The 48th Actuarial Research Conference
2013
Temple University

PROGRAM and ABSTRACTS

July 31 – August 3, 2013
Philadelphia, PA

Organized by
Department of Risk, Insurance and Healthcare Management
Fox School of Business
# The 48th Actuarial Research Conference 2013

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The 48th Actuarial Research Conference
Sponsors

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The 48th Actuarial Research Conference

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Krupa Viswanathan, Temple University

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J. David Cummins, Temple University, Chair
Hua Chen, Temple University
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Mary A. Weiss, Temple University
48th Actuarial Research Conference
Temple University
Alter Hall
1801 Liacouras Walk
(Between Broad and Montgomery and 13th Streets)
Philadelphia, PA
July 31-August 3, 2013

PROGRAM OVERVIEW

July 31, Wednesday

17:00-19:30 Welcome Reception
Courtyard Marriott Hotel
21 N. Juniper Street, Philadelphia, PA

20:00-20:20 Bus Transportation: Marriott to Temple Dormitory
(You must be on the bus by 20:00.)

August 1, Thursday

7:30-7:50 Bus Transportation: Marriott to Alter Hall
(You must be on the bus by 7:30.)

8:00-8:25 Breakfast in Alter Hall, 1st Floor, Ticker Area

8:25-9:30 Opening Session, Auditorium, Alter Hall, Lower Level

9:30-10:20 Plenary Session I, Auditorium, Alter Hall, Lower Level
Actuarial Education

10:20-10:40 Refreshment Break, Alter Hall, 1st Floor, Ticker Area

10:40-12:20 Concurrent Sessions 1

Concurrent Session 1A, Alter Hall 237
Rating/Ratemaking

Concurrent Session 1B, Alter Hall 606
Mortality Modeling

Concurrent Session 1C, Alter Hall 607
Financial Analysis

12:20-13:45 Lunch, Alter Hall, 1st Floor, Ticker Area
13:50-14:40  **Plenary Session II**, Auditorium, Alter Hall, Lower Level
Lessons from Hurricane Sandy
*Mark Bove, Munich Re*

14:40-15:40  **Concurrent Sessions 2**

**Concurrent Session 2A**, Alter Hall 237
Issues in Actuarial Education

**Concurrent Session 2B**, Alter Hall 606
Modeling and Pricing

**Concurrent Session 2C**, Alter Hall 607
Financial Applications

15:40-16:00  Refreshment Break, Alter Hall, 1st Floor, Ticker Area

16:00-17:20  **Concurrent Sessions 3**

**Concurrent Session 3A**, Alter Hall 237
Valuation

**Concurrent Session 3B**, Alter Hall 606
Insurer Operations

**Concurrent Session 3C**, Alter Hall 607
Predictive Modeling & Fuzzy Logic

17:30-17:50  Bus Transportation, Alter Hall to Marriott Hotel
(You must be on the bus by 17:30.)

18:00-22:00  Reception and Dinner, Courtyard Marriott Hotel

22:00-22:20  Bus Transportation, Marriott to Temple Dormitory
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**August 2, Friday**

7:30-7:50  **Bus Transportation: Marriott to Alter Hall**
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8:00-8:30  **Breakfast in Alter Hall, 1st Floor, Ticker Area**

8:30-9:30  **Concurrent Sessions 4**

**Concurrent Session 4A**, Alter Hall 237
Copulas

**Concurrent Session 4B**, Alter Hall 606
Healthcare Modeling
Concurrent Session 4C, Alter Hall 607
Modeling Issues

9:30-10:20  Plenary Session III, Auditorium, Alter Hall, Lower Level
Systemic Risk and the Insurance Industry
J. David Cummins and Mary A. Weiss
Temple University

10:20-10:40  Refreshment Break, Alter Hall, 1st Floor, Ticker Area

10:40-12:20  Concurrent Sessions 5

Concurrent Session 5A, Alter Hall 237
Longevity Risk

Concurrent Session 5B, Alter Hall 606
Risk Theory & Insurance Economics

Concurrent Session 5C, Alter Hall 607
Financial Analysis

12:20-13:50  Lunch, Alter Hall, 1st Floor, Ticker Area

14:00-14:50  Plenary Session IV, Auditorium, Alter Hall, Lower Level
Predictive Modeling

