Presented by the Society of Actuaries' Committee on Life Insurance Research, Committee on Knowledge Extension Research, International Section, Long Term Care Section, Pension Section, and Product Development Section.

Welcome to Orlando! Living to 100 is the third, triennial international research symposium bringing together thought leaders from many disciplines to share ideas knowledge on the increase in aging populations and its implications to social, financial, health care and retirement systems. Actuaries, gerontologists, demographers, physicians, scientists and other professionals from around the world are attending this event to participate in developing measures of continuing improvement in survival and in discussing the problems and solutions relating to costs and quality of life of increasing numbers of elderly.

The 2008 symposium is a 2 ½ day program that includes concurrent sessions to address a wider range of subjects than covered in past Living to 100 symposia. More than 25 papers will be presented on a variety of topics such as mortality projection methods and trends, theories on aging, and coping with problems of old age to name a few. Formal discussions of the papers presented are scheduled along with ample opportunities for you to join in the dialogue. Distinguished speakers have also been assembled to provide panel discussion on determining and projecting health status at advanced ages, implications of aging populations and social security and retirement issues. Difficult and perhaps controversial issues society may face in addressing the increasing numbers of elderly are expected to be presented and/or discussed.

The valuable information presented at Living to 100 will aid participants in estimating not only advanced-age mortality rates, but also their rates of improvement needed for:

- Designing, pricing, valuing and managing financial security products
- Developing national life tables
- Ensuring solidity of government and private pension plans
- Ensuring the availability and continued solvency of homes for the aged
- Projecting the resources and services needed for the increasing older age population
- Providing useful information to individuals and their advisors for retirement and financial planning

The Society of Actuaries and the participating organizations and sponsors, and/or the SOA's Committee on Living to 100 Research Symposia make no warranties as to the accuracy of the information presented at the Living to 100 Symposium. The opinions reflected in the papers and discussions are solely those of the authors, discussants, and/or participants and do not represent any official position or opinion of the SOA or its members, the participating organizations and sponsors, and/or the SOA's Committee on Living to 100 Research Symposia. In no event shall the SOA or its members, the participating organizations and sponsors, and/or the SOA's Committee on Living to 100 Research Symposia be liable for any damages in connection with or resulting from the use of information presented at the symposium and/or reflected in the papers and discussions.
## Living to 100 Symposium
January 7 – 9, 2008
Hilton in the Walt Disney World Resort, Lake Buena Vista, FL

<table>
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<tr>
<th>Time</th>
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<tr>
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<td><strong>General Information</strong></td>
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<td>Monday, January 7, 2008</td>
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<tr>
<td>7:00 – 8:00 am</td>
<td><strong>Registration and Continental Breakfast</strong></td>
<td>Palm Foyer 3</td>
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<td>8:00 – 10:00 am</td>
<td><strong>Opening Remarks and Keynote Speaker</strong></td>
<td>Palm Ballroom 3 &amp; 4</td>
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<td></td>
<td><strong>Symposium Co–Chairperson:</strong> Timothy F. Harris, FSA, MAAA</td>
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<td><strong>SOA President:</strong> Bruce D. Schobel, FSA, FCA, MAAA</td>
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<td></td>
<td><strong>Keynote Presentation: Aging Research–Past, Present, and Future</strong></td>
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<td>Cynthia Kenyon, PhD</td>
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<td>American Cancer Society Professor and</td>
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<td>Director of Hillblom Center for the Biology of Aging</td>
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<td></td>
<td>University of California, San Francisco</td>
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<tr>
<td>10:00 – 10:15 am</td>
<td><strong>Refreshment Break</strong></td>
<td>Palm Foyer 3</td>
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<tr>
<td>10:15 am – 12:00 pm</td>
<td><strong>General Session 1: Implications of Longer Life Spans: What Does This All Mean to Us?</strong></td>
<td>Palm Ballroom 3 &amp; 4</td>
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<td><strong>Moderator:</strong></td>
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<td></td>
<td>Anna M. Rappaport, MBA, FSA, EA, MAAA</td>
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<td>Anna Rappaport Consulting</td>
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<td><strong>Panelists:</strong></td>
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<td>Timothy F. Harris, FSA, MAAA</td>
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<td>Dawn E. Helwig, FSA, MAAA</td>
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<td>Valerie A. Paganelli, FSA, EA, MAAA</td>
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<td>Seattle, Washington</td>
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<td>David K. Sandberg, FSA, CERA, MAAA</td>
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<td>VP &amp; Corporate Actuary</td>
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<td>Allianz Life Insurance Company of North America</td>
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<td>Minneapolis, Minnesota</td>
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<td>Steven G. Vernon, FSA, EA, MAAA</td>
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<td>Rest–of–Life Communications</td>
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<td>Oxnard, California</td>
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### Luncheon with Roundtable Discussions

