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Population Policy Dilemmas in Europe at the Dawn of the Twenty-First Century

PAUL DEMENY

IN HIS 1922 BOOK, *The Decline of the West,* the German historian Oswald Spengler ventured a long-range demographic prediction. In the unfolding final cycle of their civilization, he wrote, Europeans, as individuals, still set high store on life. But the collective continuity of populations was no longer valued. An appalling depopulation was beginning that would continue for centuries.

The book in its time was highly influential; today it is largely forgotten. But current demographic changes in many countries, while still at the periphery of public consciousness, are bound to lend the issue of impending population decline a new urgency in the years to come. In Europe, which has been experiencing unprecedentedly low levels of fertility, these changes demand special attention. In what follows, I discuss political and social problems inherent in Europe's demographic predicament.

Demography

Twentieth-century demographic developments in Europe at first blush seem to contradict the Spenglerian demographic prognosis. Despite the huge losses of life caused by the two world wars, and despite the massive demographic bloodlettings engineered by the two totalitarian state systems that darkened the history of the continent in the first half of the century, Europe's population grew from an estimated 422 million in 1900 to 548 million in 1950, or by some 30 percent. In the next 50 years—which, apart from few exceptions, most notably the Balkan wars of the 1990s, was a rare period of peace and much material progress—population size grew by another one-third, from 548 million in 1950 to 727 million in 2000. These figures are for an expanded version of the continent's de Gaullean definition: for a Europe not just from the Atlantic to the Urals, but one including the entire north Asian Russia—a Europe that stretches from Lisbon to Vladivostok.

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But on a closer look at macrodemographic indexes for the continent, the picture of seemingly steady population growth quickly becomes more nuanced. In describing that picture, I draw on the population estimates and projections ("medium variant") of the United Nations Population Division, issued in 2001. Two features of Europe's demographic situation deserve special notice.

One is the recent rapid drop in the rate of population growth. Between 1950 and 1975, the average annual rate of growth was 8.4 per 1000 population. During the most recent quarter-century this index fell to 2.9 per 1000. By the turn of the century negative natural population growth rates—growth rates that do not take into account migration—made a pervasive appearance. According to statistics issued by the Council of Europe, in 2000 17 European countries registered a decrease—the number of deaths exceeded the number of births. It is evocative to list these 17 countries. In alphabetic order they are: Belarus, Bulgaria, Croatia, the Czech Republic, Estonia, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Moldova, Romania, Russia, Slovenia, Sweden, and Ukraine. In another four countries, Austria, Poland, Slovakia, and Spain, the difference between the numbers of births and deaths was still positive, but less than 1 per 1000—that is, their numbers were practically equal.

But simply comparing these two statistical data—those for births and deaths—conceals the true magnitude of the tendency toward diminishing population increase. In the countries of Europe the age distribution reflects the influence of the higher fertility of earlier decades. The proportions of the population of reproductive age around the turn of the twenty-first century are higher than those that could be maintained at the current levels of fertility. Thus, for example, Europe's female population under age 20 in 2000 was 87 million while the number of women between age 20 and 40—that is, a population also consisting of 20 annual birth cohorts—was 105 million. Even if all those under 20 in 2000 survive during the following two decades, the simple maintenance of the number of births in 2000 would require a 20 percent rise in fertility. Taking mortality into account would of course further increase that percentage.

A more precise index of population dynamics in any given period assumes the stabilization of the then current levels of fertility and mortality. It also assumes a closed population, that is, no in- or outmigration. Around 2000, the total fertility rate (TFR)—the average number of children a woman would have by age 50 based on the then current age-specific fertility rates—in Europe as a whole (calculated as the population-weighted average of the individual country TFRs) was 1.37. At the same time, the most concise index of mortality, the expectation of life at birth, was, in round numbers, 69 years among males and 78 years among females. These statistics permit calculation of the net reproduction rate—an index of the corresponding stable population. In this instance that rate is 0.645, indicating the relative size of succeeding generations once the population is stabilized. In other words,

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assuming constancy of Europe's 2000 fertility and mortality rates, a generation of 1000 persons would be replaced by a second generation of 645, followed by a third generation of 416, a fourth of 268, and so on. If we take the generational distance as 30 years—a reasonably close approximation in Europe—the implied annual rate of growth in the stable population, the so-called intrinsic rate of growth, is –0.0146 or minus 1.46 percent per year. Such a rate of decline would bring a population to half of its original size in 47 years. After a century—a short period in the life of a country—the starting population size of 1000 would have fallen to 232.

The main moving force in the calculation just presented is the total fertility rate, in this instance, as noted, 1.37. Mortality, assuming that under age 50 it is very low (which is a good approximation everywhere in contemporary Europe), has no significant influence on the calculation of the intrinsic growth rate. In the long run, the rate of population growth is largely independent of the improvement in the survival chances at ages above 50. The calculation is more sensitive to the assumed generational length, but the variation in that index is fairly narrowly constrained. In the short and medium term, transition toward a lower mean generational length would be growth-promoting. But if fertility remains below replacement, the negative intrinsic growth rate would deplete the population more speedily, since the succeeding smaller and smaller generations would replace one another more quickly. A higher generational length would, in the long run, stretch out the decline somewhat, moderating its annual tempo.

The above figures show that in speaking about "depopulation that will last for centuries," Spengler in fact exhibited a fair degree of optimism. Should Europe's reproductive performance persist at the year-2000 level, that is, at a TFR of 1.37—just one-third above the level of fertility in a generalized one-child-per-woman population—population decline would occur at a much faster clip than was assumed by the gloomy historian.

But is population size in fact very important? Before continuing with sheer demographic description, one should pose this question so as to provide reassurance that the exercise is justified. If for a moment one pays no heed to the changes in the age structure that population decline inevitably generates—and, of course, if population decline is rapid, such changes can hardly be ignored—perhaps the process of moving toward a smaller population size may be contemplated with equanimity. At the turn of the sixteenth century, the total population of Europe was barely one-tenth of its present size, roughly 80 million. Yet Renaissance Europe was not short, for example, on artistic and literary creativity. In the next few centuries a flowering of scientific and technological creativity also followed, despite relatively modest population growth. And as population growth accelerated after 1800 as a result of the decline of mortality, the resulting increased population size and its economic and environmental consequences were welcomed with less than undivided enthusiasm. Europe of the industrial

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revolution was regarded by many as overpopulated. The masses of European emigrants, voting with their feet, or rather by buying steamship tickets, seemed to certify that judgment as valid. By the same token, perhaps, a slow twenty-first-century European demographic decompression—if that process is the aggregate consequence of voluntary individual decisions—could be welcomed as a healthy spontaneous self-correction.

But here the second salient aspect of Europe's demographic situation imposes a major cautionary note. Even apart from structural changes and attendant economic adjustment problems—population aging, above all—there is a geopolitical dimension to population size that can hardly be ignored. Europe is not an island, surrounded by uninhabited deserts or endless oceans. It has neighbors that follow their own peculiar demographic logic. On the global level, in the eighteenth and nineteenth century, Europe's steadily increasing economic, technological, scientific, and cultural weight and influence, and of course its military and political power, went hand-in-hand with, and in no small measure resulted from, the continent's growing demographic ascendancy. Europe's population in 1800 (owing to deficient population statistics, estimates of that share for earlier times are highly unreliable) amounted to 20 percent of the global population. Fifty years later that proportion rose to 22 percent and by 1900 to 24 percent.

One might note that that share would be significantly higher if it included the population of Europe's overseas offshoots, joint results of the continent's demographic dynamism and its economic and technological edge over the rest of the world. If one affixes that label only to the United States, Canada, Australia, and New Zealand—somewhat unreasonably excluding the Latin American countries that culturally and in part ethnically are also of European ancestry—Europe's demographic weight by 1900 well exceeded 30 percent of the global total. But excluding those offshoots is defensible: they are all independent now, and demographically their behavior deviates from that of the old country.

Remaining with the more narrowly defined concept of Europe, its share of the world's population peaked in the second decade of the twentieth century, at 25 percent. By midcentury the share fell back to 22 percent; by 1975 it was 17 percent, and by 2000 it was 12 percent—only half of the share just 80 years earlier. The continent thus exhibited rapid demographic marginalization during the twentieth century. And that marginalization is likely to continue in the twenty-first century at an accelerating speed. According to the UN's medium projection, Europe's share of the global total will be about 7 percent in 2050.

Russia and Yemen: A comparison

In the European context, the dramatically swift potential population decline (swift, if viewed in a time perspective appropriate for a nation, if not

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for the individuals who compose it), the attendant radical transformation of the age structure, and the possibly drastic loss in relative population size compared to other regions may be best illustrated by the example of the continent's sickest country in demographic terms. For perhaps as much as the last quarter-century, that uncomplimentary epithet fits Russia most aptly. Russia happens to be the most populous country in Europe—most populous, that is, until that title passes to Turkey, an event likely to occur about midway in the present century. That switch of course assumes that, implausible as this may sound today, Turkey's tentatively promised admission into the European Union will take place, certifying that country as a bona fide European one.

To gain a broader perspective on the contemporary demographic dynamics of Russia, it is appropriate to start at the middle of the twentieth century. Figure 1 is helpful for this purpose. The left-side panel shows the age distributions of Russia's population, by sex, in 1950 and 2000 and as projected to 2050. The 1950 sex ratio—the number of males in relation to the number of females—is extraordinarily low; it reflects, inter alia, the massive losses during World War II. For example, in that year the number of women between age 25 and 55 exceeded the number of men in the same age group by more than two-thirds: in those ages there were 1676 women for every 1000 men. The 1950 total population of Russia was 103 million.

For purposes of illustration, let us compare Russia's population size, age distribution, and population dynamics with a population outside Europe. Selecting another extreme case for this purpose is appropriate in the present context. The right-side panel in Figure 1 shows the age-sex distribution in Yemen—a somewhat idiosyncratic yet telling juxtaposition of two populations of very different make-ups. Yemen's population in 1950 was 4.3 million, a small fraction of Russia's population size. (In the figure, the data for the two countries are plotted on the same numerical scale.)

The second part of the last century witnessed a substantial growth in Russia's population and also the attenuation of the war's impact on the balance of the sexes. By 2000 the population had grown from the 1950 figure of 103 million to 145 million. But the most conspicuous features of the age distribution in 2000 are the drastic relative decrease in the size of the youngest age groups—the base of the "population pyramid"—and the pronounced increase in the number of women relative to the number of men in the elderly population. The former reflects the steep decline of fertility, the latter is the result of the increasingly disadvantageous pattern of male mortality. Around 2000, the expectation of life at birth for women in Russia was respectably high by international standards: its value of slightly above 72 years was roughly the same as found, for example, in Thailand. The same indicator for men was, however, only 60 years—lower than, for example, in India or Indonesia. The magnitude of the difference between male and female life expectancy—some 12 years—set a dubious international record.

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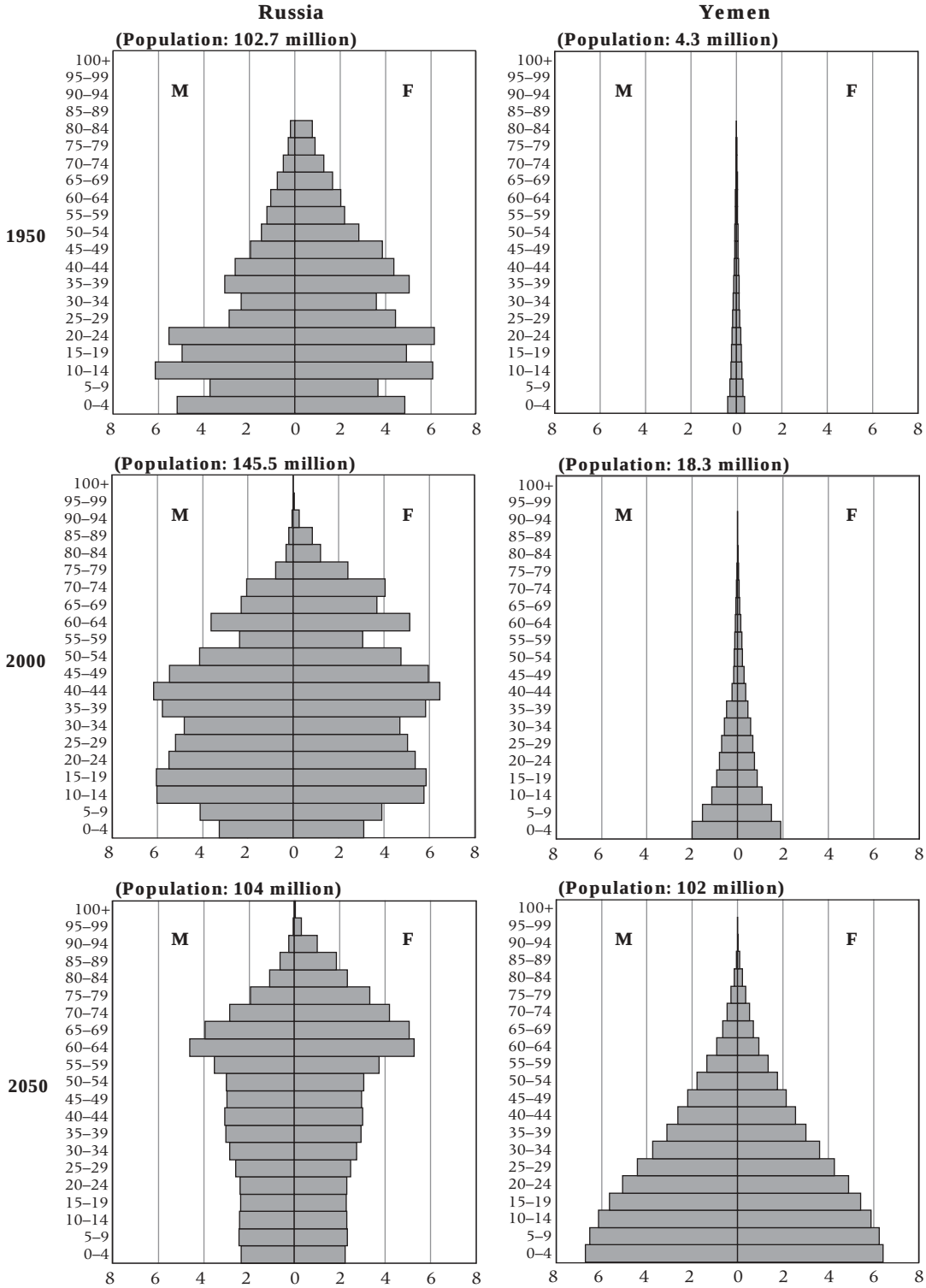
FIGURE 1 Population size and age distribution, Russia and Yemen: Estimates and projections 1950, 2000, and 2050



NOTE: Horizontal scale in million persons separately by sex.
SOURCE: United Nations 2001.

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As to population increase, while Russia's population grew by 42 percent in 50 years, in Yemen during the same period the population increased from 4.3 million to 18.3 million, or more than fourfold.

What can be expected in the next 50 years? Russia's period total fertility rate around the turn of the century was 1.14—barely above a one-child-per-woman average. This, with Russian mortality, implies a net reproduction rate of 0.54 and an intrinsic growth rate of slightly less than minus 2 percent per year. Such a dynamic would shrink a population to one-third of its original size within 50 years. There is hardly any historical precedent for such precipitous demographic collapse.

The medium UN population projection for Russia to 2050 anticipates a rather grim but less catastrophic demographic future. For one thing, in the coming decades the tempo of population decline is slowed by the age distribution, which, as inheritance from past demographic behavior, still shows a relatively high proportion of women in the childbearing ages. But, more to the point, the UN projections stipulate, as a deus ex machina, a more than 50 percent rise in the level of fertility during the first half of the twenty-first century. Also, they assume that the expectation of life at birth will rise during that period to above 73 years for men and above 80 years for women. These optimistic assumptions, however, can only moderate the tempo of the anticipated population decline. By 2050 the projected population size would be 104 million, almost exactly back to the 1950 level. The 41 million population loss implied by that figure affects mostly the younger age groups, hence it is accompanied by very rapid population aging. More than half of the projected 2050 population would be above age 50; 28 percent would be above 65. A tendency toward prolonged further rapid population decrease is inherent in such an age structure, even if fertility somehow were to rise well above replacement level.

During the same 50 years, Yemen's population would grow, according to the UN, from 18.3 million to 102 million, that is to say, to 24 times its 1950 size. The 2050 age distribution, furthermore, imparts a tendency for continuing rapid population growth beyond 2050. Even if fertility dropped well below replacement level, the growth momentum would keep population size during the second part of the century much above its 2050 mark.

The sharp contrast between the two projections outlined above is shown in Figure 2 in terms of total population size. The figure can be seen as emblematic of the potentially radical transformation of the global demographic picture likely to occur during the twenty-first century.

What are the proximate demographic factors explaining the extraordinarily rapid growth of Yemen's population since 1950? Outmigration has been very modest, leaving only mortality and fertility as the relevant variables. Around 1950, expectation of life at birth in Yemen was 32 years for the sexes combined—worse than it was in Europe some 200 years earlier. By 2000 it had almost doubled, reaching an estimated 62 years. Among

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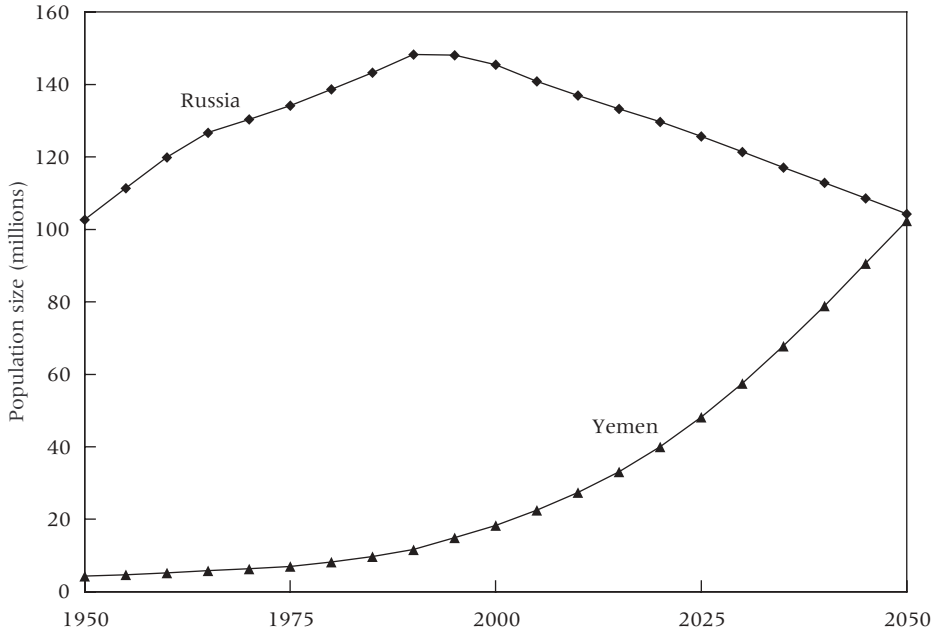
FIGURE 2 Population size of Russia and Yemen: Estimates and projections 1950–2050



SOURCE: United Nations 2001.

males expectation of life exceeded that in Russia by 2 years. Yet fertility stubbornly stayed at a very high level, estimated by the UN (admittedly on a rather weak statistical base) as an average of 7.6 children per woman. A similarly high level in the contemporary world can be observed only among the Palestinian population of the Gaza Strip and in Niger. The youthful age distribution generated by so high a fertility level guarantees continuing rapid population growth; further improvement of mortality beyond its 2000 level is now only a weak growth-promoting factor. But what should be assumed about the future course of fertility? If it remained at 7.6, the rate of population growth would creep up from an annual rate of 4 percent to 4.5 percent by 2050. This would bring Yemen's population to 159 million, 37 times the size it was a century earlier. This would seem, prima facie, a wholly infeasible outcome.

How did the demographers at the United Nations solve this apparent problem? Bravely, if not fully convincingly. Yemen's economic and social conditions—including, notably, the subordinate status of the country's female population and its low levels of literacy—provide a weak foundation for anticipating early and substantial fertility decline. The UN projection nevertheless assumes that by 2050 the Yemeni total fertility rate will fall to 3.35, that is to less than half of its 2000 level. As to mortality, the assumption

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envisages a further increase of the expectation of life by some 14 years between 2000 and 2050. The resulting population size (102 million) and its age distribution (50 percent of the population still younger than 21 years of age) are shown in the age pyramid in the lowest right-side panel of Figure 1.

The validity of such a "demographic" projection, that is, a projection that does not explicitly introduce consideration of possible economic-ecological constraints on population expansion, may be viewed with legitimate skepticism. Even a Yemen of 102 million inhabitants in 2050—or 57 million less than would be produced under the constant-fertility assumption—is highly implausible. For example, only 3 percent of the country's territory is rated as arable land, and fresh water resources are severely limited. Yemen's oil production and reserves are a major prop for its economy, yet these resources are modest in comparison to those of the oil-rich Arab countries and to those of Russia or even of Norway—the latter a country with a population of fewer than 5 million. The likelihood of a Malthusian crisis in the twenty-first century is increased by the high growth potential the 2050 age distribution will still represent. Barring a major rise in mortality, the Gordian knot could be cut by introducing the assumption of an early and even more rapid fertility decline. But the forces that would generate such a behavioral change would have to be made explicit. They are anything but obvious.

Figure 2 presents the detailed time series of the estimated and projected total populations of Russia and Yemen for the 100-year period from 1950 to 2050. Heuristically, the series can readily be extrapolated beyond 2050. The picture is little short of remarkable. Yemen's population, which in 1950 was one-twenty-fourth of the then population of Russia, after a century catches up with—and, beyond midcentury, is expected to exceed—the size of Europe's most populous country.

The European Union and its southern hinterland

But, it may be objected, Russia and Yemen are extreme cases, exaggerating the magnitude of the shifts in the relative population sizes of European and extra-European countries that have been occurring in recent decades and are foreseeable for the future. Comparing the population dynamics of the more representatively "European" population of the European Union with the population of neighboring lands to the south and southeast of the continent might present a picture both more balanced and of greater contemporary interest. Such a comparison—again in terms of total population size and age-sex distribution for the years 1950, 2000, and 2050—is shown in Figure 3. The European Union presented there is not the current association of 15 member states but, anticipating an imminent development (formally to take place on 1 May 2004), the enlarged EU, comprising 25 coun-

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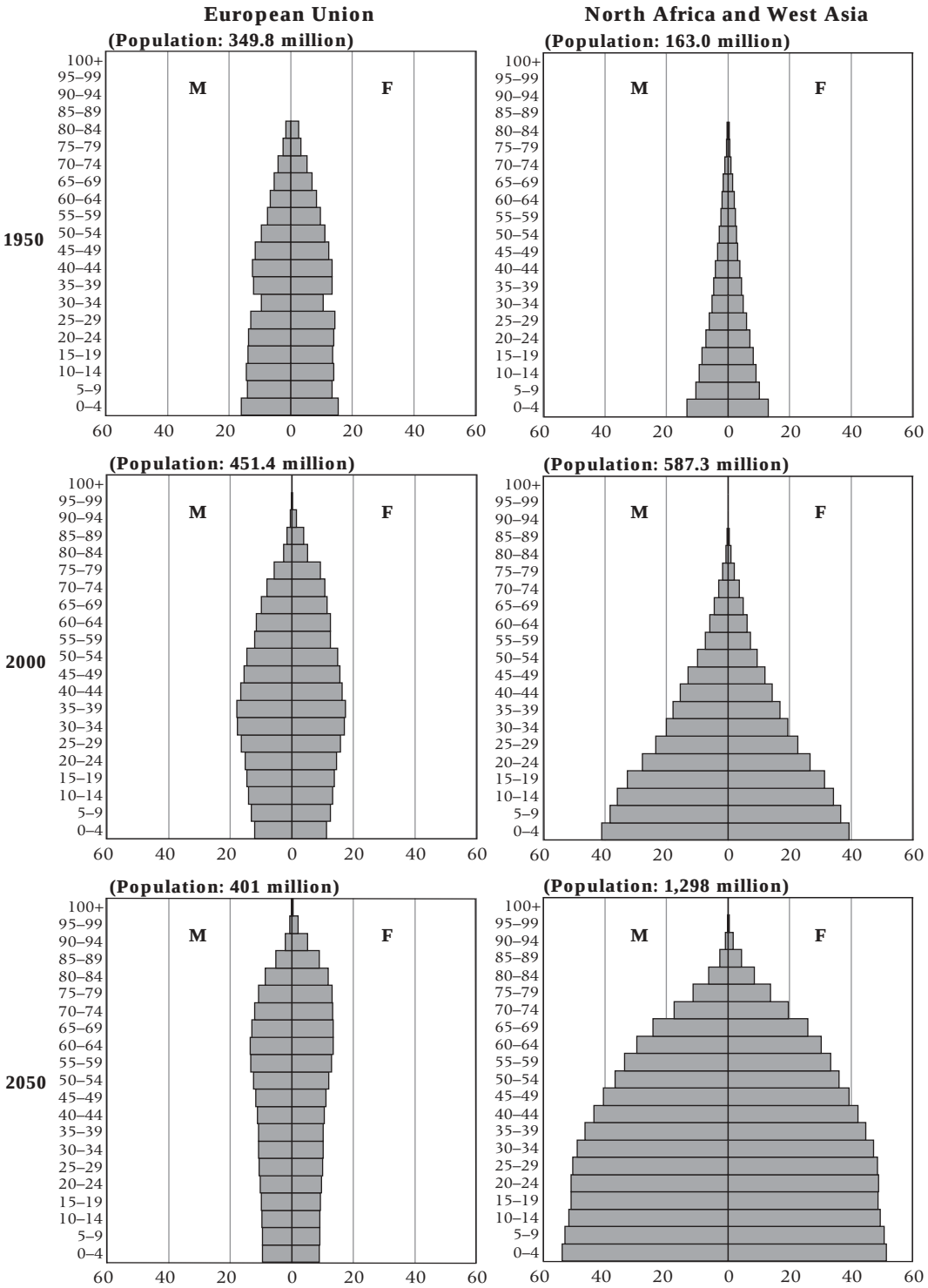
FIGURE 3 Population size and age distribution, European Union (25 countries) and North Africa and West Asia (25 countries): Estimates and projections 1950, 2000, and 2050



NOTE: Horizontal scale in million persons separately by sex.
SOURCE: United Nations 2001.

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tries. As the EU(25)'s contrasting southern and southeastern neighborhood, let us somewhat arbitrarily select the countries between India's western border and the Atlantic Ocean. If we exclude from this assemblage the countries of central Asia that were part of the former Soviet Union, those of Muslim Black Africa, and Israel, we are again left with 25 countries.* To these, as a 26th unit, the Arab population of the Israel-occupied territories of Palestine is a logical addition. A conspicuous unifying characteristic of this group of countries is that they are all exclusively or predominantly Muslim. But demographic patterns that go with that cultural marker are diverse—the differences, say, between fertility or mortality in Tunisia and Afghanistan are wide—hence a more neutral descriptive label may be preferable. Let us call this group of countries in North Africa and West Asia the European Union's southern hinterland—a kind of near-abroad to the continent's western half. The obviously Eurocentric label is justified by the chosen topic of the present discussion. Seen from a different vantage point, the European Union could be described with equal accuracy as the hinterland of North Africa and West Asia.

In 2000 the EU(25) comprised some 451 million persons. The graph of the age structure of this population yields a less jagged age pyramid than that of Russia, but its character is unmistakably similar. The numerically largest 5-year age group is ages 35–39; below them the successive cohorts are smaller and smaller. The number of those under age 5 amounts to less than two-thirds of the number aged 35–39. In the older age groups the number of women well exceeds the number of men, but the numerical imbalance is less extreme than in Russia. In the EU(25), still referring to 2000, the number of women above age 65 was 49 percent higher than the number of men. Above age 80, this percentage was 125.

The UN medium projection assumes that the total fertility rate will rise from its level of 1.4 in 2000 to 1.82 by 2050. It also assumes a net average annual number of 500,000 immigrants from outside the EU(25), or roughly 25 million persons during the first half of the century. Expectation of life at birth for the two sexes combined is also assumed to rise, to an approximate average of 83 years. Despite these stipulations—each of them population-enhancing—by 2050 the size of the population would fall by 50 million, that is, to 401 million. The tempo of population decline would also accelerate: by midcentury it would be 0.5 percent, or a net loss of 2 million, annually. In 2050 the largest 5-year age group would be those aged 60–64 among males and 65–69 among females. This is an age structure with no precedent among sizable populations. By 2050, half of the population would be older than 50 years, and the share of the population aged 65 years and older would be more than twice as large as the share under age 15 years: 30 percent versus 14 percent.

*The countries included in the 25 are: Afghanistan, Algeria, Bahrain, Djibouti, Egypt, Eritrea, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen.

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The most commonly used index for describing the potential demographic impact on the relationship between the economically active and the economically dependent segments of a population is the "support ratio," the ratio of those aged 15–64 to those aged 65 and older. It is a far from ideal index; in economically advanced countries the labor force participation rate of those under age 25 is fairly low, and, with the increasing demand for higher skill levels it tends to diminish further. Similarly, in the age groups approaching the arbitrary cutoff point of age 65, the proportions economically inactive are fairly high and in the most recent decades have shown a tendency to increase. With these caveats, the fall of the EU support ratio from its year-2000 level of 4.25 to 1.86 by 2050, even though drastic, is likely to understate the magnitude of the economic adjustment population aging would impose on society.

The demographic dynamics of the EU(25)'s southern hinterland show a strikingly different pattern during the 100-year span from 1950 to 2050, and indeed beyond. The total population of that 25-country group was 163 million in 1950, less than half (46 percent) of the EU(25)'s population calculated for that year. During the next 50 years the hinterland's population nearly quadrupled, reaching 587 million by 2000, thus surpassing the EU(25) population by 30 percent. For the first half of the twenty-first century the UN population projections assume a further improvement of mortality (a rise in the expectation of life at birth from 63 to 73 years), average outmigration somewhat over a quarter-million per year, and, most importantly, a decline in the total fertility rate from 3.9 to 2.3. The 2050 population size resulting from these assumptions is 1.3 billion, more than triple the then expected population of the European Union. These benchmark figures reflect the logic of the underlying demographic dynamics. Between 1950 and 1975 the population of the EU(25) grew by an annual average of 2.7 million. Between 1975 and 2000 the annual increase dropped to 1.3 million, and, as noted earlier, between 2000 and 2050 an annual average *decrease* of 1 million is expected. The corresponding absolute growth figures in the hinterland are, respectively, 5.7 million, 11.3 million, and 14.2 million. Figure 4 depicts this radical shift in the comparative population size of the two areas during the 100-year span.

It may be objected that the area of the "hinterland" is defined in an overly expansive fashion. Does Pakistan really belong to it, for example? An impressionistic if fairly persuasive affirmative answer to the question might be obtained by a visit to many large cities in Britain. Indeed, such visits there and also to urban areas of the European mainland might suggest that the hinterland is far wider than defined above. Potentially, and in part already de facto, it could be construed as also comprising the entire African continent, not only its northern fringe. The population of such a comprehensively defined hinterland in 1950 was still smaller (by 11 mil-

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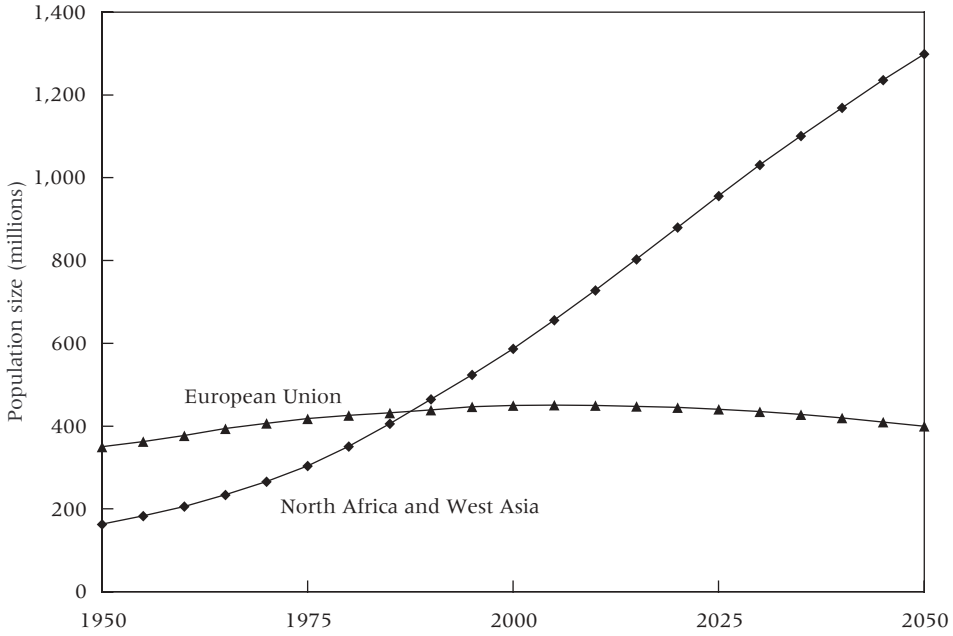
FIGURE 4 Population size, European Union (25 countries) and North Africa and West Asia (25 countries) : Estimates and projections 1950–2050



SOURCE: United Nations 2001.

lion) than the EU(25)'s. By 2000 the expansively defined hinterland had a population 800 million greater than did the EU(25). By 2050 it is projected to exceed the EU(25) population by 2.7 billion.

Policy response

What might be the European reaction to this tectonic change in relative demographic weights? One possible variant is the politics of closed eyes and ears. That which is ignored causes no headache. It would be difficult to claim that European attitudes toward demographic matters are exempt from this comfortable stance. It would be easy to demonstrate that during the last quarter-century the European press, the continent's informed opinion, and its proverbial man in the street were agitated far more deeply by the perceived problems of the ozone hole, the state of the Amazonian rain forest, or the menace of global warming than engaged with problems, real or supposed, inherent in ongoing demographic processes, whether at home or in the neighborhood. A reasonable explanation of this disproportion may be simple: the former problems, large as they may be, are potentially solvable—either through adjustment or by prevention. And the technological means

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for solution, at least in principle, can be made accessible, economically feasible, and politically acceptable in a modern, affluent, and democratic society. In comparison, deliberately modifying the factors, especially fertility and international migration, that underlie demographic change—either within or outside the relevant national borders—appears to be far more difficult. Indeed, given existing value systems and conflicting group interests, the political system may even decide that solutions are impossible. In the latter case, the issue is rightfully kept off the political agenda. That which has no solution can be held to be not a problem.

Indeed, some dimensions of comparative demography must be taken as given—hence beyond effective human control. The above-cited statistics and projections make it obvious, for example, that Europe's demographic marginalization within the global population (as compared to Europe's relative status in earlier times) is a fait accompli, one that is bound to be further accentuated during the present century. Apart from catastrophic events of incalculable magnitude, there is no demographic scenario that could substantially modify the ongoing shifts in relative population sizes of the sort illustrated above.

The European demographic predicament of course is not unique. In varying degrees it also characterizes the status of all economically advanced areas in comparison to the regions that the UN labels as less developed. Japan's demographic configuration, for example, very much resembles that of the European Union. Compared to these regions of very low fertility, North America—the United States and Canada—shows more demographic dynamism: higher fertility and more openness to immigration. As a result the North American population, whose size today is well below that of the EU(25), by 2050 is likely to exceed the EU(25)'s 400 million population projected for that year. But, as is evident from some of the population figures mentioned above, 400 million is a modest share of the growing global total, and modest even in comparison to other regional populations. Thus North America's population size in 1950 was still slightly larger than Latin America and the Caribbean's. But by the turn of the century the latter region had a population some 200 million greater than North America, and by 2050 the difference is projected to reach some 370 million.

Lowering population growth

If the evolution of the north–south demographic contrast in the Western Hemisphere is much less dramatic than the one characterizing Europe and its southern hinterland, that is in part the consequence of North America's comparatively faster population growth. But an even more important factor attenuating the shift in relative population size between north and south in the Americas was the earlier onset and speedier progress of Latin America's

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demographic transition as compared to the transition observable in Europe's southern hinterland. This difference clearly suggests that the most effective means that would have moderated the drastic shift that occurred in the last 50 years of the twentieth century in relative population size between the global north and the global south would have been the speedy reduction of southern birth rates, and a timing of the onset of the decline that would have closely followed the rapid post–World War II reduction of death rates. The implied policy agenda still applies, albeit with far less potential, in the first decades of the present century.

This, of course, is no new discovery. Shortly after World War II, it became obvious to demographers and to other informed observers that, absent an early and rapid decline of fertility, the inexpensive and easily transmitted new methods of controlling the lethality of infectious diseases and the establishment of an international economic order favorable for development would result in an unprecedented acceleration of the rate of population growth in the less developed world. The biblical injunction of "Be fruitful and multiply" was readily obeyed in the past by all existing populations; if that were not the case these populations would have long exited from the stage of history. But by the middle of the twentieth century, with a global population of 2.5 billion, the second part of the biblical order should have also conveyed a message: "Replenish the earth." How a replenished earth is to be defined is, of course, a matter for human judgment. That the right definition is unlikely to demand the diligent cultivation of every square meter of willing land, the squeezing of the economic machine to the limit of its technological potential, and the accommodation of the greatest possible human numbers, overruling every qualitative and aesthetic consideration to the contrary, is more or less agreed everywhere by all. But differences in this regard between "more" and "less" can be very great among individuals, and the concept of the replenished earth can also change over time. As is evident in documented modern history, how and with what relative weights and with what success individual judgments are summed up, shaped, and reconciled through the institutional structures of a polity can and do yield very different results.

On this score the Bible, to quote it again, expresses classic Malthusian pessimism: "When goods increase, they are increased that eat them." If so, economic improvements—whether originating from man's technological prowess or from gifts like manna from heaven—do not lead to a higher standard of living but are absorbed in full by increased population numbers. More commonly, there are compromises between the two polar solutions—greater population versus higher quality of life. But precisely where the compromise is struck can vary greatly from society to society. This is borne out by the different development records of countries during the last 50 years. Compared to any past era, the second half of the twentieth cen-

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tury was a period of unprecedented worldwide economic progress. The claim applies with special force to the years between 1950 and 1973. During that period the annual growth rate of gross domestic product was higher than 4 percent in all world regions. In Japan that rate exceeded 9 percent, in Asia outside Japan and in Latin America it exceeded 5 percent, in Western Europe it was 4.8 percent, and in Africa 4.4 percent. But while in Japan and Europe the bulk of this rapid growth translated into rising per capita incomes, in the countries of high fertility and thus rapid population growth a disproportionately high share of economic growth was absorbed in accommodating the rapid increase in population size. Goods increased but they that eat them increased too.

These two factors—increase in population and increase in GDP—are of course not completely independent: population increase tends to stimulate economic growth. Nevertheless, the range of possible tradeoffs between them is fairly wide. Demographic growth has to be paid for in economic terms, and when that growth is rapid the price may be high and especially exacting when average income levels are low.

To contemplate a counterfactual: how would people's conditions have changed in the European Union in terms of nutrition, lodging, transportation, environmental standards, adequacy of educational and health services, and many other indicators of the quality of life if the EU(25)'s population had grown at the same tempo as experienced in its southern hinterland—rising from 350 million in 1950 to 1.26 billion in 2000? And how would the economic prospects of the EU(25) change in the coming decades if, in conformity with the same assumption, its population in 2050 were to amount not to 400 million but to 2.8 billion? The questions are so bizarre as not to deserve answers. Yet in 1950 in the less developed countries of the world, similar questions could have been raised in the confident expectation that unless fertility were to fall in tandem with the fall of mortality, a tripling or even quadrupling of the population by the end of the twentieth century was a distinct possibility. And it would follow that per capita gains would be much smaller than could have been obtained with slower population growth. After 1973 the tempo of population growth did slow, but so did economic growth. And the demographic growth still remained sufficiently high that, as a matter of sheer arithmetic, growth of income per capita was very slow, nonexistent, or even negative, as was the case during the last decade of the century in a number of countries of Africa.

