Session 1B: Happily Ever After, Marriage and Old Age

Transcription of the discussion given by Jean-Marc Fix

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My name is Jean Marc Fix and I had the pleasure of being the discussant, and therefore the reader, for all of these papers. As you know, we put this symposium on, that is the Society of Actuaries and the associated groups, every three years. When we issue a call for papers for the symposium, we don't really know ahead of time what we will be getting. We were quite happy we had a session here that formed by itself with three papers on the topic of marriage—which seems to be a popular topic in this year's symposium.

Earlier Joseph Lu, also a member of the committee, mentioned the billion dollar question of advanced-aged mortality for insurance companies and pension plans. But the trillion dollar question everyone else worries and wonders about is how do we get to age 100 and why do people who get to age 100 get there. And those three papers attempt to identify some of those variables.

"Spousal Concordance in Exceptional Longevity: The Interplay Between Early Life, Marriage and Survival," Valerie Jarry, Alain Gagnon and Robert Bourbeau

As Valerie mentioned earlier, nature versus nurture is an important component. How much of longevity is genetic and how much is not genetic? Studying marriage allows the study of one of the aspects of the nongenetic component. This contrasts with twin and sibling studies who share a genetic component. So marriage has an intriguing aspect: How do the spouses of centenarian maximize their own life by marrying somebody that will be good for them 60 or even 80 years before it is known that the spouse would become a centenarian?

Good research comes from good data and often this data, especially for older ages, needs to be looked at over a long period of time to be clean and to be reliable. Dr. Bourbeau and his team at University of Montreal have worked very hard to develop and validate this cohort of Quebecer centenarians so that [at] every Living to 100 symposium they have been able to look at it and shed additional light on some aspects of their life as it relates to their achieving extreme old ages.

As we discussed, or as Valerie discussed, the two hypotheses of shared resources and contagion on one hand and assortative mating on the other hand were discussed. The paper is very accessible, as far as reading for the uninitiated, so I recommend that everybody read this paper. It is quite informative.

I think a question that begs to be asked is: How much of that survival advantage is due to the positive aspect of shared resources and how much of that is due to the ambivalent aspect of contagion? Contagion could be the positive effect a centenarian may have on their spouse but also the deleterious effect one spouse may have on the other on the people that don't reach age 100.

I think one of the most creative aspects of this paper is the teasing of a lot of extra information from census information, from the database itself, to look at a lot of the co-variables that allows some conclusions to be made. Particularly looking at two cohorts, not just the population cohort but the sibling cohort, allows you to really sharpen how you can answer the hypothesis. I think that was also a

very good thing. So we see that the advantage of marrying a centenarian spouse versus the population is about three to four years. But even compared to their own siblings, they still have about a three- to 3.5-year advantage. So it has a significant impact beyond, as I mentioned, beyond just assortative mating as you can assume that the siblings of the spouse of the centenarians are of the same social class and origin.

Nonetheless, I have a couple of questions. First we need to remember that the cohort is remarkably homogeneous. They are all Quebecers that lived and stayed in Quebec. They were born about 100 years ago or more in a fairly homogeneous environment. I think they are all of a Catholic background, given that it was Quebec. So there is some question as to how much of the environment from early childhood had an impact on later mortality—and that is true of a lot of centenarian studies. Growing up 100 years ago, 150 years ago, is quite a bit different than growing up now and how that is affecting mortality is a difficult question to answer. So are we able to project some of those answers in the future I think remains to be debated.

Another interesting item that I found in the paper, and I don't know if you'll have the answer to that one, is that it looks like having a father who is an unskilled worker was a protective factor. I'll have to look at the special reference that's down there. That was a little surprising as I would have expected the opposite for lower social economic status. But once again, unskilled workers in the 1800s are not like what you think of unskilled workers today.

"Which Socio-Demographic Living Arrangement Helps to Reach 100," Michael Poulain and Anne Herm

This paper also was very informative. It looked at other ways to access the resources you need for elderly life through living arrangements and not just necessarily marriage.

