

**SHELDON HOWARD JACOBSON**

Founder Professor of Computer Science  
Director, Simulation and Optimization Laboratory  
Director, Bed Time Research Institute  
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**SUMMARY**

Sheldon H. Jacobson is a Founder Professor in Computer Science, Director of the Simulation and Optimization Laboratory, and Founding Director of the Bed Time Research Institute at the University of Illinois at Urbana-Champaign. He holds appointments in Industrial and Enterprise Systems Engineering, Electrical and Computer Engineering, Mathematics, and the College of Medicine. He has a B.Sc. and M.Sc. in Mathematics from McGill University and a Ph.D. in Operations Research from Cornell University. He has served on the faculties at Case Western Reserve University (Weatherhead School of Management, 1988-1993), Virginia Tech (Industrial and Systems Engineering, 1993-1999), and the University of Illinois (1999-present). He served as a Program Director at the National Science Foundations (Engineering Directorate) from 2012-2014.

He has published 180 peer-reviewed articles, 11 book chapters, 48 conference proceeding papers, 29 professional/editorial publications, and delivered over 470 presentation, seminars and posters at conferences, universities, and research laboratories around the world. He has directed 23 Ph.D. dissertations and been awarded over \$5M of research support from the National Science Foundation and the Air Force Office of Scientific Research.

As the Director of the Bed Time Research Institute, he spearheaded the creation of two research videos (“A Healthy Collaboration: Pediatric Immunization and Operations Research”, “Aviation Security: Researching the Risk.”) and launched three websites ([bracketodds.cs.illinois.edu](http://bracketodds.cs.illinois.edu), [electionanalytics.cs.illinois.edu](http://electionanalytics.cs.illinois.edu), [drivingobesity.cs.illinois.edu](http://drivingobesity.cs.illinois.edu)), all designed to communicate the value of basic research through Broader Impact activities, and promulgate STEM activities for enhancing and growing a technically literate citizenry.

He has made several seminal research contributions, all focusing on applying operations research and advanced analytics to address societal problems of national interest. He launched the research field, aviation security analytics, demonstrating how probabilistic models, optimization, and artificial intelligence can be used to improve the performance of aviation security systems. His research on multi-level aviation security passenger screening at airports was the precursor to risk-based security, providing the foundational concepts that informed the design and implementation of TSA Precheck®. His contributions have been recognized with numerous awards, including a 2003 *Guggenheim Fellowship* and the 2018 *INFORMS Impact Prize*, given biennially to recognize widespread impact of operations research. His research on the design of pediatric vaccine formularies introduced the use of operations research in the pediatric immunization domain. His research on bridging obesity, transportation, and fuel consumption established the impact of transportation on obesity, providing the foundation for non-medical obesity interventions based on modes of transportation.

His research has been widely reported and communicated in the national press, including the *Washington Post*, the *Chicago Tribune*, the *Los Angeles Times*, and the *Boston Globe*, editorialized in the *New York Times*, and discussed in *Business Week*, *Forbes*, *Kiplinger*, and *The Osgood Files* on CBS radio. He has appeared on CNBC's *Street Signs* and *The Closing Bell*, MSNBC's *Weekends with Alex Witt*, *Washington Post Radio*, *CBS This Morning*, and *CBC Canada News* (television and radio), and *BBC World News* (television and radio).

He has been recognized with numerous awards, including the *INFORMS Impact Prize* (2018), *David F. Baker Distinguished Research Award* (IISE) (2017), *Award for Technical Innovation in Industrial Engineering* (IISE) (2010, 2013), the *Aviation Security Research Award* (Aviation Security International) (2002), the *IIE Outstanding Publication Award* (2009), the *Award for Excellence in the Teaching of Operations Research* (IISE Operations Research Division) (2011), the *INFORMS Impact Prize* (2018), and a *Guggenheim Fellowship* (2003). He is an elected Fellow of the Institute for Operations Research and the Management Sciences (INFORMS, 2013) and the Institute of Industrial and Systems Engineers (IISE, 2011).

His leadership acumen and technical expertise have been sought by both government and professional societies. He briefed personnel within the Office of Science and Technology Policy (in the executive Office of President George W. Bush) on 31 August 2002, on issues related to aviation security research and the cost and benefit of checked baggage screening strategies. He briefed the Advisory Committee on Immunization Practice (ACIP) on a web-site he co-developed for designing optimal pediatric vaccine formularies at their October 2001 meeting in Atlanta, Georgia. He has served on committees for the National Academies, including the National Research Council *Committee on Airport Passenger Screening: Backscatter X-Ray Machines* (2013-2015) and the National Academy of Medicine (NAM) *Standing Committee for the Centers for Disease Control and Prevention Division of Strategic National Stockpile* (2015-Present). He led the NSF-Funded workshop (May 2016), *Setting a Broader Impacts Innovation Roadmap*, in creating new pathways for enhancing Broader Impacts in the Engineering Directorate at the NSF. He served as the (elected) Treasurer for INFORMS (2015-2016).

## EDUCATION

- 1988 Ph.D. (Operations Research & Industrial Engineering) Cornell University,  
Dissertation Supervisor: Dr. L.W. Schruben
- 1986 M.S. (Operations Research & Industrial Engineering) Cornell University
- 1983 M.Sc. (Mathematics) McGill University, Thesis Supervisor: Dr. S. Zlobec
- 1981 B.Sc. (Mathematics) McGill University

## EMPLOYMENT

- 8/2006-Present Professor, Department of Computer Science, University of Illinois at Urbana-Champaign. Director, Simulation and Optimization Laboratory.
- 7/2012-8/2014 Program Director, Operations Research, National Science Foundation.
- 8/2002-8/2006 Professor, Willett Faculty Scholar, Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign.  
Director, Simulation and Optimization Laboratory.
- 6/1999-8/2002 Associate Professor, Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign.  
Director, Simulation and Optimization Laboratory.
- 8/1996-5/1999 Associate Professor, Department of Industrial & Systems Engineering, Virginia Tech. Director, Simulation and Optimization Laboratory.
- 8/1993-7/1996: Assistant Professor, Department of Industrial & Systems Engineering, Virginia Tech. Director, Simulation and Optimization Laboratory.

7/1988-6/1993: Assistant Professor, Department of Operations Research, Weatherhead School of Management, Case Western Reserve University.

### **APPOINTMENTS AND AFFILIATIONS**

College of Engineering, Department of Computer Science (Primary) (2006-Present)  
 College of Engineering, Department of Industrial & Enterprise Sys. Engineering (2006-Present)  
 College of Liberal Arts and Science, Department of Mathematics (2001-Present)  
 College of Medicine, Department of Pediatrics (2006-Present)

### **AWARDS AND RECOGNITIONS**

University of Illinois:

Associate, Center for Advanced Study, University of Illinois, 2002-2003.

Willett Faculty Scholar, College of Engineering, University of Illinois, 2002-2009.

*Aviation Security Research Award*, sponsored by Aviation Security International, International Air Transport Association, and Airports Council International, (with J.E. Kobza), 2002.

*Best Paper Award*, *IIE Transactions* Focused Issue on Operations Engineering, (with J.E. Kobza and A.E. Easterling), 2003.

*Guggenheim Fellowship*, John Simon Guggenheim Memorial Foundation, 2003.

*Operations Research Meritorious Service Award*, 2003.

*Award of Excellence* ("College or University" and "Video News Release" Categories) for "Aviation Security: Researching the Risk," 13<sup>th</sup> Annual Communicator's Award Competition, (with WILL-TV), 2006.

"List of Teachers Ranked as Excellent by their Students," IE410/CS481: Stochastic Processes and its Applications, Fall 2006, Fall 2007, Fall 2008, Fall 2010.

"List of Teachers Ranked as Excellent by their Students," IE413/CS482: Computer Simulation, Spring 2006, Spring 2007, Spring 2008, Spring 2010.

Finalist, INFORMS Health Applications Section Pierskalla Best Paper Award, 2004, 2007.

Semi-Finalist, Christopher Columbus Foundation Homeland Security Award, 2005, 2007, 2009.

*Outstanding IIE Publication Award*, Institute of Industrial Engineers (with L.A. McLay), 2009.

*Award for Technical Innovation in Industrial Engineering*, Institute of Industrial Engineers (with E.C. Sewell), 2010.

Finalist (Runner-Up), Christopher Columbus Foundation Homeland Security Award (Transportation and Border Security), 2010.

Fellow, Institute of Industrial Engineers, 2011.

Award for Excellence in the Teaching of Operations Research, Institute of Industrial Engineers Operations Research Division, 2011.

Honorable Mention, Best Paper Award, *Computational Optimization and Applications*, 2011.

Finalist, INFORMS Public Sector Operations Research (with D.M. King, E.C. Sewell), Best Paper Award, 2012.

Semi-Finalist, INFORMS Innovations in Analytics Award, 2012.

*Award for Technical Innovation in Industrial Engineering*, Institute of Industrial Engineers, 2013.

Fellow, Institute for Operations Research and the Management Sciences (INFORMS), 2013.

University of Illinois Office of Public Affairs, Award for Communications & Marketing Excellence – Media Relations, 2013.

Top-5 Papers (of 149) Published in *Journal of Global Optimization* in 2012 (Sewell, E.C., Sauppe, J.J., Morrison, D.M., Jacobson, S.H., Kao, G.K., 2012, "Minimizing Total Tardiness for the Single Machine with Sequence Dependent Setup Time Problem Using the BB&R Algorithm," *Journal of Global Optimization*, 54(4), 791-812).

Best Research Poster (First Place), Association of Program Directors in Internal Medicine (APDIM) Spring 2014 Conference, "Annual Rotation Schedules in 45 Seconds: Simplifying Life for an Internal Medicine Residency Program," coauthored with David R. Morrison, J. Taylor Fairbank, and Janet A. Jokela.

*David F. Baker Distinguished Research Award*, Institute of Industrial & Systems Engineers, 2017.

Grainger Engineering Breakthroughs Initiative's (GEBI) Founder Professor in Computer Science, 2017-2022.

*INFORMS Impact Prize* (with K.C. Fletcher, L.A. Albert, A.G. Nikolaev, A.J. Lee) for their contributions to risk-based aviation security and its impact on the design of TSA PreCheck, 2018.

Honorable Mention, INFORMS Public Sector Operations Research (with R. Swamy, D.M. King), Best Paper Award, 2018.

First Place, INFORMS Poster Competition (with R. Swamy, D.M. King), "Political Districting with Fairness Objectives: An Optimization-Based Framework."

Virginia Tech:

Best Paper Award, Industrial Simulation Track, 1997 European Simulation Multiconference, Istanbul, Turkey (with K.A. Sullivan, A.W. Johnson).

Application Award, 1998, Institute of Industrial Engineers Operations Research Division (with J.E. Kobza).

Dean's List for Teaching, Spring 1999.

Cornell University:

National Science and Engineering Research Council of Canada (NSERC) Graduate Scholarship (1983-1986).

FCAC (Province of Quebec) Graduate Fellow (1983-1984).

Forgivable Loan Program Award, General Electric Foundation (1986).

McGill University:

FCAC Graduate Fellow (1982-1983).

NSERC Graduate Scholarship (1981-1983).

NSERC Summer Undergraduate Research Fellowship (1980, 1981).

Great Distinction (1981), Wolvin Scholarship (1980), Faculty Scholar (1980), University Scholar (1979, 1981), McConnell Awards (1978, 1979).

Other: Second Place in Canada, Actuarial Exam #1 (1980).

## PROFESSIONAL AFFILIATIONS

Institute for Operations Research and the Management Sciences (INFORMS) (1988-Present)  
(Simulation Society, Computing Society, Health Care Applications Section)

Institute of Industrial Engineers (IIE) (1994-Present)

American Society for Engineering Education (ASEE) (1998-Present)

Society for Industrial and Applied Mathematics (SIAM) (2000-Present)

American Association for the Advancement of Science (AAAS) (2015-Present)

## PROFESSIONAL SERVICE AND ACTIVITIES

Associate Editor, *Operations Research* (2001-2005)

Guest Editor, *IIE Transactions* Special Issue on Homeland Security (2005-2006)

Senior Editor, *Flexible Services and Manufacturing* (2007-2009)

Editorial Board Member, *Journal of Transportation Security* (2007-Present)

Associate Editor, *Int'l Journal of Applied Metaheuristic Computing* (IJAMC) (2008-2016)

Focused Issue Editor, *IIE Transactions*, Operations Engineering and Analysis (2009-Present)

Associate Editor, *Operations Research for Health Care* (2011-2012)  
 INFORMS Speaker's Program (1997-Present)  
 Reviewer, *ACM Transactions on Modeling and Computer Simulation*, *Annals of Operations Research*, *Applied Mathematics and Computation*, *Complex Systems*, *Computers and Industrial Engineering*, *Discrete Event Dynamic Systems*, *European Journal of Operational Research*, *Health Care Management Science*, *IEEE Transactions on Automatic Control*, *IEEE Transactions on Evolutionary Computation*, *2001 IEEE CSS Conference*, *IIE Transactions*, *INFORMS Journal on Computing*, *Journal of Global Optimization*, *Journal of Heuristics*, *Journal of the Operational Research Society*, *Management Science*, *Mathematical and Computer Modelling*, *Mathematical Programming*, *Mathematics of Operations Research*, *Naval Research Logistics*, *Operations Research*, *Operations Research Letters*, *Production and Operations Management*, *SIAM Optimization*, *Simulation*, *Winter Simulation Conference*.  
 Invited Visiting Scholar, S.O.R.I.E., Cornell University (1989)  
 Reviewer, McGraw Hill Book Company (1994)  
 Treasurer, INFORMS College on Simulation (1994-1996)  
 Panelist, National Science Foundation, DMI-OR (1995)  
 Best Publication Award Committee, INFORMS College on Simulation (1997-1999) (Chair, 1998)  
 Industrial Affiliate Development Committee, INFORMS College on Simulation (1997)  
 Reviewer, Ohio Supercomputer Center (1989, 1991)  
 Reviewer, FCAR (Quebec Research Support Agency) (1994)  
 Reviewer, Air Force Office of Scientific Research (1995, 1998)  
 Reviewer, National Science Foundation EPSCoR Program (1996)  
 Reviewer, Army Research Office (1997)  
 Reviewer, National Science Foundation, Probability and Statistics (1998)  
 Reviewer, National Science Foundation, International Programs (1999)  
 Panelist, National Science Foundation, Exploratory Research on Eng. the Transport Ind. (2000)  
 Membership Committee, INFORMS College on Simulation (2000-2002)  
 Panelist, National Science Foundation, Career Awards, DMII (2001)  
 Panelist, National Science Foundation, 9/11 Panel, DMII (2002)  
 Reviewer, Interdisciplinary Contest in Modeling, Consortium for Math. & Its Applications (2003)  
 Committee Member, INFORMS George C. Nicholson Student Paper Competition (2003, 2004)  
 Chair, Best Paper Award Committee, *IIE Transactions* Focused Issue on Oper. Eng. (2003)  
 Reviewer, Cooperative Grants Program, U.S. Civilian R&D Foundation (2003)  
 Reviewer, National Science and Engineering Research Council of Canada (2003)  
 Panelist, Transportation Security Administration, Boeing USCAP Review Panel (2004)  
 Reviewer, METRANS Research Center (2005)  
 Committee Member, INFORMS Health Appl. Society, Bonder Student Scholarship (2006, 2007)  
 Participant, NSF Healthcare Systems Engineering Workshop (2006)  
 Reviewer, Centers for Disease Control and Prevention Panel Review (2006)  
 Panelist, World Technology Evaluation Center (WTEC), International Assessment of Rapid Vaccine Manufacturing Study Group (2006-2007, 2009-2010).  
 OR/MS Today Advisory Committee, INFORMS, (2007-2008)  
 Panelist, National Science Foundation, Career Awards, DMII (2004, 2005)  
 Panelist, National Science Foundation, CDI-Type I Preliminary Proposals (2008)  
 Panelist, National Science Foundation, Career Awards, CMII (2008, 2011, 2018)  
 Panelist, National Science Foundation, CMII (2009, 2010, 2011, 2012)  
 Panelist, National Science Foundation, CBET (2010)  
 Panelist, National Science Foundation, EFRI (2010)  
 Panelist, National Science Foundation, CMMI (2011) (two panels)  
 Panelist, National Science Foundation, IGERT (2011)

