Data Bases and Statistical Systems: Demography

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Abstract

This article deals with the availability of large-scale data for demographic analysis. The main sources of data that demographers work with are censuses data, microcensus data, population registers, other administrative data, survey data, and big data. Data of this kind can be used to generate demographic rates and study demographic processes, such as family formation, marriage, divorce, residential mobility, and death. The advantages and pitfalls of different types of data are summarized.

Introduction: The Core of Demographic Research

Demography is the study of population dynamics and population structures. At the heart of this discipline lies the investigation of fertility, migration, and mortality processes. These processes determine the size and the composition of a population. Among the related issues that demographers investigate are partnership dynamics (including marriage, cohabitation, separation, divorce, and repartnering), residential mobility, aging, health, and retirement. A general principle that unifies demographic research is the firm conviction that demographic processes need to be located in time. Time includes two prime dimensions, namely, calendar time and age. An important tool used to visualize the age-calendar dimension is the Lexis diagram, which displays age on the horizontal axis and calendar time on the vertical axis (*see* Demographic Techniques: LEXIS Diagram). The diagonal lines in the Lexis diagram represent the aging of different birth cohorts. The evolution of demography as a discipline is strongly connected to the invention of the life-table technique, which originated in the works of John Graunt during the seventeenth century. Till today, life-table techniques are among the main methods demographers use in the study of age-related processes (*see* Life Table).

Demography is a discipline that relies heavily on the availability of large-scale data. During the seventeenth and eighteenth centuries, parish registers were the prime source of demographic analysis (Bengtsson and Dribe, 2006; Knodel, 1988). Genealogies have also been employed as sources in the reconstruction of the demographic behavior of historical populations (*see* Demographic Techniques: Family Reconstitution). With the formation of nation states in Europe during the nineteenth century, national governments developed an increasing interest in the size and structure of their populations. This interest later led to the establishment of national statistical offices. In Prussia, for example, the 'Königlich Preußische Statistische Bureau' was established in 1805. This office collected extremely rich population data, which are still used to study regional fertility dynamics (Lee et al., 1994). The 'modern' census was also created in this era.

A population census is an enumeration of all residents in a country or present in a country at the time of the census. The enumeration of all individuals necessarily implies that not more than a few characteristics can be recorded for each individual. More detailed information is usually collected from a selection of individuals that is representative for the entire population (microcensus). In addition to censuses and sample surveys, administrative processes are sources of information on the population. This data are a by-product of administrative processes. Civil registration is an administrative process by which a government records the vital events of its citizens and residents (e.g., births, deaths, marriages, divorces, migrations). Other administrative processes produce useful data too, e.g., tax collection, pension benefit payments, and issuing residence permits. A new source of data on individuals and their activities are tracking devices in sensors, mobile devices, credit cards, electronic identification cards, social media, Internet searches, and so on. Much of these data are generated in real time and are referred as *big data* because of their massive volume. Mayer-Schönberger and Cukier (2013) situate the emergence of big data in a historical perspective, with the census being the first systematic recording of information about members of a given population. The census could collect limited information only at periodic intervals. The modern tracking devices collect a variety of data in real time. In this article, brief descriptions of the main data sources are presented: census data, microcensus data, population registers, other administrative produced data, survey data, and big data. The processing of these data yields parameters of demographic processes (e.g., demographic rates) and indicators of population dynamics.

Census Data

A population census is a systematic recording of information on all members of a population usually residing in a country (*de jure*) or present at the time of enumeration (*de facto*). The United Nations (UN) recommends that censuses be conducted at least every 10 years, but countries vary greatly in the extent to which they comply with this guidance. The UN has provided a list of core aspects which the national statistical offices are expected to include in the census (United Nations, 2006): sex, age, marital status, employment status, level of education, country of birth, housing conditions, and household composition. Traditionally, censuses have been based on face-to-face surveys. However, in the most recent census, several countries

(such as the Nordic countries, Germany, The Netherlands, Slovenia, and Austria) have turned to register-based censuses in which several registers (e.g., employment, housing, and population registers) are combined. Such a census is sometimes referred to as a *virtual census*. Most other countries conduct traditional censuses in which the total population is interviewed face-to-face. Nonetheless, in some of these countries (e.g., Canada), the traditional census is a subject of political debate. The US Bureau of the Census has considered for decades how government records might help the traditional census-taking process. The use of these records raises concerns about personal privacy.

