Developed Country Patterns

A major comparative Migration and Settlement Study conducted at the International Institute for Applied Systems Analysis between 1976 and 1982 drew attention to the general *age* patterns of migration that characterized 17 industrialized countries (Rogers and Willekens, 1986). Among the features of these patterns was the increased likelihood of longer-distance migration associated with the needs for support and assistance. Building on a earlier model proposed by Law and Warnes (1982) and focusing on retirement-type movement, Rogers (1989) has proposed a set of typical stages referred to as the "elderly mobility transition." A first stage reflects early industrialization characterized by low levels of retirement moves from urban areas back to widely dispersed rural areas of origin. A second stage reflects higher levels of retirement moves to selective destinations that offer attractive environmental opportunities (i.e., climatic conditions). In postindustrialized societies, a third stage emerges with more diffuse destinations in nonmetropolitan areas that may often be closer to places of origin.

An International Elderly Migration Project conducted in the late 1980s enabled Rogers and a network of international scholars to assess this model of elderly migration and population redistribution. Rogers et al. (1990) report countries classified by stages, with the United Kingdom clearly in the final stage, the United States approaching it, and Japan and Italy probably still in the first stage. Nonetheless, pervasive regularities in age-migration profiles were found to characterize the situation in all of the countries, and some spatial patterns also emerged. The studies from this project and others conducted in England and France (Noin and Warnes, 1987) have all identified amenity movement at retirement ages as a more important factor than aging-in-place in leading to spatial concentrations of aged persons in advanced industrialized countries. These concentrations are often located in nonmetropolitan areas, especially on coastlines that offer favorable climatic conditions and recreational opportunities. Important covariates have been reported in these comparative studies. In the case of older elderly persons, the unmarried are more likely to move than married persons. In particular, this is true of widowed persons, which leads to higher propensities of female than male movement at later ages. In the case of younger elderly persons, those with higher education and greater financial resources also are more likely to move.

There has also been increasing examination of the consequences of elderly movement for the older movers, their families, and the communities of origin and destination. In particular, the implications of elderly movement for areas of destination, especially areas of high concentrations, are coming to be examined more extensively with respect to such factors as housing and infrastructure (e.g., services for the elderly). Considerable

research in France and England (Noin and Warnes, 1987) on these topics should serve to stimulate similar interest in the United States.

In spite of the efforts that have been made to generate models of typical sequences of elderly population redistribution and migration flows, along with changing levels of elderly migration propensity, it is still the case that comparative research shows that considerable intercountry variability exists. Notwithstanding the difficulties inherent in studying these phenomena cross-nationally, which arise from varying geographic units of analysis and definitions of migration, the general features of the temporal model of transitions seem to hold for many industrialized countries.

KNOWLEDGE GAPS AND DATA NEEDS

As the populations of the United States and other countries have aged, it has become increasingly evident that the distribution and redistribution of the elderly population entail important public policy consequences. Jurisdictions that contain above-average concentrations of the elderly are faced with planning and policy requirements that are different from those of areas with lower concentrations of the elderly (such areas, of course, may face similar policy and planning imperatives when the absolute sizes of their elderly population are large). Substantial net inter-area transfers of the elderly have implications for population growth, age structure, and the provision of health and social benefits. Although the demographic, economic, and public policy significance of migration and population redistribution among the elderly has grown increasingly clear, this importance has yet to be matched by research output focusing on some of the issues that have emerged.

Two major gaps in knowledge in particular warrant comment. The first concerns demographic components of change in aging and their consequences. Although some empirical knowledge has been marshaled concerning the magnitude of the net migration and aging-in-place components of population aging (Fuguitt and Beale, 1993; Rogers and Woodward, 1988), little systematic empirical evidence has been assembled concerning the magnitude of the subcomponents of these, especially at the subnational (regional, state, metropolitan area) level. Geographic convergence in fertility and mortality patterns over time, together with the relatively low levels of immigration to the United States until recently, implies that the magnitude of the subcomponents will vary according to the level of analysis, with internal migration making a greater difference for the concentration of the elderly at the state level than international migration makes at the national level. But to understand better the consequences of these demographic changes, more information is needed about how much difference various

demographic factors make for population aging, especially at subnational levels of geography.

We also need to know more about the consequences of population aging for the health and social service costs of states and cities. It is evident that aging has implications for these costs, but again, to our knowledge, little research has been conducted into the quantitative impact of population aging for state- and city-level changes in health and social service costs. By the same token, research is lacking on how much difference the various components of population aging (including the age pattern of net migration) make for changes in net public benefit costs. In fact, Longino (1990) notes that many observers assume that the growing concentration of the aged in an area has negative social and economic consequences, a notion he terms the "gray peril mythology." Recent research suggests that the growth of the aged in a given area often exerts positive benefits, especially if it results from the inmigration of affluent younger-old (aged 65-74) retirees (Biggar, 1980; Longino, 1988; Haas and Crandall, 1988). But if the nonelderly move away from an area, leaving the elderly behind, the economic implications may be more adverse. Research does not presently exist that quantifies relationships across areas in differences in the various components of population aging and differences in elderly public benefits, or relationships between changes in the demographic components of aging and changes over time in the receipt and expenditure of tax dollars on programs that benefit the elderly.

Information is also needed concerning the degree to which the magnitude of the various demographic components of aging may be changing. The effects of immigration, for example, seem unlikely to remain small as they have been in the past. At a national level, immigration has not yet contributed much to population aging (Preston et al., 1989), primarily because its volume has been relatively low (at least until recently) and because the median age of immigrants tends to be slightly lower than that of the general population and the distribution of immigrants' ages tends to be narrower (Arthur and Espenshade, 1988). However, states vary enormously in the percentages of their populations that are foreign born, with California (21.7 percent), New York (15.9 percent), and Florida (12.9 percent) showing the highest concentrations (Bureau of the Census, 1992a). As these foreign-born populations age, their health and social service needs may differ from those of other elderly. Whatever the case, it would be useful to know how relationships between the demographic components of aging and the relative balance of tax and public benefit dollars vary across locales and change over time.

The second major gap occurs at the level of individual migration behavior. The lack of detailed longitudinal data about migration, retirement, and health has prevented to this point the adequate testing of hypotheses devel-

oped within a life-course framework about linkages between migration and the occurrence of retirement and health events. The patterns that have emerged in aggregate data provide a basis for developing hypotheses that transitions in living arrangements occur because individuals seek environments that are compatible with age-influenced needs, desires, and goals. In this perspective, residential change is thought to be linked to the timing and sequencing of age-related role changes and significant life events (Lee, 1980). Individuals are more likely to move with their families prior to the teen years. Adolescent children are more residentially stable. During early adulthood, individuals move again as a normal life-course transition as they seek employment, marriage, and parenthood. After these early life transitions occur, greater residential stability characterizes the adult years between 25 and 65. Although moves occur, they are less frequent and less tied to age-related life events. Retirement, however, may again give more weight to age-related reasons for residential change. Older individuals move in response to leaving the labor force, as the result of losing a spouse, or because of declining functional capacity (Golant, 1980).

As noted earlier, the kinds of residential moves among the elderly have been arranged in a typological sequence consisting of (1) moves intended to maximize life-style and amenities, (2) moves intended to bring one closer to family, and (3) moves dictated by declining health (Litwak and Longino, 1987). Although research on the determinants of living arrangements and changes in residential patterns among the elderly has increased in recent years, hypotheses linking reasons and motives for migration to patterns of residential change among the elderly need more systematic testing at the individual level of analysis. As yet, for example, we do not know whether older persons who suffer a serious decline in functional capacity and who require assistance with ADLs are more likely to move closer to their adult children than elderly who are functionally independent. Recent analyses of the third wave of the LSOA suggest that elderly persons who move out of state may have done so in anticipation of deteriorating health. These data provide some evidence that older persons do in fact move closer to their families prior to suffering serious declines in functional capacity (Angel et al., 1991), suggesting that the availability of kin may be one of the most important predictors of migration in later life (e.g., Krout, 1988; Clark and Wolf, 1992).

Recent studies have also begun to examine the impact of changes in functional status on the likelihood of residential mobility for aged men and women, and for whites and blacks. This research should be extended to examine the interaction of race, gender, and locational factors in the probability of specific types of migration, including the likelihood of entering assisted-living facilities or nursing homes. It is hoped that the new national longitudinal Health and Retirement Survey that is currently under way will

provide the kinds of detailed life history data that will allow stronger inferences to be drawn about causal relationships between life events and migration behavior among the elderly.

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APPENDIX

Number (in 1,000s), Percentage, and Percent Change of Persons 65 and Over, 85 and Over, and Median Age in the United States by Region, Division, and State, 1980-1990

	65 and Over			85 and Over			
Region	1980	1990	Percent Change	1980	1990	Percent Change	Median Age, 1990
U.S. total	25,549	31,242	22.3	2,240	3,080	37.5	32.9
	(11.3)	(12.6)	(11.5)	(1.0)	(1.2)	(20.0)	
Northeast	6,071	6,995	15.2	547	710	29.9	34.2
	(12.4)	(13.8)	(11.3)	(1.1)	(1.4)	(27.3)	
New England	1,520	1,770	16.4	151	194	28.3	33.7
	(12.3)	(13.4)	(8.9)	(1.2)	(1.5)	(25.0)	
Maine	141	163	15.9	14	18	29.3	33.9
	(12.5)	(13.3)	(6.4)	(1.3)	(1.5)	(15.4)	
Vermont	58	66	13.7	6	8	25.2	33.0
	(11.4)	(11.8)	(3.5)	(1.2)	(1.3)	(8.3)	
New Hampshire	103	125	21.4	10	13	37.7	32.8
	(11.2)	(11.3)	(0.9)	(1.0)	(1.2)	(20.0)	
Massachusetts	727	819	12.8	74	92	24.8	33.6
	(12.7)	(13.6)	(7.1)	(1.3)	(1.5)	(15.4)	
Rhode Island	127	151	18.6	12	16	33.7	34.0
	(13.4)	(15.0)	(11.9)	(1.3)	(1.6)	(23.1)	
Connecticut	365	446	22.2	36	47	31.5	34.4
	(11.7)	(13.4)	(16.2)	(1.1)	(1.4)	(27.3)	
Middle Atlantic	4,551	5,225	14.8	395	516	30.5	34.4
	(12.4)	(13.9)	(12.1)	(1.1)	(1.4)	(27.3)	
New York	2,160	2,364	9.4	193	248	28.6	33.9
	(12.3)	(13.1)	(6.5)	(1.1)	(1.4)	(27.3)	
New Jersey	860	1,032	20.0	72	96	32.3	34.5
	(11.7)	(13.4)	(14.5)	(1.0)	(1.2)	(20.0)	
Pennsylvania	1,531	1,829	19.5	130	172	32.2	35.0
	(12.9)	(15.4)	(19.4)	(1.1)	(1.4)	(27.3)	
Midwest	6,692	7,749	15.8	649	840	29.3	33.0
	(11.4)	(13.0)	(14.0)	(1.1)	(1.4)	(27.3)	
East North Central	4,493	5,299	17.9	415	539	29.8	32.9
	(10.8)	(12.6)	(16.7)	(1.0)	(1.3)	(30.0)	
Ohio	1,169	1,407	20.3	108	138	27.3	33.3
	(10.8)	(13.0)	(20.4)	(1.0)	(1.3)	(30.3)	
Indiana	585	696	18.9	54	72	31.9	32.8
	(10.7)	(12.6)	(17.8)	(1.0)	(1.3)	(30.3)	
Illinois	1,262	1,437	13.8	115	148	28.7	32.8
	(11.0)	(12.6)	(14.5)	(1.0)	(1.3)	(30.0)	

APPENDIX (continued)

Number (in 1,000s), Percentage, and Percent Change of Persons 65 and Over, 85 and Over, and Median Age in the United States by Region, Division, and State, 1980-1990

	65 and Over			85 and Over			
Region	1980	1990	Percent Change	1980	1990	Percent Change	Median Age, 1990
Michigan	912	1,108	21.5	82	107	30.9	32.6
	(9.8)	(11.9)	(21.4)	(0.9)	(1.0)	(33.3)	
Wisconsin	564	651	15.4	56	74	33.5	32.9
	(12.0)	(13.3)	(10.8)	(1.2)	(1.5)	(25.0)	
West North Central	2,199	2,450	11.4	235	301	28.5	33.1
	(12.8)	(13.9)	(8.6)	(1.4)	(1.7)	(21.4)	
Minnesota	480	547	14.0	53	69	30.4	32.5
	(11.8)	(12.5)	(5.9)	(1.3)	(1.6)	(23.1)	
Iowa	388	426	9.9	45	55	23.0	34.2
	(13.3)	(15.3)	(15.0)	(1.5)	(2.0)	(33.3)	
Missouri	648	718	10.7	61	81	33.0	33.5
	(13.2)	(14.0)	(6.1)	(1.2)	(1.6)	(33.3)	
North Dakota	80	91	13.2	8	11	38.1	32.4
	(12.3)	(14.3)	(16.3)	(1.2)	(1.8)	(33.3)	
South Dakota	91	102	12.4	10	13	28.0	32.5
	(13.2)	(14.7)	(11.4)	(1.5)	(1.9)	(26.7)	
Nebraska	206	223	8.5	24	29	23.0	33.0
	(13.1)	(14.1)	(7.6)	(1.5)	(1.9)	(26.7)	
Kansas	306	343	11.9	33	42	26.3	32.9
	(13.0)	(13.8)	(6.2)	(1.4)	(1.7)	(21.4)	
South	8,488	10,724	26.3	664	992	49.5	32.8
	(11.3)	(12.6)	(11.5)	(0.9)	(1.2)	(33.3)	
South Atlantic	4,367	5,834	33.6	327	515	57.5	33.7
	(11.8)	(13.4)	(13.6)	(0.9)	(1.2)	(33.3)	
Delaware	59	81	36.4	5	7	35.5	32.9
	(10.0)	(12.1)	(21.0)	(0.9)	(1.1)	(22.2)	
Maryland	396	517	30.8	33	46	42.3	33.0
	(9.4)	(10.8)	(14.9)	(0.8)	(1.0)	(25.0)	
District Columbia	74	78	4.8	6	8	22.9	33.5
	(11.6)	(12.8)	(10.3)	(1.0)	(1.3)	(30.0)	
Virginia	505	664	31.5	41	60	45.2	32.6
	(9.5)	(10.7)	(12.6)	(0.8)	(1.0)	(25.0)	
West Virginia	238	269	13.0	19	25	31.1	35.4
	(12.2)	(15.0)	(12.6)	(1.0)	(1.4)	(40.0)	
North Carolina	603	804	33.3	45	70	54.8	33.1
	(10.3)	(12.1)	(17.5)	(0.8)	(1.1)	(37.5)	
South Carolina	287	397	38.1	20	31	53.7	32.0
	(9.2)	(11.4)	(24.0)	(0.6)	(0.9)	(50.0)	