Once again we have a great database. I think this database has a lot of potential for future studies as I'm sure Dr. Poulain will endeavor. It's a big, high quality database that has a lot of statuses, a lot of connection with data that will allow us to hopefully learn a lot more in the future.

The lesson that is interesting but difficult for me to fully appreciate the application of is that living with your spouse is good up to a certain point and then becomes detrimental. I don't see how easily that can be applied in practice unless you divorce your spouse as soon as they get sick, which might not be particularly popular or socially acceptable.

The lesson that we also need to learn is that, as we look at groups and especially for the elderly, there is a danger of lumping too many different patterns into an average pattern. For a lot of our needs it is quite important to have those patterns separated because each pattern needs to be projected separately.

I appreciated, as an actuary, the number of charts that allowed comparison between groups. That was very useful. I also liked the presentation of those funnel looking charts. I think that was a really good way of illustrating information in a very striking manner. As life insurers, we are familiar with gender

differences but I think this did a good job at quantifying what the difference is, especially in the subpopulation that we were looking at.

Another lesson from that is that centenarians have a very different pattern of usage of resources compared to other old people. That needs to be factored at a social policy level. Projecting resources needed without taking that into account, given that we noted that the number of centenarians is increasing, might have some drastic consequences.

Of course, as Dr. Poulain alluded, the confounding of house status and living arrangements is huge. The three stages of life that he suggested, I think, need to be explored with more rigor and the impact of health in each status would gain to be described in further papers.

In conclusion, I think this is another fairly easy-to-read article, maybe a little more technical than the first but quite instructional. I suggest that you read it as well, even if you're not an actuary.

"Mortality, Health and Marriage: A Study Based on Taiwan's Population Data," Hsin-Chung Wang and Jack Yue

As you have seen from the presentation, this paper is quite a bit more technical than the other papers that we've discussed and it is also more actuarial in its nature. It really has three distinct parts.

The first part is discussing what is happening to mortality by marriage status in Taiwan as it is easily accessible. It confirmed what we have learned from many other sources in other countries: In Taiwan as well there is a marriage advantage. Nevertheless the rate of mortality advantage varies quite a bit by status and that should be factored in.

The second part is the real technical part where Drs. Wang and Yue use the APC [age-period-cohort] model for what analysis they are going to do later on the data and some validation of the intrinsic estimator in the context of using APC. I was not sure, and I'm not a specialist in that area, why the intrinsic estimator was superior to the other estimators but at least it was comparable.

Finally, the third part is applying the dynamic table mortality rates to an insurance problem that exists in Taiwan as in many other countries: trying to get better rates for better risks. In this case, Drs. Wang and Yue are using marriage as a way to differentiate from a population between a preferred group, the married group, and the nonpreferred group, the unmarried group. Drs. Wang and Yue showed that by their calculations, the impact of marriage is similar to the impact of smokers and, as we know, the impact of smokers is considerable. I would like to make a couple of points on this. Their analysis is based on whole population mortality and I don't know to what extent the population mortality reflects insurance population mortality. So the conclusion from one may not apply to the other. I know that in the [United States] and in Canada, the mortality differential between smoker and nonsmoker is quite a bit more than indicated in the charts in this paper. That may be due to different underwriting, especially fluid testing of cotinine level—which would detect liars among the smokers that try to pass as nonsmoker and therefore a truer split—in North America.

The key value of this paper from my perspective is that there are many ways to slice the mortality pie to make products attractive and if smoker/nonsmoker doesn't work in your country because of the lack of ability to control for it, other alternative markers of mortality can be used. In this case marriage, which is officially recorded and therefore easier to verify, could be used as a selection factor. We saw the rate of marriage and of children born out of marriage is quite different in different countries. Whether the mortality results of considering marriage could be ported to other countries and whether the impact would be of the same magnitude in other countries could be the subject for another study. Thanks.