

# YANXIN LIU

## CONTACT INFORMATION

---

Department of Finance  
University of Nebraska-Lincoln  
Lincoln, NE, USA 68588

Phone: +1-(402)-472-2629  
E-mail: yanxin.liu@unl.edu

## EMPLOYMENT

---

- **Assistant Professor** in Actuarial Science, University of Nebraska-Lincoln. 08/2016 - present

## EDUCATION

---

- **PhD** in Actuarial Science, University of Waterloo, Canada. 09/2012 - 08/2016  
– Supervisor: Johnny Siu-Hang Li
- **MMath** in Actuarial Science, University of Waterloo, Canada. 09/2011 - 08/2012  
– Supervisor: Johnny Siu-Hang Li
- **BEC** in Statistics, Jinan University, Guangdong, China. 09/2007 - 08/2011

## ACTUARIAL CREDENTIAL

---

- Associate of the Society of Actuaries (ASA), Society of Actuaries 03/2019 - present

## RESEARCH INTERESTS

---

- Mortality modeling and forecasting, mortality-linked security pricing, mortality/longevity risk measurement and management, structural time series.

## PUBLICATIONS

---

- [1] Liu, Y. and Li, J.S.-H., 2019. An efficient method for mitigating longevity value-at-risk. *The North American Actuarial Journal*, Forthcoming.
- [2] Kang, M., Liu, Y., Li, J.S.-H. and Chan, W.-S., 2018. Mortality forecasting for multiple populations: An augmented common factor model with a penalized log-likelihood. *Communications in Statistics Case Studies and Data Analysis*, 4:3-4, 118-141.
- [3] Liu, Y. and Li, J.S.-H., 2018. A strategy for hedging risks associated with period and cohort effects using q-forwards. *Insurance: Mathematics and Economics*, 78: 267-285.
- [4] Liu, Y. and Li, J.S.-H., 2017. The locally-linear Cairns-Blake-Dowd model: A note on delta-nuga hedging of longevity risk. *ASTIN Bulletin* 47: 79-151.
- [5] Liu, Y. and Li, J.S.-H., 2016. It's all in the hidden states: A longevity hedging strategy with an explicit measure of population basis risk. *Insurance: Mathematics and Economics* 70: 301-319.
- [6] Liu, Y. and Li, J.S.-H., 2015. The age pattern of transitory mortality jumps and its impact on the pricing of catastrophic mortality bonds. *Insurance: Mathematics and Economics* 64: 135-150.
- [7] Liu, Y., Li, J.S.-H. and Ng, A.C.-Y., 2015. Option pricing under GARCH models with Hansen's skewed-t distributed innovations. *North American Journal of Economics and Finance* 31: 108-125.

## WORK IN PROGRESS

---

- [1] Li, J.S.-H., Zhou, R., Liu, Y., Graziani, G., Hall, D., Haid, J., Peterson, A., and Pinzur, L., 2018. Drivers of mortality dynamics: Identifying age/period/cohort components of historical U.S. mortality improvements. Revised and Resubmitted.
- [2] Li, J.S.-H., and Liu, Y., 2018. The Heat Wave Model for Constructing Two-Dimensional Mortality Improvement Scales with Measures of Uncertainty. Revised and Resubmitted.
- [3] Li, J.S.-H., Liu, Y., and Chan, W.-S., 2018. Hedging Longevity Risk under Non-Gaussian State-Space Stochastic Mortality Models: A Mean-Variance-Skewness-Kurtosis Approach. Submitted.
- [4] Liu, Y., and Li, J.S.-H., 2019. Recent Declines in Life Expectancy: Implication on Longevity Risk Hedging.
- [5] Liu, Y., Li, J.S.-H. and Ng, A.C.-Y., 2017. Market consistent valuation and hedging under Solvency II: A dual-layered canonical approach.
- [6] Liu, Y. and Li, J.S.-H., 2017. Disentangling mortality trend risk and population basis risk: A functional time-series approach.

## RESEARCH PROJECT

---

- [1] Li, J.S.-H., and Liu, Y., 2018. Constructing Two-Dimensional Mortality Improvement Scales for Canadian Pension Plans and Insurers: A Stochastic Modeling Approach.
  - Published on <http://www.cia-ica.ca/publications/publication-details/219015>
- [2] Li, J.S.-H., Zhou, R. and Liu, Y., 2017. Components of historical mortality improvement.
  - Published on <https://www.soa.org/research-reports/2017/2017-comp-hist-mort-impr/>

