ABSTRACT OF THE DISCUSSION

The President (Mr H. W. Brown, F.F.A.): This is a rather special meeting for the Faculty of Actuaries, because last year the Faculty decided that we would sponsor some research into healthy life expectancy measurement in Scotland. We commissioned this research, and I am delighted to welcome Professor Angus Macdonald of Heriot-Watt University, Mrs Jennifer Straughn, one of the main researchers, and Professor Matt Sutton from the Information Services Division of the Scottish Executive, and also of the University of Aberdeen. I hope that much of the information and research which has been carried out will be helpful to the Scottish Executive, and, indeed, to the Scottish Parliament.

Professor A. S. Macdonald, F.F.A. (presented the research findings in depth. In order to avoid repetition of what appears in the paper, only additional material is included in this abstract.)**:** Many of you who are present must have spent a career of 40 or more years in the city of Edinburgh without realising that you were working in the same location as possibly one of the best health databases in the entire world, the Information Services Division of the National Health Service (ISD), which is located currently at the Gyle. This is partly because of the length of time for which the ISD has been operating. Its predecessor, the Health Services Research and Intelligence Unit, was set up in 1965 as part of the Civil Service. It was transferred to the Scottish Health Service in 1974, and it has recently moved to new offices at the NHS Scotland HQ, at Gyle Square. It collects and analyses health statistics for the NHS in Scotland for policymakers, and has done so for a very long time. As ISD's own website says, but it is no exaggeration: "Scotland has some of the best health service data in the world. Few other countries have information which combines high quality data, consistency, national coverage and the ability to link data to allow patient-based analysis and follow up. ... Scotland has become the envy of the world." So, we are very lucky, indeed, to be able to collaborate with a body such as the ISD, and it has been very stimulating to work with members of the ISD, Professor Sutton in particular. How valuable it would be if this project for the 150th anniversary of the Faculty of Actuaries was not the last such contact which we had with ISD on matters of shared interests, but the first such contact.

Professor J. J. McCutcheon, F.F.A.: I congratulate Professor Macdonald for giving us a very fascinating lecture and for the clarity with which he presented quite complex data. I should also like to congratulate Mrs Straughn and Professor Sutton for their major contributions to this work.

I was interested in the European comparisons on healthy life expectancy, as shown in Tables 8 and 9. I think that the British data were based on the General Household Survey. Presumably the surveys in the other European countries formed a rather disparate group of documents. Were you able to reconcile reasonably satisfactorily the sort of questions which were being asked? How did you reconcile the different questions from the various countries?

Mrs J. Straughn (a visitor)**:** We have focused on the estimates provided by Eurostat, because we found it quite difficult to reconcile the answers to the questions from the different surveys in all the European countries. The estimates in Tables 8 and 9 are based on Eurostat, except for the comparison figures at the bottom of the tables for Great Britain, England and Scotland.

Professor McCutcheon: Is it possible that in the European Union, through Eurostat, some form of standardisation might be attempted?

Professor Macdonald: It has already happened. The figures which we were reporting were based on questions which are the same, insofar as they can be the same, having been translated into different languages.

Professor McCutcheon: I should like to congratulate the Faculty Council for having had the vision to commission this research. It will be of interest to many members of the profession, but clearly also to those in much wider fields — politicians, sociologists and the medical profession. This is a piece of research which is going to develop, and we should be pleased that we have got the ball rolling here.

Dr R. Wood (a visitor)**:** I am a doctor in public health medicine, formerly of ISD, but currently of Lothian NHS Board. I was involved in the calculation of the original healthy life expectancy estimates. I know that, as academics, the authors are interested in calculating healthy life expectancy using a multi-state model rather than using the traditional Sullivan's model. I was interested in your opinion as to whether it would make a qualitative difference as to how, in the end, we interpret the results. I am interested in monitoring the health of the population on an ongoing basis, and in questions like: "Are we experiencing compression or expansion of morbidity?" I was interested in your opinion as to whether it would make a qualitative difference to those types of high level interpretation.

Professor Macdonald: I think that the area where it would make most difference is possibly not in the measurement of health expectancy or life expectancy at a given point in time, but in projections into the future. The drawback of the method based on the current prevalence of illness is that it reveals nothing about how things have been changing in the past, and how those changes will flow through into the future. In particular, if you were to make projections of either health status or mortality, you would want to make assumptions about how the basic drivers of the model would change, namely the rates at which people fall sick and recover from sickness, and then see how the prevalences would develop as a consequence of those assumptions.

