

Monday, August 10

- 09:00-09:05 a.m. **Announcement and Introduction of Dean of the College of Business**
Sue Vagts, Director of Actuarial Science at University of Nebraska-Lincoln
- 09:05-09:15 a.m. **Welcome to ARC 2020**
Kathy Farrell, Dean of the College of Business
- 09:15-09:30 a.m. **Instructions and Recognition of Sponsors**
- 09:30-10:15 a.m. **Keynote Speaker: The COVID-19 Pandemic: Updates and a Perspective**
Michael T. Osterholm, PhD, School of Public Health, University of Minnesota
Moderator: Max Rudolph, Rudolph Financial Consulting, LLC
- 10:15-10:30 a.m. **Break**
- 10:30-11:45 a.m. **Concurrent Sessions 1**

1-SIS-A Climate Data: Use & Management RT

- Moderator:** Rob Montgomery, Society of Actuaries Consultant
- Panelists:** Patrick Wiese, Society of Actuaries
David Schneider, National Center for Atmospheric Research
James Penn, Deloitte LLP
Cindy Bruyère, National Center for Atmospheric Research

1-SIS-B The Micro-Insurance Landscape TD

- Moderator:** Ida Ferrara, York University
- Panelists:** Barbara Magnoni, EA Consultants
Michael J. McCord, MicroInsurance Center at Milliman

1-SIS-C COVID-19: International Perspectives TD

- Moderator:** John Robinson, Life Insurance Regulator, Minnesota
- Panelists:** Doug Andrews, University of Waterloo
Shubhash Gosine, Duggan Associates

1-PS-A Cyber Risk

- Moderator:** Maochao Xu, Illinois State University

- 10:30-10:55 a.m. **Cyber Claim Analysis Through Generalized Pareto Regression Trees With Applications to Insurance**
Authors: Sébastien Farkas,* Sorbonne University
Olivier Lopez, Sorbonne University
Maud Thomas, Sorbonne University

Full Meeting Agenda

10:55-11:20 a.m. **Extreme Cyber Losses: An Alternative Approach to Estimating Probable Maximum Loss for Data Breach Risk**

Authors: Kwangmin Jung, * POSTECH/Drake University

11:20-11:45 a.m. **Unraveling Dependence Among Cyber Risks**

Authors: Maochao Xu, * Illinois State University

1-PS-B Post-Retirement Benefits

Moderator: Peter Hieber, University of Ulm

10:30-10:55 a.m. **AHP Application to Post-Retirement Planning and Decision-Revisited**

Authors: Marie-Claire Koissi, * University of Wisconsin- EC

Arnold F. Shapiro, Penn State University

10:55-11:20 a.m. **Tail Index-Linked Annuity: A Longevity Risk Sharing Retirement Plan**

Authors: Mark Schultze, * Ulm University

An Chen, Ulm University

Hong Li, University of Manitoba

Mark Schultze, Ulm University

11:20-11:45 a.m. **Optimal Retirement Products Under Subjective Mortality Beliefs**

Authors: Peter Hieber, * University of Ulm/Université Catholique de Louvain

An Chen, University of Ulm

Manuel Rach, University of Ulm

1-PS-C Actuarial Mathematics

Moderator: Jean-François Bégin, Simon Fraser University

10:30-10:55 a.m. **Probability of Up-Crossing Before Ruin for a Levy Process Having Two-Sided Jumps**

Authors: Mohammad Jamsheer Ali, * University of Tartu

10:55-11:20 a.m. **Analysis of Bounds for the Tail of Bivariate Compound Distributions**

Authors: Ang Li, * University of Western Ontario

Jiandong Ren, University of Western Ontario

Ricardas Zitkis, University of Western Ontario

11:20-11:45 a.m. **Do Jumps Matter in the Long Run? A Tale of Two Horizons**

Authors: Jean-François Bégin, * Simon Fraser University

Mathieu Boudreault, Université du Québec à Montréal

11:45a.m.-12:45p.m. **Lunch Break - Fun and Games**

12:45-02:00 p.m.

Concurrent Sessions 2

2-SIS-A COVID-19 Overview TD

Moderator: Rhonda Ahrens, Nebraska Department of Insurance

Panelists: Dale Hall, Society of Actuaries
Max Rudolph, Rudolph Financial Consulting, LLC

2-SIS-B US Health Care Reform Efforts: State Solutions To Stabilization Of Individual Market Premiums Through CMS Waivers RT

Moderator: Steven Konnath, Blue Cross and Blue Shield of Nebraska

Panelists: Rick Rush, GERICK
Michael Cohen, Wakely
Veronica Fontama, Kaiser Permanente

2-PS-A Actuarial Techniques for COVID-19

Moderator: Hirbod Assa, University of Liverpool

12:45-01:10 p.m.

