



# Dædalus

Journal of the American Academy of Arts & Sciences

Spring 2015

## Successful Aging of Societies

John W. Rowe

S. Jay Olshansky

Robert A. Hummer  
& Mark D. Hayward

Frank F. Furstenberg,  
Caroline Sten Hartnett,  
Martin Kohli  
& Julie M. Zissimopoulos

Lisa F. Berkman,  
Axel Boersch-Supan  
& Mauricio Avendano

Dawn C. Carr,  
Linda P. Fried  
& John W. Rowe

S. Jay Olshansky,  
Dana P. Goldman  
& John W. Rowe

David E. Bloom,  
David Canning  
& Alyssa Lubet

Julie M. Zissimopoulos,  
Dana P. Goldman,  
S. Jay Olshansky,  
John Rother  
& John W. Rowe

Successful Aging of Societies 5

The Demographic Transformation  
of America 13

Hispanic Older Adult Health & Longevity  
in the United States: Current Patterns &  
Concerns for the Future 20

The Future of Intergenerational Relations  
in Aging Societies 31

Labor-Force Participation, Policies & Practices  
in an Aging America: Adaptation Essential  
for a Healthy & Resilient Population 41

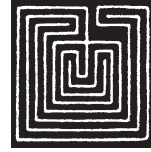
Productivity & Engagement in an Aging  
America: The Role of Volunteerism 55

Resetting Social Security 68

Global Population Aging: Facts, Challenges,  
Solutions & Perspectives 80

Individual & Social Strategies to Mitigate  
the Risks & Expand Opportunities  
of an Aging America 93





*Inside front cover*: Indian photographer G. B. Mukherji's award-winning photograph "Tibetan Grandfather" portrays how tight intergenerational family bonds can facilitate communal security and cohesion. Although Tibetans living in exile in India face an uncertain future, their devotion to family serves as a source of strength and hope. © G. B. Mukherji/Generations United.

John W. Rowe, Guest Editor

Phyllis S. Bendell, Managing Editor and Director of Publications

Peter Walton, Assistant Editor

Emma Goldhammer, Senior Editorial Assistant

*Committee on Studies and Publications*

John Mark Hansen and Jerrold Meinwald, *Cochairs*;

Denis Donoghue, Gerald Early, Carol Gluck, Sibyl Golden,

Linda Greenhouse, John Hildebrand, Jerome Kagan, Philip Khoury,

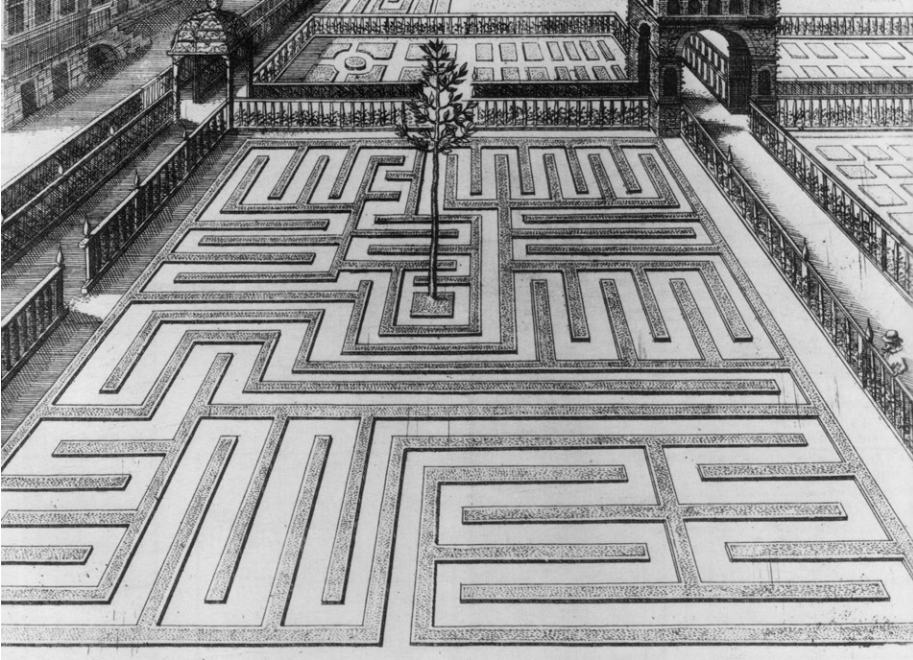
Arthur Kleinman, Steven Marcus, Rose McDermott, Eric Sundquist,

Jonathan F. Fanton (*ex officio*), Don M. Randel (*ex officio*), Diane P. Wood (*ex officio*)

*Dædalus* is designed by Alvin Eisenman.

# Dædalus

Journal of the American Academy of Arts & Sciences



Design for the hedge maze is by Johan Vredeman de Vries, from *Hortorum viridariumque elegantes & multiplices formae: ad architectonicae artis normam affabre delineatae* (Cologne, 1615).

Dædalus was founded in 1955 and established as a quarterly in 1958. The journal's namesake was renowned in ancient Greece as an inventor, scientist, and unriddler of riddles. Its emblem, a maze seen from above, symbolizes the aspiration of its founders to "lift each of us above his cell in the labyrinth of learning in order that he may see the entire structure as if from above, where each separate part loses its comfortable separateness."

The American Academy of Arts & Sciences, like its journal, brings together distinguished individuals from every field of human endeavor. It was chartered in 1780 as a forum "to cultivate every art and science which may tend to advance the interest, honour, dignity, and happiness of a free, independent, and virtuous people." Now in its third century, the Academy, with its nearly five thousand elected members, continues to provide intellectual leadership to meet the critical challenges facing our world.

*Dædalus* Spring 2015  
Issued as Volume 144, Number 2

© 2015 by the American Academy  
of Arts & Sciences

Editorial offices: *Dædalus*, American Academy of Arts & Sciences, 136 Irving Street, Cambridge MA 02138. Phone: 617 576 5085. Fax: 617 576 5088. Email: [daedalus@amacad.org](mailto:daedalus@amacad.org).

Library of Congress Catalog No. 12-30299.

*Dædalus* publishes by invitation only and assumes no responsibility for unsolicited manuscripts. The views expressed are those of the author of each article, and not necessarily of the American Academy of Arts & Sciences.

*Dædalus* (ISSN 0011-5266; E-ISSN 1548-6192) is published quarterly (winter, spring, summer, fall) by The MIT Press, One Rogers Street, Cambridge MA 02142-1209, for the American Academy of Arts & Sciences. An electronic full-text version of *Dædalus* is available from The MIT Press. Subscription and address changes should be addressed to MIT Press Journals Customer Service, One Rogers Street, Cambridge MA 02142-1209. Phone: 617 253 2889; U.S./Canada 800 207 8354. Fax: 617 577 1545. Email: [journals-cs@mit.edu](mailto:journals-cs@mit.edu).

Printed in the United States of America by Cadmus Professional Communications, Science Press Division, 300 West Chestnut Street, Ephrata PA 17522.

Newsstand distribution by Ingram Periodicals Inc., 18 Ingram Blvd., La Vergne TN 37086.

Postmaster: Send address changes to *Dædalus*, One Rogers Street, Cambridge MA 02142-1209. Periodicals postage paid at Boston MA and at additional mailing offices.

The typeface is Cycles, designed by Sumner Stone at the Stone Type Foundry of Guinda CA. Each size of Cycles has been separately designed in the tradition of metal types.

Subscription rates: Electronic only for non-member individuals – \$47; institutions – \$129. Canadians add 5% GST. Print and electronic for nonmember individuals – \$52; institutions – \$144. Canadians add 5% GST. Outside the United States and Canada add \$23 for postage and handling. Prices subject to change without notice. Institutional subscriptions are on a volume-year basis. All other subscriptions begin with the next available issue.

Single issues: \$14 for individuals; \$36 for institutions. Outside the United States and Canada add \$6 per issue for postage and handling. Prices subject to change without notice.

Claims for missing issues will be honored free of charge if made within three months of the publication date of the issue. Claims may be submitted to [journals-cs@mit.edu](mailto:journals-cs@mit.edu). Members of the American Academy please direct all questions and claims to [daedalus@amacad.org](mailto:daedalus@amacad.org).

Advertising and mailing-list inquiries may be addressed to Marketing Department, MIT Press Journals, One Rogers Street, Cambridge MA 02142-1209. Phone: 617 253 2866. Fax: 617 253 1709. Email: [journals-info@mit.edu](mailto:journals-info@mit.edu).

To request permission to photocopy or reproduce content from *Dædalus*, please complete the online request form at <http://www.mitpressjournals.org/page/permissionsForm.jsp>, or contact the Permissions Manager at MIT Press Journals, One Rogers Street, Cambridge MA 02142-1209. Fax: 617 253 1709. Email: [journals-rights@mit.edu](mailto:journals-rights@mit.edu).

Corporations and academic institutions with valid photocopying and/or digital licenses with the Copyright Clearance Center (CCC) may reproduce content from *Dædalus* under the terms of their license. Please go to [www.copyright.com](http://www.copyright.com); CCC, 222 Rosewood Drive, Danvers MA 01923.

# Successful Aging of Societies

*John W. Rowe*

*Abstract: As America ages, policy-makers' preoccupations with the future costs of Medicare and Social Security grow. But neglected by this focus are critically important and broader societal issues such as inter-generational relations within society and the family, rising inequality and lack of opportunity, productivity in late life (work or volunteering), and human capital development (lifelong education and skills training). Equally important, there is almost no acknowledgment of the substantial benefits and potential of an aging society. The MacArthur Foundation Research Network on an Aging Society offers policy options to address these issues and enhance the transition to a cohesive, productive, secure, and equitable aging society. Such a society will not only function effectively at the societal level but will provide a context that facilitates the capacity of individuals to age successfully. This volume comprises a set of papers, many of which are authored by members of the MacArthur Network, focusing on various aspects of the opportunities and challenges facing the United States while it passes through its current demographic transformation. This essay provides a general overview of the strategy the Network has used to address the various components of this broad subject.*

JOHN W. ROWE, a Fellow of the American Academy since 2005, is Professor at the Columbia University Mailman School of Public Health and Chair of the MacArthur Foundation Research Network on an Aging Society. He is the author of *Successful Aging* (with Robert L. Kahn, 1998) and was the Chair of the Institute of Medicine of the National Academies project the Future Health Care Workforce for Older Americans, which authored the report *Retooling for an Aging America: Building the Health Care Workforce* (2008).

Policy-makers and pundits are increasingly preoccupied with the negative economic effects of population aging on public health and pension entitlements, including Medicare and Social Security. The enormous unfunded future obligations of these programs, especially Medicare, tend to crowd out all other considerations. While these entitlement programs surely require modifications to ensure their sustainability and fairness, the current debate neglects other critically important issues related to the aging of America: future intergenerational relations and tensions; socioeconomic disparities and inequalities; changes in the structure and function of the family and its capacity to serve the traditional safety-net role; the impact of technology; and the critical importance of adaptation of core societal institutions, including education, work and retirement, housing, transportation, and even the design of the built environment (the supporting residential, recreational, commercial, and transportation infra-

structure). Equally important, there is almost no acknowledgment of the substantial positive contributions and potential productivity of an aging society.

Our goal is to develop and help implement policies that assure our transition to a cohesive, productive, secure, and equitable aging society. Failure to reach this goal will leave us with a society rife with intergenerational tensions – characterized by enormous gaps between the haves and the (increasingly less-educated) have-nots in quality of life and opportunity – and unable to provide needed goods and services for any of its members, especially a progressively older and more dependent population.

Gloomy though this scenario is, it is avoidable. We have time to put in place policies that will help strengthen the future workforce, increase productive engagement of older individuals, and enhance the capacity of families to support elders. Many such policies may, at the same time, lessen the burden on Social Security.

**H**ow did we get here? Given the advance warning decades ago that an age wave was coming, why has U.S. society been unable to prepare? Part of the failure to act lies with a set of archaic beliefs regarding the true nature of societal aging. Stakeholders failed to realistically assess challenges and envision opportunities and squandered the time available to formulate appropriate public policy. The denial continues: a recent Pew Research Center survey of global attitudes on aging shows that less than 26 percent of Americans feel that an aging society is a “major issue”! Only Indonesia and Egypt ranked lower on the survey.<sup>1</sup> Contributing to this denial are two pervasive and disabling myths about aging in the United States: the first myth concerns the impact of the baby boom; the second assumes that an aging society is only concerned with the elderly.

The influence of the baby boom on U.S. population aging is not temporary. Contrary to what the popular myth suggests, the passing of the baby boomers through the age structure will not terminate population aging or return us to the age structure of earlier periods of U.S. history. Rather, the demographic changes that have taken place over the last century are permanent. The age structure of all current and future populations either have already been transformed or are about to permanently shift, aggravated in part by the unusually large post–World War II birth cohort, but driven primarily by the combined effect of unprecedented increases in life expectancy and decreases in birth rates.

The second widely accepted myth is that an aging society is defined by and is solely concerned with its elders. This belief tends to pit generations against each other, overlooking the critical fact that the proper unit of analysis for policy-makers is not one specific age cohort but rather society as a whole. Policy-makers must consider the intergenerational effects of their policies and design solutions that benefit all of society, not just any one interest group.

Whereas countries in Western Europe aged ahead of the United States – reflecting their post–World War II baby bust and sustained reductions in total fertility below the replacement rate – the U.S. baby boom and higher fertility rate have combined to delay by a few decades the emergence of an aging society (defined here as one with more individuals over age sixty-five than are under age fifteen). For instance, the United States will not meet Germany’s current population age distribution until 2030. And Germany’s age structure has not caused ruin for its society or its economy. Thus, one would think that the experiences of the Western European countries, which are like the United States in many ways, would provide a clear road map for the policies the United States



needs to adopt for a successful transition to a productive and equitable aging society. But although the United States certainly has much to learn from looking at the experiences of older societies in Europe and even of Japan, differences across societies, cultures, and policy strategies may limit the utility of these comparisons, thus requiring the development of a uniquely American resolution to the issues presented by an aging society. In short, international comparisons can be valuable, but we must be cautious in generalizing experiences from other cultures.

The MacArthur Network has developed a set of closely related components that form the core of a theory of adaptation in an aging society. Although there is substantial overlap between these components, identifying each has value. To begin, a plan of action must first:

1) *Analyze society and its institutions.* The unit of analysis should be the society and the adaptation of its core institutions (such as family, work and retirement, education, media, religion, and civic affairs) and should encompass a multigenerational and intergenerational perspective, rather than focus solely on individuals of any one age group (elders or youth).

2) *Take a long-term view and consider structural lag.* The primary focus should be on adjusting and adapting core institutions – including education, work and retirement, health care, the design and function of housing and cities, and transportation – over the long term. It is important to keep in mind gerontologist Matilda Riley’s concept of structural lag: the recognition that most societal institutions are resistant to change and lag behind the shifting population of their members.<sup>2</sup>

3) *Adopt a life-course perspective.* U.S. society needs to adopt a life-course perspective that urges redistribution of life’s activities (such as education, work, retire-

ment, childrearing, and leisure) across the individual life span. Stakeholders need to detail the impact of socioeconomic, racial/ethnic, and gender differences on life-course trajectories and specify how they influence the effectiveness of various life-style related interventions.

4) *Consider benefits and risks.* Analysis of policy changes should consider both the possible benefits and risks to an aging society and should develop a unifying strategy that optimizes the balance between the two. As societies attempt to deal with the many challenges derived from demographic transition, too little attention is paid to its potential upside: the longevity dividend. This includes the previously unimaginable capability of older individuals to participate productively in society either through the workforce or through civic engagement. Older people have much to offer, including accrued knowledge, stability, unique creative capacities for synthetic problem solving, and increased ability to manage conflicts and consider the perspectives of other age groups. As a society, the United States should harness the life-stage-appropriate capabilities and goals of people of all ages, including older adults, to enhance societal benefits and reduce social stratification.

5) *Focus on human capital.* Policy-makers should focus on strategies that take advantage of all available talent in the population, employ social norms based on ability rather than chronological age, and transition from an emphasis on investment early in life to recognition that investments across the full life span can pay dividends. These payoffs will be individual, intergenerational, and societal (with both cross-over and spillover effects); and because they can be positive or negative, the outcomes must be monitored.

The MacArthur Network has developed three strategies for policy analysis. First,

it is critical to develop a toolbox of more sensitive and predictive economic and social indicators – including lifestyle dimensions – that permit accurate assessment of the current conditions and likely future trajectory of the population and society along the principal policy dimensions of interest. We need an alternative to the archaic old-age dependency ratio, which simply equates old age with dependency. Metrics that express the full array of benefits-to-costs relationships of a long-lived society, as well as alternatives for life-course trajectories, are also essential. This toolbox can be used to model possible outcomes of societal investment in factors that alter the impact of an aging population.

Second, in order to encourage the identification of effective solutions, researchers and policy-makers must present and analyze multiple policy options, rather than advocate single proposals, and should target multiple factors (such as the financial, social, life-course evolution, behavioral, and physical). Further, policy-makers should consider and employ both private and public involvement and federal and local approaches.

Finally, policy analysis must assess policy impacts. The MacArthur Network suggests adopting a strategy similar to that used to assess the environmental impact of a planned development. Specifically, Network members propose that all policies be evaluated for the effects they have within each generation, as well as on the interactions between generations (known as assessing intergenerational effects), in order to be most effective.

In addition, the MacArthur Network has identified six high-priority domains for policy analysis. They include:

1) *Intergenerational relations*. This general area requires understanding at both the societal and individual family-unit levels. For society, the core question relates to cohesion. What is the potential for the

widening gap between the haves and have-nots and for the increased competition over scarce resources being channeled into entitlements to tear at the fabric of our society and create a “war” between the generations?

The MacArthur Network prefers to use the term *cohesion* to describe the issues related to intergenerational relations (or tensions) because it focuses on age integration rather than age segregation and addresses intergenerational transfers, attitudes, multigenerational strategies, and changes in family structure. Cohesion can be viewed as the debate regarding the traditional social compact – which we prefer over the more commonly used legalistic “contract” – between the generations.

Substantial empirical evidence shows strong support by middle-aged and younger Americans for older Americans and highlights social cohesion’s benefits; but, as many observers have noted, the future increase of entitlement costs may place substantial stress on this balance.<sup>3</sup> Depending on future economic and educational gaps, will future young-adult and middle-aged Hispanics, for example, reflect the same support for elderly white Americans? Further, what impact will future immigration policies, whose intent may be to eliminate the shortfall of skilled U.S. workers, have on these tensions?

2) *Family (evolution, supports, changing roles)*. Families make up the front line of our adaptation to an aging society. For the family, the core question of the aging society relates to the uncertainty regarding its capacity to play its traditional role as safety net and exhibit adaptive capacities to respond to a variety of financial, social, and health-related needs. Factors threatening the family’s role include the emergence of an array of family forms with different capacities for support (such as a childless family unit), increased longevity, geographic dispersion, economic challenges,

and likely future reductions in entitlements.

Moreover, these changes are amplified by the growing diversity that results from increased stratification. The strength and salience of intergenerational ties become more prominent features in an aging society, and the traditional life course is being altered in part because of increased longevity. The transition to adulthood comes five or more years later than it used to, placing parents of young adults in the challenging position of helping support their parents or even their grandparents while launching their own children toward independence.<sup>4</sup> Families with resources can manage this balancing act relatively well, but a growing number of families will be overly burdened trying to contend with these competing demands without proven ways of managing the more complex, intergenerational family systems. Issues such as intrafamilial supports, housing, financial transfers, caregiving, and new familial roles will also inform critical policy decisions surrounding the changing face of U.S. families.

3) *Productivity (work and retirement, functional status and disability, technology, roles of older individuals in society)*. The future roles of older individuals in society will have a dramatic impact on the likelihood that the United States will be productive, cohesive, and equitable. This set of issues can be conveniently divided between work and retirement matters and civic engagement matters, although they are closely interrelated. The likelihood of a retiree volunteering is very much influenced by whether that person volunteered while still in the workforce.<sup>5</sup> Thus, approaches to encouraging people to volunteer while still in the workforce – via modifications in time and place of work, provision of opportunities for engaging in what individuals consider meaningful activities, and development of paid volunteerism strat-

egies – may have a substantial positive effect on post-retirement engagement. Such engagement is beneficial not only for retirees but also for the general population.

Technology bridges the worksite to areas of civic engagement and, depending on the type of technology and its fit with the abilities and needs of older individuals, can wind up either facilitating or inhibiting their participation. Substantial opportunity exists for policy changes and technological and other worksite modifications and educational interventions that will not only make retention of older workers more attractive to employers, but will also take advantage of the many strengths older workers offer. It is important for policy-makers to be aware of the “lump-of-labor” fallacy and the growing body of empirical evidence indicating that older individuals need not be moved out of the workforce to make room for younger workers.<sup>6</sup> In addition, policy should be informed by the most recent findings regarding trends in disability in populations of elders and near-elders. Much of the most recent work suggests that the severe disability rates (as measured by activities of daily living and instrumental activities of daily living scales) are now stable in older individuals, having halted their decades-long decline; and that, for unknown reasons, functional mobility impairments may be rising in individuals aged fifty to sixty-five.<sup>7</sup> It will be important for policy-makers to understand the likely influence of these trends on the adequacy of the future U.S. labor force, as well as on the future demand for personal care services.

4) *Human capital development (such as lifelong education and skills training)*. Some of the same societal forces that led to longer lives have also shortened the half-life of knowledge in science and technology. How can human capital be expanded at different points along the life course? Can the mis-

John W.  
Rowe

alignment between education and work that is aggravated by increasing longevity be improved through a closer relationship between educational institutions and the workplace?

Stakeholders need to understand and employ the most effective approaches to keep young individuals in school and to provide a coherent approach to lifelong learning that gives individuals the skills and attitudes they need to continue to productively evolve within overall societal and work environments. Although returning to school – now common among younger adults – is still relatively rare among individuals over forty, providing access to educational institutions for the near-old and old is no less critical than keeping younger people in school. Education must be redefined as a lifelong experience.

5) *Health and health care.* Although it might seem that the ongoing national debate about health care reform may have exhausted this topic, the Network believes that some important and often neglected areas of the discussion are directly related to the demographic transformation. These include the development of a more geriatrically sophisticated health care system in which most providers (physicians, nurses, dentists, social workers, psychologists, pharmacists, and others) are competent in diagnosing and treating medical diseases and syndromes that are common in old age, as well as a strong reliance on new interdisciplinary models of care that are more effective in managing the health care problems of frail older individuals with multiple impairments. In addition, a reorientation to a life-course preventive health model is needed to strengthen education about healthy lifestyles and intervention implementation in at-risk groups so that future older individuals will enter the Medicare program healthier and at higher levels of functioning than their predecessors. Finally, the United States needs sus-

tainable and clearly articulated policies that deal humanely with care at the end of life.

6) *Relevance to successful aging of individuals.* Over the past fifteen years, successful aging has been a major theme of gerontological research. Much of the work in the field has been stimulated by the model of successful aging proposed by the MacArthur Network on Successful Aging, which is focused primarily at the level of the individual.<sup>8</sup> It is self-evident that the changes that occur at the societal level in response to the demographic transformation may have major positive or negative effects on the capacity of individuals to age successfully. While many of the issues and policy options discussed in this volume are relevant to individuals, our primary current focus is at the level of society. The interaction between societal change and the status of aging individuals represents fertile territory for future research.

These major themes and recommendations are explored in depth in the essays found in this issue of *Dædalus*. Among the essays are S. Jay Olshansky's "The Demographic Transformation of America," which looks toward the changing face of aging and life expectancy in America. Robert Hummer and Mark Hayward's essay "Hispanic Older Adult Health & Longevity in the United States: Current Patterns & Concerns for the Future" explores the "Hispanic paradox" – that first-generation Hispanic immigrants have a greater life expectancy than both nonimmigrant Americans and residents of their native countries – in addition to troubling health and well-being warning signs for the future Hispanic population. Frank Furstenberg, Caroline Hartnett, Martin Kohli, and Julie Zissimopoulos have written "The Future of Intergenerational Relations in Aging Societies," which examines the family's capacity to respond to the growing

challenges and demands for support of a rapidly aging America; while Lisa Berkman, Axel Boersch-Supan, and Mauricio Avendano point toward how adaptation of our expectations of the elderly can lead to a more productive and resilient society in “Labor-Force Participation, Policies & Practices in an Aging America: Adaptation Essential for a Healthy & Resilient Population.”

In our essay “Productivity & Engagement in an Aging America: The Role of Volunteerism,” Dawn Carr, Linda Fried, and I propose that the impact of volunteerism in an aging population be recognized and invested into, and that programs harness the social capital of older adults to improve the well-being of the elderly and address critical needs of society as a whole. And S. Jay Olshansky, Dana Goldman, and I contributed the essay “Resetting Social Security,” which considers the critical financial safety net of social security and what impact might result from further changes to its age of eligibility requirements.

In their essay “Global Population Aging: Facts, Challenges, Solutions & Perspectives,” David Bloom, David Canning, and Alyssa Lubet provide an overview of global population aging and its contributing factors; outline some of the major challenges associated with widespread population aging; and describe current and possible future responses to these challenges. Finally, Julie Zissimopoulos, Dana Goldman, S. Jay Olshansky, John Rother, and I conclude the issue with “Individual & Social Strategies to Mitigate the Risks & Expand Opportunities of an Aging America.” This essay discusses the major risks associated with aging at both the level of the individual and the level of society, and presents courses of action for policy-makers in education, work and retirement, financial security, health care, and social cohesion to promote the benefits and reduce the risks of longer life. Taken together, these policy options provide a broad blueprint for successful societal adaptation to the aging of America.

John W.  
Rowe

#### ENDNOTES

- 1 Pew Research Center, *Attitudes about Aging: A Global Perspective* (Washington, D.C.: Pew Research Center, 2014).
- 2 Matilda Riley and John Riley, “Structural Lag: Past and Future,” in *Age and Structural Lag: Society’s Failure to Provide Meaningful Opportunities in Work, Family, and Leisure*, ed. Matilda Riley, Robert L. Kahn, and Ann Foner (New York: Wiley-Interscience, 1994).
- 3 James Schulz and Robert Binstock, *Aging Nation: The Economics and Politics of Growing Older in America* (Baltimore: Johns Hopkins University Press, 2008).
- 4 Gordon Berlin, Frank F. Furstenberg, Jr., and Mary Waters, “The Transition to Adulthood,” *The Future of Children* 20 (1) (Spring 2010): 1–18.
- 5 Barbara A. Butrica, Richard W. Johnson, and Sheila R. Zedlewski, “Volunteer Dynamics of Older Americans,” *The Journals of Gerontology: Psychological Sciences & Social Sciences* 64 (5) (February 2009): 644–655.
- 6 Axel Boersch-Supan, *Reduction of Working Time: Does it Decrease Unemployment?* MEA Discussion Paper No. 2003 (Mannheim, Germany: University of Mannheim, Mannheim Research Institute for the Economics of Aging, 2002); and John Gruber and David Wise, eds., *Social Security Programs and Retirement Programs Around the World: The Relationship to Youth Employment* (Chicago: University of Chicago Press, 2009).

- <sup>7</sup> National Research Council, “Health and Disability in the Working-Age and Elderly Populations,” in *Aging and the Macroeconomy: Long-Term Implications of an Older Population* (Washington, D.C.: National Academies Press, 2012).
- <sup>8</sup> John W. Rowe and Robert L. Kahn, “Human Aging: Usual and Successful,” *Science* 237 (4811) (1987): 143–149; John W. Rowe and Robert L. Kahn, “Successful Aging,” *The Gerontologist* 37 (4) (1997): 433–440; and John Wallis Rowe and Robert L. Kahn, *Successful Aging* (New York: Pantheon Books, 1998).

# The Demographic Transformation of America

*S. Jay Olshansky*

*Abstract: The face of aging in America is about to change. Within the next thirty years, the U.S. population will experience a permanent change in its age structure, and there is reason to believe that cohorts reaching older ages in the future will be far different from those reaching older ages today. In this essay, I explain why life expectancy in the United States is likely to diverge from that experienced by the rest of the developed world; describe recent trends in healthy life expectancy; and examine how the age structure of the United States will by mid-century be different from that found today.*

S. JAY OLSHANSKY is Professor of Epidemiology at the School of Public Health, Division of Epidemiology and Biostatistics at the University of Illinois at Chicago. He has published articles in such journals as *The New England Journal of Medicine*, *JAMA: The Journal of the American Medical Association*, *Science*, *The Scientist*, *Scientific American*, and *Health Affairs*.

The face of aging in America is undergoing a profound transformation. Within the next thirty years, the U.S. population will accompany the rest of the developed world in experiencing a permanent change in its age structure. The United States will not only be much older in the coming decades, confronting a suite of resulting challenges and opportunities, but cohorts that reach older ages in the future are likely to be far different from those reaching older ages today. The reason? Older cohorts in the future will have been born into and lived through an entirely different set of environmental and medical/health conditions relative to their counterparts born in the early twentieth century. In this essay, I begin by explaining why life expectancy in the United States is likely to diverge from that experienced by the rest of the developed world (a phenomenon that has already begun); describe recent trends in healthy life expectancy; and examine how the age structure of the United States by mid-century will be different from that found today. Weaved into the discussion of each topic is the issue of how disparities are likely to influence trends in longevity and health.

---

© 2015 by the American Academy of Arts & Sciences  
doi:10.1162/DAED\_a\_00326

The question of how high life expectancy in the United States can rise has been the subject of intense debate for decades. Because forecasts of longevity influence efforts to ensure the financial integrity of age entitlement programs such as Social Security and Medicare, the answer to this question has important public policy implications. In order to understand what the future might bring, we must first place our current longevity within historical context.

The modern rise in life expectancy is one of humanity's crowning achievements. Historical trends suggest that after more than two hundred thousand years of slow but steady increases, a new chapter in the book of human longevity began in the middle of the nineteenth century with a quantum leap in average duration of life. As modern populations learned how to insulate themselves from the hazards of the outside world, the external forces of mortality (infectious diseases, predation, and accidents) that precluded survival beyond the first few years of life were for most people largely relaxed.<sup>1</sup> The rapid increase in life expectancy was initially due to advances in public health (such as refrigeration, sewage disposal, clean water, and indoor living and working environments) that saved the lives of the young. When the lives of young people are extended, life expectancy rises rapidly since a large number of person-years-of-life are added to the total population (a phenomenon that can only occur once). Once reductions in early-age mortality are achieved, future gains in life expectancy must then be a product of reductions in death rates in other (middle and older) regions of the lifespan.

The latter part of the twentieth century followed this model exactly: death rates at middle ages began to decline as some behavioral risk factors for the U.S. population improved (such as reductions in smoking prevalence) and as advances in

medical technology yielded reductions in case fatality rates for people with cardiovascular diseases, cancer, and diabetes. However, the resulting gain in life expectancy at birth as a product of declining middle-age mortality was much smaller than that observed in the early twentieth century because of entropy in the life table: declining death rates at middle ages and above yielded progressively smaller gains in life expectancy since the total person-years-of-life added to the life table is much smaller than what occurs when saving the young.<sup>2</sup>

Long-lived populations such as the United States' are now in a position where the only way to significantly increase life expectancy in the future is to generate dramatic reductions in death rates at the oldest ages *and* simultaneously push the envelope of survival into the outer regions of the lifespan (ages above one hundred twenty), where only a handful of people have ever lived. That is, large increases in life expectancy at birth in the future require not only large declines in death rates for older people on par with what was observed in the past for young and middle-aged populations; it also requires that most people either routinely live past the age of one hundred ten, or that a significant segment of the population begin surviving well past the age of one hundred thirty. Is this likely to happen? Unfortunately, the answer is no, and there are three reasons why.

First, it is now acknowledged that the biological processes of aging represent the most important risk factor for fatal diseases expressed at older ages.<sup>3</sup> Since it is not currently possible to significantly alter the processes of aging, there is no reason to suspect that dramatic declines in death rates among the extreme elderly are plausible. To the contrary, entropy in the life table is likely to continue to erode gains in life expectancy in the future. This does not mean declines in death rates at older



ages cannot be achieved – they can – rather, it just means that the resulting gains in life expectancy will be small.

Second, the age distribution of death in long-lived populations like that of the United States has indeed shifted to later ages, but this shift has been characterized by a compression of death into a fairly narrow region between the ages of sixty-five and ninety. There is no evidence that the prospects for surviving past the age of one hundred ten are improving; there is no reason to expect people will routinely live beyond the age of one hundred thirty, an age to which no human in history has been documented to live; nor is there reason to believe that in a genetically heterogeneous population, everyone has the potential to live as long as the longest-lived member of the population. The implications of these observations are straightforward: mortality compression is the most likely scenario going forward, and this, in turn, must be accompanied by a decelerating increase in life expectancy.

Finally, there are vast differences in longevity prospects among existing birth cohorts in the United States – a phenomenon well documented in the scientific literature.<sup>4</sup> As detailed in the sections that follow, some subgroups of the U.S. population today are facing rather bleak health and longevity prospects for the future. If these health and longevity trends play out as suspected, some people will live longer and healthier lives relative to populations alive today, but others may very well experience a decline in life expectancy on par with observed reductions in life expectancy among the least educated white men and women in the United States.<sup>5</sup> The Hispanic paradox, discussed by Robert Hummer and Mark Hayward in their contribution to this volume, suggests that this growing segment of the U.S. population could place an additional dampening effect on the historic rise in life expectancy.<sup>6</sup>

The bottom line regarding the future of longevity in the United States is that there is no reason to expect that survival can be routinely pushed beyond the age of one hundred thirty; there are no medical breakthroughs on the horizon that offer the prospect of radical life extension; and there is compelling evidence to suggest that population subgroups within the United States are simultaneously moving in opposite directions with regard to future longevity. Overall, there is reason to expect that life expectancy in the United States may rise marginally in the coming decades, and that what is far more important from a public health perspective is how healthy the population will be in the future.

Life expectancy at birth and at older ages has been rising in the United States at a fairly steady pace for most of the last century; but of equal interest to researchers are the trends in how healthy U.S. populations are along the way. The measure of life expectancy is often taken as a barometer of a population's health, yet, in fact, it is more appropriately defined as little more than a measure of death. Life expectancy tells us nothing at all about how healthy people are when alive. The proportion of total life expectancy lived in a state of good health free from frailty and disability is known as healthspan and is measured by a metric referred to as healthy life expectancy (HLE). Because the unique data required to calculate it has only recently become available, measures of HLE have only been calculated for developed nations since the early 1970s.

Trends in HLE for the United States indicate that a complex pattern has emerged consistent with the complexity of how life expectancy has changed in recent decades. In 1970, HLE at birth in the United States was 67 for men and 74.6 for women, rising to 71.8 and 78.8 for men and women, respectively, by 1990.<sup>7</sup> The rate of improve-

ment in HLE accelerated during this time frame, and the same trend toward increases in HLE and accelerated improvements also occurred among the population aged sixty-five and above. However, when HLE is considered within the frame of reference of secular trends in total life expectancy, the 1970s were characterized by a slight expansion of morbidity (when the rise in life expectancy outpaces the rise in HLE), while the 1980s were characterized by a slight compression of morbidity (when the rise in HLE occurs faster than the rise in life expectancy).<sup>8</sup>

Given a history of known disparities in the life expectancies of American subgroups,<sup>9</sup> it should be no surprise that HLE is also inequitably distributed. Based on trends in HLE at age thirty by race, sex, and level of completed education from 1970 to 1990, the gap in HLE between population subgroups is large. For example, in 1970 the HLE at age thirty for black men with less than a high school degree was 23.6 years, while the HLE at age thirty for white women with more than sixteen years of education was 40.1 years.<sup>10</sup> Interestingly, the gap in HLE between these two population subgroups declined from 1970 to 1990; that is, HLE increased by 0.2 years for the most educated white women while the least educated black men experienced an increase in HLE of 4.8 years. Nevertheless, differences in total life expectancy and HLE remain extremely large among population subgroups demarcated by level of completed education, essentially placing today's disadvantaged populations in the middle part of the twentieth century in terms of their health and longevity prospects.