Panelist, National Science Foundation, CMMI (2012) (two panels)  
 Panelist, National Science Foundation, CMMI (2018)  
 National Science Foundation Liaison to INFORMS (2012-2014)  
 Council Member (Elected), INFORMS I-SIM (2014-2015)  
 Committee Member, National Research Council, Committee on Airport Passenger Screening:  
     Backscatter X-Ray Machines (2013-2015)  
 Committee Member, National Academy of Medicine (NAM) *Standing Committee for the Centers  
 for Disease Control and Prevention Division of Strategic National Stockpile* (2015-2017)  
 Treasurer (Elected), Institute for Operations Research and the Management Sciences  
 (INFORMS) (2015-2016).  
 Member, INFORMS Speakers Program Committee (2018-2019).  
 Review Committee, INFORMS Health Applications Society Pierskala Best Paper Award (2018).  
 Organizing Committee, National Academy of Medicine Workshop: *Medical Product Shortages  
 during Disasters: Opportunities to Predict, Prevent, and Respond* (2018).  
 Chair, INFORMS Liaison to NSF (2019-2020).

## EDUCATIONAL ACTIVITIES

### *Courses Taught at the University of Illinois*

IE310 Introduction to Operations Research (B.S.)  
 CS481/IE410 Stochastic Processes and its Applications (B.S./M.S.)  
 CS482/IE413 Computer Simulation (B.S./M.S.)  
 IE598 Special Topics in Stochastic Models and Simulation (Ph.D.)

### *Courses Taught at Virginia Tech*

ISE3414 Probabilistic Operations Research (B.S.)  
 ISE3424 Discrete Event Simulation (B.S.)  
 ISE5424 Computer Simulation (M.S./Ph.D.)  
 ISE6494 Advanced Simulation (M.S./Ph.D.)

### *Courses Taught at Case Western Reserve University*

OPRE425 Probability Theory in Operations Research (M.S./Ph.D.)  
 OPRE432 Computer Simulation (M.S./Ph.D.)  
 OPRE521 Queuing Theory (Ph.D.)  
 OPRE525 Advanced Topics in Simulation and Time Series (Ph.D.)  
 QUMM403 Managerial Statistics (MBA)  
 QUMM405 Management Science (MBA)

### *Courses Taught at Other Universities*

OR260 Introduction to Probability (Cornell University) (B.S.)  
 MATH111 Algebra and Trigonometry (McGill University) (B.Sc.)

### *Other Educational Activities*

#### *University of Illinois*

Faculty Advisor, Alpha Pi Mu (2002-2006)

#### *Virginia Tech*

Advisor, MCM Undergraduate Team (1995)  
 Faculty Advisor, INFORMS Student Chapter (1995-1996)

#### *Case Western Reserve University*

Faculty Advisor, ORSA/TIMS Student Chapter (1990-1993)  
 Faculty Representative, Omega Rho (1990-1993)  
 Faculty Coordinator, Student Recruitment Campus Visits by Faculty (1990-1993)  
 Faculty Coordinator (joint), Dept. Student Recruitment Open House (1990-1993)

## DEPARTMENTAL AND UNIVERSITY SERVICE

### *University of Illinois at Urbana-Champaign*

M&IE Strategic Planning (1999-2000)  
 M&IE Advisory Committee (Elected) (2000-2004)  
 M&IE Faculty Recruitment Committee (2000-2006)  
 M&IE Social Committee (2000-2006)  
 M&IE Undergraduate Program Committee (2004-2006)  
 M&IE Department Head Search (2004-2005)  
 C&EE Transportation Faculty Search (2005-2006)  
 CS Director of Development (2007-2008)  
 CS Promotion and Tenure (2006-Present)

#### *Virginia Tech*

Director, Simulation and Optimization Laboratory (1993-Present)  
 University Representative, Commonwealth Connection Tour (1996)  
 ISE Department, Computers/Networks/Software (1994-1995, 1998-1999)  
 ISE Department, Positioning Plan (1995)  
 ISE Department, Personnel (1995-1999) (Chairman 1996-1999)  
 ISE Department, Mentor Program Development (1995-1999)  
 ISE Department, Promotion and Tenure (1996-1999)  
 ISE Department, SCHEV Proposal Development (Chairman) (1996)  
 College of Engineering, Numerical Methods (1994-1995)

#### *Case Western Reserve University*

"Alumni Fund" Graduate School Telethon (1988-1989)  
 Creator/Editor/Writer, *OR NEWS*, Department Alumni Newsletter, Issues 1-4 (1989-1993)  
 Quality Management (1989-1993)  
 MBA Statistics and Management Science Curriculum (1988-1993)  
 Ph.D. Curriculum (1988-1993)  
 Seminar (1988-1991)  
 Student Recruitment (1990-1993)  
 Faculty Recruitment (1992-1993)  
 WSOM Computer Usage (1989-1993)  
 WSOM Research (1990-1992)

## **RESEARCH ACTIVITIES**

### *Papers in Archival Journals*

#### *Computer Simulation Methodology and Modeling*

1. Jacobson, S.H., Schruben, L.W., 1989, "Techniques for Simulation Response Optimization," *Operations Research Letters*, 8(1), 1-9.
2. Jacobson, S.H., Buss, A.H., Schruben, L.W., 1991, "Driving Frequency Selection for Frequency Domain Simulation Experiments," *Operations Research*, 39(6), 917-924.
3. Jacobson, S.H., 1993, "Variance and Bias Reduction Techniques for the Harmonic Gradient Estimator," *Applied Mathematics and Computation*, 55(2&3), 153-186.
4. Jacobson, S.H., 1994a, "Optimal Mean Squared Error Analysis of the Harmonic Gradient Estimators," *Journal of Optimization Theory and Application*, 80(3), 573-590.
5. Jacobson, S.H., 1994b, "Convergence Results for Harmonic Gradient Estimators," *ORSA Journal on Computing*, 6(4), 381-397.
6. Jacobson, S.H., 1994c, "Second Derivative Estimation Using Harmonic Analysis," *Annals of Operations Research*, 53, 507-531.
7. Jacobson, S.H., 1995a, "Analyzing the M/M/1 Queue in Frequency Domain Experiments," *Applied Mathematics and Computation*, 69(2&3), 185-194.
8. Jacobson, S.H., 1995b, "How Difficult is the Frequency Selection Problem?" *Operations Research Letters*, 17(3), 139-147.

9. Jacobson, S.H., Yucesan, E., 1995, "Intractability Results in Discrete Event Simulation," *Recherche Operationelle*, 29(3), 353-369.
10. Yucesan, E., Jacobson, S.H., 1996, "Computational Issues for ACCESSIBILITY in Discrete Event Simulation," *ACM Transactions on Modeling and Computer Simulation*, 6(1), 53-75.
11. Jacobson, S.H., 1997, "The Effect of Initial Transient on Steady State Simulation Harmonic Gradient Estimators," *Mathematics and Computers in Simulation*, 43(2), 209-221.
12. Yucesan, E., Jacobson, S.H., 1997, "The Complexity of Rapid Learning in Discrete Event Simulation," *IIE Transactions*, 29(9), 783-790.
13. Jacobson, S.H., Schruben, L.W., 1999, "A Harmonic Analysis Approach to Simulation Sensitivity Analysis," *IIE Transactions*, 31(3), 231-243.
14. Jacobson, S.H., Yucesan, E., 1999, "On the Complexity of Verifying Structural Properties of Discrete Event Simulation Models," *Operations Research*, 47(3), 476-481.
15. Vazquez-Abad, F.J., Jacobson, S.H., 2001, "Phantom Harmonic Gradient Estimators for Priority Queueing Systems," *INFORMS Journal on Computing*, 13(4), 345-359.
16. Jacobson, S.H., Yucesan, E., 2002, "Common Issues in Discrete-Event Simulation and Discrete Optimization," *IEEE Transactions on Automatic Control*, 47(2), 341-345.
17. Swisher, J.R., Jacobson, S.H., Yucesan E., 2003, "Discrete-Event Simulation Optimization Using Ranking, Selection, and Multiple Comparison Procedures: A Survey," *ACM Transactions on Modeling and Computer Simulation*, 13(2), 134-154.
18. Swisher, J.R., Hyden, P.D., Jacobson, S.H., Schruben, L.W., 2004, "A Survey of Recent Advances in Discrete Input Parameter Discrete-Event Simulation Optimization," *IIE Transactions*, 36(6), 591-600.
19. Smith, J.C., Jacobson, S.H., 2005, "An Analysis of the Alias Method for Discrete Random Number Generation," *INFORMS Journal on Computing*, 17(3), 321-327.

#### *Discrete Optimization Algorithms (Exact and Approximation)*

1. Jacobson, S.H., Solow, D., 1993, "The Effectiveness of Finite Improvement Algorithms for Finding Global Optima," *Zeitschrift fur Operations Research (ZOR) -- Methods and Models of Operations Research*, 37(3), 257-272.
2. Jacobson, S.H., Johnson, A.W., Sullivan, K.A., Fleischer, M.A., Kumar, A., 1997, "Metaheuristics for a Flexible Assembly System Design Problem," *Journal of Heuristics*, 3(2), 139-159.
3. Jacobson, S.H., Sullivan, K.A., Johnson, A.W., 1998, "Discrete Manufacturing Process Design Optimization Using Computer Simulation and Generalized Hill Climbing Algorithms," *Engineering Optimization*, 31, 247-260.
4. Fleischer, M., Jacobson, S.H., 1999, "Information Theory and the Finite-Time Behavior of the Simulated Annealing Algorithm: Experimental Results," *INFORMS Journal on Computing*, 11(1), 35-43.
5. Kumar, A., Jacobson, S.H., Sewell, E.C., 2000, "Computational Analysis of a Flexible Assembly System Design Problem," *European Journal of Operational Research*, 123(3), 453-472.
6. Sullivan, K.A. and Jacobson, S.H., 2000, "Ordinal Hill Climbing Algorithms for Discrete Manufacturing Process Design Optimization Problems," *Discrete Event Dynamical Systems*, 10(4), 307-324.
7. Vaughan, D., S.H. Jacobson, and D. Armstrong, 2000, "A New Neighborhood Function for Discrete Manufacturing Process Design Optimization Using Generalized Hill Climbing Algorithms," *ASME Journal of Mechanical Design*, 122(2), 164-171.
8. Sullivan, K.A., Jacobson, S.H., 2001, "A Convergence Analysis of Generalized Hill Climbing Algorithms," *IEEE Transactions on Automatic Control*, 46(8), 1288-1293.
9. Johnson, A.W., Jacobson, S.H., 2002a, "A Class of Convergent Generalized Hill Climbing Algorithms," *Applied Mathematics and Computation*, 125(2-3), 359-373.



10. Johnson, A.W., Jacobson, S.H., 2002b, "On the Convergence of Generalized Hill Climbing Algorithms," *Discrete Applied Mathematics*, 119(1-2), 37-57.
11. Orosz, J.E., Jacobson, S.H. 2002a, "Finite-time Performance Analysis of Static Simulated Annealing Algorithms," *Computational Optimization and Applications*, 21(1), 21-53.
12. Orosz, J.E., Jacobson, S.H., 2002b, "Analysis of Static Simulated Annealing Algorithms," *Journal of Optimization Theory and Application*, 115(1), 165-182.
13. Fleischer, M.A., Jacobson, S.H., 2002, "Scale Invariance Properties in the Simulated Annealing Algorithm," *Methodology and Computing In Applied Probability*, 4(3), 219-241.
14. Henderson, D., Vaughan, D.E., Jacobson, S.H., Wakefield, R.R., Sewell, E.C., 2003, "Solving the Shortest Route Cut and Fill Problem Using Simulated Annealing," *European Journal of Operational Research*, 145(1), 72-84.
15. Armstrong, D.E., Jacobson, S.H., 2003 "Studying the Complexity of Global Verification for NP-hard Discrete Optimization Problems," *Journal of Global Optimization*, 27(1), 83-96.
16. Jacobson, S.H., Yucesan, E., 2004a, "Global Optimization Performance Measures for Generalized Hill Climbing Algorithms," *Journal of Global Optimization*, 29(2), 173-190.
17. Venkat, V., Jacobson, S.H., Stori, J.A., 2004, "A Post-Optimality Analysis Algorithm for Multi-Objective Optimization," *Computational Optimization and Applications*, 28(3), 357-372.
18. Armstrong, D.E., Jacobson, S.H., 2004, "Polynomial Transformations and Data Independent Neighborhood Functions," *Discrete Applied Mathematics*, 143(1-3), 272-284.
19. Vaughan, D.E., Jacobson, S.H., 2004, "Formulating the Meta-Heuristic Tabu Search in the Generalized Hill Climbing Framework," *Methodology and Computing in Applied Probability*, 6(3), 343-354.
20. Jacobson, S.H., Yucesan, E., 2004b, "Analyzing the Performance of Generalized Hill Climbing Algorithms," *Journal of Heuristics*, 10(4), 387-405.
21. Vaughan, D.E., Jacobson, S.H., Hall, S.N., McLay, L.A., 2005, "Simultaneous Generalized Hill-Climbing Algorithms for Addressing Sets of Discrete Optimization Problems," *INFORMS Journal on Computing* 17(4), 438-450.
22. Armstrong, D.E., Jacobson, S.H., 2005, "Data Independent Neighborhood Functions and Strict Local Optima," *Discrete Applied Mathematics*, 146(3), 233-243
23. Jacobson, S.H., Hall, S.N., McLay, L.A., Orosz, J.E., 2005, "Performance Analysis of Cyclic Simulated Annealing Algorithms," *Methodology and Computing in Applied Probability*, 7(2), 183-201.
24. Jacobson, S.H., McLay, L.A., Hall, S.N., Henderson, D., Vaughan, D.E., 2006, "Optimal Search Strategies Using Simultaneous Generalized Hill Climbing Algorithms," *Mathematical and Computer Modelling*, 43(9-10), 1061-1073.
25. Armstrong, D.E., Jacobson, S.H., 2006, "Order Preserving Reductions and Polynomial Improving Paths," *Operations Research Letters*, 34(1), 9-16.
26. Kaul, H., Jacobson, S.H., 2006, "Global Optima Results for the Kauffman NK Model," *Mathematical Programming*, 106, 319-338.
27. Armstrong, D.E., Jacobson, S.H., 2006, "Analyzing the Complexity of Finding Good Neighborhood Functions for Local Search Algorithms," *Journal of Global Optimization*, 36(2), 219-236.
28. Kaul, H., Jacobson, S.H., 2007, "New Global Optima Results for the Kauffman NK Model: Handling Dependency," *Mathematical Programming*, 108(2-3), 475-494.
29. McLay, L.A., Jacobson, S.H., 2007, "Integer Knapsack Problems with Set-Up Weights," *Computational Optimization and Applications*, 37(1), 35-47.
30. McLay, L.A., Jacobson, S.H., 2007, "Algorithms for the Bounded Set-Up Knapsack Problem," *Discrete Optimization*, 4(2), 206-212.
31. Vaughan, D.E., Jacobson, S.H., Kaul, H., 2007, "Analyzing the Performance of Simultaneous Generalized Hill Climbing Algorithms," *Computational Optimization and Applications*, 37(1), 103-119.

