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**EDUCATION:**

June 1984: Ph.D.; Massachusetts Institute of Technology (Urban Studies and Planning). Focus on operations research applied to public policy analysis and urban service systems.

June 1982: Master of Science in Mathematics (Statistics); Massachusetts Institute of Technology. Focus on statistical modeling and the analysis of categorical data.

June 1979: Master of Science in Operations Research; Massachusetts Institute of Technology. Focus on applied probabilistic modeling.

June 1979: Master in City Planning; Massachusetts Institute of Technology. Focus on methods for evaluating public programs.

June 1977: Bachelor of Arts (First Class Honors) in Economic/Urban Geography; McGill University; Montreal, Quebec, Canada.

**ACADEMIC EXPERIENCE:**

June 2014 – present: William N. and Marie A. Beach Professor of Operations Research, Yale School of Management.

February 2000 – June 2014: William N. and Marie A. Beach Professor of Management Sciences, Yale School of Management.

January – May 2012: Distinguished Visiting Professor, Graduate School of Business, Stanford University.

January – May 2006: Visiting Research Scholar, Decision, Risk and Operations Division, Graduate School of Business, Columbia University.

January 2006 – present: Professor of Engineering, Department of Chemical Engineering, School of Engineering and Applied Science, Yale University.

February – May 2000: Visiting Professor of Operations Research and Statistics, Sloan School of Management, Massachusetts Institute of Technology.

July 2001 – June 2005: Director, Methodology and Biostatistics Core, Center for Interdisciplinary Research on AIDS, Yale University.

July 1999 – June 2001: Director, Law, Policy and Ethics Core, Center for Interdisciplinary Research on AIDS, Yale University.

July 1998 - present: Professor of Public Health, Yale School of Public Health, Yale University.

July 1998: Visiting Professor, Davidson School of Management, Technion Israel Institute of Technology, Haifa.

February 1997 - June 1997: Lady Davis Visiting Professor of Statistics, Department of Statistics, Hebrew University, Jerusalem, Israel.

July 1993 – February 2000: Professor of Management Sciences (with tenure), Yale School of Management. Responsible for graduate courses in research methods, policy modeling, management science, and data analysis and statistics.

July 1993 - June 1998: Professor of Medicine, Department of Internal Medicine, Yale School of Medicine. Active in AIDS research consortium.

February 1994 - June 1994: Lady Davis Visiting Professor of Medicine, Hebrew University School of Medicine, Braun School of Public Health and Community Medicine, Hebrew University, Jerusalem, Israel.

July 1991 - June 1993: Associate Professor of Medicine, Department of Internal Medicine, Yale School of Medicine. Active in AIDS research consortium.

July 1989 - June 1993: Associate Professor of Policy Modeling and Public Management, Yale School of Organization and Management; Associate Professor of Operations Research, Operations Research Department, Yale University. Responsible for graduate level courses in policy modeling, managing the AIDS epidemic, and data analysis and statistics. Also supervised doctoral students working on policy models for control of the AIDS epidemic, and on evaluation of needle exchange.

July 1989 - present: Affiliated Faculty, Institution for Social and Policy Studies, Yale University.

January - February 1991: Visiting Research Scholar, Survey Research Center, University of California at Berkeley.

July 1987 - June 1989: Assistant Professor of Operations Research and Public Management; Yale School of Organization and Management. Responsible for graduate and undergraduate courses in applied operations research modeling, with an emphasis on public policy analysis; evaluating public programs; data analysis and statistics. Also responsible for supervision of undergraduate, masters and doctoral student projects.

September 1985 - June 1987: Assistant Professor of Management Sciences; University of Massachusetts at Boston. Responsible for graduate and undergraduate courses in operations management (production); management science models; operations management for public services; statistics.

Summers 1985 - 1987: Instructor in Statistics; Sloan Foundation and Association of Public Policy Analysis and Management (APPAM) Summer Senior Institute; Kennedy School of Government, Harvard.

September 1984 - August 1985: Adjunct Lecturer of Public Policy and Research Associate; John F. Kennedy School of Government; Harvard University. Responsible for graduate courses in operations research for urban services; methods of decision making; operations management in the public sector.

1977 - 1984: Instructor for the following graduate courses at MIT: laboratory in data analysis for planners; introduction to statistical methods for planners; logistical problems in public housing management; decision analysis for planners; formal models and public policy; evaluation of public programs (Department of Urban Studies and Planning); introduction to applied statistics (Department of Mathematics).

#### **AWARDS AND FUNDED RESEARCH:**

October 2019: Awarded *George E. Kimball Medal* of INFORMS for distinguished service to the Institute and to the profession of operations research and the management sciences

August 2018: Keynote Speaker, Asia-Pacific Society for Operations Research, Kathmandu, Nepal

July 2018: Named a *Distinguished Fellow of the INFORMS Manufacturing and Service Operations Management Society*

June 2018: Keynote Speaker, INFORMS International Meeting, Taiwan

April 2017: Illinois Distinguished Lecturer in Operations Research, University of Illinois at Urbana-Champaign

December 2016: Named Titan of Simulation, Winter Simulation Conference, Washington, DC

November 2014: Elected to lead the Institute for Operations Research and the Management Sciences (INFORMS); serving terms as President-Elect (2015), **President** (2016), and Past-President (2017).

June 2013: Israel Pollak Distinguished Lecturer, Technion-Israel Institute of Technology.

March 2013: Distinguished Speaker in Management Science, London School of Economics.

November 2011: Awarded *Koopman Prize* of the INFORMS Military Applications Society for the best publication in the field of military operations research for “Terror Queues.”

November 2010: INFORMS *Expository Writing Award*.

October 2009: INFORMS *Philip McCord Morse Lectureship*.

June 2009: *Shepard Science Award* from the Centers for Disease Control and Prevention, awarded for best 2008 research publication in the area of Assessment and Epidemiology for “Estimation of HIV Incidence in the United States.”

April 2008: *\$1.3 million gift* from Daniel Rose to establish Daniel Rose Technion – Yale initiative in homeland security and counterterror operations research (with Boaz Golany).

November 2006: Awarded *Koopman Prize* of the INFORMS Military Applications Society for the best publication in the field of military operations research for “Operational effectiveness of suicide-bomber-detector schemes: a best-case analysis” (with Moshe Kress).

November 2005: Named a *Fellow of the Institute for Operations Research and the Management Sciences (INFORMS)*

October 2004: Elected to the *Institute of Medicine of the National Academy of Sciences*.

June 2004: Appointed to the Academic Committee of the *Board of Governors of the Technion-Israel Institute of Technology*. (Co-chair, Academic Committee, 2006; served through June 2010).

