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Interventions to Improve Late Life

Linda G. Martin [Senior Fellow, RAND Corporation, and Adjunct Professor]

Department of Population, Family and Reproductive Health, Bloomberg School of Public Health, Johns Hopkins University

At the time of publication of the 1994 National Research Council's *Demography of Aging*, the expert contributors to that volume were hungry for more information (Martin and Preston 1994). Over the last 15 years, population researchers focusing on aging have made great strides in describing the status and experiences of older people, especially in the United States, identifying factors influencing those outcomes, and understanding the societal consequences of aging. A particularly important development has been the growth in the availability of survey data. For example, at the time of writing the 1994 book, the Health and Retirement Study (HRS) had only recently started. Another key development has been the growth of interdisciplinarity in the study of the demography of aging. Certainly the US National Institute on Aging's fostering of aging centers has been critical. But individual scholars also have recognized that they can learn from other disciplines. Most social scientists have learned some biology, and many economists in particular have learned some psychology. Overall, there has been an enormous increase in our knowledge about the older population and the process of population aging.

Of course, there is much more to be done in the description and modeling of aging. To highlight just a few areas, we need to know more about individual trajectories in outcomes over multiple periods, trends in outcomes at the population level over time and their explanations, disparities in outcomes, and cross-national comparisons. At the same time, we need to begin to move on.

In other domains of population research (e.g., fertility), besides describing the demographic process and investigating both the determinants and the consequences of the phenomenon, a major focus has been the design and evaluation of policies and programs that may influence determinants and mitigate consequences. But thus far in the demography of aging in the United States, except perhaps for work on Social Security, policy and program development has not been a major focus of population researchers.

Albert Hermalin made this point in his 1993 presidential address at the annual meeting of the Population Association of America (Hermalin 1993). In his intriguingly titled talk, "Fertility and family planning among the elderly in Taiwan," he highlighted the integral role of family planning program research in the broader study of fertility and argued for the considerable potential of population experts to evaluate programs designed for the elderly.

In the following commentary, I build on Hermalin's suggestion by illustrating the potential role of demographers in working on interventions in two domains critical for the older population: saving and disability. My focus is on the United States, where as a result of analysis of the HRS and other surveys, we now know much more about the dimensions of these issues among the elderly, and we can potentially use that information to design interventions that improve outcomes.

Saving

There is debate about whether people in the United States are saving enough for retirement (Skinner 2007), which is often defined as savings sufficient to maintain a pre-retirement standard of living (for better or worse). The answer depends in part on the age group and time period being examined (Munnell, Webb, and Golub-Sass 2007). But there is little doubt that some subgroups in the United States, for example women, minorities, the unmarried, and the less educated, are at greater risk of falling short (Haveman et al. 2007). The proportion not adequately saving will likely increase, all things equal, given declining Social Security replacement rates, lower real interest rates, the shift from defined-benefit to defined-contribution pension plans, and the growth of health care costs (Munnell, Webb, and Golub-Sass 2007; Skinner 2007). Indeed, many people in their 50s and 60s report that they wish they had saved more (Hurd and Zissimopoulos 2003).

The standard economic theory of saving assumes that, first, people estimate an optimal lifetime consumption path and then, second, have the willpower to follow the plan by saving and spending accordingly (Benartzi and Thaler 2007). In reality, neither assumption holds. And, as in other aspects of human behavior (e.g., use of contraception), people are often poorly informed and behave irrationally about saving. Recognizing that models of rational choice do not necessarily apply, a new branch of economics called behavioral economics has arisen in an attempt to rationally explain such irrational behaviors as suboptimal saving and to design interventions to make people's behaviors more optimal. This work borrows heavily from the insights of psychology.

