

## **Message from the President**



It's hard to believe that my term as president of the SSC is almost done. It's been a busy year.

SSC 2019 in Calgary was a tremendous success. Calgary and the university were wonderful hosts. **Karen Kopciuk** and **Alex De Leon**, the local organizing committee, and all the volunteers did a great job with the local arrangements, while the program committee led by **Lisa Lix** delivered an exciting program that had interesting sessions right up to the last session on Wednesday afternoon. The president's invited speaker, **Sylvia Richardson**, delivered a great talk to kick off the meeting, and the sessions were enjoyable throughout the week. The awards committee, led by **Jack Gambino**, and the various other committees awarding key prizes of the SSC, presented us a great slate of deserving statisticians for a variety of awards.

The Canadian Statistics Student Conference, organized entirely by students led by **Anita Brobbey** and **Myrtha Reyna**, was also a success; it showcased some of the great work (and great organizational skills) our students have, and shows that our society's future is bright.

The society went through a few personnel changes over the year. **Miaclaire Woodland** left her job as executive assistant to return to school, but came back as a part-time administrative assistant for the SSC. **Michelle Benoit** has taken on the executive assistant role and has been a quick study to get up to speed on our operations and to start proposing new ideas for the society. The society would not function without the excellent work by Michelle and Miaclaire; we depend on them for our day-to-day functioning and much of our organizational strength.

The executive had a number of changes as well. **Edward Chen** resigned as treasurer, and **Jason Loeppky** as electronic services manager. **Hugh Chipman** (while keeping busy as past-president) filled in as ESM for Jason for a couple of years. Edward is being replaced by **Patrick Brown**, and **Angelo Canty** has taken on the ESM role. I want to take the time to thank Edward for his long and dedicated service to the SSC; his contribution at many levels, especially as treasurer, has been instrumental in the development of the society. Jason's work, too, has been critical to developing the society's electronic platform. And, finally, Hugh Chipman has been tremendously dedicated to ensuring that the society functions; his contributions as interim ESM, as past-president, and as general institutional memory of the society, were a great help throughout the year.

It's been a pleasure to serve as president of the SSC. The society is extremely well-organized, and volunteers throughout the society keep us functioning at a very high level. All this makes the job of the president easy; it's just a matter of asking very capable and willing people to keep things moving. The society is in very good hands, with **Bruce Smith** as incoming president, **Wendy Lou** as incoming president-elect, and several new board members ready to contribute.

I look forward to seeing lots of you at JSM in Denver and at SSC 2020 in Ottawa!

Robert Platt

SSC President 2018–2019

## **SSC at JSM 2019**



This year, the SSC is once again a partner of JSM, which will take place in Denver, Colorado, from July 27 to August 1. If you are planning to attend, don't miss our new initiative: an invited session on **Highlights of *The Canadian Journal of Statistics***. Organized by **Louis-Paul Rivest** from Université Laval and taking place on Tuesday, July 30, from 10:30 a.m. to 12:20 p.m., this session will feature **Dennis Cook**, **Rob Tibshirani**, **Jeff Rosenthal**, and **Dave Stephens**. The SSC's other invited paper sessions are: **Making an Impact in Neuroscience: Advances in Statistical Methods for Brain Imaging** (July 29, 8:30 a.m.–10:20 a.m.; organized by **Farouk Nathoo**, University of Victoria), **Making Sense of Complex Featured Data with Statistical Methods** (July 31, 2:00 p.m.–3:50 p.m.; organized by **Grace Yi**, University of Waterloo), and **Advances in Statistical Disclosure Control Methodology** (August 1, 10:30 a.m.–12:20 p.m.; organized by **Bei Jiang**, University of Alberta). In addition, the SSC is the main sponsor of the topic contributed session **Believable Big Bayes: Large-Scale Bayesian Inference with Finite-Data Guarantees** (July 28, 4:00 p.m.–5:50 p.m.; organized by **Trevor Campbell**, UBC) and of a contributed poster presentation session on July 29, 10:30 a.m.–12:20 p.m.; the SSC is also a secondary sponsor of a topic contributed session **Inference with Non-Probability Sample Through Data Integration** (July 29, 10:30 a.m.–12:20 p.m.; organized by **Sixia Chen**, University of Oklahoma Health Sciences Center).