Attendees will have the opportunity to share ideas with one another and engage in lively discussion on one of the following important topics:

- Mortality investigations and quality of data at very high ages
- Mortality models, mortality trends, annuity tables, and population projections
- Quality of life of the increasing numbers of elderly
- The financial impact of the increasing numbers of elderly on social programs and costs
- Medical approaches to aging—attacking the diseases of old age or old age itself
- Progress and consequences of anti–aging and effective treatment of ailments of the aged
- The societal significance of centenarians
- Financial products and services for the increasing aging population

### 1:50 – 3:35 pm Concurrent Session 1

#### 1A: Distinguishing Health Status For Advanced Ages

**Moderator:**
Craig M. Baldwin, MS, MSAS, FSA, MAAA  
Vice President  
Transamerica Reinsurance  
Charlotte, North Carolina

**Panelists:**
Faye S. Albert, MBA, FSA, FCA, MAAA  
President  
Albert Associates  
Miami, Florida

Thomas Ashley, MD, FACP  
Vice President and Chief Medical Director  
Gen Re LifeHealth  
Stamford, Connecticut

Robert Gleeson, MD, FACP  
Vice President & Medical Director  
Northwestern Mutual  
Milwaukee, Wisconsin

Stephen K. Holland, MD  
Senior Vice President & Medical Director  
Long–Term Care Group, Inc.  
Natick, Massachusetts

#### 1B: Perspectives on a Changing Global Retirement Paradigm

**Moderator:**
Kenneth W. Faig, Jr., FSA, MAAA  
Committee on Living to 100 Research Symposia Member

**Discussant:**
J. Bruce MacDonald, FSA, FCIA, MAAA  
Consulting Actuary  
Halifax, Nova Scotia, Canada

**Papers:**

- *Living to 100 and Beyond in Canada with Dignity*
  
  Doug Andrews, MBA, FSA, FCIA, CFA  
  PhD Candidate  
  University of Waterloo  
  Waterloo, Ontario, Canada

- *Micro Pension Plan: Indian Perspective*
  
  Prakash Bhattacharya, Be, CFA  
  Bengal College of Engineering and Technology  
  Durgapur, West Bengal, India

- *Retirement and Retirement Ages in Canada Revisited*
  
  Brian L. Burnell, FSA, FCIA, FIA  
  Burnell Actuarial Consulting  
  Halifax, Nova Scotia, Canada
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<td>3:35 – 3:50 pm</td>
<td>Refreshment Break</td>
<td>Narcissus and Dogwood Foyers</td>
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<tr>
<td>3:50 – 5:35 pm</td>
<td>Concurrent Sessions 2</td>
<td>Narcissus/Orange</td>
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### 2A: Demographic Implications of Aging Populations Internationally

**Moderator:**
Timothy F. Harris, FSA, MAAA  
Symposium Co-Chairperson

**Discussant:**
John W. Paddon, MA, FSA, MAAA  
Consulting Actuary  
Convent Station, New Jersey

**Papers:**
- *Challenges on Improved Life Spans in India–The Actuarial Implications*
  N. V. Subramanyan, MBA, MPhil, ICWAI, CAIIIB  
  Manager–Business Analysis  
  HSBC Software Development India  
  Kalyaninagar, Pune, India

- *Economic Sustainability of Retirement Pensions in Mexico: Is There a Link with the Mexican-Origin Population in the U.S.?*
  Roberto Ham–Chande, PhD  
  Researcher  
  Department of Population Studies  
  El Colegio de la Frontera Norte  
  Tijuana, Mexico

- *Income Inequality and Life Expectancy: New Evidence*
  Robert L. Brown, PhD, FSA, FCIA, ACAS, HONFIA  
  Professor  
  Department of Statistics and Actuarial Science  
  University of Waterloo  
  Waterloo, Ontario, Canada

  Steven G. Prus, PhD (Presenter)  
  Associate Professor  
  Department of Sociology  
  Carleton University  
  Ottawa, Ontario, Canada

### 2B: Emerging Definitions of Retirement

**Moderator:**
Anna M. Rappaport, MBA, FSA, EA, MAAA  
Anna Rappaport Consulting  
Chicago, Illinois

**Panelists:**
- Doug Andrews, MBA, FSA, FCIA, FCA  
  PhD Candidate  
  University of Waterloo  
  Waterloo, Ontario, Canada

