

Nathaniel David Osgood

1. Personal

Born July 16, 1968, Fairborn (Dayton), Ohio, United States
Dual Canadian & United States citizenship

2. Academic Credentials

Ph.D., Massachusetts Institute of Technology, 1999, Dept. Electrical Engineering and Computer Science, Computer Science

Sc.M., Massachusetts Institute of Technology, 1993, Dept. Electrical Engineering and Computer Science, Electrical Engineering and Computer Science

B.Sc., Massachusetts Institute of Technology, 1990, Dept. Electrical Engineering and Computer Science, Computer Science and Engineering

3. Other Credentials

None

4. Appointments and Promotions

Professor, Computer Science, 2017
Associate Professor, Computer Science, 2010
Assistant Professor, probationary, Computer Science, 2005

5. Associate Memberships

(Via Secondment) Co-Director Saskatchewan Provincial Modeling Initiative, March 2020-March 2021.

Honorary Associate Professor, University of Sydney, May 2016-Present

Visiting Associate Professor, Sloan School of Management, MIT, January-May 2012

Visiting Scholar, Sloan School of Management, MIT, October 2011-January 2012

College of Graduate Studies and Research, 2005-Present

School of Public Health, 2008-2011

Community Health and Epidemiology, 2007-Present

Division of Biomedical Engineering, 2007-Present

Jan 06, 2019: "Agent-based Modeling: A Research Strategy for Challenging Problems in Nursig Research."

6. Leaves

Sabbatical Leave July 1, 2011 - June 30, 2012.

Secondment to Saskatchewan Health Authority, March 2020-March 31, 2021.

Honorary Associate Professor, University of Sydney, May 2016-Present

7. Honours (Medals, Fellowships, Prizes)

Computer Science Graduate Course Council (CSGCC) Excellence in Supervision Award 2017-2018

Provost's Award for Outstanding Teaching in Science for the College of Arts and Science 2016

College of Arts & Science Teaching Excellence Award for Science 2016

Computer Science Student Society Professor of the Year Award, 2013

Department of Computer Science Teaching Award, 2012

Fellow, Wellesley Institute. 2010-2012

Department of Computer Science Teaching Award, 2010

National Science Foundation Fellow, United States National Science Foundation, 1991-1994

1990 William Martin Prize for Best MIT Undergraduate Thesis in Computer Science. June 1990

8. Previous Positions Relevant to U of S Employment

Senior Lecturer, Massachusetts Institute of Technology, Cambridge Massachusetts, United States, 2003 to 2005

Research Associate, Massachusetts Institute of Technology, Cambridge Massachusetts, United States, 2003 to 2005

Contractor, Massachusetts Institute of Technology, Cambridge Massachusetts, United States, 2002 to 2003

Consultant, World Water Institute, Cambridge Massachusetts, United States, 2001 to 2002

Partner, Steeprock Group, Cambridge Massachusetts, United States, 2000 to 2001

Research Specialist, University of California Irvine, Irvine California, United States, 1999 to 2000

Acting CTO, Incentive Markets Inc., Cambridge Massachusetts, United States, 1997 to 2003

Partner, Cambridge Decision Dynamics Inc., Cambridge Massachusetts, United States, 1994 to 1996

Research Associate, Massachusetts Institute of Technology, Cambridge Massachusetts, United States, 1990 to 1991

Staff Member, Koobi Fora Field School, Koobi Fora, Kenya, 1991

Teaching Assistant, Koobi Fora Field School, Koobi Fora, Kenya, 1992

Software Development Engineer (Summers), Microsoft Corporation, Redmond, Washington, United States, 1987 to 1990

9. Teaching Record

A. Scheduled Instructional Activity

2023-2024

CMPT 371.3 (T2) Software Engineering Management Lecture, number of students: 42,
lecture hours: 34.58, YCSH: 1452.36

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

CMPT 394.3 (T1), Simulation Principles, Lecture, number of students: 30, lecture hours: 34.58, YCSH: 1037.4

CMPT 858.3 (T1), Topics in Modeling and Operations Research, Lecture, number of students: 1, lecture hours: 34.58, YCSH: 34.58

CMPT 898.3 (T1), Applied Category Theory for Dynamic Computational Modeling in Systems Science, Lecture, number of students: 5, lecture hours: 34.58, YCSH: 172.9

2022-2023

CMPT 371.3 (T1) Software Engineering Management Lecture, number of students: 24, lecture hours: 34.58, YCSH: 829.92

CMPT 898.3 & Cross-Listed Fields Institute course (T1), Agent-Based & Individual-Based Modeling: Theory and Praxis, Lecture, number of students: 4 USask + 6 students via Fields Institute, lecture hours: 34.58, YCSH: 345.8

CMPT 394.3, Simulation Principles, Lecture, number of students: 31, lecture hours: 34.58, YCSH: 1071.98

CMPT 858.3, Topics in Modeling and Operations Research, Lecture, number of students: 7, lecture hours: 34.58, YCSH: 242.06

CMPT 400 (T1&T2) Research Topics in Computer Science (supervised 1 student: Pucheng Tan)

2021- 2022

CMPT 371.3 (T1) Software Engineering Management Lecture, number of students: 19, lecture hours: 34.58, YCSH: 657.02

CMPT 898.3 (T1), Applied Category Theory for Higher-Level Functional Programming and Systems Science, Lecture, number of students: 4, lecture hours: 34.58, YCSH: 138.32

CMPT 898.3 & Cross-Listed Fields Institute course (T2), Machine Learning and Statistical Methods for Disease Transmission Modelling: Foundations and Praxis, Lecture, number of students: 9 USask + 38 students via Fields Institute, lecture hours: 34.58, YCSH: 1625.26

CMPT 394.3 (T2), Simulation Principles, Lecture, number of students: 33, lecture hours: 34.58, YCSH: 1141.14

CMPT 858.3 (T2), Topics in Modeling and Operations Research, Lecture, number of students: 2, lecture hours: 34.58, YCSH: 69.16

CMPT 400 (T1&T2) Research Topics in Computer Science (supervised 1 student: Amanda Zimmerman)

2020-2021

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

CMPT 394.3, Simulation Principles, Lecture, number of students: 33, lecture hours: 34.58, YCSH: 1141.14

CMPT 400 (T1&T2) Research Topics in Computer Science (supervised 1 students: Zeshan Ahmad)

2019-2020

CMPT 898.3 (T1) Special Topics in Special Topics in Elements of Intermediate Dynamic Modeling and Systems-Data Science (9 students)

CMPT 371.3 (T2) Software Engineering Management (17 students)

CMPT 400 (T1&T2) Research Topics in Computer Science (supervised 2 students: J. Goertzen, J. He)

2018-2019

CMPT 371.3 (T2) Software Engineering Management (5 students)

2017-2018

CMPT 394.3, Simulation Principles, Lecture, number of students: 32, lecture hours: 34.58, YCSH: 1106.56

CMPT 858.3, Topics in Modeling and Operations Research, Lecture, number of students: 14, lecture hours: 34.58, YCSH: 484.12

CMPT 371.3, Software Management, Lecture, number of students: 41, lecture hours: 34.58, YCSH: 1417.78

CMPT 898.3, Special Topics - Scalable Software Engineering, Lecture, number of students: 9, lecture hours: 34.58, YCSH: 311.22

2016-2017

CMPT 394 (T1) Simulation Principles (25 students)

CMPT 858 (T1) Topics in Modeling & Operations Research (7 students)

CMPT 898.3 (T1) Special Topics in Scalable Software Engineering for Data Science (11 students)

CMPT 371.3 (T2) Software Engineering Management (32 students)

CMPT 470.3 (T2) Advanced Software Engineering (36 students)

CMPT 816.3 (T2) Advanced Software Engineering (14 students)

CMPT 400 (T1&T2) Research Topics in Computer Science (supervised 2 students: Y. Chen, W. McDonald)

2015-2016

CMPT 371.3 (T2) Software Engineering Management (37 students)

CMPT 470.3 (T2) Advanced Software Engineering (23 students)

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

CMPT 816.3 (T2) Advanced Software Engineering (5 students)
CMPT 394 (T1) Simulation Principles (31 students)
CMPT 858 (T1) Topics in Modeling & Operations Research (6 students)
CMPT 880.3/890.3 (T1&T2) Supervised 3 students (L. Li, A. Tayhouee, A. Mohammadbhageri).
CMPT 400 (T1&T2) Research Topics in Computer Science (1 student: W. van der Kamp)
CMPT 405 (T1&T2) Project Design and Implementation (supervised 2 students: S. Dilsner, J. Heinrichs)

2014-2015

CMPT 371.3 (T2) Software Engineering Management (22 students)
CMPT 394 (T1) Simulation Principles (21 students)
CMPT 858 (T1) Topics in Modeling & Operations Research (13 students)
CMPT 898 (S1&2) Special topics (Software Engineering Management) (8 students)
CMPT 880.3/890.3 (T1&T2) Supervised two students (N. Shojaati, R. Oraji), co-supervised one (A. McLean).

2013-2014

CMPT 214.3 (T1) Software Engineering Management (89 students)
CMPT 371.3 (T2) Software Engineering Management (17 students)
CMPT 858 (T1) Topics in Modeling & Operations Research (13 students)
CMPT 858 (T2) Topics in Modeling & Operations Research (4 students)
CMPT 394 (T2) Simulation Principles (20 students)
CMPT 400 (T1&T2) Research Topics in Computer Science (co-supervised 1 student: Jonathan Calver)
CMPT 880.3/890.3 (T1&T2) Co-supervised two students (K. Kreuger, P. Bhowmik)., Second reader for one student (M. Mughees)

2012-2013

CMPT 371.3 (T2) Software Engineering Management (20 students)
CMPT 394 (T2) Simulation Principles (12 students)
CMPT 858 (T1) Topics in Modeling & Operations Research (12 students)
CMPT 880.3/890.3 (T1&T2) Co-supervised one student (D. Knowles), second reader for one student (A. Preuss).

2011-2012

MIT 15.879 (T2) Research Seminar in System Dynamics (4 registered; 6 auditors)
CMPT 880.3/890.3 Co-supervised one student (W. An)

2010-2011

CMPT 470.3 (T1) Advanced Software Engineering (12 students)

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

CMPT 816.3 (T1) Software Engineering (14 students)
CMPT 400 (T1&T2) Research Topics in Computer Science (1 student: Xiang Meng)
CMPT 405 (T1&T2) Project Design and Implementation (co-supervised 1 student: Dylan Knowles)
CMPT 371.3 (T2) Software Engineering Management (33 students)
CMPT 858 (T2) Topics in Modeling & Operations Research (13 students)
CMPT 880.3/890.3 Co-supervised one student (W. Qian), Second reader for one student (M. Mughees)

2009-2010

CMPT 470.3/816.3 (T1) Advanced Software Engineering (24 students)
CMPT 405 (T1&T2) Project Design and Implementation (1 student: Tyler Hinz)
CMPT 371.3 (T2) Software Engineering Management (18 students)
CMPT 858 (T2) Topics in Modeling & Operations Research (2 students)
CMPT 880.3/890.3 Supervised one student (Y. Tian), Second reader for two student (R. Harrison & Y. Liu)

2008-2009

CMPT 470.3/816.3 (T1), Advanced Software Engineering (20 students)
CMPT 405 (T1&T2) Project Design and Implementation (4 students: Daniel Funk, Yudi Xue, Mike Taylor, Tony Leung)
CMPT 371.3 (T2) Software Engineering Management (10 students)
CMPT 858 (T2). Topics in Modeling & Operations Research (8 students; drawn from Computer Science, School of Public Health, Community Health & Epidemiology, and Biostatistics/Mathematics and Statistics)
MPT 880.3/890.3 Second reader for two students (M. Hashemian & D. Noete)

2007-2008

CMPT 470.3/816.3 (T1), Advanced Software Engineering (15 students)
CMPT 405 (T1&T2) Project Design and Implementation (3 students: JT Dorion, Qian Wang, Joshua Goodwin)
CMPT 371.3 (T2) Software Engineering Management (13 students)
CMPT 858 (T2). Topics in Modeling & Operations Research (7 students; drawn from Computer Science, School of Public Health, and Community Health & Epidemiology)
CMPT 880.3/890.3 First reader for one student (Q. Zhang), second reader for two students (J. Paudel and A. Keela)

2006-2007

CMPT 470.3/816.3 (T1), Advanced Software Engineering (27 students)
CMPT 405 (T1&T2) Project Design and Implementation (1 student: David Noete)

CMPT 371.3 (T2) Software Engineering Management (11 students)
CMPT 880.3/890.3 Second reader for one student (T. Guha)

2005-2006

CMPT 405 (T1&T2) Project Design and Implementation (1 student: Scott Gjesdal)
CMPT 371.3 (T2) Software Engineering Management (16 students)
CMPT 856.3 (T2), Software Engineering (4 students)
CMPT 880.3/890.3 Supervisor for one student (A. Gao), second reader for three students (J. Zhang, M. Donaldson, Y. Mao) and submitted presentation grade for a fourth (G. Tian)

B. Committee Memberships

Students in Other Institutions (typically involving guidance over extended periods).

Past

C. Tang. Ph.D. Worcester Polytechnic Institute. Supervisors M. Radzicki and A. Rosen.
2014-2019

R. Olaisen. Ph.D. Case Western Reserve University. Quantitative & Population Health
Sciences. Supervisor K. Stange. Jan 2017-2018.

R. Flint. Ph.D. UCLA, Health Policy & Management. Supervisor Neal Helfon. 2015-2018.

S. Moran. M.Sc. National University of Ireland, Galway, Computer Science and Information
Technology. A Time Series Approach for Wave Height Prediction Based on Real-Time
Sensor Data. Discipline of Information Technology, College of Engineering and Informatics,
National University of Ireland, Galway. External Examiner. June 2017. Supervisor J.
Duggan.

N. Neary. Ph.D. School of Public Health, University of Alberta. Agent-based modeling for
Obesity. 2012-Present.

S. Deodhar. Ph.D. Virginia Tech, Computer Science. Supervisor M. Marathe. 2014-June
2015.

H. Kaur. Ph.D. University of Nebraska, School of Public Health. Advisor S. Watanabe.
2015-April 2016

E. Mudimu. Ph.D. University of South Africa, Operations Research. On Modelling the
Transmission of the Human Immunodeficiency Virus (HIV) in a Closed Mixed Society. UNISA
thesis. Department of Operations Research. University of South Africa. External Examiner.
April 2016. Co-Supervisors: Dr. G.N. Engelbrecht, Prof. C. Swanepoel.

T. Lyons. M.Sc. National University of Ireland, Galway, Computer Science and Information
Technology. An Agent-Based Framework for Simulating PC Societies in Game

Environments. Discipline of Information Technology, College of Engineering and Informatics, National University of Ireland, Galway. External Examiner. October 2013. Supervisor J. Duggan.

P. Jackson, Ph.D. Computing Science. A Framework for Software Modelling in Social Science Research. School of Computing Science, Simon Fraser University. External Examiner. April 2013. Supervisor U. Glässer.

University of Saskatchewan Students.

Current

Dana Ramsay. Ph.D. Large Animal Clinical Sciences. September 2014-Present.

T. Le. Ph.D. Community Health and Epidemiology. 2014-Present.

S. Finch. Ph.D. Nutrition. Supervisor H. Vatanparast. 2015-Present.

J. Hawley. Ph.D. Kinesiology. (Cognate) Physical Literacy and Sports Involvement K. Chad. 2011-Present. (*Unsure if student remains active*).

A. Sutherland, PhD. Computer Science. Software Visualization, Supervisor K. Schneider. 2005-2009, 2014-Present. (*Currently on leave*).

D. Noete. M.Sc. Computer Science. Domain Specific Languages & Agile Processes. Supervisor K. Schneider. 2009-Present. (*Currently on leave*).

Past

M. Pang. M.Sc. Large Animal Clinical Sciences, Veterinary Medicine. 2015-July 2021.

M. Andkhoie. Ph.D. School of Public Health. 2018-November 2021

Z. Gheisary. Ph.D. Biochemistry, Microbiology and Immunology. 2019-2023.

H. Mortazavi. Ph.D. Anatomy, Physiology, and Pharmacology. 2019-2023.

A. Afful. Ph.D. Statistics. 2016-2019.

M. Orafaee. MSc. Computer Science. 2019.

F. Abrar. MSc. Computer Science. 2019.

T. Lawrence. Ph.D. Statistics. 2016-2018.

M. Mejia-Salazar. Ph.D. College of Veterinary Medicine. Supervisor T. Bollinger. 2013-2017.

A. Kroshko. Ph.D. Computer Science. Topic to be Determined. Supervisor R. Spiteri. 2011-2018.

A. Safarishahrbijari. Ph.D. Mechanical Engineering. 2015-2016.

P. Mondal. Ph.D. Collaborative Biostatistics Program. 2015-2016.

O. Osemwegie. MSc. Scalable and Energy Efficient Software Architecture for Human Behavioral Measurement. February 2017.

D. Brown. M.Sc. Civil Engineering. Dynamic Modeling of Road Network Degradation. Supervisor G. Sparks. December 2016.

T. Paul. Ph.D. Computer Science. Scaling Behaviour in Human Mobility. Supervisor K. Stanley. 2012-February 2017.

R. Haque. Ph.D. Computer Science. Medical Image Analysis. Co-supervisor M. Eramian and K. Schneider. 2011-August 2016.

M. Trecker. Ph.D. School of Public Health. Gonorrhea Epidemiology and Modeling. Co-supervisors J. Dillon & C. Waldner. 2011-2016.

B. Sagl. M.Sc. Computer Science. Biomechanical Modeling of the Masticatory Region. 2015.

R. Harrison. M.Sc. Computer Science. Distributed infrastructure for agent-based modeling. Supervisor N. Jamali. 2011-2015.

S. McPhee-Knowles. Ph.D. Johnson-Shoyama School of Public Policy. Supervisor P. Phillips. 2013-2014.

M. Zibran. Ph.D. Computer Science. Software Cloning. Supervisor C. Roy. 2010-2014.

M. Obeidat. Ph.D. Mathematics (Cognate). Composite likelihood methods. Supervisor J. Liu. 2011-July 2014.

R. Orji. Ph.D. Computer Science. Supervisor R. Mandryk. 2012-2014

K. Gerling. Ph.D. Computer Science. Supervisor R. Mandryk. 2012-2014.

A. LaVallee. Ph.D. Community Health & Epidemiology. Participatory Modeling for Tuberculosis. Supervisor S. Abonyi (Community Health & Epidemiology). 2007-April 2014.

M. Naseri. Ph.D. Computer Science. Provenance reasoning in Grid and service-oriented computing. Supervisor S. Ludwig. 2009-2013.

J. Chauhan. M.Sc. Computer Science. Co-supervisors D. Makaroff and W. Grassmann. August 2012-July 2013.

D. Liu. Ph.D. Computer Science. Service-Oriented Architectures. Supervisor R. Deters. 2006-2013.

D. Flatla. PhD Computer Science. Improving Assistive Technology for Individuals with Colour Vision Deficiency. Supervisor C. Gutwin. 2009-March 2013.