March 2004: Elected to the *Connecticut Academy of Science and Engineering*

October 2003: Awarded *Koopman Prize* of the INFORMS Military Applications Society for the best publication in the field of military operations research for “Emergency response to a smallpox attack: the case for mass vaccination” (with Lawrence M. Wein and David L. Craft).

February 2003: Elected to the *National Academy of Engineering of the National Academy of Sciences* for assessment of needle-exchange programs and for generally bringing engineering perspectives to the design of public health policies.

November 2002: Presented with the *INFORMS President's Award* for use of the methods of Operations Research and the Management Sciences to advance the welfare of society; awarded in recognition of my work in HIV/AIDS, and also smallpox vaccination policy in the event of a bioterror attack.

May 2001: Selected to deliver the *Pinhas Naor Lecture* to the Operations Research Society of Israel, Zichron Ya'akov.

May 2000: Selected to deliver the *E. Leonard Arnoff Memorial Lecture on the Practice of Management Science* at the University of Cincinnati.

May 2000: Selected to deliver the *Omega Rho Distinguished Lecture* at the Spring 2000 National INFORMS Meeting, and inducted as an *honorary member of Omega Rho*, the international honor society of operations research and the management sciences.

October 1997: Voted the *Dr. Ira V. Hiscock Award* by the Connecticut Public Health Association for national and international leadership in public health.

July 1996 - April 2001: Public Health Impact and Cost Effectiveness of HIV Interventions. **\$3.5 million award from the National Institute on Drug Abuse** (in collaboration with Drs. Margaret Brandeau and Doug Owens, Stanford; Dr. James Kahn, UCSF; Dr. David Paltiel, Yale; and administration by Dr. Donald Thomsen, Societal Institute for the Mathematical Sciences).

January 1996: Awarded *Lady Davis Visiting Professorship* at the Hebrew University of Jerusalem for Spring 1997.

October 1995: Awarded **1994 Frederick W. Lanchester Prize** of the Institute for Operations Research and the Management Sciences (INFORMS) for the best publications in operations research and the management sciences in the English language.

January 1994: Master of Arts *privatim*, Yale University (for promotion to the rank of Professor with tenure).

January 1993: Awarded *Lady Davis Visiting Professorship* at the Hebrew University of Jerusalem for Spring 1994.

December 1992: Nominated for 1992 Connecticut Department of Health Services AIDS Leadership Award (winner of 1991 award)

April 1992: **21st Franz Edelman Award for Management Science Achievement**, awarded by The Institute of Management Sciences (with E. O'Keefe).

April 1992 - March 1995: A Syringe Tracking and Testing System for IVDU Epidemics, **\$1,000,930 grant from the National Institute on Drug Abuse (NIDA)**. This is the first ever federally funded research addressing the efficacy of needle exchange programs.

May 1992 - April 1995: Evaluating the New Haven Model Needle Exchange, **\$177,923 grant from the Robert Wood Johnson Foundation.**

January 1992 - June 1992: Evaluating the New Haven Needle Exchange, **\$49,917 grant from the Robert Wood Johnson Foundation.**

December 1991: *Connecticut Department of Health Services AIDS Leadership Award*; cited for evaluation design of the New Haven Needle Exchange, and for mathematical modeling of the AIDS epidemic.

May 1991: Received *Alumni Award for outstanding teaching at the Yale School of Management* as voted by students and alumni.

May 1991: Presented *Elm-Ivy Award* by New Haven Mayor John Daniels and Yale President Benno Schmidt for pro bono evaluation of New Haven's legal needle exchange program.

1989: Named an Outstanding Young Man of America.

September 1985 - August 1987: Managing The Demand For Public Housing, **\$30,000 grant from the Decision, Risk and Management Sciences Program, National Science Foundation.**

May 1983: Awarded the *Goodwin Medal of the Massachusetts Institute of Technology* for excellence in teaching by a graduate student.

June 1977: Received *Canadian Association of Geographers Award* for best undergraduate thesis in geography at McGill University.

#### **PROFESSIONAL ACTIVITIES (including journal editorial duties):**

Institute for Operations Research and the Management Sciences (INFORMS): President-Elect (2015), President (2016), Past-President (2017)

Intelligence Community Associates program, Office of the Director of National Intelligence (ODNI, 2009-2014)

Israel Ministry of Health committee to evaluate blood donation policy (2014-15)

Member, National Academy of Sciences Committee on Evaluating the Effectiveness of the Global Nuclear Detection Architecture (2012-2013).

Member, National Academy of Sciences Committee on basic research to improve intelligence analysis (2009-2011).

Member, National Academy of Sciences Committee on basic research to defeat improvised explosive devices (IEDs) (2005 – 2007).

Member, Naval Studies Board, National Research Council, National Academy of Sciences (2006 – 2011)

Member, Institute of Medicine Committee on HIV Prevention Strategies (1999 – 2000).

INFORMS, chair Philip M Morse Lectureship Committee (2012-13), member Expository Writing Award Committee (2011-12); chair of same (2012-13).

Member, H. John Heinz III School of Public Policy and Management Advisory Board, Carnegie Mellon University (1998 - 2009).

Member, Program Committee, Track C (Epidemiology and Public Health), 12<sup>th</sup> International Conference on AIDS (Geneva, June/July 1998).

Scientific review board, American Foundation for AIDS Research (AmFAR) (1992 – 2002).

Member, Search Committee, Malone Chairs in Engineering, School of Engineering and Applied Science, Yale University (2011-present).

Director, Law, Policy and Ethics Core, Yale Center for Interdisciplinary Research on AIDS (1999 – 2001).

Director, Methodology and Biostatistics Core, Yale Center for Interdisciplinary Research on AIDS (2001 – 2006).

Member of Executive Committee, Yale Center for Interdisciplinary Research on AIDS, Yale University (1997 - 2006).

Member, Institute of Medicine panel investigating the restructuring of the National Institutes of Health with respect to the incorporation of the former Alcohol, Drug Abuse and Mental Health Administration agencies and their role in AIDS research (1993-94).

Co-chair of U.S. Agency for Health Care Policy and Research panel on the cost-effectiveness of voluntary HIV counseling and testing (1993-1995).

Faculty Advisory Committee, Yale Initiative for the Interdisciplinary Study of Antisemitism (YIISA), 2006-2009.

Chair, Faculty Research Committee, Yale School of Management (1999 - 200).

Chair, Appointments Committee, Yale School of Management (1994- 1996); Member of Appointments Committee (1997 – 2011).

Search Committee for Dean of Yale School of Management (2004, 2010-2011).

Standing Committee on Appointments and Promotions for the Yale School of Public Health (2002 – 2005).