Risk Management: Evaluating the Role of a National Risk Avoidance Policy in Limiting the Spread of Corona Virus (Perspective from Saudi Arabia)

Authors: Hany Saleh,* Mansoura University

01:10-01:35 p.m.

Insurance-by-Credit

Authors: Hirbod Assa,* University of Liverpool

2-PS-B Optimization

Moderator: Frédéric Godin, Concordia University

12:45-01:10 p.m.

Deflators and Optimal Portfolios Under Random Horizon

Authors: Sina Yansori,* CIBC
Tahir Choulli

01:10-01:35 p.m.

Mean-Variance Investment and Risk Control Strategies: A New Time-Consistent Formulation

Authors: Bin Zou,* University of Connecticut

01:35-02:00 p.m.

A Mixed Bond and Equity Fund Model for the Valuation of Segregated Fund Policies

Authors: Frédéric Godin,* Concordia University
Maciej Augustyniak, University of Montreal,
Emmanuel Hamel, Université Laval

	2-PS-C	Statistical Issues	
	Moderator:	Chudamani Poudyal, Tennessee Technological University	
12:45-01:10 p.m.		Introduction to Splines and Their Implementation in Excel	
	Authors:	Manoharareddy Ramireddy,* Maryville University Kubrom Teka, Maryville University	
01:10-01:35 p.m.		Regression Shrinkage and Selection for Actuarial Models	
	Authors:	Gee Lee,* Michigan State University	
01:35-02:00 p.m.		Estimating Longormal Insurance Payment Severity Models	
	Authors:	Chudamani Poudyal,* Tennessee Technological University	
02:00-02:15 p.m.		Break	
02:15-03:30 p.m.	Concurrent Sessions 3		
	3-SIS-A	Parametric Insurance	TD
	Moderator:	Denise Olson, Zurich North America	
	Panelists:	Jonathan Charak, Zurich North America Sebabrata Sarkar, Swiss Re Kate Stillwell, Jumpstart	
	3-SIS-B	Natural Hazards Risk Management	RT
	Moderator:	Shasta Gaughen, Pala Environmental Department	
	Panelists:	Barbara Carby, University of the West Indies-Mona Roger Pulwarty, NOAA Federal Carolyn Kousky, University of Pennsylvania Wharton School Daniel Aldrich, Northeastern University Marty D. Matlock, University of Arkansas	
	3-SIS-C	COVID-19: Life Insurance and Assets	TD
	Moderator:	Noel Harewood, Ameritas	
	Panelists:	Andrew Hallsworth, SCOR Edward Toy, Risk Regulatory Consulting	

3-PS-A Machine Learning

Moderator: Arnold Shapiro, Penn State University

02:15-02:40 p.m.

Joint Dynamic Pricing of Multiple Non-Life Perils Using Neural Networks and Telematics

Authors: Roel Henckaerts,* Katholieke Universiteit Leuven
Katrien Antonio, Katholieke Universiteit Leuven
Marie-Pier Côté, Université Laval

02:40-03:05 p.m.

Quantile Regression Mixtures for Robust Estimates of Insurance Misrepresentation

Authors: Jianxi Su,* Purdue University
Hong Li, University of Manitoba
Qifan Song, Purdue University

03:05-03:30 p.m.

Machine Learning: What Is It, What Are Its Components, and What Are Its Implications for the Insurance Industry?

Authors: Arnold Shapiro,* Penn State University

3-PS-B Variable Annuities

Moderator: Thorsten Moenig, Temple University

02:15-02:40 p.m.

Pseudo-Model-Free Hedging for Variable Annuities Via Deep Reinforcement Learning

Authors: Haoen Cui,* Georgia Institute of Technology
Wing Fung Chong, University of Illinois at Urbana-Champaign
Yuxuan Li, University of Illinois at Urbana-Champaign

02:40-03:05 p.m.

Green Nested Simulation of Variable Annuities

Authors: Jessica Dang,* University of Waterloo
Ben Feng, University of Waterloo
Mary Hardy, University of Waterloo

03:05-03:30 p.m.

Efficient Valuation of Variable Annuity Portfolios With Dynamic Programming

Authors: Thorsten Moenig,* Temple University

3-PS-C Optimization

Moderator: Silvana Pesenti, University of Toronto

02:15-02:40 p.m.

Bilateral Risk Sharing with Heterogeneous Beliefs and Exposure Constraints

Authors: Mario Ghossoub,* University of Waterloo
Tim J. Boonen, University of Amsterdam

Full Meeting Agenda

02:40-03:05 p.m. **Optimal Investment and Consumption With Forward Preferences and Uncertain Parameters**

Authors: Wing Fung Chong,* University of Illinois at Urbana-Champaign
Gechun Liang, University of Warwick

03:05-03:30 p.m. **Portfolio Optimisation Within a Wasserstein Ball**

Authors: Silvana Pesenti,* University of Toronto
Sebastian Jaimungal, University of Toronto

03:30-03:45 p.m. **Break**

03:45-05:00 p.m.