Censuses are of considerable importance for demographic research because they provide 'official' population counts for generating demographic rates by age and sex at the regional level. A key comparative project that makes use of the available census data is the Integrated Public Use Microdata Series (https://www.ipums.org/). Monitored by the Minnesota Population Center, the project makes harmonized census data available for a large number of countries around the world.

Microcensus Data

Most countries also conduct microcensuses on a regular basis. Microcensuses are surveys that are monitored by the national statistical offices and include a fraction of the total population. Microcensuses include data, which are richer than the data collected by censuses, and they are conducted in relatively short and regular intervals (often on a yearly basis). Among the forms of demographic information that come from microcensus data are, for example, the number of cohabiting unions in a population, the share of single-headed households, or the share of individuals in need of care. Because of their large sample sizes, microcensuses can provide more reliable indicators than social science surveys (see below). In addition, the nonresponse rates are very low in the microcensuses because participation is compulsory in some countries. However, microcensus or census data alone may not be sufficient for generating demographic rates because they often only contain cross-sectional information. However, methods have been developed that allow researchers to exploit microcensus and census data for demographic analysis. The 'own-child method' is a method that uses information on the number of children who live in a household at the time of a survey to reconstruct the fertility histories of women (Cho et al., 1986). This method is generally used for historical populations, but it may also be applied to contemporary societies when order-specific fertility data are not available from the vital statistics. In the 1980s, the UN published a manual of methods for deriving useful demographic indicators from census data. The manual has been updated recently (Moultrie et al., 2013) and is available online (http://demographicestimation.iussp.org/).

Population Register

Several countries, especially in Europe, maintain population registers or other types of registers that contain demographic data (such as birth, marriage or death registers). Individuals are legally required to report births, deaths, and migrations. When a marriage is performed in a civil ceremony involving a legal contract between spouses, marriages are registered and the data becomes part of the register. The dissolution of a marriage, or the end of a marriage contract, is registered too. In many countries, including most European countries, cohabitation has been on the rise since the 1970s. While some countries now provide the possibility to register a cohabiting union (such as France and the Netherlands), other countries (such as Germany) only provide this option for same-sex unions. Registered partnerships may, thus, also be captured in the civil registration system.

Registers that contain information of vital events are the prime form of data with which demographers work. The data generally contain counts of births, deaths, marriages, and residential moves. Births are commonly broken down by the age of the mother, the biological birth order of the child, the duration since the mother's last birth, and the mother's marital status. In most national statistics, birth statistics are only available by the mothers' characteristics. Marriage data are commonly broken down by aspects such as age, marriage order, and citizenship of the partner. Divorce data also fall into the category of demographic data, and are commonly available by age, marriage duration, and citizenship of the partner. Deaths are usually recorded by age, sex, marital status, and cause of death.

Migration data is often less widely available. Not all countries keep registers including data on changes of residence. If they do, internal and international migration statistics are derived from the registers. The quality of register-based migration data depends on reporting practices. If people do not report a change of residence and no system exists to track where people reside, migrations are undercounted. The undercounting is particularly frequent and extensive for emigrations, i.e., migrations to other countries. Some national statistical offices adjust international migration statistics regularly for undercounting. For instance, in the Netherlands, the official emigration statistics consist of emigrations reported and *administrative corrections*. Canada adjusts the number of immigrants. In most countries, though, undercounting goes unnoticed until the next population census. The 2011 census of Germany found 1.5 million people missing. Most of them are likely persons who failed to declare their emigration. The German statistical office had estimated that there were 7.3 million residents of Germany without German passports, but the census counted just 6.2 million. Residence is often not included in the migration registers. For instance, in the UK, the Office of National Statistics (ONS) uses three administrative data sources to produce internal migration statistics: the National Health Service Central Register, the Patient Register Data Service, and the Higher Education Statistics Agency data. To produce international migration data, ONS uses the census and the UK International Passenger Survey. Most official migration statistics tend to underestimate the volumes of immigration and particularly emigration, and to double-count circular and return migrants (United Nations Economic Commission for Europe and Statistical Office of the European Union, 2010). The difficulty of capturing illegal migrants in migration statistics is another source of serious error in the migration counts of some countries.

