

SUMMER 2017

This newsletter provides updates on the work of the Research Executive Committee, including current and upcoming research projects.

Research Committee Restructuring

The new Research Executive Committee (REC) has implemented the strategic realignment of the Research Committee (ResCo). The new structure will develop key partnerships to lead research relevant to the actuarial community and in support of general public issues, and enhance the engagement of academics with related interests. The committee's new structure consists of the following:

- Research Executive Committee (REC);
- Experience Study Research Subcommittee (ESRS);
- Academic Research Subcommittee (ARS); and
- Project Oversight Groups (POGs).

To facilitate this work, the CIA has hired Shlomit Jacobson, PhD, MBA, as manager of research to work with the REC, ESRS, and ARS. Beginning in August, Ms. Jacobson will provide project management support, facilitate strategic plan development and implementation, and represent the REC to other research organizations, researchers, and vendors.



Ms. Jacobson has worked as a research facilitator at the University of Ottawa's [Brain and Mind Research Institute](#) and as a senior research project manager at Carleton University's [Institute of Neuroscience](#). She earned her MBA from the Telfer School of Management at the University of Ottawa and her PhD in neurobiology and ethology at Haifa University.

The Role of Each Group:

The Research Executive Committee

- Manages the CIA's overall research process;
- Evaluates opportunistic research;
- Helps obtain support for joint research with other actuarial organizations; and
- Integrates the prioritization and funding for all research activity, including experience studies, academic research, and opportunistic research to support CIA public statements across all traditional and emerging areas of practice.

The **Experience Study Research Subcommittee**, combining key elements from the ResCo subcommittees, builds on the foundation of periodic experience studies, ensuring a balance between practice areas and providing a focus on consistency, best practice, and advancement of analysis.

The **Academic Research Subcommittee** extends to the academic community, expanding on traditional research and encouraging academic research projects, with a focus on making new research accessible to the greater actuarial community. It also supports academic development through its management of the CIA graduate scholarship program.

Project Oversight Groups are created on an as-needed basis to provide oversight to researchers for a specific project.

Research is important and the Institute commits 9.5% of net dues revenue to our research budget. Members of the REC integrate research recommendations and select research the committee will fund. All teams oversee and manage the progress of the researchers to ensure high quality research, completed in a timely manner; appropriate resources provide expertise and insight as the research progresses and ultimately goes through the approval process.

Current CIA Research Projects

This section includes a list of current research projects. Those with a * are still under development but will be initiated soon.

New Projects:

The following are new research projects the committee approved in fiscal 2017:

Experience Study Research Subcommittee

- **Economic Statistics 2017:** Regular update;
- **2015–16 Life Mortality:** Latest update of periodic study;
- **2016 CI Claims Study:** Biannual update of ongoing study; and
- ***Post-Renewal Lapses:** A first CIA study to examine the lapse experience of term insurance policies once they reach their first renewal, using predictive analytics.

Research Executive Committee

- ***CIA Public Statement:** The CIA Board has approved the development of a public statement on the topic of retirement age. Funds have been earmarked to conduct any research necessary to support this statement.
- ***Ethical Concerns of Actuaries:** Building on a similar study conducted by the American Academy of Actuaries (AAA), this initiative will survey CIA members on the ethical challenges they face in their practice, the causes of these issues, and possible solutions.
- ***Impact of Disability on Earnings:** This first-time study is aimed at actuarial evidence practitioners, examining the impact of different levels of disability on future earnings.
- **Longevity and Morbidity Risk:** The CIA will continue its investment in the second year of this four-year project involving the Institute and Faculty of Actuaries (IFoA) and the Society of Actuaries (SOA) to study longevity from a global perspective.

Academic Research Subcommittee

The following research papers were selected through our [Academic Research Grant program](#).

- **Hierarchical Rating Models:** An academic study examining the levels of interdependence between risks, insureds, and coverages for homeowners and car insurance to better estimate premiums and possible discounts.

- ***Longevity and Annuity Planning:** An academic study that examines how the provision of longevity annuities can impact retirement planning, based on Canadian-specific assumptions, to help individuals plan their retirement income and usage of annuities.
- ***Mortality Rates for Multiple Populations:** An academic study to develop a hierarchical credibility model for multi-population mortality rates to help price and hedge mortality and longevity risks.

Ongoing Projects from Previous Fiscal Years:

Periodic Projects

The following studies and reports are in progress:

- **2013-15 Individual annuitant mortality study** for the period from 2003 to 2015: Latest installment of ongoing periodic study;
- **2016 Critical Insurance (CI) Claims Study:** Latest installment of ongoing periodic study; and
- ***C-1 Survey:** Continuation of annual reports. Note that no C-1 survey was produced for year-end 2015; will be done for year-end 2016.

One-Time Projects

There are a number of exciting projects previously approved and already under way.