The good news is that overall, the health status of older Americans has improved during the last half century.<sup>11</sup> The age-specific incidence of functional impairments defined by activities of daily living (ADLs) improved from 1980 to 2000, leading to notable increases in the prevalence

of functionally independent older cohorts. In fact, there is evidence to indicate that a surprisingly large percentage of the population aged sixty-five and above in the United States today is physically and mentally operating at a level of efficiency that is not far different from people who are decades younger.<sup>12</sup>

The challenging news is that disability rates have leveled off among people reaching older ages during the last decade,<sup>13</sup> and recently published cohort studies suggest that younger cohorts moving through the age structure are less healthy than their recent predecessors.<sup>14</sup> Particularly notable is the rise in pathology among children who are both obese and who have diabetes – a disturbing trend that does not bode well for this generation. It implies that as contemporary younger and middle-aged generations move into older regions of the lifespan in the coming decades, unless these public health issues are ameliorated, we may witness declines in both HLE and possibly even life expectancy for the entire U.S. population.<sup>15</sup> Changing demographic conditions – discussed below – will influence these trends.

**T**he U.S. population has undergone a dramatic demographic shift since the beginning of the twentieth century, when our age structure was in the shape of a pyramid: few people reached older ages, contrasted by a comparatively large number of young people. By way of illustration, in 1900 the proportion of the total U.S. population aged sixty-five and above was 4.1 percent; but this has risen to 14 percent today, and will rise to over 20 percent by mid-century.<sup>16</sup> When rapid increases in longevity combined with declining fertility in the latter part of the twentieth century, the U.S. age structure began shifting to a more rectilinear form. By 2050, the age structure of the United States and all other developed nations will be in the shape of

a square, with at least as many people alive at older ages as there are at younger ages. This new shape to the U.S. age structure is likely to be a permanent feature of our population for the foreseeable future.

However, beneath the surface of a visibly shifting age structure are forthcoming changes to our demographics that will alter the course of U.S. health and longevity by the mid-twenty-first century. Three major events are now unfolding: First, there is evidence to suggest that subgroups of the U.S. population are experiencing significantly different longevity and health trajectories.<sup>17</sup> While the least educated among us compose a slowly shrinking segment of the population, being less educated today is far more lethal now than it was just two decades ago. This trend *will not* have a profound influence on national vital statistics because the proportion of the total population that falls into this category is relatively small; but it will be a health challenge nonetheless.

A second factor that will influence U.S. age structure in the twenty-first century is the advances in public health and the biomedical sciences that are likely to yield improvements in health and longevity. Included among them are continued efforts to reduce smoking prevalence; greater success in the treatment of complications associated with obesity; traction beginning in the battle against the rise of childhood obesity; and anticipated advances in aging science that could yield a notable extension of healthy life by mid-century.

Finally, one of the more interesting developments in shifting U.S. demographics is the anticipated dramatic increase in the Hispanic population and the unique impact it will have on national health and longevity over the next few decades. This development is discussed in detail in Hummer and Hayward's essay in this volume, but for now it is important to recognize that the proportion of the total U.S.

population that is Hispanic will rise from 16 percent today to 28 percent by 2050. More important, Hispanics now represent only 7 percent of the population aged sixty-five and above, but this will rise to 18 percent by 2050. Neither of these projections would ordinarily be all that notable, except for the fact that Hispanics represent perhaps one of the more interesting anomalies in U.S. demographics.

Hispanics currently have the highest life expectancy among the main population subgroups in the United States today. Hummer and Hayward demonstrate that this is due to the fact that the Hispanic population in the United States is currently dominated by first-generation immigrants known to possess healthier lifestyles than either the citizens of their country of origin or the general U.S. population. This has led to what is commonly known as the Hispanic paradox: the unexpected observation that Hispanic immigrants currently live longer than the total resident population.<sup>18</sup>

What makes the Hispanic impact on U.S. demographics even more interesting is the likelihood that the health and longevity of this subgroup is expected to worsen in the coming decades. Recent evidence indicates that second- and third-generation Hispanics are experiencing notable declines in health due to the acquisition of increasingly harmful behavioral risk factors such as smoking and obesity.<sup>19</sup> Thus, if Hispanics are about to dramatically increase their proportion of U.S. demographics, and their future health and longevity trajectory is spiraling downward, then there is reason to believe that this will have a notable negative impact on national vital statistics such as life and health expectancy. Such future trends would be invisible to currently popular forecasting models that rely exclusively on historical trends.

The United States – along with the rest of the world – is headed down an inevi-

table one-way path toward population aging. However, there are elements to the U.S. demographic transformation to an aged society that set us apart from other developed nations. Unlike France and Japan, where life expectancy at older ages has risen rapidly in recent decades, the United States has been characterized by stagnating or slowly rising life expectancy at birth and older ages. The United States is a far more heterogeneous population relative to most other nations, and the differences among us have been accentuated over time by often radically different living conditions for subgroups of the population.

The overall trend toward population aging in the United States will take on unique characteristics relative to the rest of the developed world. Although life expectancy at birth and at older ages is expected to rise in this century, there will be competing events that will influence the future course of both longevity and health. Some will live longer and healthier lives than anticipated by most forecasting mod-

els in use today, while others may experience significant challenges. It is distinctly possible that two Americas will emerge: one characterized by privilege as defined by higher levels of education, income, and every other benefit packaged with higher socioeconomic status; and another characterized by lack of education, low income, poverty, and the lifelong challenges imposed by a lifetime of lower socioeconomic status. Our shifting demographics will have a powerful influence on these trends, and chief among them will be the unique influence of a rising Hispanic population.

The prospects for an aging America are distinctive and challenging. Exactly how this phenomenon plays out in the coming decades is unclear since so many different factors can and will influence health and quality of life going forward. What is known with certainty is that the U.S. age structure will change dramatically in this century, and there is reason to believe that subgroups of the population will experience vastly different health and longevity prospects.

#### ENDNOTES

- <sup>1</sup> S. Jay Olshansky, Bruce A. Carnes, and Christine K. Cassel, "The Aging of the Human Species," *Scientific American* 268 (4) (1993): 46–52.
- <sup>2</sup> Nathan Keyfitz, *Applied Mathematical Demography*, 2nd ed. (New York: Springer, 1985).
- <sup>3</sup> Denham Harman, "The Aging Process: Major Risk Factor for Disease and Death," *Proceedings of the National Academy of Sciences* 88 (12) (1991): 5360–5363.
- <sup>4</sup> S. Jay Olshansky, Toni Antonucci, Lisa Berkman, Robert H. Binstock, Axel Boersch-Supan, John T. Cacioppo, Bruce A. Carnes, Laura L. Carstensen, Linda P. Fried, Dana P. Goldman, James Jackson, Martin Kohli, John Rother, Yuhui Zheng, and John Rowe, "Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up," *Health Affairs* 31 (8) (2012): 1803–1813.
- <sup>5</sup> *Ibid.*
- <sup>6</sup> See Robert A. Hummer and Mark D. Hayward's essay in this volume, "Hispanic Older Adult Health & Longevity in the United States: Current Patterns & Concerns for the Future."
- <sup>7</sup> Eileen M. Crimmins, Yasuhiko Saito, and Dominique Ingegneri, "Trends in Disability-Free Life Expectancy in the United States, 1970–1990," *Population and Development Review* 23 (3) (1997): 555–572.
- <sup>8</sup> *Ibid.*

- <sup>9</sup> Evelyn M. Kitagawa and Philip M. Hauser, *Differential Mortality in the United States: A Study in Socioeconomic Epidemiology* (Cambridge, Mass.: Harvard University Press, 1973).
- <sup>10</sup> Eileen M. Crimmins and Yasuhiko Saito, "Trends in Healthy Life Expectancy in the United States, 1970–1990: Gender, Racial, and Educational Differences," *Social Science & Medicine* 52 (11) (2001): 1629–1641.
- <sup>11</sup> Vicki A. Freedman, Brenda C. Spillman, Patti M. Andreski, Jennifer C. Cornman, Eileen M. Crimmins, Ellen Kramarow, James Lubitz, Linda G. Martin, Sharon S. Merkin, Robert F. Schoeni, Teresa E. Seeman, and Timothy A. Waidmann, "Trends in Late-Life Activity Limitations in the United States: An Update from Five National Surveys," *Demography* 50 (2) (2013): 661–671.
- <sup>12</sup> David J. Lowsky, S. Jay Olshansky, Jay Bhattacharya, and Dana P. Goldman, "Heterogeneity in Healthy Aging," *The Journals of Gerontology: Biological Sciences & Medical Sciences* 69 (6) (2013): 640–649.
- <sup>13</sup> Freedman et al., "Trends in Late-Life Activity Limitations in the United States."
- <sup>14</sup> Eric N. Reither, S. Jay Olshansky, and Yang Yang, "New Forecasting Methodology Indicates More Disease and Earlier Mortality Ahead for Today's Younger Americans," *Health Affairs* 30 (8) (2011): 1562–1568; and Teresa E. Seeman, Sharon S. Merkin, Eileen M. Crimmins, and Arun S. Karlamangla, "Disability Trends Among Older Americans: National Health and Nutrition Examination Surveys, 1988–1994 and 1999–2004," *American Journal of Public Health* 100 (1) (2010): 100–107.
- <sup>15</sup> S. Jay Olshansky, Douglas J. Passaro, Ronald C. Hershow, Jennifer Layden, Bruce A. Carnes, Jacob Brody, Leonard Hayflick, Robert N. Butler, David B. Allison, and David S. Ludwig, "A Potential Decline in Life Expectancy in the United States in the 21st Century," *The New England Journal of Medicine* 352 (11) (2005): 1138–1145.
- <sup>16</sup> U.S. Department of Health and Human Services Administration for Community Living, "Administration on Aging," [http://www.aoa.gov/Aging\\_Statistics/future\\_growth/future\\_growth.aspx](http://www.aoa.gov/Aging_Statistics/future_growth/future_growth.aspx) (accessed September 20, 2014).
- <sup>17</sup> Olshansky et al., "Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up."
- <sup>18</sup> Kyriakos S. Markides, Raphael Samper-Ternent, and Soham Al Snih, "Aging and Health in Mexican Americans: Selected Findings from the Hispanic EPESE," in *Race and Social Problems*, ed. Ralph Bands and Larry E. Davis (New York: Springer, 2015), 171–186.
- <sup>19</sup> Mark D. Hayward, Robert A. Hummer, Chi-Tsun Chiu, César González-González, and Rebeca Wong, "Does the Hispanic Paradox in U.S. Adult Mortality Extend to Disability?" *Population Research and Policy Review* 33 (1) (2014): 81–96.

# Hispanic Older Adult Health & Longevity in the United States: Current Patterns & Concerns for the Future

*Robert A. Hummer & Mark D. Hayward*

*Abstract: The Hispanic population aged sixty-five and over – the most socioeconomically disadvantaged subset of America’s elderly – is projected to quintuple between 2012 and 2050. While current longevity patterns for Hispanics relative to whites are favorable, old-age functioning and disability patterns for Hispanics are unfavorable and have serious implications for caregivers; families; and local, state, and federal governments. Troubling signs for the future Hispanic population (which are shared to varying degrees with other vulnerable groups) include the unresolved legal status of unauthorized immigrants, continued low levels of insurance coverage even after health care reform, some unfavorable trends in health behaviors, and continued disadvantages in educational attainment and income relative to whites. We urge policy-makers to deal with these potentially problematic health and well-being issues. Not doing so could have detrimental consequences for the future of the Hispanic population as well as other at-risk groups and, by extension, the U.S. elderly population as a whole.*

ROBERT A. HUMMER is Centennial Commission Professor in the Liberal Arts in the Department of Sociology and Faculty Research Associate in the Population Research Center at the University of Texas at Austin.

MARK D. HAYWARD is Professor of Sociology, Centennial Commission Professor in the Liberal Arts, and Faculty Research Associate in the Population Research Center at the University of Texas at Austin.

*(\*See endnotes for complete contributor biographies.)*

Demographic data make clear that Hispanics will play an increasingly prominent role in the overall health profile of U.S. society as the twenty-first century progresses. By the year 2000, Hispanics had become the country’s largest minority group at just over 35 million people, or one-eighth of the total population. Between 2000 and 2010, the Hispanic population grew an additional 43 percent to over 50 million people and increased its share of the population to 16.3 percent.<sup>1</sup> Furthermore, the U.S. Census Bureau projects that the Hispanic population will grow to 112 million by 2050 and account for 28 percent of the total population.<sup>2</sup> Should the reality of future population changes come anywhere close to Census Bureau projections – and at present we see no reason why it will not – it is straightforward to see that the future health patterns of U.S. society will increasingly reflect those of the Hispanic population. (For a detailed discussion of demographic changes in the His-

panic population, see S. Jay Olshansky's essay on demographic transformation in this volume.)

In addition to growing precipitously, the Hispanic population is rapidly aging and will make up a progressively larger share of the older population in the coming decades. Indeed, the Census Bureau projects that the population of Hispanics over sixty-five will quintuple between 2012 and 2050, growing from 3.1 million to 15.4 million. In percentage terms, while Hispanics now compose just over 7 percent of the nation's population over sixty-five, that figure is projected to increase to over 18 percent in 2050.<sup>3</sup>

Rapid Hispanic population growth and aging mean that it is important to understand current health and longevity patterns among Hispanics and consider how such patterns may change given the social, behavioral, and policy contexts of the United States. Simply put, a more complete understanding of current Hispanic health and longevity patterns will undoubtedly shed light on what future patterns may look like. But at the same time, we cannot assume that the Hispanic health and longevity patterns of tomorrow will necessarily reflect those of today; indeed, some of the social, behavioral, and policy contexts in which Hispanic health and longevity patterns are unfolding are unfortunately less than favorable.

This essay first provides an overview of current longevity and health patterns for the older Hispanic population. We make frequent comparisons with non-Hispanic whites (hereafter, "whites"), the nation's largest and most socioeconomically advantaged demographic subpopulation. This description is not straightforward, because Hispanics are heterogeneous in their nativity and national-origin composition. Moreover, complex data-quality issues have made the accurate documentation of Hispanic longevity and health pat-

terns a challenging endeavor. Following this overview, we discuss four key issues – undocumented immigrant status, health insurance coverage, trends in important health behaviors, and continued socioeconomic status disadvantages – that will likely have important impacts on the future health and longevity patterns of the rapidly aging Hispanic population. We conclude by urging a forward-thinking policy agenda that will have the greatest chance of enhancing the health and longevity profile of America's largest minority group in the decades ahead.

Despite having a much higher level of poverty and substantially lower levels of educational attainment and health insurance coverage than whites, Hispanics currently live longer lives, on average, than their more socioeconomically advantaged counterparts. The combination of greater Hispanic longevity in the context of lower socioeconomic status has long been considered an epidemiologic paradox (often called the "Hispanic paradox").<sup>4</sup> While the quality of Hispanic mortality data used to demonstrate this epidemiologic paradox has been debated, recent very high-quality studies using different data sets and methodologies have convincingly documented Hispanics' greater longevity.<sup>5</sup> Table 1, for example, provides estimates of life expectancy at age sixty-five for Hispanics and whites from two national data sources. The table illustrates that Hispanic life expectancy at age sixty-five is about two years longer than that of whites, with only minor variations across data sources and by gender.

The Hispanic longevity advantage over whites varies by both nativity and national origin. While U.S.-born Hispanics have no appreciable longevity advantage relative to whites, foreign-born Hispanics exhibit a substantial advantage. For example, estimated life expectancy at age sixty-five for

*Robert A.  
Hummer &  
Mark D.  
Hayward*

Table 1  
Estimates of Remaining Life Expectancy at Age Sixty-Five for Hispanics and Non-Hispanic Whites from Two National Data Sources

	Women		Men	
	NVSS	NHIS-LMF	NVSS	NHIS-LMF
Hispanics	21.7	21.9	19.0	18.8
Non-Hispanic Whites	19.7	20.3	17.1	16.8

“NVSS” represents National Vital Statistics System, 2006 data; “NHIS-LMF” represents National Health Interview Survey-Longitudinal Mortality Follow-Up, 1989–2006 data. Sources: Elizabeth Arias, “United States Life Tables by Hispanic Origin,” *Vital and Health Statistics Series 2, No. 152* (Hyattsville, Md.: National Center for Health Statistics, 2010), 1–35; and Joseph T. Lariscy, Robert A. Hummer, and Mark D. Hayward, “Hispanic Older Adult Mortality in the United States: New Estimates and An Assessment of Factors Shaping the Hispanic Paradox,” *Demography* 52 (1) (2015).

foreign-born Hispanic women is three years longer than for white women.<sup>6</sup> The most important reasons for the exceptionally favorable longevity patterns for foreign-born Hispanics include positive health selection at the time of immigration (that is, healthier individuals are more likely to migrate) and favorable health-related behavior, particularly low levels of cigarette smoking.<sup>7</sup>

Across national-origin groups, most studies report higher life expectancy for Hispanics who originate from Cuba and other countries in Central and South America, lower life expectancy among Puerto Ricans, and life expectancy figures for Mexican-origin Hispanics that are very similar to those of all Hispanics. Lower life expectancy (that is, higher mortality rates) for Puerto Rican-origin Hispanics have been attributed to their lower level of healthy immigrant selection (since Puerto Ricans are U.S. citizens and easily migrate between Puerto Rico and the U.S. mainland) and their low socioeconomic status. Cubans, on the other hand, are thought to be characterized by healthier selection profiles at time of immigration and have long experienced a positive reception into the middle class of U.S. society.<sup>8</sup> Low rates of smoking (and lighter smoking among those who do

smoke) have recently been found to be an important explanation for the low mortality rates exhibited by older Mexican immigrants, who are also characterized by healthy selection at time of immigration.<sup>9</sup>

While longevity patterns for older Hispanics, particularly the foreign-born, are clearly favorable in comparison with whites, this is not the case in other health domains. For example, levels of physical disability among older Hispanics – both U.S.- and foreign-born – are significantly worse than those of whites at age sixty-five and above. Foreign-born Hispanic women have the highest level of physical disability when compared with U.S.-born whites, blacks, and Hispanics and, thus, they are characterized among these groups by the unique combination of the longest life expectancy coupled with the longest average period of time spent disabled.<sup>10</sup> This is not to minimize the importance of the high levels of physical disability also exhibited by U.S.-born Hispanic women and men, who share similar disability profiles with black women and men. At older ages, both foreign-born and U.S.-born Hispanic women also exhibit lower levels of physical functioning (for example, gait speed and grip strength) than whites and similar levels as blacks.<sup>11</sup>



Clearly, more research is needed to understand why relatively long lives among Hispanics are not coupled with low levels of disability and high levels of physical functioning. One of our working hypotheses is that many Hispanics experience pronounced “wear and tear” after years and years working in physically demanding occupations (such as in hospitality and food service, child care, domestic service, construction, agriculture, and meat processing), placing them at disproportionate risk of physical difficulties and disability at older ages, even in the context of their relatively long lives. Long-term exposure to adverse socioeconomic conditions – for example, higher rates of child poverty and lower levels of educational attainment than whites – may also be partly responsible for their disadvantaged patterns of disability and physical functioning.

Hispanics also exhibit higher rates of some, but not all, chronic morbidities in comparison with whites. Obesity, diabetes, and overall metabolic risk, for example, are higher in most studies of middle-aged and older Hispanics (both foreign- and U.S.-born) compared to whites; some (though not all) studies also document somewhat higher levels of hypertension among foreign- and U.S.-born Hispanics than among whites.<sup>12</sup> U.S.-born Hispanics have also been shown to have moderately higher levels of inflammation risk compared with whites.<sup>13</sup> On the other hand, other morbidity rates are lower for Hispanics. Of greatest significance, most studies find a lower prevalence of cancer (with some site-specific exceptions) and lung disease among both foreign-born and U.S.-born Hispanics compared with whites – patterns consistent with Hispanics’ historically much lower levels of cigarette consumption.<sup>14</sup> Lower cancer- and lung disease-related morbidity among Hispanics relative to whites aligns with the significantly lower all-site cancer, lung cancer,

and respiratory disease mortality exhibited by both foreign- and U.S.-born Hispanics.<sup>15</sup> Lower heart disease mortality among older Hispanics (particularly the foreign-born) is also associated with their lower levels of cigarette smoking.

This brief overview clearly shows that, at present, both Hispanic women and men have lower overall mortality rates and longer life expectancies than their more socioeconomically advantaged white counterparts. The longer life-expectancy levels for Hispanics are concentrated among the foreign-born and characterize most, but not all, of the national-origin Hispanic subgroups. Again, healthy immigrant selection to the United States and positive health behavior – particularly lower cigarette consumption relative to whites – seem to be the keys to this epidemiologic paradox of longevity. For the Hispanic population, this is all good news. Unfortunately, as we have shown, not all of the news is good. Perhaps most disturbing are the very high levels of disability and poor physical functioning among older Hispanics, which will increasingly challenge caregivers, families, health agencies, and governments in a rapidly aging population. High levels of diabetes and metabolic risk among middle-aged and older Hispanics, particularly the U.S.-born, also pose looming challenges. Our attention now turns to four of the key health-related concerns facing the rapidly growing and aging Hispanic population.

The success or failure of U.S. immigration policy to effectively respond to the roughly 11 million undocumented residents (approximately three-fourths of whom are Hispanic) will have long-term consequences for health and longevity patterns among older Hispanics.<sup>16</sup> In an important essay in the Summer 2013 issue of this journal, sociologist Douglas Massey argued that rapid growth in the undocumented population between 1965 and 2008 was an

unintended consequence of U.S. immigration and border control policies in conjunction with the simultaneous increase in the economic and social integration of Mexico and the United States. He further argued that a path to citizenship for undocumented residents of the United States is a necessary and critical step toward the future social and economic well-being of Hispanics in U.S. society.<sup>17</sup>

Massey's arguments are directly relevant to the future health and longevity of the aging Hispanic population in at least two important ways. First, the growth in the undocumented immigrant population means that a significant portion of the U.S. population is largely invisible in the country's data monitoring systems. Thus, there are no credible estimates of mortality rates, disability levels, or morbidity patterns at the national level for this sizable subgroup (roughly 3.5 percent) of the U.S. population. An unknown number of undocumented residents may be included in health surveys, census records, and vital statistics, but it is difficult or impossible to know with any certainty how their health patterns compare to other subgroups or to the population as a whole. Despite their statistical invisibility, there are reasons to suspect that the health and longevity patterns for undocumented immigrants are not very good. For example, estimates from the Pew Hispanic Center show (not surprisingly) that undocumented immigrants have substantially lower household incomes and lower levels of insurance coverage than the U.S.-born resident population.<sup>18</sup> Moreover, while the vast majority of undocumented Hispanic residents of the United States are currently between the ages of twenty and fifty, the clock is ticking and these undocumented adult immigrants will move into old age near mid-century. The poor wages, harsh working conditions, high levels of stress and fear, and lack of access to health care

and social services that characterize many undocumented immigrants will undoubtedly have negative health consequences for this segment of the U.S. population in the decades to come.

Second, policies focused on undocumented immigrants are very likely to have important spillover effects on children of immigrants as well as on the Hispanic community as a whole. An estimated 73 percent of children of undocumented immigrants are U.S.-born citizens; thus, the future health and well-being of these children will also be in part dependent upon the resolution of their parents' legal status.<sup>19</sup> While data are not available to assess the relationship between parents' legal status and children's well-being, there is a substantial body of evidence pointing to the pernicious effects of poverty and family stress for children's long-term health. Thus, the health of children of undocumented immigrants is in a very real sense the embodiment of parents who live with substantial uncertainty and stress and who lack access to basic social services, health care, and legal rights. More generally, the issue of immigrant legal status has been a critical one in the Hispanic community for decades, and the intensity of the debate has only increased in the fourteen years following the 9/11 terrorist attacks, given stricter U.S. border controls. A positive solution to the legal status of the United States' 11 million undocumented immigrants, 8 million of whom are Hispanic, would be critical to all Hispanics achieving the full integration that is fundamental to their long-term health and well-being. A federal policy that encourages legalization of undocumented immigrants in a humane and healthy way will substantially strengthen the prospects of favorable future health and longevity patterns among older Hispanics.

A second major health concern for Hispanics stems from the exclusion of undoc-

umented immigrants from purchasing health insurance under the provisions of the 2010 Patient Protection and Affordable Care Act (ACA).<sup>20</sup> This results in significant barriers for undocumented immigrants seeking health services – including emergency care – compared to both legal immigrants and those born in the United States. Undocumented immigrants are less likely to seek care, and when they do, they are at greater risk of presenting more advanced and complicated health problems and developing functional limitations and disabilities downstream.<sup>21</sup> Undocumented status and lack of access to health insurance coverage are thus inextricably linked with the ACA for 8 million or so Hispanics, and this link has direct ramifications for Hispanic health far into the future.

Compounding this situation is the already low level of health insurance coverage for the Hispanic population as a whole: the U.S. Census Bureau estimated that 29.1 percent of the Hispanic population (15.5 million) was uninsured in 2012 (down from over 30 percent in 2011), the highest proportion by far of any ethnic group in the country.<sup>22</sup> Thus, even if every single undocumented Hispanic resident of the United States suddenly purchased health insurance coverage, there would still be at least 7.5 million uninsured Hispanic residents in the United States – around 15 percent of the Hispanic population. This 7.5-million figure includes both legal Hispanic immigrants as well as U.S.-born Hispanics.

A 2014 Gallup Poll provides estimates of racial/ethnic differences in ACA uptake among the previously uninsured population.<sup>23</sup> Less than 11 percent of uninsured Hispanics obtained coverage during the open-enrollment period, compared with 16 percent increases for blacks and 14 percent for whites. This is a worrisome pattern given the overall lower level of insurance coverage among Hispanics prior to the pas-

sage of the ACA. A key structural barrier to health insurance coverage among both the legal immigrant and U.S.-born segments of the Hispanic population is the limited eligibility for low-income adults of all racial/ethnic groups to qualify for Medicaid coverage in states that thus far have decided not to expand Medicaid coverage under the ACA (these include Texas, Florida, Georgia, and twenty-one others).<sup>24</sup> As with immigration policy toward undocumented residents, this policy issue may not necessarily be harming the overall health and longevity patterns of current older-aged Hispanics, the vast majority of whom are legal residents of the United States and have health insurance coverage through Medicare. However, it is critical to keep in mind that the older-aged Hispanic population of tomorrow is the working-aged Hispanic population of today; this group's current health insurance coverage may help determine whether they are healthy and disease-free in older adulthood or whether, on the contrary, they develop conditions that could have been treated much earlier in life or avoided altogether.

The third major health concern for Hispanics is rooted in two key health-related behaviors: smoking and the combination of poor nutrition and low physical activity that results in obesity. Smoking and obesity have long been identified as the two most important behavior-related causes of poor health and premature death in the United States. National trends in obesity and smoking point to the potential erosion of Hispanics' current advantage in life expectancy relative to whites and a widening of Hispanics' existing disadvantages in old-age disability and physical functioning. With respect to obesity, recent studies have projected that a long-term increase in the prevalence of obesity will reduce U.S. life expectancy in the future.<sup>25</sup> Although none of this work has directly

*Robert A. Hummer & Mark D. Hayward*

examined Hispanics, it is very likely that Hispanics will disproportionately bear the brunt of this effect. Obesity prevalence has increased precipitously in countries from which many Hispanic immigrants originate, particularly Mexico,<sup>26</sup> and it has increased disproportionately among Hispanics in the United States.<sup>27</sup> Given the high-calorie, high-fat diets that have become characteristic of the United States and Mexico in the last several decades, dietary behavior will need to change quickly and in dramatic ways for adverse health and longevity consequences among Hispanics to be minimized. As emphasized above, it is not necessarily current older-aged Hispanics who are at particular risk; rather, the much larger group of working-age Hispanics (who will become tomorrow's elderly Hispanics) are facing this growing threat.

On the upside, recent work also shows that future declines in overall U.S. life expectancy due to increasing obesity may be counterbalanced by life expectancy increases resulting from decreases in smoking.<sup>28</sup> That said, the relative balance of obesity and smoking effects could differ substantially for Hispanics in comparison with the U.S. population as a whole. Hispanics have smoked less in the past and continue to smoke less than either whites or blacks. This lower level of smoking is responsible for up to one-half of Hispanics' current life expectancy advantage over whites.<sup>29</sup> However, this smoking-related advantage for Hispanics may be diminishing as blacks and whites catch up. Lung cancer incidence and mortality rates for white and black men have declined precipitously since 1999, while the same rates for Hispanic men have declined only modestly.<sup>30</sup> Women's lung cancer death rates for all racial/ethnic groups have remained stable since the late 1990s, with the rate for Hispanics considerably lower than both whites and blacks; however, both

white and black women's smoking levels have exhibited rapid declines in recent decades while Hispanic women's levels have remained about the same, suggesting that white and black women's lung cancer rates will also soon begin to fall while Hispanic women's rates will not.<sup>31</sup> Thus, on the whole, the advantage relative to other groups that U.S. Hispanics have from smoking less may be disappearing. With the disproportionate and precipitous rise in obesity among Hispanics compared to whites, then, Hispanics' current life-expectancy advantage may well become a disadvantage in the not-too-distant future.

**T**he fourth concerning factor for future old-age Hispanic health and longevity patterns is their continued disadvantaged socioeconomic profile. One might ask why this is concerning, given that current Hispanic old-age mortality rates and life expectancy levels are favorable compared to whites (as reviewed above), despite the overall low socioeconomic status of the Hispanic population. After all, does not the combination of relatively high life expectancy despite socioeconomic disadvantage define the epidemiologic paradox? Two points are worth noting. First, our recent work demonstrates that current older-aged Hispanics would have even lower mortality rates and higher life expectancies than they already have if their levels of education and income were similar to those of whites.<sup>32</sup> In other words, Hispanic longevity patterns are not immune to low socioeconomic status. Second, socioeconomic resources are perhaps more fundamentally important for individual-level health in the United States than ever before in our nation's history.<sup>33</sup> Characteristics such as educational attainment, stable employment, decent income, and wealth holdings provide individuals with access to flexible resources – goods, information, technologies, social ties, and psycho-social re-

sources – that are particularly important for negotiating health-related behavior and care in the hyper-competitive and information-based twenty-first century.

Looking ahead, there is no logical reason why Hispanic health outcomes will not be influenced by socioeconomic status, as they are in other racial/ethnic groups. For the country as a whole, life expectancy has risen disproportionately among persons with a college-level education or higher, while less-educated adults have actually experienced a decrease in life expectancy in recent decades.<sup>34</sup> Yet unfortunately, Hispanic adults currently have the lowest rate of college (and high school) graduation out of all other U.S. racial/ethnic groups.<sup>35</sup> It is not surprising, then, that Hispanics are concentrated in low-wage service-sector jobs. In addition, Hispanic households hold, on average, less than 6 percent of the wealth that white households do; this gap has widened considerably in recent years.<sup>36</sup> Hispanic socioeconomic disadvantages relative to whites persist even to the second- and third-generation U.S.-born Hispanics.<sup>37</sup> Such pronounced socioeconomic disadvantages could have damaging effects on Hispanics' health and longevity patterns in the coming decades.

Aggressive policies are needed to deal with the substantial disadvantages in educational attainment, income, and wealth experienced by these sizable segments of the U.S. population. Such socioeconomic policies will also act as health policies: more socioeconomic empowerment will give individuals more access to care and better tools to make health-related decisions.<sup>38</sup> Although we have focused on Hispanics, this issue is germane to all socioeconomically disadvantaged groups. But since Hispanics will constitute such a large percentage of our aging population, their status will disproportionately influence the future. Currently, it is clear that Hispanic mortality advantages relative to other

groups erode when comparing the immigrant generation to subsequent generations.<sup>39</sup> Socioeconomic disadvantages among U.S.-born Hispanics may play an important role in these generational changes in mortality patterns. Given the well-established and strengthening relationship between socioeconomic status and health in the United States, Hispanic health and longevity patterns may soon lag behind those of whites if aggressive efforts are not undertaken to enhance socioeconomic achievement for all disadvantaged groups. Policy efforts must focus on making advanced education (and higher-quality education at all levels) much more attainable for socially disadvantaged groups; early-educational interventions may also be particularly important and fruitful for children who have Spanish-speaking immigrant parents. Income policies – minimum wage, child care, paid family leave, housing subsidies, and more – can also work to improve the socioeconomic status of families who are dependent upon low-wage service work. There is little doubt that future Hispanic health and longevity patterns will be influenced by how policy-makers help shape the social and economic future of America's socioeconomically disadvantaged populations.

While current longevity patterns for Hispanics relative to whites are favorable, old-age functioning and disability patterns for Hispanics compare unfavorably. Patterns for some morbidity conditions – most notably diabetes and metabolic issues – place Hispanics at higher risk than other U.S. racial/ethnic groups. Future Hispanic health and longevity patterns are troubling for a number of reasons: the unresolved legal status of over 8 million unauthorized immigrants, continued low levels of Hispanic insurance coverage even after health care reform, some unfavorable trends in

*Robert A.  
Hummer &  
Mark D.  
Hayward*

Hispanic health behavior, and continued, substantial socioeconomic disadvantages for Hispanics relative to whites. While these risks and vulnerabilities are shared with other groups as well, development

of policies to address these issues will be of particular value to the large and growing elderly Hispanic population, and by extension, the U.S. elderly population in general.

#### ENDNOTES

\* Contributor Biographies: ROBERT A. HUMMER is Centennial Commission Professor in the Liberal Arts in the Department of Sociology and Faculty Research Associate in the Population Research Center at the University of Texas at Austin. His research focuses on the accurate description and more complete understanding of health and mortality disparities in the U.S. population. He is the coauthor of *Living and Dying in the U.S.A.: Health, Behavioral, and Social Differentials of Adult Mortality* (with Richard Rogers and Charles Nam, 2000) and the coeditor of the volume *Religion, Families, and Health: Population-Based Research in the United States* (with C. E. Ellison, 2010). He has also published extensively in demography, sociology, and public health journals.

MARK D. HAYWARD is Professor of Sociology, Centennial Commission Professor in the Liberal Arts, and Faculty Research Associate in the Population Research Center at the University of Texas at Austin. His primary research focus is how life-course exposures and events influence the morbidity and mortality experiences of the older population. He has published extensively on population health topics in such journals as *Demography*, *Journal of Health and Social Behavior*, and *Social Science & Medicine*.

Authors' Note: Funding was provided by the MacArthur Foundation Research Network on an Aging Society (John W. Rowe, Chair), and by infrastructural research support (5 R24 HD042849) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development to the Population Research Center at the University of Texas at Austin.

- 1 Karen R. Humes, Nicholas A. Jones, and Roberto R. Ramirez, *Overview of Race and Hispanic Origin: 2010* (Washington, D.C.: U.S. Census Bureau, 2011).
- 2 U.S. Census Bureau, "Table 6. Percent of the Population by Race and Hispanic Origin for the United States: 2015 to 2060," *2012 National Population Projections* (Washington, D.C.: U.S. Census Bureau, Population Division, 2012), <https://www.census.gov/population/projections/data/national/2012.html>.
- 3 Jennifer M. Ortman, Victoria A. Velkoff, and Howard Hogan, *An Aging Nation: The Older Population in the United States* (Washington, D.C.: U.S. Census Bureau, 2014).
- 4 Kyriakos S. Markides and Jeanne Coreil, "The Health of Southwestern Hispanics: An Epidemiologic Paradox," *Public Health Reports* 101 (1986): 253–265; and Kyriakos S. Markides and Karl Eschbach, "Hispanic Paradox in Adult Mortality in the United States," in *International Handbook of Adult Mortality*, ed. Richard G. Rogers and Eileen M. Crimmins (New York: Springer, 2011), 227–240.
- 5 Elizabeth Arias, "United States Life Tables by Hispanic Origin," *Vital and Health Statistics Series 2, No. 152* (Hyattsville, Md.: National Center for Health Statistics, 2010), 1–35; Irma T. Elo, Cassio M. Turra, Bert Kestenbaum, and B. Renee Ferguson, "Mortality Among Elderly Hispanics in the United States: Past Evidence and New Results," *Demography* 41 (2004): 109–128; Joseph T. Lariscy, Robert A. Hummer, and Mark D. Hayward, "Hispanic Older Adult Mortality in the United States: New Estimates and An Assessment of Factors Shaping the Hispanic Paradox," *Demography* 52 (1) (2015).
- 6 Lariscy, Hummer, and Hayward, "Hispanic Older Adult Mortality in the United States."

