

Mortality of British jews at the turn of the 20th Century in a comparative perspective

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Abstract

This paper presents analysis of mortality data of British Jews. Not much was known about mortality of British Jews until recently. Recent availability of mortality data of British Jews represents a remarkable development in Jewish demography. The study reported in this paper employs multiple comparisons of mortality schedules and places the discussion of findings within the larger analytical framework offered by the existing tradition of research into Jewish mortality across the world. This paper addresses three principle empirical questions: (1) how does mortality of British Jews compare to mortality of total British population and of different subgroups within this population?, (2) how does mortality of British Jews compare to the range of mortality schedules of developed countries, (3) how does mortality of British Jews compare to those observed among Israeli Jews? The analysis is concluded with a discussion of the results in the light of other available evidence from the literature on Jewish mortality. Specifically, the concept of Jewish pattern of mortality and its appropriateness within the context of British Jewish demography are discussed.

Keywords: mortality, Jews, United Kingdom, ethnic minorities

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Mortalité des britanniques de religion juive au tournant du 20e siècle : une perspective comparative

Cet article analyse des données de mortalité de britanniques de religion juive. La mortalité de cette population était peu connue jusqu'ici, mais la récente mise à disposition de données permet un développement considérable dans le domaine de la démographie juive. Cette étude se base sur diverses comparaisons de calendriers de mortalité et s'inscrit dans le cadre plus large de la tradition de recherche autour de la mortalité des juifs dans le monde. Trois questions empiriques sont traitées dans cet article : (1) la mortalité des britanniques de religion juive est-elle comparable à celle de la population britannique en général, et à celle de différents sous-groupes de cette population ? (2) comment la mortalité des britanniques de religion juive se classe-t-elle par rapport aux calendriers d'âge au décès observés dans les pays développés ? (3) la mortalité des britanniques de religion juive est-elle comparable à la mortalité des Israéliens de religion juive ? L'analyse se conclut avec une discussion des résultats au regard d'autres informations disponibles dans la littérature sur la mortalité des juifs. Plus spécifiquement, le concept de modèle de mortalité juive et sa pertinence dans le contexte de la démographie britannique juive sont discutés.

Mots-clés : mortalité, juifs, Royaume-Uni, minorités ethniques

1. Introduction

This paper presents an analysis of mortality data of British Jews. Jews are a small minority in the United Kingdom: in 2001 the Jewish community constituted about 0.5% of the total population of the UK. At the same time, British Jews constituted about 5% of the Diaspora Jewry as a whole and 30% of the Jewish population of European Union (DellaPergola 2003). Currently both death counts and

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population figures for Jews are available in Great Britain, allowing estimation of death rates specific to this group. This is a new situation which followed the introduction of the question on religion in Census 2001 allowing identification of Jews by religion. British death certificates do not include a suitable category for Jews. However, there is a long tradition of collecting data on Jewish deaths within Great Britain by the Board of Deputies of British Jews (BoD).

The recent availability of mortality data of British Jews represents a remarkable development in Jewish demography. Not much was known about mortality of British Jews until recently. In general, obtaining data on the mortality of Diaspora Jews is not straightforward due to the dearth of reliable data on death counts and population figures. The reasons for this are manifold. Certain countries hosting large Jewish communities, such as the United States of America, the United Kingdom and France, do not possess established traditions of collecting data on religion in general in surveys, Censuses or systems of vital registration, not least due to the existence of public opposition to the collection of data on religion. Additionally, the attitude of Jewish communities to the collection of such data is not unambiguous, being complicated by the fear of abuse of administrative sources (for further details see Graham et al. 2007; Graham and Waterman 2005; Ritterband et al. 1988; Seltzer 1998; Southworth 2005). As a result, there is not a single Jewish Diaspora community for which time trends in mortality can be studied for a sufficiently long time (Staetsky and Hinde 2008). Additionally, research in the field of Diaspora Jewish mortality relies, more often than not, on data on subpopulations of Jews - typically Jewish populations of selected cities or districts/provinces- rather than on national Jewish populations (Fauman and Mayer 1969; Goldstein 1996; Herman and Enterline 1970; Horowitz and Enterline 1970; Needleman 1988; Rosenwaike 1994; Seidman 1971; Shatenstein and Kark 1995; Shkolnikov et al. 2004; Spiegelman 1948).

To be sure, data on Jewish deaths collected by the BoD in Great Britain served British Jewish scholars in their estimates of the size of the Jewish British population from the end of the 19th century and up until the mid-1990s (Haberman et al. 1983; Schmool 1996; Trachtenberg 1933). Estimates of Jewish population were built by applying the total or social-class-adjusted British mortality rates (Haberman et al. 1983; Haberman and Schmool 1995; Prais and Schmool 1968) to the counts of Jewish deaths. However, in the absence of population figures, data on Jewish deaths could not be employed for calculation of death rates. Only following the introduction of the question on religion in Census 2001, did it become possible, for the first time, to estimate Jewish mortality directly. The first estimates of the mortality of British Jews were produced by Haberman and Schmool (2005). These estimates were never published, however, and remained largely unknown to the broader community of professional demographers.

Therefore, the aim of this paper is to add a study of British Jewish mortality to the corpus of demographic literature. The analysis in this paper extends beyond a simple presentation of the British Jewish death rates. It employs multiple comparisons of mortality schedules and places the discussion of

findings within the larger analytical framework offered by the existing tradition of research into Jewish mortality across the world.

This paper addresses four questions:

1. How does mortality of British Jews compare to mortality of (a) total British population and (b) different subgroups within this population?
2. How does mortality of British Jews compare to the range of mortality schedules of developed countries?
3. How does mortality of British Jews compare to that observed among Israeli Jews?
4. What are the factors (socio-economic, behavioural, and cultural) that influence the observed differences and similarities across different comparisons?

Previous studies have demonstrated that during the last hundred years or so a special pattern of mortality has been observed among Jews of the principal Diaspora communities. In the first half of the 20th century, mortality at young ages among American and Canadian Jews was lower than mortality of their host societies while at old ages Jewish mortality was higher. This puzzling phenomenon received the title of 'Jewish pattern of mortality' (Fauman and Mayer 1969; Goldstein 1996; Needleman 1988; Rosenwaike 1990; Spiegelman 1948). The Jewish pattern of mortality in its classic form disappeared in these communities sometime during the 1960s and was replaced by another consistently observed pattern of relatively low Jewish mortality across all ages and for both sexes (Goldstein 1996, Rosenwaike 1994, Shatenstein and Kark 1995). The shift from somewhat elevated to relatively low old-age mortality in Jewish Diaspora communities was quicker for Jewish males than for Jewish females.

In all Diaspora communities male mortality proved to be low across many causes of death, and especially in relation to smoking-related causes and other types of behaviourally induced mortality (Herman and Enterline 1970, Horowitz and Enterline 1970, Seidman 1971, Rosenwaike 1994, Shatenstein and Kark 1995, Shkolnikov et al. 2004). Recently, Staetsky and Hinde (2008, 2009) conducted a comprehensive evaluation of trends in the Jewish pattern of mortality. They proposed that a relatively small contribution of behaviourally induced mortality is a decisive factor in the low mortality of Jews observed consistently in the Diaspora since the 1970s, and that previously observed elevated mortality could be linked to the persistent influence of early life factors among Jewish migrant populations. In this paper I explore whether characteristics of Jewish pattern mortality are observed in the British Jewish population.

The rest of this paper is built as follows. The next three sections consider the principal methodological issues involved in obtaining data on mortality of British Jews: the first illuminates the definitional issues in Jewish demography as a whole, the second and the third describe the data and methods employed in this study. As concerns about the quality of data have been raised in the past (Haberman and Schmool 2005), some corrections to the original mortality data of British Jews are implemented.

The subsequent section carries out systematic comparisons of British Jewish mortality with the mortality of their host society and other low-mortality countries, including that of the Jews of Israel. I conclude the analysis with a discussion of the results in the light of other available evidence from the literature on Jewish mortality.

2. Who is a Jew?

The question of 'who is a Jew' is a complex one. This is partly due to the fluid nature of ethnic/religious identity and, within the context of demographic research, due to a nature of sources used to derive information on basic demographic processes. These characteristics are shared by Jews with other ethnic minority groups in the UK and across the globe. This section aims to present the complexity of the question 'who is a Jew' and the ways in which this complexity is handled in Censuses/registration systems of different countries and in demographic research.

Jewish law defines as a Jew a person who was born to a Jewish mother or converted to Judaism in accordance with the Jewish law. This definition is deeply engrained into the Jewish psyche. Although the Israeli system of demographic data collection consistently follows this definition, this cannot be expected of the systems in countries other than Israel. In the state systems of demographic data collection in countries other than Israel, the reporting of Jewish ethnicity or religion in population censuses depends largely on the good will of the respondent. Assimilation of Jews into non-Jewish societies both culturally and through intermarriage might result in the unwillingness of certain persons, born and brought up within Jewish communities, to identify themselves as Jews in the census or through ritual. On the other hand, forces of assimilation and intermarriage create a segment of population which would not be recognized as Jews by the Jewish law but that may identify themselves as Jews. The precise dynamics of these processes and the extent to which they balance each other out vary from country to country and, naturally, depend on the degree of assimilation of a given Jewish community and on various political factors that make affiliation with the Jewish community more or less desirable.

