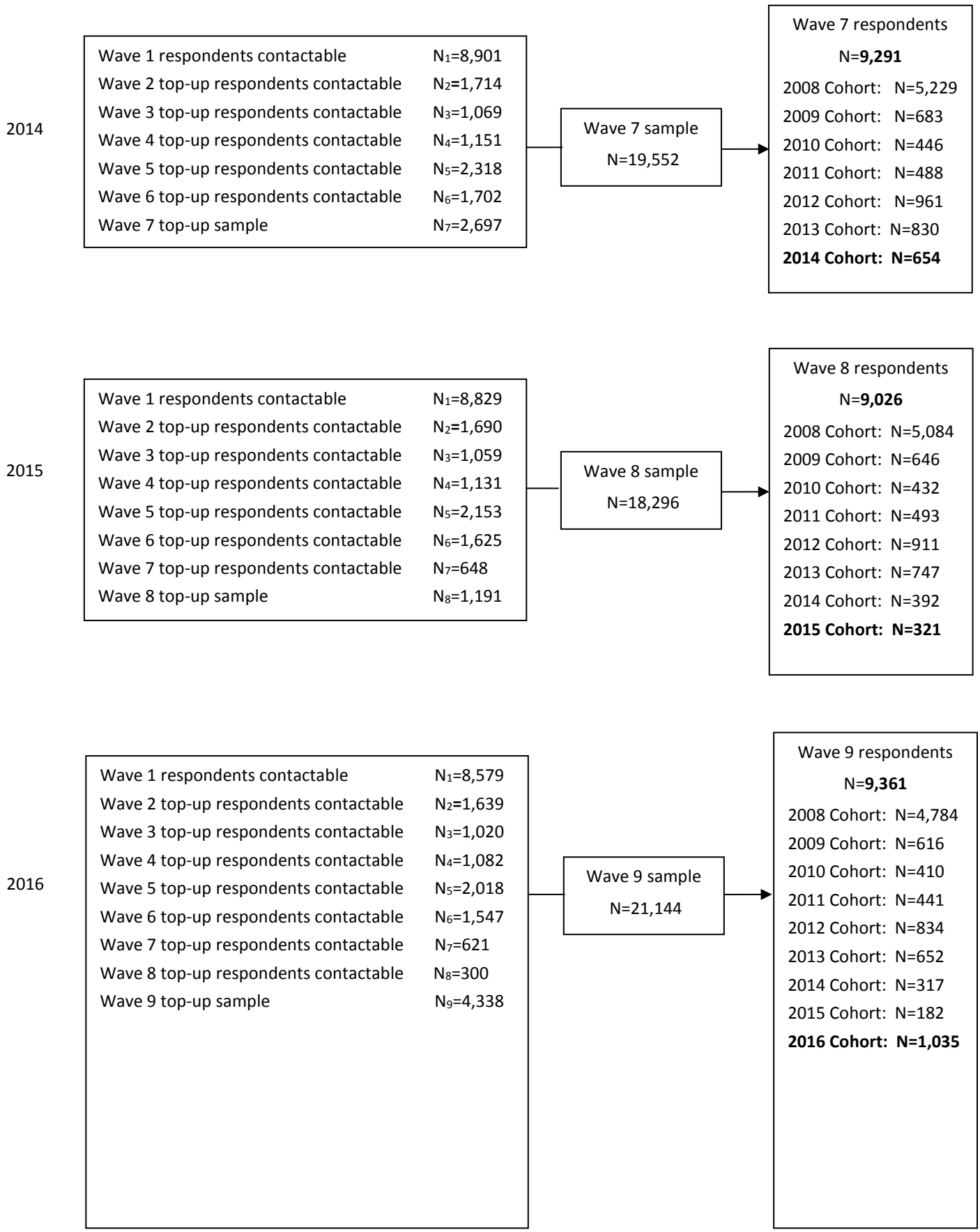
For the Wave 1 survey in June 2008, the AMPCo database was chosen as the sample frame because it was the only national source of data on the population of medical practitioners in Australia available to researchers. The database had details for 58,620 doctors practising in Australia, excluding those not working due to retirement, maternity leave, overseas location or other reasons. The intention was to include only those undertaking clinical work in the Wave 1 cohort. Of the 58,620 doctors, 1,552 (2.6%) could not be assigned to one of the four doctor types, either because they had not supplied this information to AMPCo (1,261) or because they were not undertaking clinical practice (291). A further 1,263 doctors (2.2%) would not allow their contact details to be released, and 1,059 (1.8%) were non-contactable because their contact details were in the process of being verified. This left 54,746 doctors in the sampling frame. Based on results from our piloting that showed relatively low response rates, we decided to undertake a census of the entire population of doctors rather than select a random sample.

Response rate calculations for Wave 1 were based on the combined totals from respondents in the third pilot survey (February 2008) and those in the main wave (June 2008), as the survey content was very similar. The numerator included respondents to the third pilot and the main wave. The denominator included: 54,746 doctors from the main wave population obtained from AMPCo in May 2008, plus 35 doctors who were in the sample frame for the third pilot in February 2008 but not in the main wave population in May 2008 (i.e. they were no longer listed in the AMPCo database as being in clinical practice), less 31 doctors who responded to the first two pilots in October and November 2007. We felt it was not appropriate to send these respondents an invitation to participate in the main wave due to the short time interval since they had completed the pilot study. Thus, the final denominator for the baseline cohort used to calculate the response rate was 54,750.

Of the 54,750 doctors who were invited to participate in Wave 1, 10,498 doctors in clinical practice responded (response rates are provided in Section 1.7). These doctors have formed the baseline 2008 cohort in the subsequent waves. In Wave 2 (2009) and each subsequent year a new group of doctors has been invited to participate as a ‘top-up’ sample. These new groups comprise the population of doctors added to AMPCo’s Medical Directory since the previous wave and consist mainly of new medical graduates, international medical graduates working in Australia for the first time, and doctors who re-join the medical workforce after a period of temporary leave (e.g. maternity leave or working overseas). The aim of the top-up sample is to maintain the sample numbers each year at around 10,000, to replace doctors who attrite from the 2008 cohort. The construction of the MABEL sample for each wave is illustrated in Figure 1.

Figure 1: The MABEL survey sample and respondents in each wave




2014
Wave 1 respondents contactable N1=8,901
Wave 2 top-up respondents contactable N2=1,714
Wave 3 top-up respondents contactable N3=1,069
Wave 4 top-up respondents contactable N4=1,151
Wave 5 top-up respondents contactable N5=2,318
Wave 6 top-up respondents contactable N6=1,702
Wave 7 top-up sample N7=2,697
Wave 7 sample
N=19,552
Wave 7 respondents
N=9,291
2008 Cohort: N=5,229
2009 Cohort: N=683
2010 Cohort: N=446
2011 Cohort: N=488
2012 Cohort: N=961
2013 Cohort: N=830
2014 Cohort: N=654
2015
Wave 1 respondents contactable N1=8,829
Wave 2 top-up respondents contactable N2=1,690
Wave 3 top-up respondents contactable N3=1,059
Wave 4 top-up respondents contactable N4=1,131
Wave 5 top-up respondents contactable N5=2,153
Wave 6 top-up respondents contactable N6=1,625
Wave 7 top-up respondents contactable N7=648
Wave 8 top-up sample N8=1,191
Wave 8 sample
N=18,296
Wave 8 respondents
N=9,026
2008 Cohort: N=5,084
2009 Cohort: N=646
2010 Cohort: N=432
2011 Cohort: N=493
2012 Cohort: N=911
2013 Cohort: N=747
2014 Cohort: N=392
2015 Cohort: N=321
2016
Wave 1 respondents contactable N1=8,579
Wave 2 top-up respondents contactable N2=1,639
Wave 3 top-up respondents contactable N3=1,020
Wave 4 top-up respondents contactable N4=1,082
Wave 5 top-up respondents contactable N5=2,018
Wave 6 top-up respondents contactable N6=1,547
Wave 7 top-up respondents contactable N7=621
Wave 8 top-up respondents contactable N8=300
Wave 9 top-up sample N9=4,338
Wave 9 sample
N=21,144
Wave 9 respondents
N=9,361
2008 Cohort: N=4,784
2009 Cohort: N=616
2010 Cohort: N=410
2011 Cohort: N=441
2012 Cohort: N=834
2013 Cohort: N=652
2014 Cohort: N=317
2015 Cohort: N=182
2016 Cohort: N=1,035

The sampling frame in Wave 2 (2009) included 15,871 doctors. This comprised 10,251 continuing doctors (doctors who had responded in Wave 1) who were contactable, and the 5,620 doctors new to the AMPCo database who formed the Wave 2 top-up sample frame. There were 247 practising Wave 1 cohort doctors who could not be sent a survey in Wave 2 due to an invalid address or a stated preference not to receive mail through AMPCo mail-outs (but their employment status was obtained from AMPCo). The Wave 2 pilot survey (see Section 1.5 for details) was sent to 975 doctors (470 continuing and 505 new) and these are included in the overall Wave 2 sample of 15,871 doctors. According to the AMPCo database the total population of doctors providing clinical medical services in Australia as of May 2009 was 57,565, and the Wave 2 sampling frame accounted for 27.4% of the population.

The Wave 3 (2010) sampling frame comprised 10,075 continuing doctors who had responded in the first wave, 2,068 doctors who were respondents from the Wave 2 (2009) new cohort, and 4,277 doctors who formed the Wave 3 (2010) top-up sample frame. Overall, 16,420 doctors were sent a survey in Wave 3. In May 2010 AMPCo recorded a population of 59,144 doctors practising in Australia, of which the Wave 3 sampling frame accounted for 27.6%.

A total of 15,963 doctors were sent a survey in Wave 4 (2011), including 12,346 continuing doctors who had responded in previous waves and were contactable at the time of Wave 4, and a top-up sample of 3,617 doctors. This sampling frame accounted for 27.0% of the total population of doctors providing clinical medical services in Australia (59,134) as per the May 2011AMPCo database.

In Wave 5 (2012) 24,711 doctors were sent a survey. Of these, 13,305 had responded in previous waves and were contactable at the time of the survey, and a further 11,406 were in the top-up sample frame. The Wave 5 sample size represented 36.3% of the 68,009 doctors recorded on the AMPCo database as providing clinical medical services in Australia in May 2012.

The sharp increase in the number of doctors listed on the AMPCo database in May 2012, from around 59,000 previously to 68,000, reflected the transition to a national registration scheme from 2010. This new system gave AMPCo access to information about doctors from the national registration database, held by the Australian Health Practitioner Regulation Agency (AHPRA), which had not previously been captured in the AMPCo database. To this point AMPCo had relied on state and territory medical registration boards, among other sources, however this data was not always timely nor did it involve all registration boards, and so the AMPCo data had not included all doctors in Australia. The doctors added to the AMPCo registry at this time were mainly new interns who had entered the medical workforce after 2008 and the first wave of MABEL, but who had not previously been captured in the AMPCo data.

As in the previous waves a top-up sample, consisting of new doctors who had recently been added to the AMPCo database, was included in Wave 6. In addition, an attempt was made to contact hospital non-specialists who had been invited to participate in earlier waves but had not done so and therefore had not been invited again. These previously-contacted doctors are referred to as the ‘boost sample’ since they were re-invited in Wave 6 to boost the number of junior doctors in MABEL. This would have the effect of increasing the number of doctors we observe moving into specialty

training in future and thus provide greater statistical power for examining the factors influencing specialty choice and other career transitions. The top-up sample frame of 4,413 doctors in Wave 6 (2013) and the boost sample frame of 9,344 doctors were added to the 15,396 continuing doctors to give a Wave 6 sample frame of 29,153 doctors, accounting for 42.5% of the AMPCo database in May 2013. The boost sample was funded by Health Workforce Australia.

In Wave 7 we reverted to the standard protocol of inviting doctors who had previously participated in MABEL (16,855) plus a top-up sample of 2,697 doctors who were new to the Australian medical workforce and registered on AMPCo's database. The same protocol was used in Wave 8 and Wave 9. In Wave 8, 17,106 previously-participating doctors plus a top-up sample of 1,191 doctors were invited, giving a total sample of 18,296. In Wave 9 we invited 15,777 previously-participating doctors together with a top-up sample of 5,367 to participate, producing a total sample of 21,144.

1.3 Questionnaire Design

The choice and development of questions for the MABEL survey reflect the key hypotheses to be tested, namely the determinants of labour supply and mobility. Questions were based on those of other relevant surveys where possible (see Appendix 3). Prior to the Wave 1 mail-out, there were four stages of piloting. First, the content and face validity of the GP questionnaire was examined through face-to-face interviews with 11 GPs and two Specialists. Additional feedback on our pilot Specialist Registrar (SR) and Hospital Non-Specialist (HNS) questionnaires was obtained at a meeting of around 12 registrars and Hospital Non-Specialists. Three pilot surveys were administered to random samples of doctors from the AMPCo list (n=200, n=200 and n=2,702 with response rates of 8%, 8% and 17.8% respectively), helping to ensure that the final versions were as relevant, concise and clear as possible.

There are four different survey questionnaires relating to doctor type:

(i) General Practitioner & GP Registrar;

(ii) Specialist;

(iii) Hospital Non-Specialist, also referred to on the survey as Hospital Doctor Not Enrolled in a Specialty Training Program (Interns & Medical Officers); and

(iv) Specialist Registrar, also referred to on the survey as Doctor Enrolled in a Specialty Training Program

The four different questionnaires incorporate a set of common questions as well as specific questions related to each doctor type, thus the surveys vary in length. From Wave 2 onwards, four additional versions of the questionnaire were created to distinguish between continuing doctors and new doctors. Given the longitudinal nature of the survey, most of the core survey questions are repeated each year. Selected questions, such as age, gender and medical school of graduation, are included in questionnaires for new participants, but excluded from continuing doctor questionnaires. Apart from the core questions additional topics are included that may or may not be repeated each wave.

Table 1 lists all sections of the MABEL survey and their availability across nine survey waves. The availability of the different variables across Waves 1 to 9 is summarised in Table 20.

Job satisfaction was measured with a widely used 10-item short version of the Warr-Cook-Wall Job Satisfaction Scale (van Ham et al. 2006; Warr et al. 1979). The short form version of the Job Satisfaction Scale was validated in the MABEL cohort of Australian clinical medical practitioners (Hills et al. 2011). The discrete choice experiments (DCEs) in Waves 1 and 2 present a number of paired scenarios describing different job packages where participants are asked which job, of each pair, they would prefer. The job packages differ according to a number of predefined job characteristics that might include the earnings, sector of work, hours worked, opportunities for education and training, and characteristics of the work environment. DCEs have been used successfully in examining doctors' preferences for jobs in other studies (Scott 2001; Scott 2002; Ubach et al. 2003; Wordsworth et al. 2004).

Table 1: Sections of MABEL survey

	MABEL Survey Section								
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9
Core Topics									
Current Working Status		A	A	A	A	A	A	A	A
Job Satisfaction	A	B	B	B	B	B	B	B	B
Places of Working	C	C	C	C	C	C	C	C	C
Workload	D	D	D	D	D	D	D	D	D
Finances	E	E	E	E	E	E	E	E	E
Geographic Location	F	F	F	F	F	F	F	F	F
Family Circumstances	H	G	G	G	G	G	G	G	G
Personal Characteristics	G	H	H	H	H	H	H	H	H
Additional Topics									
DCE	B								
DCE (Rural GPs only)		B							
Life Satisfaction		H	H	H	H	H	H	H	H
Personality		H	H (N)	H (N)	H (N)	H(N)	H(N)	H(N)	H(N)
Locus of Control			H	H (N)	H (N)	H(N)	H(N)	H(N)	H(N)
Workplace Aggression			B						
Practice Vacancies (GPs				D	D	D	D	D	D
Medical School				H	H (N)	H(N)	H(N)	H(N)	H(N)
Personal Life Events				H	H	H	H	H	H
Detailed Medical					H	H	H	H	H
Risk-taking						H	H	H	H
Committee Membership							D	D	D
Outreach							G (SP only	G (SP & GP)	G (SP & GP)

Notes: 'DCE' – Discrete Choice Experiment; 'N' – included for new doctors only

In Wave 1 a different DCE was included for each type of doctor. For GPs, the focus was on working in a non-metropolitan area (Scott et al, 2013). For Hospital Non-Specialists (the majority of whom are junior doctors in their early postgraduate years), the focus was on speciality choice (Sivey et al, 2012). For Specialists and Specialist Registrars the focus was on the balance between public and private sector work. In Wave 2 a new set of DCEs about the impact of different incentive schemes on retention in rural and remote areas was included for GPs practising in those areas (Li et al, 2014).

1.3.1 Wave-to-wave changes

Wave 2 included a set of questions aimed at measuring the personality traits of doctors using the 15-item 'BIG FIVE' factor model (John and Srivastava 1999). The five broad factors of personality traits

include extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. This set of questions is included in the survey questionnaires for new participants (the top-up sample) in subsequent waves. Wave 2 questionnaires also included a 10-point scale measurement of doctors' life satisfaction (happiness). Table 1 also shows additional questions asked in the subsequent waves, including questions relating to workplace aggression (in Wave 3 only), locus of control, practice vacancies (GP surveys only), medical school at which the doctor completed basic medical degree and personal life events. Locus of Control is taken from the Pearlin-Schooler Mastery/Self-efficacy Scale (Pearlin and Schooler, 1978), which measures locus of control as originally developed by Rotter (1966). From Wave 3 onward, the word "after-hours" has been removed from the question on on-call ratios for GP and specialists. Wave 5 collected more detailed information about medical qualifications than previous waves. This included questions about the type of registration obtained in Australia by those who were trained elsewhere; all qualifications obtained in Australia; and the preferred specialty of Hospital Non-Specialists. Email addresses were also collected from respondents for the first time in Wave 5 to aid future contact.

In Wave 6 new questions measuring doctors' attitudes to risk were developed, piloted and included in the survey. Attitudes to risk are regarded as a fundamental part of decision making under conditions of uncertainty, and various types of physician behaviour are closely related to physicians' risk attitudes. There are three general approaches to measuring risk attitudes in the literature.

The first involves presenting respondents with gambles, but these are difficult to manage in a self-administered survey and have been shown to produce similar results to other approaches (Dohmen et al, 2011). The second approach, used by some general household panel surveys, is a single general question scored on a Likert scale. The third asks more specific questions scored on Likert scales based on different risk-taking domains, and this was our preferred approach. The most relevant existing methods for measuring risk appetite in a clinical setting are characterised by two general approaches: the measurement of personality traits associated with risk taking using a subset of the Jackson Personality Index (see Jackson 2004); or measuring risk propensity directly across multiple domains (see a review by Harrison et al. 2005). After considering the internal and external validity of these instruments, we followed the second approach and adapted the Risk Propensity Scale (RPS) proposed by Nicholson et al (2005) to the context of physician behaviors. We developed our own domains that were specific to physicians' working lives: financial risk, career and professional risk, and clinical risk.

In the Wave 6 pilot, two questions were asked of respondents in relation to each of the three risk areas/domains: first, how often they had engaged in these types of activities in the past; and second, how likely they were to engage in these types of activities in the future. This was simplified into a single question in the main Wave 6 surveys due to the similarity in responses to the two questions. Thus doctors are asked to rate the likelihood of them engaging in risky activity in each the three areas of risk (financial risk, career and professional risk, and clinical risk) on a five-point Likert scale where 1 is 'very unlikely' to 5 is 'very likely').

For Wave 7 in 2014, Specialists were asked additional questions about their outreach work. These questions were added to enable an assessment of the patterns and predictors of rural outreach work

by specialist doctors, including the practice arrangements underpinning outreach services, doctors' motivations, and the influence of Australia's specialist outreach policy. Responses to these questions will help inform how rural outreach services by specialists can be managed within the context of the Australian health system. A limited selection of these questions was also asked of Specialists and GPs in Wave 8.

In Wave 8 four questions addressing work–life balance were added to the survey for all doctors (_JSHE, _JSWL, _JSLI and _JSRED). No new questions were added to Wave 9.

1.4 Survey length

The length of the surveys varies due to the need for different surveys for new and continuing doctors, as well as the periodic inclusion of additional topics in certain waves, some topics of which are repeated and some of which relate to specific groups of doctors. Table 2 summarises the changes in survey length across waves in terms of number of pages and number of questions.

Table 2: Length of survey in each wave

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar	
	Cont	New	Cont	New	Cont	New	Cont	New
				Number of pages				
Wave 1		11		13		8		8
Wave 2	10	10	12	12	8	8	8	8
Wave 3	11	12	14	14	10	11	10	11
Wave 4	11	12	12	14	9	11	9	11
Wave 5	10	12	11	13	9	11	9	11
Wave 6	10	12	11	13	8	10	9	10
Wave 7	10	12	11	14	8	10	9	10
Wave 8	11	13	11	13	9	10	9	10
Wave 9	11	13	11	14	9	10	9	10
				Number of questions				
Wave 1		84		87		59		58
Wave 2	67	77	73	80	52	59	49	58
Wave 3	72	83	78	86	56	65	54	64
Wave 4	72	85	73	86	55	65	53	64
Wave 5	67	83	63	80	52	65	52	66
Wave 6	74	91	67	85	55	69	55	70
Wave 7	74	90	83	100	56	69	56	70
Wave 8	83	96	78	92	59	72	59	73
Wave 9	80	96	75	92	57	72	57	73

1.5 Survey Administration

1.5.1 Survey mode

Three pilot surveys were conducted to test the questions and online processes prior to the first main wave survey in June 2008. From Wave 2 onwards one pilot survey has been conducted in February each year, prior to the main wave survey in June.

The first two Wave 1 pilots were conducted online only. Low response rates from these encouraged the use of a third pilot survey to compare the effectiveness and cost of three different modes of survey administration using a randomised trial (Scott et al. 2011). A stratified random sample of 5% of doctors (2,702/54,160) undertaking clinical practice in Australia was surveyed in a three-arm, parallel trial design with equal randomisation across arms. Doctors were randomly allocated to complete an online questionnaire (902 doctors), a paper questionnaire (900), or a mixed-mode option of online and paper questionnaire (900). The primary outcome measures were response rate, survey response bias, item non-response bias, and cost. The response rate for the online mode was 7 percentage points lower than that for the paper mode, and 7.7 percentage points lower than for the mixed mode. Compared with the full population of doctors in the trial, those filling out the paper survey were more likely to be Specialists, and those responding to the mixed-mode survey were more likely to be aged 50–59 or 60–69 years and practising in an inner regional or outer regional/remote area. The paper and mixed-mode options had higher rates of item completion than the online mode. The total cost of the online survey was 38% lower than that of the paper mode and 22% lower than the mixed mode. When compared with the online mode the mixed mode was the most cost effective, albeit exhibiting some evidence of response bias, and was adopted for the MABEL survey thereafter.

Invitations to participate in the survey were distributed by mail through AMPCo. The invitation package included:

(i) a cover letter on university letterhead using personalised participant information and coloured ink;

(ii) a copy of the survey questionnaire, printed in colour;

(iii) an explanatory statement providing information about the study, in colour;

(iv) a reply-paid envelope; and

(v) a fax form to enable doctors to request a different version of the survey if required, for example, if a doctor had completed a specialist training program and was now a Specialist .

All survey materials are available at www.mabel.org.au.

Doctors were given the choice of completing a paper copy of the questionnaire or an online version through the secure study website, and were provided with login details in the invitation letter. The content of the online version was identical to the paper version. Participants were able to move

forwards and backwards through the online survey sections, to complete the survey in multiple sessions if desired, and to elect not to answer any particular question.

1.5.2 Incentive payments

to draw meaningful inferences about recruitment and retention in rural and remote areas, we needed to ensure a high response rate in those regions where absolute numbers are small. Pre-paid monetary incentives, not conditional on response, have been shown to double response rates (Edwards et al. 2002, Edwards et al. 2009). While cost-considerations precluded the use of financial incentives for all participants, we provided an AU$100 honorarium payment to doctors, mostly general practitioners, in small rural and remote communities. This was done in order to maximise response rates for this group, in recognition of both their importance from a policy perspective and of the significant time pressures on these doctors. This group was defined using both the Australian Standard Geographic Classification (ASGC) based on the Accessibility and Remoteness Index for Australia (ARIA), and the Rural, Remote and Metropolitan Area classification (RRMA).

In Wave 1 doctors located in the following areas were sent a cheque:

(i) ASGC ‘Remote’ area;

(ii) ASGC ‘Very Remote’ area;

(iii) ASGC ‘Outer regional’ area & RRMA ‘Other remote’ area; and

(iv) ASGC ‘Outer regional’ area & RRMA ‘Remote Centre’.

In Wave 2 all continuing doctors who had received a cheque in Wave 1 were sent another cheque, regardless of their current location of work, as were those who had moved into the above areas. However, from Wave 3 onwards, cheques have been sent only to GPs currently living in the above rural or remote areas. Those doctors who move out of the above-mentioned areas are no longer sent a cheque in subsequent waves.

In Wave 9 there was an overall response rate of 43.1%, but of the 245 doctors sent an incentive cheque 66% responded. This higher response rate is likely to be in part due to the incentive, but in the absence of random allocation this cannot be stated conclusively.

1.5.3 Survey reminders

The protocol for sending survey reminders changed across waves as steps were taken to improve response rates. Figure 2 shows the different protocols for different waves and doctor types.

For each wave until Wave 5 three reminder letters were posted to non-respondents, with the first of these sent approximately 4–6 weeks after the initial mail-out. Each reminder letter was personalised and included the same information and inserts as the initial mail-out. This process was modified after Wave 5, such that doctors were no longer sent a paper version of the survey with every reminder (see below). This was done primarily to reduce printing and distribution costs and the literature indicated this would not adversely affect response rates.

Figure 2: Protocol for survey reminders

	Main Mailout	1st Reminder	2nd Reminder	3rd Reminder
Waves 1-5 All doctors	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS + PAPER SURVEY
Wave 6 GP and SP	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS	LETTER + LOGIN DETAILS	LETTER + LOGIN DETAILS
Wave 6 HNS and SR	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS	LETTER + LOGIN DETAILS	LETTER or EMAIL + LOGIN DETAILS
Wave 7 - 9 GP and SP	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS
Wave 7 - 9 HNS and SR	LETTER + LOGIN DETAILS + PAPER SURVEY	LETTER + LOGIN DETAILS	EMAIL* + LOGIN DETAILS	LETTER + LOGIN DETAILS

* Those without a known email address were sent a letter

GP = General Practitioners; SP = Specialists; HNS = Hospital non-Specialists; SR = Specialist Registrars

1.5.3.1 Trial of email third reminder for junior doctors in Wave 6

In addition to the inclusion of a boost sample, as described in Section 2.3, a further attempt was made to improve response rates amongst junior doctors by varying the mode of contact for survey reminders to this group. Evidence in the form of higher rates of non-contact and returns-to-sender suggested that mailed attempts to contact junior doctors were often unsuccessful due to their high mobility and incorrect mailing addresses. The non-contact rate for junior doctors was around 30% in Wave 5 (Table 3.5) compared with around 2% for GPs and Specialists. We were cautious about an email approach given evidence suggesting that email approaches can reduce response rates in general population samples. However, in Wave 5 a relatively high proportion of junior doctors responded online (43% vs 30% for GPs and Specialists), suggesting that it was worth trialling email

contact for this group. Contacting junior doctors by email also reduces the costs for a group whose response rates are already low.

It was decided to test the use of email using a sequential mixed-mode design. Junior doctors who had not responded to the main and first two reminder mail-outs, and whose email addresses were known, were randomly assigned to receive the third reminder by either email or a mailed letter. Email address were obtained from the MABEL survey responses for continuing doctors in Wave 5 and from AMPCo, who hold email addresses for some doctors. AMPCo sent out the email on our behalf, and best practice was followed in terms of the format of the email, including a personalised email not including the word 'survey' in the subject line (Edwards et al 2009). The trial was undertaken to test the mode of approach not the mode of completion, as upon receipt of the reminder doctors could still choose to complete the survey online, or they could fill out the hardcopy questionnaire they were sent in the initial mail-out (or request another be sent).

Doctors who were sent the third reminder by email were 4.8 percentage points more likely to respond than those who were sent a mailed letter (Table 3.1). The benefit of sending an email reminder compared with a letter was statistically significant for Hospital Non-Specialists (12.5% response vs 7.7% response) at the 5% level, but for Specialist Registrars (16.5% vs 11.3%) only at the 10% level of significance (Table 3.2). The relative lack of statistical significance for Specialist Registrars may reflect the smaller sample size of this group, since the magnitude of the percentage point difference was similar (5 percentage points).

The benefit of sending an email third reminder (as opposed to a mailed letter) was also limited to continuing doctors, i.e. those who had responded in a previous wave of the survey. The response rate increase for this group was 7.5 percentage points (Table 3.3), compared with only a 1.3 percentage point increase for doctors who were new to the survey and this was not statistically significant.

At the time of randomisation, 926 junior doctor non-responders were excluded from the trial as their email addresses were unknown. The response rate for this group following receipt of the (mailed) third reminder letter was statistically significantly lower than for those in either arm of the trial (3.7% vs 10.8%). One explanation for this may be a lesser familiarity with or mistrust of electronic communication, which influenced them in not supplying an email address. Since all reminder letters were sent without a questionnaire, recipients either had to find the questionnaire sent to them months previously or respond online. Those without a known email address may be intrinsically less inclined to respond online and therefore could only respond if they managed to find the questionnaire (or request another one). Supporting this explanation is the finding that across all doctor types, those with a known email address were more likely to respond following the third reminder (7.5%) than those without a known email address (2.5%). In addition, all 1,073 doctors who responded following the third reminder did so online, implying that finding the hard copy at this stage was too difficult. By comparison, only one-third (34.2%) of Wave 5 doctors (sent a questionnaire with *every* reminder) who responded following the third reminder did so online. On the basis of this trial, a definitive recommendation could be made for sending a reminder via email to junior doctors in all future waves (where the email address is known).

Table 3.1: Overall outcome of email reminder trial

Randomisation	n	Number responding (clinical or non-clinical)	% responding
Received letter	1,724	144	8.4
Received email	1,785	235	13.2

Pearson chi2(1) = 21.1, p<.0005

Table 3.2: Outcome by doctor type

	Received letter			Received email			Chi-squared p-value
	N	Response	%	n	Response	%	
Hospital non-Specialists	1,422	110	7.7	1,481	185	12.5	<.0005
Specialist Registrars	302	34	11.3	304	50	16.5	.065

Table 3.3: Outcome by previous participation

	Received letter			Received email			Chi-squared significance
	n	Response	%	n	Response	%	
Continuing	1,025	92	9.0	1,017	168	16.5	<0.0005
New	699	52	7.4	768	67	8.7	0.26

1.5.3.2 Trial of letter vs letter plus hardcopy questionnaire, GPs & Specialists, Wave 7 pilot

The drop in the overall response rate in Wave 6 may have partly reflected the removal of hardcopy questionnaires from all survey reminders, which in turn consisted of either a letter or an email reminder if doctors were part of the trial described above in 1.6.3.1. This change meant that doctors prompted by the reminder to participate had either to find the questionnaire they were sent in the initial mail-out, or complete the survey online. This may have been detrimental to response rates for Specialists and GPs particularly, given that they have been less likely to respond online in previous waves. Thus, a small randomised trial was conducted for the second reminder of the Wave 7 pilot, in which half of the GPs and Specialists were sent a letter only and half were sent a letter plus hardcopy questionnaire.

Table 3.4 shows the number of responses for the trial groups from the date of the mail-out of the second reminder to the mail-out of the third reminder (at which point responses can no longer be attributed to the second reminder). The response by the group who received a letter plus hardcopy questionnaire was 3.4 percentage points higher than that of those who received the letter only (11.3% vs 7.9%). This difference was found to be not statistically significant presumably due to the small sample size. It was nevertheless decided to adopt the approach of sending a hardcopy questionnaire with at least one reminder letter to GPs and Specialist in future waves, on the basis

that a similar, higher response rate could be expected in larger samples.Table 3.4: Outcome of trial in 2nd reminder of Wave 7 pilot

	Received letter only			Received letter + hardcopy questionnaire			Chi-square test
	n	Responded before 3rd reminder mail-out	%	n	Responded before 3rd reminder mail-out	%	
GPs and Specialists who had not responded before 2nd reminder mail-out	316	25	7.9	284	32	11.3	Chi^2=1.96 P=0.16

1.6 Communications activities to increase response rates

It is important to make doctors aware of the survey and its credibility before sending them an invitation to participate, to encourage participation. Public relations activities relating to MABEL include:

- Displaying the names and logos of the 39 endorsing organisations on survey materials. These organisations include professional medical organisations, colleges, societies and training bodies.
- Including information about MABEL in the newsletters and publications of endorsing bodies and other relevant organisations.
- Distributing the 'MABEL Matters' newsletter to all new doctors, responding doctors, endorsing organisations, and medical and general media prior to each survey wave.
- Using social media (Twitter, Facebook and LinkedIn) to disseminate key findings from MABEL to doctors.