14:50-15:40  Plenary Session V, Auditorium, Alter Hall, Lower Level
State of the Insurance Industry
John Andre, A.M. Best Company

15:40-16:00  Refreshment Break, Alter Hall, 1st Floor, Ticker Area

16:00-17:20  Concurrent Sessions 6

Concurrent Session 6A, Alter Hall 237
An Open Forum on Actuarial Education

Concurrent Session 6B, Alter Hall 606
Pricing & Capital Allocation

Concurrent Session 6C, Alter Hall 607
Catastrophes and Reinsurance

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August 3, Saturday

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8:00-8:30  Breakfast in Alter Hall, 1st Floor, Ticker Area

8:30-10:10  Concurrent Sessions 7

Concurrent Session 7A, Alter Hall 237  
Mortality Modeling

Concurrent Session 7B, Alter Hall 606  
Estimation Techniques

Concurrent Session 7C, Alter Hall 607  
Risk Theory & Risk Measures

10:10-10:30  Refreshment Break, Alter Hall, 1st Floor, Ticker Area  
Taxi Signup

10:30-11:50  Concurrent Sessions 8

Concurrent Session 8A, Alter Hall 237  
Issues in Health Actuarial Science

Concurrent Session 8B, Alter Hall 606  
Annuities

Concurrent Session 8C, Alter Hall 607  
Modeling Issues

11:50-11:55  Closing Session

12:00  Box Lunch, Alter Hall, 1st Floor, Ticker Area
DETAILED PROGRAM

July 31, Wednesday

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21 N. Juniper Street, Philadelphia, PA

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(You must be on the bus by 20:00.)

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8:00-8:25 Breakfast in Alter Hall, 1st Floor, Ticker Area

8:25-9:30 Opening Session, Auditorium, Alter Hall, Lower Level
Introduction

Dean Moshe Porat
Fox School of Business, Temple University

Dr. R.B. Drennan, Chair
Department of Risk, Insurance, and Healthcare Management
Temple University

Keynote Presentation

Longevity Risk
Steven Haberman
Cass Business School
9:30-10:20  **Plenary Session I**, Auditorium, Alter Hall, Lower Level

Actuarial Education

Moderator:
*Stuart Klugman, The Society of Actuaries*

Panelists:
*Ron Gebhardtsbauer, Penn State University*
*Richard W. Gorvett, University of Illinois at Urbana-Champaign*
*Mary Hardy, University of Waterloo*
*Arlie Proctor, Casualty Actuarial Society Executive Council*

10:20-10:40  Refreshment Break, Alter Hall, 1st Floor, Ticker Area

10:40-12:20  **Concurrent Sessions 1**

**Concurrent Session 1A**, Alter Hall 237
Rating/Ratemaking

Moderator:
*Margie Rosenberg, University of WI-Madison*

Comparison of the Standard Rating Methods and the New General Rating Formula
*Muhamed Borogovac, Boston Mutual Life Insurance Company*

The Use of Annual Mileage as a Rating Variable
*Jean Lemaire, The Wharton School*
*Sojung Park, Seoul National University*
*Kili Wang, Tamkang University*

Ratemaking Using the Tweedie Model
*Peng Shi, University of Wisconsin-Madison*

A Statistical Bonus-Malus System for Panel Data
*Jean-Philippe Boucher, UQAM*
*Rofick Inoussa, UQAM*

A Risk Modeling Framework for Autonomous Vehicle Technology
*David Varodayan, University of Illinois at Urbana-Champaign*
*Richard W. Gorvett, University of Illinois at Urbana-Champaign*
*Grace Xingxin Gao, University of Illinois at Urbana-Champaign*
Concurrent Session 1B, Alter Hall 606

Mortality Modeling

Moderator:
James G. Bridgeman, University of Connecticut

The Financial Impact of Subjective Mortality Risk
Thorsten Moenig, University of St. Thomas
Clement Foltz, University of St. Thomas
Nathan Kent, University of St. Thomas
Yabing Yang, University of St. Thomas

Modeling Mortality by Cause of Death and Socio-Economic Stratification: An Analysis of Mortality Differentials in England
Andres Villegas, Cass Business School
Steven Haberman, Cass Business School