A. Genest, Ph.D. Computer Science. Deictic Gestures. Co-Supervisors R. Mandryk & C. Gutwin. 2008-Jan 2013.

X. Zhao, Ph.D. Computer Science. Resource coordination in large-scale distributed systems. Supervisor N. Jamali. 2008-June 2012

F. Alawami. M.Sc. Computer Science. An Aspect Refactoring Tool for The Observer Pattern. Supervisor C. Dutchyn. 2012-May, 2012

A. Rahim, M.Sc. Computer Science. Predicting antigen evolution in Factor H Binding Protein from *Neisseria meningitis*. Supervisor A. Kusalik. 2010-October, 2011

S. Kapaj, Ph.D. Epidemiology. The H1N1 Pandemic in Saskatoon. Supervisor C. Waldner. 2010-2011.

A. Kroshko, M.Sc. Computer Science. Differential equation workbench. Supervisor R. Spiteri. 2009-2011

P. Pourhaj, M.Sc. Electrical and Computer Engineering, Hardware Simulation. Supervisor D. Teng. External Examiner. 2010

M. Hashemian, M.Sc. Computer Science. Human Dynamic Networks in Opportunistic Routing and Epidemiology. Supervisor K. Stanley. 2009-2011

D. Madsen, M.Sc. Computer Science. Distributed Filesystems. Supervisor D. Makaroff. 2007-2010

L. Jin, M.Sc. Computer Science. Sequence Matching with Constraints. Supervisor I. McQuillan. 2009-2010

J. Feng, Ph.D. Computer Science. Wireless sensor networking, Co-supervisors D. Eager & D. Makaroff. 2006-2010

R. Dean, M.Sc. Computer Science. Numerical methods for simulation of electrical activity in the myocardial tissue. Supervisor R. Spiteri. 2007-2009

J. Paudel, M.Sc. Computer Science. The Aspect Structure of Compilers. Supervisor C. Dutchyn. 2007-2009

M. Nacenta, Ph.D. Computer Science. Multidisplay interfaces. Supervisor S. Subramanian, 2005-2008.

C.S. Koh, M.Sc. Computer Science. Modeling Gene Regulatory Networks Using a State-Space Model with Time Delays. Supervisor A. Kusalik. 2007

N. Bian, PhD Computer Science. Supervisor M. Eramian. 2007. On indefinite leave of absence.

F. Huang, M.Sc. Computer Science. A Method for Mapping XML-Based Specifications Between Development Methodologies. Supervisor J. Carter. 2008-2009

I. Hopkins, M.Sc. Computer Science. Design-Time Performance Testing. Supervisor K. Schneider. 2009

Q. He, M.Sc. Computer Science. Network Traffic Analysis. Supervisor D. Makaroff & D. Eager. 2007

L. Xu, M.Sc. Computer Science. Modeling Dendritic Shapes Using Path Planning. Supervisor D. Mould, 2007-

S. Sethi, M.Sc. Computer Science. Queuing Network Analysis. Supervisor W. Grassmann. 2006-

M. Donaldson, M.Sc. Computer Science. Parameter Estimation. Supervisor R. Spiteri. 2006-

R. Rangel, Ph.D. Computer Science. Content generation for computer graphics. Supervisor D. Mould. 2006-

Y. Mao, M.Sc. Computer Science. Simulation of community reward system, Supervisors J. Vassileva and W. Grassmann. 2006-

R. Degenhardt, Ph.D. Biology. Dean's Representative. 2008

H. Nguyen, M.Sc. Electrical and Computer Engineering. Wireless Diversity. Supervisor H. Nguyen. External Examiner. 2006

D. Chen, M.Sc. Computer Science. Combinatorial optimization for fertilizer formulation. Supervisor M. Horsch. 2006

I. Tsai, Ph.D. Risk Management (MIT). Self-enforcing contract design, Supervisor F. Moavenzadeh. 2003-2007

C. Student Supervision

Undergraduate Students Supervised

CMPT 405 Students (please see Section 9A)

CMPT 400 Students (please see Section 9A)

M. F. Starling, summer 2023-summer 2024.

A. Patel, work summer 2024.

T. Purdy, work summer 2023-summer 2024.

J. Li, work summer 2023.

H. Gundidza, work summer 2023.

S. Mills, work summer 2022, 2023 and 2024.

T. Purdy, work summer 2023, January 2021-May 2024.

J. Mikuliak, work May 2021-April 2024.

J. Pointer, work September 2020-August 2022.

V. Patel, work January 2021-Present.

A. Toderash, work September 2020-January 2021.

E. Redekopp, work September 2020-January 2021.

L. Pham, January 2021-May 2024.

L. Pham, work January 2021-December 2021.

A. Dumais, work Summer 2014, work during 2014-2015 and 2017-2018 academic years and summer 2017.

P. Zhai, work summer 2017 and during 2017-2018.

D. Thiessen, work summer 2017 and during 2017-2018 and summer 2018.
G. Hansen, work summer 2016, during 2016-2017.
H. Li, work during 2016-2017.
W. McDonald, work during 2016-2017.
Y. Chen T1&T2, work during 2014-2015, 2015-2016, 2016-2017.
J. Tang, work summer 2016, during 2016-2017.
M. Long. Summer 2015. Co-supervised with K. Stanley.
W. van der Kamp. Summers 2014-2015, work during 2014-2015, 2015-2016 academic years.
I. Vendrov. Summers 2013-2014. Co-supervised with C. Dutchyn
M. Hoffert. Summer 2014. Co-supervised with C. Dutchyn
J. Heinrichs. Summer 2014. Co-supervised with C. Dutchyn
C. Theoret. Summer 2014. Co-supervised with D. Teng (Electrical & Computer)
N. Unifei. Summer 2014. Co-supervised with D. Teng (Electrical & Computer Engineering).
A. Yaholnitsky. Summer 2011. Co-supervised with K. Stanley.
J. Calver. Summer 2011 (NSERC USRA) & 2012. Co-supervised with K. Stanley.
D. Knowles, Summers 2010 (NSERC USRA) & 2011. Co-supervised with K. Stanley.
O. Schneider, Summer 2009. Co-supervised with C. Dutchyn.
J. Bai, Summer 2008.
Y Xue, Summer 2008 & Summer 2009.
J. A. McLean. Investigating the Efficacy of Persuasive Health Technologies for Improving Patient Activation. September 2014-August 2022

Non-Thesis Graduate or Post-Graduate Students Supervised

R. Orazi. Post-doctoral associate. July – August 2014 (transitioned to M.Sc. program September 2014).
L. Burgos-Liz. Masters of Public Health Practicum student co-supervised with D. Finegood of Canadian Partnership Against Cancer (Summer of 2009); additionally supervised for research in Diabetes modeling (November 2010-May 2011) and Gonorrhea molecular epidemiology modeling (September 2011-June 2012).
J. Qi, Post-M.Sc. Early Summer 2009.
A. Mahamoud, Masters of Public Health student. May 2009-September 2011.
K. Yee, Masters of Public Health Practicum student co-supervised with J. Wright of Saskatoon Health Region. Summer of 2009, March 2010-July 2011.
I. Abdel-Mallek, Post-MD and Post-MPH student. Early Summer 2009.
J. Leung, M.Sc. student (Community Health & Epidemiology). Summer 2009.
W. An, Post-B.Sc. Summer 2010.
A. Mohammadbagheri. Dynamic Modeling and Machine Learning for Infant, Child and Caregiver Mental Health. September 2015-2019.

B. Keeler. Machine Learning and Dynamic Models of Weight Dynamics. September 2018-August 2023.

Other Students Supervised

Z. Ning. Master's Thesis Project for Karolinska Institute, Sweden.

A. Dong. Science Fair Project. Summer 2009-February 2013 (since Summer 2010, Co-supervised with M. Horsch)

Graduate Thesis Supervision

See Section 10.

Postdoctoral Supervision

A. Al-Azem, Half-time Postdoctoral Fellow. August 2009-August 2011.

M. Atapour. Full-Time Postdoctoral Fellow. May 2011-Jan 2012.

K. Hempel (University of Alberta), Cosupervised July 2019-2022.

Research Associate Supervision

N. Meadows. Research Associate (Part time). July 2022 – September 2023

10. Theses and Dissertations Supervised

Completed Theses (Ph.D.)

N. Shojaati. Systems Science Approaches to the Opioid Crisis: Exploring its Multifaceted Nature through Agent-Based Model Simulations. Full Time September 2015-November 2023.

W. Qian. Transmission Modeling with Smartphone-based Sensing. Full Time January 2013-July 2022.

K. Kreuger. Data and Design: Advancing Theory for Complex Adaptive Systems. Full Time January 2013-March 2017.

D. Vickers. Ph.D. Interdisciplinary. Evaluation of Dynamic Hypotheses for Saskatchewan's Increased Rates of Chlamydia. Full Time 2006-2011.

D. Zhang. Performance Issues in Wireless Mesh Networks. Co-supervised with R. Bunt. Co-supervised. Full Time June 2007-September 2010.

Completed Theses (M.Sc.)

I. Jamali. Identifying Trade-offs Associated with Cross-platform Mobile Development Tools. May 2017-May 2022.

L. Lamp, Agent-Based Models of Tasmanian Devil Populations. January 2019-October 2021.

L. Duan. Architectures and GPU-Based Parallelization for Online Bayesian Computational Statistics and Dynamic Modeling. September 2017-September 2021.

B. Pu. High performance computing for Convergent Cross Mapping. September 2017-August 2019.

X. Li. Particle Filtering of Compartmental models for childhood infectious diseases. September 2016-December 2018.

A. Teyhouee. Understanding Foodborne Illness Outbreaks through Mobile Sensing and Simulation. April 2015-December 2019.

T. Thomas. Dynamic Modeling and Machine Learning to Address the Burden of HIV in Saskatchewan. January 2016-December 2019.

W. McDonald. Intervention-oriented agent-based models for childhood infectious diseases. September 2017-March 2020.

A. Safarishahrbijari. Combining Dynamic Machine Learning and Dynamic Modeling. October 2016- November 2018.

Y. Qin. Data Informed Health Simulation Modeling. September 2016-January 2020.

P. Cong (Statistics). Bayesian Computational Statistics for West Nile virus. September 2014-September 2017. Co-supervised with Prof. J. Liu.

P. Bhowmik, Computer Science. Aspect- and Reflection-Based to Enhance Separation of Concerns in Simulation Models. January 2014-April 2016. Co-supervised with Prof. C. Dutchyn.

D. Knowles, Computer Science. The Design and Use of a Smartphone Data Collection Tool and Accompanying Configuration Language. Co-supervised with Prof. K. Stanley. May 2012-December 2014. *Winner, MSc Thesis Award for Physical and Engineering Sciences.*

W. An, Computer Science. Conceptual and Software Framework for the Integration of Simulation Modeling and Decision Analysis. Co-supervised with Prof. W. Grassmann. September 2010-June 2014 (on family medical leave of absence November 2010-August 2011, November 2012-December 2012).

Yu (Amy) Gao. Simulation Modeling to Understand the Human and Financial Cost of ESRD in Saskatchewan in Coming Decades. Co-supervised with Prof. R. Dyck (Department of Medicine), Part Time 2005-October 2013.

W. Qian. Modeling of Human Mobility Patterns from Microcontact Data. Co-supervised with Prof. K. Stanley. September 2010-December 2012.

Y. Jiang, Community Health & Epidemiology. Modeling of Diabetes Mortality in Saskatchewan. Co-supervised with Prof. H. Lim (Community Health & Epidemiology), Full Time 2009-May 2012

Y. Xue. Visualization in Support of the Simulation Modeling Process. Co-supervised with Prof. C. Gutwin. Full Time 2009-April 2012.

Y. Tian. Agent-Based Modeling of Tuberculosis in Saskatchewan. September 2009-February 2012.

J. Zhang, Part Time, Lowering the Burden of Diabetes and Heart Disease in the Saskatoon Health Region: A Systems Simulation Model. Co-supervised with Prof. W. Grassmann. Part Time October 2006-September 2011.

Q. Zhang. "Application and Evaluation of Local and Global Analysis for Dynamic Models of Infectious Disease Spread". Full Time January 2007-December 2008.

A. Rhee (MIT). "An Agent-Based Approach to HIV/AIDS Epidemic Modeling: A Case Study of Papua New Guinea". (Co-supervised with Prof. F. Moavenzadeh). Full Time 2005-2006.

R. Kureyabashi (MIT). "A System Dynamics Model for Analyzing Bubble Effects in the Long Distance Telecom Industry" (Co-supervised with Sharon Gillett). Full Time 2003-2004.

B. Daher (MIT). "Use of Sensors in Monitoring Civil Structures" (Co-supervised with Prof. Ruaidhri O'Connor). Full Time 2003-2004.

A. Coste (MIT). "Schedule and Cost Estimate for an Innovative Boston Harbor Concert Hall" (Co-supervised with Prof. J. O'Connor). Full Time 2003-2004.

Theses in Progress (Ph.D.)

Y. Pei. TBD. September 2024-Present.

N. Jamali. Categorical Modeling and Support for Data Science. Jan 2022-Present

W. McDonald. Machine Learning and Dynamic Modeling in Support of Wastewater Mathematical Epidemiology. March 2020-Present.

R. Zahan. Machine learning and dynamic modeling for insight into and prevention of suicides. May 2016-Present.

J. Mee. Participatory Modeling and Simulation. January 2019-Present.

Y. Tian. Simulation studies of health care delivery. September 2016-Present.

X. Li. Enabling Compositional Dynamic Modeling via Category Theory. January 2019-Present.

Theses in Progress (M.Sc.)

G. Klassen. TBD. September 2024-Present.

M. Simpson. Group Modeling Building and Participatory Modeling. September 2023-Present.

A. Lahiji. A General Platform for Integrated Patient & Family Self-Care and Multidisciplinary Care Teams. September 2024-Present.

- E. Redekopp. Categorical and computational statistical in support of health modeling. September 2022-Present.
- N. Sepahrom. Agent-based modeling to reduce the burden of intimate partner violence. September 2022-Present.
- A. Zimmerman. Dynamic modeling of Social Determinants of Health impact on the Burden of Human Papilloma Virus Infection and Cervical Cancer.
- J. Pointer. Machine learning, dynamic modeling and data science for insight from health smartphone-based data collection studies employing passive sensing. September 2022-Present.
- L. Stilling. Categorical Support for the systems Modeling Process. May 2022-Present.
- E. Gillies. Environmental scan, and analysis in support statistical and dynamic modeling for the opioid epidemic in Saskatchewan. Co-supervised with C. Neudorf, Community Health & Epidemiology. October 2022-Present.
- M. Baloch. Computational & informatics technologies to address the problem of dementia. September 2020-Present.
- A. Alegre. Computational effects in simulation modeling. September 2020-Present.
- A. Dumais, Co-Design of a Model for At-Risk Youth. September 2018-Present. On leave of absence.
- J. Berscheid. Machine Learning Models of Sleep Disorders. September 2018-Present. On leave of absence.

11. Books, chapters in books, expository and review articles

12. Books

- Lee, D., Osgood, N., Lin, Y.R. and Thomson, R. (Editors) 2017. Social, Cultural, and Behavioral Modeling. Springer International Publishing. 2017. LNCS Volume 10354. ISBN 978-3319602394. 358pp.
- Xu K., Reitter D., Lee D., **Osgood, N.** (Editors) 2016. "Social, Cultural and Behavioral-Cultural Modeling". Springer International Publishing. 2016. LNCS Volume 9708. ISBN 978-3-319-39930-0. [*e-Book version also available; ISBN 978-3-319-39931-7*]. 412pp.
- Agarwal, N., Xu, K., **Osgood, N.** (Editors) 2015. "Social Computing, Behavioral-Cultural Modeling and Prediction". Springer International Publishing. 2015. LNCS Volume 9021. ISBN 978-3-319-16267-6. [*e-Book version also available; ISBN 978-3-319-16268-3*]. 472pp.
- Rahmandad, H., Oliva R., **Osgood, N.** (Editors). 2015. Analytical Handbook for Dynamic Modelers, Cambridge, MA. MIT Press, November 13, 2015. 448pp. ISBN 978-0262029490.

Expository and Review Articles

Stanley, K., **Osgood, N.** 2011. The potential of sensor-based monitoring as a tool for health care, health promotion, and research. Invited (to N.D.O) Editorial in *Annals of Family Medicine*. 2011. 9:296-298. (*Impact Factor 4.5. Google Scholar gives 24 citations as of August 2016.*)

Book Chapters

PUBLISHED:

Baez, J.C., Li, X., Libkind, S., **Osgood, N.D.** and Redekopp, E., 2023. A Categorical Framework for Modeling with Stock and Flow Diagrams. In *Mathematics of Public Health: Mathematical Modelling from the Next Generation* (pp. 175-207). Cham: Springer International Publishing.

McDonald, G.W. and **Osgood, N.D.**, 2023. Agent-Based Modeling and Its Trade-Offs: An Introduction and Examples. In *Mathematics of Public Health: Mathematical Modelling from the Next Generation* (pp. 209-242). Cham: Springer International Publishing.

Osgood, N. “Simulation Modeling in Population Health and Healthcare Research”, Chapter in Apostolopoulos Y, Lich KH, Lemke MK. 2019. *Complex Systems and Population Health: A Primer*, Oxford University Press.

McLean, A., **Osgood, N.**, Newstead-Angel, J., Stanley, K., Knowles, D., van der Kamp, W., Qian, W., and Dyck, R. 2017. Chapter in Lau, F., Bartle-Clar, J., Bliss, G., Brycki, E., Courtney, K., Kuo, A. Building research capacity: results of a feasibility study using a novel mHealth epidemiological data collection system within a gestational diabetes population. *Building Capacity for Health Informatics in the Future*, IOS Press, Inc. ISBN 978-1-61499-741-2. [*e-Book version also available; ISBN 978-1-61499-742-9*] 234:238. p228.

Osgood N. 2017. “Frontiers in Health Modeling.” Chapter in El-Sayed and A Galea, Editors, *Systems Science and Population Health*. Oxford University Press.

Hammond R., **Osgood N.**, Wolfson W. 2016. “Using Complex Systems Simulation Modeling to Understand Health Inequality”. Chapter 2 in Kaplan G.A., Diez Roux A., Galea S., Simon C.P., Editors, *Growing Inequality: Bridging Complex Systems, Health Disparities, and Population Health*, Westphalia Press, 2016.

Kreuger K., Flint R., **Osgood N.** 2016. “Beyond Drill and Fill: Modeling the Impacts of Risk-based Care on Oral Health Disparities”. Chapter 11 in Kaplan G.A., Diez Roux A., Galea S., Simon C.P., Editors, *Growing Inequality: Bridging Complex Systems, Health Disparities, and Population Health*, Westphalia Press, 2016.

McPhee-Knowles S., **Osgood N.** 2016. “Agent-based Models and Health Oriented Mobile Technologies”. Chapter in Kaplan G.A., Diez Roux A., Galea S., Simon C.P., Editors, *Growing Inequality: Bridging Complex Systems, Health Disparities, and Population Health*. Oxford University.

Osgood N, Yee K, An W, Grassmann W. 2015. “Addressing Dynamically Complex Decision Problems Using Decision Analysis and Simulation” In Rahmandad et al., *Analytical Handbook*

for Dynamic Modelers, Cambridge MA. MIT Press. November 13, 2015. Pages 277-306. (*Application to West Nile virus control*).

Osgood N, Liu J. 2015. “Combining Markov Chain Monte Carlo Approaches and Dynamic Modeling” in Rahmandad et al., Analytical Handbook for Dynamic Modelers. Cambridge MA. MIT Press. November 13, 2015. Pages 125-170. (*Application to communicable disease control*).

Osgood, N. 2014. “System Dynamics Modeling for Tobacco Control: A Brief Introduction”. Section on Simulation Models for Tobacco Control [Paper-length subsection on System Dynamics Models]. 2014 50th Anniversary Surgeon General’s Report, The Health Consequences of Smoking: 50 Years of Progress.

Urban J.B., **Osgood N.**, Okamoto J., Mabry P., Lich K.H. 2012. Developmental Systems Science: Extending Developmental Science with Systems Science Methodologies in Handbook of Developmental Systems Theory and Methodology, P.C.M. Molenaar, K.M. Newell, & R.M. Lerner (Editors), New York, Guilford Press. 49pp.

Thesis/Dissertation

N. Osgood, 1999. TACHYON: Customizable Program Analysis via Generic Abstract interpretation. Unpublished Ph.D. Dissertation, Massachusetts Institute of Technology, 420pp.

N. Osgood, 1993. PARTICLE: an Automatic Program Specialization System for Imperative and Low-level Languages. Unpublished M.Sc. thesis, Massachusetts Institute of Technology, 231pp.

N. Osgood, 1993. MIDAS: An automatic system for the discovery and application of machine specific optimizations. Unpublished B.Sc. thesis, Massachusetts Institute of Technology, 109pp.

CMPT 858

CMPT 470

2004-2005

(MIT) 1.961/MUST (Wireless Sensor Network for Physical Systems) CEM 508 materials (lecture notes, assignments, technology platform) co-created.

13. Papers in Refereed Journals

SUBMITTED:

PUBLISHED:

Li, X., Patel, V., Duan, L., Mikuliak, J., Basran, J. and Osgood, N.D., 2024. Real-time epidemiology and acute care need monitoring and forecasting for covid-19 via Bayesian

sequential Monte Carlo-leveraged transmission models. *International Journal of Environmental Research and Public Health*, 21(2).

Xia, Y., Flores Anato, J.L., Colijn, C., Janjua, N., Irvine, M., Williamson, T., Varughese, M.B., Li, M., Osgood, N., Earn, D.J. and Sander, B., 2024. Canada's provincial COVID-19 pandemic modelling efforts: A review of mathematical models and their impacts on the responses. *Canadian Journal of Public Health*, pp.1-17.

Qian, W., Cooke, A., Stanley, K.G. and Osgood, N.D., 2024. Comparing Contact Tracing Through Bluetooth and GPS Surveillance Data: Simulation-Driven Approach. *Journal of Medical Internet Research*, 26, p.e38170.

Zahan, R., Osgood, N.D., Plouffe, R. and Orpana, H., 2024. A dynamic model of opioid overdose deaths in Canada during the co-occurring opioid overdose crisis and COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 21(4), p.442.

Shojaati, N. and Osgood, N.D., 2023. Evaluating the Impact of Increased Dispensing of Opioid Agonist Therapy Take-Home Doses on Treatment Retention and Opioid-Related Harm among Opioid Agonist Therapy Recipients: A Simulation Study. *Systems*, 11(8), p.391 (1-17).

JaKa, M.M., Henderson, M.G., Alch, S., Ziegenfuss, J.Y., Zinkel, A.R., Osgood, N.D., Werner, A., Borgert Spaniol, C.M., Flory, M. and Mabry, P.L., 2024. Qualitative Interviews to Add Patient Perspectives in Colorectal Cancer Screening: Improvements in a Learning Health System. *Journal of Cancer Education*, 39(1), pp.78-85.