International action programs after World War II that were aimed at lowering mortality and that played a key role in triggering what, with a degree of poetic license, used to be called the population explosion, were welcomed in the developing world. The same cannot be said about proposals for reducing fertility. True, there were no precedents for international action in that domain. The initiatives to launch family planning programs in

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less developed countries, taken first by private organizations in the United States and later also by the US government, received some support and cooperation in Scandinavian countries and in Britain. Continental Western Europe, not to speak of the countries of the Soviet Bloc, however, long remained skeptical and passive or explicitly critical. The first intergovernmental world population conference, convened at Bucharest in 1974 primarily on American initiative, was meant to invigorate action toward disseminating the newly available birth control technologies in what was then called the Third World. Prominent European critics considered the proposed plans either childish American games or, viewed in a more sinister fashion, prime examples of attempts at crude interference with the exclusive rights of sovereign states. But to justify the claim for the exclusive exercise of sovereignty with respect to demographic growth would require that the deleterious consequences of such growth—increased economic inequality, political turmoil, and pressures for outmigration, to mention only a few—also remain within the borders of the countries experiencing rapid expansion of their populations. Much historical evidence indicates that the prospects for such containment are not good. Thus, potentially the issue of population growth had, and has, a legitimate place on the international political agenda.

The 1974 population conference, adopting a formulation crafted at the First World Conference on Human Rights held in Tehran in 1968, declared that "all couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children." This laudable principle has been endlessly repeated since, although with the qualifier "responsibly" often omitted. The advantage of brevity gained by the truncation is more than counterbalanced by the lopsided "right" that appears to be enunciated by the shortened version. Exercise of such a right obviously assumes that the result of the aggregated free choice of individuals is in harmony with the interest of the particular society, and indeed with the interest of the global society, to which the individuals making the choice belong, or at least that it yields an outcome that can be accepted as tolerable. This stipulation has practical implications with universal validity. For example, should a family in Germany or in America decide to have six children, most of the neighbors would be likely to regard this with admiration provided that the parents satisfied the material needs of the children to the extent considered socially appropriate—something that in these countries most parents would be able to do. Other neighbors would perhaps express disapproval, but this would in no way affect the sovereign right of the parents to choose a large family. It may be noted that the fertility level reflected in the choice of six children need not be considered especially high. It represents less than half of what, on average, would be biologically feasible. Maintenance of such a fertility level among couples living together from a young age presupposes a fairly extensive practice of birth control. And neighbors could not claim

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that a large family necessarily imparts a qualitative disadvantage upon children. From recorded Western history it would be easy to assemble lists of eminent artists, scientists, saints, and poets who were sixth or higher-order offspring of their parents.

It is evident, however, that, under conditions of low mortality, generalization of such fertility behavior would soon prove inconsistent with the public interest. A Germany or a United States that increased its population sixfold in 50 years—as would happen under the stipulated demographic regime—would no longer resemble its earlier self, and the lack of resemblance would not be for the better. Well-functioning societies spontaneously generate informal signals that prompt more socially responsible behavior, reducing average fertility to an acceptable level. If such a reaction were not forthcoming in a timely fashion, states with sound political and legal institutions would soon find the means by which individual fertility choices would be made to conform to the collective interest. Individuals live in a social matrix that can, in the name of the public good, constrain rights even if they are said to be sovereign.

The most drastic application of this logic took place in China. The collectivization of agriculture was a major factor leading to the 1959–61 famine, which caused some 30 million deaths. In the following years the views of the Chinese leadership concerning the consequences of population growth for that country's development changed radically, eventually resulting in the introduction of the obligatory one-child-per-family system. In the rest of the less developed world, fertility transition followed largely classical patterns, exempt, apart from occasional episodes, from heavy-handed government intervention. In countries with intensive economic, political, and cultural ties with the more developed world, fertility decline followed the drop of mortality with relatively short time lags. Family planning programs, typically organized with substantial outside assistance, were helpful in this regard, but the process was fundamentally driven by the joint forces of the changing economic calculus of families concerning the costs and benefits of children and Western cultural penetration affecting aspirations and life plans. In countries where these influences were weak, as was the case in many countries in Europe's southern hinterland, the onset of the fall of fertility was retarded and in a number of cases it is yet to occur.

Geopolitics of population

Tardy fertility decline, as was shown above, has reshaped the relative demographic weights of countries and regions. This continuing process could have far-reaching negative consequences for the stability of the international system. Rapid demographic growth may produce symptoms of overpopulation—inability of a country's economy to satisfy the basic material needs of an

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increasing share of its population or, by a more exacting formulation, inability to improve average levels of welfare in a population of increasing size in the context of increasing material affluence abroad. Overpopulation can undermine domestic political stability in an affected country, with potential spillover effects beyond the country's borders. It can generate, for example, large numbers of emigrants whom the intended destination countries are unwilling to accept. While rolling back the demographic shifts outlined above is hardly feasible, Europe and the West at large can still play a role in slowing the tendency toward increasing demographic imbalances. Future fertility trends are not rigidly foreordained. The UN's medium assumptions are fairly sanguine in assuming rapid fertility decline, but the process conceivably could be speeded up.

It would be erroneous to assume that starting and accelerating the fertility transition in a country is possible in the absence of significant structural changes in the economy and accompanying cultural transformation—effectively a demographic regime change. The historical record suggests the key ingredients that can trigger or promote such changes in the twenty-first century: greater integration in the world economy through openness to trade and capital flows, major upgrading of the educational system, and female emancipation. Cultural influences can be especially important in generating social change, including fertility change. Much of this is likely to be a spontaneous process, with limited opportunities for planned programmatic schemes. External encouragement, however, for adoption of institutions and political arrangements that prevail in modern affluent societies—respect for human rights and civil liberties, free mass media, secure property rights, democracy—could greatly facilitate the effectiveness of cultural influences that promote lower fertility in countries where population growth is still rapid. Exporting Goethe and Proust would seem, unfortunately, less potent in this regard than exporting Hollywood movies and television soap operas. If the European Union has a better recipe for socioeconomic and demographic modernization than the often berated American version, vigorous application of the remedy could greatly lessen the potentially harmful consequences of the demographic pressures now accumulating in its southern hinterland. Thus far, however, Europe has shown limited taste for such action.

Large population size in a less developed country need not necessarily lead to impoverishment and political instability. It may become linked, instead, with economic and military power. The requirements for successful development in the age of globalization are well known; competent and well-governed countries should be able to grasp the opportunity for success. Forty years ago South Korea's per capita income was smaller than Ghana's; today South Korea's per capita income, in purchasing power parity terms, is more than nine times higher. Contrary to misconceptions widespread in the West, and perhaps especially in Europe, no insurmountable

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obstacles prevent demographic giants such as China, India, and Brazil from transforming themselves into great economic and military powers, possibly even in the early decades of the present century. The eventual geopolitical consequences of such changes cannot be fully discerned, but as population size and power become more tightly correlated than they are at present the consequences will hardly be negligible. Today, for example, in the UN General Assembly, India with its population of more than one billion has the same single vote as does UN member-state Tuvalu with a population one-hundred-thousandth the size. Not surprisingly, General Assembly resolutions have modest weight. But in the more influential 15-member UN Security Council India holds a seat only intermittently, and then only as one of the ten council members without veto power. Among the five permanent members of the council that hold veto power, and have done so for over 50 years, three are from Europe. The combined population of the three in 2000 was barely one-quarter of India's population; by 2050 it is likely to be only about one-seventh. Can the current arrangements in allocating influence within international organizations to member countries be expected to be maintained in the coming decades? On demographic grounds alone, it would be difficult to give a confident affirmative answer to the question. Similar issues arise within the still unsettled constitution of the European Union. If the EU, for example, eventually inherited the British and French seats in the UN Security Council, would the EU's formally equal member states each be given power to exercise a veto over a vote in the United Nations, despite their very different demographic weights? What of Malta, for instance, one of the states about to be admitted to membership, even though with its 400,000 inhabitants it represents less than one-thousandth of the EU's total population? Such impolite questions have limited relevance in a peaceful world. But the world has not been such for a long time; it is unlikely that in the twenty-first century international conflicts will disappear. Demography's role in creating and resolving conflicts is likely to become increasingly pressing.

Raising fertility

If it turns out that Europe—or, more realistically, within it that core association of countries called the European Union—can have little or no influence on demographic trends outside its borders, or in any case has no inclination to exercise such influence, it can still devote itself to the Voltairian task of cultivating its own garden. If it is found that domestic fertility has sunk to unacceptably low levels, raising fertility through deliberate policy is a potential partial corrective for loss of structural balance and geopolitical weight. More problematically, an enlightened immigration policy could also be helpful. It might have been expected that the demographic slump of the

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last few decades would have elicited vigorous action toward finding remedies for Europe's demographic predicament. But the record contradicts that expectation.

Classical liberal theory assigns a strictly constrained role to the state in human affairs. State action is legitimate only if it performs functions that serve the interests of the citizenry but that do not emerge from the voluntary interaction among individual members of society. By this criterion, adopting measures aimed at assuring demographic stability if such stability is not spontaneously achieved could rightly be regarded as a proper function of even the minimalist "night-watchman" state. Like national defense, pronatalist policies would aim at preserving national viability and survival when the aggregate result of individual decisions concerning childbearing endangers these valued objectives.

Contemporary welfare states of the affluent world, and especially those of Europe, perform a vastly wider range of functions than the limited government of classical theory. But dirigist intervention typically stops short of any intent to influence personal fertility choices. On that score, the official stance is strictly laisser faire. The United Nations regularly canvasses government attitudes toward demographic phenomena. The most recent inquiry finds that 14 of the 15 current member states of the European Union consider the level of fertility "satisfactory." (Earlier inquiries found complete unanimity about the matter; the current, probably temporary outlier is Austria—possibly exhibiting a Haider-effect.) Not surprisingly, government attitudes in the eastern EU candidate countries are different. There, with the exception of Slovenia, governments declare the level of fertility "too low," and presumably remediable. This may reflect lingering confidence in social engineering through central planning, something that might dissipate in fairly short order. Certainly, the principle of subsidiarity notwithstanding, formal entry into the EU will likely make social policies in general, and fertility policy in particular, euroconform sooner rather than later.

The significance of governmental assertions denying or affirming a problem of low fertility should not, however, be regarded as necessarily consequential and informative as far as actual policies are concerned. For example, official Russian statements find that country's low birth rate alarming. But what does the Russian government do in order to try to remedy the situation? My recent discussions with prominent Russian population experts brought a unanimous reply: nothing that would deserve mention. Swedish social policy, in contrast, sustains a dense web of allocations and targeted benefits that in an earlier terminology would have been labeled pronatalist. But no such aim is officially admitted today. The reasons for this may be primarily ideological. But political correctness apart, the denial of a pronatalist aim may also reflect the melancholy fact that

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even the most sympathetic assessments found the effect of such policies on fertility at best marginal.

The declared aim of the most closely fertility-relevant social policies in Sweden, and in varying degrees also elsewhere in Western Europe, is to make participation of women in the formal labor force compatible with raising children. Few social policies enjoy greater unqualified support from demographers and sociologists than those seeking to achieve that objective. Indeed, fertility differences between Western European countries are routinely explained by differential success of government policies supporting compatibility. Economists also tend to concur in supporting the policy, if for somewhat different, macroeconomic reasons: greater mobilization of the female labor force provides a degree of correction for the increasingly disadvantageous ratio between those in the labor force and those retired. On the micro-level there are also good reasons for the policy. Once the proportion of families with two wage earners—such as husband and wife—becomes fairly large in an economy, the relative economic status of families with only one earner becomes more and more disadvantageous or even untenable, especially when dependent children are also present. Gradual collectivization of the costs of child raising (for example, through publicly financed family allocations and through provision of benefits in kind, such as free child care for preschool children through crèches, kindergartens, and the like) represents a major approach to easing the conflict between working outside the home and having children. Financing such services, however, requires imposition of heavier tax burdens, which, in turn, put further pressure on families to seek participation of more than one adult member of the household in the formal labor force. Thus the system is self-reinforcing and the option that one of the parents stays at home with children until the children are grown (in practical terms for 20 to 25 years) can be plausibly exercised only by the exceptionally well-to-do, or those willing to deny to themselves and to their children material comforts that are customary in their social reference group.

Many other social changes tend to reinforce the tendency toward higher labor force participation of women. Marriages nowadays more frequently end in divorce, and a divorced spouse without independent income is placed at high financial risk, as are the children affected. But even in stable marriages, the allure of independent income and of work-related personal claims for a pension or for accumulated wealth increases the inclination to participate in the formal labor force. Higher earnings potential, furthermore, is closely related to higher levels of formal education, acquisition of which tends to delay marriage and the birth of a first child. Thus social policies that could encourage the combination of work with childbearing and childrearing are well motivated. Yet the results of such policies in terms of raising fertility are uncertain and likely to be constrained. When the tradi-

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tional roles of parents beginning with the age of entry of their children to formal schooling, or even beginning with their children's infancy, are by and large taken over by specialized nonfamily institutions, parental roles tend to be devalued. Eventually, having a cat or a canary as a surrogate for children may be found not only to involve fewer risks and lesser costs, but also to be competitive with having children (who must be cared for mostly by substitutes for their parents) in terms of providing emotional satisfaction. It is not surprising, therefore, that despite policies that seek to make two-earner families compatible with childrearing—that is, despite flexible work hours, generous paid vacation, fathers' temporary home leave to care for an infant or a sick child, and other similar benefits—the actually chosen number of children in two-working-parent families gravitates toward a system consisting of families that are either childless or have only one or two children. Although in practice these proportions are weighted in the reverse order, the arithmetic of such a system produces total fertility rates below, and possibly well below, the replacement level. In other words, helped by child-friendly policies, having two children *can* be compatible with both parents working, if perhaps at a certain sacrifice in terms of life style and material comforts. Having three children while both parents engage in work outside the household borders on the heroic, and having four or more children, unless the working parents are sufficiently well-off to be able to hire outside help, borders on the irresponsible.

But do not fertility surveys confirm a preference expressed by a large majority of women, men, and families for having at least two children? Would it not follow, then, that regardless of whether a family policy is meant to be pronatalist or simply family- and people-friendly, its task is plain: to provide moral and material support so that families (or just women) can have the children that they wish to have? The answer to this question is also simple: expressed preferences concerning the number of children desired may well be genuine, but they are also in competition with other preferences the satisfaction of which is, at least in principle, attainable in modern societies. The outcome of such competition is not necessarily in favor of children. The children actually born may turn out to be what in the title of one of his novels Günter Grass called *Kopfgeburten*, births that occur in the minds of their would-be parents. As in the case of the novel's young teacher-couple, sometimes a preference for a trip to Bali, or delays caused by waiting for something like the outcome of the federal elections ("we cannot possibly have a child if Franz Joseph Strauss wins!") defeat the abstract desire to have a baby. Anatomically speaking, *Kopfgeburten* are not a promising method of having children, as they do not assure population replacement. Grass of course was not daunted by German shortages in children; he discerned a certain providential benefit. What would happen to this world, after all, if Germans were as numerous as the Chinese? Yet today, and as

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far as eyes can see, this ominous eventuality is not in prospect either in Germany or in the European Union at large. What *can* be taken as highly probable is the failure of the now prevailing orthodoxy governing European social policies. These policies will fail to increase fertility up to replacement level and thus will fail to prevent the long-term numerical decline of the European population.

Perhaps, it may be countered, what prevents realization of latent fertility desires is simply the high costs of raising children in modern societies. As postindustrial economies reach higher per capita levels of real income, an automatic upward correction of average fertility levels can be reasonably expected. But very few data could be adduced in support of this proposition. Data that disprove it seem, in contrast, plentiful. As a simple illustration, consider the case of two proverbially child-loving societies: those of Italy and Austria. Average incomes in the 75-year period beginning in 1870 followed a fitful but slowly upward-creeping trend within a band from roughly $1500 to $3000 calculated in 1990 dollars. These income levels, while historically fairly high, were well below those found in the economically most advanced countries of Europe. By the years immediately before World War II, fertility in Austria was appreciably short of replacement level while the average TFR in Italy in the 1930s was still above it. The post–World War II economic boom raised income levels steeply, bringing them to about $17,000 per capita in the early 1990s in Austria and to $16,000 in Italy. These figures match or are very close to the best European country levels. Despite the unprecedented prosperity reflected in these data, fertility in Austria sank further below replacement level (to a TFR of 1.3), while in Italy it fell to a level barely more than one-half of what is needed for the simple reproduction of the population. The goods increased but they that eat them not only failed to follow suit but seem set to diminish.

The post–World War II economic fate of Eastern European countries was far less happy than that of Italy and Austria. The combination of relatively low income levels (as understood in the broader European context) and material aspirations attuned to Western European consumption standards provides an often-voiced explanation for the very low fertility in these countries. By the same token, the hoped-for economic improvement in the early twenty-first century, even if it should prove far less spectacular than that experienced in recent decades in Western Europe, is often considered a potentially powerful future stimulus toward higher birth rates. The record of Austrian and Italian fertility does not support that expectation.

However, with respect to fertility behavior the relevant factor may not be the average level of income but its distribution. The modalities of income distribution and how they may be changed are indeed the central concerns of contemporary social policy. The original goal of the early European welfare state was to help a segment of the population, thought or defined to be

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a relatively small fraction of the total, that for reasons not of its own doing—sheer bad luck, personal misfortune (for example, orphanhood), or as an inadvertent side effect of economic friction inevitably generated by a dynamic market economy—had fallen on bad times. But it was soon discovered that such relatively narrow constraints on government-organized income transfers can be loosened through the give-and-take of the political marketplace. Today, in the welfare states said to be most advanced, up to 60 percent of the national income is allocated through the central national budget. The bulk of that income represents transfers not from the rich to the poor or at least from the better-off to the less well-off, but between variously constituted segments of the society depending on the relative strength and skill of the political interest groups representing them. The so-constituted and ever-changing pattern of income redistribution and the resulting configuration of the net gainers and net losers tend to be immensely complex and thoroughly opaque. Similarly elusive are the estimates of the cost of the bureaucratic apparatus needed to effect the allocation and of the losses consequent upon the distortions in economic and social behavioral patterns that such redistribution necessarily induces. In the absence of an effective constitutional limit, the logical final outcome of the dynamics of this process would be a state that satisfies all truly important needs of the citizenry—from cradle to grave, as the saying goes. Unfortunately the material ingredients of such benevolence are not obtainable as manna from heaven but need to be collected in the form of taxes on productive economic activity. The incomes left with the producers would then tend to resemble pocket money—sufficient to cover expenses on socially unimportant or outrightly frivolous things, like ice cream and movie tickets.

Such a socialist paradise is of course a caricature, but one that nevertheless illustrates the central *problématique* of the European welfare state. In the present context it is also a reminder that any programmatic ambition that seeks, openly or covertly, to encourage fertility through newly designed schemes of income reallocation must be fitted into the ongoing partisan battles among a multitude of interest groups, and must do so with the familiar disadvantages of a relative latecomer. Among the leading champions in that battle are the well-organized lobbies of a demographic interest group, those of the elderly population. Low fertility, by strengthening the relative electoral base of the elderly, is a progressively important basis of the very weakness of those trying to encourage fertility increase through preferentially distributing income to couples who might want to have more children but, supposedly for reasons of material want, do not have them.

But success in buying children through skillfully targeted redistributive largess is not a promising approach. Because exhortation and propaganda emanating from governments are certifiably ineffective in a modern secular society, governments naturally conclude that the only potentially

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effective instrument at their disposal for changing behavior—any kind of behavior—other than through coercion is allocation of rewards, either in the form of direct money payments or as services in kind. Incentive schemes that presumably should have stimulated fertility have not worked well in the past. Analyzing the reasons for this and outlining modifications that could improve the record of such schemes are beyond the scope of the present discussion. I limit myself to some brief remarks.

The increasingly narrow variation of family sizes voluntarily chosen in low-fertility countries underlines the necessarily low efficiency of material rewards given to parents. If every family were to prefer having a single child only, that child would be born in all probability without any government incentive. An arrangement in which, in effect, A pays for B to have a child and B pays A for the same reason has little to recommend it, even if the exchange conducted by intermediation through the public purse were costless. If the possible choices vary between 0, 1, or 2 children, the intended stimulus is likely to be not much more effective and could easily be counterproductive. The tax-burdened childless might find that burden a good reason not to marry and to remain childless. Those with a single child might think in the same way about having a second. Noninterference by the state—apart from the long-standing practice of collectively financing a large share of children's formal education and making allowances for dependents in income taxation—would, instead, confront parents and would-be parents with the fact, confirmed by much history, that children *are* costly and assuming such costs is a matter of personal choice that creates long-term legal obligations and special emotional bonds. Having children is a risky adventure that imposes responsibilities but also offers unique rewards. The austerity of such a public policy stance may not only result in higher birth rates but also might increase fertility disproportionately among those best equipped for and best disposed toward parenthood. A pronatalist policy should aim not only for more children but also for children who are brought up with the greatest chance to become productive and responsible members of their society.

It is a strong tenet of the dominant strand of European family policy that the extensive socialization of the costs of rearing children—transferring the costs to society at large and thus alleviating the burdens borne by parents—even if it does not increase fertility demonstrates social solidarity in a crucial area of human activity. But the arrangements that translate this principle into action may generate not only good will but also controversy, dissatisfaction, and passivity. Questions on the appropriate scope of income reallocation have no agreed answers. Even if taken after careful political deliberations and with the best of intentions, decisions on issues of why, to whom, when, where, how much, how long, how many times, and under what supervision will strike many beneficiaries as arbitrary, inadequate, and

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unjust. Those who do not benefit from a particular scheme, perhaps for no fault of their own, might feel shortchanged and exploited. It is then not surprising that the allocation schemes adopted by political markets seldom remain the same for long: the cards are frequently reshuffled and new methods of churning centralized resources among beneficiaries are continually introduced. This in turn generates mistrust and uncertain expectations as to what benefits will survive the current government's term, hence what can be counted on along the prolonged course parents must resolutely stay in bringing up children to adulthood. This is not a social atmosphere favorable to elevating fertility. If low fertility is recognized as a European social problem, European policies affecting parental willingness to have children need radical rethinking.

Admitting immigrants

Arguably the same holds for that other big issue of European population policy: immigration. In the decades following the end of World War II, Western Europe became what it had not been for a thousand years: a region of immigration. This was in part the result of the collapse of the colonial system, generating massive influx from the former overseas possessions. Partly it happened, as was famously suggested in another context, in a fit of inattention: a classic failure of governments to properly perform their core night-watchman role. The prime example for such inattention is the massive importation of so-called guestworkers back in the 1950s and 1960s. The guests decided to stay and even invited in their relatives from the home country. Democratic states could not nullify these unilateral decisions by the guests, decisions which, for good measure, also served the economic interests of their employers. That is how, for example, Germany became the not always friendly home to millions of Muslim immigrants, with the promise of more to come.

Today, the economic attraction of the European Union for would-be immigrants is greater than ever. This reflects not the EU's rather sclerotic economic performance, manifest, among other symptoms, in large-scale unemployment, but the enormous difference in levels of economic welfare and political security in the potential sending countries on the one hand and the corresponding situation in the EU on the other. The demographic pool from which immigrants may be forthcoming, as was shown above, is enormous and rapidly growing. At the same time, public sentiment and resistance in the countries of the EU against admission of large numbers of additional immigrants, particularly from Europe's southern hinterland broadly defined, are greater than ever. Despite this fact, the annual volume of immigration into the EU remains high, similar in volume to that entering into the United States: it consists of about one million legal and roughly

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half a million illegal immigrants. The distinction is somewhat pedantic: in time the great majority of illegals become permanent residents. Pressures of an aging population notwithstanding, official immigration policy is exclusionary: it aims at reducing the annual flow, save for special categories of skilled workers. Fences are erected and gates are meant to be controlled. But success is limited: the fences are full of holes and the gates are poorly guarded. The costs that would be entailed in good fences and effective guards are very high, not only in material terms but also in undermining prized legal provisions in democratic states and in interfering with rights and comforts of the domestic population. That is how it could happen that, for example, in Greece, one of the EU(15)'s member states, the most recent census discovered that the country's population grew by some one million, or 10 percent, in a decade, even though natural increase—the difference between births and deaths during this period—was only 20,000 persons.

Immigration is unlikely to halt the decline of population in Europe, but immigration will probably remain high, hence will moderate the decline considerably. Thus Oswald Spengler's prophecy may turn out to be correct after all: depopulation may be slow, rather than precipitous; it could indeed last for centuries. The process, however, would entail a fundamental transformation in the ethnic composition of the population and also in its cultural patrimony. If Europe would prefer a different future for its descendants, corrective action cannot be long delayed.

Note

This article is a slightly abbreviated and edited translation of the inaugural lecture by the author as external member of the Hungarian Academy of Sciences, delivered on 20 November 2002 at the Academy's headquarters in Budapest.

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Urban–Rural Mortality Differentials: An Unresolved Debate

ROBERT WOODS

THE PRESUMPTION TODAY is that life chances will not show a distinctive pattern of differentiation between urban and rural places or, if there are differentials, that they will favor the urban population, which has superior access to the most modern health care facilities. But in medieval and early modern Europe it is apparent that there were strong urban–rural differences; that towns were the high-mortality, unhealthy places bedeviled by epidemics while the risks of dying prematurely were relatively less in the countryside. Indeed, it is usually argued that without a constant flow of rural migrants, towns would not have been able to survive, that urban growth and urbanization would have been impossible. Outside Europe it has proved even more difficult to describe the extent of urban–rural mortality differentials, but there is some suggestion that in East Asia the mortality experience of cities might have been less destructive than in Europe. These uncertainties have helped to fuel a continuing debate—one that has focused on description, measurement, and interpretation, none of which is as yet secure.

Since the pioneering work of Henri Pirenne (1926) and Roger Mols (1954, 1955, 1956) it has become the convention to regard Western cities as politically, economically, and demographically distinct, quite separate from the countryside and from other non-Western urban places. Cities governed themselves; they had walls for defense, to allow taxes to be collected, and to symbolize separate identities; they offered markets for merchants, production centers for craftsmen, administrative headquarters for princes and bishops; they were places of conspicuous consumption for the wealthy; but they also had highly distinctive demographic regimes. Their principal demographic characteristic was excessive mortality, far higher than in the surrounding rural areas. There was, in other words, an obvious urban–rural mortality differential that was exacerbated by frequent and severe demographic crises, especially epidemics of such diseases as bubonic plague. Late medieval

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and early modern European cities could be centers of wealth and power, but they were also dangerous to live in. Cities were graveyards, demographic sinks, and there was a clear penalty in terms of life chances to being or becoming a resident. The evidence for this view seemed overwhelming. The burial registers for fifteenth-century Italian cities showed many years with catastrophic mortality (Del Panta 1980). Bills of Mortality, developed as a public health early-warning system, also reinforced the argument for London in the seventeenth and eighteenth centuries.

Allan Sharlin's 1978 article, "Natural decrease in early modern cities," marked a point of departure for research on the demography of such cities. Instead of stressing the impact of epidemic crises, it shifted attention to the rural-to-urban migrants. Without a constant supply of migrants from the countryside, cities would not be able to survive, let alone grow, and urbanization would be impossible. Migrants filled the gaps left by the premature deaths of urban residents. By this means, any surplus rural population could easily be drawn off and made efficient economic use of in the towns. Sharlin also pointed out, however, that the survival chances of "temporary migrants" and nonmigrant "permanent residents" might differ in the urban environment; that the latter could show natural increase (an excess of births over deaths) while the former displayed natural decrease at a level sufficient to cancel out any gains contributed by the permanent residents. Sharlin's reconsideration has proved both a welcome challenge and a source of frustration to other researchers. For example, Galley (1998: 12) has observed that although the shift of emphasis from crises to the experiences of migrants—their attraction to cities, marriage, fertility, and risk of death—has helped to make analysis of the urban regime far more sophisticated, the data required to distinguish between the experiences of the various subgroups involved far exceed the capacity of even the best parish registers. Sharlin's intervention has also encouraged renewed discussion of the extent to which cities should be seen as "generative" or "parasitic" (Hozelitz 1957). Urban centers could be engines of national economic growth by being not only points of innovation and consumption, but also devourers of rural surplus labor thanks to their excess mortality (Wrigley 1987, 1990).

Other demographers and historians, such as Kingsley Davis (1973; Davis and Golden 1954) and Jan de Vries (1984, 1990), have followed the lead of Adna Ferrin Weber (1899) by concentrating on the causes of urban growth, especially those of urbanization. In this case the true extent of urban–rural mortality differentials needs to be established so that the balance between natural growth and population increase by net migration can be identified, and the point at which any particular urban center acquired the capacity for natural increase can be defined (see Keyfitz 1980; Keyfitz and Philipov 1981).

Where does the debate on the historical demography of cities stand now? First, there seems to be an appreciation that although Sharlin's inter-

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vention has raised some pertinent questions—certainly it has redirected attention from crises to migrants and has spurred the integration of work on economic, social, and demographic structures—it will never be possible to monitor the demographic experiences of highly mobile sections of the population in the past (Woods 1989). Second, recent research on mortality patterns has emphasized the importance of certain key age groups and causes of death. For example, early-age mortality and the childhood infectious diseases can have a disproportionate impact on the overall level of mortality (life expectancy at birth, for example) while being highly sensitive to environmental differences, especially the quality of drinking water and population density (Preston and Haines 1991; Bideau et al. 1997). There are obvious implications for urban–rural mortality differentials. Third, historians and demographers have become more sensitive to culture. They now appreciate that values, beliefs, and feelings are likely to have had a bearing on cultural practices and the ways in which these were recorded. Infant mortality may not mean the same thing in Japan, China, France, and England despite the fact the indicative rates are calculated in the same way. Comparative research on urban–rural differentials faces a particular challenge, therefore. Fourth, contributions by urban geographers and planners have enhanced our understanding of urban systems in general. For historians this involves the need to return to old questions about the distinctive, defining characteristics of urban places (size, density, function, autonomy, and the like). The clarification of such characteristics will encourage the quest for an urban–rural mortality continuum while contributing to the challenging possibility that not all places that were in some sense urban were necessarily graveyards in the past.

This article focuses on the second, third, and fourth of these issues. It considers the different ways in which mortality levels may be indexed, especially the relative merits of considering general mortality or individual age components; the cross-cultural comparability of some of these standard measures; and one way in which a mortality continuum might be identified using log-normal distributions as a guide.

How to measure and compare?

The European experience may be thrown into sharper contrast by comparison with East Asia. For Japan and perhaps also China, the case has been made that cities should not be seen as dangerous, distinctly unhealthy places. Susan B. Hanley (1997: 104–128) and Alan Macfarlane (1997), for example, have argued that the state of sanitation in late Tokugawa cities was superior to European standards of the time, that preparation of a predominantly vegetarian diet helped the situation, that expected standards of personal hygiene were high, that the concentration of urban centers between moun-

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tains and the sea facilitated the supply of fresh water, and that night soil was especially highly prized as an agricultural resource. In these circumstances one would not expect to find sharp urban–rural mortality differentials, at least not ones generated by the water- and food-borne diseases (diarrhea, cholera, typhoid, dysentery, and the like). Hanley's arguments help to raise some pertinent questions about the effects of cultural practices and the nature of demographic evidence. What would we need to know in order to demonstrate the validity of her case?

The obvious place to begin is with the scrutiny of available demographic estimates for levels of mortality in urban and rural places. Tables 1, 2, and 3 offer a starting point. They show mortality rates for infants (q_0 in parts per thousand) and early childhood ($_4q_1$ in parts per thousand) together with life expectancy at birth (e_0), at ages 1 (e_1), 5 (e_5), and 15 (e_{15}), and the partial life expectancy between ages 15 and 35 ($e_{15–35}$, the key age group for reproduction) all in years. The tables focus on East Asia, France, and England, respectively.

Table 1 presents estimates from a variety of Chinese and Japanese sources. Urban areas are underrepresented, especially for Japan, although one might argue that the outcast village of Minami Oji could be used to represent urban conditions, and there are some limited data for Nara (not shown) assembled by Hayami (2001: 136–137). This is not the most critical problem, however. Gender biases in the reporting of births, difficulties in the recording of age, and the practices of infanticide, child abandonment, sale, and adoption make the estimation of early-age mortality rates exceptionally troublesome.[1] Natural and unnatural deaths are confused; and base, at-risk populations normally provided by live births are systematically underenumerated. Table 1 is a veritable demographic minefield (Campbell 2001). It remains uncertain whether in the past East Asia exhibited a clear urban–rural mortality gradient favoring the countryside, although Hayami (2001) is now inclined to think that adult mortality may have been higher in urban than rural Japan, and Jannetta (2001) has pointed to the tardy development of smallpox vaccination. Hanley's case is thus not proven.

The French example, represented by Table 2, encourages further consideration of time-honored assumptions about the form of the urban–rural mortality differential in Europe. Figure 1 performs the elementary exercise of plotting time series for vital events or their proxies (baptisms and burials). It shows the example of Paris in the eighteenth century and reflects most of the problems faced by urban historical demographers: poor continuity, uncertain reliability, extreme fluctuations in births and especially deaths, and unknown denominators (Chaunu 1978: 517; Roche 1981: 30). France was about 12.5 percent urban and Paris contained perhaps 2.2 percent of the national population at that time. However, the level of mortality is particularly difficult to estimate for Paris as it is for most French localities, whether urban or rural, because of the absence (in urban areas) or

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TABLE 1 Urban and rural mortality measures, examples from China and Japan

	q_0	${}_4q_1$	e_0	e_1	e_5	e_{15}	e_{15-35}
Chinese clans, males (1)							
Urban	182	107	34.4	41.0	41.7	33.8	14.4
Rural	206	120	35.5	43.6	45.4	37.8	14.1
Peking elite, 1701–50 (2)							
Males	104	281					
Females	144	271					
Peking, 1929–33 (3)							
Males	173	174	40.9	48.3	54.1	48.9	17.1
Females	170	180	36.1	42.4	47.1	42.1	11.4
Rural China, 1929–31 (4)							
Males	162	230	34.9	40.3	47.6	43.9	13.4
Females	155	232	34.8	39.7	47.0	42.8	11.5
Nakahara, 1717–1830 (5)							
Both sexes	170	126	43.2	48.2	51.0	44.9	13.7
Males				46.1	49.7		
Females				50.8	52.6		
Mino villages, 1751–1869 (6)							
Males	205	139	37.2	45.6	48.7	42.5	14.2
Females	175	134	40.1	47.5	50.5	43.4	12.7
Minami Oji, 1830–69 (7)							
Males		164	30.6	37.1	40.1	34.9	11.1
Females		189	31.6	38.4	42.9	38.6	11.6

NOTE: q_0 (probability of dying between ages 0 and 1, infant mortality rate) and ${}_4q_1$ (probability of dying between ages 1 and 5, early childhood mortality rate) are both in parts per 1000; e_0 (life expectancy at birth), e_1 (life expectancy at age 1), e_5 (life expectancy at age 5), e_{15} (life expectancy at age 15), and e_{15-35} (partial life expectancy between ages 15 and 35) are all expressed in years.
SOURCES: (1) Lower Yangtze clans, various birth cohorts from the fifteenth to the nineteenth century, from Liu Ts'ui-Jung (1990); "Demographic aspects of urbanization in the lower Yangzi region of China, *c.* 1500–1900," in Ad van der Woude, Jan de Vries, and Akira Hayami (eds.), *Urbanization in History* (Oxford: Clarendon Press), pp. 328–351, Table 19.8. (2) Qing imperial lineages in Peking, 1701–50, from James Lee, Wang Feng, and Cameron Campbell (1994), "Infant and child mortality among the Qing nobility: Implications for two types of positive check," *Population Studies* 48: 395–411, Table 2. Note that equivalent figures are given for 1751–1820 and 1821–40. (3) Peking, First Demonstration Health Station, 1929–33, from Cameron Campbell (1997), "Public health efforts in China before 1949 and their effects on mortality," *Social Science History* 21: 179–218, Table 2. (4) Rural Chinese families, 1929–31, from Harry E. Seifert (1935), "Life tables for Chinese farmers," *Milbank Memorial Fund Quarterly* 13: 223–236, Table 6. (5) Nakahara (near Ogaki, Nobi Plain, Japan), 1717–1830, from Thomas C. Smith (1977), *Nakahara, Family Farming and Population in a Japanese Village, 1717–1830* (Stanford: Stanford University Press), Tables 4.1, 4.2, 4.5, 4.6, low-mortality estimates throughout. (6) Three villages, Mino Province, central Japan, 1751–1869, from Osamu Saito (1997), "Infant mortality in pre-industrial Japan: Levels and trends," in Alain Bideau, Bertrand Desjardins, and Héctor Pérez Brignoli (eds.), *Infant and Child Mortality in the Past* (Oxford: Clarendon Press), pp. 135–153, Table 8.4. The high (based on Model West) and low (Model North) estimates for infant mortality have been averaged. (7) Minami Oji (Izumi City, Japan), 1830–69, from Dana Morris and Thomas C. Smith (1985), "Fertility and mortality in an outcast village in Japan, 1750–1869," in Susan B. Hanley and Arthur P. Wolf (eds.), *Family and Population in East Asian History* (Stanford: Stanford University Press), pp. 229–246, Table 10.6.

presence (in rural areas) of those infants put out to wet nurse—*les nourrissons*. The series in Table 2 and the pattern suggested by Figure 1 must both have been distorted by this problem of early-age migration, especially when one realizes that these nurslings faced far higher risks of mortality than infants who remained at home and were breastfed by their mothers. Flandrin (1976:

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TABLE 2 Urban and rural mortality measures, examples from France

	q_0	${}_4q_1$	e_0	e_1	e_5	e_{15}	e_{15-35}
Rural areas (1)							
1690–1719	350	261					
1720–49	328	277					
1750–79	261	223					
France, 1740–89 (2)							
Males	281	262	31.1	40.1	43.9	36.6	12.5
Females	241	263	32.5	41.3	44.2	38.5	11.9
Small town, Meulan (3)							
1668–1739	244	312					
1740–89	226	269					
1790–1839	155	192					
3 villages, 1700–99 (4)	212	180					
17 parishes, 1774–94 (5)	177	201					
France, 1840s (6)	149	130	42.3		51.4		
Seine (Paris)	191	221	31.1		43.5		
Rhône (Lyon)	195	175	34.0		45.5		
Bouche-du-Rhône (Marseilles)	173	230	32.9		45.8		

NOTE: See note to Table 1.
SOURCES: (1) From Jacques Houdaille (1984), "La mortalité des enfants dans la France rurale de 1690 à 1779," *Population* 39: 77–106, Table 5. (2) Based on Jacques Dupâquier (1979), *La Population Française aux XVIIe et XVIIIe Siècles* (Paris: Presses Universitaires de France), pp. 99–100. (3) Meulan, north west of Paris, from Marcel Lachiver (1969), *La Population de Meulan du XVII^e au XIX^e Siècle (vers 1600–1870)* (Paris: SEVPEN), pp. 199 and 203. (4) Three villages in the Ile-de-France, 1700–99, from Jean Ganiage (1963), *Trois Villages d'Ile-de-France au XVIIIe Siècle. Étude Démographique*, INED, Travaux et Documents, Cahier No. 40 (Paris: Presses Universitaires de France), p. 106. (5) Seventeen parishes on the southern outskirts of Paris, 1774–94, excluding *nourrissons*, from Paul Galliano (1966), "La mortalité infantile (indigènes et nourrissons) dans la banlieue sud de Paris à la fin du XVIIIe siècle (1774–1794)," *Annales de Démographie Historique*, pp. 139–177, Table 3. (6) Three urban *départements* of France in the 1840s, from Samuel H. Preston and Etienne van de Walle (1978), "Urban French mortality in the nineteenth century," *Population Studies* 32: 275–297, Tables 1 and 5. Two *départements* (Orne and Sarthe) had e_0s greater than 50 in the 1840s; estimates for the female population only.

196), for example, has argued that "the practice of putting babies out to nurse doubled infant mortality among urban families. It is this that explains both the excessive mortality of children in the towns and the excessive fertility of urban couples not practising contraception." Van de Walle and Preston (1974: 103) have shown that even in the 1890s at least a third of Paris-born infants were placed with wet nurses.