Furthermore, in the context of Jewish demography definitional complexity exists alongside imperfect data sources. National systems of demographic data collection outside Israel, both Census and vital registration systems, do not necessarily register information on religious/ethnic affiliation for Jews (Ritterbrand et al. 1988, DellaPergola 2002a, 2002b, Southworth 2005). Where national systems of data collection provide insufficient information, Jewish community systems of data collection sometimes 'fill in' the lacking data. Therefore, more often than not, information on the numerators and denominators required for calculating death rates among Jews is derived from two different sources. However, the two systems (the national and community-based) may apply different definitions of 'who is a Jew'. The degree to which these definitions are comparable is a source of permanent uncertainty in Jewish demography. Moreover, the precise degree to which any of these definitions is comparable to the definition derived from the Jewish law has never been established, to my knowledge. Thus, in the area of Jewish demography the 'classic' numerator/denominator comparability problem characteristic

of demographic indices based on unlinked sources is exacerbated by the definitional ambiguities: the sources used for derivation on numerators and denominators may not only cover different segments of the population of interest but also define this population in different ways.

All existing studies of Jewish mortality outside of Israel share inherent uncertainty in the definition of the population they claim to describe. Nearly all studies define their population of interest, more or less explicitly, on the basis of self-identification of persons as Jews in Census, surveys or through membership of Jewish religious organisations. This pragmatic method has evolved, to date, as the 'best' way to identify Jews in demographic research. Importantly, even self-identification does not produce unambiguous results. At times, more than one option is made available for Jewish self-identification. Canadian and Australian Censuses, for example, allow Jewish self-identification through questions on religion or ethnicity/ancestry, or both. The choice of the method of Jewish self-identification differs somewhat in these two countries. An absolute majority of Jews in Australia chose to identify as 'Jews by religion' in the Australian Census in 2001: 84,000 identified as Jews by religion and 23,000 identified as being of Jewish 'ancestry'. In the latter group a very significant majority simultaneously self-identified also as 'Jews by religion' (Australian Bureau of Statistics 2003). On the other hand, Canadian Jews self-identify by religion and ethnicity: in Canadian Census in 1991 318,000 self-identified as 'Jews by religion' and 281,000 self-identified simultaneously as Jews by ethnicity. Remarkably, 38,000 stated that they had no religion but claimed Jewish ethnicity (DellaPergola 2002b). British Jews were given an option to identify as Jews by religion through a pre-defined category in the Census question on religion in 2001, and 260,000 persons identified as Jews in that way. A very small proportion of Jews in England and Wales (2,594, 1% of the total of 262,521 who identify as Jews by either mode) chose to identify as such solely through a Census question on ethnicity, using the 'write-in' option (Graham et al. 2007). This diversity of modes of self-identification among Jews reflects the diversity across host societies as to what represents meaningful categories of ethnic and religious identification.

Scholars of Jewish mortality in various contexts typically follow the definitions made possible by the national and communal data collection systems. Scholars of Jewish mortality in Canada, for example, usually rely on both religious and ethnic definitions in calculation of death rates, pointing out the insignificance of differences between the two possible definitions for comparisons between Jewish and non-Jewish mortality profiles. The first accounts of Jewish mortality in Canada were based on the population of Jews defined by ethnicity (Fauman and Mayer 1969, Spiegelman 1948). Needleman (1988) produced life tables of Canadian Jews for the first three quarters of the 20th century using 'Jews by religion' figures. Shatenstein and Kark (1995), in a comparative study of Canadian Jewish mortality in the early 1990s, again, relied on 'Jews by ethnicity' figures. Since Canadian vital statistics does not register Jewish ethnicity or religion on death certificates, all scholars of Canadian Jewish mortality have relied on death counts provided by the directors of Jewish funeral homes. In the context of these studies the compatibility of death counts and population figures was never significantly questioned by the researchers but one must bear in mind that, ultimately, no empirical confirmation exists regarding

the extent to which these two sources apply the same definition of Jewishness. Moreover, no firm understanding exists as to the definition of Jewishness exercised by the Jewish funeral homes. It is reasonable to think that (1) at least some Jews self-identifying as such in the Census are not captured by the communal burial system, (2) some Jews not self-identifying as such are captured by it, (3) self-identification as a 'Jew by religion'/'Jew by ethnicity' in the Census may be more/less compatible with the definition(s) operationalized by the Jewish burial systems. These are questions, however, that should constitute the focus of future research and to which no satisfactory empirically supported answers exist to date².

American Jewish mortality research presents, essentially, the same definitional ambiguities. The American Census does not collect information on Jewish ethnicity or Jewish religion. Therefore, population figures for calculation of Jewish death rates have been based on local surveys and small community-mediated Censuses of Jewish populations, all relying on self-identification of persons as Jews without an in-depth exploration of its potentially problematic nature. In certain cases, surveys and censuses were supplemented by exploration of community registers to ensure full coverage of populations. Information on death counts was derived from Jewish burial undertakers and, as in the case of Canadian Jews, the potential lack of compatibility between definitions used for production of death and population counts was not addressed explicitly (Fauman and Mayer 1969, Goldstein 1996). A notable exception is a study published by Rosenwaike (1990) which presented death rates of persons with Jewish surnames in the United States. In this study both deaths and population counts were derived from a single source, Medicare files. Interestingly, the findings of this study resembled the findings of Goldstein (1996), in the context of the United States and Shatenstein and Kark (1995) in the context of Canada, both based on unlinked sources.

The considerations presented so far lead to three important propositions. First, any Census-based or registration-based definition of 'a Jew', especially outside Israel, is inevitably approximate. Consequently, none of the existing studies provides a clear-cut answer to the most essential question of 'what is the population covered by the study' and 'whether the existing sources adequately describe this very population'. Definitions of the Jewish population based on self-identification in surveys using religion or ethnicity or both are consensually accepted by the community of Jewish demographers but more work is needed to assess their real meaning, especially in the context Jewish mortality research. Second, in demographic work on Jews the issue of compatibility of numerators and denominators and not, somewhat paradoxically, of definitional clarity is of principal importance. It is possible that the much-desired clarity of 'who is a Jew' will never be reached in a social world, yet documentation of the essential features of Jewish mortality can be still possible for those who choose to call themselves

² Such work is currently being carried out by the author of this paper. For example, I re-calculated death rates for Canadian Jews in the early 1990s using age- and sex-specific death counts supplied by Shatenstein and Kark (1995) and alternative population figures – those of Jews by religion. The re-calculation proved that, indeed, the choice of the definition did not change the essential features of Canadian Jewish mortality and the way it compared to mortality of non-Jews in Canada.

Jews, provided that the sources of population figures and death counts use the same definition. Third, sensitivity analyses in application to Jewish death rates are preferable to 'single scenario' analyses relying on just a single set of death counts and a single set of population figures. Uncertainty in relation to the basic definition of 'who is a Jew', on one hand, and in relation to the issue of correspondence of numerators and denominators, on the other hand, should be formally acknowledged and incorporated into study designs. This could be done, depending on analytical tradition and the skill sets of a particular scholar: using Bayesian methods, or multiple methods for estimation of mortality (see Shkolnikov et al. 2004, for one example), or allowing for informed alternatives in relation to completeness of statistics on deaths and population.

This study follows the tradition established by the previous studies regarding the definition of the Jewish population: it relies on self-identification of Jews in Census 2001 as 'Jews by religion'. While the following section describes in detail the technique used to obtain population figures according to this definition, it is appropriate to note here that the total number of Jews obtained using this technique is of the order of magnitude of the number estimated on the basis of the Jewish communal records. This in itself may suggest a significant degree of overlap between the definition of 'who is a Jew' based on self-identification and the definition according to the Jewish law. Further, the key methodological feature of this study is its reliance on sensitivity analyses, allowing for various options of undercount of deaths and population figures. These options are derived from previous scholarly attempts at assessment of the undercount, community surveys and information provided by burial undertakers and community data gathering institutions.

3. Data

The base for calculation of death rates of British Jews presented in this study are the total of 7,400 male and 9,400 female deaths that occurred in England and Wales over the period 1999-2003 (annual totals of approximately 1,500 male and 1,900 female deaths) and population figures of 125,000 males and 135,000 females in the Census of England and Wales (2001). Death counts, population figures and death rates for British Jews are presented in Appendix 1.

The source of death counts is the datafiles of the Board of Deputies of British Jews, containing death records collected from the Jewish burial societies. This is the one and only source of information on Jewish deaths in the United Kingdom. The files were requested and received directly from the Board of Deputies. The format of these data enables tabulations by sex and five-year age groups. Only for ages 45 years and over are the numbers of deaths large enough to be considered reliable. Thus, all analyses in this paper apply to ages 45 years and over.

