



IAA  
AAI

ASTIN  
Non-Life Insurance

2021  
**2022**

ANNUAL REPORT

# WELCOME TO OUTER SPACE!

Although we have not yet been able to launch ASTIN on a SpaceX rocket, we are continuing to push further to new frontiers.

This year's annual report will continue to explore the virtual world in which we all live, and reaffirm our global focus on the world's non-life risk professionals.

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**FRANK CUYPERS**  
**ASTIN CHAIRMAN**  
**MAY 2, 2022**

## Message from the Chairman

Dear Colleague,

This is the first time I address you in this new video format of the ASTIN annual report. It is the first time, and it is also the last time, because after having been on the Board for nine years and having served as its chairman for five years, I am now stepping down. So, I'll take this opportunity to share with you a few backward-looking thoughts, and then more importantly some forward-looking ones.

Backward-looking: what did we achieve over these nine years? Well, it's always too little. In hindsight there are so many things I could have done, I didn't manage, I didn't have the ideas early enough. But then there were also a few things that worked out fine.

The ASTIN Working Parties: quite a success story! Others, like the ASTIN Helpline: let's see if there will be some more call for it and it will take flight some day. And then there are things that are just rising, like the ASTIN Academy and the Master Classes: we just initiated them and already we have received a lot of positive feedback.

These are all visible initiatives, but there are also less flashy innovations like the elections, which basically used to be based on co-opting people within the Board, but now have a full-fledged base election process. I'm really happy because in the past few years we noticed that more of you now wish to actively join our ASTIN community. As a result, we now have a very strong, motivated, and active Board.

But let's now look forward: how about you getting more involved in your international general insurance actuarial community, your ASTIN family?

If you are listening to me now or reading these lines, there are probably things that are important to you:

- 1- actuarial state of the art
- 2- in general insurance
- 3- at an international, worldwide level.

This is probably the most succinct summary of what ASTIN is about, and my message to you is: get involved!

You can do this, for instance, by joining the Board, or if you don't yet feel ready for that, help out as a volunteer by, for example, joining one of its committees, or even chairing one of them. You can also contribute by encouraging your like-minded colleagues who are not yet ASTIN members to join our community; it doesn't matter whether they are "fully qualified" actuaries, practitioners, research or teaching academics, or students: all are welcome to further develop, promote, and benefit from our actuarial expertise.

But if these three items are important to you, I also encourage you to think about what ASTIN can do for you. For instance, it might be that you want ASTIN to focus more on educational tasks, or maybe you prefer ASTIN to become more of a research organization, or perhaps you think both types of activities are important. Make sure to let your colleagues from the Board know about your thoughts. ASTIN is a wealthy organization with lots of means. Let's take advantage of that!

Now that I'm leaving the leadership of ASTIN, my biggest regret is that during my tenure we did not make enough out of our large resources...

Finally, I'd like to address my last words in this Chair function to my dear colleagues who are serving ASTIN as volunteers on the Board or on our Committees: you are a great team and I'm gonna miss you very much!

Bye-bye my friends,

Frank

[Watch the speech](#)

▶ 00:00



**AXEL WOLFSTEIN**  
**ASTIN SECRETARY**  
**MAY 2, 2022**

## Message from the Secretary

Dear members and friends of ASTIN,

It's a pleasure to present our 2021/2022 Annual Report as ASTIN Secretary, a role I'm now happy to have served for another year.

Unfortunately COVID-19 has continued to mean restrictions for many of us, but as vaccination is progressing I would like to express my hope again that more normality should be possible not too far in the future, which would include face-to-face meetings.

As actuaries we are used to facing risks and dealing with them which enables us to help our business and people to get through the current situation. And by the way, there is some similarity between vaccination and actuarial work: Each of these does not avoid all problems but significantly improves the situation.

COVID-19 is continuing to have an impact and has changed our priorities, but we are proud nevertheless that we have been able to push on and make progress.

Given the current situation, it's even more important that we provide value and service for our members. Therefore five webinars were offered/hosted regarding different topics.

Three working parties were active in 2021 and made their progress, two of them were continued, the other one on COVID-19 was started.

The ASTIN academy was established which is integrating more closely the perspective of practitioners and universities.

We are very proud that Jed Frees agreed to contribute.

To generate even more service for our Spanish speaking members, a Spanish version is provided as well.

Furthermore, the ASTIN reading club was started and already delivered several sessions.

The Expert Helpline needs to be developed further to fulfil our objectives especially considering the low demand.

The masterclass will start on short notice as all necessary preparations are nearly finalized. We are delighted that Andrew Smith accepted our invitation to present.

All of that clearly demonstrates that we are broadening our offer and delivering more support to our members in developing research and knowledge and sharing this.

After the successful online colloquium last year we will have another online colloquium in June 2022. This decision for online had to be made before the end of 2021 as the circumstances regarding traveling etc. were completely uncertain.

We can expect a successful colloquium as judging by the contributions we have already received.

We also strengthened our communications with our members, stakeholders and the IAA. You can easily see that while checking our website and reading our annual reports and bimonthly newsletters.

Summing up, we will continue to further roll out our five-year strategic plan which will generate more value for our members and improve our visibility as an organization on an international level.

I would like to thank all ASTIN members and colleagues on the Board for their contributions which enable all these initiatives and help us to progress. In this Annual Report you will find details on what we've done and we will do in the near future. I wish you maximum fun reading it.

I am looking forward to our upcoming colloquium and meeting you all at the ICA next year. In the meantime, stay healthy!

[Watch the speech](#)

► 08:18

# OUR MISSION & VISION

ASTIN is the first and oldest section of the IAA and remains the leading worldwide forum of actuarial and risk professionals in the non-life insurance industry. ASTIN's aim is to generate value for its members by helping them develop their professional skills. We also engage with academia and industry to drive innovation and promote meaningful, quality research in the field of economics and mathematics of non-life insurance, and their applications to quantitative risk management.

Our vision is for ASTIN to serve the non-life insurance industry globally by ensuring that our members are trusted to provide insight and find solutions to quantitative risk management issues, and hence are in high demand for their valued professional skills and expertise.

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**BOARD** 07

## RESEARCH & DEVELOPMENT

The ASTIN Board encourages and supports applied research through its ASTIN Working Parties (AWP) program. Each AWP is a self organized group of risk and actuarial experts with a focused and applied research goal. The ASTIN Board provides support to AWP's by ensuring appropriate governance, adequate funding and access to the IAA infrastructure.

ASTIN also regularly organizes various topical webinars which are used to share knowledge and expertise among ASTIN members and the wider non-actuarial community.

## ASTIN COLLOQUIA

Held annually, ASTIN colloquia are truly international events that attract risk professionals from all over the world. The colloquia encompass keynote speakers and invited lecturers, plenary sessions, parallel sessions, 'practitioner corner' panel discussions and actuarial workshops. All papers submitted are carefully pre-selected by the ASTIN Scientific Committee and distributed to all participants, in advance for prior reading, to enable more time to debate proposed ideas.

To help promote the actuarial profession in emerging regions, ASTIN also organises regional events, a mix of seminars and workshops, in conjunction with local actuarial associations and other Sections of the IAA.

## EDUCATION & CONTINUING PROFESSIONAL DEVELOPMENT

ASTIN's research and educational platforms –Masterclasses and Expert Helpline– will play an important role in providing continuing professional development services to our members.

The online Masterclasses are designed for risk and actuarial professionals. They are fully interactive, providing ASTIN members with free access and covering key topics including financial stability and enterprise risk management, regulatory changes, data science and artificial intelligence in insurance, climate change and catastrophe risk, cyber risk, and InsurTech and disruptive technologies. ASTIN operates an open access online question and answer exchange platform for the global actuarial community. The Expert Helpline is used to facilitate rapid worldwide dissemination of actuarial best practices by connecting actuarial practitioners and academics.

