Informal Discussion Transcript
Concurrent Session 2B: Older-Age Mortality Trends

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W. WARD KINGKADE: Okay, thank you very much. Let me open the floor for discussion. Please come up to the microphone. If you have a question, please state your name and affiliation. Thank you.

JOSEPH LU: My name is Joseph Lu from Legal & General in the U.K. My question is to Adrian. Would you please take us back to the slide where you concluded that the higher the ages, the greater is the age error—1.18 years. Does it worry you, because other organizations like the Human Mortality Database get data from the Office of National Statistics, and a large part of ONS data is founded on the census data? Just wondering whether you have a comment on the scale and the size of the errors—how big a problem is that?

ADRIAN GALLOP: Yes, I can't really speak for the census team, as they're a different bunch of people, but, yes, I guess this is kind of what we expected, for the reasons I was saying before: that maybe people at the oldest ages aren't filling in the census forms themselves. Someone else is filling them in, and they may have a wrong date, so in a sense, it is worrying, although, again, the numbers of people are small, and if you get one or two errors, that's going to bump up the percentages quite a lot. You've really got 21 cases at age 100-plus where you've got a discrepant record out of 114, so if it's plus or minus 1 or 2 on top of that, it would change the percentage of possible error.

JOSEPH LU: How large is the discrepancy? Is it one day difference or a month? Five years?

ADRIAN GALLOP: Right, I don't know the answer to that one myself. I'll have to ask Angele if she's got some figures on that. I'll look at the speaking notes to see if she wrote those down for me and get back to you on that one.

I guess another question is, Can we actually do anything about these errors or not? Maybe we can't in the way the census is currently done. They are looking at whether data from administrative sources could help, and you could use the data from those and tie it in with the census data. I think, at the moment in the U.K., they're considering whether they're going to move from filling in a census form to doing censuses from administrative data. A team have been looking at compiling estimates from administrative data, so you can really do a census every year. In effect, you can just interrogate the databases you have, but then you have to work

out how good are those databases compared to the census as well.

So I think it's really more just highlighting where there are possible errors for users of this data. Then you can decide as well for yourself whether this is an important error for you and if you want to try and make some allowance for it, or whether it doesn't really matter.

JOSEPH LU: I think somebody will tell us the range of error for age estimates. If it's just two days, so what? But if it's two years, we may want to look into it more.

ADRIAN GALLOP: This slide is talking about—this is year of birth, so this one here means that in one of the records, the year of birth was different, so you have a different year of birth. It's not the months or the date; it's the year of birth that we're looking at here—just the year of birth, not the actual full date of birth.

JOSEPH LU: Thank you.

JEAN-MARC FIX: The problem in this kind of census data is that some of the errors are transposition of numbers, so that can result in big apparent errors. Not all of them are just because you're one year off because you can't remember what Grandma's age is. Sometimes there's a typing error or a scanning error that created it.

ADRIAN GALLOP: Yes, but as you say, if it's a couple of days, it's not a big issue here for most purposes, but this one just talks about year of birth, so you talk about a year—at least a year out, possibly more, and if that's a scanning error, it could mean, as I said before, 1902 instead of 1920, in which case that's 18 years difference, and so—

JEAN-MARC FIX: So it is hard to gauge.

W. WARD KINGKADE: Okay, sir.

ROLAND RAU: Roland Rau from the University of Rostock and the Max Planck Institute, also in Rostock. I don't have a question, rather a comment to Samuel. Using extreme value theory, I think, is really an exciting topic to model mortality at the oldest ages, like really at the highest ages. I was curious to do it myself, but since you working on it, and there's—I just want to comment that there's another person, Anthony Medford; he's a graduate from the Cass [Business] School in London, and he's also working on it. So if you are interested in connecting to him and discussing issues, you're more than welcome. I can give you his email address. It's

Anthony Medford, and he does similar things. At least for demographers, it's a pretty exotic topic, extreme value theory. I don't know how it is among actuaries to model late-life mortality, so at least there could be a network of two people working in the area.

MARK COOPER: I'm Mark Cooper, Rothesay Life. Sorry, another U.K. question for Adrian. You made the comment that the administrative sources always gave lower population estimates. I don't know whether you could provide any sort of more context as to why that might be the case.

ADRIAN GALLOP: I can't give you any reason why. I mean those are the figures that have been produced. I don't know exactly the way that they look at the administrative sources. I think one of the things is they look at several administrative sources, but they only count you in if you appear in a certain number of them, so again, there may be some issues whether there were some issues with the data sources themselves or if they are all up-to-date or not, and you can get problems with links and so on. For example there's the database of people getting state pension age, and they take people off when they're notified of a death, but there could be a while before they are notified. Someone tells them that someone has died, and the person is removed. At the very oldest ages, this can form quite a problem, because your exposure to risk is going to be wrong; it's too high. However, I don't know all the ins and outs of the way that they produce the data. This just gives you another example of another way of looking at it, and it was giving a different answer.

MARK COOPER: Another question for Robert, if I may. It was really interesting to see the increase in the number of centenarians in Canada is driven by the survival probability above ages 80, but I guess something that we saw in Samuel's paper was the maximum life expectancy was not improving very much with increasing birth cohort. So I just wondered whether you'd had any thoughts on where the improvement was happening, since we tend to see a reduction in mortality improvements with increasing age. I don't know if I've made myself clear there.

