

Where have all the children gone? Increasing reports of childlessness in a large-scale continuous household survey.*

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*** Acknowledgments**

Thanks are due to the Office for National Statistics for access to unpublished Census tabulations and mortality statistics, and for permission to use the 1981 to 2006 General Household Surveys; to the ESRC data archive for supplying these data; and for comments by Steve Smallwood and Julie Jefferies (ONS). All errors are the responsibility of the author. Crown copyright material is reproduced with the permission of the Controller of HMSO. The work was funded by ESRC project Modelling Needs and Resources of Older People to 2030 (RES-339-25-0002).

Where have all the children gone? Increasing reports of childlessness in a large-scale continuous household survey: Abstract

Reports of childlessness by women in later life from the 1940 to 1955 birth cohorts in the British General Household Survey are analysed. The levels of childlessness reported by the same cohort of women increase with age, by over 50% between their early 40s and their late 50s. However reported cohort mean fertility of parous women remains constant with increasing age. Similar results hold within sub-groups such as those in different educational and marital status groups. Possible reasons for such differences are discussed, including non-comparability of samples over time due to differential migration, mortality or institutionalisation, but these are not adequate explanations. Other possible reasons such as changes in the survey design and content are also found to be implausible. It is concluded that the most likely reason is due to deliberate under-reporting of childbearing among older cohorts of women. The implications of these results for the interpretation of retrospective data in surveys and for availability of informal care for older people are considered.

INTRODUCTION

Data obtained from retrospective enquiries into social surveys such as fertility histories are an increasingly important source of information, e.g. Wu (2008). Such data may permit more detailed analyses in a way not possible with data referring to a single point in time. The other main sources of life history data come from panel or other longitudinal surveys. However, few longitudinal studies cover the extended time periods such as that of a typical length of generation, around 30 years or so. Some longitudinal studies, such as the British birth cohort studies (<http://www.cls.ioe.ac.uk/>), where interviewing may take place only after extended periods, will frequently collect substantial amounts of retrospective data to fill in information in the intervening periods between interviews. While there are some long-term panel studies, such as the Panel Study of Income Dynamics (PSID, <http://psidonline.isr.umich.edu/>), these are rare. Life history data may also be obtained from administrative registers in countries with such systems, but the number of countries with well-developed systems is relatively few, and information obtained from retrospective interviews are now a primary source of data for scientific and policy purposes. The opening paragraph of a recent paper in Demography by Hayford and Morgan stated “When large-scale surveys first began collecting retrospective demographic information, such as marriage and birth histories, many demographers expressed doubt about the quality of these data. However, studies showed that in many contexts women reported births and marriages with a high level of accuracy.” (Hayford and Morgan 2008:129, see also Swicegood, Morgan and Rindfuss 1984, and Wu Martin and Long 2001). However, recent evaluations of the quality of fertility histories are rare.

If large-scale surveys containing identical retrospective questions are repeated then it is possible to compare the experiences of different cohorts. Such synthetic cohort approaches have been widely used, even though the information obtained will not be from the same individuals (Gilbert 2001:277-8; Glenn 2005; Uren 2006). In practice, it is difficult to validate information collected in such surveys from independent sources. For example, surveys will often be confined to the private household population making direct comparisons with alternative sources such as vital registration problematic. However, the internal consistency of reporting the same events by members of the same cohorts at different time points in the same survey may be assessed, which will minimise problems of comparability, so overcoming many of the difficulties in interpreting differences between results from different surveys identified by Swicegood et al (1984).

This paper compares reports by women of their completed fertility experience, specifically, as to whether or not they ever had any live born children, and if so, the number of such children. Information is not collected from men; it is well-recognised that men, especially those who are non-co resident, substantially underreport numbers of children as compared with women, and it is assumed that reports by women are more accurate (Cherlin, Griffith and McCarthy 1983; Rendall et al 1999): men are less accurate and complete in reporting vital events in general (Auriat, 1991; Poulain, Riandey and Firdion 1991; White 1998). Our analysis is confined to women over age 40, who can be assumed essentially to have completed childbearing. Fertility after age

40 adds only 0.02 children per woman to the average number of births to women born in 1940 (based on Office for National Statistics, 2007a:Table 10.1), and very few women have their first child beyond age 40: Smallwood (2002:Figure 8) estimates average first-birth rates at ages 40-44 as about 5 per 1,000 per annum among the 11% of women born in 1940 who were still childless at age 40, suggesting that about one woman in 400 would have a first birth after that age. Thus the contribution of women of aged 40 and over to fertility in the analysis period is very small.

DATA AND METHODS

The data used are from the General Household Survey (GHS) (Office for National Statistics, 2004), the principal multipurpose official survey in Britain, which has been running almost continuously since 1971, interviewing about 20 thousand adults aged 16 and over per annum. Data have collected continuously on five core topics, education, employment, health, housing, and population and family information, including marriage and fertility histories. In the early years of the survey, information on fertility was collected only for women under age 50, but in 1986, this was extended to ages under 60, so including larger numbers of women and a considerably expanded age range over which the same cohort of women report their completed childbearing experiences.

Women were asked about their childbearing histories including dates of birth, sex and survival status of all children, the section having started with an explicit question about whether they had given birth or not. The introductory questions remained the same throughout the period: "Have you ever had a baby - even one who only lived for a short time?", apart from "had" being replaced by "given birth to" from 2004; if the answer is

“yes”, she was then asked “How many children have you given birth to, including any who are not living here and any who may have died since birth?”

(questionnaires available at <http://qb.soc.surrey.ac.uk/surveys/ghs/INDSEC198WCDOCb.pdf>).

The GHS has been conducted throughout the whole period by the Government’s official survey organisation, the Social Survey Division of the Office of Population Censuses and Surveys (now Office for National Statistics), a highly respected organisation with a strong track record and organisational memory. The Survey itself has been subject to regular external review throughout the period (Summary quality report for General Household Survey (GHS) available at <http://www.statistics.gov.uk/about/data/methodology/quality/downloads/SQRGHSv1.pdf>). There are few surveys globally with large samples that have been able to operate with such high quality and in a consistent environment over such an extended period. Since 1985, there have been some changes: for example, the sampling basis (between 1986 and 1990); the introduction of computer assisted interviewing since 1994; some telephone interviewing from 2000; small financial incentives for respondents; and some restructuring of content from 2000. However, the basic format and survey structure, a multi-purpose survey that interviews all eligible adults in selected households, remains fixed and all changes were designed to ensure no loss in utility of time series data.

