

Preface

By: Dr. Tamon Stephen

Analytics Now showcases undergraduate student projects from the Operations Research program at Simon Fraser University. These projects are the products of our Introduction to Operations Research (MATH 208W) and capstone Operations Research Clinic (MATH 402W) courses; this volume covers selected projects from 2015 and 2016.

The three Clinic projects were each selected as a finalists in the Canadian Operational Research Society's (CORS) student paper competition, and were presented at the respective Annual CORS conferences in Montréal (joint with INFORMS) in 2015 and in Banff in 2016.

In the Clinic, the team of M. Beddis, M. Mitrovic and M. Sharma present a case study on selecting station locations for a public bike sharing program. They focus on building a network suited to handling the final stage of a commuter's transit. This allows them to formulate the problem as a deterministic integer program. As part of this, they developed criteria for station placement, and a detailed map of potential locations in downtown Vancouver.

J. Hung, B. Lo and F. Si study the transit fare system operated by TransLink in Vancouver. They consider the tradeoffs between various fare groups with a view to sharing the ridership costs more equitably and to maximizing ridership without losing revenue. Their analysis suggests that it may be effective to increase cash fares while further discounting passes.

O. Jackson and I. Martinez consider the placement of refugees arriving in Vancouver into English language programs. The recent surge in arrivals has produced long queues, and they explore priority policies that may reduce wait times. This project won an Honourable Mention at the finals of the 2016 CORS competition in Banff.

In Math 208W, M. Baillet, T. Dallow, H. Pham and K. Shen compare several management plans for water distribution in Metro Vancouver. They quantify how different adaptations to the distribution system, such as connecting existing reservoirs, can help to meet forecast demand, via a linear program.

Finally, Z. Cesaretti, R. Tominaga, S. Zimmerman and M. Reyers examine an airline scheduling problem for a single type of aircraft available between seven major Canadian cities. Their model incorporates capacities, costs, demands and prices, and allows them to evaluate scenarios where airline operations are impaired.

This publication is a product of the efforts of the members of the Simon Fraser University's Operations Research Student Union (ORSU). I would like to thank them for their work, particularly Fanli Si for leading the operation. And I thank the authors for their hard work in developing the papers and for allowing their projects to appear in this volume. I look forward to seeing more of these projects in the coming academic year and beyond.