The EMS Planning Conference is aimed at EMS managers and analysts. The purpose of the conference is to share knowledge about effective planning and management of EMS systems. The first day of the conference will provide training for EMS analysts. The second day will feature presentations by EMS researchers, as well as opportunities to influence the direction of future research.

The conference is organized by the Centre for Excellence in Operations (CEO) at the University of Alberta School of Business. CEO research on EMS planning has been sponsored by EMS operators in Calgary, Edmonton, St. Albert, and Seattle; the Capital Health Region in Alberta; and Infrastructure Canada. During the conference, CEO staff will share lessons learned from these research projects, complemented by presentations from leading researchers from other universities.

We hope you can join us for the EMS Planning Conference in Edmonton in August!

This conference has been made possible through a financial contribution from Infrastructure Canada. THE VIEWS EXPRESSED HEREIN DO NOT NECESSARILY REPRESENT THE VIEWS OF THE GOVERNMENT OF CANADA.
Click here to download registration form

Hotel Information:

- The Metterra
- The Varscona
- Campus Towers

Map of Conference and Hotels (Stollery Centre is on the fifth floor of the School of Business)

Registration questions:
Centre for Excellence in Operations
skeys@ualberta.ca
(780) 492-0010
August 7, 2008: Hands-on Training for EMS Analysts

9:30 AM - 10 AM  
Training session registration

10 AM - 12 PM  
Useful spreadsheet analysis tools (interpreting and understanding data, graphing)

12 - 1 PM  
Lunch

1 - 5 PM  
Analyzing patterns in call data (data cleaning, visualization, and root cause analysis) and scheduling.

6:30 - 9:30 PM  
Dinner and keynote address by Andrew Mason at the University of Alberta Faculty Club

August 8, 2008: Effective EMS Planning

9:30 - 9:40 AM  
Arman Ingolfsson - Welcome to the conference

9:40 - 10:40 AM  
Shane Henderson - Deploying Ambulances: Some Insights and Computational Tools

10:40 - 11:00 AM  
Break

11:00 - 11:45 AM  
Jeff Meyer - Siren Live: Software for Real-time optimized Ambulance Redeployment

11:45 - 12:00 PM  
Introduction to discussion topics

12:00 - 1:00 PM  
Lunch

1:00 - 1:30 PM  
Panel Discussion on Data Integrity

1:30 - 2:30 PM  
Arman

2:30 - 3:30 PM  
Panel Discussion on Regionalization

Presentations:

Shane Henderson  
Deploying Ambulances: Some Insights and Computational Tools

What fraction of time should your ambulances be busy? If this fraction is too high then response times go up, and if it is too small then you are not effectively using the assets at your disposal. The answer turns out to depend on how large a fleet of ambulances you have. Larger fleets can be run at higher utilizations than small fleets while still keeping response times small. I'll explain why.

How should a given fleet be distributed between remote locations, or between bases? I'll look at a (very) special case of this question, explaining how to distribute ambulances between two locations. It turns out that distributing ambulances in proportion to demand is not always the best answer! It can be better to "boost" the allocation to the lighter-loaded location.
Finally, I'll discuss a new method for system-status management, i.e., moving ambulances in real time to ensure good response-time performance.

I'll explain roughly how our method works and give lots of computational results for (slightly) simplified models of ambulance operations at two cities, one of which is Edmonton.

Armann Ingolfsson
EMS Performance Targets and Travel Times

Most EMS operators use a response time performance target of the form "respond to X% of calls in Y minutes or less." Numbers and definitions vary between operators and regions, but "90% in 8:59 minutes" is a common target in cities in North America. An alternative performance target is to "maximize the number of cardiac arrest survivors." I will discuss possible implications of such a target for how best to choose station locations and deploy ambulances.

Second, I will discuss a relatively simple approach for estimating ambulance travel times, taking into account that average speeds are typically lower for shorter trips, and recognizing that travel times are highly variable.

Jeff Meyer
"Siren Live: Software for Real-time optimized Ambulance Redeployment"

Emergency service performance is typically measured against the time an emergency response vehicle takes to reach the scene of an incident. Judicious placement of available response vehicles to cover areas with higher expected call arrival rates means the emergency service is more likely to respond to those calls within the requisite response time, hence improving the response time performance of the system. A new optimisation-based decision support tool, Siren Live, makes improved deployment recommendations in real-time, maintaining system performance. It incorporates rules to address staffing issues and other problems that are typically observed in previous methods based on manual heuristic approaches. The Siren Live user interface and optimization model is presented, and experience with implementation is discussed.

