

CURRENT SOA RESEARCH PROJECT INVENTORY (September 2009)

FINANCE PROJECTS

Modeling Collateralized Debt Obligations (FP160) — The project will introduce a methodology for modeling Collateralized Debt Obligations (CDO) and Collateralized Mortgage Obligations (CMO) markets. Researchers: Gibraltar Analytical. (Contact: Steve Craighead)

The Subprime Mortgage Crisis and Lessons for Insurers – Report 1 (FP161) – The projects will evaluate and gauge the impact of the subprime mortgage crisis on insurers and what can be learned from it for future financial and risk management. (Contact: John Nigh)

The Subprime Mortgage Crisis and Lessons for Insurers – Report 2 (FP161) – The projects will evaluate and gauge the impact of the subprime mortgage crisis on insurers and what can be learned from it for future financial and risk management. (Contact: John Nigh)

RISK MANAGEMENT PROJECTS

Corporate Reputational Risk and Enterprise Risk Management: An Analysis from the Perspectives of Various Shareholders (ERM104) — The research team will examine the effect of ERM adoption on a firm's reputation as viewed through various stakeholders. **This project is now complete and will be removed from future reports.** Researchers: Donald Pagach and Richard Warr, NC State University. (Contact: Steven Siegel)

Exploration of Reputational Risk from the Perspective of a Variety of Stakeholders (ERM105) — The research team will survey business professionals about aspects of reputational risk from a number of perspectives. Researchers: Greg Young, NC State University. (Contact: Steven Siegel)

Determinants of Insurer's Reputational Loss: Operational Loss Event Study (ERM106) — The research team will identify key factors affecting reputational loss arising from operational loss events experienced by US domiciled insurers. Researchers: Shinichi Kamiya, Joan Schmit and Marjorie Rosenberg, U of WI. (Contact: Steven Siegel)

Operational Risk for Insurers within an ERM Framework (ERM107) – This project evaluates and gauges the impact of operational risk and how it can be managed under an ERM framework. Researchers: Towers Perrin (Contact: Steven Siegel)

Operational Risk Characteristics & Risk-Return Trade-Off (ERM111) – This project presents operational risk models and their use in corporate settings. Researcher: Dr. Madhu Acharyya. (Contact: Steven Siegel)

Reflecting Risk in Pricing Survey RFP (ERM112) - Update to the Risk Management Task Force's Reflecting Risk in Pricing Survey. (Contact: Steven Siegel)

A Study of International Solvency Regimes (ERM113) – This project compares and contrasts the frameworks provided by RBC vs. Solvency 2. Researchers: Mary Hardy and Ishmael Sharara. (Contact: Steven Siegel)

2010 ERM Symposium Call for Papers (ERM114) - This call for papers was issued in conjunction with the 2010 Enterprise Risk Management (ERM) Symposium to expand knowledge in this area. (Contact: Steven Siegel)

Actuarial Climate Change Volatility Index (ACVI) (ERM115) - This is a joint project of the CIA, CAS, SOA, and AAA to develop an index to help raise awareness of the potential risks associated with climate change and the risk management implications within North America and globally. Researchers: To Be Determined, Partners: CAS, CIA, AAA. (Contact: Caterina Lindeman)

HEALTH PROJECTS

Data Mining Based Risk Adjustment Techniques (HP154) — The objective of this project is to develop new techniques using knowledge management and data mining tools applied to predictive modeling. Researcher: Yair Babad. (Contact: Steven Siegel)

Evaluation of IBNR Methods for Medical Claims (HP156) — An analysis of commonly used methods for calculating IBNR with a ranking of their accuracy and guide for their most appropriate use will be produced. Researcher: Lewis & Ellis. (Contact: John Stenson)

Benefit Offsets for Disability Income Products (HP158) – Report 1 — The project will review and critique approaches used to determine and reflect benefit offsets for disability income product valuation and pricing. **This report is now complete and will be removed from future updates.** Researcher: Milliman, Inc. (Contact: Steven Siegel)

Benefit Offsets for Disability Income Products (HP158) – Report 2 — The project will review and critique approaches used to determine and reflect benefit offsets for disability income product valuation and pricing. Researcher: Milliman, Inc. (Contact: Steven Siegel)

Wear-off of Underwriting on Long Term Care Products (HP161) — This project will develop an ultimate table of morbidity incidence rates and claims costs and related select-and-ultimate factors by issue age, gender and marital status. **This project is canceled and will be removed from further updates.** Researcher: Thau, Inc. (Contact: Steven Siegel)