Differences in data sources, measurement schemes, and definitions of migration explain the lack of comparability of migration data across countries. Despite long-standing efforts to harmonize international migration statistics, the data are not fully comparable across countries (Lemaitre, 2005; United Nations, 1949). These discrepancies in international migration statistics become obvious when the migration flows between sending and receiving countries are directly compared (Raymer and Willekens, 2008).

Other Administrative Data

Administrative data (also called *process-produced data*) are data that are collected as a byproduct of administrative processes. Apart from birth, death, and marriage registers (see Section Population Register), tax, pension, employment, and registers of national health insurance providers may contain valuable demographic information. Administrative data are not subject to many of the problems associated with social science surveys, such as small sample sizes, high nonresponse rates, and the related underrepresentation of certain subpopulations (see below). However, countries vary greatly in terms of the availability of administrative data for demographic research; the Nordic countries of Europe are at the forefront of the development of such data (United Nations, 2007) (see also http://www.suda.su.se/simsam/). For other countries, data protection issues and difficulties in combining different types of administrative data create hurdles for this type of data analysis. In a time of shrinking response rates in social science surveys and the growing capacity of computers to manipulate large-scale data, the exploitation of administrative data is an obvious avenue for future demographic research. Several countries have already taken this route and have replaced their traditional censuses with register-based censuses in the most recent census round. The extent to which register-based demographic research will also be able to replace, enrich, or validate survey-based research is largely contingent on the willingness of the providers of administrative data to make their data available for scientific usage and the willingness of the national governments to promote and allow the linkage of different registers.

Social Science Surveys

Data from large-scale social surveys, which have become increasingly available since the 1980s, have revolutionized demographic research. Previously, demographers were primarily concerned with population data, which were mainly available at the aggregate level. But as a result of the wide availability of social science surveys, demographers have turned increasingly to the analysis of microlevel data. In addition, demographic techniques for microlevel data have advanced. In particular, the development of event history techniques has been paramount for demographic research. These techniques arose from classical life table techniques, but are also related to statistical methodology and modern regression analysis (Hoem, 1978; Mayer and Tuma, 1990). Sequence analysis and methods for displaying demographic behavior across the life course are also related to developments in event history techniques (Raymer and Willekens, 2008; Willekens, 1999).

To generate demographic rates with survey data, longitudinal data that locate the demographic events in time are needed. In this context, it is important to distinguish between retrospectively and prospectively collected data. *Retrospective data* are collected by asking people about their recollections of the timing and occurrence of past events. This information is usually gathered in a modularized way. In different sections of the questionnaire (*modules*), the different *domains* of a respondent's life course (like the fertility, residential, and partnership histories) are surveyed. This means that in these different parts of the questionnaire, the occurrence and timing of past events are recorded, often by relying on so-called *event history calendars*. In *prospective surveys*, life histories are reconstructed by reinterviewing each person at different points in his or her life course. This is done in a follow-up study (*panel survey*) in which the same respondent is reinterviewed on a regular basis (often in a yearly rhythm). By adding together the data gathered over time, it is possible to generate longitudinal information for the person. These data are, however, only partially comparable with the retrospectively collected life histories. A panel study only includes information on a person at different points in time in his or her life, and not for the person's entire life course. However, panel surveys usually also survey retrospective information that covers the last year or the time since the last interview. This type of information allows for the reconstruction of the person's complete life history, or at least the portion of the life history for the period during which the person participated in the panel study.