The data set used here consists of responses by women aged 40 to 59 in the period 1986 to 2006, a total of 19 separate rounds of the survey (the survey was

continuous over this period, apart from suspension in years 1997 and 1999). This is supplemented by information reported by women aged 40 to 49 in the period 1981 to 1985; these values increase the number of years for which reports of fertility cover the whole age range from 40 to 59 (Figure 1). The socio-demographic variables included were obtained from the 1972-2004 GHS time series file (Uren 2006) updated to include survey years 2005 and 2006, and information on childlessness and number of children born from the individual survey files in each of the 24 relevant years

(<http://www.esds.ac.uk/government/ghs/>). Summary information is given in Table 1.

The response rate has remained high over the period, but drifting down slightly in line with patterns in other developed countries; even so, response is higher than often found elsewhere (de Heer 1999; Groves 2006). Table 1 also shows little item non-response to the question on whether the woman has ever had a baby, averaging around the 5% but with a U-shaped pattern over the last quarter century.

Insert Figure 1 and Table 1 about here

Current official statistics of overall numbers of children born to women are based on a variety of different sources, including vital registration which collects information about previous marital births from married women, and therefore to get true birth order (including all births whether inside or outside marriage), these data are combined with birth history information from the General Household Survey which are presented in the form of cohort data for England and Wales (Smallwood, 2002). Thus, as in many countries, no independent definitive alternative source of information on the basic

demographic characteristic of the proportion of women who have given birth exists, and therefore no possibility of assessing quality against external sources (the ONS 1% Longitudinal Study based on record linkage of all births to sample members in England and Wales from 1971 provides information for cohorts from about 1956, Hattersley and Creeser 1995; Smallwood 2002). However, it is possible to make comparisons of reports by women in the same cohort but at different time periods in the GHS. Since the proportion of women who have their first birth beyond age 40 is negligible, information on the proportion of childless women born in 1946 is available from 18 rounds of the survey between 1986 and 2005 as their age increases from 40 to 59. If the populations sampled are sufficiently similar, these alternative estimates permit investigation of the accuracy of reporting of variables that in this case are expected to be constant across time. While such data are conventionally presented as cohort data, this is not completely accurate. A cohort is defined as a group of people who have some common experience, in this case, the same birth period (Smelser and Baltes 2001; Glenn 2005), but almost all national statistics on cohorts refer to a group of people identified by such a cohort indicator, but do not comprise the same people from year to year; they usually consist of the experiences of people who are resident in the country at some particular time point, immigrants should join the system on arrival and emigrant should be lost to the system at departure. Thus the criterion for inclusion is not simply year of birth but also residential status at particular time points. At present over 20% of births in Britain are to mothers born overseas, which makes the implicit assumption that published cohort data refer to a well-defined group of women increasingly less justifiable (Dunnell 2007). In the case of quasi-cohort data from

surveys, such as used here, they will consist of almost completely different groups of people in successive periods. To maximise comparability, as far as practicable, the population samples for the same cohort at different time points should be drawn from the same population.

The rest of the paper addresses these issues, by analysing estimates of levels of childlessness and of fertility of parous women produced by the same cohorts at different time points, and investigating possible reasons for differences in reporting. Changes between two time points in the population of women born in a particular year resident in the private household sector in Great Britain (the population surveyed) are due to only three types of events to these women in the intervening period: deaths; international emigration and immigration; and moves between the community and communal sectors, so how these may affect estimates is considered. Finally some wider implications about use of retrospective data collected in surveys are discussed.

RESULTS

Overall results

From the question of whether the woman had ever given birth, Table 2 shows the proportions of women in various cohorts who responded to the relevant question by reporting themselves as childless at different ages depending on the round of the survey, together with the official estimates of childlessness in England and Wales by corresponding cohorts in the same period (Smallwood 2002; Office for National Statistics 2007a). There are no official data for Great Britain, which the survey covers,

but more detailed analysis (not shown) indicates that differences between England and Wales and Great Britain figures are small (Scotland accounts for only 9% of the sample and fertility trends and levels are similar in both parts). Information is presented for four 5-year cohorts with completed fertility for which information is available in the survey (although the age-range covered and sample size for the 55-59 year old group in the period 1950-54 are smaller since the last survey date is 2006, the average age of women in that age group is therefore close to the lower bound, which would be expected to reduce the reported difference since the effective age-range covered will be smaller, Figure 1).

Insert Table 2 about here

The proportion of women in the 1940-1944 cohort who reported themselves as childless increased from 10% when they were asked in their 40s to 16% in their late 50s, an increase of 6 percentage points and so more than 1.5 times the figure when the cohort was first interviewed (if the small component of fertility among very old mothers was removed from the older age group to maximise comparability, the result would actually increase the difference, albeit trivially). This difference is about the same size as the range of "true" values for cohorts born in the quarter-century around this period, 1930 to 1955 (16% in 1955 to 9% in 1946, Office for National Statistics 2007a: Table 10.3). The increases with age observed for the two later cohorts were slightly larger, 7 and 8 percentage points respectively. Estimated confidence intervals (assuming simple random sampling, but design effects of variables such as those shown here are very

close to one, Ali et al 2008b) show that such changes cannot be accounted for by sampling variability. The increase in reported childlessness for the 1935-39 cohort was smaller, 3 percentage points, suggesting that these discrepancies have been increasing over time. The values for women aged 45-49 are closest to the official values (although note that the geographic coverage is different) and that the reported levels of childlessness by women aged 40-44 are generally lower than both the official values and those reported by the same cohorts of women when aged 45-49. Although these data are presented in 5-year bands, Figure 2, which gives these data by single years of age (the data are smoothed to reduce sampling fluctuations), shows that the increase in reported childlessness steadily increases with age in a uniform way.

Insert Figure 2 about here

In contrast, the average reported fertility of parous women is almost constant and not statistically significantly different across all ages within each cohort shown (as would be expected if reporting was consistent): the anomalous fertility results are due specifically to an increasing propensity of older women to report themselves as childless as they age, rather than a general tendency for such women to report fewer births which would be expected to lead to declining reported fertility among parous women.