Quality and Efficiency in Health Care Call for Papers (HP162) – This call for papers explores quality and efficiency in health care from a variety of perspectives. **This project is now complete and will be removed from future reports.** (Contact: Joan Barrett)

Healthcare and ERM (HP164) – This request for proposals was issued to evaluate the current state of practice of enterprise risk management for health organizations. Survey responses have been collected and are being analyzed by the researcher. Researcher: Max Rudolph. (Contact: Steven Siegel)

Model-Based Analysis of Factors That Drive Long-Term Disability Submitted Incidence Rates (HP166) – The objective of this project is to model Social Security incidence rates using Auto-Regressive Integrated Moving Average (ARIMA) modeling. Researcher: Bruce Andrews, University of Southern Maine. (Contact: Steven Siegel)

Quality Initiative Review and Analysis (HP167) – This project consists of two parts. Part one is looking at organizations and published items as related to the quality and efficiency of health care. Part two, if pursued, will look at Part One findings from an actuarial perspective. Researcher: Ian Duncan and Greger Vigen. (Contact: Joan Barrett)

The Economic Consequences of Medical Errors (HP168) – This request for proposals is looking for researchers to estimate the direct and indirect costs of medical errors to the US health care system and the overall US economy. (Contact: Steven Siegel)

Stop Loss Data Analysis – 2009 (HP169) - This project entails preparation of data collected by the Academy's Stop Loss Work Group for creation of a new stop loss probability model. Researcher: Steven Siegel. (Contact: Eric Smithback)

LIFE INSURANCE PROJECTS

The Effect of Pandemic Influenza on U.S. Mortality and Morbidity (LP138) — The goal of this project is to produce a report that summarizes current research on this topic and develop morbidity and mortality rates assuming a pandemic influenza has occurred. Researcher: Jim Toole, MBA Actuaries. Partners: Risk

Management Section's Research Team, and Health Section. (Contact: Tom Edwalds)

Living To 100 and Beyond Call For Papers and Symposium (LP140) — This fourth international symposium, to be held in January 5-7, 2011, will bring together actuaries, demographers, gerontologists and others interested in presenting papers on advanced age survival and its implications to social, financial, retirement, and healthcare system. Partners: Committee on Knowledge Extension Research, The Actuarial Foundation. (Contacts: Bob Johansen and Tim Harris)

Data Quality Tools For Life Insurers (LP147) – The purpose of this project is to create a tool for life insurers to assist with data cleansing and validation of data files for mortality and lapse experience studies. Researchers: LIMRA team led by Elaine Tumicki. (Contact: Bud Ruth)

Effect of Obesity on Morbidity and Mortality (LP148) – The purpose of this project is to examine the economic costs associated with obesity. Researchers: Don Behan and University of Manitoba team led by Sam Cox and Hal Pedersen. (Contact: Ping Wang)

2007 Individual Life and Annuity Expense Study (LP160) – This is an annual inter-company expense study of individual life and annuity products. Researcher: Steven Siegel. (Contact Sam Gutterman)

Implications of Perceptions of Post Retirement Risks (LP163) - This project is a literature review synthesizing the results on public perceptions of post retirement risks to determine the public's level of understanding of these risks and its implications on life insurance product design and marketing strategies. Researchers: Steve Cooperstein, Steve Cooperstein & Affiliates, Partners: Product Development Section. (Contact: Tom Edwalds)

2008 Individual Life and Annuity Expense Study (LP165) – This is an annual inter-company expense study of individual life and annuity products. Researcher: Steven Siegel. (Contact Sam Gutterman)

Longevity Research Conference (LP166) – City University of London, St John's University, and Illinois State University are organizing the fifth research symposium in a series exploring longevity risk and capital markets solutions for managing the risk. Researchers: Many. (Contact: JJ Carroll)

Predictive Modeling for Life Insurers (LP169) - This call for papers examines how existing or new predictive models or methods can be applied to life insurers. Researchers: Many, Partners: Product Development Section. (Contact: Tom Edwalds)

Structured Products (LP170) – This project examines the optimal design of structured products in general with a focus on the optimality aspects of the Constant Proportion Portfolio Insurance (CPPI) strategy. Researchers: Steven Vanduffel, Free University of Brussels Partners: The Actuarial Education and Research Fund of the Actuarial Foundation. (Contact: Debbie McCormac)

