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Fertility and Mortality Data for Germany

Recent Progress and Future Challenges

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Fertility and Mortality Data for Germany
Recent Progress and Future Challenges

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Abstract

In recent years, considerable progress has been made in improving the data infrastructure for fertility and morality researchers in Germany. Several large scale data sets have been made available through the research data centers: the micro-censuses of the 1970s and 1980s, the censuses of the GDR and FRG, the micro-census panel, data from the pension registers, individual level data from the vital statistics, and the central foreigner registers have become available for scientific usage. Vital statistics have been reformed, and the micro-census now includes information on number of children ever born. Despite these improvements, there are still some "weak spots" in Germany's data infrastructure. Germany is lacking official counts of reconstituted families. We know little about the mortality risks of immigrants. In addition, the data infrastructure for studying the socio-economic differences in mortality risks could be improved, thus enabling Germany to catch up with international developments in this area. This paper concludes by making some suggestions for improving the data available.

Keywords: Fertility, Mortality, Demographic Data

1. Introduction[1]

Since the turn of the last century, demographic change has been a popular topic among journalists, as well as among policy makers. Yet despite the considerable level of public interest in this topic, the available data was rather poor in Germany: important fertility indicators were lacking, official mortality rates for the "oldest old" were of poor quality, and population counts were inaccurate. Today, however, we can state that the data situation has improved tremendously for researchers who are interested in the field of demographic change. Germany is about to conduct a register-based census which is expected to give an accurate account of the population size in Germany. Furthermore, new micro-level data sets have become available for scientific usage which will enhance our understanding of demographic processes.

This paper provides an overview of what we believe are the most important recent innovations in the field of fertility and mortality research. Obviously, such an overview is subjective and it can never be comprehensive. But we nevertheless believe that we have included the landmark datasets in this brief overview. Part 2 presents data and discusses applications. In Part 3 we discuss what could be done to improve data availability in the future. Part 4 concludes the overview, and also provides a list of recommendations for the future.

2. Recent Progress in the Data Infrastructure

2.1 Fertility and Family Research

In the field of family and fertility, an important step forward was made recently with the amendment of the German Population Statistics Law (*Bevölkerungsstatistik-Gesetz*), which prescribes which data are to be collected for population statistics. For centuries, German vital statistics did not collect births by biological order. Since 2008, German vital statistics includes this type of information (Deutscher Bundestag 2007). Another important amendment is that the micro-census will ask female respondents about the number of their biological children.[2]

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1 We would like to thank Klaus Duschek for his detailed and friendly responses to our various inquiries about the micro-census. For language editing, we would like to thank Miriam Hils.

2 The intention is to collect this information every four years. The micro-census 2008 is the first one that will include a question on whether the respondent has ever given birth to a child and another one on the total number of children ever born. The question will be asked of female respondents aged 15 to 75.

Age at first birth and childlessness

The groundbreaking changes in the law will enable researchers to generate important structural fertility indicators, such as the mean age at first birth. The postponement of first birth is one of the most important changes in fertility behavior of the recent years (Sobotka 2004; Billari et al. 2006). Germany has been a forerunner in this development, but official indicators documenting this process were lacking. Due to the amendment of the German Population Statistics Law, it is now possible to generate a (period) mean age at first birth. This measure is of great public interest. Furthermore, it is a measure that will enter international demographic statistics.

In addition to the changes in the age at first birth, the level of childlessness is an indicator that is in great demand and is frequently discussed (Berth 2005; Mönch 2007; Schwentker 2007). However, the ultimate level of childlessness cannot yet be calculated based on German vital statistics.[3] This gap in the vital statistics can be filled through other sources, however. The *Frauenbefragung Geburten* has been an important source of indicators of permanent childlessness (Pötzsch 2007). In future, the micro-census will provide this information, too.

Fertility of migrants

From 2008 onwards, the micro-census will enable researchers to generate the fertility indicators by the socio-economic characteristics of the respondents. This will also enable us to generate the total number of children by nationality and migration background. In addition to the micro-census, the Turkish sample of the Generations and Gender Survey will complement our understanding of the demographic behavior of foreigners and migrants. The fertility of migrants is an aspect worth pointing out, not only because this topic is of major scientific interest (see Nauck 2007; Milewski 2007), but also because vital statistics are not very useful for understanding the fertility dynamics of foreigners and migrants. This pertains to the fact that population counts of foreigners in Germany have been imprecise. But this also relates to the fact that it is difficult to generate fertility indicators of a highly mobile population with aggregate level data.