Generally speaking, in England babies were not put out to wet nurse; they were cared for at home by their mothers or, among the aristocracy, by their nurses (Fildes 1986). Compared with rates for France, English infant mortality rates are remarkably low, especially in the healthy rural parishes of the southwest (Hartland in Table 3). In the urban areas of London, York, Liverpool, and Manchester, by contrast, infant and early childhood mortal-

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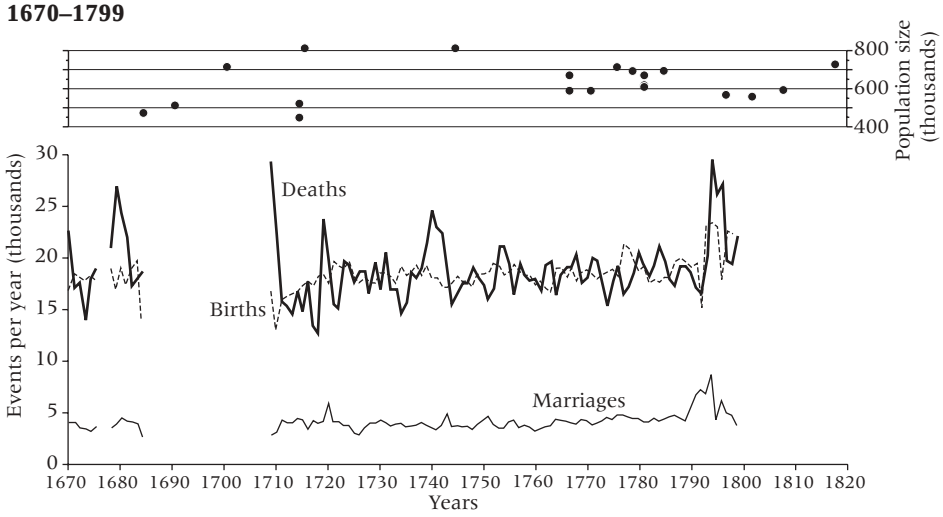
FIGURE 1 Births, deaths, marriages, and population estimates: Paris, 1670–1799



SOURCE: Redrawn from Chaunu (1978: 517).

ity was substantially higher—even to the point where it seems early childhood mortality was higher than infant mortality, as it appears to have been in parts of urban France. What is also interesting about Table 3 (as well as Tables 1 and 2) is the consistent level of adult mortality, with the partial life expectancy between 15 and 35 falling in the range 11 to 14 years. This emphasizes, once again, the importance of mortality in early ages in determining overall urban–rural mortality differentials.

It might be thought that, apart from the problems associated with child care, the evidence in Tables 2 and 3 could be directly compared, but there is at least one associated matter that needs to be confronted. Before the nineteenth century, parish registers offer virtually the only source for demographic reconstruction whether via the aggregative analysis illustrated by Figure 1 or by the particular form of nominal record linkage known as family reconstitution. The estimation of early-age mortality is highly sensitive to the numbers included in the population at risk: live births derived from registered baptisms. In largely Catholic France it was believed essential to have infants baptized immediately after birth, by a priest at the font if possible, but at home by the midwife if necessary. By assuming that the fetus was still alive, a baptism might also be performed before parturition (Gélis et al. 1978; Laget 1982). Such practices would tend to maximize the number baptized (the denominator) by including some stillborn among the live births. In Protestant England the approach to baptism was more relaxed: one, two, or three weeks could elapse before a church christening. In these circumstances some live-born infants might die before baptism and the stillborn are less likely to be included. English infant mortality would tend to be underestimated (especially

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TABLE 3 Urban and rural mortality measures, examples from England

	q_0	${}_4q_1$	e_0	e_1	e_5	e_{15}	$e_{15–35}$
Hartland (1)							
1675–1749	94	77					
1838–44	80	84					
Gainsborough (1)							
1675–1749	270	185					
1838–44	141	90					
England (2)							
1675–1749	193	112	36.1	42.0	45.7	40.2	13.1
London (3)							
1580–1650	228	190	28	39	42	35	12
1650–1799	293	265	27	36	41	36	12
York, 1641–1700 (4)	266	226					
England and Wales, 1840s (5)	146	131	41	47	50	44	13
Surrey	122	98	45	50	52	45	14
London	163	184	37	43	48	41	14
Manchester	268	296	26	34	43	38	13
Liverpool	253	301	26	33	43	37	13

NOTE: See note to Table 1.
SOURCES: (1) Hartland (Devon) and Gainsborough (Lincolnshire) capture the range of mortality experience among the 26 reconstitution parishes, from E. A. Wrigley, R. S. Davies, J. E. Oeppen, and R. S. Schofield (1997), *English Population History from Family Reconstitution, 1580–1837* (Cambridge: Cambridge University Press), Table 6.16. (2) England, 1675–1749, has been derived from Wrigley et al. (1997), Tables 6.14, 6.19, and 6.21, while England (and Wales), 1838–44, is from the Second English Life Table calculated by William Farr. (3) London parishes 1580–1650, based on mean of four parishes from Roger Finlay (1981), *The Demography of London, 1580–1650* (Cambridge: Cambridge University Press), Tables 5.15 and 5.16; London Quakers, 1650–1799, based on John Landers (1993), *Death and the Metropolis: Studies in the Demographic History of London, 1670–1830* (Cambridge: Cambridge University Press), Tables 4.3 and 4.10. (4) York estimates from Chris Galley (1998), *The Demography of Early Modern Towns: York in the Sixteenth and Seventeenth Centuries* (Liverpool: Liverpool University Press), Table 4.9. (5) England and Wales, Surrey (nonmetropolitan), London, and Liverpool are from the *Fifth Annual Report of the Registrar General* for 1841, while Manchester is from the *Seventh Annual Report* for 1843 and 1844.

in the larger rural parishes) while French rates might be overblown (Woods 2003a). The development of civil systems for the direct registration of vital events during the nineteenth century should have removed most of these difficulties—apart, that is, from the wet nursing problem in France and the underregistration of births in urban England (Wrigley et al. 1997; Woods 2000).

Ideally it ought be possible to reduce the data in Tables 1 through 3 to a 3 x 2 matrix—three regions x two environments—but this task is far from straightforward. Perhaps the best that can be said is that during the early nineteenth century life chances were about 1.5 times better in rural than in urban places in western Europe, and 1.2 times better in Japan. However, we can also focus on certain points of difference or similarity. First, although the urban–rural differential is clear in France and England in the nineteenth

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century, when the death registration systems were more secure, this clarity also applies to England in earlier periods. In France the situation is less clearcut. Second, adult mortality (when it can be calculated) appears less sensitive to environmental differences than mortality at earlier ages. Mortality in childhood (ages 0–14 years) was particularly sensitive to the differences between urban and rural environments; but it was also susceptible to infanticide or deliberate neglect, differences in infant feeding practices, attitudes toward baptism (and thus its registration), and conventions concerning the stillborn. Were it not for the distortions these problems are capable of creating, the childhood mortality rate would appear to be the most appropriate device for measuring differences between the experiences of urban and rural places.

Mortality and the rank-size rule

Although comparison of the material in Tables 1, 2, and 3 has helped to clarify certain issues, as well as highlighting a number of additional problems, it is not able to help us with the following questions. Was there an urban–rural mortality continuum in the past? Was the level of mortality directly associated with the population size or population density of places?

By substituting the notion of a continuum for that of a simple urban versus rural dichotomy, it may be possible to advance the debate and to add some new sophistication to the analysis of mortality patterns. The use of log-normal distribution, as represented by the so called rank-size rule, will help us to identify the mortality continuum and to consider the way in which mortality in different age groups was distributed among places with different population sizes or densities.

It must be reiterated, however, that before the development of population censuses and vital registration in the nineteenth century it is not possible to be certain about the population sizes, densities, and mortality levels in all statistical units into which a country might be divided; rather, such certainty was reserved for only a few well-documented cases. Even in Britain, not until the Victorian era can we begin to distinguish between different age groups in systematic rather than selective terms, and to start identifying the effects of particular causes of death in the entire range of urban, rural, and intermediate districts. Thanks largely to the efforts of William Farr, the Statistical Superintendent at the General Register Office in London, Victorian England and Wales offers an exceptional wealth of data on mortality and its characteristics and causes.[2] For example, using the framework provided by the network of local registration districts in combination with the notion of a rank-size rule, we may examine the pattern of mortality variation between urban and rural districts in terms of their population size and density.

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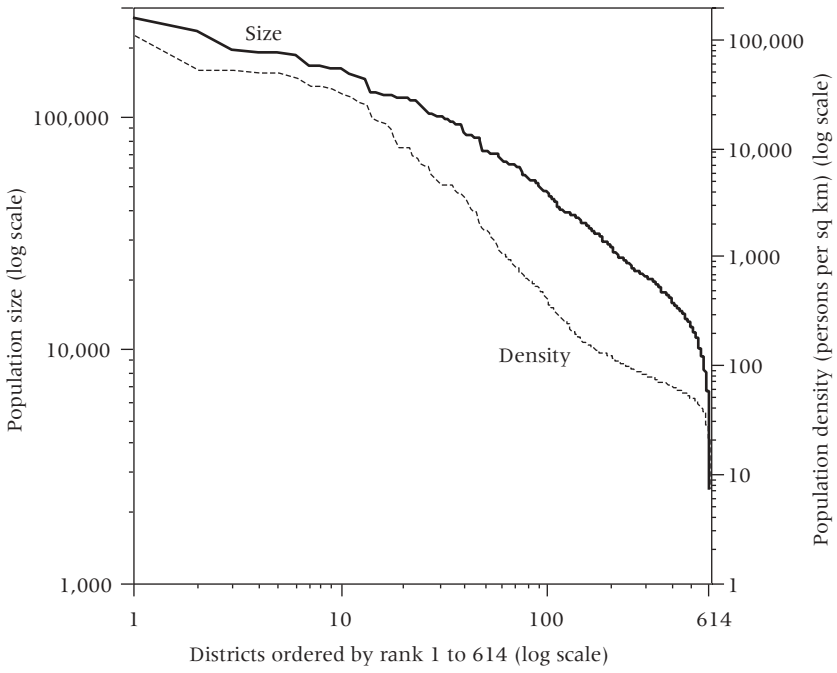
FIGURE 2 Rank size and rank density distributions, England and Wales, 1851–60



The rank-size rule has often proved useful as a descriptive device, and it will be used here to establish a standard against which the actual pattern of mortality may be judged (Haggett et al. 1977). It has been defined as follows:

$$\log P_n = \log P_1 - b(\log n) \tag{1}$$

where 1 and n denote first and nth rank order in terms of the population sizes of places (P), and $-b$ is a constant expressing the negative slope of the log-normal relationship between the population sizes of places and their rank orders.[3] In those circumstances where b is 1, the population of the nth-ranked place would be that of the first-ranked place (P_1) divided by n (the second would be half the first, the third would be a third of the first, and so on). During the 1960s the rank-size rule was especially popular among geographers and urban planners as a tool for describing and classifying urban systems. Brian J. L. Berry, in particular, pioneered its use in the study of economic development (Berry 1961, 1971). The initial hypothesis was that a region's urban system would become more functionally integrated, and thus closer to a rank size and less like a primate distribution (in which the largest city is far larger than twice the size of the second-largest), as economic development progressed; but the available evidence led to the

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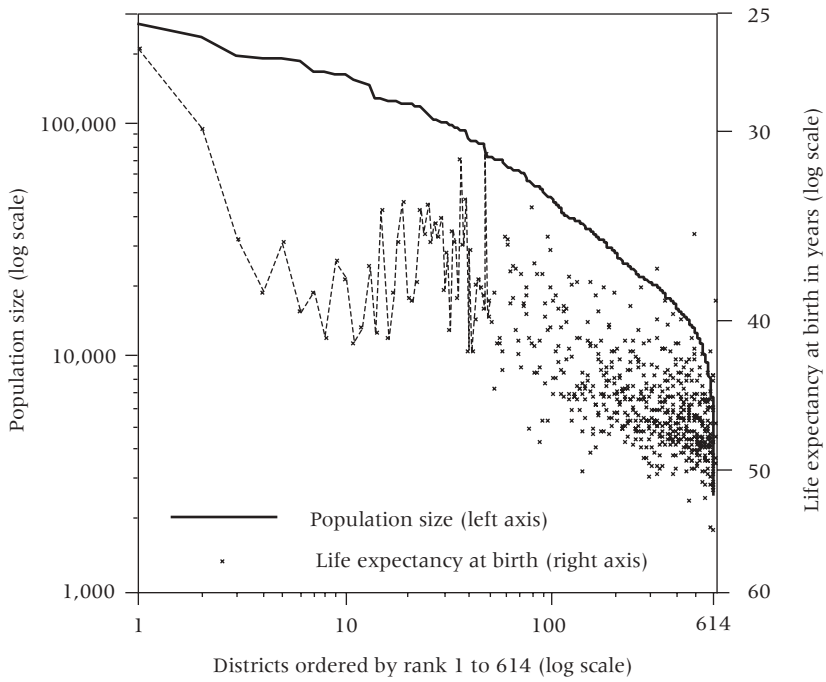
FIGURE 3 Rank size and rank life expectancy at birth in years, England and Wales, 1851–60



counter conclusion that "different city size distributions are in no way related to the relative economic development of countries" (Berry 1961: 585). More recently de Vries (1984) has used the log-normal distribution as a simple descriptive device to argue that European urbanization should be seen in terms of two distinct modes: the city-creation mode and the urban-concentration mode. In the former b is rather shallow and P_1 increases only slowly, while in the latter b becomes steeper and P_1 and thus the entire urban system expands rapidly.

Figure 2 illustrates the basic distributions among the 614 districts into which England and Wales can be divided in the 1850s, taking first their population size and then their population density. Not surprisingly the districts do not conform to the rank-size rule; they are after all data-collection and recording units and not devices for charting the geography of built-up areas. Nonetheless, the ranking and log transformation of Figure 2 do produce some semblance of order: there is a regular progression in the population size of districts, although the simple linear quality of equation (1) is not replicated.

Figure 3 takes the population size distribution from Figure 2 as a guide to rank districts and focuses on life expectancy at birth in years (e_0), again

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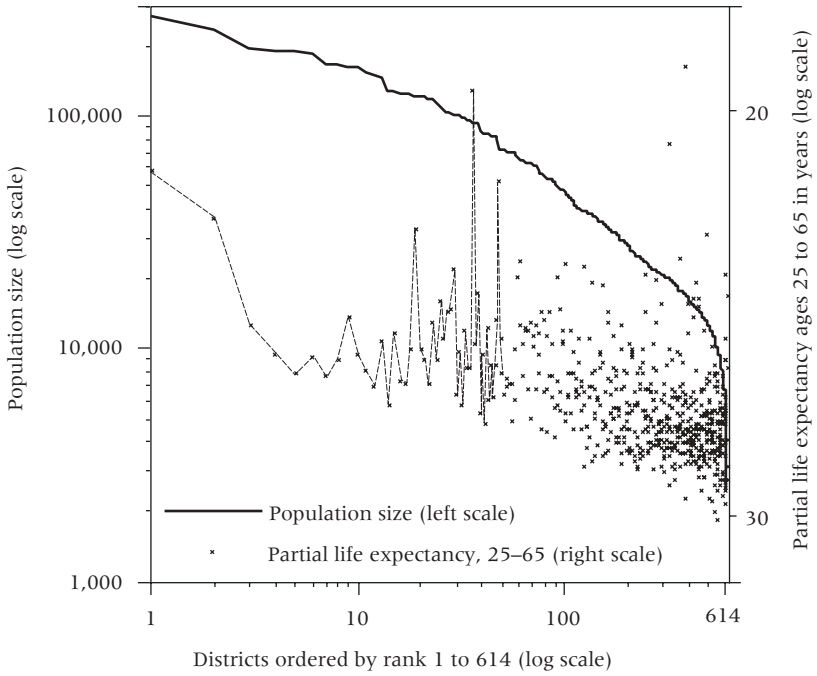
FIGURE 4 Rank size and rank partial life expectancy 25 to 65, England and Wales, 1851–60



for the 1850s. Observations for the 50 most populous districts are emphasized. Overall mortality does not decline in a manner that is neatly ordered by population size of district. If it did, then the mortality distribution would match the rank population size distribution. The smaller districts tend to have lower mortality, with life expectancy at birth between 45 and 50 years even in the middle of the nineteenth century (rural Surrey in Table 3). But at the other end of the distribution life expectancy may be at or even below 30 years (Liverpool and Manchester in Table 3). For the intermediate ranks there is a good deal of disorder, with no regular progression by size. In broad terms Figure 3 appears to indicate that while mortality was directly related to population size among districts, no decisive distinction could be made between the mortality level for urban and rural places. There were many distorting factors.

Whereas Figure 3 combines the effects of age groups, Figure 4 begins the process of disaggregation. It uses the partial life expectancy in years between ages 25 and 65 (e_{25-65}), which is a fairly refined measure of adult mortality, but avoids the effects of deaths in old age. With no adult mortality, e_{25-65} would be 40 years. In the 1850s most districts of England and Wales

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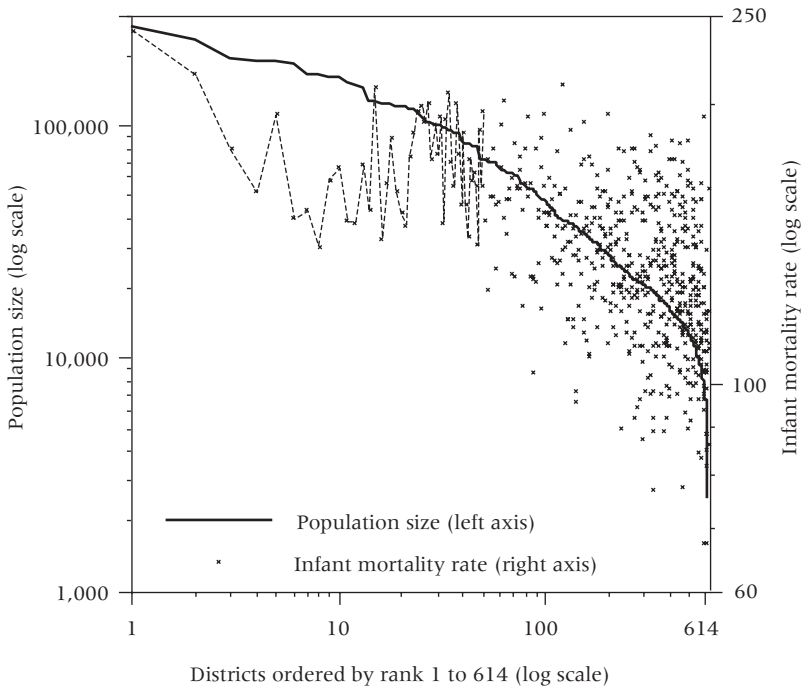
FIGURE 5 Rank size and rank infant mortality, England and Wales, 1851–60



had an e_{25-65} of 25 to 30 years, that is from 63 to 75 percent of the maximum, and this would include a substantial number of urban districts. A handful of districts—Liverpool and Manchester included—experienced excess adult mortality at about 55 percent of the maximum, but they were the exception. Adult mortality was not the principal cause of the general mortality effects seen in Figure 3; they are far more closely influenced by the consequences of mortality at early ages. Figure 5 uses the same framework to illustrate the influence of the infant mortality rate (q_0, in parts per thousand). Here the distribution sits astride the rank-size guideline, and there is in some ways a more orderly urban–rural continuum; but among the smaller districts there was still considerable scope for variation, confirming that not all rural districts experienced low levels of infant mortality of less than 100. Infant, and doubtless childhood mortality in general, were rather more sensitive to environmental conditions than adult mortality.

Figure 6 is a final illustration of how this size-density effect influenced the urban–rural mortality gradient. It shows, in simple terms, the associations between the infant mortality rate (IMR) and the early childhood mortality rate (ECMR) and population density among the 614 districts of En-

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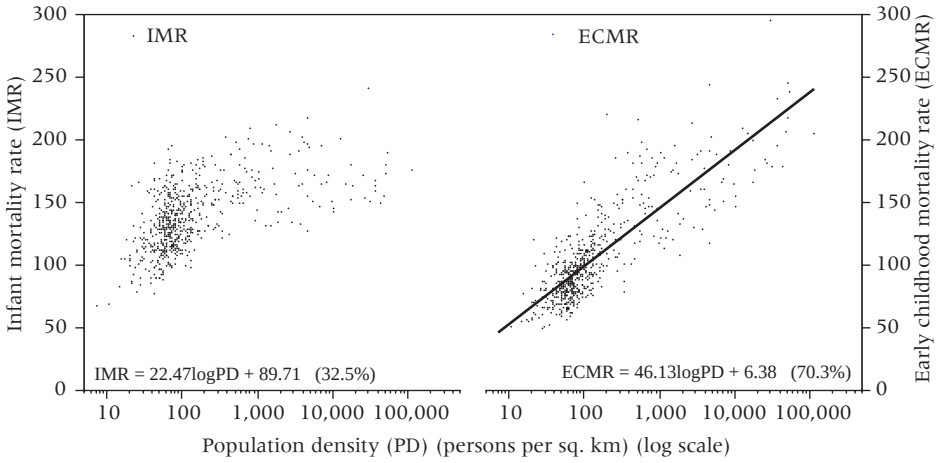
FIGURE 6 The effects of population density (PD) on the infant mortality rate (IMR) and early childhood mortality rate (ECMR), England and Wales, 1851–60



gland and Wales in 1851–60. While there is clearly a positive and significant link between infant mortality and population density, the association is less strong and certainly less clearcut than that between early childhood mortality and population density. There should be few surprises here. The infant mortality rate combines a number of diverse elements: especially the after effects of delivery and the possibility that birth did not occur at full-term, factors that affect the neonatal mortality rate (deaths at 0–30 days); and the influence of breastfeeding and the start of exposure to the common childhood diseases, factors that affect postneonatal mortality (deaths at 1–12 months). The early childhood mortality rate responds mainly to the infectious diseases of childhood, especially measles, scarlet fever, whooping cough, diphtheria, and smallpox. Figure 6 also suggests that, in many areas of relatively low population density and substantially rural characteristics, infant mortality was higher than might have been expected. These anomalies are certainly worthy of closer investigation.[4]

The data presented in Figures 2 through 6 also complicate matters for those seeking to assess the demographic consequences of urbanization during the early stages of industrialization. They make it more difficult to capture long-run trends in the standard of living without considering the additional risks to health and of dying early that became synonymous with the urban environment. Real wages and the quality of life did not run together, thanks to urbanization, in those countries where the industrial revolution began before the twentieth century (Szreter and Mooney 1998; Szreter and Hardy 2000; Woods 2000: 360–380; Woods 2003b). In developing regions today, there is also a continuing debate on the extent of poverty in cities

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and the ways in which urban poverty may affect well-being and access to health care, especially among children (Brockerhoff and Brennan 1998; Harpham and Molyneux 2001). But Africa has experienced excess rural mortality and this may also have been true of early-twentieth-century China (Table 1). In the well-documented case of Kenya during the 1980s, for example, early-age mortality hardly improved in most rural areas but did improve in urban locations, thereby exacerbating already substantial rural–urban differentials; during the 1990s, meanwhile, conditions improved in rural Kenya (especially in highland areas with no endemic malaria) and deteriorated in most urban districts, reversing the earlier trend (Gould 1998).

There are some other interesting questions. What would Figure 6 look like for earlier centuries and other places? Presumably the increase in population density in the new urban places encouraged increases in early childhood mortality, rather than infant mortality, in eighteenth-century Europe. Was measles endemic in Chinese and Japanese cities, and if so what was its impact on early childhood mortality? And what was the role of pulmonary tuberculosis in maintaining urban–rural mortality differentials?

Conclusion

The economic and epidemiological conditions of urban compared to rural places continue to have a bearing on the risk of death. The historical analysis of such differentials offers several pointers to the way in which the debate might be advanced. First, the focus of attention clearly needs to be mortality in childhood, which appears to be highly sensitive to differences in population density. It is important as well to distinguish between deaths in infancy and early childhood and to realize that an excess of the latter may be found especially in urban centers and at times before the medical control of childhood infectious diseases became possible.

Second, although it is convenient to categorize environments as either urban or rural, in reality there was in the past, at least in Europe, a mortality continuum. Certainly the average life chances, measured by life expectancy at birth, were as much as 1.5 times better in the countryside than in the larger towns, but this does not mean that the former was invariably healthier. What changed the situation in Europe during the eighteenth and nineteenth centuries was rapid urbanization: the redistribution of people from the relatively good to the bad locations in terms of health environments.

Third, in using demographic indexes to facilitate cross-cultural comparison, historians always run the risk of oversimplification. Even near neighbors such as Catholic France and Protestant England, while sharing an apparently common system of ecclesiastical registration, displayed very different attitudes toward both infant feeding and the need for an infant to be baptized quickly. The resulting conventions undoubtedly affected parish register en-

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tries and thereby the results of family reconstitution studies. The comparison of East Asia and West Europe is far more troublesome, however. In early modern Japan it seems most likely that urban centers did experience some excess mortality, although differentials were less than in Europe even while levels of urbanization were comparable. In China, where the distinctions between town and countryside were even more blurred in both administrative and statistical terms, the pattern of mortality is far from obvious.

The long debate on urban–rural mortality differentials has not been brought to a successful conclusion, but the signs of greater cultural awareness and analytical sophistication are encouraging. In particular, it is critical that the crude depiction of an urban graveyard effect be replaced by a far more contingent account that is sensitive to the diversity of health environments that may be associated with the clustering of populations in high-density areas.

Notes

1 Wolf (2001: 153), for example, assumes that ${}_5q_0$ (the childhood mortality rate) for late Qing China was 0.333 (1 in 3 babies born alive did not reach their fifth birthday), but the evidence summarized in Table 1 indicates that early-age mortality was rather variable (see Lee and Wang 1999; Lee, Campbell, and Wang 2002). There must also be a continuing suspicion that these estimates are too low. More generally, Naquin (2000; see also Skinner 1977; Mote 1995) has illustrated the various source problems that limit work on the urban history of China; and, in similar fashion, Benedict (1996) has shown the problems faced in research on Chinese historical epidemiology created by the absence of continuous statistical and demographic data.

2 Woods and Shelton (1997) and Woods (2000) provide detailed guides to the mortality statistics available for Victorian England and Wales. Although these data are not without limitations, they provide a means of observing variations and changes in the level of mortality, its age pattern, and the principal causes of death, disaggregated by at least 600 geographical units (many of which can be classified as either overwhelmingly urban or predominantly rural in terms of population density or economic function) spread over six decades (1851–60 to 1901–10).

3 Bak (1997: 27) and Wolfram (2002: 1014) have recently reminded us that George Kingsley Zipf's rank-size rule is simply one of many examples of "power laws" to be found in nature.

4 Dobson (1997) has examined some of these environmental differences in rural England during the early modern period. Apart from the towns, the low-lying estuarine and coastal marsh areas were especially prone to high levels of infant mortality.

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Shifting Childrearing to Single Mothers: Results from 17 Western Countries

Patrick Heuveline
Jeffrey M. Timberlake
Frank F. Furstenberg, Jr.

The final third of the twentieth century witnessed remarkable changes in patterns of family formation within most Western countries. During the two decades that followed World War II, marriage and childbearing occurred early in adulthood and were tightly linked. Then, beginning in the late 1960s in some countries and spreading to many others over the next few decades, the average age at first marriage increased as growing proportions of couples cohabited either as a prelude or an alternative to marriage (Bumpass and Sweet 1989b; Cherlin 1992; Casper and Cohen 2000; Kiernan 2000; Prinz 1995; Raley 2000; Smock 2000). Accompanying these changes in marriage practices were large increases in the prevalence of nonmarital childbearing (Sardon 2000; Ventura and Bachrach 2000), especially conspicuous in the face of rapid declines in marital fertility (Smith, Morgan, and Koropeckyj-Cox 1996).

Labeled by van de Kaa (1987) as the "second demographic transition," this multifaceted departure from the ordered sequence of marriage and childbearing has created challenges for researchers attempting to describe contemporary patterns of family formation with precision. The nonmarital fertility ratio (NMFR), perhaps the most closely watched indicator of changes in family structure, has become an increasingly blunt instrument in light of the share of nonmarital fertility accounted for by parental cohabitation. Moreover, most fertility studies cannot easily determine the number of children women have had by different partners (much less the number of childbearing partners that men have had). Different family forms are often confused in public rhetoric and sometimes even by those researchers who use marriage as a proxy for a nuclear household or nonmarriage as a proxy for single parenthood.

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This article builds on a growing effort by some family demographers to fashion new techniques for capturing the ongoing changes in partnership formation and dissolution, marriage, and childbearing, and for examining how these changes translate into different familial experiences for children (Bracher and Santow 1990; Bumpass 1984; Bumpass and Lu 2000; Bumpass and Raley 1995; Bumpass and Rindfuss 1979; Bumpass and Sweet 1989a; Clarke 1992; Furstenberg et al. 1983; Graefe and Lichter 1999; Hoem and Hoem 1992). We extend previous research by analyzing the nationally representative Fertility and Family Surveys from 14 European countries and from Canada, New Zealand, and the United States. We employ multistate life table analysis to estimate children's total expected duration in selected family types and probabilities of transition between them for a series of national synthetic birth cohorts covering, in most cases, the late 1970s to the mid-1990s.

This exercise is instructive because previous research has shown that family structure—the set of residential arrangements of children's main caregivers—has important consequences for the welfare of children. Numerous studies have shown that individuals generally fare best both in childhood and in later life when they grow up with both of their biological parents (Amato and Booth 1997; Cherlin 1999; Cherlin, Chase-Lansdale, and McRae 1998; Furstenberg and Kiernan 2001; Jonsson and Gähler 1997; Kiernan and Cherlin 1999; McLanahan and Sandefur 1994). The reasons for this are largely related to the economic disadvantages faced by single and divorced mothers (Burkhauser et al. 1991; Duncan and Hoffman 1985; Garfinkel and McLanahan 1986; Jarvis and Jenkins 1999; Smock, Manning, and Gupta 1999) and the consequences of childhood poverty (Duncan et al. 1998; Guo and Harris 2000). Put simply, children benefit from the economic and emotional investment of parents who reside together continuously, and these investments are generally higher among biological than among surrogate parents.

While children may therefore be better off residing in a cohabiting union formed by two biological parents than in a married household where one of the parents is not a biological parent, the current focus in survey research on marital status makes changes in the former living arrangement more conspicuous than changes in the latter. Research has shown that in spite of the economic benefits of stepfamilies relative to single-parent families (Morrison and Ritualo 2000), stepfamilies also suffer disadvantages associated with disruption following divorce or competition with a nonresidential biological parent (Cherlin 1978; Cherlin and Furstenberg 1994; Kiernan 1992). We still know little about the consequences for children of growing up in a de facto marriage when both biological parents are present (Manning and Lichter 1996; Smock 2000). Until we have good techniques for charting children's experiences of different types of families at both the

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macro and micro level, our understanding of the effects of family structure on child well-being will be incomplete.

This article contributes to the development of such techniques by tracing the effects of family change on children's family structure experiences in a number of Western countries. Substantively, we focus on children growing up with only one parent, since the literature to date indicates that this is the living arrangement that most profoundly affects child well-being. We study both the incidence and the duration of living with only one parent, and the respective contributions of out-of-wedlock fertility and parental separation to children's exposure to a single-mother household. We take into account parental cohabitation at birth, which leads nonmarital fertility ratios to overstate the incidence of single parenthood at birth, and we estimate whether parental cohabitation is more likely than parental marriage to dissolve before the end of childhood. We also take into account parental "repartnering" and estimate the reduction it provides in the duration of life with only one parent.

While we aim primarily at addressing these descriptive challenges, our cross-national scope also provides insight into the underlying causes of the observed changes. As exemplified years ago by the European Fertility Project, the convergence in demographic behavior among countries that differ widely with respect to one alleged cause of that behavior calls for a reframing of extant theories of demographic change. Interestingly, the first demographic transition in Europe has been characterized by Watkins (1991) as one of demographic integration within countries, with the gradual fading of provincial idiosyncrasies between 1870 and 1960. Wilson (2001) also describes a global demographic convergence between countries for the second half of the twentieth century. Yet, many authors expect national demographic differences to persist in view of the deep historical roots of family patterns (e.g., Reher 1998) and the enduring differences in welfare systems (Esping-Andersen 1990) that likely affect family behavior.

Our findings indicate that the second demographic transition exhibits little sign of convergence because the decline in marriage, the increase in the prevalence of nonmarital cohabitation with children, and changes in family "reconstruction" have each proceeded at quite different paces across countries. Perhaps the only universal Western trend is that childrearing is being shifted from married parents to single mothers more than to cohabiting parents, stepfamilies, or single fathers.

Data and methods

Data

The Fertility and Family Surveys (FFS) is an international sample survey program focusing on fertility and family change in the member countries of

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the United Nations Economic Commission for Europe. The list of participating countries includes over 20 European nations, as well as Canada, New Zealand, and the United States. The program coordinated the sample and questionnaire design of nationally representative surveys carried out by national statistical offices (Macura and Klijzing 1992). The first countries participating in the program contributed existing family surveys (e.g., Norway's 1988 Family and Occupation Survey), while countries joining later attempted to fit the model survey instruments into ongoing data collection ventures. A common strategy was to use a particular cycle of an existing survey with core topics most similar to those of the FFS, appending ad hoc modules if necessary (e.g., Cycle 5 of the General Social Survey in Canada; the 1994 Annual Employment Survey in France; Cycle 5 of the National Survey of Family Growth in the United States). Given these diverse strategies, the years of data collection range from 1988 to 1998, the sampling designs differ (e.g., with respect to age range, inclusion of a male sample), and the questionnaires vary in content. Although the FFS data are imperfectly standardized, they represent an unparalleled source of information about differences in fertility and family trends across a number of Western countries.

For this article we analyzed female samples only, permitting the inclusion of several countries that did not interview males. For idiosyncratic reasons a few of the surveys could not yield the desired national life tables.[1] For the remaining 17 countries, required items are missing for only a small proportion of children. Sample sizes net of item nonresponses and internal consistency checks are shown in the Appendix Table (for a fuller analysis of data quality see Kveder 2002). The samples' nonmarital fertility rates were also compared to official birth registration statistics to verify the reliability of the data.[2]

Methods

Children's family structure. We reconstructed children's family structure experiences by combining the partnership and fertility histories of the female FFS respondents. For up to nine cohabiting partners, respondents were asked the dates of coresidence (beginning and end), whether and how the partnership ended, and the date of marriage, if applicable. In addition, for each of up to 13 live births, respondents reported the date of birth, whether the child was currently a coresident, and the date of and reason for the child's departure if not coresiding at the time of the interview. As long as the child was living with the respondent (i.e., the child's mother), we knew whether or not he or she was living with the male partner of the respondent and, if so, whether the couple was married. We limit our analyses to living arrangements involving the mother, with all other arrangements lumped into a single residual state. While this state comprises several distinct family structures (e.g., living with a single father, in a paternal stepfamily, with grand-

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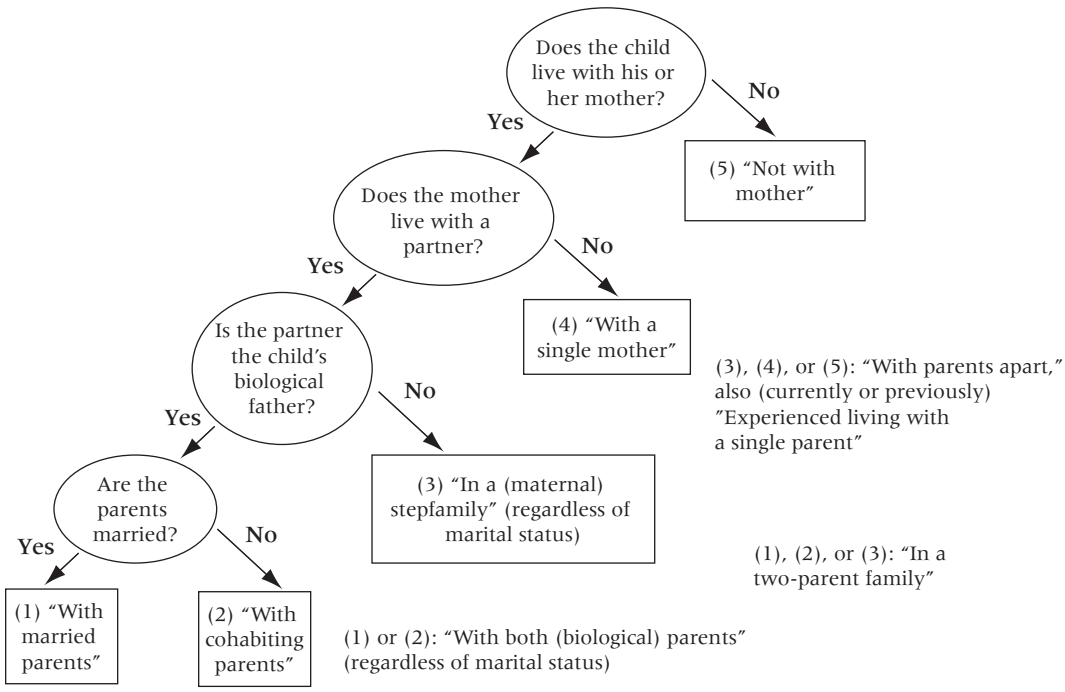
parents), we found that less than 5 percent of childhood years, defined here as years from birth to exact age 15, are lived without the mother, which reduces the utility of making further distinctions within the residual state.

Figure 1 depicts the states analyzed below. Research on the impact of family structure on child well-being suggests beginning with the distinction between living with both parents and not doing so. Although the effect of parental marital status is less clear, married unions tend to be more stable, so we also account for parents' marital status. This allows us to study the family structure trajectories of children born to married versus cohabiting parents. For children whose parents live apart, we distinguish between living with the mother and not. Finally, when the child lives with his or her mother only, we distinguish between living with a single mother and living with a mother and her cohabiting partner (irrespective of marital status). Unfortunately, as is true of commonly used measures of family structure, the conventional nomenclature of family demography is poorly suited to describe this kaleidoscope of family forms efficiently. Figure 1 also defines the terms we use to denote the five states and three additional combinations of states. Most notably, by "single" mother we always imply "not in a partnership"; and by "both" parents (as opposed to "two" parents in a "two-parent family"), we refer to the two biological parents.

FIGURE 1 Definition of childhood living arrangements and shorthand descriptive terms



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Multistate life table construction. There are two principal methods for constructing a multistate life table, one based on rates of transition between states, and another based on probabilities of transition (Rogers 1995). In most instances, transition probabilities cannot be directly estimated, so the former is the more commonly used method. With retrospective data, however, transition probabilities can be estimated directly, which greatly simplifies the calculation of the tables. More precisely, we estimate conditional probabilities of transition—that is, conditional on the survival of the mother. Given the low mortality rate of women in the age range sampled in the FFS (on the order of 1 per 1,000 per year), this should not deter us from applying this more straightforward technique.

Under the typical stationary assumptions of life table construction, rendered acceptable by the use of short age intervals, the survivorship ratios are estimated as:

$$\frac{{}^{i}_{n}N^{j}_{x}(t)}{{}_{n}N^{i}_{x-n}(t-n)} = \frac{{}^{i}_{n}L^{j}_{x}[t-n,t]}{{}_{n}L^{i}_{x-n}[t-n,t]} \tag{1}$$

where

${}_{n}N^{i}_{x-n}(t-n)$ is the number of children aged $x-n$ to x and in state i at time $t-n$;

${}^{i}_{n}N^{j}_{x}(t)$ is the number of children aged x to $x+n$ and in state j at time t who were in state i at time $t-n$;

${}_{n}L^{i}_{x-n}[t-n,t]$ is the number of child-years lived in state i, between age $x-n$ and x in the period $[t-n, t]$;

${}^{i}_{n}L^{j}_{x}[t-n,t]$ is the number of child-years lived in state j, between ages $x-n$ and x in the period $[t-n,t]$ by children who were in state i at time $t-n$; and

i is any state and j is any state unless i is the absorbing state (in which case $j=i$).

Using the above-mentioned assumptions, we reconstructed children's living arrangements from birth to the time of the survey and calculated the quantities ${}_{n}N^{i}_{x-n}(t-n)$ and ${}^{i}_{n}N^{j}_{x}(t)$ at any time t before the survey. We then obtained the distribution of child-years lived across states between ages x and $x+n$ from the distribution of child-years lived across states between ages $x-n$ and x, using the equation above and the following identity:

$${}_{n}L^{j}_{x}[t-n,t] = \sum_{i} {}^{i}_{n}L^{j}_{x}[t-n,t] \tag{2}$$

Starting from any distribution of birth statuses, we derived sequentially the distribution in each three-year age group. We calculated four sets of life tables—three corresponding to one of the three possible statuses at

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birth (with married parents, with cohabiting parents, with a single mother), and a fourth using the observed distribution at birth in that period. To analyze recent trends, we estimated life tables for three-year periods (and in three-year age groups), that is, for the three years before the survey [$t-3, t$] and for previous three-year intervals [$t-6, t-3$], [$t-9, t-6$], [$t-12, t-9$], and [$t-15, t-12$]. These period life tables provide the expected number of years in different states at the transition rates observed during the period. We subsequently use the term "childhood expectancy," analogous to life expectancy in standard mortality life tables, to refer to the expected total number of years an average member of a synthetic birth cohort would spend in a given living arrangement between birth and age 15.