Dan Haight
An EMS Planning Medley – Data Modeling to Improve Operations and Direct Strategy

In this presentation, we will discuss the broad set of structural, strategic, and operational issues that face EMS planners. We will then look at specific case studies of how the different issues can be addressed. Finally, we will identify some rules of thumb with an eye toward developing a cost-benefit framework for EMS.
Andrew Mason, Ph. D.

Andrew Mason is a Senior Lecturer at the University of Auckland, New Zealand, where he has been working since completing his PhD at Cambridge University. Andrew is an enthusiastic proponent of applied Operations Research. He has developed optimization-based staff scheduling systems that are used at Auckland Airport and in Australia. Along with Shane Henderson, he co-developed the first version of the ambulance visualisation and simulation software Siren Predict. He is a cofounder of The Optima Corporation who now sell the Siren software internationally. He is actively involved in the research underpinning Siren Live, Optima's software for improving response times through real-time ambulance redeployment.

Armann Ingolfsson, Ph. D.

Armann Ingolfsson is an associate professor of management science and academic director of the Centre for Excellence in Operations (CEO) at the University of Alberta School of Business. He received Ph.D. and S.M. degrees in operations research from the Massachusetts Institute of Technology and a B.S. degree in industrial engineering from SUNY at Buffalo. He has taught courses in operations management and quantitative modeling to undergraduate, M.B.A., executive education, and Ph.D. levels and has received awards for teaching both at the undergraduate and graduate levels. His research interests focus on operations management in the service and health sectors, including emergency service operations and call centre operations, and developing methodology to analyze congested systems. He has published articles on these topics in journals such as the European Journal on Operational Research, Health Care Management Science, INFORMS Journal on Computing, Journal of the Operational Research Society, and Transportation Science.

Dan Haight

As the managing director of the Centre for
Excellence in Operations (CEO), Dan oversees the day-to-day operations and is intimately involved in Centre projects. He has managed several research projects for emergency services clients both in Alberta and in the US. Projects have addressed issues around demand forecasting, deployment, scheduling, station location, and SSM/redeployment. Many of these projects have resulted in academic publications and media stories. When he is not directing research projects, he teaches consulting and presentation skills at the University of Alberta School of Business.

Before joining the CEO, Dan worked in the consulting sector, where he provided strategic advice to senior management of clients in the energy, financial, and retail sectors. He speaks English and French and holds a Bachelor of Commerce from the University of Alberta.

**Shane G. Henderson, Ph. D.**

Shane G. Henderson is an associate professor in the School of Operations Research and Information Engineering at Cornell University where he teaches courses in simulation, applied probability and mathematical modeling. He has previously held positions at the University of Michigan in Ann Arbor, and the University of Auckland in New Zealand. His research focus is stochastic simulation and simulation optimization and he is the simulation area editor of the journal *Operations Research*. He has worked with emergency services for about 10 years, with a focus on ambulances. He co-developed, with Andrew Mason, a simulation and visualization tool that was built into a commercial product and is now installed and used in a number of cities around the world. He has worked in a number of other areas including radiation therapy planning for cancer treatment and America’s Cup yacht design.

**Jeff Meyer**

Jeff Meyer is the Chief Technology Officer for and co-founder of the Optima Corporation Ltd, developers of the Siren Predict and Siren Live decision support tools for Public Safety organizations. Siren is used by EMS services in 5 different countries across 20 time-zones. Based in Auckland, New Zealand, Jeff travels extensively working with Optima’s customers. Jeff has an engineering degree from the University of Auckland. His career spans over twenty years of engineering and computer science implementing high value optimization-based computer systems for industry. Jeff is a past INFORMS Franz Edelman finalist for work developing optimization-based crew scheduling solutions for New Zealand’s international airline, Air New Zealand.

**Ian Blanchard, BSc., EMT-P**

Ian Blanchard has been a Quality Assurance Strategist with The City of Calgary since 2004 and has taken a lead role in establishing and developing the framework for EMS wide systematic data collection and analysis.

Ian is currently completing a master’s degree in epidemiology (completion date, 2008) at the University of Calgary. His master’s thesis is entitled “Advanced Life Support Ambulance Response Time and Survival in a Large Urban Emergency Medical Services System”. He has been involved with EMS systems in Canada and the United Kingdom for 14 years.
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Centre for Excellence in Operations
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