Changing item non-response with age cannot account for the differences – even if the additional non-response (increasing by about 2 percentage points for the 1940s cohorts) were concentrated among parous women, the change in proportions reported

childless would be altered only by about 0.2%, a point we return to in discussion of Table 5(a). Moreover, when married women were asked about their childbearing in the 1971 Census, the Census Validation Survey showed that the great majority of non-responders were actually childless (Hattersley and Creeser 1995:34).

Migration as a possible confounder

Migration is one potential explanation for the findings of Table 2, if the composition of the cohort samples changed over time. In order to assess this, we show values separately for those born inside and outside the United Kingdom. The UK-born population is a better approximation to a well-defined cohort since they are likely to have spent their whole life in the country. However, the proportions of women born outside Britain are relatively small, typically about 10%, so the values for those born inside Britain are very similar to those for all women, thus immigration cannot explain the patterns observed (Table 3). A more difficult problem is that of emigration, since no information exists about whether native-born parous women were more likely to emigrate than non-parous women. Official statistics suggest that emigration rates at these ages are small, averaging 12 thousand women aged 45-59 per annum, out of a UK population of over 5 million women in the age group, 0.24 % per annum (Office for National Statistics 2006:Table 2.7). However, this will over-estimate emigration of native-born women since many of these will be returning immigrants, but the proportion of women from earlier England and Wales birth cohorts who have emigrated may be calculated by estimating the expected number of survivors from that group and comparing it with the numbers of England and Wales-born women recorded in the 2001

Census of England and Wales (unpublished Census Table C0681; see also Siegel and Swanson 2004; Murphy 1995). These data indicate that 10% of women in the 1961 England and Wales birth cohort were emigrants at age 40, and 9% of women in the 1941 cohort at age 60. Although these data refer to different cohorts, they suggest that emigration among older working age British-born women is low. In order for the proportion of childless women to increase by over 50% over the period due to differential emigration, about one third of parous woman would have had to emigrate between ages 40 and 60; clearly neither immigration nor emigration holds the answer to the reported increase in childlessness.

Insert Table 3 about here

Mortality as a possible confounder

Other possible explanations for the observed patterns relate to mortality, either directly because of differential mortality among women age 40 to 60 by parity or indirectly because mothers may under-report dead children. The first explanation would hold if large numbers of parous women died in the period between the two surveys compared with childless women. The overall proportion of women born in 1945 in England and Wales who died between ages 40 and 60 is about 5% (calculations based ONS/GAD unpublished cohort mortality data). Excess mortality among parous compared with non-parous women is obviously insufficient to account for the reported differences in Table 2, even if only parous women died, it could not explain the change (in fact, the evidence suggests the reverse, parous women after the end of the childbearing phase have lower

mortality than those who are childless, Grundy and Tomassini 2005; Grundy and Kravdal 2008). Thus parity-specific differential mortality of late middle-aged women cannot be the answer.

Although deaths to children are commonly found to be under-reported in some low literacy and numeracy developing countries and vital events in general may be poorly reported (Brass et al 1968; Trussell and Hill 1980; Beckett et al 2001), deaths to children and consequent reluctance of women to recall or report the corresponding birth cannot be an explanation in developed countries. The period of childbearing among those born in the early 1940s was centred on the late 1960s, and the probability of a child born around that period dying before age 20 was about 3% and about a further 1.5% in the next 20 years in Britain (calculations based ONS/GAD unpublished cohort mortality data). Official statistics suggest that about 15% of parous women born in 1940 had one child (Office for National Statistics 2007a:Table 10.5), and if independence of child deaths is assumed, then well under 1% of parous women would have lost all their children to death by age 20 (Murphy, Martikainen and Pennec 2006). Clearly this cannot be an explanation for the discrepancy, since even if all women who had lost all their children reported themselves as childless, this would have only a trivial effect on childlessness estimates between these ages, and the question would still remain as to why they were reporting them 15 to 20 years after the birth, but had stopped doing so around 15 years later.

Institutionalisation as a possible confounder

The survey is household-based and therefore excludes those in the communal sector. A possible explanation is that over this period, large numbers of parous women entered the communal sector, and therefore they were not interviewed at later time periods (or less plausibly that high fractions of childless women were in institutions in the first period, but were in the community at the second period). The proportions of women in institutions at aged 40 in the 2001 Census of England and Wales was 0.35%, rising to 0.45% at age 60. Married women are the most likely of all marital status to have children (Table 5(b)), and by far the least likely to be in institutions (Murphy 2007). Institutionalisation is more likely among childless than parous women, so allowing for differential rates of institutionalisation would tend to reduce rather than to increase the reported level of childlessness in the community, but again by only a trivial amount. Therefore institutionalisation cannot account for the differences, and probably acts to attenuate the observed differences.

Survey organisation as a possible confounder

It is possible that the organisation or administration of the survey might have led to such divergences over time, but there is nothing to suggest changes of such a magnitude. There were some relatively minor changes in the sample organisation noted earlier. While the most substantial of these occurred in 2000, the trends identified above had started to become apparent before that date (for example, the higher values for the 1945-49 cohort at ages 50-54 than at ages 40-44 in Table 2 are based almost entirely on information collected before 2000). The response rate remained relatively constant at around 83% over the first half of the analysis period (1981-1992), but then dropped

by 9 percentage points in the second half. These rates refer to overall response and more detailed comparisons including matching the characteristics of non-respondents with 1981 and 1991 census values, which was possible since the GHS was conducted by the Census Office itself, showed that response rates among women aged 40-59 were better than average, so these values over-state non-response among this group (Rauta 1985; Foster 1994). Over the whole period, information on childbearing was collected either by face-to-face interview or more-commonly by a self completion schedule especially when other people were present. If changes in these data were “real” then changes in the level of differential under-enumeration of parous compared with childless older women would have to be by a factor of 1.5 to 2, suggesting that women with children, who are more likely to be married, would have become over this period much less likely to be interviewed in the survey (or to agree to answer these specific questions). If the “true” proportion of childlessness was p and the survey response rate was r , then the range of possible variation in reported childlessness due to differential non-response between childless and parous women would be between $\max(0, (p+r-1)/r)$ and p/r , so with values of r about 75% and p about 11% for those born in the 1940s (Tables 1 and 2), the maximum possible childless value due to non-response would be 15% (if the response rate for childless women was 100%), still below the values for women aged 55-59 in Table 2. In fact, women in their 50s are more likely to respond on average, the mean standardised average weight for such women in the period 2000-2006 was 0.96, suggesting their response rate was about 4% higher than average in this period. Moreover, a number of studies have concluded that changing non-response has little effect on survey estimates (Curtin, Presser, and Singer

2005; Keeter et al. 2000), and the change in response rates shown in Table 1 is relatively small in any case. We therefore conclude that changes in question wording, survey organisation or response cannot explain the results of Table 2.