Limitations

International survey research always raises issues of data comparability. The information culled from the FFS (age, dates of birth, coresidence) is reasonably objective, and therefore less prone to the different meanings and interpretations that can hamper comparative research on attitudes, for example. However, these data also have several limitations. First, for each child information was provided on only one departure from the maternal household, if one had occurred before the interview. Even when the survey included a male sample, that sample was independent from the female sample, precluding the complete reconstruction of a child's living arrangements for children who did not continuously stay with one of the respondents. Heuveline and Timberlake (2002) provide a method to "splice" together information obtained from the male and the female samples and to estimate aggregate life tables with transitions between maternal and paternal households. This more complex approach yields results that are not numerically different enough from those presented here to justify this added complexity. The reporting of, at most, only one move also requires us to assume that children continuously coresided with their mother from birth until either the time of the survey—if they coresided then—or the date reported as the end of coresidence. Since reentries into households are not reported, we also had to assume that a child who leaves the maternal household before age 15 remains out of that household through age 15; that is, we treat the residual state as an "absorbing" state. Under stable conditions, the two biases would exactly balance out, and in any event the total bias is likely to be small given the low incidence of leaving the maternal household in the first place.[3]

A more nettlesome limitation of the maternal data is the absence of positive identification of a child's father. As with most surveys, the FFS were designed to measure marital rather than parental status; therefore we were compelled to develop rules to distinguish children living with both biologi-

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cal parents from children living with an unrelated male who cohabits with the biological mother. If a child was born while the biological mother was in a cohabiting partnership (married or not), we assumed that the partner fathered the child. For children born outside of a partnership, we used the timing of the birth and the next union formation to distinguish between a parental union and another partnership. If the next partnership was formed within six months of the birth or if the mother married within a year of the birth, we coded this partner or spouse as the child's father. Although we could not find data to externally validate this rule, it is well documented that the likelihood of forming a new partnership increases sharply after an out-of-partnership birth (e.g., Brien, Lillard, and Waite 1999). Any rule based on timing will necessarily create some false assignments; however, the numerical impact of these false assignments is likely to be low because the vast majority of children are born within a partnership, even in recent years. Simulations from the United States, the country with the highest proportion of out-of-partnership births, suggested that the proportion of recent birth cohorts experiencing a postnatal parental union varied between 2.3 percent and 3.4 percent depending on the identifying rule applied.[4]

More general concerns associated with the use of retrospective data must also be addressed. First, retrospective data are subject to recall errors, although the more salient the reported events are to the respondent, the lower the chances of recall errors. Dates of birth (of self and own children) and marriage are among the most accurately reported items in retrospective surveys, especially by women (Poulain, Riandey, and Firdion 1991). Retrospective reports on the incidence and timing of cohabitation are less reliable, so it is possible that some early and short-lived partnerships might have gone unreported (Casper and Cohen 2000; Murphy 2000). Their omission would tend to bias estimates of the incidence of children's transitions between various family structures. On the other hand, if such partnerships ended before a child's birth, their omission would not affect his or her family structure experience. Furthermore, as long as respondents tend to forget the shortest partnerships, their omission should not contribute much bias to duration measures.

Finally, retrospective data on children are subject to selectivity biases with respect to maternal age at birth (Rindfuss, Palmore, and Bumpass 1982). As shown in the Appendix Table, the upper age limit of women interviewed across national samples varies appreciably: nine countries had 50 years or older as their upper limit, but the other eight had upper limits ranging from 40 to 49 years. In calculating a three-year period life table up to age 15, the last survivorship ratios estimated with equation (1) above include 9- to 12-year-olds at the beginning of the period, becoming 12- to 15-year-olds at the end of the period. Hence, the youngest children contributing to the estimates were born 12 years before the end of the period. With an upper age

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limit for female respondents of 40 years, for instance, the last survivorship ratio is estimated only from children born to mothers under age 28 in the most recent period life table, under age 25 for the previous one (three to six years before the survey), and so on.

This causes selection problems because younger mothers are more likely to give birth out of wedlock (Morgan and Rindfuss 1999) or in unstable partnerships. For the United States, Bumpass and Lu (2000) found that children born to mothers under age 24 can expect to spend much less time with a married mother than children of mothers aged 24 to 26. We therefore used age 25 as the maternal age at birth threshold below which we considered the estimates too biased. Since 40 years is the lowest upper age limit of respondents across countries, we could compute at least one period life table up to age 15 in each country. When we computed change over time, however, we gradually lowered the last age group of the life table of children's living arrangements, so that the data did not come only from children born to mothers under age 25. When the upper age limit of respondents is 40, as in Germany, we estimated only one period life table up to age 15, with the previous three-year period table ending at age 12, the one before at age 9, and so on. When the age limit is 55 or higher, as in Austria, Canada, and New Zealand, we computed four period life tables up to age 15 without risking substantial selectivity biases.

Results

Exposure to single parenting: The predominance of parental separation

We begin by analyzing the two main childhood routes to single parenting: parental separation and birth to a single mother. Although children experiencing parental separation may transit rapidly from the parental household to a stepfamily, we assume that these children experience a transitory period, however brief, during which they live with only one of their parents, typically the mother. Countries are ranked in Table 1 by childhood exposure to single parenting at early 1990s rates (column 6).[5] The nonmarital fertility ratio is presented in column 1.

Countries with low nonmarital fertility ratios—Italy, Spain, and Belgium—tend to have relatively stable parental unions, and therefore low overall childhood exposure to single parenting. At medium to high levels, the association between the ratio and childhood exposure to single parenting is attenuated by the large variance in the share of nonmarital fertility accounted for by parental cohabitation. At one extreme is Sweden, where 41.2 percent of all births are to cohabiting parents, compared to only 5.5 percent to single mothers (columns 2 and 3). Parental cohabitation also accounts for

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TABLE 1 Childhood exposure to single parenting (from birth to age 15), by child's birth status: Children of the FFS female respondents (in percent)

	Status at birth		Childhood exposure to single parenting				Relative risk of parental separation: cohabitation vs. marriage
				Born to a two-parent family			
	Out of wedlock	Cohabiting parents	Born to a single mother	Cohabiting parents	Married parents	Total exposure	
Country	(1)	(2)	(3)=(1)–(2)	(4)	(5)	(6)=(3)+(4)+(5)	(7)[a]
Italy	6.3	4.1	2.2	1.1	7.6	10.9	3.50
Slovenia	18.9	12.1	6.8	1.5	5.3	13.6	1.93
Spain	6.5	3.4	3.1	2.6	9.2	14.9	7.75
Belgium	6.4	4.9	1.5	3.1	12.4	17.0	4.77
Poland	12.1	2.4	9.7	0.5	8.2	18.4	2.14
Switzerland	7.4	4.4	3.0	2.4	17.3	22.7	2.98
Finland	16.9	13.8	3.1	6.7	16.0	25.8	2.50
Hungary	11.5	7.1	4.4	5.1	17.8	27.3	3.55
France	25.6	21.3	4.3	12.9	11.7	28.9	3.85
Sweden	46.7	41.2	5.5	14.3	14.2	34.0	1.30
Canada	24.1	15.8	8.3	7.5	18.7	34.5	1.92
Czech Republic	13.2	7.8	5.4	5.0	24.4	34.8	2.28
Germany	25.9	10.7	15.2	5.5	18.6	39.3	2.05
Austria	30.7	17.1	13.6	9.3	16.9	39.8	2.22
Latvia	19.3	10.5	8.8	7.8	24.3	40.9	2.47
New Zealand	31.0	18.4	12.6	13.9	22.5	49.0	2.40
United States	26.9	10.7	16.2	8.1	27.0	51.3	2.05

NOTES: Countries are listed in ascending order according to total exposure to single parenting (shown in col. 6). See Figure 1 for definitions of the labels for columns 3 to 6. Columns 1 to 3 are observed from FFS data. Columns 4 and 5 are derived from synthetic cohorts at early 1990s rates.

[a]The formula for column 7 is: (column 4÷column 2)÷(column 5÷[100–column 1]).

much of nonmarital fertility in several other European countries (Slovenia, Finland, France) and Canada. By contrast, in the United States more births are to single mothers (16.2 percent) than to cohabiting parents (10.7 percent). Single mothers also account for a substantial proportion of all births in New Zealand (12.6 percent), Austria (13.6 percent), and Germany (15.2 percent). While the Austrian exception within Europe has been documented previously (Prinz 1995), the estimates for Germany are inflated by the above-mentioned overestimation of nonmarital births in the FFS.

Once status at birth is adjusted to account for parental cohabitation, it becomes clear that parental separation is a more frequent route to single parenting than birth to a single mother. Two exceptions are Slovenia and Poland, where parental separation and birth to a single mother are both rare. Birth cohorts in the United States and New Zealand have the highest combined proportions of children born to a single mother and children born

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to married or cohabiting parents who separate during childhood. Combining these two routes, at early 1990s rates, 51.3 percent of a birth cohort is expected to experience living with a single parent during childhood in the United States. The proportion is similar in New Zealand (49.0 percent, column 6). In both countries parental separation accounts for more than two-thirds of this childhood exposure. In the majority of European countries and Canada, the percentages of children expected to experience parental separation range from the low 20s to the low 30s, often four to five times higher than the percentage born to a single mother.

Cohabitation and marriage from the perspective of children

It is clear that failing to account for parental cohabitation creates a distorted picture of the exposure at birth to living with a single mother. If parental cohabitations are highly unstable, however, the overestimation of the total childhood exposure to single parenting would not be large. We find in most countries that children born to cohabiting parents are two to four times more likely to see their parents separate than are children of parents married at the time of birth (column 7). Sweden again stands out: the likelihood that children born in a cohabitation experience the separation of their parents during childhood is only 30 percent greater than that of children born to married parents. The Swedish exception is only one of degree, however, since parental cohabitation is less stable than parental marriage in every country. Nevertheless, variation in the degree to which marriage relative to parental cohabitation "protects" children from parental separation complicates certain cross-country comparisons. Our results indicate, for example, that children born to cohabiting parents in Sweden are less likely to experience a parental break-up (column 4÷column 2 = 0.347) than children born to married parents in the United States (column 5÷[100–column 1] = 0.369).

Birth to cohabiting parents therefore has quite different effects across countries on the childhood probability of experiencing a parental separation. In Sweden, most children born to cohabiting parents never experience single parenting. Whereas 41.2 percent of Swedish children are born to cohabiting parents, we estimate that about a third of them (14.3 percent) experience parental separation, at early 1990s rates (see columns 2 and 4). The proportion of a Swedish birth cohort that is born out of wedlock and yet is expected to remain with both parents from birth to age 15 is the difference, or 26.9 percent. The corresponding percentages are markedly smaller in other countries, though not trivial in Finland (7.1), Austria (7.8), Canada (8.3), France (8.4), and Slovenia (10.6). However, this pattern of longstanding de facto marriages is not universal. In the United States, for example, the stability of

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cohabiting unions is far lower even when children are involved. Of the 10.7 percent of American children born to cohabiting parents in the early 1990s, a very large majority is expected to see their parents separate by age 15 (8.1 percent of a birth cohort). Thus, in the United States, parental cohabitation merely postpones the experience of single parenting to later childhood years. This expectation is similar for children born to cohabiting parents in Latvia and, to a lesser extent, in New Zealand and the Czech Republic.

Beyond exposure: Other partnerships and childhood expectancy of living with a single mother

The duration of single parenthood is related to public costs and perhaps private costs to parents, children, and extended kin. Hence, it is crucial to look beyond incidence and analyze the duration of children's coresidence with a single parent, overwhelmingly the mother. Table 2 first compares childhood expectancy of living with a single mother across birth statuses (columns 1 to 3). For each country, the first two columns indicate a longer childhood expectancy (two to four times longer in most countries) of living with a single mother for children born to cohabiting rather than to married parents. Even in Sweden, where the parental cohabitation-to-marriage ratio of exposure was smallest (1.30), the ratio of duration is nearly two (2.17÷1.09). In the United States, with a more typical exposure ratio (2.05), the ratio of duration exceeds three (3.95÷1.28). Within countries, the duration ratios are higher than the exposure ratios, indicating that children born to cohabiting parents are more likely both to see their parents separate and to see them separate sooner than children born to married parents.

Because exposure starts at birth, children born to single mothers can expect to live longer with single mothers than children of other birth statuses—in a majority of countries spending more than half of their childhood with single mothers (column 3). Childhood expectancy of living with a single mother for children born to single mothers is shortest in countries where these children are more rare (Spain 4.47 years, Italy 4.50 years, and Slovenia 4.52 years), suggesting social pressure to raise children within partnerships even if they were conceived outside of a partnership. In contrast, the childhood expectancy of living with a single mother for children born to single mothers exceeds two-thirds of childhood years in Germany (11.67 years), Belgium (11.06 years[6]), and Poland (10.24 years). In each of these countries, childhood expectancy of living with a single mother is less than one year for children born to married parents; thus, childhood living arrangement experiences are highly conditioned by birth status. Overall, out-of-partnership fertility accounts for a larger share of a birth cohort's average expected duration in single-mother households than it does for the percentage of a birth cohort ever exposed to living in such households. Nevertheless, children born to single mothers con-

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TABLE 2 Childhood expectancy of the duration of living in selected family structures (in years, from birth to age 15) by child's birth status: Children of the FFS female respondents

Country	With a single mother (no partner)				In a maternal stepfamily (5)	Not with mother (6)	Total with parents apart (7)=(4)+(5)+(6)	Ratio with a single mother to total with parents apart (8)=(4)÷(7)
	Born to married parents (1)	Born to cohabiting parents (2)	Born to a single mother (3)	All births (weighted average) (4)				
Italy	0.43	0.60	4.50	0.52	0.16	0.13	0.81	0.64
Spain	0.56	3.11	4.47	0.72	0.35	0.07	1.14	0.63
Slovenia	0.32	0.63	4.52	0.61	0.55	0.09	1.25	0.49
Belgium	0.58	3.82	11.06	0.82	0.53	0.06	1.41	0.58
Switzerland	0.78	1.43	8.04	1.03	0.36	0.31	1.70	0.60
Poland	0.45	1.00	10.24	1.41	0.34	0.28	2.03	0.69
Hungary	1.04	2.87	6.86	1.46	0.68	0.26	2.40	0.61
France	0.75	3.02	8.82	1.55	0.76	0.13	2.44	0.64
Finland	0.93	2.85	8.14	1.44	0.76	0.31	2.50	0.57
Sweden	1.09	2.17	9.40	2.08	0.75	0.33	3.16	0.66
Czech Republic	1.04	2.11	5.05	1.35	1.71	0.12	3.18	0.43
Canada	1.31	4.03	9.20	2.38	0.93	0.08	3.39	0.70
Austria	1.32	2.14	7.76	2.32	1.36	0.26	3.94	0.59
Latvia	1.47	5.50	4.89	2.14	1.57	0.26	3.97	0.54
Germany	0.89	3.00	11.67	2.69	1.20	0.10	3.99	0.67
New Zealand	1.44	4.29	9.78	2.96	1.41	0.71	5.08	0.58
United States	1.28	3.95	8.56	2.70	1.87	0.56	5.12	0.53

NOTES: Countries are listed in ascending order according to the expected duration of living (in years) with parents apart (shown in col. 7). See Figure 1 for definitions of the labels for columns 1 to 6. Columns 1 to 6 are derived from synthetic cohorts at early 1990s rates. The difference between 15 years and the value in column 7 is the childhood expectancy of the duration of living with both biological parents. In the United States, e.g., that expectancy is 9.88 years.

tribute more than half of the years that children spend with a single mother in only three countries, Germany, Poland, and the United States.[7]

The country rankings in Table 2 are based on the total childhood expectancy of living with parents apart (column 7). Columns 4 through 6 decompose this total into childhood expectancy of living with a single mother, in a stepfamily, and not with the child's mother. New Zealand and the United States again stand out with more than a third of childhood years expected to be with parents apart (5.08 and 5.12 respectively). The difference between the expected childhood exposure to single parenting (about 50 percent in these two countries) and the expected proportion of childhood years spent with a single mother reflects the fact that exposure frequently occurs several years after birth, through parental separation.

Because maternal repartnering (column 5) is more prevalent in the United States than elsewhere,[8] childhood expectancy of living with a single mother (2.70 years, column 4) is shorter than in New Zealand (2.96 years) and nearly the same as in Germany (2.69 years), despite a longer childhood expectancy of living with parents apart. Not coresiding with the mother is quite rare. The longest childhood expectancy not with mother is 0.71 years in New Zealand (column 6), less than 5 percent of the first 15 years. In all countries, living with a single mother accounts for the largest share of childhood expectancy of living with parents apart. Across countries, the ratio of childhood expectancy of living with a single mother to total childhood expectancy of living with parents apart varies between 43 percent and 70 percent (column 8). In seven of the 17 countries, childhood expectancy of living with a single mother reaches two to three years at early 1990s rates. In sum, at the time of the survey, living with a single mother was the most common alternative to living with married parents. This could be due to the relatively recent emergence of other two-parent families, such as cohabiting parents and stepfamilies.

What offsets the declining proportion of childhood spent with married parents?

To analyze within-country trends over time, we compare the most recent three-year period life table with the table corresponding to an earlier three-year period. We focus on childhood expectancy across the four states that we believe best reflect underlying family structure transitions. Because of the variable severity of the selectivity concerns discussed above, in Table 3 we used somewhat different time intervals (column 1) and upper age limits (column 2) to generate the within-country trends. Although necessary to reduce selectivity bias, this strategy complicates cross-national comparisons. Columns 3 to 6 in Table 3 hence provide annualized rates of change in childhood expectancy of living in each family structure. These rates standardize the pace of change, independent of the age limit or time interval used in

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TABLE 3 Annualized rate of change and absolute change in childhood expectancy of living in selected family structures: Children of the FFS female respondents

Country	Time interval (1)	Upper age limit (2)	Annualized rate of change (percent) of living: With married parents (3)	With cohabiting parents (4)	With a single mother (5)	In a step-family (6)	Absolute change (in years) of living: With married parents (7)	With cohabiting parents (8)	With a single mother (9)	In a stepfamily (10)
Latvia	9	15	–2.7	9.1	7.4	–0.3	–2.40	0.35	2.05	–0.03
France	9	15	–2.3	11.8	7.7	–2.6	–2.35	1.16	1.23	–0.16
Canada	15	15	–1.6	13.7	3.0	3.4	–2.60	1.12	0.91	0.47
New Zealand	15	15	–1.5	5.9	5.1	–1.0	–2.30	0.58	1.78	–0.18
Austria	15	15	–1.4	10.0	1.5	3.7	–2.17	0.83	0.54	0.64
Slovenia	9	12	–0.6	6.1	2.8	0.4	–0.49	0.51	0.16	0.02
United States	9	9	–0.6	0.2	2.0	–1.2	–0.33	0.01	0.34	–0.08
Finland	12	15	–0.5	2.7	4.1	–0.6	–0.66	0.25	0.56	–0.06
Poland	9	15	–0.5	17.0	2.4	0.4	–0.52	0.22	0.28	0.01
Czech Republic	9	9	–0.5	18.2	1.9	–2.1	–0.38	0.33	0.09	–0.07
Hungary	9	6	–0.5	13.1	2.9	0.1	–0.23	0.18	0.09	0.00
Belgium	9	6	–0.4	13.6	2.7	15.2	–0.20	0.13	0.04	0.06
Germany	9	6	–0.4	0.0	3.7	–6.6	–0.16	0.00	0.29	–0.12
Spain	9	15	–0.2	12.7	–3.5	–5.7	–0.28	0.30	–0.24	–0.16
Italy	9	15	–0.1	0.6	4.7	–4.9	–0.10	0.01	0.21	–0.06
Switzerland	9	15	0.0	–0.5	2.2	–1.6	–0.03	–0.01	0.16	–0.08
Sweden	9	9	0.3	–2.5	3.2	–2.4	0.14	–0.42	0.27	–0.06

NOTES: Countries are listed in ascending order according to the annualized rate of change of living with married parents (shown in col. 3). See Figure 1 for definitions of the labels for columns 3 to 10. Estimates are based on different synthetic cohorts. In each country, a synthetic cohort to which are applied the period rates of the three years before the survey—see Appendix Table for survey dates—is compared with a synthetic cohort to which are applied the rates of an earlier three-year period. The time difference is shown in Column 1 above. Since we are comparing three-year period rates, a nine-year comparison is between the rates of the period three years before the interview date and the rates of the period nine to 12 years before the interview date. When the age range of respondents permitted, we went back to 12 years earlier (in one country) or 15 years earlier (in three countries) without having to censor the life table below age 15. In some other countries, however, selectivity concerns led us to limit the comparison to up to age 12 (one country), age nine (three countries), or even age six (three countries) in order to maintain a nine-year time interval (as shown in column 2).

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the comparison.[9] Absolute changes (in childhood years) during the period are presented in columns 7 to 10.

Countries are ranked in Table 3 by the pace of the decline in childhood expectancy of living with married parents (column 3). Quite rapid declines, between 1 percent and 3 percent annually, are found in Latvia, France, Canada, New Zealand, and Austria. These rates of change reflect absolute declines in childhood expectancy of living with married parents of 2.17 years over a 15-year period in Austria to 2.40 years over a nine-year period in Latvia (column 7). In eight other countries, annual rates of decline averaged between 0.4 percent and 0.6 percent. In the remaining four countries (Spain, Italy, Switzerland, and Sweden), childhood expectancy of living with married parents was more stable.

What changes in other family structures have been concurrent with the decline in childhood expectancy of living with married parents? In the five countries where these declines were most rapid, childhood expectancy of living with cohabiting parents increased rapidly, from 6 percent per year in New Zealand to 14 percent per year in Canada (column 4). Overall, childhood expectancy of living with cohabiting parents was on the rise in nearly every country (columns 4 and 8), with France and Canada experiencing the largest absolute increases (a little over one year). However, these increases were not large enough to substitute fully for declines in childhood expectancy of living with married parents, resulting in overall declines in childhood expectancy of living with both parents (i.e., irrespective of marital status). Even in France and Canada, the increase in childhood expectancy of living with cohabiting parents represents only one-half of the decline in childhood expectancy of living with married parents.

Childhood expectancy of living with cohabiting parents declined slightly in the years before the survey in Sweden, where it had reached its record duration in the early 1990s. The Swedish trend seems to be linked to a change in pension policies in 1990 that induced cohabiting parents to marry, causing a temporary increase in marriages. The impact of this policy change is also visible in the annual nonmarital fertility rate, which dropped in 1990 and did not return to its 1989 level until 1994 (Sardon 2000). The decrease in childhood expectancy of living with cohabiting parents between the pre- and the post-1990 period partially reflects this temporary marriage surge. However, the decrease in childhood expectancy of living with cohabiting parents still exceeds the increase in childhood expectancy of living with married parents. Thus, even in Sweden, childhood expectancy of living with both parents declined between the two periods. In sum, across countries there appear to be limits to the extent to which parental cohabitation is substituting for parental marriage.

Stepfamilies appear to constitute, on average, an even less substantial alternative. In the early decades of rising divorce rates, family sociologists

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speculated that stepfamilies would become more prevalent, knitting different households in complex networks resembling "new extended families." The actual changes of the past several decades proved this sanguine vision to have been mistaken. In the years before the FFS, increases in childhood expectancy of living in stepfamilies were visible in only two countries (Canada, 0.47 years and Austria, 0.64 years, column 10), and amounted to only a fraction of the decreases in childhood expectancy of living with married parents. Also, like parental cohabitation in Sweden, childhood expectancy of living in stepfamilies declined slightly in the years before the survey in the United States, where it had reached its highest level in the early 1990s. The results indicate that the prevalence of stepfamilies was even less able than parental cohabitation to expand when childhood expectancy of living with married parents declined.

In countries where childhood expectancy of living with married parents declined fastest, increases in childhood expectancy of living in alternative forms of two-parent families were not sufficient to compensate fully for the decline in marriage. As a result, childhood expectancy of living with a single mother increased in these countries (column 9). In Latvia and New Zealand, for example, the bulk of the decline in childhood expectancy of living with married parents was translated into an increase in childhood expectancy of living with a single mother. In France, where childhood expectancy of living with cohabiting parents increased but that in stepfamilies did not, about one-half of the decline in childhood expectancy of living with married parents was transferred into increased childhood expectancy of living with a single mother. In both Latvia and France, childhood expectancy of living with a single mother increased at an annualized rate of more than 7 percent per year (column 5), equivalent to a doubling time of less than ten years. Had that pace continued to the present, childhood expectancy of living with a single mother would now be longer in these two countries than in the United States. Even in Canada and Austria, where childhood expectancies of living with cohabiting parents and in stepfamilies both increased, about one-third of the reduction in expected time with married parents was converted into childhood expectancy of living with a single mother.

While these trends are most visible in the five countries where childhood expectancy of living with married parents declined quickly, similar observations apply in the eight countries where the annualized rate of decline was more moderate (between 0.6 percent and 0.4 percent per year). In these countries, absolute changes in childhood expectancy of living in stepfamilies were negligible. Increases in childhood expectancy of living with cohabiting parents largely offset decreases in living with married parents in three central European countries (Czech Republic, Hungary, and Slovenia) and Belgium, whereas childhood expectancy of living with a single mother increased most in the United States, Finland, Poland, and Germany.

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Discussion

Although it is widely acknowledged that, at least since the 1970s, marriage and divorce statistics have become increasingly flawed indicators of family structure, more appropriate data have not been collected frequently enough to trace the quickly changing contours of children's family environments. The retrospective data from the Fertility and Family Surveys provide a unique opportunity to compare children's family structure experiences during a time of transition in Western countries. At the rates occurring in the early 1990s, we estimate the proportion of a birth cohort expected to experience single parenting by age 15 to reach one-half in New Zealand and the United States. The expected proportions are lower elsewhere, but still exceed one-third in Canada and five European countries.

Parental separation, regardless of marital status, contributes more to childhood exposure to single parenting than does birth to a single mother. For that reason, and to a lesser extent because of the relative importance of stepfamilies, the share of childhood years expected to be spent with a single mother is substantially lower than the proportion of a birth cohort expected to experience single parenting during childhood. Nevertheless, the expected duration of the former approaches 20 percent (three years by age 15) in a few countries. For the United States, our estimate (2.70 years, or 18 percent, by age 15; see Table 2, col. 4) replicates Bumpass and Lu's (2000: 38) estimate of 20 percent by age 16, derived by similar techniques from the same data. Bumpass and Lu define different states of interest, however, dividing the remaining childhood years into 9 percent spent in cohabiting unions and 71 percent spent in marriage. We separate the remaining years before age 15 into 66 percent with both biological parents (since 34 percent—5.12 years by age 15—are with parents apart; Table 2, col. 7), nearly all of which occurs within marriage, and 12 percent in a maternal stepfamily (1.87 years by age 15; Table 2, col. 5), nearly half of which occurs within cohabitation. At early 1990s rates, childhood expectancy of living with parents apart reached five years in New Zealand and the United States, and up to four years in three of the other countries examined here.

A compelling reason to track the changing patterns of family formation is that they are likely to exert economic pressures on families and require policy interventions to help children and parents who may require added support. To the extent that instability in families creates greater hazards for children's development, it is essential to develop ways of discerning whether changes in patterns of family formation are relatively nominal (e.g., from official to de facto marriage) or potentially more consequential for children's welfare.

Even though the nonmarital fertility ratio misrepresents children's exposure to growing up with only one parent, its variation across countries and

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over time thus far has captured reasonably well the *direction* of temporal changes and cross-national differences in childhood exposure to single parenting (the correlation coefficient between our estimates of incidence in column 6, Table 1 and nonmarital fertility rates is 0.67.) This is true in part because, while some nonmarital births are to cohabiting parents, the incidence of separation for parents who were cohabiting at the time of birth is greater than if they were married at the time of birth. Another reason is less obvious, but equally important. We also find a strong association (a correlation coefficient of 0.59) between the nonmarital fertility rate and the risk of parental divorce before the child reaches age 15 among married parents, which, as we have shown, is still the most frequent route to single parenting. It appears that the social conditions that lead individuals to be hesitant about entering marriage before having children are also associated with greater levels of marital instability among couples who do enter matrimony. The cultural and institutional accommodation to the expansion of single parenting hardly discriminates between divorced custodial parents and single (at birth) mothers.

We have not attempted to explain fully the variations that we have identified among the 17 countries examined here. Consistently standing out, New Zealand and the United States are two of only three English-speaking countries included in our analyses. At the other end of the distributions of single childbearing and likelihood of parental separation stand three Mediterranean countries: Italy, Spain, and Slovenia. We suspect it is no coincidence that these three countries are also those with some of the lowest fertility levels at the time of the FFS. Their total fertility rates were 1.27, 1.27, and 1.36 children per woman (United Nations 2001), while New Zealand (2.06) and the United States (2.05) were the two countries with the highest total fertility rates among the 17 countries examined in this article. To the extent that increases in out-of-partnership childbearing and parental divorce reflect divergence from traditional family living arrangements, it seems likely that the countries maintaining traditional practices of family formation do so by postponing fertility to later ages. In fact, the correlation between our estimate of the average duration spent without two parents in the early 1990s (column 7 of Table 2) and the 1990–95 total fertility rates is 0.65.

This is but one plausible possibility in accounting for the large variation in both the pace and the pattern of change that we observed in our analysis. There are many other possible explanations for why different countries are characterized by different family formation strategies. Longstanding historical differences related to cultural preferences undoubtedly play a part in the process (Reher 1998). Similarly, we expect that public policies designed to support these differing cultural values also affect the tempo of change and the type of family formation patterns that emerge across countries. The three countries that appear here as exemplars of a traditional family

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structure (Italy), an expansion of parental cohabitation (Sweden), and an increase in single parenting (the United States) also typify Esping-Andersen's (1990) three categories of capitalist welfare states: the conservative, the social democratic, and the liberal. Yet, much diversity in family behavior remains to be explained within the "conservative" welfare states of continental Europe—for example, between Italy, France, and Germany.

Complicating matters further, our estimates of change during the past decade indicate that we are still in the midst of the second demographic transition. Some countries continue to experience rising levels of nonmarital childrearing both within and outside of de facto marriage. Divorce and remarriage rates continue to result in considerable flux in children's living arrangements. It is still too early to tell whether the end points of the second demographic transition are in sight; thus, it is still too soon to tell whether countries will eventually converge or whether they will cluster in different cultural or economic categories (Kuijsten 1996). At this point, the evidence points toward the latter alternative, with the possible exception that—at paces that depend on the stability of marriage, the expansion of parental cohabitation, and the prevalence of family reconstruction—childrearing is increasingly being shifted to single mothers. In other words, while children who do not live with married biological parents could in principle live in other two-adult families, most do not or do so only temporarily. Childhood expectancy of living with a single mother remained just under three years at early 1990s rates; but in a few countries, if the increases observed in the years just before the survey were to continue unabated, this expectancy would double within a decade.

It is abundantly clear from this and related research that we cannot continue to cling to the traditional categories for measuring change in marriage and childbearing. Accordingly, surveys must begin to produce data that are amenable to the family living arrangements that currently exist, rather than to the forms observed in the past. In so doing, we will advance our understanding of these demographic changes and be in a better position to evaluate policy options aimed at promoting children's welfare.

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APPENDIX TABLE **Survey dates, upper age limits of women interviewed, sample sizes, and data quality checks, by FFS survey**

Country	Survey dates			Number of own children reported			NMFRs[a] (percent)	
	From	To	Upper age limit	Total	With complete data	Percent complete	Observed from FFS sample	Recorded in vital statistics
Austria	Dec-95	Apr-96	55	7,043	7,032	99.8	33.8	27.4
Belgium[b]	Mar-91	Dec-92	42	3,781	3,710	98.1	5.9	7.1
Bulgaria[c]	Dec-97	Dec-97	49	2,794	—	—	—	—
Canada	Jan-95	Dec-95	55	5,490	5,112	93.1	27.8	24.4
Czech Republic	Nov-97	Dec-97	45	2,364	2,363	100.0	14.2	n/a
Finland	Aug-89	Jan-90	53	6,223	6,213	99.8	16.3	20.8
France	Jan-94	May-94	51	4,525	4,525	100.0	31.8	33.0
Germany	Jul-92	Jul-92	40	6,024	5,748	95.4	26.0	15.3
Hungary	Dec-92	Dec-93	42	4,935	4,933	100.0	10.2	13.1
Italy	Nov-95	Jan-96	50	5,501	5,479	99.6	6.3	7.4
Latvia	Sep-95	Oct-95	50	3,903	3,894	99.8	26.1	29.9
Lithuania[c]	Oct-94	Oct-95	50	3,801	—	—	9.3	12.6
New Zealand	Sep-95	Nov-95	60	5,978	5,847	97.8	34.9	n/a
Norway[c]	Oct-88	Jun-89	43	4,914	—	—	33.6	32.4
Poland	Dec-91	Dec-91	49	7,024	6,947	98.9	12.1	6.2
Portugal[c]	Apr-97	Jul-97	50	4,920	—	—	—	—
Slovenia	Nov-94	Nov-95	46	4,005	3,997	99.8	24.2	29.8
Spain	Nov-94	Nov-95	50	5,065	5,065	100.0	7.3	10.8
Sweden	Oct-92	May-93	45	4,689	4,685	99.9	48.3	47.0
Switzerland	Oct-94	Jun-95	50	5,441	5,427	99.7	7.0	6.4
United States	Jan-95	Oct-95	44	14,847	14,749	99.3	28.9	32.6

[a]Nonmarital fertility ratios (NMFRs) computed from FFS data include all live births reported by female respondents to have occurred in the year(s) the survey was undertaken and in the last three full years before the survey started. In Austria, for instance, the survey was fielded in 1995–96, so all 1992–96 births are included. They are compared with the closest calendar year statistic available from national birth registration (Source: FFS Standard Reports, Table 1).
[b]The survey for Belgium covers only the Flanders region.
[c]In these countries, data to estimate childhood trajectories were not available.

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Notes

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1 The survey for Lithuania does not include questions about the coresidence of children at the time of data collection. The survey for Norway does, but the date when coresidence ended is available only for deceased children. The surveys for Bulgaria and Portugal provide information about only the most recent partnership, so we cannot assess the birth status of children born before that relationship.

2 There is a substantial discrepancy in the proportion born out of wedlock between the estimate in German vital statistics and the estimate from FFS data (also noted in the FFS standard report for Germany). Thus, the results for Germany discussed below must be regarded with caution.

3 To confirm this, we used the available male samples to estimate childhood expectancy of living in a paternal (i.e., nonmaternal) household. Were there any systematic bias in our estimation from the female samples of childhood expectancy of not living with the mother, we should find the opposite bias when estimates are derived from the male samples. On the contrary, we obtained results that were nearly identical and consistently low (less than one year by age 15 being spent away from the maternal household).

4 The US data include 2,421 births three to six years before the survey. Of these births, 521 were not born in a partnership and, of these, 205 experienced at least one partnership formation by their mother before the survey, three to six years later. The problem of identifying whether the mother's first postnatal partner was in fact the child's father thus concerned 8.5 percent of the birth cohort. Given our allocation rule that combines timing and marital status, we estimated that 59 children (2.4 percent) experienced their parents' forming a partnership. Had we used a stricter timing rule of six months regardless of marital status, the estimate would be 56 children (2.3 percent). With a more liberal timing rule of one full year regardless of marital status, the estimate would be 78 children (3.2 percent), and with an additional six months in the case of marriage the estimate would be 82 children (3.4 percent). Although the uncertainty about the exact value is unfortunate, the numerical effect on the average estimates for a birth cohort is limited even in a country where out-of-partnership births and new partnership formations are prevalent.

5 As mentioned above, the surveys were fielded in different years across countries (see Appendix Table). To make the results more comparable, we present either the most recent set of period tables (i.e., three years before the survey) or the previous set (three to six years before the survey). The most recent set is used when the national survey was fielded in 1991, 1992, or 1993. The previous set is used when the survey was fielded in 1994, 1995, or 1996, thus scaling the reference period back three years. All but two surveys fell within one of the two three-year windows: Finland's survey was fielded in 1989–90 (the most recent set is presented), and the Czech Republic's survey was completed in 1997 (we present the tables referring to three to six years before the survey). Except for these two outliers, the cross-national comparisons below all refer to a three-year period that includes January 1991, to which we refer for convenience as "the early 1990s."

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6 Because of a smaller sample size and lower proportion of births to single mothers, the estimates for Belgium are relatively unstable.

7 These results are not shown here but can be obtained by weighting the estimates in Table 2, columns 1 to 3, by the corresponding proportions of a birth cohort in each birth status from Table 1, columns 1 to 3 (note that in the latter table the percentage born to married parents is obtained by subtracting column 1 from 100).

8 In particular, high numbers of sequential transitions appear rare outside the United States. By age 15, 11.7 percent of American children in the FFS had lived in three or more parental partnerships. The second-highest proportion in the FFS was 3.1 percent in Sweden. These proportions are estimated directly on all uncensored observations, i.e., children over age 15 at the time of the interview and still living with their mother at age 15 (results not shown). Life table estimates might differ from these direct estimates, which nevertheless suffice to illustrate the uniqueness of the United States in this respect.

9 The following illustrates how this standardization operates: we computed the estimates of changes over the past 15 years with censoring at ages 3, 6, 9, 12, 15, and 18 in New Zealand, the country with the highest upper age limit and thus the fewest selectivity concerns. At these different ages, the annual rates of decline in time spent with married parents are 1.51 percent (at age 3), 1.53 percent (at ages 6, 9, 12, and 15), and 1.41 percent (at age 18). In spite of the standardization, the very young upper age limit may slightly bias international comparisons because parental separation is relatively less likely to occur in the first few years after birth.

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Measurement of Household and Family Composition in the United States, 1850–2000

STEVEN RUGGLES
SUSAN BROWER

THE PAST 150 YEARS have witnessed extraordinary change in American living arrangements. In 1850, for example, 70 percent of the elderly resided with their children, and 11 percent lived alone or with only a spouse; by 1990, only 16 percent resided with children, and 70 percent resided alone or with a spouse only. The changes have been almost as great for the young: since 1910, the percentage of children under age five residing without two parents has increased more than fourfold, to 27 percent in 1990; among blacks, the figure is 67 percent (Carter et al. forthcoming).

Demographers and historians are only beginning to understand the dimensions of long-run changes in the American family. Much of the scholarly literature over the past 30 years has stressed the continuities (e.g., Bane 1976; Hareven 1996). In part, this reflects inadequacies of available data. Until the 1990s, only fragmentary data on long-run changes in American living arrangements existed. Except for the mean size of households, the Census Bureau produced no published statistics on family and household composition until 1940, and official published statistics remained scanty until the 1960s.

Within the past few years, the availability of new historical census microdata has led to a flood of research on long-run trends in the American family.[1] Despite the intense interest, however, there has been little attention to problems of comparability in measures of household and family composition over the long run. Some comparability problems are inevitable; in the mid-nineteenth century, census taking was carried out very differently from the way it is done today, and the census was intended to serve different purposes (Magnuson 1995; Anderson 1988).[2] This article explores the impact of changing census definitions, concepts, and postenumeration processing on the measurement of households and families.

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We identify several potential pitfalls for researchers using household and family measures. The introduction of the concept of group quarters in 1930 and its subsequent modifications have important implications for the study of unrelated persons such as boarders and domestic servants. As part of our analysis of definitions of group quarters, we develop a consistent series of the number of households and group-quarters residents since 1850 based on constant definitions. There have been numerous changes in the rules used by the Census Bureau to distinguish one household from the next in multi-household dwellings, and these changes have had a significant impact on the classification of persons residing in single-room-occupancy housing. The introduction of the householder concept in 1980 and a change in the treatment of college students in 1950 can pose special problems for certain kinds of studies. We also identify major problems in the Census Bureau's procedures for identifying subfamilies, and advise researchers to avoid using either aggregate tabulations or microdata variables that rely on these measures. In the concluding section, we discuss the broader limitations of the main Census Bureau classifications of family and household composition and propose basic recommendations for developing measures of living arrangements that minimize problems of long-run comparability.