REINSURANCE SECTION

Life Reinsurance Capacity and Concentration of Risk (LP158) – This project surveys chief actuaries and chief risk officers of life insurers regarding the risk criteria employed in evaluating reinsurers as well as company policies pertaining to the relative exposure of ceded business residing with various reinsurers. **This report is now complete and will be removed from future reports.** Researchers: Reinsurance Section Subteam. (Contact: Bob Lau)

Mortality Improvement in the US and Internationally (LP171) – This project examines historical life insurance and annuity policyholder mortality improvement trends and/or mortality improvement rates and how they compare to that of the general US and international populations. Researchers: To Be Determined, Partners: Financial Reporting. (Contact: Kelly Levy)

Future of Reinsurance (LP172) – This call for essays (CFE) explores the future of the life reinsurance industry. Researchers: To Be Determined. (Contact: Michael Shumrak)

PRODUCT DEVELOPMENT SECTION PROJECTS

Post Level Term Shock Lapse Study (LP161) - This project examines the post-level period lapse and mortality experience of individual level premium term life insurance product. This is a follow-up to the initial survey that was completed in May 2007. Researchers: RGA research team led by Tim Rozar, Partners: Committee on Life Insurance Research. (Contact: Jeff Beckley)

FINANCIAL REPORTING SECTION

Monograph on Stochastic Modeling (LP155) – The IAA is sponsoring a project to develop an educational monograph on the applications of stochastic processes and modeling to insurance company financial reporting and capital assessment. Researchers: Milliman research team led by James Stoltzfus. Partners: Many including IAA and CAS. (Contact: Kerry Krantz)

Analysis of Proposed Principle–Based Approach (LP157) – This project examines the proposed principle-based reserving and capital approach on US

life insurance products. Partners: Product Development Section, Reinsurance Section, the Committee on Life Insurance Research and the AAA's Life Reserves Work Group. (Contact: Ronora Stryker)

Credibility Theory Practices (LP162) – This project studies the credibility theory practices of life insurers. Researchers: MIB team led by Stacy Gill and Tom Rhodes. Partners: Product Development Section, Committee on Life Insurance Research, and AAA's Life Reserves Work Group. (Contact: Ronora Stryker)

IASB Financial Reporting For Insurance Liabilities II (LP164) – This project is an update of the project completed in February 2008 and examines the impact to life insurance financial reporting of the upcoming IASB exposure draft on accounting of insurance liabilities. Researchers: PwC team led by Sam Gutterman. (Contact: Tom Herget)

MARKETING and DISTRIBUTION SECTION

Underwriting Mortality Risk Utilizing Electronic Tools (LP168) - This is a two-phase project with the ultimate purpose of determining the mortality selection of risks efficacy of an electronic personal history interview (drill-down application) coupled with e-data (MIB, Rx, MVR) vs. non-med underwritten business and medically underwritten business. Researchers: Deloitte team led by Alice Kroll. Partners: Committee on Life Insurance Research and Product Development Section (Contact: Maria Thomson)

RETIREMENT SYSTEMS PROJECTS

Financial Shock of Widowhood (RP153) — This project examines the financial impact in the period directly before and after widowhood. Researcher: Univ. of WI. (Contact: Steven Siegel)

Stock Options (RP156) — The objective of this study is to examine experience on the exercise of stock options and apply it for valuation purposes. Researchers: Nancy Wallace and Richard Stanton, U.C. Berkeley and Jennifer Carpenter, New York University. (Contact: Terry Adamson)

The Impact of the Undersupply of Long-Term Bonds on Pension Plans (RP158) – This call for papers is exploring how the supply of long-term bonds will affect the future status of pension plans. **This project is now complete and will be removed from future reports.** (Contact: Ian Genno)

Individual Post-Retirement Financial Strategies (RP164) – The purpose of this project is to conduct a literary review on post-retirement financial strategies

from the perspective of an individual who is approaching retirement age.
Researcher: Arnold Shapiro. (Contact: Steven Siegel)

International Financial Reporting Standards Call for Papers (RP165) – This call for papers is seeking papers on International Financial Reporting Standards that will prove helpful to North American pension and benefit actuaries. Paper discussants are being sought as well. (Contact: Steven Siegel)

Retirement Replacement Ratios & Drawdown of Retirement Savings (RP166) – This request for proposals is seeking to conduct a literature search related to retirement replacement ratios and the drawdown of retirement savings. (Contact: Steven Siegel)