32. Armstrong, D.E., Jacobson, S.H., 2008, "An Analysis of Neighborhood Functions on Generic Solution Spaces," *European Journal of Operational Research*, 186(2), 529-541.
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9. Nikolaev, A.G. Jacobson, S.H., 2010, "Simulated Annealing," Chapter 1 in *Handbook of Metaheuristics* (M. Gendreau and J.-Y. Potvins, Editors), Second Edition, International Series in Operations Research and Management Science, Volume 146, Springer, New York, 1-40.
10. Jacobson, S.H., King, D.M., 2010, "A Societal Cost of Obesity in Terms of Automobile Fuel Consumption," Chapter in *Encyclopedia of Operations Research and Management Science* (James J. Cochran, Editor), Wiley and Sons.
11. Lee, A.J., Jacobson, S.H., 2010, "Optimizing the Aviation Checkpoint Process to Enhance Security and Expedite Screening," Chapter in *Encyclopedia of Operations Research and Management Science* (James J. Cochran, Editor), Wiley and Sons.

*Professional Publications and Blog Postings*

1. Jacobson, S.H., Kobza, J.E., 2002, "A New Era for Aviation Security," *Swords and Ploughshares*, 14(1), 7-8.
2. Jacobson, S.H., Kobza, J.E., 2003, "Authors' Commentary: Aviation Security Baggage Screening: To Screen or Not to Screen, That is the Question," *UMAP Journal*, 24(2), 187-192.
3. Jacobson, S.H., Sewell, E.C., Weniger, B.G., 2004, "An Operations Research Software Tool for Designing Pediatric Vaccine Formularies for Childhood Immunization," *Interfaces*, 34(6), 440-441.
4. Jacobson, S.H., 2005, "Selling Our Wares: What We Don't Tell Them Can Hurt Us," *ORMS Today*, 32(2), 80.

5. McLay, L.A., Jacobson, S.H., Kobza, J.E., 2005, "Making Skies Safer: Applying Operations Research to Aviation Passenger Prescreening Systems," *ORMS Today*, 32(5), 24-31 (Reprinted in *Analytics*, Spring 2008, 13-17).
6. Jacobson, S.H., 2006, "How to Survive Your 15 Minutes of Fame," *ORMS Today*, 33(6), 30-34.
7. Jacobson, S.H., Kobza, J.E., Pohl, E., 2007, "Editor's Introduction: Special Issue on Homeland Security," *IIE Transactions*, 39(1), 1-2.
8. Jacobson, S.H., 2007, "Research Videos: A Star is B"OR"n," *ORMS Today*, 34(5), 16-17.
9. Lee, A.J., Jacobson, S.H., 2008, "Olympic Tiebreakers: The Reward of Risk and Innovation," *ORMS Today*, 35(5), 20-21.
10. Jacobson, S.H., Sewell, E.C., 2008, "Predictions, Prophecy, and Promises," *ORMS Today*, 35(6), 16-17.
11. Jacobson, S.H., 2010, "Staking a Claim to IE (Information Engineering)," *ORMS Today*, 37(1), 18-19.
12. Jacobson, S.H., Lee, A.J., 2010, "Aviation Security in 2030: A Glimpse into the Future," *ORMS Today*, 37(6), 14,16.
13. Proano, R.A., Jacobson, S.H., Jokela, J.A., 2011, "Response to "Modeling the national pediatric vaccine stockpile: Supply shortages, health impacts and cost consequences"", *Vaccine*, 29(4), 615.
14. Jacobson, S.H., 2011, "The Laws of Probability, the Final Four, and the Analytics of Bracketology," *ORMS Today*, 38(1), 30-32.
15. Jacobson, S.H., 2011, "An Opportunity to Make a Difference," *ORMS Today*, 38(6), 28-30,32.
16. Sauppe, J.J, Jacobson, S.H., 2012, "Election Analytics," *ORMS Today*, 39(5), 34-36.
17. Jacobson, S.H., 2014, "Confessions of a NSF Program Director," *ORMS Today*, 41(5), 34-36.
18. Jacobson, S.H., 2015, "A Call for Arms: How INFORMS Can Help in Making Value for America," *ORMS Today*, 42(6), 14.
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20. Jacobson, S.H., Sauppe, J.J., Rigdon, A.E., "What Happened?" *Blog@CACM* (Posted 2 December 2016).
21. Jacobson, S.H., 2017, "NSF: Peer reviews peer-review process," *ORMS Today*, 44(6), 10-11.
22. Jacobson, S.H., Hajjar, J.F., Johnson, A., Moreno- Centeno, E., Shen, S., 2018, "Future Directions for Broader Impacts at the National Science Foundation," *ORMS Today*, 45(1), 24-27.
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24. Jacobson, S.H., 2018, "Resoundingly Human November: Part 2," *ORMS Today* (Podcast), <https://pubsonline.informs.org/doi/10.1287/orms.2018.11.02/abs/>.

*Op-Eds, Letters (Contributed, Invited)*

1. Jacobson, S.H., 2011, "Letters: TSA chats address limits of Technology," *USAToday*, 30(36), 3 November 2011, 8a.
2. Jacobson, S.H., 2012, "Letters: Brackets can Promote Stem," *USAToday*, 30(139), 30 March 2012, 10a.
3. Jacobson, S.H., 2014, "Airport should be screening for Ebola the same way they screen for terrorists," Invited Op-Ed, *Washington Post*, 2 October 2014.
4. Jacobson, S.H., 2016, "After Brussels, simply adding extra security won't keep travelers safe," Invited Op-Ed, *Quartz*, 23 March 2016.

5. Jacobson, S.H., 2017, "How secure are our Airports?" Invited Op-ed, *CNN Opinion*, 6 January 2017.
6. Jacobson, S.H., 2017, "Letter: How to avoid getting bumped from a flight," *Chicago Tribune (Voice of the People)*, 12 April 2017.
7. Jacobson, S.H., 2017, "Morrill Land-Grant Acts and the Erosion of State Support for Higher Education," *Insider Higher Ed*, Published 5 September 2017.
8. Jacobson, S.H., 2018, "If US states cannot fund their universities, they must stand aside," *Times Higher Education*, Published 1 March 2018.

#### *Conference Proceedings*

1. Jacobson, S.H., Morrice, D.J., Schruben, L.W., 1988, "The Global Simulation Clock as the Frequency Domain Experiment Index," *Proceedings of the 1988 Winter Simulation Conference*, 558-563.
2. Jacobson, S.H., Schruben, L.W., 1988, "Optimization of Stochastic Dynamical Systems in the Frequency Domain," *Analysis and Optimization of Systems*, Springer-Verlag Lecture Notes in Control and Information Sciences, 111, 925-938.
3. Jacobson, S.H., 1989, "Oscillation Amplitude Considerations in Frequency Domain Experiments," *Proceedings of the 1989 Winter Simulation Conference*, 406-410.
4. Morrice, D.J., Schruben, L.W., Jacobson, S.H., 1990, "Initial Transient Effects in the Frequency Domain," *Proceedings of the 1990 Winter Simulation Conference*, 357-359.
5. Yucesan, E., Jacobson, S.H., 1992, "Building Correct Simulation Models is Difficult," *Proceedings of the 1992 Winter Simulation Conference*, 25, 783-790.
6. Jacobson, S.H., 1994, "Harmonic Gradient Estimators: A Survey of Recent Results," *Proceedings of the Conference on Modeling and Simulation (European Simulation Multiconference)*, 853-857.
7. Kumar, A., Jacobson, S.H., Mohamed, Z., Motwani, J., 1994, "A Heuristic Approach for Designing Flexible Assembly Systems," *1994 Proceedings Decision Sciences Institute Annual Meeting*, 3, 1612-1614.
8. Vazquez, F., Jacobson, S.H., 1994, "Application of RPA and the Harmonic Gradient Estimators to a Priority Queueing System," *Proceedings of the 1994 Winter Simulation Conference*, 369-376.
9. Jacobson, S.H., Morrice, D.J., 1994, "Teaching Simulation: A Panel Discussion," *Proceedings of the 1994 Winter Simulation Conference*, 1378-1381.
10. Fleischer, M.A., Jacobson, S.H., 1995, "Cybernetic Optimization by Simulated Annealing: An Overview with Experimental Results," *First Metaheuristics International Conference Proceedings*, 361-368.
11. Morrice, D.J., Jacobson, S.H., 1995, "Amplitude Selection in Transient Sensitivity Analysis," *Proceedings of the 1995 Winter Simulation Conference*, 330-335.
12. Yucesan, E., Jacobson, S.H., 1995, "On the Simultaneous Construction of Sample Paths," *Proceedings of the 1995 Winter Simulation Conference*, 357-361.
13. Jacobson, S. H., 1996, "Building and Analyzing Discrete Event Simulation Models of Complex Systems: A Computational Complexity Approach," *Proceedings of the 1996 NSF Design and Manufacturing Grantees Conference*, 503-504.
14. Yucesan, E., Jacobson, S.H., 1996, "Simulated Annealing Heuristic for Accessibility," *Proceedings of the Second International Workshop on Mathematical Methods in Stochastic Simulation and Experimental Design*, 21-27.
15. Jacobson, S.H., Morrice, D.J., 1996, "Analyzing the Temporal Association Between Health Disorders and Medical Treatments Using Probability Models and Monte Carlo Simulation," *Proceedings of the 1996 Winter Simulation Conference*, 1176-1182.

16. Jacobson, S.H., 1997, "Heuristics for Discrete Event Computer Simulation Model Structural Problems," *Proceedings of the 1997 NSF Design and Manufacturing Grantees Conference*, 415-416.
17. Jacobson, S.H., Sullivan, K.A., Johnson, A.W., 1997, "Generalized Hill Climbing Algorithms for Discrete Manufacturing Process Design Problems Using Computer Simulation Models," *Proceedings of the 11th European Simulation Multiconference*, 473-478.  
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18. Weniger, B. C., Jacobson, S.H., Sewell, E.C., Deuson, R., Chen, R.T., 1997, "Vaccine Selection Algorithm using Linear Programming to Minimize the Overall Cost of Disease Control through Immunization," *Proceedings of the 37th Interscience Conference on Antimicrobial Agents and Chemotherapy*.
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22. Jacobson, S. H., Armstrong, D.E., Vaughan, D. 1999, "A Survey of Generalized Hill Climbing Algorithms for Discrete Manufacturing Process Design Optimization," *Advanced Aerospace Materials and Processes Conference (AeroMat)*.
23. Kumar, A., Jacobson, S.H., Mohamed, Z.M., 1999, "Managing Critical Resources with Stochastic Consumption Rates," *Proceedings of the Decision Sciences Institute Annual Meeting*
24. Swisher, J.R., Jacobson, S.H., 1999, "Discrete-Event Simulation Optimization Using Ranking, Selection, and Multiple Comparison Procedures: A Survey," (State-of-the-Art Tutorial), *Proceedings of the 1999 Winter Simulation Conference*, 492-501.
25. Jacobson, S.H., 2000, "A Study of Local Search Strategies Using Generalized Hill Climbing Algorithms," *Proceedings of the 2000 NSF Design and Manufacturing Grantees Conference*.
26. Kumar A., Jacobson, S.H., 2000, "Managing Critical Resources with Stochastic Consumption Rates," *Manufacturing and Service Operations Management 2000 Conference Proceedings*, 1-8.
27. Swisher, J.R., Hyden, P., Jacobson, S.H., Schruben, L.W., 2000, "A Survey of Simulation Optimization Techniques and Procedures," (State-of-the-Art Tutorial), *Proceedings of the 2000 Winter Simulation Conference*, 119-128.
28. Jacobson, S.H., 2001, "On the Performance of Local Search Algorithms," *Proceedings of the 2001 NSF Design and Manufacturing Grantees Conference*.
29. Henderson, D., Wakefield, R.R., Vaughan, D., Jacobson, S.H., 2001, "Optimal Earthmoving Vehicle Routes Using Local Search Algorithms," *Perspectives on Innovation in Architecture, Engineering and Construction*, Anumba, C.J., Egbu, C. and Thorpe, A. (eds), *Proceedings of the 1st International Conference on 'Innovation In Architecture Engineering And Construction (AEC)'*, Loughborough University, United Kingdom, 555-565.
30. Vaughan, D.E., Jacobson, S.H., Armstrong, D.E., 2001, "Discrete Manufacturing Process Design Optimization using Simultaneous Generalized Hill Climbing Algorithms," *Proceedings of the 3rd International Conference on Intelligent Processing and Manufacturing of Materials*.
31. Jacobson, S.H., Sewell, E.C., Weniger, B.G., 2001, "Using Monte Carlo Simulation to Assess the Value of Combination Vaccines for Pediatric Immunization," *Proceedings of the 2001 Winter Simulation Conference*, 1421-1428.

