



CORS • SCRO

Canadian Operational Research Society
Société canadienne de recherche opérationnelle

The Bulletin

Volume 54, Number 3 – August 2020
ISSN 0315-1417

TABLE OF CONTENTS	PAGE
In This Issue	2
The 2020–2021 Council	3
Recent Changes to Council and Committees	4
Outgoing President’s Message	5
Incoming President’s Message	6
CORS Award Winners	7
Harold Larnder Prize: Anna Nagurney	8
Omond Solandt Award: Canadian Tire	8
CORS Award of Merit: David Stanford	8
CORS Student Paper Competition	9
2020–2021 CORS Budget	10
2019–2020 CORS Membership Report	11
Announcements	13
CORS Emeritus member: David Stanford	13
Special Interest Groups (SIGs)	14
SIG News: Queueing Theory Student Paper Prize	15
OR @ Work	16
Meetings and Conferences	18
The Next Issue	19
CORS Bulletin Translation Policy	19
CORS Bulletin Advertising Policy	19
CORS Mailing List	19
About CORS	20



IN THIS ISSUE

Dear CORS members,

In this issue, we hear from both our outgoing and incoming presidents, as they comment on the many ways that CORS has been impacted along with the rest of the world by the COVID-19 pandemic. Most notably, the CORS 2020 conference had to be delayed, along with several of the events that it hosts. Despite the setback, some competitions were able to go ahead, thanks to the great work by their organizers, and our annual award winners were chosen. We highlight all the winners of the 2020 prizes in this bulletin. Congratulations to everyone who took part from a distance this year.

You will also find the budget for the upcoming year and the latest membership report.

Lastly, we continue our highlight of past OR@Work articles, with the 2005 CORS practice prize winning study, "Improving the Efficiency of Porter Operations at Vancouver General Hospital".

If you have any content to submit to the bulletin, particularly if you are doing any OR work related to the outbreak, please consider submitting a write-up to AndreaFriars@gmail.com

Cheers,

Andrea

Bulletin Editor

Andrea Friars

Elected Officers

President
Vice-President
Past-President
Secretary
Treasurer
Councillors

Michael Pavlin
Jules Comeau
Stanko Dimitrov
Marco Bijvank
Gregory Paradis
Erdem Coskun (19–21)
Sonia Vanderby (20–21)
Samira Abbasgholizadeh Rahimi (20–22)
Majid Taghavi (20–22)

Standing Committees

Awards

Jules Comeau, Majid Taghavi, Erdem Coskun

Education

Anjali Awasthi

Membership

Sonia Vanderby

Program

Jules Comeau, Fredrik Ødegaard,
Fatma Gzara, Timothy Chan

Public Relations

Michael Pavlin

Publications

Samir Elhedhli, Elkafi Hassini, Andrea Friars

SIG Relations

Jules Comeau,
Samira Abbasgholizadeh Rahimi,
Erdem Coskun

Section Relations

Jules Comeau,
Samira Abbasgholizadeh Rahimi,
Gregory Paradis

Past Presidents
Advisory Board

Michael Pavlin, Stanko Dimitrov

Ad hoc Committees

Practice Prize

Mikael Rönnqvist

Award of Merit

Stanko Dimitrov, Mahmut Parlar,
Mikael Rönnqvist, David Stanford

Student Paper
Competition

Anjali Awasthi

Financial Planning

Gregory Paradis, Stanko Dimitrov,
Michael Pavlin, Jules Comeau

Industry

Michael Pavlin

Nominating

Stanko Dimitrov

INFOR Co-Editors

Samir Elhedhli, Elkafi Hassini

INFOR Administrator

Bev Rodgers

Travelling Speakers
Program

Stanko Dimitrov

IFORS Representative

Marco Bijvank

Membership Services

Erla Anderson

THE 2020–2021 COUNCIL

CORS Council consists of the officers of the society, four councillors, the immediate past president, a representative designated by each local section and chapter of the society, SIG presidents, and the standing committee chairs. Contact information for council representatives is below. See www.cors.ca for a complete listing.