Panel studies in the field of family and fertility

In the past, the Socio-Economic Panel (SOEP) has been the major panel study for family and fertility researchers. Although this data provides a rich battery of socio-economic variables, it

3 Since 2008, German vital statistics provide birth order specific fertility information, which is needed to calculate indicators of childlessness. However, order specific fertility information for the entire reproductive life of a cohort must be collected first before an ultimate level of childlessness can be generated. The cohort 1993 will be the first one for which birth order information will be available for their entire reproductive lives. This cohort reaches the end of their fertile years in 2038.

does not provide much information on the quality of partnership or the intention to become parent. This has limited our opportunities to study, for example, how fertility intentions transfer into behavior. Germany now provides two important data sets − the Generations and Gender Survey (GGS) and the Panel Analysis of Intimate Relationships and Family Dynamics (PAIRFAM) − that will help to shed light on the decision making processes that underlie fertility and nuptiality behavior. The first wave of the GGS has been released (Ruckdeschel et al. 2006). Data from the second round of the GGS, as well as data of the PAIRFAM, were collected in autumn 2008 (Feldhaus and Huinink 2008).

Fertility and large-scale data sets

For demographic studies, having access to large-scale data is indispensable. In this context, the great achievement of the Research Data Centres must be acknowledged. The Research Data Centres of the Federal Statistical Office and the Statistical Offices of the *Länder* have made available individual level data for births and marriages. Additionally, the micro-censuses of the 1970s and 1980s and the censuses of the GDR and FRG have been made available for scientific purposes. The scientific use file of the micro-census, which provides new potential for fertility and family analysis, is also now accessible (Schmidtke et al. 2008). Finally, the Research Data Centre of the German Pension Insurance has opened for scientific use files of pension records, which can also be used for fertility and family research (in particular, the *Versicherungskontenstichprobe*) (Kreyenfeld and Mika 2008). Fertility analyses with register data that have previously been done mainly for Scandinavian countries can now be replicated with German data.

2.2 Aging and Mortality

It is equally crucial in the field of mortality and aging to have access to large-scale data sets. After all, death is quite a rare event. Therefore, large datasets are needed in the calculation of robust mortality estimates. Fortunately, considerable progress has been made in recent years in the availability of large-scale data sets. New computer techniques and new opportunities offered by installed process data sources enable researchers to conduct mortality analyses on large-scale data sets.

Human Mortality Database (HMD), population size and census

The Human Mortality Database (HMD) is a collaborative project which has been conducted since 2002 by the University of California at Berkeley (United States) and the Max Planck Institute for Demographic Research (Rostock, Germany). The purpose of the database is to

provide researchers around the world with easy access to detailed and comparable national mortality data via the Internet.[4] The HMD methodology has been used to validate German population statistics. In Germany, the last census was conducted in the West in 1987, and in the East in 1990.[5] In order to generate the population size, German vital statistics largely relies on the results from the last census and a component-method by births, immigrations, out-migrations, and deaths (*Bevölkerungsfortschreibung*). There is reason to believe that the population estimates that are generated from the *Bevölkerungsfortschreibung* are particularly distorted with growing distance to the last census, especially among the highest ages.

As shown in Figure 1, the difference between the official and the recalculated population for men age 90+ in West Germany grows with the amount of time that has passed since the last census. Just after the West German census of 1987, a sudden jump is seen in the official population. This suggests that the population of males age 90 and over is strongly overestimated in German vital statistics (for more detail, see Jdanov et al. 2005; Scholz and Jdanov 2006). It may be hoped that the new census will improve the quality of the data available for studying mortality at higher ages.

Relative socio-economic inequality in old age mortality is a major public health issue given the growing size of the elderly population and the sharp rise in absolute mortality with age. In the past, the international literature in this area was marked by the persistent absence of Germany. In many reviews of socio-economic mortality differences in Europe, Germany was not included. One reason for this is that, unlike in many other countries, German population statistics do not provide suitable data for mortality estimation by socio-economic status. Social science surveys can only partially fill this gap since the number of elderly subjects is too small for a robust estimation of mortality differentials in this kind of data. Furthermore, the survey data suffer from recruitment bias and the absence of people living in institutions. However, the situation has changed recently with the introduction of new policies enabling scientific analyses of administrative micro-data. Data from the German Research Data Centre of the German Pension System can now be used to evaluate mortality differentials among men aged 65 and older (Gaudecker and Scholz 2007; Shkolnikov et al. 2008; Himmelreicher et al. 2008).