1.7 Data Management and Analysis

A commercial data-entry company captures the data from the hardcopy questionnaires into an electronic database using double entry verification. The captured data from a random sample of 5% of the questionnaires are checked for accuracy in-house at the Melbourne Institute to verify the quality of this data. The accuracy has ranged from 99.58% in Wave 3 to a high of 99.99% in Wave 8.

Responses collected online automatically generate a record in an electronic database. These data are downloaded and merged with the data from paper questionnaires. Standard data checks and cleaning procedures (e.g. range and consistency checks) are used to minimise errors and missing values and to maximise data quality. Minimal imputation and recoding is undertaken to give data users maximum flexibility to code variables to suit their own purposes.

1.8 Response Rates

Response rates for each wave are shown in Tables 4.1–4.9.

Table 4.1: Wave 1 response rates

	Doctor Type[a]				All doctors
	GP	Specialist	Hospital Non-Specialist	Specialist Registrar	
(A) Total	22,137	19,579	8,820	4,214	54,750
(B) Useable responses (at least one question answered)	3,873	4,310	1,451	864	10,498
(C) Refusal (hard copy returned blank and declined)	145	124	54	26	349
(D) No contact (returned to sender)	161	307	547	229	1,244
(E) No responses	17,762	14,555	6,732	3,083	42,132
(F) Not in clinical practice	196	283	36	12	527
Response rate (B/(A-F))(%)	*17.7*	*22.3*	*16.5*	*20.6*	*19.4*
Contact rate ((B+C+E)/(A-F))(%)	*99.3*	*98.4*	*93.8*	*94.6*	*97.7*
Online responses	*25.4*	*27.6*	*47.6*	*38.1*	*30.4*

Table 4.2: Wave 2 response rates

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All
(A) Total sample	3,825	1,249	4,348	790	1,230	2,742	838	839	10,251	5,620	15,871
(B) Total responses	3,113	495	3,587	348	838	1,031	642	250	8,180	2,124	10,304
(B1) Respondents in clinical practice	2,997	452	3,410	329	780	995	587	233	7,774	2,009	9,783
(B2) Respondents not in clinical practice	116	43	177	19	58	36	55	17	406	115	521
(C) Hardcopy returned blank and declined	52	20	27	5	5	9	1	5	85	39	124
(D) No contact (returned to sender)	17	37	35	38	43	322	37	167	132	564	696
(E) No response	653	697	699	399	344	1,380	158	417	1,854	2,893	4,747
Response rate (B/A) (%)	*81.2*	*39.6*	*82.5*	*44.1*	*68.1*	*37.6*	*76.6*	*29.8*	*79.8*	*37.8*	*64.9*
Contact rate (B+C+E)/A (%)	*99.6*	*97.0*	*99.2*	*95.2*	*96.5*	*88.3*	*95.6*	*80.1*	*98.7*	*90.0*	*95.6*
Online responses (%)	*19.7*	*26.1*	*24.3*	*33.3*	*47.6*	*32.9*	*39.4*	*43.2*	*26.1*	*32.6*	*27.5*

Note: (a) Doctor types as defined in the AMPCo database. Actual doctor types will vary as the survey completed may differ to the type of survey allocated using information from AMPCo.

Table 4.3: Wave 3 response rates

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All
(A) Total sample	4,273	1,028	4,805	589	2,010	1,882	980	760	12,068	4,259	16,327
(B) Total responses	3,199	388	3,624	213	1,215	539	613	158	8,651	1,298	9,949
(B1) Respondents in clinical practice	3,079	364	3432	203	1,142	519	561	149	8,214	1,235	9,449
(B2) Respondents not in clinical practice	120	24	192	10	73	20	52	9	437	63	500
(C) Hardcopy returned blank and declined	58	14	54	4	3	6	2	1	117	25	142
(D) No contact (returned to sender)	25	25	46	44	89	222	37	112	197	403	600
(E) No response	990	601	1,081	328	703	1,115	328	489	3,102	2,533	5,635
Response rate (B/A) (%)	*74.9*	*37.7*	*75.4*	*36.2*	*60.4*	*28.6*	*62.6*	*20.8*	*71.7*	*30.5*	*60.9*
Contact rate (B+C+E)/A (%)	*99.4*	*97.6*	*99.0*	*92.5*	*95.6*	*88.2*	*96.2*	*85.3*	*98.4*	*90.5*	*96.3*
Online responses (%)	*21.1*	*19.8*	*25.0*	*30.0*	*49.1*	*39.0*	*59.5*	*38.6*	*29.4*	*31.7*	*29.7*

Note*:* (a) Doctor types as defined in the AMPCo database. Actual doctor types will vary as the survey completed may differ to the type of survey allocated using information from AMPCo.

Table 4.4: Wave 4 response rates

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All
(A) Total Sample	4,462	621	5,103	777	1,777	1,864	1,051	312	12,393	3,574	15,967
(B) Total responses	3,170	199	3,705	285	936	720	687	71	8,498	1,275	9,773
(B1) Respondents in clinical practice	3,039	184	3,526	259	861	710	629	66	8,055	1,219	9,274
(B2) Respondents not in clinical practice	131	15	179	26	75	10	58	5	443	56	499
(C) Hardcopy returned blank and declined	31	5	35	5	5	1	2	1	73	12	85
(D) No Contact (returned to sender)	23	12	41	32	69	96	44	56	177	196	373
(E) No response	1,238	405	1,322	455	767	1,047	318	184	3,645	2,091	5,736
Response rate (B/A) (%)	*71.0*	*32.0*	*72.6*	*36.7*	*52.7*	*38.6*	*65.4*	*22.8*	*68.6*	*35.7*	*61.2*
Contact rate (B+C+E)/(A)(%)	*99.5*	*98.1*	*99.2*	*95.9*	*96.1*	*94.8*	*95.8*	*82.1*	*98.6*	*94.5*	*97.7*
Online responses (%)	*24.6*	*27.1*	*26.8*	*31.2*	*49.7*	*39.6*	*53.6*	*38.0*	*30.7*	*35.7*	*31.3*

Note: (a) Doctor types as defined in the AMPCo database. Actual doctor types will vary as the survey completed may differ to the type of survey allocated using information from AMPCo.

Table 4.5: Wave 5 response rates

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All
(A) Total Sample	4,759	1,381	5,499	1,328	1,994	6,850	1,162	1,738	13,414	11,297	24,711
(B) Total responses	3,118	438	3,780	450	725	1,262	594	379	8,217	2,529	10,746
(B1) Respondents in clinical practice	2,953	408	3,529	424	656	1,225	547	359	7,685	2,416	10,101
(B2) Respondents not in clinical practice	165	30	251	26	69	37	47	20	532	113	645
(C) Hardcopy returned blank and declined	57	8	42	10	14	9	6	3	119	30	149
(D) No Contact (returned to sender)	49	57	61	121	136	2,090	80	515	326	2,783	3,109
(E) No response	1,535	878	1,616	747	1,119	3,489	482	841	4,752	5,955	10,707
Response rate (B/A)(%)	*65.5*	*31.7*	*68.7*	*33.9*	*36.4*	*18.4*	*51.1*	*21.8*	*61.3*	*22.4*	*43.5*
Contact rate (B+C+E)/(A)(%)	*99.0*	*95.9*	*98.9*	*90.9*	*93.2*	*69.5*	*93.1*	*70.4*	*97.6*	*75.4*	*87.4*
Online responses (%)	*25.7*	*31.7*	*30.9*	*42.7*	*36.3*	*35.6*	*55.4*	*58.3*	*31.2*	*39.6*	*33.2*

Note: (a) Doctor types as defined in the AMPCo database. Actual doctor types will vary as the survey completed may differ to the type of survey allocated using information from AMPCo.

Table 4.6: Wave 6 response rates

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total			Boost
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All	
(A) Total Sample	5,072	1,441	5,903	596	3,318	1,948	1,103	428	15,396	4,413	19,809	9,344
(B) Total responses	2,593	251	3,255	123	1,375	489	525	65	7,748	928	8,676	862
(B1) Respondents in clinical practice	2,472	233	3,038	119	1,277	485	485	60	7,272	897	8,169	746
(B2) Respondents not in clinical practice	121	18	217	4	98	4	40	5	476	31	507	116
(C) Hardcopy returned blank and declined	33	5	23	2	8	7	2	1	66	15	81	35
(D) No Contact (returned to sender)	54	44	126	51	307	241	104	81	591	417	1,008	2,061
(E) No response	2,392	1,141	2,499	420	1,628	1,211	472	281	6,991	3,053	10,044	6,386
Response rate (B/A)(%)	*51.1*	*17.4*	*55.1*	*20.6*	*41.4*	*25.1*	*47.6*	*15.2*	*50.3*	*21.0*	*43.8*	*9.2*
Contact rate (B+C+E)/(A)(%)	*98.9*	*96.9*	*97.9*	*91.4*	*90.7*	*87.6*	*90.6*	*81.1*	*96.2*	*90.6*	*94.9*	*77.9*
Online responses (%)	*35.7*	*61.8*	*38.6*	*54.5*	*70.3*	*66.5*	*61.7*	*81.5*	*44.8*	*64.7*	*46.9*	*82.4*

Note: (a) Doctor types as defined in the AMPCo database. Actual doctor types will vary as the survey completed may differ to the type of survey allocated using information from AMPCo.

Table 4.7: Wave 7 response rates

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All
(A) Total Sample	5,433	863	6,115	284	4,038	1,361	1,269	189	16,855	2,697	19,552
(B) Total responses	2,967	143	3,517	84	1,589	390	561	37	8,634	654	9,288
(B1) Respondents in clinical practice	2,823	141	3,253	82	1,470	386	511	35	8,057	644	8,701
(B2) Respondents not in clinical practice	144	2	264	2	119	4	50	2	577	10	587
(C) Hardcopy returned blank and declined	34	5	25	0	16	4	6	1	81	10	91
(D) No Contact (returned to sender)	85	28	118	19	415	78	118	28	736	153	889
(E) No response	2,347	687	2,455	181	2,018	889	584	123	7,404	1,880	9,284
Response rate (B/A)(%)	*54.6*	*16.6*	*57.5*	*29.6*	*39.4*	*28.7*	*44.2*	*19.6*	*51.2*	*24.2*	*47.5*
Contact rate (B+C+E)/(A)(%)	*98.4*	*96.8*	*98.1*	*93.3*	*89.7*	*94.3*	*90.7*	*85.2*	*95.6*	*94.3*	*95.5*
Online responses (%)	*38.5*	*62.2*	*43.0*	*67.9*	*76.5*	*67.2*	*72.0*	*73.0*	*49.5*	*88.2*	*52.2*

Note: (a) Doctor types as defined in the AMPCo database. Actual doctor types will vary as the survey completed may differ to the type of survey allocated using information from AMPCo.

Table 4.8: Wave 8 response rates

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All
(A) Total Sample	5,786	350	6,409	183	3,894	439	1,185	67	17,274	1,039	18,313
(B) Total responses	2,994	81	3,485	52	1,551	157	478	14	8,508	304	8,812
(B1) Respondents in clinical practice	2,846	76	3,245	51	1,446	156	438	14	7,975	297	8,272
(B2) Respondents not in clinical practice	148	5	240	1	105	1	40	0	533	7	540
(C) Hardcopy returned blank and declined	53	4	64	0	17	0	4	0	138	4	142
(D) No Contact (returned to sender)	97	14	151	6	322	14	106	4	676	38	714
(E) No response	2,642	251	2,709	125	2,004	268	597	49	7,952	693	8,645
Response rate (B/A)(%)	51.7%	23.1%	54.4%	28.4%	39.8%	35.8%	40.3%	20.9%	49.3%	29.3%	48.1%
Contact rate (B+C+E)/(A)(%)	98.3%	96.0%	97.6%	96.7%	91.7%	96.8%	91.1%	94.0%	96.1%	96.3%	96.1%
Online responses (%)	36.4%	48.1%	43.3%	50.0%	81.5%	66.2%	70.7%	85.7%	49.4%	59.5%	49.7%

Note: (a) Doctor types as defined in the AMPCo database. Actual doctor types will vary as the survey completed may differ to the type of survey allocated using information from AMPCo.

Table 4.9: Wave 9 response rates[b]

	GP		Specialist		Hospital Non-Specialist		Specialist Registrar		Total		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	Continuing	New	All
(A) Total Sample	5,946	2,172	6,391	307	3,363	1,541	1,247	209	16,947	4,229	21,176
(B) Total responses	2,841	484	3,316	88	1,358	397	483	33	7,998	1,002	9,000
(B1) Respondents in clinical practice	2,733	475	3,115	84	1,238	393	447	33	7,533	985	8,518
(B2) Respondents not in clinical practice	108	9	201	4	120	4	36	0	465	17	482
(C) Hardcopy returned blank and declined	58	18	66	6	11	5	4	0	139	29	168
(D) No Contact (returned to sender)	124	124	152	32	196	120	100	43	572	319	891
(E) No response	2,923	1,546	2,857	181	1798	1,019	660	133	8,238	2,879	11,117
Response rate (B/A)(%)	47.8%	22.3%	51.9%	28.7%	40.4%	25.8%	38.7%	15.8%	47.2%	23.7%	42.5%
Contact rate (B+C+E)/(A)(%)	97.9%	94.3%	97.6%	89.6%	94.2%	92.2%	92.0%	79.4%	96.6%	92.5%	95.8%
Online responses (%)	39.4%	47.9%	44.2%	53.4%	84.5%	69.3%	84.1%	78.8%	51.7%	57.9%	52.4%

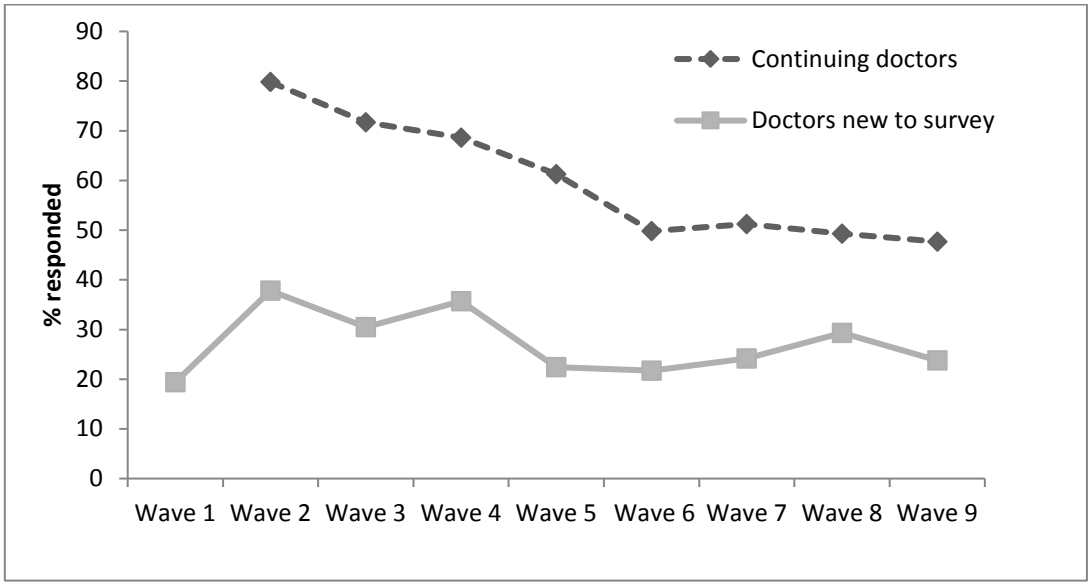
Note: (a) Doctor type as defined in the AMPCo database. Actual doctor type will vary as the survey completed may differ from the type of survey allocated using information from AMPCo.

(b) There were 8 hardcopies that belonged to waves 8 and 7 but were sent to us during wave 9 survey time. We counted them as wave 9 responses upon the verification that these doctors had not had either online or hardcopy responses for wave 9.

1.8.1 Overall response

Figure 3.1 shows response rates for new and continuing doctors in each wave. The average response rate for continuing doctors is 59.9%, compared with 27.2% for new doctors. Response rates of new doctors are relatively stable. For continuing doctors, response rates fell from 79.8% in Wave 2 to 47.7% in Wave 9, though appear relatively stable from Wave 6. This may be partly explained by the change in the composition of the 'continuing' cohort over time. The Wave 3 continuing doctor cohort includes doctors who were 'new' in Wave 2 (the 2009 cohort) as well as the Wave 1 cohort. The new doctor cohorts subsequent to Wave 1 comprise mainly graduating medical students who become new Hospital Non-Specialists (1,882/4,259=44.2% of all new doctors in Wave 3 were Hospital Non-Specialists), and international medical graduates moving into Australia. As a result, from Wave 3 onwards continuing doctors include a greater proportion of Hospital Non-Specialists and Specialist Registrars than in Wave 2, and these doctor types are less likely to respond than GPs and Specialists. The denominator/sample frame each year also includes doctors who may have completed the survey only once in a previous wave.

Figure 3.1 Response rates for Waves 1–9



The proportion of doctors explicitly declining to participate, either by returning a blank questionnaire or informing the survey manager of this decision, has not risen above 1% in any wave (Figure 3.2). In most waves continuing doctors have been more likely to decline than new doctors, although the decline rate was similar for new and continuing doctors in Wave 6.

Figure 3.2 Proportion of doctors declining to complete the survey

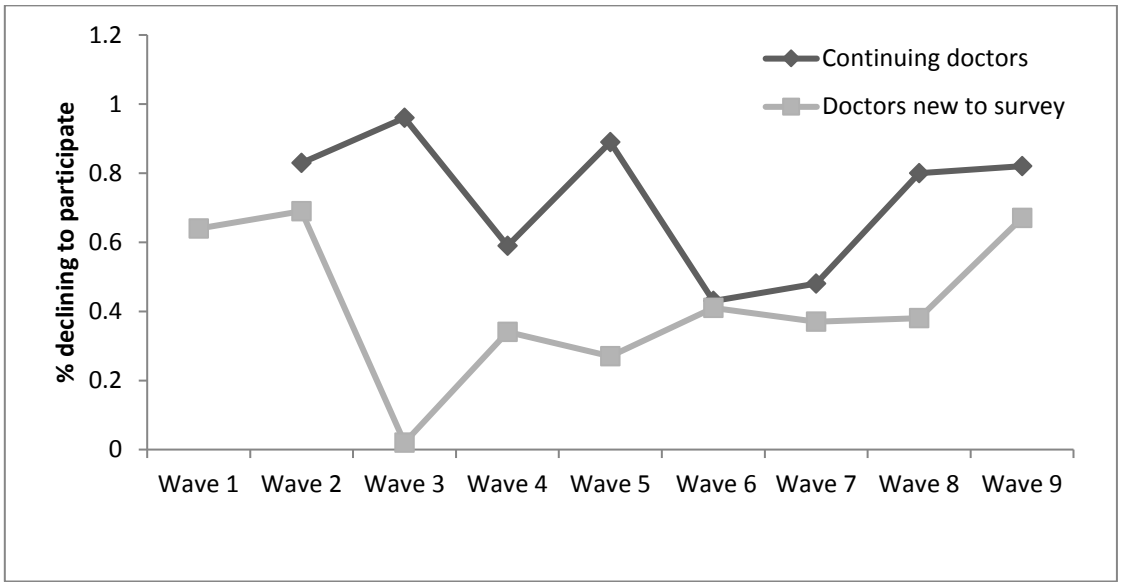
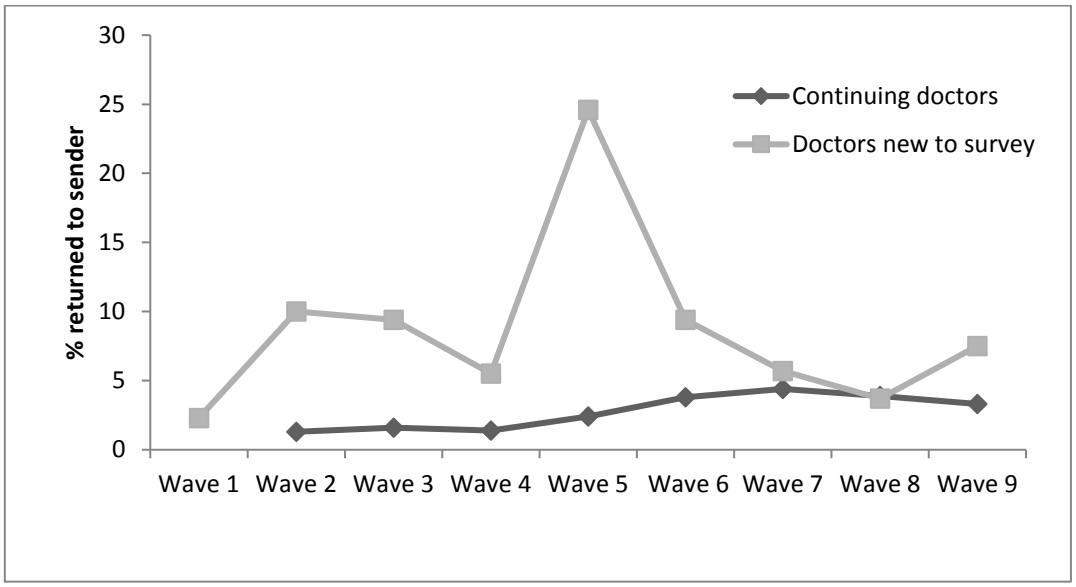


Figure 3.3 Proportion of surveys returned to sender



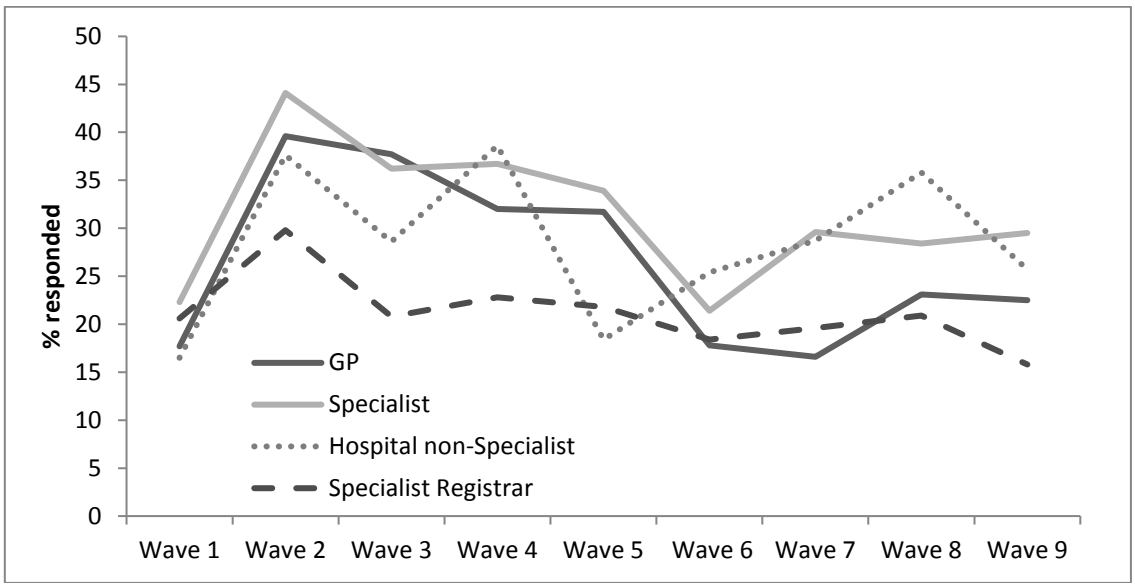
In Wave 1, 2.3% of the questionnaires sent to doctors were classified as ‘return to sender’. Return-to-sender rates for continuing doctors have been lower than those for new doctors in all waves, but are generally increasing over time. Since Wave 2 the return-to-sender rates for new doctors have ranged between 5% and 10%, with the exception of Wave 5 in which there was a spike to 24.6%. Further analysis shows this spike in returns-to-sender was limited to junior doctors, and was most likely related to the nature of the Wave 5 top-up sample, as described in Section 1.3. There is evidence that the address information for new junior doctors supplied by AHPRA to AMPCo, was inadequate (e.g. Dr M Smith, Royal Melbourne Hospital), such that many hospitals returned large batches of mailed surveys with comments indicating it was not known where, within their hospital, the target doctors were located. In Wave 7 an extra line was inserted into the hospital addresses of all hospital doctors – “C/o Medical Workforce Training Unit” – on the assumption that most hospital doctors are

still in some form of training and that this would facilitate an increased contact rate. It would also be incorrect to assume that all unanswered and unreturned questionnaires reached the intended recipient since some survey packs may have been disposed of when the intended recipients could not be located at the destination mailing address.

1.8.2 Response rates by doctor type

Across the new doctor cohort groups there are no clear trends in response rates, either by wave or doctor type, with rates ranging from 16.5% for Hospital Non-Specialists in Wave 1 to 44.1% for Specialists in Wave 2 (Figure 4.1).

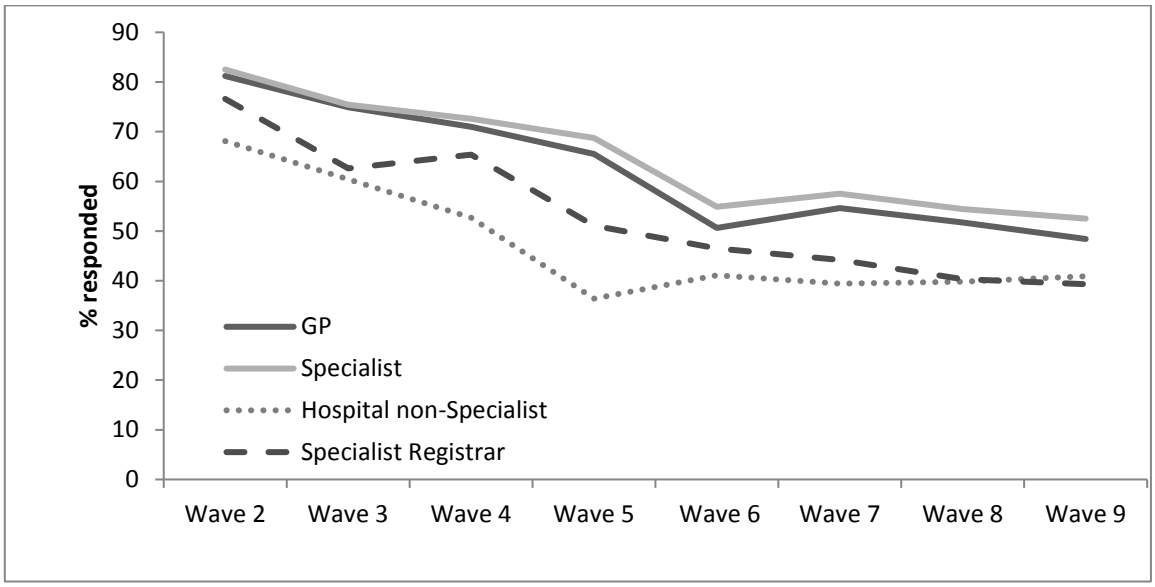
Figure 4.1: Proportion of doctors responding to the survey: New doctors



However, certain patterns do emerge for continuing doctors (Figure 4.2). Continuing GPs and Specialists have had the highest response rates in every wave, followed by Specialist Registrars and then Hospital Non-Specialists. Response rates for all doctor types have generally declined over time, with the exception of a small increase for GPs and Specialists in Wave 7.

The decline in response rates between Waves 5 and 6 was sharpest for GPs and Specialists. This may in part have been due to the change in protocol for survey reminders. Since GPs and Specialists appear less inclined to use electronic communication than junior doctors, the omission of the hardcopy questionnaires from the survey reminders may have reduced the likelihood of these groups of doctors responding. The results of the trial conducted for reminder 2 of the Wave 7 pilot (letter only vs letter + hardcopy questionnaire) confirmed this suspicion (see section 1.5.3).

Figure 4.2: Proportion of doctors responding to the survey: Continuing doctors



1.8.3 Response rates by cohort

Survey respondents belong to different cohorts depending on when they first participated in the survey. For example, the 10,498 doctors who responded to the survey in Wave 1 represent the 2008 cohort as they joined the survey in 2008 (Figure 1). The 1,767 doctors who first responded to the survey in Wave 6 are the 2013 cohort. Those who respond in more than one year are 'panel' responders, and those who respond in every wave are known as the 'balanced panel'.

Of the 10,498 Wave 1 responders (the 2008 cohort) 10,251 were contacted in Wave 2, with the remaining 247 doctors having become ineligible or uncontactable in the intervening period. Of the 8,031 doctors who responded in Waves 1 and 2 and were sent a survey in Wave 3, 6,789 (84.5%) responded. Of the 6,424 doctors responding in each of the first three waves and sent a survey in Wave 4, 88.6% (5,694) responded. Of these 5,591 were invited to participate in Wave 5, with an 87.9% response rate (4,913 doctors). In Wave 6, 4,776 doctors who participated in the first five waves were sent a survey and 3,956 responded (82.8%). Of the 3,956 doctors who responded in the first six waves 3,908 doctors were invited to participate in Wave 7 and of these 3,564 (91.2%) responded. In Wave 8, 3,532 ongoing respondents were invited to participate and 3,240 (91.7%) responded. Of the 3,240 doctors who responded in the first eight waves, 3,184 were invited to participate in Wave 9 and 2,905 (91.2%) responded; these represent the balanced-panel respondents in Wave 9.

1.8.4 Attrition

Attrition refers to the non-response of continuing respondents from each wave of the survey. Attrition can be thought of as balanced-panel attrition or overall attrition. The balanced panel is made up of those who respond in every wave from when they first enter the survey. The balanced panel does not include re-joiners. For example, if a member of the Wave 2 cohort (2009) does not respond in Wave 3 but does respond in Wave 4 they are not a member of the balanced panel in Wave 4 because they have missed a year since first participating. Balanced panel attrition is shown in Table 5.1. Year-on-

year attrition is the attrition from one wave to the next, and cumulative attrition is the proportion dropping out of the balanced panel since entry year.

Attritors include non-responders plus those who were omitted from the sample frame for that year. Doctors can be omitted temporarily, for example if they are working overseas or have no valid address, or permanently, for example if they change career or die.