President	Michael Pavlin, Wilfrid Laurier University, president@cors.ca
Vice-President	Jules Comeau, Université de Moncton, vicepresident@cors.ca
Secretary	Marco Bijvank, University of Calgary, secretary@cors.ca
Treasurer	Gregory Paradis, University of British Columbia, treasurer@cors.ca
Past-President	Stanko Dimitrov, University of Waterloo, sdimitro@uwaterloo.ca
Councillor	Erdem Coskun, Manulife / John Hancock, mehmeterdemcoskun@gmail.com
Councillor	Sonia Vanderby, Saskatchewan Health Quality Council, soniavanderby@gmail.com
Councillor	Samira Abbasgholizadeh Rahimi, McGill University, samira.rahimi@mcgill.ca
Councillor	Majid Taghavi, Saint Mary's University, Majid.Taghavi@smu.ca
Analytics SIG	Gregory Paradis, University of British Columbia, cors.analytics.sig@01101.io
Forestry SIG	Maha Ben Ali, École Polytechnique de Montréal, maha.ben-ali@polymtl.ca
HCOR SIG	Nadia Lahrichi, École Polytechnique de Montréal, nadia.lahrichi@polymtl.ca
Queueing Theory SIG	David Stanford, Western University, stanford@stats.uwo.ca
Atlantic	Claver Diallo, Dalhousie University, claver.diallo@dal.ca
Québec	Irène Abi-Zeid, Université Laval, irene.abi-zeid@osd.ulaval.ca
Montréal	Nadia Lahrichi, École Polytechnique de Montréal, nadia.lahrichi@polymtl.ca
Ottawa	Dragos Calitoiu, Carleton University, calitoiu@math.carleton.ca
Kingston	Mohan Chaudhry, Royal Military College of Canada, chaudhry-ml@rmc.ca
Toronto	Hassan Anis, University of Toronto, hassan.anis@mail.utoronto.ca
Southwest Ontario	Joe Naoum-Sawaya, Western University, jnaoum-sawaya@ivey.ca
Saskatoon	Hamed Samarghandi, University of Saskatchewan, samarghandi@edwards.usask.ca
Calgary	Owen James, Associated Engineering, jameso@ae.ca
Edmonton	Armann Ingolfsson, University of Alberta, armann.ingolfsson@ualberta.ca
Vancouver	Stuart Donald, University of British Columbia, stuart.donald@sauder.ubc.ca
Waterloo Student	Khaled Shah, University of Waterloo, khaled.mostafa.shah@uwaterloo.ca
Québec Student	Irène Abi-Zeid, Université Laval, irene.abi-zeid@osd.ulaval.ca
Montréal Student	Gabriel Vanasse, Concordia University, or.students.montreal@gmail.com
Toronto Student	Kyle Booth, University of Toronto, kyle.booth@mail.utoronto.ca Christopher Sun, University of Toronto, christopher.sun@mail.utoronto.ca
Winnipeg	Currently vacant

RECENT CHANGES TO COUNCIL AND COMMITTEES

Post	Previous	New
Council		
President	Stanko Dimitrov	Michael Pavlin
Vice-President	Michael Pavlin	Jules Comeau
Past-President	Mehmet Begen	Stanko Dimitrov
Treasurer	Sonia Vanderby	Gregory Paradis
Councillors	Jules Comeau / Erdem Coskun Anjali Awasthi / Andrea Friars	Erdem Coskun / Sonia Vanderby Samira Abbasgholizadeh Rahimi Majid Taghavi
Standing Committees		
Awards	Jules Comeau / Erdem Coskun	Jules Comeau / Majid Taghavi Erdem Coskun
Membership	Jules Comeau	Sonia Vanderby
Program	Michael Pavlin / Fredrik Ødegaard Fatma Gzara / Timothy Chan Mireille Faucon	Jules Comeau / Fredrik Ødegaard Fatma Gzara / Timothy Chan
Public Relations	Stanko Dimitrov	Michael Pavlin
Past Presidents Advisory	Stanko Dimitrov / Mehmet Begen	Michael Pavlin / Stanko Dimitrov
SIG Relations	Mike Pavlin Andrea Friars Erdem Coskun	Jules Comeau Samira Abbasgholizadeh Rahimi Erdem Coskun
Section Relations	Michael Pavlin Jules Comeau Sonia Vanderby	Jules Comeau Samira Abbasgholizadeh Rahimi Gregory Paradis
Ad hoc Committees		
Award of Merit	Mehmet Begen / Mahmut Parlar Mikael Rönqvist	Stanko Dimitrov / Mahmut Parlar Mikael Rönqvist / David Stanford
Financial Planning	Sonia Vanderby / Mehmet Begen Stanko Dimitrov / Mike Pavlin	Gregory Paradis / Stanko Dimitrov Michael Pavlin / Jules Comeau
Nominating	Mehmet Begen	Stanko Dimitrov
Travelling Speakers Program	Mehmet Begen	Stanko Dimitrov



OUTGOING PRESIDENT'S MESSAGE

Greetings Fellow CORS Members,

I thank each of you for the privilege to serve as president of our society. My involvement with CORS is a greatly rewarding experience, and I look forward to continuing to serve the society in the future.

During my time as president, in no small part due to the global COVID-19 pandemic, CORS experienced a virtual annual general meeting, no annual conference, and a collection of local, special interest group, and chapter events canceled or delayed. I thank the conference chair, Fatma Gzara, and program chair, Timothy Chan, of the 2020 CORS conference for working tirelessly on the conference and addressing the impact of the global pandemic on the 2020 conference. I greatly appreciate their dedication to continue planning the conference for 2021. Additional student-centered events were actively explored for the annual conference until the annual conference was postponed. I hope these events are realized at the next annual conference.



Fortunately, the global health pandemic did not derail all CORS activities. With the tremendous efforts of the student competition organizers, Nadia Lahrichi and Tamon Stephen, the student paper competitions were held this year. I thank all those involved with ensuring the competitions were held. In addition, CORS council introduced new procedures to address institutional memory, successfully identified and hired a bookkeeper, and formalized the 2022 CORS-INFORMS International Conference.

CORS council is always actively exploring new awards and ways to support members. If you have any ideas, then please do let anyone on CORS council know. INFOR is making great strides and is improving in all aspects; I encourage you to submit your articles to the journal.

Prior to concluding, I would like to acknowledge all the members of the 2019–2020 council for helping the society in the past year: Past President Mehmet A. Begen; Vice President Michael Pavlin; Secretary Marco Bijvank; Treasurer Sonia Vanderby; Publications Chair Elkafi Hassini; and Councillors Anjali Awasthi, Mehmet Erdem Coskun, Andrea Friars, and Jules Comeau. Each of the council members helped tremendously throughout the year, I thank each of them for their time and efforts! I would like to conclude by saying that our society is defined by its members. Many members worked together to help face the challenges encountered by our society. I strongly encourage you to get involved with CORS in any way you are able. I hope you all keep well, safe, and healthy!