Search Committee, Dean, Yale School of Public Health (2015-16).

Search Committee for Chair of Department of Epidemiology and Public Health and Associate Dean for Public Health, Yale University School of Medicine, 1993-94, and again 2005-06.

Area Editor for Policy Modeling and Public Sector Operations Research, *Operations Research* (2000 – 2005).

Associate Editor, *Operations Research* (1987 - 1999).

Associate Editor, *Naval Research Logistics* (2003 – 2005).

Editorial Board Member, *Journal of AIDS* (1993 - 2008).

Editorial Board Member, *Health Care Management Science* (1997 - 2005).

Associate Editor, *IMA Journal of Mathematics Applied in Medicine and Biology* (1999 – 2002).

Departmental Editor, Public Sector Applications, *Management Science* (1991 - 1999).

Editor at Large, *Interfaces* (1995 - 1999).

Associate Editor, *Journal of Sex Research* (1989 - 1992).

Advisory Committee, *OR/MS Today* (October 1996 - 2008).

Elected Board Member, Institute for Operations Research and the Management Sciences (INFORMS, January 1996 - December 1997).

Chairman, College on Public Programs and Processes, The Institute of Management Sciences (July 1988-July 1990).

Public Information Committee, Institute for Operations Research and the Management Sciences (INFORMS, 1994 - 1997).

Nicholson Prize Committee, INFORMS (1999 - 2001).

Lanchester Prize Committee, Operations Research Society of America/INFORMS (1993-94, 1996-97, Acting Chair 2004).

Education Committee, Operations Research Society of America (1993-1994).

Member of the Institute for Operations Research and the Management Sciences (INFORMS).

Member of the Operations Research Society of Israel (ORSIS).

Peer reviewer for numerous professional and scientific journals.

Grant/fellowship reviewer for numerous government agencies and foundations.

External referee for numerous tenure/promotion/hiring cases.



**RESEARCH INTERESTS:**

Operations research for public policy and management; epidemic modeling with applications to COVID-19, bioterrorism and HIV/AIDS; homeland security and counterterror operations research; applied probabilistic modeling and statistics.

**PUBLICATIONS - BOOKS:**

**Quantitative Evaluation of HIV Prevention Programs** (ed. with R. Brookmeyer), Yale University Press, New Haven, Connecticut, 2002.

**No Time To Lose: Getting More from HIV Prevention** (ed. with Monica Ruiz, Alicia Gable, Michael Stoto, Harvey Fineberg, and James Trussell), National Academy Press, Washington, DC, 2001.

**Modeling The AIDS Epidemic: Planning, Policy and Prediction** (ed. with M. Brandeau), Raven Press, New York, 1994.

**PUBLICATIONS – ARTICLES:** (with co-authors as stated):

153. Predicting daily COVID-19 case rates from SARS-CoV-2 RNA concentrations across a diversity of wastewater catchments. *FEMS Microbes* (with Zulli A, Pan A, Bart SM, Crawford FW, Cartter M, Ko AI, Sanchez M, Brown C, Cozens D, Brackney DE, and Peccia J.) <https://doi.org/10.1093/femsmc/xtab022>.
152. Modeling local coronavirus outbreaks. *European Journal of Operational Research* 2021. <https://doi.org/10.1016/j.ejor.2021.07.049> (with Joseph T. Chang).
151. Controlling the spread of coronavirus via repeat testing and isolation. *Significance* 2020. <https://www.significancemagazine.com/692> (with Joseph T. Chang).
150. Snapshot Models of Undocumented Immigration. *Risk Analysis* 2020 <https://onlinelibrary.wiley.com/doi/10.1111/risa.13658>
149. Repeat SARS-CoV-2 Testing Models for Residential College Populations. *Health Care Management Science* 2020. <https://doi.org/10.1007/s10729-020-09526-0> (with Joseph T. Chang and Forrest W. Crawford).
148. Aligning SARS-CoV-2 Indicators via an Epidemic Model: Application to Hospital Admissions and RNA Detection in Sewage Sludge. *Health Care Management Science* 2020. <https://doi.org/10.1007/s10729-020-09525-1> (with Dennis Wang, Mike Wang, Aryn A. Malik, Alessandro Zulli, Jordan Peccia).
147. Measurement of SARS-CoV-2 RNA in wastewater tracks community infection dynamics. *Nature Biotechnology* 2020 38:1164-1167. <https://doi.org/10.1038/s41587-020-0684-z> (with Jordan Peccia, Alessandro Zulli, Douglas Brackney, Nathan Grubaugh, Arnau Casanovas-Massana, Albert Ko, Aryn Malik, Dennis Wang, Mike Wang, Joshua Warren, Daniel Weinberger, Wyatt Arnold, Saad Omer).

146. Logistics of Aggressive Community Screening for Coronavirus 2019. *JAMA Health Forum*, 2020. <https://jamanetwork.com/channels/health-forum/fullarticle/2765693> (with Howard Forman).
145. COVID-19 Scratch Models to Support Local Decisions. *Manufacturing and Services Operations Management*, 22(4), 645-655, 2020. <https://doi.org/10.1287/msom.2020.0891>
144. Containing 2019-nCoV (Wuhan) coronavirus. *Health Care Management Science* 23(3), 311-314, 2020. <https://doi.org/10.1007/s10729-020-09504-6>
143. The case for universal cloth mask adoption and policies to increase the supply of medical masks for health workers. *Covid Economics* 2020 5:147-159. <https://cepr.org/sites/default/files/CovidEconomics5.pdf> (with Jason Abaluck, Judith Chevalier, Nicholas A. Christakis, Howard Forman, Albert Ko, and Sten H. Vermund)
142. Perspectives on Policy Modeling: 2018 MSOM Fellow Award, *Manufacturing and Services Operations Management*, 2020. <https://doi.org/10.1287/msom.2019.0849>
141. The Number of Undocumented Immigrants in the United States: Estimates Based on Demographic Modeling with Data from 1990-201, *PLOS One* 13(9): e0201193, 2018 (Mohammad Fazel-Zarandi and Jonathan Feinstein).
140. Approximating the FCFS Stochastic Matching Model with Ohm's Law, *Operations Research* 66(5): 1423-1432, 2018 (with Mohammad Fazel-Zarandi).
139. Estimating Aging Effects in Running Events, *Review of Economics and Statistics*, 100(4):704-711, 2018 (with Ray Fair).
138. Decomposing Pythagoras, *Journal of Quantitative Analysis in Sports*, 13(4):141-149, 2017 (with Candler Rich).
137. An Adaptive Approach to Locating Mobile HIV Testing Services, *Medical Decision Making*, 38(2) 262-272, 2018 (with Gonsalves, Gregg, Crawford, Forrest, Cleary, Paul, Paltiel, A. David).
136. A Flow-Based Model of the HIV Care Continuum in the United States, *Journal of Acquired Immune Deficiency Syndrome*, 75(5):548-553, 2017 (with Gonsalves, Gregg S., Paltiel, A. David, Cleary, Paul D., Gill, Michael John, Kitahata, Mari M., Rebeiro, Peter F., Silverberg, Michael J., Horberg, Michael, Abraham, Alison G., Althoff, Keri N., Moore, Richard, Bosch, Ronald J., Tang, Tian, Hall, H. Irene).
137. Differential terror queue games, *Dynamic Games and Applications*, 7(4):578-593, 2017 (with Stefan Wrzaczek, Jonathan P. Caulkins, Andrea Seidl and Gustav Feichtinger).
136. Optimal control of a terror queue, *European Journal of Operational Research* 248:246-256, 2016. (with Andrea Seidl, Jonathan P. Caulkins, Stefan Wrzaczek and Gustav Feichtinger).
135. Reducing Sexual Violence by Increasing the Supply of Toilets in Khayelitsha, South Africa: A Mathematical Model, *PLoS ONE* 10(4): e0122244. doi:10.1371/journal.pone.0122244, 2015 (with Gregg Gonsalves and David Paltiel)