The data presented so far are unweighted because weights are available only since 2000. Table 4 therefore compares weighted and unweighted estimates of childlessness in the 7-year period 2000-2006 for the relevant age-groups. The differences are small and irregular compared with the reported changes with age, so lack of weighting in the earlier period seems unlikely to account for the findings.

Insert Table 4 about here

Results within sub-populations: educational level and marital status

It might be suspected that some groups might be less able or willing to answer such questions. To address this issue, Table 5(a) shows values broken down by educational level and Table 5(b) by marital status at interview: the numbers of women in the 1950-54 cohort aged 55-59 is small within separate groups so to simplify presentation we concentrate on the 1940s cohorts (full results are available on request). Highest educational level tends to be fixed relatively early in adult life and therefore comparisons between women in a given cohort of the same educational level at different time periods beyond age 40 should be meaningful and Table 5(a) confirms that the distributions of highest qualification level remain broadly similar as women age. Highly-educated women have different patterns of family formation from those with less formal education:

they are more likely to be childless and to have their children later (Rendall and Smallwood 2003) although those that have them do not necessarily maintain more contact with their adult children (Grundy and Murphy 2006a). While the statistical significance of values is less than for those of Table 2 because the population sizes are smaller for the groups shown, nevertheless there is a consistent tendency within almost all groups to report more childlessness with increasing age (eight out of 10 cases show lower reported childlessness at ages 40-44 than at 55-59 for the same birth cohorts), while cohort fertility of parous women is largely consistently reported by age. Item non-response to the question about childbearing within educational groups is much smaller than for the overall values of Table 2 since the majority of non-responders will already have failed to respond to the educational level question earlier in the interview (the survey also includes proxy reports who will be treated as missing values), suggesting very little reluctance to answer the question on childbearing.

Insert Table 5 about here

A similar point holds for marital status – it is not fixed, but few never-married women subsequently marry beyond age 45, and the great majority of women married at age 45 will be so at age 60, and since women widowed by age 60 are most likely to have been married at age 45, these two groups have been combined. The great majority of women are married (or widowed) and therefore the numbers in other groups are relatively small, but nevertheless the majority of these groups also show an increasing tendency to report increased childlessness with age (seven out of the eight

cases shown including the married/widowed group). This suggests that the reported increase in childlessness is not due to reluctance of some specific groups such as never-married women to disguise their experiences: if it were to be the case, it would have occurred at a time when attitudes to extra-marital childbearing were becoming more relaxed, the proportion of births outside marriage in England and Wales increasing from 12.8% in 1981 to 43.5% in 2006 (Office for National Statistics 2007a:Table 2.1). We also note that average reported fertility of parous women by marital status remains essentially constant with age, reinforcing the fact that anomalous reporting of fertility observed across all groups is largely confined to childlessness.

CONCLUSIONS AND SUMMARY

Recent studies of the accuracy of fertility reports in developed country surveys are rare, possibly since it was assumed that their accuracy had been established, e.g. Wu (2008), and more attention has been given to variables such as cohabitation, where inconsistencies over time may be due to changing interpretations of whether a particular relationship was a cohabiting one and when it started or ended (Murphy, 2000; Hayford and Morgan 2008). Although some of the non-survey literature (e.g. Bernard et al 1984) adopts a more sceptical approach, the substantial survey-oriented literature on retrospective information often concentrates on ways of increasing accuracy, such as the best way to obtain precise dates or to ask about sensitive issues such as sexual histories (e.g. McAuliffe, DiFranceisco and Reed 2007). These studies are frequently concerned with methodological improvements designed to overcome problems with respondent uncertainty or recall problems – respondents are implicitly assumed to want

to give the correct answer and such innovations are designed to enable this to happen (Belli 1998; Belli, Shay and Stafford 2004) Having a child would rarely be a candidate for memory failure either of encoding or storage, since of all events that happened in a woman's lifetime, giving birth must be regarded as one of the most noteworthy and memorable. It seems implausible that a substantial fraction of women in contemporary developed societies will simply have started to forget the event as they pass through the late working ages. It might be possible to think of special cases such as some young women who have given up their child(ren) for adoption might be less likely to report their births (Moehling 2002), but it seems unlikely as they had been reporting these births up to age 45 and in any case, adoptions are increasingly rare in England and Wales, in 1971 there were 21.5 thousand adoption orders compared with nearly 800 thousand births (Office for National Statistics 2007b:Figure 2.22).

Since giving birth is a very well-defined event, these differences cannot be explained as artefacts of non-comparability of the cohorts' composition or changing survey practices over time, the most plausible conclusion is that there is increasing deliberate inaccurate reporting of cohort childbearing with age emerging among older women in recent time periods in the General Household Survey across a range of population groups. Respondents at younger ages may have less scope for providing misinformation since they will frequently have children present in the household, whereas this is increasingly less likely at older ages, making it is easier to misreport information. Therefore the assumption that reports at younger ages are more accurate, although not necessarily completely accurate, is reasonable. Lack of co-residence is the

explanation usually given for under-reporting of children by men, and the possibility that this may also hold for women should not be dismissed. Wu (2008:195), who used reports of fertility histories by women aged under 45 from the Current Population Survey to investigate extra-marital childbearing in the US, argued that such data are reliable since “a woman’s marital history [is] obtained before her fertility history. Thus, because respondents have no knowledge while responding to the marital history items that these questions will be followed by a fertility history, this ordering plausibly reduces the tendency of women to underrepresent nonmarital fertility”; however, the fertility histories in the GHS also follow a complete marriage history (and more recently full partnership histories, including broken earlier cohabitation spells).

