A Discussion of Two Papers on Theories of Longevity— "Trajectories of Disability and Mortality among the U.S. Elderly Population: Evidence from the 1984–1999 NLTCS" (Stallard) and "The Interdependency of Increasing Life Expectancy and Driving Life Expectancy of Elderly Populations" (Leng and Wen)

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I am delighted to discuss these two excellent articles that focus on a very important question: the measurement of functional capacity at the very end of extremely long life. The study of this question is vital because the answers will determine both societal and economic needs to provide care and support to the pending demographic bulge of the fastest growing segment of our population.

The average life expectancy in America today is near 78, something we call "old age." A reasonable goal might be to move the national life expectancy to 85 years, something we call "old-old." Now, for the first time in history, large numbers of people who join the ranks of the old-old will go on to become the "extreme old." We do not yet know what kind of life these people will live.

This conference focuses on these few people—the extreme old—who have a substantially longer life expectancy and can expect to live to age 100. It is a certainty that the number of these extremely old people will continue to increase. Information presented at this conference indicates that the number of centenarians will increase twentyfold in the next 50 years.

What kind of life will these extremely old people live? Will the extreme old pose new unmet, or even not yet defined challenges to the social support systems? Will a long life be worth living? Living long is not the same as living well. Will the next generation of centenarians have the same health as the current centenarians? Will they be healthier or will they require more support and assistance? Do the same actuarial methods apply to the extreme old as to those who are merely old? What does the data show? The answers to these questions that we are all wrestling with are crucial to the future of all countries around the world.

The goal of this conference is to focus attention on methods necessary to project and understand the pending demographic shift to old-old age and extreme old age. The questions are addressed, in part, by the studies of Dr. Stallard and Drs. Leng and Wen. The challenge addressed by these two studies is whether living to an extreme-old age poses greater challenges than living to old-old age. These two papers address this very important question of whether, as we live to very old age, we will live well.

Dr. Stallard continues to support and provide evidence for the Grade of Membership method of calculating morbidity and longevity as the mortality curve flattens at these extreme ages. His method accounts for individual variability of multiple factors that cause both the loss of vitality or mortality in the extreme old. The data source for the study was impeccably chosen: the National Long Term Care Survey. This population-based database contains a sufficient number of people who are

sufficiently old, a sufficient number of data points and a sufficiently long follow-up to make the results reliable.

The data collected by NLTCS include individual discriminators to project future disability and mortality. They include data that is sequential, representative and repeated. The data include physical measures, 30 medical conditions, measures of alcohol and tobacco use and fitness and body measurements.

The importance of Dr. Stallard's work is the ongoing development of a model that predicts individual life expectancy, morbidity and mortality based on these multiple factors in the NLTCS. As this modeling work is further developed and refined, it will have important implications for both individuals and society.

The work of Dr. Leng and Dr. Wen illustrates the personal societal issues associated with just one of the possible outcomes of such a study. Dr. Leng and Dr. Wen seek to apply a real-life analysis of the impact of Dr. Stallard's measure of frailty to the public policy issues. They studied the time between driving life expectancy and actual life expectancy and looked at the alternatives to driving for the oldest old who have given up driving but not life.

Their excellent and clear study looked at the difference between driving life expectancy and life expectancy. The difference is the time when mobility will be limited or require additional resources. Given the critical importance of driving mobility in our society and the lack of available options, their results indicate that we face a real problem. Recognizing this problem can lead to the development of new solutions. The solutions might include larger street signs and easier roadways. On the other hand, maybe we will drive something other than a fossil fuel burning car. Who knows? It is called the future, and it is worthy of study.

Both of these papers as well as this entire conference are to be applauded for studying and advancing these questions of the new longevity that is facing every society in the world today.