32. Jacobson, S.H., 2002, "Assessing the Performance of Generalized Hill Climbing Algorithms," *Proceedings of the 2002 NSF Design and Manufacturing Grantees Conference*.
33. Kobza, J.E., Jacobson, S.H., 2003, "A Study of Aviation Access Control Security Systems," *Proceedings of the 2003 NSF Design and Manufacturing Grantees Conference*.
34. Jacobson, S.H., 2003, "A Study of Local Search Strategies Using Generalized Hill Climbing Algorithms," *Proceedings of the 2003 NSF Design and Manufacturing Grantees Conference*.
35. Kobza, J.E., Jacobson, S.H., 2004, "A Study of Aviation Access Control Security Systems," *Proceedings of the 2004 NSF Design and Manufacturing Grantees Conference*.
36. Jacobson, S.H., 2004, "A Study of Local Search Strategies Using Generalized Hill Climbing Algorithms," *Proceedings of the 2004 NSF Design and Manufacturing Grantees Conference*.
37. Sewell, E.C., Jacobson, S.H., 2004, "Research on Designing Vaccine Formularies for Childhood Immunization," *Proceedings of the 2004 NSF Design and Manufacturing Grantees Conference*.
38. Jacobson, S.H., Kobza, J.E., 2005, "A Study of Aviation Access Control Security Systems," *Proceedings of the 2005 NSF Design and Manufacturing Grantees Conference*.
39. Jacobson, S.H., Sewell, E.C., 2005, "Research on Designing Vaccine Formularies for Childhood Immunization," *Proceedings of the 2005 NSF Design and Manufacturing Grantees Conference*.
40. Jacobson, S.H., Kobza, J.E., 2006, "A Study of Aviation Access Control Security Systems," *Proceedings of the 2006 NSF Design, Service, and Manufacturing Grantees and Research Conference*.
41. Jacobson, S.H., Sewell, E.C., 2006, "Pediatric Vaccine Formulary Design and Optimization," *Proceedings of the 2006 NSF Design, Service, and Manufacturing Grantees and Research Conference*.
42. Jacobson, S.H., Hall, S.N., McLay, L.A., 2006, "Visiting Near-Optimal Solutions Using Local Search Algorithms," *Proceedings in Computational Statistics, Compstat 2006* (Editors, A. Rizzi, M. Vichi), Physica-Verlag, Springer, Heidelberg, Germany, 471-481.
43. McLay, L.A., Jacobson, S.H., Kobza, J.E., 2006, "Balancing Technology Capability Enhancement and Passenger Prescreening Information for Aviation Baggage Screening," *Proceedings of Safe Skies Symposium*, Washington, DC.
44. Jacobson, S.H., Sewell, E.C., Hall, S.N., 2008, "Analyzing the General Minimum Cost Vaccine Formulary Selection Problem," *Proceedings of the 2008 National Science Foundation Engineering Research and Innovation Conference*.
45. Jacobson, S.H., Sewell, E.C., Hall, S.N., 2009, "Maximizing the Effectiveness of a Pediatric Vaccine Formulary While Prohibiting Extrimmunization," *Proceedings of the 2009 NSF Engineering Research and Innovation Conference*.
46. Chan, W.K., Schruben, L.W., Nelson, B.L. Jacobson, S.H., 2009, "Simulation Fusion," *Proceedings of the 2009 Winter Simulation Conference*.
47. Jacobson, S.H., McLay, L.A., Lee, A.J., 2011, "New Approaches for Airport Security Checkpoint Screening," *Proceedings of the 2011 NSF Engineering Research and Innovation Conference*.
48. Lee, A.J., Jacobson, S.H., Cragoe, W.A., 2014, "NCAA basketball tournament analysis for high school mathematics," *ASEE Annual Conference and Exposition, Conference Proceedings*.
49. Brailsford, S.C, Carter, M.W., Jacobson, S.H., 2017, "Five Decades of Healthcare Simulation", *Proceedings of the 2017 Winter Simulation Conference*.

*Presentation, Seminars and Posters*

Air Force Institute of Technology (1997, 2002, 2006, 2008, 2016)

Carnegie-Mellon University (1998, 2014)

Case Western Reserve University (1988, 1990, 1993, 1994, 1996, 1998-2000, 2013, 2015)

Clemson University (2019)  
Cornell University (1986, 1987, 1995, 2011)  
George Mason University (2002, 2013)  
Georgia Institute of Technology (1997, 2015)  
Homeland Security Institute (2005)  
Illinois Institute of Technology (2014)  
Indiana University of Pennsylvania (1990)  
INSEAD, European Institute of Business Administration (1994, 1996)  
Iowa State University (2013)  
Johns Hopkins University, Applied Physics Laboratory (2004)  
Kansas University (1997)  
Kent State University (1990)  
Massachusetts Institute of Technology (2006, 2017)  
New Jersey Institute of Technology (1998)  
NASA Lewis Research Center, Cleveland, Ohio (1991)  
Naval Postgraduate School (2001)  
North Carolina State University (2008)  
Northeastern University (1988, 2011)  
Northwestern University (2002, 2007, 2015)  
Ohio State University (1990)  
Oklahoma State University (1998, 2014)  
Old Dominion University (1996)  
Pennsylvania State University (1988, 2016)  
Purdue University (2007, 2009, 2011)  
Rensselaer Polytechnic Institute (2008, 2012, 2013)  
Rochester Institute of Technology (2009)  
Rice University (2018)  
Rose-Hulman Institute of Technology (2009)  
Rutgers, the State University of New Jersey (2006)  
Sandia National Laboratory (2003)  
Schlumberger (Austin Research), Austin, Texas (1996)  
Silicon Valley Illini Club (2008)  
Southern Illinois University (Edwardsville) (1998, 2013)  
Southern Polytechnic State University (1997, 1998)  
Statistical and Applied Mathematical Sciences Institute (2012)  
SUNY Stony Brook (2013)  
Texas A&M University (2012, 2013)  
Texas Tech University (2007)  
United States Military Academy (1996, 2000, 2003)  
University of Arizona (2001, 2003)  
University of British Columbia (2010)  
University of Buffalo (2011)  
University of California (Berkeley) (2004)  
University of Florida (2006, 2007, 2013)  
University of Houston (2014)  
University of Illinois (Urbana-Champaign) (1998, 2003, 2008, 2009)  
University of Iowa (2008)  
University of Kentucky (2019)  
University of Michigan (1988, 1999, 2005, 2012, 2016)  
University of Maryland (2000, 2006, 2007)  
University of Massachusetts (2010)

University of Minnesota (1992, 2000, 2008, 2013)  
 University of Montreal (1996)  
 University of North Carolina (Chapel Hill) (1998, 2007)  
 University of Oklahoma (2010)  
 University of Pennsylvania (1996)  
 University of Pittsburgh (2005, 2011)  
 University of South Florida (2013)  
 University of Southern California (2008, 2013)  
 University of Tennessee (2014)  
 University of Texas (Austin) (1993, 1996, 1999, 2001, 2004, 2013, 2016)  
 University of Washington (2014)  
 University of Wisconsin (2005)  
 Vanderbilt University (2003)  
 Virginia Tech (1993, 1995, 1996, 1997, 1998)  
 Washington University (St. Louis) (1992)  
 Xerox Corporation, Webster Research Center (2010)  
 1986,1991,1995,1997, 1999, 2000, 2002, 2004-2006, 2009-2010 Opt. Days, Montreal, Canada  
 1987-1990, 1992, 1994-2000, 2005 Winter Simulation Conference  
 1988-1994 ORSA/TIMS & TIMS/ORSA Joint National Meetings  
 1988, 1994, 2000 International Symposium on Mathematical Programming  
 1988 International Conference on Analysis and Optimization of Systems, Antibes, France  
 1994, 1999 Decision Sciences Institute Annual Meeting  
 1994 European Simulation Multiconference, Barcelona, Spain  
 1995-2016 INFORMS National Meetings  
 1995, 1998, 1999 AFOSR Electronic Prototyping Review Meeting, Dayton, Ohio  
 1995 First Metaheuristics International Conference, Breckenridge, Colorado  
 1995 Workshop on Industrial Systems Dynamics, Nantes, France  
 1996 National Science Foundation Design & Manufacturing Grantees Conference,  
 Albuquerque, New Mexico  
 1996 Richmond/Tidewater INFORMS Chapter Meeting, Norfolk, Virginia  
 1996,2004 St. Louis Gateway INFORMS Chapter Meeting, St. Louis, Missouri  
 1996 AFOSR Electronic Prototyping Review Meeting, Athens, Ohio  
 1996 Second International Workshop on Mathematical Methods in Stochastic Simulation and  
 Experimental Design, St. Petersburg, Russia  
 1997 National Science Foundation Design & Manuf. Grantees Conference, Seattle, Washington  
 1997 AFOSR Electronic Prototyping Review Meeting, Blacksburg, Virginia  
 1997 European Simulation Multiconference, Istanbul, Turkey  
 1997 INFORMS Applied Probability Conference, Boston, Massachusetts  
 1997 Interscience Conference on Antimicrobial Agents and Chemotherapy, Toronto, Canada  
 1998 National Science Foundation Design & Manuf. Grantees Conference, Monterey, Mexico  
 1999 Advanced Aerospace Materials and Processes Conference (Aeromat '99), Dayton, Ohio  
 1999 AFOSR Scientific Advisory Board Meeting, Dayton, Ohio  
 2000 National Science Foundation Design & Manuf. Grantees Conference, Vancouver, Canada  
 2000 SIAM Discrete Mathematics Conference, Minneapolis, Minnesota  
 2000 Military Operations Research Society Symposium, Colorado Springs, Colorado  
 2000 Manufacturing and Service Operations Management Conference, Ann Arbor, Michigan  
 2000 AFOSR Electronic Prototyping & New World Vistas – Disc. Math. Review, Orlando, Florida  
 2000 NEXTOR Annual Research Symposium, Washington, DC  
 2001 National Science Foundation Design & Manufacturing Grantees Conference, Tampa,  
 Florida  
 2001 Fourth Annual Conference on Vaccine Research, Arlington, Virginia

2001 INFORMS International Meeting, Maui, Hawaii  
2001 International Conference on Innovation in Architecture, Engineering, and Construction, United Kingdom  
2001 AFOSR Electronic Prototyping, Discrete Mathematics Review, Seattle, Washington  
2001 Intelligence Processing and Manufacturing of Materials Conference, Vancouver, Canada  
2001 Advisory Committee on Immunization Practice, Atlanta, Georgia  
2002 National Science Foundation Design & Manufacturing Grantees Conference, San Juan, Puerto Rico  
2002 National Immunization Conference, Denver, Colorado  
2002 SIAM Optimization Conference, Toronto, Canada  
2002 Institute of Industrial Engineers Annual Conference, Orlando, Florida  
2002 Hawaii International Conference on Statistics, Honolulu, Hawaii  
2002 AFOSR Electronic Prototyping, Discrete Mathematics Review, Sunnyvale, California  
2002 SIAM Discrete Mathematics Conference, San Diego, California  
2003 National Science Foundation Design, Service, & Manufacturing Grantees and Research Conference, Birmingham, Alabama  
2003 First International Workshop on Optimization in Radiation Therapy  
2003 National Immunization Conference, Chicago, Illinois  
2003 Sixth Annual Conference on Vaccine Research, Arlington, Virginia  
2003 Institute of Industrial Engineers Annual Conference, Portland, Oregon  
2003 AFOSR Optimization and Discrete Mathematics Program Review, Estes Park, Colorado  
2004 National Science Foundation Design, Service, & Manufacturing Grantees and Research Conference, Dallas, Texas  
2004 Institute of Industrial Engineers Annual Conference, Houston, Texas  
2004 SIAM Discrete Mathematics Conference, Nashville, Tennessee  
2004 SIAM National Annual Meeting, Portland, Oregon  
2004 AFOSR Optimization and Discrete Mathematics Program Review, Pasadena, California  
2004 Tenth International Conference on Stochastic Programming, Tucson, Arizona  
2005 National Science Foundation Design, Service, & Manufacturing Grantees and Research Conference, Phoenix, Arizona.  
2005 National Immunization Conference, Washington, DC  
2005 IEEE Conference on Technologies for Homeland Security: Advanced Sensors for Personnel, Baggage and Cargo Security, Boston, Massachusetts  
2005 SIAM Conference on Optimization, Stockholm, Sweden  
2005 Genetic and Evolutionary Computation Conference, Washington, DC  
2005 17th Triennial Conference of the International Federation of Operational Research Societies, Honolulu, Hawaii  
2005 AFOSR Optimization and Discrete Mathematics Program Review, St. Louis, Missouri  
2005 Homeland Security Institute Workshop “Advancing Analytic Techniques in Deterrence Analysis – Workshop Plenary Meeting”, Washington, DC  
2005 Winter Simulation Conference, Orlando, Florida (Keynote Speaker, Ph.D. Colloquium)  
2006 National Immunization Conference, Atlanta, Georgia  
2006 INFORMS Optimization Society Conference on Optimization and Health Care, San Antonio, Texas  
2006 INFORMS Conference on OR/MS Practice, Miami, Florida  
2006 Canadian Operations Research Society (CORS) National Meeting, Montreal, Canada  
2006 Institute of Industrial Engineers Annual Conference, Orlando, Florida  
2006 AFOSR Optimization and Discrete Mathematics Program Review, Pensacola, Florida  
2006 INFORMS Manuf. & Service Operations Management Conference, Atlanta, Georgia  
2006 SIAM Conference on Discrete Mathematics, Victoria, Canada



2006 National Science Foundation Design, Service, & Manufacturing Grantees and Research Conference, St. Louis, Missouri  
2006 COMPSTAT 2006, International Conference on Computational Statistics, Rome, Italy  
2006 Safe Skies Symposium, Washington, DC  
2007 INFORMS Computing Society Conference, Coral Gables, Florida  
2007 National Immunization Conference, Kansas City, Missouri  
2007 Workshop on Intl. Research & Development in Rapid Vaccine Manuf., Arlington, Virginia  
2007-2011 AFOSR Optimization and Discrete Mathematics Program Review, Arlington, Virginia  
2007 Institute of Industrial Engineers Annual Conference, Nashville, Tennessee  
2007 Dallas/Fort Worth INFORMS Chapter Meeting, Dallas, Texas  
2007 Metaheuristics International Conference, Montreal, Canada  
2007 INFORMS International Conference, Rio Grande, Puerto Rico  
2007 Sixth International Congress on Industrial and Applied Mathematics, Zurich, Switzerland  
2007 Operating on Health Care: An Operations Research Symposium, Vancouver, Canada  
2007 Opening Workshop on Risk Analysis, Extreme Events, and Decision theory, Statistical and Applied Mathematical Sciences Institute, Research Triangle Park, North Carolina  
2008 National Science Foundation Civil, Mechanical, and Manufacturing Innovation (CMMI) Engineering Research and Innovation Conference, Knoxville, Tennessee  
2008 INFORMS Opt. Soc. Conf. on Theory, Computation, & Emerging Applications, Atlanta, Georgia  
2008 National Immunization Conference, Atlanta, Georgia  
2008 INFORMS Manuf. & Service Operations Management Conference, College Park, Maryland  
2008 SIAM Conference on Discrete Mathematics, Burlington, Vermont  
2008 SIAM Annual Meeting, San Diego, California  
2008 Joint Statistics Meeting, Denver, Colorado  
2008 Northern California Symposium on Statistics & Operations Research in Sports, Menlo Park, California  
2009 INFORMS Computing Society Conference, Charleston, South Carolina  
2009 National Immunization Conference, Dallas, Texas  
2009 Canadian Discrete and Algorithmic Mathematics Conference, Montreal, Canada  
2009 IIE Research Conference Doctoral Colloquium, Miami, Florida  
2009 CORS-INFORMS International Meeting, Toronto, Canada  
2009 National Science Foundation (NSF) Civil, Mechanical and Manuf. Innovation (CMMI) Engineering Research and Innovation Conference, Honolulu, Hawaii  
2009 INFORMS Applied Probability Conference, Ithaca, New York  
2010 International Conference on Systems Analysis Tools for Better Health Care Delivery: A New Engineering/Health Care Partnership, Invited Plenary, Gainesville, Florida  
2010 IIE Research Conference Doctoral Colloquium, Cancun, Mexico  
2010 National Science Foundation, Arlington, Virginia  
2010 SIAM Conference on Discrete Mathematics, Austin, Texas  
2010 Twelfth International Conference on Stochastic Programming, Halifax, Canada  
2010 AVSEC World 2010, Frankfurt, Germany  
2011 National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation (CMMI) Research & Innovation Conference, Atlanta, Georgia  
2011 INFORMS Computing Society Conference, Monterrey, California  
2011 National Immunization Conference, Washington, DC  
2011 IIE Research Conference Doctoral Colloquium, Reno, Nevada  
2011 INFORMS Health Care, Montreal, Canada  
2011 INFORMS Simulation Society Research Workshop: Simulation in Complex Service Systems, Montreal, Canada