Forecasting Mortality in Related Populations Using Lee-Carter Type Models: A Comparison
Ivan Danesi, University of Padova
Pietro Millossovich, Cass Business School
Steven Haberman, Cass Business School

Re-fitting Phase-Type Mortality Model
Matt Bartley, University of Western Ontario
Xin Huang, University of Western Ontario
Xiaoming Liu, University of Western Ontario

Concurrent Session 1C, Alter Hall 607

Financial Analysis

Moderator:
Benjamin Avanzi, University of New South Wales

External Monitor Quality and Managerial Discretion
Martin F. Grace, Georgia State University
Tyler Leverty, University of Iowa

Executive Compensation and Risk Taking
Yu-Luen Ma, Illinois State University
Ping Wang, St. John’s University

Portfolio Management with the Critical Event Cost Method
John Major, Guy Carpenter
Sherry L. Thomas, Guy Carpenter
Economic Capital Model Validation
*Markus Stricker, Georgia State University*
*David Simmons, Willis Re*
*Dave Ingram, Willis Re*
*Alice Underwood, Willis Re*
*Juan England, Willis Re*

12:20-13:45  Lunch, Alter Hall, 1st Floor, Ticker Area

13:50-14:40  **Plenary Session II**, Auditorium, Alter Hall, Lower Level

Lessons from Hurricane Sandy
*Mark Bove, Munich Re*

14:40-15:40  **Concurrent Sessions 2**

**Concurrent Session 2A**, Alter Hall 237
Issues in Actuarial Education

Moderator:
*Ping Wang, St. John’s University*

SOA Education Update
*Stuart Klugman, Society of Actuaries*

Diversity in the Actuarial Profession - Next Steps
*Barry McKeown, CAS/ SOA Committee on Actuarial Diversity; Towers Watson*

Actuarial Job Market: Overcoming the Matthew Effect
*Natalia Humphreys, University of Texas at Dallas*

Assessment of a University-Based Actuarial Program: A Case Study of UW-Madison
*Edward (Jed) Frees, University of Wisconsin-Madison*
*Margie Rosenberg, University of Wisconsin-Madison*

**Concurrent Session 2B**, Alter Hall 606
Modeling and Pricing

Moderator:
*Hua Chen, Temple University*

Stochastic Economic Models for Actuarial Use: An Evidence of China
*Fei Huang, Australian National University*
Smoothed Quantiles, Value-at-Risk, and the Method of Percentile-Matching for Claim Count Data
Ponmalar Ratnam, University of Wisconsin-Milwaukee
Vytaras Brazauskas, University of Wisconsin-Milwaukee

Model Uncertainty, Ambiguity Aversion and Implications for Catastrophe Insurance Market
Hua Chen, Temple University
Tao Sun, Temple University

**Concurrent Session 2C**, Alter Hall 607
Financial Applications

**Moderator**
Richard W. Gorvett, University of Illinois at Urbana-Champaign

A Mixture Model Approach to Operational Risk Management
Andrei Badescu, University of Toronto
Lan Gong, University of Toronto
X. Sheldon Lin, University of Toronto

Mixed Erlang Moment-Based Approximation: Applications in Actuarial Science and Quantitative Risk Management
Hélène Cossette, Université Laval
David Landriault, University of Waterloo
Etienne Marceau, Université Laval
Khouzeima Moutanabbir, University of Waterloo

Interplay of Insurance and Financial Risks in a Discrete-time Model with Strong Regular Variation
Qihe Tang, University of Iowa

**15:40-16:00 Refreshment Break, Alter Hall, 1st Floor, Ticker Area**

**16:00-17:20 Concurrent Sessions 3**

**Concurrent Session 3A**, Alter Hall 237
Valuation

**Moderator:**
Eric Ulm, Georgia State University

Hyperbolic Discounting: Implications for Actuarial Science and Financial Risk Management
Rick Gorvett, University of Illinois at Urbana-Champaign
Have It Both Ways? A Tale of the Speed-Accuracy Trade-Off in the Valuation of Guaranteed Minimum Withdrawal Benefit
Runhuan Feng, University of Illinois at Urbana-Champaign
Hans W. Volkmer, University of Wisconsin-Milwaukee

Option Pricing Without Tears: Valuing Equity-Linked Death Benefits
Elias Shiu, University of Iowa