Tian, Y., Basran, J., Stempien, J., Danyliw, A., Fast, G., Falastein, P. and Osgood, N.D., 2023. Participatory Modeling with Discrete-Event Simulation: A Hybrid Approach to Inform Policy Development to Reduce Emergency Department Wait Times. *Systems*, 11(7), p.362 (1-31).

Skinner, A., Osgood, N.D., Occhipinti, J.A., Song, Y.J.C. and Hickie, I.B., 2023. Unemployment and underemployment are causes of suicide. *Science advances*, 9(28), p.eadg3758 (1-6).

Shojaati, N. and Osgood, N.D., 2023. Opioid-related harms and care impacts of conventional and AI-based prescription management strategies: insights from leveraging agent-based modeling and machine learning. *Frontiers in Digital Health*, 5, p.1174845 (1-13).

Tian, Y., Osgood, N.D., Stempien, J., Onaemo, V., Danyliw, A., Fast, G., Osman, B.A., Reynolds, J. and Basran, J., 2023. The impact of alternate level of care on access block and operational strategies to reduce emergency wait times: a multi-center simulation study. *Canadian Journal of Emergency Medicine*, pp.1-9.

Tian, Y., Zhang, W., Duan, L., McDonald, W. and Osgood, N., 2023. Comparison of pretrained transformer-based models for influenza and COVID-19 detection using social media text data in Saskatchewan, Canada. *Frontiers in digital health*, 5, p.1203874 (1-11).

Qian, W., Stanley, K.G. and Osgood, N.D., 2023. Impacts of observation frequency on proximity contact data and modeled transmission dynamics. *PLoS Computational Biology*, 19(2), p.e1010917 (1-31).

- Dyck, R.F., Pahwa, P., Karunanayake, C. and Osgood, N.D., 2023. The Contribution of Gestational Diabetes to Diabetes Risk Among First Nations and Non-First Nations Women in Saskatchewan: Results From the DIP: ORRIIGENSS Project. *Canadian Journal of Diabetes*, 47(6), pp.509-518.
- Hempel, K., McDonald, W., Osgood, N.D., Fisman, D., Halperin, S.A., Crowcroft, N., Klein, N.P., Rohani, P. and Doroshenko, A., 2023. Evaluation of the effectiveness of maternal immunization against pertussis in Alberta using agent-based modeling: A Canadian immunization research network study. *Vaccine*, 41(15), pp.2430-2438.
- Zhu, H., Liu, S., Li, X., Zhang, W., Osgood, N. and Jia, P., 2023. Using a hybrid simulation model to assess the impacts of combined COVID-19 containment measures in a high-speed train station. *Journal of Simulation*, pp.1-25.
- Qian, W., Stanley, K.G. and Osgood, N.D., 2023. Impacts of observation frequency on proximity contact data and modeled transmission dynamics. *PLOS Computational Biology*, 19(2), p.e1010917.
- Shojaati, N. and Osgood, N.D., 2023. An Agent-Based Social Impact Theory Model to Study the Impact of In-Person School Closures on Nonmedical Prescription Opioid Use among Youth. *Systems*, 11(2), p.72 (1-20).
- McLean, A., Goodridge, D., Stempien, J., Harder, D. and Osgood, N., 2023. Health Literacy and Serious or Persistent Mental Illness: A Mixed Methods Study. *HLRP: Health Literacy Research and Practice*, 7(1), pp.e2-e13.
- Zhang, W., Liu, S., Osgood, N., Zhu, H., Qian, Y. and Jia, P., 2023. Using simulation modelling and systems science to help contain COVID-19: A systematic review. *Systems research and behavioral science*, 40(1), pp.207-234.
- Johnson, P., McLeod, L., Qin, Y., Osgood, N., Rosengren, L., Campbell, J., Larson, K. and Waldner, C., 2022. Investigating effective testing strategies for the control of Johne's disease in western Canadian cow-calf herds using an agent-based simulation model. *Frontiers in Veterinary Science*, 9, p.1003143 (1-28).
- Nianogo, R.A., Mueller, M.P., Keeler, B., Kreuger, K., Nhan, L.A., Nobari, T.Z., Crespi, C.M., Osgood, N., Kuo, T., Prelip, M. and Wang, M.C., 2022. Evaluating the impact of community interventions on childhood obesity in populations living in low-income households in Los Angeles: A simulation study. *Pediatric Obesity*, 17(11), p.e12954 (1-10).
- McDonald, G.W., Bradford, L., Neapetung, M., Osgood, N.D., Strickert, G., Waldner, C.L., Belcher, K., McLeod, L. and Bharadwaj, L., 2022. Case Study of Collaborative Modeling in an Indigenous Community. *Water*, 14(17), p.2601 (1-30).
- Rafferty, E.R., McDonald, W., Osgood, N.D., Doroshenko, A. and Farag, M., 2021. What we know now: an economic evaluation of chickenpox vaccination and dose timing using an agent-based model. *Value in Health*, 24(1), pp.50-60.

Stevens, E.M., Vázquez-Otero, C., Li, X., Arya, M., Vallone, D., Minsky, S., Osgood, N.D. and Viswanath, K., 2021. Tobacco messages encountered in real-time among low socio-economic position groups: a descriptive study. *BMC Public Health*, 21(1), pp.1-6.

Goodridge, D., Reis, N., Neiser, J., Haubrich, T., Westberg, B., Erickson-Lumb, L., Storozinski, J., Gonzales, C., Michael, J., Cammer, A. and Osgood, N., 2021. An App-Based Mindfulness-Based Self-compassion Program to Support Caregivers of People With Dementia: Participatory Feasibility Study. *JMIR aging*, 4(4), p.e28652 (1-14).

Shojaati, N. and Osgood, N.D., 2021. Dynamic Computational Models and Simulations of the Opioid Crisis: A Comprehensive Survey. *ACM Transactions on Computing for Healthcare (HEALTH)*, 3(1), pp.1-25.

Law, P.C.F., Too, L.S., Hill, N.T., Robinson, J., Gould, M., Occhipinti, J.A., Spittal, M.J., Witt, K., Sinyor, M., Till, B. and Osgood, N., 2021. A Pilot Case-Control Study of the Social Media Activity Following Cluster and Non-Cluster Suicides in Australia. *International journal of environmental research and public health*, 19(1), p.343 (1-15).

Choi, K., Kreuger, K., McNeel, T.S. and Osgood, N., 2022. Point-of-sale cigarette pricing strategies and young adult smokers' intention to purchase cigarettes: an online experiment. *Tobacco Control*, 31(3), pp.473-478.

Obeidat, M., Liu, J., Osgood, N. and Klassen, G., 2022. Bayesian methods for time series of count data. *Communications in Statistics-Simulation and Computation*, 51(2), pp.486-504.

Peters, E.M., Dong, L.Y., Thomas, T., Khalaj, S., Balbuena, L., Baetz, M., Osgood, N. and Bowen, R., 2022. Instability of suicidal ideation in patients hospitalized for depression: an exploratory study using smartphone ecological momentary assessment. *Archives of suicide research*, 26(1), pp.56-69.

Shojaati, N. and Osgood, N.D., 2021. Dynamic computational models and simulations of the opioid crisis: a comprehensive survey. *ACM Transactions on Computing for Healthcare (HEALTH)*, 3(1), pp.1-25.

Dyck, R.F., Karunanayake, C., Pahwa, P., Stang, M., Erickson, R.L. and Osgood, N.D., 2021. Congenital Anomalies of the Kidney and Urinary Tract (CAKUT): An Emerging Relationship With Pregestational Diabetes Mellitus Among First Nations and Non-First Nations People in Saskatchewan—Results From the DIP: ORRIIGENSS Project. *Canadian Journal of Diabetes*, 45(4), pp.346-354. [Impact Factor: 4.190]

Barton, C.M., Alberti, M., Ames, D., Atkinson, J.A., Bales, J., Burke, E., Chen, M., Diallo, S.Y., Earn, D.J., Fath, B. and Feng, Z., Gibbons, C., Hammond R., Heffernan, J., , Houser, H., Hovmand, P.S., Kopainsky, B., Mabry, P.L., Mair, C., Meier, P., Niles, R., Nosek, B., Osgood, N., Pierce, S., Polhill, J.G., Prosser, L., Robinson, E., Rosenzweig, C., Sankaran S., Stange, K., Tucker, G. 2020. Call for transparency of COVID-19 models. *Science*, 368(6490), pp.482-483. [Letter. *Journal 2-year Impact Factor (July 2021): 47.728*]

Skinner, A., Occhipinti, J.A. and Osgood, N.D., 2021. A dynamic modelling analysis of the impact of tobacco control programs on population-level nicotine dependence. *Scientific reports*, 11(1), pp.1-9. [Impact Factor (2020): 5.133]

Jiang, L., Li, X., Wang, M.C., Osgood, N., Whaley, S.E. and Crespi, C.M., 2020. Estimating the population impact of hypothetical breastfeeding interventions in a low-income population in Los Angeles County: An agent-based model. *PLoS One*, 15(4), p.e0231134.
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0231134> Impact Factor (2020): 3.24]

Shah, B.D., Tyan, C.C., Rana, M., Goodridge, D., Hergott, C.A., Osgood, N.D., Manns, B. and Penz, E.D., 2021. Rural vs urban inequalities in stage at diagnosis for lung cancer. *Cancer treatment and research communications*, 29, p.100495.

Williamson, L., Dell, C.A., Osgood, N., Chalmers, D., Lohnes, C., Carleton, N. and Asmundson, G., 2021. Examining Changes in Posttraumatic Stress Disorder Symptoms and Substance Use Among a Sample of Canadian Veterans Working with Service Dogs: An Exploratory Patient-Oriented Longitudinal Study. *Journal of Veterans Studies*, 7(1). [Unable to find impact factor on record]

Rafferty, E.R., McDonald, W., Osgood, N.D., Qian, W. and Doroshenko, A., 2020. Seeking the optimal schedule for chickenpox vaccination in Canada: Using an agent-based model to explore the impact of dose timing, coverage and waning of immunity on disease outcomes. *Vaccine*, 38(3), pp.521-529. [Impact Factor (2019): 3.143]

Freebairn, L., Atkinson, J.A., Qin, Y., Nolan, C.J., Kent, A.L., Kelly, P.M., Penza, L., Prodan, A., Safarishahrbiari, A., Qian, W. and Maple-Brown, L., 2020. 'Turning the tide' on hyperglycemia in pregnancy: insights from multiscale dynamic simulation modeling. *BMJ Open Diabetes Research and Care*, 8(1), p.e000975. <http://drc.bmj.com/cgi/content/full/8/1/e000975> [Impact Factor: 3.388]

Lee, E.W., Bekalu, M.A., McCloud, R., Vallone, D., Arya, M., Osgood, N., Li, X., Minsky, S. and Viswanath, K., 2020. The Potential of Smartphone Apps in Informing Protobacco and Antitobacco Messaging Efforts Among Underserved Communities: Longitudinal Observational Study. *Journal of Medical Internet Research*, 22(7), p.e17451. [Impact Factor (2020): 5.43]

Dyck, R.F., Karunanayake, C., Pahwa, P., Stang, M. and Osgood, N.D., 2020. Epidemiology of diabetes in pregnancy among First Nations and Non-First Nations women in Saskatchewan, 1980–2013. Part 1: Populations, methodology and frequencies (1980–2009); Results from the DIP: ORRIIGENSS Project. *Canadian journal of diabetes*, 44(7), pp.597-604. [Impact Factor: 4.190]

Dyck, R.F., Karunanayake, C., Pahwa, P., Stang, M. and Osgood, N.D., 2020. Epidemiology of diabetes in pregnancy among First Nations and Non-First Nations women in Saskatchewan, 1980–2013. Part 2: Predictors and early complications; Results from the DIP: ORRIIGENSS Project. *Canadian journal of diabetes*, 44(7), pp.605-614. [Impact Factor: 4.190]

- McLean, A., McDonald, W., Goodridge, D. and Osgood, N., 2019. Agent-based Modeling: A Research Strategy for Challenging Problems in Nursing Research. *Nursing research*.
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- Seitzinger, P., Osgood, N., Martin, W., Tataryn, J. and Waldner, C., 2019. Compliance Rates, Advantages, and Drawbacks of a Smartphone-Based Method of Collecting Food History and Foodborne Illness Data. *Journal of food protection*, 82(6), pp.1061-1070.
- Seitzinger, P.J., Tataryn, J., Osgood, N. and Waldner, C., 2019. Foodborne Outbreak Investigation: Effect of Recall Inaccuracies on Food Histories. *Journal of food protection*, 82(6), pp.931-939.
- Freebairn, L., Atkinson, J.A., Osgood, N.D., Kelly, P.M., McDonnell, G. and Rychetnik, L., 2019. Turning conceptual systems maps into dynamic simulation models: An Australian case study for diabetes in pregnancy. *PloS one*, 14(6), p.e0218875.
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0218875>
- Fragoso, L., Paul, T., Vadan, F., Stanley, K.G., Bell, S. and Osgood, N.D., 2019. Intrinsic dimensionality of human behavioral activity data. *PloS one*, 14(6), p.e0218966.
- Obeidat, M., Liu, J., Osgood, N. and Klassen, G., 2019. Bayesian methods for time series of count data. *Communications in Statistics-Simulation and Computation*, pp.1-19.
- Paul, T., Stanley, K.G. and Osgood, N.D., 2018. Multiscale entropy rate analysis of complex mobile agents. *Royal Society Open Science*, 5(10), p.180488.
- Li X, Doroshenko A, Osgood ND. 2018. Applying particle filtering in both aggregated and age-structured population compartmental models of pre-vaccination measles. *PLoS ONE* 13(11): e0206529. <https://doi.org/10.1371/journal.pone.0206529>
- Rafferty, E., McDonald, W., Qian, W., Osgood, N. D., and Doroshenko, A. 2018. Evaluation of the effect of chickenpox vaccination on shingles epidemiology using agent-based modeling. *PeerJ* 6:e5012 <https://doi.org/10.7717/peerj.5012>. June 20, 2018.
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- Roberts, N., Atkinson, J.A., McDonnell G., Osgood, N., Wutzke, S. 2018. *Systems Modelling and Big Data for Non-Communicable Disease Prevention*. Oxford Bibliographies. February 2018. DOI: 10.1093/OBO/9780199756797-0176.
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- Feng, C., Osgood, N.D. and Dyck, R.F., 2018. Low Birth Weight, Cumulative Obesity Dose, and the Risk of Incident Type 2 Diabetes. *Journal of Diabetes Research*, 2018. 9pp.
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Katapally, T.R., Bhawra, J., Leatherdale, S.T., Ferguson, L., Longo, J., Rainham, D., Larouche, R. and Osgood, N. 2018. The SMART Study, a Mobile Health and Citizen Science Methodological Platform for Active Living Surveillance, Integrated Knowledge Translation, and Policy Interventions: Longitudinal Study. *JMIR public health and surveillance*, 4(1).

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Dyck, R.F., **Osgood, N.**, Lin, T.H., Gao, A., Stang, M.R. 2010. "End Stage Renal Disease Among People with Diabetes: A Comparison of First Nations People and Other Saskatchewan Residents from 1981 to 2005". *Canadian Journal of Diabetes*. 34(4). December 2010. 8pp. (*Thompson Reuters Journal Citation Reports 2015 Impact Factor: 2.509; Google Scholar gives 16 citations as of August 2016.*)

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Osgood, N. 2009. "Lightening the Performance Burden of Individual-Based Models through Dimensional Analysis and Scale Modeling". *System Dynamics Review*, 25(2).Spring, 2009. 24pp. (*2009 Impact Factor, 0.738; Google Scholar gives 13 citations as of August 2016.*)

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Perspectives (4), 598-603. (Thompson Reuters 2015 Impact Factor: 1.603, Google Scholar gives 50 citations as of August 2016)

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Tengs, T., and **Osgood, N.** 2001. "The link between smoking and impotence: Two decades of evidence". *Preventive Medicine*, 32(6), 447-452. (2015 Impact Factor: 2.893; 2015 5-year Impact Factor: 3.748; Google Scholar gives 115 citations as of August 2016)

14. Papers in Non-Refereed Journals

None

15. Invited Papers in Published Conference Proceedings and Abstracts

Baez J, Li X, Libkind S, Osgood ND, Redekopp E. 2023. Software for Compositional Modeling in Epidemiology. Invited extended abstract and presentation at Abstract Category Theory 2023 (ACT 2023). College Park, Maryland. August 2, 2023.

ACCEPTED:

PUBLISHED:

Baez J, Li X, Libkind S, Osgood ND, Redekopp E. 2023. Software for Compositional Modeling in Epidemiology. Invited extended abstract and presentation at Abstract Category Theory 2023 (ACT 2023). College Park, Maryland. August 2, 2023.

16. Contributed (Non-Invited) Papers in Published Conference Proceedings and Abstracts Fully Refereed Conference Proceedings

PUBLISHED:

Liu, Y., Klassen, G., Mee, J., Pointer, J., Baloch, M., Marciano, L. and Osgood, N., 2024, September. User-Donated Screenshots Analysis: Feasibility of a New Approach to Collect Objective Social Media App Usage in Adolescents. In International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation (pp. 80-89). Cham: Springer Nature Switzerland.

https://link.springer.com/chapter/10.1007/978-3-031-72241-7_8

Baez, J., Li, X., Libkind, S., Osgood, N. and Patterson, E., 2022. Compositional modeling with stock and flow diagrams. Full paper in Proceedings of and oral presentation at Applied Category Theory 2022. EPTCS 380, pp.77-96. July 2022. Strathclyde, Scotland.

<https://arxiv.org/pdf/2205.08373v3>

Duan, L. and Osgood, N., 2021, July. GPU Accelerated PMCMC Algorithm with System Dynamics Modelling. In Proceedings of the International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS 2021). (pp. 101-110). Springer, Cham.

Qin Y, Freebairn L, Atkinson J-A, Cheng W, Safarishahrbijari A, **Osgood N**. 2019. Multi-Scale Simulation Modeling for Prevention and Public Health Management of Diabetes in Pregnancy and Sequelae. SBP-BRiMS 2019: International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation; 9-12 July 2019; Washington DC, USA (2019).

Qin, Y., Edjoc, R. and Osgood, N.D. 2019. Effect of E-cigarette Use and Social Network on Smoking Behavior Change: An agent-based model of E-cigarette and Cigarette Interaction. In Proceedings of the International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation (pp. 245-255). Springer, Cham.

Teyhouee, A. and Osgood, N.D. 2019. Cough Detection Using Hidden Markov Models. In Proceedings of the International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation (pp. 266-276). Springer, Cham.

Pu B, Duan L, Osgood ND. 2019. Parallelizing Convergent Cross Mapping Using Apache Spark. In Proceedings of the International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation 2019 Jul 9 (pp. 133-142). Springer, Cham.

Mohammadbagheri, A., Lillas, C., and **Osgood, N.D.** 2018. Mathematical Modeling of HPA axis using Particle Filter Algorithm. Oral Presentation and Paper in IEEE International Conference on Healthcare Informatics (ICHI), 2018. New York City.

Zahan, R., McQuillan, I., and **Osgood, N.D.** 2018. DNA Methylation Data to Predict Suicidal and Non-Suicidal Deaths: A Machine Learning Approach. Oral Presentation and Paper in IEEE International Conference on Healthcare Informatics (ICHI), 2018. New York City.

van der Kamp, W.S., **Osgood, N.D.** 2017. Multivariate Hidden Markov Models for Personal Smartphone Sensor Data: Time Series Analysis. Oral Presentation and Paper in IEEE International Conference on Healthcare Informatics (ICHI), 2017. Park City, Utah. pp179-188.

Shojaati, N., Andkhoie, M., Osemwegie, O., **Osgood, N.D.** 2017. MRSA Transmission in a Personal Care Home Facility: A Spatially Explicit Agent Based Modeling Approach. Paper in

IEEE International Conference on Healthcare Informatics (ICHI), 2017. Park City, Utah. pp368-373.

Teyhouee, A. and McPhee-Knowles, S. and Waldner, C. and **Osgood, N.** 2017. Prospective Detection of Foodborne Illness Outbreaks Using Machine Learning Approaches. Oral Presentation and paper in proceedings of the 10th International Conference on Social, Cultural, and Behavioral Modeling (SBP-BRiMS 2017), Washington, DC, USA, July 5-8, 2017. pp302-308.

Depping, A.E. **Osgood, N.**, Kreuger, K. 2017. ‘They All Look the Same to Me.’ An Agent Based Simulation of Out-Group Homogeneity. Oral Presentation and paper in proceedings of the 10th International Conference on Social, Cultural, and Behavioral Modeling (SBP-BRiMS 2017), Washington, DC, USA, July 5-8, 2017. pp60-64.