## ASTIN BULLETIN

The ASTIN Bulletin was founded in 1958. Over the last six decades, it has evolved and is now widely regarded as the leading international peer-reviewed journal of the actuarial profession, covering the full breadth of practical and theoretical work in actuarial science.

The ASTIN Bulletin is published three times per year in January, May and September, comprising about 30 articles in total. The bulletin is published in both print and online editions. An electronic copy of the ASTIN Bulletin is distributed to members of the ASTIN, AFIR-ERM, LIFE and PBSS Sections of the IAA, as part of their Section membership benefits.

## GRANTS & ASSISTANCE

A proportion of ASTIN's income has always been reserved for the development of actuarial science in actuarially emerging countries. ASTIN has donated actuarial textbooks to more than 100 universities and actuarial associations across emerging markets. The beneficiaries were also granted free access to the ASTIN Bulletin. ASTIN has also sponsored seminars in India, Croatia, Latvia, Poland, Zimbabwe, Chile, and Hong Kong.

ASTIN members have taught the principles of loss reserving, experience rating in motor insurance, financial economics in insurance, applications of stochastic processes, and stochastic models for life contingencies to actuarial students and practitioners.

Today, ASTIN continues to support actuarially emerging countries.

# ASTIN BOARD



**Dr. Frank CUYPERS**

**ASTIN Board office:** Chairman  
**Country:** Switzerland  
**Qualification:** PhD in Theoretical Physics; Fellow of German and Swiss Associations of Actuaries  
**Experience:** Chief Actuary, Prime Re Solutions  
**Main areas of expertise:** actuarial engineering



**Michiel VAN DER WARDT**

**ASTIN Board office:** Vice-Chairman  
**Country:** The Netherlands  
**Qualification:** MSc in Actuarial Science; Fellow of the Actuarial Society of the Netherlands  
**Experience:** Freelance Senior Non-Life Actuary and Risk Manager  
**Main areas of expertise:** enterprise risk management, Solvency II



**Axel WOLFSTEIN**

**ASTIN Board office:** Secretary  
**Country:** Germany  
**Qualification:** Dipl. Math., Aktuar DAV  
**Experience:** Director of Pricing, Verti Versicherung AG  
**Main areas of expertise:** pricing, reserving, claims statistics



**Eberhard MÜLLER**

**ASTIN Board office:** Treasurer  
**Country:** Portugal  
**Qualification:** Dipl. Math., Aktuar DAV, CERA  
**Experience:** Managing Director, Riskmueller Consulting GmbH  
**Main areas of expertise:** enterprise risk management, Solvency II, reinsurance



**Miyuki EBISAKI**

**ASTIN Board office:** Chair ASTIN Academy  
**Country:** Japan  
**Qualification:** MBA; Fellow of the Institute of Actuaries of Japan, and Fellowship of the Chartered Institute of Insurance (UK)  
**Experience:** Risk Advisory, Financial Services-Deloitte Touche Tohmatsu LLC.  
**Main areas of expertise:** product development, risk management, MGA



**Brian FANNIN**

**ASTIN Board office:** Member (2025)  
**Country:** United States  
**Qualification:** Associate of the Casualty Actuarial Society, Certified Specialist in Predictive Analytics  
**Experience:** Research actuary for the Casualty Actuarial Society  
**Main areas of expertise:** commercial liability pricing and reserving, capital modeling, predictive modeling



**Dr. Yuriy KRVAVYCH**

**ASTIN Board office:** Chair ASTIN Masterclasses  
**Country:** UK  
**Qualification:** PhD in Mathematics (Kyiv), PhD in Actuarial Studies (Sydney)  
**Experience:** Managing Director, Guy Carpenter  
**Main areas of expertise:** enterprise risk management, risk and capital modelling, Solvency II



**Dr. Bernard WONG**

**ASTIN Board office:** Chair Scientific Committee  
**Country:** Australia  
**Qualification:** PhD in mathematical sciences from the Australian National University; Fellow, Institute of Actuaries of Australia  
**Experience:** Head of the School of Risk and Actuarial Studies at the University of New South Wales  
**Main areas of expertise:** actuarial risk modeling and optimal decision-making



**Bor HAREJ**

**ASTIN Board office:** Chair ASTIN Expert Helpline  
**Country:** Slovenia  
**Qualification:** BSc in Applied Mathematics; Fellow of the Slovenian and Swiss Actuarial Associations  
**Experience:** Head of Strategic Analysis, Non-life Actuarial Department, Zavarovalnica Triglav  
**Main areas of expertise:** Risk management, capital modeling, Solvency II



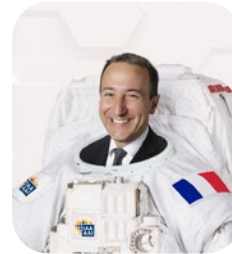
**Salma JAMAL**

**ASTIN Board office:** Chair Events Committee  
**Country:** UK  
**Qualification:** MSc in Actuarial Science; Fellow of the French Institute of Actuaries; Fellow of the Danish Society of Actuaries (Danske Aktuarforening)  
**Experience:** Associate Director, WTW  
**Main areas of expertise:** non-life reserving, Solvency II, capital modeling



**Sarah KÆSTEL-BJERG**

**ASTIN Board office:** Member (2025)  
**Country:** Denmark  
**Qualification:** Cand. Act. And CFA  
**Experience:** 15 years experience  
**Main areas of expertise:** non-life insurance, risk management, model validation



**Pierre MIEHE**

**ASTIN Board office:** Chair Social Media Committee  
**Country:** France  
**Qualification:** Certified Actuary (IA and CERA); Fellow of the French Institute of Actuaries  
**Experience:** Director, Milliman  
**Main areas of expertise:** non-life insurance pricing, reserving and risk modeling



**Ronald RICHMAN**

**ASTIN Board office:** Member (2025)  
**Country:** South Africa  
**Qualification:** Fellow of the Institute of Actuaries, Fellow of the Actuarial Society of South Africa, Chartered Property Casualty Underwriter, Chartered Enterprise Risk Actuary  
**Experience:** Chief Actuary, Chief Risk Officer and Head of Actuarial Function for several insurers over the years  
**Main areas of expertise:** non-life insurance, machine learning, life insurance, risk management



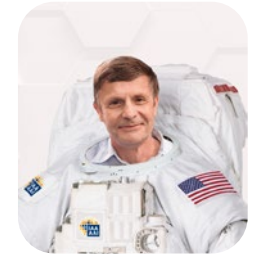
**Dr. Dimitri SEMENOVICH**

**ASTIN Board office:** Chair Scientific Committee  
**Country:** Australia  
**Qualification:** PhD in Computer Science; Fellow of the Actuaries Institute (Australia)  
**Experience:** Director of Analytics and Artificial Intelligence, Insurance Australia Group  
**Main areas of expertise:** machine learning, applied mathematical modeling, computational statistics



**Professor Hans BÜHLMANN**

**ASTIN Board office:** Honorary Chairman  
**Country:** Switzerland  
**Qualification:** PhD in Mathematics; Fellow of the Swiss Association of Actuaries  
**Experience:** Professor Emeritus, Swiss Federal Institute of Technology (ETH)  
**Main areas of expertise:** risk theory, credibility theory, insurance mathematics



**Professor Jean LEMAIRE**

**ASTIN Board office:** Honorary Chairman  
**Country:** USA  
**Qualification:** PhD in Mathematics; Associate of the Society of Actuaries  
**Experience:** Director of the actuarial science program of the Wharton School of the University of Pennsylvania  
**Main areas of expertise:** mathematical statistics and probability, bonus-malus systems in automobile insurance

# CHAPTERS

As part of our strategy to expand and strengthen ASTIN's presence locally at the regional level, we continue to build up our links with existing ASTIN Chapters in the Caucasus (Armenia, Azerbaijan, Georgia), Denmark, Germany, Italy, Japan and Switzerland. In addition, we are establishing and fostering new relationships in territories where ASTIN is not currently well represented.

