LIVING TO 100 SYMPOSIUM*

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Increased Longevity and the Challenge of Determining q_x at Extreme Ages—Part 1

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MR. GENE HELD: Before the first Living to 100 conference, Natalia Gavrilova and her husband, Leonid Gavrilov, shared a paper with me regarding a reliability approach to mortality. It had a number of characteristics that fit right in with the observations that we see in these papers, such as the slowing of mortality at the upper ages and so forth. I've tried to share that paper with several actuaries, because I thought it was very interesting. Perhaps Natalia will be able to provide a little more information on it.

I have a question for Christine. On the curves that you had showing the fit, the left side of the curve fit much less well than the right side. Is that due to the relatively lower mortality? What do you attribute that to?

MS. CHRISTINE DUGAN: Are you referring to the fit with the viable distribution?

MR. HELD: Yes.

MS. DUGAN: Yes, I would attribute it to the fact that we used the method of percentiles in order to back-solve the parameters in that distribution. We actually used the 95th percentile, so we would expect to have a better fit because of the fact we went out to the 95th percentile.

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MS. NATALIA S. GAVRILOVA: I also have a question for Christine. Do you take into account that for the human mortality database, which you used, in the life tables they used data fit by logistic regression for ages over 90? So actually, they had already fit it by special formula. If you need to use the real data, you need to take a specific death rate. I would also like to add that in the previous version Berkeley database, they used a different fit for the older ages. They are not the same for the same population; the dates are not the same. Do you take this into account?

MS. DUGAN: Since Richard is right next to you, maybe he wouldn't mind answering that one.

MR. RICHARD HUMBLE: No, we didn't attempt to make adjustments to the human mortality database. We effectively just took that data, used it as it was and fitted it.

MR. VINAYA SHARMA: I'd like to address this question toward Mr. Klein, but it certainly is applicable all across the boards. The question I want to bring up is about the size of data you need to have for credibility. Certainly when we're talking about people at advanced ages, we're talking about a very small sample size. I'm just trying to get an idea of what we need for credible size to make some determinations.

MR. ALLEN M. KLEIN: There are some statistical experts in the audience that could probably answer this better than I can. The rule of thumb is that you need 35 deaths per sell to make it credible. Does anyone else want to add to that?

MR. EDWIN C. HUSTEAD: I'm glad you mentioned that, because that's a point in the discussion on my paper. All the points that were made were good as to how to construct the meat of the mortality table. What do you do for annuitants? You have good experience up to age 90 or 95, and when you fit a graph to that table graduation, you can maybe go another four or five years. U.S. insurance tables, census tables and pension tables probably can get you up to around 100. But what I was talking about was what do you do after that? Old maps used to say, "Beyond here be dragons." We have no deaths, no lives, no experience. That's my focus—what happens when you don't have that experience.

MS. ANNA RAPPAPORT: This is a question for Mr. Klein. You talked about purpose, and we all know that it's important to have different tables for different purposes. I'd like to ask you what you think about a couple of other purposes. I chair the committee on Post-Retirement Needs and Risks of the SOA. One of the things that we're very concerned about, as I know many other people are in different ways, is how people plan for retirement. Various studies show that individuals are somewhat oblivious in many cases or not well educated at all about longevity risk. There's also been a lot of study done on this question of whether annuities are a good buy. While traditionally, as actuaries, we think about valuing things, I'm concerned about some of these individual issues. Mr. Hustead says that the end doesn't really matter very much. But from our perspective, it matters very much that people are aware that the end is out there. I

wonder if you had any comments about the individual purpose and how the models might fit into some of these other kinds of purposes?