Pricing Weather Derivatives Using Maximum Entropy Principle
Jeffrey Pai, University of Manitoba
Johnny Li, University of Waterloo
Rui Zhou, University of Manitoba

**Concurrent Session 3B, Alter Hall 606**
*Insurer Operations*

Moderator:
Jean Lemaire, The Wharton School

Pitfalls in Implementation of Non-Discriminatory Premiums: the Case of Unisex Tariffs in the German Auto Insurance Market
Vijay Aseervatham, Ludwig-Maximilians-University Munich
Christoph Lex, Ludwig-Maximilians-University Munich
Martin Spindler, Max-Planck-Institute for Social Law and Policy

Micro-Level Loss Reserving Models for Insurance
Xiaoli Jin, University of Wisconsin-Madison

The Managerial Role of Actuarial Professionals on Insurer's Risk Taking
Shinichi Kamiya, Nanyang Technological University
Ang Zie Sen, Nanyang Technological University
Goh Choon Yung, Nanyang Technological University
Lim Wei Thong, Nanyang Technological University

Property Casualty Insurance and the Next Industrial Revolution: Nanotechnology-Opportunities and Uncertainties
Mahmoud Shehadeh, Northern Illinois University

**Concurrent Session 3C, Alter Hall 607**
*Predictive Modeling & Fuzzy Logic*

Moderator:
Natalia Humphreys, University of Texas at Dallas

Predictive Modeling of Storm Damage to Overhead Power Lines
Brian Hartman, University of Connecticut
Predictive Modeling of Healthcare Costs Using Regression Trees  
*Daniel Mena, UC Santa Barbara*  
*Alexandra Moat, UC Santa Barbara*  
*Jessie Wang, UC Santa Barbara*  
*Ian Duncan, UC Santa Barbara*  
*Michael Ludkovski, UC Santa Barbara*

Fuzzy Logic Modifications of the Analytic Hierarchy Process - A Risk Assessment Context  
*Arnold F. Shapiro, Penn State University*  
*Marie-Claire Koissi-Kouassi, Western Illinois University*

Applying Fuzzy Optimization to Risk Assessment  
*Marie-Claire Koissi, Western Illinois University*  
*Arnold F. Shapiro, Penn State University*

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8:00-8:30 **Breakfast in Alter Hall, 1st Floor, Ticker Area**

8:30-9:30 **Concurrent Sessions 4**

**Concurrent Session 4A, Alter Hall 237**  
Copulas

Moderator:  
*Qihe Tang, University of Iowa*

Copula-Dependent Collateral Default Intensity and Its Applications to CDS Rate  
*Jiwook Jang, Macquarie University*  
*Siti Norafidah Mohd Ramli, Macquarie University*

Assessing High-Risk Scenarios by Full-Range Tail Dependence Copula  
*Lei Hua, Northern Illinois University*
A Transformed Linear Approximation to Copula Regression  
*Rahul Parsa, Drake University*  
*Paul Ferrara*

**Concurrent Session 4B**, Alter Hall 606  
Healthcare Modeling

Moderator:  
*Elias Shiu, University of Iowa*

Trend Analysis Algorithms and Applications to Health Rate Review  
*Ye Ye, Middle Tennessee State University*  
*Le Yin, Middle Tennessee State University*  
*Don Hong, Middle Tennessee State University*  
*Qiang Wu, Middle Tennessee State University*

Predictive Healthcare Cost Modeling Using Regression Splines  
*Andrew Mackenzie, University of California at Santa Barbara*  
*Tiffany Sun, University of California at Santa Barbara*  
*Roger Wu, University of California at Santa Barbara*  
*Ian Duncan, University of California at Santa Barbara*  
*Michael Ludkovski, University of California at Santa Barbara*

Risk Assessment in Group Health Claims  
*Shujuan Huang, University of Connecticut*  
*Brian Hartman, University of Connecticut*

**Concurrent Session 4C**, Alter Hall 607  
Modeling Issues

Moderator:  
*Mathieu Boudreault, University of Quebec Montreal*

Log-Folded-t Models for Insurance Loss Data: Revisited  
*Vytautas Brazauskas, University of Wisconsin-Milwaukee*  
*Andreas Kleefeld, Brandenburgische Technische Universitat Cottbus*