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APPENDIX (continued)

Number (in 1,000s), Percentage, and Percent Change of Persons 65 and Over, 85 and Over, and Median Age in the United States by Region, Division, and State, 1980-1990

	65 and Over			85 and Over			
Region	1980	1990	Percent Change	1980	1990	Percent Change	Median Age, 1990
Georgia	517	654	26.6	39	57	45.2	31.6
	(9.5)	(10.1)	(6.6)	(0.7)	(0.9)	(28.6)	
Florida	1,688	2,369	40.4	117	210	79.1	36.4
	(17.3)	(18.3)	(5.8)	(1.2)	(1.6)	(33.3)	
East South Central	1,657	1,930	16.5	134	186	38.8	32.9
	(11.3)	(12.7)	(12.4)	(0.9)	(1.2)	(33.3)	
Kentucky	410	467	13.9	35	46	32.3	33.0
	(11.2)	(12.7)	(13.4)	(11.2)	(12.7)	(30.0)	
Tennessee	518	619	19.6	41	59	41.9	33.6
	(11.3)	(12.7)	(12.4)	(11.3)	(12.7)	(33.3)	
Alabama	440	523	18.9	34	49	42.6	33.0
	(11.3)	(12.9)	(14.2)	(11.3)	(12.9)	(33.3)	
Mississippi	289	321	11.0	24	32	37.5	31.2
	(11.5)	(12.5)	(8.7)	(11.5)	(12.5)	(44.4)	
West South Central	2,464	2,960	20.1	203	291	43.6	31.3
	(10.4)	(11.1)	(6.7)	(0.9)	(1.1)	(22.2)	
Arkansas	312	350	12.0	26	35	33.6	33.8
	(13.7)	(14.9)	(8.8)	(13.7)	(14.9)	(25.0)	
Louisiana	404	469	16.0	31	44	42.9	31.0
	(9.6)	(11.1)	(15.6)	(9.6)	(11.1)	(42.9)	
Oklahoma	376	424	12.8	34	46	34.9	33.2
	(12.4)	(13.5)	(8.9)	(12.4)	(13.5)	(36.4)	
Texas	1,371	1,717	25.2	112	167	48.7	30.8
	(9.6)	(10.1)	(5.2)	(9.6)	(10.1)	(25.0)	
West	4,298	5,774	34.3	380	539	41.6	31.8
	(10.0)	(10.9)	(9.0)	(0.9)	(1.0)	(11.1)	
Mountain	1,061	1,524	43.6	86	133	53.6	31.6
	(9.3)	(11.2)	(20.4)	(0.8)	(1.0)	(25.0)	
Montana	85	106	25.9	9	11	20.8	33.8
	(10.7)	(13.3)	(24.3)	(10.7)	(13.3)	(18.2)	
Idaho	94	121	29.4	8	11	34.5	31.5
	(9.9)	(12.0)	(21.2)	(9.9)	(12.0)	(22.2)	
Wyoming	37	47	27.0	3	5	31.0	32.0
	(7.9)	(10.4)	(29.1)	(7.9)	(10.4)	(42.9)	
Colorado	247	392	33.2	24	33	35.3	32.5
	(8.6)	(10.0)	(16.3)	(8.0)	(10.0)	(25.0)	

APPENDIX (continued)

Number (in 1,000s), Percentage, and Percent Change of Persons 65 and Over, 85 and Over, and Median Age in the United States by Region, Division, and State, 1980-1990

Region	65 and Over			85 and Over			Median Age, 1990
	1980	1990	Percent Change	1980	1990	Percent Change	
New Mexico	116	163	40.7	9	14	62.0	31.3
	(8.9)	(10.8)	(21.3)	(8.9)	(10.9)	(28.6)	
Arizona	307	479	55.8	20	38	89.7	32.2
	(11.3)	(13.1)	(15.9)	(11.3)	(13.1)	(42.9)	
Utah	109	150	37.2	9	14	53.8	26.2
	(7.5)	(8.7)	(16.0)	(7.5)	(8.7)	(33.3)	
Nevada	66	128	94.1	4	7	105.0	33.3
	(8.2)	(10.6)	(29.3)	(8.2)	(10.6)	(20.0)	
Pacific	3,237	4,250	31.3	294	506	38.0	31.9
	(10.2)	(10.9)	(6.9)	(0.9)	(1.0)	(11.1)	
Washington	432	575	33.3	41	56	35.7	33.1
	(10.4)	(11.8)	(13.4)	(10.4)	(11.8)	(20.0)	
Oregon	303	391	29.0	28	39	36.5	34.5
	(11.5)	(13.8)	(20.0)	(11.5)	(13.8)	(27.3)	
California	2,414	3,136	29.9	218	300	37.2	31.5
	(10.2)	(10.5)	(2.9)	(10.2)	(10.5)	(11.1)	
Alaska	12	22	93.7	1	1	102.1	29.4
	(2.9)	(4.1)	(41.4)	(2.9)	(4.1)	(0.0)	
Hawaii	76	125	64.2	6	10	87.0	32.6
	(7.9)	(11.3)	(43.0)	(7.9)	(11.3)	(50.0)	

SOURCE: 1980 and 1990: Bureau of the Census, (1992b); median age, 1990: Bureau of the Census (1992a).

10

Research on the Demography of Aging in Developing Countries

Linda G. Martin and *Kevin Kinsella*

INTRODUCTION

The study of the demography of aging in developing countries is a relatively new endeavor, which expanded enormously in the 1980s. Anthropologists have been examining social and economic aspects of aging in developing countries for at least 50 years; most notable is the classic work by Simmons (1945), which presented evidence that high status of the elderly was not necessarily guaranteed in primitive societies. In the 1970s, Cowgill published his modernization theory, which posited that the status of the elderly declines in the process of socioeconomic development (Cowgill and Holmes, 1972; Cowgill, 1974). This theory has since generated considerable response—both positive and negative—in sociology and gerontology.

It was only in the 1980s that demographers began to focus on aging in developing countries (see, for example, Treas and Logue, 1986; Kinsella, 1988; Martin, 1988), and economists have been even slower to take up the issue. Demographers were motivated by population projections indicating that declining fertility and mortality, particularly in Asia and Latin America, were resulting in population aging. Their interest was also motivated by the

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concerns of policy makers in these countries, which arose from those projections and from the focus on aging at the 1982 United Nations World Assembly on Aging. Interest in comparative research involving developing countries has been based on the belief that it can provide insight into the influences of culture and ethnicity, the particular effects of aging in low-income environments, the changing roles of families, and the consequences of new policies and programs.

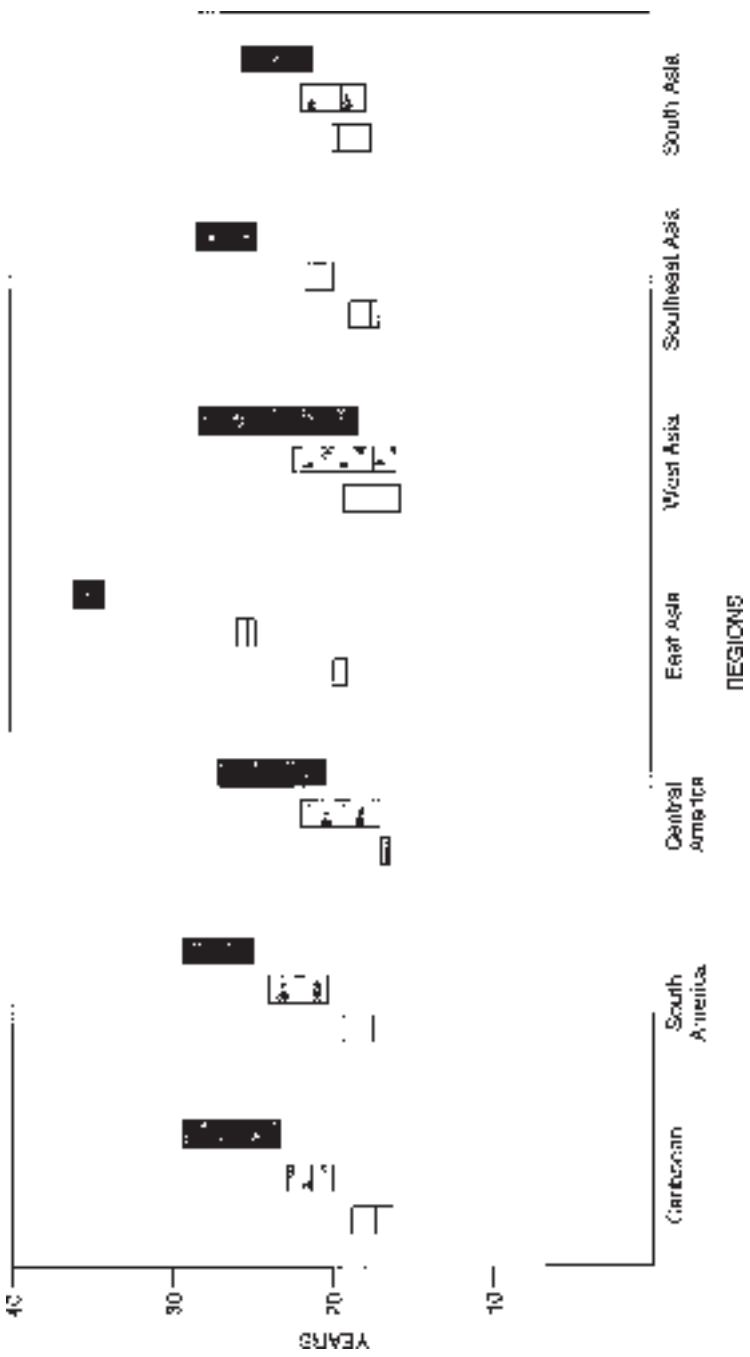
In this chapter, we review research on the demography of aging in developing countries in several substantive areas, namely, basic demography, mortality and health, family demography, population distribution and migration, and economic activity and well-being. We conclude with a summary of data collection and research challenges and provide an appendix that highlights the current availability of different types of data—survey, census, vital statistic, and ethnographic—for research on these topics.

BASIC DEMOGRAPHY

Much of the early work of demographers on aging in developing countries focused on raising awareness of aging as a policy and research issue. A decade ago, most conference papers and journal articles emphasized projections of population aging and were basically alarmist in their discussions of the implications. No doubt, such consciousness raising was needed. More sophisticated projection work was also done, for example, Yu and Horiuchi's (1987) analysis of the relative contribution of fertility and mortality change, as well as initial age structure, to population aging in more and less developed countries, and Zeng's (1986, 1988) projections of family structure in China.

The essence of the projections is that populations are indeed aging in most of the developing world except parts of Africa; United Nations (1991) estimates for 1990 indicate that 56 percent of the world's 65 and over population already lives in less developed countries. Moreover, some of the populations of East and Southeast Asia are aging at substantially more rapid rates than was the case historically in the West (Chen and Jones, 1989). Figure 10-1 presents the changes over time in median ages for countries that in 1989 had per capita incomes of less than $5,000. The data are taken from the United Nation's (1991) estimates for 1970-1975 and medium-variant projections for 1990-1995 and 2010-2015. The countries are divided into 12 subregions of Latin America, Asia, and Africa. The line in the middle of each box indicates the median of the median ages for the countries in that subregion and period. The height of the box shows the interquartile range (25 to 75 percent) within which the median ages of the middle half of the countries in each subregion fall.