134. A Markov Model for Hockey: Manpower Differential and Win Probability Added, *INFOR: Journal of the Canadian Operational Research Society* 52(2):39-50, 2014 (with Kevin Mongeon and John Ryan).
133. Socially efficient detection of terror plots, *Oxford Economic Papers*, 67:104-115, 2015.
132. Mass casualty potential of Qassam rockets, *Studies in Conflict and Terrorism*, 37:258-266, 2014 (with Lian Zucker).
131. Staffing models for covert counterterrorism agencies, *Socio-Economic Planning Sciences*, 47:2-8, 2013.
130. Estimating the Duration of Jihadi Terror Plots in the United States, *Studies in Conflict and Terrorism*, 35:880-894, 2012.
129. Intelligence operations research, *Operations Research*, 60:1297-1309, 2012.
128. Intel queues, *Military Operations Research*, 17:17-30, 2012 (with Jonathan Feinstein).
127. Counterterror intelligence operations and terror attacks, *Public Choice*, 149:281-295, 2011 (with Jonathan Feinstein).
126. Operations research and intelligence analysis. In *Intelligence Analysis: Behavioral and Social Scientific Foundations* (Baruch Fischhoff and Cherie Chauvin, editors). National Research Council, Committee on Behavioral and Social Science Research to Improve Intelligence Analysis for National Security, Board on Behavioral, Cognitive, and Sensory Sciences, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press, 31-56, 2011.
125. Terror queues, *Operations Research*, 58:773-784, 2010.
124. Queue inference from periodic reporting data, *Operations Research Letters*, 38:420-426, 2010 (with Jesse Frey).
123. Baseline, Placebo, and Treatment: Efficient Estimation for Three-Group Experiments. *Political Analysis*, 18:297-315, 2010 (with Alan Gerber, Don Green, and Holger Kern).
122. Analysis of a Strategic Terror Organization, *Journal of Conflict Resolution*, 52:281-302, 2010 (with Jonathan Feinstein).
121. Confronting Entrenched Insurgents, *Operations Research*, 58:329-341, 2010 (with Moshe Kress and Roberto Szechtman).
120. FCFS Infinite Bipartite Matching of Servers and customers, *Advances in Applied Probability*, 41:695-730, 2009 (with Rene Caldenty and Gideon Weiss).
119. Nature Plays with Dice - Terrorists Do Not: Allocating Resources to Counter Strategic and Probabilistic Risks, *European Journal of Operational Research*, 192:198-208, 2009 (with Boaz Golany, Avi Marmur and Uri Rothblum).

118. Estimation of HIV incidence in the United States, *Journal of the American Medical Association*, 300:520-529, 2008 (with H. Irene Hall, Ruiguang Song, Philip Rhodes, Joseph Prejean, Qian An, Lisa Lee, John Karon, Ron Brookmeyer, Matthew McKenna, and Robert Janssen).
117. Estimating HIV incidence in the United States from HIV/AIDS surveillance data and biomarker HIV test results, *Statistics in Medicine* 27:4617-4633, 2008 (with John Karon, Ruiguang Song, Ron Brookmeyer and H. Irene Hall).
116. Modeling a presidential prediction market, *Management Science*, 54:1381-1394, 2008 (with M. Keith Chen and Jonathan E. Ingersoll, Jr.).
115. Suicide bombings and targeted killings in (counter) terror games, *Journal of Conflict Resolution* 51:772-792, 2007 (with Daniel Jacobson).
114. A cure for the electoral college? *Chance* 20:6-9, 2007 (with Arnold Barnett).
113. Getting Started. *The Operations Research Center at MIT* (Ingrid Yoerg Larson, editor). Topics in Operations Research Series. Institute for Operations Research and the Management Sciences, pp. 51-58, 2007.
112. Situational Awareness in a Bioterror Attack via Probability Modeling, *Risk Assessment and Risk Communication Strategies in Bioterrorism Preparedness* (MS Green, J Zenilman, D Cohen, I Wisner and RD Balicer, editors), NATO Security Through Science Series, Springer: 2007 (with Johan Walden).
111. Anti-Israel sentiment predicts antisemitism in Europe. *Journal of Conflict Resolution* 50:548-561, 2006 (with Charles Small).
110. Tactical prevention of suicide bombings in Israel. *Interfaces* 36(6):553-561, 2006 (with Alex Mintz and Shaul Mishal).
109. Adventures in policy modeling: Operations research in the community and beyond. *Omega* 36(1): 1-9, 2008.
108. Operational effectiveness of suicide-bomber-detector schemes: A best-case analysis. *Proceedings of the National Academy of Sciences of the United States of America*, 102:10399-10404, 2005 (with Moshe Kress).
107. What happened to suicide bombings in Israel? Insights from a terror stock model. *Studies in Conflict and Terrorism* 28:225-235, 2005 (with Alex Mintz, Shaul Mishal, and Claudio Samban; reprinted as a chapter in *Psychology of Terrorism: The Best Writings about the Mind of the Terrorist* (Edited by Jeff Victoroff and Arie W Kruglanski, Psychology Press, Taylor and Francis, 2007).
106. Estimating time and size of a bioterror attack. *Emerging Infectious Diseases* 10:1202-1205, 2004 (with Johan Walden).
105. The illusion of learning from observational research. Chapter 12 (pp. 251-273) in Shapiro I, Smith RM and Masoud TE (Eds.), *Problems and Methods in the Study of Politics*, Cambridge University Press, 2004 (with Donald P. Green and Alan S. Gerber).