Table 1 highlights some of the problematic elements of saving behavior and provides some approaches that behavioral economists have suggested to address them. Many Americans are remarkably uninformed about their own assets, particularly those represented by public and private pensions. Responses to the HRS can be compared with pension plan descriptions, as well as earnings histories from the Social Security Administration. Focusing on the latter, Gustman and Steinmeier (2005) found that almost half of 1992 HRS respondents, who were aged 51 to 61, said that they did not know what level of Social Security benefits to expect. Indeed, only about a quarter of respondents were able to report their expected benefits within 75 to 125 percent of what could be expected on the basis of their Social Security earnings records.

Beyond lack of knowledge of one's assets, general illiteracy about investment instruments (e.g., stocks, bonds) may be a barrier to more optimal saving. For example, even when employers offer to match employee contributions to work-based defined-contribution pensions (401(k)s), many employees decline to participate. The reasons are many, but one

element is a lack of understanding of the investment options (Choi, Laibson, and Madrian 2005). Thus, indirect non-pecuniary transactions costs appear to be associated with participating. One remedy is to provide more information and counseling. Not all educational efforts change saving behavior, but some do (Lusardi 2004).

Another symptom of the saving problem is greatly overvaluing the present in comparison to the future, or what economists call hyperbolic discounting (Laibson 1997). Such discounting may be related to lack of self-control, which may be ameliorated by pre-commitments. Thus, one strategy for encouraging saving is to ask for commitment to a savings program that starts in the future, such as next year—not today. Lack of self-control also may be manifested in procrastination (O'Donoghue and Rubin 1999). To overcome procrastination in saving, increasing numbers of employers are offering optout, rather than opt-in, savings plans. That is, all employees automatically participate in the program unless they take action not to do so.

Once employees begin to participate in a work-based savings program, however, considerable inertia may ensue, that is, they may rarely change the amounts that they save or the allocation of their savings to various financial instruments. A classic study of TIAA-CREF participants in 1987, at a time when there were only two investment options, found that the median of the lifetime number of reallocations of assets was zero (Samuelson and Zeckhauser 1988). Such inertia may reflect in part so-called regret avoidance (Kahneman and Tversky 1982) in which a loss that stems from action rather than inaction is more greatly regretted. Thus, in the design of a savings program it may be important to start with a strong default plan, in terms of both amount and diversification, since participants may be reluctant to make subsequent changes.

More generally, suboptimal saving behavior may reflect loss aversion. Tversky and Kahneman (1992) have noted that people seem to care roughly twice as much about losses as they do about gains. Accordingly, successful experiments to increase saving include programs that raise amounts saved only after a salary increase (Thaler and Benartzi 2004) or a tax refund (Duflo et al. 2005).

The success rate of experiments designed using these insights is by no means 100 percent, but is not negligible. For example, in a study reported by Thaler and Benartzi (2004), participants' average saving rates over a 40-month period increased from 3.5 percent to 13.6 percent of earnings. Moreover, a broad array of employers are increasingly incorporating the design elements discussed here in their own programs.

This application of behavioral economics and what is now being called “libertarian paternalism” or “benign paternalism” may be useful for many other choices that older people have to make—for example, helping people make more-optimal decisions about Medicare Part D drug plans, health insurance plans more generally, health treatments, and retirement itself.

It is also striking that many of the insights into saving behavior are ones with which family planning researchers have long been familiar. They have dealt with the irrationality surrounding sex, they understand the need for information and education, they know that

noncoital contraceptive methods and thus pre-commitment to contracepting have advantages, and so on. More generally, such insights have been garnered through interdisciplinary collaboration and careful observation of real-world behavior, two proclivities that population researchers have long demonstrated.

Disability

There is a general consensus that late-life disability in the United States has declined in recent decades, although details of the trend (e.g., pace, continuity) depend on the specific measures of disability used and periods observed (Cutler 2001; Freedman, Martin, and Schoeni 2002; Freedman et al. 2004; Manton, Gu, and Lamb 2006). Shown in Figure 1 are disability prevalence rates from the 1984 to 2006 National Health Interview Survey for the 70-and-over population. The disability definition used is needing help with instrumental activities of daily living (IADLs), such as preparing meals or shopping, and with activities of daily living (ADLs), such as eating or bathing. Over this 23-year period, the proportion needing help with either type of activity declined from 21 percent to 15 percent.