Latin America and Asia show substantial increases in median age over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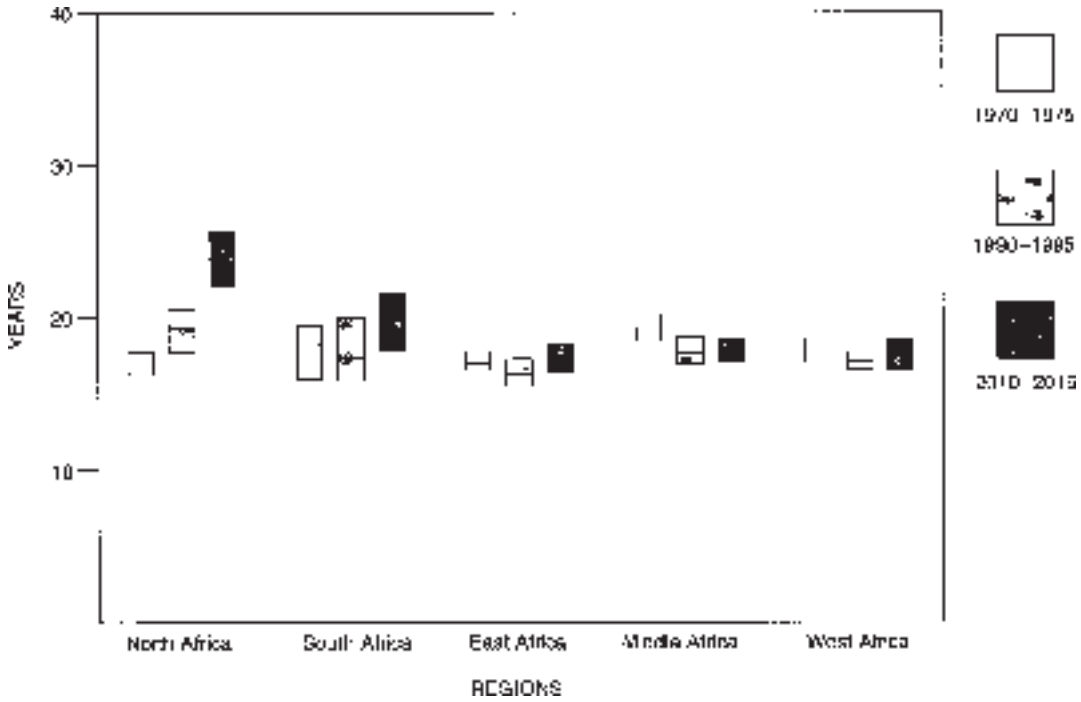

FIGURE 10-1 Median and interquartile ranges of median age, 1970-1975, 1990-1995, 2010-2015, for each subregion for countries with per capita income under $5,000 in 1989. SOURCES: Median ages are from the United Nations' (1991) estimates for 1970-1975 and medium-variant projections for 1990-1995 and 2010-2015. Per capita income in 1989 is from the Population Reference Bureau's 1991 data sheet.

time, but in East, Middle, and West Africa, there is very little change, with the median of the median ages decreasing between 1970 and 1990, and only barely increasing from 1990 to 2010. Of course, the changes over the latter period are based on the assumptions that the total fertility rates in these three subregions will be on average 4.32, 4.99, and 4.53, respectively. Higher or lower fertility would change the results shown here, but the overall impression of little change in median ages in African populations in comparison to the rest of the developing world would remain. Nevertheless, it is important to remember that such national median ages may mask considerable diversity within countries, with urban and female populations typically being older than rural and male populations. Moreover, static or slow-rising median ages convey nothing about the absolute numerical growth of various age groups.

Besides projections of proportions elderly and of median ages, demographers have also used projections of dependency ratios (e.g., the ratio of the under-15 plus 65-and-over population to the population in the middle) to summarize the changes in population age distributions likely to take place.[1] The good news is that increases in elderly "dependents" will likely be more than offset by decreases in young "dependents," at least in the short run, for developing countries, but the bad news in parts of Asia is that when the large birth cohorts of the 1960s and 1970s reach old age, overall dependency ratios are likely to increase.

Of course, not all persons under 15, over 65, or even over 80 are dependent in an economic or care-requiring sense. The total costs and contributions, both public and private, of the young and the old have not been adequately determined in the United States (Siegel and Taeuber, 1986), let alone in the developing world. Hence, dependency ratios are useful more as illustrative devices than as analytic tools, and could certainly be refined through incorporation of factors such as age-specific labor force participation and availability of economic resources.

Demographers have played an important role in compiling and summarizing the basic characteristics of elderly populations (e.g., marital status, urban/rural residence, labor force participation). An initial effort to produce individual country reports on elderly populations began in 1984 under the auspices of the Committee for International Cooperation in National Research in Demography (CICRED) and resulted in monographs from several developing as well as developed countries. Many of the data generated

[1]Crude generational support ratios, which relate the size of successive generations to one another (e.g., persons aged 80 and over versus persons (or women) aged 50-64) also have been used, primarily in developed countries, as indicators of potential care burdens for nonelderly adult cohorts.

by the CICRED project became the foundation for the International Data Base on Aging of the Center for International Research at the Bureau of the Census. An expansion of this initial data set formed the basis for the publication *Aging in the Third World* (Kinsella, 1988) and a subsequent wall chart of summary indicators for 100 countries (Bureau of the Census, 1991). The challenge for the future is to obtain comparable data sets over time that make possible the measurement of changes in demographic and socioeconomic characteristics and provide insight into how the elderly of tomorrow may differ from those of today.

MORTALITY AND HEALTH

In developing countries, the focus of most nationally and internationally sponsored health programs has been on infectious and parasitic diseases and child survival, and in fact, many developing countries have succeeded in reducing the incidence of tropical diseases and of infant and child mortality in particular (Hill and Pebley, 1989). However, as children survive and age, they are increasingly exposed to risks associated with chronic diseases and accidents. And as fertility decline induces population aging, national mortality and health profiles begin to reflect the growing importance of chronic and degenerative ailments associated with greater numbers of older individuals (Frenk et al., 1989). In the last few years, there has been considerable attention paid to the emerging health issues in developing countries (Caldwell et al., 1990; Jamison and Mosley, 1991; Feachem et al., 1992). In this section, we first review research on mortality in the adult years in developing countries, then discuss research on morbidity and disability, and studies of health care utilization and costs.

Mortality

Demographers have long been interested in measuring adult mortality in developing countries, but limited or defective data have constrained analysis. Timæus (1991b) points out that also complicating the study of adult mortality are the facts that adult deaths are *relatively* rare events, that there is not necessarily an appropriate informant about an adult death, and that age misreporting is common. He goes on to review the array of direct and indirect methods that demographers have used to try to estimate adult mortality. Analyzing patterns of causes of deaths and their changes over time is even more difficult. As discussed in the appendix to this chapter, reliable information through vital statistics on cause of death is available for only, at most, half of the deaths in developing countries (Bulatao, 1993), and age exaggeration is a problem, especially in Latin America (Dechter and Preston, 1991).

Nevertheless, there is growing evidence that an epidemiological transition is under way in many developing as well as developed countries (see for example, Murray et al., 1992b). Adult survival has improved, death rates for infectious and parasitic diseases have declined, and chronic and degenerative diseases are becoming relatively more important.

On a regional basis, the epidemiological transition appears most advanced in Latin America and the Caribbean (Bulatao, 1993). Analysis from the Pan American Health Organization (1990) indicates that cardiovascular diseases are the principal cause of death in the populations of 27 of the 37 countries of the Americas for which recent mortality data are available. In 6 of the remaining 10 countries, cancer or cerebrovascular disease is the leading killer. Bulatao (1993) has estimated that in Latin America and the Caribbean, the ratio of deaths from circulatory system diseases to deaths from infectious and parasitic diseases increased from 0.68 to 1.09 between 1970 and 1985.

Frenk et al. (1989) have demonstrated that in some Latin American countries, the stages of epidemiological transition overlap, such that populations suffer simultaneously from high incidences of infectious and parasitic as well as chronic and degenerative diseases. In some cases, pretransition diseases that were once essentially controlled (e.g., malaria, dengue fever, cholera) have reemerged as major contributors to morbidity burdens (Brandling-Bennett, 1991; Oakes et al., 1991).

The diversity of experience in Asia defies regional generalization (Ruzicka and Kane, 1991). Clearly, mortality decline has been greater in East and Southeast Asia than in South and West Asia. In Singapore, life expectancy at birth rose 30 years in barely one generation, from 40 years in 1948 to 70 years in 1979 (Bureau of the Census, various years). During the same period, deaths due to infectious diseases declined from 40 to 12 percent of all deaths, while the share of cardiovascular deaths rose from 5 to 32 percent. Data from selected areas of China in 1986 indicate that circulatory diseases are the primary killers, accounting for 47 percent of all deaths, and cancer accounts for 17 percent of deaths (World Bank, 1992). Similar patterns have been reported for Turkey and Sri Lanka, but to date, comparable indicators for the majority of South and West Asia are not available.

Improvements in adult survival in African nations, especially in the sub-Saharan region, lag behind those of all other major regions of the world (Feachem and Jamison, 1991). Nationwide health and mortality data typically are unavailable, but subnational and community-level data indicate that infectious and parasitic diseases remain the most important causes of mortality among adults in Africa (Timæus, 1991a). There is evidence, however, that cardiovascular disease, respiratory tuberculosis, and accidents and violence affect adults disproportionately.

Several research efforts have moved beyond description of mortality

patterns and their changes at the national level. These have included the following:

1. Efforts to compare mortality in urban and rural areas. Bumgarner and colleagues (World Bank, 1992) found considerable differences in mortality from infectious disease in urban and rural China, with rates for rural men being almost twice those for urban men, and the difference being fourfold for rural and urban women. Differences in mortality rates from chronic diseases are much smaller, but rural dwellers experience slightly higher rates than do urban dwellers. Altogether in 1986, circulatory diseases and cancer accounted for 67 percent of reported deaths in urban areas and 64 percent in rural areas.

2. Decomposition of mortality differences in life expectancy between countries and years by gender and causes of death (Pollard, 1982; Arriaga, 1984, 1989). For example, Adlakha and Arriaga (1992) compared patterns of mortality in Guatemala and Costa Rica to identify areas of dissimilarity and highlight realistic targets for scarce health resources. They found that of 25 causes examined, just four—intestinal infection, pneumonia, conditions originating in the perinatal period, and nutritional deficiency—were generally responsible for the large mortality differential for both sexes between the two countries (14-year longer life expectancy at birth in Costa Rica in the mid-1980s). In addition, violence (including suicide and homicide) is an important contributor to lower male life expectancy in Guatemala. These five causes, if reduced to the levels in Costa Rica, would add 10 to 11 years to overall Guatemalan life expectancy, in contrast to only 3 to 4 years added by the other 20 causes.

3. Projections of mortality by cause and broad age groups. Bulatao and Stephens (in press) based their worldwide projections on a model of the relationship between mortality level and cause of death structure in populations with good data. Dowd and Manton (1990) projected death rates from chronic diseases in Cuba, Ghana, Mauritius, Sri Lanka, Tanzania, and Thailand based on information on risk factors in those countries and the estimated relation between risk factors and mortality in more developed countries. Complicating such projections is the extent to which the consequences of changes in behavior (e.g., smoking) affect mortality over time. For example, smoking is thought to have increased rapidly in recent years in China; by 1984, 61 percent of adult Chinese men smoked (*British Medical Journal*, 1991).

Disability and Morbidity

Successes in lengthening life expectancy have raised new questions about whether added years of life mean a healthier life or an increased

burden of chronic illness. Liang and Whitelaw (1987) have suggested that physical health can be measured in three ways: (1) medically, through detection of disease or impairment; (2) functionally, through tests of the ability to perform activities of daily living; and (3) subjectively, through self-assessment of health or functional ability.[2] To date, data on the health status of adults and, in particular, the elderly in developing countries are largely of the last two types and have been collected through surveys. Census data on particular types of disability (e.g., blindness) are also available for some countries.

Surveys generally do not involve physical examinations because of the costs involved, although there are some notable exceptions: for example, the 1976-1977 Indonesian Health Survey conducted by local physician interviewers; physical examination surveys in Colombia, Egypt, and Uruguay (see Murray et al., 1992a, for some of the results); the World Health Organization (WHO) Noncommunicable Disease prevention program, which sponsored cross-sectional surveys focused on cardiovascular disease risk factors such as cholesterol and blood pressure in six developing countries (see Dowd and Manton, 1990); and risk factor surveys in Brazilian cities (see Briscoe, 1990). Perhaps surprisingly, the last indicate that risk factors for chronic diseases are higher among people of lower socioeconomic status than among those of higher status.

Most importantly for understanding and modeling health processes, longitudinal data on risk factors and functional status transition rates are virtually nonexistent. The World Health Organization is currently designing three cross-national survey programs that will begin to fill this gap. These surveys (see appendix table) will incorporate clinical as well as self-perceived measures, on a longitudinal basis, and will contrast urban and rural locales in both developed and developing countries. Two of these survey programs are focused on specific causes of disability, osteoporosis and age-associated dementias; the third is a broader investigation of the determinants of healthy aging.

The systematic study of disability in developing countries is still in its infancy. Due largely to efforts spearheaded by the United Nations Statistical Office (UNDIESA, 1990), there is greater awareness of the need to collect and tabulate data on impairments, disabilities, and handicaps. The creation of a Disability Statistics Data Base (DISTAT) has been an important first step in highlighting international differences in the definition and description of disability, as well as enabling provisional international comparisons. At present there is enormous variation in international definitions

[2]Due to space limitations (and admitted unfamiliarity with the literature), we do not review measurement of mental health.

and rates of disablement. Among countries included in DISTAT, crude disability rates for the total population range from less than 0.5 percent in several developing countries (Peru, Egypt, Pakistan, Sri Lanka) to nearly 21 percent in Austria. In recognition of the wide conceptual disparities, an international network has been established to assist countries in defining and developing information on disablement, with the goal of harmonizing concepts of impairment, disability, and handicap (Chamie, 1990).

Incidence of disability also differs by age, sex, and other social characteristics. Despite definitional and measurement differences between countries, several patterns emerge. Regardless of the levels of crude disability, rates tend to rise with age and increases are especially notable in later adulthood. Males usually have higher rates than females at most ages. And the profile of disability changes with age as well, because certain disabilities are directly related to age. Muteness, for example, reaches a peak in the later teen years, then is relatively constant at older ages. Deafness, on the other hand, shows a distinct rise with age among adults, especially after age 50. Vision disability is also related to age.