2011 Mayo Clinic Conference on Systems Engineering and Operations Research in Health Care, Rochester, Minnesota  
 2011 Transportation Hazards and Security Summit: Looking Beyond the 10th Anniversary of 9/11, Irvine, California  
 2011, 2015 New England Symposium on Statistics in Sports, Boston Massachusetts  
 2012 Joint Mathematics Meeting, Boston Massachusetts  
 2012 Transportation Research Board, Washington, DC  
 2012 World Vaccine Congress, Washington, DC  
 2012 National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation (CMMI) Research & Innovation Conference, Boston, Massachusetts.  
 2012 Workshop on Comp. Sim. - Opportunities & Challenges, Fudan Univ., Shanghai, China.  
 2012 Workshop on Healthcare and Operations Research, SAMSI, RTC, North Carolina  
 2015 Euro OR Conference, Glasgow, Scotland  
 2015 CREATE-TSA Symposium on Aviation Security, Los Angeles, California  
 2015 Washington INFORMS Chapter, Washington, DC  
 2015 Rutgers Fourth Applied Probability Conference, New Brunswick, New Jersey  
 2016 Workshop on Broader Impact, National Science Foundation, Arlington, Virginia.  
 2016 SIAM Conference on Discrete Mathematics, Atlanta, Georgia  
 2017 Joint Mathematics Meeting, Atlanta, Georgia  
 2017 INFORMS Computing Society Conference, Austin, Texas  
 2018 Joint Mathematics Meeting, San Diego, California  
 2018 National Taiwan University - Illinois Forum, Taipei, Taiwan  
 2019 Big Ten Strategic Partnership for Applied Redistricting Knowledge (SPARK) Conference, College Park, Maryland  
 2019 American College of Physicians Spouses Program, Philadelphia, Pennsylvania

*Conference Committees, Sessions Organized and/or Chaired*

1990 TIMS/ORSA Joint National Meeting, May 6-9, 1990, Las Vegas, Nevada, Sponsored by the TIMS College on Simulation, "Sensitivity Analysis."  
 1991 Winter Simulation Conference, December 8-11, 1991, Phoenix, Arizona, Software/Modelware Track Tutorial, "SIGMA Tutorial."  
 1993 TIMS/ORSA Joint National Meeting, May 16-19, 1993, Chicago, Illinois, Sponsored by the TIMS College on Simulation, "Simulation Sensitivity Estimation."  
 1993 Winter Simulation Conference, December 12-15, 1993, Los Angeles, California, Sponsored by the TIMS College on Simulation, Ph.D. Colloquium.  
 1994 TIMS/ORSA Joint National Meeting, April 24-27, 1994, Boston, Massachusetts, "Simulation Methods."  
 1994 Eur. Simulation Multiconf., June 1-3, 1994, Barcelona, Spain, "Performance Analysis."  
 1994 Winter Simulation Conference, December 11-14, 1994, Orlando, Florida, Advanced Tutorial Track (Nine Sessions).  
 1994 Winter Simulation Conference, December 11-14, 1994, Orlando, Florida, Sponsored by the TIMS College on Simulation, Ph.D. Colloquium.  
 1994 Winter Simulation Conference, December 11-14, 1994, Orlando, Florida, Panel Discussion (with D.J. Morrice), "Teaching Simulation: A Panel Discussion."  
 1995 Winter Simulation Conference, December 3-6, 1995, Washington, DC, Advanced Tutorial Track (Nine Sessions).  
 1996 INFORMS National Meeting, May 5-8, 1996, Washington, DC, "Scheduling."  
 1996 Second International Workshop on Mathematical Methods in Stochastic Simulation and Experimental Design, June 18-21, 1996, St. Petersburg, Russia, Member of the International Organizing and Program Committee.  
 1996 INFORMS National Meeting, November 3-6, 1996, Atlanta, Georgia, "Health Applications."

- 1996 Winter Simulation Conference, December 8-11, 1996, San Diego, California, "Discrete Optimization and Selection."
- 1997 AFOSR Electronic Prototyping Review Meeting, May 27-29, 1997, Virginia Tech, Blacksburg, Virginia, Host and Local Arrangement Organizer for Meeting.
- 1997 European Simulation Multiconference, June 1-4, 1997, Istanbul, Turkey, "Design, Validation, and Testing."
- 1997 INFORMS Applied Probability Conference, June 30 - July 2, 1997, Boston, Massachusetts, "Stochastic Optimization Methodologies."
- 1997 Winter Simulation Conference, December 7-10, 1997, Atlanta, Georgia, "Global Optimization via Simulation."
- 1998 Third International Workshop on Mathematical Methods in Stochastic Simulation and Experimental Design, June 28 - July 3, 1998, St. Petersburg, Russia, Member of the International Organizing and Program Committees.
- 1999 Winter Simulation Conference, December 4-8, 1999, Phoenix, Arizona, "Simulation Optimization."
- 2000 International Symposium on Mathematical Programming, August 7-11, 2000, Atlanta, Georgia, "Metaheuristics."
- 2000 INFORMS National Meeting, November 5-8, 2000, San Antonio, Texas, "Algorithm Design for Discrete Optimization Problems."
- 2002 Optimization Days, May 6-8, 2002, Montreal, Canada, "Metaheuristics I."
- 2002 SIAM Conference on Optimization, May 18-22, 2002, Toronto, Canada, "Global Optimization."
- 2002 Hawaii International Conference on Statistics, June 5-9, 2002, Honolulu, Hawaii, "Statistics."
- 2002 INFORMS National Meeting, November 17-20, 2002, San Jose, California, Cluster Organizer, "Applications of Optimization Theory."
- 2002 INFORMS National Meeting, November 17-20, 2002, San Jose, California, "Heuristic Programming Methods I."
- 2002 Winter Simulation Conference, December 8-11, 2002, San Diego, California, Modelware/Software Track Coordinator (Nine Sessions).
- 2003 Winter Simulation Conference, December 7-10, 2003, New Orleans, Louisiana, Modelware/Software Track Coordinator (Nine Sessions).
- 2004 Optimization Days, May 10-12, 2004, Montreal, Canada, "Combinatorial Optimization".
- 2004 SIAM National Annual Meeting, July 12-16, 2004, Portland, Oregon, "CP1 Contributed Session".
- 2004 Winter Simulation Conference, December 4-8, 2004, Washington, DC, "Input Modeling."
- 2005 Sixth Metaheuristics International Conference, August 22-26, 2005, Vienna, Austria, Program Committee.
- 2006 INFORMS Manufacturing and Service Operations Management Conference, June 19-20, 2006, Atlanta, Georgia, Review Committee.
- 2006 INFORMS National Meeting, November 8-11, 2006, Pittsburgh, Pennsylvania, "Society and Energy."
- 2007 Seventh Metaheuristics International Conference, June 25-29, 2007, Montreal, Canada, Program Committee.
- 2007 INFORMS International Meeting, July 8-11, 2007, Puerto Rico, Cluster Chair, "OR on the Edge".
- 2007 International Congress on Industrial and Applied Mathematics, July 16-20, 2007, Zurich, Switzerland, Session Chair, "Probability".
- 2008 INFORMS Manufacturing and Service Operations Management Conference, June 5-6, 2008, College Park, Maryland, Review Committee.

- 2008 COMPSTAT International Conference on Computational Statistics, August 24-29, 2008, Porto - Portugal, Review Committee.
- 2008 SIAM National Annual Meeting, July 7-11, 2008, San Diego, California, Session Chair, "Biological and Medical Models I".
- 2010 Winter Simulation Conference, December 5-8, 2010, Baltimore, MD, "Epidemics and Agents."
- 2012 SIAM Conference on Discrete Mathematics, June 19, 2012, Halifax, Canada, "Discrete Algorithms."

### VIDEO PRODUCTIONS

- "A Health Collaboration: Pediatric Immunization & Operations Res.," Released 24 April 2006.
- "Aviation Security: Researching the Risk," Released 20 September 2006.

### WEB SITE PRODUCTIONS

- election08.cs.illinois.edu Web site for predicting the outcome of the 2008 United States Presidential Election (launched September 2008)
- bracketodds.cs.illinois.edu Web site for assessing the likelihood of seed combination for the NCAA Men's D1 basketball Tournament (launched March 2012, updated annual since 2013)
- electionanalytics.cs.illinois.edu Web site for predicting the outcome of the 2012 United States Presidential Election and which party will control the United States Senate (launched June 2012, Updated June 2014, Updated May 2016. Updated May 2018)
- drivingobesity.cs.illinois.edu Web site for assessing the impact of driving and caloric intake on body mass index (launched January 2016).

### DISSERTATIONS/THESES DIRECTED

*Ph.D. Dissertations Directed* (23 Directed, 4 Currently)

- M.A. Fleischer, "Assessing the Performance of the Simulated Annealing Algorithm Using Information Theory," January 1994, Patent Office, United States Patent Office, Washington, DC.
- A.W. Johnson, "Generalized Hill Climbing Algorithms for Discrete Optimization Problems," October 1996, Associate Professor of Logistics Management, Department of Operational Sciences, Air Force Institute of Technology, Dayton, Ohio.
- **1997 George E. Nicholson Student Paper Competition (INFORMS), Honorable Mention.**
- K.A. Sullivan, "A Convergence Analysis of Generalized Hill Climbing Algorithms," May 1999, Consultant, Chicago, Illinois.
- **1996 Women and Minority Award, INFORMS College on Simulation.**
  - **1996 AFOSR Graduate Student Summer Research Fellowship Award.**
- D.E. Vaughan, "Simultaneous Generalized Hill Climbing Algorithms for Addressing Sets of Discrete Optimization Problems," August 2000, Research Scientist, Los Alamos Research Laboratory, Los Alamos, New Mexico.
- **2001 Paul E. Torgersen Graduate Student Research Excellence Award, Runner Up.**
  - **2001 AAUW Postdoctoral Research Leave Fellowship, Runner up.**
  - **2002 IIE Pritsker Doctoral Dissertation Award Competition, Third Place.**
- D. Henderson, "Assessing the Finite-Time Performance of Local Search Algorithms," April 2001, Academy Professor, Consultant, Louisville, Kentucky.
- T. Aytemiz, "A Probabilistic Study of 3-SATISFIABILITY," July 2001, Professor, School of Business and Political Science, Mersin University, Mersin, Turkey.

- D.E. Armstrong, "A Local Search Algorithm Approach to Analyzing the Complexity of Discrete Optimization Problems," May 2002, Research Scientist, Los Alamos Research Laboratory, Los Alamos, New Mexico.  
**- 2001-2002 M&IE Alumni Teaching Fellow, University of Illinois.**
- L.A. McLay, "Designing Aviation Security Systems: Theory and Practice," May 2006, Associate Professor, Department of Industrial Engineering, University of Wisconsin, Madison, Wisconsin.  
**- 2002-2003 Ph.D. Thesis Initiation Fellowship, Program in Arms Control, Disarmament, and International Security (ACDIS).**  
**- 2003-2004 M&IE Alumni Teaching Fellow, University of Illinois.**  
**- 2005 M&IE Harper Safety Award, University of Illinois.**  
**- 2006 INFORMS Computing Society Student Paper Competition, Runner Up.**
- H. Kaul, "Topics in Stochastic Combinatorial Optimization and Extremal Graph Theory," August 2006 (co-advised with D. West), Associate Professor, Department of Mathematics, Illinois Institute of Technology, Chicago, Illinois.
- S.N. Hall, "The Design and Analysis of Pediatric Vaccine Formularies: Theory and Practice" August 2006, Research Scientist, Scott Air Force Base.  
**- 2006 M&IE Harper Safety Award, University of Illinois.**
- A.G. Nikolaev, "Stochastic Sequential Resource Allocation and Passenger Assignment in Aviation Security Systems" August 2008, Assistant Professor, SUNY Buffalo, Buffalo, New York.
- G.K. Kao, "Two Combinatorial Optimization Problems at the Interface of Computer Science and Operations Research" August 2008, Staff Researcher, Sandia National Laboratory, Albuquerque, New Mexico.
- R.A. Proano, "Strengthening the Sustainability of Pediatric Vaccine Supply by using Operations Research Methods" August 2008, Assistant Professor, Rochester Institute of Technology, Rochester, New York.
- A.J. Lee, "Optimality, Uncertainty, and Performance of Passenger Screening in Aviation Security Systems" May 2009, Director, Central Illinois Technology and Education Research Institute, Springfield, Illinois.  
**- 2008-2009 Graduate Research Award, Program on Public-Sector Aviation Issues, sponsored by the Federal Aviation Administration and U.S. Department of Transportation.**  
**- 2009 INFORMS Transportation Sci. & Logistics Dissertation Prize (Honorable Mention).**
- M. Robbins, "Exploring Pediatric Immunization Markets Using Operations Research and Game Theory," August 2010, Assistant Professor, Department of Operational Sciences, Air Force Institute of Technology, Dayton, Ohio.  
**- 2011 IIE Pritsker Doctoral Dissertation Award Competition, First Place.**
- D.M. King, "Graph Theory Models and Algorithms for Political Districting: An Approach to Inform Public Policy," May 2012, Lecturer, Department of IESE, University of Illinois, Urbana, IL.  
**- 2009 College of Engineering Mavis Memorial Fund Scholarship, Univ. of Illinois.**  
**- 2010 College of Engineering Mavis Future Faculty Fellowship, Univ. of Illinois.**  
**- 2012 Finalist, Best Paper Award, INFORMS Section on Public Policy, Services and Needs).**  
**- 2012 Semi-Finalist, Advances in Analytics Award, INFORMS Analytics Society.**  
**- 2013 IIE Pritsker Doctoral Dissertation Award Competition, Second Place.**
- G. Baharian, "Limiting Behavior of the Target-Dependent Stochastic Sequential Assignment Problems," August 2014, Post-Doc, University of Montreal.