Sincerely,

Stanko Dimitrov

Stanko Dimitrov



INCOMING PRESIDENT'S MESSAGE

Dear Colleagues,

I am excited and honoured to have the opportunity to take on the role of president of the Canadian Operational Research Society. Both professionally and personally, I've benefitted a great deal from my time as a CORS member. I hope that I can pay a little of this back over the next year.

The annual conference is always a highlight of my academic year. The decisions brought on by the pandemic to cancel the conference were difficult, and I commend the organizers, Fatma Gzara and Timothy Chan, who, with the support of council, kept the health of CORS top of mind. Unfortunately, the fog of pandemic life has not lifted, and, this year, we will continue to operate behind masks and under a cloud of uncertainty. Nonetheless, we will be working to ensure that CORS will be ready to get back to normal as soon as possible and, in the meantime, continuing to deliver members the services that they expect from CORS.



I would like to give a special thanks for the activities at CORS that have continued and are being planned in the face of the pandemic, including the student paper competition (chairs Nadia Lahrichi and Tamon Stephen), the publishing of INFOR (co-EIC Samir Elhedhli and Elkafi Hassini) and the CORS Bulletin (editor and outgoing councillor Andrea Friars). I'd also like to thank our staff, Erla Anderson and Bev Rogers, who support CORS and INFOR and haven't missed a beat. Continuing in this vein, we will ensure that students have the opportunity to share their research and build their networks in the CORS community by introducing a series of micro-conferences.

I am excited to welcome new council members Greg Paradis, Samira A. Rahimi, and Majid Taghavi. I look forward to collaborating with them and ongoing members Marco Bijvank, Jules Comeau, Erdem Coskun, Sonia Vanderby, and education chair Anjali Awasthi, to continue to move the ball forward on both new ventures and improving and streamlining the operations of council. This will be much easier, thanks to the concerted efforts of outgoing past president Mehmet Begen and current past president Stan Dimitrov.

Without being Pollyannaish, we've been given an opportunity to take a step back and look at CORS from a different vantage point and to look for new means and opportunities to build a stronger society. I look forward to working with all of you and leveraging ideas and energy from across the membership to make our community thrive.

Best wishes for a safe, productive, and happy year!

Sincerely,

Mike Pavlin



CORS AWARD WINNERS

Congratulations to the winners of the awards and prizes. Special thanks to all the participants and judges. Details on CORS awards and prizes, including a list of past winners, can be found on the CORS website www.cors.ca

The following 2020 awards will be presented at the 2021 CORS Annual Conference:

Harold Larnder Prize	Anna Nagurney
Omond Solandt Award	Canadian Tire
CORS Award of Merit	David Stanford

The following 2020 award certificates were sent to recipients:

CORS Student Paper Competition Open Category: First Prize

Margarita Castro (University of Toronto)
"A Combinatorial Cut-and-Lift Procedure with an Application to 0-1 Chance Constraints"

CORS Student Paper Competition Undergraduate Category: First Prize

Sarah McCurdy, Meghan Stronach, Allison Jacobs, and Alyssa Hopkins
(University of Waterloo)
"Smart Scheduling Tool: Improvement of Elementary School Timetables"

CORS Student Paper Competition Undergraduate Category: Honourable Mention

Lucy Fountain (University of Waterloo)
"Implementing Constraint Generation Methods for Solving Large-scale IMRT Treatment Optimization Problems"

Queueing Theory SIG Student Paper Prize: Winner

Mona Imanpoor Yourdshahy (University of British Columbia)
"Equilibrium Joining Strategies in the Presence of a Prerequisite Condition for Receiving Service"

Queueing Theory SIG Student Paper Prize: Honourable Mention

Haoran Wu (University of Waterloo)
"Double-Sided Queues with Marked Markovian Arrival Processes and Abandonment"



HAROLD LARNDER PRIZE

Anna Nagurney

The Harold Larnder Prize is awarded annually to an individual who has achieved international distinction in operational research. The prize winner delivers the Harold Larnder Memorial Lecture, on a topic of general interest to operational researchers, at the National Conference of the Canadian Operational Research Society. Harold Larnder was a well-known Canadian in wartime OR. He played a major part in the development of an effective radar-based air defense system during the Battle of Britain. He returned to Canada in 1951 to join the Canadian Defence Research Board and was President of CORS in 1966–67.



OMOND SOLANDT AWARD

Canadian Tire

The Omond Solandt Award is awarded to an organization, private or governmental, that is deemed to have made an outstanding contribution to operational research in Canada. Dr. Solandt was the founder and first chairman of the Defence Research Board (DRB). At various times in his life he headed the Science Council of Canada was a vice-chairman of Canadian National Railways (CNR), and Chancellor of the University of Toronto.

CORS AWARD OF MERIT

David Stanford

The Award of Merit is awarded to a present or past member of CORS in recognition of significant contributions to the profession of operational research.





CORS STUDENT PAPER COMPETITION

Each year the Canadian Operational Research Society conducts a student paper competition to recognize the contribution of a paper either directly to the field of operational research through the development of methodology or to another field through the application of operational research. The competition serves to showcase the high quality of OR education in Canada as well as the excellence of the new generation of operational researchers. Prizes are awarded in two categories: Undergraduate and Open. MBA students (and other specialized master students) are encouraged to participate in the competition in the open category with their applied projects.