You are all invited to attend the **SSC reception** hosted by SSC president **Bruce Smith** in **H-Mineral Hall D** in the Hyatt Regency ([location](#)) on July 30, 5:30 p.m.–7:00 p.m. The SSC is also looking for volunteers to man its booth; we count on you.

**Johanna G. Nešlehová**

SSC Representative at the JSM Program Committee

## **Adam Kashlak: Recipient of the New Investigator Presentation Award 2019**



At the 2019 SSC Annual Meeting, the New Investigator Committee ran the second annual New Investigator Presentation Award competition. This distinction is awarded for the best contributed talk given by a New Investigator (someone within five years of beginning their first academic appointment, and within 10 years of completing their PhD program). Entries were judged on the quality of both the presentation and the underlying research. The award consists of a certificate and a cash prize.

We are happy to announce that the 2019 recipient of the award is **Adam Kashlak** of the University of Alberta for his talk titled "Symmetrization for exact nonparametric functional ANOVA." Congratulations, Adam!

## **Jamie Stafford: Recipient of the 2019 Distinguished Service Award**



Professor **Jamie Stafford** is the recipient of the 2019 Distinguished Service Award from the Statistical Society of Canada (SSC). This award honours an individual who has played an important and substantial role in fostering the growth and success of the Canadian statistical sciences community through leadership in the SSC.

Jamie was born in Toronto, and attended the University of Toronto for undergraduate and graduate work, completing his PhD in the Department of Statistics in 1992. During his time at the University of Toronto, he was also a track star—all Canadian and a veteran of four world championships as a member of the national team. His PhD thesis, under the supervision of **David Andrews** and **Rob Tibshirani**, was focused on asymptotics for likelihood-based inference. The methods of the time involved lengthy expansions and careful collection of terms, and Jamie had the brilliant idea of bypassing these tedious hand calculations with symbolic computation. This work evolved into the book with **David Andrews**, *Symbolic Computation for Statistical Inference*, published by OUP in 2000.

Jamie held postdoctoral fellowships at the University of Oxford and then at Stanford University, and in 1994 joined the Department of Statistical and Actuarial Sciences at Western University. In 1999 he moved to the University of Toronto in the Departments of Public Health Sciences and Statistical Sciences. His skills in leadership were recognized very early: he was graduate chair at Western, and associate, acting and then interim chair of the Department of Public Health Sciences in the Faculty of Medicine. From 2002 to 2009 he first established, and then led, the National Program on Complex Data Structures. This was a pilot project intended to lead to a national institute for statistical science, and the Canadian Institute for Statistical Sciences is the result. Jamie's leadership with NPCDS galvanized the community around interdisciplinary research, inspired many students who went on to establish successful research collaborations, and set the stage for the current success of CANSSI. While juggling all these administrative roles he continued to develop research programs in spatial data analysis, survey sampling, and spatio-temporal models, with a special emphasis on local smoothing methods applied to this non-standard and complex data.

In 2008 Jamie was appointed chair of the Department of Statistics, and for the next 10 years led a remarkable period of expansion of the department. During those 10 years undergraduate enrollment in statistics programs increased by tenfold. Jamie managed this growth with grace and vision. He developed a core of teaching stream faculty to provide pedagogical leadership in the department. He managed a large increase in administrative positions to help the department cope with the flood of students. Most importantly, he established the department as a recognized research resource across campus, primarily through a number of targeted and joint appointments in a wide range of application areas, including biostatistics, computer science, sociology, astronomy and astrophysics, and psychology. In addition to advancing statistical science at the University of Toronto, these efforts have provided a model for other groups in Canada to look to as their student numbers increase.

Jamie has three children with **Maria Luisa Gardner**, R.I.P.: **Gabriela**, **Lucia**, and **Nicholas**, and two step-children with **Leanne Shafir**: **Talia** and **Gabrielle**. Jamie continues to run regularly, but finds he cannot keep up with his spouse or any of his children!

**The citation for the award reads:**

*“To James E. Stafford, for his vision in developing the National Program on Complex Data Structures, the forerunner of the Canadian Statistical Sciences Institute (CANSSI), for his enthusiastic and dynamic leadership in statistical science across Canada, and for hosting the 2014 Annual Meeting of the SSC.”*

Nancy Reid was primarily responsible for preparing this material.