Reasons for such apparent under-reporting of childlessness could be due to the survey context; for example, some respondents may simply have lost interest and report themselves as childless as a non-confrontational way of shortening the interview (even though at outset, the respondents are informed that they can discontinue the interview at any stage). Another possible explanation is that if the interview takes place with other people present, such as a new partner, some women may be reluctant to acknowledge earlier childbearing (although the majority of women use a self-reported questionnaire), but if so this would appear to only include cases where the woman had not had any children in the new partnership, since fertility reports by parous women appear to be consistent. However, there may other possibilities which have more important social consequences, such as if the mother had become estranged from her children in the intervening period and they were ‘written out’.

One of the main reasons for interest in estimating the proportions of childless people is concerned with the availability of kin support in old age, especially living children, who are key sources of informal care (Grundy and Murphy 2006b; Rowland 2007). Such informal care depends on the existence of a living child and the propensity of such a child (or children) to provide care. If there are over 50% more women who report that they have no children as they approach retirement as when they were middle-aged, it is unclear what relationship they have with such “missing” children. If the reason is respondent fatigue (Warriner 1991), then their level of social interaction with their children may be no different from those who report having children, but if the reason is due to estrangement between parents and children, then the mother may be in the same situation as a “real” childless women with regard to support from children, if this situation is not resolved in the future. The number of “missing” children is substantial, the average proportion of women born in the period 1940 to 1954 reporting themselves as childless when aged 45 to 59 compared when they were aged 40 to 44 is 4.4%: if women in such cases had average patterns of childbearing, the number of children not reported would be around half a million. The implications for the future of family care are sensitive as to type of explanation is more correct.

There are also implications for survey research. Fertility histories collected from older women are increasingly important, and are now collected for women aged 50 and over in a series of major studies such as the English Longitudinal Study of Ageing (ELSA <http://www.ifs.org.uk/elsa/>), although the way in which data were collected in this

survey makes comparison with GHS data difficult); the US Health and Retirement Survey (HRS <http://hrsonline.isr.umich.edu/>); and the cross-national programme, Survey of Health, Ageing and Retirement in Europe (SHARE, <http://www.share-project.org/t3/share/>) which now includes 16 countries: in total these cover half of the population of the developed world. The assumption that fertility histories are reliably answered needs to be assessed continuously and comprehensively – it should be noted that Swicegood et al (1984) looked only at age at first birth, and Wu et al (2001) at the closed first inter-birth interval so both included only women reporting themselves as parous, the analyses relate to earlier periods and to younger women, all groups where the divergences found here appear to be smaller.

More generally, if childbearing at such ages is poorly reported, it also raises the issue of how well more complicated, more detailed, and possibly less important life history events such as full work, health or partnership histories are reported (as in the large-scale cross-national SHARELIFE project, <http://www.share-project.org/t3/share/index.php?id=120>) – if these are reported consistently with age, why should childbearing be so different? Retrospective data have been widely used to underpin policy discussions, including use with quasi-cohort analyses (e.g. Evandrou and Falkingham, 2001). Such data provide insights from inter-cohort comparisons, but also the possibility of checking the internal consistency of retrospective data on topics such as smoking (for which the General Household Survey is the main source of trend data in Britain) and more comparisons of cohort reports show retrospective information that such data need to be interpreted carefully (Kemmer, 2001). While this paper has not

been able to provide clear answers to the anomalous patterns of fertility reporting, it suggests that greater attention needs to be given to the reliability of retrospective fertility data.

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Table 1 Response rates and sample sizes, General Household Survey 1981-2006.

Year	Response rate (%) ¹	Sample size of women ²	Item non-response rate for childlessness (%) ³
1981	84	1836	4.7
1982	84	1572	4.5
1983	82	1518	5.9
1984	81	1485	4.8
1985	82	1478	4.8
1986	84	2914	4.1
1987	85	3075	4.3
1988	85	3077	3.3
1989	84	3103	3.6
1990	81	2916	3.1
1991	84	3058	3.2
1992	83	3133	3.1
1993	82	2943	3.0
1994	80	2858	4.9
1995	80	2999	4.9
1996	76	2808	4.7
1998	72	2641	5.8
2000	67	2600	4.6
2001	72	2877	4.0
2002	69	2877	5.7
2003	70	3351	6.2
2004	69	2901	6.0
2005	72	3505	6.6
2006	76	3299	8.6

Notes: 2005 and 2004 response rates both include the last quarter of 2004/5 data due to survey change from financial year to calendar year.

¹ the response rate given here is the *middle* rate for households, which includes households where at least some information is provided all eligible household members (in practice the proportion of households from whom all or nearly all the information was obtained).

² women aged 40-49 (1981-85) and 40-59 (1986-2006).

³ proportion of women in given year who failed to answer the question on having given birth.

Sources: overall response rates from Ali et al (2008a); sample sizes and item non-response, author's estimates.

Table 2 Proportion childless and mean fertility of parous women by age-group and birth cohort, General Household Survey, 1981-2006

Cohort ¹	Age-group	Proportion childless	95% confidence interval	Sample size ²	Fertility of parous women	95% confidence interval	Total sample size ³	Item non-response rate for childlessness
1935-9 (11.8)	40-4	10.4	(8.5 - 12.5)	965	2.68	(2.59 - 2.77)	1008	4.3
	45-9	10.3	(9.3 - 11.4)	3355	2.73	(2.68 - 2.78)	3527	4.9
	50-4	11.8	(10.7 - 13.0)	3267	2.70	(2.65 - 2.75)	3537	7.6
	55-9	12.9	(11.7 - 14.2)	2712	2.71	(2.66 - 2.77)	2817	3.7
1940-4 (10.8)	40-4	9.5	(8.6 - 10.5)	3826	2.57	(2.53 - 2.61)	3966	3.5
	45-9	10.9	(9.9 - 11.9)	3598	2.56	(2.52 - 2.61)	3734	3.6
	50-4	12.4	(11.2 - 13.6)	2969	2.59	(2.54 - 2.64)	3121	4.9
	55-9	15.7	(14.1 - 17.4)	1909	2.52	(2.46 - 2.58)	2003	4.7
1945-9 (11.0)	40-4	11.2	(10.3 - 12.2)	4448	2.38	(2.35 - 2.42)	4592	3.1
	45-9	11.3	(10.3 - 12.3)	3823	2.35	(2.32 - 2.38)	3982	4.0
	50-4	15.2	(13.8 - 16.7)	2418	2.37	(2.32 - 2.42)	2545	5.0
	55-9	17.9	(16.6 - 19.3)	3221	2.35	(2.32 - 2.39)	3420	5.8
1950-4 (14.6)	40-4	12.8	(11.8 - 14.0)	3544	2.33	(2.30 - 2.37)	3680	3.7
	45-9	16.3	(14.8 - 17.9)	2260	2.34	(2.29 - 2.38)	2373	4.8
	50-4	20.3	(18.9 - 21.8)	2990	2.34	(2.30 - 2.39)	3174	5.8
	55-9	20.7	(16.9 - 24.9)	421	2.27	(2.14 - 2.40)	461	8.7