The source of Jewish population figures in a compatible format is the Census of England and Wales, and they are drawn from the study conducted by Haberman and Schmool (2005), received by personal communication. Population figures of Jews include those identified in the Census of England and

Wales (1) as Jews by religion and (2) as Jews both by religion and ethnicity. The question on religion in the Census form had 'Jewish' as one of the response options, and 259,927 individuals chose this option. The question on ethnicity did not include a separate category for 'Jewish' but it presented a 'write in' field which, in theory, could be used by individuals wishing to identify as Jews as an addition or an alternative to identifying themselves as Jews by religion. In reality, the question on ethnicity was grossly under-used for the purpose of Jewish self-identification: only 13,544 persons used the 'write in' option to identify themselves as Jews by ethnicity (over 80% of those also mentioned Jewish religion).

The population figures used in this paper exclude those who identified as Jews by ethnicity alone, stating no religion (1,749) and Jews by ethnicity who were non-respondents to the question of religion (845), and those who identified as Jews by ethnicity stating religion other than Judaism (547). This operational definition closely resembles the 'Standard Jewish definition' employed since the 1990s in the context of Canadian Jewish demography (Shahar 2004). There are two reasons behind the operational definition adopted in this paper. First, it follows the basic feature of social reality. Second, it is most suitable in the specific context of Jewish mortality. It is obvious that religious affiliation is a salient feature of Jewish identity: both in England and Wales where the question on religion is novel, and in Australia and Canada where it is part of a long tradition whereby an absolute majority of Jews choose to identify through religion in the presence of alternatives. In both contexts, a small minority identify as Jews by ethnicity only, and this group is likely to comprise atheists, agnostics, and followers of other religions. It is not unreasonable to assume that this group has somewhat weaker links to the broader Jewish community. Therefore, this category of people is also probably the least likely to want the Jewish burial.

In this paper, the mortality of Jews in England and Wales is systematically compared to the mortality of the total population in England and Wales and to Israeli Jewish mortality. In addition, I compare British Jews to selected developed countries. Data for the total population of England and Wales come from the publications of the Office for National Statistics (2001, 2002, 2003, 2007). Data for other developed countries, apart from Israel, are taken from Human Mortality Database (2009). Data for Israeli Jews are taken from the annual publication of the Israeli statistical authority (Central Bureau of Statistics, *Statistical Abstract of Israel*, 2001, 2002, 2003, 2004). Data on mortality of selected subgroups among Israeli Jews were requested and received directly from the Central Bureau of Statistics, Israel.

In the following sub-sections of this section I critically examine the procedures of data collection on Jewish deaths and population figures, and issues of compatibility of numerators and denominators of Jewish death rates.

3.1. Population figures

The first estimates of Jewish mortality in England and Wales were produced by Haberman and Schmool (2005). They proved to be less straightforward than expected due to the existence of census undercount among Jews (Schmool 2004, Haberman and Schmool 2005, Graham and Waterman 2005). There are a number of reasons for this undercount. Firstly, there is a significant sector of the Ultra Orthodox population among British Jews which is opposed to the Census on religious grounds (Graham and Waterman 2005). Due to the high fertility of this group it has a significant impact on undercount at young ages. Secondly, in a way different from the Canadian Census, for example, the only unambiguous way for Jews to identify themselves in the British Census was via a question on religion, rather than ethnicity. This could pose a problem to secular and/or very assimilated people who could be unwilling to identify themselves in religious terms (Schmool 2004).

Haberman and Schmool (2005) attempted to adjust for the undercount by enlarging each age group by 7.7% to allow for those who did not answer the question on religion and additional 14.4% for those who gave their religion as 'none' thereby creating an 'augmented' Jewish population. These adjustments were based on an assumption that non-response and the 'none' response to the question on religion among Jews were the same as in the White population at large. A further adjustment for the strictly Orthodox population (10,000) was made, also taking into account their young age structure (Haberman and Schmool 2005). The total adjustment for undercount in Jewish population proposed by Haberman and Schmool was at a level of 26%. It is not clear, however, to what extent this practice is justified as it is difficult to know (1) the real order of the magnitude of the undercount, especially in strictly Orthodox circles; (2) whether the adjustment is advisable for the specific purpose of calculating of death rates in view of the fact that death reporting *might* be incomplete.

Graham and Waterman (2005) and Voas (2007) attempted to estimate the undercount among Jews. The former resorted to the post-Census surveys of Jews in Leeds and London, while the latter employed detailed residential ward-level comparisons of 'religion not stated' percentages among Jews and in the total population of wards containing significant proportions of Jews. Graham and Waterman (2005) arrived at a 9% undercount by adding together the following response categories to the post-Census survey question on whether or not the respondent answered 'Jewish' in the Census: 'No – I chose not to answer that question', 'No – I gave a different answer', 'No – I did not fill in a Census form'. Voas (2007) interpreted the excess in percentage not reporting religion relative to the national average in residential wards with significant Jewish population as attributable to higher non-response among Jews. After correction, the undercount among Jews stood at around 9%, an estimate identical to the one produced by Graham and Waterman (2005). However, Voas (2007) also indicated that even after this correction, the percentage not reporting religion in the residential wards in question was still higher than the national average. Further corrections aiming to bring the percentage not reporting religion in these wards to the national average suggested that undercount among Jews could be at a level of 17.4% (Voas 2007, p. 406). In contrast to Haberman and Schmool (2005), neither Graham and Waterman (2005) nor Voas (2007) allowed in their corrections for those who explicitly gave their religion as 'none'.

3.2. Death counts

The current procedure for data collection of Jewish deaths by the BoD has been in operation since the mid-1960s, which ensures that the staff of burial institutions are highly familiar with the procedure. All existing Jewish burial societies are covered by it: small communities compile records and send them to the BoD annually, while large communities are also visited by the research officers of the BoD (personal communication with Mrs. Frances Cohen, former Research Officer of the Board of Deputies of British Jews). The BoD does not collect data on the causes of death.

The underlying assumption behind the use of Jewish death counts from the Jewish burial institutions is that all Jewish dead are interred in these frameworks, but no non-Jews. Whilst the second assumption is not questionable, the first is. Interestingly, in the British context, concerns about the plausibility of the first assumption were expressed long ago by Trachtenberg (1933). There might be Jews who are not buried within the framework of the Jewish ritual. The phenomenon of burial outside Jewish frameworks is most likely to exist among Jews highly assimilated into non-Jewish society. The level of assimilation of British Jews, if assessed with the help of the rate of intermarriage, is probably lower than that of American Jews, for example, but still significant. The results of a survey by the Institute of Jewish Policy Research in 1995 indicate that about 50% of males aged below age 30 years and 20% of males aged 60-70 years had non-Jewish partners (Miller et al. 1996). Recent analysis of the results of the British Census showed that about 25% of all married people who identified as Jews by religion in the Census were married to non-Jews, or, at least, to people who did not identify themselves as Jews (Graham et al. 2007). Since the degree of assimilation into non-Jewish society is greater among young Jews in comparison to the older generations, this would affect quality of death reporting more for young ages than for old ages, and hence the estimated age pattern of mortality. However, even among the older ages the death counts based on the burial societies' registration might be incomplete. According to Schmool and Miller (1994), about 90% of communally unaffiliated Jewish women in the United Kingdom reported that they would choose Jewish burial for their parents and 80% would choose it for themselves. Technically speaking, the occurrences of burial outside Jewish frameworks offset the influence of Census undercount on Jewish mortality rates, but to an unknown degree.

3.3. Death rates

To conclude, there are uncertainties relating to the compatibility of denominators and numerators of Jewish deaths in England and Wales. We are not sure of (1) the extent to which Jews choose burial outside the Jewish ritual (although we possess some indications of the possible order of magnitude of this phenomenon); (2) the extent of Census undercount and (3) the extent to which (1) and (2) offset each other, i.e. the extent to which Census figures for Jews represent 'true' exposure for those buried within the Jewish ritual. Therefore, if death counts remain uncorrected it is reasonable to calculate mortality rates on the basis of the original Census data rather than on the adjusted population figures of

any kind. If, on the other hand, death counts can be corrected, death rates should be calculated using the adjusted population figures. In general, given these uncertainties, it may be sensible to produce and examine a number of possible mortality schedules for Jews of England and Wales, based on various combinations of corrected and uncorrected deaths and population counts. This strategy is pursued in further calculations of British Jewish death rates. In the next section I specify the corrections applied to the original data on Jewish deaths and populations.

4. Method

The age- and sex-specific death rate is a basic element of analysis in this paper. I compare death rates of British Jews with the death rates in England and Wales, selected developed countries and among Israeli Jews using ratios of death rates: British Jews to the comparator populations. However, I also employ additional tools:

1. I introduce certain corrections of mortality figures for Jews of England and Wales.
2. I calculate a few 'sets' the death rates for Jews of England and Wales; each set is based on a different combination of corrected and uncorrected death counts and population figures.

4.1. Jews of England and Wales: corrections of mortality data

As previously stated, a certain amount of undercount is suspected in relation to both death counts and population counts of British Jews. Haberman and Schmool (2005) proposed corrections of the population counts based mainly on the assumption of similarity of non-response to the Census question on religion between Jews and the total population of England and Wales. The issue of possible undercount of deaths remained open. I propose to correct the death counts of British Jews using information from the survey of British Jewish women carried in 1993 by the Board of Deputies of British Jews (Schmool and Miller 1994)- the only existing source of information on the possible undercount of Jewish deaths, to my knowledge³.