OPM Turnover (RP168) – This project employs graduate students to analyze turnover data received from the U.S. Office of Personnel Management. (Contact: Steven Siegel)

Using Retirement Benefits for Workforce Management CFP (RP169) – This call for papers is seeking the latest thinking about early retirement windows and uses of retirement benefits for workforce management. (Contact: Steven Siegel)

Funding Strategies Under PPA (RP170) – This call for papers is looking for opinions and perspectives of actuaries on effective funding strategies under PPA. (Contact: Steve Siegel)

Retirement Planning Software and Post-retirement Risks (PRNR101) — The study, as a follow-up to the 2003 study, will assess the extent to which retirement planning software helps users prepare for post-retirement risks. Researchers: John Turner and Hazel Witte. (Contact: Steven Siegel)

Follow-up Survey to Spending and Investing in Retirement: Is there a Strategy (PRNR102) — The objective is to build on the last study and create a survey that would be disseminated to approximately 1500–2000 retirees to turn the impressions formed from the focus groups into statistical and credible data. **This project is now complete and will be removed from future reports.**
Researcher: LIMRA. (Contact: Sandy MacKenzie)

Consumer Profiles (PRNR103) — The researchers will develop consumer profiles that describe characteristics representing individuals who are approaching or entering retirement and create strategies for each of the profile situations. Researcher: Milliman, Inc. (Contact: Carol Bogosian)

Housing in Retirement Call for Papers (PRNR104) – This Call for Papers explores the nature and impact of housing issues in retirement. **This project is now complete and will be removed from further updates.** (Contact: Steven Siegel)

Housing in Retirement Roundtable (PRNR105) – This roundtable will feature an interactive discussion on housing issues in retirement. (Contact: Steven Siegel)

ACTUARY of the FUTURE SECTION

Financial Advice to the Middle and Lower Income Markets (RP167) – This project is a two phase project that will seek to address financial advice issues pertaining to persons of moderate and low income markets. Researchers: Dan Iannicola, The Financial Literacy Group, Partners: Product Development Section. (Contact: Janet Deskins)

Longer Term Projects—Books, Monographs

Interest Rate Models in Actuarial Practice (FP123) — This project will produce a practical guide on the selection and use of interest rate models. Researchers: Sam Cox and Dr. John Martin Partners: Investment Section and Finance Practice Area. (Contact: Steven Siegel)

2009 Retirement Risk Survey (RX114) — This survey is the fifth in a bi-annual series that assesses retired and near retired person's attitude towards post-retirement risk. Researcher: Mathew Greenwald & Assoc. (Contact: Anna Rappaport)

GENERAL EXPERIENCE STUDIES

Experience Studies Advisory Group (GS104) – This group is comprised of current and former members of the SOA Board of Directors and academics. Their assignment is to look at the current SOA practices and procedures for experience studies and determine whether there are better, more efficient ways to handle the process. (Contact: Steve Siegel)

HEALTH EXPERIENCE STUDIES

Long-Term Care Valuation Task Force (HC108) - This Task Force is considering updating and expanding the 1995 Long-Term Care Insurance

Valuation Methods report, including the development of standard tables for the valuation of the many facets of this product. (Contact: Bob Yee)

Cancer Experience Study & Table Committee (HX119) - The objective of this study is to perform an experience study that will lead to an update of the 1985 NAIC Cancer Claim Cost Tables. (Contact: Sue Blanck)

Analysis re Update to 1985 CIDA (HX121) - The objective of this work is to develop a potential replacement for the 1985 CIDA Table from recently collected individual disability income policy experience, if practical. (Contact: Bob Beal)

Group Long-Term Disability Study (HX124) - This study examines the termination experience under group LTD claims. (Contact: Roger Martin)

2005-08 Long-Term Care Study (HX125) - The objective of this study is to compile long-term care data from carriers into an inter-company study. (Contact: Roger Gagne)

Credit Life Mortality Study (HX126) - This committee is developing an experience study for credit life insurance. (Contact: Chris Hause)

2009-11 Group Life Insurance Study (HX127) - This Committee is pursuing a follow up to the 1999-2001 Group Life Insurance Experience Study, including the establishment of a regular pattern for this study. (Contact: Bob Hardin)

LIFE EXPERIENCE STUDIES

Individual Life 2005-07 (LX174) – This study is the ongoing reporting of mortality experience under standard, fully underwritten life insurance policies for policy year 2005–07. (Contact: Rick Bergstrom)