JEAN-MARC FIX: I'll make a comment on the outliers, because I forgot to make that point in my discussion. So in Mr. Gbari's paper, they were looking at the maximum age and then the mean age over a certain age, and you didn't see any trend, but in Professor Bourbeau's paper, he

is looking at the average of the top four outliers, and then you see a trend there. So I think the problem of outliers [is that] if you use one, you have an issue, but if you use the top layer of outliers, you get the message at least. And looking at the charts, it looks like a pretty convincing message that it was increasing actually, so although we might be hitting close to a maximum age, more people seem to be reaching that age from the data that we saw here for those two papers. So I don't know if that answers all your question, but some of it.

AL KLEIN: Al Klein, Milliman. We all know that there's been an increase in the number of centenarians. When you look at it as a percentage of the population, it's also been increasing. My question for any of you is, How much of that increase in percentage might be due to a declining birth rate?

JEAN-MARC FIX: How much of the increase in centenarians proportionally is due to the fact that there [are fewer] births, so less people at a younger age? Anybody want to take a crack at that?

AL KLEIN: Yeah, I'm not sure that anybody has looked at it, but I'm curious.

ADRIAN GALLOP: No, I don't have any figures at the moment. We can do that later.

JEAN-MARC FIX: So nobody has the answer, but Adrian might look into it.

ADRIAN GALLOP: Exactly.

JEAN-MARC FIX: So as the population pyramid changes shape and becomes less of a pyramid, percentagewise there are more people on top of the cylinder now than there used to be. The question is, Is that also affecting the very old ages, where it's still pretty close to a pyramid? If you look at ages above 100, it's still pretty pyramidal today, so I'm not sure.

FROM THE FLOOR: Does the RC_{60} address that?

JEAN-MARC FIX: Well, it dodges that by not looking at it. It looks instead at a more stable measure. It also addresses the immigration or the migration problem, because starting at age 60, at least for both Quebec and the U.K., it looks like immigration or migration is quite reduced—or at least historically was quite reduced.

ROLAND RAU: Sorry, that's me again, Roland Rau. I did not estimate the contribution of changing fertility and mortality to the growth of centenarians, but there was a paper five years

ago—I think in *Population and Development Review*—by Sam Preston and Andrew Stokes. They estimated how much was the contribution of changes in fertility and changes in mortality to the aging of the population. So they did not look at centenarians, but they took population in general, and they found that the effects of changes in mortality were three times as big as the changes in fertility affecting the mean age. I think that was their target: mean age of the population. So Sam Preston and Andrew Stokes, that's what they estimated.

SAM GUTTERMAN: This is a follow-up to the question that was asked regarding the reasons for the trends in birth cohort mortality. It was mentioned that for those over age 100, mortality was level in Belgium, while in Quebec it was improving between 80 and 100. I'm attempting to obtain a better understanding of those trends by age. I expect that we'll be talking about this in subsequent sessions, but any thoughts about the age gradient? For example, was there a larger improvement in the 80s and very little improvement in the 100s? In the U.S., these improvements have been cyclical at the old ages. There's been very little discussion as to whether such improvements have been cohort related or period related. And what are the key drivers, sources of improvement at these ages? Any thoughts about the age gradient in terms of rates of improvement? There was one reference to cardiovascular disease, but that's a very general explanation, so further thoughts would be appreciated.

JEAN-MARC FIX: Yeah, and I don't think Mr. Gbari's paper presented the fact that there was not mortality improvement. He was just saying that the maximum outlying age of the group did not significantly increase. It did mean that below that age, there were no mortality improvements hitting up against the maximum age that he postulated for his use of the extreme value methodology. I don't think any of us are in a position to answer that question, though. It is a good question.

ADRIAN GALLOP: This is the part that is a bit difficult in a way, because you don't know how accurate are the deaths, or the exposure, to measure mortality improvement at the oldest ages.

JEAN-MARC FIX: Right, given that we don't even know the rate at the oldest ages very accurately.

I think the part of the mortality improvement—and I think it goes back to Dr. Barsilai's comment—is, are we hitting a real maximum age, not just a statistical maximum age where we'll need a different technology to break through it? Or is it because we have more centenarians, we'll have more people at 101, and [with] more at 101, it's more at 102, and so on and so forth, and then, just by sheer luck and numbers, not everybody at 114 will die at 115? Half of them will, and one-half of them have a chance at pushing the barrier one more year, so it will be interesting to see if that happens. I think if that does not happen and there is a more significant, maximum age, as we're getting to get credible numbers in the 105 range, we start having a good chance on hitting that. And maybe in two or three symposiums from now, we'll have a better answer. My own bias is the quantity: The more centenarians, the more 101-year-olds, and so on and so forth. It's just that statistically, you'll move the year. If they'll be a lucky one, they'll survive one more year—or even, like for Jeanne Calment, extreme luck. But the facts do not seem to relate that, because we've seen a big increase in centenarians in the last 15 years, and the maximum age is still around 115 for the world record, pretty consistently so. I think we'll have some of these answers in two or three symposiums from now.

Ward, do you want to conclude, then?

W. WARD KINGKADE: Well, if there are any further comments or questions, please step up and let us hear them. If not, I'd like to thank you all for participating in this session. It's been very interesting to me, and I think that these meetings seem to be interesting to a lot of people. Thank you.