- 7 Andrew Fenelon, "Revisiting the Hispanic Mortality Advantage in the United States: The Role of Smoking," *Social Science and Medicine* 82 (2013): 1–9; and Gopal K. Singh and Robert A. Hiatt, "Trends and Disparities in Socioeconomic and Behavioural Characteristics, Life Expectancy, and Cause-Specific Mortality of Native-Born and Foreign-Born Populations in the United States, 1979–2003," *International Journal of Epidemiology* 35 (2006): 903–919.
- 8 Robert A. Hummer, Richard G. Rogers, Sarit H. Amir, Douglas Forbes, and W. Parker Frisbie, "Adult Mortality Differentials among Hispanic Subgroups and Non-Hispanic Whites," *Social Science Quarterly* 81 (2000): 459–476.
- 9 Fenelon, "Revisiting the Hispanic Mortality Advantage in the United States"; and Markides and Eschbach, "Hispanic Paradox in Adult Mortality in the United States."
- 10 Karl S. Eschbach, Soham Al-Snih, Kyriakos S. Markides, and James S. Goodwin, "Disability and Active Life Expectancy of Older U.S.- and Foreign-Born Mexican Americans," in *The Health of Aging Hispanics*, ed. Jacqueline L. Angel and Keith E. Whitfield (New York: Springer, 2007): 40–49; and Mark D. Hayward, Robert A. Hummer, Chi-Tsun Chiu, César González-González, and Rebeca Wong, "Does the Hispanic Paradox in U.S. Adult Mortality Extend to Disability?" *Population Research and Policy Review* 33 (2014): 81–96.
- 11 Steven A. Haas, Patrick M. Krueger, and Leah Rohlfson, "Race/Ethnic and Nativity Disparities in Later Life Physical Performance: The Role of Health and Socioeconomic Status Over the Life Course," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 67 (2012): 238–248.
- 12 Eileen M. Crimmins, Jung Ki Kim, Dawn E. Alley, Arun Karlamangia, and Teresa Seeman, "Hispanic Paradox in Biological Risk Profiles," *American Journal of Public Health* 97 (2007): 1305–1310; and Gopal K. Singh and Mohammad Siahpush, "Ethnic-Immigrant Differentials in Health Behaviors, Morbidity, and Cause-Specific Mortality in the United States: An Analysis of Two National Data Bases," *Human Biology* 74 (2002): 83–109. For statistics on hypertension, see Crimmins et al., "Hispanic Paradox in Biological Risk Profiles"; and Zhenmei Zhang, Mark D. Hayward, and Chuntian Lu, "Is There a Hispanic Epidemiologic Paradox in Later Life? A Closer Look at Chronic Morbidity," *Research on Aging* 34 (2012): 548–571.
- 13 Crimmins et al., "Hispanic Paradox in Biological Risk Profiles."
- 14 Zhang et al., "Is There a Hispanic Epidemiologic Paradox in Later Life?"
- 15 Lariscy, Hummer, and Hayward, "Hispanic Older Adult Mortality in the United States."
- 16 Jeffrey S. Passel and D'Vera Cohn, *A Portrait of Unauthorized Immigrants in the United States* (Washington, D.C.: Pew Hispanic Center, 2009).
- 17 Douglas S. Massey, "America's Immigration Policy Fiasco: Learning from Past Mistakes," *Dædalus* 142 (3) (Summer 2013): 5–15.
- 18 Passell and Cohn, "A Portrait of Unauthorized Immigrants to the United States."
- 19 Massey, "America's Immigration Policy Fiasco."
- 20 Steven P. Wallace, Jacqueline Torres, Tabahir Sadegh-Nobari, Nadereh Pourat, and E. Richard Brown, "Undocumented Immigrants and Health Care Reform," Final Report to The Commonwealth Fund, UCLA Center for Health Policy Research, 2012.
- 21 *Ibid.*; and Marc L. Berk, Claudia L. Schur, Leo R. Chavez, and Martin Frankel, "Health Care Use Among Undocumented Latino Immigrants," *Health Affairs* 19 (2000): 44–57.
- 22 Carmen DeNavas-Walt, Bernadette D. Proctor, and Jessica C. Smith, "Income, Poverty, and Health Insurance Coverage in the United States: 2012," *Current Population Reports* P60-245 (Washington, D.C.: U.S. Census Bureau, 2013), 1–77.
- 23 Jenna Levy, "U.S. Uninsured Rate Drops to 13.4%," Gallup, 2014, <http://www.gallup.com/poll/168821/uninsured-rate-drops.aspx> (accessed September 4, 2014).

- <sup>24</sup> Henry J. Kaiser Family Foundation, “Health Coverage for the Hispanic Population Today and Under the Affordable Care Act,” *Kaiser Commission of Medicaid and the Uninsured: Key Facts* (Washington, D.C.: Kaiser Family Foundation, 2013): 1–6, <http://www.kff.org/kcmu>.
- <sup>25</sup> Samuel H. Preston, Andrew Stokes, Neil K. Mehta, and Bochen Cao, “Projecting the Effect of Changes in Smoking and Obesity on Future Life Expectancy in the United States,” *Demography* 51 (2014): 27–49.
- <sup>26</sup> Juan A. Rivera, Simon Barquera, Teresa González-Cossío, Gustavo Olaiz, and Jaime Sepulveda, “Nutrition Transition in Mexico and in Other Latin American Countries,” *Nutrition Reviews* 62 (2004): S149–S157.
- <sup>27</sup> Katherine M. Flegal, Margaret D. Carroll, Brian K. Kit, and Cynthia L. Ogden, “Prevalence of Obesity and Trends in the Distribution of Body Mass Index among U.S. Adults, 1999–2010,” *JAMA: The Journal of the American Medical Association* 307 (2012): 491–497.
- <sup>28</sup> Preston, Stokes, Mehta, and Cao, “Projecting the Effect of Changes in Smoking and Obesity on Future Life Expectancy in the United States.”
- <sup>29</sup> Andrew Fenelon, “Revisiting the Hispanic Mortality Advantage in the United States: The Role of Smoking,” *Social Science and Medicine* 82 (2013): 1–9; and Lariscy, Hummer, and Hayward, “Hispanic Older Adult Mortality in the United States.”
- <sup>30</sup> Centers for Disease Control and Prevention, “Lung Cancer Rates by Race and Ethnicity,” <http://www.cdc.gov/cancer/lung/statistics/race.htm>.
- <sup>31</sup> American Lung Association Research and Program Service (Epidemiology and Statistics Unit), “Trends in Tobacco Use,” 2011, <http://www.lung.org/finding-cures/our-research/trend-reports/Tobacco-Trend-Report.pdf>
- <sup>32</sup> Lariscy, Hummer, and Hayward, “Hispanic Older Adult Mortality in the United States.”
- <sup>33</sup> Bruce G. Link and Jo Phelan, “Social Conditions as Fundamental Causes of Disease,” *Journal of Health and Social Behavior* 36 (extra issue) (1995): 80–94; and Jo C. Phelan, Bruce G. Link, and Parisa Tehranifar, “Social Conditions as Fundamental Causes of Health Inequalities: Theory, Evidence, and Policy Implications,” *Journal of Health and Social Behavior* 51 (extra issue) (2010): S28–S40.
- <sup>34</sup> S. Jay Olshansky, Toni Antonucci, Lisa Berkman, Robert H. Binstock, Axel Boersch-Supan, John T. Cacioppo, Bruce A. Carnes, Laura L. Carstensen, Linda P. Fried, Dana P. Goldman, James Jackson, Martin Kohli, John Rother, Yuhui Zheng, and John Rowe, “Differences in Life Expectancy Due to Race and Educational Differences Are Widening, and Many May Not Catch Up,” *Health Affairs* 31 (8) (2012): 1803–1813.
- <sup>35</sup> Marta Tienda and Faith Mitchell, eds., *Multiple Origins, Uncertain Destinies: Hispanics and the American Future* (Washington, D.C.: The National Academies Press, 2006).
- <sup>36</sup> Rakesh Kochhar, Richard Fry, and Paul Taylor, *Wealth Gaps Rise to Record Highs Between Whites, Blacks, and Hispanics* (Washington, D.C.: Pew Research Center, 2011), [http://www.pewsocialtrends.org/files/2011/07/SDT-Wealth-Report\\_7-26-11\\_FINAL.pdf](http://www.pewsocialtrends.org/files/2011/07/SDT-Wealth-Report_7-26-11_FINAL.pdf).
- <sup>37</sup> Tienda and Mitchell, *Multiple Origins, Uncertain Destinies*.
- <sup>38</sup> Robert F. Schoeni, James S. House, George A. Kaplan, and Harold Pollack, eds., *Making Americans Healthier: Social and Economic Policy as Health Policy* (New York: Russell Sage Foundation, 2008).
- <sup>39</sup> Lariscy, Hummer, and Hayward, “Hispanic Older Adult Mortality in the United States”; and Fernando Riosmena, Bethany G. Everett, Richard G. Rogers, and Jeff A. Dennis, “Negative Acculturation and Nothing More? Cumulative Disadvantage and Mortality during the Immigrant Adaptation Process among Latinos in the U.S.,” *International Migration Review* (forthcoming 2015).



# The Future of Intergenerational Relations in Aging Societies

*Frank F. Furstenberg, Caroline Sten Hartnett,  
Martin Kohli & Julie M. Zissimopoulos*

*Abstract: As the pressure mounts to reduce the public costs of supporting rapidly aging societies, responsibility for supporting elderly people will increasingly fall on their family members. This essay explores the family's capacity to respond to these growing challenges. In particular, we examine how family change and growing inequality pose special problems in developed nations, especially the United States. This essay mentions a series of studies supported by the MacArthur Foundation Research Network on an Aging Society that aim to examine the future of intergenerational exchange. We focus particularly on adults who have dependent and young-adult children and who must also care for elderly parents, a fraction of the population that will grow substantially in the coming twenty-five years.*

FRANK F. FURSTENBERG, a Fellow of the American Academy since 1994, is the Zellerbach Family Professor of Sociology Emeritus at the University of Pennsylvania.

CAROLINE STEN HARTNETT is an Assistant Professor of Sociology at the University of South Carolina.

MARTIN KOHLI is Distinguished Bremen Professor at the Bremen International Graduate School of Social Sciences and Professor of Sociology, Emeritus, at the European University Institute, Florence.

JULIE M. ZISSIMOPOULOS is an Assistant Professor at the Sol Price School of Public Policy and the Associate Director of the Schaeffer Center at the University of Southern California.

(\*See endnotes for complete contributor biographies.)

Family systems are among the most enduring and universal institutions that human beings have devised; in one form or another, they exist in every society as a social arrangement for regulating reproduction, supporting the young, and caring for the elderly. The survival of family systems stems from their remarkable ability to transform their structure and practices in response to new demographic, social, and economic conditions. That the family system has persevered despite the vast global changes of the last century attests to this resiliency and adaptability. But there are a number of indications that the family's capacity to perform its traditional functions is becoming strained as the pace of social and economic change quickens around the globe.

Family formation and childbearing, robust a half-century ago, have slowed to below population-replacement levels in most developed nations. Marriage has become a less central and stable institution, making child care more precarious. The breakdown of the gender-based division of labor has challenged women and men to develop more complex routines

for managing work and family roles. Greater parental investment and support is required for childrearing today: lengthier and increasingly expensive post-secondary education and depressed job prospects have prolonged young adults' dependency on their parents. On the other hand, a rapid increase in longevity has enlarged the ranks of the elderly, contributing – along with the smaller number of the young – to an increase in their share of the total population. This adds to the elderly's capacity to assist younger generations, though at the same time it increases the future burdens on younger generations to support and care for elderly family members when they become frail and incapacitated.

The decline of fertility and growth of longevity have produced a rapidly aging society in many parts of the world. This pattern of population aging will be accentuated as the large cohort of individuals born after World War II – the baby boomers – reaches seniority. The demographic profile for each wealthy nation differs depending on the timing of its baby boom and the magnitude of its baby bust (a consequence of rapidly decreasing fertility in the latter third of the last century). Some are aging sooner or more rapidly than others; these nations have provided some insights about the effects of population aging. (For more on demographic shifts in the United States, see S. Jay Olshansky's essay in this volume.)

Public systems such as Social Security and Medicare were devised a century or more ago partly to relieve some of the economic and social pressures on the family – midlife parents in particular – to assume complete responsibility for the care of both the young and the elderly. Due to population aging, these public support systems will face considerable pressure in many societies, including in the United States. Any reductions in public expenditure will

only increase the burden on working-age adults already challenged by the temporal and financial demands of supporting the elderly while simultaneously having to invest more in caring for and educating the young. In this essay, we explore whether families will be up to this task.

We begin this inquiry by briefly summarizing some salient findings on practices of intergenerational support and exchange in economically developed nations. We will then discuss changing conditions that are likely to complicate (and possibly alter or erode) these existing familial relationships and patterns of intergenerational resource allocation. We also examine coping mechanisms families develop to accommodate intergenerational needs. In the second part of the paper, we will describe the work of the MacArthur Foundation Research Network on an Aging Society, which has devised a series of projects to explore these social issues linked with aging societies, and whose work may contribute significantly to the knowledge base that informs U.S. policy on aging. We conclude by considering some possible dilemmas that policy-makers may face in their efforts to support families.

A vast amount of research has been done over the past several decades on how generations within family systems support and assist each other over time. Patterns of intergenerational exchange operate quite differently in traditional societies, developing countries, and advanced economies. Traditional societies have often devised means of protecting the elderly generation (G<sub>1</sub>) by maintaining intergenerational households or mandating that the middle generation (G<sub>2</sub>) provide financial support to elderly parents, though older parents (G<sub>1</sub>) may also continue to assist their adult children by caring for their offspring (G<sub>3</sub>) or working. Two distinctive features of traditional systems are that the

oldest generation 1) does not survive in great numbers and 2) produces a relatively high number of children who can provide support as they come of age. Moreover, low geographical mobility tends to keep families in the same locale, ensuring that parents will have surviving children around to provide support when they are no longer able to take care of themselves.<sup>1</sup>

This general pattern of an upward flow of resources from the middle to the oldest generation typically persists in developing countries, though due to the expansion of labor markets, second-generation members often move away from their birth communities to seek higher incomes. In international migration, this may lead to considerable remittances from G2s to G1s. On the other hand, children may sometimes have to be left behind in the care of their grandparents, especially when mothers move to wealthier countries (often to become paid care workers for children or the elderly). The introduction of old-age pensions – frequently the first step of public social assistance – greatly improves the financial position of the elderly and may lead to a reversal of the financial flow by enabling them to aid the families of their adult children and help cover the schooling expenses of their grandchildren.<sup>2</sup>

In nations with advanced economies, the flow of economic assistance more generally moves downward. Children and grandchildren require more and longer support due to extended and more costly education and difficult transitions into work; conversely, the elderly are often economically better-off thanks to public support, savings, and improvements in health care. In all European nations, parents continue to provide more economic assistance to their children and grandchildren than they receive (at least through their seventies). This is true even if we include nonmonetary help.<sup>3</sup> Children (and possibly grandchildren) often reciprocate by aiding their

parents when they become frail or incapacitated, but are less often called upon to provide economic assistance to elderly parents (many of whom enjoy the economic security provided by their social security benefits, pensions, and savings). Those in need of personal care often first turn to spouses or partners, but children may also step in, either as caregivers or as organizers and monitors of third-party or institutional care.

Admittedly, this is an oversimplified picture of intergenerational exchange in wealthy countries; there is much variation both within and across individual nations. First, the magnitude of public support varies greatly among welfare systems. Second, countries also differ in terms of the forms of their support systems (family-based versus individualized).<sup>4</sup> Third, the flow of resources works differently across different economic strata. Among the poor and near-poor, children may be called upon to help out both economically and nonmonetarily throughout their lives and cannot readily afford to purchase assistance for older relatives, as might be common among the more privileged. Fourth, there is a great deal of evidence showing that racial and ethnic differences correlate with different patterns of support and exchange.<sup>5</sup> Some ethnic groups are much more likely to maintain intergenerational households in which the volume of support and assistance is more intense and reciprocal over time.<sup>6</sup> (Interestingly, however, there is a paucity of evidence on the workings of intergenerational households in contemporary societies.) Finally, divorce and remarriage affect the amount of support provided both downward and upward throughout the life course. Divorced fathers not infrequently lose contact with some or all of their children, who in turn are unwilling or unavailable to assist their fathers in later life. Stepfathers may fill in to some extent, but there is strong evidence

*Frank E. Furstenberg,  
Caroline Sten  
Hartnett, Martin  
Kohli & Julie M.  
Zissimopoulos*

that children feel less obligated to care for elderly stepparents than parents.<sup>7</sup>

As we contemplate a potential retreat of public systems of assistance for the elderly in the next several decades, there are sound reasons to be concerned about families' ability to pick up the slack. This is especially true in the United States, where the population is becoming more economically stratified, more ethnically diverse, and more varied in its family forms.

Impending demographic change in the size of elderly and middle-aged cohorts drives much of the concern about the pressures likely to mount on parents in midlife and late midlife (roughly ages forty-five to sixty-four).<sup>8</sup> These middle-aged parents (mothers especially) are often called the "sandwiched generation," squeezed by the simultaneous demands of supporting their children, assisting a frail elderly parent, and being in the labor force. Some argue that this term exaggerates the pressure faced by this generation, because many parents take active steps to avoid being in this position or do not have to fill all three roles at once. Nonetheless, it is highly likely that a substantial percentage of families will face these circumstances in the next two or three decades. Though there is little research describing the incidence and duration of episodes of being "sandwiched" for middle-aged adults, we know that about one-third of women in late middle age (between fifty-five and sixty-nine) report giving support to both children and parents at some point.<sup>9</sup> This is likely to increase, since the proportion of adults who have both children and living parents is rising.<sup>10</sup>

The number of elderly (including parents, parents-in-law, and stepparents) who survive to become incapacitated or frail will increase as the baby-boom cohort advances into their later years in the next several decades. This poses a new challenge for the reconciliation of family and work,

similar to that faced by young parents. At the same time, unless current patterns of family formation rapidly reverse – and there is no reason to expect that they will – a rising number of young adults will not begin having children until their thirties or even later. More than one-third of births are now to women over thirty, and the average age at first birth has risen steadily, from twenty-one in 1970 to nearly twenty-six in 2012.<sup>11</sup> Not all of these young adults remain dependents while forming partnerships and having children, but many do receive partial or complete support from their parents in their early adult years. The proportion of young adults being assisted by their parents has been steadily rising over the past several decades.<sup>12</sup> Were this pattern of the prolongation of early adulthood to continue, it would result in an even greater level of "sandwiching," mandating that a growing proportion of midlife adults divide time and resources between their parents, their children, and possibly even their grandchildren.

These demographic trends of greater longevity and later family-formation are compounded by rapid changes in marriage practices that have tended to make family obligations more uncertain. Compared to four or five decades ago, young adults marry later and divorce more often, making cohabitation and remarriage more common and socially acceptable. Marriage has become a less central institution for organizing childbearing than it was a half-century ago; a growing proportion of children are born out of wedlock, often into cohabiting unions (which are less stable family forms, particularly in the United States).<sup>13</sup>

We know all too little about felt obligations to extended kin in varied family circumstances. Existing evidence suggests that marriage – especially a first marriage – confers a greater sense of obligation to in-laws than do consensual unions.<sup>14</sup> Cohabitation may offer a more discretionary and

conditional commitment to both the partners and their extended kin. The growing number of remarriages and cohabitations after a first marriage may result in weaker obligations to in-laws and quasi-in-laws, reducing the level of support to in-laws that accompanied marriages in the past.

As mentioned earlier, an ever-greater fraction of children are growing up with sporadic or limited contact with their biological fathers (and a smaller but rising number instead have limited contact with their biological mothers, or have little contact with either parent). As stated previously, the evidence strongly suggests that children with limited contact with their fathers are – not unsurprisingly – far less likely to provide assistance to them when they become elderly.<sup>15</sup> A third trend associated with family change may also affect the availability of support for older people in the future: childlessness has been rising rapidly in many nations with advanced economies, including the United States, where close to one-sixth of all women in their forties are currently childless.<sup>16</sup> Fortunately, much of the research on this topic suggests that the childless are not necessarily stranded in old age because many acquire surrogate caregivers who may or may not be kin.<sup>17</sup> Nonetheless, the relative shortage of children among people entering midlife may eventually reduce the amount of assistance and care available to certain subsets of the elderly.

The constellation of family changes has not been uniformly distributed; markedly different family forms exist across the social strata. As inequality has widened in the United States and elsewhere, family practices among the privileged, the disadvantaged, and those in the middle have become more pronounced and distinct from one another.<sup>18</sup>

Disadvantaged families are generally formed earlier, typically outside of marriage, and they are less stable, with less

contact between fathers and children.<sup>19</sup> Family units are more complex, often containing step- or surrogate parents and half-siblings.<sup>20</sup> Coresidence among three generations is a common adaptive strategy for managing economic pressures and the greater need for assistance by kin.<sup>21</sup> At the same time, the elderly have significantly shorter life spans, suggesting that pressures on midlife parents (often matriarchs charged with keeping the family together) are considerable. Cutbacks in public support most acutely affect these overburdened families, and it is unclear how parents will be able to invest adequately in their children while supporting frail parents or grandparents (shorter generations result in more four-generation families in this segment of the population, owing to earlier childbearing ages).

Issues facing the privileged are likely to be less acute, if only because of their greater resources for purchasing assistance when needed. Nonetheless, many will face an overlap between demands from children and from elder parents and in-laws. Affluent parents tend to provide high levels of support to young adult children and at the same time have parents with relatively high life expectancies.<sup>22</sup> As greater numbers of baby-boomers reach old age, affluent parents will have to contend with the declining health of their parents and in-laws while they are still launching their young-adult children.

Families of modest and moderate means – the middle third of the economic distribution – face a different situation, at least in countries with limited social safety nets such as the United States. They are squeezed economically because, though they are ineligible for public assistance, they may have obligations to financially assist their older parents and adult children (who may themselves be ineligible for social services). So-called middle-class families may well feel the effects of an

*Frank F. Furstenberg, Caroline Sten Hartnett, Martin Kohli & Julie M. Zissimopoulos*

aging society most acutely. It seems likely that more of these families will adopt the coresidence strategy of low-income households in an effort to pool their resources.

It is impossible to know how economic growth and wage trajectories for various job sectors will mitigate the pressures on families in different countries twenty or thirty years out; however, the prospects do not look especially bright, given that many advanced economies are struggling to maintain the robust economic growth necessary for a good labor market of young and middle-aged adults that are capable of helping to support the oldest generation. Perhaps older persons – who are in better health than previous generations – will be more amenable to remaining in the labor force through their late sixties and early seventies, both to improve their own circumstances and to contribute resources to younger generations.

This much we do know: large parts of the future elderly are likely to be less affluent than current cohorts of individuals over sixty-five. And, in all likelihood, many of their children will be less well off in their middle years than their parents were at the same age. Young adults today are as well-educated (or better-educated) than their parents were, but they are entering adulthood with more debt and more modest labor-market prospects.

These speculations about the future of intergenerational relations are informed by current research, but there are still many unknowns. The demographic growth of the elderly population, followed by a far smaller cohort of younger and middle-aged adults, is fixed, but we do not know exactly how these cohorts will look in another twenty or thirty years as the baby-boom cohort ages. They will certainly be more ethnically diverse, but whether current trends in economic inequality and family change will persist is less clear.

What will the health and economic status of future Americans be? How will the circumstances of the elderly be affected by trends in health and disease and changes in family structure, educational attainment, and public and family support systems? The answers to these questions depend on a range of alternative future scenarios, each with a different set of costs and benefits. Economic and demographic modeling is a useful tool that provides a simplified representation of our future reality.

A team of researchers from the MacArthur Network in collaboration with the Schaeffer Center for Health Policy and Economics at the University of Southern California has been building such a model: the Future Americans Model (FAM). FAM is a simulation model that uses data on groups of Americans over age twenty-five from the Panel Study of Income Dynamics and the Health and Retirement Study in order to understand the short- and long-term implications of changes across cohorts on well-being from birth through death. This model expands on the technical infrastructure and expertise the researchers developed while building and using a similar model, the Future Elderly Model (FEM). Researchers from the Network are also using the FEM to quantify the value of current and future intergenerational support and resource-exchange for Americans aged sixty-five and older. They are simulating the effects of changes in public assistance (via Social Security and Medicare) on these exchanges of money and time across familial generations. Looking forward, the Network researchers' work will deepen our understanding of future intergenerational exchange and support by anticipating future changes to the family.

Part of the challenge of building the Future Americans Model is taking into account the ways in which new family patterns will emerge for each age stratum in the next twenty years. But predicting fam-

ily forms is fraught with challenges. For this reason, the Network has given a grant to a second team of researchers (headed by Chris Sepaki and including Andrew Cherlin, Emily Agee, and Douglas Wolfe) to build a framework for exploring how family forms may evolve over the decades. Such changes may also vary over socioeconomic strata (as well as family forms), affecting the potential flow of family assistance in the near future. The team will begin with different assumptions and an alternate approach to that of the FAM team, using current information about the type and pace of changes in marriage, cohabitation, and fertility within and outside of wedlock. Both teams are exchanging information so that they can determine whether and how different assumptions about family change and the growth of inequality may affect public and private demands for health care and economic support. In the next year, they plan to publish the results from these simulations.

This information will, in turn, give the first team (which is modeling future patterns of costs and care for the elderly) a more specific and nuanced understanding of how demands on midlife parents and their children may overlap with the needs of the baby-boom generation as they age and require greater assistance from their families.

A third project, supported jointly by the Network and the Pew Foundation, involves data collection on a largely unexplored issue: how families in societies with more advanced population aging – such as Germany and Italy – are managing to deal with the simultaneous demands of caring for their children and their elderly parents. The emphasis is on measuring unmet or partially met needs of individuals in the family unit. As we discussed earlier, we anticipate that, in an aging society, midlife parents in particular will face demands for assistance that are beyond their capacity

to meet them. How do parents respond? Do they call on additional relatives such as grandchildren or siblings to help out? Do they look to public services? Or does the demand simply go unmet? The Network will compare the patterns in these already “older” societies with the circumstances of midlife parents in the United States.

To supplement this survey, researchers supported by the Network will be conducting in-depth interviews of family members in a three-generation qualitative study carried out by human development researcher Karen Fingerman and her colleagues.<sup>23</sup> The aim of this research is to examine in depth how exchanges of support are initiated and responded to in daily life when the oldest generation begins to need more assistance. In research on intergenerational exchange, very little attention has been paid to the needs families are unable to meet and what might remedy this shortfall. This qualitative research may help us understand how and when gaps occur between the needs of the elderly and the supply of assistance.

This essay has sketched a picture of a demographic future that may pose considerable challenges for family systems in Western nations that during the twentieth century worked to strike a balance between public and private support. That balance is likely to change, and the economic and health costs of supporting the elderly generation while investing in younger generations will become formidable over the next thirty years. We have observed that this task is likely to become more complex with the aging of the baby-boom cohort, changes in family systems, and the growing stratification of social classes and ethnic groups.

Despite this essay’s overarching focus on the problems, there are some silver linings to the current demographic situation. The relative paucity of children (G3s) compared to the elderly (G1s) could mean that

*Frank F. Furstenberg,  
Caroline Sten Hartnett, Martin Kohli & Julie M. Zissimopoulos*

although seniors will be less financially well-off on average, there will be a larger cohort of them to provide assistance to their children and grandchildren. The ratio of seniors to grandchildren is likely to soar in the next fifteen to twenty years, suggesting the possibility of a greater flow of parent and grandparent assistance before the older generation requires assistance, by which point grandchildren may have become a more potent source of assistance to the elderly. In fact, we know very little about how flows of assistance to the young are reciprocated over longer stretches of time.

We do not dismiss the possibility that significant social, economic, and demographic changes could alter the rather bleak sce-

nario of declining support for the elderly that we have projected. Nonetheless, the American public, unlike its European counterparts, appears to be relatively unaware of the looming problems facing it as the baby-boom cohort reaches an advanced age.<sup>24</sup> The pressures on an already overburdened and rapidly changing family system suggest that we could begin to see a diminution (if not a full reversal) of the downward flows of assistance from elderly parents and relatives to younger generations. Were this to happen, it could restrict social mobility and become an added source of inequality in the United States, which is already among the most socioeconomically unequal of all economically developed nations.

#### ENDNOTES

\* Contributor Biographies: FRANK F. FURSTENBERG, a Fellow of the American Academy since 1994, is the Zellerbach Family Professor of Sociology Emeritus at the University of Pennsylvania. He has authored or edited numerous books, including *Destinies of the Disadvantaged: Teenage Childbearing and Public Policy* (2007); *Managing to Make It: Urban Families in High-Risk Neighborhoods* (with Thomas D. Cook, Jacquelynne Eccles, and Glen H. Elder, Jr., 1999); and *The New American Grandparent: A Place in the Family, a Life Apart* (with Andrew J. Cherlin, 1986). His most recent book is *Behind the Academic Curtain: How to Find Success and Happiness with a Ph.D.* (2013).

CAROLINE STEN HARTNETT is an Assistant Professor of Sociology at the University of South Carolina. Her research has been published in such journals as *Population Studies*, *Demographic Research*, and *Sociological Quarterly*.

MARTIN KOHLI is Distinguished Bremen Professor at the Bremen International Graduate School of Social Sciences (Germany) and Professor of Sociology, Emeritus, at the European University Institute, Florence (Italy). His work has been published in such journals as *European Sociological Review*, *Demographic Research*, *Research in Human Development*, and *Journal of European Social Policy*, as well as in the recent editions of the *Handbook of Aging and the Social Sciences* (ed. Robert H. Binstock and Lisa K. George).

JULIE M. ZISSIMOPOULOS is an Assistant Professor at the Sol Price School of Public Policy and the Associate Director of the Schaeffer Center at the University of Southern California. Her research has recently appeared in such journals as *The Journal of Economic Perspectives*, *Journal of Health Economics*, *Journal of Human Resources*, and *Demography*.

<sup>1</sup> John C. Caldwell, "Toward a Restatement of Demographic Transition Theory," *Population and Development Review* 2 (3–4) (1976): 321–366.

<sup>2</sup> United Nations Department of Economic and Social Affairs, *World Youth Report 2003: The Global Situation of Young People* (New York: United Nations, 2004).



- 3 Martin Kohli, Marco Albertini, and Harald Künemund, "Linkages among Adult Family Generations: Evidence from Comparative Survey Research," in *Family, Kinship and State in Contemporary Europe* (Vol. 3: *Perspectives on Theory and Policy*), ed. Patrick Heady and Martin Kohli (Frankfurt: Campus Verlag, 2010), 225–248.
- 4 Marco Albertini, Martin Kohli, and Claudia Vogel, "Intergenerational Transfers of Time and Money in European Families: Common Patterns – Different Regimes?" *Journal of European Social Policy* 17 (4) (2007): 319–334.
- 5 Dennis P. Hogan, David J. Eggebeen, and Clifford C. Clogg, "The Structure of Intergenerational Exchanges in American Families," *The American Journal of Sociology* 98 (6) (1993): 1428–1458; and Debra Umberson, "Relationships between Adult Children and their Parents: Psychological Consequences for Both Generations," *Journal of Marriage and the Family* 54 (3) (1992): 664–674.
- 6 Yoshinori Kamo, "Racial and Ethnic Differences in Extended Family Households," *Sociological Perspectives* 43 (2) (2000): 211–229.
- 7 Pew Research Center, "The Decline of Marriage and Rise of New Families" (Washington, D.C.: Pew Research Center, 2010), <http://www.pewsocialtrends.org/2010/11/18/the-decline-of-marriage-and-rise-of-new-families/>.
- 8 Daphna Gans, Ariela Lowenstein, Ruth Katz, and Julie Zissimopoulos, "Is There a Trade-Off Between Caring for Children and Caring for Parents? The Nexus of Informal and Formal Care for Older Adults," *Journal of Comparative Family Studies* 44 (4) (2013); and Judith Seltzer and Suzanne M. Bianchi, "Demographic Change and Parent-Child Relationships in Adulthood," *Annual Review of Sociology* 39 (2013): 275–290.
- 9 Emily Grundy and John C. Henretta, "Between Elderly Parents and Adult Children: A New Look at the Intergenerational Care Provided by the 'Sandwich Generation,'" *Ageing and Society* 26 (5) (2006): 707–722.
- 10 Emily Wiemers and Suzanne Bianchi, "Sandwiched between Aging Parents and Boomerang Kids in Two Cohorts of American Women," University of Massachusetts Boston Working Paper 2014-06 (Boston: University of Massachusetts Boston Department of Economics, 2014).
- 11 Joyce A. Martin, Brady E. Hamilton, and Michelle Osterman, *Three Decades of Twin Births in the United States, 1980–2009* (Hyattsville, Md.: National Center for Health Statistics, Centers for Disease Control and Prevention, 2012); Joyce A. Martin, Brady E. Hamilton, Michelle J. K. Osterman, Sally C. Curtin, and T. J. Matthews, *Births: Final Data for 2012* (Hyattsville, Md.: National Center for Health Statistics, Centers for Disease Control and Prevention, 2013); and T. J. Mathews and Brady E. Hamilton, *Delayed Childbearing: More Women Are Having Their First Child Later in Life* (Hyattsville, Md.: National Center for Health Statistics, Centers for Disease Control and Prevention, 2009).
- 12 Patrick D. Wightman, Megan Patrick, Robert Schoeni, and John Schulenberg, *Historical Trends in Parental Financial Support of Young Adults* (Ann Arbor: University of Michigan, 2013).
- 13 Andrew J. Cherlin, "The Deinstitutionalization of American Marriage," *Journal of Marriage and Family* 66 (4) (2004): 848–861; and Patrick Heuveline and Jeffrey M. Timberlake, "The Role of Cohabitation in Family Formation: The United States in Comparative Perspective," *Journal of Marriage and Family* 66 (5) (2004): 1214–1230.
- 14 Pew Research Center, "The Decline of Marriage and Rise of New Families."
- 15 Teresa M. Cooney and Peter Uhlenberg, "The Role of Divorce in Men's Relations with Their Adult Children after Mid-Life," *Journal of Marriage and Family* 52 (3) (1990): 677–688; Matthijs Kalmijn, "Gender Differences in the Effects of Divorce, Widowhood and Remarriage on Intergenerational Support: Does Marriage Protect Fathers?" *Social Forces* 85 (3) (2007): 1079–1104; and Liliana E. Pezzin and Barbara Steinberg Schone, "Parental Marital Disruption and Intergenerational Transfers: An Analysis of Lone Elderly Parents and Their Children," *Demography* 36 (3) (1999): 287–297.

- <sup>16</sup> Lindsay Monte and Renee Ellis, *Fertility of Women in the United States: 2012* (Washington, D.C.: U.S. Census Bureau, 2014); and Pew Research Center, “The Decline of Marriage and Rise of New Families.”
- <sup>17</sup> Ingrid Connidis, “Contact between Siblings in Later Life,” *Canadian Journal of Sociology/Cahiers canadiens de sociologie* 14 (1989): 429–442; Pearl A. Dykstra, “Childless Old Age,” in *International Handbook of Population Aging*, ed. Peter Uhlenberg (New York: Springer, 2009), 671–690; Colleen Leahy Johnson and Donald J. Catalano, “Childless Elderly and Their Family Supports,” *The Gerontologist* 21 (6) (1981): 610–618; Martin Kohli and Marco Albertini, eds., *Minimal Families: Childlessness and Intergenerational Transfers* (Special Issue of *Ageing & Society*) 29 (8) (2009): 1171–1274; and Robert L. Rubinstein et al., “Key Relationships of Never Married, Childless Older Women: A Cultural Analysis,” *The Journals of Gerontology: Psychological Sciences & Social Sciences* 46 (5) (1991): S270–S277.
- <sup>18</sup> Sara McLanahan, “Diverging Destinies: How Children Are Faring under the Second Demographic Transition,” *Demography* 41 (4) (2004): 607–627; and Sara McLanahan and Christine Percheski, “Family Structure and the Reproduction of Inequalities,” *Annual Review of Sociology* 34 (2008).
- <sup>19</sup> S. Philip Morgan and Ronald R. Rindfuss, “Reexamining the Link of Early Childbearing to Marriage and to Subsequent Fertility,” *Demography* 36 (1) (1999): 59–75; R. Kelly Raley and Larry Bumpass, “The Topography of the Divorce Plateau: Levels and Trends in Union Stability in the United States after 1980,” *Demographic Research* 8 (8) (2003): 245–260; Ronald R. Rindfuss, S. Philip Morgan, and Kate Offutt, “Education and the Changing Age Pattern of American Fertility: 1963–1989,” *Demography* 33 (3) (1996): 277–290; and Judith A. Seltzer, “Relationships between Fathers and Children Who Live Apart: The Father’s Role after Separation,” *Journal of Marriage and Family* 53 (1) (1991): 79–101.
- <sup>20</sup> Frank F. Furstenberg, “Fifty Years of Family Change: From Consensus to Complexity,” *The ANNALS of the American Academy of Political and Social Science* 654 (2014): 12–30.
- <sup>21</sup> Richard Fry and Jeffrey S. Passel, “In Post-Recession Era, Young Adults Drive Continuity Rise in Multi-Generational Living,” Pew Research Center Social and Demographic Trends Project (Washington, D.C.: Pew Research Center, 2014).
- <sup>22</sup> Robert F. Schoeni and Karen E. Ross, “Material Assistance from Families during the Transition to Adulthood,” in *On the Frontier of Adulthood: Theory, Research, and Public Policy*, ed. Richard A. Settersten, Jr., Frank F. Furstenberg, and Rubén G. Rumbaut (Chicago: University of Chicago Press, 2005), 396–417.
- <sup>23</sup> K. L. Fingerma et al., “Who Gets What and Why: Help Middle-Aged Adults Provide to Parents and Grown Children,” *The Journals of Gerontology: Psychological Sciences & Social Sciences* 66 (2011): 87–98.
- <sup>24</sup> Pew Research Center, “Attitudes about Aging: A Global Perspective” (Washington, D.C.: Pew Research Center, 2014), <http://www.pewglobal.org/2014/01/30/attitudes-about-aging-a-global-perspective/>.