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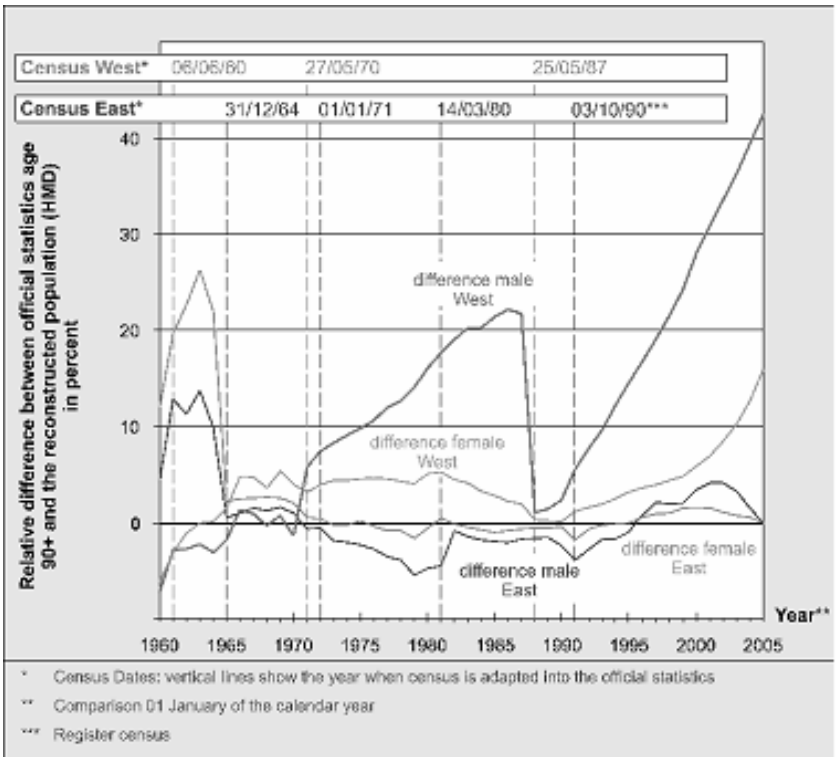
4 The database will contain original life tables for 35 countries, as well as all raw data used in constructing those tables. The raw data generally consist of birth and death counts from vital statistics, population counts from periodic censuses, and official population estimates. The general documentation and the steps followed in computing mortality rates and life tables are described in the methods protocol. For Germany, there are data sets for East Germany, West Germany, and Germany Total for the period of 1955-2007 (http://www.mortality.org/).

5 The last "conventional" census of the GDR was conducted in 1981. However, there were population registers in East Germany which provide reliable population counts. These registers were discontinued in 1990.

Figure 1: Comparison of relative differences in population estimates in Germany 1960-2005 between official statistics and HMD



Source: own estimations

Socioeconomic inequality in old-age mortality

The healthy migrant effect

It is known from several studies that migrants are healthier, and thus show lower mortality than the native population. This phenomenon has been described for various countries and ethnic groups, and for both internal and international migrants. Generally, this development is explained by a special selection effect which may influence mortality and morbidity rates. This selective migration is expected to operate in two directions, which involves the movement of a "select group" of the healthy or the unhealthy. The movement of healthier individuals is known as the so-called "healthy migrant effect". Conversely, it appears that sick migrants are involved in return migration, in order, for example, to be closer to family or to care-giving institutions. The latter phenomenon is also known as "salmon bias". For Germany, it is also important to consider whether migrants' low mortality rates are caused by inaccuracies in the vital statistics, i.e., if doubtful data quality contribute to migrants' ''statistical immortality''. Newly available data will help to shed more light on this issue. This applies to the Immigrant Survey of the Bundesinstitut für Bevölkerungsforschung in Wiesbaden (Luy 2007) and data from the German statutory pension insurance (DRV) (Kibele

et al. 2008), as well as to data from the German central alien register (*Ausländerzentralregister*) (Kohls 2008).

3. Challenges and Recommendations

Overall, the infrastructure for conducting fertility and mortality research has improved tremendously in recent years. Nevertheless, there are some "weak spots" in Germany's data infrastructure, which we will discuss in the following.