Table 5.1 Balanced panel attrition

Respondents in each cohort	Attrition	Wave 2 2009	Wave 3 2010	Wave 4 2011	Wave 5 2012	Wave 6 2013	Wave 7 2014	Wave 8 2015	Wave 9 2016
2008 Cohort	Year-on-year	22.1%	17.0%	16.1%	13.8%	19.2%	10.3%	9.1%	10.3%
10,498	Cumulative	22.1%	35.3%	45.7%	53.2%	62.2%	66.1%	69.1%	72.3%
2009 Cohort	Year-on-year		43.7%	28.9%	31.2%	26.8%	22.0%	14.4%	15.7%
2,124	Cumulative		43.7%	60.0%	72.5%	79.8%	84.3%	86.5%	88.7%
2010 Cohort	Year-on-year			45.5%	35.6%	36.7%	20.1%	17.0%	19.9%
1,298	Cumulative			45.5%	64.9%	77.8%	82.3%	85.3%	88.2%
2011 Cohort	Year-on-year				43.4%	43.1%	24.6%	16.5%	17.4%
1,275	Cumulative				43.4%	67.8%	75.7%	79.7%	83.2%
2012 Cohort	Year-on-year					57.3%	37.4%	21.9%	22.5%
2,529	Cumulative					57.3%	73.2%	79.1%	83.8%
2013 Cohort	Year-on-year						53.4%	32.3%	26.6%
1,767	Cumulative						53.4%	68.5%	76.9%
2014 Cohort	Year-on-year							41.0%	33.9%
654	Cumulative							41.0%	61.0%
2015 Cohort	Year-on-year								42.1%
321	Cumulative								42.1%

There were 10,498 respondents in Wave 1, of which 10,251 were contactable in Wave 2 and 8,180 responded. There was therefore an 8,180/10,251=79.8% response rate for the balanced panel and a (1–(8,180/10,498)) = 22.1% attrition rate (Table 5.1). That is, response rate calculations are based on the invited sample, but attrition rate calculations are based on the sample frame, which includes those who responded the previous year but were not invited in the current year (for example, if they became non-contactable due to a loss of practising licence, unknown address, death and so on). Of the 8,180 responding 2008 cohort doctors in Wave 2, 8,031 were invited in Wave 3 and 6,789 responded giving a 17% attrition rate. Of the 6,424 invited in Wave 4, 5,694 responded, giving a 16.1% attrition for Wave 4. Of the 5,591 of these invited in Wave 5, 4,913 responded, giving 13.8% attrition of the balanced panel in Wave 5. Of the 4,776 then invited in Wave 6, 3,956 responded giving an attrition rate of 19.2% for the balanced panel in Wave 6. Of the 3,970 then invited in Wave 7, 3,552 responded resulting in an attrition rate of 10.5%. Of the 3,564 doctors invited in Wave 8, 3,240 responded, giving a balanced-panel attrition rate of 9.3%. Of the 3,184 doctors invited in Wave 9, 2,905 responded, giving a balanced-panel attrition rate of 10.3%. The overall attrition rate for the full, balanced panel from Wave 1 to Wave 9 was 72.3%. It is encouraging that in general the attrition rate has declined over time (with its lowest rate in Wave 8), which may indicate a stabilising of the

balanced panel of doctors who are committed to the aims of the MABEL survey. Comparing the MABEL attrition rates with those of household panel surveys such as HILDA: HILDA had an attrition rate of 13.2% and 9.6% in Wave 1 and Wave 2 respectively, while the comparable figures for MABEL are 20.2% and 15.4%. MABEL's relatively high attrition rates can be explained by the nature of the sampling frame (doctors instead of the general population) and the survey method (HILDA uses interviewers whereas MABEL is a self-complete survey). This point would seem to be confirmed when we compare the attrition rates of MABEL with other medical workforce surveys, both nationally and internationally. For example, the Australian Medical Workforce Advisory Committee (AMWAC) conducted a survey of Australian doctors in vocational training in 2002 and 2004 which achieved a retention rate of 71.4% and hence an attrition rate of 28.6% after two years. The US Community Tracking Study asked more than 10,000 physicians to participate in a second round of interviews, two years after the first round, and obtained a response rate of 77.2% (attrition rate 22.8%).

Table 5.2: Overall attrition

Respondents in each cohort	Attrition	**Wave 2 2009**	**Wave 3 2010**	**Wave 4 2011**	**Wave 5 2012**	**Wave 6 2013**	**Wave 7 2014**	**Wave 8 2015**	**Wave 9 2016**
2008 Cohort	Year-on-year	77.9%	91.1%	90.4%	91.0%	84.0%	102.1%	97.2%	94.2%
10,498	Cumulative	22.1%	29.0%	35.8%	41.6%	50.9%	49.9%	51.3%	54.1%
2009 Cohort	Year-on-year		56.3%	87.8%	78.5%	87.4%	95.4%	94.5%	92.9%
2,124	Cumulative		43.7%	50.6%	61.2%	66.1%	67.7%	69.4%	71.6%
2010 Cohort	Year-on-year			54.5%	76.4%	79.6%	95.6%	99.5%	91.0%
1,298	Cumulative			45.5%	58.4%	66.9%	68.3%	68.5%	71.3%
2011 Cohort	Year-on-year				56.6%	71.1%	95.9%	101.0%	87.9%
1,275	Cumulative				43.4%	59.8%	61.4%	61.0%	65.7%
2012 Cohort	Year-on-year					42.7%	87.9%	94.9%	90.7%
2,529	Cumulative					57.3%	62.4%	64.3%	67.7%
2013 Cohort	Year-on-year						46.6%	90.5%	86.4%
1,767	Cumulative						53.4%	57.8%	63.6%
2014 Cohort	Year-on-year							59.7%	80.3%
654	Cumulative							40.3%	52.1%
2015 Cohort	Year-on-year								57.9%
321	Cumulative								42.1%

Overall attrition is the proportion of responders in Wave X who do not respond in Wave (X+1). Table 5.2 shows year-on-year and cumulative overall attrition. This is different from balanced panel attrition as doctors can come in and out of the panel if they are non-responders for one wave but then respond again in the next wave. Generally, there is high attrition in the second wave for each cohort, but from the third wave onwards year-on-year response is always above 70%. For example, for the 2012 cohort only 42.7% of those who responded did so again in 2013 (their second wave) but, then 87.9% responded in 2014 (their third wave) and 94.9% did so in 2015 (their fourth wave). This drop in attrition after the second wave likely reflects the fact that those who respond in at least two waves are more committed to the goals of MABEL. The lowest year-on-year attrition rates are found for the original 2008 cohort going into Wave 2 (22.1%). Importantly, however, the 2008 cohort represented

respondents from the entire population of doctors, whereas the 2009 and 2010 cohorts consisted of doctors new to clinical practice in Australia (mainly newly qualified Hospital Non-Specialists and international medical graduates), who tend to have lower response rates generally and are less likely to participate longitudinally.

1.8.5 Doctor-type recorded by AMPCo and type of questionnaire completed

Since some doctors change their doctor-type status over time (for example, a Specialist Registrar completing training and becoming a Specialist) AMPCo records are sometimes out of date, and so doctors end up completing a different questionnaire from the one they were initially sent (Table 7). Thus, for all waves the final number of observations available for analysis for each group are different from those shown in Tables 4.1–4.8. The accuracy of AMPCo records is highest for GPs and Specialists, with at least 97% (and usually more than 99%) being listed as the correct doctor type. The accuracy for Hospital Non-Specialists and Specialist Registrars has proved much lower (between 59% and 81%), but this is to be expected given they are still adding to their qualifications. For example, in 2014, 31.3% of those listed as Hospital Non-Specialists completed the Specialist Registrar survey, 10.1% were found to be GPs or GP Registrars, and 4.3% were actually Specialists. Out of those listed as Specialist Registrars in 2014, 14.1% had become Specialists, 3.5% were Hospital Non-Specialists and 1.5% were GPs.

1.8.6 Response to the Wave 6 boost sample

Of the 9,344 doctors in the Wave 6 boost sample, a response was received from 862 (9.2%), of which 746 were in clinical practice at the time. The inclusion of the boost sample, therefore, increased the number of responding Hospital Non-Specialists by 46.6%, from 1,813 to 2,657. The non-contact rate (return to senders) was high at 22.0%, that is, 2,051 doctors did not receive the survey invitation. By comparison, the non-contact rate for the main sample of new junior doctors in Wave 6 was around 11.6%. This lower response from the boost sample was anticipated as these were doctors who had previously been invited to complete the survey but did not respond.

1.9 Clinical Practice Status

Since Wave 2 there have been questions on clinical practice status in the first section of the questionnaire. Only doctors currently in clinical practice in Australia are asked to complete the whole questionnaire. Those not in clinical practice in Australia but intending to return to it in future are asked to complete the final two sections of the survey only – about family circumstances and personal information. Those not intending to return to clinical practice in Australia, perhaps because they have a new career path or are permanently retired, are not asked to complete the rest of the questionnaire.

AMPCo provides MABEL researchers with the clinical practice status of doctors who cannot be sent a questionnaire, either because of an invalid address or because the doctors have asked not to receive mail. Occasionally doctors notify the MABEL office that they are not in clinical practice, in

Table 6: Comparison of doctor type according to AMPCo against actual survey type completed

		Survey type completed by doctor			
Doctor type recorded in AMPCo	N	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars
GP					
Wave 1	*3,873*	98.5	0.7	0.4	0.4
Wave 2	*3,603*	99.3	0.3	0.2	0.2
Wave 3	*3,587*	99.4	0.2	0.1	0.3
Wave 4	*3,368*	99.3	0.3	0.2	0.3
Wave 5	*3,450*	99.1	0.4	0.4	0.1
Wave 6	*2,844*	98.4	0.8	0.4	0.5
Wave 7	*3,110*	98.8	0.4	0.6	0.2
Wave 8	*3,208*	98.7	0.7	0.3	0.3
Wave 9	*3,392*	98.6	0.6	0.4	0.4
Specialist					
Wave 1	*4,310*	0.2	99.4	0.2	0.2
Wave 2	*3,935*	0.1	99.6	0.0	0.2
Wave 3	*3,837*	0.1	99.6	0.2	0.2
Wave 4	*3,988*	0.1	97.8	0.1	2.0
Wave 5	*4,073*	0.1	99.6	0.2	0.1
Wave 6	*3,378*	0.1	99.5	0.1	0.3
Wave 7	*3,601*	0.1	99.5	0.2	0.2
Wave 8	*3,624*	0.2	99.4	0.2	0.3
Wave 9	*3,473*	0.1	99.5	0.2	0.2
Hospital Non-Specialist					
Wave 1	*1,451*	5.0	4.5	59.7	30.7
Wave 2	*1,869*	3.3	2.8	74.9	19.0
Wave 3	*1,754*	4.6	3.6	69.7	22.1
Wave 4	*1,684*	4.8	1.1	77.0	17.2
Wave 5	*2,458*	4.8	1.7	78.9	14.6
Wave 6	*1,864*	8.7	2.3	61.3	27.7
Wave 7	*1,979*	10.1	4.3	54.3	31.3
Wave 8	*1,772*	12.3	2.9	43.8	41.0
Wave 9	*1,820*	9.5	5.8	44.0	40.8
Specialist Registrar					
Wave 1	*864*	1.5	25.2	3.8	69.4
Wave 2	*892*	1.7	22.0	4.3	72.1
Wave 3	*771*	2.2	25.9	0.9	70.9
Wave 4	*731*	1.1	17.6	2.5	78.8
Wave 5	*765*	1.7	15.6	3.7	79.1
Wave 6	*590*	2.0	13.1	4.1	80.9
Wave 7	*598*	1.5	14.1	3.5	80.9
Wave 8	*518*	2.5	15.0	5.1	77.4
Wave 9	*540*	2.4	23.2	4.8	69.6

which case this information is also included in the MABEL dataset. In both cases the clinical practice status is included in the MABEL dataset. Further information on this is given in Section 2.5.

1.10 Response Bias

A key issue in survey research is whether respondents differ from non-respondents in some way that is likely to impact systematically on the estimated outcome values. Variables which are of particular relevance to our key outcome variables include age, gender, doctor type, geographic location and hours worked.

Age is a key variable, with impacts in a number of areas such as life-cycle labour supply decisions, decisions to start a family, and propensity to fill out questionnaires. For example, those in the middle age ranges may be more likely to respond due to lower satisfaction with work and life in general, while doctors closer to retirement may be less likely to participate because of a perception that the survey is less relevant for them (Lynn 2008), especially if they are working only a small number of hours.

Tables 7.1 to 7.5 show differences between the MABEL cohorts and the total AMPCo population of doctors in clinical practice each year by age, doctor type, gender, state and remoteness.

When compared with the total AMPCo population, the age profile of MABEL respondents tends to over-represent the younger age ranges and slightly under-represent the older age ranges, particularly for Waves 2 to 6. In Waves 7 and 8 the age breakdown of the MABEL population appears to be more similar to the doctor population as a whole than in previous waves. There is no clear pattern in the representativeness of each doctor type. Females are generally over-represented by six to nine percentage points.

The locality and postcode of doctors' practice location were matched to the Australian Standard Geographic Classification Remoteness Areas to compare geographic distribution (ABS 2003). Over-representation of doctors in remote and rural areas in all waves was anticipated because of the incentive payment. Doctors in major cities were under-represented by one to five percentage points in all waves.

Many of the differences in response rates with respect to age, gender, doctor type and location are statistically significant, partly reflecting the large cohort size. The final dataset includes response weights based on a logistic regression model estimated for each doctor type (see next section).

Table 7.1: Comparison of respondents with known population: Age

		N	<30 %	30-39 %	40-49 %	50-59 %	60-69 %	70+ %
2008	AMPCo	54,750	6.7	20.8	27.2	25.4	14.7	5.2
	MABEL W1	10,498	7.4	22.0	27.9	26.9	12.2	3.5
2009	AMPCo	57,565	7.7	20.7	26.2	25.0	15.2	5.2
	MABEL W2	10,304	11.4	23.6	25.7	24.0	12.0	3.4
2010	AMPCo	59,144	7.1	20.4	25.7	25.6	15.6	5.6
	MABEL W3	9,949	10.4	23.0	25.0	24.9	12.6	4.2
2011	AMPCo	59,134	7.2	19.6	24.9	26.2	16.2	6.0
	MABEL W4	9,773	11.8	22.5	24.5	24.5	12.7	4.0
2012	AMPCo	68,009	9.2	20.3	23.8	24.9	15.8	6.1
	MABEL W5	10,746	13.7	24.1	23.7	21.8	12.2	4.6
2013	AMPCo	69,265	8.2	20.6	23.2	24.9	16.4	6.7
	MABEL W6	9,663	14.7	26.6	22.1	20.8	11.7	4.2
2014	AMPCo	67,783	10.2	22.4	24.3	23.2	14.2	5.7
	MABEL W7	9,288	12.0	24.0	22.9	21.8	14.1	5.3
2015	AMPCo	68,956	8.0	22.3	24.8	23.7	15.1	6.1
	MABEL W8	8,982	9.6	24.4	22.9	21.7	15.4	6.0
2016	AMPCo	69,368	7.2	22.3	25.0	24.0	15.5	6.1
	MABEL W9	9,186	9.2	24.8	22.5	21.2	15.8	6.4

Table 7.2: Comparison of respondents with known population: Doctor type

		N	GP %	Specialist %	Hospital non-Specialist %	Specialist Registrar %
2008	AMPCo	54,750	40.4	35.8	16.1	7.7
	MABEL W1	10,498	36.9	41.1	13.8	8.2
2009	AMPCo	57,565	39.6	35.4	16.7	8.3
	MABEL W2	10,304	35.0	38.2	18.1	8.7
2010	AMPCo	59,144	39.4	35.7	16.4	8.5
	MABEL W3	9,949	36.1	38.6	17.6	7.8
2011	AMPCo	59,134	39.3	38.6	16.2	6.0
	MABEL W4	9,773	34.3	40.6	19.4	5.8
2012	AMPCo	68,009	35.5	34.9	22.0	7.6
	MABEL W5	10,746	31.9	37.3	24.2	6.7
2013	AMPCo	69,265	36.4	36.3	21.1	6.2
	MABEL W6	9,663	29.3	35.1	30.3	5.3
2014	AMPCo	70,245	37.4	36.2	20.4	6.1
	MABEL W7	9,288	33.1	38.3	23.1	5.3
2015	AMPCo	68,956	38.9	37.5	17.7	5.9
	MABEL W8	9,026	34.9	38.9	20.2	6.0
2016	AMPCo	71,710	40.9	37.7	15.8	5.7
	MABEL W9	9,225	37.0	37.8	19.5	5.8

Table 7.3: Comparison of respondents with known population: Gender

		N	Male %	Female %
2008	AMPCo	54,750	66.5	33.5
	MABEL W1	10,498	60.9	39.2
2009	AMPCo	57,565	65.5	34.5
	MABEL W2	10,304	58.0	42.0
2010	AMPCo	59,144	65.1	35.0
	MABEL W3	9,949	56.7	43.3
2011	AMPCo	59,134	64.5	35.5
	MABEL W4	9,773	55.7	44.3
2012	AMPCo	68,009	62.5	37.5
	MABEL W5	10,746	54.3	45.7
2013	AMPCo	69,265	62.2	37.8
	MABEL W6	9,663	52.6	47.4
2014	AMPCo	70,245	61.8	38.3
	MABEL W7	9,288	52.9	47.2
2015	AMPCo	68,943	61.6	38.4
	MABEL W8	9,013	52.3	47.7
2016	AMPCo	71,697	60.9	39.1
	MABEL W9	9,200	52.1	47.9

Table 7.4: Comparison of respondents with known population: State

		N	ACT %	NSW %	NT %	QLD %	SA %	TAS %	VIC %	WA %
2008	AMPCo	54,750	1.8	34.1	0.7	18.1	8.1	2.8	25.5	8.9
	MABEL W1	10,498	1.8	28.0	1.4	18.0	8.2	3.1	30.1	9.5
2009	AMPCo	57,565	1.8	33.3	0.7	18.1	7.7	2.7	26.9	8.9
	MABEL W2	10,304	1.8	27.7	1.2	17.8	7.6	3.0	31.5	9.5
2010	AMPCo	59,144	1.8	32.7	0.7	18.2	7.6	2.9	26.9	9.3
	MABEL W3	9,949	1.9	27.1	1.1	18.0	7.9	3.3	30.5	10.2
2011	AMPCo	59,134	1.9	32.8	0.7	18.6	7.5	2.8	26.2	9.5
	MABEL W4	9,773	2.1	27.3	1.2	18.4	7.4	3.2	29.8	10.7
2012	AMPCo	68,009	1.8	33.0	0.9	19.8	7.7	2.5	24.3	9.9
	MABEL W5	10,746	1.9	27.4	1.5	19.5	8.2	2.7	27.9	10.3
2013	AMPCo	69,265	1.9	32.3	0.9	19.9	7.7	2.5	24.7	10.1
	MABEL W6	9,663	2.1	27.2	1.3	19.2	7.8	2.6	28.9	10.7
2014	AMPCo	70,245	2.0	32.1	0.8	20.0	7.5	2.4	24.6	10.5
	MABEL W7	9,288	2.2	26.8	1.3	18.6	8.0	2.7	29.3	11.1
2015	AMPCo	68,956	2.0	32.1	0.7	19.6	7.6	2.4	25.0	10.6
	MABEL W8	9,026	2.3	27.2	1.2	18.6	7.8	3.8	29.3	10.7
2016	AMPCo	71,710	2.0	32.1	0.8	19.6	7.5	2.5	25.0	10.7
	MABEL W9	9,225	2.2	28.4	1.4	18.9	7.5	3.0	28.1	10.7

Table 7.5: Comparison of respondents with known population: Remoteness

		N	Major city %	Inner regional %	Outer regional %	Remote %	Very remote %
2008	AMPCo	54,750	81.5	13.3	4.4	0.6	0.2
	MABEL W1	10,498	77.2	15.1	5.2	2.0	0.5
2009	AMPCo	57,565	81.6	13.3	4.4	0.6	0.2
	MABEL W2	10,304	76.7	15.6	5.4	1.7	0.6
2010	AMPCo	59,144	81.2	13.6	4.5	0.6	0.2
	MABEL W3	9,949	76.5	16.0	5.5	1.6	0.5
2011	AMPCo	59,134	81.3	13.6	4.4	0.6	0.2
	MABEL W4	9,773	77.0	15.6	5.7	1.4	0.4
2012	AMPCo	68,009	81.4	12.8	5.0	0.7	0.1
	MABEL W5	10,746	77.0	14.8	6.4	1.5	0.3
2013	AMPCo	69,265	80.5	14.2	4.5	0.7	0.2
	MABEL W6	9,663	77.9	15.0	5.4	1.4	0.3
2014	AMPCo	70,245	77.2	14.3	7.4	0.7	0.4
	MABEL W7	9,288	76.3	16.3	5.7	1.4	0.3
2015	AMPCo	68,441	77.2	14.4	7.3	0.7	0.4
	MABEL W8	9,026	75.9	16.5	6.0	1.4	0.2
2016	AMPCo	71,163	76.5	14.8	7.5	0.8	0.5
	MABEL W9	9,225	75.6	16.6	6.0	1.5	0.3

It seems likely that doctors who work longer hours would be less inclined to complete a survey than those who are less pressed for time. In general, the opportunity cost to respondents of filling out the survey are related to the time taken to complete the survey (Groves and Peytcheva 2008; Dillman 2007). To examine the extent to which MABEL represents doctors who work long hours, we compared the mean and distribution of hours worked with those reported in the Australian Institute of Health and Welfare (AIHW) Medical Labour Force Survey 2008–2015. This is the only other source of national data, and with an overall response rate increasing from 53% in 2008 to 92.2% in 2015. The hours question in MABEL was based on the questions used in the AIHW survey, so are comparable.

Table 7.6 shows differences in the mean of total clinical hours worked per week according to AIHW and MABEL. In general, AIHW and MABEL participants report very similar working hours, with MABEL hours on average just 1% lower than those reported by AIHW. However, these differences are not consistent across doctor types and waves. In earlier waves, MABEL respondents tended to report longer working hours than AIHW respondents, with differences being as high as 5% for male GPs in Wave 1 (MABEL reported 45.4 hours and AIHW reported 43.2 hours) and female GPs (MABEL reported 33.1 hours and AIHW reported 31.5 hours).

GPs and Specialists responding to MABEL reported working hours which were up to 5% longer (approximately 1.5 hours) than those responding to AIHW in Wave 1. This difference was lower in Wave 2 and disappeared altogether in Wave 3. From Wave 4 MABEL GPs and Specialists reported

shorter working hours than respondents to AIHW. One explanation for this is that doctors who work long hours are unable to commit to responding repeatedly to MABEL, even though they managed it once or twice. There was no clear trend in the reporting patterns of junior doctors.

Table 7.7 shows the distribution of clinical hours worked using AIHW and MABEL data, and Figures 5.1 and 5.2 show the distribution of working hours for doctors from the two most recent waves of the surveys (males and females combined). The tables and the figures show very similar distributions of working hours by data source, with a very slight over-representation of doctors working 20-34 hours, and an under-representation of doctors working 34-49 hours, according to MABEL data.

Table 7.6: Mean total clinical hours worked per week, according to MABEL and the AIHW Medical Labour Force Survey.

	All Drs	GP	SP	HNS	DE	All Drs	GP	SP	HNS	DE	All Drs	GP	SP	HNS	DE
	Male					Female					Male and Female				
2008															
MABEL W1	47.1	45.4	47.1	49.5	50.5	38.4	33.1	37.5	45.7	47.4	43.7	39.9	44.4	47.3	48.9
AIHW	45.8	43.2	46.1	48.3	50.9	37.8	31.5	36.6	46.0	47.1	43.0	38.6	43.8	47.1	49.4
2009															
MABEL W2	46.3	44.8	46.5	48.5	48.4	38.5	33.0	38.0	47.2	47.4	43.1	39.2	44.0	47.8	46.9
AIHW	45.2	42.7	45.9	46.9	49.4	37.6	31.6	37.3	44.7	47.3	42.5	38.3	43.7	45.9	48.5
2010															
MABEL W3	46.0	44.0	45.9	49.4	51.0	38.2	32.5	37.6	47.5	46.9	42.6	38.4	43.3	48.3	48.8
AIHW	46.0	43.5	46.7	48.2	51.6	38.7	32.5	37.6	46.0	47.7	43.3	39.1	44.4	47.1	49.8
2011															
MABEL W4	45.1	43.5	45.2	47.8	49.3	37.6	32.0	37.5	46.8	48.0	42.5	39.0	43.4	47.3	48.8
AIHW	46.2	43.4	47.0	47.6	50.4	38.9	32.7	38.0	44.8	46.8	43.5	39.1	44.7	46.2	48.8
2012															
MABEL W5	44.5	42.0	44.9	47.3	49.3	38.0	32.0	37.2	45.3	46.3	42.1	38.0	43.0	46.3	48.0
AIHW	45.6	43.4	46.4	46.5	49.2	38.4	33.0	37.9	44.1	45.7	42.9	39.1	44.1	45.4	47.6
2013															
MABEL W6	44.0	41.9	44.5	47.4	46.6	37.4	31.6	36.8	46.8	45.8	41.7	37.8	42.6	47.2	46.2
AIHW	45.6	43.1	46.5	47.0	48.7	38.9	33.1	38.0	45.3	45.0	43.0	39.0	44.1	46.2	46.9
2014															
MABEL W7	44.1	42.0	44.1	47.9	48.5	37.8	32.3	37.1	46.8	47.6	41.7	37.9	42.1	47.3	48.1
AIHW	45.5	42.6	46.1	47.6	48.5	38.8	33.0	37.9	45.0	44.6	42.8	38.6	43.7	46.4	46.5
2015															
MABEL W8	43.9	41.5	44.1	46.8	49.8	37.1	31.7	37.4	45.5	48.0	41.2	37.2	42.2	46.1	48.9
AIHW	45.3	42.2	46.0	48.3	48.3	38.8	32.8	38.1	45.6	44.7	42.7	38.3	43.7	47.0	46.5
2016 MABEL W9	43.2	40.7	43.8	46.4	48.9	37.1	32.3	37.5	45.8	47.1	40.6	36.9	41.5	46.1	48.0
AIHW	45.0	42.1	45.5	48.1	48.2	38.6	32.7	37.9	45.4	44.4	42.5	38.1	43.3	46.8	46.2

Note: The working hour questions are subject to changes across first three waves, see Table 16.2 for details.
Source: MABEL (2008 - 2016) and AIHW Medical Labour Force Survey (2008 - 2016) weighted data

Table 7.7: Comparison of total clinical hours worked per week by MABEL respondents and population, by gender

	Number of hours worked per week (% of doctors)						Number of hours worked per week (% of doctors)						Number of hours worked per week (% of doctors)					
	1-19	20-34	35-49	50-64	65-79	80+	1-19	20-34	35-49	50-64	65-79	80+	1-19	20-34	35-49	50-64	65-79	80+
	Men						Women						All					
2008																		
MABEL Wv1	2.9	9.6	42.4	37.5	5.8	1.8	10.1	28.8	36.4	20.3	3.1	1.3	5.7	17.1	40.1	30.8	4.7	1.6
AIHW LFS	4.4	10.8	44.1	32.4	5.7	2.7	12.2	26.0	40.3	16.4	3.5	1.7	7.1	16.2	42.8	26.8	4.9	2.3
2009																		
MABEL Wv2	3.1	9.6	46.5	33.4	5.4	2.0	9.5	26.7	42.0	17.9	2.6	1.3	5.8	16.7	44.6	27.0	4.3	1.7
AIHW LFS	4.5	11.5	45.9	30.3	5.3	2.5	11.6	26.7	40.6	16.8	2.6	1.6	7.1	16.9	44.0	25.5	4.4	2.2
2010																		
MABEL Wv3	3.6	10.5	46.6	32.0	5.2	2.2	10.2	28.1	39.1	18.0	3.0	1.6	6.5	18.1	43.4	26.0	4.2	1.9
AIHW LFS	4.8	10.2	43.7	32.1	6.5	2.6	10.2	25.1	41.8	17.8	3.3	1.8	6.8	15.7	43.0	26.9	5.3	2.3
2011																		
MABEL Wv4	3.8	11.9	47.4	30.5	4.8	1.6	9.7	30.9	38.3	17.3	2.8	1.0	5.8	18.4	44.3	26.0	4.1	1.4
AIHW LFS	4.3	9.8	46.6	31.0	5.9	2.5	10.0	24.4	44.0	16.9	3.1	1.6	6.4	15.3	45.6	25.7	4.9	2.2
2012																		
MABEL Wv5	3.7	12.7	47.2	30.5	4.5	1.3	8.7	28.7	43.2	15.7	2.4	1.3	5.6	18.6	45.8	25.1	3.7	1.3
AIHW LFS	3.7	9.9	48.9	29.7	5.5	2.3	9.2	24.6	46.7	15.2	2.6	1.6	5.7	15.5	48.1	24.2	4.4	2.1
2013																		
MABEL Wv6	4.5	12.9	49.5	28.3	3.8	1.1	8.9	30.7	41.5	15.7	2.2	1.0	6.0	19.1	47.6	23.2	3.1	1.1
AIHW LFS	3.5	9.9	49.9	28.3	5.7	2.7	8.9	24.5	46.3	15.3	2.9	2.1	5.6	15.5	48.5	23.3	4.6	2.5
2014																		
MABEL Wv7	4.0	12.1	50.0	28.6	4.1	1.2	9.1	31.0	39.8	15.9	2.8	1.5	5.9	19.3	46.1	23.7	3.6	1.3
AIHW LFS	3.5	10.3	50.6	27.5	5.4	2.7	8.4	25.3	46.9	14.6	2.8	2.0	5.4	16.2	49.2	22.4	4.4	2.4
2015																		
MABEL Wv8	4.1	12.9	49.9	28.1	3.8	1.3	9.8	3.2	39.4	14.8	2.6	1.5	6.3	20.3	45.8	22.9	3.3	1.4
AIHW LFS	3.4	10.4	51.1	27.2	5.3	2.7	8.3	25.4	46.7	14.7	2.9	2.0	5.4	16.4	49.3	22.2	4.3	2.4
2016 MABEL Wv9	4.5	14.4	49.9	26.5	3.7	1.1	8.8	32.2	41.0	14.7	2.5	0.8	6.3	22.0	46.1	21.5	3.2	1.0
AIHW LFS	4.9	17.9	52.5	20.3	2.6	1.8	11.6	30.7	43.6	10.7	1.8	1.5	7.6	23.1	48.9	16.4	2.3	1.7

Note: The working hour questions are subject to changes across the first three waves, see Table 16.2 for details.
Source: MABEL (2008 - 2016) and AIHW Medical Labour Force Survey (2008 - 2016).

Figure 5.1: Working hours of doctors in 2015 according to MABEL and AIHW

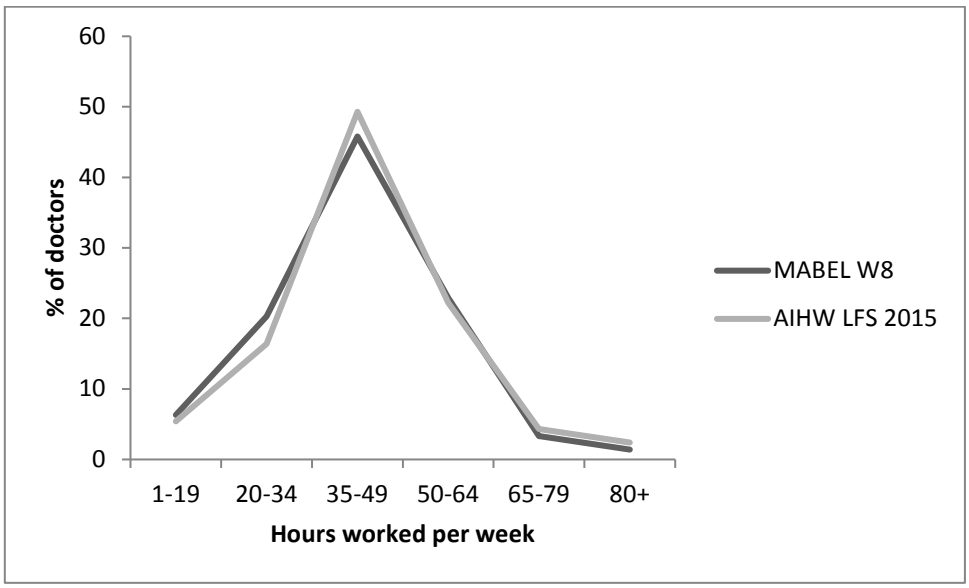
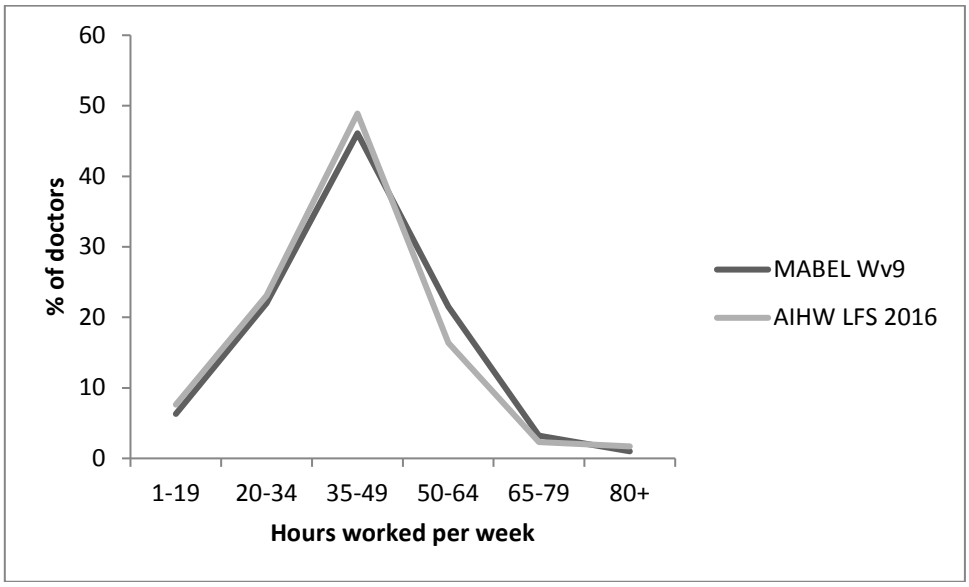


Figure 5.2: Working hours of doctors in 2016 according to MABEL and AIHW



1.11 Survey Weights

1.11.1 Survey Weights for Wave 1

As Wave 1 of MABEL consisted of a census of the entire population of Australian doctors, it was necessary only to create weights to adjust for non-response. Non-response weights are commonly used to adjust for differences between the characteristics of respondents to a survey and the characteristics of the population. For example, in order to calculate the mean earnings of doctors in Australia we must take into account the fact that the MABEL survey over-represents rural doctors and under-represents urban doctors. As we have information on the population of doctors, including the

number located in rural versus urban areas, we can compute weights to ensure that summary statistics better approximate the true averages of the population.