However, the aging of the baby boom cohort and growth in numbers of people at older ages (and thus at higher risk for disability) may lead to increases in the *number* of people with disability. The outcome will depend on future trends in prevalence rates (Waidmann and Liu 2000). Moreover, the decline in disability rates thus far has not occurred for all groups. Schoeni and colleagues (2005) found that not only had disparities by education in ADL disability widened from 1982 to 2002, but also the absolute prevalence of ADL disability increased for those with fewer than eight years of education. So besides trying to sustain the overall downward trend in disability rates into the future, there is interest in reaching those groups who have not yet benefited.

A first step might be to understand why overall disability has declined in the first place. Unfortunately, that is more easily said than done. Many factors contribute to disability, which is not just a matter of suboptimal health. Figure 2 shows a version of the disablement process based on conceptualizations of Nagi (1965), Pope and Tarlov (1991), and Verbrugge and Jette (1994). In this simplified view of reality, conditions and impairments (e.g., heart disease, Alzheimer's disease, and cataracts) lead to limitations in physical, cognitive, and sensory functioning (say, ability to climb stairs, remember words, or see). These in turn may lead to disability—difficulty with an activity in a specific environment, such as eating, dressing, shopping, or cooking. For example, whether arthritis (a condition) and difficulty in stooping (a physical functional limitation) keep one from bathing (a disability) depends on whether a bathtub or a walk-in shower is used. So the environment matters. Moreover, disability depends on the accommodations that are put into place—assistive technology (e.g., canes, hearing aids), personal help, or changes in behavior. For bathing, options include using a grab bar in the bathtub, having someone stand by to prevent a fall, or bathing less frequently or switching to sponge baths.

So all these factors—health, environment, and accommodations—influence disability and could be behind the recent disability trends. Moreover, this disablement process does not occur in a vacuum. Changes in early-life, mid-life, or late-life characteristics and

experiences of older people may have contributed to the trends in late-life disability. For example, changes over time in health care, changes in health behaviors, changes in the social and economic context in which people have lived since birth, and changes in environmental exposures where people have lived, worked, or played also could be influencing trends in disability.

Information on trends in all these factors is not available, certainly not all in one data set, but Schoeni, Freedman, and Martin (2008) recently published a review of literature and new analyses that attempt to identify some likely explanations for the decline of disability in recent decades.¹ They organized their search by placing the disablement process of Figure 2 in a life-course framework. Working backwards from disabilities to functional limitations and conditions/impairments, they concluded that some of the disability decline could indeed be attributed to the greater use of assistive technologies, as well as use of mainstream technologies (e.g., microwave ovens, direct bank deposit) (Freedman, Agree, Martin, and Cornman 2006; Spillman 2004).

Likely more important, although they could not be modeled jointly with changes in assistive technology, were changes in heart and circulatory conditions, vision problems, and musculoskeletal conditions as causes of disability. The prevalences of many conditions have increased in recent decades, but their disabling effects appear to be declining (Freedman, Schoeni, Martin, and Cornman 2007). These improvements may well be linked to advances in diagnosis as well as treatment. For example, for the three groups of conditions just mentioned, important advances in recent decades have involved both surgery and pharmaceutical treatment.

Schoeni, Freedman, and Martin also found that changes in sociodemographic factors played a role in the decline in old-age disability, with higher levels of education accounting for as much as half of the improvement. More work is needed to identify the pathways through which education has influenced disability trends—for example, greater willingness to use assistive technology, healthier lifestyles, economic resources and access to health care throughout life, ability to navigate the health care system, adherence to doctor's orders. It would be especially helpful to know whether certain aspects of education, for example health literacy, could be supplemented in later life. Changes in other sociodemographic factors that have been associated with past disability trends are less modifiable in the short run, including marital status and, of course, childhood health.