# Labor-Force Participation, Policies & Practices in an Aging America: Adaptation Essential for a Healthy & Resilient Population

*Lisa F. Berkman, Axel Boersch-Supan & Mauricio Avendano*

*Abstract: Population aging in the United States poses challenges to societal institutions while simultaneously creating opportunities to build a more resilient, successful, and cohesive society. Work organization and labor-force participation are central to both the opportunities and challenges posed by our aging society. We argue that expectations about old age have not sufficiently adapted to the reality of aging today. Our institutions need more adaptation in order to successfully face the consequences of demographic change. Although this adaptation needs to focus especially on work patterns among the “younger elderly,” our society has to change its general attitudes toward work organization and labor-force participation, which will have implications for education and health care. We also show that work’s beneficial effects on well-being in older ages are often neglected, while the idea that older workers displace younger workers is a misconception emerging from the “lump-of-labor” fallacy. We conclude, therefore, that working at older ages can lead to better quality of life for older people and to a more productive and resilient society overall.*

LISA F. BERKMAN is the Director of the Harvard Center for Population and Development Studies.

AXEL BOERSCH-SUPAN is the Director of the Munich Center for the Economics of Aging at the Max Planck Institute for Social Law and Social Policy.

MAURICIO AVENDANO is Principal Research Fellow and Deputy Director of LSE Health at the London School of Economics and Political Science.

(\*See endnotes for complete contributor biographies.)

Population aging in the United States, as in most countries around the world, poses many challenges to our major private, public, and societal institutions. At the same time, however, it creates great opportunities for building a more resilient, successful, and cohesive society. For several reasons, work organization and labor-force participation are central to both opportunities and challenges posed by an aging population. First, for all but a very few, working remains the main source of income for consumption and for savings. Work also has an anchoring function in society, bringing multiple benefits to our physical, social, and emotional well-being. Given the continuing increase in life expectancy in aging societies, it is more necessary than ever before to revisit the role of work in older ages and the opportunities that longer working lives can bring to aging societies. We

argue in this essay that individual expectations about old age have not sufficiently adjusted to the new reality of an aging society. Reflecting this, our private, public, and societal institutions suffer from the same disconnect and now need to adapt considerably to face the challenges and embrace the opportunities of demographic change. Although this adaptation must focus especially on work patterns among the “younger elderly,” our entire society has to adapt its attitudes toward work organization and labor-force participation, and in the process rethink its education and health care policies and expectations.

In this essay, we will describe some of the often understated benefits that working and remaining active may have for health and well-being in older populations. Furthermore, it is often claimed that an older workforce has negative implications for general productivity and displaces younger workers from positions they would otherwise occupy. We will show that this is a misconception emerging from the “lump-of-labor” fallacy: the idea that the amount of work available to laborers is fixed. We maintain that it is not demographic transitions per se that will shape our future, but instead how our institutions and policies respond and adapt to them. It is our choice.

Individual expectations about old age tend to be formed by looking to history. Our intuition about health and workability at older ages stems to a large extent from the experiences of our parents and grandparents. Our expectations about what Social Security should deliver to us stem from what Social Security delivered to previous generations. We have a hard time imagining, however, what our lives will look like in twenty-five or fifty years: how long we will live, how healthy we will be by then, and under how much pressure Social Security will be. We will address all

of these issues, beginning with the salient points about Social Security (a more detailed discussion of which may be found in S. Jay Olshansky, Dana P. Goldman, and John W. Rowe’s essay in this volume.)

At the time Social Security was established in 1935, sixty-five was commonly the age U.S. citizens received other government benefits. (It is important to recall that life expectancy for American men from 1935 to 1940 was about sixty years.) Table 1 shows the dramatic changes in life expectancy that have taken place since then – changes that have been reported in many articles and studies, but that appear not to have entered our collective wealth of self-evident facts on which individual actions and general policy are based.

In the mid-twentieth century, just over half of all Americans who reached the age of twenty-one could expect to reach sixty-five. Many workers paying into Social Security would never live long enough to receive benefits, especially African Americans, whose life expectancy was just over fifty in 1935. Today, however, men who retire at age sixty-five can expect to live for an additional seventeen years; women live even longer.<sup>1</sup> Average life expectancies have risen so sharply since 1935 that it is no surprise that Social Security – and our expectations about what old age looks like – have been unable to keep up.

Significantly, there is also evidence for a substantial increase in healthy and disability-free life expectancy; that is, the number of years men and women can expect to live without major functional limitations. Despite some controversy, the general trend appears clear: over the past decades, as life expectancy has improved in the United States, so too has healthy or disability-free life expectancy. When life expectancy improves and morbidity and disability decrease, this leads to “compression of morbidity,” or a longer part of life

Table 1  
Life Expectancy for Social Security

Lisa F.  
Berkman,  
Axel Boersch-  
Supan &  
Mauricio  
Avendano

Year Cohort Turned 65	Percentage of Population Surviving from Age 21 to Age 65		Average Remaining Life Expectancy for Those Surviving to Age 65	
	Male	Female	Male	Female
1940	53.9	60.6	12.7	14.7
1950	56.2	65.5	13.1	16.2
1960	60.1	71.3	13.2	17.4
1970	63.7	76.9	13.8	18.6
1980	67.8	80.9	14.6	19.1
1990	72.3	83.6	15.3	19.6

Source: Social Security Administration, “Life Expectancy for Social Security,” <http://www.ssa.gov/history/lifeexpect.html>.

spent in good health and a shorter number of years lived in ill health. Most studies show that a significant compression of morbidity has occurred over the last decades in the United States, making it clear that many – although not all – Americans are able to work until after current retirement ages or eligibility for Social Security.<sup>2</sup>

Yet some evidence suggests that compression of morbidity has stagnated in recent years. Even more concerning are current hints that the middle-aged and the “young old” are showing increases in morbidity and functional limitations not evident in earlier cohorts that grew old between 1990 and the present. A closer look at the evidence shows that good health at older ages is strongly predicted by educational attainment and other indicators of socioeconomic status. In a recent study, public health researcher David Rehkopf and colleagues projected the future employment potential for the near-elderly workforce based on demographic trends and trends in mobility and functional status from the 1982 – 2004 National Long Term Care Study and the 1992 – 2010 Health and Retirement Study.<sup>3</sup> Rehkopf’s projections through 2050 focus specific attention on educational differences. His group concludes – based on multiple sce-

narios of population trends in disability – that those with a high school diploma have generally a high and consistent potential to work productively between the ages of fifty-five and seventy-four. The estimates suggest that under most scenarios, about 70 percent of those with at least a high school diploma will be able to work in this age range. These findings are generally in line with studies done by economist David M. Cutler and others, who assume no huge upward turns in disability prevalence, even with modest or no improvements in active life expectancy.<sup>4</sup>

But the same is not true for those with low levels of education. Rehkopf’s team suggests that if less favorable trends continue for men and women without a high school diploma, this group could have depressed levels of ability to work at older ages.<sup>5</sup> These estimates vary much more depending on different assumptions about trends, but they range from just over 0 percent to 60 percent in the most optimistic circumstances. Of course, new medical technologies could alter these trends by providing more support to those with limitations. Furthermore, patterns of immigration bringing in more or less educated young and middle-aged adults could also change these estimates. But, assuming that

less dramatic changes take place, we can anticipate seeing a divided workforce: one group of men and women with a high potential to work in their sixties and seventies, and another whose more substantial disabilities limit their potential for long-term labor-force participation. This division in potential future ability to work makes it even more difficult to form expectations about the type of support an aging society will need. Political discussions tend to focus on one or the other group, stressing either the disadvantaged group's need to retire early or the healthier group's need (or at least ability) to work longer. Adapting work organization and labor-force participation to an aging world, however, requires recognition of U.S. society's deep split between the many for whom healthy life expectancy has dramatically increased, and those who have not enjoyed such improvements in health.

The dramatic demographic changes depicted in Table 1 imply that most men, and even more women, will now survive early childhood and mid-adulthood to reach older ages, meaning that larger and larger numbers of older men and women will reach eligibility for Social Security. When most retirement and other age-related policies were established, they made sense in terms of the current life expectancy. Today they do not. These demographic changes point to the necessity of institutional adaptation.

Among industrialized nations, the United States does not have the largest disparity between life expectancy and retirement age. France and Italy, for example, set the age of early retirement earlier than the United States' (often between fifty-five and sixty), even though they enjoy greater life expectancy than the United States does. Thus, the time from retirement to death is decades long in France and Italy, creating a large imbalance between work pat-

terns and demographic reality. In response, France and Italy have joined the growing number of European countries adapting their statutory retirement ages, although only for future cohorts and with many exceptions. Germany, for instance, has confronted this challenge through a variety of policy adjustments: First, it introduced penalties for early retirement that were gradually phased in between 2000 and 2010. Second, it abolished some special tracks for early retirement, including the differential treatment of men and women (who previously could retire earlier despite their longer life expectancy). Third, the statutory retirement age began gradually shifting in 2013 by about a month per year to reach a target of age sixty-seven by 2029 – roughly in line with the expected increase in the length of life. These adaptations have met much resistance. Accommodating popular opinion, the German government reintroduced a pathway to early retirement at age sixty-three. France and Italy have seen similar policy reversals, backtracking from modest increases in statutory retirement ages to early retirement options. Public anxiety about increased retirement age clearly shows the need to overcome popular misconceptions about actual and future life expectancy and health in older ages.

The United States has done part of its homework and is ahead of Europe in its preparations. The Social Security Amendments of 1983 legislated a gradual shift in the eligibility age for normal Social Security benefits. It will not be sufficient, however, to bring the U.S. Social Security system back into actuarial balance. Thus, a steeper path to changing the average worker's eligibility ages is still necessary.

In addition, given the reality of a divide in the health of America's older population, it is critical to create differentiated paths to retirement and labor-force exits depending upon health (which in turn of-

ten depends on economic and social experiences earlier in life). This life-course fork in long-term trajectories suggests that options for early retirement based on work disability are critical to maintaining intra-generational equity between those who can work longer and those who cannot. A one-size-fits-all Social Security reform will not do; only a differentiated approach will avoid the political backlashes observed in Europe. This may mean the implementation of both a general retirement age that is indexed in some way to life expectancy and an early-retirement option based on the ability to work. For older workers in poor health, it is obviously better for their health and well-being not to have to work. This may mean that certain groups within the population – such as the less educated and those with very physically demanding jobs – may need the option to take an early path to retirement. Current Social Security policies enabling people to start collecting benefits around age sixty-two may be a good model for workers in this group. Those with better functioning or with limitations that do not interfere with their performance could have longer working lives and continue to make substantial contributions to productivity in U.S. society.

Adapting the retirement age to a longer life has many implications. We note, as others in this volume have, that these do not exclusively affect the elderly. First, the ability of future generations to work longer hinges on their education and health throughout life. Additionally, since the United States will have a larger number of retirees in the future than ever before, the younger and middle-aged will have to be better-educated and in better health than they are today in order to carry this additional actuarial burden (regardless of how many older people keep working). To optimize our chances of providing a healthier workforce at older ages, we must

adopt a life-course approach that focuses on the social experiences and behaviors of men and women across all ages. For example, the men and women who will be in their sixties and seventies in 2030 to 2050 are in early to mid-adulthood now. Their current health and social conditions are therefore shaping their capacity and the opportunities for employment options they will have at age sixty, seventy, or eighty. The point is even stronger for education because of the many implications a poor education has on opportunities over the entire course of life. We have no time to lose if we hope to change trajectories of work and retirement.

Debates about our aging society too quickly end up foundering on the issue of Social Security reform and the well-being of the elderly, while tending to ignore the necessity of creating better starting positions for the young. Macroeconomic analyses show that education and health care reform have more leverage in shaping our society's ability to create new jobs, foster better working conditions, and encourage labor-force participation (and thus, indirectly, improve the financial position of Social Security) than an adapted retirement age and disability insurance reform.<sup>6</sup> Other studies suggest that recessions have differential impacts on health in the long run, with disadvantages accruing to particularly vulnerable age groups.<sup>7</sup>

In any argument about retirement, it is important to discuss the implications of working at older ages. In general, being employed is positively associated with health. There are many reasons for this relationship, the most obvious being health selection; that is, healthy people are more likely to be able to work. However, there is growing evidence that employment itself actively yields both physical and mental health benefits. Here, we will explore findings suggesting that employment may im-

*Lisa F. Berkman, Axel Boersch-Supan & Mauricio Avendano*

prove health and well-being by increasing social engagement; developing and maintaining intellectual and interpersonal skills; and, importantly, continuing to earn and delaying the use of savings, pensions, and other benefits. This phenomenon has obvious implications for retirement, since negative effects of retirement are often ignored in the cost-benefit analysis that is done when a state attempts to determine the optimal retirement age.

Retirement introduces large changes to an individual's life. While there is little doubt that poorer health is associated with early retirement, studies on the health impact of retirement have so far reached no consensus on whether retirement promotes or harms health. Differentiation is essential in conducting these studies: physically and psychologically strenuous work conditions are unlikely to be good for a person's health, while working in a rewarding and healthy environment may be better for mental and physical health than leaving the workforce. Many of the existing studies have faced methodological problems: they do not distinguish the effects of aging from those of retirement and they often do not distinguish the effects of retirement from those of previous life experiences or conditions that themselves influence retirement decisions. Many of the descriptive studies lack an adequate control or comparison group. This is important because the decision to retire is not random: there is a self-selection issue. For instance, those who are ill are more likely to retire early. Those with great wealth may also retire early. However, illness may be caused by environmental conditions and wealth by enhanced educational opportunities. Thus, in both cases, retirement is not causally linked to health or wealth but to previous life experiences and conditions. In addition, the effects of retirement on health may depend on many contextual factors, including the adequa-

cy of retirement benefits, as well as individual factors such as occupation, socioeconomic status, and marital status. Retirement may also have different effects on physical and mental health, requiring the need for further differentiation in the methodology of studies on retirement.

The literature on this question has focused on understanding how reforms on the age of retirement – namely, the age of compulsory retirement or the minimum age of retirement – might impact health. These laws have a strong effect on retirement decisions: while a substantial proportion of workers retire before the statutory age of retirement, a higher statutory retirement age encourages individuals to work longer. Here we focus on a small (but growing) set of studies that have attempted to establish causality between the statutory retirement age and retirement's effects on health. We will examine two pieces of evidence that are important in this respect: First, we discuss some of the studies using longitudinal data to assess how retirement influences health, taking into account the complex set of factors that lead individuals into retiring early. Second, we discuss the evidence of the health impact of retirement age-related policy reforms.

Longitudinal studies follow the health of workers during the years prior, during, and after retirement and compare it to the health trajectories of workers who continue to work. Using data from employees from the French companies *Électricité de France* and *Gaz de France* (EDF-GDF; also called the GAZEL cohort), epidemiologist and gerontologist Hugo Westerlund and colleagues found that between the year before and the year after retirement, the prevalence of poor self-rated health fell from 19 percent to 14 percent.<sup>8</sup> These health improvements were stronger for workers with a poor work environment before re-



tirement. Using data from the Whitehall II study of British civil servants, epidemiologist Gill Mein and colleagues found that although mental health improved after retirement, physical functioning did not appear to change.<sup>9</sup> Mental health improvements, however, were confined to high-grade employees. In a reexamination of the data, epidemiologist and social scientist Markus Jokela and colleagues found that compulsory retirement at age sixty and early voluntary retirement were associated with improvements in mental health and physical functioning.<sup>10</sup> In contrast, retirement due to ill health was associated with poorer mental health *and* physical functioning. Their findings highlight the important role of health-related selection as a potential explanation of the negative association between retirement and health. Many of the studies referenced above, which are confined to European populations, cast doubt on the notion that retirement is bad for health overall: the prevailing finding appears to be that in the short term, retirement is associated with an improvement in mental health and little or no change (but no clear evidence of harm) to physical health; though there is no doubt that the effect of retirement depends on the nature of the worker's occupation and health prior to retirement.

More recently, studies have used differences across cohorts in eligibility for retirement benefits (based on legislation on statutory retirement or pensionable ages) to isolate the effects of retirement on health. Economist Kerwin Kofi Charles has used policy variation in mandatory retirement and Social Security benefits that influence retirement incentives by age and cohort in the United States to examine the impact of retirement on depression.<sup>11</sup> He found that retirement leads to better mental health and well-being. Other studies exploit variations across countries in the age of eligibility for early and full retirement bene-

fits. Based on these variations, economists Norma B. Coe and Gema Zamorro found that retirement leads to a short-term decrease in the probability of reporting poor health, and a long-lasting improvement in the overall health index.<sup>12</sup>

It is nonetheless important to distinguish general health from cognitive abilities, which appear to benefit from working at older ages. The impact of retirement on cognitive function is of particular interest in view of the "use it or lose it" hypothesis, which suggests that age-related cognitive decline can be lessened through engagement in cognitively demanding activities.<sup>13</sup> This suggests that individuals whose work is cognitively demanding may benefit from later retirement. Using data from the Whitehall II study, B. A. Roberts and colleagues found that workers who retired experienced smaller improvements in mean cognitive test scores than continuously employed workers, although these differences were not significant for most cognitive test scores.<sup>14</sup> A seminal paper by psychologist Stéphane Adam and colleagues, based on the Study of Health, Aging, and Retirement in Europe (SHARE), found that cognition – measured mainly by memory abilities such as delayed word recall – declined during retirement.<sup>15</sup> This finding has given rise to an entire literature. Economists Susann Rohwedder and Robert J. Willis compared studies of retirement from Europe, the United States, and Britain and found that early retirement has a negative effect on cognitive ability.<sup>16</sup> Their findings, however, are not corroborated by other studies. Based on data from the U.S. Health and Retirement Study (HRS), Coe and colleagues examined employers that offered early retirement windows and found that time in retirement was unrelated to cognitive function among white-collar workers, but may have a positive effect on cognitive function among

*Lisa F. Berkman, Axel Boersch-Supan & Mauricio Avendano*

blue-collar workers.<sup>17</sup> More recent studies based on European data, however, show that early retirees suffer from faster cognitive decline than later retirees.<sup>18</sup> Based on the HRS, sociologist Esteban Calvo and colleagues found that the effect of retirement depends on the timing: those retiring before age sixty-two seem to fare worse than those who continue to work; yet, retirement at age sixty-two or older is not associated with worse physical and mental health.<sup>19</sup> Again, these studies have generally not found any negative effects of retirement on physical or mental health. Other studies have also found that retirement has no impact on mortality.<sup>20</sup>

The studies discussed above reflect the variety of approaches to determining the health effects of retirement. What do these results tell us about the potential impact of recently enacted policies to increase retirement age for future generations across many countries? On the one hand, there seems to be little evidence that retirement harms physical health or increases the risk of dying. Although some studies do suggest that retirement may be beneficial to mental health, distinguishing between different cohorts is again paramount: several studies suggest that the mental health consequences of retirement depend on the working environment and type of job the retiree had. While retirement does appear to benefit the mental health of many working in strenuous conditions and performing manual labor, this is less clear for workers in white-collar positions and with healthy work environments. Finally, the more recent evidence tends to find some support for the hypothesis that retiring later helps individuals maintain better cognitive function.

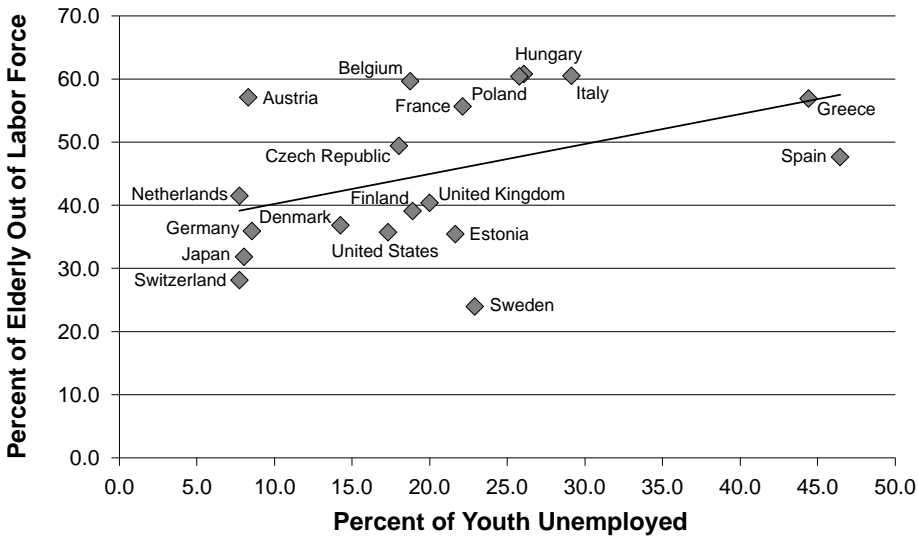
What effects will delayed retirement have on the greater population and the young in particular? Higher rates of labor-force participation in older individuals is

often said to have negative side effects for the economy as a whole. For many years, common sense suggested that the number of jobs in the economy is finite, and that a new population entering the labor force would therefore push other workers out. This so-called lump-of-labor fallacy has been invoked at moments in history when women's labor-force participation increased, because it was thought that they would take "good jobs" away from men. Immigrants to the United States continue to be accused of stealing jobs from other, native lower-wage workers. Likewise, many older people who wish to continue working today are accused of taking jobs from younger workers, creating intergenerational conflict. The lump-of-labor fallacy is one of the most damaging myths in economics.<sup>21</sup> It is deeply rooted in the belief that the economy resembles a small enterprise with a small, fixed number of clients and a fixed demand for its product. Such an enterprise has a set amount of output based on demand, and therefore can only use a certain amount of labor. This is a poor analogue to a sufficiently large and complex economy. This is shown most clearly in the United States, where the sharp increase in female labor-force participation not only did *not* cause mass unemployment for men, but actually correlated with a rise in male employment rates. More specifically, recent findings from cross-national comparisons show that higher employment of older individuals is actually positively correlated with higher employment of the young; that is, countries with a high prevalence of early retirement tend to have higher unemployment rates and lower employment of the young.<sup>22</sup>

Figure 1 shows a correlation between early retirement and youth unemployment in OECD countries. These findings may be challenged, however, as many confounding factors operate at the same time in the

Figure 1  
Early Retirement and Unemployment in the OECD

Lisa F.  
Berkman,  
Axel Boersch-  
Supan &  
Mauricio  
Avendano



The R-squared of the correlation (a measure of statistical tightness) is 18 percent. This is not driven by the outliers (Greece and Spain). If these crisis-affected economies are omitted, the positive correlation is actually stronger (with an R-squared of 21 percent). Source: Figure prepared by authors using calculations based on the 2012 Organisation for Economic Co-operation and Development, *Employment Outlook 2012* (Paris: OECD Publishing, 2012).

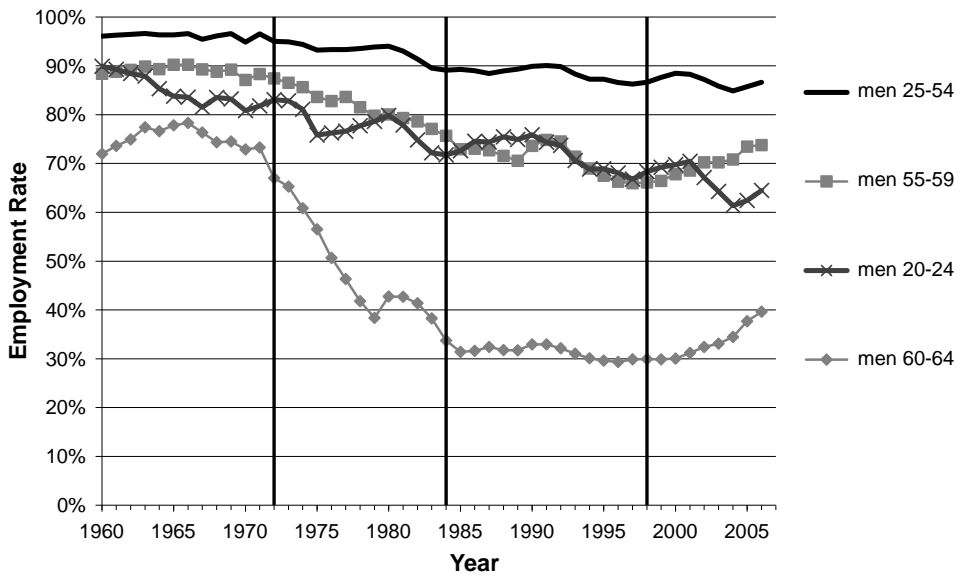
aggregate data. Strong and isolated reforms are more suitable for empirically identifying the effects of pension policies on labor-market outcomes for the young. It is therefore instructive to examine the impact of specific pension reforms on employment rates at different ages.

Germany provides a particularly neat case, since strong and isolated reforms in the years 1972, 1984, and 1998 dramatically changed retirement incentives.<sup>23</sup> Figure 2 depicts the labor-force participation rates for four age groups in Germany, and Figure 3 presents the corresponding unemployment rates. These figures reveal three important facts. First, the 1972 reform dramatically reduced retirement age, labor-force participation, and employment of older individuals. In spite of this, youth employment did not increase. Second, the “bridge to retirement” legislation intro-

duced in 1984 substantially increased the unemployment rate of those aged fifty-five to fifty-nine, since unemployment insurance benefits were used as substitutes for early retirement pensions. Yet youth employment did not rise in response. The phasing-in of “actuarial” adjustments after 1998 reversed the trend of early retirement. Employment increased from 30 percent to 40 percent in those aged sixty to sixty-four. There is a very slight concurrent decrease in employment of the young.

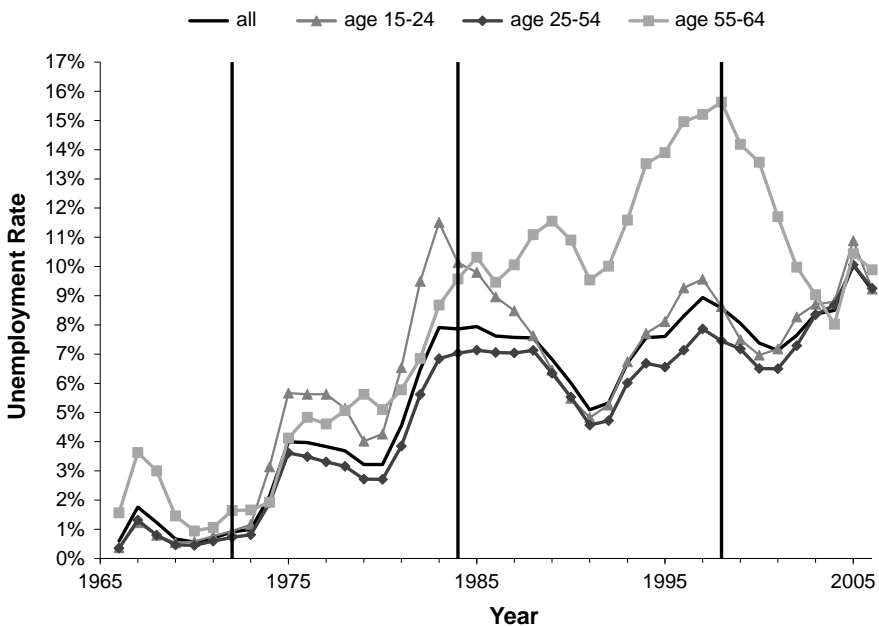
The first two cases are clear-cut: employment of the young and the old moved in tandem. But the third case may appear to contradict this relationship. Axel Boersch-Supan and economist Reinhold Schnabel, however, have shown in their regression analysis of the third case that the slight decrease in employment of the young is in fact a reflection of the business cycle and

Figure 2 Labor-Force Participation of Young and Elderly Males in Germany, 1960 – 2006



Each line represents a different age group. Source : German Mikrozensus, <https://www.destatis.de/DE/Methoden/SUFMikrozensus.html>.

Figure 3 Labor-Force Participation of Young and Elderly Males in Germany, 1966 – 2006



Each line represents a different age group. Source : German Mikrozensus, <https://www.destatis.de/DE/Methoden/SUFMikrozensus.html>.

not a response to the introduction of actuarial adjustments.<sup>24</sup>

The German analysis is part of the work by an international team that used pension-design changes in eleven countries to identify how changes in the employment of older individuals has affected the employment of the young. The results vary considerably across specifications, but in these studies there are many more cases that refute the lump-of-labor hypothesis than cases that support it. As economists Jonathan Gruber and David Wise have written:

The overwhelming weight of the evidence, as well as the evidence from each of the several different methods of estimation, is contrary to the “boxed economy” proposition. We find no evidence that increasing the employment of older persons will reduce the employment opportunities of youth and no evidence that increasing the employment of older persons will increase the unemployment of youth.<sup>25</sup>

Countries have large multifaceted economies that cannot be likened to small companies with fixed, “boxed” labor needs. National economies can grow, increasing the demand for all goods and services and therefore also the demand for labor. As with women and immigrants, the increasing entry of older workers into the workforce contributes to a vital and productive economy. Moreover, unless a pension system is fully funded, there is a tax cost for retirement – whether early or not – that must be spread over the entire economy. This raises the total labor compensation employers must pay for all workers, including the young. The greater the number of older workers that leave the workforce, therefore, the more likely it is that the employment prospects of the young will worsen.

**I**ncreases in life expectancy and compression of morbidity, funding deficits in Social

Security, possible cognitive benefits to working at older ages, and the potential for economic vitalization are some of the factors that support increasing the number of individuals who work past today’s statutory retirement age. It would be naive to expect that this will occur only through Social Security reform and legislation encouraging workers to work longer; we also need structural policy changes that generate a healthier and more productive America. These include policies that invest in human capital throughout individuals’ lives, thus enabling them to work longer; such as policies on early childhood, education, employment protection, work flexibility, income support, poverty reduction, and health care access.<sup>26</sup> Most individuals should not experience deterioration of mental and physical health from working longer; rather, the goal is to support healthy aging in such a way that working will be more feasible and potentially flexible for older cohorts. Only through policies that promote life trajectories leading to healthy aging will we be able to create a workforce able to work longer, and only then will we be able to accrue the true societal benefits of Social Security reform.

How we adapt the major U.S. institutions related to work organization and labor-force participation will shape our future as we move through this demographic transition. Although shaping public and private policies is of paramount importance, this adaptation must take place on all levels, such as with more informal workplace practices. These policies and practices shape patterns of labor-force participation for older men and women and determine how they will pursue retirement. These policies must also take into account that each older generation is a diverse set of men and women with different life-course patterns of education, skills, family constellations, and health conditions, and that this in turn affects the employment op-

*Lisa F. Berkman,  
Axel Boersch-Supan &  
Mauricio Avendano*

opportunities they will have at older ages. Also determining outcomes of labor policy changes are the social, economic, and health capital of Americans in the labor force, currently and in the future. These two sets of conditions – one at the labor-

policy level and the other at the population level (related to the capacity of individuals) – will determine whether we remain a resilient and successful society as we experience the aging of our population.

#### ENDNOTES

\* Contributor Biographies: LISA F. BERKMAN is the Thomas D. Cabot Professor of Public Policy and of Epidemiology at the Harvard School of Public Health and the Director of the Harvard Center for Population and Development Studies. She is the author or editor of numerous books and publications, including *Social Epidemiology* (second edition; edited with Ichiro Kawachi and Maria Glymour, 2014), *Neighborhoods and Health* (edited with Ichiro Kawachi, 2003), and *Health and Ways of Living* (with Lester Breslow, 1983).

AXEL BOERSCH-SUPAN is the Director of the Munich Center for the Economics of Aging at the Max Planck Institute for Social Law and Social Policy. He has written numerous books and his articles have appeared in such journals as *American Economic Review*, *Journal of Econometrics*, *Journal of Public Economics*, and *International Journal of Epidemiology*.

MAURICIO AVENDANO is Principal Research Fellow and Deputy Director of LSE Health at the London School of Economics and Political Science, and Adjunct Associate Professor at Harvard University. His research has been published in such journals as *American Journal of Epidemiology*, *Annual Review of Public Health*, and *Preventive Medicine*.

Authors' Note: This work was supported by the MacArthur Foundation Research Network on an Aging Society and by a grant from the National Institute on Aging (5R01AG040248-03). Mauricio Avendano is also supported by the European Research Council (ERC grant 263684). This paper includes sections adapted from Axel Boersch-Supan, "Myths, Scientific Evidence, and Economic Policy in an Aging World," *The Journal of the Economics of Ageing* 1–2 (2013): 3–15; and from Mauricio Avendano and Lisa F. Berkman, "Labor Markets, Employment Policies, and Health," in *Social Epidemiology*, 2nd ed., ed. Lisa F. Berkman, Ichiro Kawachi, and Maria Glymour (New York: Oxford University Press, 2014).

<sup>1</sup> Social Security Administration, "Actuarial Life Table" (2010), <http://www.ssa.gov/oact/STATS/table4c6.html>.

<sup>2</sup> Vicki A. Freedman, Eileen Crimmins, Robert F. Schoeni, et al., "Resolving Inconsistencies in Trends in Old-Age Disability: Report from a Technical Working Group," *Demography* 41 (3) (2004): 417–441.

<sup>3</sup> David H. Rehkopf, Nancy E. Adler, and John W. Rowe, *The Impact of Health and Education on Future Labor Force Participation of the Near Elderly in the United States*, The MacArthur Foundation Research Network on an Aging Society (forthcoming).

<sup>4</sup> David M. Cutler, Ellen R. Meara, and Seth Richards-Shubik, "Healthy Life Expectancy: Estimates and Implications for Retirement Age Policy," NBER Working Paper 2011, 10–11.

<sup>5</sup> Rehkopf, Adler, and Rowe, *The Impact of Health and Education on Future Labor Force Participation of the Near Elderly in the United States*.

<sup>6</sup> Axel Boersch-Supan, Klaus Härtl, and Alexander Ludwig, "Aging in Europe: Reforms, International Diversification and Behavioral Reactions," *American Economic Review* 104 (5) (2014): 1–7; James J. Heckman, Rodrigo Pinto, and Peter Savelyev, "Understanding the Mechanisms through Which an Influential Early Childhood Program Boosted Adult Outcomes," *American Economic Review* 103 (2013): 2052–2086; and David N. Weil, "Accounting for the Effect of Health on Economic Growth," *Quarterly Journal of Economics* 122 (3) (2007): 1265–1306.