Concurrent Sessions 4

4-SIS-A Resolved: The United States Should Require That Persons in the United States Be Vaccinated if an Efficacious Covid-19 Vaccine Becomes Available DEBATE

Moderator: John Robinson, Life Insurance Regulator, Minnesota

Panelists: David Cram Helwich, Debating Coach, University of Minnesota
Brian Rubaie, Debating Coach, University of Iowa
Hamza Jamal, University of Minnesota
Allegro Wang, University of Minnesota
Elizabeth Bennett, University of Iowa
Spencer Roetlin, University of Iowa

4-PS-A Health Economics

Moderator: Ian Duncan, University of California, Santa Barbara

03:45-04:10 p.m. **Trends in Pre-Diabetes: A Longitudinal Study of a South African Cohort**

Authors: Sam Zhang,* University of California, Santa Barbara
Kyle Guan,* University of California-Santa Barbara
Lingyu Zhou,* University of California-Santa Barbara

04:10-04:35 p.m. **Polypharmacy, Medication Possession and Deprescribing of Potentially Non-Beneficial Drugs In Hospice Patients**

Authors: Ian Duncan,* University of California, Santa Barbara
Terri Maxwell, Turn-Key Health

4-PS-B Loss Reserving

Moderator: Anas Abdallah, McMaster University

03:45-04:10 p.m. **Tort Reform and Physician Moral Hazard**

Authors: Juan Zhang,* NAIC

04:10-04:35 p.m. **Macro and Micro Loss Reserves With Inflation, Discount, Trends and Dependence**

Authors: Anas Abdallah,* McMaster University
 Emmanuel Hamel, Laval University
 Ghislain Léveillé, Laval University

05:30-06:30 p.m.

Poster Session

Sensitivity Analysis With Chi-Square Divergences

Authors: Vaishno Devi Makam, University of London

Joint Generalized Quantile and Conditional Tail Expectation Regression for Insurance Risk Analysis

Authors: Albert Pitarque, University of Barcelona

Modelling Bivariate Count Data With Copula-Based Finite Mixture Models

Authors: Lluis Bermúdez, University of Barcelona

AutoSULT: An R Package for Generating Life Contingencies Problems

Authors: Chris Groendyke, Robert Morris University

Stochastic Mortality Modelling for Dependent Coupled Lives

Authors: Kira Henshaw, University of Liverpool

Actuarial Formula Predictor

Authors: Lahiru Somaratne, University of Nebraska - Lincoln

Minimizing Shootings in Multi-State and Differential Equation Models of Gun Violence

Authors: Yulong Wu, University of Michigan

Modeling Malicious Hacking Data Breach Risks

Authors: Hong Sun, Lanzhou University

Optimal Reinsurance and Investment Problem With Default Risk and Correlation for an Insurer Under the CEV Model

Authors: Yiqi Yan, Tianjin University

Robust Optimal Investment and Benefit Payment Adjustment Strategy for Target Benefit Pension Plans Under Default Risk

Authors: Hui Zhao, Tianjin University

Tuesday, August 11

08:00-09:15 a.m.

Concurrent Sessions 5

5-SIS-A Making Micro-Insurance Work for Women RT

Moderator: Katherine Baez, Barna Management School/EA Consultants/ALAS

Panelists: Sarah Ebrahimi, International Finance Corporation
Queenie Chow, MicroInsurance Center at Milliman
Gilles Renouil, Women's World Banking

5-SIS-B Cyber Risk TD

Moderator: Cindy Xu, University of Nebraska-Lincoln

Panelists: Martin Eling, University of St. Gallen
Ben Goodman, 4A Security & Compliance
Greg Thompson, Manulife
Rainer Böhme, University of Innsbruck

5-SIS-C Malaysia's National Islamic Insurance (i.e. Takaful) Scheme for the Underprivileged Group TD

Moderator: Zainal Abidin Mohd Kassim, Actuarial Partners

Panelists: Jasveen Marne, Great Eastern Takaful Berhad
Khairul Anuar Che Yeop, Great Eastern Takaful Berhad
Irene Ng, GenRe Asia

5-PS-A Mortality and Longevity

Moderator: Fei Huang, University of New South Wales

08:00-08:25 a.m.

Mortality Forecasting Using Factor Models: Time-Varying or Time-Invariant Factor Loadings?

Authors: Jianjie Shi,* Monash University
Lingyu He, Australian National University
Fei Huang, Australian National University
Yanrong Yang, Australian National University

08:25-08:50 a.m.