Moreover, looking to the future for some of these factors, there may not be much more room for improvement. For example, the effects of the major increase in education after World War II have already been reflected in the older age groups. Figure 3 shows that the proportion of the 65-and-older population with 8 or fewer years of education declined from 40 percent in 1982 to below 15 percent by 2004, and, as noted earlier, those with less education appear to be increasingly selected for disability. Conversely, major increases have occurred in the proportions with high school or greater than high school education. These

¹Schoeni, Freedman, and Martin (2008) also ruled out some possible explanations of the decline in disability, namely changes in cancer, diabetes, lung disease, mental conditions, and conditions of the nervous system; smoking behavior; the population's racial/ethnic composition; and the proportion of foreign born.

are very large changes over a matter of two decades, and the pace of progress will taper off (Freedman and Martin 1999).

For other explanations of the past disability decline, considerable room for future improvement remains. In the case of hypertension, an important component of cardiovascular disease, there is still much work to be done in improving individual awareness, treatment, and control. Table 2 shows that from 1976 to 2000, progress took place in each of the three factors; however, the ultimate goal of 100 percent control of hypertension remains a distant goal.

Rather than delving further into specifics of a particular condition or other factor with the potential to influence disability trends in the future, I focus here more broadly on how demographers might contribute to designing and evaluating interventions to reduce disability. One excellent recent example of the application of a demographic perspective to this question is a paper in the *Milbank Quarterly*, whose authors include two from the 1994 NRC volume, Vicki Freedman and Douglas Wolf (Freedman et al. 2006). The paper highlighted four considerations in identifying possible interventions:

1. Size and selectivity of the target population.
2. Relationship between the risk factor and the risk of disability, including onset, progression, and recovery, as well as prevalence.
3. Effect of the intervention on risk factors, which is a function of efficacy, adherence to protocols in practice, and representativeness of study populations used to determine efficacy.
4. Influence of the intervention on length of life and competing risks.

Using this framework, Freedman and colleagues (Freedman et al. 2006) reviewed three types of interventions: efforts to increase physical activity, depression screening and treatment programs, and multifactor fall-prevention programs. They concluded that the last holds the most promise in the short run, but they were unable to fully account for the fourth consideration above because of limited evidence.

Population researchers certainly could be helpful in filling this gap and more broadly in designing and evaluating interventions to improve the individual well-being of older people and potentially to mitigate the societal costs of population aging. Their comparative advantages for such work include their strong track record in describing the state and experiences of the older population, their propensity for multisectoral and multidisciplinary approaches, their sensitivity to issues of exposure and selection, and their experience with interventions in other domains. The last is especially strong in less developed countries and includes, in addition to work on family planning, efforts in the areas of child health, HIV, and microfinance. Finally, a very important strength that population researchers would bring to work on interventions for older populations is their penchant for and skill in measuring and understanding real-world behavior, including its elements of irrationality.

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FIGURE 1.
Percentage of community-dwelling population 70 and over needing help, United States,
1984–2006
SOURCE: National Health Interview Survey.

FIGURE 2.
The disablement process

FIGURE 3.

Educational attainment, population 65 and over, United States, 1982, 1993, and 2004

SOURCE: Current Population Survey.

TABLE 1

Designing programs to increase saving using insights from behavioral economics

Aspect of suboptimal saving	Possible remedy
Financial illiteracy	Information, education, counseling
Hyperbolic discounting of the future	Deferred commitment to saving
Procrastination	Opt-out design
Inertia	Strong default plan
Loss aversion	Activation upon receipt of salary increase or tax refund

SOURCES: Thaler and Benartzi 2004; Choi, Laibson, and Madrian 2005.

TABLE 2

Trends in awareness, treatment, and control of hypertension from the US National Health and Nutrition Examination Survey^a (in percent)

	1976–80	1988–91	1991–94	1999–2000
Awareness	51	73	68	70
Treatment	31	55	54	59
Control	10	29	27	34

^a Among those ages 18 to 74 with hypertension or taking medication.

SOURCE: Chobanian et al. 2003.