- 7 Carlos Riumallo-Herl, Sanjay Basu, David Stuckler, Emilie Courtin, and Mauricio Avendano, "Job Loss, Wealth and Depression during the Great Recession in the USA and Europe," *International Journal of Epidemiology* 43 (5) (2014): 1508 – 1517; and Philipp Hessel and Mauricio Avendano, "Are Economic Recessions at the Time of Leaving School Associated with Worse Physical Functioning in Later Life?" *Annals of Epidemiology* 23 (11) (2013): 708 – 715.
- 8 Hugo Westerlund, Mika Kivimäki, Archana Singh-Manoux, et al., "Self-Rated Health Before and After Retirement in France (GAZEL): A Cohort Study," *The Lancet* 374 (9705) (2009): 1889 – 1896.
- 9 G. Mein, P. Martikainen, H. Hemingway, S. Stansfeld, and M. Marmot, "Is Retirement Good or Bad for Mental and Physical Health Functioning? Whitehall II Longitudinal Study of Civil Servants," *Journal of Epidemiology and Community Health* 57 (1) (2003): 46 – 49.
- 10 Markus Jokela, Jane E. Ferrie, David Gimeno, et al., "From Midlife to Early Old Age: Health Trajectories Associated with Retirement," *Epidemiology* 21 (3) (2010): 284 – 290.
- 11 Kerwin Kofi Charles, "Is Retirement Depressing?: Labor Force Inactivity and Psychological Well-Being in Later Life," in *Accounting for Worker Well-Being*, ed. Solomon W. Polachek (Amsterdam; San Diego, Calif.; Oxford: Elsevier, 2004), 269 – 299.
- 12 Norma B. Coe and Gema Zamarro, "Retirement Effects on Health in Europe," *Journal of Health Economics* 30 (1) (2011): 77 – 86.
- 13 Susan Rohwedder and Robert J. Willis, "Mental Retirement," *Journal of Economic Perspectives* 24 (1) (2010): 119 – 138.
- 14 Beverly A. Roberts, Rebecca Fuhrer, Michael Marmot, and Marcus Richards, "Does Retirement Influence Cognitive Performance? The Whitehall II Study," *Journal of Epidemiology and Community Health* 65 (11) (2011): 958 – 963.
- 15 Stéphane Adam, Eric Bonsang, Sophie Germain, and Sergio Perelman, "Retirement and Cognitive Reserve: A Stochastic Frontier Approach Applied to Survey Data," CREPP Working Papers 2007/04 (2007).
- 16 Rohwedder and Willis, "Mental Retirement."
- 17 Norma B. Coe, Hans-Martin von Gaudecker, Maarten Lindeboom, and Jürgen Maurer, "The Effect of Retirement on Cognitive Functioning," *Journal of Health Economics* 21 (8) (2012): 913 – 927.
- 18 Eric Bonsang, Stéphane Adam, and Sergio Perelman, "Does Retirement Affect Cognitive Functioning?" ROA Research Memorandum 2010/1 (Maastricht, The Netherlands: Maastricht University, 2010); Adreas Kuhn, Jean-Philippe Wuellrich, and Josef Zweimüller, "Fatal Attraction? Access to Early Retirement and Mortality," Institute for Empirical Research Working Paper 499, Institute for Empirical Research in Economics (University of Zurich, 2010); Rohwedder and Willis, "Mental Retirement"; and Fabrizio Mazzonna and Franco Peracchi, "Aging, Cognitive Abilities, and Retirement," *European Economic Review* 56 (4) (2012): 691 – 710.
- 19 Esteban Calvo, Natalia Sarkisian, and Christopher R. Tamborini, "Causal Effects of Retirement Timing on Subjective Physical and Emotional Health," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 68 (1) (2013): 73 – 84.
- 20 Stefanie Behncke, "Does Retirement Trigger Ill Health?" *Health Economics* 21 (3) (2012): 282 – 300.
- 21 Axel Boersch-Supan, "Myths, Scientific Evidence and Economic Policy in an Aging World," *The Journal of the Economics of Ageing* 1 – 2 (2013): 3 – 15.
- 22 Jonathan Gruber and David A. Wise, eds., *Social Security Programs and Retirement around the World: The Relationship to Youth Employment* (Chicago: University of Chicago Press, 2010); and Axel Boersch-Supan and Reinhold Schnabel, "Early Retirement and Employment of the Young in Germany" in Gruber and Wise, eds., *Social Security Programs and Retirement around the World*, 147 – 166.

- Labor-Force Participation, Policies & Practices in an Aging America*
- <sup>23</sup> Boersch-Supan and Schnabel, “Early Retirement and Employment of the Young in Germany,” in Gruber and Wise, eds., *Social Security Programs and Retirement around the World*, 147 – 166.
- <sup>24</sup> Ibid.
- <sup>25</sup> Gruber and Wise, eds., *Social Security Programs and Retirement around the World*.
- <sup>26</sup> Mauricio Avendano and Ichiro Kawachi, “Why do Americans Have Shorter Life Expectancy and Worse Health than Do People in Other High-Income Countries?” *Annual Review of Public Health* 35 (2014): 307 – 325.



# Productivity & Engagement in an Aging America: The Role of Volunteerism

*Dawn C. Carr, Linda P. Fried & John W. Rowe*

*Abstract: Volunteering in late life is associated with health benefits such as reduced risk of hypertension, improved self-related health and well-being, delayed physical disability, enhanced cognition, and lower mortality. Although the mechanisms of these correlations are not clear, increases in physical activity, cognitive engagement, and social interactions likely play contributing roles. Volunteers are typically thought to represent a select group, often possessing higher levels of education and income, good health, and strong social networks. However, group evidence indicates that there are many members of groups of lower socio-economic status (SES), including elderly adults, who serve their communities on a regular basis and in high-priority programs. We propose that the impact of volunteering in an aging population be recognized and invested into, and that effective programs harness social capital of older adults to address critical societal needs and also improve the well-being of older adults. While members of low-SES groups are less likely to volunteer, they exhibit disproportionately great benefits. The Experience Corps represents a model of an effective volunteerism program, in which elders work with young schoolchildren. Existing federal initiatives, including the Foster Grandparent Program and Senior Companion Program – which target low-income elders – have had low participation with long waiting lists. Given the proven benefits and relatively low proportion of older persons who volunteer, enhancement of elder volunteerism presents a significant opportunity for health promotion and deserves consideration as a national public health priority.*

DAWN C. CARR is a Social Science Research Associate at Stanford Center on Longevity at Stanford University.

LINDA P. FRIED is Dean of the Mailman School of Public Health at Columbia University.

JOHN W. ROWE, a Fellow of the American Academy since 2005, is Professor at the Columbia University Mailman School of Public Health.

(\*See endnotes for complete contributor biographies.)

Recent and expected future increases in life expectancy and the increasing proportion of our population that will be elderly has stimulated substantial research into the factors that promote well-being and health in late life. Early research on aging was concerned primarily with understanding the average or usual physiologic and psychological changes associated with aging, particularly in the context of inevitable loss and decline as part of senescence. The first White House Conference on Aging in 1961, however, reoriented gerontological research to provide information that facilitates good societal and individual choices associated with positive aging outcomes.<sup>1</sup> More than twenty-five years later, John Rowe and gerontologist Robert Kahn – working as part of the MacArthur Foundation Research Network on an Aging Society – sought to advance discussions about

successful aging to enhance our understanding of the mechanisms involved.<sup>2</sup> They proposed that successful aging should reflect the distinction between two non-pathologic forms of aging – usual and successful – and called for research investigating the factors underlying the heterogeneity among older people. Following a decade of systematic studies in this area, the MacArthur Network laid out three critical factors to successful aging: 1) avoidance of disease and disability; 2) maintenance of high cognitive and physical function; and 3) engagement with life.<sup>3</sup>

As discussed in the introduction to this volume, engagement through either paid work or volunteering is an important component of assuring that the United States will be a productive and equitable society as it ages. A substantial body of research indicates that remaining an active member of society through meaningful and productive social roles yields many benefits to the elderly.<sup>4</sup> For those concerned about the impact of aging at both the individual and population levels, volunteerism is an attractive area of study: it leverages human capital to create social capital, offers substantial health benefits that facilitate a successful aging lifestyle, and facilitates societal cohesion as a powerful tool for connecting generations through a shared sense of purpose.<sup>5</sup>

Distinct from forms of societal engagement such as caregiving, providing informal help to friends or family, or paid work, volunteering typically refers to what is commonly understood to include working for an organization for no (or very modest) pay in a capacity that would otherwise involve fiscal remuneration.<sup>6</sup> It also is presumed to be an activity in which the individual involved is uncoerced and driven primarily by a concern for his or her community.<sup>7</sup> Working in exchange for very limited compensation, often to cover transportation or meal expenses – so-called

paid volunteering – is considered part of the general category of volunteering. While there are definitional differences among many of the major available data sources, volunteer engagement among older people seems to be on the rise over the last several decades, with somewhere between one in four and one in three older people in the United States volunteering today.<sup>8</sup> Among older volunteers, approximately half dedicate two or more hours per week on average, with the rest involved only sporadically.<sup>9</sup>

A growing body of research and interventions related to volunteering has bolstered our understanding of the range of ways in which it is associated with positive health outcomes in later life.<sup>10</sup> Although the health benefits associated with volunteering are robust, we are only beginning to understand the mechanisms of the positive benefits attributed to volunteer engagement.

Three primary mechanisms have been hypothesized to produce these benefits: increased physical engagement, cognitive engagement, and social interaction.<sup>11</sup> First, with respect to physical benefits, volunteering has been shown to be associated with reduced risk of onset of diseases (including decreased risk of hypertension), decreased mortality risk, improved self-rated health, and delayed decline in physical functioning.<sup>12</sup> These physical health benefits purportedly stem, at least in part, from the extent to which volunteering involves increased levels of physical engagement, though most volunteer activities include only mild or moderate levels of activity. Second, with respect to cognitive benefits, volunteering has been shown to be related to enhanced cognitive function.<sup>13</sup> The cognitive benefits attributed to volunteering are proposed to relate to the level of cognitive engagement required to perform the tasks associated with volun-

teering, which include executive planning and use of memory.<sup>14</sup> Third, with respect to social interaction, in addition to being linked to decreased depressive symptoms,<sup>15</sup> social engagement in volunteering is associated with enhanced overall well-being, with increased benefits with more time spent volunteering.<sup>16</sup> Volunteer activities typically involve social interactions, with both the people whom the volunteers are helping and those whom they are volunteering alongside. Some researchers have presumed that the value of increased social interaction to mental health is based in part on the feeling of “mattering” to others.<sup>17</sup> However, the benefits of maintaining meaningful relationships with others has been shown to have far-reaching effects on longevity, and could point to physiological factors such as decreases in overall stress.<sup>18</sup>

In addition to our lack of detailed understanding of the mechanisms underlying the benefits of volunteering, we have scant information on the “dose response” of the benefits, including both the intensity and duration of the engagement. While a few studies suggest that two hours per week of volunteering produces the greatest benefits, with additional engagement producing no additional benefit and potentially leading to detrimental effects on health,<sup>19</sup> others suggest that engagement beyond two hours per week on average does, in fact, produce more significant health benefits.<sup>20</sup> Clearly the dose of volunteering that yields the greatest individual health benefits has yet to be determined, and new insights into dose responsiveness will be key to the design of volunteering initiatives.

A key potential limitation of a major expansion of senior volunteering relates to selection effects: the significant differences between volunteers and nonvolunteers.<sup>21</sup> High educational attainment, sufficient income (in part because volunteers

are also more likely to work at least part time), being married (particularly for those whose spouse also volunteers), and being in good health all increase the likelihood of volunteering: these characteristics provide individuals with greater capacity to contribute than their lower resourced peers, and their social connections facilitate greater access to opportunities (for example, they are more likely to be asked to volunteer).<sup>22</sup> Research has shown that social networks that value volunteer engagement produce in their members a stronger sense of obligation to volunteer.<sup>23</sup> Offering a stipend and volunteer opportunities of high value to the community and especially to children are important strategies to attract significant numbers of volunteers from all racial and ethnic backgrounds. Minority groups also spend considerable time volunteering in church or other community groups that are often “under the radar” of scholars or agencies who evaluate volunteerism activities. In addition, sociologists Yunqing Li and Kenneth Ferraro found that individuals who struggle with depression are more likely to seek out volunteering opportunities, and that they experience a decrease in symptoms with formal engagement in volunteering.<sup>24</sup> Understanding the impact of such selection effects on the dynamics of volunteering is required to better understand the causal pathways between volunteering and well-being, particularly if we are interested in maximizing the public health impact of volunteer engagement.

Volunteering is not static: people frequently move into or out of this form of engagement. People may volunteer for many years and then stop when they experience a health event that prevents continued engagement, or they may switch from one organization to another that more readily accommodates their abilities.<sup>25</sup> In addition, some individuals who have never volunteered may reach later life and choose

*Dawn C. Carr, Linda P. Fried & John W. Rowe*

to begin volunteer engagement at the request of a friend. Although the factors driving these behaviors cannot be fully explained using the large observational data sets for which much of the research findings associated with volunteering are based, at a broader level, some important patterns have emerged.

First, once someone becomes a volunteer, he or she is more likely to remain one; thus, it is easier to keep a volunteer from quitting than it is to get a nonvolunteer to start volunteering, especially when the sociopolitical context values volunteering and offers positive reinforcement.<sup>26</sup> Second, those with past volunteer experiences are likely to return to volunteering if they do stop, particularly if they have a history of volunteering at higher intensity levels.<sup>27</sup> Third, those who have never volunteered are less likely to start; and if they have fair or poor health, are disabled, have limitations related to executive function, or have less than a high school education, they are highly unlikely to start volunteering.<sup>28</sup> Fourth, the dynamics associated with volunteering are influenced by the dynamics of engagement in other productive activities. In general, by simply engaging in any other productive activities (including caregiving or work) individuals are more likely to start a new volunteer role.<sup>29</sup> Decreasing time spent engaged in paid work is also associated with increased likelihood of starting a volunteer role<sup>30</sup> and compared to those who fully retire, those who choose to retire into a part-time job are more likely to start or continue volunteering.<sup>31</sup> Finally, despite the increase in volunteering that accompanies work-hour reductions, it is much more likely that a nonvolunteer will start volunteering in later life if they begin volunteering prior to retirement,<sup>32</sup> if they marry/are married to a volunteer, or if they are asked to volunteer.<sup>33</sup> Importantly, selection effects may influence not only who volunteers and to

what degree they are involved, but also how much they benefit from it. For instance, despite engaging in volunteering at much lower rates, individuals with lower levels of resources have been shown to experience disproportionately higher benefits from volunteering.<sup>34</sup>

The abundant evidence demonstrating that those who volunteer are better resourced and better poised to volunteer than those who do not has raised concerns about volunteering being a privilege.<sup>35</sup> If volunteering offers evidence of individual “success” in aging, the alternative (presumably unsuccessful or “usual” aging) may be depicted as a reflection of an individual’s poor choices.<sup>36</sup> In other words, since volunteering would seem to be a lifestyle choice, the onus for obtaining the benefits of volunteering is then placed on individuals, who may or may not have the means to participate. In addition, with volunteering producing such potent health benefits, the extent to which certain groups of individuals lack access to volunteer roles in later life suggests that unequal ability to participate in volunteering is a major public health and health-disparities concern. With these considerations in mind, a new agenda for volunteerism research has been to identify ways to minimize volunteer disparities and, by extension, minimize health disparities among older adults.

As noted above, individuals with lower levels of resources have been shown to experience disproportionately greater benefits from volunteering.<sup>37</sup> Interest in increasing participation in volunteering among underrepresented groups has led to several interventions designed to enhance participation among older people. The first step in building the interventions was to gain a clearer understanding of the key barriers to volunteering. These barriers include issues related to disability, cost to the individual, access, opportunity/incen-

tive, and social network and environmental factors. Institutional level responses have effectively enhanced participation of older nonvolunteers and retained existing volunteers using five primary strategies: 1) designing for high impact of service; 2) role flexibility; 3) recognition; 4) accommodation and training; and 5) compensation.<sup>38</sup> Offering flexible volunteer opportunities has been shown to increase participation, and it may be an especially effective tool for encouraging underrepresented groups who may have fewer resources and who are more likely to face greater informal and formal care responsibilities or time-consuming and potentially unpredictable health problems. Recognizing older adults' contributions are also important to increasing participation and maintaining volunteers. Older people want to ensure that the ways their time is being used matters, and tend to respond more strongly to positive feedback that relates to the benefit of younger people;<sup>39</sup> this positivity enhances the effect of rewarding altruistic commitments.<sup>40</sup> Older people who have fewer skills and abilities in later life (such as those with lower levels of educational attainment) often feel less confident about being able to volunteer, despite having a desire to do so. In addition to having fewer skills, those with fewer resources are also disproportionately more likely to have health problems that may limit mobility and, thus, the ability to volunteer. Organizations that offer training or skill development necessary to successful volunteering and who are able to accommodate mobility problems, including by providing transportation, enjoy an increase in sustained participation.<sup>41</sup>

The fourth and perhaps most controversial approach used to increase the participation of individuals in underrepresented groups in volunteering during later life is compensation, or so-called paid volunteering. Both monetary and nonmone-

tary compensations can incentivize voluntary participation. Nonmonetary incentives include training or skill development opportunities, but more common strategies include goods or services such as food; medical services such as free physical examinations; gift certificates; or prizes.<sup>42</sup> These strategies have been shown to be helpful for enhancing participation somewhat, but are minimally associated with sustained volunteer engagement.<sup>43</sup>

Compensation was proposed to increase sustained engagement specifically of underrepresented groups, but researchers discovered that all older adults – regardless of socioeconomic status – find the stipend important. This is for two reasons: 1) most elderly are on a fixed income, and the small stipend covers out of pocket costs of volunteering; and 2) a stipend lends credibility to the program, since it demonstrates that organizers believe its impact is worth the financial investment. Programs like Peace Corps and AmeriCorps have utilized monetary stipends to increase participation for decades, and the recently implemented Edward M. Kennedy Serve America Act of 2009 called for an increase in stipend volunteer roles for people of all ages. However, financial compensation for volunteer engagement during later life was first introduced by initiatives designed to increase community service engagement among low-income older adults. In 1965, the first program associated with today's "Senior Corps" programs was introduced: the Foster Grandparent Program. This program was designed to provide both a meaningful community and intergenerational engagement role for older adults, and an income supplement for low-income elders.<sup>44</sup> In 1974, another federally sponsored Senior Corps program was introduced: the Senior Companion Program. This program continues to offer financial stipends for income-eligible older people. The Senior Companion Program supports

*Dawn C. Carr,  
Linda P. Fried &  
John W. Rowe*

older adult volunteers who visit the homes of frail elders, providing them with social support and thereby enhancing the resources they have available to age in place successfully. Both Senior Corps programs were designed to encourage high engagement volunteer roles – those requiring fifteen to forty hours of service per week – and support antipoverty efforts.

These volunteer programs have been minimally modified since their introduction, and there are no studies assessing the impact of the stipend or if the programs decrease disparities. Because funding levels are so limited, participation in these programs continues to be fairly low. For example, in 2012, the Foster Grandparent Program saw only 28,500 participating out of the eligible nineteen million adults aged fifty-five and above living at or below 200 percent of the poverty line. Lack of participation could be related to the stigma associated with receipt of a means-based stipend, poor health, lack of access to opportunities, or due to participation in other roles (such as paid work or caring for family members); but the presence of long waiting lists for these programs suggest that limited funding is playing a major role in their failure to grow. While the Foster Grandparent Program has elicited participation from diverse older adults who are income eligible, should funds become available to further expand eligibility, engagement by older adults with moderate and moderate-to-low income may greatly increase the public health and social impact of this program. Like other means-tested programs, some individuals who are income-eligible may not participate because of the attention brought to their financial circumstances. Furthermore, those unable or uninterested in high-engagement volunteering are also excluded.<sup>45</sup>

Although there are discrepancies in the extent to which it is an effective policy and program tool for all volunteer programs,

the use of stipends as an intervention to increase engagement of underrepresented older adults in volunteering and to improve the health of individuals and communities has been shown to be successful in a more recently introduced program: the Experience Corps. The Experience Corps brings older adult volunteers into public elementary schools to help improve students' academic achievement. Described below, the Experience Corps has observed higher recruitment rates, longer volunteer tenure, increased hours of engagement, and increased benefits associated with participation with use of stipends.<sup>46</sup>

The Experience Corps, the most robustly studied volunteer program designed for older Americans, has clearly demonstrated that volunteer interventions can play an important role in enhancing the well-being of older volunteers as well as the beneficiaries they serve. The core of the model that became the Experience Corps (a title suggested by Lyndon B. Johnson's Secretary of Health, Education, and Welfare, John Gardner) was independently designed and proposed by Linda Fried and Encore.org-founder Marc Freedman, who together collaborated on the final design in 1994. The overall strategy was to embed an evidence-based health-promotion/disease-prevention program in a senior volunteering initiative to create a community-based social model of high-impact health enhancement. The hypothesis was that this approach would deliver effective prevention and health promotion into the community for all older adults – including those who otherwise might not access health promotion programs – and would lead to decreased rates of mobility and IADL (instrumental activities of daily living) disability, frailty, falls, and cognitive decline. The approach would also produce delayed onset of these ailments at a pop-

ulation level, thus contributing to a compression of morbidity. The vehicle through which this prevention would occur would have a generative impact, organizing and amplifying the social capital offered by an aging society to support improved academic outcomes of vulnerable children and the teaching effectiveness and efficacy of teachers. Ultimately, the goal was to demonstrate that a new social institution could be designed to create meaningful roles and responsibilities for older adults while also exposing the benefits for all generations achieved through the increased engagement of older adults in an aging society. The Experience Corps model targets children from kindergarten to third grade, reflecting the research that suggests that children who do not succeed in school by the third grade are more likely to drop out.

Congressional support was provided for pilot studies in five cities: New York (via the Community Service Society); Philadelphia; Minneapolis; Port Arthur, Texas; and Portland, Oregon. Implemented through the Corporation for National and Community Service (with Linda Fried and Marc Freedman), the pilot project was conducted between 1996 and 1997 to assess design elements and roles for older adults, to identify requirements for implementation, and to determine feasibility and acceptability to older volunteers and schools. During this demonstration, it became evident that it was impossible in some cities to recruit for this significant time commitment (fifteen hours per week) without offering a stipend; as a result, all sites started offering a stipend at the level that the Foster Grandparent Program provided: \$200 per month. This potentiated older adults living on modest fixed incomes being able to serve by providing money for bus fare and other expenses of service.

The model was carefully designed, deploying a critical mass of older adults at each school, all of whom committed fif-

teen hours per week throughout the full school year. They served and were trained in teams for the roles they would perform, and learned the unique challenges associated with twenty-first-century schools. At the conclusion of the pilot demonstration, all five sites reported that the model met all of its original criteria for success: providing roles that were of importance to principals and meaningful to volunteers; using high intensity, fifteen-hours-per-week service; providing comprehensive training; deploying volunteers in teams; deploying a critical mass of volunteers in each school; providing a stipend; creating a diverse volunteer force; improving health of volunteers and building a vehicle for generative impact; establishing pathways to leadership for volunteers; and ensuring that all elements of the program be a win-win-win for children, schools, and older adults.

After the initial success of the pilot program, a second successful national demonstration was launched to target literacy at the original five sites. Linda Fried, who was then based at Johns Hopkins, led the initiative to expand the program to Baltimore. These demonstrations were followed by a highly successful pilot randomized trial, which was published in 2004.<sup>47</sup> Thereafter, Freedman started Civic Ventures (now Encore.org) in San Francisco to create a movement built around service by older adults and to organize a franchise of programs, formalized as Experience Corps™. The program has since grown to include twenty-three cities, many of whom provide funding for the program, and in 2009, the program became affiliated with the AARP. Studies of the Experience Corps model have shown remarkable results. K–3 students in the intervention schools, as compared to those in control schools, have shown improved standardized reading scores and markedly fewer referrals for behavioral problems. The results to date ap-

*Dawn C. Carr,  
Linda P. Fried &  
John W. Rowe*

pear to suggest that boys benefit from the program more than do girls. Teachers and principals report large improvements in school atmosphere and climate (school safety, delinquency, classroom order, learning environment) with a critical mass of high time-commitment Experience Corps volunteers in the school.

The benefits to older adult volunteers have been particularly robust.<sup>48</sup> They reported experiencing higher levels of social integration and sense of generative achievement than controls. Additionally, the number of hours of service was proportional to benefits. Overall, there were modest benefits to lifestyle, intellectual, and physical activity at twelve months. Perhaps most important, those with low levels of each type of activity at baseline show meaningful and significant increases. For physical activity, increases were approximately 800 Kcal burned per week, an amount consistent with a modest exercise program. Experience Corps also showed the first evidence that a community-based activity engagement program directly impacts markers of brain health known to buffer the brain from the clinical expression of neuro-pathologies, such as Alzheimer's disease and vascular dementia. Findings indicated that length as well as dose of exposure matters: for men, the benefits emerge during the second year of service. Older women with baseline low/normal levels of cognitive function experienced improved executive function and corresponding brain activation on fMRI (functional MRI) within one year.<sup>49</sup>

At the outset of Experience Corps, the prevailing "wisdom" related to volunteering was based primarily on upper socioeconomic status (SES) white women. Experience Corps showed that levels of informal community, civic, and church-based service in the African-American community is significant. Fried correctly theorized that minority and lower SES old-

er adults would respond to the opportunity to volunteer for a program designed for high impact on the futures of children. This was conditioned on providing a modest monthly stipend (about \$200–250 taxable dollars per month) that covered the costs of volunteering (bus fare, lunches, and so on) for older adults who had limited resources. This stipend served as incentive to volunteer because it signified that society expects the volunteer service to make a difference. It also contributed to full participation: with a little money on the line, volunteers seemed to be motivated to get up each morning and participate when they may otherwise have decided not to. Perhaps more important, because of the stipend, minority older adults became the dominant volunteer group.

To date, the Experience Corps demonstrates that older people *will* volunteer to make a difference for the next generation, and that a societal institution that transforms human capital into social capital for generativity, in a model designed for high impact, can harness this energy. People participate to ensure their legacy as well as to give back. Retention is high because volunteers receive evidence that they are making a difference. The Experience Corps is both a volunteer and public health program, delivering a high and sustained dose of prevention to diverse older adults: fifteen hours per week of increased physical, cognitive, and social activity and social engagement/integration with meaning and purpose. The return on investment has been demonstrated to be high, and could increase dramatically when the long-term impact on children's and older adults' outcomes are assessed.

Unlike other health interventions that facilitate similar health benefits in late life, such as exercise, volunteer programs have the additional potential to provide a means to address important social problems and



thus strengthen civil society.<sup>50</sup> With the combination of addressing important social problems and the benefits offered to those who engage, volunteering has gained attention among policy-makers in the United States and in other developed and developing nations. In addition to positive contributions to the health of older adults – potentially facilitating delayed onset of morbidity and mortality – volunteering has also been shown to leverage human capital in a way that facilitates workforce opportunities. Particularly for those who have less financial resources in retirement, enhancing opportunities to maintain income in later life is critical. Volunteering increases available social resources by facilitating social network connections and opportunities to obtain skills that are valuable in the paid workforce. As we prepare for U.S. society to age successfully, volunteer engagement programs should play an important role. The Experience Corps demonstrates that a volunteer intervention can successfully leverage the accumu-

lating reserve of knowledge, skills, and experiences of older adults to target specific social problems and simultaneously facilitate compressed morbidity of the older population.

With these considerations in mind, and in view of the accumulated scientific evidence of its benefits, the time has come to identify late-life engagement through volunteering as a major public health issue, with special emphasis on engagement of individuals across the full socioeconomic spectrum, including those with fewer resources who have the most to gain. This effort will require federal and local support, as well as additional research to identify both the specific “dose” at which volunteering yields the maximum benefit and the best strategies to recruit individuals with diverse social characteristics. If successful, a comprehensive national effort to enhance volunteerism in late life can be an important component of our successful transition to a productive and equitable aging society.

Dawn C.  
Carr,  
Linda P.  
Fried &  
John W.  
Rowe

#### ENDNOTES

\* Contributor Biographies: DAWN C. CARR is a Social Science Research Associate at Stanford Center on Longevity at Stanford University. She edited *Gerontology in the Era of the Third Age: Implications and Next Steps* (with Kathrin Komp, 2011); has contributed articles to such journals as *Activities, Adaptation and Aging*, *The Gerontologist*, and *Journal of Health and Human Services Administration*; and serves on the editorial board of *The Gerontologist*.

LINDA P. FRIED is Dean of the Mailman School of Public Health, Senior Vice President of the Columbia University Medical Center, the DeLamar Professor of Public Health, and Professor of Epidemiology and Medicine at Columbia University. She is the designer and cofounder of Experience Corps, and also founded the Johns Hopkins Center on Aging and Health. She serves on the editorial boards of *The Journals of Gerontology: Biological Sciences & Medical Sciences* and *Aging*.

JOHN W. ROWE, a Fellow of the American Academy since 2005, is Professor at the Columbia University Mailman School of Public Health and Chair of the MacArthur Foundation Research Network on an Aging Society. He is the author of *Successful Aging* (with Robert L. Kahn, 1998) and was the Chair of the Institute of Medicine of the National Academies project the Future Health Care Workforce for Older Americans, which authored the report *Retooling for an Aging America: Building the Health Care Workforce* (2008).

- 1 Robert J. Havighurst, "Successful Aging," *The Gerontologist* 1 (1) (1961): 8–13, doi:10.1093/geront/1.1.8.
- 2 John W. Rowe and Robert L. Kahn, "Human Aging: Usual and Successful," *Science* 237 (4811) (1987): 143–149, doi:10.1126/science.3299702.
- 3 Robert L. Kahn, "Guest Editorial on 'Successful Aging and Well-Being: Self-Rated Compared with Rowe and Kahn,'" *The Gerontologist* 42 (6) (2002): 725–726, doi:10.1093/geront/42.6.725; and John W. Rowe, "The New Gerontology," *Science* 278 (5337) (1997): 367–375, doi:10.1126/science.278.5337.367.
- 4 Caroline E. Jenkinson, Andy P. Dickens, Kerry Jones, Jo Thompson-Coon, Rod S. Taylor, Morwenna Rogers, Clare L. Bamba, Iain Lang, and Suzanne H. Richards, "Is Volunteering a Public Health Intervention? A Systematic Review and Meta-Analysis of the Health and Survival of Volunteers," *BMC Public Health* 13 (2013): 773–783, doi:10.1186/1471-2458-13-773; Ming-Ching Luoh and A. Regula Herzog, "Individual Consequences of Volunteer and Paid Work in Old Age: Health and Mortality," *Journal of Health and Social Behavior* 43 (4) (2002): 490–509; Yunkyung Jung, Tara L. Gruenewald, Teresa E. Seeman, and Catherine A. Sarkisian, "Productive Activities and Development of Frailty in Older Adults," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 65 (2) (2010): 256–261, doi:10.1093/geronb/gbp105; Nicole D. Anderson, Thecla Damianakis, Edeltraut Kröger, Laura M. Wagner, Deirdre R. Dawson, Malcolm A. Binns, Syrelle Bernstein, Eilon Caspi, Suzanne L. Cook, and the BRAVO Team, "The Benefits Associated with Volunteering among Seniors: A Critical Review and Recommendations for Future Research," *Psychological Bulletin* 40 (6) (2014): 1503–1533, doi:10.1037/a0037610; Hui-Xin Wang, Anita Karp, Bengt Winblad, and Laura Fratiglioni, "Late-Life Engagement in Social and Leisure Activities is Associated with Decreased Risk of Dementia: A Longitudinal Study from the Kungsholmen Project," *American Journal of Epidemiology* 155 (12) (2002): 1081–1087, doi:10.1093/aje/155.12.1081; Thomas A. Glass, Carlos F. Mendes De Leon, Shari S. Bassuk, and Lisa F. Berkman, "Social Engagement and Depressive Symptoms in Late Life Longitudinal Findings," *Journal of Aging and Health* 18 (4) (2006): 604–628, doi:10.1177/0898264306291017; Jesse E. Hinterlong, Nancy Morrow-Howell, and Philip A. Rozario, "Productive Engagement and Late Life Physical and Mental Health: Findings from a Nationally Representative Study," *Research on Aging* 29 (4) (2007): 348–370; Terry Y. Lum and Elizabeth Lightfoot, "The Effects of Volunteering on the Physical and Mental Health of Older People," *Research on Aging* 27 (1) (2005): 31–55, doi:10.1177/0164027504271349; Nancy Morrow-Howell, "Volunteering in Later Life: Research Frontiers," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 65 (4) (2010): 461–469, doi:10.1093/geronb/gpqq024; and Jan E. Mutchler, Jeffrey A. Burr, and Francis G. Caro, "From Paid Worker to Volunteer: Leaving the Paid Workforce and Volunteering in Later Life," *Social Forces* 81 (4) (2003): 1267–1293, doi:10.1353/sof.2003.0067.
- 5 Generations United and the Generations Initiative, *Out of Many, One: Uniting the Changing Faces of America* (Washington, D.C.: Generations United, 2013), <http://www.gu.org/RESOURCES/Publications/OutOfManyOne.aspx>; Jean E. Kincade, Donna J. Rabiner, Shulamit L. Bernard, Alison Woomert, Thomas R. Konrad, Gordon H. DeFries, and Marcia G. Ory, "Older Adults as a Community Resource: Results from the National Survey of Self-Care and Aging," *The Gerontologist* 36 (4) (1996): 474–482, doi:10.1093/geront/36.4.474; and Greg O'Neill, Sarah F. Wilson, and Nancy Morrow-Howell, "The Civic Enterprise: Advancing Civic Engagement Opportunities in Later Life," in *Civic Engagement in an Older America*, ed. Greg O'Neill and Sarah F. Wilson (Washington, D.C.: Gerontological Society of America, 2010).
- 6 Morrow-Howell, "Volunteering in Later Life."
- 7 Ram A. Cnaan, Femida Handy, and Margaret Wadsworth, "Defining Who is a Volunteer: Conceptual and Empirical Considerations," *Nonprofit and Voluntary Sector Quarterly* 25 (3) (1996): 364–383.
- 8 Barbara A. Butrica, Richard W. Johnson, and Sheila R. Zedlewski, "Volunteer Dynamics of Older Americans," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 64 (5) (2009): 644–655, doi:10.1093/geronb/gbno42.

- 9 Morrow-Howell, "Volunteering in Later Life."
- 10 Jenkinson et al., "Is Volunteering a Public Health Intervention?"; Anderson et al., "The Benefits Associated with Volunteering among Seniors"; Ben Heaven, Laura J.E. Brown, Martin White, Linda Errington, John C. Mathers, and Suzanne Moffatt, "Supporting Well-Being in Retirement through Meaningful Social Roles: Systematic Review of Intervention Studies," *The Milbank Quarterly* 91 (2) (2013): 222–287, doi: 10.1111/milq.12013; and Linda P. Fried, Michelle C. Carlson, Marc Freedman, Kevin D. Frick, Thomas A. Glass, Joel Hill, Sylvia McGill, George W. Rebok, Teresa Seeman, James Tielsch, Barbara A. Wasik, and Scott Zeger, "A Social Model for Health Promotion for an Aging Population: Initial Evidence on the Experience Corps Model," *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 81 (1) (2004): 64–78, doi:10.1093/jurban/jth094.
- 11 Anderson et al., "The Benefits Associated with Volunteering among Seniors"; and Fried et al., "A Social Model for Health Promotion for an Aging Population."
- 12 Luoh and Herzog, "Individual Consequences of Volunteer and Paid Work in Old Age"; Jung et al., "Productive Activities and Development of Frailty in Older Adults"; Lum and Lightfoot, "The Effects of Volunteering on the Physical and Mental Health of Older People"; Morrow-Howell, "Volunteering in Later Life"; and Mutchler et al., "From Paid Worker to Volunteer."
- 13 Anderson et al., "The Benefits Associated with Volunteering among Seniors"; and Wang et al., "Late-Life Engagement in Social and Leisure Activities is Associated with Decreased Risk of Dementia."
- 14 Michelle C. Carlson, Kirk I. Erickson, Arthur F. Kramer, Michelle W. Voss, Natalie Bolea, Michelle Mielke, Sylvia McGill, George W. Rebok, Teresa Seeman, and Linda P. Fried, "Evidence for Neurocognitive Plasticity in At-Risk Older Adults: The Experience Corps Program," *The Journals of Gerontology: Biological Sciences & Medical Sciences* 64 (12) (2009): 1275–1281, doi:10.1093/gerona/glp117.
- 15 Glass et al., "Social Engagement and Depressive Symptoms in Late Life Longitudinal Findings"; Hinterlong, Morrow-Howell, and Rozario, "Productive Engagement and Late Life Physical and Mental Health"; and Lum and Lightfoot, "The Effects of Volunteering on the Physical and Mental Health of Older People."
- 16 Heaven et al., "Supporting Well-Being in Retirement through Meaningful Social Roles"; and Fried et al., "A Social Model for Health Promotion for an Aging Population."
- 17 Jane Allyn Piliavin and Erica Siegl, "Health Benefits of Volunteering in the Wisconsin Longitudinal Study," *Journal of Health and Social Behavior* 48 (4) (2007): 450–464, doi:10.1177/002214650704800408.
- 18 Seoyoun Kim and Kenneth F. Ferraro, "Do Productive Activities Reduce Inflammation in Later Life? Multiple Roles, Frequency of Activities, and C-Reactive Protein," *The Gerontologist* 54 (5) 2014: 830–839.
- 19 Luoh and Herzog, "Individual Consequences of Volunteer and Paid Work in Old Age"; Lum and Lightfoot, "The Effects of Volunteering on the Physical and Mental Health of Older People"; and Marieke Van Willigen, "Differential Benefits of Volunteering Across the Life Course," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 55 (5) (2000): S308–S318, doi:10.1093/geronb/55.5.S308.
- 20 Nancy Morrow-Howell, Jim Hinterlong, Philip A. Rozario, and Fengyan Tang, "Effects of Volunteering on the Well-Being of Older Adults," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 58 (3) (2003): S137–S145, doi:10.1093/geronb/58.3.S137; and Rodlescia S. Sneed and Sheldon Cohen, "A Prospective Study of Volunteerism and Hypertension Risk in Older Adults," *Psychology and Aging* 28 (2) (2013): 578–586, doi:10.1037/a0032718.
- 21 Peggy A. Thoits and Lyndi N. Hewitt, "Volunteer Work and Well-Being," *Journal of Health and Social Behavior* 42 (2) (2001): 115–131, doi:10.2307/3090173.