Open Category First Prize

Margarita Castro (University of Toronto)
“A Combinatorial Cut-and-Lift Procedure with an Application to 0-1 Chance Constraints”

Undergraduate Category First Prize

Sarah McCurdy, Meghan Stronach, Allison Jacobs, and Alyssa Hopkins
(University of Waterloo)
“Smart Scheduling Tool: Improvement of Elementary School Timetables”

Undergraduate Category Honourable Mention

Lucy Fountain (University of Waterloo)
“Implementing Constraint Generation Methods for Solving Large-scale IMRT Treatment Optimization Problems”

Open Category Finalists

Saman Lagzi (University of Toronto)
“Cherry-picking and Spillover on Service Level: Evidence from a Radiology Workflow Platform”

Forough Pourhossein (University of British Columbia)
“Assortment Planning with Satisfying Customers”

Undergraduate Category Finalists

Natalie Chen, Kayla Stump, and Monica Montgomery (University of Calgary)
“Optimal Truck Scheduling to Offload Oil and Gas at Processing Facilities with Uncertain Arrivals”

Einar Gabbassov and Sarah Morse (Simon Fraser University)
“Bus Stop Consolidation: a GIS Optimization Approach”

2020–2021 CORS BUDGET

	2018-2019		2019-2020		2020-2021
	Budget	Actual	Budget	Actual	Budget
I. Revenues					
Membership Dues	20,000	24,461.90	30,000	32,676.19	30,000
Conference Profit	-	1,054.16	-	-	10,000
Conference Advance returns	20,000		20,000	-	40,000
Tax	1,500	1,294.85		1,671.90	
Miscellaneous		266.67		628.57	
Total Revenues	41,500	27,077.58	50,000	34,976.67	70,000

	2018-2019		2019-2020		2020-2021
	Budget	Actual	Budget	Actual	Budget
II. Expenses					
Administrative Expenses:					
Administrative Support	12,000	15,191.52	12,000	12,000.00	12,000
Supplies, Other Expenses	2,000	3,986.35	2,000	2,622.85	2,000
Bookkeeping support			4,800		4,800
Bookkeeping expense			200		200
Membership Refunds				319.52	
Translation services	2,500	1,332.96	2,500	860.59	2,500
Council Meeting	4,000	5,124.46	4,000	3,269.09	4,000
Sections Shares	10,000	11,403.51	15,000	14,863.65	15,000
Sections Shares of Conf Profit	1,500	5,749.58	2,000		2,000
IFORS Subscription	500	507.55	600		600
Conf Expenses (Larnder, etc.)	3,000		4,000		4,000
Advance - 2019 Saskatoon		20,000.00			
Advance - 2020 Waterloo				40,000.00	
Awards/Prizes	3,600	1,191.24	3,600	2,666.58	3,600
Travelling Speaker Program	2,000		2,000	1,000.00	2,000
GST/HST	15,000	199.61	15,000	174.17	15,000
Bank, Credit Card Charges	1,000	507.41	1,500	441.58	1,500
Web Services	5,025				5,000
CORS Conf attendance Funding	8,000	6,051.82	8,000	5,557.50	8,000
Total Expenses	70,125	71,246.01	77,200	83,775.53	82,200

	2018-2019		2019-2020		2020-2021
	Budget	Actual	Budget	Actual	Budget
Total Revenues	41,500	27,077.58	50,000	34,976.67	70,000
Total Expenses	70,125	71,246.01	77,200	83,775.53	82,200
Total Revenues-Expenses	-28,625	-44,168.43	-27,200	-48,798.86	-12,200

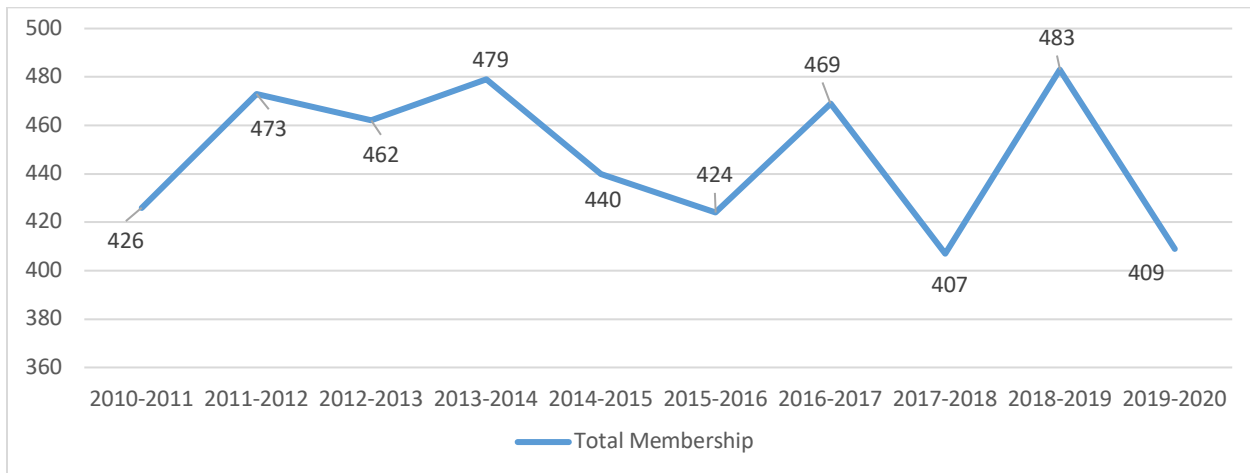


2019–2020 CORS MEMBERSHIP REPORT

I am pleased to submit a copy of the 2019–2020 Annual Membership Report of the Canadian Operational Research Society, which documents the membership activities experienced by the Society over the past year, for the consideration of CORS Council. The report provides Council with the information it needs to assess the health and well-being of the Society; to monitor the effectiveness of membership processes and practices; and to identify areas where policy initiatives or changes may be required. This report reveals that CORS experienced **a decrease in membership in 2019–2020 of 15%**. These graphs summarize the report, which can be seen in full on the CORS website www.cors.ca