Bayesian Foundations of Insurance  
*Liang Hong, Robert Morris University*  
*Ryan Martin, University of Illinois Chicago*  
*Zhiquiang Yan, Western Illinois University*

Pairwise Markov Chains Model Applied to Default Data Analysis  
*Selwa Rafi, University of Quebec Montreal*  
*Jean-Philippe Boucher, University of Quebec Montreal*  
*Mathieu Boudreault, University of Quebec Montreal*
9:30-10:20  **Plenary Session III**, Auditorium, Alter Hall, Lower Level

Systemic Risk and the Insurance Industry  
*J. David Cummins and Mary A. Weiss*  
*Temple University*

10:20-10:40  Refreshment Break, Alter Hall, 1st Floor, Ticker Area

10:40-12:20  **Concurrent Sessions 5**

**Concurrent Session 5A**, Alter Hall 237

Longevity Risk

Moderator:  
*Steven Haberman, Cass Business School*

Systematic Mortality Risk: An Analysis of Guaranteed Lifetime Withdrawal Benefits in Variable Annuities  
*Man Chung Fung, University of New South Wales*  
*Katja Ignatieva, University of New South Wales*  
*Michael Sherris, University of New South Wales*

Personal Care Savings Bonds - A New Way of Saving Towards Social Care in Later Life  
*Les Mayhew, Cass Business School*  
*David Smith, Cass Business School*

Intergenerational Equity and Sustainability in A Collective Defined Contribution Plan  
*Barbara Sanders, Simon Fraser University*

Credibility for Periodic Payments Such As Pension Plans  
*Charles Fuhrer, The Segal Company*

**Concurrent Session 5B**, Alter Hall 606

Risk Theory & Insurance Economics

Moderator:  
*Liang Hong, Robert Morris University*

On A Ruin Model with Both Interclaim Times and Premiums Depending on Claim Sizes  
*Zhong Li, University of Western Ontario*  
*Kristina P. Sendova, University of Western Ontario*
Discounted Moments of Surplus after the Last Innovation before Ruin under the Dual Risk Model
Chen Yang, University of Western Ontario
Kristina P. Sendova, University of Western Ontario

Ruin Analysis in a Discrete-time Sparre Andersen Model with External Financial Activities and Random Dividends
Sungsoo Kim, University of Waterloo
Steve Drekic, University of Waterloo

On Two Methods Based on Martingales and Simulation to Compute Infinite-Time Ruin Probabilities
Hélène Cossette, Université Laval
Etienne Larrivée-Hardy, Université Laval
Etienne Marceau, Université Laval
Julien Trufin, Université Laval

Risk Reducers in Convex Order
Junnan He, University of Iowa
Qihe Tang, University of Iowa
Huan Zhang, University of Iowa

Concurrent Session 5C, Alter Hall 607
Financial Analysis

Moderator:
Vytaras Brazauskas, University of Wisconsin-Milwaukee

Calibration of a Regime-Switching Interest Rate Model
James G. Bridgeman, University of Connecticut
Zepeng Xie, University of Connecticut
Xuezhi Zhang, University of Connecticut

On Optimal Periodic Dividend Strategies in the Dual Model with Diffusion
Benjamin Avanzi, University of New South Wales
Vincent Tu, University of New South Wales
Bernard Wong, University of New South Wales

An Actuarial Model of Excess of Policy Limits Losses
Neil Bodoff, Willis Re

Application of Actuarial Science to Systemic Risk in the Housing Sector
Shaun Wang, Geneva Association

12:20-13:50 Lunch, Alter Hall, 1st Floor, Ticker Area
14:00-14:50  **Plenary Session IV**, Auditorium, Alter Hall, Lower Level
Predictive Modeling

Moderator:
*Alice Underwood, Willis Re*

Panelists:
*Louise Francis, Francis Analytics*
*Kevin Pledge, Insight Decision Research*
*Dan Tevet, Insurance Services Office*

