Blair Laurence Bilodeau

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EDUCATION

Sep 2018 – Present
PhD, Statistics – 4.00/4.00
University of Toronto (Toronto, Canada)

Sep 2014 – Apr 2018
Honours BSc, Financial Modelling and Mathematics – 3.97/4.00
Western University (London, Canada)

PREPRINTS

Bilodeau B.L., Stanford D.A., Goldszmidt M., Appleton A. "Simulated co-location of patients admitted to an inpatient internal medicine teaching unit: Potential impacts on efficiency and physician-nurse collaboration." Submitted to INFOR on May 10, 2018. Resubmitted with revisions on Dec 7, 2018 and Feb 17, 2019.

CONFERENCE TALKS

"Simulated co-location of patients admitted to an inpatient internal medicine teaching unit: Potential impacts on efficiency and physician-nurse collaboration." Presented at CanQueue, University of Alberta, Edmonton, Canada, Aug 17-18, 2018 and Operations Research Applied to Health Services (ORAHS), Oslo Science Park, Oslo, Norway, July 29 – Aug 3, 2018.

RESEARCH EXPERIENCE

May 2018 – Aug 2018
NSERC Undergraduate Student Research Award II
Western University (London, Canada)
Supervisor: David Stanford

- Derived the Laplace transform of the joint density function for accumulated priorities in the two-class accumulating priority queue and performed numerical inversions.
- Extended these results to the case where the high priority class begins with some initial credits to obtain a system of equations. For the purpose of solving this system, made progress on finding the average waiting time for the high priority class by deriving an analytic expression.
- Proved a combinatorial method for determining the low priority waiting time distribution, as opposed to the previous approximation method.

May 2017 – Aug 2017
NSERC Undergraduate Student Research Award I
Western University (London, Canada)
Supervisor: David Stanford

- Developed a simulation model of the internal medicine ward at London's University Hospital in Python to study physician-nurse collaboration efficiency.
- Proposed and tested two novel changes based on geographic co-location of patient bed assignments and a lowest census model of patient team assignments, which suggested improved efficiency without a negative impact on patient quality of care metrics.
- Investigated sources of delay for mental health patients in the extreme tails of the empirical waiting time distribution. Assessed the impact of eliminating these patients through both a deterministic and stochastic simulation.

Sep 2016 – Dec 2016
Independent Study Project
Western University (London, Canada)
Supervisor: Zinovi Krougly

- Implemented the Gaver-Stehfest algorithm in C++ to calculate Laplace and inverse Laplace transforms with arbitrary precision.

PROFESSIONAL EXPERIENCE

May 2016 – Aug 2016 — Risk Research Intern
London Life Insurance Company – Wealth Management (London, Canada)

- Analyzed annuitant mortality data using Access databases, SQL, VBA macros, and PivotTables to make pricing and valuation recommendations.
- Identified lines of business which were experiencing abnormal mortality and used new factors within the customer data to reveal causes.
- Wrote and optimized Access SQL code to improve data quality, simplify the user experience, and cut study runtime in half.
- Investigated possible improvements for measuring lag on late-reported deaths using regression in R, quantifying that predictions were acceptable to a high significance level.

May 2015 – Aug 2015 — Data Analyst Intern
Bell Canada – Access Network (London, Canada)

- Estimated future spending by using Excel PivotTables, V-Lookups, and VBA formulas to predict construction milestones from historical data. Interpreted these trends to recommend allocation of funds and identified which jobs could be cancelled with minimal costs.
- Automated many clerical tasks with VBA macros to improve efficiency and data quality by reducing human error and poor formatting.

Sep 2010 – Apr 2017 — Level 3 Ice Hockey Referee
Ontario Hockey Federation (London, Canada)

- Analyzed on-ice situations and reacted quickly to minimize mistakes and maintain the game's integrity.
- Communicated with on-ice partners to anticipate potential conflict before it escalated.
- Established a calm presence when faced with aggravated coaches to defuse situations.

TEACHING EXPERIENCE

University of Toronto – Department of Statistical Sciences (Toronto, Canada)

Spring 2019 — STA355 Theory of Statistical Practice – *Teaching Assistant*
STA457 Time Series Analysis – *Teaching Assistant*

Fall 2018 — ACT230 Mathematics of Finance for Non-Actuaries – *Teaching Assistant*
STA347 Probability – *Teaching Assistant*

RESEARCH GRANTS

2018-2019	NSERC Canada Graduate Scholarships – Master's, *University of Toronto*	$17,500
2018-2019	Queen Elizabeth II Graduate Scholarship, *University of Toronto* (DECLINED)	$15,000
2018	NSERC Undergraduate Student Research Award, *Western University*	$4,500
2017	NSERC Undergraduate Student Research Award, *Western University*	$4,500

SCHOLARSHIPS AND AWARDS

2018	E.F. Burton and F.W. Burton Graduate Scholarship, *University of Toronto*	$3,000
2017	Robert and Ruth Lumsden Scholarships in Science, *Western University*	$1,500
2017	Borwein Memorial Prize, *Western University*	$100
2014-2017	Continuing Admission Scholarship, *Western University*	$10,000