104. Preventing second generation infections in a smallpox bioterror attack, *Epidemiology* 15:264-270, 2004.
103. Decision making for bioterror preparedness: examples from smallpox vaccination policy. In Sainfort F, Brandeau ML and Pierskalla, WP (Eds.), *Handbook of Operations Research and Health Care: Methods and Applications*, pp. 519-536, Kluwer Academic Publishers, 2004 (with Lawrence M. Wein).
102. Analyzing bioterror response logistics: the case of smallpox, *Mathematical Biosciences* 185:33-72, 2003 (with David L. Craft and Lawrence M. Wein).
101. Smallpox bioterror response [letter], *Science*, 300:1503, 2003 (with Lawrence M. Wein).
100. Detecting a bioterror attack by screening blood donors: a best-case analysis, *Emerging Infectious Diseases* 9:909-914, 2003 (with Christopher Patton, William FitzGerald, and Lawrence M. Wein).
99. Emergency response to an anthrax attack, *Proceedings of the National Academy of Sciences of the United States of America*, 100:4346-4351, 2003. (Published online before print March 21, 2003, 10.1073/pnas.0636861100; with David L. Craft and Lawrence M. Wein).
98. More March Madness, *OR/MS Today* 30(1):38-42, 2003 (with Michael Magazine).
97. Optimizing admissions to an intensive care unit, *Health Care Management Science* 6:131-136, 2003 (with Charles Sprung and Amir Shmueli).
96. Smallpox eradication in West and Central Africa: surveillance-containment or herd immunity? *Epidemiology* 14:90-92, 2003 (with Lawrence M. Wein).
95. A new approach to estimating the probability of winning the presidency, *Operations Research*, 51:32-40, 2003 (with Arnold Barnett).
94. Emergency response to a smallpox attack: the case for mass vaccination, *Proceedings of the National Academy of Sciences of the United States of America*, 99:10935-10940, 2002. (Published online before print July 12, 2002 (10.1073/pnas.162282799; with David L. Craft and Lawrence M. Wein).
93. Allocating HIV prevention resources: balancing efficiency and equity, *American Journal of Public Health* 92:1905-1907, 2002 (with Michael Merson).
92. A model-based evaluation of a cultural mediator outreach Program for HIV+ Ethiopian immigrants in Israel, *Evaluation Review* 26:382-394, 2002 (with Varda Soskolne, Ronny Shtarkshall, Bella Adler and Alexander Leventhal).
91. Evaluating Israel's Ethiopian Blood Ban. In: *Quantitative Evaluation of HIV Prevention Programs*. Edward H. Kaplan and Ron Brookmeyer (editors), Yale University Press, New Haven, Connecticut: 2002, pp. 189-201.
90. Evaluating plasma holds in the presence of multiple infections, *IMA Journal of Mathematics Applied in Medicine and Biology*, 18:215-224, 2001.
89. Allocating HIV Resources: An OR Approach to Prevention Strategy, *OR/MS Today*,

- 28(1):26-29, 2001.
88. March Madness and the Office Pool, *Management Science*, 47:369-382, 2001 (with Stanley J. Garstka).
87. The Public Health Consequences of Screening Patients for Adherence to HAART, *Journal of Acquired Immune Deficiency Syndromes*, 26:118-129, 2001 (with Eric Tchetgen and Gerald Friedland).
86. Repeat Screening for HIV: When to Test and Why, *Journal of Acquired Immune Deficiency Syndromes*, 23:339-345, 2000 (with Glen Satten).
85. Treatment on Demand: An Operational Model, *Health Care Management Science* 3:171-183, 2000 (with Mira Johri).
84. New Approaches to HIV Surveillance: Means and Ends, *AIDS and Public Policy Journal* 14:136-146, 1999 (with Mira Johri, Jeffrey Levi, and Alvin Novick).
83. Hold Everything! Holding Policies for Protecting Plasma Supplies, *Mathematical Biosciences* 160:159-173, 1999 (with Glen Satten).
82. Implicit Valuation of a Blood Exclusion Decision, *Medical Decision Making*, 19:207-213, 1999.
81. Snapshot Estimators of Recent HIV Incidence Rates, *Operations Research*, 47:29-37, 1999 (with Ron Brookmeyer).
80. Allocating HIV Prevention Resources, *Socio-Economic Planning Sciences*, 32:257-263, 1998 (with H. Pollack).
79. Can Difficult-To-Reuse Syringes Reduce the Spread of HIV Among IDUs? *Interfaces*, 28(3):23-33, 1998 (with J.P. Caulkins, P. Lurie, T. O'Connor and S-H Ahn).
78. Economic Evaluation and HIV Prevention Community Planning - A Policy Analyst's Perspective. *Handbook of Economic Evaluation of HIV Prevention Programs*. David Holtgrave (editor), 177-193, 1998 (Plenum Press, New York).
77. A Mathematical Model of HIV Transmission in New South Wales Prisons, *Drug and Alcohol Dependence*, 50:197-202, 1998 (with K. Dolan, A. Wodak, and W. Hall).
76. To Treat or Not to Treat? *Nature Medicine*, 4:664-665, 1998 ("News and Views" commentary).
75. HIV Incidence among Ethiopian Immigrants to Israel, *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, 17:465-469, 1998 (with E. Kedem and S. Pollack).
74. Israel's Ban on Use of Ethiopians' Blood: How Many Infectious Donations were Prevented? *The Lancet*, 351:1127-1128, 1998.
73. Mixing Behavior in Cross-Country Diffusion, *Marketing Science*, 16:354-369, 1997 (with W. Putsis, S. Balasubramian, and S. Sen).

72. A Note on the Cost-Effectiveness of HIV Testing: Accounting for Differential Participation Rates, *Medical Decision Making*, 17:490-495, 1997 (with A. David Paltiel).
71. Snapshot Samples. *Socio-Economic Planning Sciences*, 31:281-291, 1997.
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15. A Public Housing Queue With Reneging And Task-Specific Servers, *Decision Sciences*, 19:383-391, 1988.
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13. Facility Location And Capacity Planning With Delay-Dependent Demand,

- International Journal of Production Research*, 25:1173-1780, 1987  
(with O. Berman).
12. Tenant Assignment Policies With Time-Dependent Priorities, *Socio-Economic Planning Sciences*, 21:305-310, 1987.
  11. Analyzing Tenant Assignment Policies, *Management Science*, 33:395-408, 1987.
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  8. Waiting For Public Housing: What Can And Cannot Be Done, *Urban Resources*, 3:Boston Local Insert:B1-B3, 1986.
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  6. Decision-Oriented Approaches To Program Evaluation, **Evaluation of Complex Systems**, *New Directions for Program Evaluation* 10:49-68, 1981 (with R. Larson).
  5. Comment On Destination Independence And Separability In Origin Constrained Trip Distribution Models, *Geographical Analysis*, 13:181-183, 1981.
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  2. Evaluating The Effectiveness Of One-Officer Versus Two-Officer Patrol Units, *Journal of Criminal Justice*, 7:325-355, 1979.
  1. Police Field Studies: A Review Of Evaluation Research, **Review of Criminal Justice Evaluation, 1978**, U.S. Department of Justice, 1979 (with M. Cahn and J. Peters, Jr.).