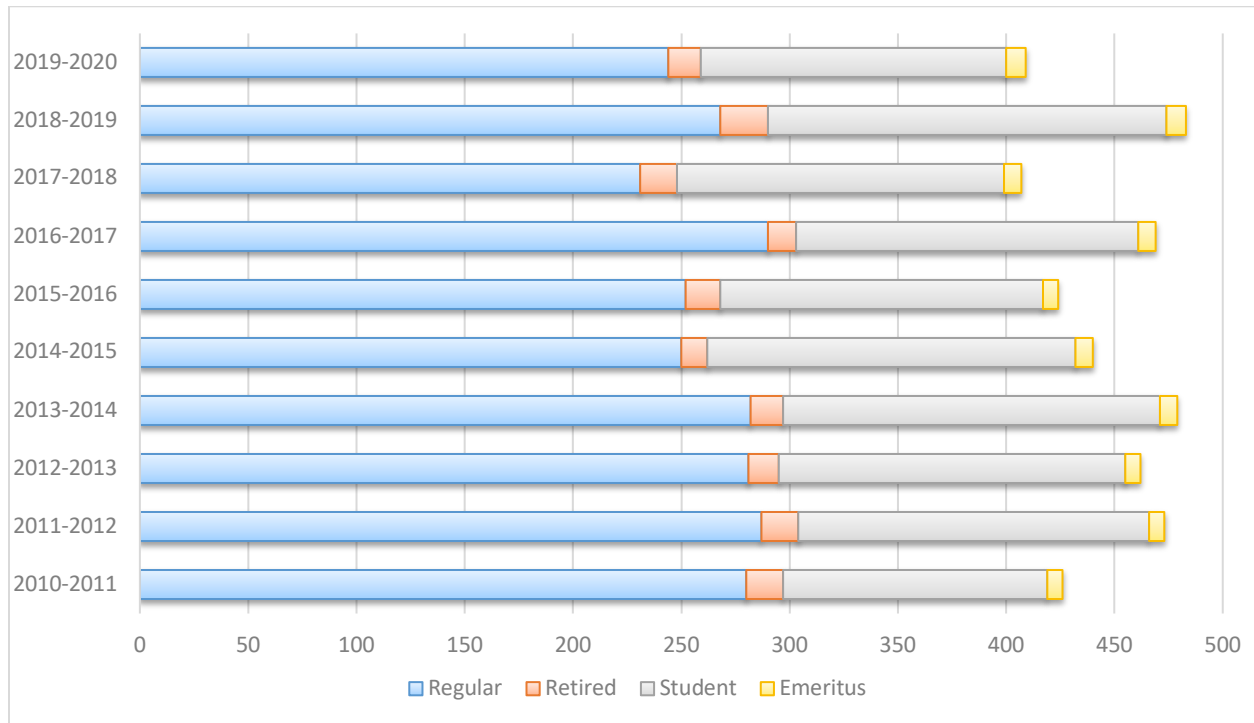
Erla Anderson, Membership Services Provider