Qin, Y., Qian, W., Shojaati, N., **Osgood, N.** 2017. Identifying Smoking from Smartphone Sensor Data and Multivariate Hidden Markov Models. Oral Presentation and paper in proceedings of the 10th International Conference on Social, Cultural, and Behavioral Modeling (SBP-BRiMS 2017), Washington, DC, USA, July 5-8, 2017. pp 230-235.

McLean, A., **Osgood, N.**, Newstead-Angel, J., Stanley, K., Knowles, D., van der Kamp, W., Qian, W. and Dyck, R., 2017. Building Research Capacity: Results of a Feasibility Study Using a Novel mHealth Epidemiological Data Collection System Within a Gestational Diabetes Population in Proceedings of the Information Technology and Communications in Health conference (ITCH 2017), published under the title “Building Capacity for Health Informatics in the Future”, Volume 234 of Studies in health technology and informatics, p.228. February 16-19, 2017, Victoria, BC.

Kreuger K., Choi K., Qian W., **Osgood N.** 2016. Agile Design Meets Hybrid Models: Using Modularity to Enhance Hybrid Model Design and Use. Accepted June 8, 2016 for oral presentation and for publication in Proceedings of the 2016 Winter Simulation Conference. Arlington, Virginia, December 11-14, 2016.

Oraji R., Hoepfner V., Safarishahrbijari A., **Osgood N.** 2016. Combining Particle Filtering and Transmission Modeling for TB control. Poster presentation and full paper publication in Proceedings of the International Conference on Health Informatics. October 4-7, 2016. Chicago, Illinois.

Bhowmik P., Dutchyn C., **Osgood N.** 2016. An Aspect Oriented Framework to Applying Markov Chain Monte Carlo Methods with Dynamic Models. Oral presentation and short (6pp) paper publication in Proceedings of the Symposium on Theory of Modeling & Simulation (TMS/DEVS 2016 at SpringSim). Society for Computer Simulation International. In Press. (Technical Co-Sponsor IEEE Computer Society). 6pp. April 4-6, 2016, Pasadena, CA, USA.

Paul T., Stanley K., **Osgood N.**, Bell S., Muhajarine N. Scaling Behavior of Human Mobility. 2016. In Proceedings of GIS Science 2016 (published as Lecture Notes in Computer Science). Montreal. September 27-30, 2016.

Kreuger K, **Osgood N.** 2015. Particle Filtering Using Agent-Based Transmission Models. Accepted June 14, 2015. Proceedings of the 2015 Winter Simulation Conference. December 6-9, 2015. Huntington Beach, CA. 11pp.

Safarishahrbiari A., Lawrence, T., Lomotey, R., Liu J., Waldner C., **Osgood N.** 2015. Particle filtering in a SEIRV simulation model of H1N1 influenza. Oral Presentation and paper in proceedings of the 2015 Winter Simulation Conference. December 6-9, 2015. Huntington Beach, CA. 12pp.

Esfabod, B., Kreuger K., and **Osgood N.** Gaming the Social System: A Game Theoretic Examination of Social Influence in Risk Behaviour. Short paper in Proceedings of the 2015 International Social Computing, Behavioral-Cultural Modeling and Prediction Conference, April 1-3, 2015. Springer International Publishing, 2015. 296-301.

Bhowmik P., **Osgood N.**, Dutchyn C. 2015. Improving the Flexibility of Simulation Modeling with Aspects. Oral presentation and full paper publication in Proceedings of the Symposium on Theory of Modeling & Simulation (TMS-DEVS). Society for Computer Simulation International. In Press. (Technical Co-Sponsor IEEE Computer Society, and in cooperation Association for Computing Machinery Special Interest Group on Simulation). 8pp. April 12-15, 2015.

Osgood N., Liu J. 2014. Towards Closed Loop Modeling: Evaluating the Prospects for Creating Recurrently Regrounded Aggregate Simulation Models. Oral presentation and full paper publication in Proceedings of the 2014 Winter Simulation Conference, Savannah Georgia, pp. 829-841. December 7-10, 2014.

Knowles, D.L., Stanley, K.G., **Osgood, N.D.** 2014. A Field-Validated Architecture for the Collection of Health-Relevant Behavioural Data. Oral presentation and full paper publication in Proceedings the IEEE International Conference on Healthcare Informatics 2014 (ICHI 2014). pp. 79-88. Verona, Italy, September 15-17, 2014.

Knowles, D.L., Stanley, K.G., **Osgood, N.D.** 2014. Seddacco: An Extensible Language in Support of Mass Collection of Health Behavior Data. Oral presentation and publication in ACM SIGKDD Workshop on Health Informatics (HI-KDD 2014). 8pp. New York City, August 24, 2014.

Qian, W., **Osgood, N.D.**, Stanley, K.G. Integrating epidemiological modeling and surveillance data feeds: a Kalman filter based approach. Oral presentation and publication in Proceedings the 2014 International Social Computing, Behavioral Modeling and Prediction Conference (SBP14), Washington DC, pp. 145-152. April 2-4, 2014.

Vendrov, I., Dutchyn, C., **Osgood, N.** 2014. Frabjous: A Declarative Domain-Specific Language for Agent-Based Modeling. Poster presentation and publication in Proceedings the 2014 International Social Computing, Behavioral Modeling and Prediction Conference (SBP14), pp. 385-392. Washington DC, April 2-4, 2014.

Osgood, N., Liu, J. 2013. "Bayesian Parameter Estimation of System Dynamics Models Using Markov Chain Monte Carlo Methods: An Informal Introduction". Verbal and poster presentation

and Full paper in Proceedings, The 30th International conference of the System Dynamics Society, Cambridge, MA. 19pp. July 22-24th, 2013.

Qian, W, Stanley, K.G., and **Osgood, N.D.** 2013. "The impact of spatial resolution and representation on human mobility predictability." In Web and Wireless Geographical Information Systems. Springer Berlin Heidelberg, 2013. Paper presented in the 12th International Symposium on Web and Wireless Geographical Information Systems (W2GIS 2013), Springer Lecture Notes in Computer Science, pp 25-40. 4-5 April 2013, Banff, Alberta, Canada.

Tian, Y., **Osgood, N.** 2012. "15 Things System Dynamics can Learn from Software Development". Verbal Presentation and Full paper in Proceedings of the 29th International conference of the System Dynamics Society, St. Gallen, Switzerland. 18pp. July 22-25, 2012.

Meng, A., **Osgood, N.** 2012. "Design of the System Dynamics Longitudinal Analysis System: Quantifying the Hidden Trajectories of System Dynamics Models". Poster Presentation and Full paper in Proceedings of the 29th International conference of the System Dynamics Society, St. Gallen, Switzerland. 18pp. July 22-25, 2012.

Grassmann, W., Zhang, J., Dyck, R., **Osgood, N.** 2012. "A System Simulation Model for Type 2 Diabetes in the Saskatoon Health Region", Poster Presentation and Full paper in Proceedings of the 29th International conference of the System Dynamics Society, St. Gallen, Switzerland. 18pp. July 22-25, 2012.

Hashemian, M., Knowles, D., Calver, J., Qian, W., Bullock M., Bell, S., Mandryk, R.L., **Osgood, N.D.**, Stanley, K.G. 2012. "iEpi: An End to End Solution for Collecting, Conditioning and Utilizing Epidemiologically Relevant Data." In Proceedings, The 2nd ACM International Workshop on Pervasive Wireless Healthcare, June 11-14, 2012. Hilton Head, South Carolina. 6pp.

Dong, A., **Osgood, N.** 2011. "The Limits of Discrete Modeling Continuous of Individual Dynamics: A Cautionary Tale from Immuno-Epidemiological Dynamics". Accepted for Publication as a full paper and poster presentation in the 29th International Conference of the System Dynamics Society, Washington D.C. July 2011. 9pp.

Hashemian, M., Stanley, K.G., Knowles D.L., Calver J., **Osgood, N.D.** 2011. Human Network Data Collection in the Wild: The Epidemiological Utility of Micro-contact and Location Data. Full paper in Proceedings of the ACM SIGHIT International Health Informatics Symposium (IHI 2012). January 28-30, 2012, Miami, FL. 10pp.

Schneider, O., Dutchyn, C., **Osgood N.** 2011. Towards Frabjous: A Two-Level System for Functional Reactive Agent-Based Epidemic Simulation. Short paper in Proceedings of the ACM SIGHIT International Health Informatics Symposium (IHI 2012). January 28-30, 2012, Miami, FL. 6pp.

Tian, Y., Alawami, F., Al-Azem, A., **Osgood, N.**, Hoepfner, V., Dutchyn, C. 2011. A System Dynamics model of tuberculosis diffusion with respect to contact tracing investigation. Proceedings of the 2011 Winter Simulation Conference. December 2011, Phoenix, AZ. 12pp.

Kongnetiman S., Fan, W., Walters P., and **Osgood, N.** 2011. Regional Economic Growth and Municipal Financial Planning: An Application of A System Dynamics Model to Calgary.

Proceedings, The 29th International Conference of the System Dynamics Society. July 2011, Washington, D.C. 31pp.

Tian, Y. and **Osgood, N.** 2011. Comparison between Individual-based and Aggregate Models in the context of Tuberculosis Transmission. Proceedings, The 29th International conference of the System Dynamics Society. July 2011, Washington, D.C. 29pp.

Xue, Y., **Osgood, N.**, Gutwin, C., 2011. "SILVERVIZ: Extending SILVER for coordination in distributed collaborative modeling." Poster presentation and full paper in Proceedings, The 29th International conference of the System Dynamics Society, Washington D.C. July 2011. 15pp.

Hashemian, M., Stanley, K., and **Osgood, N.** 2010. Flunet: Automated tracking of contacts during flu season. Proceedings of the 6th International workshop on Wireless Network Measurements (WiNMee 2010), 557-562, 6pp.

Zhang, D., Bunt, R., and **Osgood, N.** 2010. The Achievable Cell Capacity in Cellular Wireless Mesh Networks. Proceedings of the Third International Conference on Advances in Mesh Networks (MESH 2010), July 2010.

Zhang, D., Bunt, R., and **Osgood, N.** Capacity Bounds for Cellular Wireless Mesh Networks. Extended Paper in Proceedings, *17th Annual Meeting of the IEEE/ACM International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems* (MASCOTS 2009). London. September 21-23, 2009. 8pp. (2009 Acceptance rate: 20%.)

Bateman, S., Gutwin, C., **Osgood, N.**, and McCalla, G. (2009) "Interactive Usability Instrumentation", *Proceedings, The ACM SIGCHI Symposium on Engineering Interactive Computer Systems (EICS 2009)*, Pittsburgh, PA. July 14-17, 2009. 10 pages.

Zhang, Q. and **Osgood, N.** 2009. "Local Analysis of Individual-based Viral Dynamic Models with Eigenspace and Eigenvalue Elasticity Analysis". *Proceedings, The 27th International Conference of the System Dynamics Society*, July 2009, Albuquerque. 36pp.

Osgood, N. 2009. "Representing Progression and Interactions of Comorbidities in Aggregate and Individual-Based Systems Models". *Proceedings, The 27th International Conference of the System Dynamics Society*, July 2009, Albuquerque. 20pp.

Osgood, N. 2009. "SILVER: Software in Support of the System Dynamics Modeling Process". *Proceedings, The 27th International Conference of the System Dynamics Society*, July 2009, Albuquerque. 12pp.

Osgood, N. 2007. "Using Traditional and Agent Based Toolsets for System Dynamics: Present Tradeoffs and Future Evolution". *Proceedings, The 25th International Conference of the System Dynamics Society*, July 2007, Boston. 19pp.

Osgood, N. 2007. "Lightening the Performance Burden of Individual-Based Models through Dimensional Analysis and Scale Modeling". *Proceedings, The 25th International Conference of the System Dynamics Society*, July 2007, Boston. 20pp. **Substantially the same paper as the**

journal publication in System Dynamics Review; the two published works should be considered two versions of the same article.

Osgood, N. 2006. “Low-Dimensional Dynamics in Agent-Based Models”. *Proceedings, The 24th International Conference of the System Dynamics Society*, July 2006, Nijmegen. 37pp.

Kureyabashi, R. *, **Osgood, N. ***, and S. Gillett. 2006. “Dynamic Analysis of the Long-Distance Telecom Bubble”. *Proceedings, 24th International Conference of the System Dynamics Society*, July 2006, Nijmegen. (*: First two authors acknowledge equal contribution.) 25pp.

Osgood, N. 2005. “Combining System Dynamics and Decision Analysis for Rapid Strategy Selection”. *Proceedings, 23rd International Conference on System Dynamics*, July 2005, Boston. 26pp.

Osgood, N. 2004. “Representing Heterogeneity in Complex Feedback System Modeling: Computational Resource and Error Scaling”. *Proceedings, 22nd International Conference of the System Dynamics Society*, July 2004, Oxford. 46pp.

16b. Contributed (Non-Invited) Papers in Fully Refereed Non-Archival Conferences

Meadows, N., Li, X. and Osgood, N.D.023. Hierarchical and Upstream-Downstream Composition of Stock and Flow Models. Full paper and poster presentation at Applied Category Theory 2023 (2023). College Park, MD. Full paper preprint available at arXiv preprint arXiv:2305.02136.

16c. Contributed (Non-Invited) Abstracts and Posters at Refereed Archival Conferences

PUBLISHED:

Osgood, N. and Jeremy, E., 2022. Effective Use of PMCMC for Daily Epidemiological Monitoring and Reporting: Methodological Lessons. Abstract in Proceedings of the Annual Meeting of Statistical Society of Canada, with accompanying presentation.

Johnson, K.L., Adam, M.E., Kowalski, K.C., Mosewich, A.D., Osgood, N.D., Schellenberg, B.J., Storey, K.E. and Ferguson, L.J., 2023. Competitive sport as a complex social system: Illustrating the iterative process of designing a self-compassion intervention for women athletes. Abstract accepted in Annual Conference, North American Society for the Psychology of Sport and Physical Activity. Abstract also appears in the Journal of Sport & Exercise Psychology (Vol. 45, pp. S86-S87).

Khanam, U., Goodridge, D., Lawson, J., Osgood, N., Baloch, M., Zimmerman, A., Fenton, M. and Kelvin, A., 2023, December. The impact of asthma on post COVID condition (PCC) and COVID symptoms. EAACI Hybrid Congress 2023. Abstract also appears in the Journal Allergy 2023 Dec 1 (Vol. 78).

L Jiang, CM Crespi, X Li, N Osgood, M Prelip, SE Whaley, MC Wang. 2021. Translating breastfeeding intervention research into community practice: The usefulness of agent-based modeling. APHA 2021 Annual Meeting and Expo.

Systems Mapping to Understand Colorectal Cancer Screening Underutilization in an Integrated Health System: A Valuable Approach for Learning Health Systems, has been accepted for an oral presentation at the 2021 Health Care Systems Research Network Conference to be held virtually on May 11-12, 2021.

Qin Y, Freebairn L, Atkinson J, Dyck RF, Osgood ND. 2019. A Multi-Scale Co-Designed Simulation Model for Gestational and Type 2 Diabetes. Abstract in Proceedings INFORMS Annual General Meeting 2019. Seattle, WA. Oct. 20-23, 2019.

Nobari, T.Z., **Osgood N.**, Nianogo R., Whaley S.E., Wang M.C. 2016. An agent-based model to estimate the impact of increasing affordable housing on obesity risk in early childhood. Abstract and Oral presentation during the APHA 2016 Annual Meeting & Expo. Oct. 29 - Nov. 2, 2016, Denver, Colorado.

Gao, A., **Osgood, N.D.**, An, W., Dyck, R. 2014. A Tripartite Hybrid Model Architecture for Investigating Health and Cost Impacts and Intervention Tradeoffs for Diabetic End-Stage Renal Disease. Oral Presentation and Full Paper in *Proceedings of the 2014 Winter Simulation Conference*. December 7-10, 2014, Savannah, GA. 12pp.

Flynn T., Tian Y., Masnick K., Huynh E., Mair A., McDonnell G., **Osgood N.** 2014. Discrete Choice, Agent Based and System Dynamics Simulation of Health Profession Career Paths. Oral Presentation and Paper in *Proceedings of the 2014 Winter Simulation Conference*. December 7-10, 2014, Savannah, GA. 12pp.

Zhang Q. and **Osgood N.** 2010. Summary function elasticity analysis for an individual-based System Dynamics model. In Proceedings of the 2010 Winter Simulation Conference. December 2010, Baltimore, MD. 12pp.

Osgood, N. and Kaufman, G. "A Hybrid Model Architecture for Strategic Renewable Resource Planning". In Proceedings of the 21st International Conference on System Dynamics, New York City. July 2003. (Only extended abstract submitted and published, not refereed).

Li X., Keeler B., Zahan R., Duan L., Safarishahrbijari A., Goertzen J., Tian Y., Liu J., and Osgood N., 2018. Illuminating the Hidden Elements and Future Evolution of Opioid Abuse Using Dynamic Modeling, Big Data and Particle Markov Chain Monte Carlo. Extended Abstract and Presentations at the 11th International Conference on Social, Cultural, and Behavioral Modeling (SBP-BRiMS 2018), Washington, DC, USA, July 10-13, 2018.

Penz, E.D., Rana, M., Wu, L., Goodridge, D., Hergott, C.A., Tian, Y., Osgood, N., Sherin, T. and Manns, B., 2018. Effect of Wait time to Treatment on Survival in Lung Cancer. Abstract in Proceedings of the American Thoracic Society 2018 International Conference. In American Journal of Respiratory and Critical Care Medicine. 2018; 197:A7340.

Tian, Y., Onaemo, V., Stempien, J., Basran, J., Fast, G., Osgood, N. 2018. Simulation-based Optimization with Mathematical Programming to Optimize Physician Scheduling in the Emergency Department. Poster presented at WEDOC 2018.

Waldner, C., Pang, M., McDonald, W., Krueger, K., Gow, S., Erickson, N., Checkley, S., Osgood, N. 2017. Agent-based models of AMR and AMU in a western Canadian feedlot and beef processing facility. Conference of Research Workers in Animal Diseases. Dec 3-5, 2017. Chicago, IL. Abstract and oral presentation.

Bethune, R. and Wu, L. and Goodridge, D. and Hergott, C. and Osgood, N. and Manns, B. and Tian, Y. and Sherin, T. and Penz, E. 2017. The Clinical Benefit And Cost-Effectiveness Of Adding A Smoking Cessation Program To A Simulated Lung Cancer Screening Program In Saskatchewan, Canada. Abstract in Proceedings of the Annual Conference of the American Thoracic Society, and appearing in American Journal of Respiratory and Critical Care Medicine 2017;195:A5179.

Tsoi B. Osgood, N. Tarrid J.-E., Blackhouse G., Oraji R, Goeree R., O'Reilly D. 2015 "Comparison of different approaches in modelling for the conduct of cost-effectiveness analyses: a case in childhood flu vaccination." Abstract and Presentation at the 37th Annual Meeting of the Society for Medical Decision Making. St. Louis, Missouri. October 18 - 21, 2015.

Dong, A., **Osgood, N.D.**, Horsch, M.C. 2011. "Probabilistic inference of pathways of infection. Abstract and Poster Presentation at Epidemics 3: Third International Conference on Infectious Disease Dynamics." Boston, MA. 29th November – 2nd December, 2011.

Al-Azem, A., Hoepfner, V., **Osgood, N.** 2010. "Social Network Analysis (SNA) advantages in tuberculosis (TB) control in high TB incidence community in Saskatchewan." INSNA Sunbelt XXX (Trento, Italy). July, 1 2010.

Hassmiller-Lich, K., **Osgood, N.**, and Dyck, R. 2009. "Why we must care about the effects of diabetes and smoking on TB and what else we most need to learn". Poster presentation and Abstract in *Proceedings, 40th Union World Conference on Lung Health*. Cancun, Mexico. December 3-9, 2009.

Dyck, R., **Osgood, N.**, Lin, T. and Gao, A. 2009. "Epidemiology of diabetes in Saskatchewan adults from 1980-2005: a Comparison of First Nations People and Other Saskatchewan Residents". Presentation and Abstract in *Proceedings, 20th World Diabetes Congress*. Montreal. October 18-22, 2009. (*This abstract summarizes findings from our CMAJ paper, and should be viewed as two components of the same contribution.*)

Osgood, N., Dyck, R., and Grassmann, W. 2009. "Simulation Model of the Intra- and Inter-Generational Impact of Gestational Diabetes on the Diabetes Epidemic in Saskatchewan First Nations People". Poster presentation and Abstract in *Proceedings, 20th World Diabetes Congress*. Montreal. October 19-20, 2009.

Karanfil, Ö., Finegood, D., **Osgood, N.** “A System Dynamics Model of Body Weight Regulation and Obesity”. Poster presentation and Abstract in *Proceedings of the 27th International Conference of the System Dynamics Society*, Albuquerque. July 26-30, 2009

Osgood, N. 1999. Beyond Markov: A system dynamics model of national tobacco policy. Poster presentation at the *Society for Medical Decision Making Annual Meeting*. Reno, NV. October 1999.