The basic procedure for calculating sampling weights is as follows (adapted from Deaton 1997):

(i) identify subgroups of the population which have different probabilities of responding to the survey;

(ii) calculate the probability of response for each subgroup; and

(iii) calculate the corresponding weight for each subgroup by taking the reciprocal of the probability of response.

Step (i) is influenced by the availability of data on the population.

Our population data, from the Australian Medical Publishing Company (AMPCo), was linked by postcode to the Australian Standard Geographic Classification Remoteness Areas (ASGC 2006). We use information on the following: receipt of an incentive cheque (for rural doctors); doctor age group; gender; rurality (ASGC); state/territory; and doctor type. The population data is linked to MABEL responses. Where we received a response to the MABEL survey that indicated the doctor had retired or was not currently in clinical practice, we dropped the observation from the population. Responses that were classified 'return to sender' were included in the population, on the assumption that these responses represent doctors in the population who had changed address and could not be located.

Following a similar method to Watson and Fry (2002), we use a logistic regression to calculate the probabilities in step (2). The probability of response of individual *i* is modelled as follows for each doctor type:

$$\Pr(response_i) = F(\alpha + \beta gender_i + \gamma agegroup_i + \delta state_i + \theta ruralitygroup_i + \pi cheque_i)$$

Where *F(.)* is the logistic distribution function. Sampling weights are defined by:

$$weight_cs_i = \frac{1}{\widehat{\Pr}(response_i)}$$

We estimate the model separately for each doctor type, thus allowing the effect of gender, age, state and rurality on response to vary by doctor-type, but we do not include any interaction terms. This implies, for example, that for a given doctor-type, the effect of gender on probability of response is the same across age groups, in all states and in all rurality groups.

The reason for restricting the interaction terms in the model is to avoid estimating response probabilities for very small sub-samples of the data (see e.g. Little 2003, Section 3). If we included all possible interactions we would be calculating a probability separately for 1120 groups [2(genders)*7(age groups)*8(states)*5 (rurality groups)*2 (cheque groups)], many of which would have very few (or zero) observations. By omitting interaction terms (except for doctor type), we pool many of these groups together to make estimation more reliable. For example, there are relatively few observations in the 'very remote' rurality category, and in the model these observations are

pooled across states, age groups, and gender to estimate the effect of ‘very remote’ location on response probability.

For some doctor types there are very small numbers of doctors in particular age groups, states or rurality groups. Where there are less than ten doctors of a given type in a group, they are assigned to a different group. In Wave 1, for Specialist Registrars we combine: doctors in ‘remote’, ‘very remote’ and the ‘outer regional’ groups; doctors in the Northern Territory and Western Australia; doctors in the (age) groups ‘Age 50–59’, ‘Age 60–69’ and ‘Age 40–49’ (there are no Specialist Registrars in the ‘Age >70’ group); and doctors in the ‘cheque’ group (eight doctors) and the ‘no cheque’ group. For Hospital Non-Specialist doctors we combine the ‘Age >70’ group and ‘Age 60–69’ group. For Specialists we combine the ‘very remote’ group with the ‘remote’ group. Table 8.1 presents descriptive statistics for the estimated response probabilities and associated weights by doctor type, and Table 8.1.1 presents Wave 1 results of the models (in odds-ratio form) for each doctor type.

As Wave 1 of MABEL was a census of Australian doctors rather than a random sample of the population, it is inappropriate to calculate standard errors or confidence intervals for the weights (see AIHW, 2008 Appendix A for a similar argument in relation to the AIHW Medical Labour Force Survey).

Table 8.1: Descriptive statistics for Wave 1 sampling weights

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Predicted response	0.211	0.115	0.241	0.069	0.192	0.086	0.237	0.079
Weight	5.649	2.134	4.474	1.229	6.040	2.293	4.850	2.073
Total	3,873		4,310		1,451		864	

Note: The weights are greater than one by definition. When summed over all responders, they sum to the population for each doctor type.

Table 8.1.1: Logistic regression for Wave 1 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.467	0.056	1.548	0.065	1.403	0.083	1.628	0.127
Age <30	2.102	0.396			1.270	0.150	2.274	0.433
Age 30–39	1.172	0.072	1.088	0.069	0.864	0.103	1.639	0.190
Age 50–59	1.202	0.056	1.124	0.052	1.484	0.270	0.690	0.171
Age 60–69	0.868	0.054	0.944	0.050	1.048	0.302		
Age >70	0.901	0.084	0.726	0.063				
Age missing	0.576	0.043	0.586	0.040	0.560	0.076	0.682	0.101
ACT	1.690	0.230	1.119	0.152	1.271	0.282	1.149	0.371
NT	1.534	0.288	1.675	0.426	1.950	0.663		
QLD	1.241	0.067	1.136	0.061	1.163	0.104	1.005	0.123
SA	1.386	0.099	1.424	0.093	1.062	0.142	0.730	0.144
TAS	1.498	0.167	1.206	0.145	0.957	0.187	0.700	0.202
VIC	1.645	0.080	1.555	0.070	1.544	0.117	1.309	0.127
WA	1.460	0.099	1.077	0.075	1.392	0.154	1.545	0.215
Inner regional	1.406	0.067	1.471	0.088	1.545	0.169	1.363	0.247
Outer regional	1.483	0.104	1.199	0.151	0.965	0.205	1.739	0.476
Remote	1.651	0.410	1.535	1.229	0.873	0.626		
Very remote	1.355	0.440			1.088	0.846		
Cheque	5.291	1.071	3.524	2.533	6.060	3.886		
Log L	-9819.1		-10038.6		-3807.1		-2051.7	
N	21,941		19,296		8,784		4,202	

Note: Reference category is: male, age 40-49, NSW, major city, no cheque.

1.11.2 Survey weights for subsequent waves

From Wave 2 onwards, the composition or 'selection' of the sample depends on the baseline cohort, the attrition of doctors from Wave 1, the new cohort and non-response in subsequent waves. Three different types of survey weights are provided in the dataset: cross-sectional weights, longitudinal weights and balanced panel weights. Cross-sectional weights for subsequent waves were constructed using AMPCo data on the population of doctors in Australia in each year using a similar approach to generate the survey weights in Wave 1. These weights are available for all respondents from Wave 2 onwards and can be used to adjust the differences between the characteristics of respondents to the characteristics of the population of doctors in that survey year. These are useful if only a cross-section of the data are being analysed.

For doctors included in the longitudinal cohort (that is doctors who responded in initial and any subsequent waves), longitudinal weights are constructed as follows:

(i) Calculate Wave 1 cross-sectional weights ($weights_cs_{i,1}$) using the procedure as described in previous section;

(ii) Apply a logistic regression to calculate the probabilities of a continuing response of individual i in subsequent Wave j for the Wave 1 baseline cohort of doctors by Wave 1 characteristics. The probability of subsequent wave response is modelled as follows for each doctor type:

$$\Pr\left(response_{i,j} \middle| response_{i,1} = 1\right) = F(\alpha + \beta gender_{i,j} + \gamma agegroup_{i,j} + \delta state_{i,j} + \theta ruralitygroup_{i,j} + \pi cheque_{i,j} + \varphi change_{i,j})$$

Compared with the model used to calculate the sampling weights in Wave 1, the additional variable *change* is defined to equal 1 if a doctor's working address (postcode) changed between waves, and 0 if otherwise. The logistic regression results (in odds ratio form) are presented in Table 9.1;

(iii) Calculate the longitudinal weights as follow:

$$weight_l_{i,j} = weight_cs_{i,1} \times \frac{1}{\widehat{\Pr}\left(response_{i,j} \middle| response_{i,1} = 1\right)}$$

From Wave 3 onwards the panel weights for the balanced panel cohort, which is formed by the continuing doctors responding in initial and ALL subsequent waves (these balanced panel weights also exist in Wave 2, which are equalised to the longitudinal weights), are constructed as follows:

(i) Calculate Wave 1 cross-sectional weights (*wave1_weights*) using the procedure as described in previous section;

(ii) Apply a logistic regression to calculate the probabilities of a continuing response of individual i in ALL subsequent waves up to Wave j for the Wave 1 baseline cohort of doctors by Wave 1 characteristics. The probability of subsequent wave response is modelled as follows for each doctor type:

$$\Pr\left(response_{i,j} \middle| response_{i,j-1} = \cdots = response_{i,1} = 1\right) = F(\alpha + \beta gender_{i,j} + \gamma agegroup_{i,j} + \delta state_{i,j} + \theta ruralitygroup_{i,j} + \pi cheque_{i,j} + \varphi change_{i,j})$$

Compared with the model used to calculate the longitudinal weights, the definition of variable *change* is defined to equal 1 if a doctor's working address (postcode) changed at least once during ALL waves, and 0 if otherwise. The logistic regression results (in odds ratio form) are presented in Table 10;

(iii) Calculate the panel weights as follow:

$$weight_panel_{i,j} = weight_cs_{i,1} \times \frac{1}{\widehat{\Pr}\left(response_{i,j} \middle| response_{i,j-1} = \cdots = response_{i,1} = 1\right)}$$

The longitudinal weights allow one to account for cross-wave attrition and adjust for differences between the characteristics of the continuing samples in subsequent waves and the baseline cohort in Wave 1. The panel weights restrict this justification to the balanced panel cohort only. For example, when we compare the working hours of doctors between two waves, the statistics are not directly comparable between waves as a result of the cross-wave attrition, which possibly leads to changes of cohort structures with respect to certain attributes (e.g. doctors work more hours are more likely

not to respond, etc.). Therefore, longitudinal weights are recommended for use here to adjust for such attrition before comparing the statistics across waves. If more than two waves are analysed, the panel weights are recommended instead.

Tables 8.2–8.9 present the logistic regression results (in odds ratio form) for the selection of the sample in Waves 2–9 where the benchmark is the population of doctors in 2009, 2010, 2011, 2012, 2013, 2014, 2015 and 2016 respectively. Due to the small number of Specialist Registrars over the age of 70, Specialist Registrars in the two oldest age groups were combined in each wave. The two youngest age groups of GPs were combined in several but not all waves due to a lack of GPs under the age of 30. The same is true for Specialists: those working in remote and very remote areas were often combined, due to the small numbers of doctors working in very remote areas.

Table 8.2: Logistic regression for Wave 2 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.603	0.063	1.629	0.069	1.250	0.068	1.422	0.111
Age <30	2.365	0.401			1.822	0.195	1.514	0.282
Age 30–39	1.546	0.091	1.203	0.073	0.933	0.102	1.568	0.169
Age 50–59	1.072	0.052	1.017	0.047	1.019	0.182	0.807	0.183
Age 60–69	0.836	0.053	0.849	0.045	1.124	0.282	0.710	0.397
Age >70	0.885	0.083	0.652	0.056				
Age missing	0.068	0.012	0.053	0.010	0.052	0.012	0.095	0.021
ACT	1.680	0.244	1.208	0.169	1.567	0.314	1.728	0.500
NT	1.202	0.264	1.178	0.327	0.736	0.282	2.691	1.566
QLD	1.347	0.076	1.105	0.062	0.802	0.069	1.127	0.142
SA	1.525	0.114	1.392	0.097	0.877	0.125	1.057	0.207
TAS	1.392	0.163	1.168	0.147	0.926	0.191	1.474	0.430
VIC	1.663	0.085	1.497	0.070	1.551	0.103	1.552	0.152
WA	1.537	0.110	1.066	0.078	1.323	0.131	1.696	0.245
Inner regional	0.632	0.031	0.602	0.036	0.516	0.052	0.764	0.135
Outer regional	1.116	0.087	0.918	0.122	0.746	0.153	1.164	0.416
Remote	1.142	0.237	0.349	0.227	0.564	0.246	4.200	3.535
Very remote	1.505	0.503			1.773	0.840		
Cheque	29.735	7.107	35.477	25.979	11.205	5.220		
Log L	-9057.2		-9421.7		-4257.1		-2064.7	
N	22,799		20,381		9,637		4,748	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 8.3: Logistic regression for Wave 3 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.638	0.064	1.704	0.071	1.270	0.071	1.604	0.132
Age <30	2.365	0.395			1.520	0.148	1.501	0.281
Age 30–39	1.765	0.098	1.243	0.075	0.812	0.081	1.421	0.156
Age 50–59	1.100	0.048	1.094	0.046	0.951	0.156	0.960	0.214
Age 60–69								
Age >70	0.962	0.085	0.835	0.064	0.178	0.183		
Age missing	0.054	0.009	0.042	0.008	0.043	0.010	0.058	0.015
ACT	1.698	0.250	1.275	0.175	1.631	0.303	1.118	0.400
NT	1.856	0.385	0.844	0.245	1.171	0.414	0.795	0.544
QLD	1.392	0.078	1.042	0.059	1.047	0.089	0.936	0.131
SA	1.644	0.122	1.327	0.094	1.365	0.184	1.349	0.250
TAS	1.403	0.167	1.474	0.179	1.223	0.238	0.893	0.246
VIC	1.686	0.086	1.456	0.068	1.535	0.110	1.620	0.168
WA	1.560	0.110	1.042	0.075	1.509	0.143	1.675	0.248
Inner regional	1.578	0.078	1.549	0.095	1.659	0.176	2.098	0.365
Outer regional	1.645	0.119	1.701	0.205	1.248	0.236	1.497	0.501
Remote	0.307	0.099	4.814	1.774	2.675	0.867	8.905	7.729
Very remote	0.344	0.143			4.321	1.923		
Cheque	56.101	17.273			4.510	4.732		
Log L	-9080.9		-9411.3		-4103.7		-1913.8	
N	23,349		21,145		9,677		5,068	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 8.4: Logistic regression for Wave 4 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.625	0.065	1.618	0.065	1.321	0.072	1.536	0.167
Age <30	2.940	0.537	1.450	0.659	1.764	0.181	1.587	0.338
Age 30–39	1.615	0.101	1.195	0.069	0.885	0.093	1.372	0.183
Age 50–59	0.978	0.049	1.007	0.046	0.845	0.149	0.647	0.189
Age 60–69	0.816	0.050	0.875	0.047	1.226	0.296	0.195	0.202
Age >70	0.797	0.074	0.710	0.057	0.385	0.287		
Age missing	0.099	0.013	0.089	0.012	0.065	0.014	0.153	0.035
ACT	1.753	0.251	1.457	0.189	1.485	0.255	0.784	0.353
NT	1.325	0.256	1.262	0.305	1.252	0.431	1.715	1.189
QLD	1.271	0.073	1.131	0.062	1.139	0.093	0.878	0.139
SA	1.496	0.114	1.330	0.094	1.251	0.180	1.174	0.236
TAS	1.403	0.165	1.201	0.147	1.490	0.284	0.845	0.275
VIC	1.591	0.083	1.394	0.065	1.557	0.109	1.320	0.161
WA	1.477	0.105	1.192	0.081	1.395	0.125	1.344	0.235
Inner regional	1.576	0.079	1.613	0.097	1.382	0.142	1.439	0.284
Outer regional	1.980	0.139	1.650	0.194	1.686	0.296	1.177	0.487
Remote	5.739	0.744	2.303	0.855	1.758	0.568	1.055	1.310
Very remote					2.653	1.374		
Cheque								
Log L	-8888.41		-10019.35		-4342.14		-1423.16	
N	23,217		22,837		9,549		3,529	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 8.5: Logistic regression for Wave 5 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.580	0.063	1.749	0.070	1.235	0.057	1.290	0.110
Age <30					1.383	0.125	0.663	0.151
Age 30–39	1.845	0.109	1.150	0.068	0.906	0.083	1.069	0.115
Age 50–59	0.899	0.046	0.963	0.044	0.953	0.148	0.530	0.124
Age 60–69	0.802	0.048	0.889	0.047	0.924	0.211	0.189	0.139
Age >70	0.960	0.081	0.846	0.063	0.583	0.289		
Age missing	0.043	0.008	0.050	0.008	0.024	0.005	0.047	0.011
ACT	1.638	0.247	1.441	0.185	1.342	0.212	0.937	0.324
NT	1.518	0.284	1.332	0.310	3.140	0.710	1.105	0.557
QLD	1.329	0.075	1.162	0.063	1.119	0.081	0.685	0.096
SA	1.556	0.117	1.328	0.094	1.455	0.144	1.696	0.258
TAS	1.298	0.158	1.011	0.125	0.951	0.162	0.537	0.186
VIC	1.526	0.079	1.339	0.062	1.301	0.082	0.871	0.096
WA	1.359	0.097	1.111	0.075	1.122	0.088	0.886	0.131
Inner regional	1.653	0.083	1.751	0.105	1.461	0.122	1.312	0.260
Outer regional	1.960	0.136	1.542	0.167	1.362	0.169	2.312	0.632
Remote	4.733	0.592	2.775	0.878	1.175	0.326	1.254	0.938
Very remote					2.344	1.105		
Cheque								
Log L	-9027.9		-10121.7		-5920.6		-1801.6	
N	24,125		23,719		14,971		5,188	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 8.6: Logistic regression for Wave 6 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.566	0.067	1.709	0.071	1.196	0.053	1.331	0.133
Age <30			1.289	1.495	1.239	0.104	2.471	0.548
Age 30–39	1.657	0.105	1.161	0.072	0.954	0.080	1.103	0.145
Age 50–59	0.878	0.049	1.038	0.050	1.067	0.152	0.314	0.115
Age 60–69	0.779	0.050	0.910	0.052	1.112	0.230	0.205	0.151
Age >70	0.737	0.070	0.821	0.065	1.985	0.657		
Age missing	0.064	0.010	0.045	0.008	0.028	0.005	0.017	0.007
ACT	1.493	0.246	1.330	0.183	1.934	0.272	1.221	0.452
NT	1.656	0.312	0.801	0.225	2.317	0.540	1.459	0.938
QLD	1.261	0.077	1.053	0.061	1.191	0.077	0.835	0.138
SA	1.476	0.120	1.243	0.094	1.225	0.116	1.489	0.283
TAS	1.178	0.157	0.978	0.130	1.062	0.174	0.964	0.344
VIC	1.571	0.087	1.289	0.063	1.382	0.083	1.126	0.149
WA	1.412	0.107	1.014	0.073	1.185	0.088	0.951	0.161
Inner regional	1.550	0.084	1.528	0.099	1.373	0.110	1.420	0.305
Outer regional	1.886	0.137	1.517	0.176	1.275	0.154	1.896	0.606
Remote	4.579	0.594	2.497	0.933	1.234	0.327	1.127	1.051
Very remote					0.868	0.448		
Cheque								
Log L	-8165.4		-9382.1		-6416.0		-1306.0	
N	25,190		25,153		14,599		4,321	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 8.7: Logistic regression for Wave 7 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.563	0.063	1.656	0.066	1.415	0.068	1.499	0.147
Age <30					1.364	0.136	2.704	0.526
Age 30–39	1.396	0.081	1.087	0.065	1.078	0.109	1.363	0.197
Age 50–59	1.094	0.059	1.094	0.052	1.433	0.227	0.387	0.158
Age 60–69	1.204	0.074	1.112	0.061	1.566	0.374	0.736	0.399
Age >70	1.009	0.095	1.118	0.083	1.398	0.596		
Age missing	0.816	0.106	1.370	0.219	0.206	0.043	0.575	0.140
ACT	1.412	0.223	1.088	0.154	1.695	0.228	1.949	0.604
NT	1.567	0.270	1.180	0.301	1.371	0.344	2.213	1.370
QLD	1.184	0.068	1.136	0.063	1.002	0.075	1.010	0.162
SA	1.429	0.109	1.210	0.089	1.503	0.151	1.244	0.251
TAS	1.090	0.136	1.165	0.146	0.717	0.127	0.937	0.338
VIC	1.449	0.076	1.453	0.069	1.717	0.112	1.375	0.175
WA	1.433	0.101	1.126	0.077	1.401	0.111	1.193	0.200
Inner regional	1.433	0.072	1.405	0.087	1.545	0.132	1.388	0.312
Outer regional	1.782	0.121	1.227	0.137	1.374	0.179	1.057	0.348
Remote	4.138	0.519	1.930	0.680	1.349	0.392	1.412	1.127
Very remote					2.279	1.029		
Cheque								
Log L	-9303.2		-10176.6		-5863.7		-1474..0	
N	26,360		25508		14,343		4,321	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 8.8: Logistic regression for Wave 8 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.567	0.062	1.670	0.067	1.442	0.755	1.613	0.153
Age <30					1.545	0.161	2.284	0.427
Age 30–39	1.606	0.092	1.118	0.689	1.157	0.120	1.259	0.171
Age 50–59	1.033	0.057	1.105	0.527	1.390	0.233	0.522	0.169
Age 60–69	1.247	0.076	1.203	0.065	1.773	0.420	0.263	0.194
Age >70	1.169	0.103	1.170	0.085	1.666	0.636		
Age missing	0.901	0.117	2.029	0.321	0.433	0.098	0.810	0.187
ACT	1.544	0.236	1.135	0.156	1.806	0.260	1.662	0.498
NT	1.260	0.231	1.448	0.352	1.331	0.379	4.115	2.279
QLD	1.177	0.067	1.030	0.058	1.069	0.088	1.133	0.166
SA	1.317	0.102	1.115	0.082	1.475	0.162	1.252	0.241
TAS	1.268	0.149	1.196	0.147	0.879	0.165	0.855	0.306
VIC	1.483	0.077	1.367	0.065	1.639	0.115	1.172	0.147
WA	1.280	0.091	1.022	0.071	1.302	0.112	1.063	0.169
Inner regional	1.384	0.069	1.374	0.084	1.559	0.142	1.355	0.269
Outer regional	1.826	0.121	1.253	0.143	1.246	0.182	0.879	0.288
Remote	4.200	0.526	1.149	0.445	2.102	0.607	1.155	0.881
Very remote					2.363	1.139		
Cheque								
Log L	-9442.0		-10141.9		-5020.0		-1555.3	
N	26,815		25,881		12,170		4,082	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 8.9: Logistic regression for Wave 9 survey non-response

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.525	0.058	1.680	0.143	1.291	0.068	1.492	0.142
Age <30	2.328	0.246			1.794	0.186	2.496	0.471
Age 30–39	1.399	0.081	1.137	0.072	1.204	0.125	1.599	0.228
Age 50–59	1.056	0.057	1.080	0.051	1.304	0.216	0.435	0.168
Age 60–69	1.248	0.074	1.223	0.064	1.587	0.361	0.167	0.171
Age >70	1.134	0.099	1.136	0.080	2.602	0.822		
Age missing	1.028	0.097	2.007	0.359	0.626	0.159	0.657	0.187
ACT	1.645	0.229	1.099	0.150	1.217	0.185	0.976	0.342
NT	1.569	0.265	1.341	0.333	1.863	0.469	1.869	1.083
QLD	1.154	0.063	1.004	0.056	0.906	0.073	1.122	0.163
SA	1.220	0.092	1.040	0.077	1.387	0.151	0.980	0.200
TAS	1.285	0.143	1.144	0.145	0.744	0.138	0.688	0.242
VIC	1.378	0.069	1.335	0.063	1.248	0.091	1.306	0.163
WA	1.187	0.082	0.959	0.067	1.165	0.097	1.034	0.166
Inner regional	1.348	0.064	1.237	0.076	1.397	0.133	1.703	0.311
Outer regional	1.664	0.108	1.160	0.134	1.459	0.207	0.875	0.287
Remote	4.470	0.562	0.946	0.386	1.336	0.410	1.249	0.982
Very remote	3.563	0.862			1.674	0.866		
Cheque								
Log L	-10279.3		-10319.5		-4865.2		-1533.8	
N	29,312		27,003		11,295		4,100	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque.

Table 9.1 presents the logistic regression of attrition between Wave 1 and 2. In the attrition regression, we combine the doctors in ‘outer regional’, ‘remote’ and ‘very remote’ groups for Specialists. We assigned doctors in the ‘very remote’ group to the ‘remote’ group for hospital non-Specialists. For Specialist Registrars, we combine: doctors in age groups ‘Age 50–59’, ‘Age 60–69’ and ‘Age>70’; doctors in Northern Territory and Western Australia; doctors in ‘outer regional’ and ‘remote’ groups; and doctors in ‘cheque’ group and ‘no cheque’ group.

In the calculation of attrition weights, factors such as job satisfaction, working hours, and intention to quit are omitted to minimise the missing values. The results of a full specification attrition logistic regression including these factors suggests that the probability of attrition is not associated with job satisfaction or intention to quit; the doctors who work less than 20 hours per week are more likely to participate in the MABEL survey, however this group accounts for only a little over 5% of the sample, and there is no significant difference between other working hour groups in terms of attrition. (For details about analysing attrition across waves, see Yan et al. 2011.)

Table 9.1: Wave 1 & 2 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.447	0.130	1.279	0.126	1.151	0.138	1.236	0.204
Age <30	1.149	0.739			1.101	0.237	2.381	1.375
Age 30–39	1.159	0.163	1.159	0.184	0.996	0.208	1.499	0.304
Age 50–59	1.083	0.111	1.015	0.102	1.397	0.464	1.218	0.547
Age 60–69	1.346	0.190	1.061	0.124	1.742	0.947		
Age >70	1.652	0.371	1.209	0.244	0.403	0.586		
Age missing	0.531	0.248	0.326	0.125	0.285	0.149	0.189	0.140
ACT	0.934	0.284	0.973	0.310	1.560	0.751	1.619	1.294
NT	1.472	0.621	0.348	0.177	0.912	0.557		
QLD	1.173	0.149	1.044	0.136	1.215	0.222	1.233	0.329
SA	1.479	0.260	0.930	0.139	0.802	0.212	0.759	0.303
TAS	0.851	0.206	0.697	0.195	1.116	0.446	0.390	0.255
VIC	1.047	0.116	0.967	0.103	1.058	0.162	1.304	0.267
WA	1.295	0.209	0.738	0.114	1.470	0.337	1.116	0.312
Inner regional	1.146	0.127	1.397	0.206	1.117	0.248	2.322	1.111
Outer regional	1.147	0.187	1.758	0.601	0.910	0.400	2.336	1.552
Remote	0.591	0.327			1.104	1.046		
Very remote	0.568	0.396						
Cheque	2.665	1.294	1.281	0.744	1.416	1.223		
Change	0.961	0.128	0.938	0.175	1.707	0.268	1.236	0.241
Log L	-1802.7		-1943.1		-840.8		-448.0	
N	3,773		4,251		1,399		828	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque, and no address change.

Tables 9.2 – 9.8 present the logistic regressions of attrition between Waves 1 and 3, Waves 1 and 4, Waves 1 and 5, Waves 1 and 6, Waves 1 and 7, Waves 1 and 8, and Waves 1 and 9 respectively. For the regression in Table 10.2, we combine the doctors in groups of ‘remote’ and ‘very remote’ for Specialists. For the attrition regression between Waves 1 and 4, we combine the doctors in groups of ‘remote’ and ‘very remote’ for Specialists, as well the hospital non-Specialists in age groups of ‘Age 50–59’, ‘Age 60–69’ and ‘Age>70’.

Table 9.2: Wave 1 & 3 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.244	0.098	1.325	0.115	1.213	0.140	1.510	0.230
Age <30	0.561	0.178			0.577	0.125	1.253	0.437
Age 30–39	1.026	0.119	1.008	0.120	0.573	0.125	0.922	0.196
Age 50–59	0.966	0.083	0.975	0.080	1.189	0.407	0.942	0.454
Age 60–69								
Age >70	0.794	0.144	1.512	0.298	0.174	0.220		
Age missing	0.045	0.014	0.045	0.013	0.019	0.010	0.017	0.013
ACT	0.898	0.241	1.106	0.331	1.027	0.447	0.961	0.616
NT	1.729	0.563	0.329	0.146	0.584	0.330	0.375	0.395
QLD	1.209	0.138	0.784	0.087	0.993	0.171	0.898	0.214
SA	1.500	0.233	0.883	0.119	1.344	0.364	0.875	0.342
TAS	1.309	0.307	1.403	0.382	1.954	0.834	2.884	1.957
VIC	1.145	0.115	0.993	0.095	1.173	0.174	1.239	0.234
WA	1.139	0.157	0.609	0.084	1.480	0.322	1.321	0.362
Inner regional	1.012	0.100	1.051	0.127	0.995	0.209	0.887	0.310
Outer regional	1.097	0.160	1.800	0.520	0.862	0.366	1.247	0.816
Remote	0.294	0.120			0.566	0.526	1.711	2.255
Very remote	0.404	0.208			6.541	8.426		
Cheque	1.713	0.613	0.930	0.449	1.050	0.841		
Change	0.968	0.098	1.170	0.146	1.828	0.228	1.578	0.250
Log L	-2143.4		-2320.6		-885.9		-501.3	
N	3,873		4,310		1,451		864	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque, and no address change.

Table 9.3: Wave 1 & 4 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.269	0.092	1.247	0.098	1.281	0.143	0.980	0.141
Age <30	0.603	0.185			0.962	0.192	1.256	0.420
Age 30–39	1.083	0.116	1.110	0.123	0.817	0.164	0.839	0.172
Age 50–59	1.070	0.086	1.081	0.082	1.364	0.418	0.423	0.200
Age 60–69								
Age >70	0.710	0.120	0.566	0.087				
Age missing	0.165	0.038	0.166	0.037	0.184	0.060	0.111	0.048
ACT	0.934	0.241	1.291	0.356	1.313	0.558	2.728	1.835
NT	1.368	0.416	0.814	0.350	0.583	0.333	0.193	0.209
QLD	1.043	0.110	0.892	0.092	1.175	0.197	0.822	0.189
SA	1.231	0.173	0.853	0.104	1.030	0.262	1.124	0.429
TAS	0.972	0.205	0.767	0.172	2.808	1.082	0.658	0.369
VIC	1.039	0.098	0.927	0.080	1.424	0.204	1.173	0.210
WA	0.953	0.121	0.874	0.116	1.491	0.307	1.189	0.303
Inner regional	1.136	0.105	1.223	0.138	0.840	0.168	0.886	0.297
Outer regional	1.173	0.157	1.341	0.329	0.957	0.391	2.304	1.481
Remote	0.662	0.232	0.796	1.019	0.715	0.627	0.536	0.700
Very remote	0.925	0.432			1.280	1.199		
Cheque	1.106	0.326	1.090	1.288	0.885	0.663		
Change	1.209	1.109	1.100	0.101	0.691	0.146	1.876	0.275
Log L	-2405.76		-2647.72		-945.60		-553.65	
N	3,873		4,310		1,451		864	

Note: Reference category is: male, age 40-49, NSW, major city, no cheque, and no address change.

Table 9.4: Wave 1 & 5 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.140	0.080	1.297	0.098	1.440	0.164	1.364	0.194
Age <30	0.504	0.152			0.419	0.086	0.502	0.163
Age 30–39	0.996	0.102	1.012	0.107	0.549	0.112	0.818	0.166
Age 50–59	0.969	0.074	1.087	0.080	1.104	0.339	0.608	0.284
Age 60–69								
Age >70	1.123	0.194	0.732	0.112				
Age missing	0.164	0.039	0.167	0.039	0.140	0.048	0.279	0.104
ACT	0.975	0.244	0.915	0.228	1.260	0.539	1.330	0.791
NT	1.840	0.551	1.160	0.492	0.826	0.481	0.372	0.395
QLD	1.142	0.116	0.936	0.093	0.987	0.170	1.011	0.231
SA	1.384	0.189	0.966	0.115	0.891	0.235	0.855	0.320
TAS	0.912	0.184	0.955	0.212	1.960	0.739	0.474	0.267
VIC	1.066	0.097	1.056	0.088	1.057	0.155	1.309	0.231
WA	0.942	0.116	0.958	0.123	1.216	0.254	1.128	0.281
Inner regional	1.155	0.103	1.350	0.148	0.814	0.168	1.352	0.456
Outer regional	1.069	0.136	1.274	0.297	1.035	0.428	0.864	0.527
Remote	0.970	0.425	0.528	0.672	0.646	0.597	0.589	0.763
Very remote	0.693	0.188			2.598	2.495		
Cheque	1.257	0.104	1.487	1.754	0.527	0.415		
Change	1.397	0.123	1.233	0.103	2.378	0.271	2.101	0.301
Log L	-2530.6		-2783.4		-918.6		-568.0	
N	3,873		4,310		1,451		864	

Note: Reference category is: male, age 40-49, NSW, major city, no cheque, and no address change.