- **Canadian Long-Term Healthcare Trends Resource Model:** Constructs a resource model for the projection of long-term employer-sponsored healthcare plan cost trends. The model will be used by actuaries as a resource for the estimation of reportable liabilities for Canadian retiree healthcare benefits and other post-employment benefits as required under the accounting standards.
- ***Actuaries Climate Risk Index:** A useful monitoring tool, an objective indicator of the frequency of extreme events and the extent of sea level change; provides graphics and data for download.
- **Consumption and Bequests for Canadian Retirees:** Obtains a more complete picture of retirement objectives of Canadians, and compares and contrasts them with commonly assumed objectives in models of lifetime portfolio selection. Three areas of interest: difference between expectations and experience among Canadian retirees, current level of wealth in retirement or savings pre-retirement, and preferences and risk aversion.
- ***Credibility Theory for Life Insurance:** Examines how concepts related to credibility theory can be applied to a life insurance framework.
- ***Enterprise Risk Management (ERM) Country Risk Officer:** Examines the implications of developing a chief risk officer position for countries.
- ***ERM for Long-Term Care Insurance:** Aims to illustrate how an ERM model can be applied to the imminent needs of the Canadian population as the baby boom ages.
- **Group LTD Termination Study:** This is an updated study of Canadian Group Long-Term Disability termination tables based on more recent experience. Project will be completed in two phases.
- **Impact of the Enhanced CPP:** This project will compare the retirement financial outcomes of Canadians under the enhanced Canada Pension Plan, as compared to the previous version.

- **Impairment and Insolvency:** Working with the Casualty Actuarial Association (CAS) and the Society of Actuaries (SOA), this project will examine the root causes of insurer insolvencies, and identify the key risks that can lead to such situations.
- ***Interest Rates and Inflation:** A study to examine the relationship between prevailing interest rates and the rate of inflation.
- **A Markov Model for Mortality:** Considers extending the Markov aging mortality model to a more general latent class model, where the dynamic relationship between latent (health state) variable and several dimensions of health-related observations can be incorporated.
- **Municipal Assets Infrastructure:** Develops an aging model for municipal assets, in order to create a viable funding model for future repair and replacement.
- **Ontario Accident Benefits Long-Term Disability:** Describes how differences in the Ontario Statutory Accident Benefits Statistical Plan legislation were treated; comments on legislative impact on LTD termination rates and annuity factor evaluation; reviews Ontario automobile LTD experience from 1994 to 2012; contains termination rates and annuity factors split by age band, gender, and geographical area.
- **Pensions and Low Interest:** Examines the impact of the prevailing low interest environment on the affordability of retirement income schemes.
- ***Predictive Analytics for Life Insurance:** Studies predictive modelling methods and techniques, and how they can be applied to the life insurance sector.
- **Segregated Funds Policyholder Behaviour Study:** Three studies are being completed: a Canadian segfund policyholder behaviour company practices survey, a Canadian segfund policyholder experience study, and a Canadian segfund mortality experience study.
- **Two-Dimensional Mortality Improvement Scales:** Develops a stochastic mortality model allowing the production of two-dimensional mortality improvement scales with solid statistical justifications and derives measures of uncertainty for mortality projections obtained from a two-dimensional scale.
- **Impact of Population Aging on Asset Values:** A study to determine the impact the aging population in Canada will have on asset values going forward.
- **Flood Insurance:** Develops methodology to integrate catastrophe models related to floods into property and casualty pricing and product design.

Other Research News

The [Report on Canadian Economic Statistics 1924–2016](#) was approved and published in July 2017.

The [Research Paper on Mortality Improvement Promulgation](#) was approved and published in May 2017.

The research paper on [Calibration of Equity Returns and Volatility for Stochastic Models](#) was approved and published in May 2017.

A member's paper on [An Actuarial Balance Sheet Approach to Assessing Sustainability of Target Benefit Plans](#) was approved and published in April 2017.

The [Canadian Group Annuitant Mortality Experience, Calendar Years 2007–2012](#) study was

approved and published in April 2017.

The [Provisions for Adverse Deviations in Going Concern Actuarial Valuations](#) research paper was approved and published in March 2017.

The [Discount Rate Sensitivities in Pension Plans](#) research paper was approved and published in March 2017.

Several more papers have been approved and will be published pending translation into French.

We Need You!

The REC is [actively recruiting new volunteers](#) (you must be logged in to the members' site to access the link). Joining REC is an excellent opportunity for both experienced and new volunteers to share knowledge, improve skills, and network. Interested in being on the cutting edge of actuarial research in Canada? Contact Carmelina Santamaria, coordinator, volunteer services at carmelina.santamaria@cia-ica.ca or at 613-236-8196 ext. 126.

Outgoing Members

Several members of the REC finished their terms of service this year. They include Scott McManus, Lisa Miolo, and Jim Wagner.

Many thanks for the work they have done. We look forward to welcoming new members to the committee and continuing to help advance the actuarial profession in Canada.

Faizel Alladina
Chair of the Research Executive Committee

Document 217083

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