17. Technical Reports Relevant to Academic Field

None

18. Book Reviews

None

19. Invited Lectures outside of the U of S and Invited Conference Presentations

Note: We omit here contributions in workshops/conferences where all presentations are by invitation only; such contributions are given in Sections 15 (for archival conferences) and 19 (for non-archival conferences). We also exclude cases where we are invited merely as a participant in a workshop or conference.

- Nathaniel Osgood, “Towards Compositional System Dynamics for Public Health”. Invited Talk at CANMOD -- Canadian Mathematical Modeling for Infectious Disease Event. November 2023.
- Nathaniel Osgood, “Service Delivery from Models: Real-time multipathogen epidemiology and acute care need monitoring and forecasting via PMCMC-leveraged Transmission Models”. Invited Talk for Surveillance Advances Seminar Series, National Coordinating Centre for Infectious Diseases. November 28, 2023.
- Xiaoyan Li and Nathaniel Osgood. “Towards Compositional System Dynamics for Public Health ACT in Support of the Human Theatre of Health Modeling”. Talk to Topos Institute Colloquium. June 19, 2023.
- Nathaniel Osgood, “The Burden & Dynamic of Post-COVID Conditions: A Patient-Centric Perspective”. Talk to Mathematics for Public Health Colloquium. April 18, 2023.
- Nathaniel Osgood, “Long COVID & Long COVID in SK Study”. Talk to Mathematics for Public Health Scientific Advisory Committee. October 7, 2022.
- Nathaniel Osgood, “Machine-Learning Enabled Dynamic Models for Service Delivery and Research for the COVID-19 and Opioid Epidemics”. Symposium on Machine Learning and Data Modelling in the Biomedical Sciences, York University. September 27, 2022.
- Nathaniel Osgood & Keira Stockdale, Co-Presenters. “Predictive Analytics”. Talk to Versaterra in the Prairies Conference, September 25, 2022.
- Nathaniel Osgood, “Assessing the Effectiveness of Maternal Immunization Against Pertussis: An Agent-Based Modeling Approach”, Invited Talk at Canadian Applied and Industrial Mathematics Society (CAIMS) 2022 Meeting and accompanying Abstract. June 16, 2022.
- Nathaniel Osgood, “Education & Training for Systems Science in Health & Health Care: An Ecosystem Approach”. At Boston University Symposium Advancing Public Health with Systems Science & Simulation Modeling. June 6, 2022.

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

- Nathaniel Osgood. “Cross-Leveraging Bayesian ML & Dynamic Modeling with Wastewater, Hospitalization & Health System Data for Daily Health System Reporting: A Particle Filtering & PMCMC Approach”. Talk to PHAC Sponsored Modelling WW and hospitalization Symposium. May 31, 2022.
- Nathaniel Osgood. Invited keynote “A Call to Service: Reflections on Health System Embedded Modeling” at Canadian Center for Disease Modelling Incubation Day 2022. May 16, 2022.
- Nathaniel Osgood, “Luxury or Necessity?: The value & limits of microcontact data in characterizing communicable disease transmission”. Invited talk delivered to Mathematics for Public Health Colloquium. March 11, 2022.
- Jenny Basran, Nathaniel Osgood, Maurice Glucksman. “How ML can help predict future mental health issues in populations”. Invited talk delivered to United Kingdom National Health Service (NHS) PHE. April 4, 2022.
- Nathaniel Osgood, “Discovering COVID-19 Inequities and Systemic vulnerabilities and the Role of AI: Towards Future Policy Implications”. Invited talk for Transformative Disaster Risk Governance. Webinar series will be organized CIFAL York, UNITAR, CIFAL Durban, CIFAL Dakar and Africa-Canada Artificial Intelligence and Data Innovation Consortium. February 3, 2022.
- Nathaniel Osgood, “MfPH Project Vignettes”. Invited talk for MfPH Workshop on Endemic COVID-19: Mathematical Insights. Attendees include high-level PHAC representation, including Canada’s Chief Public Health Officer, Theresa Tam. January 26, 2022.
- Nathaniel Osgood, “Dynamic Modeling & Health Inequities: Peril & Promise, Principles & Practices”. Invited talk to Mathematics for Public Health Colloquium. December 14, 2021.
- Nathaniel Osgood, “Machine Learning in health equity research”. Invited Guest Lecture for University of Ottawa Class “Health Inequities-Theory and Current Methods of Measurement” Delivered on Nov. 16, 2021.
- Nathaniel Osgood . “Service Delivery from Models: Production-grade real-time COVID-19 epidemiology and acute care demand monitoring and nowcasting via Particle-Filter & Particle MCMC-leveraged Transmission Models.” Invited talk to Fields Institute Colloquium on Mathematics for Public Health. October 19, 2021.
- Cheryl Waldner, Nathaniel Osgood Co-Presenters (Invitation to Osgood). Joint work with Dana Ramsay, Wade McDonald, Michelle Thompson & Nathaniel Osgood. “Antimicrobial resistance from farm to fork: First steps in a multi-scale modeling approach .” Invited talk to Fields Institute Colloquium on Mathematics for Public Health. October 5, 2021.
- Nathaniel Osgood. “CEPHIL COVID-19 Modeling” Invited talk to MfPH Scientific Advisory Committee. August 9 2021.
- Nathaniel Osgood, “COVID-19 Pandemic Through a Modeling Lens”. Invited Talk to City Mayors Conference of Saskatchewan Urban Municipalities Association (SUMA), November 4, 2021
- Invited (with funding) keynote address “Systems-Data Science: A Whole Greater than the Sum of its Parts” to COMPSE-2019, November 28, 2019. Video delivery.
- Invited (with funding) talk “Artificial Intelligence and its Role in Community Safety” to the Canadian Association of Chiefs of Police, Information Technology Committee, December 6, 2018

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

- Invited (with funding) talk “Role of Predictive Analytics in Addressing Saskatchewan’s Incipient Opioid Crisis” to the Saskatchewan Association of Chiefs of Police, October 3, 2018
- Invited (with funding) keynote “Combining Data Science, Systems Science and Computational Science to improve decision-making in health & healthcare.” Keynote address for 29th Annual Warren E. Kalbach Population Conference Society for Edmonton Demographers 2019. March 29, 2019.
- Invited (with funding) talk “SMC/Particle Filtering with Dynamic Models: A Spiral Tutorial”. 2019 Modeling Food-borne Infection and Food Safety workshop, York University. April 2, 2019.
- Invited (with funding) keynote “Using streaming data, sequential Monte Carlo methods and particle MCMC data and dynamic models for outbreak detection, projection & intervention evaluation”. Keynote address for 2019 Modeling Food-borne Infection and Food Safety workshop, York University. April 3, 2019.
- Invited (with funding) talk “Dynamic Health Policy Modeling in the Age of Big Data: Moving Beyond Myth & Madness”. Brain-to-Society Decision and Behavior Research Seminar, McGill University. May 15, 2019.
- Invited (with funding) talk “Bending the Curve: Our Strategic Vision. A Systematic Adaptive Approach for Cross-Leveraging Systems & Data Science for Individual & Public Health”. Talk for McGill University class “Precision Retailing for Health, Wellbeing, and Wealth Through Sustainable Investment, Production, and Consumption. May 16, 2019.
- Invited (with funding) talk “Using Smartphones and Wearables for Public Health Insight: A Hands-On Introduction”. Tutorial at McGill University. May 16, 2019.
- Invited webinar (broadcast from U. Saskatchewan) “Dynamic Health Policy Modeling in the Age of Big Data”. BRIDGE Webinar, McGill University. April 11, 2019.
- Invited talk (local transportation requires no funding) “SMC/Particle Filtering with Dynamic Models: A Spiral Tutorial”. MIT System Dynamics Seminar Series. June 12, 2019.
- Invited talk (local transportation requires no funding) “The Intra- and Inter-generational Linkages between Gestational and Type 2 Diabetes: Insights from Dynamic Modeling”. Saskatchewan Prevention Institute. Saskatoon. September 18, 2018.
- Invited talk (local transportation requires no funding) “Using Smartphones to Put YOU at the Centre of Health Innovation”. Health Vision 20/20. Saskatoon. June 20, 2019.
- Invited (with funding) sub-plenary talk “Artificial Intelligence, Data Science and Population Health/Health Care: Two Vignettes.” Canadian Association of Health Services and Policy Research. Montreal. May 30, 2018.
- Invited (with funding) talk “Mobile Technologies & Predictive Analytics for Social Services & Justice.” Saskatchewan Ministry of Justice. Regina. October 18, 2017.
- Invited (with funding) talk “Role of Predictive Analytics in Addressing SK’s Incipient Opioid Crisis.” Saskatchewan Ministry of Justice. Regina. April 9, 2018.
- Invited (with funding) talk “Health and Risk Communication: The Technology of Surveillance” at Harvard TK Chan School of Public Health course “Risk Communication in the 21st Century”, March 26, 2018.
- Invited (with funding via designation as a “Leading Scholar” by UCLA Fielding School of Public Health) talk “Beyond Myth and Madness: Cross-leveraging Systems Science and Data Science to Address Complex Health Problems”. Invited Talk at Dean’s Seminar Series, UCLA Fielding School of Public Health. February 21, 2018.

- Invited talk (local transportation requires no funding) talk “A Glimpse of Our Program of Work on Youth Suicide”. Invited talk at the Saskatchewan Prevention Institute, February 17, 2018.
- Invited (with funding) talk “Using Smartphones and Wearables for Public Health Insight: A Hands-On Introduction”. Invited Talk at UCLA Fielding School of Public Health. December 13, 2017.
- Invited (with funding) talk “Dynamic Health Policy Modeling in the Age of Big Data”. Invited Talk at UCLA Fielding School of Public Health. December 12, 2017.
- Invited (with funding) talk “Understanding the Complex: A Brief Intro to Systems Thinking in Health”. Keynote Address at University of Alberta School of Public Health. October 20, 2017.
- Invited talk “A Glimpse of Our Program of Work on Youth Suicide”, Saskatchewan Child Death Review Committee. Hosted by the Saskatchewan Prevention Institute, Saskatoon, October 4, 2017.
- Invited talk “Moving Beyond Myth & Madness: Dynamic Health Policy Modeling in the Age of Big Data” MedHack 2017. CREATE Cafe, August 2017.
- Invited (with funding) talk “Moving Beyond Myth & Madness: Dynamic Health Policy Modeling in the Age of Big Data” Australian Commonwealth Health (Australian Ministry of Health), February 2017.
- Invited (with funding) talk “Moving Beyond Myth & Madness: Dynamic Health Policy Modeling in the Age of Big Data” Australian Capital Territories Health, February 2017.
- Invited (with funding) to co-deliver 4-day bootcamp on “Understanding Health Behaviour using Smartphones and Wearables 2017” at Sydney University/Sax Institute, Sydney, AU, May 8-11th, 2017.
- Invited (with funding) to deliver 5-day bootcamp on “Data-informed simulation modelling in health 2017” at Sydney University/Sax Institute, , Sydney, AU, February 20-24th, 2017.
- Invited talk (with funding) “Cross-Leveraging Data, Systems Computational Sciences: A Brief Overview of our Work” at discussion of Prospective Data Science NCE. Vancouver 11-12-2017.
- Invited talk “Project SNAP Preliminary Analysis Results -- Adherence and Questionnaire Responses”. Harvard School of Public Health/Dana Farber Cancer Institute. December 2016.
- Invited (with funding) talk “Health and Risk Communication: The Technology of Surveillance” at Harvard TK Chan School of Public Health course “Risk Communication in the 21st Century”, November 14, 2016.
- Invited panelist for 2016 Institute for Health Technology Transformation’s (iHT2) panel on “Big Data Mining for Value-based Healthcare”. Wednesday, September 21, 2016. Toronto, Ontario.
- Invited (with funding) to deliver talk “Moving Beyond Myth and Madness: Modeling in the Age of Health Big Data” to International Cluster for Public Health Agency of Canada, August 15, 2016.
- Invited (with funding) to deliver 5-day bootcamp on Agent-Based Modeling for Public Health Policy at Sydney University, May 9-13th, 2016.
- Invited (via teleconference) talk “Moving Beyond Myth and Madness: Modeling in the Age of Health Big Data” for Alberta Health Services (Research Innovation and Analytics), April 21, 2016.
- Invited (with funding) to deliver 4-day bootcamp on Agent-Based Modeling for Public Health Policy at Public Health Agency of Canada, March 2016.

- Invited (with funding) to deliver 5-day bootcamp on Agent-Based Modeling for Public Health and Veterinary Medicine at University of Minnesota, February 22-26, 2016.
- Invited (with funding) to deliver 4-day Master Class in Modeling and Chronic Disease Across the Care Continuum”, Deakin University, Melbourne, Australia. November 17-20, 2015.
- Invited (with funding) to deliver 5-day Master Class in Simulation Modeling with focus on Health Economics, Deakin University, Melbourne, Australia. November 9-14, 2015.
- Invited video presentation “Introduction to and Motivation for Systems Science” for Alberta Health Services (Research Innovation and Analytics), October 29, 2015.
- Invited (with funding) co-teaching of iEpi Bootcamp for Alberta Health Services (with representation from Alberta Health). 21 October-23 October, 2015. Calgary, Alberta.
- Invited (with funding) to deliver talk on use of mobile technologies for health surveillance at Harvard TK Chan School of Public Health course “Risk Communication in the 21st Century”, September 28, 2015.
- Invited (with funding) talk “Cross-Leveraging Systems, Data and Computational Science for Public Health Insight” at United States National Institutes of Health (National Heart Lung and Blood Institute, Center for Translational and Implementation Science), July 8, 2015.
- Invited (with funding) talk “Leveraging Systems Science for Health Policy in the Age of Big Data” at University of Calgary (McCaig Institute for Bone & Joint Health), July 13, 2015.
- Invited (with funding) two talks at Alberta Health Services (Rockyview Hospital), and for subsequent discussion lasting for most of the day. March 13, 2015.
- Invited (with funding) talk “Leveraging Systems Science for Informing Health in the Age of Big Data” at e-Health Saskatchewan. June 17, 2015.
- Invited (with funding for workshop, but elected for talk via teleconference) Talk, “Our Tuberculosis Modeling Program a Learning Vignette”, Guru Angad Dev Veterinary & Animal Sciences University. November 10, 2014. Graduate student served to deliver 3-day bootcamp in my absence.
- Invited (with funding) American Legacy Foundation Talk, May 9, 2015. (*Note: American Legacy Foundation was funded to support tobacco prevention and cessation by the Masters Settlement Agreement between the United States Attorney General, 46 states, and the tobacco industry and is a central player in United States anti-tobacco efforts.*)
- Invited Public Health Agency of Canada (via teleconference & slides) Talk, “iEpi: A Smartphone-based Sensing, Survey and Crowdsourcing Platform”, February 26, 2015.
- Invited (with funding) Series of Talks, “Introduction to and Motivation for Systems Science”, “What Tools Does Complex Systems Modeling Provide for Understanding Population Health & Health Disparities?”, class talk at Harvard School of Public Health, Brookline, Massachusetts, April 24, 2015.
- Invited (with funding) Talk, “Cross-Leveraging Systems, Data & Computational Science for Health Behavioural Insight”, talk at the Workshop on Big Data for Social Policy, Fields Institute for Research in Mathematical Sciences, Toronto, April 14, 2015.
- Invited (with funding) Talk, “Responsive Strategies for Modeling to Address Chronic Disease Disparities”, talk at the Australian Prevent Partnership Centre, Sax Institute, Sydney, Australia, April 27, 2015.

- Invited (with funding) Sole Instructor, 4-day Masterclass, Simulation modelling for the prevention of lifestyle-related chronic disease: bootcamp at the Sax Institute, Sydney, Australia, April 28-May 1, 2015.
- Invited (with funding) Sole Instructor, “Applying Systems Science to Public Health & Early Intervention: The Cutting Edge of Smart Research”, full day symposium at California State University, Fresno, California, April 10, 2015.
- Primary Speaker, “Health Care Modelling Systems Thinking and Design Workshop and Training: What, Why and How?” at Flinders University, Adelaide, Australia, February 16 & 17, 2015.
- Invited (with funding) Sole Instructor, “Health Care Modelling Systems Thinking and Design Workshop and Training: What, Why and How?” at Flinders University, Adelaide, Australia, February 18-20, 2015.
- Invited (with funding) talk “Cross-leveraging Systems, Data and Computational Science for Public Health Insight”, Columbia University System Sciences Program, October 9, 2014.
- Invited (with funding) Sole Instructor, Agent-Based Modeling Bootcamp and Incubator at University of California Los Angeles, July 28-August 1, 2014.
- Invited (with funding) Sole Instructor, Agent-Based Modeling Bootcamp for Health Researchers at University of North Carolina and North Carolina State University, August 4-8, 2014.
- Invited (with funding) Sole Instructor, One-Day “Agent-Based Modeling Workshop” at National University of Singapore Symposium “Using Modeling to Prepare for Changing Health Care Needs”, April 16, 2014.
- Invited (with funding) talk “Designing complex intervention and treatment strategies” at National University of Singapore Symposium “Using Modeling to Prepare for Changing Health Care Needs”, April 15, 2014.
- Invited (with funding) Sole Instructor for two half-day workshops on dynamic modeling to public health at Public Health Agency of Canada, November 2014.
- Invited (with funding) talk “What Tools Does Complex Systems Modeling Provide for Understanding Population Health & Health Disparities?” at Public Health Agency of Canada, November 2014.
- Invited (with funding) talk “What Tools Does Complex Systems Modeling Provide for Understanding Population Health & Health Disparities?”, one of three opening talks at Complex Systems, Health Disparities & Population Health: Building Bridges at Natcher Auditorium, National Institutes of Health, February 24, 2014.
- Invited (with funding) talk “10 Key Lessons Learned in Building Agent-Based, Hybrid, and Multi-Scale Health Models”. AnyLogic Symposium. December 12, 2013.
- Invited (with funding) talk “Enhancing the Effectiveness and Efficiency of Contact Tracing: A System Dynamics Approach”. American College of Epidemiology Workshop at University of Louisville. September 21, 2013.
- Invited (with funding) technology keynote “Moving Beyond Myth & Madness: How Big Data, Rich Models, Cloud Computing, and Smartphones are converging to Make Health Survey Research Cheaper, More Reliable, More Timely, More Insightful – and ever more

Important”. International Field Directors and Technology Conference in Providence, RI. May 20, 2013.

- Invited (with funding) talk “Cross-Leveraging Dynamic Models & Digital Epidemiology to Inform Behaviorally Rich Dynamic Models”. American Academy of Health Behavior. Santa Fe, New Mexico. March 19, 2013.
- Invited talk “Cross-Leveraging Dynamic Modeling & Big Data to Confront Complex Health Services Research Problems”. Western Regional Training Centre (U. Regina, U. Manitoba, U. Saskatchewan). March 15, 2013.
- Invited (videoconferenced) talk “An Introduction to Some of Our TB Modeling Efforts”. Public Health Agency of Canada. February 8, 2013.
- Invited co-lead for workshop “Dynamic Modelling: What, Why & How?”, University of New South Wales (Australia), February 18-22, 2013.
- Invited (with funding) talk “Cross-Leveraging Systems Science & Big Data to Confront Complex Health Problems”. University of New South Wales (Australia). February 20, 2013.
- Invited (with funding) talk “The Intra- and Inter-Generational Linkages Between Gestational and Type 2 Diabetes: Insights from System Dynamics & Agent-Based Modeling”, 2012 Summit on the Science of Eliminating Health Disparities: Building a Healthier Society, Integrating Science, Policy and Practice, Washington, DC, December 17, 2012.
- Invited (with funding) talk “Cross-Leveraging Systems Science & Big Data to Confront Complex Health Problems”, Integrating Community-Based Prevention Research and Systems and Network Science Seminar Series, University of New Mexico, Albuquerque, NM, United States, October 9, 2012.
- Invited (with funding) talk “Complex Systems Modeling & Big Data: A Natural Synergy”, Sandia National Laboratory Seminar Series, Sandia National Laboratory, Albuquerque, NM, United States, October 8, 2012.
- Invited (with funding) talk “Cross-Leveraging Sensors, Modeling and Bayesian Inference for Nosocomial Infection Control”, SIMCARE Conference, Halifax, September 5, 2012.
- Invited (with funding) talk “Sensor Informed Computational Epidemiology” at a session at the Annual Meeting of the Society for Epidemiological Research, June 30, 2012.
- Invited (with funding) talk “Prospects for Leveraging Smartphone Based Sensing in Support of Diabetes Prevention & Care”, International workshop on research priorities in chronic disease prevention and management, Anhui Medical University. Anhui Medical University April 17th, 2012.
- Invited (with funding) talk “A Sketch of Our Ongoing Diabetes Modeling Projects”, International workshop on research priorities in chronic disease prevention and management, Anhui Medical University. Anhui Medical University April 17th, 2012.
- Invited (with funding) tutorial Co-Leader (jointly with Dr. P. Mabry [US National Institutes of Health]) on Applying Science and Engineering Skills in Public Health, Pre-conference tutorial for SBP: Social Computing, Behavioral-Cultural Modeling and Prediction, University of Maryland, April 2, 2012.
- Invited talk, “Sensor Informed Computational Epidemiology Cross-Leveraging Sensors & Systems Models”, Massachusetts Institute of Technology (MIT), Systems and Social Dynamics Seminar, April 12, 2012.