- Steven Haberman, PhD, ASA, FIA  
  Deputy Dean  
  Cass Business School  
  City University  
  London, England

- Valerie A. Paganelli, FSA, EA, MAAA  
  Senior Consulting Actuary  
  Paganelli Consulting  
  Seattle, Washington
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<tr>
<td>6:00 – 7:00 pm</td>
<td>Networking Reception</td>
<td>Poolside</td>
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<td>7:00 – 8:00 am</td>
<td>Continental Breakfast and Registration</td>
<td>Palm Foyer 3</td>
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<td>8:00 – 9:45 am</td>
<td>General Session 2: Social Insurance Perspectives and Implications</td>
<td>Palm Ballroom 3 &amp; 4</td>
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<td>9:45 – 10:00 am</td>
<td>Refreshment Break</td>
<td>Palm Foyer 3</td>
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<td>10:00 – 11:45 am</td>
<td>Concurrent Sessions 3</td>
<td>Narcissus/Orange</td>
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**Tuesday, January 8, 2008**

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<tr>
<td>8:00 – 9:45 am</td>
<td>General Session 2: Social Insurance Perspectives and Implications</td>
<td>Palm Ballroom 3 &amp; 4</td>
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- **Moderator and Discussant:**
  - Sam Gutterman, FSA, FCAS, FCA, MAAA, HONFIA
  - Director and Consulting Actuary
  - PricewaterhouseCoopers LLP
  - Chicago, Illinois

- **Panelists:**
  - Adrian P. Gallop, FIA
    - Government Actuary’s Department
    - London, England
  - Jean-Claude Menard, FSA, FCIA
    - Chief Actuary
    - Office of the Superintendent of Financial Institutions Canada
    - Ottawa, Ontario, Canada
  - Stephen C. Goss, MS, ASA, MAAA
    - Chief Actuary
    - Social Security Administration
    - Baltimore, Maryland

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<td>10:00 – 11:45 am</td>
<td>Concurrent Sessions 3</td>
<td>Narcissus/Orange</td>
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**3A: Social Insurance Follow-up: Methodologies and Implications**

- **Moderator:**
  - Sam Gutterman, FSA, FCAS, FCA, MAAA, HONFIA
  - Director and Consulting Actuary
  - PricewaterhouseCoopers LLP

- **Panelists:**
  - Stephen C. Goss, MS, ASA, MAAA
    - Chief Actuary
    - Social Security Administration
    - Baltimore, Maryland
  - Danita L. Pattemore, ASA
    - Actuarial Officer
    - Office of the Superintendent of Financial Institutions Canada
    - Ottawa, Ontario, Canada
  - Alvin K. Winters ASA, EA, MAAA
    - Actuary
    - Social Security Administration
    - Baltimore, Maryland
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<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
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</table>
| 3B: Quality of Life of Elderly | Moderator: Timothy F. Harris, FSA, MAAA  
Symposium Co-Chairperson  
Discussant: Deborah Briceland–Betts, JD  
National Director Women's Programs  
AARP Foundation  
Washington, D.C.  
Papers:  
*Living to 100–A Woman’s Issue*  
Anna M. Rappaport, MBA, FSA, EA, MAAA  
Anna Rappaport Consulting  
Chicago, Illinois  
*Evaluation of Approaches to Reducing Women's Longevity Risk*  
Beverly J. Orth, JD, FSA  
Principal  
Mercer Human Resource Consulting  
Portland, Oregon  
*Estimates of the Incidence, Prevalence, Duration, Intensity, and Cost of Chronic Disability among the U.S. Elderly*  
Eric Stallard, ASA, FCA, MAAA  
Research Professor, Department of Sociology and  
Associate Director, Center for Population Health and Aging  
Duke University  
Durham, North Carolina | Camellia/Dogwood |
| 11:55 am – 1:40 pm | Luncheon with Speaker: The MacArthur Initiative on an Aging Society: Population Forecasts for the U.S. | North Ballroom |
| 1:50 – 3:15 pm | Concurrent Sessions 4                                                                 | Narcissus/Orange |
| 4A: New Models of Advanced Age Mortality | Moderator: Kenneth W. Faig, Jr., FSA, MAAA  
Committee on Living to 100 Research Symposia Member  
Discussant: Thomas P. Edwalds, MS, FSA, ACAS, MAAA  
Assistant Vice President, Mortality Research  
Munich American Reassurance Co  
Chicago, Illinois  
Papers:  
*Inference for Logistic–type Models for the Force of Mortality*  
Louis G. Doray, PhD, ASA  
Professor  
Department of Math and Statistics  
University of Montreal  
Montreal, Quebec, Canada  
*Predictive Modeling for Advanced Age Mortality*  
Lijia Guo, PhD, ASA, MAAA  
Principal Financial Engineer/Actuary  
Algorithmics Inc.  
Newton, Massachusetts |
### 4B : Mortality Measurement and Prediction