CORS Membership 2010–2020

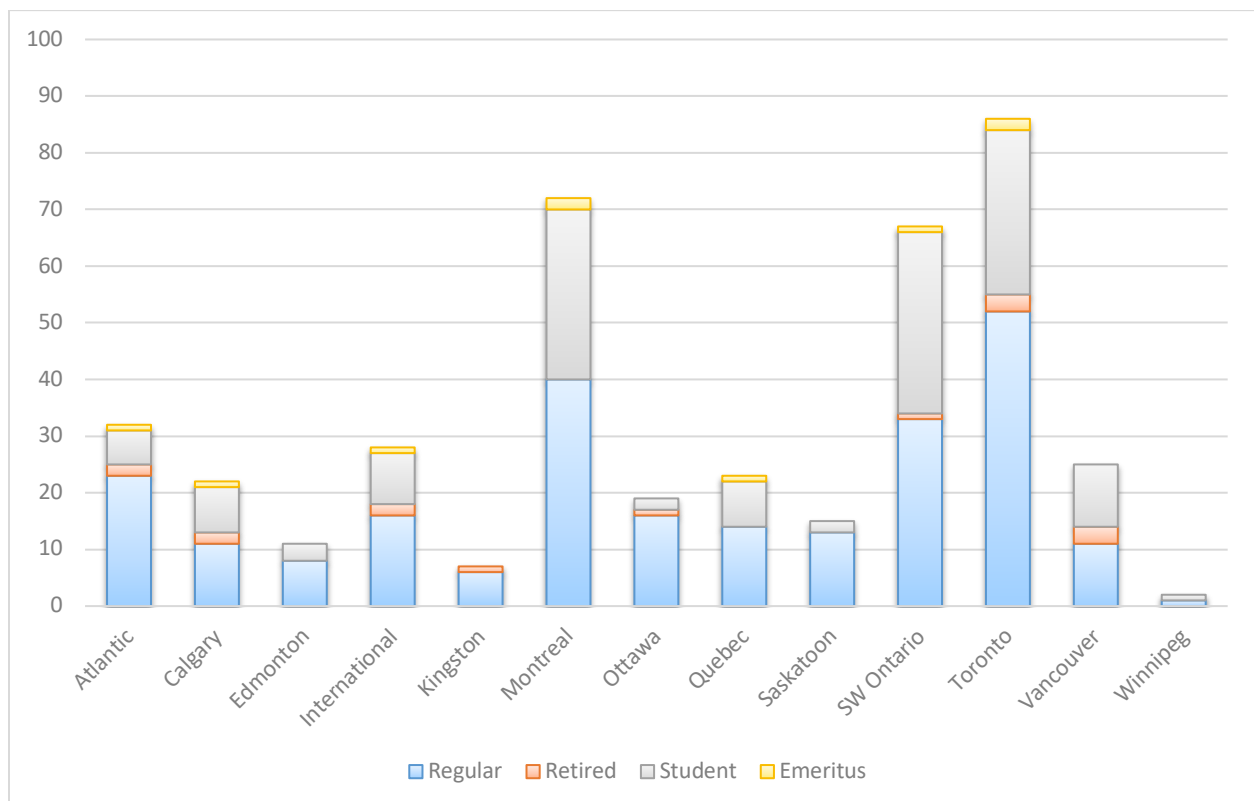




CORS Membership by Member Type 2010–2020



CORS Membership by Section and Member Type March 31, 2020





ANNOUNCEMENTS

CORS Emeritus member

The status of Emeritus member of CORS is bestowed upon retired members who have received both the CORS Eldon Gunn Service Award and the CORS Award of Merit.

This prestigious designation is to acknowledge the member's significant contribution to the field of operations research and to CORS. This year's recipient is **David Stanford**.



It's time to renew your CORS membership

The website is ready to accept payment of membership fees for **April 1, 2020 to March 31, 2021**. You may be able to use an NSERC grant to pay CORS membership dues. Renew your membership at http://www.cors.ca/sites/cors_php/en/membership/renewal.php

If you have questions, contact Membership Services at members@cors.ca

Access the journal INFOR

Current members receive an email message from Taylor and Francis with instructions to access the journal INFOR. If you have questions, contact Membership Services at members@cors.ca

CORS FUNDING OPPORTUNITIES

Traveling Speakers Program (TSP)

The TSP enables local sections to bring O.R. practitioners / researchers in Canada as speakers to their local events. In order to keep costs in line while maximizing the CORS national profile, CORS sponsorship will be limited to 50% of the total expenses, up to a maximum of \$500 per speaker or \$1000 for a single event (conference, workshop). Other expenses can be covered by the local section. The program of the event must acknowledge the contribution of CORS. Each local section must contact the TSP coordinator to obtain approval for funding preferably at least one month in advance of the event date. Payment will be made by the CORS Treasurer upon receipt of the expense form (<https://www.cors.ca/sites/default/files/documents/expenses.docx>).

Applicants fill out the application form (<https://www.cors.ca/sites/default/files/documents/tsp.docx>) and submit to:

Stanko Dimitrov, TSP Coordinator (sdimitro@uwaterloo.ca)



CORS SPECIAL INTEREST GROUPS

CORS Council approved a policy on Special Interest Groups (SIGs). A SIG provides a mechanism to promote CORS, the SIG area and the SIG members, as well as the opportunity for CORS members with common interests to interact and network.

Analytics SIG

Gregory Paradis (cors.analytics.sig@01101.io)
University of British Columbia
www.cors.ca/SIG/Analytics

Forestry SIG

Maha Ben Ali (maha.ben-ali@polymtl.ca)
École Polytechnique de Montréal
www.cors.ca/SIG/Forestry

Health Care Operational Research SIG

Nadia Lahrichi (nadia.lahrichi@polymtl.ca)
École Polytechnique de Montréal
www.cors.ca/SIG/HCOR

Queueing Theory SIG

David Stanford (stanford@stats.uwo.ca)
Western University
www.cors.ca/SIG/Queueing

If you would like to join a SIG, contact the people listed above, or indicate that you would like to join when you renew your CORS membership.

CORS encourages members with common interest in an area within or related to operational research to form additional SIGs.

More information about SIGs can be found online at www.cors.ca/?q=content/communities

If you are interested in forming a SIG in a particular area, contact:

Jules Comeau, SIG Committee Chair (vicepresident@cors.ca)

SIG NEWS

Queueing Theory SIG

Queueing Theory SIG Student Paper Prize

Winner

Mona Imanpoor Yourdshahy

University of British Columbia

Paper: "Equilibrium Joining Strategies in the Presence of a Prerequisite Condition for Receiving Service"

Honourable Mention

Haoran Wu

University of Waterloo

Paper: "Double-Sided Queues with Marked Markovian Arrival Processes and Abandonment"

The winner of the Eighth CORS Queueing SIG Annual Student Paper Prize is Mona Imanpoor Yourdshahy from UBC, supervised by Tim Huh and Stephen Shechter, with the winning paper titled "Equilibrium Joining Strategies in the Presence of a Prerequisite Condition for Receiving Service". The paper was chosen for its relevance, the novelty of the technical analysis, and the insights that it brings to the strategic behaviour of customers in queues. In addition, the committee was impressed with the level of exposition. An honourable mention was given to Haoran Wu from the University of Waterloo for the paper "Double-Sided Queues with Marked Markovian Arrival Processes and Abandonment". The selection committee members are Drs. Douglas Down (Chair), Vahid Sarhangian, and Armann Ingolfsson.