- B. Behzad, "Analysis of the United States Pediatric Immunization Market: A Game Theoretic Approach," May 2014, Assistant Professor, California State University, Long Beach.  
 - **2013 Gilbreth Memorial Fellowship by the Institute of Industrial Engineers (IIE).**
- D.M. Morrison, "New Methods for Branch-and-Bound Algorithms," May 2014, Inverse Limit, Sacramento, CA.
- J.J. Sauppe, "Balance Optimization Subset Selection: A Framework for Causal Inference with Observational Data," August 2015, Assistant Professor, University of Wisconsin La Crosse.
- A. Khatibi, "Generalized Sequential Stochastic Assignment Problems," August 2017. Analyst, BB&T, Winston-Salem, NC.  
 - **2018 IIE Pritsker Doctoral Dissertation Award Competition, Second Place.**
- G. Yu, "Dynamic Online Resource Allocation Problems," May 2018. Amazon, Boston, MA.
- H.-Y., Kwon, "New Developments in Causal Inference Using Balance Optimization Subset Selection," May 2018.  
 - **2017 College of Engineering Mavis Future Faculty Fellowship, Univ. of Illinois.**

*M.S. Thesis/Projects Directed (12 Directed, 1 currently)*

- A.E. Simms, "A Stochastic Approach to Modeling Aviation Security Problems Using the Knapsack Problem," June 1997 (co-advised with J.E. Kobza).  
 - **1998 IIE Graduate Research (Master's Thesis) Award Competition, First Place.**
- J.R. Swisher, "Evaluation of the Design of a Family Practice Healthcare Clinic using Discrete-Event Simulation," May 1999.
- J.B Jun, "A Visual Simulation Life-Cycle of the Queston Physician Network," May 1999.
- J.E. Orosz, "Finite-time Performance Results for Static and Cyclical Simulated Annealing Algorithms," May 2001.
- J.M. Bowman, "Evaluating and Analyzing the Performance of Aviation Baggage Screening Security Systems," August 2001.
- J.L. Virta, "Three Essays on the Modeling and Analysis of Aviation Baggage Screening Security Systems," August 2001.
- V. Venkat, "Post-optimality Analysis for Multi-objective Optimization Problems," October 2002 (co-advised with J.A. Stori).
- T. Karnani, "Engineering the Design and Analyzing the Economics of Pediatric Vaccine Formularies," May 2003.  
 - **2004 IIE Graduate Research (Master's Thesis) Award Competition, Second Place.**
- I. Shiryayev, "A Sensitivity Analysis of Matching Coin Game Strategies," December 2004.
- S. Dutta, "Applications of Balance Optimization Subset Selection," August 2016.
- Z. She, "Essays on the Relationship Between Public Transit usage and Obesity," December 2017 (co-advised with D.M. King).
- K. Li, "Modeling and analyzing the NCAA Men's Division I Basketball Tournament," December 2017.

**SPONSORED RESEARCH (Over \$5.0M)**

*National Science Foundation*, Research Initiation Award, 9/1994 to 8/1998, "Building and Analyzing Discrete Event Simulation Models of Complex Systems: A Computational Complexity Approach," Division of Design, Manufacturing, and Industrial Innovation, DMI-9409266.

*Air Force Office of Scientific Research*, 2/1995 to 1/1998, "Building and Analyzing Discrete Event Simulation Models of Complex Manufacturing Systems: A Computational Complexity Approach," Division of Mathematical and Computer Sciences, F49620-95-1-0124.

- National Science Foundation* (with H.D. Sherali), 9/1995 to 8/1996, "Engineering Research Equipment: Workstations for Computational Studies in Large-Scale Simulation and Mathematical Programming Research," Division of Design, Manufacturing, and Industrial Innovation, DMI-9423929.
- Air Force Office of Scientific Research*, 2/1998 to 11/2000, "Discrete Manufacturing Process Design Optimization Using Generalized Hill Climbing Algorithms," Division of Mathematical and Computer Sciences, F49620-98-1-0111.
- Air Force Office of Scientific Research*, 5/1998 to 5/2001, "AASERT - Optimal Discrete Manufacturing Process Design Optimization," Division of Mathematical and Computer Sciences, F49620-98-1-0432.
- Rowe Furniture and the Virginia Center for Innovative Technology* (with J.E. Kobza), 2/1999 to 7/1999, "A Simulation Study of New Layouts for a Furniture Manufacturing Facility."
- Federal Aviation Administration*, 7/1999 to 12/2000. "Deployment of Aviation Security Technologies," DTFA01-99-C-00085.
- National Science Foundation*, 1/2000 to 1/2003, "A Study of Local Search Strategies Using Generalized Hill Climbing Algorithms," Division of Design, Manufacturing, and Industrial Innovation, DMI-9907980.
- Air Force Office of Scientific Research* (subcontracted through Austral Engineering and Software, Inc.) (with J.A. Stori), 10/2000 to 10/2001, "Software System for Criteria Management in Multi-Objective Optimization-Guided Design of Sequences of Materials Processes," Division of Mathematical and Space Sciences , F49620-00-C-0044.
- Air Force Office of Scientific Research*, 12/2000 to 11/2003, "Designing Optimal Generalized Hill Climbing Algorithms, with Applications to Discrete Manufacturing Process Design Optimization," Division of Mathematical and Space Sciences, F49620-01-1-0007.
- National Science Foundation* (with John, E. Kobza), 9/2001 to 8/2006, "Collaborative Research: A Study of Aviation Access Control Security Systems," Division of Design, Manufacturing, and Industrial Innovation, DMI-0114499, DMI-0211053.
- Air Force Office of Scientific Research* (subcontracted through Austral Engineering and Software, Inc.) (with J.A. Stori), 10/2001 to 7/2004, "Software System for Criteria Management in Multi-Objective Optimization-Guided Design of Sequences of Materials Processes," Division of Mathematical and Space Sciences , F49620-00-C-0044.
- National Science Foundation* (with Edward C. Sewell), 1/2003 to 6/2005, "Collaborative Research: Research on Designing Vaccine Formularies for Childhood Immunization," Division of Design, Manufacturing, and Industrial Innovation, DMI-0222597.
- Air Force Office of Scientific Research*, 3/2004 to 2/2007, "A Heuristic Design Information Sharing Framework for Hard Discrete Optimization Problems," Division of Mathematical and Space Sciences, FA9550-04-1-0110.
- National Science Foundation* (with Edward C. Sewell), 8/2005 to 7/2008, "Collaborative Research: Pediatric Vaccine Formulary Design and Optimization," Division of Design, Manufacturing, and Industrial Innovation, DMI-0457176.
- Air Force Office of Scientific Research*, 3/2007 to 11/2009, "Finite-Time Performance of Local Search Algorithms: Theory and Application," Division of Mathematical and Space Sciences, FA9550-07-1-0232.
- National Science Foundation* (with Wendy Cho) 7/2008 to 6/2009, "SGER-III-CXT: A Computational Approach to Zoning Analysis," Division of Information & Intelligent Systems, IIS-0827540.
- National Science Foundation* (with Wendy Cho, Edward C. Sewell), 7/2009 to 6/2012, "Collaborative Research: Shifting Paradigms: Causal Inference via Subset Selection," Division of Social and Economic Sciences, SES-0849223.
- National Science Foundation*, 8/2009 to 7/2013, "New Approaches to Protecting Transportation Infrastructure," Division of Civil, Mechanical and Manufacturing Innovation, CMMI-0900226.

*Air Force Office of Scientific Research*, 7/2010 to 7/2013, "Optimal Dynamic Asset Allocation Problems: Addressing the Impact of Information Uncertainty and Quality," Division of Mathematical and Space Sciences, FA9550-10-1-0387.

*National Science Foundation*, 8/2012 to 7/2017, "A Game Theoretic Approach to Pediatric Vaccine Pricing," Division of Civil, Mechanical and Manufacturing Innovation, CMMI-1161458.

*Air Force Office of Scientific Research*, 2/2015 to 2/2018, "Optimal Dynamic Asset Allocation Problems: New Approaches for Managing Input Data Uncertainty," Division of Mathematical and Space Sciences, FA9550-15-1-0100.

*National Science Foundation*, 3/2016 to 3/2018, "Workshop: Setting a Broader Impact Innovation Roadmap; Arlington, Virginia; May 2016" Division of Civil, Mechanical and Manufacturing Innovation, CMMI-1629955.

*Air Force Office of Scientific Research*, 3/2019 to 3/2022, "Optimal Real-time Decision-making in an Uncertain World," Division of Information and Networks, FA9550-19-1-0111.

### **CORPORATE GIFTS**

*Alcoa Foundation* (with C.P. Koelling), 10/1997 to 10/1999, \$60,000 to support the ISE Computational Laboratory and the Simulation and Optimization Laboratory, Department of Industrial and Systems Engineering, Virginia Polytechnic Institute and State University.

### **CONSULTING**

*Biological and Popular Culture, Inc.*, Radford, VA (4/1996-12/1997).

*Logicon*, Fairfax, VA (1/1998-7/1999).

*SmithKline Beecham Pharmaceuticals*, Philadelphia, PA (1/2000-7/2000).

*Austral Engineering and Software, Inc.*, Athens, OH (9/2000-5/2001).

*Homeland Security Institute*, Alexandria, Virginia (3/2006-10/2006).

Fish and Richardson, Philadelphia, PA (2/2015-8/2015).

Security Point Media (12/2017-Present)

### **CORPORATE BOARD ACTIVITIES**

Scientific Advisory Board, *Biopop Inc.*, Radford, Virginia (11/2000-12/2002).

### **SELECTED MEDIA COVERAGE AND OUTREACH**

The papers "An Integer Programming Model for Vaccine Procurement and Delivery in the National Childhood Immunization Program: A Pilot Study," (co-authored with Edward C. Sewell, Robert Deuson, and Bruce G. Weniger) published in *Health Care Management Science* (Volume 2, Number 1, January 1999) by Baltzer Science Publishers, and "Addressing the Challenges to Immunization Practice with an Economic Algorithm for Vaccine Selection," (co-authored with Bruce G. Weniger, Robert T. Chen, Edward C. Sewell, Robert Deuson, J.R. Livengood, and W.A. Orenstein) published in *Vaccine* (Volume 16, Number 19) by Elsevier Science, received significant media coverage following a press release issued on December 21, 1998 by Virginia Polytechnic Institute and State University. Media coverage included

- Article, *Hepatitis Weekly* on 23 November 1998.
- Television news spot, WDBJ-7 (CBS affiliate in Roanoke, Virginia) on 17 December 1998.
- Radio news spot, *Morning Edition*, Virginia News Network, National Public Radio (NPR) on 21 December 1998.
- Article, *Richmond Times - Dispatch* on 24 December 1998.
- Article, *Health Letter of the CDC* on 11 January 1999.
- Article, *Vaccine Weekly* on 11 January 1999.
- Article, *Journal of the American Medical Association* (Quick Uptakes) on 27 January 1999.
- Article, *Infectious Diseases in Children*, Volume 12, Number 2, February 1999.



The paper "A New Neighborhood Function for Discrete Manufacturing Process Design Optimization Using Generalized Hill Climbing Algorithms," (co-authored with Diane E. Vaughan and Derek E. Armstrong) published in *ASME Journal of Mechanical Design* (Volume 122, Number 2, 164-171) was featured in an article on 20 October 2000 focusing on new directions in manufacturing research in *Advanced Manufacturing Technology*.

Sheldon H. Jacobson briefed the Advisory Committee on Immunization Practice (ACIP) on a web-site he co-developed for designing optimal pediatric vaccine formularies at their October 2001 meeting in Atlanta, Georgia (the ACIP is the nation's primary advisory board on immunization issues, providing guidance and advice to the Secretary of Health and Human Services).

The paper "Using Monte Carlo Simulation to Determine Combination Vaccine Price Distributions for Childhood Diseases," (co-authored with Edward C. Sewell) published in *Health Care Management Science* (Volume 5, Number 2, April 2002) by Baltzer Science Publishers, received media coverage following a press release issued on 8 April 2002 by the news bureau at the University of Illinois. Media coverage included

- Article, *UniSci, International Science News* on 11 April 2002.
- Article, *Immunization News* on 12 April 2002.
- Article, *IIE Solutions*, Volume 24(6), June 2002, p.23.
- Article, *Vaccine Weekly* on 26 June 2002.

Sheldon H. Jacobson (and John E. Kobza) briefed personnel within the Office of Science and Technology Policy (in the executive Office of President George W. Bush) on 31 August 2002, on issues related to their aviation security research on assessing the cost and benefit of checked baggage screening strategies.

On 18 February 2003, was a guest (with graduate student Laura A. McLay) on Focus 580 on public radio station WILL-AM580 (in Champaign, Illinois), to discuss our research activities on aviation security. Focus 580 is a daily radio program that interviews newsmakers and experts on national and international affairs.

The paper "Modeling Aviation Baggage Screening Security Systems: A Case Study," that appeared in the March 2003 issue of *IIE Transactions* (Volume 35, Number 3, pages 259-269), co-authored with J.L. Virta, J.M. Bowman, J.E. Kobza, and J.J. Nestor, was highlighted in *Research Reports* in the February 2003 of *Industrial Engineering*, the monthly professional magazine of the Institute of Industrial Engineers.

The paper "Pediatric Vaccine Stockpile Levels: How Much is Enough?" (co-authored with E.C. Sewell, R.A. Proano, and J.A. Jokela) published in *Vaccine* (Volume 24, Number 17, 3530-3537, 24 April 2006) by Elsevier Publishers, received media coverage following a press release issued on 18 April 2006 by the news bureau at the University of Illinois. Media coverage included over sixty web sites, newspapers, and professional magazines, including

- Reference on News-Medical.Net (Australia) on 19 April 2006.
- Reference on [www.vaccinationnews.com](http://www.vaccinationnews.com) on 18 April 2006.
- Reference on [www.medications.com](http://www.medications.com) on 18 April 2006.
- Reference on [www.healthcareindustrytoday.com](http://www.healthcareindustrytoday.com) on 20 April 2006.
- Reference on [www.medicalnewstoday.com](http://www.medicalnewstoday.com) (England) on 20 April 2006.
- Reference on [www.worldwidehealth.com](http://www.worldwidehealth.com) on 20 April 2006.

- Commentary on the *Vaccine* article posted on [www.vaccineethics.org](http://www.vaccineethics.org) on 11 April 2006.
- Reference in *NewsRx* on 9 May 2006.
- Reference in *World Disease Weekly* on 9 May 2006.
- Reference in *Life Science Weekly* on 10 May 2006.
- Reference in *Medical Letter on the CDC & FDA* on 10 May 2006.
- Reference in *Pharma Business Week* on 10 May 2006.
- Reference in *Vaccine Weekly* on 10 May 2006.
- Reference in *Health & Medicine Week* on 11 May 2006.
- Reference in *Biotech Law Weekly* on 12 May 2006.
- Reference in *Drug Week* on 12 May 2006.
- Reference in *Science Letter* on 12 May 2006.
- Reference in *Law and Health Weekly* on 13 May 2006.
- Reference in *Aging and Elder Health Week* on 14 May 2006.