For more details about ASTIN Chapters please refer to the ['Our Activities'](#) page on the ASTIN website.



## DEN DANSKE ASTIN FORENING

Chair: Sarah Kæstel-Bjerg

The Danish ASTIN Society was established in 1995 as a sub-division of the Danish Society of Actuaries. The association's purpose is equivalent to ASTIN, helping to share knowledge about the use of actuarial methods in non-life insurance.



## ARBEITSGRUPPE ASTIN, SWISS ASSOCIATION OF ACTUARIES

Chair: Prof. Dr. Mario Wüthrich

The Swiss ASTIN Chapter (called "Arbeitsgruppe ASTIN") was founded on October 15, 1967, by the General Assembly of the Swiss Association of Actuaries in Bern. Swiss ASTIN continues to organize the scientific part of the annual meeting of the Swiss Association of Actuaries.



## ITALY ASTIN CHAPTER

Co-chairs: Giampaolo Crenca, Giovanni Sammartini

The Italy ASTIN Chapter was founded in 2019. The association ISOA was established in Via delle Milizie 1, Rome, and represents Italy in the ASTIN Chapter.



## DAV ASTIN, THE GERMAN ASTIN GROUP

Chairs: Professor Viktor Sandor, Roland Voggenauer

The German ASTIN group was founded in 1979 by Professor Elmar Helten and Jürgen Strauss. The size of the group has grown to well over 200. DAV holds two full-day meetings a year.



## JAPAN ASTIN CHAPTER

Co-chairs: Miyuki Ebisaki, Shigeo Watanabe

The Japanese ASTIN Chapter was formed by volunteers of the ASTIN-related study group of the Institute of Actuaries of Japan (IAJ) on October 31, 2020, in order to strengthen the ties within the ASTIN community.



## THE CAUCASUS

Chairs: Giorgi Abashidze, Gayane Arsenyan, Dilara Asadov

The Caucasus regional ASTIN chapter was founded in October 2019. The founders of the chapter are the young actuarial associations: Actuarial Association of Azerbaijan, Association of Actuaries and Financial Analysts of Georgia (AAFA) and Actuarial Society of Armenia.

# ACTIVITIES

Today, ASTIN has over 1,300 members in nearly 30 countries. ASTIN Colloquia are held each year and, every four years, in conjunction with International Congresses of Actuaries. Jointly with other IAA Sections, three times per year, ASTIN publishes the ASTIN Bulletin -the internationally renowned, peer-reviewed scientific journal of the actuarial profession. ASTIN also organizes working parties and webinars and provides training and bursaries to young researchers in developing economies.

For more information about our activities please visit our ASTIN web page on the IAA website [www.actuaries.org](http://www.actuaries.org)

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## IAA SECTION COLLOQUIUM (ASTIN SECTION) – VIRTUAL, 2021

The 2021 ASTIN online colloquium has concluded. The event took place over a period of four days, hosted by seven chapters across three continents. This was the first attempt at carrying out a colloquium online, and the results for attendance and continuing education were positive. In all, over 460 attended some portion of the event, collecting a total of 2,149 CPD hours. Registrations came from 59 countries in total, so it was a truly global affair.

Our colleagues from the French Institute of Actuaries used the opportunity of the Colloquium to inaugurate their ASTIN Chapter. During the break they organized, the keynote speaker entertained the audience with a fascinating analysis of the incidence of climate change on wine making (What else would we have expected from the Grande Nation?), which achieved a soaring attendance of 140 participants.

The chapter with the most attendees was Switzerland with 227 participants, just edging out Denmark and Italy with 226 each. (Although it looks like Italy may be getting their revenge in the UEFA European Championship.) In its first event as an ASTIN chapter, Japan had a strong debut with 167 participants.

A few comments from attendees:

“Each chapter was able to present something of its own identity.”

“Of course, I was impressed with each presentation, but I think it was good to see the scenes where everyone from each country gathered together and discussed their favorite actuarial science, even in the difficult times of the COVID-19.”

“Prof. Nomura’s keynote speech was a presentation that made us feel a different space, talking about the EQ risks with the background of a starry universe. The introduction with the earthquake quiz evolved into risk analysis using the latest actuarial technology. I was surprised at the extensibility of this technology, as it can be applied to any country if you have the appropriate data set.”

“The ASTIN French chapter was also happy to show how actuaries can contribute to the preservation of the traditional wine culture that is so important for our country and so important for all actuaries around the world :)”

“In the keynote speech of each chapter, I was able to hear the latest topics in practice, such as the response of automobile insurance to the progress of autonomous driving technology and the impact of the pandemic on the insurance industry, which was a great learning experience.”

“The ASTIN online colloquium was a great testament to pulling an international event together when the world makes such things a challenge. Across multiple time zones, and physical locations, people were able to meet and learn.”

“The ASTIN online colloquium will go down in the history of the French Institute of Actuaries as it coincided with the creation of the ASTIN French chapter. This will help to better structure all the initiatives of French actuaries working in P&C and will be a strong motivational tool as well.”

“My highlights: Great mix of technical and practical stuff, always pointing out what and where the real-life relevance lies, great to get an overview of topics globally, and last but not least: The breaks were excellent :-)”

# ASTIN BULLETIN

The ASTIN Bulletin was founded in 1958. Over the last six decades, it has evolved and is now widely regarded as the leading international peer-reviewed journal of the actuarial profession, covering the full breadth of practical and theoretical work in actuarial science.

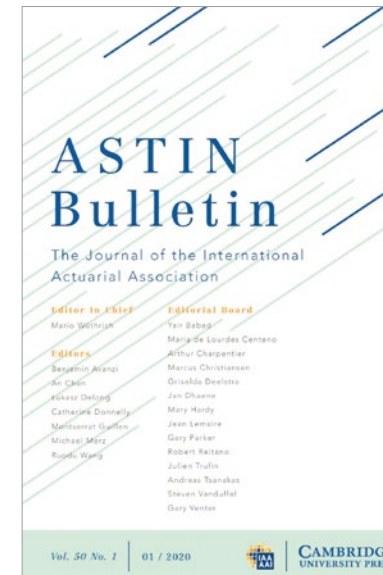
ASTIN Bulletin was awarded the Thompson Reuters Impact Factor. It publishes three issues per year comprising about 30 articles in total. The journal is published by Cambridge University Press. It welcomes the online submission of articles.

ASTIN Bulletin is published in both print and online editions in January, May and September. An electronic copy of the ASTIN Bulletin is distributed to members of the ASTIN, AFIR-ERM, LIFE and PBSS Sections of the IAA, as part of their Section membership benefits. Members wishing to receive a printed edition must contact the [IAA Secretariat](#).

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. The journal especially welcomes papers exploring new areas of interest to the international actuarial profession as well as papers that describe practical, ongoing issues that have arisen in practice.

For more information about the Bulletin, please visit our 'ASTIN Bulletin' web page on the IAA website [www.actuaries.org](http://www.actuaries.org)



## EDITORS:

Benjamin Avanzi  
An Chen  
Lukasz Delong  
Catherine Donnelly  
Montserrat Guillen  
Michael Merz  
Ruodu Wang

## JOURNAL MANAGER:

Christian Levac

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**MARIO WÜTHRICH**  
**EDITOR-IN-CHIEF**  
**OF ASTIN BULLETIN**  
**MARCH 16, 2022**

## Message from the Editor-in-Chief

### Overview

2021 was the second year of the COVID-19 crisis. ASTIN Bulletin also managed this second pandemic year very well. Overall 2021 was a bit more difficult than the 2020 first COVID-19 year, in particular, the submission rates were lower in the first half of 2021 compared to previous years. Fortunately, the submission rate recovered during the second half of 2021, so that we are back at our old submission rate level. The overall quality of the submitted papers was very high, and, in general, we received fewer papers with an immediate rejection.