According to the survey, 90% of communally unaffiliated Jewish females would consider Jewish burial for their parents and around 80% would wish it for themselves (Schmool and Miller 1994, Appendix B, p. 32). Communal affiliation is defined as a synagogue membership, and, according to the publications of the Board of Deputies of British Jews, in the mid- and late 1990s it stood at 70% of the total

³ The survey sample was derived by a mixture of random and purpose sampling, and 'snowballing'. The productive survey sample comprises 1,350 women (response rates of 56%). Survey planners aimed to obtain a balanced representation of geographical areas, synagogue groups, and older and newer communities. Synagogue membership lists across Orthodox and non-Orthodox groups in London and outside London were consulted and random samples were drawn from these lists. 'Snowballing' was used to reach women not affiliated with synagogues (Schmool and Miller 1994, p.15 and Appendix A, pp. 2-5).

population of British Jews (Schmool and Cohen 1998). Using this information I propose a correction factor for British Jewish deaths, as follows:

1. Let us assume that the range 10%- 100% represents the boundaries of the possible undercount of deaths among the non-affiliated British Jews. The range 10%-20% is suggested by the survey of British Jewish women, and widening of the range to 100% allows for the possibility of extremely high undercount in this group.
2. All deaths of communally affiliated Jews are handled according to the Jewish ritual, i.e. there is no undercount in this population.
3. Let us further assume that the phenomenon of being non-affiliated communally does not vary by sex and age (for those aged 45 years and over).
4. A correction factor is obtained as a product of the proportion of undercounted deaths among the non-affiliated Jews (0.1, 0.2 or 1.0) and the proportion of the non-affiliated Jews (0.3) in the total population of British Jews.

On this basis three correction factors can be calculated: 0.03, 0.06 and 0.3 representing the possibility of relatively light, intermediate and severe undercount of deaths of communally unaffiliated Jews, respectively. The correction factors are then applied to the age and sex-specific numbers of British Jewish deaths. Following the correction of the death counts, new corrected death rates are calculated using the population figures adjusted for non-response to the question on religion using the techniques proposed by Haberman and Schmool (2005), Waterman and Graham (2005) and Voas (2007).

4.2. Jews of England and Wales: presentation of possible mortality schedules

It has been previously stated that if the British Jewish death counts remain unadjusted it is reasonable to use the unadjusted Census population figures for calculation of mortality rates. Application of corrections to death counts, on the other hand, would make it reasonable to turn to adjusted population counts. However, even with this heuristic, multiple uncertainties still remain. So far we have three possible levels of population undercount: 9%, 17.4% or 26% (as suggested by Waterman and Graham 2005, Haberman and Schmool 2005, and Voas 2007) and at least two informed levels of undercount of death counts. What level of adjustment of population counts is the most appropriate at any particular level of adjustment of death counts?

It is impossible, in my view, to attach numerical probabilities to any of the existing possibilities of undercount. However, it is possible instead to calculate a number of variants of mortality schedules for British Jews and assess how all these variants compare with the mortality of the total population of England and Wales (and other relevant comparators).

Table 1 presents such variants accompanied by explanations.

Table 1. Variants of mortality schedules of Jews of England and Wales

Population		Population counts			
		Original Census-based (P1)	Adjusted for undercount: at 9% at 17.4% at 26% (P2) (P3) (P4)		
Original (D1) (based on the BoD records)		D1P1	NA	NA	NA
Death counts	Adjusted for undercount at 10%* (D2)	D2P1	D2P2	D2P3	D2P4
	at 20%* (D3)	D3P1	D3P2	D3P3	D3P4
	at 10% at ages >65 years* and 20% at ages <65 years* (D4)	D4P1	D4P2	D4P3	D4P4
	at 100%* (D5)	D5P1	D5P2	D5P3	D5P4

Note: NA-not applicable. * among communally unaffiliated Jews. ‘D’ stands for deaths, ‘P’ stands for population.

In total, 17 variants of mortality schedules of British Jews are presented in Table 1. One variant (D1P1) is based on the original death counts, i.e. death counts unadjusted for possible undercount paired with the original Census-based population figures. Variant D1P1 allows for the possibility that unadjusted death counts are largely compatible with the unadjusted population counts, on the assumption that the persons who are likely to be buried within the Jewish framework would be inclined to identify as Jews in the Census. We bear in mind, however, that the existence of undercount in the population of Orthodox Jews is well established, and consequently, even if the first assumption is true, the resultant rates *may be* inflated. On the basis of these considerations, variants of death rates based on adjusted death counts and unadjusted population figures (D2P1, D3P1, D4P1 and D5P1) express quite unlikely scenarios. They have been created in order to evaluate the impact of (hypothetically) severe undercount of deaths on the relative positioning of British Jewish mortality⁴. Of those, variant D5P1 represents, theoretically, the highest level of Jewish mortality. All remaining variants express, in my view, equally likely combinations of undercounts of deaths and population.

5. Results

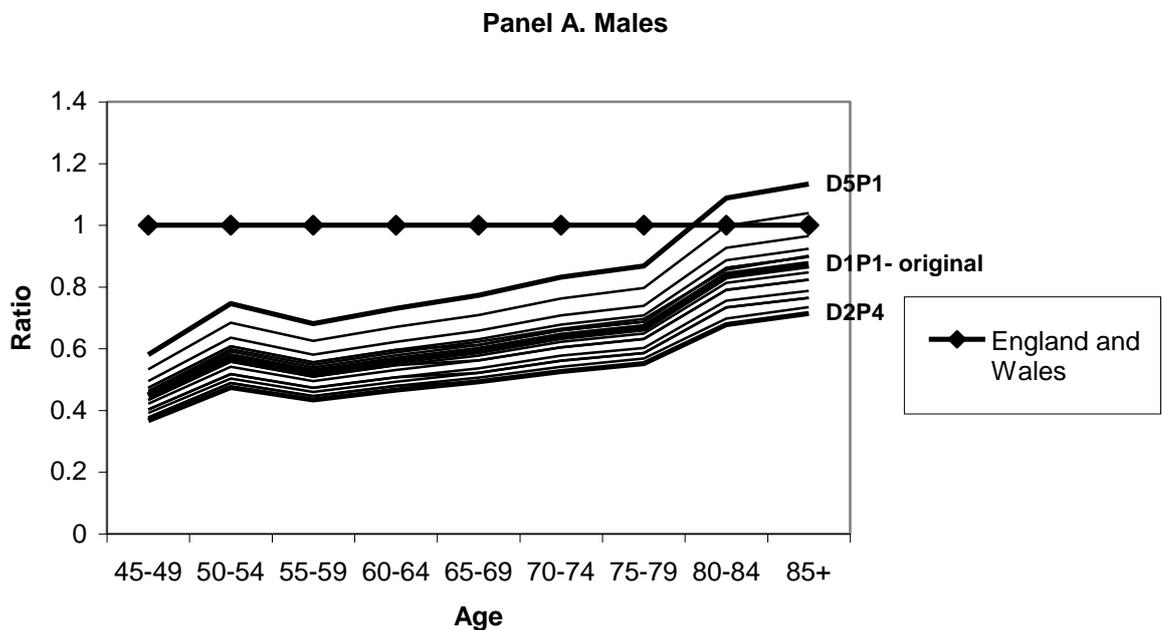
⁴ In this paper I opt for adjustments of deaths and population counts capitalising on the prevailing understanding of the scope of undercount in relation to both elements. It is worth noting that other options for corrections and accounting for uncertainty exist. The graduation of mortality schedules of Jews is one such option, with application of corrections to Jewish mortality at ages 45-64 years on the basis of mortality observed at ages 65 years and over. For graduation to take place, however, the presence of obvious problems in mortality schedules is a pre-requisite (e.g. mortality cross-overs between Jewish and non-Jewish mortality schedules or non-monotonic increases in Jewish mortality). No such problems are present in this case.