## CONFERENCE PRESENTATIONS

---

1. “Recent Declines in Life Expectancy: Implication on Longevity Risk Hedging”.
  - Presented at the Sixteenth International Longevity Risk and Capital Markets Solutions Conference, Washington, USA, September 12, 2019.
2. “The Heat Wave Model for Constructing Two-Dimensional Mortality Improvement Scales with Measures of Uncertainty”.
  - Presented at the 2019 China International Conference on Insurance and Risk Management, Chengdu, China, July 19, 2019.
3. “Disentangling mortality trend risk and population basis risk: A functional time-series approach”.
  - Presented at the Twelfth International Longevity Risk and Capital Markets Solutions Conference, Chicago, USA, September 29, 2016.
4. “It’s all in the hidden states: A hedging method with an explicit measure of population basis risk”.
  - Presented at the Eleventh International Longevity Risk and Capital Markets Solutions Conference, Lyon, France, September 9, 2015.
5. “The locally-linear Cairns-Blake-Dowd model: A note on delta-nuga hedging of longevity risk”.
  - Presented at the Tenth International Longevity Risk and Capital Markets Solutions Conference, Santiago, Chile, September 4, 2014.
  - Presented at the Graduate Student Research Conference, University of Waterloo, Waterloo, Canada, November 4, 2014.

6. “The age pattern of transitory mortality jumps and its impact on the pricing of catastrophic mortality bonds”.
  - Presented at the 18th International Congress on Insurance: Mathematics and Economics, Shanghai, China, July 10, 2014.
7. “A Mortality Model with Transitory Multi-age Jump Effects and its Application”.
  - Presented at the Graduate Student Research Conference, University of Waterloo, Waterloo, Canada, September 30, 2013.

## SERVICE

---

- Reviewer for The *Journal of Risk and Insurance*, *Insurance: Mathematics and Economics*, and The *North American Actuarial Journal*.
- Organizer of the 2019-20 Snell Actuarial Science and Risk Management Seminar Series.

## TEACHING EXPERIENCE

---

### Assistant Professor, University of Nebraska-Lincoln

- ACTS 430/830: Actuarial Applications of Applied Statistics Fall 2016, 2017, 2018
- ACTS 470: Life Contingencies I Spring 2017, 2018, 2019

### Guest Lecturer, University of Waterloo

- ACTSC 991: Topics in Actuarial Science - Managing Longevity Risk Winter 2015

### Head Teaching Assistant, University of Waterloo

- MTHEL 131: Intro to Actuarial Practice Winter 2015, Winter/Fall 2014, Fall 2013

### Teaching Assistant, University of Waterloo

- ACTSC 431: Loss Models 1 Fall 2015
- ACTSC 432: Loss Models 2 Spring 2014
- ACTSC 445: Quantitative Risk Management Spring 2013
- ACTSC 231: Mathematics of Finance Spring 2013, Fall 2012, Fall 2011
- ACTSC 462: Intro Prop & Casualty Pricing Winter 2013
- ACTSC 232: Intro to Actuarial Mathematics Winter 2013, Spring 2012
- ACTSC 471: Advanced Corporate Finance Fall 2012
- ACTSC 331: Life Contingencies 1 Spring 2012
- MTHEL 131: Intro to Actuarial Practice Fall 2011

## AWARDS AND SCHOLARSHIPS

---

- Graduate Research Studentship, University of Waterloo 2013 - 2016
- International Doctoral Student Award, University of Waterloo 2012 - 2016
- Mathematics Graduate Experience Award, University of Waterloo 2011 - 2016
- Statistics & Actuarial Science Chair’s Award, University of Waterloo 2011 - 2016

- Institute for Quantitative Finance & Insurance Scholarship, University of Waterloo 2013, 2014
- International Masters Student Award, University of Waterloo 2011, 2012
- National Scholarship, China 2010
- Scholarship for Outstanding Students, Jinan University 2007, 2008, 2009

## STATUS AND COMPLETE HISTORY OF THE WORKING PAPERS

---

- [1] Li, J.S.-H., Zhou, R., Liu, Y., Graziani, G., Hall, D., Haid, J., Peterson, A., and Pinzur, L., 2018. Drivers of mortality dynamics: Identifying age/period/cohort components of historical U.S. mortality improvements. Revised and Resubmitted.
  - First submitted to NAAJ on May 2018
  - Revised and Resubmitted.
  
- [2] Li, J.S.-H., and Liu, Y., 2018. The Heat Wave Model for Constructing Two-Dimensional Mortality Improvement Scales with Measures of Uncertainty. Revised and Resubmitted.
  - First submitted to IME on November 2018
  - Revised and Resubmitted.
  
- [3] Li, J.S.-H., Liu, Y., and Chan, W.-S., 2018. Hedging Longevity Risk under Non-Gaussian State-Space Stochastic Mortality Models: A Mean-Variance-Skewness-Kurtosis Approach. Submitted.
  - First submitted to the Journal of Econometrics on October 2018
  - Under Review.
  
- [4] Liu, Y., and Li, J.S.-H., 2019. Recent Declines in Life Expectancy: Implication on Longevity Risk Hedging.
  - In progress.
  
- [5] Liu, Y., Li, J.S.-H. and Ng, A.C.-Y., 2017. Market consistent valuation and hedging under Solvency II: A dual-layered canonical approach.
  - In progress.
  
- [6] Liu, Y. and Li, J.S.-H., 2017. Disentangling mortality trend risk and population basis risk: A functional time-series approach.
  - In progress.