We published 30 high-quality research papers in 2021, and our impact factor has increased 3 years in row, now, which confirms our position as the leading international actuarial journal with a bias toward more practically motivated and more statistically oriented research papers compared to some other actuarial journals.

### Editorial Board

We did not have any changes in the Editorial Board in 2021. I would like to kindly thank all editors for their invaluable contribution to the success of ASTIN Bulletin. I wish to sincerely thank all the many anonymous peer-reviewers, without whom the journal could not function. A big thank you goes to our journal manager Christian Levac, who is instrumental in running this journal so smoothly.

### ASTIN Bulletin, Volume 51, 2021

In 2021 we published 30 research articles, amounting to 938 pages. Volume 51 contains a good mixture of applied and theoretical papers over the actuarial research areas: **ASTIN type-9; AFIR-ERM type-10; Life & Pension type-11; Health type-0.**

	2017/Vol 47	2018/Vol 48	2019/Vol 49	2020/Vol 50	2021/Vol 51
<b>Number of articles</b>	30	42	31	35	30
<b>Number of pages</b>	961	1,341	914	1,122	938
<b>Average page length</b>	32	32	29	32	31
<b>Impact factor</b>	0.906	1.017	1.236	1.479	N/A

The number of published articles is slightly lower than in the last years, which is mainly due to the pandemic crises, as this difficult situation requires special efforts on various fronts. However, we already have good indications that the number of published articles in 2022 will increase again. Note: the high number in 2018 is explained by the fact that our publisher Cambridge University Press (CUP) changed the typesetter by the end of 2018. This required that the backlog of all accepted papers had to be published by the end of 2018.

The updated impact factor for 2021 is not available yet, but the past improvements have been very stable and positive; the impact factor 2021 is determined from citations in 2021 referring to papers in 2020 and 2019.

All papers continue to be published in the earliest available issue after they have been accepted for publication. As soon as they are professionally typeset, they are published electronically for a few weeks prior to appearing formally in a numbered volume.

## Administration

The current administrative structure continues to work very well. Submissions are handled effectively on an online submission system. At the point of acceptance our administrative officer, Christian Levac takes over and acts as a liaison between the authors and the publisher, CUP. The relationship with CUP is working well and we are pleased with the quality of their work. We are now in our final year of our most recent five year contract with CUP. Discussions have begun for the renewal of the contract in December 2022. CUP provides us with a strong electronic presence and Section members can all log on through [www.actuaries.org](http://www.actuaries.org) to access the most recent papers including papers that have been accepted but not yet published via their FirstView system.

## Open Access (OA) and Plan S

Plan S is an initiative for Open Access (OA) publishing that was launched in September 2018. The plan is supported by cOAlition S, an international consortium of research funding and performing organizations. Plan S requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms, see <https://www.coalition-s.org/>

After several meetings and discussions of the ASTIN Bulletin Management Board (ABMB), the ASTIN Bulletin Journal Manager and myself with representatives of CUP (mainly Andrew Hyde), the involved ASTIN Bulletin parties decided on April 21, 2021,

to join this OA initiative. This ensures that our journal remains attractive for authors and readers also in the future. From our side, this will require more transparency about submission statistics and the review process, however, these additional transparency requirements are generally considered to be the good practice of high-quality scientific journals. The financing of the journal will gradually shift, say, over the next 10 years, from subscriptions to authors through offering more and more OA articles.

ASTIN Bulletin, through CUP, has taken the necessary steps to transition to open research and meet the transformative journal requirements of Plan S, including the OA growth goals set by cOAlition S.

## Outlook

We emphasize that ASTIN Bulletin is the preferred journal for actuarial research. Our publications have a clear actuarial focus presenting interesting statistical work with a practical relevance.

ASTIN Bulletin plays a key role in the area of data analytics and machine learning for insurance. We continue to encourage authors to provide us with code and data as supplementary material.

We aim at increasing the visibility of our publications, in particular, we try to increase the publication of articles that produce high attention and citations. This also requires that we actively participate in international conferences to advertise ASTIN Bulletin and to get in contact with authors, potential future authors and our readership.

## ASTIN WORKING PARTIES

The ASTIN Board encourages and supports applied research through its program called ASTIN Working Parties (AWP). This involves a self-organized group of experts with a clearly defined scope of applied research that is expected to be completed within a reasonable timeframe. The research topics fall within the scope of non-life insurance. They are designed to be timely, practical and provide added value to the ASTIN membership. In addition to stimulating applied research, the AWP also aims to benefit from the intellectual caliber of ASTIN membership.

There are currently two ASTIN working parties actively in progress. These working parties will produce results to benefit non-life insurers in pricing, reserving, and risk management.

Copies of the reports of the completed projects are accessible to ASTIN members and can be downloaded from our ['Working Parties'](#) web page on the IAA website (login required).

Both leadership or participation in an ASTIN working party is an excellent way to establish contacts with colleagues/peers, who have similar interests, as well as the opportunity to share and enhance your professional skills.

If you are interested in forming or joining a working party, please contact the AWP Coordinators at [waltherneuhaus@alambraconsulting.com](mailto:waltherneuhaus@alambraconsulting.com) and/or [almagamo@gmail.com](mailto:almagamo@gmail.com).



**DR. WALTHER NEUHAUS,  
CHAIR OF THE ASTIN WORKING PARTIES**

Walther qualified as an actuary at the University of Oslo in 1982 and obtained his PhD in Actuarial Science in 1988. He has worked in the insurance industry, in consulting and the university sector in Norway, Australia and Portugal. Today he is an independent consultant for non-life insurers and teaches on the Master of Actuarial Science program at the University of Lisbon. His main areas of actuarial interest are loss reserving and credibility theory.



**ALMA QAMO,  
COORDINATOR OF  
THE ASTIN WORKING PARTIES**

Alma started to work as a non-life actuary in 1996 after completing her studies in applied mathematics in Albania. Since then, she has engaged in product design, pricing, reserving, reinsurance, solvency, and risk management for insurers and reinsurers and contributed to insurance regulations and supervision methodologies around solvency and nat-cat risk management. For 12 years, she has participated in technical assistance and assessment programs supported by the World Bank in SEE countries.

In 2021, two working parties continued their activities and one new working party was started.

## Forecast Verification in Insurance

Project Leader: **Dimitri Semenovich, Insurance Australia Group** (Australia)

Project period: May 2020-May 2021 (ongoing)

Summary: A great deal of actuarial work consists of making forecasts. Whereas traditional rate-making and reserving deal with point forecasts, capital models, including stochastic reserving and premium principles, are primarily concerned with probabilistic forecasts in the form of distributions over future outcomes or their functionals. Empirical verification then emerges to systematically assess the quality of all such forecasts, including those where the forecaster has applied subjective judgment.

The Working Party will review existing meteorology and statistics literature on empirical forecast verification and suggest methods that are most appropriate to the established areas of actuarial practice. Where possible this will also include suggestions for the economic interpretation of such metrics. At last count the Working Party had eight members.

The Working Party produced a second conference presentation during 2021 and currently work on the final report is underway. Forecast verification is emerging as an important new perspective in actuarial science and those interested should have a look at the recently published survey: Model Comparison and Calibration Assessment: User Guide for Consistent Scoring Functions in Machine Learning and Actuarial Practice by Tobias Fissler et al.