Table 9.5: Wave 1 & 6 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.227	0.083	1.242	0.089	1.398	0.156	1.214	0.170
Age <30	0.710	0.214			0.780	0.155	0.818	0.260
Age 30–39	1.093	0.108	0.885	0.089	0.786	0.158	1.030	0.205
Age 50–59	0.938	0.070	1.040	0.073	0.925	0.282	0.483	0.238
Age 60–69								
Age >70	0.595	0.103	0.713	0.109				
Age missing	0.232	0.058	0.220	0.054	0.148	0.053	0.350	0.132
ACT	0.915	0.223	0.854	0.208	2.529	1.096	0.441	0.299
NT	2.170	0.622	0.654	0.260	1.419	0.817	1.161	1.199
QLD	1.033	0.102	0.846	0.081	1.076	0.181	1.076	0.243
SA	1.215	0.158	0.779	0.090	1.045	0.267	1.295	0.474
TAS	0.702	0.140	0.928	0.194	1.276	0.482	0.812	0.450
VIC	1.108	0.098	0.959	0.077	1.411	0.202	1.494	0.260
WA	1.019	0.124	0.738	0.092	1.543	0.316	0.937	0.232
Inner regional	1.120	0.097	1.082	0.111	1.057	0.211	0.937	0.309
Outer regional	1.025	0.126	0.910	0.201	0.775	0.329	0.832	0.507
Remote	0.830	0.273	2.217	2.808	0.355	0.333	2.255	2.907
Very remote	0.690	0.304			0.491	0.492		
Cheque	0.895	0.241	0.373	0.439	0.913	0.714		
Change	1.157	0.089	1.098	0.085	1.554	0.173	1.407	0.199
Log L	-2638.9		-2944.1		-945.4		-578.0	
N	3,873		4,310		1,451		864	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque, and no address change.

Table 9.6: Wave 1 & 7 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.116	0.076	1.173	0.084	1.465	0.165	1.194	0.168
Age <30	0.616	0.187			0.800	0.161	0.785	0.251
Age 30–39	1.057	0.104	0.921	0.092	0.910	0.184	0.771	0.155
Age 50–59	1.061	0.079	1.128	0.079	1.300	0.396	0.594	0.280
Age 60–69								
Age >70	0.538	0.093	0.725	0.111				
Age missing	0.168	0.046	0.200	0.050	0.182	0.066	0.336	0.125
ACT	0.762	0.186	0.662	0.163	2.319	0.993	0.928	0.551
NT	2.316	0.681	1.041	0.413	1.109	0.608	1.079	1.177
QLD	0.985	0.098	0.963	0.092	0.936	0.161	1.177	0.267
SA	1.123	0.146	0.891	0.103	1.001	0.259	0.685	0.263
TAS	0.571	0.115	1.327	0.280	1.908	0.720	0.660	0.376
VIC	0.957	0.085	1.098	0.088	1.405	0.203	1.474	0.257
WA	0.939	0.114	0.901	0.112	1.132	0.235	1.046	0.258
Inner regional	1.150	0.010	0.955	0.098	0.836	0.172	1.044	0.344
Outer regional	1.027	0.127	0.794	0.176	1.090	0.453	0.459	0.301
Remote	0.912	0.301	1.376	1.747	1.068	0.949	0.462	0.603
Very remote	0.772	0.342			0.977	0.932		
Cheque	0.758	0.205	0.380	0.447	0.901	0.685		
Change	1.238	0.093	1.154	0.086	1.734	0.194	1.746	0.248
Log L	-2625.5		-2934.0		-932.5		-575.0	
N	3,873		4,310		1,451		864	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque, and no address change.

Table 9.7: Wave 1 & 8 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.189	0.081	1.230	0.088	1.703	0.195	1.240	0.174
Age <30	0.642	0.196			0.857	0.173	0.825	0.262
Age 30–39	1.173	0.115	0.820	0.083	0.842	0.171	0.890	0.178
Age 50–59	1.140	0.085	1.106	0.078	1.103	0.341	0.403	0.199
Age 60–69								
Age >70	0.657	0.113	0.676	0.105				
Age missing	0.318	0.074	0.203	0.051	0.116	0.049	0.328	0.121
ACT	0.888	0.217	0.833	0.204	2.366	1.028	1.499	0.875
NT	1.546	0.440	1.527	0.633	0.946	.532	0.830	0.890
QLD	1.002	0.099	0.968	0.093	0.918	0.159	1.109	0.252
SA	1.076	0.139	0.759	0.088	0.891	0.235	0.674	0.254
TAS	0.697	0.138	1.156	0.243	1.498	0.575	0.733	0.403
VIC	1.100	0.097	1.036	0.083	1.201	0.176	1.171	0.203
WA	0.863	0.105	0.793	0.099	1.189	0.249	0.773	0.192
Inner regional	1.106	0.095	1.062	0.109	1.136	0.231	1.166	0.384
Outer regional	1.285	0.159	0.855	0.191	1.457	0.611	0.613	0.380
Remote	1.582	0.524	0.210	0.244	0.554	0.502	0.483	0.626
Very remote	1.149	0.507			0.800	0.768		
Cheque	0.058	0.158	1.160	1.190	1.226	0.935		
Change	1.245	0.092	1.116	0.081	1.871	0.213	1.649	0.234
Log L	-2641.6		-2936.3		-914.7		-578.1	
N	3,873		4,310		1,451		864	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque, and no address change.

Table 9.8: Wave 1 & 9 attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.189	0.081	1.234	0.088	1.713	0.197	1.256	0.176
Age <30	0.641	0.195			0.852	0.172	0.804	0.256
Age 30–39	1.167	0.115	0.820	0.083	0.833	0.170	0.877	0.175
Age 50–59	1.143	0.085	1.104	0.077	1.128	0.349	0.391	0.193
Age 60–69								
Age >70	0.670	0.115	0.681	0.105				
Age missing	0.319	0.074	0.203	0.051	0.116	0.048	0.333	0.123
ACT	0.885	0.216	0.837	0.205	2.514	1.100	1.529	0.892
NT	1.518	0.432	1.543	0.640	1.012	0.570	0.851	0.912
QLD	0.994	0.098	0.968	0.093	0.921	0.159	1.133	0.257
SA	1.077	0.140	0.759	0.088	0.909	0.241	0.705	0.267
TAS	0.695	0.138	1.158	0.243	1.498	0.576	0.728	0.401
VIC	1.098	0.097	1.034	0.082	1.226	0.180	1.186	0.206
WA	0.857	0.104	0.796	0.099	1.195	0.250	0.773	0.192
Inner regional	1.113	0.096	1.069	0.110	1.169	0.238	1.170	0.385
Outer regional	1.293	0.160	0.860	0.192	1.451	0.609	0.574	0.340
Remote	1.605	0.532	0.209	0.242	0.527	0.481		
Very remote	1.144	0.506			0.845	0.817		
Cheque	0.575	0.157	1.165	1.194	1.261	0.969		
Change	1.321	0.095	1.123	0.075	2.039	0.233	1.715	0.245
Log L	-2638.5		-2935.9		-910.3		-577.2	
N	3,873		4,310		1,451		864	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque, and no address change.

Table 10 presents the logistic regressions of attrition of the balanced panel cohort in Waves 2–9.

Table 10: Balanced panel attrition logistic regression (in odds ratio form)

	GPs		Specialists		Hospital Non-Specialists		Specialist Registrars	
	O-R	S.E	O-R	S.E	O-R	S.E	O-R	S.E
Female	1.096	0.082	1.234	0.093	1.672	0.261	1.225	0.205
Age <30	0.498	0.189			0.427	0.105	0.675	0.254
Age 30–39	0.788	0.087	0.872	0.095	0.470	0.117	0.748	0.171
Age 50–59	1.057	0.086	1.188	0.088	1.555	0.547	0.543	0.325
Age 60–69								
Age >70	0.506	0.112	0.924	0.155				
Age missing	0.087	0.045	0.100	0.046			0.125	0.094
ACT	0.633	0.183	0.785	0.214	1.079	0.630	0.995	0.798
NT	1.357	0.409	1.584	0.697	0.981	0.895	2.228	2.707
QLD	0.919	0.101	0.934	0.096	1.012	0.234	1.051	0.291
SA	1.109	0.157	0.809	0.102	0.802	0.303	1.442	0.642
TAS	0.687	0.164	1.198	0.267	1.669	0.828	0.835	0.575
VIC	1.023	0.100	1.031	0.087	1.287	0.253	1.526	0.316
WA	0.822	0.113	0.772	0.106	1.358	0.375	1.109	0.336
Inner regional	0.973	0.094	0.965	0.107	1.003	0.270	1.350	0.509
Outer regional	1.057	0.144	0.664	0.172	1.089	0.627	0.705	0.570
Remote	1.153	0.433	0.370	0.489	0.150	0.195		
Very remote	0.587	0.318			0.313	0.453		
Cheque	0.777	0.241	1.135	1.345	1.672	1.629		
Change	1.643	0.128	1.255	0.088	2.726	0.442	2.374	0.424
Log L	-2246.0		-2657.7		-575.9		-441.0	
N	3,873		4,310		1,355		864	

Note: Reference category is: male, age 40–49, NSW, major city, no cheque, and no address change.

2. The MABEL Data

2.1 Variable Name Conventions

Variable names have between four and 13 characters. From the Wave 2 release onwards each variable name has three parts indicating the content of the variable. The first letter is the wave identifier, that is, 'a' for Wave 1; 'b' for Wave 2 etc. (for the variable names occurring throughout this user manual, the first letter is replaced by '_'). The following two letters indicate the section of the survey to which the variable relates (e.g. 'js' indicates questions relating to job satisfaction). The rest of the variable name relates to the specific question or question part.

For a few special cases with negative numeric responses (for example, negative responses to the question of income indicating losses from investment), we generated new variables with the corresponding variable names and a suffix '_neg' to prevent the confusion with the global codes for missing values. These '_neg' variables are omitted from the public release dataset.

Users should be aware that some continuous variables have been top-coded to de-identify them. Separate derived variables were generated in these cases, which are denoted by the original variable name followed by an underscore (_) and a suffix representing the doctor type. More detailed information on this can be found in the section explaining the coding framework.

A complete list of all variables, ordered by section, is given in Table 20 Some of these variables are only present in the internal-release dataset.

2.2 MABEL Data Format

MABEL datasets are in Stata format, or SPSS if requested. MABEL data is fully supported by PanelWhiz, which is a collection of Stata/SE Add-Ons to make using panel data sets easier. For example, it allows the user to select a range of variables across multiple waves at once, and then matches and merges them automatically. PanelWhiz is charityware, which means users donate $AU20 directly to UNICEF each calendar year. For details of PanelWhiz, please see the website: www.panelwhiz.eu or Hahn and Haisken-DeNew (2013).

2.3 Administrative Variables

Doctors can be linked across waves using the cross-wave identifier (variable name: *XWAVEID*). This variable contains three components: the first digit denotes the wave when first participated; the second digit represents doctor type; and the last four digits are randomly assigned to each doctor as individual identifiers (e.g. 123456 denotes a Specialist with personal identifier 3456 first joined MABEL survey at Wave 1). The other administrative variables are:

- *_SDTYPE*: Doctor type (GP, Specialist, Hospital Non-Specialist, or Specialist Registrar);
- *_RESPONSE*: Mode of response, i.e. hardcopy questionnaire, online questionnaire, or information conveyed by AMPCo, telephone call, fax or email.
- *_SOURCE*: Pilot or main survey
- *_CONTINUE: Continuing (previously participating) doctor or doctor new to MABEL*

- *_COHORT*: Year in which respondents initially responded to the survey.

2.4 Missing Value Conventions

Global codes used for all variables to indicate missing values are shown in Table 11 below.

Table 11: Missing value conventions

Text	Description
– 1	Not asked
– 2	Refused
– 3	Not applicable
– 4	Unable to determine value
– 5	Written comment exists

2.5 Data Sources

MABEL data are gathered from various sources, as follows, which could influence the data quality.

- Doctors receive either a pilot questionnaire or a main questionnaire. Those sent a pilot questionnaire remain in the pilot sample every year (and are not moved to the main sample in subsequent waves). The data from respondents to the pilot survey are combined with the main survey where possible. If a question is different in the pilot and main survey then the data from the pilot version is not included in the dataset, producing a missing value.
- Doctors can choose to complete a hardcopy or an online questionnaire.
- Doctors can contact the MABEL office to notify of a change of clinical status by phone, email or fax, rather than returning a questionnaire.
- In each wave a group of doctors are classified by AMPCo as uncontactable, for example, because the AMPCo address is invalid or the doctors have elected not to receive mail. Where possible AMPCo informs the MABEL team of the clinical status of these doctors.

For example, of the 247 doctors who responded to Wave 1 but could not be sent a survey in Wave 2, AMPCo informed the MABEL team that 77 were not in clinical practice, and this information was merged into the MABEL dataset. Table 12 summarises MABEL data sources for each wave.

Table 12: Sources of MABEL data

		Data Sources (percent from each source)					
	Total n	Pilot (Hardcopy)	Pilot (Online)	Main survey (Hardcopy)	Main survey (Online)	Response Sheet	AMPCo
Wave 1	*10,498*	2.4	2.1	67.1	28.4		
Wave 2	*10,381*	2.1	2.5	71.5	22.3	0.9	0.7
Wave 3	*10,078*	2.2	1.1	66.5	28.2	0.7	1.3
Wave 4	*9,973*	0.9	1.8	66.1	28.8	0.3	2.0
Wave 5	*10,916*	2.9	1.5	62.2	31.1	0.6	1.6
Wave 6	*9,961*	2.9	2.1	44.0	45.9	2.1	3.0
Wave 7	*9,536*	3.6	2.1	47.4	43.8	0.6	2.6
Wave 8	*9,166*	1.4	4.8	44.2	44.5	3.6	1.5
Wave 9	*9,353*	2.7	2.8	41.6	48.0	3.5	1.4

2.6 Data Cleaning

In both the hardcopy and online versions of the questionnaire respondents sometimes provided text as well as numeric responses to questions. This meant the data had to be thoroughly cleaned before it could be used. Cleaning the data often required judgement to determine the intended meaning of a response, and a set of guiding principles was developed to deal with the most common problems, as listed in Table 13 below.

Table 13: Basic data cleaning rules

Problem	Examples	Solution
Written text instead of a numeric value.	- Ten hours - Twelve days	De-string the text, i.e. convert text into a numeric value (i.e. 10 and 12).
Instead of a single number, a range of numbers was entered.	'10-12' (for instance hours worked).	Replace the range with the mean of the two values (i.e. 11).
'Not applicable' entered.	'Not applicable' or 'N/A'.	Apply global missing code, i.e. replace with -3.
An inequality was entered instead of a number.	- 'at least 3 hours' - 'maximum of 5 days' - 15+	In these cases, it is not clear what value to impute from this entry, therefore coded as -4.
Basic punctuation symbols such as '?' or '~' were combined with a numeric value.	- ~ 5 (nurses) - ?10 - 10?	These symbols were treated equivalently with any string entry meaning 'around', or 'close to'. These symbols were thus dropped to arrive at the numeric value contained in the entry.

2.7 Duplicate responses

On occasions, doctors complete or return more than one copy of the survey (usually inadvertently). For example, they could complete both the paper and online versions, or two paper surveys, or return two paper surveys with different doctor types, having requested a survey for a different doctor type.

There have been between 33 and 200 duplicates in each wave but only one record for each doctor is selected for inclusion in the dataset. The following rules are used when selecting which of the duplicate records to include in the dataset:

- retain the record with the lowest number of non-response items;
- if the item non-response is similar, the most recent response is retained unless it was received after the cut-off date;
- if the doctor requests a different version of the survey (e.g. because of a change in doctor type), the record from the updated doctor type is retained.

2.8 Data Quality Issues

When cleaning the data a conservative approach is taken to recoding and imputation to allow the data user greater discretion over how to recode variables in line with their particular objectives. This also means the data may contain some seemingly implausible values, even after we have applied the

cleaning rules. In these cases we leave it up to the user whether or not to include these values in their analysis.

2.8.1 Item non-response

Table 14 provides item response rates by section and doctor type for each wave of the survey. Overall, the level of non-response differs by both doctor type, survey section and over time. Completion rates are higher for Waves 3 to 7 than for Waves 1 and 2 across doctor types and across most of the different sections of the survey. The job satisfaction section at the beginning of the survey has the highest completion rate. The section on finances is the least likely to be completed, with completion rates falling by around 4 percentage points between Wave 1 and Wave 2, but increasing substantially, by 9–10 percentage points, in subsequent waves. Response rates for the sections on personality and locus of control are 9 percentage points lower in Wave 6 than Wave 5 (85.4% compared to 94.5%), for reasons which are not clear.

Table 14: Item response by doctor type and section (%)

Wave 1	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Job satisfaction	99.0	99.1	97.3	99.5	99.0
Work places	89.0	78.5	96.0	95.4	85.7
Workload	89.5	86.5	92.4	93.9	88.9
Finances	83.4	82.9	86.8	88.2	84.0
Location	94.2	88.2	94.6	94.6	91.6
About you	87.0	94.7	95.1	96.0	92.0
Family	96.5	94.0	96.9	97.3	95.5
Total	91.7	89.3	94.6	95.4	91.3
Wave 2	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	99.9	99.9	99.9	99.9	99.9
Job satisfaction	99.1	99.3	97.2	99.2	98.9
Work places	83.2	88.1	95.4	95.4	88.1
Workload	87.3	86.0	95.2	96.5	88.8
Finances	81.1	82.2	73.6	70.7	79.5
Location	91.5	94.0	94.5	91.5	93.0
Family	98.4	98.3	97.3	97.7	98.1
About you	86.6	92.9	85.7	90.5	89.4
DCE	97.8	-	-	-	97.8
Personality	97.8	97.7	97.8	97.7	97.7
Total	90.2	91.3	93.2	93.3	91.4

Wave 3	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	100.0	100.0	100.0	100.0	100.0
Job satisfaction	97.9	96.7	97.1	98.0	97.3
Work places	83.5	94.7	89.4	89.3	89.4
Workload	93.1	91.0	96.1	97.1	93.0
Finances	91.4	90.9	94.5	96.0	92.0
Location	97.2	97.9	97.9	98.6	97.7
Family	89.4	89.8	88.8	89.7	89.5
About you	88.1	82.5	90.9	94.4	86.7
Personality	99.5	99.6	97.9	98.8	99.3
Locus of control	98.7	98.7	98.4	98.8	98.7
Workplace aggression	96.8	97.3	98.2	98.6	97.4
Total	93.5	94.1	95.6	96.3	94.3

Wave 4	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	100.0	100.0	100.0	100.0	100.0
Job satisfaction	97.3	98.7	98.4	99.1	98.2
Work places	96.7	82.8	98.7	98.7	91.4
Workload	94.9	91.2	97.0	97.5	93.9
Finances	91.2	91.3	93.7	95.5	92.0
Location	96.5	96.2	98.2	97.8	96.7
Family	94.8	94.3	95.5	96.8	94.9
About you	96.5	98.2	97.4	97.9	97.5
Personality	96.1	96.8	96.7	95.7	96.6
Locus of control	96.5	96.6	96.9	94.8	96.6
Life Events	94.3	93.1	95.9	95.7	95.0
Total	96.0	94.0	97.3	98.1	95.5

Wave 5	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	99.9	99.9	100.0	100.0	99.9
Job satisfaction	94.8	99.2	96.9	98.7	97.2
Work places	96.1	95.3	97.7	97.2	96.2
Workload	94.1	89.9	93.2	95.3	92.4
Finances	90.3	89.6	93.6	93.7	91.0
Location	97.6	98.2	97.3	97.1	97.7
Family	92.4	92.0	92.6	90.4	92.1
About you	94.4	94.5	95.6	91.7	94.6
Personality	94.2	94.3	95.6	91.4	94.5
Locus of control	94.3	96.5	96.7	94.4	95.6
Life Events	94.1	92.9	95.1	91.7	94.1
Total	95.8	95.2	96.7	97.0	95.8

Wave 6	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	99.8	99.8	99.7	99.9	99.8
Job satisfaction	98.5	98.8	95.5	97.9	98.1
Work places	95.3	94.3	97.0	96.6	95.4
Workload	92.9	87.2	88.3	88.0	89.3
Finances	87.7	97.5	95.5	95.1	89.8
Location	95.6	97.6	95.8	95.2	96.3
Family	94.3	96.5	90.8	90.2	94.0
About you	92.5	91.7	94.1	96.4	93.0
Personality	80.4	80.7	89.3	84.4	85.4
Locus of control	80.4	80.7	89.4	84.4	85.4
Life Events	92.9	94.7	92.2	90.7	93.1
Risk-taking	94.3	95.8	92.8	91.6	94.3
Total	95.1	94.7	95.1	95.2	95.0
Wave 7	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	99.9	99.9	99.9	99.9	99.9
Job satisfaction	98.6	99.2	95.7	98.9	98.5
Work places	95.7	96.8	97.0	97.4	96.5
Workload	90.7	86.6	89.7	82.8	88.0
Finances	89.5	89.2	92.2	93.5	90.2
Location	95.0	66.0	93.9	94.9	83.3
Family	90.1	89.5	89.5	87.4	89.5
About you	92.9	92.9	96.4	97.7	88.6
Personality	86.0	87.4	91.6	89.3	89.5
Locus of control	84.7	87.9	91.3	89.4	89.2
Life Events	95.5	96.1	94.7	95.5	95.6
Risk-taking	96.3	96.2	94.9	95.6	96.0
Total	94.8	89.4	95.2	95.5	92.8
Wave 8	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	99.7	99.6	99.8	99.9	99.7
Job satisfaction	98.6	99.0	95.9	98.9	98.6
Work places	96.3	90.4	97.3	97.8	94.2
Workload	92.0	85.2	90.8	83.3	88.0
Finances	90.3	90.6	95.5	94.9	91.5
Location	86.1	90.8	92.3	92.0	89.3
Family	83.6	82.6	84.1	81.7	83.0
About you	87.7	88.1	91.8	96.2	89.3
Personality	89.2	87.2	95.0	88.8	91.3
Locus of control	89.3	83.6	95.2	89.3	90.8
Life Events	95.1	95.2	95.3	94.1	95.1
Risk-taking	96.4	96.8	96.0	95.4	96.4
Total	94.1	95.0	95.1	95.0	93.6

Wave 9	GPs	Specialists	Hospital Non-Specialists	Specialist Registrars	Total
Current situation	99.7	99.8	99.8	100	99.8
Job satisfaction	95.9	97.8	99.1	99.4	98.4
Work places	95.4	96.9	97.0	97.7	96.5
Workload	82.2	84.9	90.2	91.4	87.6
Finances	82.4	82.7	86.9	89.3	83.7
Location	86.8	91.2	91.7	92.3	89.8
Family	80.9	82.8	83.5	83.7	82.9
About you	84.1	84.7	87.8	94.1	85.9
Personality	85.8	86.4	89.3	91.4	88.3
Locus of control	85.1	86.7	89.4	90.9	88.2
Life Events	93.7	93.8	94.3	95.0	94.3
Risk-taking	94.2	94.3	94.7	95.4	94.9
Total	92.9	93.2	94.2	94.3	93.3

2.8.2 Changes to survey questions over time

Questions included in one wave are sometimes modified before inclusion in subsequent waves, either in response to problems doctors had in answering the original version, or because of shifts in policy or terminology. For example:

- Questions relating to GPs and Specialist on-call work were expanded between Waves 1 and 2 to distinguish between on-call ratios for weeknights and weekends, and practice or hospital work.
- The categories of doctors' work settings were modified to include 'laboratory' (Specialist survey) and 'government department, agency or defence force' (both GP and Specialist surveys) after Wave 1, while the category 'deputising service or after-hours clinics' was removed from the GP survey.
- In Wave 1 Specialists were asked to state their standard private consultation fee. From Wave 2 onwards this question asked Specialists to state their fees for new and follow-up consultations separately. GPs were asked to give a single standard (level B) consultation fee in all waves.
- The list of specialty types change in line with official categorisation. The list of specialties in the Wave 6 Specialist, Hospital Non-Specialist and Specialist Registrar questionnaires were substantially different from those in Wave 5 therefore a new variable had to be created, in order to avoid confusion and measurement error. The main differences were the inclusion of five new specialties (palliative medicine, oral and maxillofacial survey, addiction medicine, pain medicine and sexual health) and the collapse of eight pathology specialties into a single category. To compare specialties across waves, a cross-wave specialty variable was created for all waves.

There have been four different formats for the questions on qualifications, as shown in Table 15.1. The most critical difference is that in Waves 2, 3 and 4, doctors who were continuing respondents

were asked to state only the degrees they had been awarded since they last participated in MABEL. However, it was found that this method led to substantial over-reporting of qualifications as it would appear that doctors could not easily recall when they obtained qualifications. Therefore, in Waves 5 and 6 doctors were asked to list all qualifications, even if they had listed them in previous waves. In addition, up until Wave 5 the questions were just about postgraduate qualifications, on the assumption that all doctors have a basic medical degree. In the final version of the question (Waves 5 and 6) doctors were asked to include all medical qualifications, as a basic medical degree can be obtained at the undergraduate (as a five or six-year course) or postgraduate level (as a three-year course following another relevant bachelor's degree). In the first four waves doctors were asked to state the names of qualifications only, whereas in Waves 5 and 6 they were asked the number as well as names of qualifications in attempt to improve the accuracy of the count. Care should be taken when comparing changes in qualifications over time.

Table 15.1: Changes to the qualification questions across waves

Waves	Question	Response format
1	What Specialist postgraduate qualifications have you obtained in Australia? (e.g. FRACP, FRACS, diploma)	Text box
2, 3, 4	Please list any medical qualifications you have obtained in Australia since the last time you completed the MABEL survey (e.g. FRACP, FRACS, AMC examination, diploma).	Text box
5, 6	Please indicate all medical qualifications that you have obtained in Australia. (e.g. MBBS, FRACP)	Number and Text box.
7, 8, 9	Please indicate all medical qualifications that you have obtained in Australia. (New Doctor question) Please indicate all NEW medical qualifications that you have completed in the last 12 months. (Continuing Doctor question)	Number and Text box.

Changes are also sometimes made to written instructions and individual question guidance, particularly for hours worked and earnings. Table 15.2 summarises the changes in wording of the working hour questions between Waves 1, 2 and 3. Comparisons of working hours by setting across the first three waves are likely to result in incorrect estimates of changes in working hours. Using working hours by activity to examine changes in working hours is accurate for Specialists only.

Table 15.2: Changes in the wordings of working hour questions between Waves 1, 2 & 3

Questions	Doctor types	Wave 1	Wave 2	Wave 3
Working hours by setting	All doctor types	In your most recent USUAL week at work, for how many HOURS did you undertake work in each of the following setting? (include ALL of the work you do as a doctor)	**Excluding after-hours <u>and</u> on-call**, for how many HOURS in your MOST RECENT USUAL WEEK at work did you undertake work in the following settings? (include ALL of the work you do as a doctor) (If none, write 0)	**Excluding on-call,** for how many HOURS in your MOST RECENT USUAL WEEK at work did you undertake work in each of the following settings? (Include ALL of the work you do as a doctor) (if none, write 0)
Working hours by activities	Specialist	**Excluding after-hours and on-call**, how many HOURS in your MOST RECENT USUAL WEEK at work did you spend on the following activities? (Include ALL of the work you do as a doctor in ALL jobs/workplaces)	**Excluding after-hours <u>and</u> on-call**, how many HOURS in your MOST RECENT USUAL WEEK at work did you spend on the following activities? (Include ALL of the work you do as a doctor in ALL jobs/workplaces) (If none, write 0)	**Excluding on-call,** for how many HOURS in your MOST RECENT USUAL WEEK at work did you undertake work in each of the following activities? (Include ALL of the work you do as a doctor in ALL jobs/workplaces) (if none, write 0)
	GP Hospital Non-specialist Specialist Registrar	**Excluding after hours on-call**, how many HOURS in your MOST RECENT USUAL WEEK at work did you spend on the following activities? (Include ALL of the work you do as a doctor in ALL jobs/workplaces)	**Excluding after-hours <u>and</u> on-call**, how many HOURS in your MOST RECENT USUAL WEEK at work did you spend on the following activities? (Include ALL of the work you do as a doctor in ALL jobs/workplaces) (If none, write 0)	**Excluding on-call,** for how many HOURS in your MOST RECENT USUAL WEEK at work did you undertake work in each of the following activities? (Include ALL of the work you do as a doctor in ALL jobs/workplaces) (if none, write 0)

2.8.3 Data issues

A number of variables in the dataset had quality issues which were addressed prior to data release, as described below. Given these issues, we suggest that data users undertake careful sensitivity analyses when using variables relating to income, qualifications, hours, on-call, fees and days/weeks responses.

2.8.3.1 Income

(1) Some doctors report their annual income to be below $1000.

Solution: Based on a cross-tabulation of all income variables, these observations appear to refer to a metric of ‘thousands’ (note: this is quite common in MABEL, but usually doctors add an indicator such as ‘k’ or ‘thousands’ after the given number of dollars). We construct an hourly wage rate for these observations to check their validity, by multiplying the values in the range $0 to $1000 by 1000. We

then compare the means and medians of these observations with the rest of the sample. Where it was clear that such values refer to thousands, the value was replaced accordingly.

Some fortnightly income figures were similarly unrealistically low. Following the same approach as above, these figures were cross-tabbed with the other income variables, allowing us to conclude that these figures also referred to 'thousands' rather than absolute numbers, and we replaced the values accordingly.

Although doctors were given the choice of reporting their income as annual or fortnightly figures (and in gross or net terms), the de-identified dataset contains only the annual income variables. Where doctors state only their fortnightly income figures, these data were multiplied by 26 to calculate the annual income.

(2) Some doctors reported a lower gross personal income than net personal earnings.

Solution: For these observations we compared the income figures to those of doctors with similar characteristics, in terms of: doctor type; gender; age; working hours; partner's employment status; and specialty (if the doctor is a Specialist). Having constructed the average gross and net income for a doctor's reference income group, we compared these with the 'problem' income data. Cross-tabulating all this information allowed us to impute values based on the following changes:

- switching gross and net;
- adding one zero to personal income where the respondent omitted one zero; and
- for the rest, either the gross or the net figure was replaced with an –4, depending on which of these two figures was least similar to the group average (by the above criteria).

(3) There were a substantial number of observations where doctors reported gross personal income which was higher than gross household income. This could be explained by measurement errors (typos/etc.); doctors reporting only their partner's earnings as household earnings; or doctors including either their practice's earnings or other forms of income in either of the two figures.

Solution: As a first step, a few cases were identified where one of the two variables had either a surplus zero, or was missing a zero. These values were changed accordingly, but this still left the large majority of cases unchanged. Due to the complexity of household earnings data (which can include a partner's earnings and other sources of income) it was decided to change only those values where the ratio of gross personal to gross household income was exactly ten. We then multiplied the household gross income data for these observations by ten. Note, however, that this problem (i.e. gross personal income being higher than gross household income) persists for a large number of observations in the dataset.

(4) There were a few cases where household net income was greater than household gross income.

Solution: Using an analogous approach to that used in point 2 for personal income, it was possible to resolve these inconsistencies by:

- switching gross and net where appropriate;

- adding one zero to gross income where appropriate; and
- replacing either the gross or the net figure with a –4, depending on which of these two figures was least realistic.

2.8.3.2 Hours

There are two sets of variables which collect information about hours worked: hours worked per week by setting (public hospital, private practice etc.) with *_PWTOH* as the total; and hours worked per week by activity (direct patient care etc.) with *_WLWH* as the total.

(1) For some doctors the reported sum of hours worked *(either _PWTOH* or *_WLWH*) exceeded the permissible limit of 168 hours per week.