OR @ WORK

Improving the Efficiency of Porter Operations at Vancouver General Hospital

The winner of the 2005 CORS Practice Prize (as well as the 2005 Award of Merit) was Martin L. Puterman together with his team (Li Chen, Mats Gerschman, Fredrik Odegaard, David Puterman and Ryan Quee) for their study of porter operations at Vancouver General Hospital. This article provides a summary of the study and shows “OR @ Work”.

Porter services moves patients, materials and equipment between different hospital departments. An earlier study conducted at the Vancouver General Hospital (VGH) pointed out that efficient porter operations are necessary to ensure smooth operation of other more critical hospital functions. Consequently, Vancouver Coastal Health Authority management commissioned the Centre of Operations Excellence in the Sauder School of Business at UBC to carry out an in-depth study of porter services at VGH.

The centralized porter system at VGH is run by a dispatch center which logs request for porter services. Requests are divided into two categories: pre-scheduled and un-scheduled. Un-scheduled jobs are further categorized into three priority levels: STAT, ASAP and Routine with different standards for each. Dispatchers manually select jobs from the queue and assign a porter to it. Once the porter completes a job, he/she calls the dispatcher who updates the system. There are also decentralized porters at VGH dedicated to a specific ward or unit. When they are unable to meet demand in a timely fashion or if more than one porter is required, the unit calls the central dispatch for additional resources.

The study began shortly after a strike at Vancouver General Hospital so to get buy in from the porters, the team held a range of briefing meetings that addressed their concerns. In particular porters were ensured that they would not lose their jobs as a result of the findings of this study.

The study began with a series of interviews with porter service managers, users and dispatchers and a review of existing data. However, data from the dispatch system was not sufficiently complete or reliable so that a large amount of important information was collected by shadowing, that is observing porters and dispatchers performing their jobs. The study team compiled observation data from 113 shadowed trips.

The information from shadowing was used to create a process map of the centralized porter operations and a timeline of the porter tasks. Furthermore, it provided distributions of the time a porter spends on each component of a move and identified differences in the component times for centralized and decentralized systems. In addition, by observing the system, the study team was able to develop performance metrics and assess performance with respect to these metrics. Further, data from the shadowing exercise revealed that a porter could carry out 3.3 moves/hour which exceeded the previous benchmark of 2.7 moves/hour.

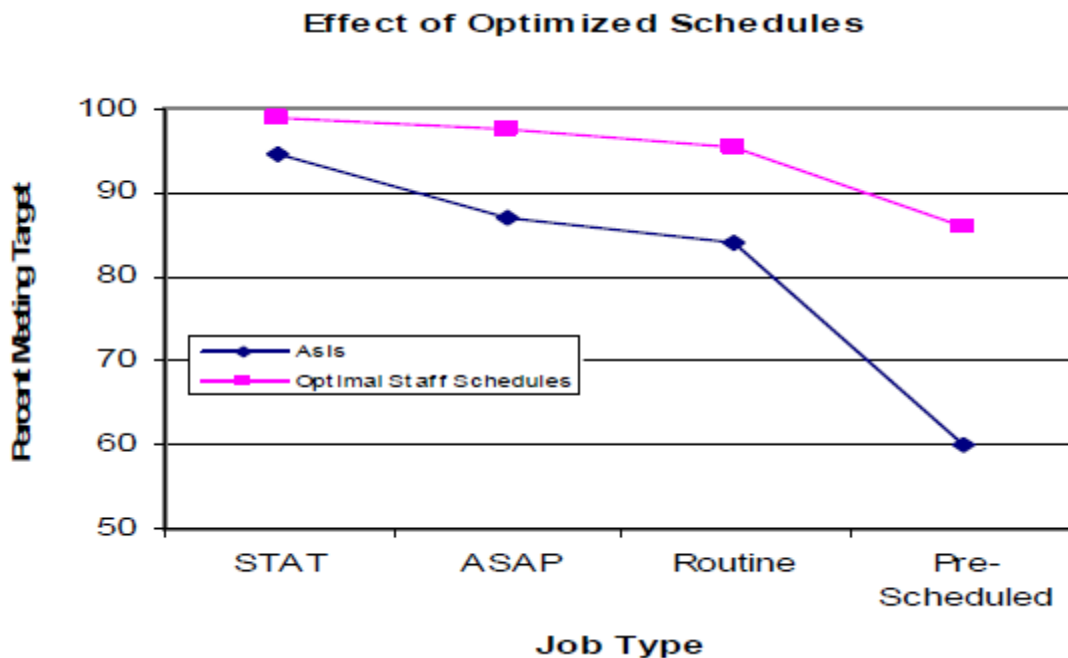
There were three key observations that suggested easy fixes:

1. Modify the porter schedules to reflect demand patterns.
2. Upgrade the dispatching hardware to remove a built in dispatch delay.
3. Enhance communication between the porters and the wards so that when porters arrived, patients or materials were ready to be moved.



To address the first issue, a linear programming (LP) model was developed to optimally match the porter shift schedules with the demand for half-hour time slots. After developing an optimal porter shift schedule, a simulation model developed in Arena, was used to assess the impact these and 30 scenarios that were developed in collaboration with management and user groups.

The simulation provided several key results. For example when the second and third suggestions above were put in place, the system met the dispatch targets in over 95% of cases for all job priority types. The following figure shows the potential improvements from using the optimized staff schedules.



