



# Vusal Babashov

## Data Scientist



90 Blackdome Cres, Kanata, ON  
K2T 1B1



+1 613 716 69 49



<https://vbabashov.github.io>



vbabashov@gmail.com

## About me

I'm a Data Scientist and Ph.D. candidate in Advanced Analytics at the Telfer School of Management, University of Ottawa. I have more than 10 years of industry, research, consulting and government experience combined. I specialize in building a range of advanced analytical solutions to real-life problems that arise in service industry including finance and healthcare.

## Skills

Python



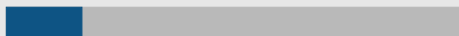
R



Tableau



SQL



Java



Simul8, Simio



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(\*) [The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

## Education

2016-	Ph.D. Candidate in Advanced Analytics Telfer School of Management, University of Ottawa	Ottawa, ON
2010-2012	M.Sc. in Epidemiology and Biostatistics Western University	London, ON
2008-2010	M.Sc. in Industrial Engineering University of Pittsburgh	Pittsburgh, PA
2003-2007	B.Sc. in Industrial Engineering Qafqaz University	Baku, AZ

## Relevant Experience

2019-	PhD Intern/Analyst, Currency Department, Bank of Canada	Ottawa, ON	<ul style="list-style-type: none"><li>Implemented classical time series forecasting and advanced machine learning models including deep neural network to improve the accuracy of multi-denominational and multi-regional bank note demand forecasting.<ul style="list-style-type: none"><li>Methodology: Time Series Forecasting, Machine Learning, Multi-Layer Perceptron, Long Short-Term Memory</li><li>Analytical Tools: R, Python</li></ul></li><li>Built Graphical User Interface (GUI) to Note Flow Simulation Tool to support decision making process and allow for various What-If scenario analyses.<ul style="list-style-type: none"><li>Methodology: Decision Support System, Discrete Event Simulation</li><li>Analytical Tools: Java</li></ul></li></ul>
2016-	Doctoral Candidate, Telfer School of Management	Ottawa, ON	<ul style="list-style-type: none"><li>Developed inverse optimization model to estimate the implicit cost of waiting and to set appropriate wait time targets in a multi-priority patient setting.</li><li>Submitted a manuscript for a publication in a peer-reviewed journal that describes the approach in detail.<ul style="list-style-type: none"><li>Methodology: Multiple Linear Regression, Quadratic Regression, Deep Neural Network, Convex Inverse Optimization, Simulation</li><li>Analytical Tools: Python, R, Gurobi, Java, Scikit-learn, Keras, Tensorflow, Pandas, Matplotlib</li></ul></li><li>Developed dynamic programming model to efficiently allocate healthcare resource capacity and to identify good scheduling policies for patients with multiple visits.<ul style="list-style-type: none"><li>Methodology: Markov Decision Processes, Approximate Dynamic Programming, Linear Programming, Integer Programming, Column Generation, Simulation</li><li>Analytical Tools: CPLEX, Java, GAMS</li></ul></li><li>Developed a predictive framework using Multi-Criteria Decision Analysis (MCDA) approach for sorting and classification of pharmaceutical drug alternatives for reimbursement recommendation decisions.</li><li>Presented research model and findings at several academic conferences, and published the results in a peer-reviewed journal.<ul style="list-style-type: none"><li>Methodology: Multi-Criteria Decision Analysis, UTADIS, Linear Programming</li><li>Analytical Tools: R, rorutadis</li></ul></li><li>Taught Business Analytics course to BCom undergraduate students in Fall 2018 and 2019 terms, and served as a Teaching Assistant to Probability, Statistics, Business Analytics, Simulation and Data Mining courses.</li></ul>



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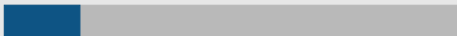
R



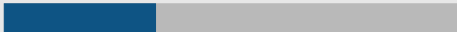
Tableau



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## Relevant Experience (Cont'd)

2013-14

Health Economist, Health Quality Ontario

Toronto, ON

- Developed a comparative economic analysis model for a medical technology and provided a funding policy recommendation to the Ministry of Health and Long-Term Care to establish fee for service code as a part of the Ontario Health Insurance Plan (OHIP).
- Wrote a technical report (publicly available on HQO website) on economic analysis that describes the methodology and findings in detail.
- Presented key findings of the analysis to the senior executive team at the Health Quality Ontario.
  - Methodology: Cost-Effectiveness Analysis, Decision Tree, Markov Chains
  - Analytical Tools: TreeAge

2012-14

Health Economist, PIVINA Consulting Inc

Toronto, ON

- Built several cost-effectiveness, cost-utility and budget impact analyses for pharmaceutical manufacturers seeking market access for drugs in Canada.
- Wrote a report for each medical product to explain the specifics of the economic analysis.
  - Methodology: Cost-Effectiveness Analysis, Decision Tree, Survival Analysis, Markov Chains
  - Analytical Tools: MS Excel, SAS

2010-12

Master's Candidate, Western University

London, ON

- Built a discrete-event simulation model to reduce the wait times and improve treatment planning efficiency for radiation planning process at the London Regional Cancer Program.
- Published a manuscript on simulation model and findings in a peer-reviewed academic journal.
  - Methodology: Discrete-Event Simulation
  - Analytical Tools: Simul8
- Developed an early-look economic model for an oncology drug based on the phase II clinical trial.
- Using large administrative data, analyzed clinical resource utilization and conducted survival analysis for a cohort of patients to estimate total cost to the payer.
- Presented results at a conference and published the research work in an academic journal.
  - Methodology: Decision Analytical Model, Markov Chains, Survival Analysis
  - Analytical Tools: SAS, TreeAge

## Awards and Distinctions

2019

National Capital Region Thesis Competition Second Place

2016-17

Ontario Graduate Scholarship

2016-2020

Telfer School of Management Admission and Excellence Scholarship

2008-10

Full Graduate Scholarship

2007

Honour's Diploma

## Professional Affiliations

- The Institute for the Operations Research and Management Sciences (INFORMS)
- The Canadian Operational Research Society (CORS)