- Invited plenary speaker and System Dynamics Track guest speaker at the 2011 Sponsored Institute on Systems Science and Health (sponsor, United States Institutes of Health and United States Centers for Disease Control and Prevention). May 25, 2011.
- Invited Tutorial Leader on Advanced Agent-Based Modeling using Anylogic at Workshop and Training Course on Disease Spread Modelling of Zoonotic Diseases, Guelph, November 1-4, 2010.
- Invited speaker at MIDAS and American Schools of Public Health sponsored Workshop *Systems Thinking in Public Health*. Pittsburgh, PA. (October 6, 2010).
- Invited speaker at “Aboriginal Health Forum: Type 2 Diabetes & Aboriginal People: Prevention & Intervention Strategies”. Saskatoon, SK. Sponsor: Aboriginal Affairs Coalition of Saskatchewan (Congress of Aboriginal People Affiliate) (February 4-5, 2010).
- Invited speaker at NIH-Sponsored event *Applying Complex Systems Approaches to the Processes of Behavior Change - A First Conversation*. Ann Arbor, Michigan. (January 28-29, 2010).
- Invited speaker at workshop on Modeling and Public Health Surveillance. Toronto, Ontario. (Talk delegated to doctoral student David Vickers) (October 8, 2009).
- Invited organizer and sole instructor for a 5-day tutorial on Agent-Based Modeling at the Canadian Memorial Chiropractic College (October 2009 & January 2010).
- Invited plenary presenter & panelist on System Science approaches at the Biennial Meeting of the Society for the Study of Human Development. In this plenary panel (sponsored by the NIH OBSSR), our work in the modeling of gestational diabetes will serve as the keystone example illustrating how system sciences can help interface with research in the developmental sciences. (October 18-20, 2009)
- Invited speaker at 2nd annual Symposium of Modelling Complex Social Systems. Title: *10 Uncomfortable Truths about Dynamic Modeling for Health Policy*. Simon Fraser University. (September 14, 2009).
- Invited organizer and central instructor for 5 day class on Systems Dynamics Modeling at the Institute on Systems Science and Health. Students were researchers with doctorate degrees and had all expenses covered by the sponsors. Sponsor: United States National Institutes of Health, United States Centers for Disease Control and Prevention, and the National Association of Chronic Disease Directors. (May 2-8, 2009. University of Michigan, Ann Arbor, Michigan.).
- Invited presentation as one of 12 “invited expert” speakers for Director-level NIH planning meeting the Science of Science Management. Title: *Knowledge Discovery & Management (Public Health)*. Sponsor: United States National Institutes of Health. (October 2-3, 2008)
- Invited Facilitator and Participant, Workshop on Genital Herpes and Human Papillomavirus Modelling for Public Health. May 29-30, 2008. Sponsor: Public Health Agency of Canada and the MITACS Centre for Disease Modelling.
- Invited lead presenter and a discussant at the Workshop on Modeling Sexually Transmitted & Blood Borne Infections with First Nations, Inuit & Métis Communities. Title: *Mathematical Modeling for Public Health (STI/BBIs): One Modeler’s Perspective*. Sponsor: National Aboriginal Health Organization and Public Health Agency of Canada. (May 22-23, 2008)

- Invited speaker at *Cost-Effectiveness of Obesity Prevention* conference, Toronto. Title: *Early Thoughts on Future Research Priorities*. (Sponsor: Canadian Institutes of Health Research INMD & Robert Wood Johnson Foundation) (April 22-24, 2008)
- Invited Discussant, Tobacco Modeling Telephone Meetings. Multiple Dates, Summer 2007. Sponsor: National Cancer Institute.
- Organizer and one of three primary presenters in an invited workshop accompanying the *Complex Systems Approaches to Population Health* symposium (Jointly conducted with J. Homer and R. Milstein; June 1, 2007).
- Invited Telephone Discussant, Meeting on Better Healthcare Reform Modeling: Good Practice Guidelines Meeting. Sponsored by the RAND Corporation. February 19, 2007.
- Invited talk and abstract at the First International Congress of Business Dynamics. Title: *Systems Dynamics and Agent-Based Approaches: Clarifying the Terminology and Tradeoffs*. Brasília, Brazil. (October 20, 2006.)
- Invited speaker (delegated to doctoral student David Vickers) at National Collaborating Centre for Infectious Diseases – Northern Knowledge Exchange Forum. Title: *Chlamydia rates in Saskatchewan: A Current Crisis?* Whitehorse, Yukon. (March 25-27, 2009)
- Invited panelist on linkages between tobacco modelling and tobacco surveillance within the National Cancer Institute Seminar *Linking tobacco control policies and practices to cancer outcomes: Surveillance an Agent of Change* (December 4, 2007). Sponsor: National Cancer Institute.
- Invited speaker at York University's MITACS Centre for Disease Modeling. Title: *Chlamydia Rates in Saskatchewan: Artifact or Crisis?* (4/16/2009).
- Invited speaker at the Ontario Agency for Healthcare Protection and Promotion. Title: *A Vicious Cycle: Investigating the Impact of Gestational Diabetes on Saskatchewan's Epidemic of Type 2 Diabetes Using Dynamic Modeling*. (4/17/2009).
- Invited speaker for the Saskatoon Chapter of the Canadian Operations Research Society (CORS). Title: *The Impact of Healthcare Delays on Infectious Disease Spread: A Simple Model*. April 28, 2008.
- Invited talk at the Workshop Agent-Based Modeling: Why Bother? Post-conference workshop at the 23rd International Conference on System Dynamics 2005. Title: *Motivations for the use of ABM and ABM Frameworks: One Practitioner's Perspective*. Presented, Boston, July 21, 2005.
- Invited speaker (together with S. Kennedy) at The LINC Symposium. Title: *From the Stage to Screen and Back: Experiences with Educational Technology at the Malaysia University of Science and Technology*. March, 2004.
- Invited talk at Worcester Polytechnic Institute. Title: *A Hybrid Model Architecture for Strategic Renewable Resource Planning*. (October 2003).

20. Abstracts and Presentations at Non-Archival Conferences

Refereed Conferences

Tian Y., Kapur P., Stempien J., **Osgood N.**, Basran J., McDonnell G, Fast G.. 2016. "Early Inpatient Discharge and its Effect on Emergency Department Wait Time: A Discrete-event

Simulation”. Poster presentation at Western Emergency Department Operations Conference (WEDOC) 2016: Choosing Wisely in an Emergency. Apr 28-29 2016. Winnipeg, Manitoba.

Osgood, N.D., McDonnell, G. 2016 Supporting Rich Participatory Mapping for Hybrid and Agent-Based Models: A Collaborative Web-Based Modeling Platform. Accepted March 2, 2016 for presentation at Innovations in Collaborative Modeling, June 14-15, 2016, Lansing, Michigan.

Dilsner, S., Erker, E., **Osgood, N.D.** 2016. A Collaborative Web-Based Modeling Platform for Causal Loop Diagramming. Accepted March 2, 2016 for presentation at Innovations in Collaborative Modeling, June 14-15, 2016, Lansing, Michigan.

Dyck, R., Gao, A., Jiang, Y., Osgood, N. 2015. An Agent Based Model for Projecting Diabetic End Stage Renal Disease in Saskatchewan. Accepted June 30 for Poster Presentation at and inclusion in Proceedings of the World Diabetes Congress, November 30-December 4, 2015. Vancouver, BC.

Osgood, N., Liu, J., Vickers, D., Dueck, S. 2014. “Combining MCMC and Compartmental Modeling to Enhance Understanding of Chlamydia Control in Saskatchewan”. Abstract and verbal presentation at 2014 Annual Meeting of the Statistical Society of Canada. May 28, 2014. Toronto, ON.

Yee, K., E. Silbernagel, C. Waldner, **N. Osgood**, T. Bollinger. 2011. Development of a system dynamics model of CWD transmission. Poster presented at: *Prion 2011: New World. International Prion Congress*, May 16 - 19, 2011. Montreal, QC.

Meng, A. and **Osgood, N.** 2011. The System Dynamics Longitudinal Analysis System: Quantifying the Hidden Trajectories of System Dynamics Models. Extended abstract and presentation at *System Dynamics Winter Conference 2011. Invited contributions only*. Austin, Texas. 2pp. January 7, 2011.

Yee, K. **Osgood, N.**, An, W. 2011. A hybrid system dynamics and decision analysis tool for effective strategy selection to control for a West Nile virus epidemic. Extended abstract and presentation at *System Dynamics Winter Conference 2011. Invited contributions only*. Austin, Texas. 2pp. January 7, 2011.

Knowles, D., Stanley, S., **Osgood, N. D.** 2010. Automating the Collection of Health Data through Smartphones and a Query Language. Abstract accepted for Poster Presentation at Rising Stars of Research 2010, University of British Columbia, Vancouver. August, 18-21, 2010.

Al-Azem, A., Hoepfner, V., **Osgood, N.** 2010. Advantage of using INH as Network-informed prophylaxis treatment among TB contacts in a high TB incidence Saskatchewan community. Poster Presented at STOP TB 2010. Edmonton. March 29-31, 2010.

Mahamoud, A., **Osgood, N. D.**, Al-Azem, A., Hoepfner, V. 2010. The Role of Ethnicity in the Saskatchewan Tuberculosis Epidemic: Early Insights from a System Dynamics Model. Poster Presentation at the 2010 First Nations, Inuit and Metis Health Research Meeting in Ottawa, May 13-14, 2010.

Jiang, Y., Dyck, R., Bingham, W.T., **Osgood, N.**, and Lim, H., 2009. "Microalbuminuria in infants of diabetic mothers." Abstract and Poster at Annual Symposium of the Saskatchewan Epidemiological Association. Regina. October 29-30, 2009.

Leung, J.W., Hassmiller-Lich, K., **Osgood, N.** 2009. "Housing Tuberculosis in Northern Saskatchewan: A Systematic Review and Meta-Analysis". Abstract and Poster to appear at Annual Symposium of the Saskatchewan Epidemiological Association. Regina. October 29-30, 2009.

Yee, K., **Osgood, N.**, Wright, J., Lix, L. 2009. "System Dynamic Modeling & Decision Tree Analysis to capture uncertainties of intervention choices and weather patterns on West Nile Virus disease outcomes." Abstract and Poster to appear at Annual Symposium of the Saskatchewan Epidemiological Association. Regina. October 29-30, 2009.

Yee, K., **Osgood, N.** 2009. "The Impact of Smoking and Vaccine Intervention on Cervical Cancer Outcomes." Abstract and Presentation at Annual Symposium of the Saskatchewan Epidemiological Association. Regina. October 29-30, 2009.

Hassmiller-Lich, H., **Osgood, N.** 2009. "The challenge of controlling tuberculosis: Using dynamic simulation models and system diagrams to inform complex population-health problems where earlier influences shape later life outcomes". Poster and Abstract in at the *Biennial Meeting of the Society for the Study of Human Development (SSHD)*, Montreal. October 19, 2009.

Schneider, O., Dutchyn, C., **Osgood, N. D.** Frabjous. Abstract and Poster Presentation at Rising Stars of Research 2009, August, 19-22, 2009. University of British Columbia, Vancouver. *Paper received one of 3 honourable mentions in Computational Sciences and Technology area.*

Vickers, D., **Osgood, N.**, Sahai, B. 2009. "Impact of memory CTLs on dynamics of influenza virus in vivo and its spread in diverse populations". Presentation in MITACS Workshop on *Mathematical Immunology of Infectious Disease. Invited contributions only.* Banff. May 21, 2009.

Osgood, N., Vickers, D. 2009. "Effect of Immune Responses on Transmission of Sexually-Transmitted Infections: Chlamydia as a Case Study". Presentation in MITACS Workshop on *Mathematical Immunology of Infectious Disease. Invited contributions only.* Banff. May 21, 2009.

Osgood, N., Vickers, D. 2009. "The Impact of Treatment Delays on Infection Spread". Extended abstract and presentation at *System Dynamics Winter Conference 2009. Invited contributions only.* College Station, Texas. 2pp. January 10, 2009.

Vickers, D. **Osgood, N.** 2009. "Broadening the Boundaries of Infectious Disease Models: Accounting for Immunology in Infection Spread". Extended abstract and presentation at *System Dynamics Winter Conference 2009. Invited contributions only.* January 2009. College Station, Texas. 3pp. January 10, 2009.

Vickers D, **Osgood N**. 2007. "Epidemiology outside the box: modelling infectious diseases 'across-the-skin'". Abstract and Presentation at Annual Symposium of the Saskatchewan Epidemiological Association: Epidemiology in Context: Outside the Box. Regina, SK October 11, 2007.

Osgood, N. 2007. "Enriching Dimensionality Analysis in System Dynamics Modeling". Paper and Presentation at *System Dynamics Winter Conference 2007*. **Invited contributions only**. January 2007. Austin, Texas. 12pp.

Osgood, N. 2005. "Combining Decision Analysis and SD for Strategy Selection." Extended abstract and presentation at the *System Dynamics Winter Conference 2005*, Austin, Texas, January 2005. (NB: **Extended abstract is very similar to the contents of the paper presented at ICSD 2005, and should be viewed as another variant of that work rather than as an additional work.**) 2pp.

Osgood, N. 2000. "The Tobacco Policy Model: An Introduction". Abstract and presentation at the *System Dynamics Winter Conference 2000*, Austin, Texas. January 2000.

Unrefereed Conferences

Hashemian, M., **Osgood, N.**, Stanley, K. "Understanding Social Determinants of Health via Novel Technologies." *Third Annual Workshop on Dynamic Modeling for Health Policy: Understanding Social Determinants of Health & Reducing Health Inequities*. Saskatoon, SK. July 20, 2011.

Aziza Mahamoud and Osgood, N. 2010. "Assessing the Potential Impact of Northern Canada's Diabetes Epidemic on TB Spread: Insight from Combining Chronic & Infectious Disease Administrative Data and Simulation Modeling". *Second Annual Workshop on Dynamic Modeling for Health Policy: Chronic & Infectious Disease Interactions*. Saskatoon, SK. July 21, 2010.

Osgood, N. 2009. "Exploring the Intra- or inter-generational Impact of Gestational Diabetes on Type 2 Diabetes: Results from the Gestational Diabetes Population Model". *First Annual Workshop on Dynamic Modeling for Health Policy: Obesity & Obesity-Related Chronic Disease*. **Invited Contributions only**. Saskatoon, SK. July 23, 2009.

Karanfil, Ö., Finegood, D., **Osgood, N**. "A System Dynamics Model of Body Weight Regulation and Obesity". Poster presentation at *2nd annual Symposium of Modelling Complex Social Systems*. Burnaby, Canada. September 14, 2009.

Osgood, N. 2009. "Exploring the Intra- or inter-generational Impact of Gestational Diabetes on Type 2 Diabetes: Results from the Gestational Diabetes Population Model". *First Annual Workshop on Dynamic Modeling for Health Policy: Obesity & Obesity-Related Chronic Disease*. **Invited Contributions only**. Saskatoon, SK. July 23, 2009.

21. Patents Granted or Pending

None

22. Research and Project Grant Information

Osgood, Nathaniel (PI). (01/04/2023 - 31/03/2028) Cross-Leveraging Computational, System and Data Science in Support of Computational Epidemiology in the Era of Big Data, 40,000 CAD per Annum, 120,000 CAD across the reporting period. Natural Sciences and Engineering Research Council of Canada, Discovery Grant.

David Buckeridge (PI, McGill University) & Nathaniel Osgood (co-PI) et al. (01/09/2019 - 31/08/2024) AI for Public Health (AI4PH): A Focus on Equity and Prevention. 525,000 CAD. Canadian Institutes of Health Research (CIHR).

Laura Rosella (PI, University of Toronto) & Nathaniel Osgood (co-PI) et al. (04/2022 - 3/2028) Artificial Intelligence for Public Health (AI4PH) Training Platform. 2,394,218 CAD. Canadian Institutes of Health Research (CIHR).

John Baez (PI, University of California, Riverside) & Nathaniel Osgood (co-PI) (01/05/2024 - 13/06/2024) New Mathematics and Software for Agent-Based Models. All travel, accommodation and local transportation costs & free use of ICMS meeting facilities in Edinburgh. International Centre for Mathematical Sciences (ICMS).

Laura Marciano (PI, Harvard University) & Nathaniel Osgood (co-I) et al. (01/01/2024 - 12/31/2025) Bidirectional Influences Between Adolescent Social Media Use and Mental Health. Total to University of Saskatchewan 79,909.50 CAD. United States National Institutes of Health (NIH) R21.

Gary Groot (PI, University of Saskatchewan) & Nathaniel Osgood (co-I) et al. (01/01/2024 - 12/31/2025). Integrated Care Clinical Pathway Implementation using a Patient Oriented Learning Health System Approach: A Realist Process Evaluation of the Saskatchewan Long COVID Pathway. 1,971,649 CAD. Canadian Institutes of Health Research, Team Grant: THINC Implementation Science Team Grants.

Holly Mansell (PI, University of Saskatchewan) & Nathaniel Osgood (co-I) et al. (01/03/2024 - 28/02/2026) Facilitating Self-Management Throughout the Lung and Kidney Transplant Journey with HELP (the Health Education and Learning Platform). 150,000 CAD. Saskatchewan Health Research Foundation, Impact Grant.

Holly Mansell (PI, University of Saskatchewan) & Nathaniel Osgood (co-I) et al. (01/07/2023 - 30/06/2025) Individualizing Pediatric Kidney Transplant Education with HELP (the Health Education and Learning Platform). 120,000 CAD. Kidney Foundation of Canada, Allied Health Research Grant.

Kim, S. (PI) & Nathaniel Osgood (Co-I). (01/04/2021 - 31/03/2023) Mobile App for Shoulder Exercises Following Breast Reconstruction: A Pilot Study. 24,904.57 CAD. Royal University Hospital Foundation.

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

Caroline Colijn (PI, Simon Fraser University). (03/15/2021 - 3/31/2025) Canadian Network for Modelling Infectious Disease (CANMOD), Co-Is: Janjua NZ, Bassani DG, McCabe C, Maheu-Giroux M, Basta N, Buckeridge D, Shapiro BJ, Wagner CE, Earn D, Bolker BM, Dushoff J, Loeb M, Hurford A, Day T, Cornelius SP, Hu J, Rutherford A, Tupper P, Brisson M, Sander B, Lewis M, Colliander JE, Coombs D, Otto S, Prystajek NA, Tyson RC, Deardon R, Williamson T, Greer A, Arino J, Wolfson M, Sanchez J, Osgood N, Mishra S, Mubareka S, Tuite AR, Fisman D, Kustra R, Canary LG, McPhee-Knowles S.. \$2.5M CAD. Joint NSERC and Public Health Agency of Canada Funding.

Kumar Murty (PI, University of Toronto) & Nathaniel Osgood (Co-I) & dozens of other co-investigators. (01/04/2021 - 31/03/2025) Mathematics for Public Health. Amount: Approx \$2.5M-3M CAD. Joint NSERC and Public Health Agency of Canada Funding.

Stempien, J. (PI) & Nathaniel Osgood (Co-I), et al. (01/03/2020 - 28/02/2025). Improving emergency care among patients who use opioids: Novel integration of patient-oriented mixed methodology and supervised machine learning. 66,129.00 CAD. Saskatchewan Health Research Foundation Sprout Grant. Currently on No Cost Extension.

Stempien, J. (PI) & Nathaniel Osgood (Co-I), et al. (08/01/2020 - 31/12/2025). Identifying emergency department visits related to opioid use: A novel approach using mixed methods and supervised machine learning. 18,500.00 CAD. Internal College of Medicine Funding. Currently on No Cost Extension.

Osgood, Nathaniel (PI) (2018). The impact of natural experiments on child obesity: A systems science approach, 26784 (USD). University of California, Los Angeles. 26784 (USD) to Osgood, Nathaniel.

Groot, Gary (PI) & Sylvia Abonyi, Donna Goodridge, Nathaniel Osgood (2018 - 2021). A Journey With You: Indigenous Peer Navigation in Saskatchewan Cancer Care, 120000 (CAD). Establishment Grant, Saskatchewan Health Research Foundation.

Penz, Erika (PI) & Nathaniel Osgood, Darcy Marciniuk, Joshua Lawson, Brianne Philipenko (2018 - 2019). An examination of patient reported outcomes in COPD patients utilizing a novel mobile application, 25000 (CAD). Ideas That Inspire, Saskatchewan Health Research Foundation.