The most common survey measures of disability of the elderly in developed countries are activities of daily living (ADLs)—the basic tasks of everyday life such as eating, dressing, toileting, bathing, and ambulation (Katz et al., 1983)—and instrumental activities of daily living (IADLs) such as shopping and using transportation. The ability to perform such activities (especially ADLs) has been found to be a significant predictor of outcomes such as mortality, use of hospital and physician services, insurance coverage, admission to nursing homes, and living arrangements (Wiener et al., 1990). Several surveys of the elderly in developing countries (e.g., those listed in the appendix table that have been conducted by the Association of Southeast Asian Nations (ASEAN), WHO Regional Offices, the United Nations University, and the University of Michigan and the Taiwan Provincial Institute of Family Planning) have asked respondents to assess their abilities to perform ADL and/or IADL. Andrews et al. (1986) have found responses to these questions to be quite reliable in retests and consistent with interviewers' assessments. Unfortunately, as in more developed countries, these questions do not necessarily discriminate well in community-based populations. For example, Andrews et al. (1986) found that the proportions of the 60-and-over population able to perform all of the ADLs were 71 percent in Korea, 90 percent in Malaysia, and 91 percent in the Philippines. Moreover, there is some question about the appropriateness in a developing country setting of some of the instruments developed in industrialized countries. For example, Ikels (1991) in her study of 200 people ages 70 and over in Canton, China, chose not to use any standard instrument and relied instead on her own assessment of the functionality of the individuals through in-depth, informal interviews. Applying such a proce-

dure on a larger scale, however, would not likely be feasible. Studies of how the elderly and other age groups spend their time in specific developing country settings could help inform the development of more appropriate instruments for measuring activities of daily living.

Numbers of disabled persons are almost certain to increase as a correlate of sheer population growth and population aging (see, for example, Dowd and Manton, 1992, on Indonesia). But an important question for both developed and developing countries is whether or not rates of disability are likely to increase as economies modernize and populations age (Mosley and Cowley, 1991). Census data for Turkey show declining rates of disability between 1975 and 1985 for children, but increases for men and women in almost all adult age groups. This trend also has been observed in Bangladesh and Egypt.

Data on disability have been used to estimate years of healthy life expectancy in developing countries.[3] For example, although female life expectancy at birth and at age 65 is usually greater than that of males, analysis based on data from the WHO Regional Office surveys of the elderly in Asia indicate that the percentage of lifetime expected to be spent in a healthy state is lower for women than for men (Lamb and Andrews, 1991; Myers, 1993). A multivariate procedure called graded order of membership has also been applied to disability data from developing countries to identify distinctive patterns of disability and the subgroups of the population that manifest them (Manton et al., 1986, 1987).

Self-assessments of health are common components of population-based surveys, including various surveys of the elderly in developing countries. Of course, such assessments reflect perceptions of illness, as well as underlying disease patterns, both of which may change in the course of socioeconomic development. Riley (1990) noted for Britain, Japan, and the United States that the prevalence of sickness has increased for all age groups, even as mortality has declined; he reviewed possible explanations for this anomaly, including changing perceptions of illness.

There is, of course, tremendous variability in how questions about health are asked (e.g., differences in reference periods—week, month, or ever; whether general questions are followed with probes about specific disease; and whether information on duration and intensity of illness is obtained). Ability to respond about specific diseases or symptoms may be confounded with cognitive ability and with receipt of medical care (Liang and Whitelaw,

[3]One effort to facilitate and promote analyses of health expectancy was initiated in 1989. The international network REVES (the French acronym for the International Network on Health Expectancy and the Disability Process) brings together researchers from both developed and developing countries concerned with measuring changes in health status.

1987). Even so, in the United States, self-perceptions of health have been found to be excellent predictors of mortality (Massey and Shapiro, 1982; Idler and Kasl, 1991). Research on this topic for developing countries has yet to be done.

Comparisons of self-assessments of general health with other self-assessments of specific conditions and with somewhat more objective measures of health sometimes yield contradictory patterns. For example, data from the WHO indicate that elderly Filipinos reported the most positive assessments of their health among the three Asian populations in the study, but they also had the greatest incidence of illness and injury, as well as limitations of hearing and vision (Andrews et al., 1986). Murray et al. (1992a) reported that the ratio of self-perceived to observed morbidity varies by disease and across communities.

Murray et al. (1992a) also reviewed patterns of self-reported morbidity by age, gender, and income for Côte d'Ivoire, Ghana, Pakistan, Peru, and Thailand. They found that morbidity generally increases with age, is greater for men than women, and is more common among the rich than the poor. However, the relation with age is not perfectly monotonic in all of the countries. Similarly, Knodel et al. (1992a) found in Thailand, using a different data source, that reported illness did not consistently increase with age. Strauss et al. (1992) analyzed multivariately the determinants of self-reported adult health in Jamaica and found that health problems increase with age, but that women report more health problems at earlier ages than do men. They also found that less education is associated with poorer health, but that long-run household income has no effect. This type of analysis is needed for other developing countries, and researchers at RAND are investigating the measurement of health and its determinants as part of the Indonesian Family Life Survey.

Health Care Utilization and Costs

Besides investigating mortality, morbidity, and disability, demographers with an interest in aging in developing countries are beginning to study patterns of health care utilization and costs. For example, Caldwell et al. (1990) have proposed a broadening of the concept of the epidemiological transition to that of a health transition, which includes social, economic, and behavioral changes, as well as changes in morbidity and mortality. New medical technologies are emerging, and countries are organizing or reorganizing their health care delivery systems, but health care-seeking behavior is conditioned not only by the available services but also by economic factors, family decision-making dynamics, and household coping mechanisms.

Several studies in developing countries suggest that the use of health

and hospital resources does not necessarily increase monotonically with age. The WHO Regional Office for the Western Pacific surveys of the 60-and-over population in four countries found no strong age pattern in those who had seen a health professional (physician, nurse, or pharmacist) in the month prior to the survey (Andrews et al., 1986). Using data on all ages, Knodel et al. (1992a) reported a U-shaped pattern of use of health sources in Thailand, but for those ages 60 and over there was no clear pattern by age. Murray et al. (1992a) showed that among those reporting themselves as ill in Côte d'Ivoire, those over age 60 were least likely of all the age groups to seek consultation.

There is generally a stronger relation between age and hospitalization (Knodel et al., 1992a, on Thailand; Murray et al., 1992a, on Côte d'Ivoire, Ghana, and Peru; Barnum and Kutzin, in press, on Jamaica and Korea), but once again, within the subgroup of elderly, the relation is not necessarily monotonic. Knodel et al. (1992a) suggested that limited mobility and greater mortality in this age group may account for the lack of association; however, they also noted that once hospitalized, the elderly tend to have longer stays. They combined these cross-sectional statistics on utilization of services with projections of changes in age structure and concluded that barring major changes in utilization patterns, the elderly in the future are likely to make disproportionate use of hospital services and, accordingly, demand for such services will increase dramatically as a result of population aging. In a similar exercise, Dowd and Manton (1992) projected the increased demand for surgery, protheses, and rehabilitation services in Indonesia as a result of population aging.

There are also new inquiries into the implications of population aging for the cost of health services.[4] Murray et al. (1992a:179) noted that "many developing countries spend 50 percent or more of their government budget on hospitals, where adults consume up to two-thirds of the resources." However, data on health care costs by age present a mixed picture. Besides severity of illness, age could also reflect ability or willingness to pay for services. For example in Côte d'Ivoire in 1985, per capita medical expenditures on persons ages 60 and over and in ill health were lower than those for the 40-59 group and about the same as those for the 15-39 group. The 60-and-over group accounted for 15 percent of days spent in illness, but only 11 percent of private medical expenditures. In contrast, older Koreans in 1986 accounted for 14 percent of hospital admissions and 18 percent of hospital costs (Murray et al., 1992a).

Additional efforts are currently being made to utilize the limited data

[4]Due to space limitations, we do not discuss types of payment for health care, such as public or private insurance, which is not widely available in most developing countries.

available on health care costs in three studies of costs by age and gender being funded by the Office of Health of the U.S. Agency for International Development. The study in Jamaica uses data from the Living Standards Measurement Survey, the study in Lesotho is based on administrative records from hospitals, and the study in Costa Rica is relying on social security records.

A major World Bank study (Jamison and Mosley, 1991) assesses the cost-effectiveness of alternative disease intervention strategies by estimating the years of healthy life gained. Although child survival interventions are generally cost-effective, some adult health interventions also are. Among them are antismoking campaigns plus tobacco taxes and some interventions related to tuberculosis. Complicating the trade-off between investments in child and adult health is the evidence that health in childhood plays a major role in adult mortality (Elo and Preston, 1992). Moreover, although prevention of chronic disease and injury is an appealing and apparently logical focus for developing country health schemes, Frenk et al. (1991) have argued that implementation of preventive measures is often hampered by at least three factors: (1) skepticism about the efficacy of educational programs; (2) the lack of control that health ministries have over many of the potential interventions (e.g., alcohol and tobacco taxes, use of seat belts); and (3) political realities that require demonstrable short-term benefits at the possible expense of long-term salubrious effects of disease prevention (Frenk et al., 1991).

FAMILY DEMOGRAPHY

As in the developed world, most caregiving to those elderly in developing countries who need assistance is done by families. However, in neither is caregiving devoid of stress, although there has been a tendency for both Western and developing country writers to idealize the role of the family in developing countries (Nydegger, 1983). Also, as in the West, older people in developing countries provide assistance to their younger family members, although there is some tendency in the literature to view the elderly as completely dependent.

Critical to understanding the family relations of the elderly is obtaining a complete picture of the kin option set, that is, obtaining information about all the family members whether they live together or not. An ideal data set might include not only numbers and relationships, but data on age, marital status, number of children, and labor force participation of each person. Most data sets do not provide so much, but a considerable amount of research has been done on the family demography of aging, especially in Asia (see, e.g., the special issue of *Asia-Pacific Population Journal* (Volume 7(3), 1992), that focuses on social and economic support systems of the

elderly in Asia). This emphasis has no doubt been partly driven by the interests of Western scholars, but it has also been a function of concern on the part of Asian policy makers about just what can be expected from family members in the future. Ideals of filial piety and caring for the elderly are strong, but now that there are more opportunities to put them into practice, as well as dramatic socioeconomic changes, questions about actual behavior are arising.

Demographers have been especially helpful in spelling out the implications of declines in fertility and mortality for the number of children that older people will have in the future, as well as their prospects for remaining married. Hermalin and Christianson (1992) used census data to project the number of children ever born among older women in Taiwan from 1985 to 2020. Although fertility has declined rapidly in Taiwan in recent decades, the effect on the numbers of children that older women have will be felt only with a lag. For example, in 1980, women aged 60 and over had given birth during their reproductive periods to an average of 5.4 children. By 2000 the number will still be relatively large, 4.73, and only in the twenty-first century does it begin to fall dramatically, reaching 2.89 by 2020. Zeng (1986, 1988) used simulations to model availability of kin in China, where there has been considerable concern about the implications of the one-child policy, and Tu et al. (1993) have done microsimulations for Taiwan. Data from the 1989 Taiwan Survey of Health and Living Status of the Elderly provide the most detailed description of kin availability of the elderly for any developing country (Hermalin et al., 1992b). Some scholars have argued that it is not necessarily the number of children that matters for family support as long as there is at least one (although, as discussed below, research on the determinants of living arrangements in Asia provides some evidence that *number* of children does indeed matter, and the special issue on childlessness of the *Journal of Cross-Cultural Gerontology* (Volume 2(1), 1987) provides examples of coping mechanisms for the childless elderly). Myers (1992) presented estimates for a number of countries around the world of the proportion of women ages 45-49 in the late 1970s who were childless. (He noted that both voluntary and involuntary factors influence childlessness, but was unable to specify reasons for the relative percentages of the various countries.) The percentages were generally much less than 10, although Egypt, Bangladesh, Brazil, Ecuador, Peru, and Uruguay were exceptions with larger proportions. Future trends in childlessness will depend on the extent to which current childlessness reflects volition or not. In the latter case, with improvements in health, childlessness might be expected to decline, but delays in marriage and preferences for smaller families augur an increase.

Of course, family assistance is not necessarily all intergenerational, and Lee and Palloni (1992) used the case of Korean women to model the impli-

cations of mortality decline for widowhood. Their cohort life-table analysis indicates a reduction in the proportion of widows at each age, delay in the onset of widowhood, and decrease in its duration, results that are not as apparent as one might think. However, as they note, "it remains questionable how much of the improved survival of their husbands will be translated into elderly women's well-being" (Lee and Palloni, 1992:86).

Perhaps not surprisingly, given differences in age at marriage and in mortality, men are more likely to depend on their spouses should they become incapacitated than are women. The ASEAN surveys found that 34 percent of males in comparison to 8 percent of females received care from their spouses, whereas the proportions receiving care from children were 48 and 72 percent, respectively (Chen and Jones, 1989:Table 6.9). The importance of spouses as well as children in caregiving is also clear in Taiwan, where a third of the elderly who receive assistance with activities of daily living identify their spouses as the most important providers, as opposed to 55 percent identifying children or children-in-law (Hermalin et al., 1992a).