Dawn C.  
Carr,  
Linda P.  
Fried &  
John W.  
Rowe

- <sup>22</sup> Morrow-Howell, "Volunteering in Later Life"; Butrica, Johnson, and Zedlewski, "Volunteer Dynamics of Older Americans"; Dawn C. Carr and Jon Hendricks, "Relevance of Social Capital and Lifestyle for the Third Age," in *Gerontology in the Era of the Third Age: Implications and Next Steps*, ed. Dawn C. Carr and Kathrin S. Komp (New York: Springer, 2011): 207–224; Tay K. McNamara and Ernest Gonzales, "Volunteer Transitions among Older Adults: The Role of Human, Social, and Cultural Capital in Later Life," *The Journals of Gerontology: Psychological Sciences & Social Sciences* 66 (4) (2011): 490–501; and Carroll L. Estes, Jane L. Mahakian, and Tracy A. Weitz, "A Political Economy Critique of 'Productive Aging,'" in *Social Policy and Aging: A Critical Perspective*, ed. Carroll L. Estes (Thousand Oaks, Calif.: Sage Publications, 2001), 187–200.
- <sup>23</sup> Butrica, Johnson, and Zedlewski, "Volunteer Dynamics of Older Americans."
- <sup>24</sup> Yunqing Li and Kenneth F. Ferraro, "Volunteering in Middle and Later Life: Is Health a Benefit, Barrier or Both?" *Social Forces* 85 (1) (2006): 497–519.
- <sup>25</sup> Butrica, Johnson, and Zedlewski, "Volunteer Dynamics of Older Americans."
- <sup>26</sup> Mutchler, Burr, and Caro, "From Paid Worker to Volunteer."
- <sup>27</sup> Francis G. Caro and Scott A. Bass, "Receptivity to Volunteering in the Immediate Postretirement Period," *Journal of Applied Gerontology* 16 (4) (1997): 427–441, doi:10.1177/073346489701600403; and Fengyan Tang, Nancy Morrow-Howell, and Eunhee Choi, "Why Do Older Adult Volunteers Stop Volunteering?" *Ageing and Society* 30 (5) (2010): 859–878.
- <sup>28</sup> Butrica, Johnson, and Zedlewski, "Volunteer Dynamics of Older Americans."
- <sup>29</sup> Ibid.
- <sup>30</sup> Mutchler, Burr, and Caro, "From Paid Worker to Volunteer."
- <sup>31</sup> Dawn C. Carr and Ben Lennox Kail, "The Influence of Unpaid Work on the Transition Out of Full-Time Paid Work," *The Gerontologist* 53 (1) (2013): 92–101.
- <sup>32</sup> Sheila R. Zedlewski, "Will Retiring Boomers Form a New Army of Volunteers?" *The Retirement Project: Perspectives on Productive Aging* (7) (2007): 1–7.
- <sup>33</sup> Butrica, Johnson, and Zedlewski, "Volunteer Dynamics of Older Americans."
- <sup>34</sup> Morrow-Howell, "Volunteering in Later Life."
- <sup>35</sup> Estes, Mahakian, and Weitz, "A Political Economy Critique of 'Productive Aging.'"
- <sup>36</sup> Kahn, "Guest Editorial on 'Successful Aging and Well-Being'"; and William J. Strawbridge, Margaret I. Wallhagen, and Richard D. Cohen, "Successful Aging and Well-Being: Self-Rated Compared with Rowe and Kahn," *The Gerontologist* 42 (6) (2002): 727–733.
- <sup>37</sup> Morrow-Howell, "Volunteering in Later Life."
- <sup>38</sup> Fengyan Tang, Nancy Morrow-Howell, and Song-Iee Hong, "Inclusion of Diverse Older Populations in Volunteering: The Importance of Institutional Facilitation," *Nonprofit and Voluntary Sector Quarterly* 38 (5) (2008): 810–827, doi:10.1177/0899764008320195.
- <sup>39</sup> Laura L. Carstensen, "Social and Emotional Patterns in Adulthood: Support for Socioemotional Selectivity Theory," *Psychology and Aging* 7 (3) (1992): 331–338.
- <sup>40</sup> Morrow-Howell et al., "Effects of Volunteering on the Well-Being of Older Adults."
- <sup>41</sup> Andrea Galiette Skoglund, "Do Not Forget about Your Volunteers: A Qualitative Analysis of Factors Influencing Volunteer Turnover," *Health and Social Work* 31 (3) (2006): 217–220.
- <sup>42</sup> Ram A. Cnaan and Toni Cascio, "Performance and Commitment: Issues in Management of Volunteers in Human Service Organizations," *Journal of Social Service Research* 24 (3/4) (1998): 1–37.
- <sup>43</sup> Tang, Morrow-Howell, and Choi, "Why Do Older Adult Volunteers Stop Volunteering?"
- <sup>44</sup> Rosalyn Saltz, "Aging Persons as Child-Care Workers in a Foster Grandparent Program: Psychosocial Effects and Work Performance," *The International Journal of Aging and Human Development* 2 (4) (1971): 314–340.

- 45 Fengyan Tang, Nancy Morrow-Howell, and Song-Iee Hong, "Inclusion of Diverse Older Populations in Volunteering: The Importance of Institutional Facilitation," *Nonprofit and Voluntary Sector Quarterly* 38 (5) (2008): 810 – 827, doi:10.1177/0899764008320195. Dawn C. Carr, Linda P. Fried & John W. Rowe
- 46 Tang, Morrow-Howell, and Choi, "Why Do Older Adult Volunteers Stop Volunteering?"; and Amanda Moore McBride, Ernest Gonzales, Nancy Morrow-Howell, and Stacey McCrary, "Stipends in Volunteer Civic Service: Inclusion, Retention, and Volunteer Benefits," *Public Administration Review* 71 (6) (November/December 2011): 850 – 858.
- 47 Fried et al., "A Social Model for Health Promotion for an Aging Population."
- 48 Song-Iee Hong and Nancy Morrow-Howell, "Health Outcomes of Experience Corps: A High-Commitment Volunteer Program," *Social Science and Medicine* 71 (2) (2010): 414 – 420.
- 49 Carlson et al., "Evidence for Neurocognitive Plasticity in At-Risk Older Adults."
- 50 Caroline E. Jenkinson, Andy P. Dickens, Kerry Jones, Jo Thompson-Coon, Rod S. Taylor, Morwenna Rogers, Clare L. Bamba, Iain Lang, and Suzanne H. Richards, "Is Volunteering a Public Health Intervention? A Systematic Review and Meta-Analysis of the Health and Survival of Volunteers," *BMC Public Health* 13 (2013): 773 – 783, doi:10.1186/1471-2458-13-773.

# Resetting Social Security

*S. Jay Olshansky, Dana P. Goldman & John W. Rowe*

*Abstract: Social Security retirement benefits were first introduced in 1935 as a financial safety net for a large and rapidly growing older American population. The program was intended to be economically self-sustaining, but population aging and rising life expectancies threaten the program's solvency. The 1983 Social Security Amendments mandated that the full retirement age increase to 67 by the year 2027. In this essay, we present evidence demonstrating that the rate of improvement in life extension at older ages accelerated after 1983. If the 1935 ratio of working years to retired years is maintained, early and full retirement ages of 66.5 and 69.4, respectively, were justified in 2009. Additional delays in the age of eligibility beyond those currently in effect would place significant financial burdens on individuals with lower life expectancies, the poor and near-poor, and the very old, and – absent additional reform – would exacerbate existing unequal access to entitlements within the system.*

In the future when there are a great many persons over 65, most of the able-bodied individuals will and should continue working to age 70 or 75 if their services seem needed.

– Robert J. Myers, Chief Actuary (1947 – 1970) and Deputy Commissioner (1981 – 1982) of the Social Security Administration (SSA) and leader of the National Commission on Social Security Reform (1982 – 1983)<sup>1</sup>

S. JAY OLSHANSKY is Professor of Epidemiology at the School of Public Health, Division of Epidemiology and Biostatistics at the University of Illinois at Chicago.

DANA P. GOLDMAN is Professor of Public Policy, Pharmacy, and Economics at the University of Southern California.

JOHN W. ROWE, a Fellow of the American Academy since 2005, is Professor at the Columbia University Mailman School of Public Health and Chair of the MacArthur Foundation Research Network on an Aging Society.

(\*See endnotes for complete contributor biographies.)

Has the time arrived to reset the age of eligibility for Social Security retirement benefits? When President Roosevelt signed the Social Security Act (SSA) in 1935 in the wake of the Great Depression, unemployment was 34 percent, savings accounts were decimated, and almost 50 percent of the older population was dependent on family and friends for financial support. There was reason to believe large segments of the population – particularly the elderly – were facing destitution.<sup>2</sup>

To address this concern, the Committee on Economic Security was established by executive order in 1934. What we know today as Social Security began simply as a federally administered social insurance retirement program for older people, nominally financed through payroll taxes and paid for by work-

ers and their employers. As the program was originally structured by the Social Security Act of 1935, people would earn benefits as they continued to work. If death occurred before age sixty-five, or before they received what they paid into the system even after retirement, their estate would receive the difference plus interest in the form of a one-time lump-sum payment. At the program's inception, no benefits were provided to spouses or children.

Although Social Security was originally designed to protect a limited number of American workers against loss of earnings, President Roosevelt indicated from the start that the program was expected to grow and evolve with changing economic and demographic conditions.<sup>3</sup> The first study published by the Office of the Actuary at the Social Security Board claimed that "when it is realized that too large a proportion of the population would probably be left idle with a retirement age of 65, the general feeling will undoubtedly be that a constant retirement age should be banished, or that it should be left as a balancing item."<sup>4</sup> A subsequent publication by Robert J. Myers, Chief Actuary and Deputy Commissioner of the SSA – from which we quote in our epigraph – made a more forceful statement about raising the Social Security Retirement age.<sup>5</sup>

Social Security has evolved extensively since its inception. While the program is best known for providing financial assistance to retirees, amendments to the program also added life insurance, payments for spouses and dependents, and disability benefits for those who are unable to work but are not yet eligible by age for regular benefits. The first significant change to the program was introduced in 1939, when Congress passed amendments to change the financing of the program so that workers paid into Social Security incrementally as they worked, allowing for immediate payments of benefits without increasing

Social Security tax rates.<sup>6</sup> Coverage was also extended to dependents of retired workers or workers who died prematurely. In 1948, benefits to dependents, survivors, and those with severe and long-lasting disability were increased or extended and coverage was expanded considerably.<sup>7</sup> In 1950, a revised schedule of gradual increases in tax rates for employers and employees was implemented to increase the likelihood that Social Security would remain self-supporting; coverage was also extended to several additional major categories of workers such as farmers and government workers.<sup>8</sup> Legislation in 1954 and 1956 extended coverage to 90 percent of all workers, and coverage became nearly universal in the early 1960s.<sup>9</sup> The eligibility age for Social Security was reduced from age 65 to age 62 for women in 1956 and for men in 1961, and automatic cost-of-living adjustments were authorized in 1972.<sup>10</sup> Finally, in direct response to gains in life expectancy and improvements in health (increases in active and disability-free – or what we prefer to call "healthy" – life expectancy) since the program began, amendments approved in 1983 authorized gradual increases in the age of full eligibility for workers born after 1937, with provisions fully effective for all workers born after 1959.<sup>11</sup>

These amendments gradually increased the age of eligibility for full Social Security benefits from 65 to 67 and lowered the benefits for those who choose to begin receiving them early (between 62 and the full retirement age). There have been no longevity- or health-related adjustments to the retirement age since 1983. It is also important to emphasize that, today, approximately 72 percent of new beneficiaries draw benefits before the full retirement age and 46 percent draw benefits at the earliest possible age of 62.<sup>12</sup> Despite the program's evolution, therefore, the question remains whether eligibility changes have kept pace with the substantial gains in life expect-

*S. Jay  
Olshansky,  
Dana P.  
Goldman  
& John W.  
Rowe*

tancy and healthy life expectancy that have occurred since the program's inception and, indeed, since the last retirement-age adjustment in 1983.

The current debate about raising the age of first eligibility above 62 and the age of full-benefit eligibility above 67 has been driven by a combination of factors, including: financial stress placed on the solvency of the Social Security trust fund by a much larger number of beneficiaries than anticipated (in turn caused by an unexpected baby boom and larger-than-anticipated increases in life expectancy); a substantial proportion of beneficiaries who elect early benefits; political reluctance to increase payroll taxes; and a growing number of very long-living older people who depend fully or nearly so on Social Security (called "longevity risk"). Today, two-thirds of beneficiaries rely on Social Security for more than half of their total income, and 25 percent rely on it for over 90 percent of their total income.<sup>13</sup> The shift toward retirees relying fully on the program for financial support was neither anticipated nor intended at the program's inception.

Taken together, these considerations lead to the four central questions we address in this essay:

1) How well did the two-year increase in eligibility age for full retirement benefits from the 1983 amendments correspond to the proportional rise in life expectancy at age 65 from 1935 to 1983?

2) From a demographic perspective, does the rise in life expectancy at older ages observed since 1983 warrant a further adjustment to the age of eligibility for early and full Social Security benefits?

3) How would subgroups of the U.S. population with different survival prospects be differentially influenced by further increases in the age of early and full retirement ages?

4) And what would the early and full retirement ages be today if they had been

indexed directly to rising life expectancy since the program's inception, maintaining a constant proportion of adult life spent working to life spent in retirement?<sup>14</sup>

Improvements in health care and increases in well-being at older ages have accelerated in the United States since Social Security began in 1935 with a set retirement age of 65. At that time, the average expected remaining years of life for someone reaching age 65 – notated as  $e_{(65)}$  – for men and women combined in the United States was 12.6 years, and the probability of surviving to age 65 (averaged for men and women) conditional on having survived to age 25 (referred to as "conditional survival") was 62.4 percent (Table 1). By 1983,  $e_{(65)}$  for the total population had risen to 16.6 years (meaning that each year during this time frame, 30 days were added to the life of a person reaching 65 years of age), while conditional survival to age 65 rose to 79.4 percent. Between 1983 and 2009, life expectancy past 65 rose an additional 2.3 years to 18.9, which means that the annual increase in life expectancy accelerated to 31.8 extra days added to the life of a 65-year-old per year; conditional survival to age 65 also increased to 84.8 percent between 1983 and 2009.

Since many beneficiaries now retire at the earliest possible retirement age of 62, it is worth noting that  $e_{(62)}$  increased by 4.3 years between 1935 and 1983, and by 2.5 years between 1983 and 2009 (see Table 1). This means 32 additional days of life were added each year to those reaching age 62 from 1935 to 1983, and 35.2 additional days of life were added each year for those reaching age 62 from 1983 to 2009.

Conditional survival to the full Social Security retirement age of 65 varies considerably by sex and level of completed education; trends in conditional survival between 1990 and 2008 reveal large differences among population subgroups (Table 2).



Table 1

U.S. Life Expectancy at Age 62 [ $e_{(62)}$ ], Life Expectancy at Age 65 [ $e_{(65)}$ ], and Conditional Survival from Age 25 to Age 65 [ $S_{(25-65)}$ ], by Sex; 1935, 1983, 2009

	$e_{(62)}$			$e_{(65)}$			$S_{(25-65)}$		
	M	F	T	M	F	T	M	F	T
1935	13.6	15.1	14.4	11.9	13.2	12.6	59.5	67.3	63.3
1983	16.3	20.9	18.7	14.3	18.6	16.6	74.8	85.7	80.2
2009	19.7	22.6	21.2	17.5	19.9	18.9	81.9	88.7	85.3

M = Male; F = Female; T = Total (average). Source: U.S. Social Security Administration, Historical Life Tables developed by the Office of the Chief Actuary for use in estimates and analysis in *The 2013 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (2014); see <http://www.ssa.gov/oact/TR/2013/tr2013.pdf>.

Table 2

Percent of Total U.S. Population Surviving to Age 65 Conditional on Having Survived to Age 25, by Level of Completed Education; 1990, 2008

	Years of Education at Age 25			
	<12	12	13-15	16+
1990	75.7	78.3	88.1	86.0
2008	74.4	78.7	89.2	92.1

Source: Calculations done by the MacArthur Foundation Research Network on an Aging Society.

In 1990, only 75.7 percent of 25-year-old men and women with less than a high school education were expected to reach age 65. In contrast, about 87 percent of the most highly educated 25-year-olds in that year were expected to survive to age 65. In 2008, the least educated experienced a slight reduction in survival to age 65 (down to 74.4 percent) while the most highly educated experienced a significant additional improvement (to 92.1 percent). Conditional survival increased from 1990 through 2008 as a function of level of completed education; the biggest jump in survival occurred among those who have any college education. Thus, 25.6 percent of the least educated subgroup of the population will

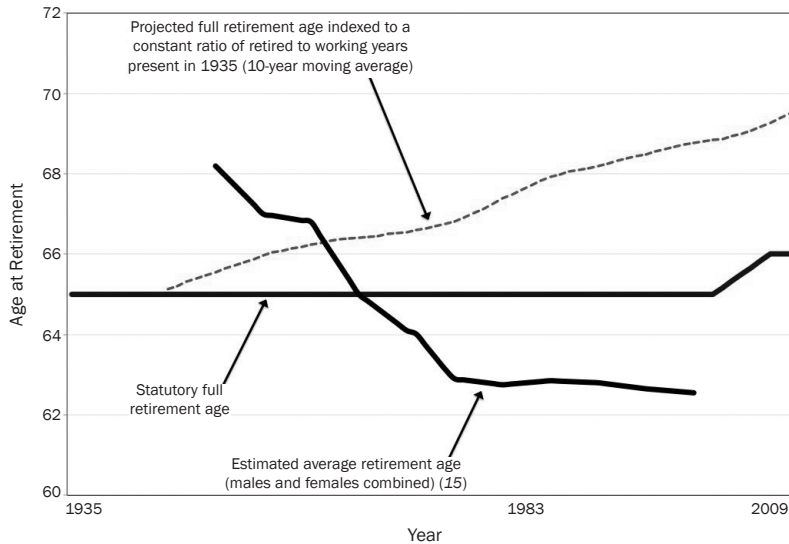
not live long enough to draw retirement benefits from Social Security at current eligibility ages. In contrast, only 5.9 percent of the most educated group will die before the early retirement age.

The observed full retirement age of 67 mandated in 1983 will not be implemented until 2027. If the full retirement age had been indexed exclusively to  $e_{(65)}$  (that is, if the full retirement age was raised in proportion to the increase in life expectancy at age 65 using a 10-year moving average), a full retirement age of 67.7 would have been justified in 1983 (see Figure 1). If the full retirement age was indexed again in 2009 to life expectancy at age 65, a full retirement age of 69.4 would have been justified. And

Resetting Figure 1

Social Security

Projected Full Retirement Age (Based on a 10-Year Moving Average) Indexed to a Constant Ratio of Retired to Working Years Present in 1935, Statutory Full Retirement Age (United States, 1935–2009), and Estimated Average Retirement Age for Males and Females Combined (United States, 1950–2005)



Source: M. Gendell, "Retirement Age Declines Again in 1990s," *Monthly Labor Review* 12.4 (2001): 12–21.

if in 2009 the full retirement age had been indexed to either observed life expectancy at birth or conditional survival to age 65, a full retirement age above 70 would be justified. The indexed full retirement ages have not only been falling further behind the statutory retirement age every year since 1935 (a difference whose growth accelerated after 1983), but the actual (estimated) average age at full retirement in the United States has been steadily declining well below both the indexed and statutory full retirement ages ever since 1965.

Along the same lines, indexing the early retirement age to the rise in life expectancy after age 62 (using a ten-year moving average) observed since 1956 (when the amendment lowering age of eligibility to age 62 was first enacted for women) would have justified an early retirement age of 64.8 in 1983 and 66.5 in 2009 (see Figure 2). The in-

dexed early retirement age has also fallen further behind the statutory early retirement age every year since it began in 1956, and this too accelerated after 1983.

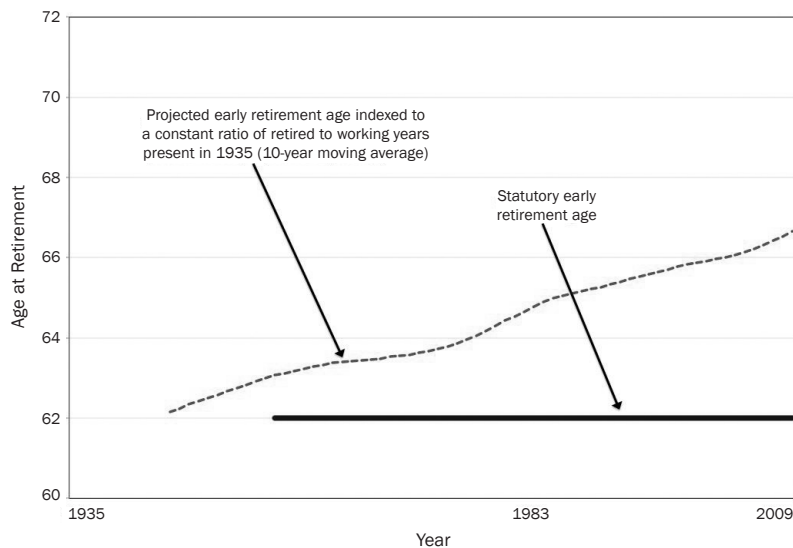
The full retirement age for Social Security is currently applied equally to almost everyone in the population, regardless of individual attributes that differentially influence survival prospects or monetary contributions and expenses. How would the retirement age vary if it were linked to the observed longevity attributes of population subgroups? Here, we use the example of education attainment (the latest data available are for 2008).

If the full retirement age had been indexed in 2008 to  $e_{(65)}$  for population subgroups demarcated by level of completed education (relative to the standard that existed for the total population in 1935), the full retirement age in 2008 would have

Figure 2

Projected Early Retirement Age (Based on a 10-Year Moving Average) Indexed to a Constant Ratio of Retired to Working Years Present in 1935 (United States, 1935 – 2009), and Statutory Early Retirement Age (1956 – 2009)

S. Jay  
Olshansky,  
Dana P.  
Goldman  
& John W.  
Rowe



Source: Figure prepared based on Social Security Administration life tables.

been 68.8 for the least educated and 71.8 for the most educated. The early retirement age would have been 66.1 for the least educated and 69.6 for the most educated.

Another consideration that is often raised in the retirement-age debate is the possibility of “correcting” for enhancements in life expectancy through stabilization of the ratio of years working to years retired.<sup>15</sup> In 1935, assuming a full retirement age of 65, the population aged 20 and older spent 78 percent of its remaining life working. If we were to hold this ratio of working to retired years constant and index the full retirement age to rising life expectancy at age 65, the full retirement age would have been 69.1 years in 2009 (based on a ten-year moving average in life expectancy after 65; see Figure 1). Assuming an early retirement age of 62, the over-20 population in 1935 spent 74 percent of their remaining life working; and the anal-

ysis above, conducted in 2004, would have yielded an early retirement age of 66.3.

When determining the full Social Security retirement age in 1935, the Council on Economic Security (CES) based the figure of 65 on retirement ages commonly used in private pension systems of the time. About half of state retirement schemes used 65 as the retirement age, while the other half used 70. The CES settled on age 65 in part due to actuarial life tables suggesting that the lower age would yield a manageable self-sustaining system based on modest levels of payroll taxation.<sup>16</sup> The question now is not whether the most appropriate retirement age was chosen in 1935, but what the appropriate ages would be from a demographic perspective if the ages for early and full retirement were adjusted to how long we actually live.

When the SSA was passed into law in 1935, government actuaries were acutely aware of the forthcoming demographic shift of population aging, and they anticipated not only an increase in the size of the beneficiary population, but also a rise in longevity, improved survival rates to age 65, and improvements in health.<sup>17</sup> One actuarial report even mentions how aging science could, in the future, delay senility and prolong life far beyond what the SSA then considered a normal lifespan.<sup>18</sup> However, their initial predictions were still too conservative. Population projections initially generated by SSA actuaries anticipated that the proportion of the total U.S. population aged 65 and older would never exceed 15 percent.<sup>19</sup> As of 2014, it is 14 percent, but it is expected to rise up to 20 percent by mid-century.<sup>20</sup> It was also projected that 20 million beneficiaries (at the very most) would ever draw benefits from Social Security after the year 2000;<sup>21</sup> and that the size of the 65-and-older population in the United States would peak at about 31 million in 2025 (under the most optimistic mortality scenario).<sup>22</sup> Today, there are more than 43 million people in the United States aged 65 and older.<sup>23</sup> Furthermore, Social Security was originally envisioned as a supplementary form of retirement income designed as a safeguard against destitution; it was never anticipated that so many people would become fully financially dependent on the program.

With these demographic shifts in mind, we will summarize some of our findings and answer the questions raised in the introduction.

1) *How well did the two-year increase in eligibility age for full retirement benefits from the 1983 amendments correspond to the proportional rise in life expectancy from 1935 to 1983?* Evidence presented here indicates that the 1983 amendments raising the full retirement age to 67 effectively anticipated the increase in longevity since 1935, but

because the change in retirement age did not begin to take effect until 2006 and the full increase to 67 will not be realized until 2027, the implementation of the change was too slow.

2) *Does the rise in life expectancy at older ages observed since 1983 warrant a further adjustment to the age of eligibility for early and full Social Security benefits, and if so, what would they be?* Evidence indicates that the rate of improvement in survival past age 65 accelerated between 1983 and 2009, and does warrant an actuarially justified full retirement age (based on a 10-year moving average) of 69.4 and an early retirement age of 66.5 in 2009.

3) *How would subgroups of the U.S. population with diverse survival prospects be differentially influenced by further increases in early and full retirement ages?* Social Security retirement benefits are made available to everyone that contributed to the program over a sufficient period of employment. The amount paid out to beneficiaries is linked to their level of contribution, but there is a cap on the maximum and a floor on the minimum amount that they can receive. Although the age at which Social Security retirement outlays may begin is not influenced by gender, occupation, level of completed education, or health status, all of these attributes (and others) create considerable variation in both the prospect of living long enough to reach retirement ages, and how many years of life people have remaining after retirement.

By way of example, of those who began working at age 25 in the United States in 2009, 88.8 percent of women and 81.3 percent of men are projected to survive to age 65. Of those, 32.6 percent of women and 19.5 percent of men will reach their ninetieth birthday.<sup>24</sup> At opposite ends of the longevity spectrum, about 32 percent of men with less than a high school education will die before age 65, whereas only

6 percent of women with a college degree will die before age 65 (as of 2008).<sup>25</sup>

When the Social Security full-retirement age of 65 was chosen in 1935, it was based on the observed longevity experience of the white population in the United States – the subgroup with the highest life expectancy.<sup>26</sup> Although this was done to create the most favorable payout to retirees, it also created an immediate disparity for the nonwhite working population as well as for populations of all races with less than twelve years of education and/or in poverty: fewer members of these population subgroups were expected to live long enough to retire, and those that did reach retirement had shorter post-retirement life expectancies. Although the size of this less educated subgroup has been declining in the United States since 1935, the “retirement-benefit disparity” has been rising because the longevity of the most educated has been increasing at a faster pace than that of the least educated.<sup>27</sup>

Any increases in the early and full retirement ages (including those already being implemented under the 1983 amendments) exacerbate economic disadvantage among those less likely to reach retirement ages – a disadvantage that continues after retirement, since those with shorter survival prospects will draw benefits for less time. One strategy to compensate for this effect would be to enhance the disability program so that individuals who are unable to work and are caught in the lengthy process of applying for disability as they reach age 62 (when they would have received retirement benefits) could more quickly and easily receive disability payments.

The criteria that served as the basis for raising the full retirement age in 1983 were improved longevity *and* health. However, healthy life expectancy did not become a routinely reported vital statistic in the United States until the 1970s, so it is difficult to make a definitive claim about how

healthy life expectancy has changed over time.<sup>28</sup> Nonetheless, this much is clear: many more people survive to age 65 today than did in 1935; the observed increase in the benefit-collecting population is far greater than originally anticipated; those reaching ages 65 and older are now living much longer than was ever thought possible; and there has been a notable increase in healthy life expectancy by people reaching older ages today relative to any other generation in American history.<sup>29</sup>

There is no formula currently available to utilize health-related data to guide further adjustments to the full and early retirement ages; and even if there were, it would be difficult to create policy responsive to the fact that people move in and out of states of health and disability as they age. Currently, if healthy life expectancy were used in any way to guide adjustments to the retirement ages, they could only support increases above those already defensible from rising longevity alone (see Figures 1 and 2). However, any formula linking improved health to increases in the early and full retirement ages should also take into account the possibility that the health of the population in general, and future older cohorts in particular, could grow worse in the coming decades.<sup>30</sup>

4) *What would the early and full retirement ages be today had they been indexed directly to rising life expectancy since Social Security's inception, holding constant the 1935 proportion of adult life spent working to life in retirement?* We have determined that an early retirement age of 66.5 and a full retirement age of 69.4 are justified based on today's life expectancy. The idea of indexing the future retirement age to observed life expectancy and the ratio of retired to working years has appeared in European and U.S. academic and government publications.<sup>31</sup> The Commission on Fiscal Responsibility and Reform (Simpson-Bowles) recently recommended that the full retirement

S. Jay  
Olshansky,  
Dana P.  
Goldman  
& John W.  
Rowe

age be gradually raised to 68 by 2050 and to 69 by 2075; and that the early retirement age be raised to 63 and 64, accordingly. This would be accomplished by increasing the retirement age by 1 month every 2 years, beginning in 2027 when the current set of increases expire.

Estimates of the linkage between survival and retirement ages provided here indicate that the proposal by the Simpson-Bowles Commission underestimated the magnitude of the increase in the retirement ages required to keep up with observed longevity. The Commission's proposed full retirement ages of 68 for 2050 and 69 for 2075 should have been instated in 1987 and 2005, respectively, according to our analysis. The Commission's proposed early retirement ages of 63 for 2050 and 64 for 2075 should have gone into effect in 1955 and 1976, respectively. The rise in life expectancy already observed for the U.S. population from 1935 to 2009 indicates that the early and full retirement ages *today* should be well above the retirement ages proposed by the Commission to occur some sixty-one years from now.

Our conclusions about resetting the early and full retirement ages for Social Security are based exclusively on actual changes in longevity observed since 1935 and do not reflect an economic or political analysis. Using only the two criteria for determining age at full retirement that were considered by the Council on Economic Security in 1935 – actuarial justification and financial soundness of the program – we find that there is now justification to reset the early and full Social Security retirement ages several years higher than they currently are. Using the two criteria of improved longevity and health since the 1983 amendments as the basis for adjusting retirement ages, there is further justification for such a change. Such modifications in eligibility age would be consistent with the vision

of the early actuarial advisors for the program, who foresaw that the retirement age would evolve in response to changing demographic, health, and economic conditions; the modifications we suggest are also consistent with the observed retirement ages of half of the states that had retirement laws in effect as far back as 1935.

In short, in order for retirement ages to “catch up” to observed levels of longevity in the United States (improvements in health notwithstanding), an adjustment to the 1983 amendments would be required. Delays in both the full and early retirement age of five months per year would be required, beginning in 2015 and continuing for thirty years.

However, as unambiguous as the actuarial and health-related justifications are, further research on the circumstances surrounding aging and retirement is necessary, including social, economic, and political analyses. We acknowledge that any additional delay in the age of eligibility beyond those already in effect from the 1983 amendments would place a significant new financial burden on subgroups of the population and exacerbate dramatically the unequal access to entitlements that is already present in the system.<sup>32</sup> There are numerous other ways in which the Social Security trust fund can be made solvent for future generations, including increased taxes and revenues and reductions in benefits. Equally important, the progressivity of our safety net cannot be viewed through the lens of just one program. Reforming retirement programs might also necessitate changes in disability assistance and programs such as the Affordable Care Act and Medicare. Whatever the policy solution, this analysis highlights the impact that changing longevity can have on the progressivity and durability of government assistance.

ENDNOTES

S. Jay  
Olshansky,  
Dana P.  
Goldman  
& John W.  
Rowe

\* Contributor Biographies: S. JAY OLSHANSKY is Professor of Epidemiology at the School of Public Health, Division of Epidemiology and Biostatistics at the University of Illinois at Chicago. He has published articles in such journals as *The New England Journal of Medicine*, *JAMA: The Journal of the American Medical Association*, *Science*, *The Scientist*, *Scientific American*, and *Health Affairs*.

DANA P. GOLDMAN is the Leonard D. Schaeffer Chair in Health Policy at the University of Southern California. He is also the Director of the Schaeffer Center for Health Policy and Economics. He serves as a health policy adviser to the Congressional Budget Office, and his research has appeared in the *New England Journal of Medicine*, *JAMA*, *Demography*, the *Journal of the American Statistical Association*, and *Health Affairs*.

JOHN W. ROWE, a Fellow of the American Academy since 2005, is Professor at the Columbia University Mailman School of Public Health and Chair of the MacArthur Foundation Research Network on an Aging Society. He is the author of *Successful Aging* (with Robert L. Kahn, 1998) and was the Chair of the Institute of Medicine of the National Academies project the Future Health Care Workforce for Older Americans, which authored the report *Retooling for an Aging America: Building the Health Care Workforce* (2008).

<sup>1</sup> Robert J. Myers, "A Comparison of Dependent and Productive Groups in Various Populations," Actuarial Study No. 2, Office of the Actuary, Social Security Board, 1938, 18.

<sup>2</sup> Martha A. McSteen, "Fifty Years of Social Security," U.S. Social Security Administration, 2014, <http://www.ssa.gov/history/50mm2.html>.

<sup>3</sup> Ibid.

<sup>4</sup> W. R. Williamson and Robert J. Myers, "Cost Estimate for Various Modifications of the Old-Age Insurance Benefits under Title II Suggested to the Social Security Board," Actuarial Study No. 1, Office of the Actuary, Social Security Board, 1937, 8.

<sup>5</sup> Myers, "A Comparison of Dependent and Productive Groups in Various Populations," 18.

<sup>6</sup> McSteen, "Fifty Years of Social Security."

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> U.S. Social Security Administration, "Social Security Fact Sheet: Increase in Retirement Age," 2014, <http://www.ssa.gov/pressoffice/IncRetAge.html>.

<sup>12</sup> Eric Kingson and Monique Morrissey, "Can Workers Offset Social Security Cuts by Working Longer?" Economic Policy Institute Briefing Paper No. 343, 2012, <http://www.epi.org/publication/bp343-social-security-retirement-age/>.

