



Mortality and Longevity



Aging and Retirement

# 2020 Living to 100 Discussant Comments 1B: Implications to Retirement Planning



## Discussant Comments Session 1B: Implications to Retirement Planning

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At first glance, these two papers don't seem especially related. Nevertheless, both deal with implications of differences among people with differing backgrounds, characteristics, risks exposed, and their outcomes. They both point out that there is no such thing as an 'average' person and we should not try to develop a single solution to complex issues. Both raise important issues that an actuary should consider in her or his work.

### ***A Study into the Impact of Pre-Programmed Genetic Health Risks in Retirement Planning – N. V. Subramanyan***

Mr. Subramanyan's paper asks the question: what is important for retirement planning? He points out that one size does not fit all and never will, in terms of retirement needs and mortality/morbidity risks.

I agree that understanding the risks of an individual is important in designing effective and relevant financial planning. However, possibly more important, is the answer to the question of what an individual should and can do about it. He addresses savings, which is a function of (1) what the person is to begin with and (2) her/his environment and subsequent human actions, including involving both societal and personal lifestyles.

Although a person's genetic makeup does not change over time, it is important to recall that many individual genes only become active if certain conditions exist or other genes are present. In addition, the genetic makeup of a country's population can change over time; as a result, the changes in the aggregate measure of genetic factors and their distribution throughout the population may be relevant to the study of trends in the health and longevity of society as a whole, and in particular, human behavior and our environment can significantly affect the overall results.

As noted in this paper, relatively new scientific approaches such as big data and artificial intelligence have potential uses in this area. However, it also needs to be noted that the data used and resulting findings are only as good as is the data quality and their ongoing availability on a consistent basis. Also, artificial intelligence is only as good as its initial algorithm and assumptions. In addition, privacy concerns with big data are growing, which needs to be kept in mind in the design and execution of these techniques.

I agree with several points made in the paper, especially that biological age is more important than chronological age in assessing an individual's health status. However, for practical purposes and for the design of a retirement program or retirement policy, only chronological age is usually available, although such design needs to recognize that those of the same chronological age do not share the same health and longevity risks.

In addition, a discussion of the distinction of what can/should and what cannot be changed is needed. For example, family history, educational attainment, predisposition to certain diseases, and genetic knowledge can be important and even useful, but it has to be remembered that they may be accompanied by anti-selection. Certainly, soundly-based laws relating to the use of genetic tests are needed. Historically, those who have been given DNA-based information concerning their disease risks have usually made little to no changes to their health behaviors, even when they can change the future trajectory of their health – it is difficult to change behaviors.

Before I leave this paper, the following are what I believe to be three basic categories of drivers of health risk that I personally use, with only the first involving genetics-related information:

- **Genetics.** This is evidenced through family history or genes. Although certainly relevant, the paper may have exaggerated its importance. Often, genes only indicate a predisposition to a condition, which only indicates its potential, rather than a certainty. In most cases, more than a single gene is involved, making the analysis of genetics quite difficult, as life is rarely simple.
- **Environmental.** This includes culture, past and current societal actions, medical developments/practices, as well as the effect of the environment surrounding all of us.
- **Personal behavior.** This includes lifestyle factors (e.g., smoking, diet, and physical activity). Individuals can only be affected by these factors through personal action. But it also includes mitigation approaches that a person applies to mitigate aging and keep in healthy condition, but conversely also includes those actions that can increase the likelihood of premature death.

A last observation regarding this paper is that, based on the version of the paper I was given to review, it needs further editing and review.

**Linking retirement age to life expectancy does not lessen the demographic implications of unequal lifespans – Jesús-Adrián Álvarez, Søren Kjærgaard, Malene Kallestrup-Lamb, and James W. Vaupel**