Although assistance can be given across household boundaries, living arrangements of the elderly have been the focus of much of the initial analysis of their family relations. Table 10-1 shows the proportion of older people (either 60 and over or 65 and over) in various developing countries who were living alone in the late 1970s and the 1980s. In Asia, less than 10 percent of the elderly live alone, but in Latin America and especially the Caribbean, the percentages are much higher. Kinsella (in press) noted that, as opposed to Asia where older women are more likely to live alone than men, in the Caribbean the pattern is the opposite, in part due to patterns of migration and union formation unique to parts of the region.

Until recently at least, approximately three-quarters of elderly Asians lived with one or more of their adult children (Martin, 1988). However, evidence from Taiwan and Korea indicates that the proportion is declining. For Taiwan, Weinstein et al. (1989) noted a decline in coresidence from 81 to 69 percent over the 1973-1985 period, although part of this change may be due to the increasing prevalence among the elderly population of mainland Chinese who migrated to Taiwan shortly after World War II and do not have extensive family networks. Using Korean census data, DeVos and Lee (1988) showed that the proportion of the 60-and-over population living with their married adult children declined from 71 to 64 percent in the 1970s. The decline occurred for all age groups, for those with and without spouses, and among both men and women, although the decline was smallest for the oldest-old and for those who were widowed, indicating perhaps that coresidence was becoming less customary and more related to the special needs of the elderly.

The determinants of the living arrangements of the elderly in developing countries is probably the topic that has been subject to the most multi-

TABLE 10-1 Household Population Aged 65 Years and Over (unless noted) Living Alone: Latest Available Data (percent)

Asia		Central/South America	
China (People's Republic), 1987 (60+)	3.4	Argentina, 1980	12.0
Indonesia, 1986 (60+)	8.0	Brazil, 1980	9.8
Korea, Republic, 1984 (60+)	2.2	Chile, 1984-1985 (60+)	7.0
Malaysia, 1986 (60+)	6.4	Colombia, 1976 (60+)	5.0
Philippines, 1984 (60+)	3.0	Costa Rica, 1985/1986	6.9
Singapore, 1986 (60+)	2.3	Dominican Republic, 1975 (60+)	9.0
Sri Lanka, 1987 (60+)	7.6	French Guiana, 1982	40.0
Taiwan, 1989	8.9	Mexico, 1981 (60+)	6.4
Thailand, 1986	6.4	Panama, 1976 (60+)	11.0
		Peru, 1977 (60+)	8.0
		Uruguay, 1985	16.2
Caribbean		**Other**	
Barbados, 1982	27.1	Côte d' Ivoire, 1986	2.8
British Virgin Islands, 1980	20.4	Fiji, 1984 (60+)	2.0
Cuba, 1981	10.0	Réunion, 1982	23.3
Dominica, 1980	18.6		
Grenada, 1981	21.0		
Guadeloupe, 1982	32.4		
Jamaica, 1984	23.0		
Martinique, 1982	30.6		
Montserrat, 1980	25.2		
St. Lucia, 1980	19.7		
St. Vincent, 1980	16.5		
Trinidad/Tobago, 1985 (60+)	13.6		
Turks and Caicos, 1980	17.9		

NOTE: Mexico refers to urban and suburban elderly in four states. Costa Rica refers to two cantons only. Jamaica refers to a single urban community of Kingston. Indonesia refers to the island of Java. Malaysia refers to three Peninsular states.

SOURCE: Compiled by the Bureau of the Census from primary census and survey volumes, international compendiums, and published research.

variate analysis, with the focus primarily on Asia, but also some work on Latin America. DeVos and Lee (1988) analyzed Korean census data for 1970 and 1980; Martin (1989b) used WHO data for Fiji, Korea, Malaysia, and the Philippines; Casterline et al. (1991) relied on the ASEAN data for the Philippines, Singapore, and Thailand, plus the 1989 Taiwan data; Chan and DaVanzo (1991) analyzed the 1988-1989 Second Malaysian Family Life Survey data; and DeVos (1990) used mid-1970s World Fertility Survey

data for Colombia, Costa Rica, the Dominican Republic, Mexico, Panama, and Peru.

All of the studies highlighted the importance of the availability of kin for the living arrangements of the elderly. In all the studies, being widowed raised the probability of living with a child. Similarly, for the Asian studies that focused on the issue (Martin, Casterline et al.), having a larger number of children was associated with a greater probability that the older person was living with at least one of them.

DeVos and Lee found that the older the person, the greater was the likelihood of living with a child, but Martin, who included a measure of ability to perform activities of daily living, which had no effect, found that for three of the countries, *less* coresidence was associated with older age. Casterline et al. shed light on this puzzling finding; they found that for Taiwan and Thailand, but not for the Philippines, the negative effect of age on coresidence was eliminated once they controlled for the age of the youngest child. Thus, some of the coresidence was likely associated with the needs of the children, rather than the needs of the elderly. One would expect the former to decrease and the latter to increase with the age of the older person.

In addition to studying the influence of kin availability, the research has also focused on the effects of "modernization" (i.e., whether coresidence is less among the more educated, urban elderly with greater economic resources). Casterline et al. did indeed find less coresidence among the more educated, but they found more coresidence in the largest cities than in smaller cities and rural areas.[5] The latter result raised the possibility that coresidence in big cities might be motivated by high housing costs and the need to double up. Chan and DaVanzo included a measure of community-level housing costs in their analysis and found that it was positively associated with coresidence, although they also obtained the puzzling result that coresidence was equally likely in rural areas and big cities, but less likely in small cities, even when housing costs were included in the model. DeVos found that among Dominican Republic males, rural residence was associated with a lower incidence of living in an extended family, perhaps reflecting the out-migration of young people, but she found that among Panamanians of both sexes, there was more coresidence in small cities in comparison to large cities and rural areas.

Chan and DaVanzo also were able to include in their model an indicator of income, which as discussed later is very difficult to measure in surveys, and found that those with greater economic resources were more likely

[5]DeVos and Lee (1988) also found greater coresidence in Seoul, and Martin (1989b) found greater coresidence in urban areas of the Philippines.

to be living apart from their children. Thus, it may be that at least some of the elderly of Asia prefer privacy, and once they have the resources to achieve their preferences, they do so. Ramos (1992:230) noted that such may also be the case in Brazil and urged that the advantages of multigenerational coresidence not be overemphasized: ". . . contrary to some prevailing beliefs, it is the elderly living in multigenerational households who require formal support because of their poverty." Similarly, Knodel et al. (1992b) concluded on the basis of their focus group work in Thailand that despite the normative basis for coresidence, there are costs as well as benefits, and they speculated that some elderly may in the future purchase greater privacy as their economic well-being increases.

Finally on the topic of living arrangements, both the Martin and the Chan and DaVanzo analyses highlighted the importance of culture as indicated by ethnic differences in living arrangements. In Malaysia, the Malays are less likely to live with their children than are the Chinese or Indians, whereas in Fiji, ethnic Fijians are less likely to coreside than Indians.

Despite the relative plenitude of research on this topic, there remain many unresolved issues (e.g., the relation of health to living arrangements; the influence of urban versus rural residence, including the role of housing costs and migration of children; and the extent to which privacy is preferred). Also, there is a need for more complex models that take into consideration more characteristics of the younger generation.[6] And, finally, research on transitions in and out of institutions is nonexistent.

Of course, support can be given across household boundaries, so living arrangements are not the only topic of interest in studying family relations in an aging population. As mentioned earlier, both spouses and children provide assistance with activities of daily living to elderly Asians. Moreover, Knodel et al. (1991) found that in Thailand the life course stage of children is associated with the type of assistance that they provide (e.g., single non-coresident children living some distance away from their parents are more likely to provide money, whereas married non-coresident children in the same community are more likely to provide food and clothing). For Taiwan, Hermalin et al. (1992a) found that sons are the most important providers of financial assistance, whereas both sons and daughters are important sources of material goods, and daughters-in-law and spouses provide personal assistance. As in the developed countries, researchers are just

[6]Such analysis will be possible using the 1989 data from Taiwan, and a dissertation on this topic is currently being written by Mary Beth Ofstedal at the University of Michigan. Preliminary analysis reported in Ofstedal and Chi (1992) indicates that the elderly are most likely to live with one child of any marital status or two unmarried children. Less likely outcomes are living with one married and one unmarried child, with two married sons, or with any duet of children including a married daughter.

beginning to refine their data collection and analytical techniques for the study of such exchanges.

As mentioned earlier and highlighted in the initially curious findings about age and coresidence, the intergenerational flow of resources is not all one way. Many elderly people may indeed continue to provide financial and material support to their children well into their adult years. They may also play important roles around the house that help facilitate the productivity of the younger generation. For example, Andrews et al. (1986) noted that in the four countries in Asia and the Pacific that they studied, more than half of the respondents indicated that they helped take care of grandchildren. But provision of such time-intensive services is possible only when the generations of a family live close to each other. We turn next to a consideration of research on migration and the elderly in developing countries.

POPULATION DISTRIBUTION AND MIGRATION

Urbanization

Urbanization is one of the most significant population trends of the second half of the twentieth century. The global population of all ages living in urban areas (as defined by each country) more than doubled between 1950 and 1975, and increased another 55 percent from 1975 to 1990. By the early 1990s, 45 percent of the world's population, some 2.4 billion persons, lived in urban areas. Nearly three-fourths of the population in developed countries was urban, compared with slightly more than one-third in developing countries. The urban population in developing countries is growing about 4 percent per year, much more rapidly than in developed countries (less than 1 percent per annum). Although the urban growth rate in most world regions has begun to decline, some parts of the globe (especially Africa and South Asia) are just now experiencing peak rates of urban growth. In spite of declining rates of growth, the world's urban population is projected to increase about 125 percent (to 5.5 billion persons) between 1990 and 2025 (UNDIESA, 1991b).

Because urbanization is driven in large part by youthful migration from rural areas to cities, it influences the age distribution in both sending and receiving areas. Consistent with the worldwide trend toward increased urbanization, the elderly population became more concentrated in urban areas during the 1970s and 1980s. In developing nations, which still are predominantly rural, slightly more than one-third of persons aged 65 and over reside in urban areas. This proportion is expected to exceed one-half by the year 2015 (UNDIESA, 1991a). In spite of the increasingly urban nature of today's elderly populations, rural areas remain disproportionately older than

urban areas in most developing (and developed) countries. This differential is a result of the migration of young adults to urban areas and, in some cases, of the return migration of older adults from urban areas back to rural homes.

The elderly of Africa are more likely to live in rural areas than are the elderly of other regions, even though African populations overall are slightly more urbanized than those in the Asia/Oceania region (excluding Japan; Heligman et al., 1991). The overall trend toward urbanization is stronger in Asia than in Africa, however. Half of the Asia/Oceania elderly are projected to live in cities by 2015, versus 42 percent in Africa. As a region, Latin America and the Caribbean is already highly urbanized. The proportion of elderly in these urban locales is very similar to that of the developed-country average. Unlike the elderly in other developing areas, the elderly in Latin America and the Caribbean are somewhat more likely to live in cities than the general population.

In a study of census data for 29 developing countries (Kinsella and Taeuber, 1993), more elderly women than elderly men were recorded in urban areas in 22 of the 29 countries; exceptions were Bangladesh, Pakistan, and five African nations (Egypt, Kenya, Malawi, Tunisia, and Zimbabwe). Sex ratios (number of men per 100 women) for the urban elderly usually are much less than 100, except in the countries just mentioned. The percentage of all urban females who are aged 65 and over is higher than the corresponding percentage for urban males in most countries. Likewise, the percentage of all elderly women who live in urban areas tends to be higher than the percentage of all elderly men who live in cities.

In some countries the gender differences in urban/rural residence for the elderly are remarkable; 1985 sex ratios for the elderly population in Colombia were 122 in the countryside versus 79 in cities (Kinsella and Taeuber, 1993). Because women live longer than men in almost all countries, sex ratios of less than 100 for the elderly normally would be expected throughout a population. There are, however, more elderly men than women in rural areas in many developing countries. Rural Cuba has an especially large imbalance of 159 men per 100 elderly women. A similar though less pronounced rural male surplus is seen in much of Latin America, which suggests a region-specific pattern in male/female migration that has implications for health and social security systems in both rural and urban areas.

The proportion of elderly men who live in rural areas tends to increase with age. For women, however, the opposite is often true: women 75 years and older are less likely than women 65 to 74 years to live in rural areas, and more apt to reside in urban localities.

There seems to be an emerging consensus that the difference in the level of population aging between urban and rural areas in many developing countries will begin to narrow. Warnes and Horsey (1988) have projected

the population of Bangkok in conjunction with that of Thailand as a whole. Their results, under various migration and growth assumptions, suggest that the elderly population of Bangkok will grow more rapidly than that of the entire country beginning around the turn of the century. This change will be due partly to the city's lower mortality rates and partly to the presence of "inflated" cohorts reaching older age. Using different methodologies, Rees (1991) and Watkins and Ulack (1991) reached similar conclusions regarding Zimbabwe's capital of Harare and the Manila area of the Philippines, respectively. Of course, such results are sensitive to the timing and pace of urbanization; Zeng's (1989) projections for China—which incorporate a large level of expected rural-to-urban migration—suggest that urban areas will become and remain younger than rural areas well into the future, in spite of lower urban than rural fertility.

Migration

The volume of labor force migration in developing countries has spawned considerable research in recent decades. Very little attention, however, has been directed to patterns and determinants of migration among older adults, undoubtedly due to a lack of available, comprehensive data.[7] National censuses, the primary sources of information on internal migration, typically obtain mobility information from heads of households and may fail to capture information about other household members. Moreover, census questions concerning spatial movement may be inconsistent from one enumeration to the next (Chayovan et al., 1990) and hence of limited analytic use.