Mortality & Morbidity Liaison Committee (LC102) - This joint committee of actuaries, medical directors and underwriters investigates experience of various facets of the insurance and disability underwriting process, especially those reflecting extra mortality. (Contact: Dave Winsemius)

Mortality & Underwriting Survey Committee (LC109) - This Committee is to oversee and conduct surveys on topics related to underwriting practices and mortality experience on life insurance and annuities. (Contact: Al Klein)

Early Duration Claims (LX169) – This survey will examine practices associated with early duration claims incurred on life insurance policies. (Contact: Mark Swanson)

Life Settlements (LX170) – This survey will examine practices associated

with life settlements including true viaticals, the settlement of other well-established life insurance policies and policies issued in anticipation of quickly entering a settlement arrangement. (Contact: Rick Bergstrom)

Foreign Travel (LX171) – This survey will examine practices with regard to foreign travel in the underwriting of life insurance policies. It will also address reactions to the potential restrictions that might be imposed in this area. (Contact: Gord Gibbins)

Alternative Tools (LX172) – This survey will examine the various methods, or “tools,” used to manage the mortality risk in life insurance companies. **This report is now complete and will be removed from future reports.** (Contact: Connie Dewar)

International Experience Survey (LC111) - The broad objective of this work is to develop experience studies for various countries of interest to members of the Society. Initial work will be a high-level survey of readily available mortality information. (Contact: Bill Horbatt)

Pre-Need Mortality Study (LX154) - The purpose of this study is to report upon the experience of pre-need (funeral home) insurance policies and to develop a database that might be used to develop a valuation standard specifically for such business. (Contact: Carol Salomone)

Deferred Annuity Study (LX158) - This study will examine the mortality and persistency experience under various forms of individual deferred annuities and the effect that associated benefits have on these products. (Contact: Jack Luff)

Preferred Mortality POG (LX166) - This preferred life mortality experience study will support industry leaders and the NAIC by developing valuation tables for preferred life insurance products. (Contact: Donna Claire)

2005-08 Individual Payout Annuity Study (LX176) - This study will examine the experience under various forms of individual payout annuities and develop a database that can be used to create a new mortality table for such products. (Contact: Bill Albright)

Payout Annuity Valuation Table (LX177) – This work will examine the recent Payout Annuity Study results with the intention of developing a table to replace the Annuity 2000 Table as a valuation standard. (Contact: Mary Bahna-Nolan or Scott Claflin)

Experience Studies Oversight (PD Section Council) (LC112) – This oversight group has been tasked with ensuring that all life experience study committees and task forces are working in a complementary fashion and not overlapping one another. (Contact: Cathy Bierschbach)

RETIREMENT EXPERIENCE STUDIES

Retirement Plans Experience Committee (RC103) - The mission of this committee is to effect mortality and other studies of public and private pension plan data. (Contact: Gavin Benjamin)

Group Annuity 2003-04 (RX108) - This study is the next in the series studying the mortality experience under group annuity contracts, primarily those in payment status. (Contact: Rich Wong)

Group Annuity 2005-06 (RX110) - This study is the next in the series studying the mortality experience under group annuity contracts, primarily those in payment status. (Contact: Rich Wong)

Group Annuity 2007-08 (RX113) - This study is the next in the series studying the mortality experience under group annuity contracts, primarily those in payment status. (Contact: Rich Wong)

Pension Plan Mortality Study (RX115) - This study will examine private pension plan data with an ultimate goal of replacing the RP-2000 Table for pension plan calculations. (Contact: Gavin Benjamin)

COMMITTEE ON KNOWLEDGE EXTENSION RESEARCH

Inverse Problems and Their Solutions in Actuarial Science (KP152) - Lijia Guo, Ph.D., A.S.A., Genworth Financial, proposed to identify various types of inverse problems in actuarial science and introduce regularization methods to solve these inverse problems and compare them to the existing actuarial treatments.

Valuation of Variable Annuities (KP153) - X. Sheldon Lin of University of Toronto, Toronto and Ken Seng Tan, University of Waterloo, proposed to consider stochastic volatility model and carry out extensive numerical studies to assess the impact of the volatility of interest rates on the variable annuities. **The NAAJ has accepted the paper. This project is complete and will be removed from future reports.**

Multi-period Risk Measurement in Insurance (KP155) - Philippe Artzner, University of Louis Pasteur, France, will attempt to examine the possibility and/or necessity of having a component for future acceptability into the current capital requirement dictated by a general risk measure.