Notes: ¹ Average values in brackets of official estimates of proportion of women in England and Wales childless at age 45 from Office for National Statistics (2007, Table 10.3)

² number of women answering question on having given birth.

³ total numbers of women in sample including non-responders to question on having given birth.

Table 3 Proportion childless and mean fertility of parous women by age-group, birth cohort and country of birth, General Household Survey, 1981-2006

Cohort	Place of birth	Age-group	Proportion childless	95% confidence interval	Sample size ¹	Fertility of parous women	95% confidence interval	Total sample size ²	Item non-response rate for childlessness ³
1940-4	UK	40-4	9.5	(8.5 - 10.5)	3496	2.53	(2.49 - 2.57)	3603	3.0
		45-9	10.9	(9.9 - 12.0)	3294	2.51	(2.47 - 2.56)	3390	2.8
		50-4	12.7	(11.5 - 14.0)	2715	2.54	(2.50 - 2.59)	2835	4.2
		55-9	15.3	(13.6 - 17.0)	1779	2.51	(2.45 - 2.56)	1852	3.9
1940-4	Abroad	40-4	10.1	(7.0 - 13.9)	327	2.92	(2.75 - 3.09)	356	8.1
		45-9	10.4	(7.2 - 14.4)	298	3.10	(2.92 - 3.29)	335	11.0
		50-4	9.2	(5.9 - 13.4)	251	3.11	(2.89 - 3.34)	280	10.4
		55-9	21.5	(14.8 - 29.6)	130	2.70	(2.41 - 2.98)	151	13.9
1945-9	UK	40-4	11.1	(10.1 - 12.1)	4091	2.35	(2.32 - 2.39)	4201	2.6
		45-9	11.4	(10.3 - 12.4)	3531	2.32	(2.29 - 2.36)	3646	3.2
		50-4	15.1	(13.7 - 16.7)	2256	2.35	(2.30 - 2.40)	2358	4.3
		55-9	17.7	(16.3 - 19.1)	3019	2.33	(2.30 - 2.37)	3179	5.0
1945-9	Abroad	40-4	13.1	(9.8 - 17.1)	351	2.75	(2.59 - 2.91)	382	8.1
		45-9	10.3	(7.1 - 14.4)	290	2.68	(2.52 - 2.85)	332	12.7
		50-4	16.7	(11.3 - 23.3)	162	2.67	(2.38 - 2.97)	187	13.4
		55-9	21.4	(15.9 - 27.7)	201	2.66	(2.45 - 2.87)	240	16.3
1950-4	UK	40-4	12.5	(11.4 - 13.7)	3190	2.30	(2.26 - 2.33)	3292	3.1
		45-9	16.3	(14.7 - 18.0)	2032	2.30	(2.25 - 2.35)	2114	3.9
		50-4	19.8	(18.4 - 21.4)	2696	2.31	(2.26 - 2.35)	2839	5.0
		55-9	20.4	(16.5 - 24.7)	393	2.25	(2.12 - 2.38)	423	7.1
1950-4	Abroad	40-4	15.5	(11.9 - 19.7)	354	2.70	(2.53 - 2.87)	385	8.1
		45-9	16.7	(12.1 - 22.2)	228	2.65	(2.45 - 2.86)	259	12.0
		50-4	24.5	(19.7 - 29.8)	294	2.71	(2.53 - 2.88)	335	12.2
		55-9	25.0	(10.7 - 44.9)	28	2.62	(2.00 - 3.24)	38	26.3

Notes: ¹ number of women answering question on having given birth and own country of birth.

² total numbers of women in sample including non-responders to question on having given birth.

³ proportion of women in relevant category who failed to answer the question on having given birth.

Table 4 Proportion of women reporting themselves as childless by age-group, unweighted and weighted estimates General Household Survey, 2000-6

Age-group	Proportion childless		Sample size (unweighted)
	Unweighted	Weighted	
40-4	22.2	23.0	5507
45-9	21.0	20.9	4939
50-4	19.4	19.1	4857
55-9	17.7	18.0	4809

Table 5(a) Proportion childless and mean fertility of parous women by age-group, birth cohort and highest educational qualification, General Household Survey, 1981-2006