Tempered Pareto-Type Modelling Using Weibull Distributions

Authors: José Carlos Araujo-Acuna,* University of Lausanne
Hansjörg Albrecher, University of Lausanne
Jan Beirlant, University of the Free State

08:50-09:15 a.m. **Modelling Life Tables With Advanced Ages: An Extreme Value Theory Approach**

Authors: Fei Huang,* University of New South Wales
Ross Maller, Australian National University
Xu Ning, Australian National University

5-PS-B Long-Term Care

Moderator: Yang Shen, University of New South Wales

08:00-08:25 a.m. **Disability and Survival Among People aged 50+: The English Longitudinal Study of Ageing**

Authors: Marjan Qazvini,* Heriot-Watt University

08:25-08:50 a.m. **Demand for Reverse Mortgages: The Role of Mental Accounting and Choice Bracketing**

Authors: Tin Long Ho,* University of New South Wales
Hazel Bateman, University of New South Wales
Joshua Funder, Household Capital Pty Ltd
Katja Hanewald, University of New South Wales

08:50-09:15 a.m. **Combining Reverse Mortgage and Long-Term Care Insurance**

Authors: Yang Shen,* University of New South Wales
Michael Sherris, University of New South Wales
Ning Wang, Macquarie University
Jonathan Ziveyi, University of New South Wales

5-PS-C Demography

Moderator: Katja Hanewald, University of New South Wales

08:00-08:25 a.m. **Using Bayesian Spatiotemporal Modeling to Understand Mortality Rates in the United States**

Authors: Zoe Gibbs,* Brigham Young University
Chris Groendyke, Robert Morris University
Brian Hartman, Brigham Young University
Robert Richardson, Brigham Young University

08:25-08:50 a.m. **Age Heaping in Population Data of Emerging Countries**

Authors: Andres Barajas Paz,* Heriot-Watt University
Andrew Cairns, Heriot-Watt University
Torsten Kleinow, Heriot-Watt University

Full Meeting Agenda

08:50-09:15 a.m. **Subnational mortality modeling: Bayesian hierarchical models with common factors**

Authors: Katja Hanewald,* University of New South Wales
 Qian Lu, Renmin University of China
 Xiaojun Wang, Renmin University of China

09:15-09:30 a.m. **Break**

09:30-10:30 a.m. **Keynote Speaker: The Voluntary D.I.E.T. - How to Gain More Than You Lose and Still Feel Great**

Jeff Johnson, FSA, MAAA, Actuary, John Hancock Life Insurance Company

Moderator: John Robinson, Life Insurance Regulator, Minnesota

10:30-10:45 a.m. **Break**

10:45a.m.-12:45 p.m.

Session 6

6-SIS-A Diversity and Inclusion Panel RT

Moderator: Sharon Robinson, Zurich North America

Panelists: Adelaida Campos, Organization of Latino Actuaries President

Roy Goldman, Society of Actuaries President Elect

Mallika Bender, Co-Chair of Joint Casualty Actuarial Society/Society of Actuaries Committee on Inclusion, Equity and Diversity

Jason Leppin, Actuarial Foundation Executive Director

Jacque Friedland, Canadian Institute of Actuaries President Elect

Dwayne Husbands, International Association of Black Actuaries President Elect

Shawna Ackerman, American Academy of Actuaries Immediate Past President

12:45-01:00 a.m. **Break**

01:00-02:15 p.m.

Concurrent Sessions 7

7-SIS-A Impact of Climate Change on Vulnerable Populations RT

Moderator: Jesse Bell, University of Nebraska Medical Center

Panelists: Maxine Burkett, University of Hawai'i-Mānoa

Jesse Bell, University of Nebraska Medical Center

Marty D. Matlock, University of Arkansas

Jeniffer Hanna Collado, Dominican Republic

Nicolette Elvira Cooley, Northern Arizona University

7-SIS-B Being an Actuary RT

Moderator: John Robinson, Life Insurance Regulator, Minnesota

Panelists: Mischelle Schweickert, Kaiser Permanente
Eric Atwater, Aon
Jennifer Middough, Liberty Mutual
Brian Hartman, Brigham Young University

7-PS-A Actuarial Modeling

Moderator: Chau Lung Ngan Spark Tseung, University of Toronto

01:00-01:25 p.m.

On the Cost of Misspecifying Risk Categories in Pricing

Authors: Dina Finger,* University of Lausanne
Hansjoerg Albrecher, University of Lausanne

01:25-01:50 p.m.

Deep Hedging of Long-Term Derivatives: A Numerical Study

Authors: Alexandre Carbonneau,* Concordia University

01:50-02:15 p.m.

LRMoE: An R Package for Flexible Actuarial Loss Modelling Using Mixture of Experts Regression Model

Authors: Chau Lung Ngan Spark Tseung,* University of Toronto
Andrei Badescu, University of Toronto
Tsz Chai Fung, University of Toronto
Sheldon Lin, University of Toronto

7-PS-B Mortality and Longevity

Moderator: Hong Li, University of Manitoba

01:00-01:25 p.m.