Data

For quantitative estimates of the consequences of changing census definitions, concepts, and processing, we use the Integrated Public Use Microdata Series (IPUMS), a coherent national database describing the characteristics of 55 million Americans in 14 census years spanning the period from 1850 through 2000 (Ruggles and Sobek 1997). The IPUMS combines census microdata files produced by the Census Bureau for the period since 1960 with new historical census files produced at the University of Minnesota and elsewhere. By putting the samples in the same format, imposing consistent variable coding, and carefully documenting changes in variables over time, the IPUMS is designed to facilitate the use of the census samples as a time series.

The most important innovation of the IPUMS, for the present purpose, is a set of consistently constructed family interrelationship variables for all years. These variables identify the location within the household of each individual's spouse, mother, and father. The family interrelationship pointers provide the essential building blocks to construct measures of family and household composition. Because the family interrelationship variables were designed to be as consistent as possible across census years, they allow us to circumvent some of the comparability problems of published census materials.

A second valuable feature of the IPUMS for the analysis of family and household composition is the imputed family relationship variable con-

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structed for the early census years. In the period before 1880, the Census Office did not collect information on the relationship of each person to the household head. The IPUMS includes imputed family relationships using a probabilistic procedure that relies on 18 predictors (Ruggles and Sobek 1997). The imputed relationship variable was constructed for the period from 1850 to 1950, providing an extensive period of overlap between inferred and reported family relationships and allowing evaluation of the method for reliability and cross-year compatibility.[3]

Changes in the group-quarters concept

The census concepts of household and group quarters did not emerge in their modern form until 1930, and their definitions have shifted significantly since then. Consequently, we lack a consistent series on the total number of households and group-quarters residents for the period 1850 through 1990. To obtain comparable measures, we need to apply a consistent definition of group quarters.

From 1790 to 1920, large dwelling units such as institutions, hotels, and boarding houses were enumerated as if they were simply very large households.[4] In 1930, such units were classified as "quasi-households" and excluded from the count of households. The term quasi-household was changed to group quarters in 1950; to simplify the discussion, we use the term group quarters throughout. In all periods since 1930, the group-quarters category included residents of correctional institutions, asylums, homes for the aged or needy, convents and monasteries, workers' dormitories, crew quarters on inland vessels, college dormitories and fraternities, hospitals, hotels, missions, flophouses, camps, and large lodging houses.

In each census year since 1930, the Census Bureau also classified as group quarters any unit with more than a specified number of persons unrelated to the householder. This threshold number of unrelated persons has not remained constant. In 1930 and 1940, units had to contain 11 persons unrelated to the head before they were classified as group quarters; from 1950 through 1970, the threshold was five unrelated persons; and since 1980 the cutoff has been ten unrelated persons. Further confusing the issue, when the 1940 public use microdata sample was designed in the late 1970s, it imposed the then-contemporary criterion of five persons unrelated to the head, so in 1940 the microdata are incompatible with the published statistics. For subsequent census years, the published statistics are compatible with the microdata samples.

Table 1 presents estimates of the number of households and the size of the group-quarters population under both the 1950–70 definition (households must have fewer than five nonrelatives) and the 1980–2000 definition (households must have fewer than ten nonrelatives). The details of

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TABLE 1 Estimates of the number of households and number of group-quarters (GQ) residents under 1950–70 and 1980–2000 group-quarters definitions

	Number of households			Number of GQ residents	
Year	Published	1950–70 definition[a]	1980–2000 definition[b]	1950–70 definition	1980–2000 definition
1850	3,598,240	3,539,847	3,581,172	808,353	361,720
1860	5,210,934	5,138,372	5,193,150	886,001	371,285
1870	7,579,363	7,477,665	7,552,352	1,293,722	571,046
1880	9,945,946	9,824,573	9,907,583	1,656,167	802,140
1890	12,690,152	12,530,206[c]	12,638,749[c]	NA	NA
1900	15,963,965	15,977,199	16,119,014	2,604,683	1,974,006
1910	20,255,555	19,984,021	20,165,673	3,508,773	1,793,064
1920	24,351,676	24,073,793	24,233,961	3,135,649	1,827,598
1930	29,904,663	29,798,665[c]	29,904,663[d]	NA	NA
1940	34,948,666	34,904,634	34,948,666[d]	2,807,103	NA
1950	42,857,335	42,857,335	NA	4,075,907	NA
1960	53,021,061	53,023,935	NA	2,881,383	NA
1970	63,573,042	63,637,721	NA	3,659,644	NA
1980	80,389,673	80,351,102	80,389,673	3,500,854	3,242,871
1990	91,947,410	91,873,988	91,947,410	3,806,303	3,363,726
2000	105,480,101	NA[e]	105,480,101	NA[e]	3,719,514

[a]1950–70 definition: units with five or more persons unrelated to the head are classified as group quarters.
[b]1980–2000 definition: units with ten or more persons unrelated to the head are classified as group quarters.
[c]1890 and 1930 group-quarters residence interpolated.
[d]1930–40 definition (ten or fewer unrelated persons).
[e]The 2000 census microdata file needed to estimate the number of households and the number of group-quarters residents using a 1950–70 definition had not been released at the time the final version of this article went to press.
SOURCES: Published total households: U.S. Census Bureau (1955b, 1972, 1975, 1982, 1992, 2001b). Estimates by household definitions and group-quarters residents calculated from Ruggles and Sobek (1997); see Appendix for a description of methods.

our calculations are given in the Appendix. The aggregate impact of variations in the group-quarters definition on the total number of households is small. In no case does the difference between the published total number of households and the number of households under the 1950–70 definitions exceed 2 percent, and in the 1980–90 period the effect of differences between the two definitions is trivial.

The effect of definitional changes is much greater, however, for the size of the group-quarters population. Indeed, in the period 1850 through 1880, the number of people residing in noninstitutional group quarters is twice as large under the 1950–70 group-quarters definition as under the 1980–2000 definition. Most of these cases consist of groups of unrelated persons such as boarders, lodgers, and domestic servants, many of whom resided with ordinary families.

A substantial percentage of group-quarters residents in the late nineteenth and early twentieth centuries resided with kin. The pre-1940 IPUMS samples created at the University of Minnesota were designed to capture

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information about all related groups, even those residing in group quarters (Ruggles and Sobek 1997). These data reveal that under the 1950–70 definition, 42 percent of group-quarters residents in 1880 and 35 percent in 1920 had coresident relatives. About half of these were family groups composed of boarders or other persons unrelated to the household head. The other half appear to be ordinary primary families—with a head, spouse, children, and other relatives—who happen also to reside with five or more boarders or servants, and are therefore classified as group-quarters residents. Even under the 1980–2000 definition of group quarters, which requires ten or more unrelated persons, 25 to 29 percent of group-quarters residents between 1880 and 1920 had coresident relatives.

From 1940 onward, it is impossible to identify the families of group-quarters residents using census data, because such units were sampled at the individual level and all information on family relationships was lost. On the basis of our analysis of the earlier census years, we expect that fewer than 2 percent of all related groups resided in group quarters between 1940 and 1990, and therefore cannot be identified in the census. Among family groups unrelated to a household head, however, as many as 50 percent may be impossible to identify in the census.

The peak census year for boarding and lodging in the United States was 1940 (Goeken 1999). That is also the year of the key shift in the census microdata group-quarters definition, when all units containing five or more persons unrelated to the head were classified as group quarters. By the time the definition was again modified in 1980, boarding and lodging were comparatively rare, so the impact of the change was less significant. Nevertheless, analysts focusing on unrelated individuals—or on households containing multiple unrelated individuals—should pay close attention to the effects of definitional change in both 1940 and 1980.

The only way to impose consistency over the entire data series is to apply the 1950–70 definition of households and eliminate any unit with five or more unrelated persons. There are costs, however, to restricting ourselves to this narrow household definition in the pre-1940 period. In the late nineteenth and early twentieth centuries, boarding, lodging, and domestic service were common. If we classify any unit with five or more persons unrelated to the head as group quarters, then we eliminate from analysis thousands of apparently ordinary households with five or more boarders or servants, and may unnecessarily obscure some of the changes in household composition.

We have no blanket recommendation to resolve group-quarters incompatibilities. For many analyses of family living arrangements in the population as a whole, it will make little substantive difference whether researchers apply the 1950–70 group-quarters standard or allow the standard to vary across census years. But for those focusing on unrelated persons or other subpopulations with high group-quarters residence, the best solution will depend on the particular topic of analysis and measures employed.

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Changes in the criteria for distinguishing households

Most households in all census years are composed of a group of persons related to one another who reside together in a separate physical dwelling and who share common eating and cooking facilities. In these cases, the divisions between successive households are usually clear, and the slight variations from year to year in the way households are defined are irrelevant. Beginning in the mid-nineteenth century, however, tenement houses and apartment buildings began to be built in New York and other large cities, and these often contained multiple distinct family groups. Census enumerators were forced to make judgments about which of these structures should be classified as boarding houses or apartment hotels, and thus enumerated as a single unit, and which should be classed as apartment buildings containing multiple separate households. The Census Office developed rules specifying which households in multi-unit dwellings should be enumerated as separate units; these rules are summarized in Table 2.

In the mid-nineteenth century the definition of the household was a preindustrial one: the household was an economic unit that depended on "one common means of support," and its members resided together in a house or part of a house. This definition was becoming obsolete in 1850, as the rise of wage labor was already breaking down the traditional family economy. Nevertheless, the definition was retained in 1860 with only a slight modification to allow enumerators to divide institutions into multiple households if they contained distinct families. In all censuses before abolition, slaves were considered members of their owners' families.

In 1870, the Census Office dropped the criterion of a common means of support and instead instructed enumerators to distinguish separate households based on the existence of a common dining table. The condition of separate tables was retained in 1880, when the enumerator instructions for the first time alluded to the problem of the tenement houses and flats of the great cities. The census of 1900 introduced some ambiguity by instructing enumerators vaguely that each household "usually, though not always" eats separately. The censuses of 1910 through 1930 dropped the requirement of separate tables and substituted the requirement of separate housekeeping. Although housekeeping is never defined, it no doubt was interpreted mainly as cooking and eating arrangements, though it might also have included other household maintenance activities. The 1940 census specifies that either cooking or housekeeping facilities may identify households.

Although the language varies from one census year to the next, the content of the enumerator instructions appears to be reasonably compatible for the period 1870 through 1940. The earlier censuses—1850 and 1860—do not mention tables, housekeeping, or cooking facilities; their focus on a common means of support therefore potentially introduces some

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TABLE 2 Criteria for distinguishing separate units in multi-unit dwellings, 1850–1990

1850	Living together in a house, or part of a house, upon one common means of support and separately from others in similar circumstances.
1860	Living together in a house, or part of a house, upon one common means of support and separately from others in similar circumstances; institutions may be broken into multiple units if there are several tenements or distinct households.
1870	Living together under one roof and provided for at a common table.
1880–90	Common roof and table; in "tenement houses and the so-called 'flats' of the great cities," households distinguished by separate tables.
1900	"Best test" is number of separate tables; each unit "usually, though not always, has its own meals."
1910–30	Separate portions of the dwelling house and housekeeping entirely separate.
1940	Separate portion of house and separate cooking or housekeeping facilities.
1950	Room with separate cooking equipment or two or more rooms with direct access to a common hallway.
1960	Live and eat separately from others and direct access to a common hall or cooking equipment.
1970	Live and eat separately from others and direct access to a common hall or complete kitchen facilities (the rules were not strictly enforced).
1980	Live and eat separately from others and direct access to common hall (the rules were not strictly enforced).
1990	Live and eat separately from others and direct access to common hall.

SOURCES: Census enumerator instructions, as published in Ruggles and Sobek (1997)

comparability problems. In practice, however, the incompatibility of the 1850–60 census definitions is probably of little consequence for most researchers, since large multi-unit dwellings were still quite rare in that period. Nevertheless, investigators focusing on residence in multi-household dwellings should be aware of the potential for some incompatibility between 1860 and 1870.

The period after World War II saw more significant changes in the definition of households. In 1950 the housekeeping criterion was narrowed to include only households with separate cooking facilities, and a criterion was added to count units with two or more rooms as separate households if they had a separate entrance to a common hallway. In 1960, even single-room units without separate cooking facilities could qualify as separate

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households if they had direct access to a common hallway. The common hallway criterion meant that hundreds of thousands of single-room-occupancy units that had previously been regarded as hotels or boarding houses were reclassified in 1960 as independent households.

The effects of these changes are uncertain. It is clear that the census enumerators had trouble classifying large residential units from the moment such units appeared on the scene. As the 1930 census instructions note, "the distinction between an apartment house and an apartment hotel, and in turn between an apartment hotel and a hotel devoted mainly to transients, will often be difficult to establish." Before 1950, much was left to the enumerator's discretion, but the instructions do suggest that individuals residing in single rooms in apartment hotels were not to be counted as constituting separate households. For example, in 1930 the instructions specify:

> All of the persons returned from a hotel should likewise be counted as a single "family," except that where a family of two or more members (as a husband and wife, or a mother and daughter) occupies permanent quarters in a hotel (or an apartment hotel), it should be returned separately, leaving the "hotel family" made up principally of individuals having no other family relations. (quoted in Ruggles and Sobek 1997: 3.2.85–86)

This instruction suggests that persons residing without family in an apartment hotel should never be enumerated as constituting distinct households. By 1960, however, the rules specify that such persons *should* be counted as separate units, provided they have access to a common hallway.

There has been little change in the formal definition of households since 1960, except that in 1980 the cooking-facilities criterion was dropped, leaving direct access as the sole criterion for distinguishing one household from another. The microdata for 1970, however, contain a significant number of households with neither the cooking facilities nor the direct access necessary to qualify as a separate unit. Similarly, there are many households in 1980 without direct access.[5] In practice, the definition of a household since the mail-back census became widely used in 1970 may simply be the existence of a mailing address, despite the continuity of the formal definitions.

How important are the changes in the definition of households after 1950? The IPUMS samples for the period 1960 to 1980 provide direct information on the number of rooms, hallway access, cooking facilities, and number of units in the structure. This allows us to apply the 1950 census definition to the 1960–80 census years, by requiring that households in multi-unit buildings have either cooking facilities or two or more rooms and access to a common hallway. Imposing these requirements means that we shift many persons residing in single-room-occupancy apartment hotels from households into group quarters. The effect on the total number of households

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TABLE 3 Number of households under contemporary household definitions and estimated number under 1950 household definition (no one-room units without kitchens in multi-unit dwellings), by household type: U.S. censuses 1950–80

Household type/ census year	Contemporary estimate	Included under 1950 definition	Percent excluded
Total households			
1950	42,857,335	42,857,335	0.00
1960	53,021,061	52,651,193	0.70
1970	63,573,042	63,179,568	0.62
1980	80,389,673	80,146,000	0.30
Nonfamily households			
1950	5,093,534	5,093,534	0.00
1960	7,958,394	7,616,554	4.30
1970	12,483,748	12,110,709	2.99
1980	21,257,704	21,038,107	1.03
Male-headed nonfamily households			
1950	2,016,295	2,016,295	0.00
1960	2,983,869	2,715,559	8.99
1970	4,595,253	4,306,781	6.28
1980	8,955,551	8,785,509	1.90
Single-person households			
1950	4,193,497	4,193,497	0.00
1960	7,062,901	6,729,661	4.72
1970	11,173,390	10,809,870	3.25
1980	18,217,377	18,005,370	1.16

SOURCES: See Table 1 for source information on total households. Estimates by household type calculated from Ruggles and Sobek (1997).

and the number of nonfamily households is given in Table 3. The results suggest that in the aggregate the effects of changing definitions were small. However, studies focusing on the living arrangements most affected by the change—such as single-room-occupancy housing—should use the kitchen, rooms, number of units, and access variables to impose greater consistency.

The shift from household heads to householders

In 1980, the Census Bureau eliminated the concept of "household head" and substituted the gender-neutral concept of "householder." The concept of household head was never clearly defined by the census; it was simply assumed that every household had one, and that it was obvious who it was. There has been debate about the meaning of headship in the census, but it presumably implies some degree of authority or status in the household (Shammas 2002; Smith 1992; Kobrin 1973). A householder is defined as the homeowner or leaseholder of the home; if a husband and wife jointly own or lease their home, either may be listed as the householder.

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Household heads in married-couple households before 1980 were ordinarily male. From 1850 to 1920, female heads never exceeded 0.2 percent in married-couple households. For the microdata samples from 1940 to 1970, the Census Bureau's editing procedure allowed no cases of female heads in married-couple households. Since then, however, female householders have been relatively common, accounting for 3.5 percent of married-couple households in 1980 and 7 percent in 1990.

The shift from household head to householder has modest implications for the measurement of household composition. In most cases under the old system, the householder would have been identified either as the head or the spouse of head. To make the family relationships of ascendant or lateral kin compatible, it is necessary to account for the sex of the householder in married-couple households. For example, researchers can reclassify the relationship parent-in-law as parent of husband or parent of wife, as appropriate. Such recodes are comparatively simple when using microdata, but are generally impossible for aggregate statistics.

The change in definitions may also affect the measurement of multigenerational families. Under the old system, an unmarried elderly parent often continued to be listed as head of a multigenerational household even after he or she had transferred the property to the next generation (Ruggles forthcoming); under the new definition, this would be impossible. As discussed below, under the Census Bureau classification system a subfamily would exist only when the older unmarried parent is listed as the householder. Thus, there is some risk that the shift from heads to householders may have reduced the proportion of households with subfamilies. We suspect that this is a minor problem. In any case, the problem can easily be avoided by adopting measures of family composition that do not depend on headship, as discussed below.

Changes in the treatment of college students

One additional change in census procedures should be noted. From 1880 to 1940, the census enumerated college students at their "usual place of abode," which meant that those in dormitories were usually counted as part of their parental family.[6] In 1950, the census instructions specified that enumerators should not include in a household a son or daughter "attending college elsewhere and not sleeping at home most of the week"; instead, such persons were enumerated in the community where they attended college (Ruggles and Sobek 1997: 3.4.100). The effects of the change were substantial: 63.7 percent of students aged 18 to 22 resided without family in 1950, compared to just 7.0 percent in 1940. Among college-age persons not attending school, by contrast, the percentage of persons residing with family changed only slightly over the course of the same decade.

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Even though the change in enumeration rules had notable consequences for the recorded living arrangements of the college population, the consequences for the population as a whole were small because the number of students was still small in 1950. Ruggles (1988) estimated that if the 1950 census had been enumerated according to 1940 rules, the percentage of persons aged 15 or older residing without family would have been reduced from 12.5 to 11.9 percent. If the pre-1950 censuses had enumerated college students where they attended school, the impact would have been even smaller because of the smaller college population. Nevertheless, researchers studying the college-age population should be aware of the potential for this change of procedures to distort their results.

Measurement errors in published census statistics

The Census Bureau has published a standard set of household and family classifications since 1940. The terminology of these classifications has changed, but their definitions have not. Table 4 lays out the basic Census Bureau categories in both modern terminology and the terms used prior to 1980.

A family household is a household containing at least one person related to the householder by birth, marriage, or adoption. Family households

TABLE 4 Basic Census Bureau classification of household and family composition

Family households (termed primary families before 1980)
Married couple
Male householder
Female householder
Nonfamily households (formerly primary individuals)
Male householder
Female householder
Related subfamilies (formerly subfamilies)
Married couple
Father–child
Mother–child
Unrelated subfamilies (formerly secondary families; combined with secondary individuals in decennial censuses beginning in 1970)
Married couple
Father–child
Mother–child
Secondary individuals

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are subdivided into those in which the householder is married and those in which the householder is an unmarried male or an unmarried female. Nonfamily households consist of persons living alone or with unrelated individuals only; nonfamily households are also subdivided according to the sex of the householder.

A related subfamily is a married couple with or without their own children, or one parent with one or more never-married children under 18 years old, living in a household and related to the householder or spouse. Related subfamilies are divided into married couples (with or without children), father–child subfamilies, and mother–child subfamilies.

Unrelated subfamilies are the same as related subfamilies, except that they are unrelated to the householder. Secondary individuals are persons unrelated to the householder who are not members of a subfamily. In recent decades, unrelated subfamilies have become rare. As a result, the Census Bureau ceased tabulating the number of unrelated subfamilies in the decennial census beginning in 1970, and has combined them with secondary individuals.

We have evaluated the published statistics for each of these categories in the period since 1940 and have compared them with evidence from the IPUMS. In general, we have found that the statistics on family households are consistent with the harmonized microdata, and the statistics on nonfamily households and secondary individuals are problematic only insofar as they are affected by the definitional changes discussed above.

Census Bureau measures of related subfamilies, by contrast, are not reliable. After examining the problem closely, we recommend that analysts not use Census Bureau measures of related subfamilies for any period, whether they are published statistics or Census Bureau–produced variables in census microdata.

The tabulation procedures for subfamilies have gone through three phases. Before 1960, census staff punched a "family card" for each person in the sample population who was the head of a family or subfamily. They apparently worked directly from the enumeration forms, which recorded family relationships in longhand, but we have not been able to uncover specific instructions for coding subfamilies from this period (U.S. Census Bureau 1955a).

The procedure was revised in 1960 to accommodate technological change. The 1960 data were converted to machine-readable form by means of the Film Optical Sensing Device for Input to Computers (FOSDIC). Under the FOSDIC system, coders were required to fill out machine-readable paper forms by blackening small numerically coded circles with number two pencils. To identify subfamilies, coders filled in circles in a "special office code box for item P3" to create a somewhat confusing two-digit number, the first digit of which was a detailed relationship code and the second

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digit of which was a subfamily or secondary family sequence number. According to the 1960 procedural history, "the coder identified family groups within households on the basis of name and relationship codes but used as additional aids the order in which persons were listed by the enumerator" (U.S. Census Bureau 1966: 187). A similar procedure was adopted for the Current Population Survey (CPS), and it remained essentially unchanged for both the census and the CPS until 1983.

Shortly after the 1980 census, the Bureau became aware that the CPS coders were missing a high percentage of parent–child subfamilies. Accordingly, in 1982–83 the Bureau revised its coding procedure for subfamilies in the CPS. Instead of having coders identify subfamilies after the fact, they instructed interviewers to identify parent–child relationships. The CPS interviewer's manual reads:

> You will enter parents' line number for all individuals in the household whose parent(s) is (are) members of the household. Use relationship to reference person and your knowledge of the family structure within the household to complete this item. (U.S. Census Bureau 1994: Part C Chapter 3)

The information on the presence of parents for each individual, as identified by the interviewers, became the basis for the subfamily codes. The CPS interviewers were not, however, normally expected to ask respondents about the presence of parents; the information they gathered on relation to head was supposed to provide them with sufficient information to infer these items. Interviewers were encouraged to "ask if there is any doubt." The revised procedures led immediately to a doubling in the frequency of related parent–child subfamilies.

The 1990 decennial census also used new procedures to improve the count of subfamilies. The details are unclear, but apparently the manual coding procedures used in 1980 and earlier census years were replaced in 1990 by an automatic classification program that relied exclusively on the family relationship variable to identify subfamilies related to the householder. The census did not attempt to identify subfamilies unrelated to the householder.

Like the 1990 census, the IPUMS uses an automatic coding procedure to identify subfamilies. The IPUMS procedure, however, is considerably subtler than the Census Bureau method. The IPUMS uses not only family relationship, but also marital status, age, sex, sequence in the household, surname code (where available), and number of children ever born (where available). The procedure is designed to yield results that are as consistent as possible across time (Ruggles and Sobek 1997).

The problem with the Current Population Surveys before 1983 has been noted in the literature (Graham and Beller 1985; Bianchi 1995; London 1998). Sweet and Bumpass (1987) suggested that similar problems ex-

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ist in the census. No attempt has been made, though, to determine whether the post-1983 reforms actually corrected the problem.

To evaluate the procedures used by the census to code subfamilies, we individually examined several thousand cases in which the IPUMS subfamily codes disagree with the census codes. In every case, we decided that the IPUMS codes were preferable to the census codes. This was true even in the 1990 census, when the problem had theoretically been corrected.

Table 5 gives four examples of the discrepancies we encountered in the 1990 census. Example 1 shows a case that was classified by the census as a father–child subfamily but by the IPUMS as a married-couple subfamily. The problem is that the daughter-in-law (person 4) was erroneously listed as "other

TABLE 5 Examples of discrepancies in subfamily coding between the 1990 census and the IPUMS

Example and person number	Relationship to householder as recorded in the census	Age	Sex	Marital status	Children born	Census subfamily	IPUMS subfamily
Example 1							
1	Householder	74	M	Married	NA		
2	Spouse	72	F	Married	2		
3	Child	39	M	Married	NA	Parent	Spouse
4	Other relative	35	F	Married	2		Spouse
5	Grandchild	16	F	Never married	0	Child	Child
6	Grandchild	12	M	Never married	NA	Child	Child
Example 2							
1	Householder	60	M	Married	NA		
2	Spouse	44	F	Married	9		
3	Child	26	F	Never married	2		Parent
4	Grandchild	6	M	Never married	NA	Child	Child
5	Child	17	M	Never married	NA	Parent	
6	Child	14	F	Never married	NA		
7	Child	13	F	Never married	NA		
8	Child	9	F	Never married	NA		
Example 3							
1	Householder	52	F	Widowed	3		
2	Child	29	F	Never married	0	Parent	
3	Grandchild	15	F	Never married	0	Child	
Example 4							
1	Householder	87	M	Married	NA		
2	Spouse	85	F	Married	8		
3	Grandchild	22	F	Separated	2		Parent
4	Grandchild	2	F	Never married	NA		Child
5	Grandchild	0	M	Never married	NA		Child

SOURCES: Census coding from U.S Census Bureau (1995); IPUMS coding from Ruggles and Sobek (1997).

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relative," so the Census Bureau coding software did not recognize that she was married to the son (person 3). This type of error occurred frequently, because the census form did not provide a category for child-in-law, so all children-in-law had to be manually coded and they often ended up as "other relative." As a result the census count for 1990 includes far too many father–child subfamilies and too few married-couple subfamilies.

Examples 2 through 4 illustrate the consequences of relying exclusively on the relationship variable without consulting age, children ever born, or sequence in the household. The census classified Example 2 as a father–child subfamily in which a 17-year-old son was considered to be the father of an 11-year-old grandson. The IPUMS assigned the grandson instead to the 26-year-old daughter who immediately precedes him. Although there are no instructions governing the sequence of enumeration of relatives in 1990, we have found that in most cases children are listed following their parents. Moreover, the age difference of the son and grandchild is implausible, and we know that the daughter has borne two children. In Example 3, the census assigned a grandchild to a 29-year-old daughter who is explicitly listed as having no children ever born; we think it more plausible that the grandchild is the daughter of an absent child. Finally, the IPUMS shows a subfamily in Example 4 where the census recorded none. Great-grandchildren often receive a relationship code of grandchild; accordingly, the IPUMS procedure assigns the 22-year-old granddaughter who had borne two children as the mother of the infant and toddler who are also listed as grandchildren.

These kinds of errors were frequent. Table 6 shows the percentage of IPUMS-identified subfamilies we believe to be misidentified in the 1990 census. Overall, we estimate that the census missed about 13 percent of married-couple subfamilies and 17 percent of parent–child subfamilies. Even more serious, 28 percent of the parent–child subfamilies identified by the 1990 census were not parent–child subfamilies at all; thus, some 45 percent of parent–child subfamilies in the 1990 census are misidentified. The net error is smaller: the census overestimates the overall number of parent–child subfamilies by only about 10 percent. We do not find this comforting, however, as it is the outcome of much larger gross errors.[7]

Figures 1 through 3 compare the overall percentage of households with subfamilies according to the census, the CPS, and the IPUMS.[8] The peak

TABLE 6 Estimated percent of error in 1990 census subfamily codes

	Married-couple subfamilies	Parent–child subfamilies
Percent of subfamilies missed	13.03	17.37
Percent erroneously classified as subfamilies	0.22	28.00
Gross error	13.25	45.37

SOURCE: See Table 5.

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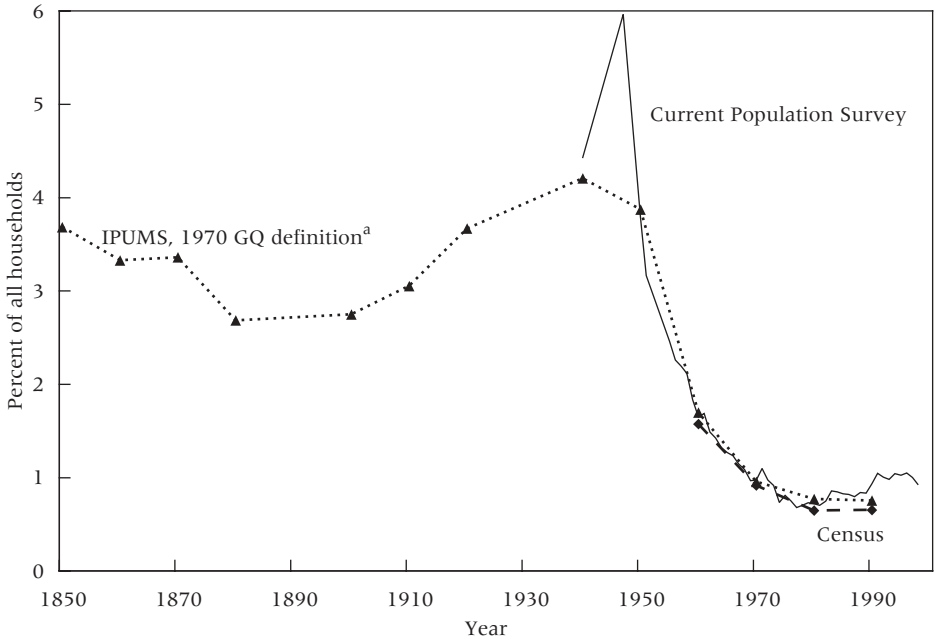
FIGURE 1 Married-couple related subfamilies: 1850–1998



[a]According to the 1970 definition, units with five or more persons unrelated to the head are classified as group quarters (GQ).
SOURCES: CPS series: U.S. Census Bureau (1975, 1998) and earlier reports on "Household and family characteristics." Census series: 1960–70: U.S. Census Bureau (1972, 1982, 1992). IPUMS series: Ruggles and Sobek (1997).

period for married-couple related subfamilies, shown in Figure 1, was the mid-twentieth century. The growth in such subfamilies between 1880 and 1940 probably does not reflect a change in residential preferences; rather, it can be ascribed to an easing of demographic constraints on multigenerational family structure (Ruggles 1994a, 1996a). The sharp peak in married-couple subfamilies in the CPS for 1947 may be the result of the short-run post–World War II demobilization and housing shortage, and is not inconsistent with the IPUMS for the surrounding census years.

For married-couple subfamilies, the census, the CPS, and the IPUMS track one another reasonably closely. Fluctuations in the CPS series are to be expected owing to small sample size. Considering the high standard errors of the CPS, the percentage of married-couple subfamilies is consistent with that of the IPUMS. The published decennial census tabulations, however, systematically understate married-couple subfamilies for the period 1960 to 1990: depending on the year, the census has a net error between 4 and 17 percent, which is statistically significant in all census years.

The problem is magnified when we turn to father–child subfamilies, and mother–child subfamilies, shown in Figures 2 and 3. All series show a

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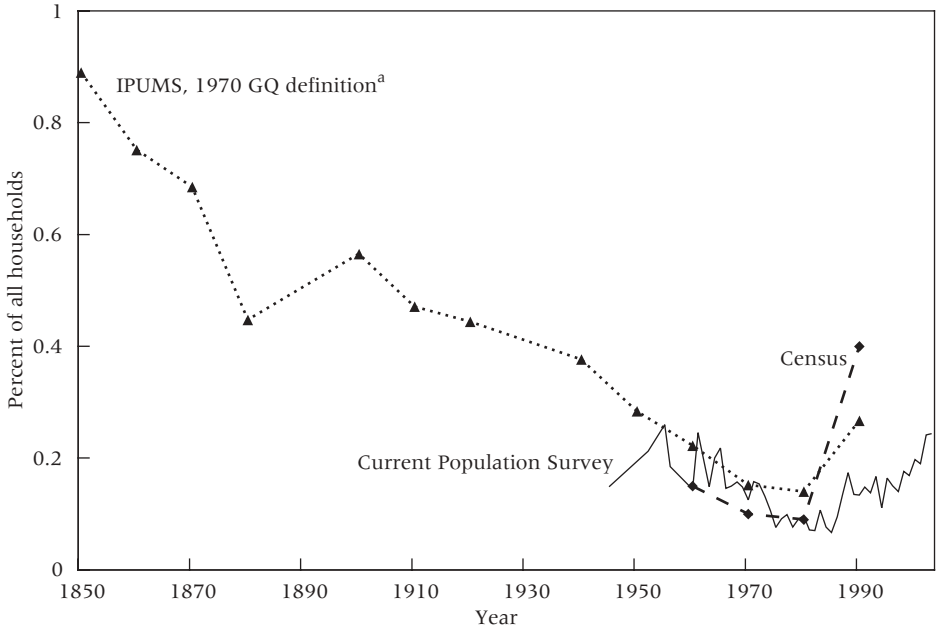
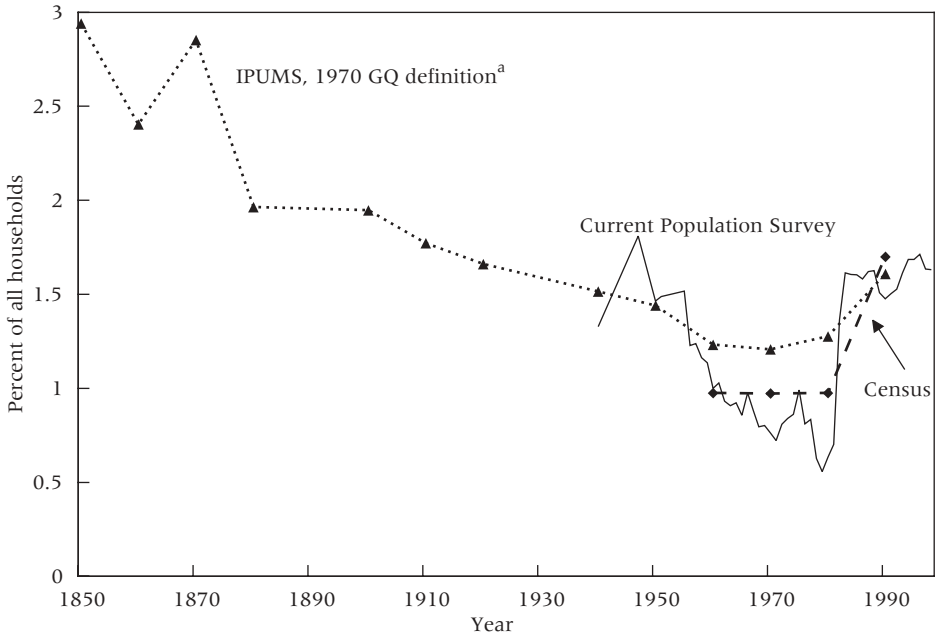
FIGURE 2 Father–child related subfamilies: 1850–1998



[a]According to the 1970 definition, units with five or more persons unrelated to the head are classified as group quarters (GQ).
SOURCES: See Figure 1.

FIGURE 3 Mother–child related subfamilies: 1850–1998



[a]According to the 1970 definition, units with five or more persons unrelated to the head are classified as group quarters (GQ).
SOURCES: See Figure 1.

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drop in the frequency of parent–child related subfamilies until 1980 and an increase thereafter, but the magnitude of the change is considerably smaller in the IPUMS series than in the census or the CPS. From the late 1950s until 1983, the discrepancies are especially pronounced. Even after the aforementioned reforms of 1983, however, the CPS continued to understate the frequency of parent–child subfamilies. In the 1990 CPS, for example, we estimate that mother–child subfamilies are understated by 9 percent and father–child subfamilies are understated by 63 percent. The problem is just the opposite when it comes to the post-1980 statistics derived from the census; under the new automatic coding procedures adopted in 1990, the census now actually overstates parent–child subfamilies by about 10 percent.

All things considered, the Census Bureau's measures of related subfamilies are so unreliable and erratic as to be unusable for comparisons across time. We therefore recommend confining measurement of related subfamilies to the IPUMS census years.

Limitations of household-level and family-level measures

Household and family composition is traditionally measured relative to the number of households or families in the population. Thus, under the Census Bureau approach, one might measure the percentage of family households containing related subfamilies. Similarly, if one employed the widely used Laslett–Hammel classification scheme, one might measure the percentage of households containing multiple "conjugal family units" (Laslett 1972).

We are convinced that the general approach of measuring the percentage of households or families containing a specified set of kin or nonkin is usually inappropriate. We identify four main disadvantages to household- or family-level measurement and explain each of these concerns in turn.

The effect of demographic conditions on kin availability

Most household-level or family-level measures of family composition are highly sensitive to prevailing levels of fertility, mortality, and generation length, so that trends and differentials are often merely a reflection of variations in demographic conditions. Households containing related subfamilies, for example, are usually formed by an older parent residing with a married child or with a child and grandchild. Before the demographic transition, such households were necessarily comparatively rare. In nineteenth-century America, life expectancy was short but generations were long. Early death together with long generations meant that most people had reached old age by the time their grandchildren were born. Thus, many adults did not live with their parents, simply because their parents had died. High fertility also

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limited the potential number of multigenerational families, because it meant that a small population of elderly people was spread thinly among a much larger younger generation. Under these circumstances, the percentage of households with elderly kin was necessarily small (Ruggles 1994a).

Raw comparisons of Census Bureau household types (or multiple family households in Laslett's classification) over long periods are more likely to reflect variations in demographic conditions than to reveal variations in residential preferences. Estimating the impact of demographic conditions on household-level measures of living arrangements requires elaborate simulation modeling with many assumptions (Ruggles 1986, 1987, 1993). By contrast, well-designed individual-level measures allow demographic analysis through straightforward life-table approaches (Ruggles 1994a, 1996a).

The life course and gender differences in living arrangements

Age and sex are among the most important determinants of residential behavior. We cannot control for age and sex if we measure household composition at the level of households or families. Sometimes analysts control for the age and sex of the householder, but that is inadequate: age and sex are individual-level characteristics, not household or family characteristics, and individuals move between households and families as they age.

Household- or family-level measurement means that we cannot control for age and sex when analyzing change over time or differences between populations. Moreover, such measures do not allow study of the family life course or differentials in the familial experience of men and women; instead, researchers are forced to adopt a life-cycle approach (for discussion of the distinction between life-cycle and life-course approaches, see Elder 1978; Hareven 1994, 1996).

Age and sex patterns of fertility and mortality underlie the standard tools of demographic analysis. No demographer would make long-run comparisons of births and deaths without attempting to control for population composition. Living arrangements are no different from other demographic indicators. Household-level measurement forces us to adopt crude measures that ignore these key determinants of residential behavior.[9]

The conflation of household composition and householder status

A third problem with the conventional measures is that they conflate household composition and household headship or householder status. For example, consider a household containing an elderly widow residing with her adult son and daughter-in-law. Such a household would contain a subfam-

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ily if the widow is listed as head, but would contain no subfamily if the son is listed as head. Similarly, if the widow is listed as head, the household is classified as a female-headed household, whereas if the son is head, it is a married-couple household.

Household headship is an interesting and important characteristic in the pre-1980 period, but it should not be confused with family composition (Bose 2001). If we want to assess the importance of headship in a meaningful way, we must differentiate between measures of household and family composition and measures of headship patterns; in too many analyses, the two are intermingled so that we do not get clear estimates of either one.

The meaning of headship is uncertain, especially when we are comparing different cultural subgroups of the population over broad periods of time (Smith 1992; Shammas 2002). Moreover, the householder concept used since 1980 is clearly different from the household-head concept used in earlier census years. Under these circumstances, it clearly makes sense to develop classifications that are unaffected by headship and then address headship as a separate issue.

The principles of demographic measurement

Finally, household- and family-level analysis violates the basic principle of demographic measurement that behavior should be evaluated relative to the population at risk. Whenever possible, for example, demographers restrict the analysis of fertility to women between the ages of 15 and 49, since they are the only people who can give birth. The conventional measures of household and family composition make it impossible to define a consistent at-risk population.