## Statistical Methods for the Derivation of Exposure Curves from First Principles

Project Leader: **Pietro Parodi, SCOR** (UK)

Project period: April 2020-April 2021 (ongoing)

Summary: The main objectives of this Working Party are to explore: a) the connection between the property graph approach to exposure rating and percolation theory as well as epidemic theory; b) the relationship between existing exposure curves and the curves arising from graph theory; c) the relationship between the graph parameters and the shape of the exposure curves; d) whether fire propagation models developed by engineers can be used to derive more realistic exposure curves; and e) if the graph approach can be extended to other risks where contagion is possible.

The Working Party has eleven members and has produced an abstract for a presentation at ICA2023.

## Pricing and Reserving Issues related to COVID-19

Project Leader: **Ryutaro Yamada, Guy Carpenter** (Japan)

Project period: November 2021-May 2022

Summary: COVID-19 has affected the frequency and severity of claims for many lines of insurance, including motor insurance, commercial property, and general liability. The Working Party will seek to better understand the impact of COVID-19 on claims frequency and severity in different geographies and how actuaries have responded through data collection and assessment of key assumptions pertinent to reserving and pricing work. A survey will be conducted to collect information about: the observed impacts of COVID-19 in various geographies; the collection of relevant data and information useful for understanding the impact; the near-term outlook and post-COVID outlook; the adjustments made to modeling methods and assumptions for reserving and pricing purposes; regulatory requirements affecting or relying on reserving, pricing and capital calculating processes, including rate filing approvals and pandemic-related requests (e.g. capital scenarios).

The Working Party has 18 members and is currently (April 2022) evaluating the results of 100 responses. The deadline was extended till April 28, which keeps the Working Party on track.

## ASTIN WEBINARS


ASTIN regularly organizes its topical webinars jointly with the IAA Secretariat.

They are used to share knowledge and expertise among ASTIN members and the wider non-actuarial community. ASTIN webinars are accessible to all ASTIN members, free of charge.

### Our recent webinars

As in 2020, ASTIN presented five webinars:

A recording of each webinar, along with a PDF copy of the presentation, can be found on the ASTIN website and is freely accessible to ASTIN members. For more details about ASTIN webinars please refer to the ['Our Activities'](#) web page on the ASTIN website.

- 
- [AI in Actuarial Science](#)  
by Ron Richman
  - [Unsupervised Learning Applied to the Customer Lifetime Value \(CLV\)](#)  
by Claudio Giancaterino AI in Actuarial Science
  - [Basic Reserving Workshop](#)  
by Michiel van de Wardt
  - [Introduction to Actuarial Pricing](#)  
by Frank Cuypers
  - [Three-layer Problems and the Generalized Pareto Distribution](#)  
by Michael Fackler

## MASTERCLASSES

Among its recent initiatives, ASTIN plans to produce a series of online Masterclasses on a wide range of non-life insurance topics given by eminent figures in the actuarial profession and renowned authorities on risk and insurance. The online Masterclasses are designed for risk and actuarial professionals, ranging from analysts to C-suite executives, and will be fully interactive, providing ASTIN members with free access and covering key topics of interest such as financial stability and enterprise risk management, regulatory changes, data science and artificial intelligence in insurance, climate change and catastrophe risk, cyber risk, and InsurTech as well as the impact of disruptive technologies.

This initiative is being co-ordinated by Yuriy Krvavych (Chair ASTIN Masterclasses).

## MODEL RISK MANAGEMENT — THE QUEST FOR A UNIFYING APPROACH

Lecturer: **Andrew D. Smith** (Ireland / UK)

Modern financial businesses rely on thousands of models to support decision-making from pricing and reserving through risk and capital to management bonuses and shareholder decisions.

These models sometimes fail. Do forecasts prove to be inaccurate or are decisions supported by models unwise?

What can we do about this? We cannot eliminate the possibility that the future turns out differently to a model prediction. However, we can ensure that assurance we give on models is both truthful and statistically meaningful. We can reverse stress-test models by feeding them awkward simulated data until they fail. We can choose between harsh validation tests that reveal model weaknesses, or we can apply powerless validation methods where a green light is a foregone conclusion. We can, and must, foster a culture where people who become aware of model shortcomings are heard rather than silenced.

This Masterclass uses a series of examples to highlight quantitative approaches to model risk management, using examples related to underwriting risk, stochastic reserving and the modeling of asset price changes. Andrew offers tips for actuaries pressurized into expressing undeserved confidence in risky models, together with tips to better support decision-making in the context of uncertainty.

### EPISODES

1. Introduction—uses of models and where models go wrong
2. The nature of model risk
3. Application: underwriting risk models
4. Application: reserving risk
5. Ersatz model tests
6. Application: stock market returns
7. Professionalism
8. Conclusion



**ANDREW D. SMITH**

Andrew D. Smith is an assistant professor in the School of Mathematics and Statistics at University College Dublin (Ireland) and an Honorary Fellow of the Institute of Actuaries (UK). Before he moved to Ireland in 2017, he gained 30 years of insurance experience, specializing in stochastic modeling, including fifteen years as a partner in a major global consulting firm. Andrew is well known internationally for his portfolio of ground-breaking client assignments and extensive published research in the actuarial field. In 1996, he won the UK Institute of Actuaries' prize for his paper "How Actuaries can use Financial Economics," another prize in 2002 for his joint paper "Corporate Bond Models," and a further prize for his joint 2004 paper "The Cost of Capital for Financial Firms." His 2001 methodology for constructing risk-free yield curves has been adopted for the published yield curves under Solvency II. His joint paper "Why Financial Firms can Charge for Diversifiable Risk" won a Casualty Actuarial Society prize in 2003 and underpins much of current thinking on risk margins. In 2008, the UK Institute of Actuaries awarded Andrew a Finlaison Medal, in recognition of Andrew's contribution to actuarial science, also awarding a prize for his joint paper "The Modelling of Extreme Market Events." Having represented the UK twice in the International Mathematical Olympiad, he graduated from Cambridge University in 1990, with a first-class degree in mathematics and a Master of Mathematics postgraduate degree.

## ASTIN REGIONAL EVENTS

ASTIN sees its core mission as being to provide practical research and education to benefit non-life actuaries around the world. This targets not only ASTIN members but also actuaries practicing in non-life insurance globally. In 2017 and 2018, ASTIN held a series of regional events in Central America-ASTIN Colloquium in Panama City in 2017, and also a Joint CAS-ASTIN Workshop in Jamaica and Joint One-Day AFIR-ASTIN Seminar in Mexico in 2018. These regional events offered innovative research presentations as well as introductory workshops aimed at assisting those in Central and South America to gain a better understanding of non-life actuarial mathematics.

## New Zealand Society of Actuaries; Modeling Tail Events

**Time:** July 2020

The New Zealand Society of Actuaries hosted ASTIN Chair Dr. Frank Cuypers, for a [90-minute interactive seminar](#) on Modeling Rare Tail Events, addressing:

- Rare events in the context of risk and solvency models
- Experience models of extreme events and their calibration
- Exposure models of extreme events and their validation
- Tail dependencies and their inference

The session included examples in Excel.

## PRIZES & AWARDS

### PRIZES

Each year the Hachemeister Prize is awarded to the best paper presented at the ASTIN colloquium. The prize was established in 1993 in recognition of Charles A. Hachemeister's many contributions to Actuarial Studies in Non-Life Insurance (ASTIN) and his efforts to establish a closer relationship between the Casualty Actuarial Society (CAS) and ASTIN.

The 2021 Hachemeister Prize was awarded to the paper "AGLM: A Hybrid Modeling Method of GLM and Data Science Techniques," by Suguru Fujita, Toyoto Tanaka, Kenji Kondo, and Hirokazu Iwasawa.