Local Modeling of U.S. Mortality Rates: A Multiscale Geographically Weighted Regression Approach

Authors: Kyran Cupido,* St. Francis Xavier University
A.Stewart Fotheringham, Arizona State University
Petar Jevtic, Arizona State University

01:25-01:50 p.m.

Unravelling the Contribution of Financial and Longevity Risks to Changes Over Time in Life Annuities

Authors: Jesus-Adrian Alvarez,* University of Southern Denmark
Andres M. Villegas, University of New South Wales Business School

01:50-02:15 p.m.

Forecasting Mortality With International Linkages: A Global Vector-Autoregression Approach

Authors: Hong Li,* University of Manitoba
Yanlin Shi, Macquarie University

	7-PS-C	Actuarial Risk Theory	
	Moderator:	Corina Constantinescu, University of Liverpool	
01:00-01:25 p.m.		Ruin Probabilities for Generalisations of Cox-Renewal Risk Processes Via Time Change	
	Authors:	Ronnie Loeffen,* University of Manchester	
01:25-01:50 p.m.		Ruin and Dividend Measures in the Renewal Dual Risk Model	
	Authors:	Renata Alcoforado,* Universidade de Lisboa Agnieszka I. Bergel, Universidade de Lisboa Alfredo D. Egidio dos Reis, Universidade de Lisboa Rui M. R. Cardoso, Universidade Nova de Lisboa Eugenio V. Rodriguez-Martinez, Universidade de Lisboa	
01:50-02:15 p.m.		A Ruin Model With a Resampled Environment	
	Authors:	Corina Constantinescu,* University of Liverpool Michel Mandjes, University of Amsterdam Leonardo Rojas-Nandayapa, University of Liverpool Guusje Delsing, University of Amsterdam	
02:15-02:30 p.m.		Break	
02:30-03:45 p.m.	Concurrent Sessions 8		
	8-SIS-A	Climate Finance	RT
	Moderator:	Thomas Singh, University of Guyana	
	Panelists:	Michael A. Goldstein, Babson College Steve Kolk, Kolkulations LLC Didier Serre Ruah, Analysis Group Rade Musulin, Finity Consulting	
	8-SIS-B	The Impact of COVID-19 on Health Care Utilization: Commercial, Medicare and Medicaid	RT
	Moderator:	Gopi Shah Goda, Stanford University	
	Panelists:	Steven Konnath, Blue Cross & Blue Shield of Nebraska Sabrina Gibson, Centene Erik Anderson, Humana	

	8-PS-A	Financial Mathematics
	Moderator:	Ruodu Wang, University of Waterloo
02:30-02:55 p.m.		Convolution Bounds on Quantile Aggregation
	Authors:	Yang Liu,* Tsinghua University Ruodu Wang, University of Waterloo
02:55-03:20 p.m.		A Comprehensive Framework for Flexible Group Benefit Plans
	Authors:	Cherie Ng,* Simon Fraser University Jean-François Bégin, Simon Fraser University Barbara Sanders, Simon Fraser University
03:20-03:45 p.m.		Some Recent Theories for the Expected Shortfall (TVaR)
	Authors:	Ruodu Wang,* University of Waterloo
	8-PS-B	Predictive Modeling
	Moderator:	Margie Rosenberg, University of Wisconsin-Madison
02:30-02:55 p.m.		Benchmarking Predictive Models for Insurance Pricing: A Story of Black Boxes and Surrogate Models
	Authors:	Marie-Pier Côté,* Université Laval Roel Henckaerts, Katholieke Universiteit Leuven Katrien Antonio, Katholieke Universiteit Leuven
02:55-03:20 p.m.		A Posteriori Ratemaking Using the Bivariate Negative Binomial-Inverse Gaussian Regression Model
	Authors:	George Tzougas,* London School of Economics A. Pignatelli di Cerchiara, London School of Economics
03:20-03:45 p.m.		Predicting the Highest Health Care Utilizers Using Clustering Methods
	Authors:	Margie Rosenberg,* University of Wisconsin-Madison Fanghao Zhong, New York University
	8-PS-C	Variable Annuities
	Moderator:	Wenchu Li, Temple University
02:30-02:55 p.m.		High-Water Mark Fee Structure in Variable Annuities
	Authors:	Yumin Wang,* University of Waterloo David Landriault, University of Waterloo Bin Li, University of Waterloo Dongchen Li, University of St. Thomas

Full Meeting Agenda

02:55-03:20 p.m. **Accommodation or Obfuscation? Product Innovation in the Variable Annuities Market**