Dr Wood: Do you think that it is far superior to having repeated prevalence measures, such as you would have, for example, in the General Household Survey? Are predictions based on that not as good as multi-state model predictions?

Professor Macdonald: The problem with the General Household Survey is that it does not follow the same group of individuals. If it were to do that, then it would give a way to estimate the transition measures. The MRC CFAS study in England is exactly of that kind. This has panel data, but the same people were interviewed at different points of time. However, just surveying different groups of lives from time to time is not sufficient to estimate transition measures properly.

Professor M. Sutton (a visitor)**:** Just to add to what has been said, we are interested in the mobility between health states of particular individuals. Just charting random cross-sections does not tell us anything about the mobility of individuals and about whether it is the same group of individuals which we are observing repeatedly or whether ill-health is a state in to or out of which people are moving frequently. Whether it is for monitoring or for intervention, it is interesting to know whether it is a group of individuals for which nothing seems to change their state of ill-health or whether ill-health is a state for which there is a lot of fluidity. If the latter is the case, one might expect there to be more potential for intervention.

Mr R. R. Ainslie, F.F.A.: Is there any aspect of the work which you have presented which could be used to improve life insurance underwriting, in particular for applicants who have a medical history of the illnesses discussed?

Professor Macdonald: Others here are better placed than I am to comment on the use of health service data by commercial interests such as insurance companies. It certainly has a bearing on the questions about which insurers are interested. If you can clearly identify the presence of an impairment through hospital or medical records in the recent past, or even the far past, then, as

we showed, you have quite rich information which has predictive value for future illness or mortality.

Professor Sutton: These measures which are giving us the quantification of health expectancy seem to be crude, very simple ways to capture differences in health states between individuals. What comes out as very striking is how good they are at predicting individual outcomes.

The survey itself is incredibly rich, with more medical and more clinical information — even measures of blood pressure and the contents of blood. Yet, it is actually this simple question which is the strongest predictor of outcomes such as future hospital admissions or mortality. That is probably a partial answer to your question, but what appears to be an extremely simple question (and it obviously does not take long to answer it) is an incredibly powerful predictor of future outcomes — much better, indeed, than more detailed clinical assessments.

Dr D. J. P. Hare, F.F.A.: In terms of making financial sense of the future, to what extent will this work help to improve the projections of health service demand going forward? I do not know how sophisticated the current projections are in terms of numbers of hospital beds, consultant availability and similar matters, but have we helped to improve them for the future?

Also, we are fortunate in the data which we have already, but they are not complete. What other data should be collected in the future, and how easy is it to arrange for that to happen?

Professor Sutton: Projecting future demand is certainly a priority for the NHS. My understanding of the studies which have been carried out to date is that there is much focus on whether population ageing and the associated modelling, such as is given in the paper, are what are important. However, most of the studies seem to show that it is the desire to do more which is the factor which matters the most. So, in a sense, if you want to plan future services, you need to understand what the NHS wants to do for individuals, and it is technological change which is the main driver of future demands for hospitalisation. That is not to say that the ageing of the population or the health status of the population at particular ages are not important, but the really big explanation of what is happening to the health service is just doing more for more individuals. It is technological change rather than population change which seems to be the more important.

Mr G. M. Murray, C.B.E., F.F.A.: I link back to Professor McCutcheon's first question. Like many people here, I remain intrigued with the unexpected differences between Italy and Scandinavia, overturning our perceptions of the unhealthy Latins and the healthy Scandinavians! Do the health costs in these two countries, or any other data which are available from them, back up the figures which you have, or were there already surprises in these countries which could not be explained?

Professor Macdonald: I agree that the differences are surprising. It is well known that there are cultural differences in how people report themselves to be in good or bad health. Then there is the simple fact that, even though the same instrument is used, it is translated into different languages and may be administered in slightly different ways.

Mr Murray: Do you feel that there should be a correlation between certain national statistics which would back up your figures or, alternatively, cast doubt on them?

Professor Macdonald: That is an interesting question. If expenditure statistics told the same story as these statistics, then that would seem to be a robust conclusion.

The President (Mr H. W. Brown, F.F.A.): I would like to thank the authors for producing such an excellent paper, and Professor Macdonald for his presentation. No doubt, once we have had time to digest the paper, we may well come back with some further questions.

It would be a shame if everything stopped here, and I hope that we can take on moving this forward, so that it is for the benefit, not just of the actuarial profession, but for a number of other users in Scotland.

https://doi.org/10.1017/S1357321700003020 Published online by Cambridge University Press