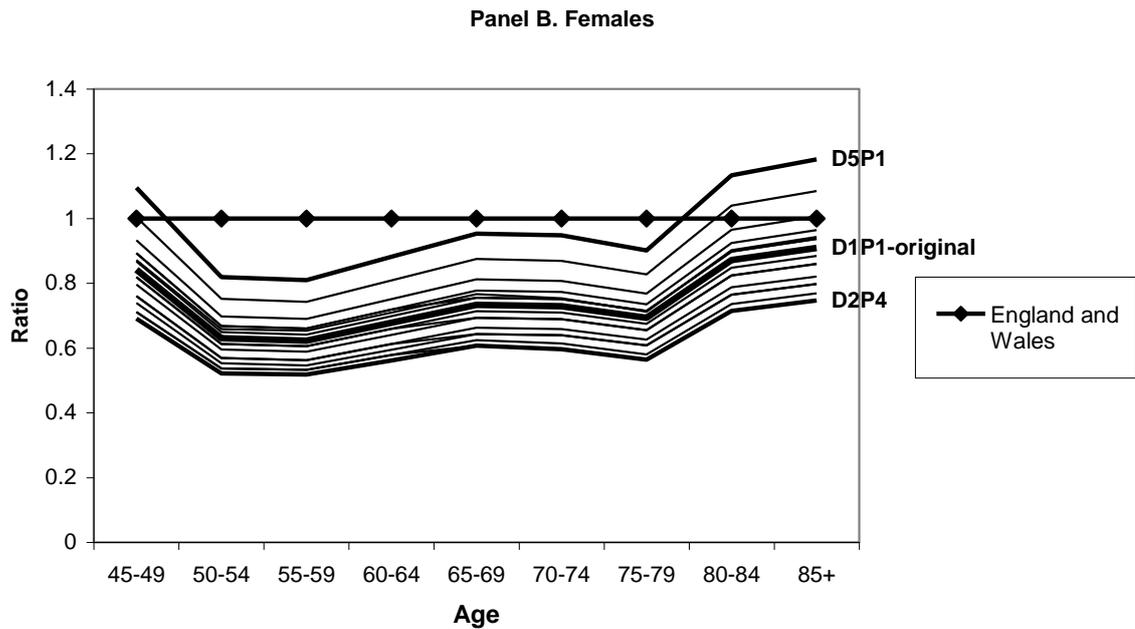
5.1. British Jews compared with total population of England and Wales and other developed countries

Figure 1 shows ratios of variant death rates of Jews in England and Wales to those in the total population of England and Wales. Note that within the present framework of corrections, variant D5P1 reflects the highest obtained level of Jewish mortality (assumption of 100% undercount of deaths among the non-affiliated Jews combined with unadjusted population figures) while variant D2P4 reflects the lowest obtained level (assumption of 10% undercount of deaths among the non-affiliated Jews combined with population figures adjusted for 26% undercount).

Clearly, both male and female British Jews display significantly lower mortality in comparison to the total population of England and Wales. This conclusion almost always holds both before and after the corrections of death and population counts of British Jews are introduced, i.e. in relation to all variant death rates.

Figure 1. Ratios of variant death rates of British Jews to total population of England and Wales, by sex, around 2001





Source. Board of Deputies of British Jews; Haberman and Schmool (2005); Office for National Statistics (2001, 2002, 2003).

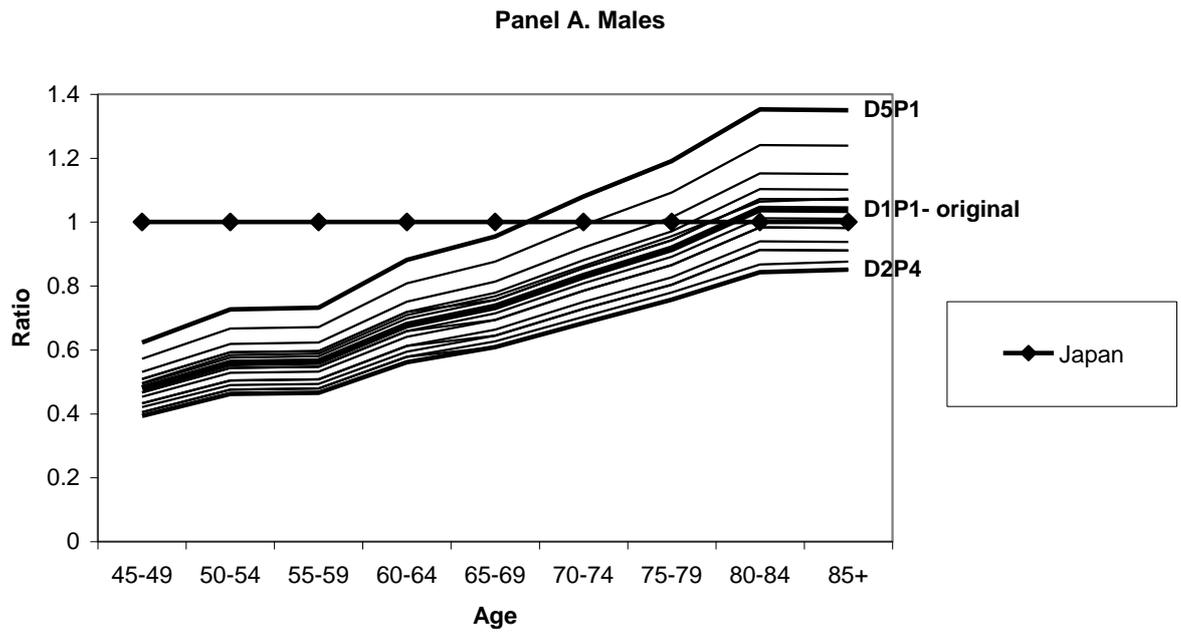
Note. The original rate (D1P1) is calculated using the uncorrected death counts and unadjusted Census figures. Corrections are calculated using variants of corrected death counts and population figures adjusted for Census undercount specified in Table 1. Variants D5P1 and D2P4, respectively, reflect the highest and the lowest levels of British Jewish mortality.

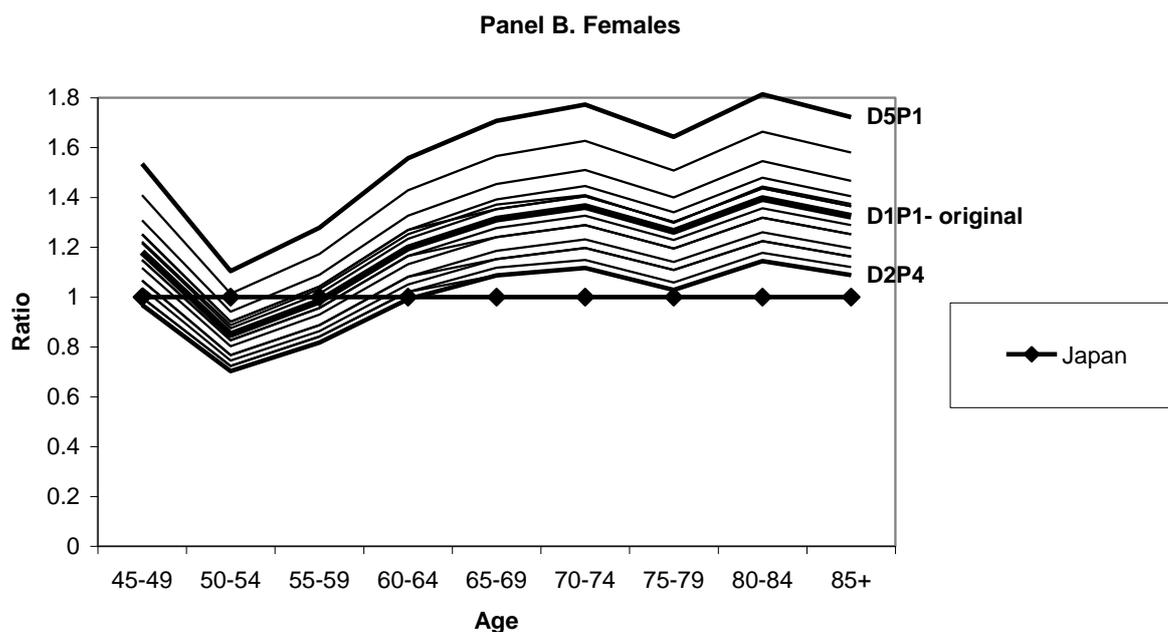
The mortality of British Jews relative to the total population of England and Wales is not as low for females as it is for males. Looking at the ‘middle’ variants of corrected Jewish death rates (2-3 variants above and below the original death rates, an anchor adopted here and subsequently for convenience): British Jewish male death rates are approximately 40% lower than the rate in the total population for age groups 45-79 years, while British Jewish female death rates in this age group are 20%-30% lower than those in the total population. Death rates of British Jews are especially low at ages 45-64 years, typical ages of premature mortality. These observations resemble the observations made earlier by Shatenstein and Kark (1995), Shkolnikov et al. 2004 and Rosenwaike (1990) in the context of Canadian Jews, Russian Jews and American Jews, respectively. In all these communities, mortality of both sexes among Jews in the late 20th century was lower than mortality of the host populations.

Total British adult mortality is among the highest in the developed world. This is true of both sexes but especially of females. In the 1990s only Denmark had a higher level of female mortality than England and Wales. The elevated mortality of the British population is, to a significant extent, due to the impact of smoking (Peto et al. 1994; Staetsky 2009). England and Wales is one of the nations where the smoking epidemic is at its most advanced stage. This would also mean that a substantial proportion of female mortality is smoking-related (Lopez et al. 1994). It is of interest to understand where the level

of mortality exhibited by British Jews 'fits' within the range of mortality schedules found in the developed world. Figure 2 shows ratios of death rates of British Jews to those found in Japan, a country that recorded the world's lowest levels of mortality during the second half of 20th century (Rau and Muszynska 2009).

Figure 2. Ratios of variant death rates of British Jews to population of Japan, by sex, around 2001





Source. Board of Deputies of British Jews; Haberman and Schmool (2005); Human Mortality Database (2009).

Note. The original rate (D1P1) is calculated using the uncorrected death counts and unadjusted Census figures. Corrections are calculated using variants of corrected death counts and population figures adjusted for Census undercount specified in Table 1. Variants D5P1 and D2P4, respectively, reflect the highest and the lowest levels of British Jewish mortality.