Authors: Xiaochen Jing,* University of Wisconsin-Madison
Daniel Bauer, University of Wisconsin-Madison

03:20-03:45 p.m. **Basis Risk in Variable Annuities**

Authors: Wenchu Li,* Temple University
Thorsten Moenig, Temple University
Maciej Augustyniak, University of Montreal

03:45-04:00 p.m. **Break**

04:00-05:15 p.m. **Concurrent Sessions 9**

9-SIS-A Medicaid Deep Dive: The Impact of COVID-19 on Medicaid Enrollment, Access, and Key Services for People With Disabilities TD

Moderator: Mary Hegemann, Wakely
Panelists: Julia Lerche, NC Medicaid
Ellen Breslin, Health Management Associates
Allison Orris, Manatt Health

9-SIS-B Impact of COVID-19 on P&C Markets: North America and International RT

Moderator: Ian Sterling, KPMG
Panelists: Ian Sterling, KPMG
Bill Van Dyke, Deloitte
Brian Fannin, Casualty Actuarial Society
Volker Kudzusz, S&P Global
Jefferson Gibbs, KPMG

9-PS-A Actuarial Techniques for COVID-19

Moderator: Michael Ludkovski, University of California, Santa Barbara

04:00-04:25 p.m. **Pandemic Risk Management: Resources Contingency Planning and Allocation**

Authors: Runhuan Feng,* University of Illinois at Urbana-Champaign
Xiaowei Chen, Nankai University
Wing Fung Chong, University of Illinois at Urbana-Champaign
Linfeng Zhang, University of Illinois at Urbana-Champaign

- 04:25-04:50 p.m. **Gaussian Process Modeling for Covid-19 Excess Deaths**
Authors: Michael Ludkovski,* University of California, Santa Barbara
 Nhan Huynh, University of California, Santa Barbara
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- 9-PS-B Cyber Risk**
Moderator: Petar Jevtic, Arizona State University
- 04:00-04:25 p.m. **Statistical Modeling of Data Breaches and Its Application in Cyber Insurance**
Authors: Meng Sun,* Simon Fraser University
 Yi Lu, Simon Fraser University
- 04:25-04:50 p.m. **(Self-)Insurance of Social Networks: Dynamic Structural Percolation Model of Loss Distribution on Erdős-Rényi graphs**
Authors: Petar Jevtic,* Arizona State University
 Nicolas Lanchier, Arizona State University
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- 9-PS-C General Insurance**
Moderator: Michael Sherris, University of New South Wales
- 04:00-04:25 p.m. **Peer-to-Peer Multi-Risk Insurance and Mutual Aid**
Authors: Samal Abdikerimova,* University of Illinois at Urbana-Champaign
 Runhuan Feng, University of Illinois at Urbana-Champaign
- 04:25-04:50 p.m. **Demand for Non-Life Insurance under Habit Formation**
Authors: Wenyuan Li,* University of Waterloo
 Ken Seng Tan, Nanyang Technological University
 Pengyu Wei, University of Waterloo
- 04:50-05:15 p.m. **Developments in Multi-Factor and Multi-Cohort Continuous Time Mortality Modelling**
Authors: Michael Sherris,* University of New South Wales
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- 05:30-06:30 p.m. **Henry Doorly Zoo Backstage Virtual Tour Sponsored by Ameritas**

Wednesday, August 12

07:30-08:45 a.m.

Concurrent Sessions 10

10-SIS-A Micro-Insurance: Case Studies and Lessons Learned RT

Moderator: Luis Arcila, MAPFRE - Peru

Panelists: Lisa Morgan, ILO
Katharine Pulvermacher, MicroInsurance Network
Richard Leftley, MicroEnsure
Saurabh Sharma, MicroInsurance at Britam

10-PS-A Actuarial Risk Theory

Moderator: Jae Youn Ahn, Ewha Womans University

07:30-07:55 a.m.

Dividend Barrier Strategies in a Renewal Risk Model With Phase-Type Distributed Interclaim Times

Authors: Linlin Tian,* Nankai University
Zhaoyang Liu, Nankai University

07:55-08:20 a.m.

Testing for Random Effects in Compound Risk Models via Bregman Divergence

Authors: Himchan Jeong,* Simon Fraser University

08:20-08:45 a.m.

Collective Risk Model: Choices Between Historical Frequency and Aggregate Severity.

Authors: Jae Youn Ahn,* Ewha Womans University
Rosy oh, Ewha Womans University
Youngju Lee, Ewha Womans University
Dan Zhu, Monash University

10-PS-B Actuarial Modeling

Moderator: Biju Mathew, Malabar Christian College

07:30-07:55 a.m.

A Generalized Linear Model for Bush Fire Insurance in Australia

Authors: Kevin Fergusson,* University of Melbourne

07:55-08:20 a.m.