<sup>13</sup> U.S. Social Security Administration, "Basic Facts," <http://www.ssa.gov/news/press/basicfact.html>

<sup>14</sup> Life expectancy and survival estimates for males and females in the United States in 1935, 1983, and 2009 used in this essay are based on life tables developed by the Office of the Chief Actuary, <http://www.ssa.gov/oact/TR/2013/tr2013.pdf>. Life expectancy and survival estimates for the U.S. population in 2008 by age, sex, and level of completed education were drawn from complete life tables derived from the research of the MacArthur Foundation Research Network on an Aging Society. See S. Jay Olshansky, Toni Antonucci, Lisa Berkman, Robert H. Binstock, Axel Boersch-Supan, John T. Cacioppo, Bruce A. Carnes, Laura L. Carstensen, Linda P. Fried, Dana P. Goldman, James Jackson, Martin Kohli, John Rother, Yuhui Zheng, and John Rowe, "Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up," *Health Affairs* 31 (8) (2012): 1803–1813. These tables were generated from the Centers for Disease Control and Prevention, National Center for Health

Statistics, Mortality Multiple Cause Files – 2008, [http://www.cdc.gov/nchs/data\\_access/vitalstatsonline.htm](http://www.cdc.gov/nchs/data_access/vitalstatsonline.htm). Estimates of the early and full retirement ages indexed to rising life expectancy since the program’s inception, holding constant the 1935 proportion of adult life spent working to years in retirement, were generated with the following formulas:

$$R_{(e,x)} = 20 + ((42 + e_{(62,x)}) * 0.7438)$$

Where  $R_{(e,x)}$  = forecast of early retirement age in year  $x$ ;

20 = conditional survival to age 20;

42 = years working, defined as early retirement age (62) minus age at which work begins (age 20);

$e_{(62,x)}$  = life expectancy at age 62 in year  $x$ ; and

0.7438 = the proportion of life after age 20 in 1935 spent working, assuming early retirement occurred at age 62.

$$\text{And } R_{(f,x)} = 20 + ((45 + e_{(65,x)}) * 0.7802)$$

Where  $R_{(f,x)}$  = forecast of early retirement age in year  $x$ ;

20 = conditional survival to age 20;

45 = years working, defined as full retirement age (65) minus age at which work begins (age 20);

$e_{(65,x)}$  = life expectancy at age 65 in year  $x$ ; and

0.7802 = the proportion of life after age 20 in 1935 spent working, assuming a full retirement occurred at age 65.

- 15 Axel Boersch-Supan, “Rational Pension Reform,” *The Geneva Papers* 32 (2012): 430 – 446, doi: 10.1057/palgrave.gpp.2510149; and National Commission on Fiscal Responsibility and Reform, “The Moment of Truth,” 2010, [http://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12\\_1\\_2010.pdf](http://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12_1_2010.pdf).
- 16 U.S. Social Security Administration, “Age 65 Retirement, The German Precedent,” <http://www.socialsecurity.gov/history/age65.html> (accessed February 12, 2015).
- 17 Myers, “A Comparison of Dependent and Productive Groups in Various Populations.”
- 18 L. O. Shudde and G. E. Immerwahr, “Old-Age and Survivors Insurance: Analysis of Long-Range Cost Factors,” U.S. Social Security Administration, Actuarial Study No. 21, 1946.
- 19 Myers, “A Comparison of Dependent and Productive Groups in Various Populations.”
- 20 U.S. Department of Health and Human Services, Administration for Community Living, “Administration on Aging (AOA): Projected Future Growth of the Older Population,” 2014, [http://www.aoa.gov/Aging\\_Statistics/future\\_growth/future\\_growth.aspx](http://www.aoa.gov/Aging_Statistics/future_growth/future_growth.aspx).
- 21 Robert J. Myers, “New Cost Estimates for the Old-Age and Survivors Insurance System, with the Assumption of a Static Future Wage Level,” U.S. Social Security Administration, Actuarial Study No. 17, 1942.
- 22 Robert J. Myers, “Illustrative U.S. Population Projections, 1946,” U.S. Social Security Administration, Actuarial Study No. 24, 1948.
- 23 U.S. Department of Health and Human Services, Administration for Community Living, “Administration on Aging (AOA): Projected Future Growth of the Older Population.”
- 24 U.S. Social Security Administration, Historical Life Tables developed by the Office of the Chief Actuary for use in estimates and analysis in *The 2013 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (2014); see <http://www.ssa.gov/oact/TR/2013/tr2013.pdf>.
- 25 Olshansky et al., “Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up.”
- 26 Robert J. Myers, “An Analysis of Benefits and the Progress of the Old-Age Reserve Account under Title II of the Social Security Act,” U.S. Social Security Administration, Actuarial Study No. 8, 1938.



- 27 Olshansky et al., “Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up.” *S. Jay Olshansky, Dana P. Goldman & John W. Rowe*
- 28 Eileen M. Crimmins and Yasuhiko Saito, “Trends in Healthy Life Expectancy in the United States, 1970 – 1990: Gender, Racial, and Educational Differences,” *Social Science and Medicine* 52 (2001): 1629 – 1641.
- 29 Vicki Freedman, Brenda Spillman, Patti Andreski, Jennifer C. Cornman, Eileen Crimmins, Ellen Kramarow, James Lubitz, Linda Martin, Sharon Merkin, Robert F. Schoeni, Teresa Seeman, and Timothy Waidmann, “Trends in Late-Life Activity Limitations in the United States: An Update from Five National Surveys,” *Demography* 50 (2) (2013): 661 – 671.
- 30 Crimmins and Saito, “Trends in Healthy Life Expectancy in the United States, 1970 – 1990”; and Olshansky et al., “Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up.”
- 31 National Commission on Fiscal Responsibility and Reform, “The Moment of Truth”; and Boersch-Supan, “Rational Pension Reform.”
- 32 Anna Zajacova, Jennifer Karas Montez, and Pamela Herd, “Socioeconomic Disparities in Health Among Older Adults and the Implications for the Retirement Age Debate: A Brief Report,” *The Journals of Gerontology: Psychological Sciences & Social Sciences* 69 (6) (2014): 973 – 978.

# Global Population Aging: Facts, Challenges, Solutions & Perspectives

*David E. Bloom, David Canning & Alyssa Lubet*

*Abstract: The rapid aging of populations around the world presents an unprecedented set of challenges: shifting disease burden, increased expenditure on health and long-term care, labor-force shortages, dissaving, and potential problems with old-age income security. We view longer life spans, particularly longer healthy life spans, as an enormous gain for human welfare. The challenges come from the fact that our current institutional and social arrangements are unsuited for aging populations and shifting demographics; our proposed solution is therefore to change our institutions and social arrangements. The first section of this essay provides a statistical overview of global population aging and its contributing factors. The second section outlines some of the major challenges associated with widespread population aging. Finally, the third section of the essay describes various responses to these challenges, both current and prospective, facing individuals, businesses, institutions, and governments.*

DAVID E. BLOOM, a Fellow of the American Academy since 2005, is the Clarence James Gamble Professor of Economics and Demography in the Department of Global Health and Population at the Harvard T.H. Chan School of Public Health.

DAVID CANNING is the Richard Saltonstall Professor of Population Sciences and Professor of Economics and International Health in the Department of Global Health and Population at the Harvard T.H. Chan School of Public Health.

ALYSSA LUBET is a Research Assistant in the Department of Global Health and Population at the Harvard T.H. Chan School of Public Health.

(\*See endnotes for complete contributor biographies.)

We are in the midst of an unprecedented transition in global demography. The world's population is aging rapidly, and older adults compose a larger proportion of the world's population than ever before – a share that will only increase over the next century. By 2050, the percentage of the United States' population that is aged sixty years and older will grow from the current figure of about 20 percent to 27 percent. The global number of centenarians worldwide – those aged one hundred years and older – is expected to more than double by 2030, with projections of nearly 3.4 million by 2050.<sup>1</sup> Three major factors are driving this transition: decreasing fertility, increasing longevity, and the aging of large population cohorts.

Falling fertility rates are the main determinant of population aging. Low fertility rates lead to smaller youth cohorts, which create an imbalance in the age structure: older age groups become larger than their younger counterparts. Thanks to accessible and effective birth control, increased child survival, and cultural changes, birth rates have dropped dramati-

---

© 2015 by the American Academy of Arts & Sciences

doi:10.1162/DAED\_a\_00332

ically in the past century. In 1950, the global total fertility rate (TFR), or the average number of children per woman, was about 5; by 2010, that number had dropped by 50 percent. By 2050, the TFR will have dropped even further to about 2.25 children per woman. In many countries, fertility rates are now well below the long-term replacement rate of just over two children per woman.

Changes in fertility rate are accompanied by increased longevity, another driver of population aging. Averaging for sex and location, a child born in 1950 had a life expectancy of only forty-seven years, while an adult who had survived to the age of sixty could expect to live another fourteen years. In contrast, by 2010, life expectancy at birth had increased to seventy years, and continued life expectancy for those aged sixty increased to twenty years. In a number of populations, recent increases in longevity have been attributed to falling rates of tobacco consumption, as well as improvements in medical technologies.<sup>2</sup> By 2050, life expectancy at birth is expected to have risen to nearly seventy-seven years, while life expectancy at age sixty will increase to twenty-two-and-a-half years.

Meanwhile, large population cohorts, such as the United States' postwar baby boom generation, are moving through middle age and older adulthood. This movement can be seen in Figure 1, which depicts the population of more-developed countries (MDCs) broken down by sex and age group. Males are on the left side of the pyramid and females are on the right. The shifting shape of the population pyramid between the years 2010 and 2050 illustrates the baby boom cohort's movement from middle into older ages.

These global phenomena – decreasing fertility, increasing longevity, and the aging of large birth cohorts – combine to drive up the percentage of older adults as a share of the global population. In 1950, only 8

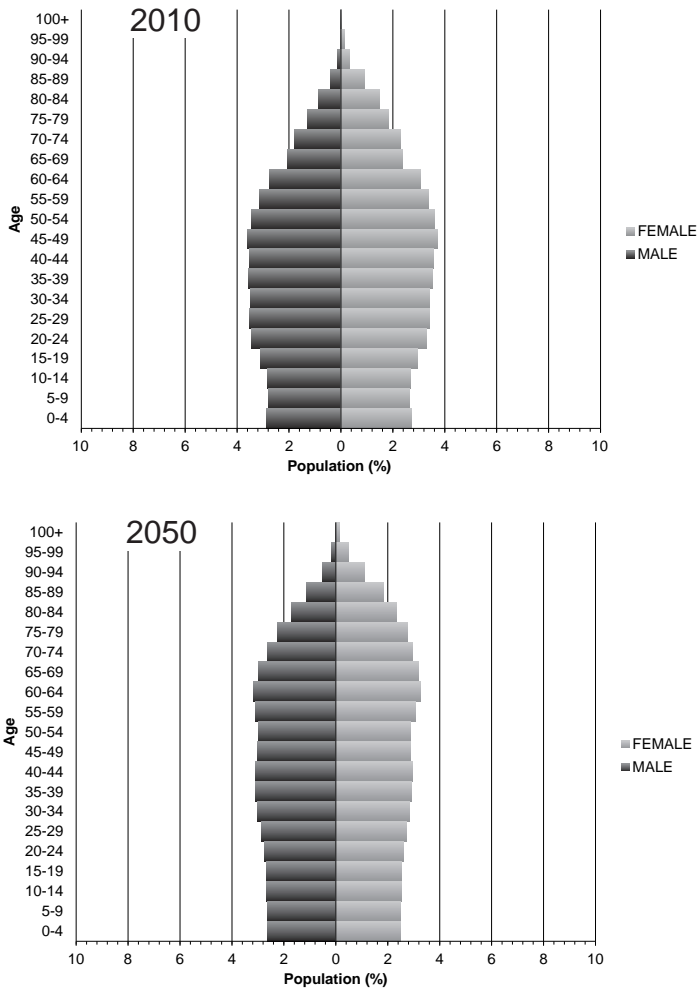
percent of the world's population was sixty years or older; this number increased to 11 percent by 2010. Over the next several decades, this proportion is expected to rise dramatically, reaching a projected 21.2 percent by 2050. The change is even more dramatic for the share of the world's population aged eighty years or older. This proportion climbed from just 0.6 percent in 1950 to 1.6 percent in 2010, and is projected to make up 4.1 percent of the global population by 2050.

While the population of virtually every country is aging rapidly, there remains considerable variation at both regional and country levels, with strong correlations to differing income levels. MDCs trend toward low fertility and high longevity, and less-developed countries (LDCs) trend toward the opposite. At the low end of the fertility range are the MDCs found in Europe and East Asia, with Bosnia, Herzegovina, and Singapore tied for the lowest TFR of 1.28 children per woman. Meanwhile, Sub-Saharan Africa has a regional TFR of just over 5, while also hosting the highest country-level fertility rates: Somalia (6.61), Mali (6.86), and Niger (7.58). As for longevity, Japan is in the lead with a current life expectancy at birth of eighty-three-and-a-half years, in stark contrast to Sierra Leone, where life expectancy at birth is slightly over forty-five years.

Tables 1 and 2 depict the percent of the elderly population in the world's most and least population-aged countries, now (2010) and projected in the future (2050). The 2050 figures are based on a medium fertility projection, which assumes that fertility in all major areas will stabilize at replacement level (at slightly over two children per woman). This comparison reveals stark differences in age profiles between countries. For example, currently 23 percent of Germany's population is aged sixty-five years and older, while the corresponding figure for Qatar (with its large expan-

*David E. Bloom,  
David Canning  
& Alyssa Lubet*

Figure 1  
Population Pyramids for More-Developed Countries, 2010 and 2050



Source: United Nations Department of Economic and Social Affairs Population Division, Population Estimates and Projections Section, *World Population Prospects: The 2012 Revision* (New York: United Nations Department of Economic and Social Affairs, 2014), <http://esa.un.org/unpd/wpp/index.htm>.

triate worker population) is only 1 percent. These rankings are projected to shift considerably in the next half century, with only Japan holding over in the top five most population-aged nations.

Rapid population aging is accompanied by several distinctive challenges in health,

labor supply, and economic growth. The economic and social consequences of greater numbers and increased shares of the elderly will be seen in rich and poor countries alike.

Nations with swiftly aging populations may find themselves with a growing disease burden on their hands: nearly one-

Table 1

The World's Most and Least Population-Aged Countries, 2010: Actual Population Percentages

David E. Bloom,  
David Canning  
& Alyssa Lubet

Country	% of population aged 65+	% of population aged 80+
<b>Top 5</b>		
Japan	23	6
Germany	21	5
Italy	20	6
Greece	19	5
Latvia	18	4
<b>Bottom 5</b>		
Kuwait	2	0.2
Eritrea	2	0.2
Bahrain	2	0.3
Qatar	1	0.1
United Arab Emirates	0.3	0.1

Source: United Nations Department of Economic and Social Affairs Population Division, Population Estimates and Projections Section, *World Population Prospects: The 2012 Revision* (New York: United Nations Department of Economic and Social Affairs, 2014), <http://esa.un.org/unpd/wpp/index.htm>.

Table 2

The World's Most and Least Population-Aged Countries, 2050: Projected Population Percentages (Medium Fertility Model)

Country	% of population aged 65+	% of population aged 80+
<b>Top 5</b>		
Japan	37	16
Republic of Korea	35	14
Spain	35	13
Portugal	34	12
Cuba	34	15
<b>Bottom 5</b>		
Chad	4	0.4
Somalia	3	0.4
Timor-Leste	3	0.7
Mali	3	0.1
Niger	2.5	0.3

Source: United Nations Department of Economic and Social Affairs Population Division, Population Estimates and Projections Section, *World Population Prospects: The 2012 Revision* (New York: United Nations Department of Economic and Social Affairs, 2014), <http://esa.un.org/unpd/wpp/index.htm>.

quarter of the world's burden of disease is attributable to illness in adults aged sixty and over. In turn, the majority (nearly 70 percent) of the older-adult disease burden is due to noncommunicable diseases (NCDs) such as heart disease, cancer, chronic respiratory disease, musculoskeletal conditions, and mental disorders such as Alzheimer's and dementia.<sup>3</sup> Adding to and significantly complicating the concerns posed by NCDs is the issue of multimorbidity, which affects a majority of older adults with NCDs.<sup>4</sup> The increasing burden of these health problems reflects the epidemiological transition that has taken place over the last century and that is still occurring in many developing nations, defined by a fundamental shift in the predominant causes of morbidity and mortality away from infectious diseases and malnutrition and toward NCDs.

The growing NCD burden could also be a significant path through which population aging slows economic growth. The treatment and care of people suffering from NCDs weighs heavily on government expenditure and household wealth and also results in decreased investment. Indeed, where losses are quantifiable, the projected economic cost of NCDs is staggering, particularly in low- and middle-income countries: recent projections show that India stands to lose US\$4.58 trillion, while China stands to lose US\$23.03 trillion due to NCDs in the period between 2012 and 2030; during this time each country's proportion of adults aged sixty-five and older is expected to double.<sup>5</sup> On an individual level, NCDs prevent people from working as long, hard, and productively as they otherwise might; this is reflected in decreased labor participation rates at older ages (see Figure 2).

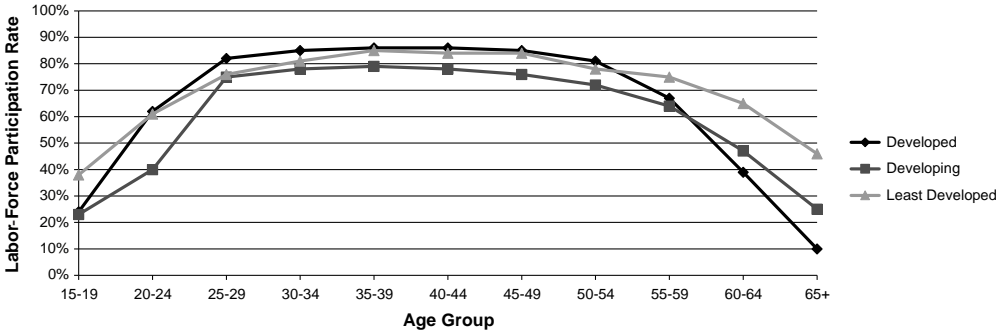
A key factor in determining the effects of population aging is the "compression of morbidity," predicted in the 1980s by professor of medicine James Fries. His theory

postulates that increasing life expectancies will result not only in deaths at later ages, but also in fewer years of life lived in the presence of disease and reduced physical and cognitive functioning, resulting in healthier, as well as extended, old age.<sup>6</sup> So far, analyses of existing data to test the compression of morbidity hypothesis have not been conclusive. Some studies have shown that certain populations – such as centenarians, adults with active cognitive lifestyles and social connections, and those with healthy lifestyles – do indeed seem to experience fewer years of illness and disability at the end of their lives.<sup>7</sup> However, other recent analyses found that in the United States, disease prevalence has increased along with average lifespan, and that years of life lived with disease and loss of mobility function have increased along with life expectancies.<sup>8</sup> Meanwhile, a number of studies using data from low- and middle-income countries show no evidence of compression of morbidity; conversely, an expansion of morbidity is also a possibility, threatening increased burdens on governments, health systems, and households.<sup>9</sup> It is clear that more research into the compression of morbidity will be necessary and that, in any case, healthy living must be emphasized.<sup>10</sup>

Another economic challenge presented by population aging is the falling labor supply. In many countries, labor-force participation falls off drastically at older ages (see Figure 2). As a result, population aging may slow national economic growth, reduce asset values, strain existing pension and health care systems, and weigh down younger generations in the process. In the United States, labor-force participation rates for both sexes peak between the ages of forty and forty-four: in 2010, the rate for this group was 82.3 percent. From there, rates drop gradually along with age, before falling precipitously from 72 percent for adults aged fifty-five to fifty-nine to 55 per-

Figure 2  
Labor-Force Participation Rate by Age Group, 2010

David E. Bloom,  
David Canning  
& Alyssa Lubet



Source: International Labour Organization, *ILOSTAT Database* (Geneva: International Labour Organization, 2014), <http://www.ilo.org/ilostat>.

cent for those aged sixty to sixty-four (unfortunately, after age sixty-five, labor-force participation rates are generally no longer available in five-year bands as they are for younger age groups).<sup>11</sup> Similar drops can also be seen in less-developed, but still aging, countries. In India, the participation rate of the sixty to sixty-four age group is nearly 50 percent, a dramatic drop from the 64 percent participation rate of those aged fifty-five to fifty-nine. In contrast, the more population-aged Japan sees a falloff from 80 percent to 61 percent participation between the fifty-five to fifty-nine and sixty to sixty-four age groups. While this decrease reflects a greater change in percentage points, higher overall proportions also point to longer working lives for a greater number of individuals.

The low labor-force participation of the elderly means that their consumption is financed out of either government pensions, family transfers, or their own savings. A difficulty with transfers such as pay-as-you-go pensions or informal transfers from children to their elderly parents is that they may become unsustainable as the ratio of elderly to working age population

increases. This can be avoided if people save real assets for their own retirement; but rather than accumulating real resources, many government pension systems promise pensions based on future tax receipts. As well as money transfers to the elderly, there are often larger transfers in the form of publicly provided access to health care, which if not financed through savings must be funded through a tax burden on younger workers.

Another challenge posed by population aging is the prospect of slowed economic growth by way of diminished labor and lower savings rates. There are strong life-cycle patterns in work and saving, and older generations do not work and save as much as younger adults do. One dire prediction is that population aging will slow or perhaps even reverse the engines of national economic growth. Reduced labor supply due to population aging may result in economies having to pay “dividend” back in the form of health care, long-term care, and capital deaccumulation as the elderly seek resources to finance their consumption in old age. Economies may also be burdened by increased social protec-

tion expenditures, such as increasing pension costs. Indeed, public pension expenditure as a share of GDP is projected to rise steeply in the coming decades due to population aging and to earlier changes in pension coverage and benefit rates.<sup>12</sup>

The problems outlined above may be offset by accompanying demographic developments, especially if countries are prepared to take advantage of these opportunities. One challenge posed by population aging is an altered age dependency ratio, or the ratio of people of working-age (ages fifteen to sixty-four) to young children and older adults in a population. However, increased elderly dependency will be offset in many economies by a reduced youth dependency ratio. The elderly dependency ratio in the United States, for example, has grown from seventeen adults aged sixty-five and older per one hundred working-aged adults in 1980 to twenty-one elderly per one hundred working-aged in 2013. In the same time period, the ratio of children under age fifteen to working-age adults has decreased from thirty-four per one hundred to twenty-nine per one hundred.<sup>13</sup> Between 1980 and the present, the United States' overall age dependency ratio has remained relatively constant, contracting from 51 percent to 50 percent.<sup>14</sup> With a lower youth dependency burden, investment can be redirected from social spending on children to investment in physical capital, research and development, and infrastructure – all classic drivers of economic growth.

Individuals may also respond to population aging through behavioral changes, such as increased rates of saving, higher educational attainment in anticipation of longer lives, and increased labor-force participation from women and the elderly. The typical “working lifespan” between the ages of fifteen and fifty-nine is the prime period for saving, and people may

respond to population aging through behavioral changes in this period. Greater longevity leads to longer retirements and increased incentives to save during working years in anticipation of retirement. There is some evidence that people in aging societies have already adjusted to this reality. Figure 3 shows that, for all countries in the aggregate, savings as a percentage of GDP rises along with the share of a country's population aged sixty-five years or older.<sup>15</sup> In economic terms, savings translates into investment, which fuels the accumulation of physical and human capital and technological progress, which are the classic drivers of economic growth.

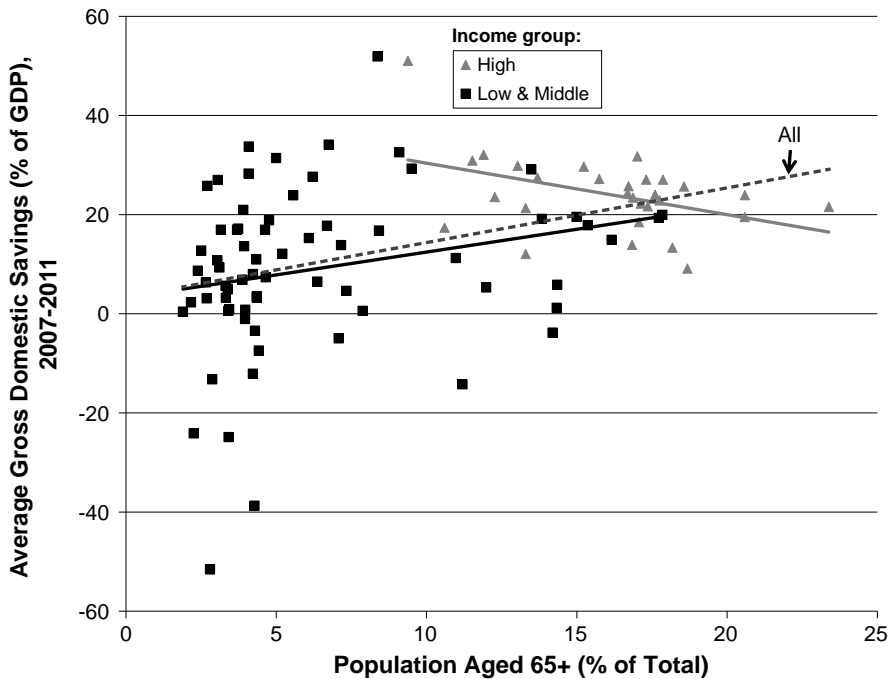
Individuals and households may also respond to population aging through increased investment in human capital, such as through education and training. Even while a more aged population can lead to a smaller workforce, investment in education can make this workforce more effective. Lower fertility rates lead to fewer children per family, and these children are typically healthier and better educated. Healthy, well-educated children generally grow up to be more productive adults.<sup>16</sup> A workforce with higher human capital has the potential to lead to increased productivity, wages, and standards of living.<sup>17</sup> Other human-capital investments in health will generally also lead to more productive working adults, offsetting the reduction in the labor force as adults age and fertility rates decline.

While reduced fertility rates have shrunk workforces in some countries, lower fertility has also facilitated greater labor-force participation by women. In that sense, lower fertility is tantamount to an increase in the effective labor force. This will further offset the negative effects of population aging on workforce numbers. Older people may also choose to work beyond the statutory retirement age, further mitigating this challenge. In the United States,



Figure 3  
Savings by Age in Developed and Developing Countries

David E. Bloom,  
David Canning  
& Alyssa Lubet



Source: David E. Bloom, Somnath Chatterji, Paul Kowal, Peter Lloyd-Sherlock, Martin McKee, Bernd Rechel, Larry Rosenberg, and James P. Smith, "Macroeconomic Implications of Population Ageing and Selected Policy Responses," *The Lancet* 385 (9968) (2015): 649 – 657.

labor-force participation rates of older individuals have been increasing for the past two decades, especially among those with higher levels of schooling.<sup>18</sup>

In addition to individuals and households, businesses can respond to population aging by adjusting human resource protocols and implementing technological innovations to assist and incentivize older workers. As older people make up greater numbers of the workforce, businesses can shift human resources practices to meet older employees' needs for flexible roles and schedules. Other developments may include reallocating more physically demanding tasks to younger employees, offering opportunities for continuing education of older employees, and instituting

worker wellness programs as a way of investing in employee health to cut down on health care and absenteeism costs.<sup>19</sup> Firms may also take advantage of new business opportunities that will accompany population aging, such as the design and marketing of products and services geared toward older adults.

With respect to public policy, it is natural for people to respond to longer and healthier lifespans by planning on longer working lives. But since most of the world's social security systems create strong incentives for retirement between the ages of sixty and sixty-five, public policy has been extremely sluggish in adapting to new demographic realities. For example, data on public pension systems in twenty-three

European countries between 1965 and 2005 show that while male life expectancy in those countries increased by an average of seven years, the mean legal retirement age did not change.<sup>20</sup> Fortunately, several countries – including France, Ireland, Greece, Sweden, and the United Kingdom – have recently raised the normal legal retirement age or have increased incentives to delay retirement.

Some countries have also considered adjusting their pension systems. For example, in Norway, new cohorts of older people will receive a pension calculated as the accumulated entitlement divided by a life expectancy indicator. Thus, as life expectancy increases, the annual pension will decrease.<sup>21</sup> In addition, some countries are moving toward fully funded systems in which contributions are saved in real assets that generate future pension income, rather than simply transferring contributions of the young to finance pension receipts of the old. Countries could also encourage and complement behavioral shifts by investing in schooling that will enlarge the effective labor force or by emphasizing healthy living and disease prevention throughout life.<sup>22</sup>

Institutional changes are also needed to address the new demographic realities. Government-initiated policies and educational programs to promote financial literacy among older adults may help them make better choices about the forms, accessibility, and security of their assets. Older people must make these choices while facing uncertainty about individual longevity and the availability of government benefits; furthermore, they must make these choices during a phase of life that is associated with reduced cognitive function.

Health system reform also has great potential to mitigate the negative effects of population aging; in 2002, the United Nations' *Madrid International Plan of Action on Ageing* called on governments to recognize

“the growing needs of an ageing population” by way of new policies geared toward the health of older adults.<sup>23</sup> In developing countries, especially those in which family and social structures are undergoing rapid transformations, there is a great need for developing basic packages of cost-effective health services suited to the needs of older people, including a realignment of primary health care programs to match changing demographic and epidemiological patterns.<sup>24</sup> There is also opportunity to reform health care financing mechanisms to ensure greater fairness and sustainability while also promoting risk pooling and increasing efficiency. This has the potential to reduce the fiscal pressures associated with an older population, and will improve the lives of older individuals by providing access to more and better services. In more-developed countries, a greater concern is securing coverage for the costs and services associated with long-term care. Governments could consider reducing reliance on costly institutional care by promoting self-care, in-home caretaker training, and other services that would enable older people to remain in their own homes.

Reforming health education and research is an important health systems-related solution. Currently, most medical curricula focus on disease cures and specialization. A potential source of cost savings and increased quality of life is to reorient medical education toward a holistic emphasis on prevention and early detection, especially given the increased burden of NCDs and the prevalence of multimorbidity. An additional focus on healthy living and a general understanding of comorbidities, treatment interactions, and palliative and end-of-life care, as well as research on the physical and cognitive transitions associated with aging, would meet the needs of the growing elderly population.

On a larger scale, international migration policies have the potential to ameliorate the economic effects of population aging, insofar as youthful developing-country populations can fill job vacancies in aging developed countries. The bottom-heavy population pyramids of Africa and the top-heavy pyramids of Europe fit together hand in glove. However, integrating the two over the next twenty-five years would require immigrant flows from Africa to Europe that are more than ten times higher than current levels.<sup>25</sup> Unfortunately, most countries have gone in the opposite direction and have instituted barriers to immigration, usually in an effort to protect their economies from low-wage workers, to preserve traditions, to maintain cultural and ethnic homogeneity, or to respond to anti-immigrant sentiments. Meanwhile, Japan, another of the world's most rapidly aging countries, has also had difficulty attracting even highly skilled migrant labor, in part due to language and cultural factors and corporate promotion and pension systems designed around lifetime, rather than medium-to-long term, employment.<sup>26</sup> It will be necessary to re-evaluate these priorities in order to produce migration policies that can meet both the employment demand of young workers from developing countries and the care needs of older people in developed countries.

Encouraging research on population aging will lead to long-term solutions; there are still many unanswered questions in this field. A great source of data for current and future research lies in the family of Health and Retirement Studies (HRS). Beginning with the first HRS in the United States, these longitudinal studies aim to collect rich and detailed data sets on older adults and their families, covering everything from physical and mental health to economic status and life histories. Countries with the most rapidly aging popula-

tions – including Japan, Korea, and those in the European Union – run their own ongoing sister studies, allowing for international harmonization and comparisons. More recently, low-income and middle-income countries such as South Africa, China, and India have also begun their own HRS surveys, which will provide a valuable look at population aging in emerging economies, for which data of this type are sorely lacking.

Counteracting the potential negative consequences of population aging will involve some combination of behavioral and policy changes. These may include increased rates of savings during the working years; increased labor supply from women, older people, and immigrants; thoughtful policy programs; increased retirement ages; and other adjustments. The combination of interventions chosen will determine how costs are divided among current and future generations of older people. Countries can ensure a smoother transition to an older population by initiating policy and institutional reforms sooner.

The solutions explored above may not only ameliorate the potential economic burden of population aging, but may also enhance the well-being of older people, which is an independently valuable result. Increased longevity can also be of great benefit to society. Older people are repositories of work experience, knowledge, and culture. Regarding them as a resource is critical to cultivating a more effective workforce and offsetting labor shortages. In a globalized world where knowledge and human capital provide an advantage, the experience of older workers is valuable.

Positive perceptions of aging individuals, their overall integration with society, and mitigation of ageist beliefs will also benefit their quality of life. Indeed, subjective well-being – life satisfaction, feel-

ings of happiness, and sense of purpose and meaning in life – has been shown to be closely related to physical health, a link that is particularly important at older ages and is associated with longer survival.<sup>27</sup> Shifting the perspective away from an ageist view of burden and diminished value and toward a positive view of older people who offer experience, wisdom, and leadership will enhance their lives and lead to behaviors and policies with the power to resolve or offset the challenges presented by aging.

Adopting policies that allow for healthy living throughout life and into old age will encourage this more positive perspective to take hold. Population aging has vastly different potential for benefit or harm to societies depending on whether aging populations are independent and healthy or are disabled and in need of costly long-term care. As discussed above, it remains to be seen whether increased longevity will introduce improved quality of life and a higher proportion of healthy years. While disability traditionally does increase along with age, research in the United States has

shown that in recent decades the incidence of disability at older ages is declining.<sup>28</sup> Policy interventions can reinforce this growing trend: higher socioeconomic status and higher levels of education among older men and women across multiple countries correlates with reduced disability and chronic disease incidence.<sup>29</sup> Higher education levels and improved health at older ages has led to such sayings as “seventy is the new sixty,” a sentiment reinforced by findings that the average self-reported health of a sixty-nine-year-old man in the United States in the 2000s was the same as that of a sixty-year-old man in the 1970s.

Although demographic change is daunting and has historically introduced significant obstacles to societal cohesion and economic growth, the bottom line is that demography is not destiny. Individuals, businesses, and governments have the option to adapt in the face of change, and many solutions are within reach. The sooner policy changes are considered and implemented, the sooner population aging can transform from a challenge into an opportunity.

#### ENDNOTES

- \* Contributor Biographies: DAVID E. BLOOM, a Fellow of the American Academy since 2005, is the Clarence James Gamble Professor of Economics and Demography in the Department of Global Health and Population at the Harvard T.H. Chan School of Public Health. His many publications include recent articles in such journals as *JAMA: The Journal of the American Medical Association*, *Finance & Development*, and *Science*.

DAVID CANNING is the Richard Saltonstall Professor of Population Sciences and Professor of Economics and International Health in the Department of Global Health and Population at the Harvard T.H. Chan School of Public Health. His many publications include recent articles in such journals as *Journal of Political Economy*, *Journal of Applied Statistics*, and *Journal of International Development*.

ALYSSA LUBET is a Research Assistant in the Department of Global Health and Population at the Harvard T.H. Chan School of Public Health. Her research interests include economics, women’s health and reproductive health, and population studies.

Authors’ Note: Preparation of this manuscript was supported by Harvard University’s Program on the Global Demography of Aging, which receives funding from the National Institute on Aging, Grant No. 1 P30 AG024409-09.