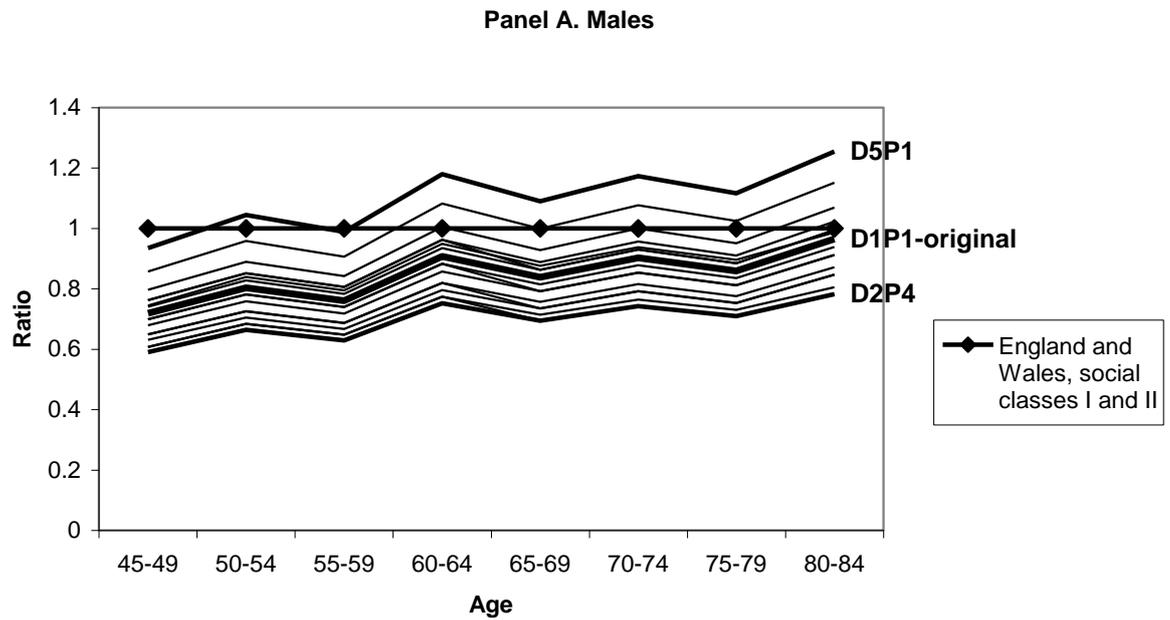
Mortality of British Jewish males is still remarkably lower than mortality of males in Japan: looking at the ‘middle’ variants, it is 10%-50% lower for ages 45-79 years. For British Jewish females this is true only for selected ages, principally age groups 50-54 and 55-59 years. At lower and higher ages, British Jewish female mortality is higher than that of Japanese females by approximately 20%-40%, depending on age group. Still, the mortality of British Jewish females is lower than in other countries with especially low levels of female mortality such as France, Spain and Switzerland (detailed comparisons not shown).

Jewish male populations across the world display low levels of smoking-related morbidity and mortality (Rennert et al. 1988, 1990, Staetsky 2011 and Staetsky and Hinde 2009 for Israeli Jews, Herman and Enterline 1970, Rosenwaike 1994 and Seidman 1971 for American Jews, Horowitz and Enterline 1970 and Shatenstein and Kark 1995 for Canadian Jews, Becher et al. 2003 for British Jews, Shkolnikov et al. 2004 for Russian Jews, and Feldman 2001 for a general review of cancer mortality among Jews). In addition, we possess information on the low prevalence of other types of health-destructive behaviour among Jews: low levels of alcohol consumption being the most remarkable example of this (Becher et al. 2003; Glassner and Berg 1980; Shkolnikov et al. 2004). Specifically for

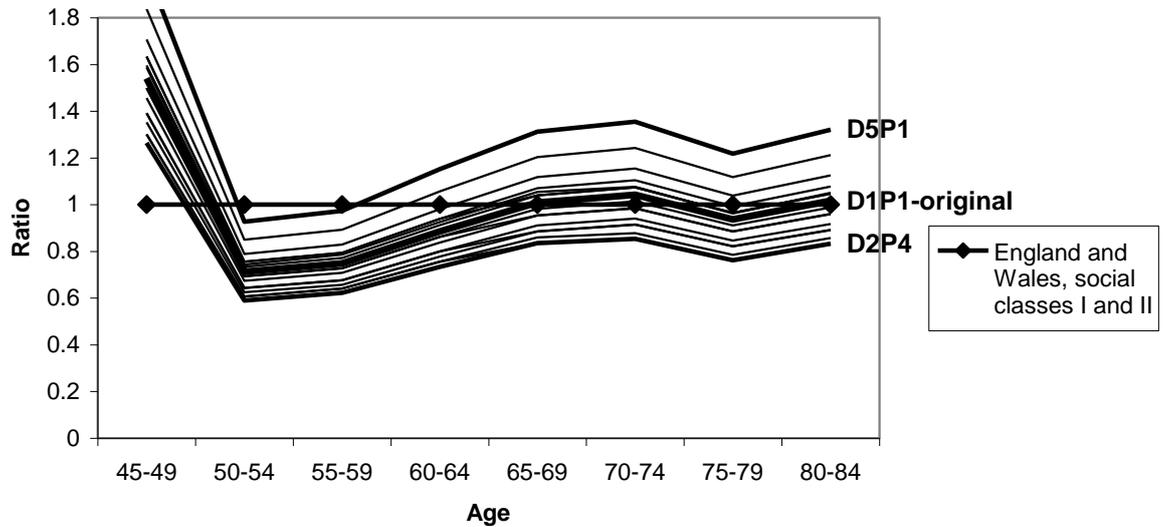
the British context, an absolute majority of British Jews identified themselves as both non-smokers and very moderate drinkers (Becher et al. 2003; Loewenthal et al. 2003; Schmool and Miller 1994).

Figure 3 compares British Jewish mortality with the mortality of the two top social classes in England and Wales, as defined by the Registrar General.

Figure 3. Ratios of variant death rates of British Jews to social classes I and II in population of England and Wales, by sex, around 2001



Panel B. Females



Source. Board of Deputies of British Jews; Haberman and Schmool (2005), Office for National Statistics (2001, 2002, 2003, 2007).

Note. The original rate (D1P1) is calculated using the uncorrected death counts and unadjusted Census figures. Corrections are calculated using variants of corrected death counts and population figures adjusted for Census undercount specified in Table 1. Variants D5P1 and D2P4, respectively, reflect the highest and the lowest levels of British Jewish mortality.

Remarkably, in the majority of variants, the mortality of British Jewish males appears to be lower than that of social classes I and II in England and Wales: in the ‘middle’ variants it is approximately 10%-20% lower. The picture is more nuanced for females. Indeed, while British Jewish female mortality is lower than female mortality of social classes I and II in age groups 50-64 years, it is somewhat higher than or equal to the mortality of the top two classes for older age groups. The stability of death rates in age group 45-49 years may be compromised due to the small number of female deaths both among British Jews and in social classes I and II.

This is a significant finding: up to 65% of British Jews belong to social classes I and II (Graham et al. 2007), yet Jewish mortality is lower than or at the same level as in these classes, indicating the possibility of some sort of an ethnic/religious rather than simply a socioeconomic effect on mortality of British Jews. To put it differently, this suggests that the factor responsible for their low mortality may have something to do with Jewishness in addition to social class.

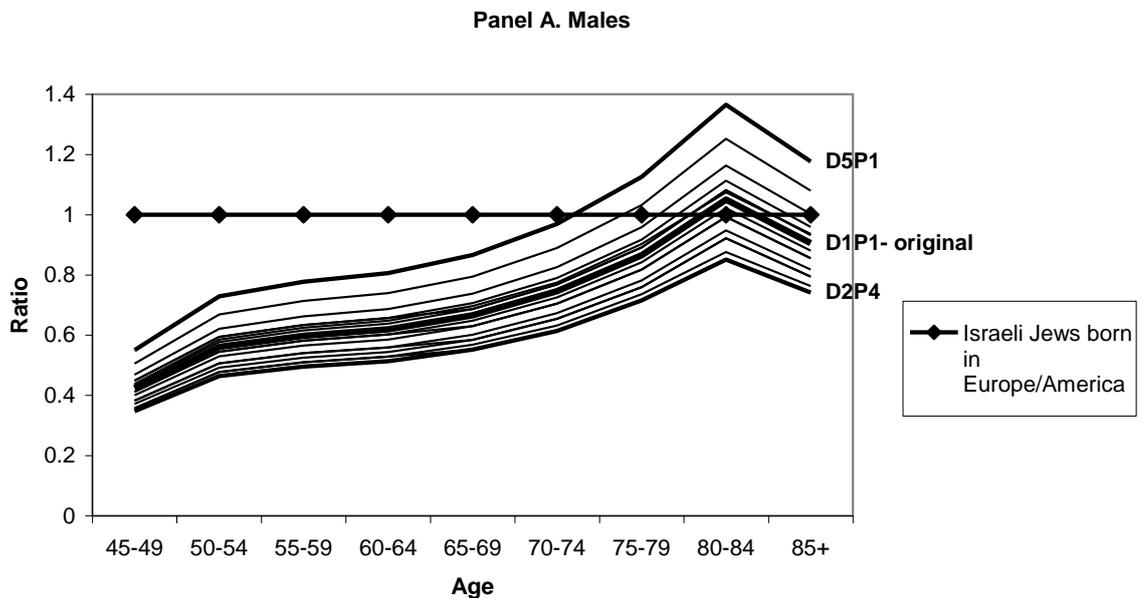
5.2. British Jews compared to Jews of Israel