The CAS Hachemeister Committee feels that the approach addresses a real need to balance the accuracy of data science techniques with the strong explanatory power of GLMs. The accompanying R package allows practicing actuaries to use the method easily. Practitioners, then, can reasonably feel free to use it even without comparing with other methods with potentially similar predictive powers.

### AWARDS

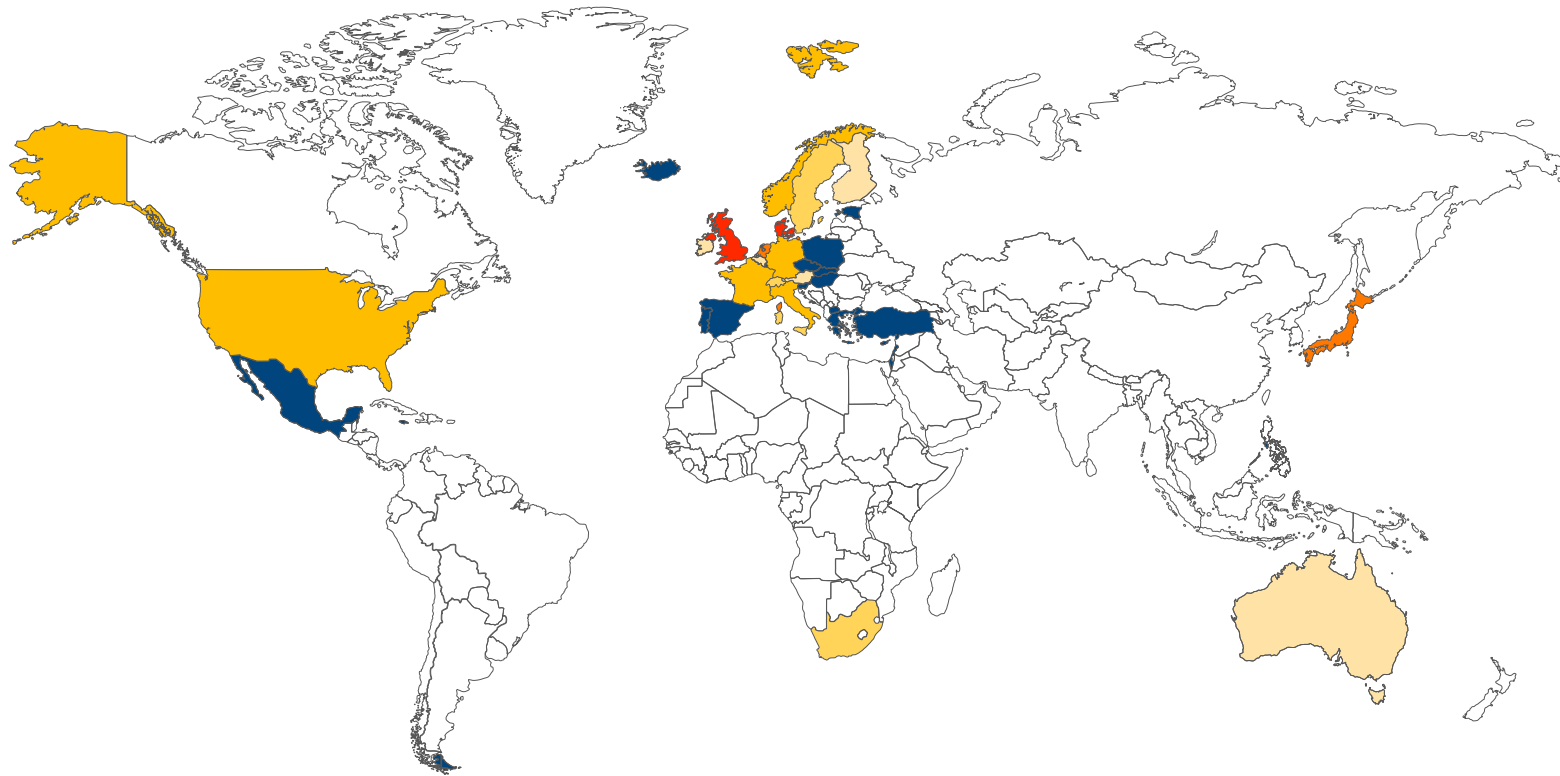
Each year, ASTIN provides the 'ASTIN Best Paper Award' to the best papers written and presented by actuarial researchers. This award is conducted in conjunction with the annual ASTIN colloquium.

A total of 16 papers which were presented at the ASTIN colloquium have been considered for the Best Paper award. Members of the Scientific Committee have assessed these papers with respect to originality, clarity of presentation and contribution to actuarial practice.

Two winners of the Best Paper Prize were "Three-layer Problems and the Generalized Pareto Distribution" by Michael Fackler and "Peer-to-Peer Risk Sharing with an Application to Flood Risk Pooling" by Runhuan Feng, Chongda Liu and Stephen Taylor.

The Committee felt that Mr. Fackler's paper identifies a realistic problem in reinsurance pricing practice and presents a convenient and simple solution. The paper by Feng, Liu and Taylor introduces a novel algorithmic approach to the construction of decentralized risk pooling mechanisms and may inspire innovation in financial services.

# FIGURES



**30**  
COUNTRIES

**1,307**  
MEMBERS





**EBERHARD MÜLLER**  
**ASTIN TREASURER**  
**MAY 2, 2022**

## Message from the Treasurer

This year, we received the confirmation of the audited reports for the full year 2021 on March 28th from the IAA office.

“Signs of normality at the horizon...”

The good news first: thanks to our major “Masterclass” project and our actuvie activities we managed to spend nearly exactly our budget for initiatives (CAD48,000 out of a budgeted CAD50,000) in 2021. We are convinced that this contributed to creating the value that our members deserve. Also for awards, we could pay out CAD4,500 from a budgeted CAD5,000.

What we could not spend as intended, due to the lasting pandemic situation, were again the budgeted amounts for Meetings and Travel (CAD35,000) and Bursaries (CAD20,000). Additionally we see unexpected bookings for (not realized) gains from investments of CAD53,087. Together with our regular income from Interest & Investment of CAD15,793, this means more from investments than from our regular membership fee income of CAD68,000!

As all other positions are more or less balancing each other, this resulted in a position of CAD105,932 higher than budgeted by year-end 2021. Rather than the scheduled decreasing of our net assets by CAD83,297, we increased it again by CAD22,635 to CAD821,761. This will certainly allow for further value creating initiatives for our members in the upcoming years.

With “mixed feelings”, I noted our membership development. Brilliant news came from Australia, where our membership number more than tripled from 6 to 19. Also from the Netherlands (+21 to 121), UK (+14 to 191, rank 1 again), Sweden and Italy (+10 each) we saw positive developments. Unfortunately we had to digest major decreases in France (-34 to 77), SOA and CAS (-14 each), Denmark and Israel (-9 each) and individuals (-15). Altogether, this resulted in a decrease from 1,336 to 1,307 members by year-end 2021. We are in the process of analyzing the reasons for this and will report further when results are available.

## BUDGET 2022

When setting up our 2022 budget we were expecting a quite normal year and continued with our “optimistic” plans. We again planned a reduction of ASTIN net assets by CAD73,361. This was based on a continued membership figure of 1,336 and the usual “zero” estimate for unrealized gains/losses in 2022. As we meanwhile all know, we had to change our plans for the Orlando Colloquium from “in person” to online again. This will most probably mean another year with limited Travel Expenses and Bursaries. All other initiatives, however, especially Masterclasses, should proceed as intended.