## **Bruno Rémillard: SSC Gold Medalist 2019**



This year's recipient of the Gold Medal of the Statistical Society of Canada is **Bruno N. Rémillard**. This prestigious award is bestowed upon a person who has made outstanding contributions to statistics, or to probability, either to mathematical developments or in applied work. It is intended to honour current leaders in their field.

Bruno was born in 1961 in St-Raphaël, Québec, where he grew up. He studied mathematics at Université Laval (BSc, 1983; MSc, 1985) and at Carleton (PhD, 1987). After being an NSERC postdoctoral fellow at Cornell University for a year, he joined the Université du Québec à Trois-Rivières in 1988. He was promoted to the rank of associate in 1992 and became a full professor in 1996. He settled at HEC Montréal in 2001.

Over the past 30 years Bruno has made outstanding contributions to probability, statistics, and financial engineering. He is the author of a graduate monograph; he co-authored three undergraduate textbooks and produced over 85 research articles published mostly in high-calibre international journals but also in books and conference proceedings. He is one of the rare scientists to have published in the four IMS annals.

Bruno's work has had broad impact on theory and practice. He also played a key role in training new generations of probabilists and statisticians, with four postdoctoral fellows, 12 PhD, and over 50 MSc students supervised to completion. His work earned him various accolades, including the Pierre Robillard Award (1988), The Canadian Journal of Statistics Best Paper Award (2003), and the Econometrics Best Paper Award (2018).

Bruno's thesis, supervised by **D. A. Dawson**, concerned laws of the iterated logarithm and large deviations. It led to a solo paper in *The Annals of Probability* describing an analog of Chung's law of the iterated logarithm for the Lévy area process. With **T.-Y. Lee**, he published in the same journal an oft-cited paper on large deviations for the three-dimensional super-Brownian motion. His interest in probability continues to this day and includes joint work with **P. Del Moral** and **J. Vaillancourt**, among others.

Bruno shifted his attention to statistics around 1995. He co-authored with **C. Genest** nearly 20 papers in *Bernoulli*, *Biometrika*, *JASA*, *The Annals of Statistics*, and *Journal of Multivariate Analysis*, etc. These works are widely cited. Bruno's expertise in the theory of empirical processes was essential, among others, in establishing the validity of various rank-based inference procedure for copula models.

The theory that Bruno developed with **K. Ghoudi** for the large-sample behaviour of empirical processes based on pseudo-observations led to the development of new tests of independence and goodness-of-fit techniques for copula models. His results were also used to validate resampling methods in the latter context. With **B. Abdous** and **K. Ghoudi**, Bruno further proposed and studied nonparametric tests of symmetry in the article that won the 2003 Canadian Journal of Statistics Best Paper Award.

Bruno also has a very deep knowledge of time series methods which he has exploited to devise tests of randomness, to develop copula models for time series data, and to test for goodness-of-fit in copula models for multivariate time series. His recent solo paper on the latter theme earned him the 2018 Econometrics Best Paper Award. He has since extended these results to generalized error models with his wife **B. R. Nasri**. After he moved to Montreal in 2001, Bruno picked up financial engineering. With **N. Papageorgiou** and **P. Laroche** he proposed innovative replication methods based on stochastic models and was involved in designing new financial investment products for Desjardins Global Asset Management, National Bank of Canada, and Innocap Investment Management. His book entitled *Statistical Methods for Financial Engineering* (2013) earned him additional praise.

Throughout his career, Bruno has given over 80 talks in 14 countries and has also been very generous with his time to NSERC, the SSC, the CMS, and the ASSQ. He co-chaired the Scientific Committee of the joint SSC-SFds Annual Meeting in 2008. Over the years he has done his fair share of editorial work, meticulously refereeing over 200 papers and serving on the editorial board of *The Canadian Journal of Statistics* and the *Annales mathématiques du Québec*.

Bruno's parents, **Cécile Duchesneau** and **Lauréat Rémillard**, have always supported him and are responsible for his interest in science. He intends to impart the same values to his future children. He considers himself fortunate to have met his wife Bouchra who has now become his most important and valued collaborator.



**The citation for the award reads:**

*“To Bruno Rémillard, for his broad and influential contributions to probability theory, statistics, and financial engineering, for his excellence in training and mentoring, for his academic leadership, and for his dedication to the profession.”*

Christian Genest and Jean Vaillancourt were primarily responsible for this material.