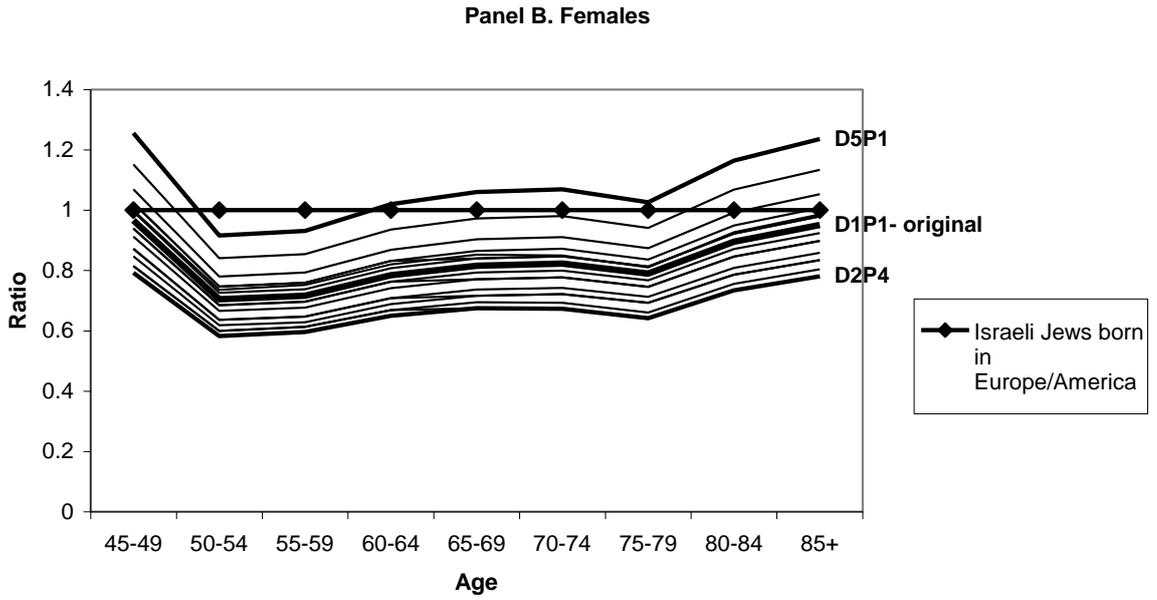
In this section I compare British Jewish mortality to the mortality of Israeli Jews. Throughout the second half of the 20th century, Israel received about 2.9 million immigrants from across the globe. As a result, the Israeli Jewish population include a significant proportion of foreign-born individuals, especially among the elderly. In 2001 the foreign-born accounted for about 38% of the total Jewish population of Israel and for about 84% of the population aged 55 years and over. Among the foreign-born, Jews born in Europe and America were always a numerical majority, and in 2001 they constituted 72% of all foreign-born Israeli Jews (Central Bureau of Statistics, *Statistical Abstract of Israel*, 2002). Israeli Jews displayed one of the lowest mortality levels among males of the developed world at the end of the 20th century.

Variations in mortality levels exist within Israeli Jews and they correspond to the patterns of socioeconomic differentiation, with European/American born Jews having lower levels of mortality and higher socioeconomic status than Jews born in Africa and Asia. Jews born in Israel (second generation) emerged as a group with the lowest mortality in the 1990s (Staetsky and Hinde 2009).

Figure 4 shows that, for most age groups, British Jewish mortality is lower than the mortality of Israeli Jews born in Europe and America, i.e. first generation of migrants to Israel from countries of Europe (wherefrom the absolute majority of immigrants arrived) and the Americas.

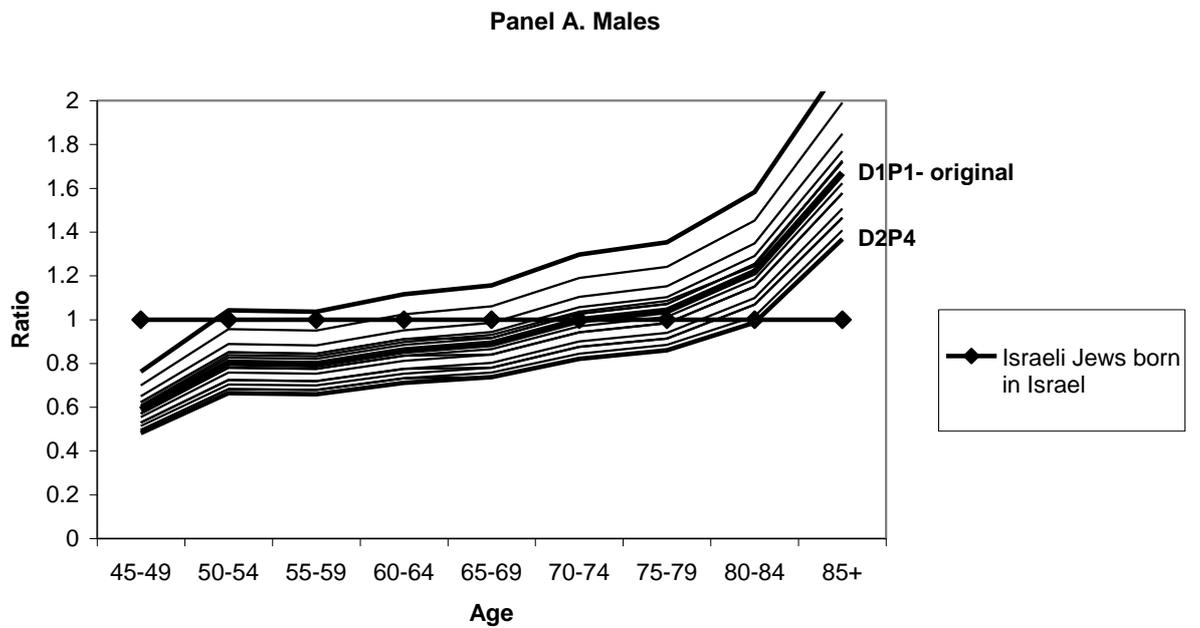
Figure 4. Ratios of variant death rates of British Jews to Jews of Israel born in Europe/America, by sex, around 2001



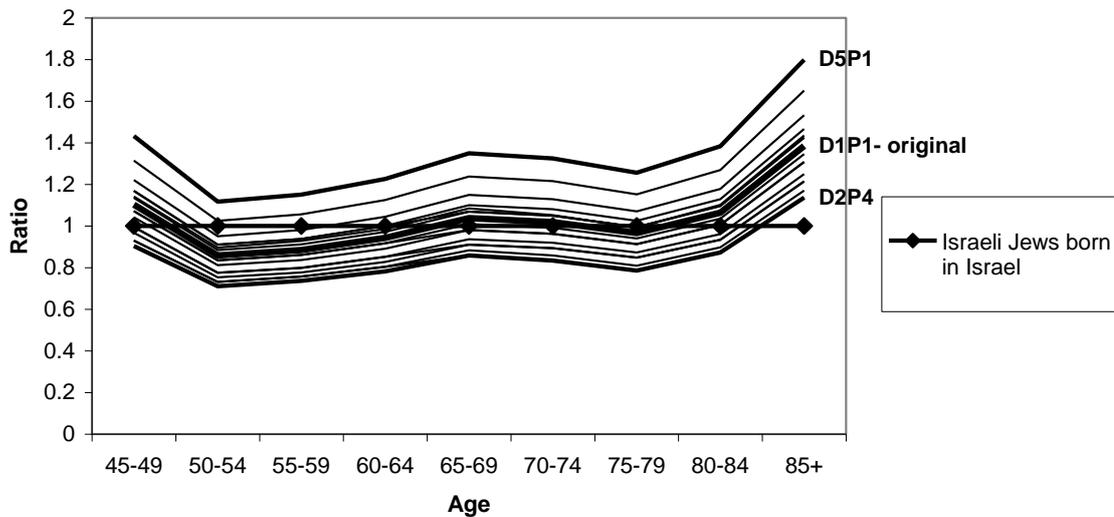


Source. Board of Deputies of British Jews; Haberman and Schmool (2005); Central Bureau of Statistics, Israel (*Statistical Abstract of Israel* 2001, 2002, 2003, 2004).

Figure 5. Ratios of variant death rates of British Jews to Jews of Israel born in Israel (second generation), by sex, around 2001



Panel B. Females



British Jews are compared to Israeli born Jews, a subgroup with the lowest mortality among Israeli Jews, in Figure 5. The mortality of British Jewish males seems to be lower or equal to that of Israeli-born Jews for ages up to 79 years, and somewhat higher at older ages. The mortality of British Jewish females is roughly at the same level as that of Israeliborn Jews.