There has, however, been considerable discussion of the consequences of migration for the elderly. A prominent theme is the effect of rural-to-urban migration on family structure and the well-being of the elderly who are "left behind" in rural areas. A commonly expressed concern is that movement of younger adults to urban areas results in the isolation of the aged in rural areas, presumably to the latter's detriment (Goldstein and Beall, 1982; UNDIESA, 1985; Apt, 1992; Gore, 1992). However, the elderly left behind by their children in rural areas may become the caretakers of the grandchildren. This "skip-generation" type of household can be found in rural areas of Thailand and Zimbabwe (Hashimoto, 1991) and in the Philippines (Lopez, 1991). Moreover, family strategies regarding migration to cities may result in a least one adult child remaining behind.

Other concerns are related to the process of aging-in-place in urban

[7]Myers and Clark (1991) provide a useful exposition of five possible stages of migration and spatial distribution of the elderly over the course of the demographic transition.

areas, and to issues of growing old in a new environment without the social network of one's place of birth (Ramos, 1992). Contreras de Lehr (1992) has observed, however, that in Mexico City, where the most prevalent form of family structure is nuclear, there is a tendency in the slums to rebuild the extended family group with available kin; rural-to-urban migrants bring remaining members of their extended family to join them when feasible. Given the high housing costs in many developing-country cities, migration of family units to urban areas may actually be associated with greater multigenerational coresidence than in rural areas, as discussed in the section on family demography.

In addition to internal migration having an effect on the living arrangements of the elderly in developing countries, international migration may also. In Turkey, for example, large-scale migration of workers to Europe and elsewhere has eased national unemployment, but has led to separation of family members. It is unclear whether remittances from abroad compensate for the loss of direct support to the elderly (Tracy, 1991).[8] In some Caribbean nations, years of sustained emigration have contributed to the region's status as the oldest of all developing regions of the world (Kinsella and Taeuber, 1993). Here, the ebb and flow of migration have been significant, but to date, effects on patterns of marital status, living arrangements, and savings/consumption among the elderly have not been well documented.

Family structure can also serve as a determinant of migration of the elderly. For example, if more than one child is available, the elderly may circulate from one child's home to another. Such a pattern has been noted for China (Chesnais and Wang, 1990; Goldstein et al., 1990[9]); India (Caldwell et al., 1984; Vatuk, 1982); the Philippines, especially among poorer families (Lopez, 1991); and Taiwan (Chan, 1992). Moreover, as reflected in the earlier discussion of sex ratios of the elderly in urban and rural areas, a variant of rural-to-urban migration arises when older women migrate to cities to join their children after the deaths of their husbands. Hugo (1991) noted that Indonesian widows, unlike widowers, tend to remain in or migrate toward urban areas. Thus the difference in residential concentration between elderly men and women appears to be related partly to stages in the life cycle. Elderly women are much more likely than men to be widowed and are more likely than men to have chronic illnesses. Urban residence

[8]See Hugo (1991) for a discussion of the issue of internal migration of children and remittances to the elderly. There is evidence that remittances are an important source of support for the elderly; however, Sorenson (1986) argues that elderly left behind in Korea prefer getting by on their own resources and having a financially independent branch of the family set up in the city. They rely on remittances only for special circumstances, not for daily expenses.

[9]Living "by turns" with different sons was thought to occur in the past after the older generation's estate had been divided among the sons.

may give elderly women, especially widows, the support benefits of closer proximity to their children and to specialized health or social services, but the evidence for this motivation for migration is thin in developing countries.

It also remains to be seen in developing countries, particularly those with sizable middle classes, whether a second developed-country pattern of migration will emerge. Besides "moving for support," the elderly may "move for amenities," such as warmer weather, quieter surroundings, or lower costs of living (see Ikels, 1991, on China). In developed countries, such migration is sometimes linked to retirement, and there is also some evidence of such a link in developing countries (see Becker, 1991, on Africa;[10] Hugo, 1991, on Indonesia), although Machado and Abreu (1991) find no retirement peak in migration for Brazil. In many developing countries, retirement is less of an event and more of a process of gradual withdrawal from the labor force, so the age pattern of migration may not be so marked.

ECONOMIC ACTIVITY AND WELL-BEING

Labor Force Participation and Retirement

Labor force participation declines markedly as persons approach retirement age in industrialized countries. The proportion of elderly who are economically active[11] is often a small fraction of the corresponding proportion of persons 25-54 years. In most developing countries the situation is quite different. Although economic activity rates also decline with older age, they rarely reach the low levels seen in developed countries, and differences among age groups are much smaller. The predominantly rural character of many developing economies means that relatively small proportions of the population are in wage and salaried employment, so most are not affected by compulsory retirement ages.

In a 50-country study (Kinsella and Taeuber, 1993), recent labor force participation rates for elderly men (aged 65 and over) in developed countries were seen to range from less than 2 percent in Austria (in 1988) to 24

[10]Becker notes that returning to one's home village is motivated by a desire to reassert property rights, as well as to have access to the care and resources of kin, who may have earlier benefited from remittances.

[11]The labor force or economically active population in a given country is usually defined as all persons who are working, actively seeking work, or temporarily out of work because of illness, layoff, vacation, strike, and so forth. The time referent for such activity may vary, however, as may the inclusion or exclusion of certain categories of workers (for example, persons engaged in home duties). Such differences in national reporting schemes have an effect on measured labor force participation rates, especially for women and the elderly.

percent in Norway (in 1989). With a few exceptions (Uruguay, Cuba, Singapore, and Argentina), rates in developing countries varied from 30 percent to a high of 85 percent in Malawi (in 1987). Half or more of elderly men were economically active in the 1980s in countries as diverse as Liberia, Bangladesh, Guatemala, the Philippines, Mexico, Indonesia, Pakistan, and Jamaica.

Among women, participation rates ranged from 1 percent in some developed countries to 29 percent in the Philippines (1989). Rates generally are higher in developing than in developed countries, but vary enormously among the former. For example, 72 percent of elderly women in Malawi are said to be economically active, compared with less than 1 percent of elderly women in Egypt. Of course, reported activity rates are influenced by the nature of work itself in many developing countries. There are large concentrations of older workers in agricultural and related sectors. In some countries, a large majority of older workers are self-employed. Various studies (e.g., Holden, 1978; PAHO/AARP, 1989) have shown that definitions of economic activity in both developed and developing countries often exclude major segments of the work that women do. Many argue that such work should be included in national accounts of economic activity. Moreover, depending on which household member is the respondent to the survey or census, perceptions and thus reports of women's economic activity may differ.

An analysis of aggregate labor force participation rates circa 1980 in 150 countries (Clark and Anker, 1990) showed that nations with high national income per capita tended to have the lowest participation rates for men and women 55 years and older. (See Durand, 1975, for earlier research on this topic.) An implication is that as a nation develops economically, labor force participation rates of older persons decline, but there are exceptions to this pattern, for example, in South Korea from 1975 to 1989 (Kinsella and Taeuber, 1993). Variations in labor force participation among countries highlight the effects that cultural values, governmental policies, and economic conditions exert on economic activity levels of older workers.[12]

Despite a worldwide trend away from employment in agriculture, jobs in this sector remained in the 1970s and 1980s the most important source of employment for the elderly in developing (and most developed) countries. Available data from the 1980s indicate that between 75 and 90 percent of all elderly workers are engaged in agriculture in numerous African and

[12]Multivariate, cross-sectional analyses of labor force participation of individual older adults have been attempted by using data from the first WHO surveys in Asia and the Pacific (Agree and Clark, 1991; McCallum, 1992). Both studies find significant country-specific or ethnicity effects.

Asian nations, with considerably lower proportions in Latin America and the Caribbean (Kinsella and Taeuber, 1993). The relatively few time series by age generally show declining proportions of older workers in agriculture, although in Turkey the proportion in agriculture increased slightly but steadily from 86 percent in 1970 to 90 percent in 1985.

Manufacturing activities usually occupy the second largest group of elderly workers in developing countries, though the levels rarely exceed 20 percent. In some Southeast Asian nations, sales positions rank second to agricultural jobs among elderly workers. Proportions of elderly workers in the service sector are still quite small, with the notable exception of Singapore (24 percent).

Formal retirement with pension benefits is much less common in developing countries than in developed countries, and pensions are frequently available only to former civil servants and employees of large private firms in the modern sector.[13] The concept of retirement is foreign to most rural elderly. Where mandatory retirement ages do exist in developing countries, primarily in the urban, formal sector, they tend to be lower than in Western industrialized nations (age 55 is not infrequent, especially for women; U.S. Social Security Administration, 1992). One reason may be the lower life expectancy in some of these countries, but it could also be that in countries with still relatively rapid population and labor force growth, early retirement may represent a substitution of jobs for youth for jobs for older workers.

There has been little multivariate analysis of the retirement process in developing countries (see LeGrand, 1989, on Brazil, and Hayward and Wang, 1991, on China). However, survey responses to questions about reasons for stopping work reflect many of the same reasons as in developed countries. In the Philippines and Singapore, almost half of the males ages 60 and over who were no longer working cited having reached the retirement limit. In Indonesia and Thailand, the percentages were only 28 and 10, respectively. In Thailand, three-quarters mentioned ill health, as did almost one-half in Indonesia and the Philippines, and one-quarter in Singapore (Chen and Jones, 1989).

Economic Well-Being and Pensions

Little evidence exists on the income or wealth of elderly individuals or of households with elderly heads, due to the difficulty of obtaining accurate

[13]The exception is Latin America; pension programs for the self-employed and those in rural areas are common in Brazil, Argentina, and Chile (Williamson, 1992).

(or any) responses to survey and census questions on these issues. Even if respondents were willing to report incomes, several factors complicate data gathering: seasonal variations in income; self-employment in agriculture; the extent of the informal or nonmonetized economy in many countries; and the frequent pooling of household resources. Surveys have had more success in collecting data on sources of income, type of housing, and household possession of consumer durables, but these types of data do not address the issue of the extent to which older people control economic resources, an issue of some importance for their status and well-being (Simmons, 1945; Martin, 1990; Kwong and Cai, 1992).

Data on main source of support from the ASEAN elderly surveys[14] (Chen and Jones, 1989) indicate that only males in Indonesia and Thailand rely most on their own salaries or business incomes. For females in these two countries and for both sexes in Malaysia and Singapore, children and grandchildren are the most important source of support. The proportion relying on pension income ranged from 1 percent among females in Singapore and Thailand to 16 percent among Malaysian males. A similar pattern of reliance on families more than work or pensions can be seen in the data on Korea, Malaysia, and the Philippines from the WHO survey program (Andrews et al., 1986).

Data on income support from the 1987 Nationwide Sample Survey of the Elderly in China indicate striking differences between urban and rural areas. In cities and towns, the proportions of the 60-and-over population who relied on retirement pay were 56 and 48 percent, respectively. Economic support from children ranked second (22 and 28 percent), and support from spouse third (13 and 14 percent). Thus these three mainstays constituted about 90 percent of elderly support. In rural areas, the picture was quite different: 68 percent relied on children, 26 percent were self-supporting from their own labor, and 5 percent received support from spouse. Half of all rural respondents said they had "no say" in their family economic decisions, versus less than 20 percent in cities and towns combined (Tian, 1988).

In general, the importance of pensions for economic support of the elderly is greater in Latin America and the Caribbean than in Africa and most of Asia. For example, about 90 percent of males and 70 percent of females age 65 and over in Argentina, and more than 60 percent of both sexes in Guyana, receive some form of pension (Pan American Health Organization, 1989a,b). Some Latin American nations have had social security systems in place for more than 50 years, as well as schemes that cover certain rural and/or self-employed workers in addition to persons in the

[14]Data from the Philippines on this issue are not available.

more modern sectors (Williamson, 1992). However, current economic realities often limit the benefits to retirees. Most Latin American social security systems are funded by a tax on formal sector labor, which in some countries represents a small base and everywhere is subject to contraction during periods of economic reversals (McGreevey, 1990). Initiatives to ensure the economic well-being of the elderly may conflict with structural adjustment policies to reduce rather than increase public expenditures. As a result, benefit levels often lag behind inflation. Increasingly in Latin America—where growing numbers of elderly have become eligible for old-age pensions—there has been a decline in the purchasing power of pensions and a severe deterioration in many older persons' standards of living (Hoskins, 1991). In Argentina, for example, the nearly 3.5 million retirees are supposed to receive pensions amounting to between 70 and 82 percent of their former salaries. In reality they now receive about half that amount, and their purchasing power erodes further as inflation continues. A retired couple in Buenos Aires, both of whom receive the minimum benefit, takes home less than half of the city's poverty-line income.

Even so, there is some hope that public pensions will provide greater support to the elderly in the future. Although only small proportions of Asian elderly rely on pension income today, increasing proportions of the current labor force are participating in pension plans, so greater proportions of the elderly in the future will be fully vested in such plans. Government officials, however, are concerned about premature overreliance on public pensions and are emphasizing the necessity of strengthening families' support of the elderly (Martin, 1991). Moreover, it is likely that as population aging continues it will be necessary to raise ages of eligibility for pensions to preserve the systems' fiscal viability, as has been proposed in Japan and Singapore, and implemented in the United States.[15] No doubt there would be pressure to accompany such increases in eligibility ages with increases in mandated retirement ages. The alternative would be to raise taxes on younger workers, as long as they remained plentiful, while maintaining relatively early ages of eligibility and retirement.