[Watch the speech](#)

# ASTIN STATEMENT OF FINANCIAL POSITION

As at December 31, 2021

<b>ASSETS</b>	<b>DEC 31, 21</b>	<b>DEC 31, 20</b>
<b>Current Assets</b>		
<u>Chequing/Savings</u>		
Cash in bank accounts	\$ 18,289	\$ 9,414
Cash in investment accounts	130,305	-
Short-term investments	-	125,275
<u>Total Chequing/Savings</u>	148,594	134,689
<u>Other Current Assets</u>		
Membership receivables	-	450
Other receivables	15,562	-
Prepaid expenses	664	18,632
<u>Total Other Current Assets</u>	16,226	19,082
<b>Total Current Assets</b>	164,821	153,771
<b>Fixed Assets</b>		
<u>Computer software - cost</u>	20,478	20,478
<u>Computer software - amortization</u>	(14,692)	(19,082)
<b>Total Fixed Assets</b>	5,786	9,898
<b>Other Assets</b>		
<u>Long-term investments - bonds</u>	401,876	402,506
<u>Long-term investments - stocks</u>	304,137	276,165
<b>Total Other Assets</b>	706,013	678,671
<b>TOTAL ASSETS</b>	<b>\$ 876,620</b>	<b>\$ 842,340</b>
<b>LIABILITIES &amp; NET ASSETS</b>		
<b>Liabilities</b>		
<u>Current Liabilities</u>		
Other current liabilities		
Deferred revenue	\$ 3,260	\$ 3,250
Other payables & accruals	25,960	14,325
<u>Total Current Liabilities</u>	29,220	17,575
<b>Total Liabilities</b>	29,220	17,575
<b>Net Assets</b>		
Unrestricted surplus	824,764	806,419
Excess (deficiency) of Revenue over expenses	22,635	18,345
<b>Total Net Assets</b>	847,399	824,764
<b>TOTAL LIABILITIES &amp; NET ASSETS</b>	<b>\$ 876,620</b>	<b>\$ 842,340</b>

# ASTIN STATEMENT OF REVENUES & EXPENSES

actual vs. budget

For the 12 months ended  
December 31, 2021

	12 MONTHS ENDED				12 MONTHS ENDED
	Dec 31, 21	Annual Budget	\$ Variance	% Variance	Dec 31, 20
<b>ORDINARY INCOME/EXPENSE</b>					
<b>Revenues</b>					
Subscription and Other revenue	\$ 25,014	\$ 15,000	\$ 10,014	67%	\$ 25,692
Gain(loss) on investments	53,087	-	53,087	-	23,510
Interest & investment revenue	15,793	10,000	5,793	58%	17,289
Membership fees	68,000	65,000	3,000	5%	67,400
IAA Section fund income	9,080		9,080		10,711
<b>Total Revenue</b>	<b>170,973</b>	<b>90,000</b>	<b>80,973</b>	<b>90%</b>	<b>144,603</b>
<b>Expense</b>					
<b>Administration</b>					
Office & overheads	617	5,000	4,383	88%	214
Bank charges & service fees	17	250	233	93%	17
	<b>634</b>	<b>5,250</b>	<b>4,616</b>	<b>88%</b>	<b>231</b>
<b>Governance</b>					
Loss(gain) on foreign exchange	4,500	5,000	500	10%	2,539
Professional services	2,232	5,000	2,768	55%	3,675
Bursaries	-	20,000	20,000	-	7,500
Initiatives	48,112	50,000	1,888	4%	22,834
	<b>54,845</b>	<b>80,000</b>	<b>25,155</b>	<b>31%</b>	<b>36,548</b>
<b>Communications and IT</b>					
Amortization	4,112	3,847	(265)	(7%)	3,847
Bulletins	23,712	10,000	(13,712)	(137%)	16,740
Committee & representation	-	1,000	1,000	-	-
Marketing	23,507	-	(23,507)	-	-
Printing	-	5,000	5,000	-	-
Telephone & teleconference	385	1,000	1,000	62%	891
Web seminar expenses	-	1,000	1,000	-	263
	<b>51,716</b>	<b>21,847</b>	<b>(29,869)</b>	<b>(137%)</b>	<b>21,741</b>
<b>Events</b>					
Meetings - other	-	20,000	20,000	-	522
Travel - general	-	15,000	15,000	-	2,130
	<b>-</b>	<b>35,000</b>	<b>35,000</b>	<b>-</b>	<b>2,652</b>
<b>Total Expense</b>	<b>107,194</b>	<b>142,097</b>	<b>34,903</b>	<b>25%</b>	<b>61,172</b>
<b>NET ORDINARY INCOME</b>	<b>63,779</b>	<b>(52,097)</b>	<b>115,876</b>	<b>(222%)</b>	<b>83,431</b>
<b>SECTION ADMINISTRATION</b>	<b>(41,144)</b>	<b>(31,200)</b>	<b>(9,944)</b>	<b>(32%)</b>	<b>(41,575)</b>
<b>EXCESS (DEFICIENCY) OF REVENUES OVER EXPENSES</b>	<b>\$ 22,635</b>	<b>\$ (83,297)</b>	<b>\$ 105,932</b>	<b>127%</b>	<b>\$ 41,856</b>

# ASTIN MEMBER FEES

1/3

	DEC 21			DEC 20		
	Qty	Fee	Amount	Qty	Fee	Amount
(Al) Albanian Actuarial Association	0	50,00	0	1	50,00	50
<b>Total (Al) Albanian Actuarial Association</b>	<u>0</u>		<u>0</u>	<u>1</u>		<u>50</u>
(Au) Actuaries Institute Australia	14	50,00	700	6	50,00	300
<b>Total (Au) Actuaries Institute Australia</b>	<u>5</u>	<u>100,00</u>	<u>500</u>	<u>0</u>	<u>100,00</u>	<u>0</u>
	19		1,200	6		300
(AT) Aktuarvereinigung Österreichs (AVÖ)	9	50,00	450	9	50,00	450
<b>Total (AT) Aktuarvereinigung Österreichs (AVÖ)</b>	<u>9</u>		<u>450</u>	<u>9</u>		<u>450</u>
(Co) Institut des Actuaire de Cote d'Ivoire	0	50,00	0	3	50,00	150
<b>Total (Co) Institut des Actuaire de Cote d'Ivoire</b>	<u>0</u>		<u>0</u>	<u>3</u>		<u>150</u>
(Cz) Česká Společnost Aktuárů	2	50,00	100	2	50,00	100
<b>Total (Cz) Česká Společnost Aktuárů</b>	<u>2</u>		<u>100</u>	<u>2</u>		<u>100</u>
(De) Den Danske Aktuarforening	172	50,00	8,600	181	50,00	9,050
<b>Total (De) Den Danske Aktuarforening</b>	<u>172</u>		<u>8,600</u>	<u>181</u>		<u>9,050</u>
(Es) Eesti Aktuaaride Liit	1	50,00	50	1	50,00	50
<b>Total (Es) Eesti Aktuaaride Liit</b>	<u>2</u>	<u>100,00</u>	<u>200</u>	<u>2</u>	<u>100,00</u>	<u>200</u>
	3		250	3		250
(Fi) Suomen Aktuaariyhdistys	22	50,00	1,100	23	50,00	1,150
<b>Total (Fi) Suomen Aktuaariyhdistys</b>	<u>22</u>		<u>1,100</u>	<u>23</u>		<u>1,150</u>
(Fr) Institut des Actuaire	77	50,00	3,850	111	50,00	5,550
<b>Total (Fr) Institut des Actuaire</b>	<u>77</u>		<u>3,850</u>	<u>111</u>		<u>5,550</u>
(Ge) Deutsche Aktuarvereinigung e. V. (DAV)	94	50,00	4,700	96	50,00	4,800
<b>Total (Ge) Deutsche Aktuarvereinigung e. V. (DAV)</b>	<u>1</u>	<u>100,00</u>	<u>100</u>	<u>1</u>	<u>100,00</u>	<u>100</u>
	95		4,800	97		4,900
(Hu) Magyar Aktuárius Társaság	1	50,00	50	0	50,00	0
<b>Total (Hu) Magyar Aktuárius Társaság</b>	<u>1</u>		<u>50</u>	<u>0</u>		<u>0</u>
(Ic) Félag Islenskra Tryggingastærðfræðing	7	50,00	350	7	50,00	350
<b>Total (Ic) Félag Islenskra Tryggingastærðfræðing</b>	<u>7</u>		<u>350</u>	<u>7</u>		<u>350</u>