#### PAPERS IN DRAFT/PREPARATION:

Modeling Local Coronavirus Outbreaks (with Joseph T. Chang)

Estimating daily COVID-19 case rates from SARS-CoV-2 RNA concentrations across domestic wastewater facilities (with Alessandro Zulli, Annabelle Pan, Stephen M. Bart,

Forrest W. Crawford, Matthew Cartter, Albert I. Ko, Duncan Cozens, Marcela Sanchez, Doug E. Brackney, and Jordan Peccia)

A COVID-19 Outbreak Early Warning System using SARS-CoV-2 RNA Wastewater Surveillance (with Annabelle Pan, Alessandro Zulli, Doug E. Brackney, Marcela Sanchez and Jordan Peccia)

## PRESENTATIONS:

*COVID-19 Scratch Models To Support Local Decisions*, Yale Public Health Modeling Seminar, April 6, 2020; Yale Computation and Society Initiative, April 7, 2020; Occupational and Environmental Medicine Program, Yale School of Medicine, April 14, 2020; Yale School of Management Operations Group Seminar, September 15, 2020; joint Columbia University/Stanford University PhD Seminar on COVID-19 modeling, September 17, 2020; Central Department of Mathematics, Tribhuvan University, Kathmandu, Nepal, December 17, 2020; Center for Accelerating Operational Efficiency, Arizona State University, February 25, 2021; OIT Seminar, Graduate School of Business, Stanford University, March 17, 2021.

*Snapshot Models of Undocumented Immigration* (with Scott Rodilitz), Operations Research Society of Israel (ORSIS) National Meeting, May 13, 2019, Shefayim, Israel; INFORMS National Meeting, Seattle, October 20, 2019.

*Approximating the FCFS Stochastic Matching Model with Ohm's Law* (with Mohammad Fazel-Zarandi), INFORMS national meeting, Houston, Texas October 23, 2017; Operations Seminar, Rotman School of Management, University of Toronto, Toronto, Ontario, Canada, November 17, 2017; seminar in operations research and control systems (ORCOS), Technical University of Vienna, Vienna, Austria, December 18, 2017; New York City Operations Day, New York University, New York, March 2, 2018; Applied Probability and Risk Seminar, Center for Applied Probability, Columbia University, New York, April 19, 2018.

*Terror Queues: Detection and Staffing*, Munich Workshop on Behavior and Terrorism, Ludwig-Maximilians-University, Munich, Germany, December 15, 2017.

*Decomposing Pythagoras* (with Candler Rich), Operations and Technology Management Seminar, Anderson School of Management, UCLA, Los Angeles, April 13, 2018; Fields Sports Analytics Workshop, Fields Institute for Research in Mathematical Sciences, University of Toronto, Toronto, Ontario, Canada; May 24, 2018; Harvard Sports Analysis Collective, Harvard University.

*The number of undocumented immigrants in the United States*, SOM Faculty Seminar (with Mohammad Fazel-Zarandi and Jonathan Feinstein), February 28, 2018; Department of Industrial Engineering and Management, Ben Gurion University of the Negev, Beersheba, Israel, October 15, 2018; Department of Statistics, Hebrew University of Jerusalem, Jerusalem, Israel, October 15, 2018; Faculty of Industrial Engineering and Management, Technion Israel Institute of Technology, Haifa, Israel, October 17, 2018; Israel Central Bureau of Statistics, Jerusalem, Israel, October 18, 2018; INFORMS National Meeting, Phoenix, Arizona, November 6, 2018.

*Operations Research and Public Health*, Keynote Talk, INFORMS International Meeting, Taipei, Taiwan, June 19, 2018; Asia-Pacific Society for Operations Research, Kathmandu, Nepal, August 2018.

*Fundamentals of Operations Research for Statisticians. Part 2: Stochastic Models*, National Registration and Statistics Office, Ulaanbaatar, Mongolia, May 24, 2016.

*The Future of Operations Research*, Operations Research Society of Israel, Ma'ale Hachamisha, Israel, May 30, 2016.

*Physical flow approximations for the FCFS stochastic matching model* (with Mohammad Fazel-Zarandi): January 18, 2017, 42nd Conference on the Mathematics of Operations Research, Landelijk Netwerk Mathematische Besliskunde (Dutch OR Society), Lunteren, The Netherlands; April 13, 2017, operations research, University of Illinois at Urbana-Champaign; May 5, 2017, Systems Dynamics Seminar, MIT; June 28, 2017, Production and Operations Management Society International Conference, Tel Aviv.

*A Puck In The Net Beats Four Men In The Box*: INFORMS national meeting, Minneapolis (Oct. 7, 2013); Yale School of Management Faculty Seminar, (Oct. 30, 2013); Rutgers Applied Probability Conference (Dec. 6, 2013); Columbia Graduate School of Business (March 4, 2014).

*Terror Queues and the Duration of Terror Plots*. Naval Postgraduate School, March 8, 2012; Yale School of Management, April 4, 2012; Center for International Security and Cooperation, Stanford University, April 10, 2012; Graduate School of Business, Stanford University, April 11, 2012; International Workshop on Applied Probability, Jerusalem, Israel, June 11, 2012; INFORMS national meeting, Phoenix, October 14, 2012; Yeshiva University, October 19, 2012; Rotman School, University of Toronto, October 26, 2012; MIT Operations Research Center, February 21, 2013; London School of Economics, March 13, 2013; Hebrew University of Jerusalem, March 17, 2013; Stanford University, Department of Management Science and Engineering, April 5, 2013; University of Chicago Booth School of Business, April 22, 2013; Department of Industrial Engineering and Management Science, Northwestern University, April 23, 2013; Technion-Israel Institute of Technology, June 5, 2013; International Institute of Applied Systems Analysis (IIASA), Vienna, December 18, 2013; Terrorism Policy Conference, UT Dallas, May 22, 2014; Feb. 24, 2016, Centro de Modelaje Matematico, San Salvador; July 4, 2016, European Conference on Operational Research, Poznan, Poland; January 17, 2017, 42nd Conference on the Mathematics of Operations Research, Landelijk Netwerk Mathematische Besliskunde (Dutch OR Society), Lunteren, The Netherlands; April 20, 2017, Institute of Mathematics and its Applications and Operational Research Society Conference on Mathematics of Operational Research, Birmingham, England.