Cohort	Highest educational qualification	Age-group	Proportion childless	95% confidence interval	Sample size ¹	Fertility of parous women	95% confidence interval	Total sample size ²	Item non-response rate for childlessness ³
1940-4	Higher education	40-4	14.6	(11.6 - 18.0)	493	2.42	(2.33 - 2.51)	498	1.0
		45-9	14.7	(11.8 - 18.1)	502	2.36	(2.27 - 2.45)	506	0.8
		50-4	17.2	(13.9 - 20.9)	465	2.48	(2.38 - 2.58)	467	0.4
		55-9	22.0	(17.7 - 26.8)	341	2.44	(2.33 - 2.55)	344	0.9
1940-4	A-level	40-4	13.9	(8.3 - 21.4)	122	2.37	(2.16 - 2.58)	122	0.0
		45-9	13.4	(7.9 - 20.9)	119	2.67	(2.41 - 2.93)	119	0.0
		50-4	6.8	(3.0 - 12.9)	118	2.25	(2.05 - 2.44)	119	0.8
		55-9	11.7	(6.4 - 19.2)	111	2.37	(2.20 - 2.54)	112	0.9
1940-4	Below A-level	40-4	9.6	(7.9 - 11.5)	1076	2.33	(2.27 - 2.39)	1083	0.6
		45-9	12.0	(10.1 - 14.1)	1049	2.33	(2.27 - 2.40)	1056	0.7
		50-4	13.8	(11.6 - 16.3)	867	2.40	(2.33 - 2.47)	870	0.3
		55-9	15.7	(12.7 - 19.1)	529	2.34	(2.25 - 2.43)	529	0.0
1940-4	No qualifications	40-4	8.0	(6.8 - 9.3)	1988	2.74	(2.68 - 2.80)	2016	1.4
		45-9	8.8	(7.5 - 10.2)	1809	2.74	(2.67 - 2.80)	1884	4.0
		50-4	10.9	(9.4 - 12.7)	1426	2.77	(2.69 - 2.85)	1480	3.6
		55-9	13.7	(11.4 - 16.2)	842	2.71	(2.61 - 2.80)	854	1.4
1940-4	Other	40-4	9.2	(5.0 - 15.1)	142	2.57	(2.38 - 2.77)	142	0.0
		45-9	13.9	(8.2 - 21.6)	115	2.52	(2.30 - 2.73)	116	0.9
		50-4	4.5	(1.2 - 11.1)	89	2.60	(2.35 - 2.85)	90	1.1
		55-9	15.9	(8.7 - 25.6)	82	2.29	(2.04 - 2.54)	82	0.0
1945-9	Higher education	40-4	19.2	(16.4 - 22.2)	741	2.23	(2.16 - 2.30)	743	0.3
		45-9	15.2	(12.7 - 18.1)	702	2.21	(2.15 - 2.28)	706	0.6
		50-4	20.6	(17.1 - 24.5)	490	2.26	(2.18 - 2.35)	494	0.8
		55-9	24.8	(21.4 - 28.5)	600	2.32	(2.24 - 2.41)	612	2.0
1945-9	A-level	40-4	21.8	(16.3 - 28.1)	202	2.28	(2.16 - 2.41)	202	0.0
		45-9	12.6	(8.5 - 17.7)	222	2.28	(2.14 - 2.42)	223	0.4
		50-4	17.4	(11.9 - 24.1)	161	2.29	(2.15 - 2.44)	161	0.0
		55-9	18.3	(13.9 - 23.3)	279	2.25	(2.13 - 2.36)	285	2.1
1945-9	Below A-level	40-4	9.0	(7.5 - 10.6)	1381	2.20	(2.15 - 2.25)	1383	0.1
		45-9	12.1	(10.3 - 14.0)	1265	2.22	(2.17 - 2.27)	1268	0.2
		50-4	15.6	(13.1 - 18.4)	761	2.27	(2.19 - 2.35)	765	0.5
		55-9	17.1	(14.8 - 19.7)	946	2.33	(2.26 - 2.40)	969	2.4
1945-9	No qualifications	40-4	8.8	(7.6 - 10.2)	1906	2.57	(2.51 - 2.62)	1994	4.4
		45-9	8.9	(7.5 - 10.5)	1495	2.54	(2.47 - 2.60)	1546	3.3
		50-4	11.5	(9.5 - 13.8)	879	2.51	(2.43 - 2.60)	886	0.8
		55-9	14.5	(12.0 - 17.2)	745	2.49	(2.40 - 2.58)	761	2.1
1945-9	Other	40-4	10.0	(6.3 - 14.9)	209	2.37	(2.24 - 2.51)	211	0.9
		45-9	7.4	(3.6 - 13.2)	135	2.26	(2.07 - 2.44)	136	0.7
		50-4	15.4	(9.6 - 23.1)	123	2.43	(2.22 - 2.64)	125	1.6
		55-9	14.2	(8.6 - 21.5)	127	2.32	(2.14 - 2.51)	129	1.6

Notes: ¹ number of women answering question on having given birth.² total numbers of women in sample including non-responders to question on having given birth.³ proportion of women in relevant category who failed to answer the question on having given birth.

Table 5(b) Proportion childless and mean fertility of parous women by age-group, birth cohort and partnership status, General Household Survey, 1981-2006

Cohort	Partnership status	Age-group	Proportion childless	95% confidence interval	Sample size ¹	Fertility of parous women	95% confidence interval	Total sample size ²	Item non-response rate for childlessness ³
1940-4	Married/ widowed	40-4	6.9	(6.1 - 7.8)	3291	2.55	(2.50 - 2.59)	3390	2.9
		45-9	7.8	(6.9 - 8.8)	3027	2.55	(2.51 - 2.60)	3133	3.4
		50-4	9.6	(8.5 - 10.9)	2401	2.55	(2.50 - 2.60)	2526	4.9
		55-9	12.6	(11.0 - 14.3)	1527	2.50	(2.44 - 2.56)	1606	4.9
1940-4	Cohabiting	40-4	8.3	(1.0 - 27.0)	24	2.68	(2.13 - 3.24)	27	11.1
		45-9	16.4	(8.8 - 27.0)	73	2.54	(2.23 - 2.86)	76	3.9
		50-4	20.0	(11.6 - 30.8)	75	2.92	(2.53 - 3.30)	81	7.4
		55-9	18.8	(10.4 - 30.1)	69	2.64	(2.36 - 2.93)	71	2.8
1940-4	Single	40-4	81.1	(73.2 - 87.5)	127	1.96	(1.47 - 2.45)	153	17.0
		45-9	87.3	(79.9 - 92.7)	118	2.07	(0.95 - 3.18)	129	8.5
		50-4	86.2	(78.3 - 92.1)	109	2.13	(1.20 - 3.07)	118	7.6
		55-9	80.5	(70.3 - 88.4)	82	2.06	(1.32 - 2.80)	85	3.5
1940-4	Divorced/ Separated	40-4	8.3	(5.8 - 11.6)	384	2.78	(2.64 - 2.93)	396	3.0
		45-9	10.5	(7.6 - 14.1)	380	2.69	(2.55 - 2.83)	396	4.0
		50-4	7.3	(4.9 - 10.4)	384	2.81	(2.66 - 2.95)	396	3.0
		55-9	12.6	(8.6 - 17.6)	230	2.66	(2.49 - 2.83)	240	4.2
1945-9	Married/ widowed	40-4	7.5	(6.6 - 8.4)	3662	2.38	(2.35 - 2.42)	3756	2.5
		45-9	8.2	(7.2 - 9.2)	3038	2.35	(2.31 - 2.38)	3162	3.9
		50-4	12.5	(11.0 - 14.0)	1877	2.35	(2.30 - 2.40)	1987	5.5
		55-9	15.0	(13.5 - 16.6)	2150	2.34	(2.30 - 2.39)	2281	5.7
1945-9	Cohabiting	40-4	20.5	(13.7 - 28.7)	122	2.28	(2.08 - 2.48)	130	6.2
		45-9	21.7	(15.5 - 28.9)	157	2.22	(2.02 - 2.42)	163	3.7
		50-4	22.4	(14.6 - 32.0)	98	2.39	(2.15 - 2.64)	104	5.8
		55-9	24.5	(16.4 - 34.2)	98	2.46	(2.20 - 2.71)	104	5.8
1945-9	Single	40-4	84.9	(78.9 - 89.7)	185	1.68	(1.28 - 2.07)	211	12.3
		45-9	78.8	(70.8 - 85.4)	132	1.86	(1.39 - 2.33)	145	9.0
		50-4	78.7	(68.7 - 86.6)	89	1.53	(1.03 - 2.02)	93	4.3
		55-9	85.4	(76.3 - 92.0)	89	1.54	(1.07 - 2.01)	101	11.9
1945-9	Divorced/ Separated	40-4	9.4	(6.9 - 12.4)	479	2.46	(2.35 - 2.57)	495	3.2
		45-9	8.9	(6.5 - 11.8)	494	2.44	(2.33 - 2.55)	510	3.1
		50-4	11.6	(8.5 - 15.5)	352	2.52	(2.38 - 2.67)	359	1.9
		55-9	17.8	(14.2 - 22.0)	398	2.46	(2.34 - 2.59)	409	2.7