Impact of Co-payments and Deductibles on Long-Run Health Insurance Claims: Empirical Evidences (KP168) - Antonio Westenberger, University of Sao Paulo, Brazil, aims his research at empirically investigating the effectiveness and cost-effectiveness of preventive care services by using panel data analysis.

Extreme Value Analysis for Partitioned Insurance Losses (KP174) - Ping-Hung Hsieh and John B. Henry III, Oregon State University, will specify a theoretically sound and defensible statistical model for analyzing extreme insurance losses in partitioned form, and consequently, to provide useful and reliable summary statistics such as the conditional mean of extreme losses for decision making.

Weighted Premium Calculation Principles and Risk Capital Allocations (KP179) - Ricardas Zitikis, University of Western Ontario, will “reintroduce” the concept of univariate and multivariate weighted distributions, emphasizing their potential applications and usefulness in the actuarial context and will develop a general class of premium calculation principles.

Pricing and Hedging Equity-Indexed Annuities Using Iterated Conditional Tail Expectation (KP180) - Patrice Gaillardetz, Concordia University, will develop pricing and dynamic hedging techniques for equity-indexed annuities.

On A Generalization of the Gerber-Shiu Function (KP181) - Manuel Morales, University of Montreal, and Enrico Biffis, City University, propose an extended definition of the expected discounted penalty function that takes into account two new random variables: the surplus at last minimum before ruin and the time since this last minimum.

On Robust Testing and Modeling of Nonlinear Stochastic Return Processes with Actuarial Applications (KP183) - Wai Sum Chan, The Chinese University of Hong Kong, will derive the Schweppe-type of generalized-M (GM) procedures for robust modeling (testing and estimation) of regime-switching processes.

Asset-Liability Management for Pension Funds in a Time-Varying Volatility Environment (KP184) - Spyridon Vrontos, University of Aegean, will address the issue of time-varying variances and co-variances of pension fund returns and give focus on their potential impacts to pension fund portfolio construction and risk measurement.

Pricing Multi-year, Multi-line Reinsurance Using Copulas (KP185) - Ping Wang, St. John’s University, will use tools with which actuaries are familiar of parametric modeling of the marginal distributions and to use copulas for modeling the dependence structures of loss experiences across years or business lines.

Stochastic Claims Reserving: Micro Models for Run-off, Incorporating Expert Opinion, and the Interaction with Extreme Value Methodology (KP186) (AP1172) - Katrien Antonio, Jan Beirlant, University Center for Statistics KU, and Rob Kaas, University of Amsterdam, will put focus on the development of three issues in stochastic reserving: micro models for run off, incorporating expert opinion in reserving techniques and the interaction of reserving techniques with extreme value methodology.

Robust and Efficient Methods for Quantitative Risk Management (KP187) (AP1173) - Vytautas Brazauskas, University of Wisconsin, will discover if more sophisticated risk segmentation methods help to improve underwriting policy, pricing accuracy, and profitability. The methods proposed in this project will estimate the threshold from the data and by doing so will reduce the subjectivity of the risk measuring process. **This project is now complete and will be removed from future reports.**

Estimating Allocated Capital Using the Bootstrap (KP188) (AP1174) - Hyun-Tae Joseph Kim & Mary Hardy (University of Waterloo) will review parametric dependency modeling (or copula fitting) with a small-sized multivariate sample; Use the exact bootstrap (EB) method as an alternative to the parametric approach to capital allocation; Develop a method to estimate the variance of the allocated capital; Illustrate the EB method using a real/simulated data under different allocation methods and loss models.

Regime Switching Models: Applications to Mortality Modeling and Pricing (KP189) - Andreas Milidonis (University of Manchester), Samuel Cox (University of Manitoba) and Yijia Lin (University of NE-Lincoln) will employ regime switching models in two areas of mortality risk and improve the modeling of the time-series common factor that affects all age cohorts as captured by Lee and Carter.

On Statistical Inference of CTE (KP190) - Nariankadu Shyamalkumar (University of Iowa) will theoretically study existing estimators towards understanding their small sample behaviors.

Copula Regression (KP191) - Rahul Parsa (Drake University) will present the formulas and algorithms necessary for conducting a copula regression analysis.

Actuarial Principles Underlying a Sound Funding Method for Partially Funded Social Security Retirement Systems (KP192) - Douglas Andrews (University of Southampton) will review relevant literature, develop actuarial principles for a sound funding method of a partially funded SSRS and specify an approach for determining if a funding method is sound.