## **Belkacem Abdous: Recipient of the 2019 SSC Award for Impact of Applied and Collaborative Work**



The 2019 recipient of the Statistical Society of Canada Award for Impact of Applied and Collaborative Work is Belkacem Abdous, professor at the Department of Preventive and Social Medicine, Université Laval until 2017, and currently director of the National Institute of Statistics and Applied Economics (INSEA), Rabat, Morocco. The award recognizes outstanding contributions by a member of the SSC in collaborative research and applied work, the importance of which derives primarily from its relatively recent impact on a subject area outside of the statistical sciences, on an area of application, or on an organization.

Belkacem was born in Mestegmer, Morocco. He studied Applied Mathematics at Université de Lille (MSc and Doctorate 3eme cycle), completing his PhD thesis in 1989 under the supervision of Professor **Radu Theodorescu** at Université Laval. After a brief time at Université de Moncton he joined Université de Québec à Trois-Rivières, where he rose to full professor. He then moved to the Department of Preventive and Social Medicine at Université Laval. Simultaneously, he was very involved with the Modelling and Simulation Laboratory in Morocco. In the fall of 2018 he was appointed as the director of the National Institute of Statistics and Applied Economics (INSEA), Rabat, Morocco.

Throughout his academic career, Belkacem has carried out research in statistics, biostatistics and epidemiology. He has played an important role in many team research projects and is actively involved in the production of official statistics in Morocco, together with various national and international statistical activities and projects. Belkacem is a member of the Centre de recherches mathématiques, the Statistical Society of Canada, the Institute of Mathematical Statistics, and the International Statistical Institute. His work has been supported directly by NSERC. Belkacem has supervised nine doctoral students and 14 MSc students. The excellence of his collaborative work was recognized with the Best Paper in *The Canadian Journal of Statistics* in 2004 with **Ghoudi** and **Remillard**. He has also done extensive consulting work for the Institut national de santé publique du Québec.

His current research is in the field of climate change, population health and official statistics. He played an essential role in developing tools to help government agencies, such as the Institut national de santé publique du Québec, monitor and support research on the relation between public health and climate changes. For example, in the case of adaptation to heat in urban settings, the large number of behaviours that can be adopted greatly complicates the monitoring of the evolution of preventive actions taken by individuals to counter the effects of the heat. Belkacem's work regarding semiparametric estimators for a count regression function (e.g., the penalized MMLL and Kernel smoothing for the nonparametric estimation of items) was essential for performing psychometric analyses, and thus developing valid heat adaptation indices that are comparable over time and between countries. More specifically, he has successfully adapted these estimation methods to the field of climate change and population health. This has made it possible to develop valid climate change adaptation indices (heat, flooding, pollen, Lyme disease) as well as to reduce the size of a set of behavioural indicators without losing the underlying base information.

As chair of the local program committee and a member of the scientific program committee, Belkacem oversaw the local organization of the 61st World Statistics Congress in July 2017 in Marrakech. With respect to this he received an ISI Service Award for outstanding and dedicated leadership and service as local program committee chair, ISI 2017, 61st WSC. Most recently he has co-chaired the High-level Group for Partnership, Coordination and Capacity-Building for statistics for the 2030 Agenda for Sustainable Development, United Nations Statistics Division.

Belkacem, with his wife **Nadia**, divides his time between Rabat, Morocco and Québec city. He has two adult children who have earned undergraduate and graduate degrees in accounting and computer science.

**The citation for the award reads:**

*“To Belkacem Abdous, for his outstanding contribution for promoting innovative statistical methodologies in population health and impacts of climate changes, for the promotion of Statistical Sciences in developing countries, and for his excellent contribution to the training of graduate students.”*

Bouchra R. Nasri, Bruno N. Rémillard and Carl Schwarz were primarily responsible for preparing this material.

## **SFU Statistics Students Impress the NFL With Their Moves**



In just 12 days, a team of graduate students in SFU’s Department of Statistics and Actuarial Science analyzed player tracking data from roughly 7,000 plays with 34,000 routes to create their winning entry for the National Football League’s Big Data Bowl competition.

The team, consisting of **Dani Chu**, **Matthew Reyers**, **James Thomson**, and **Lucas Wu** beat finalists in the College division from the University of Pennsylvania, Duke, and Carnegie Mellon universities with their “*Routes to Success*” entry.