*Intelligence Operations Research*. Conference on Operations Research and the Public Interest, Graduate School of Business, Stanford University (Morse Lecture, Keynote Speaker), June 17, 2010; Manufacturing and Service Operations Management (MSOM) Society Annual Meeting, Technion, Haifa (Morse Lecture, Plenary Speaker), June 28, 2010; INFORMS National Meeting (Morse Lecture, Plenary Speaker), Austin, TX, November 7, 2010; INFORMS Computing Society Conference (Morse Lecture, Plenary Speaker), Monterey, California, January 9, 2011.

*Terror Queues*. 2009 INFORMS annual meeting, San Diego, October 12, 2009; Yale School of Management faculty seminar/Daniel Rose Technion Yale Initiative in Homeland Security

and Counterterror Operations Research seminar, Feb. 24, 2010; IE/OR Seminar, School of Industrial and Systems Engineering, Georgia Institute of Technology, March 3, 2010; Department of Industrial and Systems Engineering, University at Buffalo, April 15, 2010; Rotman School of Management, University of Toronto, April 16, 2010; Conference on Terrorism and Policy, University of Texas-Dallas, May 20, 2010; International Relations Seminar, Political Science Department, Yale University, October 13, 2010; Braude College, Karmiel, Israel, March 21, 2011.

*Counterterror Intelligence Operations and Terror Attacks* (with Jonathan Feinstein), Terrorism and Policy Conference, University of Texas-Dallas, May 20, 2011.

*Queue Inference from Periodic Reporting Data*, INFORMS national Meeting, Austin, TX, November 8, 2010.

*Inference and Interdiction in a Terror Queue Model*, 5th Annual Conference on Mathematical Methods in Counterterrorism, American Association for the Advancement of Science, Washington, DC., March 13, 2008.

*Analysis of a Strategic Terror Organization* (with Jonathan Feinstein), conference on Terrorism and Policy, School of Economic, Political and Policy Sciences, University of Texas-Dallas, May 21, 2009; 2009 INFORMS annual meeting, San Diego, October 12, 2009.

*Confronting Elusive Insurgents*. Operations Research Society of Israel, Shefayim, Israel, May 18, 2008; Institute for Operations Research and the Management Sciences (INFORMS), Washington, DC, October 13, 2008; Daniel Rose Technion Yale Seminar in Homeland Security and Counterterror Operations Research, Yale School of Management, November 18, 2008; Game Theory Seminar, Department of Economics, Stony Brook, December 11, 2008.

*Estimating HIV Incidence in the United States*. Yale School of Management Faculty Seminar, September 24, 2008; Yale School of Public Health, Yale AIDS Colloquium Series (YACS), September 25, 2008; Yale Institute for Social and Policy Studies, October 21, 2008; Kellogg School of Management, Northwestern University, November 10, 2008; Operations Research Center, MIT, April 23, 2009.

*Deadly games: suicide bombings and targeted killings in the Israeli-Palestinian conflict*. Mathematics of Public Security, Austrian Academy of Sciences, Vienna, April 7, 2006; Operations management seminar, University of Chicago, April 27, 2006; Center for Study of Bioterrorism, Tel Aviv University, May 29, 2006; Faculty of Industrial Engineering and Management, Technion-Israel Institute of Technology, Haifa, May 30, 2006; INFORMS National Meeting, Pittsburgh, November 6, 2006; Wharton School, University of Pennsylvania, November 21, 2006; Institute for Counter Terrorism – Interdisciplinary Center, Herzliya, Israel, January 8, 2007; Fuqua School, Duke University, August 14, 2007.

*Anti-Israel sentiment predicts anti-Semitism in Europe*. Yale School of Management, faculty seminar, April 27, 2005; Operations Research Society of Israel annual meeting, Caesaria, Israel, May 30, 2005; INFORMS national meeting, San Francisco, November 14, 2005; Yale ISPS seminar on antisemitism in comparative perspectives, December 1, 2005; Anti-Defamation League Connecticut Chapter, Congregation Mishkan Israel, Hamden, Connecticut, January 12, 2006; A Taste of Honey, New Haven Jewish Community Center, January 28, 2006; Scholars for Peace in the Middle East, Columbia University, March 21, 2006.

*Sex, Drugs and Shadow Prices: The Economics of HIV Prevention.* Bohm-Bawerk Lecture, Austrian Academy of Sciences, Vienna, April 5, 2006.

*Operational Effectiveness of Suicide-Bomber-Detector Schemes.* Naval Postgraduate School, Monterey, February 23, 2005; INFORMS national meeting, San Francisco, November 14, 2005; Chinese Academy of Sciences, Beijing, November 6, 2007.

*Tactical Prevention of Suicide Bombings:* Technion-Israel Institute of Technology, March 14, 2004; Yale School of Management Faculty Seminar, April 7, 2004; Workshop on Rethinking Global Terrorism: New Approaches and New Directions, Tel Aviv University, June 16, 2004; General Headquarters Planning Branch, Israel Defense Forces, Tel Aviv, June 22, 2004; Institute for Operations Research and the Management Sciences (INFORMS) national meeting, Denver, October 24, 2004; A Taste of Honey, New Haven Jewish Community Center, January 29, 2005; Seminar in operations research applied to counterterrorism and homeland security, Columbia University, February 8, 2006; Institute for Global Security Law and Policy, Case Western Reserve University, Cleveland, Ohio, February 1, 2007; Office of the National Director of Intelligence, CIA, Langley, VA, June 12, 2008.

*Getting Started.* MIT Operations Research Center's 50<sup>th</sup> Anniversary Symposium, MIT, Cambridge, Massachusetts, April 24, 2004; INFORMS national meeting, San Francisco, November 12, 2006; Management Science seminar, University of Massachusetts-Amherst, March 3, 2006.

*Polls, Prices and Predicting the Presidency.* Ben Gurion University of the Negev, Beersheba, November 22, 2004; Tel Aviv University, November 23, 2005; Yale SOM faculty seminar, December 8, 2004 (with Keith Chen); Decision, Risk and Operations Division, Columbia University Graduate School of Business, February 18, 2005; Operations Research Seminar, MIT, October 27, 2005; Technion – Israel Institute of Technology, Haifa, January 11, 2007; ISPS Faculty Seminar, Yale University, October 9, 2007; Robert H. Smith School of Business, University of Maryland, April 16, 2008; Operations Research Society of Israel, Shefayim, Israel, May 19, 2008.