Generalized Risk-Based Premiums for Insurance Guaranty Schemes

Authors: Gaeun Lee,* Sungkyunkwan University
Hangsuck Lee, Sungkyunkwan University
Seongju Song, Korea University

08:20-08:45 a.m.

What Determines Life Insurance Lapsation in Kerala, India?

Authors: Biju Mathew,* Malabar Christian College
S. Sunitha, NIT Calicut

	10-PS-C	Quantitative Risk Management	
	Moderator:	Rosy Oh, Ewha Womans University	
07:30-07:55 a.m.		Monte Carlo Valuation of Future Annuity Contracts	
	Authors:	Fabio Viviano,* University of Udine Anna Rita Bacinello, University of Trieste Pietro Millosovich, University of London	
07:55-08:20 a.m.		Optimal Reinsurance to Minimize the Probability of Drawdown Under the Mean-Variance Premium Principle	
	Authors:	Xia Han,* Nanjing Normal University Zhibin Liang, Nanjing Normal University Virginia R. Young, University of Michigan	
08:20-08:45 a.m.		On Copula-based Collective Risk Models:from Elliptical Copulas to Vine Copulas	
	Authors:	Rosy Oh,* Ewha Womans University Jae Youn Ahn, Ewha Womans University Woojoo Lee, Seoul National University	
08:45-09:00 a.m.		Break	
09:00-10:00 a.m.		Keynote Speaker: Longevity Risk and COVID-19: A Model for the Future	
		Amy Kessler, SVP and Head of Longevity Risk Transfer, Prudential Retirement	
	Moderator:	Yijia Lin, University of Nebraska-Lincoln	
10:00-10:15 a.m.		Break	
10:15-11:30 a.m.	Concurrent Sessions 11		
	11-SIS-A	Agriculture Insurance	RT
	Moderator:	Cory Walters, University of Nebraska-Lincoln	
	Panelists:	Cory Walters, University of Nebraska-Lincoln Kwasi Etu-Bonde, Agribusiness and Rural Development Consultant Colby D. Duren, University of Arkansas David Hennessy, Michigan State University George Kuria, ACRE Africa Collin Olsen, US RMA Topeka Tara Chiu, University of California Davis	

	11-SIS-B	Professionalism:Being an Actuary - Beyond the Mathematics	TD
	Moderator:	Sarah Christiansen, Insurance Strategies Consulting	
	Panelists:	Warren Luckner, University of Nebraska-Lincoln (Emeritus)	
	11-SIS-C	New Tools New Opportunities	TD
	Moderator:	John Robinson, Life Insurance Regulator, Minnesota	
	Panelists:	Sam Wehner, Actuarial Resources Corporation Ronald Richman, QED Actuaries & Consultants Mike Ludkovski, University of California, Santa Barbara	
	11-PS-A	Financial Mathematics	
	Moderator:	Tim J. Boonen, University of Amsterdam	
10:15-10:40 a.m.		Haezendonck-Goovaerts Capital Allocation Rules	
	Authors:	Gabriele Canna,* Università di Milano-Bicocca Francesca Centrone, Università del Piemonte Orientale Emanuela Rosazza Gianin, Università di Milano-Bicocca	
10:40-11:05 a.m.		Predicting the Time for the Highest Gain for the Money Makers	
	Authors:	Mian Adnan,* Bowling Green State University	
11:05-11:30 a.m.		Insurance With Heterogeneous Preferences	
	Authors:	Tim J. Boonen,* University of Amsterdam Fangda Liu, University of Waterloo	
	11-PS-B	Predictive Modeling	
	Moderator:	Brian Hartman, Brigham Young University	
10:15-10:40 a.m.		Inference on Latent Factor Models for Informative Censoring	
	Authors:	Francesco Ungolo,* Technische Universiteit Eindhoven Edwin R. van den Heuvel, Technische Universiteit Eindhoven	
10:40-11:05 a.m.		Discrimination-Aware Decisions in Finance and Insurance	
	Authors:	Carlos Araiza,* University of Waterloo Mary Hardy, University of Waterloo Paul Marriott, University of Waterloo	

11:05-11:30 a.m. **Synthesizing Property & Casualty Ratemaking Datasets using Generative Adversarial Networks**

Authors: Brian Hartman,* Brigham Young University
Marie-Pier Cote, Universite Laval
Olivier Mercier, Universite Laval
Joshua Meyers, Brigham Young University

11-PS-C Life Insurance

Moderator: Xun Zhang, Central University of Finance and Economics

10:15-10:40 a.m. **Is There Structural Exploitation in Life Settlement Market?**

Authors: Yujia Zhang,* Renmin University of China
Wing Fung Chong, University of Illinois at Urbana-Champaign
Runhuan Feng, University of Illinois at Urbana-Champaign
Li Wei, Renmin University of China