MR. KLEIN: Thanks, Anna. First, I do agree with you. I've seen some studies about the education of those entering retirement, and a lot of people really have no idea how many years they're going to live. They think, "Oh, I can cover, five, ten years and I'll be fine." So there is a lot of educating that still needs to be done. In terms of your question on whether annuities are a good buy, there are some companies now that are starting to write what are called "substandard annuities" for those who have some impairments. They are able to get a higher rate on annuities; there are some that are better buys for those who are not as healthy. Some of you are probably aware there is some arbitrage going on now between purchasing life insurance and annuities. Annuities are not typically underwritten, except for the example I just gave, while life insurance is underwritten very heavily. So I believe annuities are moving in the direction of becoming better buys for everyone.

MR. THOMAS P. EDWALDS: This is a question for Edwin Hustead. You mentioned how trivial the difference is at the end of the mortality table using an 8 percent interest rate. I certainly agree that the further out you go, the less difference it makes financially for current products. But did you look at lower interest rates that are more consistent with what's in the market today? The impact can certainly be more than $500 out of $6 billion.

MR. EDWIN C. HUSTEAD: The table that I used shows the difference. I used 2 percent interest, which is typical perhaps of the net discount rate on post-retirement medical. It was about the same relationship—A $9 billion liability against approximately a $1,000 difference. Responding to Anna's point, I didn't mean to say that it doesn't matter. I say it doesn't matter how you end the table financially to the insurance company or the pension organization. Therefore, we're free to do something that does reflect what we know about what is happening out on those ages. I think it matters to do things differently than maybe our ancestors did, and show what we really think the true pattern is and not be driven by trying to get to one at some point. It's not going to affect the financial institution using the mortality table.

MR. ROB BROWN: I'd like to throw out a little bit of a challenge that was motivated by Mr. Klein. He talked about what an individual can do to attain healthy living and healthy life expectancy. I would suggest that the two things to tell an individual in terms of living well and living long are to get a good education, and don't live in poverty. Those may be difficult points of counseling for an individual, especially if you start to talk to them when they're 25 or 30 or 35. But if a nation wants to improve life expectancy, I personally believe that two of the things it should do are to make sure everybody gets the maximum education they possibly will continue to participate in, and do the very best to get rid of the poverty that it can legitimately afford to get rid of. Given your comment about how to close the gap in mortality or improve the life expectancy differential between the U.S. and Japan, I'd love it if all four of you would

comment.

MR. KLEIN: Intuitively, I agree with you in terms of education and poverty. It just makes sense that the more educated one is, particularly on these issues, the better everyone is going to take care of themselves. However, I have seen a study or two where they looked at every different element that you can think of, and education was not as significant as many of the other elements. So while intuitively I agree with you, I have seen some studies that say otherwise, not that it's not an important issue, but it's not as relevant as some others.

MR. HUSTEAD The poverty issue is a large aspect of it. I was just on the technical panel for Medicare. They're developing tables that show the new Part D of Medicare. If you project the out-of-pocket expenses for premiums and co-payments under Medicare for about 50 years, you show that the medical expenses the person will have to pay are greater than the social security check. We may be very healthy, but we'll be eating dog food.

MS. DUGAN: First, to address the education issue, I have to say that the most well educated individuals I know are very strong advocates of the three martinis a day rule. So I'm not quite sure education is going to do much for the longevity improvement element. But obviously, poverty is an issue that society and governments in general are going to have to deal with, especially as we have significantly stronger cohorts in higher ages going forward. We're bound to have a large piece of those cohorts that have not adequately planned to live that long. Obviously, you're going to have governments picking up some of those costs, so that's going to be a very big challenge going forward. I'm not sure we're going to be able to reverse that out from a poverty perspective.

MR. JACOB SIEGEL: This last comment brings up the contrast in my mind between the fallacious PR notion of individual successful aging and the concept of a society aging successfully. The kinds of things mentioned perhaps could be what a society could do in order to improve the chances of a long life for the individuals. One other comment—maybe if it's the last it might be a fitting one—one of the reasons I'm sure that the National Center for Health Statistics ends its tables at the age it does is because it runs out of space on the page.