# ASTIN MEMBER FEES

2/3

	DEC 21			DEC 20		
	Qty	Fee	Amount	Qty	Fee	Amount
(Ir) Society of Actuaries of Ireland	18	50,00	900	14	50,00	700
<b>Total (Ir) Society of Actuaries of Ireland</b>	18		900	14		700
(Is) Israel Association of Actuaries	2	50,00	100	11	50,00	550
<b>Total (Is) Israel Association of Actuaries</b>	2		100	11		55
(It) Istituto Italiano degli Attuari	51	50,00	2,550	41	50,00	2,050
<b>Total (It) Istituto Italiano degli Attuari</b>	51		2,550	41		2,050
	103	50,00	5,150	109	50,00	5,450
(Ja) Institute of Actuaries of Japan	3	100,00	300	109		5,450
<b>Total (Ja) Institute of Actuaries of Japan</b>	106		5,450			
(Le) Lebanese Association of Actuaries	1	50,00	50	1	50,00	50
<b>Total (Le) Lebanese Association of Actuaries</b>	1		50	1		50
(Me) Colegio Nacional de Actuarios A. C.	1	50,00	50	1	50,00	50
<b>Total (Me) Colegio Nacional de Actuarios A. C.</b>	1		50	1		50
(Ne) Het Koninklijk Actuarieel Genootschap	121	50,00	6,050	100	50,00	5,000
<b>Total (Ne) Het Koninklijk Actuarieel Genootschap</b>	121		6,050	100		5,000
(No) Den Norske Aktuarforening	77	50,00	3,850	79	50,00	3,950
<b>Total (No) Den Norske Aktuarforening</b>	77		3,850	79		3,950
	2	50,00	100	4	50,00	200
(Po) Instituto dos Actuários Portugueses	1	100,00	100	1	100,00	100
<b>Total (Po) Instituto dos Actuários Portugueses</b>	3		200	5		300
(Sl) Slovensko Aktuarsko Društvo	2	50,00	100	2	50,00	100
<b>Total (Sl) Slovensko Aktuarsko Društvo</b>	2		100	2		100
(So) Actuarial Society of South Africa	40	50,00	2,000	38	50,00	1,900
<b>Total (So) Actuarial Society of South Africa</b>	40		2,000	38		1,900
(Sp) Col.legi d'Actuaris de Catalunya	5	50,00	250	5	50,00	250
<b>Total (Sp) Col.legi d'Actuaris de Catalunya</b>	5		250	5		250

# ASTIN MEMBER FEES

3/3

	DEC 21			DEC 20		
	Qty	Fee	Amount	Qty	Fee	Amount
(Sw) Association Suisse des Actuaire	34	50,00	1,700	30	50,00	1,500
<b>Total (Sw) Association Suisse des Actuaire</b>	<u>34</u>		<u>1,700</u>	<u>30</u>		<u>1,500</u>
(Se) Svenska Aktuarieföreningen	33	50,00	1,650	22	50,00	1,100
<b>Total (Se) Svenska Aktuarieföreningen</b>	<u>6</u>	<u>100,00</u>	<u>600</u>	<u>7</u>	<u>100,00</u>	<u>700</u>
	39		2,250	29		1,800
(Tu) Actuarial Society of Turkey	2	50,00	100	1	50,00	50
<b>Total (Tu) Actuarial Society of Turkey</b>	<u>2</u>		<u>100</u>	<u>1</u>		<u>50</u>
(UK) Institute and Faculty of Actuaries	191	50,00	9,550	177	50,00	8,850
<b>Total (UK) Institute and Faculty of Actuaries</b>	<u>191</u>		<u>9,550</u>	<u>177</u>		<u>8,850</u>
(US) Casualty Actuarial Society	67	50,00	3,350	81	50,00	4,050
<b>Total (US) Casualty Actuarial Society</b>	<u>67</u>		<u>3,350</u>	<u>81</u>		<u>4,050</u>
(US) Society of Actuaries	29	50,00	1,450	43	50,00	2,150
<b>Total (US) Society of Actuaries</b>	<u>29</u>		<u>1,450</u>	<u>43</u>		<u>2,150</u>
Section Dues-Individuals	76	50,00	3,800	125	50,00	6,250
<b>Total Section Dues-Individuals</b>	<u>35</u>	<u>100,00</u>	<u>3,500</u>	<u>1</u>	<u>100,00</u>	<u>100</u>
	111		7,300	126		6,350
	<b><u>1,307</u></b>		<b><u>68,000</u></b>	<b><u>1,336</u></b>		<b><u>67,400</u></b>

# ASTIN INVESTMENTS

## Asset's allocation

Operating Funds	
Cash in bank accounts	\$ 18,290
	<b>18,290</b>

## Surplus Funds

Cash in investments	130,305
Short-Term investments	-
Long-term investments - bonds	401,876
Long-term investments - stocks	304,137
	<b>836,317</b>

**Total Cash & Investments** 854,607

Other assets	22,013
<b>Total assets</b>	<b>\$ 876,620</b>

## Allocation of Operating Funds

Cash	\$ 18,290
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## Allocation of Surplus Fund

<b>Canadian Equity = iShares S&amp;P/TSX 60 INDEX</b>	<b>304,137</b>	<b>43.1%</b>	<b>30-40%</b>	<b>35%</b>	S&P TSE 60 Total Return Index (TRI)
<b>Canadian Fixed Income = iShares Core CDN Short-Term Bond Index</b>	<b>401,876</b>	<b>56.9%</b>	<b>50-60%</b>	<b>55%</b>	
<b>Treasury Bills = Government of Canada</b>	<b>0</b>	<b>0</b>	<b>5-20%</b>	<b>10%</b>	
<b>Total of Investment Instruments</b>	<b>706,013</b>	<b>100%</b>			
<b>Cash</b>	<b>130,305</b>				
<b>Total of Surplus Funds</b>	<b>836,317</b>	<b>100%</b>			
Cash in bank accounts	18,290				
<b>Total Cash &amp; Investments</b>	<b>854,607</b>				

## Allocation

\$ 18,290

Operating range

Long-term BM

BM Index

Allocation	%	Operating range	Long-term BM
304,137	43.1%	30-40%	35%
401,876	56.9%	50-60%	55%
0	0	5-20%	10%
706,013	100%		
130,305			
836,317	100%		
18,290			
854,607			

# JOIN & ACT

ASTIN exists to support its members, the insurance industry and the general public. The papers, research, webinars, chapter events and global colloquia depend on the interest, work, participation and passion of the membership. We on the ASTIN Board are grateful for the wonderful contributions of so many actuaries across the globe. As you share the knowledge and insight you gain from ASTIN's activities with colleagues, consider encouraging them to join. If you've not attended a regional event, or joined a working party, we encourage you to consider doing so.

We hope that you continue to find value in what ASTIN does and we look forward to seeing and hearing from you at future events. Collectively, working together, we all benefit.

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**International Actuarial Association**

1203 - 99 Metcalfe Street, Suite 1203 - Ottawa, Ontario K1P 6L7 - Canada

**Publication Director:** Brian Fannin

**Editorial Board:** Brian Fannin, Christian Levac, Yuriy Krvavych and Pierre Miehé

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