Retrospective Surveys

Compared to panel surveys, retrospective surveys are far less costly. Furthermore, while it takes several years to build up a panel survey, retrospective surveys can be used immediately for demographic analysis (Beckett et al., 2001). Moreover, for some processes, like cohabitation, a retrospective survey is the only tool for learning about past behavior, because no information exists from other data sources. Retrospective surveys have been important in helping us understand family behavior in contemporary societies. The World Fertility Survey (WFS), which was launched during the 1970s and early 1980s, was one of the largest social science surveys that collected fertility and family data for developing countries (Cleland and Verma, 1989). The WFS was followed by the Demographic and Health Surveys (DHS). DHS have been organized in a large number of developing countries and countries in transition (www.measuredhs.com). The Fertility and Family Surveys (FFS), which focused on developed countries, were conducted during the 1990s. The Generations and Gender Surveys (GGS), which were conducted around 2005, were similar to the FFS, although the GGS has also been conducted as a panel study in some European countries (http://www.ggp-i.org/). Some countries have a tradition of conducting cohort studies, in which the life courses of particular birth cohorts of women and men are surveyed. The British Cohort Study and the German Life History Survey are examples of cohort studies.

There are several advantages associated with the use of retrospective surveys, but also some significant pitfalls. The

largest problem that arises in conjunction with retrospective surveys is recall bias. Even salient events like marriage and childbirth have been shown to suffer from this distortion (Ní Bhrolcháin et al., 2011). For cohabitation, marriage, separation, and divorce, there is convincing evidence that recall bias, or the deliberate disclosure of information during the interview, poses a serious challenge to retrospective surveys (Mitchell, 2012). Another source of bias is related to sampling issues. In a survey, only the people who are residing in the country at the time of the survey are included. This population may have changed over time due to in- and out-migration. Thus, a retrospective survey cannot fully mirror the past behavior of the population resident in the country in the past. *Selection on survival* is another conundrum that is related to the fact that only the surviving population can be interviewed. Selection on survival may affect the analysis of family behavior, if, for example, fertility and family patterns correlate with mortality rates. The older the surveyed cohort, the stronger the bias. Obviously, demographic events like death cannot be studied with retrospective surveys unless proxy informants are used (e.g., information of a death of a person from other household members).

Prospective Surveys

Panel data may be used to overcome many of the shortcomings of retrospective data. A panel follows the same person over a certain period of time. Thus, mortality risks may also be investigated with a panel study, provided the information for the reasons why a person has dropped out of a panel is provided. One of the longest-running panel studies, which has also served as a model for many later surveys, is the Panel Study of Income Dynamics (PSID). Although these data were not surveyed for demographic purposes, they have been employed for various types of demographic analysis (Dowd et al., 2011). In the realm of family and fertility behavior, the National Longitudinal Survey of Youth, which was initiated in 1979, was one of the first large-scale panel projects that focused on family behavior. One recent American initiative is the Fragile Family Child Wellbeing Study. In Europe, the Netherlands Kinship Panel Survey and the German Family Panel are examples of more recent family panels (http://www.pairfam.de/en). They combine a cohort and a *multi-actor design*, meaning that in addition to the 'anchor respondent,' who is selected from specific birth cohorts, the respondent's parents and children are interviewed. One of the first and largest panel studies of the older population is the Health and Retirement Study, which was launched in 1992. For Europe, the Survey of Health, Ageing and Retirement in Europe is one of the landmark projects on the elderly (http://www.share-project.org/).