Solution: Whenever the values exceeded 168 they were coded as –4.

(2) In Wave 1 the question on hours per week by setting (PWTOH) included on-call work, whereas the question on hours per week by activity excluded on-call work. This was amended from Wave 2 onwards so that both questions excluded on-call work.

Solution: Any comparisons between PWTOH in Wave 1 with either WLWH in Wave 1 or PWTOH in subsequent waves should be approached cautiously. In order to improve the quality of these data in Wave 1, the additional text responses were checked and if a doctor indicated that work in a certain setting was on-call work, we removed it from the individual variable as well as the total sum (*_PWTOH*).

It should be noted that *_PWTOH* and *_WLWH* do not match for every observation in any wave. Also, there are some observations where the reported sum of hours (either *_PWTOH* or *_WLWH*) does not equal the actual sum of hours from the various categories (i.e. after adding up the individual parts).

2.8.3.3 On-call

The on-call question for GPs and Specialists in Wave 1 did not take in to account different ratios for weekends and weekdays, public work compared to private work (for Specialists) and practice work compared to hospital work (for GPs). This was taken in to account in subsequent waves where more detailed on-call questions were asked for these doctor types (see Section 2.8.2).

The following table shows how ambiguous responses are dealt with, including those for GPs and Specialists in Wave 1, and those arising for other doctor types and in other waves.

Whenever there was a text response that did not allow the imputation of an on-call ratio, a conservative approach was adopted and such values were recoded as –4.

Table 16.1: Data quality: on-call

Problem	Example	Solution
Reporting separate on-call ratios for weekdays and weekends	'every weekday – 1 in 4 Sunday'	Coded as –4.
Reporting separate on-call ratios for public and private sector	'2 private, 10 public' '4 public, 1 private'	Coded as –4.
Reporting separate on-call ratios for different activities	'10 for A&E, 1/1 for obstetrics' '3 (Department), 1 in 12 GP	Coded as –4.
Different notation used to indicate ratio	For instance: '1 in 2' '1/2' '1:3'	Coded as 1 in: 2 –4 3
Reporting a range	For instance: '1:2-1:4' '1 in 2 / 2 in 7'	We cannot be sure that these ranges refer to the same setting, so coded as –4.
Text meaning 'on call all the time'	'all the time' 'every day'	Coded as 1 in 1.

There were several cases where a doctor did not respond to the on-call ratio question, but indicated in the adjacent 'NA' text box that some kind of on-call work was performed (and we lacked the detail to do something about it). In order to differentiate genuine 'missing' values from those situations where there was some information, albeit ambiguous or lacking in sufficient detail, the on-call variables for such responses were imputed as –4 and the NA box coded as '0' (which implies that some form of on-call work is performed). This approach also minimises coding bias by seeking to 'attribute meaning' to ambiguous responses where one coder's interpretation may differ from another's.

GPs and Specialists were asked to elaborate if their on-call arrangements were not of a standard format that could be described by the existing questions. These text responses are available in the internal, but not public, release. In the public release a dichotomous variable, wlocot, indicates whether, or not, the doctor described their non-standard on-call arrangements in text format.

2.8.3.4 Fees

There were many different text responses in relation to the fee variable WLCF (Question: 'What is your current fee for a standard private consultation?'). The intention of this question was to capture information about the total amount charged to patients. The following table summarises some of the main problems.

Table 16.2: Data quality: fees

Problem	Example	Solution
Doctors do not report a fee but give details about the billing schedules	'bulk billing' 'Medicare rebate' 'rebate'	For doctors who bulk bill 100% of their patients and reply 'Medicare rebate' or 'rebate' to the fees question, we set the fee equal to zero. For those not bulk billing (i.e. bulk billing less than 100% of their patients) but charging the rebate, we are unable to determine the cost to the patient and recode as -4. This is because we do not have the item number and so do not know the rebate.
Separate fees for new and review patients	'New 240, Old 120'	Calculate average. From Wave 2, Specialists were asked about new and review consultations separately.
More than one item number listed, with prices.	'235$ item 132, 140 $ item 110, 70$ item 116'	Calculate average.
Specialists (only) list item but not the price	'Medicare only item 110'	We checked the individual item prices on the MBS website. For more than one item, we took the average of the MBS fees.
Specialists (only) mention Medicare but no item number	'Medicare fee' 'MBS' 'Schedule fees'	It's not possible to arrive at a numeric value. Therefore, recode as –4.
AMA fees schedule reported	'AMA fee, item 110 'AMA Fee'	When item number was listed, prices were looked up in 'AMA list of medical services and fees'.

2.8.3.5 Time

There are several questions which require answers with combinations of number of days and weeks, or number of months and years. Responses were standardised as follows (Table 16.3):

Table 16.3: Data quality: time

Problem	Example	Solution
Doctors stated either months or years but not both	'18 months' '2.5 years' '7 months'	Converted to 1 year 6 months Converted to 2 years 6 months Converted to 0 year 7 months
Doctors filled both variables but with duplicate values	'3 years 36 months'	Converted to 3 years 0 months
Doctors filled both variables with different values	'3 years 43 months' '1.5 years 15 months'	Converted to 3 years 7 months Converted to 1 year 3 months
Doctors reported the date rather than duration	'2/7/2009' 'Jan 2007'	Waves 1 & 2: set December of each survey year as the baseline and calculated the duration accordingly. Wave 3 onwards: use the recorded date of response received to calculate the duration.

2.8.3.6 Geographic workplace moves

Doctors are asked in each wave for the suburb and postcode of their main place of work. In order to calculate if, and how far, doctors move each year, the co-ordinates of the mid-point of the suburb are used. A new mobility variable (gldist) is calculated based on the distance from the mid-point of the suburb the doctor worked in when last completing MABEL, to the mid-point of the suburb they work in now. For the public release dataset these distances are grouped into four categories: no move;

<10km; 10-49km; 50+ km. Where data is missing in an individual wave a missing value code is assigned. If the doctor responds in subsequent waves, then the distance moved since they last responded to MABEL is presented.

2.8.3.7 Periods of absence from work

When doctors are new to the MABEL survey they are asked to nominate how many months and years they have spent not practising as a doctor since graduation (pindyr and pindmt). In subsequent waves this variable is imputed, combining a doctor's initial response to this question plus any subsequently-reported long leave. This extended leave is derived as follows:

Table 16.4: Data quality – periods of absence

Variable	Question	What to include in calculating pindyr
WLWHPY	How many weeks holiday did you take in the past year?	Absences longer than 4 weeks (as this is standard leave period).
WLMLPY	How many weeks of parental leave did you take in the past year?	All parental or maternity leave.
WLSDPY	Approx how many days off work due to illness did you have in the past year.	Absences longer than 4 weeks.
WLOTPY	Approx how many days off work did you have for other reasons in the past year	Include holidays, carers leave and other 'domestic' absences longer than 2 weeks. Exclude absences for other reasons e.g. study, conferences, working overseas voluntarily as part of career development.

Pindyr and Pindmt are therefore derived cumulatively i.e. the values in Wave 3 are based on: Pindyr/pindmt in Wave 1 + leave mentioned in Wave 2 + leave mentioned in Wave 3, where the doctor responded to all three waves. An estimation of leave taken could not be calculated if a doctor did not respond in a particular wave and the value for leave taken in that year is assumed to be zero. Users, therefore, should be cautious of using these variables except for doctors who responded to every wave from when first invited.

2.9 De-identification

This public release of the MABEL dataset is de-identified to reduce the risk that individual respondents can be identified. This involves:

- withholding some variables (such as geographic identifiers);
- aggregating some variables (such as certain specialties, age categories); and/or
- top-coding some variables (such as age, personal income).

2.9.1 Withholding variables

Table 17 lists all variables which are withheld in the de-identified release. In addition to those variables listed, the de-identified version of data also withholds all text responses or comments and multiple responses. Multiple responses are where the respondent gives two or more responses to a question that only requires one. For example, doctors may check two points on an attitude scale, and although both responses are included in the internal release data, only the first is included on the

publicly released data. The proportion of multiple responses is low (for example, less than 0.1% for scale variables and less than 0.8% for categorical variables in Wave 3).

2.9.2 Aggregating variables

Variable categories are aggregated when the number of observations in an individual category is below a certain threshold. For example, for the variable *PIMSPI* (main specialty of practice), any specialties with less than 30 observations are subsumed into one of the upper-level categories. (e.g. Internal medicine, Pathology, Surgery, and Other specialties). As the number of observations in each category varies from wave to wave, the categories which are aggregated also vary between waves.

Variables such as ‘age’ and ‘year completed basic medical degree’ are provided as categorical rather than numeric data to avoid the risk of individual identification. The details of variable aggregation are given in the MABEL coding framework in Section 3.

2.9.3 Top-coding variables

In most cases where variables have been top-coded, all values *above* a certain threshold are made *equal* to the threshold. For example, the number of dependent children (*_FCNDC*) has been top-coded at 3+, which means that all values above three have been set equal to the value of three.

However, for all income variables, top-coding involved substituting an average value for all the cases which are equal to or exceed a given threshold. The substituted value is calculated as the weighted average of the cases subject to top-coding. As a result, the cross-sectionally-weighted means of the top-coded variable will be the same as the original variable. Table 18 lists these thresholds and top-code values for each wave and doctor type. The same top-coding rules apply to the imputed income variables.

Table 17: Variables withheld from the public release data.

Withheld variable	Description	Alternative variable	Description
Current situation			
_CSDEATH	Deceased	_CSOTHER	Others
_CSONMD	Working overseas in non-clinical role		
_CSOVS	Moved overseas, no further information		
_CSSTRUCK	Struck off medical registrar		
_DCEx_RGP	Discrete choice experiment in Wave 1 (all doctors) and in Wave 2 (Rural GPs)		Data available on request
The main hospital at which you work			
_PWMHN	Hospital name	_PWMHPASGC	ASGC classification of the location
_PWMHP	Postcode		
Fortnightly income			
_FIGEF	Gross personal income	All fortnightly income variables have been converted into annual income if only fortnightly income was reported.	
_FINEF	Net personal income		
_FIGHIF	Gross household income		
_FINHIF	Net household income		
Main place of work			
_GLTWW	Town / suburb	_GLTWWASGC	ASGC classification of the location
_GLPCW	Postcode		
The location in which you live			
_GLTWL	Town / suburb	_GLTWLASGC	ASGC classification of the location
_GLPCL	Postcode		
The main rural area you lived in up until school leaving age			
_GLRTW	Town	_GLRRI	Have you ever lived in a rural area up until school leaving age?
_GLRST	State		
_GLRNA	Not Applicable		
Where do you travel to provide services / clinics?			
_GLP1TW	Town / suburb	_GLTPS	Do you travel to provide clinical services?
_GLP1PC	Postcode		
_GLP2TW	Town / suburb		
_GLP2PC	Postcode		
_GLP3TW	Town / suburb		
_GLP3PC	Postcode		
Distance (of workplace) moved since last responded to MABEL			
_GLDIST	Distance moved (km)	_GLDISTGR	Distance of move, grouped into 4 categories
_PIYRBI	Year of birth	_PIAGEI	Imputed age
_WLCNPN	Most used item number for initial consultation	_WLCNPF	Fee for new initial consultation
_WLCSN	Most used item number for subsequent consultation	_WLCSF	Fee for subsequent consultation

Table 18: Thresholds and top-code values for de-identifying income variables

		_FIGEY – Gross annual personal income				_FINEY - Net annual personal income			
		GP	SP	HNS	SR	GP	SP	HNS	SR
Wave 1	Threshold	720,000	1,800,000	320,000	250,000	377,000	1,000,000	180,000	156,000
	Top-code value	862,866	2,018,700	375,875	365,127	410,431	1,149,794	262,180	226,417
Wave 2	Threshold	724,634	1,800,000	371,365	260,000	360,000	850,000	213,642	150,000
	Top-code value	1,001,968	2,101,589	467,734	334,440	450,244	1,034,402	266,291	169,937
Wave 3	Threshold	710,000	1,600,000	400,000	300,000	400,000	850,000	226,070	180,000
	Top-code value	954,709	1,917,095	506,826	441,851	421,193	1,111,708	274,972	240,762
Wave 4	Threshold	750,000	1,800,000	420,000	250,000	400,000	950,000	240,000	155,000
	Top-code value	875,359	2,195,258	492,454	392,440	431,230	1,202,965	277,069	205,805
Wave 5	Threshold	800,000	1,800,000	380,000	300,000	460,000	900,000	208,000	170,000
	Top-code value	1,049,853	2,011,160	446,661	368,194	579,565	1,773,713	249,654	184,578
Wave 6	Threshold	700,000	2,000,000	400,000	260,000	370,000	1,000,000	233,000	165,000
	Top-code value	970,106	2,379,236	506,978	286,801	461,621	1,068,449	280,332	194,109
Wave 7	Threshold	720,000	2,000,000	420,000	250,000	400,000	947,000	218,000	156,000
	Top-code value	955,923	2,711,544	549,095	272,671	464,956	1,193,620	281,113	174,926
Wave 8	Threshold	800,000	2,000,000	400,000	290,000	390,000	1,000,000	210,000	155,000
	Top-code value	1,032,867	2,278,813	490,962	415,639	476,027	1,160,265	261,944	192,937
Wave 9	Threshold	700,000	2,000,000	420,000	240,000	390,000	910,000	240,000	156,000
	Top-code value	868,145	2,262,693	457,579	261,353	433,184	1,290,436	268,324	173,532

		_FIGHIY - Gross annual family income				_FINHIY - Net annual family income			
		GP	SP	HNS	SR	GP	SP	HNS	SR
Wave 1	Threshold	1,100,000	2,450,000	425,000	500,000	500,000	1,100,000	260,000	230,000
	Top-code value	1,873,355	3,977,989	599,557	737,180	557,268	1,307,035	327,612	361,516
Wave 2	Threshold	950,000	2,120,000	520,000	500,000	560,000	1,100,000	277,709	250,000
	Top-code value	1,103,327	2,981,442	698,173	644,724	639,043	1,388,305	319,599	295,841
Wave 3	Threshold	1,300,000	2,400,000	500,000	480,000	560,000	1,100,000	290,000	273,000
	Top-code value	2,184,582	4,662,160	628,231	626,524	726,702	1,949,970	431,443	408,717
Wave 4	Threshold	1,385,438	2,000,000	600,000	400,000	550,000	1,100,000	340,000	250,000
	Top-code value	2,097,402	2,512,835	952,655	603,359	848,661	1,316,069	550,999	767,576
Wave 5	Threshold	1,200,000	2,100,000	598,000	600,000	650,000	1,000,000	370,000	300,000
	Top-code value	1,513,088	6,086,024	1,056,672	872,186	885,703	1,220,366	805,306	449,389
Wave 6	Threshold	1,040,000	2,100,000	500,000	600,000	600,000	1,170,000	332,500	280,000
	Top-code value	1,372,446	2,609,054	847,949	652,543	690,360	1,616,383	477,964	396,889
Wave 7	Threshold	1,000,000	2,350,000	540,000	400,000	540,000	1,100,000	300,000	250,000
	Top-code value	1,314,292	3,196,218	772,622	706,405	664,672	1,496,786	334,763	355,459
Wave 8	Threshold	1,000,000	2,000,000	468,000	290,000	510,000	1,200,000	250,000	300,000
	Top-code value	1,033,000	2,279,000	491,000	415,500	640,000	1,419,500	342,500	350,000
Wave 9	Threshold	1,040,000	2,250,000	470,000	440,000	570,000	1,100,000	300,000	270,000
	Top-code value	1,369,231	3,085,619	563,194	548,727	703,744	1,550,010	362,153	389,475

Table 18: Thresholds and top-code values for de-identifying income variables

		_FISADD - personal annual gross income from non-medical sources			
		GP	SP	HNS	SR
Wave 6	Threshold	200,000	400,000	65,000	50,000
	Top-code value	276,843	443,817	138,348	77,679
Wave 7	Threshold	300,000	400,000	80,000	48,000
	Top-code value	429,903	460,192	87,215	77,564
Wave 8	Threshold	300,000	320,000	60,000	64,000
	Top-code value	364,278	404,461	150,804	98,007
Wave 9	Threshold	293,000	350,000	82,000	45,000
	Top-code value	361,108	449,367	211,171	69,625

continued

Table 19 provides a list of variables that have been top-coded to avoid identification of individual doctors. In a number of cases, it was necessary to top-code the variables differently for different doctor types in order to maximise the informational content and usefulness of the overall data. These variables have been released as the original variable name plus a suffix representing the doctor type. For example, variable *_PWNWN* (number of nurses in main practice) are top-coded at 12+ for GPs and 20+ for Specialists, the released dataset includes two variables *_PWNWN_GP* and *_PWNWN_SP* respectively.

Table 19: Summary of top-coded variables

Variable	Description	Variable	Description
_PWNWMF	No of males - full time	_WLCOTHE	Weekend: times per weekend (hospital work)
_PWNWMP	No of males - part time	_WLCOTPBN	Weeknights: times per week (public sector work)
_PWNWFF	No of females - full time	_WLCOTPBE	Weekend: times per weekend (public sector work)
_PWNWFP	No of females - part time	_WLCOTPVN	Weeknights: times per week (private sector work)
_PWNWN	No of nurses	_WLCOTPVE	Weekend: times per weekend (private sector work)
_PWNWAP	No of allied health professionals	_WLOCR	On-call ratio 1 in
_PWNWAD	No of administrative staff	_WLRH	How many hours were you rostered or listed for after hours and on-call?
_PWNWO	No of other staff	_WLPCH	How many of these hours were actually spent in direct patient care?
_WLWHPY	How many weeks holiday did you take in the past year?	_WLCOT	How many times were you actually called out?
_WLMLPY	How many weeks of parental or maternity leave did you take in the past year?	_GLYRRS	For how many years did you live in a rural area up until the age you left secondary school?
_WLSDPY	Approximately how many days off work due to illness did you have in the past year?	_FCPR	Years spouse/partner lived in rural area
_WLOTPY	Approximately how many days off work did you have for other reasons in the past year?	_GLYR	Years working at or near this geographical location
_WLOCRPN	1 weeknight in __ (practice work)	_GLNL	In how many locations do you practise?
_WLOCRPE	1 weekend in __ (practice work)	_PICMDI	In what year did you complete your basic medical degree?
_WLOCRHN	1 weeknight in __ (hospital work)	_FCNDC	How many dependent children do you have?
_WLOCRHE	1 weekend in __ (hospital work)	_FCAY	Age of youngest dependent child.
_WLOCRPBN	1 weeknight in __ (public sector work)	_PIAGEI	Age in survey year imputed using 'PIYRBI'
_WLOCRPBE	1 weekend in __ (public sector work)	_JSSCI	Which specialist training course have you been accepted into?
_WLOCRPVN	1 weeknight in __ (private sector work)	_PIMSPI	Main specialty in which you practice?
_WLOCRPVE	1 weekend in __ (private sector work)	_PISTEI	Which specialty training program are you enrolled in?
_WLCOTPN	Weeknights: times per week (practice work)		
_WLCOTPE	Weekend: times per weekend (practice work)	_FIGEY	Gross earnings in $ (before tax) - annual
_WLCOTHN	Weeknights: times per week (hospital work)	_FINEY	Net earnings in $ (after tax) - annual
_PINDYR	How many years have you spent NOT practicing as a doctor?	_FIGHIY	Gross earnings in $ (before tax) - annual
		_FINHIY	Net earnings in $ (after tax) - annual

2.10 External linked variables

The MABEL dataset is enhanced by geographically linking respondents to various socio-economic indicators based on their home or work location. These variables are:

- *SEIFA (Socio-Economic Indices for Areas).* These are four indexes based on social and economic data from the 2011 Census (see www.abs.gov.au) as follows:

  (i) Index of Relative Socio-economic Disadvantage (IRSD). A low score indicates an area of greater disadvantage e.g. one in which there many low-income households, people with no qualifications or people with low skill occupations. A high score indicates a relative lack of disadvantage.

  (ii) Index of Relative Socio-economic Advantage and Disadvantage (IRSAD). A low score indicates relatively greater disadvantage and a lack of advantage and a high score indicates a relative lack of disadvantage and greater advantage.

  (iii) Index of Economic Resources (IER). This is a measure of financial aspects of relative socio-economic advantage and disadvantage ignoring education and occupation. A low score indicates a relative lack of access to economic resources.

  (iv) Index of Education and Occupation (IEO).This reflects the educational and occupational level of communities. A low score indicates relatively lower education and occupation of people in the area.
- *District of Workforce Shortage (DWS).* This variable, provided by the Department of Health, indicates whether an area is a DWS for GPs, based on whether the number of FTE GPs in that area is less than the national average (http://www.health.gov.au/internet/main/publishing.nsf/content/work-st-bmp-ret-dws). This changes every quarter, and the annual figure presented is from the first quarter of the survey year. This indicator is presented for all doctors in this dataset, not just GPs, since it is a useful indicator of workforce shortage for all doctor types. Up until 2014 (Wave 7 of MABEL) the area used to define a DWS was the ASGC SLA. From 2015 a newer geography, the SA2 level of the ASGS classification is used.
- *Distance to the nearest public hospital (DISTPUBL), to the nearest private hospital (DISTPRIV) and the nearest emergency department (DISTEMER).* These are calculated based on the distance from the midpoint of the postcode area of their main place of work to the exact location of the public/private/emergency hospital. These variables were included in the wave 8 release, for all waves. DISTEMER replaces the earlier _ELMINDIST variable which was based on the distance of the midpoint of the doctors' work postcode to the mid-point of the postcode where the nearest emergency department is. This new variable is a more accurate indicator of distance than the earlier _ELMINDIST.
- *Other variables:*

  (i) Metro/non-metro indicator for area, based on ASGC classification

  (ii) Number of GPs per 1000 of the population, at postcode level and based on AMPCo and Census data.

(iii) Percentage of the population in a postcode under age 5, based on 2011 census data (www.abs.gov.au)

(iv) Percentage of the population in a postcode above age 65, based on 2011 census data (www.abs.gov.au)

(v) Median house price at postcode level, categorized into 10 quantiles, according to the Australian Property Monitor (www.apm.com.au). Available for Waves 1–6 only.

3. MABEL Coding Framework: Public Release

The tables presented in the following pages provide a comprehensive overview of all variables contained in the MABEL survey dataset. The information listed in the table is outlined below.

Variable name

This is the variable name used in Stata. All variables consist of lowercase letters (although, by convention, this user manual refers to variables in uppercase letters). As mentioned before, each variable name comprises three parts which are indicative of the content of the variable.

(i) The first letter is the wave identifier (a, b, c, d, e, f or g corresponding to Waves 1-7 respectively), which is omitted from the table but appears in the dataset.

(ii) The next two letters indicate the section of the survey to which the variable relates, as shown in the following list:

CS = Current situation

JS = Job satisfaction

PW = Places where you work

WL = Workload

FI = Finance

GL = Geographic location

FC = Family circumstances

PI = Personal information

PER = Personality

The remainder of the variable name relates to the specific question /question part and consists of between one and ten characters.

Some questions are broken down into several variables (i.e. the first question on job satisfaction is broken down into ten variables). In these cases the question is listed first, followed by the variable names for the individual options.

Table 20: MABEL Subject Level Coding Framework

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
XWAVEID	Cross-wave ID	Numeric response	All	All waves	
_SDTYPE	Survey Type	1 = GP 2 = Specialist 3 = Hospital non-specialist 4 = Specialist registrar	All	All waves	
_CONTINUE	Continuing / New doctor	0 = New 1 = Continuing	All	All waves	
_SOURCE	Response Mode	1 = Main Survey 2 = Pilot Survey 3 = Administrative	All	All waves	The category 'administrative' includes all responses from survey manager's response sheet and AMPCo
_RESPONSE	Survey response	1 = Hardcopy 2 = Online 3 = Response Sheet	All	All waves	
_COHORT	Survey cohort	Numeric response	All	All waves	
ABOUT YOUR CURRENT SITUATION					
_CSCLID	Are you currently doing clinical work within Australia?	1 = Yes 0 = No	All	All waves	
_CSCLIR	Do you intend to return to clinical work within Australia?	1 = Yes 0 = No 2 = Unsure	All	Not wave 5	CSCLID = 0 only
_CSPRET	Are you permanently retired from all types of paid work?	1 = Yes 0 = No	All	All waves	
Which of the following statements describes your current situation?					
_CSNCLI	Doing medical work in Australia that is non-clinical	1 = Response marked 0 = Response blank	All	All waves	
_CSML	Maternity leave			All waves	
_CSHD	Home duties / childcare			All waves	
_CSSTU	Enrolled as a student			All waves	
_CSEXL	Extended leave			All waves	
_CSOCLI	Working outside Australia in a clinical role			All waves	
_CSONCLI	Working outside Australia in a non-clinical, but medical role			All waves	
_CSONMD	Working outside Australia in a non-clinical role			All waves	
_CSNMD	Doing non-medical work in Australia			All waves	

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
_CSOTHER	Others			All waves	
ABOUT YOUR JOB SATISFACTION					
Please indicate how satisfied or dissatisfied you are with each of the various aspects of your work as a doctor.					
_JSFM	Freedom to choose your own method of working	0 = Very Dissatisfied 1 = Moderately Dissatisfied 2 = Not Sure 3 = Moderately Satisfied 4 = Very Satisfied 5 = Not Applicable	All	All waves	
_JSVA	Amount of variety in your work				
_JSPW	Physical working conditions				
_JSAU	Opportunities to use your abilities				
_JSCW	Your colleagues and fellow workers				
_JSRC	Recognition you get for good work				
_JSHW	Your hours of work				
_JSWR	Your remuneration				
_JSRP	Amount of responsibility you are given				
_JSFL	Taking everything into consideration, how do you feel about your work?				
Please indicate the degree to which you agree or disagree with the following statements.					
_JSHP	The amount of work I delegate to other health professionals has increased in the past 12 months	0 = Strongly Disagree 1 = Disagree 2 = Neutral 3 = Agree 4 = Strongly Agree 5 = Not Applicable	1	All waves	
_JSBC	The balance between my personal and professional commitments is about right		All	All waves	
_JSSN	I have a poor support of network of other doctors like me		All	All waves	
_JSIT	The IT systems I use are very helpful in day-to-day practice		All	Waves 1-4	
_JSTO	It is difficult to take time off when I want to		All	All waves	
_JSPE	My patients have unrealistic expectations about how I can help them		All	All waves	
_JSCP	The majority of my patients have complex health and social problems		All	All waves	

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
_JSQS	I have good support and supervision from qualified Specialists		3, 4	All waves	
_JSPS	Running my practice is stressful most of the time		1, 2	All waves	
_JSST	There is enough time for me to do personal study		3, 4	All waves	
_JSPU	Research publications are important to my career		2	All waves	
_JSPT	Research publications are important to my training		3, 4	All waves	
_JSUH	The hours I work are unpredictable		All	All waves	
_JSSM	I have good supervision/mentoring support		1	All waves	
_JSLQ	I often undertake tasks that somebody less qualified could do		All	All waves	
_JSCO	I normally consult with others in the practice about the management of patients with complex health and social problems		1	All waves	
_JSFS	Formal structures are in place to encourage communication amongst practice staff		1	All waves	
_JSHE	I can take time off at short notice, for example if one of my children is ill or for a home emergency		All	8,9	
_JSWL	My colleagues understand the need for work-life balance		All	8,9	
_JSLJ	I cannot work my preferred hours due to a lack of jobs offering those hours		All	8,9	
_JSCH	Would you like to change your hours of work (including day time and after hours)?	0 = No 1 = Yes, I ‘d like to increase my hours 2 = Yes, I’d like to decrease my hours	All	All waves	
_JSRED	Imagine you would like to reduce your hours of work. How achievable is this?	1 = This could be achieved easily within my current job 2 = This could be achieved with some difficulty in my current job. 3 = I would have to change jobs, but there are suitable opportunities in my local area. 4 = I would have to change jobs, and such jobs are scarce	1, 2, 3	8,9	

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
		5 = This would be impossible 6 = Don't know			
_JSREDT	Imagine you would like to reduce your hours of work. How achievable is this?	1 = This could be achieved easily within my current training program 2 = This could be achieved with some difficulty in my current training program. 3 = I would have to change training program 4 = This would be impossible 5 = Don't know	4	Wave 8 only	
_JSAS	Do you plan to apply for a place on a specialist training courses in the future?	1 = Yes 2 = Unsure 3 = No, I already have a place 4 = No, I already have a specialist / GP qualification 0 = No	3	All waves	
What year do you expect to begin specialist training?					
_JSBSYR	Year	Numeric response	3	All waves	
_JSBSDK	Don't know	1 = Response marked 0 = Response blank	3	All waves	
_JSSCI	Which specialist training course have you been accepted into / are you waiting to commence?	0 = Not Applicable – I do not currently have a place 1 = Paediatrics and Child Health 2 = Palliative Medicine 3 = Rehabilitation Medicine 4 = Dermatology 5 = General Practice 6 = Medical Administration 7 = Ophthalmology 8 = Psychiatry 9 = Surgery 10 = Internal Medicine (adult medicine) 11 = Occupational Medicine 12 = Public Health Medicine 13 = Anaesthesia 14 = Emergency Medicine 15 = Intensive Care Medicine 16 = Obstetrics and Gynaecology 17 = Pathology 18 = Radiology 19 = Other specialities	3	Present in all waves but see next column for how this variable varies	This variable is recoded. Any individual specialty with less than 30 observations has been subsumed in one of the "(specialty) - Others" groups . In Waves 1, 2, 3 and 5, Anaesthesia is in its own category. In Waves 4 and 6 it is subsumed into the 'Other specialties' category.
_JSSC6	Which specialist training course	0 = Not Applicable - I do not	3	Wave 6 onwards	This is the version used from Wave 6

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
	have you been accepted into / are you waiting to commence?	currently have a place 1 = Addiction medicine 2 = Anaesthesia 3 = Dermatology 4 = Emergency medicine 5 = General Practice 6 = Intensive care medicine 7 = Medical Administration 8 = Obstetrics and Gynaecology 9 = Occupational and enviro med 10 = Ophthalmology 11 = Paediatrics and child health 12 = Pain medicine 13 = Palliative medicine 14 = Pathology 15 = Physician 16 = Psychiatry 17 = Public health medicine 18 = Radiation oncology 19 = Radiology 20 = Rehabilitation medicine 21 = Sexual Health Medicine 22 = Sport and Exercise Medicine 23 = Surgery			onwards. This variable is recoded. Any individual specialty with less than 30 observations has been subsumed in one of the “(specialty) - Others” groups
_JSSCG	Specialist training course been accepted into (Grouped into major categories)	0 = N/A 1 = Physician 2 = Pathology 3 = Surgery 4 = Other Specialties 5 = General Practice	3	All waves	
What is the likelihood that you will:					
_JSLP	Leave direct patient care (primary or hospital) within FIVE YEARS	0 = Very Unlikely 1 = Unlikely 2 = Neutral 3 = Likely 4 = Very Likely	All	Waves 1-5	
_JSLM	Leave medical work entirely within FIVE YEARS				
_JSRW	Reduce you clinical workload in the next FIVE YEARS				
Workplace aggression directed towards you in the last 12 months whilst you were working in medicine					
Aggression from patients		0 = Frequently 1 = Often 2 = Occasionally 3 = Infrequently 4 = Not at all	All	Wave 3 only	
_JSAG_1	Verbal or written abuse, threats, intimidation or harassment				
_JSAG_2	Physical threats, intimidation, harassment or violence				

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
Aggression from relatives or carers of patients					
_JSAG_3	Verbal or written abuse, threats, intimidation or harassment				
_JSAG_4	Physical threats, intimidation, harassment or violence				
Aggression from any workplace co-worker					
_JSAG_5	Verbal or written abuse, threats, intimidation or harassment				
_JSAG_6	Physical threats, intimidation, harassment or violence				
Aggression from any other person external to the workplace					
_JSAG_7	Verbal or written abuse, threats, intimidation or harassment				
_JSAG_8	Physical threats, intimidation, harassment or violence				
Please indicate whether or not the following actions to prevent or minimise aggression have been implemented in your main workplace					
_JSAG_9	Policies, protocols and/or procedures for aggression prevention and management				
_JSAG_10	Warning signs in reception and patient / public waiting areas				
_JSAG_11	Alerts to high risk of aggression				
_JSAG_12	Restricting or withdrawing access to services for aggressive persons				
_JSAG_13	Incident reporting and follow-up	0 = No 1 = Yes 2 = Unsure	All	Wave 3 only	
_JSAG_14	Education and training				
_JSAG_15	Duress alarms in consultation and treatment areas				
_JSAG_16	Clinician escape optimised in consultation / treatment rooms				
_JSAG_17	Optimised lighting, noise levels, comfort and waiting time in patient / public waiting areas				
_JSAG_18	Patient / public access restrictions				
_JSAG_19	Building security systems				
_JSAG_20	Safety and security measures for afterhours or on-call work, or	0 = No 1 = Yes			