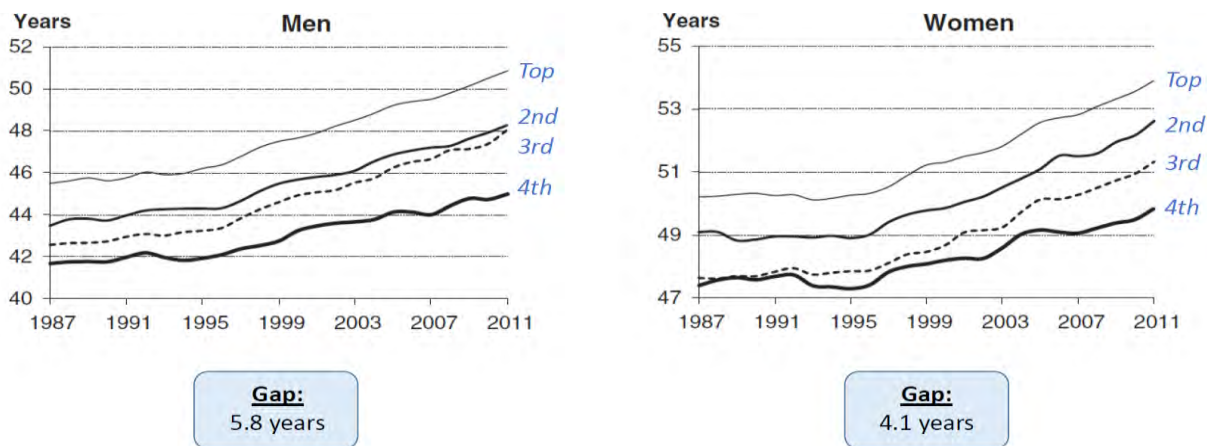
Overall, this is a well-written paper, which discusses issues associated with raising the retirement age. This is often a huge political, as well as a personal issue, as we have seen it being a major factor in a significant disapproval of the political party in power in a country for even for bringing up the subject of pension reform.

The paper makes the point that what is needed is an objective and fair treatment between socioeconomic and sociodemographic groups. As pointed out in an International Actuarial Association paper<sup>1</sup>, the treatment of those with lower income or who are disabled can make a big difference in the ability to implement a change to the normal retirement age. An interesting focus of this paper is that the effect of any proposed change on individuals having a range of characteristics within the population (as a result of longevity inequality) should be analyzed, not just expected values. This is a fundamental concept of actuarial science.

In the following graphs, a related and interesting study of Danish mortality by educational attainment looks at life expectancy at age 30. This indicates the significant effect that one of several important risk characteristics can have on life expectancy.

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<sup>1</sup> IAA Population Issues Working Group discussion paper (2016): “Determination of Retirement and Eligibility Ages: Actuarial, Social and Economic Impacts”



Source: Bronnum-Hansen, H., M. Baadsgaard (2012). "Widening social inequality in life expectancy in Denmark. A register-based study on social composition and mortality trends for the Danish population". *BMC Public Health*. 2012 Nov 17;12:994.

I would like to add a few words about inequality, a related but complex topic that can lead to controversial effects related to retirement planning<sup>2</sup>. First, inequality and heterogeneity are inevitable and will always exist, no matter what the politics, culture or economic system. Second, there is a contrast between inequality of opportunity (ex-ante) and inequality of outcomes (ex-post). Actuaries typically estimate expected costs, associated with ex-ante inequality (expressed in terms of expectations of future longevity), based on historical results (ex-post outcomes).

However, as I indicated above, an actuary may need to consider the range of risks, characteristics and stakeholders on an ex-ante basis, particularly with respect to the determination of expected values of future expected cost of a group of individual exposures.

I agree with the conclusion in this paper that financial planning needs to be conducted considering the particular condition of the individuals involved, rather than just with respect to an average individual. That is, since every person will not live to the same age, each person should develop her or his financial/retirement plan that is best suited to the range involved in each person's probability distribution of longevity. Thus, program or plan design needs to address the needs of a range of individuals.

I also agree that linking retirement age to life expectancy can enhance intergenerational equity. However, unless the plan design is carefully crafted, intragenerational socioeconomic and sociodemographic differences can have detrimental implications for those in lower socio-economic groups. And the dynamics of individual lives, population segments and entire countries change over time, as environmental and lifestyle conditions will change, thus requiring a dynamic analysis at regular intervals.

In recognition of these relationships, we need to better understand why, rather than just what contingent events occur. This will ultimately lead us to the best financial program and system for each individual and society.

<sup>2</sup> IAA Population Issues Working Group discussion paper (forthcoming). "Actuarial Perspective on Inequality"

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