On 24 October 2006, the National Science Foundation (NSF) issued a press release (06-154) “New Technologies Could Make Airport Screening More Effective and Less Cumbersome,” which featured the video “Aviation Security: Researching the Risk.” (it can be viewed at [http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=108133](http://www.nsf.gov/news/news_summ.jsp?cntn_id=108133)). This release provided the details of an NSF hosted call-in program (held 28 September 2006) on the latest developments in airport security.

The paper “The Economic Impact of Obesity on Automobile Fuel Consumption,” published in *The Engineering Economist* (Volume 51, Number 4, 307-323, October –December 2006) by Taylor and Francis received media coverage following a press release issued on 24 October 2006 by the University of Illinois News Bureau, as well as an Associated Press news release on 25 October 2006. Media coverage included several hundred newspaper and magazine articles, radio interviews and broadcasts, and television interviews and reports. Newspaper coverage included the Washington Post, USA Today, The Chicago Tribune, the Los Angeles Times, and the Boston Globe. Magazines included Business Week, Car and Driver, Forbes, Kiplinger, Women’s Health, and Reader’s Digest. Several radio interviews and reports were aired, including “Morning Edition” on National Public Radio, “The Osgood Files” on CBS Radio, and two interviews on Washington Post Radio. Live TV interviews were also given, including “Street Signs” on CNBC TV (on 27 October 2006), MSNBC TV (on 28 October 2006), and the “Closing Bell” on CNBC TV (on 16 November 2006).

Sheldon H. Jacobson appeared as an expert in the film documentary “Killer at Large” (produced by Shinebox Media productions), which highlights the growing obesity epidemic and its impact on society. The documentary was released in December 2007.

The paper “The Tradeoff between Technology and Prescreening Intelligence in Checked Baggage Screening for Aviation Security,” that appeared in *Journal of Transportation Security*, was featured in “A Minute with Sheldon Jacobson: How can better pre-screening make airports safer?” on the University of Illinois web site on 14 February 2008.

The web site, <http://election08.cs.uiuc.edu>, assembled by Sheldon H. Jacobson and his collaborators generated wide spread media attention after the press release “Latest Electoral College Forecast Shows McCain Ahead By as Many as 27 Votes,” was issued on 17 September 2008 by INFORMS. National media attention included references on MSNBC.com on 17 September 2008 (“Political Picks” Ask Again later”), by Carl Bialik (“The Numbers Guy”) in the *Wall Street Journal* on 26 September 2008 (“Oy, a Potential Electoral Mess: The Chance of

Another Deadlock Is Greater Than You Think”) and in Random Samples in *Science Magazine* on 17 October 2008 (“The (B)Ayes Have It”).

The article “Web Site Provides Pediatric Vaccine Pricing”, which appeared in the October 2008 issue of *Managed Care* (Volume 17(10), Page 48), a professional magazine for health care administrators, featured research that was reported in the Jacobson and Sewell (2008) article in *Journal of the American Medical Informatics Association*.

The article “A Shot in the Arm for Integer Programming” by Barry Cipra, which appeared in the November 2008 issue of *SIAM News* (Volume 41, Number 9, pages 1,4) featured the pediatric vaccine modeling and analysis research reported in the Hall et al. (2009) article in *Operations Research*.

The paper “Seeding in the NCAA Men’s Basketball Tournament: When is a Higher Seed Better?” published in *Journal of Gambling, Business, and Economics*, (Volume 3(2), 63-87) received media coverage following a press release issued on 16 March 2009 by the University of Illinois News Bureau. Media coverage included numerous on-line web news sites and newspapers, including the *Chicago Tribune*, [www.cnn.com](http://www.cnn.com), and the *Pittsburgh Post-Gazette*.

The paper “A Sequential Stochastic Passenger Screening Problem for Aviation Security,” that appeared in the June 2009 issue of *IIE Transactions* (Volume 41, Number 6, pages 575-579), co-authored with L.A. McLay and A.G. Nikolaev, was highlighted in *Research Executive Summaries* in the May 2009 issue of *Industrial Engineering*, the monthly professional magazine of the Institute of Industrial Engineers.

The podcast, “Emergency! Pandemic”, which was produced by INFORMS and released on 5 September 2009, featured Sheldon H. Jacobson discussing his research on pediatric immunization, vaccine pricing, vaccine stockpiling, and pandemic response preparation.

Sheldon H. Jacobson was featured on 2 October 2009, in *Science Live* on [www.livescience.com](http://www.livescience.com), based on his record of research contributions during his career.

“A Minute with aviation security expert Sheldon Jacobson: Racial versus behavioral profiling in airport screenings”, was featured on 8 January 2010, on the University of Illinois web site.

Sheldon H. Jacobson provided expert commentary featured in *Will Profiling Make a Difference?* on the New York Times *Room for Debate* web site on 4 January 2010, after the 25 December 2009 terrorist attempt to explode a bomb on the Delta flight from Amsterdam to Detroit. Other quotes by Jacobson on this topic were reported at *Media Matters for America* and the *Keene Sentinel*.

The paper “Evaluating the Impact of Legislation Prohibiting Hand-Held Cell Phone Use While Driving,” published in *Transportation Research Part A: Policy and Practice* (Volume 44(3), 182-193) received media coverage following a press release issued on 8 February 2010 by the University of Illinois News Bureau. Media coverage included over one hundred on-line web news sites and newspapers, including [medicalnews.com](http://medicalnews.com), *Research and Development Magazine*, and the *Boston Globe*.

The paper “Seeding in the NCAA Men’s Basketball Tournament: When is a Higher Seed Better?” published in *Journal of Gambling, Business, and Economics*, (Volume 3(2), 63-87) received media coverage following the article, “Professor of Bracketology: U of I computer

expert's conclusion: 'They call it madness for a reason'" in the *Chicago Tribune* on Sunday, 14 March 2010, and a press release issued on 16 March 2010 by the University of Illinois News Bureau. Media coverage included live radio interviews on 670 The Score, WGN Radio, and the Colin McEnroe Show on WNPR ( Connecticut Public Radio), as well as numerous on-line web news sites and newspapers, including msn.foxsports.com, cacm.acm.org, the Peoria Journal Star, the Belleville News Democrat, and the Rockford Register Star, among others.

Sheldon H. Jacobson provided expert commentary featured in *How to Improve the N.C.A.A. Tournament* on the New York Times *Room for Debate* web site on 1 April 2010.

"A *Minute with* aviation security expert Sheldon Jacobson: Changes to airport security screening procedures" was featured on 5 April 2010, on the University of Illinois web site.

"A *Minute with* data expert Sheldon Jacobson: The impact of hand-held cell phone legislation on driving safety", was featured on 26 May 2010, on the University of Illinois web site.

"A *Minute with* aviation security expert Sheldon Jacobson: The future of airport security screening," was featured on 22 November 2010, on the University of Illinois web site.

Sheldon H. Jacobson was a guest on several radio and television stations to discuss his research on assessing the odds in the 2011 NCAA Men's basketball tournament (WUIS Public Radio, Springfield, IL; New Hampshire Public Radio; WBEZ, Chicago, IL, WILL Public radio, Champaign,IL; WCIA-TV, Champaign, IL). Interviews were broadcasted between 9 March and 17 March 2011.

"A *Minute with* vaccine economics expert Sheldon Jacobson: The economics of pediatric vaccine pricing," was featured on 21 June 2011, on the University of Illinois web site.

The paper "Evaluating the Effectiveness of Sequential Aviation Security Screening Policies," which appeared in the August 2011 issue of *IIE Transactions* (Volume 43, Number 8, pages 547-565), co-authored with A.J. Lee, was highlighted in *Research Executive Summaries* in the July 2011 issue of *Industrial Engineering*, the monthly professional magazine of the Institute of Industrial Engineers.

The National Science Foundation (NSF) issued the press release (11-184), "From 9/11 to Now: Lessons from the Tragedy," which featured Sheldon Jacobson and his NSF supported research activities in this area.

"A *Minute with* aviation Security expert Sheldon Jacobson," was featured on 11 September 2011, on the University of Illinois web site. It discussed how aviation security has changed over the past decade, and the future of aviation security.

Sheldon H. Jacobson published an opinion letter in *USA Today* on 3 November 2011, responding to *TSA chats address limits of technology*.

Sheldon H. Jacobson appeared in the KCCI-TV (CBS affiliate, Des Moines, IA) news special report *Airport Insecurity, Part II* on 18 November 2011.

A *Minute with* Sheldon Jacobson, expert on statistics related to travel, was featured on 19 January 2012, on the University of Illinois web site. It discussed how the recent leveling off of obesity rates may be associated with the leveling off of how much Americans are driving.

The paper “Addressing Passenger Risk Uncertainty for Aviation Security Screening,” published in *Transportation Science*, (Volume 46) received media coverage following the new release *Risk-based passenger screening could make air travel safer*, issued on 31 January 2012 by the University of Illinois News Bureau, in conjunction with the National Science Foundation. Media coverage included live radio interviews on radioislam.com (Chicago, IL), *WFMB-AM 1450* (Springfield, IL), and *WAND-TV* (NBC Affiliate, Champaign, IL), as well as coverage on numerous web news outlets.

*A Minute with Sheldon Jacobson*, on “March Madness”, was featured on 7 March 2012, on the University of Illinois web site. It discussed the patterns in how the seeds advance in the NCAA Division I Men’s basketball tournament. News coverage included the *Chicago Tribune: Hoops +/- Winners?*, *Business Week: My March Madness Picks (Or 'I Think Data Made Me a Psychic')*, *Discovery News (via MSNBC.com): March Madness bracketology: The science*, *GigaOM*, and *Bloomberg Businessweek*.

Sheldon H. Jacobson published an opinion letter in *USA Today* on 30 March 2012, about how the NCAA men’s basketball tournament serves as a stimulus for young people interested in pursuing careers in science, technology, engineering and mathematics.

Sheldon H. Jacobson was quoted in the news article, “Republicans take aim at TSA, agency is inefficient, too expensive,” published on 1 April 2012 in the *Daily News Journal* (Nashville, TN).

Sheldon H. Jacobson was quoted in the news stories, “Texting while driving hard to enforce,” reported by *WLDS-WEAI News* (Jacksonville, IL), and “Illinois Lawmakers Debate New Cell Phone Restrictions,” reported by *CBS (KMOX St. Louis)* on 23 April 2012.

Sheldon H. Jacobson was quoted in the Reuters news stories, “As America's waistline expands, costs soar” on 30 April 2012. Over 120 national media outlet picked up the story, including *MSNBC*, *CNBC*, *Fox News*, *Huffington Post*, *Forbes*, *Baltimore Sun*, *Chicago Tribune*, *Orlando Sentinel*, *Sun Sentinel*, *Toronto Sun*, *Edmonton Sun*, *Winnipeg Sun*, *Ottawa Sun*, *Calgary Sun*, several public and commercial radio stations, and others.

Sheldon H. Jacobson was quoted in the *Wall Street Journal Numbers Guy* blog on 4 May 2012, “The Waiting Game” on how long queues at international customs processing at London Heathrow airport can be improved.

Sheldon H. Jacobson was quoted in the Reuters news stories, “U.S. airport security could detect Qaeda device: officials” on 8 May 2012 and “Would-be suicide bomber was U.S. informant” on 9 May 2012. Over 6000 national and international media outlets reported the story, including *MSNBC*, *CNBC*, *Chicago Tribune*, *Baltimore Sun*, *London Free Press*, and others.

The news article “Automobiles can increase obesity, study says,” appeared in the *Deseret News* (Salt Lake City, Utah) on 8 May 2012, featuring research that was reported in Jacobson, King, and Yuan (2011).

The news article “RSOs prepare to inform students for Election Day using UI professor's election prediction site,” appeared in the *Daily Illini* (Urbana, Illinois) on 22 August 2012, featuring the election forecasting website, [electionanalytics.cs.illinois.edu](http://electionanalytics.cs.illinois.edu).

Sheldon H. Jacobson was featured on 24 August 2012, on Science360 radio, [www.science360.gov/radio](http://www.science360.gov/radio) based on his research contributions.

*A Minute with Sheldon Jacobson*, on “Bracketology”, was featured on 11 March 2013, on the University of Illinois web site. It discussed the patterns in how the seeds advance in the NCAA Division I Men’s basketball tournament. News coverage included *Bloomberg Business Week*, *Time out Chicago Magazine*, and *WILL Radio Afternoon Magazine*.

The article "Hang Up the Car Keys," appeared in *Cancer Today* (Spring 2013, Volume 3(1), page 57), features research on the interrelationship between caloric intake, automobile use, and obesity, which was reported in Behzad, King, and Jacobson (2013).

A Minute With™ Sheldon H. Jacobson, U. OF I Expert on Data Analytics was featured on 13 March 2014. In addition, The Bleacher Report featured four web videos: Crunching the Number to Reveal the Biggest Potential Upsets in the West Region, Crunching the Number to Reveal the Biggest Potential Upsets in the East Region, Crunching the Number to Reveal the Biggest Potential Upsets in the Midwest Region, Crunching the Number to Reveal the Biggest Potential Upsets in the South Region. USA Today: Dominate March Madness: Tips for a better bracket, quoted Jacobson from the bracketodds web site.

The University of Illinois News Bureau issued the Press Release (17 April 2014), “Study Recalculates the Cost of Combination Vaccines,” based on the paper “The Relationship Between Pediatric Combination Vaccines and Market Effects,” which appeared in the *American Journal of Public Health*.

The University of Illinois College of Medicine at Urbana released the story (14 May 2014), “Computer Science Points to Holy Grail of Medical Scheduling,” based on research on how to schedule residents in internal medicine residency programs. The joint research effort between Jacobson and Janet A. Jokela, MD, has resulted in a software package, RESIDENT, which is being alpha tested at the University of Illinois College of Medicine at Urbana internal Medicine residency program.

Sheldon H. Jacobson was quoted in the article, "Airports Have No Way to Screen for Ebola," by Patrick Tucker, which appeared on-line in the *National Journal* on 1 August 2014. Jacobson commented on the challenges of screening for Ebola at airports, the similarities in such screening with aviation security screening, and how prescreening can be an effective strategy in such environments. The story was also featured in the Homeland Security Newswire on 4 August 2014.

The University of Illinois News Bureau issued the Press Release (2 September 2014), “Seatbelt laws encourage obese drivers to buckle up,” based on the paper “Seatbelt usage: Is there an association with obesity?” which appeared in the journal, *Public Health*. Coverage included ABC Radio (plus many of its affiliate stations) (4 September 2014) and WCIA-TV 3 in Champaign, IL (8 September 2014).

Invited to write the Op-Ed " Airports should be screening for Ebola the same way they screen for terrorists," for the Washington Post *PostEverything* blog on using aviation security screening to prevent the spread of the Ebola virus in the United States (2 October 2014). This resulted in being quoted in the Associate Press article, “Airports, airlines and Ebola: 5 things to know” (4 October 2014), being quoted in the commentary, “A Manhattan Project against Ebola” in the Chicago Tribune (7 October 2014), a live interview on “Weekends with Alex Witt” on MSNBC (5

October 2014), an interview on WAND-TV (NBC, Decatur, IL, 5 October 2014), a live interview on CBC Radio Canada “the Current” (6 October 2014), live interviews on HuffPost Live (6,8,14,17 October 2014), a live interview on WTOP CBS Radio 103.5, Washington DC, 6 October 2014), an interview on WCIA-TV (CBS Champaign, IL, 6 October 2014), and a live interview on CBC TV National News, Toronto, Canada, 11 October 2014).