Consider the percentage of households containing subfamilies. If residence in subfamilies declines, the number of households must increase by roughly the same number, since residing in an independent household is the chief alternative to residing in a subfamily. Thus, when we measure the percentage of households with subfamilies, the number of subfamilies in the population affects both the numerator and the denominator. The number of households is not the population at risk of containing subfamilies, because the number of households is inversely related to the number of subfamilies in the population (Ruggles 1987: 142–147).

The interrelatedness of household type and household size not only makes the conventional measures inelegant, it can also make them misleading. Measurement of the percentage of households of each type can give a distorted impression of living arrangements. For example, in 1990 nonfamily households made up some 30 percent of all households, but the inhabitants of nonfamily households accounted for less than 15 percent of the adult population. The solution is simple: instead of measuring the per-

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centage of households that fall into a particular category, we should measure the percentage of eligible individuals who reside in a particular family or household situation.

To avoid these problems, we have four basic recommendations for the measurement of family and household composition:

1. Whenever possible, comparisons across time and between population subgroups should consider the potential intervening effects of demographic factors on the availability of kin for coresidence.

2. As with all other basic demographic indicators, measures of household and family composition should control for age and sex.

3. Family composition should be measured without reference to headship; headship also can usefully be measured, but it should not be confused with family composition.

4. All measures should be taken at the individual level, except where there is a compelling reason to use household-level measures.[10]

The standard Census Bureau measures and most other commonly used measures of family and household composition violate all of these injunctions. There are, however, good individual-level alternatives to all the standard measures that avoid these problems with no loss of information. For example, instead of measuring nonfamily households as a percentage of all households, we can assess the percentage of adults residing without kin. Similarly, instead of tabulating the percentage of households containing married-couple subfamilies, we can examine the percentage of married couples residing with their parents, or we can look at the percentage of older persons residing with married children.

Discussion

Despite changes in census concepts, definitions, and enumeration procedures, with reasonable caution the census can provide coherent historical measures of living arrangements in the United States since the mid-nineteenth century. Among many changes in census and enumeration procedures, the following deserve the most careful attention:

1870. Households were distinguished on the basis of a common eating table, rather than on a common means of support. The consequences of this change remain unclear, but it could affect the enumeration of some multi-household dwellings. Because of the abolition of slavery, 1870 is also the earliest census that allows detailed analysis of black family and household composition.

1940. The census microdata sample applies the narrow 1950–70 definition of households, which means that no family relationships can be identified in units with five or more persons unrelated to the head.

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1950. College students were enumerated at their college, not in their parental home. This had significant implications for the recorded living arrangements of the college-age population.

1960. Single rooms without cooking facilities were counted as separate units, provided they had direct access to a common hallway. This led to a sharp increase in recorded single-room-occupancy households.

1980. The householder concept was introduced, leading to a pronounced increase in the percentage of married-couple households with a female reference person. This change has implications for the tabulated frequency of recording of in-laws and subfamilies. Using microdata, however, researchers can circumvent these problems. In addition, the 1980 census broadened the definition of household to include units with five to nine persons unrelated to the head.

With appropriate attention to these comparability problems, changes in census definitions and concepts do not pose insurmountable obstacles to the long-run comparison of household and family composition. Nevertheless, researchers focusing on population subgroups greatly affected by changing definitions—such as unrelated subfamilies, boarders, domestic servants, college students, residents of single-room-occupancy housing, and residents of large multifamily dwellings—must take special care to ensure comparability.

Formal definitions and instructions are not the only potential source of incompatibility in census enumerations. Magnuson and King (1995) document continuous improvement in the oversight and training of census enumerators, which may mean that definitions and instructions were more closely followed in the mid-twentieth century than in the nineteenth century. In 1960, however, enumerators delivered long-form questionnaires to every fourth household in urban areas, and respondents were asked to fill out the forms themselves and return them to the Census Bureau by mail. By 1970, most census forms were also delivered to households by mail; this meant that there was usually no face-to-face contact between an enumerator and a respondent. Under these circumstances, the potential for misinterpretation of instructions probably increased. As noted above, the censuses of 1970 and 1980 include many households that do not meet the formal requirements for classification as a separate household. In practice, we suspect that separate mailing addresses have often led to designation of separate households, even where the units do not qualify as independent households under the formal definition.

Changes in the mechanics of data processing and classification have also contributed to incompatibilities. In particular, our analysis reveals substantial Census Bureau processing problems in the measurement of subfamilies. Accordingly, we recommend that all Census Bureau measures of

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subfamilies—whether in published statistics or in microdata—be avoided. The family interrelationship variables provided in the IPUMS allow considerably greater comparability over time.

Finally, we recommend that analysts studying long-run change in family and household composition create measures of living arrangements that can control for changing population composition and that do not conflate headship and composition. To maximize comparability, most analyses should avoid the standard Census Bureau classifications of households and families and instead use individual-level measures of living arrangements that are tailored to the specific research questions at hand.

Appendix

Calculation of households and group quarters under 1950–70 and 1980–2000 definitions

To develop estimates of the number of households and group quarters from 1850 to 1920, we began with the official published statistics on the total number of units—including both households and group quarters—in each census year. We then used IPUMS data to estimate the proportion of units that would be classified as group quarters under each definition. We used this proportion to adjust the count of total units downward, yielding an estimate of the total number of households. Because we used the IPUMS only to estimate the proportion of all units that were group quarters, the potential for sampling error was minimized.

Although it was simple to tabulate the percentage of persons residing in group quarters under either definition using the IPUMS samples for the early censuses, it was more complicated to estimate the number of group-quarters units because most group-quarters residents were sampled at the individual level. To maximize precision, we sampled persons in large units in all IPUMS samples as individuals, or in some cases as related groups (Ruggles and Sobek 1997). For example, the microdata samples do not include a sample of prisons, but rather a sample of individuals residing in prisons. The specific criteria for individual-level sampling vary from sample to sample, but all pre-1930 census years can be made compatible with both the 1950–70 and 1980–2000 group-quarters definitions.

The pre-1930 samples include a count of the size of each large unit even if it was sampled at the individual level. This gave us sufficient information to estimate the proportion of all units in each census year that would have been classified as group quarters under any of the group-quarters definitions. We estimated *sgq*, the sample estimate of the number of group-quarters units, as

$$sgq = \sum \frac{perwt}{numperhh},$$

where *perwt* is the person-weight for all individuals in group-quarters in the IPUMS, and *numperhh* is the number of persons in the entire group quarters unit, as manu-

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ally counted by the data entry operator. We then used the IPUMS-derived estimate of the number of group-quarters units and the number of households to convert the published figures on the total number of units (including both households and group quarters) into estimates of the total number of households:

$$PHH = \frac{shh}{shh + sgq} \times PUNITS,$$

where *PHH* is the estimated number of households in the population, *shh* is the number of households in the IPUMS sample, and *PUNITS* is the total number of units—including both households and group quarters—from the original published census count. The resulting estimates of the number of households in each census year appear in Table 1.

Accounting for changes in the definitions of group quarters since 1930 was more problematic. Using the IPUMS, we could apply the 1950–70 group-quarters definition to any census year by simply classifying any unit with five or more persons unrelated to the head as group quarters. We could not, however, apply the 1980–2000 definition to the samples for the period 1940–70, since in those samples units with five to nine unrelated members were sampled at the individual level, and all information about household composition for these units was thereby lost.

Notes

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1 Recent work on long-run changes in US living arrangements using historical census microdata includes Block 2000; Bures 1998; Costa 1997, 1999; Crowder and Tolnay 2000; Dillon 1998, 2000; Elman 1998; Elman and London 2002; Fitch and Ruggles 2000; Foley and Guinnane 1999; Glick 1997; Goeken 1999; Goldscheider and Hogan 2001; Gutmann, Pullum-Pinon, and Pullum 2002; Hacker 1999, 2001; Kallgren 1995; Katz forthcoming; Lakdawalla and Philipson 2002; London and Elman 2001; McGarry and Schoeni 2000; Moehling 1997; Ruggles 1994a, 1994b, 1996a, 1996b, 1997a, 1997b, 2001, forthcoming; Russell 2000; Schoeni 1998; Shammas 2002; Tolnay 1997, 1998, 1999; U.S. Census Bureau 2001a; Wilson 2001.

2 In addition to changes in enumeration procedures, changes in the universe of census coverage have important implications for the study of changing family and household composition of particular population subgroups. At present, for example, the available census microdata exclude the slave population in 1850 and 1860. Although information on slaves in those census years will soon be added, because the census collected limited information about slaves these data will not permit comparable analyses of the slave family (Alexander et al. 2003). In addition, most American Indians were excluded from the census until 1900 (Seltzer 2000), and the geographic territory covered by the census expanded dramatically between 1850 and 1960 (Ruggles and Sobek 1997).

3 The IPUMS database and documentation (Ruggles and Sobek 1997) are available online at http://www.ipums.org

4 Before 1940, these dwelling units were called "census families" rather than households. In this article, we use the term household for all census years to avoid confusion with the modern census concept of "family." The Census Bureau experimented with an early version of the group-quarters concept in the 1900 census, which excluded the follow-

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ing from the count of "private" households: hotels, boarding houses, schools, institutions, work camps, ships, military posts, and "miscellaneous groups of persons lodging together but having no family relationship" (U.S. Census Office 1902: clviii). We have ignored this count of private households because the definition is incompatible with later census years; instead we followed the same procedures for 1900 as for the other early census years. All enumerator instructions for the period 1850 to 1990 are available online at http://www.ipums.org

5 We estimate that there were 14,100 persons in households without their own kitchens or direct access in 1970, and 296,300 persons in households without direct access in 1980.

6 In 1850, the enumerator instructions specified that "students in colleges, academies, or schools, when absent from the families to which they belong, are to be enumerated only as members of the family in which they usually boarded and lodged on the 1st day of June" (quoted in Ruggles and Sobek 1997: 3.4.4). Since most colleges were not in session on June 1, however, many of these students were enumerated at their parental homes (Davis 1972). By 1880, the instructions indicated that the "usual place of abode" rule applied to college students, and suggested that for "students at schools or colleges, the enumerator can, by one or two well-directed inquiries, ascertain whether the person concerning whom the question may arise has, at the time, any other place of abode within another district at which he is likely to be reported" (quoted in Ruggles and Sobek 1997: 3.4.17). The variation in instructions had little impact on enumeration before 1950: in every census year from 1850 to 1940, between 7.0 and 10.6 percent of college-age students resided without their parents, compared with 63.7 percent in 1950.

7 See Erickson and DeFonso (1993) for further explanation of census error terms. We could not carry out the same kind of analysis for the CPS, because IPUMS subfamily codes are not yet available for those samples. We did, however, manually examine several thousand households in the 1990 CPS, and the results were not encouraging. We noted many cases in which the CPS seems to have missed obvious subfamilies for no apparent reason. In other cases, the subfamilies identified by the CPS are implausible. While there is no doubt that the changes in procedure adopted by the CPS after 1983 represent a marked improvement over earlier practice, shifting responsibility for the identification of subfamilies from coders to interviewers has not entirely solved the problem. As part of a National Science Foundation infrastructure project, we are presently converting the March CPS files for the period 1962–2002 into IPUMS format. When that job is complete, we will be in a better position to assess the reliability of subfamily coding in the CPS.

8 These figures are affected by the changing definition of group quarters, described above; like the census, the CPS twice altered its definition of households. Until 1951, the CPS defined households as units with ten or fewer persons unrelated to the head (U.S. Census Bureau 1951, 1952). The threshold was then changed to four or fewer until 1983, when it was raised to nine or fewer (U.S. Census Bureau 1993).

9 A related point is that household-level or family-level measures preclude analysis of the effects of any other individual-level characteristics on residential behavior, such as marital status, educational attainment, or income.

10 In Figures 1 through 3 in this article, for example, we were compelled to use household-level measures because the comparisons rely on published statistics. We are not advocating the abolition of all household- or family-based measures; households sometimes operate as a meaningful unit of production and consumption. When the topic of investigation is the composition of families or households, however, the number of families or households in the population is seldom the best denominator.

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Cultural Diversity and Population Policy in Nigeria

OKA OBONO

NIGERIA'S FIRST EXPLICIT population policy went into effect in February 1988.[1] The policy was intended to provide a framework and guidelines for resolving what was seen as the country's population crisis "in a coherent and realistic manner" (Ransome-Kuti 1988: i). The Babangida administration (1985–93), and the Buhari regime before it (1983–85), had become convinced that Nigeria's rapid population growth brought with it "adverse consequences on the welfare of citizens and on the socioeconomic development of the country." There was a "dire need" to "formulate a policy on population for development, unity, progress, and self-reliance" (Nigeria 1988: 1).

The policy as adopted had multiple goals: improving living standards and the quality of life, promoting health and welfare, reducing the population growth rate, and achieving balanced rural–urban development. The policy also sought to promote awareness of population growth and its effects on development, educate young people on population matters prior to the ages of marriage and childbearing, provide family planning services, and manage the special needs of infecund and subfecund couples. Finally, the policy committed itself to the regular collection of demographic data and the use of such data for economic and social development planning.

These were large and ambitious aims. Needless to say, the achievement fell far short. Trends in fertility are indicative of this failure. The countrywide total fertility rate (TFR) declined very modestly, on the evidence of survey estimates: 6.3 in 1977–81 (Nigeria 1984: 77), 6.0 in 1987–89 (Nigeria 1992: 23), 5.9 in 1991 (Nigeria 1998: 234), 5.5 in the early 1990s (Nigeria 1995), and between 5.2 and 5.9 or 6.0 in 1994–98 (Nigeria 2000: 36).[2] (The UN Population Division's estimates of Nigeria's total fertility are: 6.9 in 1980–85, 6.7 in 1985–90, 6.4 in 1990–95, and 5.9 in 1995–2000—a drop of about one child per woman over two decades).[3]

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Even this comparatively small drop in fertility may not have stemmed from the population policy. As in many other sub-Saharan African countries, a plausible argument can be made that such fertility reductions were mainly the result of "structural adjustment" policies that drove up the cost of children for many couples. Government withdrawal of subsidies for health and education, as part of the conditionality provisions of loans from the World Bank and the International Monetary Fund, would have increased the burden of child raising for most parents and perhaps led to greater recourse to birth control. They might also have caused infant mortality to rise slightly.

The underlying reason for the ineffectiveness of the government's population policy, I argue here, is its failure to take account of the realities of Nigeria's social and cultural situation. A uniform national policy expressing official state antinatalism—which, despite protestations that it had entailed "an intensive process of consultations and discussions" (Ransome-Kuti 1988: 1), originated in the deliberations of international conferences and development agencies—had minimal influence on individual and family behavior in the complex ethnic mixture of Nigerian society, one characterized by a pronatalist culture and political economy at the local level.

Cultural context of fertility in Nigeria

Like many other sub-Saharan African societies, Nigeria contains a complex amalgam of ancestral belief systems, extraordinarily diverse in detail but sharing a common interest in the fertility of crops, livestock, and people. As Nigerian demographer Isiugo-Abanihe (1994) writes, "individual fertility behavior takes place within the context of complex social organization and under the influence of multiple social, cultural, and ideological realities" (p. 237). This position, which sees demographic behavior as "part of a larger, more complex whole of behavioral patterns, learned as part of the general repertoire of behavior in a social group" (Hammel 1990: 459), is shared by African and Africanist researchers across a wide spectrum of population scholarship. Indeed, the Caldwells have argued that the persistence of high fertility in sub-Saharan Africa as a whole can be explained neither by the absence of socioeconomic development nor by the ineffectiveness of family planning programs. The explanation lies largely in "a religious belief system and an accompanying social structure that have accorded both spiritual and economic rewards to high marital fertility" (Caldwell and Caldwell 1987: 567; for further support for this perspective, see Ocholla-Ayayo 1997: 4, and UNICEF and Nigeria 2001: 17).

The pronatalist belief systems of Nigeria should be seen as indicative of past demographic, economic, and political regimes of threats and opportunities that drove behavior and belief in a common direction. As I have demonstrated for the Yakurr of southern Nigeria (Obono 2001), behind the veil of prescriptive or political pronatalism lies a demographic profile of

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pathological infertility, infecundity, subfecundity, pregnancy wastage, and a regime of high rates of stillbirths, maternal mortality, and infant and child mortality. Seen in terms of prevalent levels of biomedical development, pronatalist religions became the primary collective expressions of human agency, not its contradiction.

Like other preindustrial agrarian cultures, Nigerian cultures historically resorted to self-regulatory practices that made population size, distribution, and growth compatible with available resources in the environment. Whatever specific forms these regulatory measures took, there were corresponding premodern norms (whether pronatalist or antinatalist) that codified them. As they "evolved," preindustrial Nigerian societies developed economic, political, and other adaptive responses that held demographic events in check. These procedures included both technological adaptations (such as shifting cultivation) and demographic adjustments (such as establishment of satellite settlements). More tragic responses included the obligatory murder of twins.

Reproductive behavior in particular came under close cultural influence because of its fundamental value for societal continuity. Numerous beliefs and practices developed over time that had strong demographic consequences. Often codified as a need to preserve lineage continuity, these included postpartum lactational sexual taboos, nonlactational abstinence, *coitus interruptus*, and *coitus intercrura*. In some cultures south of the Niger, mothers were expected to desist from further childbearing once their daughters experienced menarche. An overarching patriarchal ideology organized and intensified the effects of these practices through the institutions of gerontocracy, theocracy, and age-based village organization at the structural level. These three institutions contributed to the "enactment of norms" that regulated sexual conduct by confining it to prescribed unions, notably marriage or some approved system of concubinage, open only to adults of some social standing. Premarital pregnancies were uncommon in the majority of Nigerian societies, and, since marriage was usually contracted for the purpose of childbearing, abortions too were rare.

These cultural responses remain pervasive. Rather than disappear as their practical value has waned, they acquired symbolic values that are interwoven with the rest of cultural discourse. Contemporary norms in Nigeria are, to a large extent, the codification of such adaptive responses. Hence the necessity for population policies to take them into account. As Kingsley Davis remarked more than 30 years ago, antinatalist policies cannot avoid the confrontation with this complex of cosmological ideas (Davis 1967).

Population in Nigeria's development plans

A brief recounting of how population policy in Nigeria actually developed shows the obliviousness of policymakers to such concerns. The earliest de-

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velopment plans date back to the colonial period when, as an effect of the Third Colonial Development and Welfare Act of 1945, the Legislative Council approved the Ten-Year Plan of Development in 1946. The colonial administration was interested in increasing urban population density, in line with Britain's mercantilistic views. Rural-to-urban migration was encouraged because low population density was equated with scarcity of manpower and an absence of development. This is the background to Nigeria's current imbalance in spatial population distribution, with serious urban congestion and depletion of village manpower.

In the early postindependence period, Nigerian policymakers regarded population as an exogenous variable in development planning. The first three development plans either disregarded population or proposed a mish-mash of laissez-faire approaches that were products of their authors' pronatalist convictions.

The first postindependence plan of 1962–68 did at least recognize the deleterious effects of rapid population growth on the availability of health and other social services, but did not propose any concrete solutions. The second plan (1970–74) called for the exercise of caution ("perception and discretion") over "the issue of population policy in the contemporary Nigerian context." This perception was engendered by domestic economic prosperity in the early 1970s, which was fueled by increasing oil revenue. The government did not view the population growth rate, then at 2.5 percent per year, as constituting any immediate or foreseeable threat to the nation's well-being, and there was, therefore, no cause for alarm or need for "stringent population control measures" (Nigeria 1970). To the contrary, "the magnitude of the country's population is unlikely to be such that calls for extensive emergency or panic action." The Gowon administration (1966–75) was confident that the country's resource base was adequate to meet the demands of its population. In the euphoria of the oil boom, the administration famously declared that "money was not the problem in Nigeria but how to spend it."

The Second National Development Plan encouraged Nigerians to adopt voluntary family planning in order to raise the quality of life of children. Although it stated that the government would pursue a "qualitative population policy by integrating the various voluntary family planning schemes into the overall health and social welfare programmes of the country," nothing of the sort happened. The plan also proposed to set up a National Population Council—that too was not done.

The Third National Development Plan (1975–80) was almost completely silent on population, implying that the government's thinking had not changed much from its position in the previous plan. It noted that "emphasis is being deliberately placed on the rate of growth of the economy rather than direct action to achieve a drastic or immediate reduction in overall birth rate" (Nigeria 1975). During this plan period a 14-person National

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Population Council was finally established, and with it came the expectation of "a well-defined, articulate policy statement in the fourth development period starting in 1980" (Isiugo-Abanihe 1979: 11).

The Fourth National Development Plan (1981–85) appeared to heed this call. It accorded population variables considerable attention (Nigeria 1981). By the time of its formulation, the impact of the country's accelerated population growth on the national economy and welfare was as clear as it had become disturbing. This plan marked a departure from the earlier stance and adopted an unaccustomed antinatalism. It stated that "in order to bring the overall growth rate of the population down to a level that will not impose excessive burden on the economy, the fertility rate must decline." The government had at last become sensitized to the close relationship between population dynamics and economic development.

This slow evolution of thinking on the place of population in development planning shows the imprint of the succession of international deliberations and declarations on the matter. The 1974 World Population Plan of Action (WPPA) urged countries to:

> consider adopting population policies aimed at achieving a low level of birth and death rates consistent with goals of reducing the annual growth rate to about two per cent by 1985, raising the life expectancy at birth to at least 50 years and lowering infant mortality rate to at the most 120 per 1000 live births. (United Nations Economic Commission for Africa 1987: 1)

Then came the Lagos Plan of Action (LPA), adopted in April 1980, which sought to "ensure greater integration of population variables in development planning" (para. 348); and the Monrovia Strategy, which took account of the high population growth rate, the rapid pace of urbanization, high fertility and mortality levels, and the inability of large groups (especially women and children) to access available resources. The subsequent Kilimanjaro Programme of Action (KPA), adopted by Africa's Council of Ministers in 1984, presented a blueprint for the treatment of population and development by African countries up to 2000.

Even a cursory examination of the 1988 Nigerian population policy reveals the influence on it of the thinking embodied in these various statements (Odimegwu 1998: 15). But in many respects—perhaps in a desperate bid to play catch-up—the Nigerian policy set the most unrealistic and ambitious targets and time frames for itself. Thus while the WPPA set a target of 11 years (1974–85) to achieve the decline of infant mortality to at most 120 per 1000 live births, Nigeria sought to reduce it to 50 per 1000 live births in just five years.

In December 1992, eight years after the Kilimanjaro program, the "Dakar/Ngor Declaration on Population, Family, and Sustainable Development" of the Third African Population Conference observed in its preamble

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that "despite the increased number of explicit population policies formulated, the implementation rate of the Kilimanjaro Programme of Action for African Population and Self-reliant Development remains low" ("Dakar Declaration on Population" 1993: 210). That was certainly true for Nigeria.

Criticism of the 1988 population policy

The Nigerian population policy can be and has been criticized on many grounds, but one criticism stands out: its targeting of women's fertility behavior for change while disregarding male reproductive motivation. The policy was formulated by a coterie of male specialists and bureaucrats acting in league with a military cabal, with scant representation of women and none at all of rural women, whose reproductive behavior it was seeking to alter. It committed itself to protecting "the patriarchal family system in the country…for the stability of the home" (Nigeria 1988: 18), ignoring major changes in the structure and functioning of the family system that had occurred and the inability of the traditional family to cope with the demands of modern economic and political arrangements. Indeed, the policymakers may well have been wholly unaware of these transformations (Isiugo-Abanihe and Obono 1999)—and thus the contradiction inherent in their proposal to reduce women's fertility to no more than four children while simultaneously protecting the very family system that kept reproductive motivation high. With polygyny untouched, men were free to have as many children as they could under the customary and religious laws that upheld this practice. The policy did not associate female fertility outcomes with male reproductive motivation, nor did it acknowledge a link between that motivation and the lineage system. It ignored the influence of patriarchal structures on women's fertility and overlooked the fact that women managed, or mismanaged, their reproductive lives within the context of a male-dominated society.

Critics of Nigeria's policy also draw attention to the absence of comprehensive information on population distribution, growth, structures, and trends, and thus call into question the empirical basis of the policy. Some would go still further in challenging it. Soon after the policy's formulation, economist Bassey (1991) argued that what appeared to be overpopulation in Nigeria was a mirage created by the unequal distribution of wealth, and that a deconstruction of current political structures and their legitimizing ideology—not birth control—was the necessary condition for economic development.

Although these objections (among many others) point to the policy's shortcomings, they leave out the most fundamental observation of all: the policy was not a product of cultural consensus or understanding. It ignored the inter-ethnic differences that are a salient reality of Nigerian society. As argued on an earlier occasion, "it is because the policy is seemingly insensitive to the dynamics of the Nigerian social and cultural environment and

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because it reduces all Nigerians to figures and statistics that we think it is unrealistic" (Madunagu and Obono 1992: 6).

If demographic events are cultural events, and Nigeria is a culturally plural society, it follows that what is needed is not one *national* population policy, but several policies for the different nationalities in the country. A uniform policy is unsuited to a conflict-prone and culturally heterogeneous country. Instead, the policy ought to be cognizant of variations across local contexts, particularly when what is to be regulated is something so personal and interwoven with the cultural fabric of collective life.

Discussion

Nigeria's polity is a federal system whose political center is dominated by three major groups, the Hausa, the Yoruba, and the Igbo. There are innumerable smaller groups—in all, some 374 (Otite 1990: 36; Nigeria 2000: 1) to 389 (Otite 2000: 30) ethnic groups are recognized—many with acute sensitivity to their minority status among the larger ethnic entities and aware that their size counts in terms of claims on state revenues. For most, antinatalism would not be rational if the contradictions endemic to the country's political economy are not addressed.

The varied demographic patterns of the different groups also call for tailored policy. Igbo fertility, for example, is high, but the mean age at marriage for Igbo women is higher than it is for Hausa women in northern Nigeria. Yet the national policy sought to reduce fertility by *increasing* the age at marriage to 18 years, notwithstanding that the mean age at marriage for Igbo women was already much higher than that.

In a similar vein, the minority status of groups like the Yakurr makes it doubtful that they could consider antinatalism as a credible or rational choice. Among such a people, "pronatalism has historical links with reputed conditions of pathological sterility and infant mortality and, in the modern period, serves as a negotiating strategy within the plural ethnic environments of the Nigerian nation" (Obono 2001: 15).

The failure of Nigeria's population policy is the failure of its monocultural approach. The government sought to alter demographic outcomes by treating fertility behavior among the country's diverse ethnic communities as though it resulted from a single or monolithic cultural reality. It may have done so out of official pretension or as a form of internal cultural imperialism—imposing the orientations of a majority group on the rest of the country—that passed unnoticed because accoutered in the sacred mantle of demographic science. For an effective population policy, the government needs to find ways of incorporating distinct elements of the cultures of the respective nationalities and other minority groups, leveraging rather than suppressing the country's cultural diversity.

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Notes

1 A new population policy is currently in the making, but its effective date remains unknown.

2 The 1999 Nigeria Demographic and Health Survey (NDHS) recorded a TFR of 5.2 for 1994–99 (Nigeria 2000: xvii, 35), but noted that there had likely been underreporting of births in the three-year period preceding the survey by up to 15 percent, with the implication that "the true total fertility rate for the five years before the survey is probably closer to 5.9 or 6.0 than to the reported rate of 5.2" (Nigeria 2000: 36; see also Appendix C).

3 The national population policy also sought to lower the population growth rate. Its target was a drop from about 3.3 percent in 1988 to 2.5 percent by 1995 and 2.0 percent by 2000 (Nigeria 1988: 14). These benchmarks have not been met. The population growth rate was 2.9 percent per year in the late 1990s according to the 1999 NDHS (Nigeria 2000: 2) or 2.7 percent by UN estimates.

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Ansley J. Coale on Increases in Expectation of Life and Population Growth

The rapid decline in mortality after the end of World War II, in combination with a much slower downward adjustment of fertility, resulted in an extraordinary acceleration of world population growth. In a contribution prepared for the 1959 Vienna conference of the International Union for the Scientific Study of Population, Ansley J. Coale presented a concise and spirited exploration of the influence of mortality and fertility on the levels and patterns of growth and on the distribution of the population by age. Using the stable population model as his tool of exploration, Coale presents a comparative analysis of the implications of movements between stable states, making imaginative illustrative assumptions on changes over time and highlighting the often surprising and counterintuitive results of such calculations. The full text of this article, omitting summaries in English and French, is reproduced below from pp. 36–41 in Union internationale pour l'étude scientifique de la population, Internationaler Bevölkerungskongress, *Wien: Im Selbstverlag, 1959.*

Ansley Coale was one of the most prominent figures in demography in the second half of the twentieth century. He was born in 1917 and was educated at Princeton University. He spent his entire professional career at Princeton, as a member of the economics faculty and in association with the Office of Population Research, of which he was director from 1959 to 1975. In 1967/68 he was president of the Population Association of America, and from 1977 to 1981 he was president of IUSSP. His many scientific works include Population Growth and Economic Development in Low-Income Countries *(1958), coauthored with Edgar M. Hoover, a book that was highly influential in shaping the international population policy agenda from the 1960s on—lately receiving renewed attention as a predictor of the "demographic dividend" benefiting economies as a result of*

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the transition to low fertility. He was initiator and leader of the Princeton project exploring the causes of the decline in marital fertility in Europe, culminating in the 1986 book, coedited with Susan C. Watkins, The Decline of Fertility in Europe. *His most lasting contribution to population studies, however, was in the field of formal demography, as both teacher and scholar. His research in this area is exemplified by the 1972 book* The Growth and Structure of Human Populations: A Mathematical Investigation, *and in the application of demographic models to the estimation and analysis of population data. Ansley Coale died on 5 November 2002, at the age of 84.*

During the past two centuries, and especially in the past two decades, the average length of human life has increased. Prior to the seventeenth century, average durations of life in excess of 30 or 35 years were exceptional, and life expectancies of 20 to 30 years were the norm. Average length of life increased markedly during the nineteenth century in northern and western Europe, and in overseas areas populated by northwest Europeans. By 1900 expectation of life in these countries was 45 to 50 years. Today the countries most successful in controlling mortality have achieved an average duration of more than 70 years, and in every industrialized nation life expectancy is more than 64 years.

The non-industrialized areas of Asia, Africa, and Latin America have only in the past few decades begun to share this prolongation of life. While their control of mortality has been belated, however, it has occurred at a pace without precedent. Ceylon in Asia, Mexico in North America, Mauritius in Africa, and Venezuela in South America are among the countries where life expectancy at birth has increased recently at a rate of more than one year per year. Many non-industrialized areas in a decade have achieved progress that required 50 years in the typical experience of European countries.

In the industrialized countries, but not elsewhere, reduction of mortality has been offset by a major drop in fertility. Even in Europe the offset has not been complete. As a consequence, the population of the world, which prior to 1700 required about 1,000 years to double, would at its present pace double every 40 years.

Long-run implications of long life and high fertility

One question can be settled at the outset: the long-run incompatibility of prolonged life and current fertility rates. No matter what technological progress the future brings, in the long run either fertility rates must be reduced or mortality rates must increase. The reason lies in simple arith-

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metic. Current rates of death and childbearing, if continued, would produce a substantial constant geometric increase in numbers, and the consequence of such an increase in a surprisingly short period is a population incompatible with any estimated resources, no matter how large the estimate.

In about 6,500 years, if current growth continues, the descendants of the present world population would form a solid sphere of live bodies expanding with a radial velocity that, neglecting relativity, would equal the velocity of light. No technological miracles could provide transportation for such a volume of migration. Whether or not our growth rate is maintained for a few years, or even centuries, ultimately birth rates must fall or death rates go up.[1]

The clearest picture of the quantitative influence on population growth rates of changes in average duration of life is obtained by using the concept of *stable populations*. As Lotka showed, the continued combination of a specified schedule of mortality at each age with a specified schedule of childbearing would in a closed population produce a constant birth rate, death rate, and growth rate, as well as an unchanging age composition. To isolate the effect of increases in life expectancy, one assumes a fixed set of fertility rates. Then the constant growth rate ultimately attendant on the indefinite continuation of a short average duration of life (say 20 years) may be contrasted with the growth rate resulting from the prolonged prevalence of a long average duration (say 70 years).

The stable growth rate associated with a particular expectation of life depends, of course, on the fixed level of fertility assumed. Bourgeois-Pichat reported at the Stockholm meeting of the International Union the results of a series of calculations of stable populations made by the Population Division at the United Nations.[2] These calculations show that with an expectation of life (average for both sexes) of 20 years the stable growth rate would be negative, with an annual decrement of 40 per thousand, if the gross reproduction rate were 1.00,[3] and would be about zero if the gross reproduction rate were 3.00.[4] With a life expectancy of 70 years, the growth rates would be minus two per thousand and 38 per thousand respectively. It is a rather remarkable fact that the change in the rate of growth is virtu-

[1]Calculations of this sort are scarcely original. Unfortunately I cannot locate the source of the expanding sphere idea. However, the absurdity of continued geometric increase was one of Malthus' basic points (expressed in his famous ratios), so that the general notion is at least a century and a half old.

[2]J. Bourgeois-Pichat. "Utilisation de la notion de population stable pour mesurer la mortalité et la fécondité des populations des pays sous-developpés." *Bulletin de l'Institut International de Statistique*, Tome 36, 2° Livraison, pp. 94–121, Stockholm, 1958.

[3]Fertility at about this level was recorded between the two World Wars in Austria, Belgium, Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Latvia, Norway, Sweden, Switzerland, the United Kingdom, Australia, and New Zealand.

[4]Fertility at this level or higher is typical of low income, agrarian countries in Asia, Africa, and Latin America today, and was doubtless typical of the whole world in pre-industrial times.

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ally independent of fertility.[5] In other words an increase in life expectancy from 20 to 70 years would always add about 38 per thousand to the stable rate of growth, if fertility were kept constant.

Additions to the rate of growth from a given addition to expectation of life are greatest when initial life expectation is low. The increase in the stable annual growth rate when the average span increases from 20 to 30 years is nearly 14 per thousand, while an increase from 60 to 70 years adds less than 4 per thousand to the stable growth rate.

What effect will future improvements in the control of mortality have on population growth? The principal purpose of this paper is to answer this question by a consideration of what would happen to growth if the ultimate in low mortality were achieved. How much faster would populations grow if no one died?

The surprising answer is that the stable rate of population growth would be only slightly increased if life expectancy were infinite rather than 70 years.[6] The increase, in fact, would be somewhat less than 2 per thousand per year—less than the additional growth rate brought by a rise in average duration of life from 65 to 70 years. With a gross reproduction rate of 3, a life expectancy of 20 yields a stable annual rate of increase very near to zero, life expectancy of 70 a stable growth rate of 38, and an infinite life expectancy a stable rate of increase of 40.

Medical advance has clearly been the cause of the modern acceleration in world population growth, and as the medically less advanced parts of the world learn to apply already known techniques, further acceleration can be expected. But when an expected duration of 70 years has become the rule, the control of mortality will have very nearly exhausted its capacity to add to the long-range growth potential of population.

The intrinsic rate of increase is little affected by increases of life expectancy once 70 years is reached because such increases have so slight an

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[5]Analytically, this result follows from the fact that the stable growth rate is increased by a greater expectancy of life because of the increased proportions surviving to the ages of childbearing. Thus

(a) $e^{rT} = NRR$ where T is the mean length of generation

(b) $NRR = GRR \times p(\bar{a})$ where $p(\bar{a})$ is the probability of surviving from birth to the mean age of childbearing

Then

(c) $$r = \frac{\log_e GRR + \log_e p(\bar{a})}{T}$$

Finally, if another probability of surviving to the mean age of childbearing—$p'(\bar{a})$—is substituted, the change in r is given approximately by:

(d) $$\Delta r = \frac{\log_e p'(\bar{a}) - \log_e p(\bar{a})}{T},$$

an expression independent of the gross reproduction rate.

[6]It is implicitly assumed in this section that the age-pattern of mortality when $\mathring{e}_0 = 70$ is that typical with such a life expectancy. The age patterns of mortality in various countries with high life expectancies are very similar. "Infinite life expectancy" here means no mortality for anyone; actually a finite portion of the population with no mortality suffices to make $\mathring{e}_0$ infinite.

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effect on the number of parents. The probability of surviving from birth to the average age of childbearing is more than 93 per cent when life expectancy is 70 years. The total avoidance of death would thus add only about 7 per cent to the births expected during female lives with a previous average duration of 70 years. And it is only additional births that provide a basis for still more additional births in the future. In short, it is only when mortality *before the end of childbearing* is prevented that the ultimate growth rate of the population is affected. If women in a given cohort were saved from death after reaching the age of 50, population growth during the years in which their deaths would have occurred would be increased because of their survival, but after the time at which they all would have died their continued survival would have no further effect on population growth. No other cohorts would be affected. On the other hand, if women in a given cohort were saved from death *before* the end of childbearing, they would bear more children who would in their turn bear children. All ensuing cohorts would be enlarged.

When Lotka's stable theory is brought to bear on population growth in the absence of mortality, the following facts emerge:

(a) After mortality is ended, the stream of births gradually assumes a time pattern expressed by $B_t = B_0 e^{rt}$, where r is the stable growth rate, B_0 is the number of births in some reference year, and B_t is the number of births t years after the reference year.

(b) Since no one dies, the population at time t will equal those alive at the reference year plus subsequent births, or:

$$(1)\quad P(t) = P_0 + B_0 \int_0^t e^{rt} dt = P_0 + \frac{B_0}{r}(e^{rt} - 1)$$

If r is positive, $\frac{B_0}{r} e^{rt}$ eventually becomes large enough that $P_0 - \frac{B_0}{r}$ can be neglected, and the rate of growth becomes constant at an annual rate r. This rate is the real root of the Lotka equation,

$$(2)\quad \int_{a_1}^{a_2} e^{-ra} m(a) da = 1,$$

where m(a) is the probability of bearing a female child at each age within the childbearing interval (a_1 to a_2). The probability of surviving that usually appears in this equation is of course unity.

(c) The stable growth rate (r′) with no mortality relative to the stable growth rate (r) with a given mortality schedule may be estimated as:

$$(3)\quad \frac{r'}{r} = \frac{\log_e \text{G.R.R.}}{\log_e \text{N.R.R.}}$$

where N.R.R. is the net reproduction rate with the given fertility schedule.

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(d) The stable growth rate is precisely the same if on the one hand there are no deaths at all, or on the other, no deaths until age 70,[7] at which age the risk of death is 100 per cent. In the latter case, the stream of births would be unaffected, but there would also be, eventually, a steadily rising number of deaths, such that $D_t = D_0 e^{rt}$.

The population under these circumstances would be given by:

$$(4)\quad P'(t) = P'_0 + \frac{B_0 - D'_0}{r}(e^{rt} - 1)$$

Ultimately, the two populations would have the same rate of growth, and a constant ratio one to the other, approaching: $\frac{B_0}{B_0 - D'_0}$

(e) If r were negative when no deaths occurred (i.e., if G.R.R. < 1), the stream of births would approach $B_0 e^{rt}$, but the number of births would approach zero asymptotically, and the ultimate size of the population would be finite $\left(\frac{B_0}{-r} + P_0\right)$. The population would gradually approach a constant number of persons whose average age would, of course, increase one year annually. In short, if fertility were so low that the gross reproduction rate were less than one, immortality would not mean indefinite growth. In fact, the indefinite continuation of the fertility rates in Austria of 1931–1932 (G.R.R. = 0.890), together with the complete avoidance of mortality, would have produced an ultimate population only about 2.5 times as large as the one living in 1931.

(f) If the gross reproduction rate were exactly equal to one, an infinite expectation of life would after a few years produce a constant annual number of births, and a population growing by arithmetic progression. The growth *rate* (proportionate rate of growth) would gradually decrease toward zero.

While an increase in duration of life from seventy years to infinity would have only a slight effect on the stable growth rate,[8] its effect on the immediate growth rate would be more pronounced. In fact the immediate effect would be an increase in the rate of growth equal to the death rate at the moment immortality is achieved. If Canada (a country with a life expectancy of nearly 70 years) had had a closed population in 1957, its annual growth rate would have been 20 per thousand—the difference between a birth rate of 28 and a death rate of 8. Had deaths suddenly and

[7]Or any other age beyond the childbearing span.