These findings resemble the observations made earlier by Shatenstein and Kark (1995) in the context of Canadian Jews: in the early 1990s the mortality of Canadian Jews was low relative to that of Israeli Jews. Shatenstein and Kark (1995) reported their findings with a degree of surprise and attributed them to a combination of 'social class' (p. 735) differences with the divergent migration patterns of these two Jewish populations. Their explanatory framework can be extended also to the case of British Jews. The survival advantage of British Jews is understandable in the light of socioeconomic differences between British and Israeli Jews, and of differences in migration dynamics. The socioeconomic situation favours British Jews over Israeli Jews as the United Kingdom is a more developed country in socioeconomic terms than Israel and British Jews are situated near the top of its socioeconomic hierarchy (Graham et al. 2007). Additionally, the migration history of British Jewry is older than that of Israeli Jews. At the beginning of the 21st century, the majority of British Jews were locally born (Graham et al. 2007). This is not the case for Israeli Jews, among whom the majority of the older adult population still consists of migrants from parts of the world characterized by relatively high mortality (Eastern Europe, Middle East and Africa). An absolute majority of Israeli Jews classified in the official statistics as born in Europe/America in fact originate from relatively 'high mortality' countries of Eastern and Central Europe. Notably, the mortality of Jews born in Israel is the nearest to that of British Jews.

6. Discussion

The main findings of this study can be summarized as follows:

1. British Jewish mortality is lower than that of the total population of England and Wales, for both sexes. Furthermore, it is also lower than the mortality of the two top socioeconomic classes of British society. The death rates of British Jews were corrected using the available information on the possible sources and properties of undercounting in death and population counts. The corrections confirmed the relationships of Jewish mortality schedules to those of the host population.
2. Mortality of British Jews appears to be lowest (for males) or among the lowest (for females) when compared with a variety of mortality schedules of national populations of the developed world.
3. Mortality of British Jews is lower than mortality of Israeli Jews born abroad; it is either slightly lower or equal to mortality of Jews born in Israel- a subgroup with the lowest mortality among Israeli Jews.

Low mortality relative to host populations has been a strong feature of Diaspora Jewish mortality since the 1970s (Goldstein 1996; Needleman 1988; Rosenwaike 1990, 1994; Shatenstein and Kark 1995; Shkolnikov et al. 2004). Staetsky and Hinde (2008, 2009) referred to this phenomenon as a new phase in the evolution of the Jewish pattern of mortality. This is largely due to the tendency of Jewish populations across the world to adhere to relatively health-protective lifestyles (Rosenwaike 1994, Shatenstein and Kark 1995, Shkolnikov et al. 2004). This study shows that this pattern also exists among Jews in England and Wales. Prior to the 1970s, the Jewish communities of North America possessed slightly elevated mortality at old ages (Fauman and Mayer 1969; Goldman 1996; Spiegelman 1948). Staetsky and Hinde (2008, 2009) interpreted this as an expression of the lasting impact of early life exposure, i.e. exposure to environmental factors in the countries of origin of Jewish migrant communities in North America (largely Eastern and Central Europe). With the gradual disappearance of the first generation of migrants in these communities, the Jewish advantage in survival was exposed.

By around 2001, the absolute majority of British Jews were born in the United Kingdom or other developed countries (Graham et al. 2007). Therefore, the hypothesis linking elevated mortality observed among certain groups of Jews to their roots in Eastern and Central Europe is enhanced by the findings of this study. Did the British Jewish community undergo the same shift from elevated to low mortality? Patchy data on British Jewish mortality from the period of mass migration of Jews from the countries of Eastern Europe show that this is quite plausible. Marks (1994) and Marks and Hilder (1997) showed that Jewish infant mortality in London was higher than mortality of the total population of London and the rest of England between 1880 and 1900 and lower afterwards. Harris (1997) demonstrated that infant mortality in Jewish districts of Leeds was higher than in the rest of Leeds up

until the second decade of the 20th century. Marks (1994) and Marks and Hilder (1997) attributed their finding to the fact that the Jewish communities in question consisted of impoverished recent immigrants from Eastern Europe.

The presence of health-protective lifestyles among Jews is well documented in the literature, and the impact of these lifestyles is especially strong in relation to males. A number of complementary explanations have been proposed for this phenomenon. These include a traditional emphasis on propriety and self-control resulting from lasting vulnerability of Jews in their relations with non-Jews, the cohesive structure of Jewish societies and the centrality of family, and high socioeconomic status (Almog 2000; Boyarin 1997; Glassner and Berg 1980; Goldstein 1996; Shatenstein and Kark 1995; Shuval 1992; Shkolnikov et al. 2004; Snyder 1958; Staetsky and Hinde 2008, 2009). The relevant question here is: can the phenomenon of health-protective lifestyles be attributed to the relatively high socioeconomic status that Jewish Diaspora communities enjoyed in the second half of the 20th century or, alternatively, it is a cultural pattern of some sort, independent of social status? Shkolnikov et al. (2004) interpreted it as a consequence of the lasting influence of high social status, in the context of Moscow Jews. According to Shkolnikov et al. (2004) the presence in Jewish populations of a very significant proportion of highly educated individuals shapes the culture and behavioural patterns of the entire Jewish population in a particular way: the less educated Jews absorb values and tastes of the highly educated stratum and conform to its ways. However, low male mortality from behaviourally induced causes exists within Jewish collectives which are heterogeneous in terms of social class. The mortality of British Jews, a fairly heterogeneous entity in terms of social class, especially at old ages, is lower than the mortality of the top two classes of British society. These findings suggest the possibility of a distinct ethnic/cultural pattern. Perhaps, the special impact of high educational and socioeconomic status is not the only factor. Other factors, such as community/family cohesiveness and traditional Jewish emphasis on self-control are probably equally influential.

The gap in mortality between British and Israeli Jews is worth noting. The mortality of British Jews is lower than that of Israeli Jews born abroad. Their advantage is less pronounced (and confined to males) in relation to Israeli-born Jews. The behavioural characteristics and resulting patterns of behaviourally-induced mortality in these two populations are likely to be very similar. Additionally, only a very small proportion of British Jews are born outside the UK, and the majority of those were born in developed countries (Graham et al. 2007). The socioeconomic status of British Jews is much higher than that of Israeli Jews, however. This feature could be responsible for a slight survival advantage. Shatenstein and Kark (1995) showed that Canadian Jewish male mortality in the late 1980s was lower than that of Israeli Jews, and pointed up the differences in migration status of the two populations as a possible explanation. However, Shatenstein and Kark (1995) did not isolate the Israeli-born and the foreign-born components in Israeli Jewish mortality, and the foreign-born component numerically dominated the Israeli Jewish population well into the 1990s. I did precisely that, and the results support the interpretation proposed by Shatenstein and Kark (1995): British Jews, too, have lower mortality when compared to Israeli Jews born outside Israel in 'high mortality' countries of Central and Eastern

Europe. However, they do not exhibit the same advantage when compared to Israeli-born Jews, a group of Jews born in a country belonging to the Western mortality regime and similar to them in behavioural characteristics. This is yet another piece of evidence supporting the hypothesis of the link between the evolution of Jewish patterns of mortality and the migration origins of Jewish populations.

The two types of comparisons presented in this study, comparison of British Jews with their host population and with Israeli Jews, clearly illustrate large variations in the levels of Jewish mortality across the world. The low mortality of Diaspora Jews relative to their host populations is a widely observed phenomenon. It is also important to note that Jewish populations across the world are not converging towards the same level of mortality. On the contrary, their mortality appears to be influenced as much by local conditions, varying from community to community, as by the commonalities of Jewish culture and history.

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Appendix 1. Jewish deaths and Jewish population in England and Wales, 2001

	Annual deaths (average of 1999-2003)		Population in Census 2001		Death rates per 1000	
	Males	Females	Males	Females	Males	Females
0-4	8	4	7159	6699	1.1	0.6
5-9	2	2	7248	6843	0.3	0.2
10-14	1	0	7161	6782	0.1	0.1
15-19	1	1	6633	6795	0.2	0.1
20-24	1	3	7176	7570	0.2	0.3
25-29	2	2	7782	8038	0.2	0.2
30-34	3	2	7819	8384	0.4	0.3
35-39	5	4	8429	8483	0.6	0.4
40-44	7	8	8213	8427	0.9	0.9
45-49	11	15	8199	8611	1.4	1.7
50-54	26	20	9658	10499	2.7	1.9
55-59	33	26	7990	8470	4.1	3.1
60-64	47	36	6342	6662	7.3	5.4
65-69	80	61	6215	6342	12.9	9.6
70-74	143	112	6070	6748	23.6	16.6
75-79	226	187	5431	6733	41.6	27.7
80-84	302	328	3714	5619	81.3	58.4
85-89	319	466	2449	4556	130.3	102.4
90+	257	603	1081	2897	237.9	208.1
Total	1474	1879	124769	135158		

Source. Board of Deputies of British Jews; Haberman and Schmool (2005).

