

**Be heard around
the world – Submit
your abstract by
31 March 2022!**

The Actuaries Institute
Australia and the IAA
are looking for abstracts
with originality, a path
to further research and
real commercial and
practical value.



BRIDGE TO TOMORROW
2023 INTERNATIONAL
CONGRESS OF ACTUARIES
28 MAY – 1 JUNE 2023 • SYDNEY



Platinum Sponsors



Gold Sponsors



As the world seeks to absorb the costs, lessons and recovery opportunities thrown up by COVID-19 the Organising Committee is looking for thinking which helps reshape the actuarial profession and redefines its place in the world.
Find out more: ica2023.org

ASTIN Bulletin: The Journal of the International Actuarial Association

NOTES FOR CONTRIBUTORS

AIMS AND SCOPE

ASTIN Bulletin was founded in 1958 as a journal providing an outlet for actuarial studies in non-life insurance. In the late 1980s the journal extended its scope to encompass the study of financial risk in insurance (AFIR). In 2007 the journal was established as the journal of the International Actuarial Association (IAA) and encompasses all of the scientific sections of the IAA.

ASTIN Bulletin publishes papers that are relevant to any branch of actuarial science and insurance mathematics. Papers should be quantitative and scientific in nature, and might draw on theory and methods developed in any branch of the mathematical sciences including actuarial mathematics, statistics, probability, financial mathematics and econometrics.

The journal welcomes papers that present significant and original theoretical developments and papers that present significant and original applications of mathematical, statistical or econometric theory to problems arising in insurance, pensions and finance. We especially welcome papers opening up new areas of interest to the international actuarial profession as well as papers that describe open problems that have arisen in practice.

SUBMISSIONS

Papers for possible publication in *ASTIN Bulletin* should be submitted online at: <http://mc.manuscript-central.com/astin>. Authors are encouraged to provide their data and code during the review process which will allow the handling editor to replicate the results. The preferred code for statistical analysis is either R or Python. For accepted papers data and code should be made available as supplementary material. Please review the *ASTIN Bulletin*'s Transparency and Openness Policy. Submission of a paper is held to imply that it contains original unpublished work and is not being submitted for publication elsewhere. Receipt of the paper will be confirmed and followed by a refereeing process which will be handled by one of the editors. The editors aim to complete the refereeing of a submission in around three months. The role of a referee is to assess the quality of the academic content of the paper. If a paper is sufficiently badly written to an extent that prevents a referee from forming a proper view of the paper's scientific content, then the paper will be returned to the author unrefereed.

TEXT AND MANUSCRIPT PREPARATION REFERENCING

Before a manuscript can be published it must conform to the style of *ASTIN Bulletin*, a summary of the key points of which is listed below. The comprehensive Notes of Contributors document can be obtained from <http://journals.cambridge.org/asb/contributors>.

- The basic elements of the journal's style have been agreed by the Editors and the publisher and should be clear from checking a recent issue of *ASTIN Bulletin*. If variations are felt necessary, this should be discussed with the editor handling the paper.
- Papers should be written in English. It is not the job of the editors, the referees or the publisher to improve the use of English in the paper; it is up to the authors to ensure that the language, spelling and grammar are of a high quality prior to submission.
- Authors intending to submit longer papers (e.g. exceeding 30 pages) are advised to consider splitting their contribution into two or more shorter contributions.
- The first page of each paper should start with the title, the name(s) of the author(s), an abstract and a list of keywords. An institutional affiliation can be placed between the name(s) of the author(s) and the abstract.
- Footnotes should be avoided as far as possible.

AUTHOR AND CONTACT INFORMATION

On the title page, please provide the full name, affiliation, email and postal address of at least one author. Where the family name may be ambiguous (e.g. a double name), please indicate this clearly. For joint authored papers, please indicate the lead corresponding author and provide a contact telephone number.

REFERENCING

References should be arranged alphabetically, and for the same author chronologically. Use a, b, c etc. to separate publications of the same author in the same year. For journal references give author(s), year, title, journal (in italics), volume (in boldface), and pages. For book references give author(s), year, title (in italics), publisher, and city.

CONTENTS

Articles

- Geographic Ratemaking with Spatial Embeddings
CHRISTOPHER BLIER-WONG, HÉLÈNE COSSETTE, LUC LAMONTAGNE
AND ETIENNE MARCEAU 1
- Joint Modeling of Claim Frequencies and Behavioral Signals in Motor Insurance
ALEXANDRE CORRADIN, MICHEL DENUIT, MARCIN DETYNIĘCKI, VINCENT GRARI,
MATTEO SAMMARCO AND JULIEN TRUFIN 33
- Discrimination-Free Insurance Pricing
M. LINDHOLM, R. RICHMAN, A. TSANAKAS AND M.V. WÜTHRICH 55
- Joint Model Prediction and Application to Individual-Level Loss Reserving
A. NII-ARMAH OKINE, EDWARD W. FREES AND PENG SHI 91
- A Collective Reserving Model with Claim Openness
MATHIAS LINDHOLM AND HENNING ZAKRISSON 117
- Multivariate Composite Copulas
JIEHUA XIE, JUN FANG, JINGPING YANG AND LAN BU 145
- On the $r\beta$ Family of Distributions with Actuarial Applications
DEEPESH BHATI AND ENRIQUE CALDERÍN-OJEDA 185
- Insurance Valuation: A Two-Step Generalised Regression Approach
KARIM BARIGOU, VALERIA BIGNOZZI AND ANDREAS TSANAKAS 211
- A Group Regularisation Approach for Constructing Generalised Age-Period-Cohort
Mortality Projection Models
DILAN SRIDARAN, MICHAEL SHERRIS, ANDRÉS M. VILLEGAS
AND JONATHAN ZIVEYI 247
- Computation of Bonus in Multi-State Life Insurance
JAMAAL AHMAD, KRISTIAN BUCHARDT AND CHRISTIAN FURRER 291
- Point and Interval Forecasts of Death Rates Using Neural Networks
SIMON SCHNÜRCH AND RALF KORN 333
- Corrigendum**
- Multivariate Composite Copulas – Corrigendum
JIEHUA XIE, JUN FANG, JINGPING YANG AND LAN BU 361