Vatanparast, Hassanali (PI) & Daniel Beland, Rachel Engler-Stringer, Marwa Farag, Joseph Garcea, Nathaniel Osgood, Louise Racine, Nazmi Sari (2018 - 2019). Towards international refugee food security solutions, 19972 (CAD). Partnership Grant, Social Sciences and Humanities Research Council of Canada.

Osgood, Nathaniel (PI) (2018 - 2021). MEDIATICINO 2.0: Blessing or Curse? Smartphones in the Life of Adolescents, 20000 (CHF). Institute of Communication and Health. 20000 (CHF) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2018 - 2019). Capturing Behavioural Level Information in HIV-Infected Individuals Using Innovative Mobile Technology, 0 (CAD). Saskatchewan Health Authority. 0 (CAD) to Osgood, Nathaniel.

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

Osgood, Nathaniel (PI) (2017 - 2019). Identifying and Disentangling Social and Physical Environmental Effects on Physical Activity in Diverse Adolescent and Young Adult Populations, 13000 (USD). University of North Carolina. 13000 (USD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2018 - 2019). Canadian Immunization Research Network (CIRN) Trainee Stipend for Wade McDonald, 11402 (CAD). Dalhousie University. 11402 (CAD) to Osgood, Nathaniel. Comparative evaluation of interventions to control pertussis using agent-based modeling.

Crizzle, Alexander (PI) & Nathaniel Osgood (2018 - 2024). Medically at-risk drivers: The road to developing evidence-based fitness to drive guidelines, 803250 (CAD). Project Grant, Canadian Institutes of Health Research.

Royal University Hospital Foundation (E. Penz & **N. Osgood**, Co-PIs). Spring 2015-Spring 2016 Quantifying the Role of e-Cigarettes in Saskatchewan Using Novel Technologies: A Pilot Project. \$20,000.

Osgood, Nathaniel (PI) (2018). Modelling to Support a More Compelling Case for Prevention of Lifestyle Related Chronic Disease (Intern: Alexander Dumais), 18750 (AUD). Adaptive Care Systems. 18750 (AUD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2017 - 2018). Modelling Canadian Population-Based Estimates of Suicide and Suicidal Behaviours, 24999 (CAD). Public Health Agency of Canada. 24999 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2018). Modelling to Support a More Compelling Case for Prevention of Lifestyle Related Chronic Disease (Intern: Alexander Dumais), 30000 (AUD). The Sax Institute. 30000 (AUD) to Osgood, Nathaniel.

Balbuena, Lloyd Cenon (PI) & Rudy Bowen, Angela Bowen, Jill Bally, Nathaniel Osgood (2017 - 2020). Neuroticism and Mood Instability as Suicide Prevention Targets, 119997 (CAD). Establishment Grant, Saskatchewan Health Research Foundation.

Osgood, Nathaniel (PI) (2017). Modelling to Support a more Compelling Case for Prevention of Lifestyle Related Chronic Disease, 7000 (AUD). The Sax Institute. 7000 (AUD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2017 - 2022). Cross-Leveraging Computational, System and Data Science in Support of Computational Epidemiology in the Era of Big Data, 100000 (CAD). Discovery Grant - Individual, Natural Sciences and Engineering Research Council of Canada. 100000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2017). Estimating the Impact of E-Cigarettes Use in Canada: An Agent-Based Modelling Approach, 9800 (CAD). Public Health Agency of Canada. 9800 (CAD) to Osgood, Nathaniel.

Horsch, Michael (PI) & Nathaniel Osgood, Aydin Teyhouee (2017). Identifying Transportation Mode Based on Smartphone Sensor Data Using Machine Learning Tools and Statistical Methods, 15000 (CAD). Accelerate Internship Program, Mitacs.

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

Saskatchewan Ministry of Justice and Corrections 6/2015-6/2020
Role: Principal Investigator
Dynamic Modeling and Machine learning for issues at the interface of health and justice. \$368,000.

Osgood, Nathaniel (PI) (2016 - 2019). Discrete Choice Smoker Survey Data from the University of Saskatchewan - Data Use Agreement, 14000 (USD).

National Institutes of Health. 14000 (USD) to Osgood, Nathaniel. Discrete Choice Smoker Survey Data from the University of Saskatchewan

Osgood, Nathaniel (PI) (2016 - 2019). Healthy Pregnancy App, 61000 (CAD). Saskatchewan Prevention Institute. 61000 (CAD) to Osgood, Nathaniel. Android and iPhone Apps (and associated server infrastructure) to support women in healthy pregnancies.

Saskatchewan Health Research Foundation (Establishment Grant; T. Katapally PI)
Smart Active Living Policy. 9/1/2016-8/31/2019
Role: Co-Applicant
Use of smartphones to assess active living.
Co-applicants: Tremblay M., Larouche R., Osgood N., Longo J., Rainham D., Leatherdale S., Ferguson L. \$279,220.

Osgood, Nathaniel (PI) (2016 - 2018). A Combined Bio-Statistical and Behavioral Approach to Understanding Outcomes in Patients Living with HIV in Saskatchewan, 22476 (CAD). Saskatchewan Health Authority. 22476 (CAD) to Osgood, Nathaniel.

United States National Institutes of Health NIH (Bruch, PI) 7/1/2014-6/30/2019
R25
Dynamic Systems Science Modeling for Public Health
Role: Co-author, consultant (due to late-discovered restrictions preventing foreign Co-Is and PIs)
Joint work Elizabeth Bruch and Ross Hammond, teaching and maintaining electronic versions of week-long courses teaching cross-methodology Systems Science. US\$1,021,403.

Saskatchewan Health Research Foundation (Targeted Collaborative Innovation Development Grant; A. Wong PI)
9/1/2016-8/31/2018.
Role: Co-Applicant
A Combined Bio-Statistical and Behavioral Approach to Understanding Outcomes in Patients Living with HIV in Saskatchewan. Use of longitudinal biostatistical analysis and for understanding patient progression, and smartphones to assess patient characteristics and infer adherence categories.
Co-applicants: Joy J., Hennink M., Feng C., Harrigan R., Osgood N., Reed J., Werber D., Rodger D., Diener T., Graham H. \$73,182.

Morgan, Debra (PI) & Andrew Kirk, Haizhen Mou, Megan O'Connell, Nathaniel Osgood, Jacqueline Quail, Noelle Rohatinsky, Norma Stewart (2016 - 2023). Design and evaluation of integrated primary health care practices for dementia in rural and remote settings, 2336491 (CAD). Foundation Grant, Canadian Institutes of Health Research.

Morgan, Debra (PI) & Andrew Kirk, Haizhen Mou, Megan O'Connell, Nathaniel Osgood, Jacqueline Quail, Noelle Rohatinsky, Norma Stewart (2016 - 2023). Matching Funds - Design and evaluation of integrated primary health care practices for dementia in rural and remote settings proposal, 140000 (CAD). College of Graduate and Postdoctoral Studies.

Morgan, Debra (PI) & Andrew Kirk, Haizhen Mou, Megan O'Connell, Nathaniel Osgood, Jacqueline Quail, Noelle Rohatinsky, Norma Stewart (2016 - 2023). Matching Funds - Design and Evaluation of Integrated Primary Health Care Practices for Dementia in Rural and Remote Settings, 350000 (CAD). College of Medicine.

O'Connell, Megan (PI) & Andrew Kirk, Haizhen Mou, Nathaniel Osgood, Jacqueline Quail, Noelle Rohatinsky, Norma Stewart (2016 - 2023). Matching Funds - Matching Funds - Design and evaluation of integrated primary health care practices for dementia in rural and remote settings proposal, 59500 (CAD). College of Arts and Science.

Morgan, Debra (PI) & Andrew Kirk, Haizhen Mou, Megan O'Connell, Nathaniel Osgood, Jacqueline Quail, Noelle Rohatinsky, Norma Stewart (2016 - 2023). Matching Funds - Design and evaluation of integrated primary health care practices for dementia in rural and remote settings proposal, 100000 (CAD). Office of the Vice-President Research.

Osgood, Nathaniel (PI) (2016 - 2018). Stocking Hygeia's Toolbox: Cross-Leveraging Computational, System and Data Science in Support of Computational Epidemiology, 9830 (CAD). President's NSERC Fund, Office of the Vice-President Research. 9830 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) & Roland Dyck (2016 - 2017). Simulation Modelling Internship, 20500 (AUD). The Sax Institute. 20500 (AUD) to Osgood, Nathaniel.

Schneider, Kevin (PI) & Nathaniel Osgood, Kevin Stanley (2016 - 2017). Feasibility/Pilot Study of the iEpi (Epidemiological) Mobile Phone Application, 50105 (CAD). Alberta Health Services.

Osgood, Nathaniel (PI) (2016). Developing Capacity for Population Health Modelling for Public Health Action, 9992.38 (CAD). Public Health Agency of Canada. 9992.38 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2015 - 2017). Assessment and Intervention Utilizing the Neurorelational Framework's Three Clinical Steps, 25833.33 (CAD). Interdisciplinary Training Institute, LLC. 25833.33 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2015 - 2017). Public Health Response to Outbreaks of Vaccine-Preventable Diseases: Evaluation of Immunization Campaigns as an Outbreak Response Measure, 71020.9 (CAD). University of Alberta. 71020.9 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2015 - 2020). Predictive Analytics and Community Safety Research, 297985 (CAD). Ministry of Justice Corrections and Policing. 297985 (CAD) to Osgood, Nathaniel.

Vatanparast, Hassanali (PI) & Anne Leis, Nathaniel Osgood, Michael Szafron, Louise Humbert, Nazeem Muhajarine, Rachel Engler-Stringer (2015 - 2018). An Evaluation of the Impact of Healthy Start-Depart Santé Program, 266076 (CAD). Population-Level Nutrition Intervention Initiative, Heart

and Stroke Foundation of Canada. The Impact of Healthy Start-Départ Santé intervention on improving dietary intake of 3-5 year old children attending childcare centers in Saskatchewan and New Brunswick.

Bowen, Rudy (PI) & Nathaniel Osgood, Kevin Stanley, Marilyn Baetz (2015 - 2017). Smartphone-Enabled Assessment of Mood Instability, Depression and Suicidal Thoughts Among Psychiatric Inpatients at Royal University Hospital, 25000 (CAD). Royal University Hospital Foundation.

Waldner, Cheryl (PI) & Nathaniel Osgood, Kevin Stanley, Wanda Martin, Juxin Liu, Cordell Neudorf, Scott Bell (2015 - 2017). Exploring New Technologies to Support Investigation of Foodborne Disease, 39800 (CAD). Collaborative Innovation Development Grant, Saskatchewan Health Research Foundation. Use of iEpi for faster detection and localization of foodborne illnesses via on wireless mobile device based sensing, crowdsourcing, and surveys.

Engler-Stringer, Rachel (PI) & Kevin Stanley, Nathaniel Osgood, Nazeem Muhajarine, Hassanali Vatanparast (2015 - 2017). Nutrition Inequity in the Inner City Using Smartphones to Study Diet and Food Access, 40000 (CAD). Collaborative Innovation Development Grant, Saskatchewan Health Research Foundation.

Osgood, Nathaniel (PI) (2013 - 2014). Implementing the Python and the Scala Versions of the Model and Further Work on Anylogic Model; A Comparison of Software Environments for Agent-Based Models Exploring Inequality, Complexity and Health, 10259 (USD). University of Michigan. 10259 (USD) to Osgood, Nathaniel.

“Using smartphones to improve the clinical management and outcomes of women with gestational diabetes: a pilot study” Principal Investigator: J. Newstead-Angel. Co-investigators: R. Dyck, **N. Osgood**, K. Stanley. \$15,000. Department of Medicine, University of Saskatchewan. Awarded 4/2013.

“Smartphone-based Telemetry for Analysis of Housing Relocation Impacts”. Co-Principal Investigators: **N. Osgood**, J. Brooks-Gunn, E. Gaumer, K. Stanley. Network on Inequality Complexity in Health Support. \$20,000, awarded 07/2011.

Schneider, Kevin (PI) & Nathaniel Osgood (2014 - 2017). C7709 - Campaign Evaluation Test Bed, 124552 (USD). Dana-Farber Cancer Institute. Testbed of large-scale tobacco messaging surveillance mechanisms, understanding the effects of tobacco messaging and social networks on tobacco-related cognitions and behaviours.

Osgood, Nathaniel (PI) (2014 - 2017). C7693 - Advance Statistical Modeling on Health Behaviour Decision Making and Health Disparities, 64375 (USD). National Institutes of Health. 64375 (USD) to Osgood, Nathaniel.

Penz, Erika (PI) & Christopher Hergott, Nathaniel Osgood, Donna Goodridge (2014 - 2018). G21845 – Cost Effectiveness of Lung Cancer Screening in Saskatchewan - A Microsimulation Modeling and Saskatchewan Specific Costs of Lung Cancer Diagnosis and Management, 119817 (CAD). New Investigator Establishment Grant, Saskatchewan Health Research Foundation.

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

Osgood, Nathaniel (PI) (2014 - 2015). G22001 - Internship for Weicheng Qian: Dynamic Modeling with Empirical Data for Hydropower Decision Support, 30000 (CAD). Accelerate Internship Program, Mitacs. 30000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2013 - 2014). C7447 - Agreement for Project, AnyLogic, Python and Scala Models, 10000 (USD). Columbia University. 10000 (USD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2014 - 2015). C7117 - Articles of Agreement Regarding Project, Population Health Modelling for Public Health Action, 16465.9 (CAD). Public Health Agency of Canada. 16465.9 (CAD) to Osgood, Nathaniel.

Muhajarine, Nazeem (PI) & Nathaniel Osgood, Kevin Stanley (2014 - 2018). G20886 - A Step Towards Creating Active Urban Communities: Informing Policy by identifying and Mapping Locations of Seasonal Activity Accumulation, 284569 (CAD). Operating Grant, Canadian Institutes of Health Research.

Osgood, Nathaniel (PI) (2012 - 2013). G20863 - Canadian Regulatory Veterinary Epidemiology Network;, 10673.15 (CAD). University of Prince Edward Island. 10673.15 (CAD) to Osgood, Nathaniel.

Public Health Agency of Canada (**Osgood**, PI)

3/2014-12/2014

Role: Principal Investigator

Proposal to increase Population health modelling for public health action capacity for the Science Integration Division. Long Form Contract. \$16,466.

Osgood, Nathaniel (PI) (2013 - 2014). G20283 - Journal Article - Temporal Aggregation Impacts on Epidemiological simulations Employing Microco..., 1000 (CAD). Publications Fund - Publication Costs, Office of the Vice-President Research. 1000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2012). C5905 - NICH Proposal: A Comparison of Software Environments for Agent-Based Models Exploring Inequality, Complexity and Health, 5000 (USD). University of North Carolina. 5000 (USD) to Osgood, Nathaniel.

Stanley, Kevin (PI) & Nathaniel Osgood (2012 - 2013). G18369 - NSERC CGSM Scholarship for Dylan Knowles, 17500 (CAD). Postgraduate Scholarships Program, Natural Sciences and Engineering Research Council of Canada.

Osgood, Nathaniel (PI) (2011 - 2012). C5728 - Enhancing Decision Support Modeling Methods To Improve Stroke Policy Decision Making, 70000 (USD). University of North Carolina at Chapel Hill. 70000 (USD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2011 - 2012). G16814 - Dynamic Modeling for Health Policy Workshop, 10000 (CAD). Advancing Urban Health. 10000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2011). C5469 - Dissertation Analysis Using Vensim Model, 5750 (USD). University of North Carolina at Chapel Hill. 5750 (USD) to Osgood, Nathaniel.

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

Osgood, Nathaniel (PI) (2011 - 2012). G16530 - MITACS Accelerate Internship for Mahshid Atapour: PLC Design for Wastewater Treatment System, 30000 (CAD). ACCELERATE Internship, Mprime Network. 30000 (CAD) to Osgood, Nathaniel.

Napper, Scott (PI) & Philip Griebel, Suresh Tikoo, Murray Woodbury, Andrew Potter, Cheryl Waldner, Nathaniel

Osgood (2011 - 2013). G16200 - Development of an Oral Vaccine for Chronic Wasting Disease, 309700 (CAD). PrioNet Canada.

Osgood, Nathaniel (PI) (2011 - 2016). G15915 - Stocking Hygeia's Toolbox: Methodological Innovation in Support of Computation Epidemiology, 70000 (CAD). Discovery Grant - Individual, Natural Sciences and Engineering Research Council of Canada. 70000 (CAD) to Osgood, Nathaniel.

“Group Model Building Content Management Platform & Participatory Research Evaluation”. Principal Investigator: **Osgood, N.** Wellesley Institute Grant. \$5,000 (2010), \$5,000 (2011). *Partial support for graduate student time.*

Osgood, Nathaniel (PI) (2010). C5026 - Dynamic Modelling, 9000 (CAD). Public Health Agency of Canada. 9000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2010 - 2015). G13717 - Confronting the Challenges of Tuberculosis and Type 2 Diabetes in Saskatchewan, 25000 (CAD). Lupina Foundation. 25000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2009 - 2010). G14294 - Journal Article - Current Crisis of Artifact of Surveillance: Insights into Rebound Chlamydia Rates from Dynamic Modelling, 1265 (CAD). Publications Fund - Publication Costs, Office of the Vice-President Research. 1265 (CAD) to Osgood, Nathaniel.

Potter, Andrew (PI) & Hugh Townsend, Joyce Wilson, Volker Gerdts, Jo-Anne Dillon, Nathaniel Osgood, Hyun Lim, Jan van den Hurk, Philip Griebel (2008 - 2013). G10759 - SHRF Team Grant entitled “Research Alliance for the Prevention of Infectious Diseases (RAPID)”, 2416500 (CAD). Health Research Team Grant, Saskatchewan Health Research Foundation.

“Hygeia's Toolbox: Computation in Support of Public Health Decision Making and Insight”. Principal Investigator: **N. Osgood.**, NSERC Discovery support. \$14,000 per annum, 04/2009-04/2010. *No cost extension to 2011.*

Osgood, Nathaniel (PI) (2009 - 2011). G12414 - Hygeia's Toolbox: Computation in Support of Public Health Insight and Decision Making, 15000 (CAD). Discovery Grant - Individual, Natural Sciences and Engineering Research Council of Canada. 15000 (CAD) to Osgood, Nathaniel.

Chad, Karen (PI) & Cordell Neudorf, Gordon Zello, William Bingham, Nancy Gyuresik, Louise Humbert, Scott Stone, Carol Rodgers, Barbara von Tigerstrom, Nazeem Muhajarine, Bruce Reeder, Syed Shah, Jennifer Poudrier, Nathaniel Osgood, Carol Henry, Susan Fowler-Kerry, Linda Wason-Ellam, Joel Lanovaz, Adam Baxter-Jones (2008-2010). G11360 - SHRF Research Group

Development Grant - Obesity Research Group, 50000 (CAD). Health Research Group Grant, Saskatchewan Health Research Foundation.

Osgood, Nathaniel (PI) (2007 - 2010). G10550 - CIHR RPP Doctoral Research Award for David Vickers Supervisor Nathaniel Osgood (PI) "Social Networks and the Transmission of Infectious Diseases: The Implications for the Prevalence and Virulence of Sexually Transmitted Infections", 33000 (CAD). Doctoral Research Award, Canadian Institutes of Health Research. 33000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2007 - 2008). G9962 - New Faculty Graduate Student Support Program, 15000 (CAD). University of Saskatchewan. 15000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2005 - 2008). G8558 - New Faculty Start-up Funds from Department - Multi-paradigm simulation languages and frameworks: Design, analysis and implementation, 20000 (CAD). Start-Up Funds, College of Arts and Science. 20000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2006 - 2009). G8375 - Model-Based Approaches for Enhancing Wireless Sensor Network

Usability, Programmability, Reliability and Efficiency, 54000 (CAD). Discovery Grant - Individual, Natural Sciences and Engineering Research Council of Canada. 54000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2006 - 2007). G8306 - Laboratory for Application--Driven Wireless Sensor Networks, 25000 (CAD). Research Tools and Instruments, Natural Sciences and Engineering Research Council of Canada. 25000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2005 - 2007). G7990 - VP Academic Start-up Funds, 5000 (CAD). University of Saskatchewan. 5000 (CAD) to Osgood, Nathaniel.

Osgood, Nathaniel (PI) (2005 - 2010). G7991 - Capital Equipment Start-up Funds, 25871 (CAD). New Faculty

"IPHRC Indigenous Peoples' Health Research Centre: Network Environment for Aboriginal Health". Principal Investigators: Hampton E., Tait C., Bourassa, C. Co-investigators: Anderson, M.; Beatty; B. , Chad, K.; C Dell, R. Dyck, J. Episkenew, W. Ermine, M. Hampton, B. Jeffery, N. Muhajarine, N. **Osgood**, P. Petrucka, J. Poudrier, R. Roberts, R. Sinclair, L. Williams. CIHR support. \$1,714,899, 07/2007-07/2010.

"Model-Based Approaches for Enhancing Wireless Sensor Network Usability, Programmability, Reliability and Efficiency", **Osgood, N.**, \$18,000 per annum, NSERC (Discovery), March 2006-March 2009.