Panel surveys are indispensable for studying demographic behavior. In the realm of family research, they enable researchers to study how 'soft indicators' (like attitudes and values) affect subsequent fertility and partnership behavior. The relationship between employment and family choices has been studied using data from panel surveys, as there are very few registers that contain information about both employment and fertility careers. The growing availability of household and multiactor panels also provides researchers with the opportunity to study how the couple or household context influences fertility and family decision-making. For mortality research, panel surveys have been regularly employed to study how health-related behavior (like smoking habits) affects old-age disability or mortality. The inclusion of *biomarkers* (like grip strength, blood pressure, or even blood samples) in social science panel studies is an important new area that will help improve our understanding of the interplay of biological and social factors in family and health-related behaviors (McDade et al., 2007).

While panel surveys are very important for demographic research, there are a number of drawbacks to their use. One of the most significant problems associated with panel data is the issue of *attrition* (i.e., respondents dropping out of the study). Attrition is a general problem for any study that draws on a panel survey. But because of the strong correlation of attrition with residential mobility, it is a particularly severe issue for demographic analysis. Marriage, cohabitation, separation, divorce, or childbirth may lead to a residential move, and survey institutes are often unable to keep track of people as they move. A similar issue arises at higher ages, as respondents may be unavailable for an interview because they have moved into an eldercare facility, been hospitalized, or been unable to answer questions for other reasons (such as disability). The analysis of mortality risks using a survey is also contingent on the availability of information on the reasons why a respondent dropped out. Some panel studies (like the PSID and the US Health and Retirement Survey) are able to verify that a respondent dropped out due to death by linking his or her information to official death registers. In other countries, it is not possible to confirm deaths in this way. Another serious issue that affects social science surveys in general is the undercoverage of certain subpopulations. The underrepresentation of disabled individuals and people in eldercare facilities creates a problem for demographic analyses of transitions in the later life course. The undercoverage of young, mobile men, and the inability to properly capture nonresidential fathers, make investigations of family biographies, especially those involving male respondents, challenging (Rendall et al., 1999).

Big Data

Data generated in real time by various types of tracking devices are not used as often in demographic analysis. Zagheni and Weber (2012) studied international mobility using geolocation data generated when individuals log into the computer. IP addresses are mapped to geographical locations, and a person's duration of residence is identified by repeated logins. From that information, short- and long-term migration flows and the typical migration age profile can be produced. A user's IP address is recorded whenever the Internet is accessed. The IP address can be linked to other information on the user, such as cookies containing unique identifiers, purchases paid for by credit card, Internet banking, cameras in combination with image processing software, electronic medical records that include medical and treatment histories, administrative databases, or other databases containing personally identifiable information. From that information, a personalized profile that includes a variety of conditions and activities can be created. Profiling, i.e., the construction of

personalized profiles generated by record linkages and data analysis, is technically possible and offers opportunities for demographic analysis. Linked with Geographical Position Systems (GPS), detailed population profiles can be generated at street level. Whether that technology will be used on a large scale depends on the outcome of the political debate on the protection of personal data. The debate is not entirely new. In the 1980s, popular resentment in West Germany prevented the population census from being conducted. Some felt that the questions to be asked were quite personal and recalled the use of census data to target Jews and other minorities during the Nazi era. The Constitutional Court canceled plans for the 1983 census, and required a revision of the process. The modified census was eventually held in 1987.

Demographic Rates

Structure of Demographic Rates

Demographic indicators are generated by relating the number of events to the population at risk of experiencing an event. The numerator is defined by the number of events (births, deaths, and marriages) recorded in the civil registration system. The denominator is defined by the population count (or the risk population), which commonly comes from census data. Censuses are generally conducted at regular intervals. For the intercensal period, the population size is estimated through updates of the population count using information on the numbers of deaths and births and the volumes of in- and out-migration. As the time since the last census increases, population estimates are subject to increasing error, especially because migration data are often less reliable. In the past, inaccuracies in population estimates have led to inaccurate assessments of the mortality rates of migrants, as well as to erroneous conclusions regarding mortality at higher ages (Kibele et al., 2008).