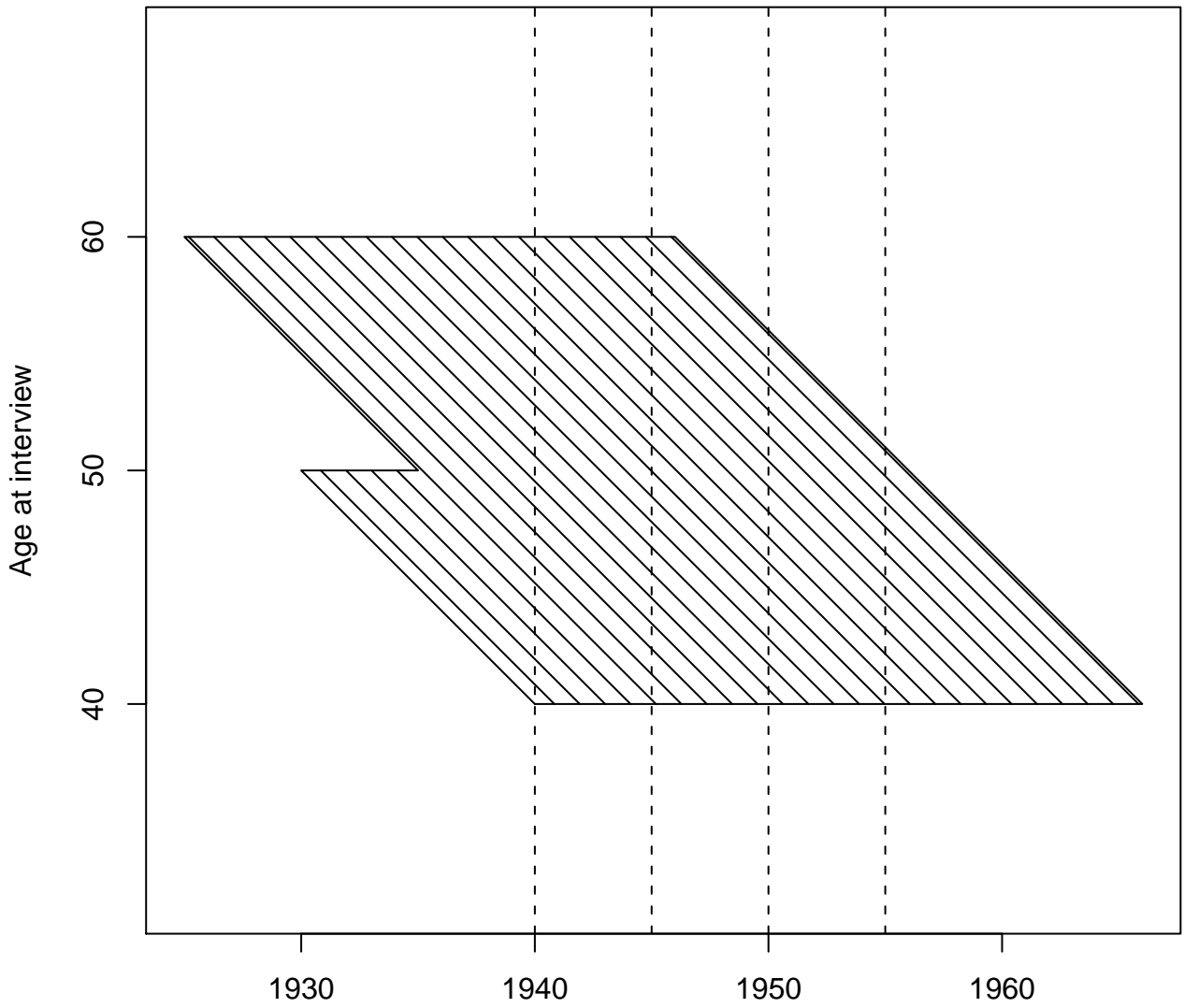
Notes: 6 members of same-sex couples have not been included

¹ number of women answering question on having given birth.

² total numbers of women in sample including non-responders to question on having given birth.

³ proportion of women in relevant category who failed to answer the question on having given birth.

Figure 1 Coverage of fertility reports, GHS 1981–2006



Birth cohort
Survey not conducted in 1997 and 1999

Childlessness estimates by cohort & age at interview (smoothed)