14:50-15:40  **Plenary Session V**, Auditorium, Alter Hall, Lower Level

State of the Insurance Industry
*John Andre, A.M. Best Company*

15:40-16:00  Refreshment Break, Alter Hall, 1st Floor, Ticker Area

16:00-17:20  **Concurrent Sessions 6**

**Concurrent Session 6A**, Alter Hall 237
An Open Forum on Actuarial Education

Moderator:
*Ron Gebhardtsbauer, Penn State University*

Participants:
*Mark Maxwell, University of Texas at Austin*
*Brian Hartman, University of Connecticut*

The objective of the session is to facilitate an open audience discussion where educators share their ideas about teaching and student development. Examples include innovative ideas in class projects, motivating students, grading schemes, technical writing projects, etc. We seek new techniques to motivate students, develop effective thinking skills, and improve student creativity, curiosity, and communication skills. We hope everyone leaves the discussion excited to try something new. Suggested reading: “Student Projects,” *Expanding Horizons* (Society of Actuaries, April 2013).

**Concurrent Session 6B**, Alter Hall 606
Pricing & Capital Allocation

Moderator:
*Rui Zhou, University of Manitoba*
Investors' Perspective Risk Analysis of Catastrophe Bonds  
*Thomas Nowak, University of the Federal Armed Forces in Munich*

Participating Life Insurance Contracts under Risk Based Solvency Frameworks: Increasing Capital Efficiency by Product Design  
*Andreas Reuss, Institut für Finanz-und Aktuarwissenschaften  
Jochen Russ, Institut für Finanz-und Aktuarwissenschaften and Ulm University  
Jochen Wieland, Ulm University*

On Bivariate Distributions Defined with Exponential Marginals: Aggregation and Capital Allocation  
*Hélène Cossette, Université Laval  
Etienne Marceau, Université Laval  
Samuel Perreault, Université Laval*

Improving Pension Product Design  
*Agnieszka Konicz, Technical University of Denmark  
John M. Mulvey, Princeton University*

**Concurrent Session 6C, Alter Hall 607**  
Catastrophes and Reinsurance

Moderator:  
*Mary A. Weiss, Temple University*

Catastrophe Reinsurance and Bonds: Valuation and Optimum Mix  
*Carolyn Chang, California State University Fullerton  
Jack S.K. Chang, California State University Los Angeles  
Min-The Yu, National Chiao Tung University*

Capital Tranching: A RAROC Approach to Assessing Reinsurance Cost Effectiveness  
*Donald Mango, Guy Carpenter  
John Major, Guy Carpenter*

Hidden Risks of a Credit Portfolio with Stochastic Recovery  
*Zhongyi Yuan, Pennsylvania State University*

Estimation of Models for Time Series of Counts With Stochastic Autoregressive Mean: An Application To Tropical Cyclones  
*Mathieu Boudreault, Université du Quebec a Montreal  
Jean-Philippe Boucher, Université du Quebec a Montreal  
Louis-Philippe Caron, Stockholm University*
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**August 3, Saturday**

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**Concurrent Session 7A, Alter Hall 237**
Mortality Modeling

**Moderator:**

*Michael Ludkovski, UC Santa Barbara*

Canadian Pensioners Mortality Improvement Rates by Data Source and Income: Life Expectancy and Present Value of Annuity

*Louis Adam, Université Laval*

Multi-State Actuarial Models of Functional Disability

*Joelle H. Fong, University of New South Wales*
*Adam W. Shao, University of New South Wales*
*Michael Sherris, University of New South Wales*

Comparison of Stochastic Mortality Models: Application to Turkish Mortality Data

*Funda Kul, Hacettepe University*
*Meral Sucu, Hacettepe University*

Successive Logistic Trend: An Alternative Model for Mortality Improvement in the US Population

*Andrew L. Dicus, Ge Han, and Ohoe Kim*
*Towson University*

On Basis Risk in Extreme Mortality CAT Bonds

*Rosena Chan, University of Manitoba*
*Xuemiao Hao, University of Manitoba*

**Concurrent Session 7B, Alter Hall 606**
Estimation Techniques
Moderator:
Ron Gebhardtsbauer, Penn State University

DFA with Dependency between Motor Own Damage Insurance and Compulsory Motor Insurance - The Case of Turkey
Betül Karagül, Hacettepe University
Murat Büyükyazıcı, Hacettepe University

Computing Semiparametric Bounds on the Expected Payments of Insurance Instruments via Column Generation
Robert Howley, Lehigh University
Robert Storer, Lehigh University
Luis Zuluaga, Lehigh University
Juan Vera, Tilburg University

