RETIREMENT INCOME UNIVERSITY

LESSON 6:

Longevity Risk

One often reads that at the end of the 20th century, life expectancy in the U.S. hit a record high of approximately 73.6 years for males and 79.2 years for females. These statistics come from the Social Security Administration (SSA) and apply to the U.S. population in its entirety. And, although these numbers have been steadily increasing over time — in the year 1950 the respective values were 65.6 for males and 71.1 for females — one can't help but wonder why there is all this fuss about financing a *long* period of retirement. Yes, people are living longer compared to 50 years ago. But, can saving enough money to generate an average of 10 to 15 years of income be that onerous?

Of course, most financial professionals will see through my straw man fallacy and know that these numbers do not apply to their healthier and wealthier clients. More critically, these numbers only apply at birth, not at retirement. Likewise, they do not account for any possible improvements or reductions in future mortality. They are based on today's death and survival rates.

Either way, if you are a 75-year-old male or female, your life expectancy is much higher than at age zero. In this case, using the same SSA statistics, the numbers are now 84.6 and 86.9, respectively. The headline values — 73.6 and 79.2 — only apply to newborns. As you age and hence survive hazards like infant mortality, teenage accidents, child-bearing years, etc., your conditional life expectancy increases. All this is pretty clear to professionals.

Yet, when talking to individuals who are outside the financial services (or medical) profession, I find that there is pervasive confusion in the public at large regarding what these life expectancy numbers actually mean. If these misunderstandings are left to fester in your clients' minds, they can lead to behavioral biases that result in underestimates of their retirement income needs, and, consequently, insufficient savings.

Either way, I think that life expectancies and averages are not the best way to explain these ideas. Averages can be deceiving. In fact, there is a silly joke about a statistician who immerses one hand in scalding hot water and the other in freezing ice water, who then declares that the temperature is fine "on average."

I believe that a better way to think about and explain longevity risk and uncertainty is via actuarial probability tables (such as the one displayed on the next page), as opposed to life expectancy tables.

Here is how to read and interpret the table. If you are a 65-year-old male there is a greater than 45 percent chance that you will live to the age of 85. That would obviously require 20 years of retirement income, if you decide to retire exactly at the age of 65. Likewise, the same 65-year-old male has a 24 percent chance of living to the age of 90, which necessitates 25 years of income. For females the numbers are even higher. A female who is 65 years of age has roughly a 35 percent chance of living to 90. Compare this number to the 24 percent probability for a male and you can see the relative impact and magnitude of female longevity.

And, for those of you struggling with the notion that people have an actuarial mortality rate tattooed into their DNA — which dictates their longevity — a more general way to think about these probabilities is by focusing on ratios and proportions. If you have a large group of male clients who are all 65-years-old, then slightly less than a quarter of them will live to the age of 90. Of course, you can't know in advance who will be included in that lucky quarter, so to be prudent you want to make sure they *all* plan for the possibility of 25 years of retirement income.

In fact, another way to think about longevity risk is by interpreting the risk in a more pessimistic manner. Indeed, according to the same actuarial

tables, the probability that a 65-year-old male does *not* reach the age of 70 — i.e., he doesn't get even five years of retirement golfing — is approximately 8 percent. This mortality rate comes from subtracting the listed survival rate of 92.2 percent from the total of 100 percent. Again, this is an 8 percent chance that your 65-year-old client dies prior to age 70. Yet, as you can see, there is the same 8 percent chance that he reaches age 95. One group gets 30 years while the other group doesn't even get five years. They are of equal odds. So, which group will your client be in? This is longevity risk.

A few caveats are in order before one takes these numbers too seriously. First of all, there are many possible actuarial tables. Depending on where you live, where you work, or whether you smoke, there's a table out there that is meant to better reflect your mortality. For example, the Social Security Administration uses very different tables for calculating benefits and projecting future deficits and liabilities. That is because they are working with the population as a whole as opposed to a subset of possibly healthier and longer-lived pensioners. In the opposite direction, if you are ever interested in purchasing an immediate life annuity (a.k.a. annuitization), the insurance company actuaries will use a completely different table. The annuity table assumes much higher survival odds when determining

how long you are projected to live and hence how much you are to be paid for the rest of your life. In fact, there are so many possible actuarial tables that I often joke that they are like snowflakes; no two are ever alike.

Moreover, there is some fascinating evidence emerging from demographers, biologists and gerontologists on the many factors that are likely to enhance or improve longevity. Perhaps with tongue in cheek I should mention that the Max Planck Institute in Germany has recently confirmed — using a large database of actual mortality experience — that although males in general don't live as long as females, interestingly, married males tend to live longer than single males. But, oddly enough, marriage is not associated with greater longevity for females. For them, being widowed or divorced is the factor associated with reduced mortality.

On a more serious note, just as important as the wide variation in longevity estimates depending on the group in question, also for any given group it is virtually impossible to predict what these numbers will look like 10 or 20 years from now. Will some pharmaceutical company discover a drug that eliminates most cancers or heart disease which will then add five to 10 years of life? Or, will the epidemic of adult obesity continue to erode public health and thus reduce longevity probabilities? Once again the experts can't answer this with any degree of accuracy and this is yet another aspect of what is called aggregate longevity risk.

What is the take-away from all of these numbers? First, your clients need to recognize and understand the longevity risk that they face. Second, and more importantly, they need a longevity-risk management strategy. With your help they need to develop a plan for the possibility of 30 to 40 years of retirement. ®

Probability of Survival: At Age 65

To Age:	Female	Male
70	93.9%	92.2%
75	85.0%	81.3%
80	72.3%	65.9%
85	55.8%	45.5%
90	34.8%	23.7%
95	15.6%	7.7%
100	5.0%	1.4%

Based on RP-2000