**Moderator:** Robert J. Johansen, MA, FSA, MAAA
Symposium Co-Chairperson

**Papers:**
- *Mortality Measurement at Advanced Ages: A Study of the Social Security Administration Death Master File*
  - Leonid A. Gavrilov, PhD (Presenter)
  - Research Associate of the Center for Demographic Studies
  - Center on Aging, NORC
  - University of Chicago
  - Chicago, Illinois

- Natalia S. Gavrilova, PhD
  - Research Associate of the Center for Demographic Studies
  - Center on Aging, NORC
  - University of Chicago
  - Chicago, Illinois

- *Typology and Review of Measures of Human Aging, Longevity and Superlongevity, with Applications to U.S. Data and Some Implications for U.S. Public Programs*
  - Jacob S. Siegel, MA
  - Demographic Consultant
  - J. Stuart Siegel Demographic Services
  - North Bethesda, Maryland

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### 5A: Longevity Risk Pricing

**Moderator:** Robert J. Johansen, MA, FSA, MAAA
Symposium Co-Chairperson

**Discussant:** Michael L. Kaster, MBA, FSA, MAAA
Senior Consultant
Watson Wyatt Insurance & Financial Services, Inc.
Berwyn, Pennsylvania

**Papers:**
- *Living to 100: Survival to Advanced Ages: Insurance Industry Implication on Retirement Planning and the Secondary Market in Insurance*
  - Jay Vadiveloo, PhD, FSA, CFA, MAAA (Presenter)
  - Professor and Director of the Deloitte–University of Connecticut Actuarial Center and Senior Manager
  - Deloitte Consulting LLP
  - Hartford, Connecticut

- Peng Zhou, PhD, FSA
  - Investment Officer
  - Sun Life Financial
  - Wellesley Hills, Massachusetts

- Charles Vinsonhaler, PhD, ASA
  - Professor
  - Department of Mathematics
  - University of Connecticut
  - Storrs, Connecticut
<table>
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<tr>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
<th>Location</th>
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<tr>
<td>Longevity Risk Pricing</td>
<td>Sudath Ranasinghe</td>
<td>PhD Candidate</td>
<td>University of Connecticut</td>
<td>Storrs, Connecticut</td>
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<td>Jiajia Cui, MPhil</td>
<td>PhD Candidate</td>
<td>Tilburg University</td>
<td>Tilburg, the Netherlands</td>
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**5B: Prediction from Data**

**Moderator:** Timothy F. Harris, FSA, MAAA
Symposium Co-Chairperson

**Discussant:**
Joseph Lu, MPhil, FIA
Senior Actuary
Synesis Life
London, England

**Papers:**

- *Data Validation and Measurement of Cohort Mortality among Centenarians in Quebec (Canada) According to Place of Birth and Ethnic Origin*
  Melissa Beaudry–Godin, MS
  PhD Candidate
  Department of Demography
  University of Montreal
  Montreal, Quebec, Canada

- *Physical and Socio-Economic Characteristics at Young Age as Predictors of Survival to 100. A study of a new historical data resource (the US WWI draft cards)*
  Natalia S. Gavrilova, PhD (Presenter)
  Research Associate of the Center for Demographic Studies
  Center on Aging, NORC
  University of Chicago
  Chicago, Illinois

- Leonid A. Gavrilov, PhD
  Research Associate of the Center for Demographic Studies
  Center on Aging, NORC
  University of Chicago
  Chicago, Illinois

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**Wednesday, January 9, 2008**

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<td>7:00 – 8:00 am</td>
<td>Continental Breakfast</td>
<td>Palm Foyer 3</td>
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<td>8:00 – 9:45 am</td>
<td>Concurrent Sessions 6</td>
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6A: Projection and Statistical Modeling of Mortality at Late Age

**Moderator:**
Timothy F. Harris, FSA, MAAA
Symposium Co-Chairperson

**Discussant:**
W. Ward Kingkade, PhD
Statistician/Demographer
Population Division
U.S. Bureau of the Census
Washington D.C.