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
	home visits	2 = Unsure 3 = Not applicable			
ABOUT THE PLACES WHERE YOU WORK					
Excluding after-hours and on-call, for how many HOURS in your MOST RECENT USUAL WEEK at work did you undertake in each of the following settings?					
_PWPUHH	Public hospital (including psychiatric hospital)	Numeric response	All	All waves	
_PWPIHH	Private hospital		All	All waves	
_PWPISH	Private medical practitioner's rooms or surgery		All	All waves	
_PWCHH	Community health centre or other state-run primary care organisation		1, 2	All waves	
_PWDSH	Deputising service or after-hours clinic		1	Wave 1 pilot only	
_PWHFH	Residential / aged care health facility (nursing/residential home, hospital etc.)		All	All waves	
_PWAHS	Aboriginal health service		1	Wave 2 onwards	
_PWLAB	Laboratory or radiology facility		2	Wave 2 onwards	
_PWGOV	Government department, agency or defence forces		1, 2	Wave 2 onwards	
_PWEIH	Tertiary education institution		All	All waves	
_PWOTHH	Other		All	All waves	
_PWTOHI	TOTAL HOURS WORKED – Imputed		All	All waves	
_PWPIP	Do you work in a private practice?	1 = Yes, in a public or private hospital and private consulting rooms 2 = Yes, in a public or private hospital only 0 = No	2	All waves	
How many GPs (or Specialists) work in your current main practice?					
_PWNWMF (*_gp, *_sp)	No. of males – Full time	Numeric response	1, 2	All waves	Top-code: 11+ for GPs; 16-20, 21+ for Specialists
_PWNWMP (*_gp, *_sp)	No. of males – Part time		1, 2	All waves	Top-code: 7-10, 11+ for GPs; 11-15, 16+ for Specialists
_PWNWFF (*_gp, *_sp)	No. of females – Full time		1, 2	All waves	Top-code: 7+ for GPs; 6-7, 8-9, 10+ for Specialists
_PWNWFP (*_gp, *_sp)	No. of females – Part time		1, 2	All waves	Top-code: 11-15, 16+ for GPs; 9-10, 11+ for Specialists

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
How many other health workers or professionals are employed in your current main practice?					
_PWNWN (*_gp, *_sp)	No. of nurses	Numeric response	1, 2	All waves	Top-code: 11-15, 16+ for GPs; 7-8, 9-10, 11-20, 21+ for Specialists. Rounded to 0.5
_PWNWAP (*_gp, *_sp)	No. of allied health professionals		1, 2	All waves	Top-code: 9-10, 11-15, 16+ for GPs; 7-9, 10-11, 12-15, 16-20, 21+ for Specialists. Rounded to 0.5
_PWNWAD (*_gp, *_sp)	No. of administrative staff		1, 2	All waves	Top-code: 16-20, 21+ for GPs; 9-10, 11-12, 13-15, 16-20, 21+ for Specialists. Rounded to 0.5
_PWNWO (*_gp, *_sp)	No. of other staff		1, 2	All waves	Top-code: 9-10, 11-15, 16+ for GPs; 6-10, 11-15, 16+ for Specialists. Rounded to 0.5
_PWCL	Is your current main practice co-located with other health or welfare professionals?	1 = Yes 0 = No	1, 2	All waves	
_PWBR	What is your business relationship with the practice?	0 = Principal or partner 1 = Associate 2 = Salaried employee 3 = Contracted employee 4 = Locum 5 = Other (Please specify)	1, 2	All waves	
When did you start working at this practice?					
_PWSMTH	Month	Numeric response	1, 2	All waves new doctors W8 new & cont doctors	
_PWSYR	Year		1, 2		
_PWOCE	My opportunities for continuing medical education and professional development are	0 = Very limited 1 = Average 2 = Very good	1, 2	All waves	
_PWACC	Is your practice accredited?	1 = Yes 0 = No	1	Wave 5 onwards	
_PWNI	Does your practice claim the Practice Nurse Incentive Program payments?	1 = Yes 0 = No	1	Wave 5 onwards	
_PWWH	Do you currently work in a hospital?	1 = Yes 0 = No	1	All waves	
_PWHLH	How many hours a week do you work as a hospital locum?	Numeric response	2, 4	All waves	Rounded to 0.5
What is the main hospital in which you work (i.e. spend most time)					
_PWMHPASGC	ASGC classification of main hospital (based on postcode)	ASGC Classification	All	All waves	This variable is withheld for all doctor types except GPs. All hospitals classified as 'remote' or 'very remote' are recoded and included in the 'outer regional' group.
_PWMHMMM	MMM classification of main	MMM Classification	All	Wave 8 only	This variable is withheld for all doctor types

Variable	Variable Description	Categories	Availability across doctor types	Availability across waves	Notes
	hospital (based on postcode)				except GPs. All hospitals classified as 'remote' or 'very remote' are recoded and included in the 'outer regional' group.
How long have you worked at this hospital?					
_PWWMTH	Months	Numeric response	All	All waves new doctors All waves continuing HnS, SR Continuing SP & GP in Wave 8 only	
_PWWYR	Years		All		
_PWAHNC	Have your working arrangements in this hospital changed since the last time you did the MABEL survey?	1 = Yes 0 = No	1	Not wave 1	Continuing only
_PWSP	What is your salaried position?	0 = Intern 1 = CMO 2 = HMO Yr 1 3 = HMO Yr 2 4 = HMO Yr 3 5 = Other Hospital Medical Officer	3	All waves	
_PWPM	How are you paid for this hospital?	0 = Fee-for-service / bill patients directly 1 = Fixed payment per session or hour 2 = Salary – no rights to private practice 3 = Salary with rights to private practice 4 = Other (please specify)	1, 2	All waves	

ABOUT YOUR WORKLOAD					
Excluding after-hours and on-call, how many HOURS in your MOST RECENT USUAL WEEK at work did you spend on the following activities?					
_WLWHI	Total hours worked per week – Imputed	Numeric response	All	All waves	
_WLDPH	Direct patient care		All	All waves	
_WLIDPH	Indirect patient care		All	All waves	
_WLEH	Educational activities		All	All waves	
_WLMH	Management and administration		All	All waves	
_WLOTHH	Other		All	All waves	
In relation to education activities, are you involved in any of the following teaching activities, including formal and informal teaching?					
_WLTMS	Teaching medical students	1 = Response marked 0 = Response blank	1, 2	Not wave 1	
_WLTTR	Teaching interns or other pre-vocational trainees		1, 2	Not wave 1	
_WLTRG	Teaching registrars		1, 2	Not wave 1	
_WLTNT	No, I am not involved in any teaching		1, 2	Not wave 1	
In relation to non-clinical activities outside you usual place of work, are you currently involved in any of the following activities?					
_WLACTO	Elected office bearer	1 = Response marked 0 = Response blank	All	Wave 7	
_WLACTC	Committee member		All	Wave 7	
_WLACTN	Not currently involved in any		All	Wave 7	
Do you practise in any of the following areas?					
_WLANA	Anaesthetics	1 = Response marked 0 = Response blank	1	Wave 4 onwards	
_WLOBS	Obstetrics		1	Wave 4 onwards	
_WLSUR	Surgery		1	Wave 4 onwards	
_WLEME	Emergency medicine		1	Wave 4 onwards	
_WLNON	None of the above		1	Wave 4 onwards	
_WLSPINT	Do you have a special interest in a specific area of clinical practice?	1 = Yes 0 = No	1	Wave 6 onwards	W6 only
Please indicate your main area of special interest.					

_WLANTE	Antenatal/ Postnatal care		1	Wave 6 onwards	W6 only
_WLWOM	Women's health		1	Wave 6 onwards	
_WLPSYCH	Psychological medicine/ Mental health		1	Wave 6 onwards	
_WLSKIN	Skin cancer/ Dermatology	1 = Response marked 0 = Response blank	1	Wave 6 onwards	
_WLCHILD	Child/ Young person's health		1	Wave 6 onwards	
_WLSPORT	Sports medicine		1	Wave 6 onwards	
_WLOTSPE	Other		1	Wave 6 onwards	
_WLPROP	Approximately what proportion of your overall clinical practice hours are accounted for by your main area of special interest practice?	0 = <25% 1 = 26-50% 2= 51-75% 3=>75%	1	Wave 6 onwards	W6 only
IN your most recent USUAL week at work, for around HOW MANY patients did you provide care?					
_WLNPPC	Total number of patients seen in private consulting rooms		1, 2	All waves	
_WLNPPH	Total number of public patients seen in a public hospital		2	Wave 4 onwards	
_WLNPRH	Total number of private patients seen in a public hospital	Numeric response	2	Wave 4 onwards	
_WLNPRR	Total number of private patients seen in a private hospital		2	Wave 4 onwards	
_WLNPH	Total number of patients seen in hospital or other settings		1	Wave 4 onwards	
_WLNP	Total number of patients that received care		3, 4	Wave 4 onwards	
Approximately what percentage of these were:					
_WLPGP	GP referrals to you		2	Waves 1-4	
_WLPS	Referrals from other Specialists	Numeric response	2	Waves 1-5	
_WLPOTH	Referrals from other sources		2	Waves 1-4	
Excluding emergency or urgent needs, for how many days does a patient typically have to wait for an appointment with:					
_WLWY	You, their preferred doctor in the practice?	Numeric response	1	Not wave 5	Rounded to 0.5
_WLWOD	Any doctor in the practice?		1	Not wave 5	Rounded to 0.5
How long does a NEW (for Specialist: PRIVATE) patient typically have to wait for an appointment in your practice?					
_WLWD	No. of days	Numeric response	1, 2	All waves	Rounded to 0.5

_WLWW	No. of weeks		1, 2	All waves	
_WLNT	Not taking new patients at present	1 = Response marked 0 = Response blank	1, 2	All waves	
_WLNA	Not Applicable		2	All waves	
_WLCMIN	How long does a standard private consultation last? MINUTES		1, 2	All waves	Specialists Wave 1 pilot only
_WLCNPMIN	New patient / Initial consultation	Numeric response	2	Not wave 1	
_WLCSMIN	Subsequent consultations		2	Not wave 1	
_WLCNA	Not Applicable	1 = Response marked 0 = Response blank	2	All waves	
_WLCFI	What is your current fee for a standard private consultation		1, 2	Not wave 5	Specialists Wave 1 pilot only
_WLCNPF	New patient / Initial consultation		2	Not wave 1 or 6	
_WLCNPFI	New patient / Initial consultation IMPUTED		2	Not wave 1 or 6	
_WLCSF	Subsequent consultations	Numeric response	2	Not wave 1 or 6	
_WLCSFI	Subsequent consultation IMPUTED		2	Not wave 1 or 6	
_WLCNPN	Most used item number for initial consultation		2	Wave 8 onwards	In internal release only
_WLCSN	Most used item number for subsequent consultation		2	Wave 8 onwards	In internal release only
_WLCFNA	Not Applicable	1 = Response marked 0 = Response blank	2	All waves	
_WLBBP	Approximately what percentage of patients do you bulk bill / charge no co-payment?	Numeric response	1, 2	All waves	
_WLBPNA	Not Applicable	1 = Response marked 0 = Response blank	2	All waves	
_WLAH	Do you do any after hours or on-call yourself?	1 = Yes 0 = No	All	All waves	
What are your after-hours on-call ratios for practice and hospital work?					From Wave 3 onward, the word “after-hours” has been taken out.
_WLOCRPN	1 weeknight in (Practice work)	Numeric response	1	Not wave 1	Continuous from 0-8; then intervals 9-10, 11-15, 16-20, 21-30, 31+. Rounded to 1
_WLOCRPE	1 weekend in (Practice work)			Not wave 1	
_WLOCRNAP	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	
_WLOCRHN	1 weeknight in (Hospital work)	Numeric response		Not wave 1	Continuous from 0-7; then intervals 8-10, 11-15, 16+. Rounded to 1
_WLOCRHE	1 weekend in (Hospital work)			Not wave 1	

_WLOCRNAH	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	
What are your after-hours on-call ratios for public and private sector work?					From Wave 3 onward, the word “after-hours” has been taken out.
_WLOCRPBN	1 weeknight in (Public sector work)	Numeric response	2	Not wave 1	Continuous from 0-10; then intervals 11-12, 13-15, 16-20, 21-30, 31+. Rounded to 1
_WLOCRPBE	1 weekend in (Public sector work)			Not wave 1	
_WLOCNAPB	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	
_WLOCRPVN	1 weeknight in (Private sector work)	Numeric response		Not wave 1	Continuous from 0-18 then intervals 9-10, 11-15, 16-20, 21-30, 31+. Rounded to 1
_WLOCRPVE	1 weekend in (Private sector work)			Not wave 1	
_WLOCNAPV	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	
In your most recent usual month, what was your on-call ratio?					
_WLOCR	On-call ratio 1 in	Numeric response	All	All waves	GPs and Specialists Wave 1 and Wave 2 pilot only, continuous from 0-8; then intervals 9-10, 11-15, 16-20, 21-30, 31+. Rounded to 1
_WLOCNA	Not Applicable	1 = Response marked 0 = Response blank		All waves	
In your last usual week at work, how many TIMES were you actually called out?					
_WLCOTPN	Weeknights: times per week (Practice work)	Numeric response	1	Not wave 1	Top-code: 7-10, 11+ for GPs Rounded to 1
_WLCOTPE	Weekend: times per weekend (Practice work)			Not wave 1	
_WLCOTNAP	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	
_WLCOTHN	Weeknights: times per week (Hospital work)	Numeric response		Not wave 1	Top-code: 7-10, 11+ for GPs Rounded to 1
_WLCOTHE	Weekend: times per weekend (Hospital work)			Not wave 1	
_WLCOTNAH	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	
_WLCOTPBN	Weeknights: times per week (Public sector work)	Numeric response	2	Not wave 1	Top-code: 7-10, 11+ for Specialists Rounded to 1
_WLCOTPBE	Weekend: times per weekend (Public sector work)			Not wave 1	
_WLCOTNAPB	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	
_WLCOTPVN	Weeknights: times per week (Private sector work)	Numeric response		Not wave 1	Top-code: 7-10, 11+ for Specialists Rounded to 1
_WLCOTPVE	Weekend: times per weekend (Private sector work)			Not wave 1	
_WLCOTNAPV	Not Applicable	1 = Response marked 0 = Response blank		Not wave 1	

In your last usual week at work:					
_WLRH (*_gp, *_sp, *_hd, *_sr)	How many HOURS were you rostered or listed for after-hours and on-call?	Numeric response	All	All waves	GPs and Specialists Wave 1 and Wave 2 pilot only. Top-code: 1-5, 6-7, 8-9, 11-12, 13-15, 16-20, 21-30, 31-40, 41-50, 51+
_WLPCH (*_gp, *_sp, *_hd, *_sr)	How many of these HOURS were actually spent in direct patient care?		All	All waves	Top-code: 9-10, 11-12, 13-15, 16-20, 21-30, 31-40, 41+
_WLCOT	How many TIMES were you actually called out		All	All waves	Top-code: 7-8, 9-10, 11+ for all doctor types Rounded to 1
_WLOCOTH	If your oncall arrangements do not fit the above descriptions, please elaborate below.	1 = Response marked 0 = Response blank	1, 2	All waves	Text variable on questionnaire, 1 or 0 on public release.
_WLAL	Arranging a locum at short notice is usually	0 = Moderately easy 1 = Rather difficult 2 = Very difficult 3 = Not Applicable	1, 2	All waves	
Turning to time spent away from work:					
_WLWHPY (*_gp, *_sp, *_hd, *_sr)	How many WEEKS holiday did you take in the past year?	Numeric response	All	All waves	Top-code: 11-12, 13-20, 21+ for GPs and Specialists; 9-10, 11+ for hospital non-Specialists; 7+ for Specialist Registrars Rounded to 1
_WLMLPY	How many WEEKS of parental or maternity leave did you take in the past year?		All	All waves	Top-code: 5-6, 7-8, 9-10, 11-15, 16-20, 21-25, 26-30, 31+ for all doctor types Rounded to 1
_WLSDPY	Approximately how many DAYS off work due to illness did you have in the past year?		All	All waves	Continuous from 1-8, then intervals 9-10, 11-15, 16-20, 21-30, 31-50, 51+ Rounded to 1
_WLOTPY	Approximately how many DAYS off work did you have for other reasons in the past year?		All	All waves	Continuous from 1-8, then intervals 9-10, 11-15, 16-20, 21-30, 31-50, 51+ Rounded to 1
How many vacancies for GPs does your (main) practice currently have advertised or registered with a recruitment or workforce agency?					
_WLVA	No. of vacancies	Numeric response	1	Wave 4 onwards	
_WLVADK	Don't know	1 = Response marked 0 = Response blank	1	Wave 4 onwards	
_WLVANA	Not Applicable		1	Wave 4 onwards	
_WLVAU	No. of these vacancies which have been unfilled for three months or more	Numeric response	1	Wave 4 onwards	
_WLVAUNA	Not Applicable	1 = Response marked 0 = Response blank	1	Wave 4 onwards	Wave 4 pilot only

ABOUT YOUR FINANCES					
What is your (approximate) TOTAL personal earnings from ALL of the work you do as a doctor?					
_FIGEY_* (*_gp, *_sp, *_hd, *_sr)	Annual gross earnings in $ (Before Tax) –		All		The weighted mean was substituted for all cases which equal to or larger than the threshold. These thresholds/top-code values apply differently for each wave and doctor type (for details, see page 58). Values are rounded to $500
_FIGEY_IMP_* (gp, sp, hd, sr)	Annual gross earning in $ (Before Tax) – Imputed based on income from medical work and other income	Numeric response	All		
FINEY_* (*_gp, *_sp, *_hd, *_sr)	Annual net earnings in $ (After Tax) – ANNUAL		All		
_FIB	In addition to this, did you receive any ongoing 'in kind' benefits or subsidies as part of your current job/s?	1 = Yes 0 = No	All		
_FIBV	What is the approximate annual value in dollars of these benefits?	Numeric response	All		
What is the total level of financial debt that you currently have as a result of your medical education and training?					
_FIDME	Medical education debt in $	Numeric response	All		
_FIMEDK	Don't know	1 = Response marked 0 = Response blank	All		
What is the total level of financial debt that you currently have from owning your practice or premises?					
_FIDP	Financial debt from owning practices/premises in $	Numeric response	1, 2		
_FIDPDK	Don't know	1 = Response marked 0 = Response blank	1, 2		
_FIDPNA	Not Applicable	1 = Response marked 0 = Response blank	1, 2		
_FIPS	What is the status of your private practice for tax purpose?	0 = Sole trader 1 = Partnership 2 = Company 3 = Trust 4 = Don't know 5 = Not Applicable	1, 2		
_FIOTI	Do you have other sources of personal income apart from your medical work?	1 = Yes 0 = No	All		
In the last year, approximately what percentage of your total gross earnings did you receive from each of the following sources?					
_FISPM	Payment from patients for services covered by Medicare	Numeric response	1, 2	Not in W5, W7, W9	Excluding new doctors in W9
_FISNPM	Payment from patients for service not covered by Medicare		1, 2	Not in W5, W7, W9	Excluding new doctors in W9

_FISGI	Government incentive schemes and grants		1, 2	Not in W5, W7, W9	Excluding new doctors in W9
_FISHW	Hospital work		1, 2	Not in W5, W7, W9	Excluding new doctors in W9
_FISOTH	Other sources		1, 2	Not in W5, W7, W9	Excluding new doctors in W9
_FISOTH_NEG	Other sources - negative		1, 2	Not in W5, W7, W9	Excluding new doctors in W9
_FISADD	How much personal gross income, in addition to income from your medical work, do you receive from other sources each year?	Numeric response	All		
_FICS	Do you (or your employer) regularly contribute to a superannuation scheme?	1 = Yes 0 = No	All	Not in W5, W7, W9	Excluding new doctors in W9
_FICSYR	For how many years have you (and/or an employer on your behalf) contributed to a superannuation scheme?	Numeric response	All	Not in W5, W7, W9	Excluding new doctors in W9
_FIIP	How much (in dollars) did you pay for professional medical liability, or malpractice, insurance premium in the last year?	Numeric response	All		
_FIEFR	Please indicate the degree to which you agree with the following statement: “Given my current financial situation and prospects, I believe I will have enough to live on when I retire”.	0 = Strongly Disagree 1 = Disagree 2 = Neutral 3 = Agree 4 = Strongly Agree	All	Not in W5, W7, W9	Excluding new doctors in W9
What is your total gross and net HOUSEHOLD income?					
_FIGHIY (*_gp, *_sp, *_hd, *_sr)	Gross household income (Before Tax) – ANNUAL	Numeric response	All		The weighted mean was substituted for all cases which equal to or larger than the threshold. These thresholds/top-code values apply differently for each wave and doctor type (for details, see page 58). Values are rounded to $500
_FINHIY (*_gp, *_sp, *_hd, *_sr)	Net household income (After Tax) – ANNUAL		All		
ABOUT YOUR GEOGRAPHIC LOCATION					
_GLNL (*_gp, *_sp)	In how many locations do you practice?	Numeric response	1, 2		Top-code: 5+ for GPs; 8+ for Specialists
Where is your main place of work?					
_GLTWWASGC	ASGC classification of main place of work (based on postcode)	ASGC Classification	All		This variable is withheld for all doctor types except GPs. All hospitals classified as ‘remote’ or ‘very remote’ are recoded and included in the ‘outer regional’ group.

_GLTWWMMM	MMM classification of main place of work (based on postcode)	MMM Classification	All	Wave 8 onwards	This variable is withheld for all doctor types except GPs. All hospitals classified as 'remote' or 'very remote' are recoded and included in the 'outer regional' group.
How long have you been practising in or close to this geographic location?					
_GLMTH	No. of months	Numeric response	All	Waves 1-7	
_GLYR	No. of years		All	Waves 1-7	
_GLDISTGR	Distance moved since last completed MABEL	0 = Did not move 1 = < 10km 2 = 10-49km 3 = 50km+	All	Waves 2-9	Imputed variable based on distance from mid-point of previous suburb to mid-point of current suburb.
Where do you live?					
_GLTWLASGC	ASGC classification of place where respondent lives (based on postcode)	ASGC Classification	All		This variable is withheld for all doctor types except GPs. All hospitals classified as 'remote' or 'very remote' are recoded and included in the 'outer regional' group.
_GLTWLMMM	MMM classification of place where respondent lives (based on postcode)	MMM Classification	All	Wave 8 onwards	This variable is withheld for all doctor types except GPs. All hospitals classified as 'remote' or 'very remote' are recoded and included in the 'outer regional' group.
_GLOSI	The opportunities for social interaction for you and your family in the geographic location of your main job are	0 = Very limited 1 = Average 2 = Very good	1, 2		
Please indicate the degree to which you agree or disagree with the following statements					
_GLFIW	I don't have many friends or family members in my current work location	0 = Strongly Disagree 1 = Disagree 2 = Neutral 3 = Agree 4 = Strongly Agree 5 = Not Applicable	All		
_GLBL	It is easy to pursue my hobbies and leisure interests in my current work location				
_GLPFIW	My partner does not have many friends or family members in this work location				
_GLGEO	There are good employment opportunities for my partner in this work location				
_GLACSC	The choice of schools for our children is adequate in this location				
_GLYRRS	For how many years did you live in a rural area up until the age	Numeric response	All		New only Top-code: 18+ for all doctor types

	you left secondary school?				Rounded to 1
_GLRRI	Derived – have you ever lived in a rural area up until school leaving age?	1 = Yes 0 = No	All		This is derived from the original questions about the rural state and town where the respondents lived up until school leaving age.
_GLRL	Are you subject to restrictions in your location of practice?	1 = Yes – I am required to work in an Area of Need 2 = Yes – I am required to work in a District of Workforce Shortage 0 = No	All		
Please indicate the reason/s for these restrictions					
_GLRLPV	I hold a Permanent Resident Visa	1 = Response marked 0 = Response blank	All		
_GLRLTV	I hold a Temporary Resident Visa		All		
_GLRLRS	I am undertaking a return of service period for a Medical Rural Bonded Scholarship or Bonded Medical Place		All		
_GLRLRP	I am undertaking a compulsory rural placement as part of my training		1, 3, 4		
_GLRLOT	Other		All		
_GLRLNA	Not Applicable		All		
_GLTPS	Do you travel to provide services / clinics in other geographic areas?	1 = Yes 0 = No	1, 2	SP – Wave 7 onwards GP – Wave 8 onwards	
_GLOUT1ASGC	ASGC classification of 1st outreach location		1, 2	SP – Wave 7 onwards GP – Wave 8 onwards	
_GLOUT2ASGC	ASGC classification of 2nd outreach location		1, 2	SP – Wave 7 onwards GP – Wave 8 onwards	
_GLOUT3ASGC	ASGC classification of 3rd outreach location		1, 2	SP – Wave 7 onwards GP – Wave 8 onwards	
_GLOUT1MMM	MMM classification of 1st outreach location		1, 2	GP – Wave 8 onwards	
_GLOUT2MMM	MMM classification of 2nd outreach location		1, 2	GP – Wave 8 onwards	
_GLOUT3MMM	MMM classification of 3rd outreach location		1, 2	GP – Wave 8 onwards	
_GLNONM	Do you provide any of these services in a non-metropolitan location?	1 = Yes 0 = No	2	Wave 7 only	
_GLNLOC	At which non-metro location did you spend the most time in the	1 = Location 1 (above) 2 = Location 2	2	Wave 7 only	

	last 12 months?	3 = Location 3		
_GLNVIS	How often did you visit this location in the last year?		2	Wave 7 only
_GLNYR	In what year did you start providing services to this location?		2	Wave 7 only
_GLNTRAV	How long does it take to travel to this location from your normal place of residence?	1 = Less than 1 hour 2 = From 1-3 hours 3 = 4 or more hours	2	Wave 7 only
_GLNPAY	Are you paid a salary/fixed payment for your services at this location?	1 = Yes 0 = No	2	Wave 7 only
_GLNCO	What main approach do you take to patient co-payments for your services at this location?	1 = Mostly gap payment 2 = Mostly bulk bill 3 = Mostly don't charge	2	Wave 7 only
_GLNSUB	Do you currently receive any reimbursement or subsidy for your services to this location?	1 = Yes from Commonwealth 2 = Yes, from another source 3 = No	2	Wave 7 only
_GLNLEAD	Did you lead the establishment of the service to this location?	1 = Yes 0 = No	2	Wave 7 only
_GLNREQ	Are you required to provide services to this location as part of your employment conditions at your main place of work?	1 = Yes 0 = No	2	Wave 7 only
_GLNGROW	I provide this service in order to: Grow my practice		2	Wave 7 only
_GLNDIS	I provide this service in order to: Provide healthcare to disadvantage people.		2	Wave 7 only
_GLNPERS	I provide this service in order to: Maintain a personal connection to a region.	1 = strongly agree 2 = agree 3 = neither agree or disagree 4 = disagree 5 = strongly disagree	2	Wave 7 only
_GLNCOMP	I provide this service in order to: Provide complex healthcare in challenging situations.		2	Wave 7 only
_GLNSUPP	I provide this service in order to: Provide support for local rural health staff.		2	Wave 7 only
_GLNLONG	For how long do you plan to continue providing services to this location?	1 = for less than 5 years 2 = for 5 years or more	2	Wave 7 only
_GLNFIVE	Are you considering travelling to provide services in a non-metropolitan location in the next 5 years?	1 = Yes 0 = No	2	Wave 7 only
_GLNPAST	Have you previously travelled to provide services in a non-metropolitan location?	1 = Yes 0 = No	2	Wave 7 only

_GLNFUND	Have you previously received Commonwealth funding for providing services to a non-metro location?	1 = Yes 0 = No	2	Wave 7 only	

ABOUT YOUR FAMILY CIRCUMSTANCES

_FCLP	Are you currently living with a partner or spouse?	1 = Yes 0 = No	All	All waves	
_FCPES	What is the employment status of your partner / spouse?	0 = Not in labour force 1 = Currently seeking work 2 = Full-time employment 3 = Part-time employment 4 = Not Applicable	All	All waves	
_FCPMD	Is your partner / spouse also a medical doctor?	1 = Yes 0 = No 2 = Not Applicable	All	Not wave 1	
_FCPR	For how many years did your spouse/partner live in a rural area up until the age he/she left secondary school?	Numeric response		Wave 3 onwards	Top-code: 18+ for all doctor types Rounded to 1
_FCPR_DK	Don't Know	1 = Response marked 0 = Response blank		Wave 3 onwards	
_FCPR_NA	Not Applicable	1 = Response marked 0 = Response blank		Wave 3 onwards	
_FCPRTASGC	ASGC classification of the main rural area where your partner/spouse lived up until school leaving age		All	Wave 3 onwards	
_FCPRTMMM	MMM classification of the main rural area where your partner/spouse lived up until school leaving age		All	Wave 8 onwards	
_FCNDC	How many dependent children do you have?	Numeric response	All	All waves	Top-code: 3+ for all doctor types
_FCAYNA	Not Applicable	1 = Response marked 0 = Response blank	All	All waves	
_FCAY	Age of the youngest dependent child	Numeric response	All	Not waves 3-5	Top-code: 22+ for all doctor types Rounded to 1
_FCC_AGE_1	Age of the 1st youngest dependent child	Numeric response	All	Wave 3 onwards	Top-code: 22+ for all doctor types Rounded to 1
_FCC_AGE_2	Age of the 2nd youngest dependent child	Numeric response	All	Wave 3 onwards	Top-code: 22+ for all doctor types Rounded to 1
_FCC_AGE_3	Age of the 3rd youngest dependent child	Numeric response	All	Wave 3 onwards	Top-code: 22+ for all doctor types Rounded to 1

Which of the following forms of childcare are you using for your children of pre-school age?

_FCCCRF	Relatives or friends		All	All waves	
_FCCCN	Nannies			All waves	
_FCCCCW	Childcare at work	1 = Response marked 0 = Response blank		All waves	
_FCCCDC	Other day care			All waves	
_FCCCNA	Not Applicable			All waves	
Please indicate the degree to which you agree or disagree with the following statements					
_FCRWNCC	I am restricted in my employment and/or the time and hours I work due to lack of available childcare	0 = Strongly Disagree 1 = Disagree 2 = Neutral 3 = Agree 4 = Strongly Agree 5 = Not Applicable	All	Not wave 1	
_FCPWNCC	My partner is restricted in his/her employment and/or time and hours he/she works due to lack of available childcare			Not wave 1	
_FCOQ	My partner is overqualified for his/her current job due to the limited availability of suitable jobs			Not wave 1	
ABOUT YOU					
_PIGENI	Gender – imputed using AMPCo information	0 = Male 1 = Female	All	All waves	Imputed
_PIAGEI	Age - imputed using AMPCo information	1 = under 35 2 = 35-39 3 = 40-44 4 = 45-49 5 = 50-54 6 = 55-59 7 = 60-64 8 = 65-69 9 = 70+	All	All waves	This variable is imputed from year of birth and then recoded. One group for 'under 35', from then on 5-year age bands, top-coded at 70+
_PICMDI	In what year did you complete your basic medical degree?	1 = pre-1950 2 = 1950-1954 3 = 1955-1959 4 = 1960-1964 5 = 1965-1969 6 = 1970-1974 7 = 1975-1979 8 = 1980-1984 9 = 1985-1989 10 = 1990-1994 11 = 1995-1999 12 = 2000-2004 13 = 2005-2009 14 = post-2009	All	All waves	Regrouped variable
In which country did you complete your basic medical degree?					