Availability and Comparability of Demographic Rates

Demographic indicators for various countries are compiled by the United Nations, Eurostat, and the Organisation for Economic Co-operation and Development. These data contain a wide array of demographic measures (such as the share of nonmarital births, marriage rates, divorce rates, life expectancies, migration flows, etc.). However, data across countries are often not fully comparable. Migration data in particular often are not comparable (as was mentioned above). In addition, discrepancies also exist in the way in which births and deaths are documented. One difference concerns the documentation of the age at which an event occurred. Some countries collect data on vital events by the age reached during the year (ARDY method). Other countries record vital events by the age in completed years (ACY method). The Human Mortality Database (HMD) (2002–present) run by the University of California at Berkeley (United States) and the Max Planck Institute for Demographic Research (Rostock, Germany) (http://www.mortality.org/) seeks to harmonize mortality statistics. The database includes death counts, population counts, and life tables for more than 30 countries. The Max Planck Institute for Demographic Research (Rostock, Germany) and the Vienna Institute of Demography (Vienna, Austria) (http://www.humanfertility.org/) offer a comparable database for fertility data: the Human Fertility Database (HFD). The HFD contains birth counts, population data, and age-specific birth rates. A special effort has been made to collect order-specific fertility data, which allows for the generation of indicators such as the age at first childbearing or the share of childlessness by the birth cohorts of women.

Period and Cohort Measures

Demographic indicators may be distinguished by period and cohort measures. Period rates relate the number of events to the average population size in a given year. The *crude birth rate*, for example, relates the number of births to the midyear population in a certain year. The *general fertility rate* uses the number of women aged 15–50 as the denominator, based on the fact that only women are at risk of childbirth. The *total fertility rate* (TFR) is a measure that standardizes for the number of women of a given age. The TFR is conventionally interpreted as the number of children a woman bears over her lifetime if she experiences age-specific fertility rates observed in a given period. The decline in the TFR observed in most industrialized countries since the 1960s has been interpreted as an indication of shrinking family size. However, period measures, like the period TFR, are distorted by so-called 'tempo effects' (Bongaarts and Feeney, 1998). Tempo effects mean that annual birth (or death) rates may decline as vital events are postponed until (or occur) later in the life course (*see* Demographic Measurement: General Issues and Measures of Fertility). For fertility behavior, this is a nontrivial issue, because the age at childbearing is constantly subject to change. The increase in age at first childbearing has risen since the 1960s in most industrialized countries, a process which has suppressed period fertility rates. For mortality development, tempo distortions have resulted in an underestimation of longevity in contemporary societies (Oeppen and Vaupel, 2002). While demographers have developed so-called 'tempo adjustments' to correct for the distortions of demographic period measures, there is so far no consensus regarding which method should be used to correct for tempo effects (Sobotka and Lutz, 2011).

Demographic events, like births or deaths, are events that are situated in the life course of individuals. Period measures, which are by definition focused on a cross section, cannot fully account for this fact. Period measures are essentially 'synthetic' measures of demographic behavior. Cohort measures that give the number of children a cohort of women have had over their lives more accurately describe the fertility behavior of a population. The same applies to cohort mortality rates, which give the life expectancy of a certain birth cohort. The above-mentioned Human Fertility Database (HFD) and Human Mortality Database (HMD) contain cohort indicators that make it possible to display cohort fertility and mortality trends. The disadvantage of using cohort data is that the behavior of a cohort can only be fully assessed for 'completed' cohorts (Ni Bhrolchain, 1992). For fertility behavior, this means that the total number of children can be determined only after the members of a respective cohort have reached the end of their childbearing years. For mortality, this means that the last

member of a given cohort must have died before the cohort's life expectancy can be generated.

Conclusion

Vital statistics continue to be a prime source of data for identifying overall fertility, marriage, divorce, and mortality trends. But because of the small number of items that are usually included in this type of data, the extent to which these statistics can be used to explain the various facets of demographic behavior is limited. In particular, these statistics fall short in their ability to capture the recent changes in family patterns. Most national statistical offices only provide marriage and divorce data, and are unable to provide information about the occurrence and stability of cohabitation and other forms of nonmarital living arrangements, which have become prevalent in recent decades.