10:40-11:05 a.m. **Hedge Interest Rate Risk: Evidence from U.S. Life Insurance Industry**

Authors: Qianlong Liu,* Georgia State University

11:05-11:30 a.m. **Asset-Liability Management of Life Insurers in the Negative Interest Rate Environment**

Authors: Xun Zhang,* Central University of Finance and Economics
Yijia Lin, University of Nebraska-Lincoln
Sheen Liu, Washington State University
Ken Seng Tan, Nanyang Technological University

11:30a.m.-12:00p.m. **Announcements, Invitation to ARC 2021, etc...**

12:00-01:00 p.m. **Lunch Break, Comments from CAS and SOA Presidents starting at 12:10**

01:00-02:15 p.m. **Concurrent Sessions 12**

12-SIS-A Blockchain/Smart Contracts

RT

Moderator: Petar Jevtic, Arizona State University

Panelists: Melanie J. Cutlan, Accenture
David Riker, Multisided Ventures
Asha Vellaikal, Marsh Digital
Gary Marchant, Arizona State University
Jon Godfread, North Dakota Insurance Commissioner

	12-SIS-B	Social and Racial Inequities in Health	TD
	Moderator:	Roy Machamire, Kaiser Permanente	
	Panelists:	Julia Raifman, Boston University School of Public Health Isaac Edrah, Deloitte Cornell P. Wright, NC Office of Minority Health and Health Disparities Dejun Su, University of Nebraska Medical Center Edward Fox, National Indian Health Board Sade Kosoko-Lasaki, Creighton University	
	12-PS-A	Machine Learning	
	Moderator:	Marie-Claire Koissi, University of Wisconsin- EC	
01:00-01:25 p.m.		Data Augmentation for Improving Telematics based Risk Evaluation	
	Authors:	Sak Lee,* University of Iowa Nariankadu D. Shyamalkumar, University of Iowa	
01:25-01:50 p.m.		A Machine Learning Approach to Incorporating Industry Mortality Table Features Into a Company's Insured Mortality Analysis	
	Authors:	Marc Vincelli,* SCOR	
01:50-02:15 p.m.		Emerging Data Analytics Techniques With Actuarial Applications	
	Authors:	Marie-Claire Koissi,* University of Wisconsin- EC Herschel Day, University of Wisconsin- EC Vicki Whitedge, University of Wisconsin- EC Su Qian Ng, University of Wisconsin - EC	
	12-PS-B	Mortality and Longevity	
	Moderator:	Thomas Bernhardt, University of Michigan	
01:00-01:25 p.m.		Adjusting for IBNR in Life Settlements Mortality Using Cure Rate Models	
	Authors:	Hong Beng Lim,* University of Iowa N.D. Shyamalkumar, University of Iowa	
01:25-01:50 p.m.		Stacked Regression Ensemble Learning for Mortality Forecasting	
	Authors:	Salvatory Kessy,* University of New South Wales Andres M Villegas Ramirez, University of New South Wales	
01:50-02:15 p.m.		The Exact Number of Members that Remove Idiosyncratic Mortality Risk In Pooled Annuity Funds	
	Authors:	Thomas Bernhardt,* University of Michigan Catherine Donnelly, Heriot-Watt University	
	12-PS-C	Professional Actuarial Education	
	Moderator:	Stuart Klugman, Society of Actuaries	

01:00-01:25 p.m.	Academic Integrity in the Time of COVID-19 Authors: Diana Skrzydlo,* University of Waterloo
01:25-01:50 p.m.	Enhancing the Utility of Complex Tables in Actuarial Teaching Authors: Russell Hendel,* Towson University
01:50-02:15 p.m.	Society of Actuaries Education Update Authors: Stuart Klugman,* Society of Actuaries
02:15-02:30 p.m.	Break
02:30-03:45 p.m.	Concurrent Sessions 13
	13-SIS-A COVID-19 – Retirement/Individual Impact TD
	Moderator: Steve Siegel, Society of Actuaries
	Panelists: Anna Rappaport, Anna Rappaport Consulting Carol Bogosian, CAB Consulting
03:45-04:00 p.m.	Break
04:00-04:30 p.m.	Closing Ceremony

Note:

1. All events are listed in North American Central Time Zone (CDT).
2. SIS = Special Invited Session and PS = Parallel Session.
3. RT = Round Table Format and TD = Traditional Slide Presentation Format.
4. For PS, "*" Denotes the presenter or poster presenter.

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Science

[Li-Jing Li \(co-leader\)](#)

Graduate Student, Actuarial Science

[XueYao Qi \(co-leader\)](#)

Senior, Actuarial Science and
Finance

[Chengjie Tang \(co-leader\)](#)

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[Noelle Mware](#)

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[Doris Kedou Ngabgna](#)

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Junior, Actuarial Science

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