DATA COLLECTION AND RESEARCH CHALLENGES

A considerable amount of data on the elderly in developing countries has already been collected, as we discuss in detail in the appendix. Much of it has been underutilized thus far. Researchers have limited access to census data, and many of the published tabulations of census data provide

[15]Some Latin American countries, for example Chile, have begun to move towards fully-funded systems (Long, 1993).

insufficient age detail or may be of questionable quality. Some of the survey data on the elderly are slowly finding their way into the public domain (e.g., the early WHO Regional Office surveys), but most are still generally not available even though they may have been collected more than 5 years ago. The lack of research on aging in Latin America (beyond the first-rate work continuing to be done on the epidemiological transition by Mexican scholars and the work on Brazil by Ramos) is surprising, given the region's relative advancement in the demographic and epidemiological transitions; increased availability of the Pan American Health Organization data sets would no doubt stimulate work in this region. There is also still much that can be accomplished worldwide in the analysis of existing data from surveys based on a broader age range (e.g., household expenditure and labor force surveys), and existing time series of census data can be used for cohort analyses of transitions.

Even so, there has been considerable interest in collecting new data, especially in light of the ever-changing characteristics and circumstances of elderly populations, the refinement of the research questions being asked, and the development of new analytical techniques. Some researchers have been concerned that each new data collection effort will end up reinventing the wheel and not benefit from lessons from past experiences.

On the basis of that concern, in 1987 the principal investigators of the first WHO Regional Office project and the ASEAN project were invited to a conference in Singapore, where they and other experts were asked to discuss what they had learned about the methodology of surveys of the elderly in developing countries (East-West Population Institute, 1987; Liang and Whitelaw, 1987; Clark, 1989; Martin, 1989a). Among the basic issues raised was how to define old age in developing countries, where life expectancy may be less than 60 or 65 years, the definition often used in research in developed countries. In some countries, given the relatively small percentages of the population over 60, for example, there can be difficulty in locating sufficient numbers of respondents of that age and higher. Also complicating matters is the fact that the quality of age reporting is suspect in many places. Moreover, as in household surveys of the elderly everywhere, there is likely a bias in the samples toward the relatively healthy, in both physical and mental terms.

For cross-national surveys, there are challenges of achieving comparability in questionnaire design. Beyond the issues of translation are those of the appropriateness of particular questions in specific cultural and socioeconomic settings. The wholesale borrowing of instruments developed in Western settings may lead to problems, such as trying to test cognitive functioning by asking illiterate respondents to copy a design with pencil and paper when they have not had experience handling writing instruments, or asking about age of retirement in places where withdrawal from economic activity

is a process rather than an event. Beyond the issue of cross-cultural applicability of specific questions is concern about whether the questions and the answers have the same meaning across cultures. Cultural influences on reports of health status have especially been the focus of debate recently (Johansson, 1992; Riley, 1992).

Given the interrelatedness of the economic, social, and physical well-being of the elderly, there is also a need for researchers in various disciplines to learn from each other, which is undoubtedly true in more developed countries as well. Many of the surveys that emphasize health issues may give short shrift to social and economic issues, and may yield data that provide only the numerators for the rates that demographers typically like to analyze. Similarly, demographers and other social scientists are just beginning to learn about how they might best measure health, given the limited amount of time that can be devoted to health questions in their surveys.

Despite these problems, progress has been made in collecting and analyzing baseline information for the elderly in many developing countries. As noted in the appendix table and discussed in the appendix, East and Southeast Asia have probably received the most attention, which is appropriate given their relative advancement in the demographic transition. Of course, Latin America is similarly advanced, but relatively little research has been done. Trailing even further behind demographically, but probably ahead of Latin America in research, are Africa, the focus of so many ethnographic studies, and South Asia (see Martin, 1990, for a review of research, which has been based primarily on small-scale surveys).

In the previous sections, we have identified many unanswered questions. Little is known about the income and wealth of the elderly in developing countries, and how their economic needs interact with social and health factors to generate dependency. More multivariate analysis of labor force participation and retirement would be helpful.

To understand the support available to the elderly from their families, information on the full kin option set needs to be collected, and data collection and analytical strategies regarding exchanges need to be refined. Although multivariate analysis of living arrangements of the elderly has dominated the work in family demography, there remain questions about the relation of living arrangements to health, housing costs, desire for privacy, and characteristics of the younger generation. Particularly underresearched are transitions in and out of institutions. Related to living arrangements is the migration of both the young and the old. There has been little analysis of the determinants of migration of the elderly, and of special interest is the extent to which they move to join their children in urban areas.

Questions on self-perceptions of health and the ability to perform activities of daily living are typically included in population-based surveys of

the elderly in developing countries, but additional refinement of survey instruments is required to reflect more accurately the daily circumstances in particular developing-country settings and cultural differences in attitudes toward health. Particularly needed is research on the socioeconomic factors associated with health and on the predictive value of self-perceptions for subsequent utilization of health services and mortality. Also deserving attention is how risk factors, functional status, and morbidity change over time.

Longitudinal data collection would help illuminate many of these issues, as no doubt would the combination of qualitative with quantitative data collection strategies. Research on aging in developing countries is a growth industry, stimulated both by the policy development process in those countries and by the curiosity of Western scholars about the aging process in different settings. Although Latin America and East Asia are further along in their demographic transitions, all of these societies must make decisions about how to respond to the needs of the elderly and how to make use of their strengths in settings where public resources are limited. Critical for policy development are a better understanding of those needs and strengths, how they are likely to change in the future, and how nongovernmental sources of assistance can best be supplemented by governmental initiatives.

APPENDIX

Data for the study of the demography of aging come from sources similar to those used in research on fertility (i.e., household surveys, censuses, vital statistics, and ethnographic studies, as well as other qualitative data collection efforts). As in fertility research in developing countries, program-related statistics have not yet been widely used. In this appendix we highlight major data collection efforts of each type. In the body of the chapter, we have commented more broadly on the challenges of gathering data on the elderly in developing countries.

Household Surveys

Receiving the most attention have been the cross-national household surveys of the elderly in developing countries, the first of which was the 1984 World Health Organization four-country study of Fiji, Korea, Malaysia, and the Philippines. These surveys were designed by health professionals but have yielded fairly usable data for demographic purposes (for the survey design and basic cross-tabulations, see Andrews et al., 1986; for research based on the data set, see Manton et al., 1987; Martin, 1989b; and Agree and Clark, 1991). As indicated in the appendix table, there soon

followed the cross-national efforts of the Association of Southeast Asian Nations (Chen and Jones, 1989), which was led by demographers and the Pan American Health Organization (PAHO), which emphasized health issues. Additional analysis and follow-up data collection for three of the ASEAN countries, plus a new survey of the elderly in Taiwan, was undertaken in 1989 by a group coordinated through the Population Studies Center at the University of Michigan, and has yielded an impressive series of working and conference papers. The PAHO data set has not been exploited to our knowledge, beyond the publication of basic tabulations in a series of country reports. Most recently, there have been two other WHO-sponsored comparative survey projects, one in WHO's so-called Southeast Asian region and one in its Eastern Mediterranean region. The appendix table lists the countries included in those studies.

In addition to these and other cross-national survey programs, there have also been individual national-level surveys of the elderly, as indicated in the appendix table. It has also been possible to base aging research on household surveys of a broader age range of the population, including labor force and income and expenditure surveys, although to date these sources have yielded little published work. Such surveys of multiple age groups have the advantage of not looking at the elderly in isolation. Most notable has been the research based on the family life surveys undertaken under the auspices of RAND in Malaysia in the 1980s (Chan and DaVanzo, 1991) and currently in Indonesia. WHO-sponsored disability surveys have been used to investigate the disablement process associated with aging in India and Indonesia (Manton et al., 1986), and physical examination surveys in Colombia, Egypt, and Uruguay in the 1970s and 1980s have provided information on morbidity and risk factors associated with chronic diseases (Murray et al., 1992a). Data from the household samples of six World Fertility Surveys fielded in Latin America in the mid-1970s allowed analysis of living arrangements of the elderly (DeVos, 1990), and the Living Standards Measurement Surveys of the mid- to late-1980s, which were supported by the World Bank in countries including Côte d'Ivoire, Ghana, Jamaica, and Peru, have also been used to do research on the elderly (Deaton and Paxson, 1990, who use data from Côte d'Ivoire; Strauss et al., 1992, who use data from Jamaica).

Censuses

Data from censuses have not been so widely used in studies of population aging in part because of restricted public access to such data. Public-use data tapes are generally not available from developing countries. To the extent that researchers must rely on published data sets, analysis has been limited because of the lack of age detail above age 65 in many of the

published census tabulations (see Martin, 1987). Hermalin and Christenson (1992) have illustrated how census data with older-age detail can be used to analyze transitions in the life course of the elderly and to project changes in the composition of future elderly populations. For example, they have investigated retirement transitions and projected future educational composition of the elderly, as well as the number of children ever born to future cohorts of elderly women.

Vital Statistics

Vital statistics data have also not been widely used in the study of population aging in developing countries. Of greatest interest, no doubt, would be data on numbers and causes of deaths. However, registration of deaths and certification of cause of death are relatively good only in Argentina, Chile, Costa Rica, Cuba, and Uruguay in Latin America; in Hong Kong and Singapore in Asia; and in no countries in Africa. In some countries, data from sample registration systems (e.g., India), disease surveillance systems (e.g., China), and population laboratories (e.g., Matlab in Bangladesh, see Rahman et al., 1992, for an application) can be used in lieu of vital registration data, but even so it has been estimated that only about half of the deaths in developing countries end up in WHO statistics on cause of death, a major source for cross-national research (Bulatao, 1993). Moreover, at least in Latin American populations, there is substantial exaggeration of age at older ages, so estimates of mortality based on these data may require adjustment (Dechter and Preston, 1991).

Ethnographic Studies and Other Qualitative Data Collection

As mentioned in the introduction, anthropologists appear to have been ahead of other social scientists in their focus on aging and the elderly in developing countries. Their interest in the topic continues today, as indicated by the majority of the papers published in the *Journal of Cross-Cultural Gerontology*, which was founded in 1986 and is managed out of the anthropology department of Case Western Reserve University. Given the dearth of studies on aging in Africa that are based on survey and census data, the fact that a substantial proportion of the ethnographic studies appear to focus on Africa helps fill a major gap.[16]

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[16]See especially the October 1992 issue of *Journal of Cross-Cultural Gerontology*, which focuses on gender, aging, and power in sub-Saharan Africa. Also see Keith (1992) for a recent review of anthropological research on family support of the elderly around the world. Less qualitative approaches to research on Africa are taken by Deaton and Paxson (1990) for Côte d'Ivoire; Adamchak et al. (1991) for Zimbabwe; and Apt (1992) for Ghana.

At least two cross-national comparative projects have attempted to combine both quantitative and qualitative data collection strategies. The 1987-1988 United Nations University study of social support systems for the elderly in Brazil, Egypt, India, Korea, Singapore, Thailand, and Zimbabwe used community surveys, focused interviews, and participant observation (Hashimoto, 1991). In the University of Michigan-based study of the elderly in the Philippines, Singapore, Taiwan, and Thailand, information from focus groups of elderly persons and of adult children is being used to supplement quantitative data drawn from censuses and surveys (Knodel et al., 1990, 1992b).

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Appendix Table Surveys of the Elderly in Developing Countries

Country	Survey Name	Sponsoring or Primary Organization	Survey Year	Coverage[a]
Cross-national				
Indonesia	Socioeconomic Consequences of the Ageing of the Population	Association of Southeast Asian Nations	1986	Java
Philippines			1984	Three provinces and Manila
Malaysia			1986	Three states
Thailand			1986	National
Singapore			1986	National
Philippines	Health and Social Aspects of Aging	WHO Regional Office for the Western Pacific	1984	Tagalog
Malaysia			1984	Peninsular
Korea (South)			1984	National
Fiji			1984	National
Bahrain		WHO Regional Office for the Eastern Mediterranean	1989	
Egypt			1989	
Jordan			1989	
Tunisia			1989	
Indonesia		WHO Regional Office for South East Asia	1990	Central Java
Korea (North)			1990	Three regions
Myanmar			1990	Ethnic Bamar
Sri Lanka			1990	Western Province
Thailand			1990	Bangkok + four regions
Trinidad and Tobago	Profiles of the Elderly	Pan American Health Organization	c. 1985	National
Guyana			1984	Capital
Argentina			1985-1986	Urban
Costa Rica			1984	National
Chile			1984-1985	Urban
Barbados				
Brazil				
Colombia				
Cuba				
El Salvador				
Honduras				
Jamaica				
Venezuela				

Number of Respondents[a]	Age Group, Comments (especially if sample nonrandom)
4,500 households	Households stratified by type of economic activity Household had respondent aged 55 or older
1,321	60+; provinces selected on basis of major language
1,254	55+; based on census frame; random
3,246	60+; also 2,111 persons 15-44 re attitudes toward elderly
1,013	60+; Two companion surveys: (1) elderly in institutions; (2) elderly sick in community
830	60+; Tagalog region = 10 provinces and metropolitan Manila
1,001	60+; purposive sample
977	60+
769	60+; purposive sample
	60+
	60+
	60+
	60+
1,202	60+
1,150	60+
1,221	60+
1,200	60+
1,199	60+
875	60+
542	60+; Georgetown and its suburbs
3,058	60+; urban areas of 500,000+
1,154	60+
1,562	60+; urban areas of 100,000+

continued on next page

Appendix Table (continued)