These improvements are especially remarkable when one considers that these changes do not require adding resources or changing staffing levels. As a result of this study, an implementation plan was put into place by the Vancouver General Hospital management team who subsequently communicated the following to the study team:

The management team has completed managing the transition of porters to the recommended optimal staffing schedule and assigned extra resources to heavy use departments. They have also put into place processes to improve communication flow between users and dispatchers and successfully implemented an upgrade of the dispatching system. A newly introduced procedure for the regular reporting on various performance metrics allows management to closely monitor the impact the changes are having.

Compared to baseline numbers, the latest monthly results show that:

1. Porter productivity (trips per hour) has increased.
2. The percentage of trips completed within target times has improved for both "STAT" and "Routine" requests.
3. Overall dispatch times during the work week are quicker.



MEETINGS AND CONFERENCES

CORS Business Meetings

Jun 10, 2020	CORS Council Meeting, Teleconference
Sep 18, 2020	CORS Council Meeting, Teleconference
Nov 20, 2020	CORS Council Meeting, Teleconference
Jan 22, 2021	CORS Council Meeting, Teleconference
Jan 29, 2021	CORS Council Meeting, Teleconference
Mar 19, 2021	CORS Council Meeting, Teleconference
May 7, 2021	CORS Financial Planning Committee Meeting
Date TBA	CORS Council Meeting (Conference)
Date TBA	CORS Council Meeting with SIGs, Sections, Chapters (Conference)
Date TBA	CORS AGM (Conference)

CORS Annual Conferences

- 2021 CORS Annual Conference (location and date TBA)
- 2022 CORS joint with INFORMS International, Vancouver, B.C.

WWW Conference Listings

CORS: www.cors.ca/?q=content/cors-annual-conferences

INFORMS: <https://www.informs.org/Meetings-Conferences>

IFORS: www.ifors.org/web

Netlib Conference Database: <ftp://ftp.cc.ac.cn/netlib/confdb/Conferences.html>

SIAM: www.siam.org/meetings/calendar.php

POMS: <https://pomsmeetings.org>

EURO: www.euro-online.org/web/pages/460/calendar



THE NEXT ISSUE

The next issue of the Bulletin is scheduled to appear in **November**. Along with the regular features and news from the local sections, it will include more information about the next CORS Annual Conference. Contributions to this issue, especially news on the activities of local sections or CORS members, should be submitted by **23 October 2020** to:

Andrea Friars
Editor, CORS Bulletin
11 Sawgrass Drive
Oakfield, NS B2T 0G1
Email: AndreaFriars@gmail.com

The preferred method of submission is by an MS Word attachment to an email.

CORS BULLETIN TRANSLATION POLICY

Items that are CORS business will be translated into English and French. All other items will be published in the language they are submitted in.

CORS BULLETIN ADVERTISING POLICY

Ads cost \$120 per page, proportional for fractional pages. Logos and prepared layouts can be accommodated. This fee also includes distribution of the advertisement on the CORS Mailing List. Direct inquiries to the Editor.

CORS MAILING LIST

As a benefit of membership, members may use the CORS Mailing List to transmit messages, announcements, and job postings to the entire membership or to a targeted subgroup such as a local section. For example, you can send

- messages regarding the activities and business of the society;
- announcements about conferences, conference sessions, special journal issues, seminars or other activities provided that these are related to operational research in its broadest sense;
- job postings of general interest to CORS members.

The Mailing List is not used for commercial purposes, and all messages are vetted before they are sent out. To submit items to the Mailing List, email CORS Membership Services at members@cors.ca

For non-members, a fee of \$60 is charged for the distribution of job postings and other announcements or messages of interest to the CORS membership.



The **Canadian Operational Research Society** was founded in 1958. Its goal is to advance the theory and practice of OR and to stimulate and promote contacts between people interested in the subject.

Publications: A quarterly scientific journal called *INFOR* and a news *Bulletin*.

Meetings: An annual national conference with an award ceremony, occasionally organized jointly with an international society (IFORS, INFORMS), and numerous local events organized by local sections.

Local Sections & Chapters: CORS has twelve local sections located throughout Canada and four student chapters.

Awards and Prizes: CORS presents the following annual awards and prizes at its conference:

Award of Merit for significant contributions of a present or past member of CORS to the profession of OR.

Harold Larnder Award to an individual who has achieved international distinction in OR.

Omond Solandt Award to an organization, private or governmental, that is deemed to have made an outstanding contribution to OR in Canada.

Practice Prize for the challenging application of the OR approach to the solution of applied problems.

Eldon Gunn Service Award for outstanding contributions of time and service to the society.

Student Paper Competition to recognize the contribution of a paper either directly to the field of OR through the development of methodology or to another field through the application of OR.

Graduate Student Funding: CORS encourages attendance of graduate students at its conference by providing partial funding. Visit CORS website for details.

CORS Diploma: This diploma is awarded to students graduating from a university curriculum comprising several OR courses. Criteria may be found on the CORS website.

Membership Directory: An online directory of CORS members is available as a membership benefit.

To join CORS: Go to the CORS website and join online by credit card using the form found under membership or complete the PDF application form found on the CORS website and mail it with payment to the address below.

Fees: Member \$110; Retired Member \$55; Student Member \$45 (including post-doctoral fellows)

Website: www.cors.ca

INFOR: www.tandfonline.com/loi/tinf20

LinkedIn: www.linkedin.com/company/canadian-operational-research-society

Twitter: @CORS_President