"Laboratory for Application-Driven Wireless Sensor Networks", Principal Investigator: **Osgood, N.**, \$25000, NSERC (RTI), 1 year, \$25,000. Single award.

Osgood, Nathaniel (PI) (2005 - 2007). G7985 - Simulation-Based Studies of Emergent Behavior in Complex Systems, 7326.53 (CAD). College of Arts and Science. 7326.53 (CAD) to Osgood, Nathaniel

“Electronics Laboratory for Power-Harvesting Wireless Sensor Networks”, Principal Investigator: **Osgood, N.** VP Academic – Capital Equipment Startup Basic Equipment Allocation, \$12,000. Single award.

“Tools for Simulation, Visualization and Sensing”, Principal Investigator: **Osgood, N.** \$13,871, VP Academic – Capital Equipment Supplement. Single award.

“Electronics Laboratory for Power-Harvesting Wireless Sensor Networks”, Principal Investigator: **Osgood, N.** VP Academic – Start-up Funds (Operational), \$5,000. Single award.

23. Artistic Exhibitions or Performances

None

24. Professional Practice

- During the 2021-2022 academic year, I provided multiple lines of support providing regular reporting using our cross-linked Bayesian Machine Learning (Particle Filtering and Particle MCMC) and dynamic modeling
 - Service to the Saskatchewan Health Authority and Saskatchewan Ministry of Health
 - Service to Public Health Agency of Canada for reporting for all of Canadian provinces
 - Service to Federal Agency Indigenous Services Canada for reporting for First Nations Services in 6 provinces
- Beyond the above, for all years covered here, service to the Saskatchewan Health Authority providing advising on multiple lines of simulation modeling work.
- By request of the City of Saskatoon’s Mayor’s Office, Advising Mayor Clark of Saskatoon and select advisors (September 15, 2021).
- By request of the City of Regina’s Mayor’s Office, Advising Mayor Masters of the City of Regina (October 8, 2021).
- UKPRP Scientific Advisory Board for Scoring and Adjudicating Grant Proposals.
- Member, Mathematics for Public Health Scientific Advisory Board.
- Member, The Global South Artificial Intelligence for Pandemic, Epidemic, Preparedness & Response (AI4PEP) Board of Trustees.
- Joint organizer (with Jude Kong, York University) of Mini-Workshop on Artificial Intelligence for Public Health at CAIMS 2022.
- Delivered Invited talk “Academic Integrity, Honesty, and Misconduct”. Sponsor and Audience: University of Saskatchewan Graduate Student Association (GSA). November 24, 2021.
- Nathaniel Osgood, “AI, Machine Learning & Data Science”. Module Delivered as Part of my Co-Organized Short Course “Introduction to AI4PH”. October 30, 2023.
- Nathaniel Osgood, “AI, Machine Learning & Data Science”. Module Delivered as Part of the Summer AI4PH Institute in July of each of 2021, 2022, and 2023.
- Through my extensive Youtube lectures and associated resources on Systems Science and Health, Systems Data Science, on Software Engineering, and a growing collection of my Applied

Category Theory videos. For the timeframe covered here, these videos experienced just over 235,000 additional video views and over 1,300 new subscribers.

- Directed and closely oversaw architecting, design and implementation of the high Security, high-performance infrastructure for the Saskatchewan Police Policing Analytics Laboratory. This centre plays a central role in our growing work at the nexus of health, justice, and social services issues.
- Fall 2016-Fall 2020, I served in a particularly high responsibility capacity as Lead Methodologist (then Chief Research Advisor) for the Saskatchewan Centre for Patient-Oriented Research (SCPOR). Over the years, position has entailed a significant load of coordination, proposal writing, presentations, integration of understanding from diverse methodologists and practitioners.
- Since 2021, Service in a consultative (rather than high responsibility) version of as Chief Research Advisor .
- Since 2010 (but with a break in 2020 and 2021 for my pandemic secondment to the health system and its immediate aftermath, I serve as the organizer for a highly popular annual series of international bootcamps on systems science. Many of these have been held around the world (University of New South Wales, Flinders University, the Sax Institute, Sydney University and Deakin University, all in Australia; UCLA, University of Minnesota and UNC/NCSU in the United States; and at the U of S. The 2014 tutorials drew 24 non-U of S participants, 18 from outside of Canada, and 4 from outside North America. The 2013 tutorials (renamed the Agent Based Modeling Bootcamp and Incubator for Health Researchers) drew 29 participants (10 international). The 2012 tutorials likewise drew 17 participants (9 international), and were drawn from 3 continents. The 2011 tutorials (renamed the Agent Based Modeling Bootcamp for Health Researchers) brought in 17 non-U of S participants, 11 of them international and spread from over 4 continents. The 2010 tutorials brought in 8 non-U of S participants, 2 international, and drawn from 2 continents.
- The 4 day June 2015 bootcamp (“Dynamic Modelling for Health Service Networks: What, Why & How”) was specially commissioned by the Saskatchewan Ministry of Health, and brought together over 30 participants from the provincial level (Provincial Ministry of Health, e-Health Saskatchewan, Health Quality Council) as well as the regional levels (attendees from most of Saskatchewan’s health regions).
- Through my extensive Youtube lectures and associated resources on Systems Science and Health, Systems Data Science, on Software Engineering, and a growing collection of my Applied Category Theory videos. For the timeframe covered here, these videos experienced just over 235,000 additional video views and over 1,300 new subscribers.

- 2016-2017

Taught Co-taught 5-day University of Michigan Graduate Summer School course on complex systems modeling. July 11-15, 2016.

Program Co-Chair. Social Computing, Behavioral Modeling and Prediction Conference 2017. *(This is a well-established conference founded in 2008, and which links researchers from a wide variety of backgrounds, but particularly Computer Scientists and Social and Behavioural Scientists).*

Organizer, Agent-Based Modeling Bootcamp and Incubator for Health Researchers 2016.

2015-2016

Taught 5-day bootcamp on Agent-Based Modeling for Public Health Policy at Sydney University, May 9-13th, 2016.

Taught 4-day bootcamp on Agent-Based Modeling for Public Health Policy at Public Health Agency of Canada, March 2016.

Taught 5-day bootcamp on Agent-Based Modeling for Public Health and Veterinary Medicine at University of Minnesota, February 22-26, 2016.

Taught 5-day Master Class in Simulation Modeling with focus on Health Economics, Deakin University, Melbourne, Australia. November 9-14, 2015.

Taught 4-day Master Class in Modeling and Chronic Disease Across the Care Continuum", Deakin University, Melbourne, Australia. November 17-20, 2015.

Program Co-Chair. Social Computing, Behavioral Modeling and Prediction Conference 2016. *(This is a well-established conference founded in 2008, and which links researchers from a wide variety of backgrounds, but particularly Computer Scientists and Social and Behavioural Scientists).*

Organizer, Agent-Based Modeling Bootcamp and Incubator for Health Researchers 2015.

Co-chair, Simulation Modeling and Systems Science in Implementation Research Workshop, United States National Institutes of Health (National Heart Lung and Blood Institute, Center for Translational and Implementation Science), July 8, 2015

2014-2015

Program Co-Chair. Social Computing, Behavioral Modeling and Prediction Conference. 2015.

Organizer, Agent-Based Modeling Bootcamp and Incubator for Health Researchers 2014.

Peer reviewer, Tenure and Promotion Case of Assistant Professor Dr. Alex Cook, Department of Statistics and Applied Probability, National University of Singapore. 2014.

Session Chair. Social Computing, Behavioral Modeling and Prediction Conference 2015.

Session Chair. Winter Simulation Conference 2015.

2013-2014

Organizer, Agent-Based Modeling Bootcamp and Incubator for Health Researchers 2013.

Organizer 4th Annual Workshop on Dynamic Modeling for Health Policy: Cross-Leveraging Dynamic Modeling and Digital Epidemiology (July 16-18, 2013).

Program Committee, ACM SIGKDD Workshop on Healthcare Informatics 2014

Adjudication Committee for Junior Lupina Health Modeling Prize

2012-2013

Organizer, Agent-Based Modeling bootcamp for Health Researchers 2012.

Adjudication Committee for Junior Lupina Health Modeling Prize

2011-2012

Organizer, Agent-Based Modeling Bootcamp for Health Researchers 2011 (August 22-26, 2011).

Organizer 3rd Annual Workshop on Dynamic Modeling for Health Policy: Understanding Social Determinants of Health & Reducing Health Inequities (July 18-20, 2011; funded \$10,000 by the Wellesley Institute, and \$5,000 from the Lupina Foundation).

Continued serving as first appointed Fellow of the Wellesley Institute (September 2010-Present).

Adjudication Committee for Junior Lupina Health Modeling Prize

Chair, Adjudication Committee for Senior Lupina Health Modeling Prize

Consultant, City of Calgary, Corporate Economics

2010-2011

Organizer, Systems Modelling For Health Practitioners: A Hands-On Introduction Tutorials. (July 23-24, 2010)

Chair, 2nd Annual Workshop on Dynamic Modeling for Health Policy: Infectious and Chronic Disease Interactions (July 20-22, 2010; funded over \$14,000 by the Lupina Foundation and Public Health Agency of Canada.)

Serving as first appointed Fellow of the Wellesley Institute (September 2010-Present) Reviewer, Lupina Foundation (2009)

Paper reviewer, System Dynamics Review.

Adjudication Committee for Junior Lupina Health Modeling Prize (two papers reviewed).

Solicited by the United States Centres for Disease Control as a Public Reviewer for paper “Are Coverage and Quality Enough? A Dynamic Systems Approach to Health Policy.” (Specially solicited peer review for work designated as having sufficiently “influential scientific information” to warrant pre-submission peer review by selected experts, prior to submission to journal *Health Affairs*).

Paper reviewer, for Winter Simulation Conference 2011 (2 papers), Tropical Medicine & International Health (joint with Roland Dyck), Sexually Transmitted Infection (delegated to Doctoral student David Vickers).

Grant Reviewer for NSERC Discovery Grant (1 review, 7-8 hours).

Adjudication Committee for Junior Lupina Health Modeling Prize

Chair, Adjudication Committee for Senior Lupina Health Modeling Prize

Consultant, City of Calgary, Corporate Economics

2009-2010

Organizer, 1st Annual Lupina Health Policy Workshop: Chronic Disease & Obesity (July 22-24, 2009; over \$25,000 in NIH Funding plus \$5,000 in funding from the Lupina Foundation).

Adjudication Committee for Junior Lupina Health Modeling Prize

2008-2009

Paper reviewer, Systems Research & Behavioral Science.

Abstract reviewer for Biennial Meeting of the Society for the Study of Human Development, 2009.

Paper reviewer, System Dynamics Review.

Adjudication Committee for Junior Lupina Health Modeling Prize (two papers reviewed).

Solicited by the United States Centres for Disease Control as a Public Reviewer for paper “Are Coverage and Quality Enough? A Dynamic Systems Approach to Health Policy.” (Specially solicited peer review for work designated as having sufficiently “influential scientific information” to warrant pre-submission peer review by selected experts, prior to submission to journal *Health Affairs*).

2007-2008

Adjudication Committee for Junior Lupina Health Modeling Prize (two papers reviewed).

Paper reviewer, System Dynamics Review.

Paper reviewer, 26th International Conference of the System Dynamics Society.

Referee for Diabetes UK grant proposal.

Reviewer for MITACS ACCELERATE Research Internship program proposal.

Grant reviewer, Ontario Problem Gambling Research Centre.

2006-2007

Paper reviewer, High Performance Computing Systems 2007.

Invited Participant, Complex Systems Approaches to Public Health. Ann Arbor, Michigan. May 30-31, 2007. Sponsor: United States National Cancer Institute.

Invited Participant, PHAC-MITACS Joint Symposium on Modeling Sexually Transmitted and Blood-Borne Infections. Banff, August 10-12, 2007. Sponsor: Public Health Agency of Canada & MITACS.

Invited Participant, Systems Thinking in Public Health. Bethesda, Maryland. May 8, 2006. Sponsor: United States National Institutes of Health, United States National Cancer Institute.

Paper reviewer, System Dynamics Review.

Paper reviewer, Arthritis Care & Research.

Paper reviewer, 25th International Conference of the System Dynamics Society.

Stream Organizer (Complexity/Agent-Based Models/Nonlinear Dynamics Stream), 25th International Conference of the System Dynamics Society.

Session Chair, 25th International Conference of the System Dynamics Society.

Grant Proposal reviewer, Science Foundation Ireland.

2005-2006

Paper reviewer, 24th International Conference of the System Dynamics Society.

Stream Organizer (Complexity/Agent-Based Models/Nonlinear Dynamics Stream), 24th International Conference of the System Dynamics Society.

Session Chair, 24th International Conference of the System Dynamics Society.

2004-2005

Paper reviewer, 23rd International Conference of the System Dynamics Society.

Stream Organizer (Complexity/Agent-Based Models/Nonlinear Dynamics Stream), 23rd International Conference of the System Dynamics Society.

Session Chair, 23rd International Conference of the System Dynamics Society.

25. Consulting Work Undertaken

Krueger Consulting. Advising on COVID-19, Chronic Kidney Disease/End Stage Renal Disease and multipathogen (COVID-19, Influenza, and Respiratory Syncytial Virus) modeling for the province.

Saskatchewan Ministry of Health (2015-2017). Consulting on Emergency Room Waiting Times & Patient Flow Initiative

Alberta Ministry of Health and Alberta Health (2015). Advice on mobile-technology based health surveillance systems. Now transitioning to a research project.

AnyLogic Corporation (2012-Present); advice on product evolution and adapting AnyLogic to the health & health care market

University of California Los Angeles (2014-Present); advice on Agent-Based modeling for childhood obesity

Guidance on Modeling and Sensing initiatives of the Neurorelational Framework / Interdisciplinary Training Institute (2015-Present)

City of Calgary (2010-2011).

26. Departmental and College Committees

2022-2023

Department of Computer Science

Undergraduate Committee

Internship co-coordinator

I served the Department of Computer Science Undergraduate Program by performing formal reassessments of a set of CMPT 370 Final Exams.

2021-2022

Department of Computer Science

Undergraduate Committee

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

Internship co-coordinator

2017-2018

College of Arts & Science

Academic Programs Committee, B.Sc.

Department of Computer Science

Undergraduate Committee

Internship co-coordinator

2016-2017

College of Engineering

Department of Computer Science Representative, College of Engineering.

Department of Computer Science

Undergraduate Committee

Internship co-coordinator

2015-2016

College of Engineering

Department of Computer Science Representative, College of Engineering.

Department of Computer Science

Undergraduate Committee

Internship co-coordinator

Department Head's Salary Advisory Committee

2014-2015

College of Graduate Studies & Research

Academic Programs Committee, Social Science (Serving as Science Representative)

Department of Computer Science

Undergraduate Committee

Internship co-coordinator

Department Head's Salary Advisory Committee

2013-2014

Department of Computer Science

Undergraduate Committee

Internship co-coordinator

2012-2013

Department of Computer Science

Undergraduate Committee

Internship co-coordinator

2011-2012

(On sabbatical)

2010-2011

College of Graduate Studies & Research

Equity Scholarship Committee

Department of Computer Science

Department Head's Salary Review Advisory Committee

Internship co-coordinator

2009-2010

College of Graduate Studies & Research

Equity Scholarship Committee

Department of Computer Science

Undergrad Curriculum Committee.

Commerce Committee.

Internship co-coordinator

2008-2009

Department of Computer Science

Undergrad Curriculum Committee.

Commerce Committee.

Faculty Search Screening Committee.

Software Engineering Curriculum Committee.

Internship co-coordinator

2007-2008

Department of Computer Science

Department Head's Salary Advisory Committee.

Software Engineering Curriculum Committee.

Internship co-coordinator

2006-2007

Department of Computer Science

Software Engineering Curriculum Committee.

Computer Engineering Committee.

Internship co-coordinator

2005-2006

Department of Computer Science

Faculty Search Screening Committee.
Prospective Commerce Minor Committee.
CMPT 100 Curriculum Committee.
Computer Engineering Committee.

27. University Committees

During the 2021-2022, and into the 2022-2023 academic year, I continued my invited service to our university by reporting regularly to the University's Pandemic Response Team.

2016-2017

Academic Council
Academic Programs Committee, Academic Council

2015-2016

Academic Council
Academic Programs Committee, Academic Council

2013-2014

Search Subcommittee, Tier 2 CRC in Predictive Analytics

2009-2010

Lupina Network Centre for Dynamic Modeling for Health Policy Network Centre of Excellence
Proposal Planning Group

28. Professional and Association Offices and Committee Activity Outside University

- Expert Advisory Committee and (separately) Establishing Reporting Standards for Systems Models, Office of Behavioral and Social Science Research, Office of the Director, National Institutes of Health (November 2014-Present).
- Expert Advisory Panel for San Diego Big Data Demonstration Project, Virginia Commonwealth University, with funding from the Robert Wood Johnson Foundation (March 2015-Summer 2017).
- Truth Campaign Expert Evaluation Advisory Panel, Truth Initiative (formerly, American Legacy Foundation) (2013-Present).

29. Public and Community contributions

- As a matter of personal service to our province, country and health system, I was formally seconded to the Saskatchewan Health Authority [SHA] and served as the full-time SHA-paid technical director of Province of Saskatchewan COVID-19 modeling for a 13-month period 3/5/2020-3/31/2021, reporting jointly to SHA & SK Ministry of Health [SKMoH]. My salary was paid by the SHA throughout this time. Within SHA, I directly built, oversaw, contributed to and guided parameterization&routine service delivery from 5 modeling lines informing decision-making across all Canadian provinces and in Australia. Via cross-leveraged particle filtering, stratified compartmental models and diverse data sources including wastewater, CEPHIL delivered daily SK COVID-19 situational analyses and short-term forecasts summer 2020-2022,

multiple per week for each CAN province for PHAC until 11/2021 and weekly to First Nations in 6 provinces via FNIHB through 3/2022. Our geospatially explicit, calibrated and extensively empirically parameterized hybrid ABM has since 3/2020 been used internally daily to inform SHA and SKMoH COVID-19 public health and capacity planning decision-making by the Yukon Territory & Australian Capital Territory. The impact of this (centrally COVID-19 related) delay was furthered by the fact that 6 of my laboratory trainees -- including 3 of my most capable and productive trainees -- were seconded to the SHA alongside me. This arrangement involved hundreds of presentations of our work both informal and formal, and meetings at least once and often more than once per week with the Province's topmost medical authority, the Chief Medical Officer of Saskatchewan. My laboratory's contractual work for SHA, PHAC and FNIHB continued for many months after my return from secondment.

- Much of our work offers value to public health agencies. Examples in this area are the following:
 - Ongoing work with partners from Alberta Health Services/U. Alberta concerning interventions to lower the burden of childhood infectious disease.
 - Ongoing work with Australian Capital Territories (ACT) around maternal-child impacts of Diabetes in Pregnancy in the ACT.
 - Work with the Saskatchewan Ministry of Justice and Ministry of Social Services on issues at the interface of health, social services and justice, such as suicide and the epidemic of opioid addiction and misuse.
 - Our work in 2014-2016 helping to guide several modeling projects for the Saskatchewan Ministry of Health for the Emergency Department Waiting Times and Patient Flow initiative.
 - Lectures providing advice on electronic data collection for Alberta Ministry of Health and Alberta Health Services
 - Continued work with and delivery of lectures and workshops for the Public Health Agency of Canada.
 - Through the circulation of research findings to the Community Acquired Infectious Disease Division in the Public Health Agency of Canada.
 - By circulation of papers analyzing tradeoffs between dynamic modeling techniques to Public Health Agency of Canada, and to program officers at the United States National Institutes of Health Office of Behavioral & Social Science Research and Institute on Child Health and Human Development.
 - My work in the health modeling area led to my solicitation by the CEO of the Saskatoon Health Region to conduct research in partnership with the Health Region (a partnership that formally initiated early following Health Region review and approval of two research projects for my co-supervised students Jin Zhang and David Vickers).
 - In my work with Saskatchewan TB Control, in order to strengthen TB prevention and control activities, including measures to assist in TB Control Case & Contact interviewing and in operations.
- Presentation to high school students "Computers and Health: Great Needs, Great Promise" through Digitized 2015.

Nathaniel Osgood Curriculum Vitae as of November 1, 2024

- Through my extensive and freely circulated online teaching materials (see above), which have garnered over 249,000 views and over 1250 subscribers as of September 2017 (see “Professional Practice”, above).
- Through my widely internationally attended bootcamps on Systems Science and Data Science methods in health and healthcare (see “Professional Practice”, above).
- Through my position as a coordinator with the Department of Computer Science Internship Program. This position requires site visits and consultations with the Saskatoon business community.
- Web application design, website design, and translation advising duties for three non-profit organizations. As of 2010, these were responsible for over 2.35 TB ($2.35 \cdot 10^{12}$ bytes) of traffic and over 135,000 viewing sessions per year.