Vital statistics are also limited when it comes to generating 'real exposure rates' (or 'occurrence–exposure rates'). Demographic rates are generated by dividing the number of events by the '*exposure population*.' The exposure population is generated by summing up the 'person-years' or 'person-months' that a population has been at risk of experiencing an event. For *absorbing* demographic events like death, exposure may be generated from population counts. For *recurrent* demographic events – like births, marriages, and divorces – it is more cumbersome to generate real exposure rates based on the overall population counts. For second births, for example, only women who have experienced a first birth are at risk of having a second one, and thus only those women should be used to calculate second birth rates. For divorce behavior, only married individuals are at risk of experiencing divorce, and thus only these individuals enter the risk population. Failing to accurately pinpoint the risk population is a frequent distortion of demographic rates. However, most national statistics are unable to provide the types of information that would enable researchers to generate real exposure rates for fertility and nuptiality indicators. Survey data and administrative data must fill this gap. The question of to what extent 'big data' may be used for demographic analysis in the future remains open to discussion.

See also: Abortion, Demography of: United States; Adoption, Demography of; Assimilation of Immigrants; Assortative Mating in the Marriage Market; Biomarkers in Demographic Research; Census Microdata; Censuses, Population: Comparative International Aspects; Censuses: Current Approaches and Methods; Censuses: History and Methods; Cohabitation: United States; Conditional Cash Transfers: Influence on Marriage and Fertility; Demographic Measurement: General Issues and Measures of Fertility; Demographic Measurement: Nuptiality, Mortality, Migration, and Growth; Demographic Models; Demographic Techniques: Data Adjustment and Correction; Demographic Techniques: Family Reconstitution; Demographic Techniques: Indirect Estimation; Demographic Techniques: Inverse Projection; Demographic Techniques: Lexis Diagram; Demography: History Since 1900; Dowries and Other Marital Transfers; Ethnic Intermarriage; Event History Analysis in Continuous Time; Evolutionary Demography: A Synthesis of Two Population Sciences; Experimental Methods in Survey Research in Demography; Family Size Preferences; Family Theory: Competing Perspectives in Social Demography; Family Theory: Economics of Childbearing; Family Theory: Economics of Intergenerational Relations; Family Theory: Economics of Marriage and Divorce; Fatherhood; Fertility Change: Quantum and Tempo; Fertility Transition: Cultural Explanations; Fertility Transition: Latin America and the Caribbean; Fertility Transition: Middle East and North Africa; Fertility Transition: Southeast Asia; Fertility Transition: Sub-Saharan Africa; Fertility Trends in the Formerly Socialist Countries of Europe; Fertility and Culture: Anthropological Insights; Fertility and Social Networks; Gender, Time-Use, and Fertility Recovery in Industrialized Countries; Hutterite Demography; Internal Migration in Industrialized Countries; Internal Migration: Developing Countries; International Migration by Ethnic Chinese; International Migration by Ethnic South and Southeast Asians; Life Table; Microsimulation in Demographic Research; Migration, Theory of; Migration: Cultural Aspects; Mortality Crossover; Mortality: The Great Historical Decline; Multilevel Models in Demography; Old Age: Definitions, Theory, and History of the Concept; Organizations and Culture; Period and Cohort Analysis in Demography; Population Cycles, Formal Theory of; Population Dynamics: Classical Applications of Stable Population Theory; Population Dynamics: Mathematic Models of Population, Development, and Natural Resources; Population Dynamics: Momentum of Population Growth; Population Dynamics: Probabilistic Extinction, Stability, and Explosion Theorems; Population Dynamics: Theory of Nonstable Populations; Population Dynamics: Theory of Stable Populations; Population Forecasts; Repartnering and Stepchildren; Risk Screening, Testing, and Diagnosis: Ethical Aspects; Second Demographic Transition; Sexuality: Cultural Aspects; Twin Studies in Demography.

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