Country	Survey Name	Sponsoring or Primary Organization	Survey Year	Coverage[a]
China	Emerging Issues of the Aging of	U.N. Economic and Social	1987	Four localities
Korea (South)	Population in	Commission for	???	Four areas
Malaysia	Selected ESCAP[b]	Asia and Pacific	1987	Melaka
Sri Lanka	Countries		1987	National
Chile	Aging	WHO	1992	Mixed
Nigeria	and Dementia		1992	
Costa Rica	Determinants of	WHO	c. 1993	
Indonesia	Healthy Aging[c]		c. 1993	
Israel			c. 1993	
Jamaica			c. 1993	
Thailand			c. 1993	
Zimbabwe			c. 1993	
Brazil	Osteoporosis[c]	WHO	c. 1993	
China			c. 1993	
Hong Kong			c. 1993	
Jamaica			c. 1993	
Nigeria			c. 1993	
National				
Barbados	Social and Economic Circumstances of the Elderly	University of the West Indies	1982	National
China	Survey of Aged Population	Five University Population Institutes	1986	Five locales
China	Survey of the Aged	CASS Population Institute[d]	1987	National
China	Cognitive Impairment	University of Illinois	c. 1988	Shanghai
China	Support Systems for the Elderly	China Research Center on Aging	1991	12 areas
Hong Kong	Health Survey of the Elderly	University of Hong Kong	1989	National

Number of Respondents[a]	Age Group, Comments (especially if sample nonrandom)
541	60+; purposive; two localities in Jilin Province, one in Shanghai City, one in Shanghai County
798	60+; three urban and one rural area; 91 intensive interviews
372	60+; random sample in West Peninsular state of Melaka
317	60+; purposive
5,000	55+; longitudinal; four developed countries also in survey;
5,000	studies now in the field
	55+; longitudinal; sample sizes and strategies still to be determined; country list includes Italy
5,000	50+; to include case-control, cross-sectional, and
5,000	longitudinal studies
5,000	
5,000	
5,000	
414	65+
NA	One per 1,000 sample survey on aged population (presumably 60+ in localities where universities are located: Shanghai, Hubei, Jilin, Liaoning, Beijing).
36,755	60+; Tibet excluded
5,055	55+; noninstitutional population
20,000	Data not yet released
1,172	55+; self-reported status; includes life-style and social support measures

continued on next page

Appendix Table (continued)

Country	Survey Name	Sponsoring or Primary Organization	Survey Year	Coverage[a]
India	Survey of the Elderly	Registrar General	c. 1990	National
Korea (South)	Korean Elderly Survey	Korean Institute for Population and Health	1984	National
Morocco	Aged Persons in Morocco	Ministère de L'Artisanat et Affaires Sociales	c. 1984	Seven zones
South Africa	Multidimensional Survey of Elderly South Africans	Human Sciences Research Council, University of Pretoria	1990-1991	National
Taiwan	Youth and the Old Survey	Directorate-General of Budget Accounting and Statistics	1988	NA
Taiwan		Taiwan Provincial Institute of Family Planning and University of Michigan	1989	National

NOTE: Other recent surveys in developing countries that cover other age groups in addition to the elderly, but that are well suited to the study of the elderly include the Malaysia Family Life Survey II and the Indonesia Family Life Survey, both conducted by RAND.

[a]NA = Not available.
[b]ESCAP = United Nations Economic and Social Commission for Asia and the Pacific.
[c]In planning stages.
[d]CASS = Chinese Academy of Social Sciences.

Number of Respondents[a]	Age Group, Comments (especially if sample nonrandom)
NA	60+; results not yet released
3,704	60+; focus on living arrangements and caretaker attitudes
899	58+; sample based on occupation; women underrepresented
4,365	60+
NA	All ages
4,049	60+

Appendix:
Letter to Richard Suzman of the National Institute of Aging from the Committee on Population, March 2, 1993

NATIONAL RESEARCH COUNCIL
COMMISSION ON BEHAVIORAL AND SOCIAL SCIENCES AND EDUCATION
2101 Constitution Avenue Washington, D.C. 20418

COMMITTEE ON POPULATION

[illegible]

March 2, 1993

Dr. Richard Suzman
Director
Office of the Demography of Aging
National Institute on Aging
Gateway Building, Rm. 2C-234
7201 Wisconsin Avenue
Bethesda, MD 20892

Dear Dr. Suzman:

This letter responds to your request for the results of the Committee on Population's deliberations about future directions in research on the demography of aging.

As you know, with your support the Committee on Population held a workshop on the demography of aging on December 10-11, 1992. The purposes of the workshop were to examine the scope of the field of the demography of aging, highlight its contributions to policy formulation, summarize principal research findings, and identify areas for future research.

The workshop resulted from a planning process that began with an informal meeting of committee members and other experts in January 1992. At that meeting, participants were asked to identify specific topics and the best researchers in the area of the demography of aging, which is an emerging subfield of both demography and gerontology. Following this meeting, the committee discussed and amended the list of topics and researchers, and we then decided to commission eight review papers for presentation at a December 1992 workshop. (A list of the papers, authors, and paper discussants is appended.) The workshop was attended by the paper authors, discussants, and other researchers and experts from federal agencies.

A volume of the papers, revised to reflect the discussion and suggestions made at the workshop, will be published in late 1993. However, given your need to receive much sooner a summary of prevailing directions for future research and data collection, the committee has identified research needs and opportunities, based on the workshop papers and discussion and its own deliberations. The published papers will provide a more detailed review of research findings to date and their relevance for policy development, as well as discussion of the strategies for research and data collection outlined below.

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Population Projections and Medical Demography

There is considerable debate about the future course of old-age mortality and life expectancy. Improved cost-, race-, and cause-specific data on deaths at older ages are essential for refining mortality and population projections, which can help gauge the future demand that will be placed on Social Security and other programs that support the elderly. There also needs to be a better understanding of how publicly funded universal health insurance programs, such as Medicare, and systems in other countries, e.g., Canada, have affected mortality trends. Both cross national comparisons or program effects and analyses of health surveys linked with administrative data sources from Medicare and Medicaid could provide valuable insights.

As populations age and life expectancy at older ages increases, there is concern about the relationship between declining mortality and the disability profiles of survivors. Evidence to support the hypothesis of convergence to a biologic limit to life is weak, but there remains considerable uncertainty about the implications of increases in the length of life for a wide range of quality-of-life issues. In order to establish national priorities in health care, it is essential to characterize the effects of changing mortality patterns on the health of the American population. Demographic models that are biologically naive are not useful either for forecasting health changes in a rapidly aging population or for measuring the health burden of this population. Of particular importance are efforts to integrate data from administrative sources (e.g., the Medicare billing files) with those on behavioral and biological variables from longitudinal surveys. Such complex data systems are necessary to characterize both the trajectory of health transitions in the elder population and the costs associated with the risk and distribution of disease states within the population. Improved understanding of these issues is a cornerstone not only for health policy development, but also for analysis of the economic and social well-being of the elderly.

Socioeconomic Status, Health, and Mortality

Although the matching of data from the National Death Index with data from the 1973-1985 Current Population Surveys has provided a rich new source of information on differences in mortality by education in the United States, understanding of how differences in socioeconomic status affect health outcomes is still rudimentary. Research designs that incorporate more information about risk factors, access to health care, social networks, and health histories are badly needed. In particular, there is a need for more research on how access to health care, measured both quantitatively and qualitatively, is associated with socioeconomic status and how they jointly affect mortality and morbidity. In these analyses, attention must be given to the fact that status, especially as measured by income, may be both a consequence and a determinant of health. Greater attention also needs to be paid to the causal role of social psychological variables and to the integration of such variables into economic models.

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There is a need to move beyond cross-sectional approaches and new cohort analysis, recognizing that individuals are not mere mixes of cross sectional characteristics but also have variable histories, exposures to risk, and motivations. Of particular interest is how childhood health and economic circumstances contribute to differences in adult health. Better knowledge of the source of socioeconomic differentials in mortality would also help to inform population projections.

Retirement and Labor Force Behavior

The Health and Retirement Survey (HRS) will provide excellent data on both health and work and allow multiperiod analysis of the behavior and circumstances of older Americans as they approach retirement. Matched data from Social Security records and information from firm retirement and health benefit plans will facilitate consideration of the full range of factors influencing retirement decisions. This NIA-supported data collection effort also will provide much needed data on minorities and women. Of particular interest are those data that will support the modeling of joint decision making by husbands and wives. It is critical to continue this most important endeavor, so that the initial sample is followed over time and that appropriate weighting of the sample is possible.

To understand the influence of different policy environments, it is hoped that international data sets comparable to HRS will become available. There is also a need for more attention to research on the demand for and accommodation of older and disabled workers, which requires research designs that go beyond surveys of older persons.

Income and Wealth

The new HRS, as well as the survey on the Asset and Health Dynamics of the Oldest-Old (AHEAD), will strengthen analysts' ability to measure, explain, and forecast the economic status of the elderly. Data on women and the oldest-old will be especially useful in tracking the changing resources of single, aged individuals, as well as aged couples, and in identifying pathways into old-age poverty. New research based on these data sets should yield a better understanding of precautionary savings behavior and of how older people draw down their assets in relation to changing health and health care expenditures. Continued funding of these data collection efforts will be critical to understanding how the circumstances of the elderly are changing. Because of likely changes in Social Security and health care benefits, longitudinal data collection, through projects such as HRS and AHEAD, can provide opportunities for assessing in a quasi-experimental fashion how the policy environment affects individuals' behavior and decision making.

The HRS and AHEAD data bases will provide useful information on income and asset dynamics, but they will allow only indirect estimation of consumption by older people. Providing estimates of the needs of the elderly

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gy/ measures of financial distress is an important goal. In particular, research to establish appropriate consumption equivalence scales for single persons relative to couples is needed.

Family Structure and Support

Families are the most important source of professional assistance to the elderly, and research on family support must take into consideration the characteristics and situations of both the elderly and their kin, whose decisions determine support outcomes. Additional information on family networks, both active and available, needs to be included in survey instruments; the HRS and AHEAD surveys are exceptional in their attention to such detail. Little is known about ethnic differences in family support, and research is needed to assess the effects of changing female labor force participation and the effects of divorce and remarriage on the living arrangements and family support networks of the elderly. A better understanding is also needed of transitions in living arrangements in relation to specific functional limitations and of the consequences of alternative living arrangements for the well-being of the family members involved.

A key factor in family support is the proximity of kin, and more research is needed on the migration decisions of family members in relation to the current and anticipated needs of the elderly and on the role of proximity in the provision of support. To better understand family structure and support, consideration should be given to making entire kinship networks an integral part of sample design.

Public and Private Transfers and Intergenerational Economic Relations

Support for dependent older people can be provided through public programs and private markets, as well as by families, and it can take the form of both financial assistance and labor. Is one type of support more efficient than another? Does the provision of one type discourage the provision of others?

In the case of financial assistance, better understanding is needed of how transfers are related to income and wealth. For family transfers, we need to know more about the motivation for transfers, whether transfers are made directly or indirectly through purchases of services, and the role of both bequests during life and bequests. In both the public and the private domains, greater attention to issues of cohort equity and ethnic differentials is required in the analysis of intergenerational transfers.

The interaction of various sources of support with respect to changing needs to be addressed in longitudinal models that include information on changing needs of the elderly and on both family and nonfamily providers of assistance, such as the pool of potential providers, their resources, and the price of services. Research should focus on the intensity, frequency, and

duration of caregiving and other forms of assistance, not simply on their existence. Results can provide input to microsimulation models designed to forecast market and family services available to future cohorts of the elderly. As mentioned above, the AHEAD survey of the oldest-old will make considerable progress in accomplishing networks of potential family providers, but because of confidentiality concerns, there as yet is no means of linking these data to detailed area resource files on the supply or price of nonfamily services.

Migration and Population Distribution

For more research is needed on geographic variations in the concentrations of the elderly, particularly the oldest-old, and the demand for and cost of services provided through state and local governments. Also, international migration is changing the demographic profile of the United States. In the short term, the immigrants of Asians, Hispanics, and others is improving the ratio of workers to retirees, but very little is known about the differences in the dynamics of aging across foreign-born groups. Detailed analyses of each older and younger cohorts of migrants are important, and both need to take selectivity of migration into account.

Developing Countries

The dramatic demographic and socioeconomic changes occurring in many developing countries provide a unique opportunity to study how societies, institutions, and individuals adapt to aging populations. Study of these processes can provide insight into the influences of culture and ethnicity, the changing role of family support, particular effects on low-income populations, and the consequences of new policies and programs. For Asia at least, there is a growing baseline of information on today's elderly, but much remains to be done in collecting data on and analyzing the interrelations among physical, economic, and social well-being and in understanding how the lives of the future elderly will differ from those of today. Prospective studies would be especially helpful. Although surveys of the elderly in Latin America have been conducted, the data have not generally been made available for analysis to the broad research community. In both regions, greater use might be made of existing survey and census data that do not focus on the elderly alone but do provide sufficient age detail. Moreover, it is important not to study the elderly in isolation from other age groups. In the development of new survey instruments, particular attention needs to be paid to cross-national comparability and how meaning and interpretation of questions and responses may vary. A better understanding of the daily activities of the elderly and of family structure and roles is needed.

We hope that this summary of the most promising directions for research and data collection in the area of the demography of aging will be of assistance to the National Institutes on Aging. We believe that the workshop was successful in achieving its goals, and we appreciate the institute's

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March 2, 1991
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willingness to support it and the Committee on Population's other activities on aging. We will of course provide you with copies of the workshop volume upon publication.

Sincerely,

Samuel H. Preston
Chair

Enclosures
Committee on Population roster
List of workshop papers, authors, and discussants