Sheldon H. Jacobson was quoted in the article, “TSA seizes record number of guns from passengers in 2014,” in the *Washington Times* (4 January 2015).

Sheldon H. Jacobson was quoted in the article, “Child vaccines out of reach for developing countries, charity warns,” on *CBC New Radio Canada* (20 January 2015).

Sheldon H. Jacobson's research on obesity and its impact on fuel economy was quoted in the article "Obesity Is Hurting the U.S. Economy in Surprising Ways on *Bloomberg.com* (4 March 2015) and "Walking's worth the (lack of) weight," in the *Pittsburgh Post-Gazette*. (8 March 2015)

A Minute With™ Sheldon H. Jacobson, U. of I Statistics Expert, A Method to March Madness, was featured on 11 March 2015. See also, How to pick a winning NCAA Bracket (YouTube, 11 March 2015), NCAA Tournament 2015: Schedule, Picks, Tips for NCAA Bracket Success (Bleacher Report, 16 March 2015), 12 Tips to Ensure A March Madness Bracket Victory (Buzzfeed, 16 March 2015), How to Build the Perfect NCAA Bracket (Men's Health, 17 March 2015), UI website uses 30 years experience for perfect brackets (CBS WCIA-TV3, 17 March 2015), and What to know: Facts, stats and nuggets about the 2015 NCAA tourney (CBS Sports, 17 March 2015).

Sheldon H. Jacobson was quoted in the article, "How Not To Fix Airport Screening" by Patrick Tucker, *Defense One* (2 June 2015). See also "The One Right Way to Solve the TSA Crisis Is Politically Incorrect," in the *Fiscal Times* (4 June 2015).

Sheldon H. Jacobson is quoted on the spread of mumps on college campuses (8 October 2015) "College campus outbreaks require timely public health response" in *Infectious Diseases in Children*.

A Minute With™ Sheldon H. Jacobson, U. of I Data Science Expert, Why you should factor driving into your weight loss plan, was featured on 8 January 2016.

A Minute With™ Sheldon H. Jacobson, U. of I Professor of Computer Science, How to improve your chances for a perfect March Madness, was featured on 9 March 2016.

A Minute With™ Sheldon H. Jacobson, U. of I aviation security expert, What should be done about long delays for security checks at airports? was featured on 17 May 2016.

"*O'Hare middle of the pack for security fence breaches*", which appeared in the *Chicago Daily Herald* (Marni Pyke) quotes Sheldon H. Jacobson on the Associated Press report discussing airport security fence breaches (25 May 2016).

"*TSA PreCheck: Will it shorten security lines at airports?*" which appeared in the *Christian Science Monitor* (Lucy Schouten), quotes Sheldon H. Jacobson on the benefits of TSA PreCheck (25 June 2016).

"*After Istanbul, Here's How Airport Experts Want to Protect You at the Curbside*" which appeared in *Defense One* (Patrick Tucker) quotes Sheldon H. Jacobson on how security can be further hardened, in response to Jeh Johnson's (DHS Secretary) call for more security vigilance at airports and other venues (30 June 2016). See also "*How to Improve Airport Security in the Wake of the Istanbul Attack*" in the *Fiscal Times* (1 July 2016).

"*Trump says Profiling has Protected Israel. It Probably Wouldn't Work Here,*" which appeared on [fivethirtyeight.com](http://fivethirtyeight.com) (Carl Bialik) quotes Sheldon H. Jacobson on Israel security profiling and its impact in the United States (28 September 2016).

"*This U of I Forecast had Clinton's chances at 100%. What went wrong?*" covers the Election Analytics program at the University of Illinois (Chicago Inno) (9 November 2016). See also



*"How Chicago Tech can Help you Survive This Election"* (2 November 2016); *"Donald Trump has a 0% Chance of Winning the Election, According to U of I Computer Scientists"* (10 October 2016).

*"Making TSA PreCheck free can save TSA millions: Report"* (*Chicago Tribune*; Mary Wisniewski) quotes a recent study by Sheldon H. Jacobson, Arash Khatibi, and Ge Yu, on why TSA PreCheck should be offered at no cost to high volume travelers (5 December 2016). See also *"TSA could save money by waving PreCheck fees for frequent travelers, study finds,"* University of Illinois News Bureau (5 December 2016); *"TSA would save millions if PreCheck was free for all flyers, Illinois prof argues,"* *Chicago Business Journal* (5 December 2016); *"Study Finds making PreCheck free could save millions,"* CBS Radio WBBM, Chicago IL (5 December 2016); *"U of I study says TSA could save money by waiving PreCheck program fees,"* ABC 7 Eyewitness News, Chicago, IL (5 December 2016); *"Making TSA PreCheck free could save millions of dollars, study suggests,"* *Los Angeles Times* (5 December 2016); *"TSA should drop enrollment fee for PreCheck, Study finds,"* *Consumer Affairs* (5 December 2016); *"TSA Could Waive \$85 PreCheck Fee and Save Millions,"* *Vocative* (6 December 2016).

*"TSA Investigating Security Breach at JFK Airport"* (*CBS This Morning*, New York, NY) quotes Sheldon H., Jacobson on the security breach at JFK airport (21 February 2017). See also *"Impact of Airport Attacks on Security"* (WRBL CBS, Columbus, OH).

A Minute With™ Sheldon H. Jacobson, U. of I Professor of Computer Science, *Can data analytics help you fill out a March madness bracket?* was featured on 7 March 2017. See also *2017 NCAA Tournament: Stats facts to know to fill out a March Madness bracket* (Matt Norlander, *CBS Sports*) (14 March 2017), *March Madness Bracket 2017: Betting Advice, Historical Trends and Predictions* (Paul Kasabian, *Bleacher Report*) (12 March 2017); *How to hack your March Madness bracket to win* (Samuel Anderson, *Best Life*) (12 March 2017).

Sheldon H. Jacobson delivered two BBC interviews (one radio, one television via skype) on the electronics ban for overseas flights implemented by the DHS (21 March 2017). The radio interview was carried nationwide on NPR (AM) on 21 March 2017. Was also quoted in *What to know about the new airline electronics ban* (*CBC Canada News*, 21 March 2017), *Here's why the US is banning larger electronics on some overseas flights* (Katie Reilly, *Time*, 21 March 2017), *Why the airline's electronics ban may not be discrimination* (Patrick Reilly, *Christian Science Monitor*, 21 March 2017), and *Clamping down on carry-on devices* (*CBC Canada News*, 21 March 2017).

The University of Illinois issued the Press Release *Study: Higher mass transit use is associated with lower obesity rates*, on 16 May 2017, based on the paper "Analyzing the impact of public transit usage on obesity," which appeared in the *Preventive Medicine* (Volume 99, pages 264-268). See also *Higher mass transit use linked with lower obesity rates* (Amy Wallace, *United Press International*, 17 May 2017), *Mass transit linked to lower obesity rates in study* (Mary Caffrey, *American Journal of Managed Care*, 17 May 2017), *What Scientists Found about Losing Weight and Obesity after Observing how People use Public Transportation* (Harold Mandel, *EmaxHealth*, 17 May 2017), *Using Public Transportation reduced obesity and makes people healthier* (Mihai Andrei, *ZMEScience*, 17 May 2017), *All Aboard! Next Stop, Less Obesity* (Tom Jacobs, *Pacific Standard Magazine*, 17 May 2017), *MTA can help you lose weight* (Ariel Scotti, *New York Daily News*, 17 May 2017), *Using mass transit leads to drop in obesity rates, study finds* (Christopher Maynard, *Consumer Affairs*, 17 May 2017), *Investing in mass transit helps communities lower their obesity rates, study suggests* (Susan Perry, *MinnPost*, 18 May 2017), *The MTA can help you lose weight* (John Daniels, *The Informer*, 17 May 2017),

*Higher mass transit use linked with lower obesity rates* (Charmaine Lamabao, *NewsLine*, 18 May 2017), *Mass transit use correlates with obesity rates* (Todd Gleason, *Illinois Public Media News*, WILL-AM 580, 19 May 2017), *Green Bay students get a free ride | Our view*, (*Green Bay Press-Gazette*, 20 May 2017), *Community investment in transit can lower obesity rates*, (*Missouri Public Transit Association*, 26 May 2017).

The University of Illinois issued the Press Release *Mass killings happen randomly, yet rate has remained steady, study finds*, on 18 October 2017, based on the paper, “*Random Acts of Violence? Examining Probabilistic Independence of the Temporal Distribution of Mass Murders in the United States*,” which appeared in *Victims and Violence*. Volume 32(6), pages 1014-1023). See also [Study Finds Mass Killings Not On The Rise Over Past Decade](#) (TV Report) (Nancy Harty, *CBS Chicago*, 18 October 2017), [Mass killings in the US happen randomly - but at a steady rate for the last 10 years, study finds](#) (Cheyenne Macdonald, *Daily Mail (UK)*, 18 October 2017), [U.S. Mass Killings Occurring at 'Uniform' Rate, Say Scientists](#) (Peter Hess, *Inverse*, 18 October 2017), [Mass Killings are not Becoming More Common](#) (John Hinderaker, *Powerline*, 18 October 2017), [Despite Vegas and Media Narrative, Mass Killings Aren't on the Rise “The data doesn't lie.”](#) (Trey Sanchez, *Truth Revolt*, 18 October 2017), [Mass Shootings are Not on the Rise, Study Shows](#) (S. Noble, *Independent Sentinel*, 18 October 2017), [New Study Says Mass Murders are Not on the Rise in the U.S.](#) (Warner Todd Huston, *American News 24/7*, 18 October 2017), [Study finds no spike in mass killings over past decade](#) (Nikki McGee, *Fox Illinois*, 18 October 2017), [The One Figure You Probably Haven't Heard About Mass Shootings](#) (Jazz Shaw, *Hot Air*, 19 October 2017), [Mass killings rate steady over past decade, but totally random](#) (Seth Augenstine, *Forensic Magazine*, 19 October 2017), [Research Finds Mass Killings Are Not on the Rise](#) (*Police Magazine*, 19 October 2017), [Study: Despite More Coverage, Mass Killings Not Occurring More Often](#) (Matt Masterson, *Chicago Tonight, WTTW*, 19 October 2017), [U.S. Mass Killing Occurring at a 'Uniform' Rate](#) (ACM Tech News, 19 October 2017), [Mass killings happen randomly, yet rate has remained steady, study finds](#) (Victoria Ritter, *Gears of Biz*, 20 October 2017), [Study Says Mass Killings are Hard to Predict](#) (*Security Magazine*, 23 October 2017), [New Research Can Help First Responders](#) (Grant Stinchfield, *NRATV*, 24 October 2017), [Comprehensive data shows mass shootings in America have risen sharply](#) (The Hill, 31 October 2017).

(11 January 2018) “*Une conseil: en cas de tempete ne utilisez pas l'aeroporte JFK*” (Maxime Aubin, *French Morning (New York)*) reports commentary by Sheldon H. Jacobson on the cause of the bomb cyclone that struck New York JFK Airport.

(30 January 2018) [DHS's New Plan for Refugee Screening Looks a Lot Like TSA PreCheck](#) (Patrick Tucker, *Defense One*) reports commentary by Sheldon H. Jacobson on how immigration screening can be conducted using a program modeled after TSA PreCheck®.

(1 March 2018) [If US states cannot fund their universities, they must stand aside](#), which appeared in *Times Higher Education*, discusses the plight of public research universities and offers two solutions, privatization or nationally funded consortia.

(5 March 2018) [Who makes the NCAA tournament? Researchers at the University of Illinois can help](#), based on the paper “*Modeling the NCAA basketball tournament selection process using a decision tree*” published in the *Journal of Sports Analytics* (Volume 4, pages 65-71). See also [Will your team make or miss the NCAA Tournament? New study may already have the answer](#)

(7 March 2018) March Madness Upset Prediction: New Method Using Publicly Available Statistics Outperforms Other Techniques released by the *American Statistical Association*, based on the paper "Identifying NCAA Tournament Upsets using Balance Optimization Subset Selection," published in *Journal of Quantitative Analysis in Sport* (Volume 13(2), pages 79-93.) See also Saturday Science Edition (10 March 2018, *The Daily Kos*, Chitown Kev).

(9 March 2018) Interview on ESPN Radio 93.5 with Sheldon H Jacobson discussing the NCAA Tournament field selection, bracket-building, and other tournament topics (Jeremy Werner Show, begins at 27:30).

(12 March 2018) NCAA Basketball: 2018 March Madness schedule, bracket – and how to win a tournament pool as a newbie (*Mic*, James Dennin).

(12 March 2018) March Madness and Bracketology: Cheryl Raye Stout vs The Machine (WBEZ Chicago Public Radio, *Morning Shift* with Tony Saraiba). See also Whose NCAA Bracket Did Better: Cheryl Raye Stout vs The Machine (3 April 2018, WBEZ Chicago Public Radio, *Morning Shift* with Tony Saraiba).

(12 March 2018) Science of Upsets: Prof has formula that doubles your shot (Associated Press, Eddie Pells) appeared in numerous media outlets, both on-line and in print, including the *New York Times*, *Washington Post*, *ESPN*, *USAToday*, *FoxSports*, and *ABC News*. See also That smarts: Buffalo makes the computer look brilliant (16 March 2017, Associated Press, Eddie Pells), NCAA tournament Winners and Loser: TruTV, Sister Jean, Thomas Jefferson and more (19 March 2018, *Chicago Tribune*, Teddy Greenstein, Phil Rosenthal and Tim Bannon), and Using machine learning in basketball brackets and beyond (*Cisco News*, Stephanie Chan).

(12 March 2018) March Madness: Analytics are making picking winning brackets easier (USAToday, AJ Perez).

(3 April 2018) Technology holds the key to redistricting reform (*Houston Chronicle*, Jay K. Aiyer (opinion)) draws on research by Sheldon H. Jacobson to argue that artificial intelligence and algorithms can help solve the problem of gerrymandering in drawing political boundaries.

(16 April 2018) Local firm Stats bets big on artificial intelligence to gather sports data (*Chicago Tribune*, Ally Marotti) reports commentary by Sheldon H. Jacobson on how artificial intelligence is impacting the value of sports data.

(25 April 2018) *Letter: Human error still a part of self-driving cars*, which appeared in *USAToday* (page 5A), discusses how self-driving cars remain subject to human error, through compliance with the framework under which they must operate.

(25 September 2018) *So Many Cars: Why American Life Expectancy Falls Short* (*Mises Wire*, Ryan McMaken) cites Sheldon H. Jacobson's research on the association between obesity and automobile use.

(28 November 2018) *Study: Public transportation use linked to better public health*, which discussed Sheldon H. Jacobson's research on the association between obesity and public transportation. was featured by *Medical Xpress*, *mymedicalmantra*, *Daily Illini*, *de Beaumont Foundation* (in the news), and *Science Magazine*.