[8]To be precise this statement must be limited to populations where the gross reproduction rate is above unity. If the gross reproduction rate were much below one, a life expectancy of 70 years could yield a large negative growth rate, while of course an immortal population cannot decline.

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permanently ceased, Canada's growth rate would have immediately risen to 28—a rate, however, lower than the natural increase recorded as prevailing in 1957 in Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Hong Kong, Iran, Jordan, Malaya, Mauritius, Mexico, Panama, Singapore, Taiwan, Trinidad and Tobago, and Venezuela. On the other hand, the actual natural increase (with mortality) in Canada in 1957 exceeded the growth rate that (according to official data) would have occurred with no deaths in Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, France, East and West Germany, Greece, Hungary, Italy, Japan, Luxembourg, Norway, Sweden, Switzerland, and the United Kingdom. Even the immediate effect on growth of avoiding all deaths is less than the effect of commonplace differences in fertility.

In the long run, immortality would add less to the growth rate than a ten per cent increase in fertility in areas near or above replacement with an expectation of life of about 70 years. To put this statement in perspective, note that the rise in fertility in Australia, Austria, Canada, New Zealand, Norway, and the United States *since 1950* has been sufficient to increase the long-term growth prospects more than would the total avoidance of all deaths. Specifically, picture these two alternative populations in the United States:

A. A population that, beginning in 1950, maintains fertility constant at 1950 levels, and has no further mortality.

B. A population that, beginning in 1950, maintains fertility constant at 1957 levels, but experiences mortality risks at each age unchanged at 1950 levels.

Population A (with immortality) would grow more rapidly at first. But the higher fertility population (B) would produce more births, more future mothers, and a greater long-run rate of growth. After about a century, population B would be larger, and progressively so thereafter.

The effect of immortality on age composition is a different matter. High risks of mortality are restricted to older ages when life expectancy is 70 years, and any large increases in proportions surviving would necessarily be limited to ages over 60. The complete avoidance of death would therefore add strongly to the proportion of the population in the older ages. For example, the proportion of persons over 60 when the average length of life is 70 years and the gross reproduction rate is 1.5 ultimately becomes 13 per cent, while if no one died the proportion over 60 would approach 41.4 per cent. The increase in the proportion of the aged would depend, however, on the level of fertility. With a gross reproduction rate at or below unity, the proportion over 60 would approach 100 per cent in the years after immortality was achieved. On the other hand, with a gross reproduction rate of 3, the proportion over 60 would become only 9.1 per cent, slightly more than twice the 4.3 per cent that would result from a life ex-

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pectancy of 70 years. When fertility is low, the proportion of the aged is high, and would rise inordinately if death were wholly avoided; but when fertility is high, even immortality would produce only a moderate proportion of aged persons.[9]

Modern medicine may be charged with having created the potentiality of very rapid population growth by making it possible to live an average age of 70 years. If future successes in prolonging life create social problems, however, they will be problems associated with age-distribution, not growth. Further medical progress can no longer increase growth potential consequentially.

[9]When there are no deaths and the gross reproduction rate is greater than one, births soon begin an exponential rise at a constant rate r. Then the proportion at each age is given by: $c(a) = re^{-ra}$

The proportion over age A would then approach $\int_A^\infty re^{-ra}da$, or e^{-Ar}.

High fertility thus yields a small proportion over 60 (because r is large), even when there are no deaths.

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PHILIPP THER AND ANA SILJAK (EDS.)
Redrawing Nations: Ethnic Cleansing in East-Central Europe, 1944–1948
Lanham, MD: Rowman and Littlefield Publishers, 2001. xi + 343 p. $79.00; $34.95 (pbk.).

This first volume in the Harvard Cold War Studies Book Series is a striking historical report of forced population transfers in Europe after World War II. The broad outlines are well known: Poland's borders were moved westward by more than 200 km, the territories of Poland and Czechoslovakia were more or less cleansed of ethnically different stock, millions of Germans, Ukrainians, and Poles were deported from their homelands. There are many authenticated reports about the experiences of refugees and expellees, but there have been few historical investigations, and those available are mostly narrowly focused. This volume is the first attempt at an overview. It makes use of recently declassified archival materials from Germany, Poland, and Russia.

It is an old idea to move people, whole populations, for the sake of peace after grave conflicts, taking into account the fate of the people involved and the consequences for their descendants and for those in the resettlement area, but seldom anticipating the political tensions, conflicts, even wars such relocations would spawn. The "exchange" of people between Turkey and Greece following World War I was seen as the invention of a new mode of politics, "cleansing" territories of unwanted people.

The second wave of ethnic cleansing occurred at the start of and during World War II, first in Czechoslovakia and Poland, and later in the German-occupied territories of the Soviet Union: the securing and reorganization of spheres of influence, including the resettlement of millions of people, and mass murder and genocide.

This book focuses on the third phase in the dark history of ethnic cleansing in twentieth-century Europe. It documents the size and burden of population change in Central Europe during the years 1944–48 and depicts the turmoil surrounding the transfers. It assesses their political, social, and economic consequences. It explores ways ethnic cleansing helped sustain Communist rule and was sustained by it. It demonstrates how ethnic cleansing figured in the Cold War. It also clarifies the extent to which the charged debate over inclusion of the countries concerned into the European Union draws on collective memories of the immediate postwar era. People directly involved in forced transfers have been largely replaced by new generations; but the facts have been conditioned by persistent narrative myths about historical circumstances and experiences.

In the introduction Mark Kramer alludes to the implications of forced migrations for the map of postwar Europe:

> For many regions, the forced population transfers after World War II were the most far-reaching demographic changes since medieval times. In some areas, … the entire population was forced out and replaced within a few short years by members of the "right" ethnic group.… (p. 16)

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The political rationale for "redrawing nations" was to improve postwar prospects for peace in Europe by creating, as far as possible, "ethnically homogeneous nation-states." This goal reflected particularly the interest of the Soviet Union in securing its European borders; the Soviet Union had used the instrument of "forced migration" before the war and continued to use it long afterward. But the forced transfers occurred with the consent of the US and British governments.

Kramer delineates the magnitude of the process:

> Although mass expulsions and deportations are not as unremittingly horrifying as genocide, the events described in this book were chilling in their own right. During World War II, millions of people in Central and Eastern Europe were forcibly uprooted from their homes and expelled to distant regions, from which they were forbidden to return to their previous residences. After the war ended, millions of other people were forcibly driven from their native lands, bringing the total number expelled to nearly thirty million. Vast numbers died during these upheavals, and millions more experienced unmitigated hardship and cruelty. (p. 2)

The most impressive achievement of the book is the presentation of different cases of forced migrations that are demonstrably connected by the same general politics, principles, and causalities. The background and past history of the expulsion of Germans and Ukrainians from Poland, of Germans from Czechoslovakia, and of Poles from the former parts of eastern Poland are described from the perspectives of the expellees and of the expelling governments. The reports draw on newly available documents and on the extensive literatures in the individual countries. This literature, to be sure, is one-sided in most cases, as it is mainly concerned with the experiences and views of the suffering parties.

Following the introduction, an overview chapter by Philipp Ther recounts the history of forced migrations in the twentieth century and conveys their human and material costs between 1944 and 1950 in East and Central Europe. The question posed throughout the book is how British and American governments came to agree to both the change in borders and the expulsion of populations. The answer in part is that the Soviet request for compensation for Russian investments and losses in occupying Germany could hardly be rejected. Also the leaders faced other problems of ending the war and reconstructing Europe that needed to be solved in agreement and at the same time. The Western governments demanded the transfers be carried out "in an orderly and humane manner," but they had little influence on the process, particularly because it started spontaneously before any formal agreements. In the longer run, indeed, the endorsement of the international community helped at least to make the relevant administrations try to make the expulsions and transfers more orderly, although without the necessary means and instruments.

These introductory essays are followed by three sections, the first of which contains seven chapters on Poland and the Polish government's efforts to create a homogeneous state. Krystyna Kersten presents an overview of Polish history, the actions of Soviet and German occupation forces after September 1939, the integration of new territories, and an assessment of the consequences of forced migration for Polish politics and society. The three following chapters deal with expulsion and resettlement in Pomerania (Stanisław Jankowiak), in southeast

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Prussia (Claudia Kraft) and in Upper Silesia (Bernard Linek), the newly incorporated northern and western regions of Poland. Jankowiak depicts the trauma and violence under which the "de-Germanization" took place.

The following chapters concentrate on forced population exchanges between eastern Poland and the Soviet Ukraine. They deal with expulsions from Poland's former eastern territories (Jerzy Kochanowski), with the Polish–Ukrainian conflict (Orest Subtelny), and with the Ukrainian resistance until 1947 (Marek Jasiak). The conflict between ethnic groups in this region had become violent as early as 1920 and continued up to 1939 and beyond, when the Soviet Union occupied the territory and deported many Poles and Jews to Siberia. The subsequent German occupation expelled or killed the mostly urban Jewish population, which had numbered about 11 million. After the Soviet reoccupation in 1944 the systematic cleansing started, sending more than 2 million Poles to the newly defined Polish territory; similarly Ukrainians were sent from Poland to the Ukrainian Soviet Republic. Additionally, 3 million Poles had to leave their homes in Galicia to fill the vacant lands in newly acquired western parts of Poland, which the Germans in turn were forced to vacate.

The second section of the book contains three chapters on the Czechoslovak government's treatment of ethnic Germans and the population's anger over Sudeten German collaboration with the Nazis. The first chapter deals with the expulsion of Sudeten Germans from Czech lands (Eagle Glassheim), the second with the effect of expulsions on the country's legal retribution policies (Benjamin Frommer), and the third with the reorganization of industry in northwestern Bohemia (Zdeněk Radvanovský).

Even before the international sanction of the expulsions, nationalist sentiment and the Czechoslovak government made the Czech population feel legitimized in their extreme brutality toward the Sudeten Germans in the initial stage of expulsions. Private interests were often motives for a good deal of the action. A sequence of trials started right after liberation as the Czechoslovak government had promised to punish all people who either—as Germans—participated in the measures of German occupation or—as Czechs—had collaborated with them. But the distinction between the two groups was not without doubts and errors, and the priority of expulsion hindered much of the prosecution. The task of reactivating industries that had been managed by Germans was hindered by a lack of trained personnel.

Chapters in the third section assess the impact of German migrants on the Soviet zone of Germany (later East Germany) and on the Western-occupied zones (later West Germany). The first chapter deals with the assimilation in the Soviet Zone of Occupation of the Germans whom Soviet officials had expelled from the former eastern provinces of Germany and from Czechoslovakia (Manfred Wille). The second is a regional study of the transformation in demography and social structure resulting from the influx to Brandenburg of "resettlers" and refugees from Czechoslovakia, Poland, Hungary, and elsewhere (Arnd Bauerkämper). The third treats the creation of a Western German identity following World War II (Rainer Schulze).

In a final chapter, Ana Siljak reviews the arguments for and against policies of ethnic cleansing and concludes, "In the end, the suffering of the transferred populations, both during and after migration, was immeasurable. If there were ever doubts about the brutal nature of postwar ethnic cleansing, this book has dispelled them" (p. 327). The political situation after cleansing, in most cases, did not prove

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to be conflict-free, as had been intended with the formula of ethnically homogeneous national-states. Although after the war the states of Europe were more homogenous than ever before, remnants of ethnic heterogeneity remained, and later migration streams increased the heterogeneity. The policies of subsequent decades, finally resulting in the European Union, did more for the promise of a lasting peace than the relative ethnic homogeneity of individual states.

Ethnic conflict cannot be resolved by selection and separation of peoples, as the powers thought at the end of World War II and as some still believe, because the costs are immeasurable and the situation after the transfer of populations is neither necessarily safe nor necessarily peaceful. In West Germany, where German migrants increased the population by a third or more, conflicts were alleviated by massive international aid. The situation was eased through rapid and effective economic development during the following decades—a circumstance that can hardly be compared with other cases and that nevertheless failed fully to eliminate tensions lasting over subsequent generations, both within the country and in relation to other countries.

Thus the reasons a report such as this one was not compiled earlier lie not only in the delayed release of archival materials but to a large degree also in the emotions of the people involved and the transmission of these emotions to their children, creating myths that have been sustained over decades. The publication of historical reports like this is therefore a step in the scientific battle against historical mythologizing, and the dissemination of its message is a necessary step in the healing process as well.

Is this a book of major relevance for population research? As a book about forced migration, it offers a lot of figures. But most chapters do not offer satisfactory numerical assessments. Numbers are difficult to ascertain, and evaluation of the estimates of the number of refugees, expellees, and other victims repeatedly results in the statement: We will never know for sure. The book documents ethnic, social, and political tensions before and after the forced migrations, and thus exposes the myth of homogeneous national populations, prior to and after the "ethnic cleansing" programs, populations that are too often considered uniform in demographic studies. The description of the political and social processes of forced migration, including the hardships of those affected, is a warning against assuming that mere quantitative analysis of similar massive demographic changes can ever tell the full story.

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RAINER MACKENSEN

RAINER MACKENSEN (ED.)
Bevölkerungslehre und Bevölkerungspolitik vor 1933
Opladen: Leske and Budrich, 2002. 316 p.

The title of this collection, which could be translated as "The science and politics of population before 1933," is somewhat misleading, as its focus is on the period

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of the Weimar Republic in Germany, between the end of World War I and the reign of Hitler. Many of the articles exceed these time boundaries, both backward and forward, and it is what happened after 1933 (with the inescapable "How could it ever have happened?") that gives the narratives their tragic power. Although the population policies of Nazi Germany serve as the leitmotiv, the typical article reviews and classifies the principal theories and authors in an encyclopedic but rather dry manner. As Rainer Mackensen states in his introduction, the demographic history of the period remains to be written. There is little here on the demographic facts themselves and on popular attitudes, and much on interpretations of these facts and on attitudes among the academics, statisticians, and politicians of the time. For instance, perceptions and theories on the decline of fertility (rather than the decline itself) are treated in two chapters, one by Bernhard Matz on "The assessment of the fertility decline at the time of the Weimar Republic," and the other by Ursula Ferdinand on "Theories of the fertility decline in the national economy of Germany between 1900 and 1930." To its thirteen chapters in German, the book adds two contributions in English, by Henk A. de Gans (on the history of forecasting and projections) and Robert Lee (on official statistics and population policy from 1872 to 1933).

As a guide to the maze of institutes and agencies and a who's who among writers on population-related topics in Germany, the book is an invaluable bibliographic tool. The reader's attention may wander at times, for the great names of German demography in the interwar period are not exactly household words today, and the content of their writings has not aged well. Some of the best known among them were Jews like Paul Mombert who lost his academic position, was incarcerated, and died shortly after his release, and R. R. Kuczynski who migrated to England. Some were Nazis, but most were fellow travelers in the service of a regime ruled by prejudice and phony science.

The topic of population drew considerable interest in Germany even before the Nazi era. Mackensen finds 715 authors of "demographically relevant writings" for the study period. Their emphasis was on "population problems" (as defined at the time) and on policies rather than on theory or measurement. There existed a "field of tension" between the prevailing major concerns: the decline of fertility and the thesis of the need for living space. In Germany before 1914, the spread of contraception was probably more widely accepted both by academic writers and in medical texts than was the case in any other Western country. The bloodbath of the Great War cast doubt on the wisdom of tolerating declining fertility. German statisticians of the time paid close attention to the subject of "nationalities," or ethnic minorities, as defined by mother tongue. One of the chapters, devoted to the Austrian demographer Wilhelm Winkler, reproduces a "linguistic map of Mitteleuropa" drawn from his 1927 *Statistisches Handbuch des gesamten Deutschtums*, to which he added the caption: "German right of self-determination! Despite the solemn promise of the right of self-determination, the German people have been divided into twelve states by the Treaty of Versailles and St. Germain: more than fifteen million Germans are denied the right of self-determination and reunification with the motherland. The white line on the map not only cuts the German body in pieces, it is a rift through good faith, human worth, and justice" (p. 284). (Winkler was the organizer of the 1959 conference of the IUSSP in Vienna, and I

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met him on that occasion. Apparently, after the war he deplored the fact that politicians had misused his studies.)

Mixed with nationalities was the topic of race. "Race hygiene" became a catchword of the times, a branch of public health. Eugenics was enormously popular among scientists and popular writers alike, as a biological as well as a social theory. Although this was also true in other Western countries, nowhere was the doctrine taken to such nightmarish extremes as the elimination of "inferior races" and the "defective." The theoretical background to these dire developments is covered in chapters on "Society and the individual," "Between economy and biology," "Demography as a science of culture," and others.

Mackensen argues that in Germany today, demography is professionally and institutionally underdeveloped because of its association with the past. Having lost the institutional support it received from the state for the wrong reasons, and having been the handmaiden of a fallen regime while relying on discredited science, demography lost its privileged position. Because of demography's previous association with eugenics, Mackensen argues, its practitioners are now wary of tackling aspects of the discipline that do not strictly adhere to the social sciences. They eschew the consideration of moral issues, such as those that involve the definition of life and the worth of the individual and the legitimacy of manipulating fertility in a country that had for some time one of the lowest birth rates in the world and a negative rate of natural increase. Mackensen appears to regret this. At any rate, a major interest of the book is that it raises the issue of the difficult marriage between official statistics, the academic world, and politics. More generally, it provides a case study of a situation where the search for "policy relevance" compromised the research enterprise. I am not convinced that demography is particularly underdeveloped in Germany today, nor, if so, that this is an inheritance from the distant past. An equally likely explanation is that population studies there did not benefit to the same extent as in the English-speaking world from the support of foundations and international programs seeking to lower fertility in the developing world.

Be that as it may, the book is a credit to a genre, intellectual history, that has a long and honorable tradition in Germany.

University of Pennsylvania ETIENNE VAN DE WALLE

CAROLINE H. BLEDSOE
Contingent Lives: Fertility, Time, and Aging in West Africa
Chicago: University of Chicago Press, 2002. xx + 396 p. $67.00; $22.00 (pbk.).

In 1992, the anthropologist Caroline Bledsoe joined the demographer Allan Hill in a research project on birth spacing and child health in rural Gambia. During the next three years, extensive material was gathered on reproductive attitudes and behaviors, primarily through cross-sectional and longitudinal surveys, supplemented by a limited number of informal interviews. Out of this material Bledsoe

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has fashioned an intellectually rich monograph that burrows deeply into the logic and strategies of a particular high-fertility regime and, simultaneously, she draws out of this material propositions that are intended to challenge well-accepted theory and practice in demography.

At the time of the research rural Gambian women desired large numbers of children and averaged in excess of six live births. About 5 percent of the women were using a modern contraceptive (mainly injectables). The women's principal concern was to space their pregnancies so as to maximize their number of living children at the end of the reproductive career, an outcome considered in their self-interest and also consonant with the interests of their husbands and other lineage members. Bledsoe describes at length the women's understanding of the reproductive process and the actions they took in accordance with this understanding. Each woman is thought to have an endowment of potential conceptions, but whether these become surviving children depends on how effectively she manages other key bodily resources (assumed to be muscles, strength, and blood, each one a local concept that Bledsoe carefully defines). The reproductive span—that is, the number of years remaining before menopause—is not a resource of concern to these Gambian women; indeed menopause is hardly present as a concept and there seems to be little anxiety about "running out of time." Rather than chronological age, it is pregnancies that take a cumulative toll on a woman's reproductive capacity, but the damage varies considerably among pregnancies, some draining a far larger quantity of key resources than others. Not only traumatic deliveries, but also closely spaced pregnancies and pregnancy losses subtract more from reproductive potential than do other pregnancies. The women perceive many threats to their reproductive capacity, including nutritional adversity, infectious disease (especially malaria), and the stresses of household production. The threat most amenable to their control is closely spaced pregnancies, and Bledsoe discusses in detail women's strategies for avoiding this outcome.

This study must rank as one of the most evocative portraits of birth spacing in a high-fertility regime. The behaviors have been amply documented in other research on West Africa, stretching back two decades to the Caldwells' (1977) research on the Yoruba published in the late 1970s and the influential volume edited by Page and Lesthaeghe (1981). Bledsoe's contribution is to describe how Gambian women understand the problem of birth spacing, how they assess the costs and benefits of various strategies, and how they negotiate with other key social actors. In short, the strength of this volume is not its demography but rather its exploration of the *mentalités* that govern this fertility regime. Especially compelling are Bledsoe's discussions of conjugal politics surrounding birthspacing—West African men's opposition to birth spacing is misunderstood and simplified to the point of caricature in some of the family planning literature, it seems—and the powerful social and moral dimensions to women's reproductive actions.

Bledsoe has no use for the concept of natural fertility, as she feels that the rather mindless reproduction that it implies is contradicted by the careful calculus and deliberate birth-spacing actions of Gambian women. This is one more instance of imputing tenets to the concept of natural fertility that are neither logical requirements nor present in the seminal literature (Henry 1961; Knodel 1983). Indeed, Bledsoe provides yet further empirical evidence that the concept applies to

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populations outside of historical Europe (the region for which it was originally devised): in this high-fertility population, the notion of limiting family size appears to be largely absent, and deliberate fertility-avoidance behaviors are only weakly parity-specific. Surprisingly, in the Gambian data the initial adoption of modern contraception is strongly positively associated with parity (or, more precisely, gravidity), a pattern consistent with one of the more common expectations derived from the concept of natural fertility (but contrary to what the Caldwells and others have predicted for African societies). This sharp differential draws little comment from Bledsoe while other differentials that, upon close examination, are trivial in magnitude (e.g., level of contraceptive use following live births versus pregnancy losses) become the linchpins of her argument.

This is one instance of many in which Bledsoe reports empirical findings that, she claims, should strike demographers as "puzzling," whereas the puzzlement derives from her own highly selective reading of the field. She is surprised that, as just noted, the initial users of modern contraceptives in rural Gambia are older rather than younger women; but this has been precisely the pattern in most European, Asian, and Arab populations during the past 150 years (and, judging from the Gambian data, perhaps will not be so rare in African populations either). Contraceptive use after a pregnancy loss is said to be inconsistent with desires for large numbers of children; but the contradiction exists only if high fertility desires and a preference for spacing births are assumed to be incompatible, and few demographers in recent decades have held this view. Bledsoe asserts that demographers, under the sway of their own experiences in high-income and low-fertility societies, have equated surviving children with live births and pregnancies, in the process relegating pregnancy losses (and to some extent infant deaths as well) "outside the vision of fertility research" (p. 146); but the mainstream textbooks and journals of the field amply refute this. Demographers are said to treat use and nonuse of contraception as static, permanently absorbing states (whereas Gambian women use contraception for only brief periods of time); but the dozens of articles in the past three decades on contraceptive use dynamics, in which much attention has been given to contraceptive discontinuation, suggest that the field has if anything been preoccupied with the nonpermanency of contraceptive use.

Bledsoe's strange characterizations of the field cannot be ignored when assessing this monograph, because she submits these "oddities" (and a few others, equally nonpuzzling to this reviewer) as the primary evidence in support of the larger argument of this volume, namely that Gambian women's understanding of the processes of reproduction and aging are fundamentally different from views held in the West that have been dominant in the field of demography. Gambian women, according to Bledsoe, see reproduction and aging as "contingent and cumulative": one event leads to the next, with each event leaving an imprint that determines the circumstances surrounding the next. Women's physical aging is heavily determined by reproductive experience, while chronological age hardly figures in either reproduction or aging.

The contrast Bledsoe draws between Gambian and Western understandings is provocative and intellectually demanding, and she is quite successful in immersing the reader in a view of the reproductive process that departs from the European model and that in all likelihood helps explain many aspects of West African

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fertility. To join Bledsoe in seeing the "contingent lives" framework as at odds with mainstream contemporary social science, however, one must again read quite selectively, setting aside large bodies of developmental and longitudinal research, including the concept of the life course and the several decades of empirical work, in demography and other subfields, that have been influenced by this concept.

In short, this monograph offers rich and revealing material on reproduction in the Gambia but a quite distorted characterization of demography and the contemporary social sciences.

Population Council JOHN B. CASTERLINE

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ALAN BOOTH AND ANN C. CROUTER (EDS.)
Just Living Together: Implications of Cohabitation on Families, Children, and Social Policy

Mahwah, NJ: Lawrence Erlbaum Associates, 2002. xi + 289 p. $59.95.

What is clear from the contents of this state-of-the-art volume is that cohabitation is much more than "just living together." The contributors systematically describe research on cohabitation to date, shortcomings of such work, and the research required to more fully understand how to serve the needs of parents and children who spend part of their lives in a cohabiting family structure. It can be read as a dialogue among some of the foremost scholars in the field of family sociology and demography, as well as a guide for future research on cohabitation and marriage.

The book is organized in four parts with lead review chapters and a set of responses that often provide fresh ideas and new research. Several chapters comprehensively review the increasing role of cohabitation in family formation in Western Europe, the United States, Canada, and Quebec, though this general trend is far from uniform across these populations. Review chapters by Kiernan and by Smock and Gupta discuss individual-level correlates of cohabitation—religiosity, gender attitudes, family background, social class, race, and ethnicity. The analyses tend to stay close to the data, however, and the authors rarely speculate on the broader social forces underlying these general trends in family formation processes—for example, the secularization of society, more egalitarian gender attitudes, and later and less childbearing.

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Thorough data analyses are a strength of the volume. Indeed, as Smock and Gupta note, nationally representative data about cohabitation in the United States were scarce until the mid-to-late 1980s. The authors in this volume plumb the data sources that have emerged since then with measures of cohabitation. In doing so, they have discovered the shortcomings of these measures as well. Several authors demonstrate the shortcomings of marital status as a measure of family structure. Manning, Kalil, Ellis, and Brown engage in a fruitful discussion of alternative measures of family structures that include children. In addition to marital status (married, cohabiting, single) they propose measures of two-parent biological families, step-families, combined families, resident and nonresident parental involvement, and the custodial parent's sex. These measures can often be applied to existing data to compare the well-being of children in different family types, although data that would allow for the measurement of changes in family structure over time are the holy grail for family demographers.

A central preoccupation with cohabitation is that it is an "unstable" family form, raising concerns for the well-being of children. This concern begs for a thorough discussion of the sources of that instability. Is there a selection into cohabitation on the basis of individual characteristics and attitudes, or does the experience of cohabitation change the individual? Does cohabitation cause instability or do people whose lives are less stable choose cohabitation? Jayakody and Cabrera use qualitative evidence to suggest that uncertainty in low-income families' lives inhibits couples from formalizing their relationship, while Coley argues that gender mistrust and the meager financial contributions of fathers make marriage less attractive. Le Bourdais and Juby argue that in the case of Quebec, where cohabitation is increasingly the first union type, the decision to marry is the best predictor of stability. These authors present some innovative research designs for investigating the union formation decision process across socioeconomic contexts—an area that merits further attention. The Fragile Families Project, which interviewed parents of newborns in an urban hospital and reinterviewed them at regular intervals, is an example of a project that can evaluate sources of instability among and between union types and family structures.

An important task that several of the authors undertake is that of identifying the essential elements of marriage-like unions, such as the centrality of the husband–wife relationship in the family system, sexual access, childbearing, common residence, division of labor, pooling of economic resources, union permanence, and public recognition. By cracking open the black box of the categories that make up marital status, future research can shed new light on the family formation process and the choices men and women make when forming a family through single, cohabiting, or married parenthood.

Finally, several authors enter into the debate over how policy influences family-formation behavior—a problem alluded to broadly by earlier discussions of cohabitation as an incomplete institution. Should policy encourage cohabiting parents to marry, or should policies be changed to treat married and unmarried parents similarly? Primus and Beeson find that if low-income parents in the United States take advantage of all the social services available to them, cohabiting parents are often better off than married parents. They offer several proposals to counter this effect, including the creation of a tax status for cohabiting parents who have chil-

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dren in common. Haskins argues instead that policies should encourage marriage and the preservation of two-parent biological families. The disjunction between the academic investigations of cohabitation and family change and the policy analyses in this volume focuses attention on the real gap between research and policy—yet another call for further research.

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ELIZABETH FUSSELL

NANCY A. DENTON AND STEWART E. TOLNAY (EDS.)
American Diversity: A Demographic Challenge for the 21st Century
Albany: State University of New York Press, 2002. xiii + 303 p. $73.50; $24.95 (pbk.).

The next time a student asks me for a good explanation of American diversity, I will recommend *American Diversity.* In less than 300 pages, this excellent collection of essays covers much of what one always wanted to know about the subject.

The editors' introduction outlines the purpose of the contributions and justifies the volume's deliberate limitation to demographic explanations. The intention was not to include articles from, say, the late Julian Simon or Ben Wattenberg on one side and those from Richard Lamm or Peter Brimelow on the other. Although I would have liked to have seen their inclusion, the chosen approach is strictly demographic. The book is divided into four sections. Part I looks at "Population: The initial numbers." In Part II, the impact on ethnic and racial diversity of three demographic processes—immigration, fertility, and mortality—is examined. Part III looks at the "Life cycle and diversity." Part IV outlines the implications and offers conclusions.

Mary Waters is the author of the first article dealing with racial and ethnic identity. After discussing the various problems in defining these concepts, Waters offers three possible scenarios for the future. I especially favored the third option. A "scenario for the future could be a blurring of the lines of distinction across all of these ethnic and racial categories—in effect a melting pot model that included all Americans regardless of color" (p. 45). I have written elsewhere on the same theme and labeled it "pluralistic assimilation."

Charles Hirschman addresses the issue of population projections, a vital ingredient if one is to comprehend the importance of demography in explaining diversity. Hirschman rightly points out that racial definitions are constantly in flux, and intermarriages blur these definitions further. The author is evidently not convinced of the usefulness of long-term projections. "[T]here is a healthy skepticism about the limits of population projections beyond the short-term of 10 to 20 years. Beyond this time frame, unforeseen changes in fertility, mortality, and migration frequently lead to population trends that diverge from prior projections" (p. 51). This is undoubtedly true—witness the late-1930s projections that did not anticipate the baby boom. However, an important point is missed here. Demographer Peter Morrison said it well: "[T]he purpose of projecting the future population is not exclusively, or even primarily, to make accurate predictions. It is, rather, to iden-

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tify and chart the likely effects of influences and contingencies that will determine future population size" ("Overview of population forecasting for small areas," Rand, June 1975, pp. 1–2). By looking at current demographic patterns and extending them into the future, demographers provide a useful tool for policymakers.

The data on the three basic demographic processes discussed in Part II are generally well known to demographers. Gray Swicegood and Philip Morgan detail differences in fertility among racial and ethnic groups, looking at changes over time and between generations. Richard Rogers, in his chapter on mortality, reports data that are not always easy to find. Douglas Massey's piece on immigration is especially insightful. He reexamines the successful assimilation that took place among European immigrants and their offspring during the first half of the twentieth century. Americans are justifiably proud of this accomplishment, which led at the highest political levels to the nomination for vice president in 1968 of two "ethnic Americans," Spiro Agnew and Edmund Muskie. Massey also explains how those successes will be more difficult to reach for recent immigrants from Latin America and Asia.

Part III on life cycle and diversity offers a good deal of information on housing segregation, education and employment, ethnic and racial intermarriage, and the elderly. Each article presents enlightening new data. For example, Michael White and Eileen Shy discuss figures on mortgage lending and fair housing, and Joseph Hotz and Marta Tienda explore the inequality surrounding the school-to-work transition among blacks, whites, and Hispanics. Gillian Stevens and Michael Tyler point out the differences in intermarriage between the mid-twentieth century (when that term related to marriages between Irish and Polish, for example) and today when such unions are no longer considered intermarriage, but marriages between blacks and whites or Hispanics and whites are. In the last chapter in this section, Cynthia Taeuber deals in great detail with the ethnic and socioeconomic characteristics of the over-65 population. Part III alone is worth the price of the book for the voluminous data it presents so concisely.

The sole chapter in Part IV is titled: "Rethinking American diversity: Conceptual and theoretical challenges for racial and ethnic demography." Hayward Horton presents a population and structural change thesis which "argues that changes in the relative size of the minority population *interact* with changes in the social structure to exacerbate the level and nature of racial inequality in society" (p. 264; emphasis in original). Referring to projections indicating that the dominant population in the United States will become a numerical minority in the future, Horton suggests that all things being equal this would happen. "But all things have never been *equal* in the United States. The history of the use of power by the dominant population would suggest that controls will likely be implemented to forestall racial and ethnic minorities from becoming a numerical majority" (p. 268; emphasis in original). He suggests the inclusion in demographic models of the concept of racism in conjunction with the more familiar categories of race and racial inequality. Clearly this is food for thought.

In my view, one glaring omission from this collection is a chapter that concentrates on cultural adaptation. This term is seldom mentioned here, although assimilation and multiculturalism are discussed briefly. But given the demographic profile that is emerging, how will the United States adapt to such a radical change

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in its population composition? We can go back to the early twentieth century and the works of Horace Kallen and others; we can look at the "melting pot" or "salad bowl" concepts. But what about today and the future? Will Horton's prediction be correct or not? This omission aside, *American Diversity* is an excellent collection that should inform scholars and nonspecialists alike.

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LEE BOUVIER

SHORT REVIEWS

by John Bongaarts, John B. Casterline, Geoffrey McNicoll

HELEN MACBETH AND PAUL COLLINSON (EDS.)
Human Population Dynamics: Cross-Disciplinary Perspectives
Cambridge: Cambridge University Press, 2002. xvi + 224 p. $75.00; $28.00 (pbk.).

This edited volume contains ten essays intended as introductions to demography. The natural audience for these essays might be, for example, undergraduates enrolled in a first course in demography. A guiding philosophy of the volume is that population dynamics are better understood if approached from multiple disciplinary perspectives. Accordingly, the disciplines represented by the contributors include statistics, epidemiology, social history, geography, anthropology, and genetics. The glaring omission is economics, which has been the disciplinary base for a highly influential body of population theory and empirical research for several centuries. Economics enters here into Richard Smith's succinct introduction to Malthusian theory and Robert Layton's discussion of production and reproduction in peasant societies. But no essay provides a full-fledged introduction to contemporary macro- or micro-economic models of population dynamics. And sociological approaches as well are hardly represented in this volume.

These omissions are offset by the several chapters by biologists and geneticists, disciplines of increasing importance in research on demographic processes that are often given short shrift in social science introductions to demography. A chapter by Andrew Hinde attempts to explain the basic mathematics of population dynamics using words rather than formulas; this brave effort is only partially successful. John Clarke provides a highly accessible description of population variation across time and space in the period 1950–2050.

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Multi-disciplinary endeavors run the risk of gaining intellectual richness at the expense of coherence. A reader would find this a disorienting volume to go through from start to finish, but presumably the main use of the book will be selection of chapters for insertion at appropriate locations in course reading lists. For that purpose, most of these chapters are excellent. Glossary, index.—J.B.C.

JANE MENKEN, ANN K. BLANC, AND CYNTHIA B. LLOYD (EDS.)
Training and Support of Developing-Country Population Scientists: A Panel Report
New York: Population Council, 2002. iv + 104 p.

A nine-member international panel of senior population scientists, chaired by Jane Menken, examined the current situation with respect to recruitment, training, funding, and employment of developing-country specialists in demography and population studies. The panel's report sees an academic job market that is stagnant or declining, but still-expanding career opportunities in government and the private sector. Funding for training, especially at the Ph.D. level, has diminished, and many developing-country institutions, where most Master's-level population training takes place, are financially strapped. Collaborative, transnational programs, short courses, and distance learning offer alternative training models. Among the recommendations is a call for development of donor consortiums to provide long-term support for a number of centers of excellence in population research and training in selected universities in developing countries. Appendixes present case studies describing existing and future needs for population training in China, India, and Uganda. The study was organized by the Population Council and funded by the Mellon Foundation.

ERIN PHELPS, FRANK F. FURSTENBERG JR., AND ANNE COLBY (EDS.)
Looking at Lives: American Longitudinal Studies of the Twentieth Century
New York: Russell Sage Foundation, 2002. x + 378 p. $47.50.

Some of the most influential empirical social science research during the latter half of the twentieth century was based on longitudinal surveys that followed individuals for two decades or longer. Twelve such surveys are reviewed in this volume through the eyes of researchers intimately involved in their initial design and ongoing management. Among the surveys discussed are the Panel Survey of Income Dynamics (Duncan), the National Longitudinal Survey of Youth (Mott), the Baltimore study of teenage mothers (Furstenberg), the Baltimore Beginning School Study (Entwisle, Alexander, and Olson), the Intergenerational Panel Study of Parents and Children (Thornton, Freedman, and Axinn), and the multiple surveys that constituted the "Children of the Great Depression" project (Elder). While few of the surveys considered are primarily demographic in orientation, many have become staples in demographic research. Five of the surveys started before 1950, and another five between 1950 and 1982. The majority were not national samples.

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Because of the sheer longevity of some of these studies, they have become invaluable in ways not anticipated at the outset, as a changing social and cultural context brings a new set of questions to the fore and as new techniques for the analysis of longitudinal data are developed. The authors of each chapter were asked to reflect on the forces—intellectual and political—that led to the establishment of the survey, and how its subsequent evolution was shaped by trends in funding, the interests of key individuals, and sheer happenstance. The authors were also asked to interweave their own professional biographies with their assessments—why they joined the project in the first place, why they remained with it as long as they did, and in several instances why they eventually parted ways with the project. The result is a rare blend of intellectual history and personal biography, with many of the chapters having a compelling urgency that, once started, makes them hard to put down. The volume can be regarded as a collection of case studies of the process of conducting social science research. As such, among the many conclusions that emerge (Giele compares the studies in an introductory chapter, and Modell distills lessons in a concluding chapter) are that there is a constant interplay between intellectual agenda and research methodology, each one feeding the other; and that more often than not the primary motivation for sustained and rigorous social science research is public policy concerns (such as the persistence of poverty, poor school performance, teenage pregnancy, and juvenile delinquency). Index.—J.B.C.

STEPHEN H. SCHNEIDER, ARMIN ROSENCRANZ, AND JOHN O. NILES (EDS.)
Climate Change Policy: A Survey
Washington, DC: Island Press, 2002. xvii + 563 p. $60.00; $29.50 (pbk.).

This book reviews the highly contentious issue of climate change policy and its complex scientific, technological, economic, and political dimensions. Increasingly persuasive scientific evidence indicates that human actions, in particular the consumption of fossil fuels, contribute to global warming. But controversy remains over the likely size of any future rise in temperature, over the consequences of warming, and over the most cost-effective means to reduce greenhouse gas emissions. The pessimists predict serious consequences including a rise in sea levels, an increase in extreme weather events, ecosystem disruption, changes in ocean circulation, and agricultural damage, and they call for immediate and intrusive interventions. The skeptics believe that any global warming will have minor effects and that adaptation will be less costly than prevention. The international division of responsibilities for dealing with climate change is a related issue that is hotly debated.

These topics are covered in 20 chapters divided into six parts on: science and impacts, economic analysis, policy context, forests and agriculture, development and equity, and energy sources. Most chapters draw on a detailed assessment undertaken by the Intergovernmental Panel on Climate Change and published in 2001. Particular attention is given to proposals for acting on the growing international consensus on the desirability of intervention. At the 1992 United Nations Conference on Environment and Development in Rio De Janeiro participating gov-

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ernments signed the Framework Convention on Climate Change, which laid the groundwork for future negotiations. The next step toward a climate change regime was taken in 1998 with the signing of the Kyoto protocol, which imposes limits on emissions in industrialized countries. Subsequent rounds of negotiations have dealt with the implementation of the protocol, but progress has been difficult, in part because the United States is no longer an active participant.

One chapter covers the neglected issue of the role of population and climate change policy. Population issues will probably become more prominent in future debates on global warming because the Kyoto protocol sets caps on absolute emissions without reference to population trends. This implies that countries with declining populations (e.g., Italy, Russia, Japan, Germany) will find it easier to remain below these caps than will countries with growing populations (e.g., the United States).

The chapter authors, who range in level of expertise from leading scientists to graduate students, largely succeed in presenting these complex issues in a balanced and accessible way intended for a wide nontechnical audience.—J.B.

UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES
Statistical Yearbook 2001: Refugees, Asylum-seekers and Other Persons of Concern—Trends in Displacement, Protection and Solutions

Geneva: UNHCR, 2002. 165 p.