**Papers:**
*On Simulation-Based Approaches to Risk Measurement in Mortality with Specific Reference to Binomial Lee-Carter Modeling*
Steven Haberman, PhD, ASA, FIA (Presenter)
Professor of Actuarial Science and Deputy Dean
Cass Business School
City University
London, England

Arthur Renshaw, PhD
Cass Business School
City University
London, England

*A Study of the Lee–Carter Model with a Jump*
Jack C. Yue, PhD, ASA
Professor, Department of Statistics
National Chengchi University
Taipei, Taiwan

Sharon S. Yang, PhD (Presenter)
Assistant Professor
Department of Business Mathematics, College of Business
Soochow University
Taipei, Taiwan

Hong–Chih Huang, PhD
Assistant Professor
Department of Risk Management and Insurance
National Chengchi University
Taipei, Taiwan

*Testing Deterministic Versus Stochastic Trends in the Lee–Carter Mortality Indexes and Its Implications for Projecting Mortality Improvements at Advanced Ages*
Wai–Sum Chan, PhD, FSA
Professor, Department of Finance
Chinese University of Hong Kong
Hong Kong, PR China

Siu–Hang Li, PhD (Presenter)
Assistant Professor
Department of Statistics and Actuarial Science
University of Waterloo
Waterloo, Ontario, Canada

Siu–Hung Cheung, PhD
Associate Professor, Department of Statistics
Chinese University of Hong Kong
Hong Kong, PR China
### 6B: Health Status and Its Impact on Mortality

**Moderator:**
Kenneth W. Faig, Jr., FSA, MAAA
Committee on Living to 100 Research Symposia Member

**Discussant:**
S. Jay Olshansky, PhD
Professor
School of Public Health
University of Illinois at Chicago
Chicago, Illinois

**Papers:**
- *Health Expectancy*
  Faye S. Albert, MBA, FSA, FCA, MAAA
  President
  Albert Associates
  Miami, Florida
  
  James C. Brooks, Jr., FSA, MAAA (Presenter)
  Actuarial Consultant
  John M Bragg & Associates Inc.
  Marietta, Georgia
  
  John M. Bragg, FSA, ACAS, MAAA
  Chairman
  John M Bragg & Associates Inc.
  Atlanta, Georgia
  
  *Human Behaviour: An Impediment toward Future Mortality Improvement*
  Sam Gutterman, MAS, FSA, FCAS, FCA, MAAA, HONFIA
  Director & Consulting Actuary
  PricewaterhouseCoopers LLP
  Chicago, Illinois
  
  *Health, Wealth and Wisdom–Living Long, Living Well*
  Michael J. Cowell, ALM, FSA
  Yarmouth, Maine

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<td>9:45 – 10:00 am</td>
<td>Refreshment Break</td>
<td>Palm Foyer 3</td>
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<tr>
<td>10:00 – 11:45 am</td>
<td>General Session 3: Theories on Aging</td>
<td>Palm Ballroom 3 &amp; 4</td>
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### 10:00 – 11:45 am

**Moderator:**
Robert J. Johansen, MA, FSA, MAAA
Symposium Co-Chairperson

**Discussant:**
Stephen C. Goss, MS, ASA, MAAA
Chief Actuary
Social Security Administration
Baltimore, Maryland

**Papers:**
- *Entropy Explains Aging, Genetic Determinism Explains Longevity, and Undefined Terminology Explains Misunderstanding Both*
  Leonard Hayflick, PhD
  Professor of Anatomy
  University of California, San Francisco, School of Medicine
  San Francisco, California
  
- *Is There a Limit to the Compression of Mortality?*
  Jean-Marie Robine
  INSERM, Health and Demography
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<th>Time</th>
<th>Session/Remarks</th>
<th>Speaker/Institution</th>
<th>Location</th>
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| 11:55 am – 12:40 pm | General Session 4: Compression of Morbidity | Siu Lan K. Cheung (Presenter)  
Hong Kong University of Science and Technology  
Shiro Horiuchi  
CUNY Institute of Demographic Research  
A. Roger Thatcher  
Former Director of the Office of Population Censuses and Surveys, London | Palm Ballroom 3 & 4 |
| Papers: | Is the Compression of Morbidity a Universal Phenomenon?  
Jean Marie Robine (Presenter)  
INSERM, Health and Demography  
Siu Lan K. Cheung  
Hong Kong University of Science and Technology  
Shiro Horiuchi  
CUNY Institute of Demographic Research  
A. Roger Thatcher  
Former Director of the Office of Population Censuses and Surveys, London | | |
| 12:40 – 1:00 pm | Closing Remarks | Symposium Co–Chairperson: Robert J. Johansen MA, FSA, MAAA  
Symposium Co–Chairperson: Timothy F. Harris, FSA, MAAA  
Committee on Living to 100 Research Symposia Member: Sam Gutterman, MAS, FSA, FCAS, FCA, MAAA, HONFIA | Palm Ballroom 3 & 4 |