_PICMDA	A medical school in Australia	1 = Response marked 0 = Response blank		All waves	
_PICMDO	A medical school in the country/region specified	1 = Response marked 0 = Response blank		All waves	
_PICMDOI	Specified country/region	1 = Africa 2 = Asia 3 = Europ (exclude UK) 4 = North America 5 = Oceania 6 = Others 7 = South America 8 = UK	All	All waves	Regrouped variable
_PIMS	In which medical school in Australia did you complete your basic medical degree?	0=NA 1=Newcastle 2=Adelaide 3=Notre Dame, WA 4=ANU 5=Notre Dame, Sydney 6=Bond 7=UNSW 8=Deakin 9=Queensland 10=Flinders 11=Sydney 12=Griffith 13=Tasmania 14=James Cook 15=WA (undergrad) 16=Melbourne (undergrad) 17=WA (postgrad) 18=Melbourne (postgrad) 19=Western Sydney 20=Monash (undergrad) 21=Wollongong 22=Monash (postgrad) 23=New England and Newcastle Joint medical program	All	Wave 5 onwards	Not in public release of data
_PIIS	If you completed your medical degree in Australia, were you an international student?	1 = Yes 0 = No 2 = Not Applicable	All	Wave 5 onwards	
If you completed your medical degree outside Australia:					
_PIFAYR	What year did you first arrive in Australia?	Numeric response		Wave 5 onwards	
_PIFRYR	What year did were you first registered to work as a doctor in Australia?	Numeric response	All	Wave 5 onwards	

_PIFYRNA	Not Applicable	1 = Response marked 0 = Response blank		Wave 5 onwards	
_PICAMC	If you did your degree at a medical school outside Australia, have you completed the AMC Certificate examination?	1 = Yes 0 = No 2 = Not Applicable	All	All waves	
_PIQONR	Do you have medical qualifications from overseas which are NOT recognised in Australia?	1 = Yes 0 = No 2 = Unsure	All	Not wave 1	
_PISTEG	Group – Which training program are you enrolled in?	1 = Internal 2 = Pathology 3 = Surgery 4 = Other	4	All waves	
_PISTEI	Which specialty training program are you enrolled in?	0 = Paediatrics and Child Health 1 = Rehabilitation Medicine 2 = Medical Administration 3 = Psychiatry 4 = Internal Medicine (adult medicine) 5 = Public Health Medicine 6 = Emergency Medicine 7 = Obstetrics and Gynaecology 8 = Radiology 9 = Palliative Medicine 10 = Dermatology 11 = Ophthalmology 12 = Surgery 13 = Occupational Medicine 14 = Anaesthesia 15 = Intensive Care Medicine 16 = Pathology 17 = Internal Medicine – Others 18 = Pathology – Others 19 = Surgery – Others 20 = Other specialties	4	All waves	Regrouped variable
Please indicate all medical qualifications that you have obtained in Australia					
_PIPQR	None: I am currently a GP registrar		1	Waves 1-4	
_PIPQNO	None: I have qualifications from overseas which are recognised in Australia	1 = Response marked 0 = Response blank	1, 2	Waves 1-4	
_PIPQNA	Not Applicable		1	Waves 1-4	
_PIPQA 1-5	Postgraduate qualifications	0 = None 1 = Postgraduate Certificates	1, 2	Waves 1-4	Imputed variable

		/ Diplomas 2 = Membership, Fellow-in-Training 3 = Masters / PHD 4 = Fellowship of Colleges 5 = Others			
_PIQANU	Number of undergraduate degree			Waves 5 & 6	
_PIQANG	Number of graduate entry medical degree			Waves 5 & 6	
_PIQANM	Number of masters degree			Wave 5 onwards	
_PIQANPH	Number of PhD	Numeric response	All	Wave 5 onwards	
_PIQANDC	Number of Postgraduate diploma/certificate			Wave 5 onwards	
_PIQANF	Number of fellowship of college			Wave 5 onwards	
_PIQANOT	Number of other degree			Waves 5 & 6	
_PIFRACGP	Does GP have postgraduate qualification FRACGP?	1 = Yes 0 = No		All waves	Imputed variable
_PIFACRRM	Does GP have postgraduate qualification FACRRM?	1 = Yes 0 = No		All waves	Imputed variable
_PIFOTH	Does GP have postgraduate fellowship other than FRACGP and FACRRM?	1 = Yes 0 = No		All waves	Imputed variable
_PIMSPI	Main specialty in which you practise	0 = Cardiology 1 = Clinical genetics 2 = Clinical haematology 3 = Clinical immunology (incl. allergy) 4 = Clinical pharmacology 5 = Endocrinology 6 = Gastroenterology 7 = General medicine 8 = Geriatrics 9 = Infectious diseases 10 = Intensive care - internal medicine 11 = Medical oncology 12 = Neurology 13 = Nuclear medicine 14 = Paediatric medicine 15 = Renal medicine 16 = Rheumatology 17 = Thoracic medicine 18 = General pathology 19 = Anatomical pathology	2	Wave 1-5	This variable is recoded. Any individual specialty with less than 30 observations has been subsumed in one of the “(specialty) - Others” groups

		20 = Clinical chemistry 21 = Cytopathology 22 = Forensic pathology 23 = Haematology 24 = Immunology 25 = Microbiology 26 = General surgery 27 = Cardiothoracic surgery 28 = Orthopaedic surgery 29 = Otolaryngology 30 = Paediatric surgery 31 = Plastic/reconstructive surgery 32 = Urology 33 = Neurosurgery 34 = Vascular surgery 35 = Anaesthesia (excl. intensive care) 36 = Dermatology 37 = Diagnostic radiology (incl. ultrasound) 38 = Emergency medicine 39 = Intensive care - anaesthesia 40 = Medical administration 41 = Obstetrics and gynaecology (incl. gynaecological oncology) 42 = Occupational medicine 43 = Ophthalmology 44 = Psychiatry 45 = Public health medicine 46 = Radiation oncology 47 = Rehabilitation medicine 48 = Sport and exercise medicine 49 = Other specialties not specified above 50 = Palliative medicine 51 = Internal medicine – others 52 = Pathology – others 53 = Surgery – others 54 = Other specialties			
_PIMSP6I	Main Speciality (wave 6 onwards)	0 = Cardiology 1 = Clinical genetics 2 = Clinical pharmacology 3 = Endocrinology 4 = Gastroenterology and hepatology	2	Wave 6 onwards	This variable is recoded. Any individual specialty with less than 30 observations has been subsumed in one of the “(specialty) - Others” groups

5 = General medicine
6 = Geriatric medicine
7 = Haematology
8 = Immunology & allergy
9 = Infectious diseases
10 = Medical oncology
11 = Neurology
12 = Nuclear medicine
13 = Nephrology
14 = Rheumatology
15 = Respiratory and sleep medicine
16 = General surgery
17 = Cardiothoracic surgery
18 = Oral and Maxillofacial Surgery
19 = Orthopaedic surgery
20 = Otolaryngology
21 = Paediatric surgery
22 = Plastic surgery
23 = Urology
24 = Neurosurgery
25 = Vascular surgery
26 = Addiction Medicine
27 = Anaesthesia
28 = Dermatology
29 = Emergency medicine
30 = Intensive care medicine
31 = Medical administration
32 = Obs & gynae
33 = Occupational and environmental medicine
34 = Ophthalmology
35 = Paediatrics and Child Health
36 = Pain Medicine
37 = Palliative Medicine
38 = Pathology
39 = Psychiatry
40 = Public health medicine
41 = Radiology
42 = Radiation oncology
43 = Rehabilitation medicine
44 = Sexual Health Medicine
45 = Sport and exercise medicine
46 = Other specialty - Not specified above

_PIMSPX	Main Specialty (crosswave variables)	0 = Cardiology 1 = Clinical genetics 2 = Clinical haematology 3 = Clinical immunology 4 = Clinical pharmacology 5 = Endocrinology 6 = Gastroenterology 7 = General medicine 8 = Geriatrics 9 = Infectious diseases 10 = Intensive care - internal medicine 11 = Medical oncology 12 = Neurology 13 = Nuclear medicine 14 = Paediatric medicine 15 = Renal medicine 16 = Rheumatology 17 = Thoracic medicine 18 = Pathology 19 = General surgery 20 = Cardiothoracic surgery 21 = Orthopaedic surgery 22 = Otolaryngology 23 = Paediatric surgery 24 = Plastic/reconstructive surgery 25 = Urology 26 = Neurosurgery 27 = Vascular surgery 28 = Anaesthesia 29 = Dermatology 30 = Diagnostic radiology 31 = Emergency medicine 32 = Medical administration 33 = Obs and gynae 34 = Occupational medicine 35 = Ophthalmology 36 = Psychiatry 37 = Public health medicine 38 = Radiation oncology 39 = Rehabilitation medicine 40 = Sport and exercise medicine 41 = Palliative Medicine 42 = OTHER SPECIALTY	2	All waves	This variable is recoded. Any individual specialty with less than 30 observations has been subsumed in one of the “(specialty) - Others” groups
_PIMSPG	Group -main specialty in which you practise	1 = Internal 2 = Pathology 3 = Surgery 4 = Other	2	All waves	

_PISESPG	Group - second specialty in which you practise	1 = Internal 2 = Pathology 3 = Surgery 4 = Other	2	All waves	
_PIRSYR	In what year did you start this training program?	Numeric response	1, 4	All waves	
_PIREYR	In what year do you expect to complete the program and become a Fellow?		1, 4	All waves	
_PIRPS	Are you training in your preferred specialty?	1 = Yes 0 = No	1, 4	Wave 4 onwards	
_PIRNA	Not Applicable	1 = Response marked 0 = Response blank	1	All waves	
What specialist training courses have you applied for in the past? (Please tick all that apply)					
_PISAPNA	Not Applicable	1 = Response marked 0 = Response blank	4	Wave 6 onwards	Only appears in public database if there are more than 30 in the category
_PISAPPC	Paediatrics and Child Health				
_PISAPPM	Palliative Medicine				
_PISAPRM	Rehabilitation Medicine				
_PISAPDE	Dermatology				
_PISAPMA	Medical Administration				
_PISAPOP	Ophthalmology				
_PISAPPS	Psychiatry				
_PISAPSU	Surgery				
_PISAPIM	Internal Medicine (adult medicine)				
_PISAPOM	Occupational Medicine				
_PISAPPH	Public Health Medicine				
_PISAPAN	Anaesthesia				
_PISAPEM	Emergency Medicine				
_PISAPIC	Intensive Care Medicine				
_PISAPOG	Obstetrics and Gynaecology				
_PISAPPA	Pathology				
_PISAPRA	Radiology				

_PISAOTH	Other specialty training course		4	Wave 6 onwards	Responses to above variables are reassigned to this variable if there are fewer than 30 response.
Since you graduated, how many years and/or months have you spent NOT practicing as a doctor?					
_PINDYR	Years	Numeric response	All	All waves	Top-code: 11-15, 16+ for all doctor types Rounded to 0.5
_PIRS	What is your residency status?	0 = Australian citizen 1 = Permanent resident 2 = Temporary resident	All	All waves	
_PIMR	What type of medical registration do you have?	0 = Full (unconditional) medical registration 1 = Conditional medical registration 2 = Other (please specify)	All	Waves 1-4	
_PIMR5	What type of medical registration do you have?	0 = General Registration 1 = Specialist Registration 2 = Provisional Registration 3 = Limited Registration 4 = Non-practising Registration	All	Wave 5 onwards	Same question as PIMR but new classification applicable in w5 only.
What type of medical registration do you have?					
_PIMRGEN	General Registration				
_PIMRSPE	Specialist Registration				
_PIMRPRO	Provisional Registration	1 = Yes 0 = No	All	From W6 only	
_PIMRLIM	Limited Registration				
_PIMRNON	Non-practising Registration				
_PIHTH	In general, would you say your health is:	0 = Excellent 1 = Very good 2 = Good 3 = Fair 4 = Poor	All	Not wave 1	
_PILFSA	All things considered, how satisfied are you with your life in general?	1 = Completely Dissatisfied 10 = Completely Satisfied	All	Not wave 1	
Personality Information					
_PERTJ	Does a thorough job				
_PERCT	Is communicative, talkative	1 = Does not apply to me at all 7 = Applies to me perfectly	All	Not wave 1	
_PERRD	Is sometimes somewhat rude to others				

_PEROR	Is original, comes up with new ideas			
_PERWO	Worries a lot			
_PERFR	Has a forgiving nature			
_PERLZ	Tends to be lazy			
_PERSOC	Is outgoing, sociable			
_PERART	Values artistic experiences			
_PERNEV	Gets nervous easily			
_PEREFF	Does things effectively and efficiently			
_PERRSV	Is reserved			
_PERKND	Is considerate and kind to others			
_PERIMG	Has an active imagination			
_PERSTR	Is relaxed, handles stress well			
Locus of control				
_PILC1	I have little control over the things that happen to me			
_PILC2	There is really no way I can solve some of the problems I have			
_PILC3	There is little I can do to change many of the important things in my life	1 = Strongly Disagree 7 = Strongly Agree	All	Wave 3 onwards
_PILC4	I often feel helpless in dealing with the problems of life			
_PILC5	Sometimes I feel that I'm being pushed around in life			
_PILC6	What happens to me in the future mostly depends on me			
_PILC7	I can do just about anything I really set my mind on doing			
Risk-taking – how likely are you to engage in each of the following activities				
_PIFIRISK	Financial risks			
_PICARISK	Career and professional risks	1=Very unlikely 5=Very likely	All	Wave 6 onwards
_PICLRISK	Clinical risks			
Personal life events				

_PIIN	Serious personal injury or illness to self	1 = Yes 0 = No		
_PIINHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago		
_PIINF	Serious personal injury or illness to a close relative or family member	1 = Yes 0 = No		
_PIINFHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago		
_PIDES	Death of spouse or child	1 = Yes 0 = No		
_PIDESHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago		
_PIDER	Death of other close relative or family member	1 = Yes 0 = No		
_PIDERHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago	All	Wave 4 onwards
_PIDEF	Death of a close friend	1 = Yes 0 = No		
_PIDEFHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago		
_PIVIV	Victim of physical violence	1 = Yes 0 = No		
_PIVIVHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago		
_PIVPC	Victim of a property crime	1 = Yes 0 = No		
_PIVPCHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago		
_PIDMN	Named as defendant in a medical negligence claim	1 = Yes 0 = No		
_PIDMNHL	How long ago did it happen?	0 = 0 to 3 months ago 1 = 4 to 6 months ago 2 = 7 to 9 months ago 3 = 10 to 12 months ago		

_WEIGHT_CS	Cross Sectional Weights		All	All waves	
_WEIGHT_L	Longitudinal Weights		All	Wave 2 onwards	2008 cohort only
_WEIGHT_PANEL	Balanced Panel Weights		All	Wave 2 onwards	Panel cohort only
External linked variables					
_EL_METRO	Indicator of Metro / Non-Metro	1 = Metro 0 = Non-Metro	All	All waves	Work address
_EL_MINDIST	Minimum distance to emergency department in bands (KM)	1 = less than 1 km 2 = 1 to 2 3 = 2 to 3 4 = 3 to 4 5 = 4 to 5 6 = 5 to 6 7 = 6 to 7 8 = 7 to 8 9 = 8 to 9 10 = 9 to 10 11 = 10 to 15 12 = 15 to 20 13 = 20 to 30 14 = 30 to 40 15 = 40 to 50 16 = 50 to 60 17 = 60 to 80 18 = 80 to 100 19 = 100 to 200 20 = 200+	All	Waves 1-6	Work address, at postcode level
_EL_GPRATIO	Number of GPs per 1,000 population	Numeric response	All	All waves	Work address, at postcode level
_EL_SEIFA1	SEIFA index of relative socio-economic advantage and disadvantage			All waves	
_EL_SEIFA2	SEIFA index of relative socio-economic advantage	10 quantiles	All	All waves	Work address, at postcode level
_EL_SEIFA3	Index of economic resources			All waves	
_EL_SEIFA4	Index of education and occupation			All waves	
_EL_PAGE5	Percentage of population under age 5	10 quantiles	All	All waves	Work address, at postcode level
_EL_PAGE65	Percentage of population above age 65			All waves	
_EL_MEDHP	Median house price	10 quantiles	All	Waves 1 - 6	Home address, at postcode level
_DISTPUBL	Distance to the nearest public hospital	Rounded to nearest Km. All values above 200km	All	All waves	Measured from the mid point of work postcode to the exact location of nearest

_DISTPRIV	Distance to the nearest private hospital	grouped into category 200+		All waves	hospital
_DISTEMER	Distance to the nearest emergency department			All waves	
_DWS	If work address is in a GP DWS	0 = No 1 = Yes	1	All waves	

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5. Appendices

Appendix 1: Glossary of terms and abbreviations

AIHW	The Australian Institute of Health and Welfare. An independent statutory authority established in 1987 to provide information and statistics on Australia's health and welfare.
AMPCo Data Direct	Part of the Australasian Medical Publishing Company. Owns Australia's most accurate and comprehensive lists of doctors, hospitals, pharmacies, and other health professionals and institutions. It rents or licences these lists so people and organisations can communicate with doctors and other health care professionals.
ASGS	Australian Statistical Geography Standard
Balanced panel	The group of doctors who respond in every wave.
Boost	The oversampling of a particular group, in order to increase the numbers of respondents in that group, to allow for complex analyses which would otherwise not be possible. In MABEL, there was a boost in Wave 6 in which Hospital Non-Specialists were oversampled. This was a relatively small group of doctors but one which was particularly interesting from a policy perspective
DWS	District of Workforce Shortage
MMM	Modified Monash Model
GPs	The group of doctors regularly referred to as GPs in the User Manual also includes GP registrars.
Hospital Non-Specialists	Also known as "Hospital Doctors", "Interns" and "Doctors not enrolled in a specialist training program". Often abbreviated to "HNS" in MABEL.
RRMA	Rural, Remote and Metropolitan Areas Classification
SEIFA	Socio-Economic Indexes for Areas ranks areas in Australia according to relative socio-economic advantage and disadvantage. It is produced by the ABS based on information from the Census.
SLA	Statistical Local Area, an Australian Standard Geographical Classification (ASGC) defined area. SLAs are Local Government Areas (LGAs) or part thereof.
Specialists	Doctors who have completed a fellowship, other than in General Practice, and work in an area of specialty medicine. Often abbreviated to "SP" in MABEL.
Specialist Registrars	Also referred to as "Doctors Enrolled in a Specialty Training Program" or abbreviated to "SR".

Appendix 2: Updates of MABEL data and user manual

Date	*Data version*	*Data updates*	*New in release*	*User Manual update*
December 2017	Wave 9 data (version 9.0) Wave 8 data (version 9.0) Wave 7 data (version 9.0) Wave 6 data (version 9.0) Wave 5 data (version 9.0) Wave 4 data (version 9.0) Wave 3 data (version 9.0) Wave 2 data (version 9.0) Wave 1 data (version 9.0)	(1) Add two variables WLCNPFI and WLCSFI that impute consultation fees for new and subsequent patients, respectively, from item numbers for specialists who originally stated fees as 0. (2) Change the top-coding thresholds as a result of changing distributions across waves. (3) Correct coding error for PWPIP. (4) Correct value label for SDTYPE in Waves 1 and 2.		(1) Updated coding framework according to Wave 9 data.
December 2016	Wave 8 data (version 8.0) Wave 7 data (version 8.0) Wave 6 data (version 8.0) Wave 5 data (version 8.0) Wave 4 data (version 8.0) Wave 3 data (version 8.0) Wave 2 data (version 8.0) Wave 1 data (version 8.0)	1) DWS (District of Workforce Shortage) for Wave 8 based on ASGS SA2, rather than ASGC SLA as it was in previous waves. 2) Corrected fellowship variable (PIQADF) to take into account fellowships mention in waves 1 and 2)	1) Distance to the nearest public hospital (DISTPUBL), distance to the nearest private hospital (DISTPRIV) and distance to the nearest emergency department (DISTEMER) included for all waves, to replace old EL_MINDIST variable. 2) Questions on outreach included for GPs. Questions on outreach for Specialists are more limited than in previous waves. 3) New questions on worklife balance (JSHE, JSWL, JSLJ, JSRED, JSREDT)	(1) Updated coding framework according to Wave 8 data.
October 2015	Wave 7 data (version 7.0) Wave 6 data (version 7.0) Wave 5 data (version 7.0) Wave 4 data (version 7.0) Wave 3 data (version 7.0) Wave 2 data	(1) Imputed income takes into account non-medical sources of household income (FISADD) (wave 7 only) (2) PINDYR (time out from clinical practice) now takes into account periods of absence mentioned each year in MABEL	(1) Questions on outreach (specialists only) (2) Committee membership (3) Whether workplace is in a DWS for GPs (data available for all doctors) (4) Distance moved (workplace) since	(1) Updated coding framework according to Wave 7 data. (2) Table 20 expanded to include cross-wave availability of variables (and appendix containing these data has been removed).

	(version 7.0) Wave 1 data (version 7.0)	(3) Updated qualification variables. Corrected fellowship data for Wave 5 and 6. (4) Distance to nearest emergency department (EL_MINDIST) removed from all waves. This will be replaced by a more accurate measure and included in updates at a later date.	last completing MABEL (GLDIST and GLDISTGR) (5) WLOCOT indicates whether on-call arrangements for GPs and specialist do not fit standard pattern (6) Median house price data not available in Wave 7 dataset.	
January 2015	Wave 6 data (version 6.0) Wave 5 data (version 6.0) Wave 4 data (version 6.0) Wave 3 data (version 6.0) Wave 2 data (version 6.0) Wave 1 data (version 6.0)	(1). Changed PIMR to 5 separate variables – PIMRGEN, PIMRSPE, PIMRPRO, PIMRLIM and PIMRNON to take into account respondents selecting more than one. (2). New list of specialties. PIMSP6, PISESP6 created to distinguish list used from Wave 6 onwards. PIMPSX, PISESPX created for all waves as cross-wave specialty variables. (3) Change the top-coding thresholds as a result of changing distributions across waves. (4). Questions on payment source, superannuation and financial prospects which had been in Wave 4 but not Wave 5. (5) Aggregated specialty variables (PIMSP, JSSCI) so that no category has less than 30 observations	(1) New questions on risk-taking behaviour. (2) New questions on area of special interest (GPs only). (3) Personal income from non-medical sources.	(1) Updated coding framework according to Wave 6 data.
May 2014	Wave 5 data (version 5.1)	(1) Correct the value label errors for variable _pimr. (2) Correct the inconsistent value categories between Online and Hardcopy version for variable _pwsp.		Update the coding framework for variable _pimr.and rename _pimr5.
February 2014	Wave 5 data (version 5.0) Wave 4 data (version 5.0) Wave 3 data (version 5.0) Wave 2 data (version 5.0) Wave 1 data (version 5.0)	(1) Using AMPCo database records to update the missing values of doctors' basic medical degrees. (2) Change the top-coding thresholds as a result of changing distributions across waves. These changes apply to variables: _picmd; _pwnwmf; _pwnwmp; _pwnwff; _pwnwfp, _pwnwn; _pwnwap; _pwnwad; _pwnwo; _wlwhpy; _wlmlpy; _wlsdpy; _wlotpy; _wlocr; _wlrh; _wlpch; _wlcot; _wlocrpn; _wlocrpe;	(1) New variables of distance to the nearest emergency department. (2) New variables of numbers of qualifications doctors obtained in Australia. (3) New variables for doctors if they were international medical students.	(1) Updated coding framework according to Wave 5 data.

		_wlocrhn; _wlocrhe; _wlocrpbn; _wlocrpbe; _wlocrpvn; _wlocrpve; _wlcotpn; _wlcotpe; _wlcothn; _wlcothe; _wlcotpbn; _wlcotpbe; _wlcotpvn; _wlcotpve; _pindyr.		
October 2013	Wave 4 data (version 4.1) Wave 3 data (version 4.1) Wave 2 data (version 4.1) Wave 1 data (version 4.1)		Added variables of work location area characteristics, including metro/non-metro indicator, SEIFA index, proportions of population under age 5 and above age 65, median house price, and number of GPs per 1,000 population	Updated coding framework with all new variables included.
December 2012	Wave 4 data (version 1.0) Wave 3 data (version 1.1) Wave 2 data (version 1.2) Wave 1 data (version 1.3)	(1) Added variables of ages of the youngest three dependent children to Wave 3 and 4. (2) Corrected error of variable _wlcfi in Wave 1. (3) Changed top-coding threshold for variable _pwnwmp_sp. (4) Renamed variables to ensure the consistency in each survey section, the changes are: _wlhth (old) / _pihth (new); _agei (old) / _piagei (new); _postgrad1-5 (old) / _pipqua1-5 (new); _fracgp (old) / _pifracgp (new); _facrrm (old) / _pifacrrm (new); _fwshpoth (old) / _pifoth (new);	(1) Questions on violence and workplace aggression (Wave 3 only). (2) Imputed gross annual income for all waves. (3) New questions on GP practice vacancies. (4) New questions on doctors' significant life events.	(1) Updated coding framework according to Wave 4 data. (2) Updated the data quality issue related to the imputed income variable. (3) Updated the imputation rules on the variable of total working hours.
February 2012	Wave 3 data (version 1.0) Wave 2 data (version 1.1) Wave 1 data (version 1.2)	(1) Changed top-coding thresholds as a result of changing distributions across waves. These changes apply to variables: _pwnwmf; _pwnwfp; _pwnwn; _pwnwap; _wlcot; _wlcotpn; _wlcotpe; _wlcothn; _wlcothe; _wlcotpbn; _wlcotpbe; _wlcotpvn; _wlcotpve. (2) Rounded numeric variables to 0.5: _pindyr; _wlwy; _wlwod; _wlwd; _wlww; _ficsyr; _pwnwn; _pwnwap; _pwnwad; _pwnwo. (3) Rounded numeric variables to 1: _pwnwmf; _pwnwmp; _pwnwff; _pwnwfp; _wlocrpn; _wlocrpe; _wlocrhn; _wlocrhe; _wlocrpbn; _wlocrpbe; _wlocrpvn; _wlocrpve; _wlocr; _wlcotpn;	(1) New questions related to if spouse/partner grew up in a rural area. (2) New set of questions of personal locus of control.	(1) Updated coding framework according to Wave 3 data. (2) Updated the details of calculation of the balanced panel cohort weights. (3) Updated data quality issue related to variables: _pwwmth/_pwwyr; _wlww/_wlwy; _glmth/_glyr; _pindmth/_pindyr. (4) Updated the data quality issue related to multiple responses.

		_wlcotpe; _wlcothn; _wlcothe; _wlcotpbn; _wlcotpbe; _wlcotpvn; _wlcotpve; _wlcot; _wlwhpy; _wlmlpy; _wlsdpy; _wlotpy; _glmth; _glnl; _glyrrs; _pwwmth. (4) Corrected the errors of variables: _fcndc and _pireyr. (5) Withheld continuing doctors' reported qualifications to avoid duplicates (see p52 for details). (6) Added the weights for balanced panel cohort.		
May 2011				(1) Added details of the changes in wording of working hour questions. (2) Added a section (2.6) with the solution to duplicated responses.
April 2011	Wave 2 data (version 1.0) Wave 1 data (version 1.1)	(1) Change value labels of some variables to ensure the cross wave consistency. These changes apply to variables: _jsbs-_jsuh; _jslp; _jslm; _picmdoi; _pimspi; jssc; pistei. (2) Add prefix letter as a wave identifier to variable names, that is 'a' for Wave 1, 'b' for Wave 2, etc. This applies to all variables. (3) Combine variables _wloo/_pwoce and _fioti/_fios for different doctor types regarding the same survey questions. (4) Correct the error occurred in variables _pwmhpasgc and _pwmhprrma, 56 missing values have been assigned to the correct values.	(1) New section of doctors' current employment situation (2) Revised the working hour questions by settings. (3) New questions of doctors' supervision activities. (4) Revised the on-call related questions for Specialists. (5) New set of personality questions.	(1) Changed coding framework according to the updates of data. (2) Corrected one typo (1st line, p23 of original version), changed it to 'where household gross income was less than household net income'. (3) Updated new variables in Wave 2.
June 2010	Wave 1 data (version 1.0)			Original user manual for Wave 1 release

Appendix 3: Previous doctor surveys

Australian Doctor Surveys

Australia and New Zealand College of Anaesthetists Workforce Survey

AMWAC Medical Careers Survey

Royal Australian College of Surgeons Workforce Questionnaire

Developing and Evaluating Viable Organizational and Economic Models of Rural General Practice (Monash University)

HILDA

Australian Doctor Survey

AIHW Medical Labour Force Survey

The Medical School Outcomes Database

The Monash Medical Graduates Survey

Queensland Doctors E-cohort Baseline Survey

ABS Medical Business Survey 2001-02

AMA Survey of GPs

Rural Doctors Association of Australian GPs survey

ABS Medical Practitioners Survey

North American Doctor Surveys

AMA study of the practice patterns of young physicians (US)

National Physician Survey (Canada)

National Survey of Rural Physicians (US)

UK Surveys

Choosing somewhere to work survey (University of Aberdeen)

Towards a flexible basis workforce – a basis for change? (University of Aberdeen)

UK Medical Careers Research Group (University of Oxford)

Appendix 4: Methodology for imputing gross income

We took the following steps[1]:

(i) Generating observed income variables (gross and net)

Firstly, we combined all available income information to generate variables for observed personal income, observed partner income and observed household income to be able to calculate taxes and benefits.

Personal gross annual data were used when available, otherwise the fortnightly income was multiplied by 26 (minus the number of fortnights of unpaid leave).

An additional variable called "observed household other income" was created by subtracting personal annual income from household annual income. This household other income could come from the following sources:

a. non-labour income by the doctor (i.e. interest, rent, dividends, etc.);
b. partner's labour income (from full- or part-time employment);
c. partner's non-labour income; or
d. a mix of the above.

Due to the limited availability of income information in the survey, it is not possible to separate these clearly, mainly due to a lack of accurate information about the partner's annual income. In order to calculate tax and transfers for the imputation, it is necessary to use the available information to construct variables for observed household income and observed partner's earnings.

For this purpose, we have had to make the following assumption: if a doctor indicated having a partner in full- or part-time work, we attributed the other household income entirely to the partner. On the other hand, if the partner was not reported as being employed, we assumed that couples would split other household income equally between both spouses. This is based on the idea that for tax purposes, it is reasonable to assume that couples will split other income to maximise tax benefits (for instance to use the tax-free income threshold). This 50/50 split is also the default choice of the ATO.

Lastly, where a doctor reported household but not personal income figures, we assumed that the doctor's income is equal to the household income only if the doctor did not have any other sources of income and if the spouse was not employed.

We take the same steps to construct similar net income variables.

From wave 6 onwards, some additional information is available on non-labour income of the doctor for some respondents. If available, this information is used to distribute gross household other income more accurately between income of the doctor him/herself or the income of the doctor's partner. If this additional information is not available we use the approach described above.

(ii) Calculating net income from observed gross income

[1] This document of gross income imputation was prepared by Guyonne Kalb and Daniel Kuehnle.

For the observed gross income, we then calculated the following components of tax and income support payments based on the information for each year:

- income tax;
- low income rebate;
- dependent spouse rebate;
- Medicare Levy; and
- Family Tax Benefit Parts A and B.

We do not have to calculate any allowances or pensions as all persons observed in the sample are working and none of them would be eligible for any allowances or pensions.

Net income is then calculated as follows:

Net income = Observed annual income – income tax payable – Medicare Levy + [minimum of income tax and rebates] + family payments.

(iii) Imputing gross income from net income

Based on the observed net income, we can reverse the income tax procedure in order to arrive at an imputed value of gross income[2]. This procedure simply uses the framework to calculate payable income tax and re-arranges the terms of the equation to arrive at an imputed starting value of gross income. We repeat this for the partner's imputed gross income and set the partner's earnings to zero if the partner is not working and if there is no other household income (which would otherwise have already been split and been attributed to the partner).

We then repeat the calculation of the tax and transfers listed in section 2 but this time we use the imputed starting value for gross income as our input variable. Based on these amounts, we can impute annual net income based on imputed gross and the related tax and transfers.
For these observations, we calculate the difference between the observed and the imputed net income, which will form the basis for our next iteration step. The basic idea is to update the gross imputed income incrementally[3] which we then use to impute net income and we repeat this process until the imputed net value is equal to observed net. Hence we generate a loop that should run as long as the absolute value of average individual income difference, i.e. the observed minus the imputed net income, is larger than the convergence value (equal to 0.01) and we bound the maximum number of iterations to avoid eternal loops. If convergence occurs within the set limits, we use the value of the imputed income for all individuals for whom we did not have gross but for whom we had net income available.

[2] Here we exclude family payments since it appears that respondents don't generally include this when reporting net income values.
[3] The incremental increase is calculated as follows:

$$\Delta = [(1 + \frac{observed_net - imputed_net}{observed_net}) * imputed_gross] - imputed_gross$$