

# Blair Laurence Bilodeau

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## EDUCATION

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Sep 2018 – Present      PhD, Statistics – 4.00/4.00  
*University of Toronto*

Sep 2014 – Apr 2018      Honours BSc, Financial Modelling and Mathematics – 3.97/4.00  
*Western University*

## PREPRINTS

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*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

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“The average waiting time for both classes in a delayed accumulating priority queue.” Presented at Canadian Operational Research Society (CORS), Saskatoon, Canada, May 27 – 29, 2019.

“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

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May 2018 – Aug 2018      NSERC Undergraduate Student Research Award II  
*Western University*  
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*  
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.

## PROFESSIONAL EXPERIENCE

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- May 2016 – Risk Research Intern  
Aug 2016 *London Life Insurance Company – Wealth Management*
- 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 – Data Analyst Intern  
Aug 2015 *Bell Canada – Access Network*
- 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 – Level 3 Ice Hockey Referee  
Apr 2017 *Ontario Hockey Federation*
- 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

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*University of Toronto – Department of Statistical Sciences*

- 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

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2019-2022	NSERC Postgraduate Scholarships – Doctoral	\$21,000/yr
2018-2019	NSERC Canada Graduate Scholarships – Master's	\$17,500
2018-2019	Queen Elizabeth II Graduate Scholarship (DECLINED)	\$15,000
2018	NSERC Undergraduate Student Research Award	\$4,500
2017	NSERC Undergraduate Student Research Award	\$4,500

## SCHOLARSHIPS AND AWARDS

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2018	E.F. Burton and F.W. Burton Graduate Scholarship	\$3,000
2017	Robert and Ruth Lumsden Scholarships in Science	\$1,500
2017	Borwein Memorial Prize	\$100
2014-2018	Western Continuing Admission Scholarship	\$2,500/yr