Team member Dani Chu says “We were thrilled that we beat out over 100 submissions just to make it to the finals!” He adds, “When we saw the work of the other finalists, we were blown away. To have our hard work recognized specifically as the winning team was the cherry on top.”

The inaugural event was driven by the NFL’s recognition of the growing value of sports analytics. The competition is seen as a way to provide teams with analytically driven ideas that can be put into action on the playing field.

The NFL, in conjunction with Next Gen Stats, provided entrants with six weeks of player tracking data from the 2017 NFL season. The data captured the real-time locations of every player and the ball on the field every tenth of a second.

The SFU group chose to model play success rate and expected points under various passing route combinations. That meant using their data science skills and football domain knowledge to analyze mountains of data.

Lucas Wu says, “The data we tackled wasn’t even able to be opened in a spreadsheet because of its size!”

Using a machine learning technique called model-based clustering for functional data, the group created a suite of tools to help teams evaluate their playbook and prepare for upcoming opponents.

James Thomson explains, “Using the available data we identified routes and analyzed combinations of routes based on their success rates and big play ability. We identified the route combinations that were consistently strong in both categories.”

Matthew Reyers adds, “We then implemented a model that accounts for the location, direction, and velocity of players’ movements to determine which zones of the field are under their control. This can be used to visualize the effect of route combinations on opening up the field for the target receiver.”

After being selected as finalists, the team travelled to Indianapolis to present their solution to an audience representing 32 NFL teams including NFL media, scouts, analysts, and management.

With some last-minute tweaks to their presentation, including the pronunciation of “route” the American way, the team gave their talk, and were ultimately selected as champions of the college division.

The trophy, which now resides in mentor and SFU professor **Tim Swartz**’s office, is a hopeful harbinger of future successes for the participants.

Each team member has already lined up prestigious summer internships with Statistics Canada, Terramera, the NBA, and Two Hat Security.

Chu says, “We’re all super excited about these internships and hope that some of the connections we made that day will lead to full-time work later on with an NFL team or affiliate organization.”

The team members are thankful for the support of Big Data Bowl staff **Michael Lopez**, director of Data & Analytics and **Jay Reid**, senior director, Football Operations Technology Strategy, as well as their academic supervisors from SFU **Tim Swartz**, **Harsha Perera**, and **Dave Campbell**; and SFU professors, **Luke Bornn** and **Tom Loughin**.

**Read the paper here:** <https://operations.nfl.com/media/3670/big-data-bowl-sfu.pdf>

Video and more on this story from the [NFL on Twitter](#).

By **Diane Mar-Nicolle**,

**Simon Fraser University**

## **Alexandre Bouchard-Côté Wins 2018 UBC/PIMS Young Faculty Award**



UBC associate professor **Alexandre Bouchard-Côté** (Department of Statistics) has received the 2018 UBC/PIMS Mathematical Sciences Young Faculty Award.

The work of Dr. Bouchard-Côté focuses on computational statistics/statistical machine learning, with a large mathematical component and applications in linguistics and biology. He received his PhD in Computer Science from the University of California, Berkeley in 2010 and has since received many awards, including the Tweedie, Google Faculty, and Martha Piper Awards. Dr. Bouchard-Côté will receive \$1000 and will give an invited colloquium at UBC on November 15, 2019.

## **Congratulations to the Marshall Prize Co-Winners**



**THE UNIVERSITY OF BRITISH COLUMBIA**

UBC Department of Statistics is pleased to announce that the co-winners of this year’s Marshall Prize are **Eric Fu** and **Harlan Campbell**. Their PhD supervisors are respectively **Nancy Heckman** and **Paul Gustafson**. Eric defended his PhD thesis in February, and Harlan will be defending soon. Both have accomplished independent research in their theses with several published and/or submitted papers.

Eric contributed a lot to the department as graduate representative, TA, and WebWork developer for many courses, and as statistical consultant in ASDa and the Short-Term Consulting Service. He is currently in a postdoctoral position.

Harlan will have completed his PhD program in less than four years. He also taught an undergraduate course during the 2017–2018 academic year.

The prize honours professor emeritus **Albert Marshall** for his scholarly contributions and his role in establishing the Department of Statistics at UBC. It is awarded to UBC statistics graduate students who have achieved great distinction.