- 1 Unless otherwise stated, population figures are drawn from United Nations Department of Economic and Social Affairs Population Division, Population Estimates and Projections Section, *World Population Prospects: The 2012 Revision* (New York: United Nations Department of Economic and Social Affairs, 2014), <http://esa.un.org/unpd/wpp/index.htm>.
- 2 Colin D. Mathers, Gretchen A. Stevens, Ties Boerma, Richard A. White, and Martin I. Tobias, "Causes of International Increases in Older Age Life Expectancy," *The Lancet* 6736 (14) (2014).
- 3 Martin J. Prince, Fan Wu, Yanfei Guo, Luis M. Gutierrez Robledo, Martin O'Donnell, Richard Sullivan, and Salim Yusuf, "The Burden of Disease in Older People and Implications for Health Policy and Practice," *The Lancet* 6736 (14) (2014): 100–111.
- 4 Sube Banerjee, "Multimorbidity – Older Adults Need Health Care that Can Count Past One," *The Lancet* 6736 (14) (2014).
- 5 David E. Bloom, Elizabeth T. Cafiero-Fonseca, Mark E. McGovern, Klaus Prettnner, Anderson Stanciole, Jonathan Weiss, Samuel Bakkila, and Larry Rosenberg, "The Macroeconomic Impact of Non-Communicable Diseases in China and India: Estimates, Projections, and Comparisons," *The Journal of the Economics of Ageing* 4 (2014): 100–111.
- 6 James F. Fries, "The Compression of Morbidity," *The Milbank Memorial Fund Quarterly* 61 (3) (1983): 397–419, reprinted under the same title in *The Milbank Quarterly* (83) (4) (2005): 801–823.
- 7 Stacy L. Andersen, Paola Sebastiani, Daniel A. Dworkis, Lori Feldman, and Thomas T. Perls, "Health Span Approximates Life Span Among Many Supercentenarians: Compression of Morbidity at the Approximate Limit of Life Span," *The Journals of Gerontology: Biological Sciences & Medical Sciences* 67 (4) (2012): 395–405; James F. Fries, Bonnie Bruce, and Eliza Chakravarty, "Compression of Morbidity 1980–2011: A Focused Review of Paradigms and Progress," *Journal of Aging Research* 2011 (2011); and Riccardo E. Marioni, Michael J. Valenzuela, Ardo van den Hout, Carol Brayne, Fiona E. Matthews, and the MRC Cognitive Function and Ageing Study, "Active Cognitive Lifestyle is Associated with Positive Cognitive Health Transitions and Compression of Morbidity from Age Sixty-Five," *PLOS One* 7 (12) (2012): e50940.
- 8 Eileen M. Crimmins and Hiram Beltrán-Sánchez, "Mortality and Morbidity Trends: Is There Compression of Morbidity?" *The Journals of Gerontology: Psychological Sciences & Social Sciences* 66 (1) (2010): 75–86.
- 9 Somnath Chatterji, Julie Byles, David Cutler, Teresa Seeman, and Emese Verdes, "Health, Functioning, and Disability in Older Adults – Present Status and Future Implications," *The Lancet* 6736 (14) (2014).
- 10 David E. Bloom, Axel Boersch-Supan, Patrick McGee, and Atsushi Seike, *Population Aging: Facts, Challenges and Responses*, Program on the Global Demography of Aging Working Paper No. 71 (Cambridge, Mass.: Harvard School of Public Health, 2012), <http://www.hsph.harvard.edu/pgda/working.htm>.
- 11 International Labour Organization, *ILOSTAT Database* (Geneva: International Labour Organization, 2014), <http://www.ilo.org/ilostat>.
- 12 Benedict J. Clements, David Coady, Frank Eich, Sanjeev Gupta, Alvar Kangur, Baoping Shang, and Mauricio Soto, *The Challenge of Public Pension Reform in Advanced and Emerging Market Economies*, International Monetary Fund Occasional Paper 275 (Washington, D.C.: International Monetary Fund, 2012).
- 13 David E. Bloom, David Canning, and Günther Fink, "Implications of Population Ageing for Economic Growth" *Oxford Review of Economic Policy* 26 (4) (2010): 583–612.
- 14 The World Bank, "World Bank Open Data," <http://data.worldbank.org> (accessed January 26, 2015).
- 15 David E. Bloom, Somnath Chatterji, Paul Kowal, Peter Lloyd-Sherlock, Martin McKee, Bernd Rechel, Larry Rosenberg, and James P. Smith, "Macroeconomic Implications of Population Ageing and Selected Policy Responses," *The Lancet* 6736 (14) (2014): 1–9.

- 16 Gary S. Becker and Nigel Tomes, "Child Endowments and the Quantity and Quality of Children," *Journal of Political Economy* 84 (4, pt. 2) (1976): S143 – S162.
- 17 Klaus Prettner, David E. Bloom, and Holger Strulik, "Declining Fertility and Economic Well-Being: Do Education and Health Ride to the Rescue?" *Labour Economics* 22 (C) (2013): 70 – 79.
- 18 Henry Aaron and Gary Burtless, eds., *Closing the Deficit: How Much Can Later Retirement Help?* (Washington, D.C.: The Brookings Institution, 2013).
- 19 David Bloom and David Canning, "How Companies Must Adapt for an Aging Workforce," *Harvard Business Review*, December 3, 2012, <https://hbr.org/2012/12/how-companies-must-adapt-for-a/>.
- 20 The World Bank, "World Bank Open Data."
- 21 Organisation for Economic Co-operation and Development, "Linking Pensions to Life Expectancy," in *Pensions at a Glance 2011: Retirement-Income Systems in OECD and G20 Countries* (Paris: OECD Publishing, 2011), <http://www.oecd-ilibrary.org/docserver/download/8111011e.pdf?expires=1422285516&id=id&accname=guest&checksum=CB440CD4A7F88CoE9274E171B76C99BD>.
- 22 Clements et al., *The Challenge of Public Pension Reform in Advanced and Emerging Market Economies*; and Ronald Lee and Andrew Mason, "Fertility, Human Capital, and Economic Growth over the Demographic Transition," *European Journal of Population* 26 (2) (2010): 159 – 182.
- 23 The United Nations, *Political Declaration and Madrid International Plan of Action on Ageing*, Second World Assembly on Ageing, Madrid, Spain, April 8 – 12, 2002.
- 24 David E. Bloom and Karen N. Eggleston, "The Economic Implications of Population Ageing in China and India: Introduction to the Special Issue," *The Journal of the Economics of Ageing* 4 (2014): 1 – 7.
- 25 David Bloom, David Canning, and Jaypee Sevilla, *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change* (Santa Monica, Calif.: RAND Corporation, 2002), [http://www.rand.org/pubs/monograph\\_reports/MR1274.html](http://www.rand.org/pubs/monograph_reports/MR1274.html).
- 26 Nana Oishi, "The Limits of Immigration Policies: The Challenges of Highly Skilled Migration in Japan," *American Behavioral Scientist* 56 (8) (2012): 1080 – 1100.
- 27 Andrew Steptoe, Angus Deaton, and Arthur A. Stone, "Subjective Wellbeing, Health, and Ageing," *The Lancet* 6736 (13) (2014).
- 28 National Research Council of the National Academies, Committee on the Long-Run Macroeconomic Effects of the Aging U.S. Population, *Aging and the Macroeconomy: Long-Term Implications of an Older Population* (Washington, D.C.: The National Academies Press, 2012).
- 29 Ahmad Reza Hosseinpoor, Jennifer Stewart Williams, Ben Jann, Paul Kowal, Alana Officer, Aleksandra Posarac, and Somnath Chatterji, "Social Determinants of Sex Differences in Disability Among Older Adults: A Multi-Country Decomposition Analysis Using the World Health Survey," *International Journal for Equity in Health* 11 (52) (2012).

# Individual & Social Strategies to Mitigate the Risks & Expand Opportunities of an Aging America

*Julie M. Zissimopoulos, Dana P. Goldman, S. Jay Olshansky, John Rother & John W. Rowe*

*Abstract: Increasing life expectancy offers the potential benefit of additional years of productivity and engagement to both individuals and society as a whole. However, it also carries substantial risks. For many, advanced age brings increased disease and disability (including cognitive impairment), financial insecurity, and social isolation. These risks are greatest for those with the least education and financial resources. An aging society must cope with increasing demands for high-quality geriatric care, mounting stresses on social insurance programs (such as Social Security and Medicare in the United States), and the increasing danger that the growing gap between the haves and have-nots will threaten societal cohesion. These risks can be mitigated or aggravated by the lifestyle and savings behavior of individuals, families, employers, and the government. We present policy options in the areas of education, work and retirement, financial security, health care, and social cohesion that can promote the benefits and reduce the risks of longer life.*

JULIE M. ZISSIMOPOULOS is an Assistant Professor at the Sol Price School of Public Policy at the University of Southern California.

DANA P. GOLDMAN is Professor of Public Policy, Pharmacy, and Economics at the University of Southern California.

S. JAY OLSHANSKY is Professor of Epidemiology at the School of Public Health at the University of Illinois at Chicago.

JOHN ROTHER is President and CEO of the National Coalition on Health Care.

JOHN W. ROWE, a Fellow of the American Academy since 2005, is Professor at the Columbia University Mailman School of Public Health.

(\*See endnotes for complete contributor biographies.)

The aging of America presents both opportunities and risks. The opportunities, which are often neglected,<sup>1</sup> relate principally to the availability of large numbers of generally fit, experienced older persons who can make valuable economic and social contributions to society.<sup>2</sup> Although increasing attention is being paid to the risks of an aging society and ways to protect against them, the United States has yet to actively adapt to either the risks or the opportunities. The focus of this essay is to illuminate the changing nature of both.

For individuals, the risks of a longer life include becoming ill or disabled and needing extensive acute and long-term care. The latter is particularly important, as long-term care can deplete the patient's financial resources, leaving him or her dependent on public support. Other individual risks include isolation and disengagement: increasing numbers of older persons are living alone, with fraying connec-

tions to families. U.S. families themselves are undergoing major changes in structure and function that impede their capacity to serve as a safety net for elderly members.

Societal challenges and individual risks are clearly linked. For instance, society is ill-prepared to meet the surging demand for high-quality geriatric care. The shortfalls are not only in funding but in developing and maintaining a qualified health-care workforce. Likewise, society has been slow to adapt to the need for “aging friendly” environments that are safe and affordable and provide transportation and housing appropriate for older residents. As the United States faces the challenge of covering the medical expenses of a growing number of insured aging individuals, some of the costs are being transferred to healthier insured populations in the form of higher out-of-pocket costs. Similarly, delays or reductions in Social Security retirement benefits, imposed to protect the solvency of the trust fund, place more pressure on the elderly and their families. Finally, ensuring societal cohesion – encouraging an equitable society and limiting disparities and tensions between groups – is a societal challenge on a grand scale.

Public and private strategies to mitigate the individual and societal risks of aging must consider several fundamental issues. First, longer and healthier lives extend the length of time that many people can engage productively in society. For others, however, innovations in medical science designed to prolong life can also prolong periods of disability, which can limit ability to work and increase medical expenses. Among those aged seventy and older, rates of functional impairment have declined since the early 1980s, although more recently the trend has flattened.<sup>3</sup> Obesity may be contributing to declining rates of physical function, though lower rates of

smoking and greater educational gains may have beneficial effects. The decision to leave the labor force is not solely driven by poor health but also by the intrinsic financial incentives (or disincentives) in public and private pension systems. Those who are able and who choose to work longer have more time to accumulate private savings and maximize public benefits.

Second, gains in life expectancy have not been distributed equally across society. Education is closely tied to the “longevity dividend”<sup>4</sup>: life-expectancy disparities by education are astonishingly large.<sup>5</sup> In 2008, white males with sixteen or more years of education lived 14.2 years longer than black men with less than twelve years of education. The same gap for women was 10.3 years. And these disparities between the educational extremes continue to widen: in 1990, the gap in life expectancy between the most and least educated white females was 1.9 years; in 2014, it was 10.4 years.

Finally, the current environment in the United States is not conducive to disease-prevention efforts, even though evidence suggests more proactive risk-factor prevention would yield high returns.<sup>6</sup> With average tenure in health plans sometimes as low as four years – and with the government financing care after age 65 – employers and health plans clearly underinvest in disease prevention. Thus, a much stronger effort is needed to prevent disease before it occurs.

**B**oth individuals and institutions share the responsibility to protect the elderly against the dual risks of physical frailty and outliving their resources. In general, however, the strength of the forces that mitigate risk is eroding just as the risks themselves are growing.

Social Security benefits, pensions, and private savings are the main economic resources that support living expenses in retirement. This “three-legged stool,” how-



ever, generally only supports high-income households,<sup>7</sup> with lower-income households often missing one or more of these sources of support. Although social programs such as Social Security and Medicare may substitute for private savings, Social Security alone will only provide enough resources to keep a household marginally above the poverty line. Thus, for many households, savings and private pensions – possibly augmented by support from other family members – are necessary to provide for adequate retirement consumption. U.S. savings rates, however, have declined during the last thirty years.<sup>8</sup> Even if individuals designate private savings for retirement, unexpected life events can have profound effects on economic security later in life.<sup>9</sup> Job loss, the loss of a spouse through death or divorce, or ill health can disrupt savings plans and leave individuals permanently worse-off, unable to regain their economic and noneconomic positions. The consequences of these shocks can also affect families and households and be transmitted intergenerationally when children have access to limited economic resources and social support.

Health shocks are often unexpected and sometimes unavoidable. However, individuals may take actions over their lifetimes to delay or avert declining health. Preventive health behaviors such as maintaining a healthy diet, exercising regularly, and avoiding harmful activities such as smoking can support long-term health. Changes in lifestyle (smoking, exercise) and treatment of risk factors (high blood pressure, high cholesterol) have decreased the incidence of some diseases of old age, including stroke and, more recently, heart attack and some forms of cancer. In addition, volunteering may offer substantial health promotion and disease prevention benefits, as discussed by Dawn Carr, Linda Fried, and John Rowe in their contribution to this volume, “Productivity and Engage-

ment in an Aging America: The Role of Volunteerism.”<sup>10</sup>

Although some risky health behaviors (such as smoking) have declined over time, others (such as poor diet and minimal exercise) have increased, leading to rising obesity rates. Between 1970 and 2000, the prevalence of overweight children and adolescents tripled, and obesity in adults doubled, affecting 33 percent of the population.<sup>11</sup> Evidence is accumulating that suggests that this steady, decades-long increase may be abating, as the rise in obesity and overweight rates appears to have flattened during the past decade.<sup>12</sup> However, this may mean that some populations are reaching a saturation point in obesity levels. Research also points to evidence that although being overweight is less damaging to older persons than to the young, the consequences of the decades-long rise in obesity will be felt for many years to come.<sup>13</sup>

Individual efforts at self-protection against health-related problems (and their attendant financial stresses) are important. But they are often not enough to mitigate the risks associated with longevity, and families and other institutions are needed to protect against financial insecurity and the consequences of physical frailty.

The American family has long served as a vital safety net for older persons. Among older Americans who report needing at least some help with activities of daily living (ADLs, or simple activities such as feeding, dressing, and grooming oneself) or instrumental activities of daily living (IADLs, or more complex skills such as managing finances and transportation), almost one-half receive help from a family member.<sup>14</sup> Caregiving from family members is even more prevalent and intensive in response to cognitive diseases such as dementia and Alzheimer’s disease, which typically strike at older ages. We have estimated in our past research that Alzheimer’s disease results in

*Julie M. Zissimopoulos, Dana P. Goldman, S. Jay Olshansky, John Rother & John W. Rowe*

almost \$30,000 worth of unpaid caregiving annually. If family members were unavailable to provide this care – which ranges from running errands and accompanying older family members to the doctor to bathing, toileting, and administering medications – on an unpaid basis, the additional cost would be more than the total Medicaid spending for these individuals.<sup>15</sup>

Family support is central to ameliorating the risks of aging. As described more fully in the essay by Frank Furstenberg, Caroline Sten Hartnett, Martin Kohli, and Julie Zissimopoulos in their contribution to this volume, “The Future of Intergenerational Relations in Aging Societies,” the primary type of support provided by the younger to the older generation in advanced economies is caregiving.<sup>16</sup> *Financial* assistance is more likely to flow from the older generation to children and grandchildren. Current and ongoing changes in the structure and function of the family may disrupt these intergenerational transfers of financial and nonfinancial resources, thus compromising the family’s collective ability to hedge against risks.

Decreases and other changes in marriage and childbearing diminish the likelihood of either children or spouses supplying care to a disabled older adult. Rates of marriage have declined and marriage has become a less central and stable institution. Childbearing, robust one half-century ago, has slowed. A larger number of couples in which both spouses work has required women and men to develop more complex routines of managing work and family roles. Adding to this burden, greater investment by parents is required today in childrearing and parental support: societal expectations of more higher education, as well as the difficulties young adults face in entering the workforce, have extended the period of young adults’ dependency on parents. The rise in the number of seniors adds potential capacity to assist younger

generations, but at the same time, it creates greater obligations for the support and care of elderly family members when they become frail and incapacitated.

In sum, an aging society has clearly created more risk for the individual just as the buffers against these risks have begun to erode. This makes it all the more imperative that effective, well-designed public programs are created to help.

**S**ocial insurance programs in the United States (both means-tested and not) play an important role in protecting individuals against financial insecurity. The leading social insurance programs are the Social Security retirement program (OASI: the Old-Age and Survivors Insurance Trust Fund), the Social Security Disability Insurance program (DI), Unemployment Insurance, Workers’ Compensation, and Medicare. Social insurance programs are intended to insure individuals against the risks of unemployment, disability, and old-age financial insecurity and inability to work. Because of their large scale, they have a greater impact on poverty than means-tested programs such as Temporary Assistance for Needy Families.

The OASI program has the greatest impact on poverty among the elderly. Without counting OASI, the poverty rate among older Americans was 55 percent in 2004. However, the poverty rate falls to nearly zero with OASI benefits. The Disability Insurance program reduces rates of poverty among the disabled to nearly zero as well.<sup>17</sup> Work by the MacArthur Foundation Research Network on an Aging Society finds that public expenditures on Americans aged sixty-five and older are projected to rise from \$1.2 trillion in 2010 to \$4.4 trillion in 2050. Public expenditures on the elderly and disabled, while extremely effective in ensuring financial security at older ages, are not without drawbacks. Some studies posit that means-tested aid programs dis-

courage saving, although the empirical evidence on this is mixed.<sup>18</sup> The evidence on the effect of OASI on saving is also mixed.

Social insurance programs do not only exist to buffer individuals from risk and assist them when they are in need; they are also a reflection of society's values and of the greater social and political context. We are entering an era in which people are expected to take increased personal responsibility for their health and financial situations. This is driven in part by the view that our social insurance system has become unaffordable (driven largely by our aging population), which has in turn cost young people their sense of financial security. A successful aging society in the United States will require that each age group develop a sense of shared sacrifice and benefit. It will also require policies that promote economic growth and job opportunities for all ages. Finally, it will need a social insurance system that reflects shifting risks and changes to the traditional buffers against them. In their essay "Resetting Social Security" in this issue of *Daedalus*, S. Jay Olshansky, Dana Goldman, and John Rowe also discuss in detail possible approaches to modifications in eligibility and timing of Social Security benefits.<sup>19</sup>

The U.S. government faces the combined challenge of the future financial shortfall of the Social Security trust fund and rising medical expenses of Medicare and Medicaid beneficiaries. The growth in health care costs has for many years far exceeded the growth of gross domestic product (GDP). Some good news may be on the horizon, however: since 2010, real per capita health care spending has grown at an estimated annual rate of just 1.3 percent.<sup>20</sup> The causes of the slowdown are not yet fully understood. Health care prices – not just use – are lower, implying that the slowdown may be due to something more than the recent recession. The Affordable Care Act's Medicare reforms, which reduce

Medicare payments to private insurers and medical providers, may also be a contributing factor. This trend however, may be temporary and population aging will drive up costs in the future. Moreover, the retirement of baby-boomers, combined with declining fertility rates producing fewer workers, has dampened economic growth. Without new sources of government revenue, slower growth reduces the amount of revenue available for the social insurance programs the elderly have come to rely on. What role should individuals, families, society, and government play in mitigating the risks that old age brings? The choices made today and in the future will redefine U.S. society going forward.

The growing momentum of the fundamental restructuring of private pensions in the last two decades – from traditional defined-benefit plans to defined-contribution plans such as 401(k) plans – is a critical factor in the aging of the United States.<sup>21</sup> Defined-benefit pensions are usually based on age, final salary, and job tenure; they generally provide a monthly income once the employee is eligible for full benefits and retires. About 60 percent of the pension wealth of the oldest baby-boomers resides in defined-benefit pension plans.<sup>22</sup> On the other hand, defined-contribution pension values are not directly tied to age and tenure, and they increase at rates that depend on market return and whether and to what extent the employer decides to match contributions. The growing prevalence of defined-contribution plans will increase workers' opportunities to supplement Social Security income but shifts investment risk from the business sector to the household.

The rising number of defined-contribution plans that pay in lump-sum distributions rather than annuities also places the responsibility for financial decisions more squarely in an individual's hands. This too

Julie M. Zissimopoulos,  
Dana P. Goldman,  
S. Jay Olshansky,  
John Rother &  
John W. Rowe

applies to the increasingly common practice of paying lump sums from defined-benefit plans. Older individuals must decide whether to spend the payout immediately or whether to roll it over and save it. If they decide to save it, they must determine how to invest it and at what rate they should spend it in retirement in order to not outlive their savings. In addition, the greater prevalence of defined-contribution pension plans with more retirement assets held in stocks have made retirement plans subject to changes in the stock market, as the recent recession has underscored.

The movement from defined-benefit to defined-contribution plans is one example of how individuals are being asked to manage their own finances and retirement assets. The shift to a “personal-responsibility” retirement model will only be successful if financial literacy rises. Financial instruments are becoming more complex, and some individuals may be ill-equipped to make complex investment decisions. The fact that many elderly do not choose the best Medicare Part D (drug benefit) plan is just one example of this deficit.<sup>23</sup> Financial literacy is highest among the most educated, but the rate of college completion is flattening, so financially under-literate populations will likely rise if this trend continues.<sup>24</sup>

Other buffers protecting financial security in retirement are also eroding. Employers today are less likely to offer their workers retiree health insurance benefits. According to the Employee Benefit Research Institute (EBRI), in 2010, 17.7 percent of workers were employed in establishments that offered health coverage to early retirees, down from 28.9 percent in 1997.<sup>25</sup> Those that continue to offer retiree health benefits have made changes in the benefits they offer, including raising premiums, tightening eligibility, and reducing benefits.

Just as with financial models in retirement, there has been a shift in health care

toward a personal-responsibility model. For example, many individuals now have “consumer-directed health plans” that carry high deductibles and encourage individuals to control their use of health care services. Medicare beneficiaries must now choose from a large menu of insurance choices when signing up for prescription drug coverage through Medicare Part D. Choosing an optimal health insurance plan, however, requires an understanding of insurance terms that many people are unfamiliar with<sup>26</sup> and an understanding of how different benefit designs affect out-of-pocket spending.<sup>27</sup> Many older adults do not understand the unique design of Part D plans, a knowledge deficit that exposes them to a coverage gap.<sup>28</sup> This gap may have long-term health consequences when, as research shows, beneficiaries with chronic disease must forgo their medications as a result.<sup>29</sup>

Despite these challenges, feasible policy options can lower the overall risk to both individuals and society and increase the likelihood that the United States will remain cohesive, productive, secure, and equitable as it emerges from this demographic transformation. Based on the information presented in this essay and in the other essays in this volume, the MacArthur Foundation Research Network on an Aging Society offers the following five recommendations as a way forward.

1) Enhance life-long learning and increase the likelihood that older workers can function effectively in the labor force:

- Offer incentives for reinvesting in skill development, especially for blue-collar workers.
- Encourage work site–based educational and training programs.
- Provide resources that support alternative ways to update skills; encourage

lifelong learning beyond the classroom. An example is the Mozilla/MacArthur Foundation Badges for Lifelong Learning Program, an emerging model of peer-to-peer learning that creates credentials for informal learning that is not currently captured by traditional credentials (such as college degrees).

2) Ensure that older persons are productively engaged in society, either through paid work or volunteering:

- Create incentives for employers to offer more flexible employment models that fit the needs of older workers.
- Create incentives for volunteering.
- Increase funding for federal senior volunteer programs.
- Consider the benefits and the costs of establishing Medicare as the primary payer for health benefits of older workers who are eligible for the program.

3) Encourage individual and societal financial security:

- Change 401(k) participation from voluntary opt-in to a default option of participation and a voluntary opt-out, and require savings rates of 6 percent.
- Offer paid leave for family caregiving.
- Ensure that Social Security continues to provide individuals and families with financial security while shoring up trust fund solvency through benefit reform.

4) Provide high-quality health care to all:

- Strengthen geriatric training and increase requirements for demonstrated competence in geriatric care for all levels of health care providers.
- Provide financial incentives such as loan forgiveness and scholarships for individuals training in geriatric care.
- Channel resources through Medicare to providers (nurses, physicians, and

others) with additional training and demonstrated competence in geriatrics. This must include the diagnosis and management of common disorders of late life, including delirium, dementia, falls, incontinence, polypharmacy (use of more than four medications, which raises the possibility of harmful interactions), and frailty; as well as diseases especially common in older persons, such as diabetes, cardiovascular disease, and arthritis.

- Establish training programs tailored to specific caregiver situations.
- Launch caregiver support programs as a place to discuss challenges in a confidential setting.
- Expand the National Family Caregiver Support Program to help reimburse costs of caregiving and provide funding for caregivers to be temporarily relieved of their duties, allowing them to maintain their responsibilities for an extended time.

5) Build a culture of shared sacrifice and benefit across the generations:

- Promote generationally cohesive communities by encouraging individuals from different generations to interact productively together, reducing inter-generational tensions.
- Establish programs to involve seniors in schools and youth in senior services.
- Avoid exclusive reliance on age-segregated housing and services.
- Emphasize the benefits of social insurance programs across the entire age span.

Taken together, these options provide a general blueprint for the types of policies that should be put in place to increase the likelihood that our country will maintain its resilience in the face of this demographic change.

*Julie M. Zissimopoulos, Dana P. Goldman, S. Jay Olshansky, John Rother & John W. Rowe*

\* Contributor Biographies: JULIE M. ZISSIMOPOULOS is an Assistant Professor at the Sol Price School of Public Policy and the Associate Director of the Schaeffer Center for Health Policy and Economics at the University of Southern California. Her research has been published in such journals as *The Journal of Economic Perspectives*, *Journal of Health Economics*, *Journal of Human Resources*, and *Demography*.

DANA P. GOLDMAN is the Leonard D. Schaeffer Chair in Health Policy at the University of Southern California. He is also the Director of the Schaeffer Center for Health Policy and Economics. He serves as a health policy adviser to the Congressional Budget Office, and his research has appeared in the *New England Journal of Medicine*, *JAMA: The Journal of the American Medical Association*, *Demography*, *Journal of the American Statistical Association*, and *Health Affairs*.

S. JAY OLSHANSKY is Professor of Epidemiology at the School of Public Health, Division of Epidemiology and Biostatistics at the University of Illinois at Chicago. He has published articles in such journals as *The New England Journal of Medicine*, *JAMA*, *Science*, *The Scientist*, *Scientific American*, and *Health Affairs*.

JOHN ROTHER is President and CEO of the National Coalition on Health Care. Prior to joining the Coalition, he served as the Executive Vice President for Policy, Strategy, and International Affairs at the AARP. He was also Staff Director and Chief Counsel of the Senate Special Committee on Aging under the direction of Chairman John Heinz (R-PA) and Special Counsel for Labor and Health to Senator Jacob Javits (R-NY).

JOHN W. ROWE, a Fellow of the American Academy since 2005, is Professor at the Columbia University Mailman School of Public Health and Chair of the MacArthur Foundation Research Network on an Aging Society. He is the author of *Successful Aging* (with Robert L. Kahn, 1998) and was the Chair of the Institute of Medicine of the National Academies project the Future Health Care Workforce for Older Americans, which authored the report *Retooling for an Aging America: Building the Health Care Workforce* (2008).

- 1 One exception is John Wallis Rowe and Robert L. Kahn, *Successful Aging* (New York: Dell, 1998).
- 2 David Lowsky, S. Jay Olshansky, Jay Bhattacharya, and Dana P. Goldman, "Heterogeneity in Healthy Aging," *The Journals of Gerontology: Biological Sciences & Medical Sciences* 69 (6) (2014): 640–649.
- 3 Robert Schoeni, Vicki Freedman, and Linda Martin, "Why is Late-Life Disability Declining?" *Milbank Quarterly* 86 (1) (2008): 47–89. Among the working-age population, results are conflicting, in part because of variation in how disability is defined and measured in surveys. See Richard Burkhauser, Andrew Houtenville, and Jennifer Tennant, "Measuring the Population with Disabilities for Policy Analysis" in *Lifecycle Events and Their Consequences: Job Loss, Family Change and Decline in Health*, ed. Kenneth A. Couch, Mary C. Daly, and Julie M. Zissimopoulos (Stanford, Calif.: Stanford University Press, 2013).
- 4 S. Jay Olshansky, Daniel Perry, Richard A. Miller, and Robert N. Butler, "In Pursuit of the Longevity Dividend," *The Scientist* 20 (3) (2006): 28–36.
- 5 S. Jay Olshansky, Toni Antonucci, Lisa Berkman, Robert H. Binstock, Axel Boersch-Supan, John T. Cacioppo, Bruce A. Carnes, Laura L. Carstensen, Linda P. Fried, Dana P. Goldman, James Jackson, Martin Kohli, John Rother, Yuhui Zheng, and John W. Rowe, "Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up," *Health Affairs* 31 (8) (2012): 1803–1813.
- 6 Dana P. Goldman, Yuhui Zheng, Federico Girosi, Pierre-Carl Michaud, S. Jay Olshansky, David Cutler, and John W. Rowe, "The Benefits of Risk Factor Prevention in Americans Aged 51 Years and Older," *American Journal of Public Health* 99 (11) (2009): 2096–2101.
- 7 John Karl Scholz, Ananth Seshadri, and Surachai Khitatrakun, "Are Americans Saving 'Optimally' for Retirement?" *Journal of Political Economy* 114 (4) (2006): 607–643.

- <sup>8</sup> U.S. Department of Commerce, “Seasonally Adjusted Annual Rate,” PSAVERT Series (Washington, D.C.: Department of Commerce, 2014). Julie M. Zissimopoulos, Dana P. Goldman, S. Jay Olshansky, John Rother & John W. Rowe
- <sup>9</sup> Kenneth Couch, Mary C. Daly, and Julie M. Zissimopoulos, eds., *Lifecycle Events and Their Consequences: Job Loss, Family Change and Decline in Health* (Stanford, Calif.: Stanford University Press, 2013).
- <sup>10</sup> Dawn C. Carr, Linda P. Fried, and John W. Rowe, “Productivity and Engagement in an Aging America: The Role of Volunteerism,” *Dædalus* 144 (2) (2015).
- <sup>11</sup> Katherine M. Flegal, Margaret D. Carroll, Cynthia L. Ogden, and Lester R. Curtin, “Prevalence and Trends in Obesity among U.S. Adults, 1999–2008,” *JAMA* 303 (3) (2010): 235–241.
- <sup>12</sup> Katherine M. Flegal, Margaret D. Carroll, Brian K. Kit, and Cynthia L. Ogden, “Prevalence of Obesity and Trends in the Distribution of Body Mass Index among U.S. Adults, 1999–2010,” *JAMA* 307 (2012): 491–497.
- <sup>13</sup> Linda G. Martin, Vicki A. Freedman, Patricia M. Andreski, and Robert F. Schoeni, “Recent Trends in Disability and Related Chronic Conditions among People Ages 50 to 64,” *Health Affairs* 29 (4) (2010): 725–731.
- <sup>14</sup> These calculations are based on the 2004 survey of the Health and Retirement Study; see University of Michigan Health and Retirement Study (HRS), <http://hrsonline.isr.umich.edu>.
- <sup>15</sup> Lynn Feinberg, Susan C. Reinhard, Ari Houser, and Rita Coula, *Valuing the Invaluable: 2011 Update – The Growing Contributions and Costs of Family Caregiving* (Washington, D.C.: AARP Public Policy Institute, 2011), 2.
- <sup>16</sup> Frank F. Furstenberg, Caroline Sten Hartnett, Martin Kohli, and Julie M. Zissimopoulos, “The Future of Intergenerational Relations in Aging Societies,” *Dædalus* 144 (2) (2015).
- <sup>17</sup> Yonatan Ben-Shalom, Robert A. Moffitt, and John Karl Scholz, “An Assessment of the Effectiveness of Anti-Poverty Programs in the United States,” NBER Working Paper 17042 (Cambridge, Mass.: National Bureau of Economic Research, 2011).
- <sup>18</sup> See, for example, Erik Hurst and James P. Ziliak, “Do Welfare Asset Limits Affect Household Saving? Evidence from Welfare Reform,” *Journal of Human Resources* 41 (1) (2006): 46–71.
- <sup>19</sup> S. Jay Olshansky, Dana P. Goldman, and John W. Rowe, “Resetting Social Security,” *Dædalus* 144 (2) (2015).
- <sup>20</sup> Executive Office of the President of the United States, Council of Economic Advisers, *Trends in Health Care Cost Growth and the Role of the Affordable Care Act* (Washington, D.C.: Executive Office of the President of the United States, November 2013), [http://www.whitehouse.gov/sites/default/files/docs/healthcostreport\\_final\\_noembargo\\_v2.pdf](http://www.whitehouse.gov/sites/default/files/docs/healthcostreport_final_noembargo_v2.pdf).
- <sup>21</sup> Nicole Maestas and Julie Zissimopoulos, “How Longer Work Lives Ease the Crunch of Population Aging,” *Journal of Economic Perspectives* 24 (1) (2010): 139–160.
- <sup>22</sup> Alan Gustman, Thomas Steinmeier, and Nahid Tabatabai, “What the Stock Market Decline Means for the Financial Security and Retirement of the Near-Retirement Population,” *Journal of Economic Perspectives* 24 (1) (2010): 161–182.
- <sup>23</sup> Florian Heiss, Adam Leive, Daniel McFadden, and Joachim Winter, “Plan Selection in Medicare Part D: Evidence from Administrative Data,” *Journal of Health Economics* 32 (6) (2013): 1325–1344.
- <sup>24</sup> Organisation of Economic Co-operation and Development, *Education at a Glance, 2011: OECD Indicators* (Paris: OECD Publishing, 2013).
- <sup>25</sup> Paul Fronstin and Nevin Adams, “Employment-Based Retiree Health Benefits: Trends in Access and Coverage, 1997–2010,” *EBRI Issue Brief* (377) (October 2012).
- <sup>26</sup> Silvia Barcellos, Amelie C. Wuppermann, Katherine Grace Carman, Sebastian Bauhoff, Daniel L. McFadden, Arie Kapteyn, Joachim K. Winter, and Dana Goldman, “Preparedness of Amer-

icans for the Affordable Care Act,” *Proceedings of the National Academy of Sciences* 111 (15) (2014): 5497 – 5502.

<sup>27</sup> Heiss et al., “Plan Selection in Medicare Part D.”

<sup>28</sup> John Hsu, Vicki Fung, Mary Price, Jie Huang, Richard Brand, Rita Hui, Bruce Fireman, and Joseph P. Newhouse, “Medicare Beneficiaries Knowledge of Part D Prescription Drug Program Benefits and Responses to Drug Costs,” *JAMA* 299 (16) (2008): 1929 – 1936.

<sup>29</sup> Geoffrey F. Joyce, Julie M. Zissimopoulos, and Dana P. Goldman, “Digesting the Doughnut Hole,” *Journal of Health Economics* 32 (6) (2013): 1345 – 1355.



---

AMERICAN ACADEMY  
OF ARTS & SCIENCES

*Board of Directors*

Don M. Randel, *Chair of the Board*

Jonathan F. Fanton, *President*

Diane P. Wood, *Chair of the Council;*  
*Vice Chair of the Board*

Alan M. Dachs, *Chair of the Trust;*  
*Vice Chair of the Board*

Jerrold Meinwald, *Secretary*

Carl H. Pforzheimer III, *Treasurer*

Nancy C. Andrews

Helene L. Kaplan

Ira Katznelson

Nannerl O. Keohane

Roger B. Myerson

Venkatesh Narayanamurti

Pauline Yu

Louis W. Cabot, *Chair Emeritus*

---

*Inside back cover:* Edna Warf, a retired woman who volunteers as a literacy tutor at Claxton Elementary School in Asheville, North Carolina, reads alongside first-grade student Valencia Barton. Volunteering in schools has been shown to produce health benefits for elderly volunteers while also addressing a significant societal need. © Owen Franken/Corbis Images.



coming up in Dædalus:

- On Water Christopher Field & Anna Michalak, Michael Witzel, Charles Vörösmarty, Michel Meybeck & Christopher L. Pastore, Terry L. Anderson, John Briscoe, Richard G. Luthy & David L. Sedlak, Stephen R. Carpenter & Adena R. Rissman, Jerald Schnoor, Katherine Jacobs, and others
- Food, Health & the Environment G. David Tilman, Walter C. Willett, Meir J. Stampfer & Jaquelyn L. Jahn, Nathaniel D. Mueller & Seth Binder, Andrew Balmford, Rhys Green & Ben Phalan, G. Philip Robertson, Brian G. Henning, and others
- The Internet David Clark, Yochai Benkler, Peter Kirstein, Deborah Estrin & Ari Juels, Archon Fung, Susan Landau, John Palfrey, and others
- What's New About the Old? Matthew S. Santirocco, Shadi Bartsch, Angelos Chaniotis, Walter Scheidel & Ian Morris, Phillip Mitsis, Roger Bagnall, Verity Platt, Emily Greenwood, Peter T. Struck, Greg Crane, Caroline Alexander, Brooke Holmes, Kyle Harper, and others
- plus New Dilemmas in Ethics, Technology & War; Political Leadership &c

AMERICAN ACADEMY  
OF ARTS & SCIENCES  
Cherishing Knowledge · Shaping the Future