Generalized Linear Models for a Dependent Aggregate Claims Model
Juliana Schulz, Concordia University

Modeling Dependence between Loss Triangles Using Hierarchical Archimedean Copulas
Anas Abdallah, Université Laval
Jean-Philippe Boucher, UQAM
Hélène Cossette, Université Laval

Pricing Risk through Simulation: Revisiting Tilley Bundling and Least Squares Monte Carlo Methods
Rickard Brannvall, Citigroup London
Dominic Cortis, University of Leicester
Juxi Li, University of Leicester

Concurrent Session 7C, Alter Hall 607
Risk Theory & Risk Measures

Moderator:
Runhuan Feng, University of Illinois at Urbana-Champaign

Asymptotic Expressions for the Haezendonck--Goovaerts Risk Measure with General Young Function
Fan Yang, Drake University
Qihe Tang, University of Iowa

Scoring Rules for Subjective Probability Distributions
Glenn W. Harrison, Georgia State University
Jimmy Martínez-Correa, Copenhagen Business School
J. Todd Swarthout, Georgia State University
Eric Ulm, Georgia State University
On a Risk Measure Inspired from the Ruin Probability
Ilie Mitric, Université Laval
Julien Trufin, Université Laval

Asymptotic Confidence Intervals for the Haezendonck Risk Measure
Nariankadu Shyamalkumar, University of Iowa

Ruin Probabilities in Multivariate Risk Models with Periodic Common Shock
Ionica Groparu-Cojocaru, Concordia University
Jose Garrido, Concordia University

10:10-10:30 Refreshment Break, Alter Hall, 1st Floor, Ticker Area
Taxi Signup

10:30-11:50 Concurrent Sessions 8

Concurrent Session 8A, Alter Hall 237
Issues in Health Actuarial Science

Moderator:
Robert Lieberthal, Thomas Jefferson University

Evaluating Approaches for Health Economics and Outcomes Research
Robert Lieberthal, Thomas Jefferson University
Jessica Lopatto, Thomas Jefferson University
Kate Cecil, Thomas Jefferson University
Joseph Jackson, Thomas Jefferson University

TIPS, the Triple Duration, and the OPEB Liability: Hedging Medical Care Inflation in OPEB Plans
Michael Ashton, Enduring Investments LLC

Risk Adjustment and the Patient Protection and Affordable Care Act
Marjorie Rosenberg, University of Wisconsin-Madison
Michael Wurm, University of Wisconsin-Madison

Health Care Costs--From Birth to Death
Dale Yamamoto, Red Quill Consulting

Concurrent Session 8B, Alter Hall 606
Annuities

Moderator:
Louis Adam, Université Laval
A Regime-Switching Framework for the Valuation of a Guaranteed Annuity Option
Huan Gao, University of Western Ontario
Rogemar Mamon, University of Western Ontario
Anton Tenyakov, University of Western Ontario
Xiaoming Liu, University of Western Ontario

Pricing Guaranteed Minimum Death Benefits under Stochastic Volatility and Stochastic Interest Rate
Xiao Wei, Central University of Finance and Economics
Sha Li, Central University of Finance and Economics

Portfolio Choice with Life Annuities under Probability Distortion
Wenyuan Zheng, University of Connecticut
James G. Bridgeman, University of Connecticut

A Generalized Modeling Framework for Guaranteed Annuity Options
Milos Miljanovic, University of Western Ontario
Huan Gao, University of Western Ontario
Xiaoming Liu, University of Western Ontario
Rogemar Mamon, University of Western Ontario

**Concurrent Session 8C, Alter Hall 607**
Modeling Issues
Moderator:
Krupa Viswanathan, Temple University

On Negative Option Values in Personal Savings Products
Thorsten Moenig, University of St. Thomas
Daniel Bauer, Georgia State University

Valuation of Some Contracts to Hedge Relative Maximum Drawdown
Bin Li, University of Waterloo

The Distribution of Aggregate Life Insurance Claims: The Gamma-Exponential Mix Model
Tom Edwalds, Munich Re
Ross Hilton

11:50-11:55 Closing Session
12:00 Box Lunch, Alter Hall, 1st Floor, Ticker Area