Family Change and Official Statistics

Official statistics have always been slow in catching up to changes in the family. For a long time, the official UN definition of what is a family ignored new family forms, such as non-marital unions with children. This has changed in the recent years. In the UN recommendation of what is to be included into the census, co-residential partnerships are named among the core concerns (UN 2006, 113). Germany will be able to provide counts on co-residential unions based on data from the micro-census. A drawback is that the question on the partnership status, which is needed to identify a non-marital union, is voluntary, and about five percent of respondents refuse to answer the question (Heidenreich and Nöthen 2002). Since the share of non-marital unions have become such an integral demographic indicator, it seems odd that partnership status is one of the few questions in the micro-census for which a response is not compulsory.

A related issue concerns stepfamilies. Families in which children live with biological and/or non-biological parents are on the rise, and they pose important new social policy questions. However, we do not have an accurate account of the share of reconstituted families in Germany. In the census, more complex living arrangements, such as stepfamilies, cannot be identified (despite the fact that the UN (2006) request that this information be included in the census). Survey data, such as data from the Generations and Gender Survey, provide detailed information on family structure and living arrangements. However, sample sizes are too small to provide good "structural indicators" on the prevalence of reconstituted families. In the micro-census, it is difficult to identify "stepfamily constellations", because the kinship status of the household members is only surveyed in reference to the head of the household.

It is difficult to make recommendations for resolving this problem. The household relationship matrix is usually seen as a method that is superior to survey living arrangements (Statistical Commission and UN Economic Commission for Europe/ Statistical Office of the European Communities; UN 2006, 107). If this method were introduced into the micro-

census, the share of stepfamilies in Germany could be established. However, this would obviously require a fundamental change in the micro-census questionnaire. Another solution could be to find out whether respondents may be asked if the stepparent, adoptive parent, or foster mother/father lives in the same household.[6]

Piecemeal Changes in the Field of Family and Fertility

While important progress has been made in improving Germany's data infrastructure, some of the changes are incomplete. For example, it is certainly a great success that the number of biological children is now counted in the German micro-census. However, it seems unfortunate that only women were asked about their fertility careers, as male fertility is also an important area for fertility and family researchers (Tölke and Hank 2005). In the social science data set, it has become standard to ask both female and male respondents about their fertility careers. It seems backwards that, in the micro-census, males have been filtered around the question on the number of their biological children.

Finally, the micro-census for fertility research could be tremendously enhanced if it included information on the ages at first, second, and additional births. This suggestion would certainly provoke another heated debate about whether the micro-census questionnaire is already overloaded. However, an easier solution could be to repeat the *Frauenbefragung Geburten* on a regular basis to provide structural indicators of fertility change in Germany.

Socio-Economic Differences in Mortality Risks

In the field of mortality research, we must conclude that we still know too little about the mortality risks of immigrants. The data infrastructure for studying socio-economic differences in mortality risks could also be improved to keep pace with international developments in this area. We simply know too little about how mortality risks differ in Germany by educational level and socio-economic status. One way to ease this situation could be to establish a central mortality register similar to those that exist in other countries, such as Sweden or the U.S. (Müller 2008). However, such an initiative will surely has to pass several administrative hurdles. An easier solution may lie in investigating how the micro-census panel could be used for mortality research. Currently, it cannot be used for this purpose because there is no systematic documentation of information on respondents who drop out because they die or move to a different location. Finding a way to do this would not only enhance the potential of

6 The micro-census already includes a question on whether the mother or father lives in the same household. However, it does not allow the respondent to distinguish whether it is a stepparent, adoptive parent, or foster father or mother. Legal regulations might make it impossible to ask respondents of whether they have adoptive parents. However, a distinction between foster parents, stepparents, and biological/adoptive parents might be less of a problem.

the micro-census panel for mortality research, but also for using the micro-census panel for all other kinds of longitudinal research.

4. Conclusion

In this paper, we described the significant progress that has been made in improving the data infrastructure for fertility and morality researchers in Germany. Nevertheless, additional enhancements would further increase our understanding of fertility and morality processes in Germany. In the field of fertility and family, we argued that we need better structural indicators to capture family change in Germany. This includes getting official counts of *reconstituted families,* and raises the possibility of making the question on the *partnership status* compulsory in the micro-census. In the field of mortality research, we stressed that we need better estimates of *mortality risks of migrants,* and a better understanding of the *socio-economic determinants of death*. We pointed out the potential of the micro-census in this context.

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