The first of a new series, the UNHCR's *Statistical Yearbook* provides detailed data and a brief commentary on the world refugee situation—or on that part of the situation officially recognized. Refugees and asylum-seekers are defined administratively, with reference to international treaties; registration systems covering them are maintained by UNHCR and most settlement countries. "Internally displaced persons" are a less clear-cut category: groups offered assistance or protection by the UNHCR within their own country, usually at the request of another UN agency. The categories combined, along with returnees (for the first 12 months), make up what are called "persons of concern to UNHCR." (The 3.7 million Palestinian refugees, many now second- and third-generation descendants of the original displaced persons, are the concern of a different agency—the UN Relief and Works Agency for Palestine Refugees in the Near East, UNRWA—and are not included in the UNHCR database.) UNHCR's population of concern at the end of 2001 numbered 19.8 million, 12 million of whom were refugees proper (a third of them from Afghanistan). Forty percent lived in camps. The assembled tables present breakdowns of these populations by country, demographic characteristics, and administrative disposition—the stage reached in the processes of asylum application and resettlement or repatriation. Of their nature, however, the result is a picture of UNHCR activities rather than a demographic accounting of human displacement in the world. In particular, it is not clear whether time trends in the former, meticulously recorded here, correspond with trends in the latter. The acknowledgments note that the report "was written and produced by Béla Hovy." It is available online at http://www.unhcr.ch/statistics.—G.McN.

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WORLD BANK
World Development Report 2003. Sustainable Development in a Dynamic World: Transforming Institutions, Growth, and Quality of Life
New York: World Bank and Oxford University Press, 2003. xxi + 231 p. $50.00; $26.00 (pbk.).

The *World Development Report* was once a solid collection of statistical tables presenting economic indexes by country, prefaced by a discussion of the year's progress and a few chapters elaborating a topic of current development concern. Over recent years successive reports have steadily thinned out the tables and, like the Bank itself, taken on a much broader span of social and environmental interests. (The statistics are mainly left to the sister publication, *World Development Indicators*.) *WDR 2003* brings together many of these newfound concerns in the course of a largely qualitative discussion of sustainable development that might well bemuse the hard-nosed development economists of the old Bank. The multiplication of types of capital (human, natural, social) that has been taking place continues: here we have an "asset portfolio" comprising human assets (innate skills and the effects of education and health), natural assets (renewable and nonrenewable resources), human-made assets (capital equipment, infrastructure, financial assets), "knowledge assets" (nonembodied, codified knowledge), and social assets (trust and interpersonal networks). These in various combinations contribute to material consumption and also, in some cases, directly to human well-being. Asset management, however, is an extraordinarily complex problem of coordination through institutional design and political action. Cautionary tales of management failure—and the occasional celebration of success—fill the numerous boxes within the text. Population issues have little place in the story other than as background. The popular thesis that dependency rates are a critical factor in the development effort is accepted: "The next 20 to 50 years are a demographic window of opportunity" as population growth slows and savings are freed for capital-deepening investment—though it is acknowledged that there will be a simultaneous need to accommodate a massive rural-to-urban transition. A pervasive theme of the report is the need for social inclusion. "Lack of assets, opportunity, and effective voice for large segments of the population blocks the emergence of general welfare-enhancing policies, impedes growth, and undermines the potential for positive change." The team that produced the report was led by Zmarak Shalizi.—G.McN.

WORLD HEALTH ORGANIZATION
World Health Report 2002: Reducing Risks, Promoting Healthy Life
Geneva, 2002. xx + 248 p. $13.50.

The last *World Health Report* to appear during Gro Harlem Brundtland's term as WHO Director-General is a major statement on public health priorities, premised on the concept of the "burden of disease." Demographers, naive egalitarians, regard a life-year as a life-year, whenever and however it may be lived: hence, for instance, the simple computations underlying the measurement of expectation of life. In contrast, the WHO, in espousing the apparatus of burden of disease, makes

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intricate judgments about relative impairments through illness and injury and about the present values of future years lived. The result is a powerful numéraire, the DALY—a disability-adjusted life-year lost (below age 80 or 82). In a neat piece of reification, DALYs can then be used in comparative analyses of health conditions and health programs, without further thought as to their ingredients. A particular risk factor, say exposure to lead, can be accorded greater or lesser importance in terms of its contribution to total DALYs.

Unfortunately, possible risk factors are innumerable, overlapping and interacting, and variously amenable to control by individuals or societies. Rather than dealing with this potential classificatory mire, the report selects 26 risk factors for study, factors that are putatively important at least in some kinds of society and for which risk-reduction strategies are available. A few of these are not pursued: for example, carcinogens, climate change, noise. But there are 20 factors that together are estimated to account for nearly half the global burden of disease, ten of them for more than one-third. The ten are: low childhood weight-for-age, unsafe sex, high blood pressure, tobacco consumption, alcohol consumption, poor sanitation and unsafe water, iron deficiency, indoor smoke pollution, high cholesterol, and obesity. Their relative significance of course differs greatly among countries: one-quarter of the disease burden in high-mortality countries can be attributed to childhood undernutrition and unsafe sex (mainly HIV transmission); in rich countries tobacco and blood pressure head the list. A theme of the report, however, is the increasing extent to which poor countries are also experiencing the risk factors once limited to the rich. Interventions bearing on each factor are assessed in terms of cost-effectiveness and magnitude of effect. The recommendations call for greater attention to the gains available from "population-wide risk reduction" in comparison to those from reduction of risk for smaller numbers of high-risk individuals. A statistical annex presents data on mortality, cause of death, healthy life-expectancy, and health sector expenditures, by country and region. (Each table has the annotation that the figures were "produced by WHO using the best available evidence; they are not necessarily the official statistics of Member States.") The annex also shows the relationships that have been assumed between the selected risk factors and the resulting disease or injury on which the DALY calculations were based. Index.—G.McN.

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Demographic Prospects 2000–2050 According to the 2002 Revision of the United Nations Population Projections

The Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat biennially issues revised versions of detailed population estimates and projections for over 200 countries, territories, and regional aggregates of the world. Highlights of the latest set, World Population Prospects: The 2002 Revision, *were released 26 February 2003 (ESA/P/WP.180) and can be accessed on the web site of the Population Division http://unpopulation.org. The estimates (essentially covering the period 1950–2000) and the projections (for 2000–2050) will be published in a series of three volumes, currently under preparation. Key findings of the projections, as presented in the Executive Summary of the document, are reproduced below. The projections incorporate newly revised assumptions of the proximate factors driving population change: fertility, mortality, and international migration. The detailed description of these assumptions is also reproduced.*

The *2002 Revision* is the eighteenth round of official United Nations population estimates and projections prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. These are used throughout the United Nations system as the basis for activities requiring population information.

The *2002 Revision* of the official United Nations population estimates and projections breaks new ground in terms of the assumptions made on future human fertility and the impact of the HIV/AIDS epidemic. For the first time, the United Nations Population Division projects that future fertility levels in the majority of developing countries will likely fall below 2.1 children per woman, the level needed to ensure the long-term replacement of the population, at some point in the twenty-first century. By 2050, the medium variant of the *2002 Revision* projects that 3 out of every 4 countries in the less developed regions will be experiencing below-replacement fertility.

This change in assumptions represents the third and final phase in a process of assessment of future trends in fertility. In 1997 the Population Division convened a meeting of experts to review the guidelines for the projection of fertility in countries with below-replacement fertility.[1] As a result of the deliberations of that meeting the fertility of low-fertility countries was maintained below replacement level during the whole projec-

[1]Below Replacement Fertility, *Population Bulletin of the United Nations,* Special Issue Nos. 40/41, 1999 (United Nations, 2000).

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tion period in the *1998 Revision*. In 2001, a similar meeting of experts was convened to discuss prospects for countries where fertility had not yet begun to decline or where fertility declines were incipient.[2] Already the *2000 Revision* projected that fertility in those countries would decline more slowly than in the *1998 Revision* and their pace of fertility decline is not projected to be much faster in the *2002 Revision*. Lastly, in 2002 a meeting of experts discussed guidelines on how to project the future fertility of intermediate-fertility countries, that is, those that had already experienced significant fertility decline but had not yet reached levels of fertility below replacement.[3] The projections of fertility in the *2002 Revision* reflect the conclusions reached at that meeting.

A second important change in the *2002 Revision* is that it anticipates a more serious and prolonged impact of the HIV/AIDS epidemic in the most affected countries than previous revisions. The impact of the disease is explicitly modelled for 53 countries, up from the 45 considered in the *2000 Revision*. The dynamics of the epidemic are assumed to remain unchanged until 2010. Thereafter prevalence levels are assumed to decline in a manner consistent with modifications of behaviour that reduce the rates of recruitment into the high risk groups as well as the chances of infection among those engaging in high risk behaviour. The resulting HIV prevalence levels remain relatively high until 2010 and then decline, but are still substantial by mid-century.

As a consequence of these changes, the *2002 Revision* projects a lower population in 2050 than the *2000 Revision* did: 8.9 billion instead of 9.3 billion according to the medium variant. About half of the 0.4 billion difference in these projected populations results from an increase in the number of projected deaths, the majority stemming from higher projected levels of HIV prevalence. The other half of the difference reflects a reduction in the projected number of births, primarily as a result of lower expected future fertility levels.

The results of the *2002 Revision* confirm key conclusions from previous revisions and provide new insights into the sensitivity of population projections to future trends in fertility and mortality. The main findings of the *2002 Revision* are summarized below.

1. Despite the lower fertility levels projected and the increased mortality risks to which some populations will be subject, the population of the world is expected to increase by 2.6 billion during the next 47 years, from 6.3 billion today to 8.9 billion in 2050. However, the realization of these projections is contingent on ensuring that couples have access to family planning and that efforts to arrest the current spread of the HIV/AIDS epidemic are successful in reducing its growth momentum. The potential for considerable population increase remains high. According to the results of the *2002 Revision*, if fertility were to remain constant in all countries at current levels, the total population of the globe could more than double by 2050, reaching 12.8 billion. Even a somewhat slower reduction of fertility than that projected in the medium variant would result in additional billions of people. Thus, if women were to have, on average, about half a child more than according to the medium variant, world population might rise to 10.6 billion in 2050 as projected in the high variant. The low variant, where women have, on average, half a child less than in the medium variant, would result in a 2050 population of 7.4 billion (Figure 1).

2. World population is currently growing at a rate of 1.2 per cent annually, implying a net addition of 77 million people per year. Six countries account for half of that annual increment: India for 21 per cent; China for 12 per cent; Pakistan for 5 per cent; Bangladesh, Nigeria and the United States of America for 4 per cent each.

3. The increasing diversity of population dynamics among the countries and regions of the world is evident in the results of the *2002 Revision*. Whereas today the population of the more developed regions of the world is rising at an annual rate of 0.25 per cent, that of the less developed regions is increasing nearly six times as fast, at 1.46 per cent,

[2]United Nations Workshop on Prospects for Fertility Decline in High Fertility Countries, New York, 9–11 July 2001 (United Nations, ESA/P/WP.167).

[3]Completing the Fertility Transition (United Nations, ESA/P/WP.1/Rev.1).

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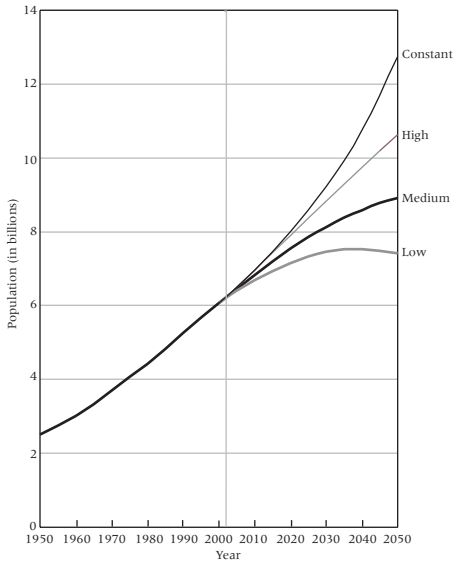
FIGURE 1 Estimated and projected population of the world by projection variant, 1950–2050



SOURCE: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2003). *World Population Prospects: The 2002 Revision. Highlights.* New York: United Nations.

and the subset of the 49 least developed countries is experiencing even more rapid population growth (2.4 per cent per year). Such differences, although somewhat dampened, will persist until 2050. By that time, the population of the more developed regions will have been declining for 20 years, whereas the population of the less developed regions will still be rising at an annual rate of 0.4 per cent. More importantly, the population of the least developed countries will likely be rising at a robust annual rate of over 1.2 per cent in 2045–2050.

4. As a result of these trends, the population of more developed regions, currently at 1.2 billion, is anticipated to change little during the next 50 years. In addition, because fertility levels for most of the developed countries are expected to remain below replacement level during 2000–2050, the populations of 30 developed countries are projected to be smaller by mid-century than today (e.g., 14 per cent smaller in Japan, 22 per cent smaller in Italy, and between 30 and 50 per cent smaller in the cases of Bulgaria, Estonia, Georgia, Latvia, the Russian Federation and Ukraine).

5. The population of the less developed regions is projected to rise steadily from 4.9 billion in 2000 to 7.7 billion in 2050 (medium variant). Particularly rapid growth is expected among the least developed countries whose population is projected to rise from 668 million to 1.7 billion despite the fact that their fertility is projected to decline markedly in the future (from 5.1 children per woman today to 2.5 children per woman in 2045–2050). With sustained annual growth rates higher than 2.5 per cent between 2000 and 2050, the populations of Burkina Faso, Mali, Niger, Somalia, Uganda and Yemen are projected to quadruple, passing from 85 million to 369 million in total.

6. Large population increments are expected among the most populous countries even if their fertility levels are projected to be low. Thus, during 2000–2050, eight countries (India, Pakistan, Nigeria, the United States of America, China, Bangladesh, Ethiopia and the Democratic Republic of Congo, in order of population increment) are expected to account for half of the world's projected population increase.

7. The past 50 years witnessed a remarkable reduction of fertility levels in the less developed regions, with total fertility falling from 6 to 3 children per woman. Over the next 50 years, fertility in less developed regions is expected to reach replacement level in 2030–2035 and fall below it thereafter. However, average fertility in the less developed regions as a whole is still expected to be slightly above 2 children per woman in 2045–2050, mainly because of the increasing heterogeneity of population dynamics among developing countries. Thus, the 49 least developed countries are expected to have a total fertility of 2.5 children per woman in 2045–2050, well above replacement level. That is, the *2002 Revision* foresees that by mid-century there will still be a significant number of countries where the transition to below-replacement fertility will not be completed.

8. Increasing diversity is also evident with respect to future mortality levels. At the world level, life expectancy at birth is likely to rise from 65 years today to 74 years in 2045–2050. But whereas more developed re-

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gions, whose life expectancy today is estimated at 76 years, will see it rise to 82 years, that of less developed regions will remain considerably below, reaching 73 years by mid-century (up from 63 years today). In the group of least developed countries, many of which are highly affected by the HIV/AIDS epidemic, life expectancy today is still below 50 years and is not expected to exceed 67 years by 2050. So, although the gap in life expectancy between the different groups of countries is expected to narrow, major differences in the probabilities of survival will remain evident by mid-century.

9. The *2002 Revision* indicates a worsening of the impact of the HIV/AIDS epidemic in terms of increased morbidity, mortality and population loss. Although the probability of being infected by HIV is assumed to decline significantly in the future (particularly after 2010), the long-term impact of the epidemic remains dire. Over the current decade, the number of excess deaths because of AIDS among the 53 most affected countries is estimated at 46 million and that figure is projected to ascend to 278 million by 2050. Despite the devastating impact of the HIV/AIDS epidemic, the populations of the affected countries are generally expected to be larger by mid-century than today, mainly because most of them maintain high to moderate fertility levels. However, for the seven most affected countries in Southern Africa, where current HIV prevalence is above 20 per cent, the population is projected to increase only slightly, from 74 million in 2000 to 78 million in 2050, and outright reductions in population are projected for Botswana, Lesotho, South Africa and Swaziland.

10. The deeper reductions of fertility projected in the *2002 Revision* result in a faster ageing of the population of developing countries than in previous revisions. Globally, the number of older persons (60 years or over) will nearly triple, increasing from 606 million in 2000 to nearly 1.9 billion by 2050. Whereas 6 of every 10 of those older persons live today in less developed regions, by 2050, 8 of every 10 will do so. An even more marked increase is expected in the number of the oldest-old (80 years or over) at the global level: from 69 million in 2000 to 377 million in 2050. In less developed regions, the rise will be from 32 million to 265 million, again implying that most oldest old will live in less developed countries by 2050.

11. In more developed regions, the population aged 60 or over currently constitutes 19 per cent of the population; by 2050 it will account for 32 per cent of the population. The elderly population in more developed regions has already surpassed the child population (persons aged 0–14) and by 2050 there will be 2 elderly persons for every child. In the less developed regions, the proportion of the population aged 60 or over will rise from 8 per cent in 2000 to close to 20 per cent in 2050.

12. Increases in the median age, the age at which 50 per cent of the population is older and 50 per cent is younger than that age, reflect the ageing of the population. At the world level, the median age rose by scarcely three years between 1950 and 2000, from 23.6 years to 26.4 years, largely because most populations in less developed countries remained young. Over the next 50 years, however, the world's median age will rise by nearly 10 years, to reach 37 years in 2050. Among developed countries, 13 are expected to have a median age of 50 years or more, with Japan, Latvia and Slovenia (each with a median age of about 53 years), and the Czech Republic, Estonia, Italy and Spain (each with a median age of about 52 years) leading the list. In addition, three developing countries (Armenia, the Republic of Korea and Singapore) will also be in that group. At the other end of the spectrum, Angola, Burkina Faso, Mali, Niger, Somalia, Uganda and Yemen expect to have still young populations, with median ages lower than 23 years in 2050.

13. International migration is projected to remain high during the first half of the century. The more developed regions are expected to remain net receivers of international migrants, with an average gain of about 2 million migrants per year over the next 50 years. Averaged over the 2000–2050 period, the main net gainers of international migrants are projected to be the United States (1.1 million annual net migrants), Germany (211 thousand), Canada (173 thousand), the United Kingdom (136 thousand) and Australia (83 thousand), whereas the major net senders are projected to be China (–303

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thousand annual net number of migrants), Mexico (–267 thousand), India (–222 thousand), the Philippines (–184 thousand) and Indonesia (–180 thousand).

Assumptions underlying the *2002 Revision*

The *2002 Revision* includes six projection variants. Four differ among themselves with respect to the assumptions made regarding the future course of fertility. The fifth differs with respect to the assumptions made about the future course of mortality, and the sixth differs with respect to the future course of migration.

To describe the different projection variants, the various assumptions made regarding fertility, mortality and international migration are described first.

A. Fertility assumptions

Fertility assumptions are described in terms of the following groups of countries:

1. High-fertility countries: Countries that until 2000 had had no fertility reduction or only an incipient decline;

2. Medium-fertility countries: Countries where fertility has been declining but whose level was still above 2.1 children per woman in 1995–2000;

3. Low-fertility countries: Countries with total fertility at or below 2.1 children per woman in 1995–2000.

Medium-fertility assumptions:

1. Fertility in high-fertility and medium-fertility countries is assumed to decline following a path derived from models of fertility decline established by the United Nations Population Division on the basis of the past experience of all countries with declining fertility during 1950–2000. The models relate the level of total fertility during a period to the average expected decline in total fertility during the next period. Under the medium variant, whenever the total fertility projected by a model falls below 1.85 children per woman, the value actually used in projecting the population is set to 1.85. That is, 1.85 children per woman represents a floor value below which the total fertility of high and medium-fertility countries is not allowed to drop before 2050. However, it is not necessary for all countries to reach the floor value by 2050. If the model of fertility change used produces a total fertility above 1.85 children per woman for 2045–2050, that value is used in projecting the population.

2. Fertility in low-fertility countries is generally assumed to remain below 2.1 children per woman during most of the projection period and reach 1.85 children per woman by 2045–2050. For low-fertility countries whose total fertility in 1995–2000 is estimated to be below 1.85 children per woman, projected fertility often declines further before increasing slowly to reach 1.85 in 2045–2050.

High-fertility assumptions:
Under the high variant, fertility is projected to remain 0.5 children above the fertility in the medium variant over most of the projection period. By 2045–2050, fertility in the high variant is therefore half a child higher than that of the medium variant. That is, countries reaching a total fertility of 1.85 children per woman in the medium variant have a total fertility of 2.35 children per woman in the high variant at the end of the projection period.

Low-fertility assumptions:
Under the low variant, fertility is projected to remain 0.5 children below the fertility in the medium variant over most of the projection period. By 2045–2050, fertility in the low variant is therefore half a child lower than that of the medium variant. That is, countries reaching a total fertility of 1.85 children per woman in the medium variant have a total fertility of 1.35 children per woman in the low variant at the end of the projection period.

Constant-fertility assumption:
For each country, fertility remains constant at the level estimated for 1995–2000.

B. Mortality assumptions

Normal-mortality assumption:
Mortality is projected on the basis of the models of change of life expectancy produced by the United Nations Population Division.

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A medium pace of mortality decline is generally used to project future mortality levels. However, for countries highly affected by the HIV/AIDS epidemic, the slow pace of mortality decline has generally been used to project the reduction of general mortality risks not related to HIV/AIDS.

In addition, for the countries highly affected by the HIV/AIDS epidemic, estimates of the impact of HIV/AIDS are made explicitly through assumptions about the future course of the epidemic—that is, by projecting the yearly incidence of HIV infection. The model developed by the UNAIDS Reference Group on Estimates, Modelling and Projections[4] has been used to fit past HIV prevalence estimates obtained from UNAIDS so as to derive the parameters determining the past dynamics of the epidemic. For most countries, the model is fitted assuming that the relevant parameters have remained constant in the past. For projection purposes, the parameters are kept constant until 2010. Thereafter, the parameter PHI, which reflects the rate of recruitment of new individuals into the high-risk group, is projected to decline by a third over intervals of increasing length. In addition, the parameter R, which represents the force of infection, is projected to decline by 15 per cent over the same intervals. A reduction in R is based on the assumption that changes in behaviour among those subject to the risk of infection will reduce the chances of transmitting the virus.

Constant-mortality assumption:
For each country, mortality remains constant at the level estimated in 1995–2000.

C. International migration assumptions

Normal-migration assumption:
The future path of international migration is set on the basis of past international migration estimates and an assessment of the policy stance of countries with regard to future international migration flows.

Zero-migration assumption:
For each country, international migration is set to zero for the period 2000–2050.

Table 1 presents in a schematic way the different assumptions underlying the six projection variants. As shown, the four fertility variants (low, medium, high and constant-fertility) share the same assumptions regarding mortality and international migration. They differ among themselves only with respect to the assumptions regarding fertility. A comparison of their results allows therefore an assessment of the effects that different fertility paths have on other demographic parameters.

In addition to the four fertility variants, a constant-mortality variant and a zero-migration variant have also been prepared. They both have the same fertility assumption (i.e. the medium fertility). Furthermore, the constant-mortality variant has the same international migration assumption as the medium variant. Consequently, the results of the constant-mortality variant can be compared with those of the medium variant to assess the effect that changing mortality has on other demographic parameters. Similarly, the zero-migration variant differs from the medium variant only with respect to the underlying assumption regarding migration. Therefore, the zero-migration variant allows an assessment of the effect that non-zero migration has on other demographic parameters.

Summary of the methodological changes made for the *2002 Revision*

The following changes and adjustments were made in the *2002 Revision* in relation to procedures followed in the *2000 Revision*:

1. In the medium-variant, the future fertility paths for countries with total fertility above 2.1 children per woman are projected using models derived from the past experience of all countries where fertility has already declined.

2. Countries with current total fertility above 2.1 children per woman are no longer constrained to stop their future fertility decline at 2.1 children per woman. Instead, their fertility levels can continue to decline until they reach 1.85 children per woman, the floor value below which fertility is not allowed to fall in the medium-variant. As in

[4]UNAIDS Reference Group on Estimates, Modelling and Projections (2002). Improved methods and assumptions for estimation of the HIV/AIDS epidemic and its impact: Recommendations of the UNAIDS Reference Group on Estimates, Modelling and Projections. *AIDS*, vol. 16, pp. W1–W14.

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TABLE 1 Projection variants in terms of assumptions for fertility, mortality and international migration

	Assumptions		
Projection variant	**Fertility**	**Mortality**	**International migration**
Low	Low	Normal	Normal
Medium	Medium	Normal	Normal
High	High	Normal	Normal
Constant-fertility	Constant	Normal	Normal
Constant-mortality	Medium	Constant	Normal
Zero-migration	Medium	Normal	Zero

SOURCE: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2003). *World Population Prospects: The 2002 Revision. Highlights*. New York: United Nations.

the *2000 Revision*, not all countries need to reach either a total fertility of 2.1 or 1.85 children per woman during the projection period in the medium-variant.

3. The total fertility of all low-fertility countries is assumed to converge to 1.85 children per woman by the end of the projection period instead of reaching different target values as in the *2000 Revision*.

4. For all countries, total fertility in the high and low variants is projected to be 0.5 children above and 0.5 children below, respectively, from the total fertility of the medium-variant. In the *2000 Revision*, a difference of 0.4 of a child was used in the case of low-fertility countries.

5. The estimation and projection of the impact of HIV/AIDS was modified to incorporate the model developed by the UNAIDS Reference Group on Estimates, Modelling and Projections. Use of the new model allows the formulation of projection hypotheses on the basis of parameters that are meaningful with respect to the dynamics of the epidemic.

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Population Policy Dilemmas in Europe at the Dawn of the Twenty-First Century

PAUL DEMENY

The article discusses issues raised by persistent below-replacement fertility in Europe. The continent's demographic predicament is highlighted by comparing age structures and relative population sizes between populations in and outside Europe—such as those of Russia and Yemen and those of an enlarged 25-country European Union and a 25-country hinterland to the EU in North Africa and West Asia—during the past 50 years and prospectively up to 2050, based on United Nations estimates and projections. Potential geopolitical aspects of the population shifts are considered. European policy responses to them are found largely wanting. With respect to the key demographic variable, fertility, explicit pronatalism is rejected by most European governments. A set of policy measures that commands wide support, with the hoped-for side effect of raising birth rates, seeks to make women's participation in the formal labor force compatible with childrearing. The effectiveness of such measures, however, is likely to be limited. Continued below-replacement fertility, higher immigration from outside Europe, negative population growth, and loss of demographic weight within the global population are safe predictions for the Europe of the twenty-first century.

Urban–Rural Mortality Differentials: An Unresolved Debate

ROBERT WOODS

Historians and demographers have long debated the existence, causes, and consequences of historical differences between urban and rural mortality levels. In Europe it has been usual to observe excess mortality in cities compared to the countryside, but in East Asia, by contrast, it has been found that urban areas had relatively favorable mortality environments. The debate continues because a number of pertinent questions remain to be resolved. For example, the way in which mortality is measured may influence the apparent extent of the differential, as may the way in which "urban" and "rural" are defined. Cultural factors need to be taken into account, including the practices of childrearing and the conventions surrounding baptism. Examples drawn from Japan, China, England, and France illustrate the issues involved in comparative analysis, while the urban–rural mortality continuum is examined for nineteenth-century England and Wales using log-normal distributions.

Shifting Childrearing to Single Mothers: Results from 17 Western Countries

PATRICK HEUVELINE
JEFFREY M. TIMBERLAKE
FRANK F. FURSTENBERG, JR.

We investigate how recent changes in the Western family have affected childhood living arrangements. For 17 developed countries, we use multistate life table techniques to estimate childhood trajectories of coresidence with biological fathers versus other maternal partners. In all countries childhood exposure to single parenting is more often caused by parental separation than out-of-partnership childbearing. Both exposure to single parenting and expectancy of childhood spent with a single non-cohabiting mother vary widely across countries, with the United States exhibiting the highest levels of each at early 1990s rates. The greatest international variations concern parental cohabitation—its prevalence, durability, and the degree to which its increase has compensated for a decrease in the expectancy of childhood spent with married parents. Overall, we find little evidence of international convergence in childrearing arrangements, except that in

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countries where parental marriage has declined over time, childrearing has predominantly shifted to single mothers.

Measurement of Household and Family Composition in the United States, 1850–2000

STEVEN RUGGLES
SUSAN BROWER

This article has three goals. First, it explores the effects of changes in census definitions and concepts on the measurement of living arrangements. As part of this analysis, the authors develop new estimates of the number of households and group quarters in each census year since 1850. Second, they evaluate the existing aggregate statistical series on family and household composition, with particular attention to problems in the measurement of subfamilies. Finally, they describe data and methods for developing a consistent set of statistics for the period since 1850 and offer recommendations for the coherent measurement of family and household composition.

Cultural Diversity and Population Policy in Nigeria

OKA OBONO

Nigeria's ambitious population policy, adopted in 1988, had its origins in the international population and development thinking of the time, set out in documents such as the World Population Plan of Action and the Kilimanjaro Programme of Action. The policy has had at most a modest effect in curbing the country's high fertility. This failure, it is argued, stems from the policy's implicit assumption of a single, monolithic cultural reality and its disregard of male reproductive motivation. Belief systems in Nigeria are extraordinarily diverse in detail but share a common interest in the fertility of crops, livestock, and people. Patterns of social organization are similarly varied. For an effective population policy, the government needs to find ways of incorporating distinct elements of the cultures of the different ethnic groups, leveraging rather than suppressing the country's cultural diversity.

Dilemmes sur la politique démographique en Europe à l'aube du XXIe siècle

PAUL DEMENY

Le présent article discute des questions soulevées par le taux de fécondité de reproduction en-dessous du niveau de remplacement qui persiste en Europe. La situation démographique difficile qui prévaut sur le continent européen est mise en évidence en comparant les structures par âge et la dimension relative des populations en Europe et à l'extérieur (comme celles de la Russie et du Yémen ou encore celles de l'Union Européenne élargie à 25 pays et de 25 régions reculées de UE en Afrique du Nord et Asie de l'Est) au cours des 50 dernières années et prospectivement jusqu'en 2050, à partir de prévisions des Nations Unies. Les aspects géopolitiques éventuels des déplacements de population sont examinés. Il y a un manque évident de solutions dans les politiques européennes. En ce qui concerne la fécondité, variable démographique clé, le natalisme explicite est rejeté par la plupart des gouvernements européens. Une série de mesures jouissant d'un soutien à grande échelle et ayant pour objectif secondaire de hausser les taux de natalité, cherche à rendre compatible la participation des femmes sur le marché du travail avec l'éducation des enfants. L'efficacité de ces mesures risque toutefois d'être limitée. On prévoit plutôt le maintien d'un taux de fécondité en dessous du niveau de remplacement, une immigration plus importante de l'extérieur de l'Europe, une croissance démographique négative et une perte du poids démographique au sein de la population mondiale pour l'Europe du XXIe siècle.

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Écarts des taux de mortalité des régions urbaines par opposition aux régions rurales : un débat non résolu

ROBERT WOODS

Les historiens et les démographes débattent depuis longtemps de l'existence, des causes et des conséquences des écarts historiques entre les taux de mortalité dans les régions rurales et dans les régions urbaines. En Europe, il était habituel d'observer une surmortalité dans les villes par comparaison aux régions rurales. Par contre, en Asie de l'Est, on a constaté que les régions urbaines jouissaient d'un taux de mortalité relativement favorable. Cependant, bon nombre de questions pertinentes ne sont toujours pas élucidées. Par exemple, la méthode d'évaluation de la mortalité pourrait-elle influer sur le degré apparent de l'écart, comme pourrait le faire la façon de définir les mots «urbain» et «rural»? Les facteurs culturels doivent être pris en considération, y compris les pratiques d'éducation des enfants et les conventions sur le baptême. Des exemples tirés du Japon, de la Chine, de l'Angleterre et de la France illustrent bien ces questions en analyse comparative, alors que le continuum de mortalité urbaine–rurale est examiné pour la période couvrant le 19e siècle en Angleterre et au pays de Galles, à l'aide de représentations logarithmiques normales.

Laisser l'éducation des enfants aux mères seules : résultats provenant de 17 pays occidentaux

PATRICK HEUVELINE
JEFFREY M. TIMBERLAKE
FRANK F. FURSTENBERG, JR.

Le présent article examine en quoi les changements récents dans la famille occidentale ont influé sur les modes de vie des enfants. Nous avons utilisé les techniques des tables de survie multidimensionnelles pour évaluer dans 17 pays développés les trajectoires de corésidence des enfants qui vivent avec leur père biologique par opposition à d'autres partenaires maternelles. Dans tous les pays étudiés, le contact des enfants avec la monoparentalité est le plus souvent le fait de la séparation des parents plutôt que le fait que la mère soit seule pour élever son enfant. Le contact avec la monoparentalité ainsi que le fait de vivre avec une mère seule varient beaucoup d'un pays à l'autre, les États-Unis affichant les niveaux les plus élevés de ces deux situations selon les données du début des années 1990. Les variations internationales les plus prononcées ont trait à la cohabitation parentale—sa prévalence, sa durabilité et jusqu'à quel point l'augmentation a compensé pour une diminution du nombre des enfants vivant avec des parents mariés. De façon générale, il y a peu d'information probante d'une convergence internationale dans les mesures afférentes à l'éducation des enfants, sauf que, dans les pays où le mariage parental a diminué avec le temps, l'éducation des enfants a été laissée principalement aux mères seules.

Évaluation de la composition des ménages et des familles aux États-Unis, de 1850 à 2000

STEVEN RUGGLES
SUSAN BROWER

Le présent article vise trois objectifs. En premier lieu, il examine les effets des changements dans les définitions et les concepts des recensements sur l'évaluation des modes de vie. Dans le cadre de la présente analyse, les auteurs élaborent de nouvelles estimations sur le nombre de ménages et de logements de groupe dans chaque année de recensement depuis 1850. En second lieu, ils évaluent les séries statistiques d'agrégats actuelles sur la famille et la composition des ménages, en portant une attention particulière aux problèmes que posent l'évaluation des sous-familles. Enfin, les auteurs décrivent les données et les méthodes visant à élaborer une série logique de statistiques pour la période à partir de 1850 et offre des recommandations pour évaluer la famille et la composition des ménages d'une façon cohérente.

Diversité culturelle et politique démographique au Nigéria

OKA OBONO

La politique démographique ambitieuse du Nigéria, adoptée en 1988, a eu ses origines

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dans la pensée internationale sur le développement et la population qui dominait dans ces années-là, comme en font foi les documents Plan d'action sur la population mondiale et le Programme d'action de Kilimandjaro. La politique a eu au plus une influence modeste sur la réduction du taux élevé de fécondité du pays. On a fait valoir que cet échec était dû à l'hypothèse implicite d'une réalité culturelle simple et monolithique ainsi que son mépris pour la motivation reproductive masculine. Les systèmes de croyances au Nigéria sont très diversifiés tout en partageant un intérêt commun pour la fertilité des cultures et du bétail et pour la fécondité humaine. Les modèles d'organisation sociale sont également très variés. S'il veut se munir d'une politique démographique efficace, le gouvernement nigérien doit trouver des solutions pour incorporer les éléments distincts des cultures des différents groupes ethniques et optimiser plutôt que réprimer la diversité culturelle du pays.

Dilemas de la política de población en la Europa del Siglo XXI

PAUL DEMENY

El artículo explora los problemas generados en Europa por la persistencia de índices de fecundidad por debajo del nivel de reemplazo. Se examinan aspectos del problema demográfico del continente mediante la comparación de estructuras de edad y tamaños relativos de la población dentro y fuera de Europa durante los últimos 50 años, y prospectivamente hasta 2050 (se consideran datos de Rusia y Yemen y los de una Unión Europea ampliada a 25 países, y los de un grupo de 25 países en el Norte de África y Asia Occidental). El artículo considera aspectos geopolíticos de los cambios en la población y propone que las propuestas Europeas en política de población son por lo general deficientes. En cuanto a la fecundidad, el variable demográfico clave, la mayoría de los gobiernos europeos rechaza el pronatalismo explícito. Un grupo de medidas políticas que sí genera apoyo amplio, y que supuestamente aumentaría la fecundidad como efecto segundario, busca hacer que la participación de las mujeres en el mercado laboral formal sea más compatible con la crianza de niños. Sin embargo, el autor opina que dichas medidas probablemente serán poco eficaces. Por lo dicho pronostica que los índices de fecundidad inferiores al nivel de reemplazo, los aumentos en la inmigración desde afuera de Europa, el crecimiento negativo de la población, y la pérdida de peso demográfico dentro de la población mundial serán características de la Europa del Siglo XXI.

Diferencias urbano–rurales en la mortalidad: Un debate inconcluso

ROBERT WOODS

Historiadores y demógrafos han debatido durante muchos años la existencia, las causas, y las consecuencias de las diferencias históricas entre los niveles urbanos y rurales de mortalidad. En Europa típicamente se ha visto mayor mortalidad en las ciudades que en el campo, mientras que en el Este de Asia, por contraste, se ha observado que la mortalidad urbana es comparativamente baja. El debate continúa porque aún quedan varias cuestiones pertinentes por resolver. Por ejemplo, los métodos de medición de la mortalidad pueden influir en la extensión de las diferencias, así como la manera en que se definen «urbano» y «rural». Es importante tener en cuenta los factores culturales, como ser las prácticas relativas a la crianza de niños y las costumbres que rodean al bautismo. El artículo utiliza ejemplos de los casos de Japón, China, Inglaterra y Francia para ilustrar los problemas involucrados en el análisis comparativo, y examina el continuo urbano–rural en Inglaterra y Gales durante el Siglo XIX utilizando distribuciones log-normales.

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El desplazamiento de la crianza de los niños hacia madres solteras: Resultados de 17 países occidentales

PATRICK HEUVELINE
JEFFREY M. TIMBERLAKE
FRANK F. FURSTENBERG, JR.

Investigamos cómo los cambios recientes en la familia en Occidente han afectado los tipos de convivencia y de hogar en la niñez. Para 17 países desarrollados, utilizamos técnicas de cuadro de vida multiestado para calcular trayectorias de co-residencia infantil con el padre biológico versus otras parejas de la madre. En todos estos países la crianza por un padre/madre soltero/a se debe con mayor frecuencia a la separación de los padres que a nacimientos que ocurren fuera de una relación de pareja estable. Tanto la probabilidad de tener un padre/madre soltero/a como la expectativa de niñez vivida con una madre soltera y no-cohabitante varían mucho entre estos países, y los Estados Unidos alcanzó los niveles más altos de ambos indicadores a principios de la década de los noventa. Las mayores variaciones internacionales ocurren con la cohabitación paterna—su frecuencia, duración, y el grado en que su aumento ha compensado por el descenso en la expectativa de niñez vivida con padres casados. Por lo general, no encontramos evidencia de una convergencia internacional en los tipos de convivencia y de hogar en la niñez, excepto que en los países donde el matrimonio paternal ha disminuido a lo largo del tiempo, la crianza de los niños se ha desplazado hacia las madres solteras.

Medición de la composición del hogar y la familia en los Estados Unidos, 1850–2000

STEVEN RUGGLES
SUSAN BROWER

Este artículo tiene tres metas. Primero explora los efectos de cambios en las definiciones y conceptos sobre la medición de situaciones de hogar aplicados en los censos. Como parte de este análisis, los autores desarrollan nuevos cálculos del número de hogares y viviendas compartidas en cada censo desde 1850. En segundo lugar, el artículo evalúa las series estadísticas agregadas existentes sobre la composición de la familia y el hogar, prestándole atención particular a los problemas en la medición de subfamilias. Por último, se describen datos y métodos con los que se podría desarrollar un cuerpo consistente de estadísticas para el período posterior a 1850, y se ofrecen recomendaciones para la medición coherente de la composición de familias y hogares.

Diversidad cultural y políticas de población en Nigeria

OKA OBONO

La ambiciosa política de población de Nigeria, adoptada en 1988, surgió del pensamiento internacional sobre población y desarrollo de la época, articulado en documentos como el Plan Mundial de Acción Sobre Población y el Programa de Acción de Kilimanjaro. Dicha política ha tenido, en el mejor de los casos, un modesto efecto de reducción de los altos niveles de fecundidad del país. Este artículo propone que la política ha fracasado porque supone la existencia de una realidad cultural uniforme y monolítica, y porque le presta poca atención a las motivaciones reproductivas masculinas. Los sistemas de creencias de Nigeria son sumamente diversos en sus detalles, pero comparten un interés común en la fecundidad de la tierra, el ganado y las personas. Los sistemas de organización social también son muy variados. Para llegar a una política de población efectiva, el gobierno debe encontrar maneras de incorporar distintos elementos de las culturas de los diversos grupos étnicos, aprovechando la variedad cultural del país en vez de suprimirla.

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