*Adventures in Policy Modeling: Operations Research in the Community and Beyond,* Plenary Presentation, INFORMS Annual Meeting, Atlanta, October 19, 2003; INFORMS Practice Conference, Baltimore, April 15, 2008; Yale New Haven Teachers Institute, April 29, 2008; Management Science and Engineering, Stanford University, April 17, 2012; Yale Club of London, March 12, 2013; Yale Club of Israel, March 17, 2013; Technion-Israel Institute of Technology, June 11, 2013; Operations Research Society of Austria, Plenary Lecture, Vienna, December 19, 2013; March 28, 2016, Distinguished Lecture, School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta; October 10, 2016, YSPH public health modeling seminar; December 12, 2016, Winter Simulation Conference, Washington, DC (Titan of Simulation talk); April 12, 2017, Illinois Distinguished Lecture Series in Operations Research, University of Illinois at Urbana-Champaign; USC Center for Artificial Intelligence in Society, Viterbi School of Engineering, University of Southern California, Los Angeles, April 11, 2018; Plenary Talk, Canadian Operational Research Society (CORS) Annual Conference, Saskatoon, Saskatchewan, Canada, May 29, 2018; MIT Operations Research Seminar, January 29, 2021.

*Preventing Second Generation Infections in a Smallpox Bioterror Attack,* INFORMS Annual Meeting, Atlanta, October 20, 2003; Center for the Study of Bioterrorism, Tel Aviv University, January 10, 2008.

*Emergency Response to a Smallpox Attack:* Fogarty International Center, National Institutes of Health, March 18, 2002; DIMACS, Rutgers University, March 22, 2002; Fogarty International Center, National Institutes of Health, April 30, 2002; Canadian Operational Research Society, Toronto, June 3, 2002; DIMACS, Rutgers University, June 28, 2002; Society for Industrial and Applied Mathematics, Philadelphia, July 11, 2002; Technion Israel Institute of Technology, Haifa, Israel, July 16, 2002; Israel Center for Military Analysis, RAFAEL, Haifa, Israel, July 17, 2002; Braun School of Public Health, Hebrew University-Hadassah School of Medicine, Jerusalem, Israel, July 21, 2002; Weizmann Institute of Technology, Rehovot, Israel, July 23, 2002; Israel Centers for Disease Control, Sheba Hospital, Tel HaShomer, Israel, July 24, 2002; IDF Surgeon General Giora Martinovits, IDF Medical Corps Headquarters, Tel HaShomer, Israel, July 24, 2002; Dr. Kevin Cahill, Bioterror Advisor, New York Police Department, New York, August 1, 2002; National Immunization Program, US Centers for Disease Control, Atlanta, August 9, 2002; New York City Health Department, New York, August 15, 2002; SOM Faculty Research Seminar, Yale School of Management, September 18, 2002; Institute for Mathematics and its Applications, University of Minnesota, September 28, 2002; Boston University, October 18, 2002; New York University, October 25, 2002; Institute for Operations Research and the Management Sciences, San Jose, November 18, 2002; Center for Risk Analysis, Harvard School of Public Health, January 10, 2003; Department of Epidemiology and Public Health, Yale University, January 13, 2003; Ministry of Health, Ottawa, Canada, January 17, 2003; Graduate School of Business, Columbia University, January 30, 2003; American Epidemiological Society, Atlanta, March 28, 2003; Military Operations Research Society Education and Professional Development Colloquium, Naval Postgraduate School, Monterey, April 3, 2003; DARPA Conference on Prognostic Epidemiology, June 5, 2003; Bioterror Response Logistics Workshop, Biosecurity 2003, Harvard Club, June 16, 2003; Yale School of Management Leadership Program for Dutch Executives, June 25, 2003.

*Emergency Response to an Anthrax Attack;* Department of Epidemiology, Harvard School of Public Health, March 13, 2003; Military Operations Research Society Education and Professional Development Colloquium, Naval Postgraduate School, Monterey, April 3, 2003; “Analysis in our Changing Times” symposium (Washington chapter of INFORMS, Military Applications Society, Washington Academy of Sciences, DC Chapter of IIE, and Association for Science, Technology and Innovation), Washington, DC, April 23, 2003; Rotman School of Management, University of Toronto, November 14, 2003.

*Bioterror Situational Awareness.*, Israel Centers for Disease Control, Tel HaShomer, Israel, February 14, 2003.

*Detecting a Bioterror Attack by Screening Blood Donors.* George Mason University, October 30, 2002; Institute for Operations Research and the Management Sciences, San Jose, November 18, 2002.

*How Preventing Mother-To-Child Transmission of HIV Creates AIDS Orphans,* Conference on AIDS and orphans, Center for Interdisciplinary Research on AIDS, Yale University, May 5, 2003.

*New Approaches to Estimating HIV Incidence.* Department of Biomathematics, UCLA, May 31, 2001; Centers for Disease Control, October 24, 2001; Marshall School of Business, USC, February 8, 2002; Yale CIRA AIDS Science Day, April 12, 2002; Institute for Operations Research and the Management Sciences, San Jose, November 17, 2002; INFORMS National Meeting, Pittsburgh (updated version), November 6, 2006; Department



of Industrial Engineering and Operations Research, Tel Aviv University, January 9, 2007; Department of Statistics, University of Haifa, January 7, 2008.

*Estimating the Probability of Winning the Presidency*: Yale American Politics Seminar, Institute for Social and Policy Studies, March 26, 2001; Technion-Israel Institute of Technology, May 16, 2001; Anderson School of Management, UCLA, June 1, 2001; Yale School of Management, October 31, 2001; INFORMS National Meeting, Miami Beach, November 6, 2001; Department of Statistics, Hebrew University of Jerusalem, December 17, 2001; Department of Statistics and Operations Research, Tel Aviv University, December 18, 2001; Gallup Poll, Washington, DC, May 3, 2002; Ivey School of Business, University of Western Ontario, February 20, 2004.

*Policy Modeling for Better Decisions: The Case of HIV Prevention*, SIMS Washington Update, Cosmos Club, Washington, DC, January 14, 2000; Omega Rho Distinguished Lecture, INFORMS 2000 Spring Conference, Salt Lake City, May 7, 2000; Arnoff Lecture, School of Business, University of Cincinnati, May 25, 2000.

*Resource Allocation for HIV Prevention*: Institute of Medicine Committee on HIV Prevention Strategies, Woods Hole, Massachusetts, May 10, 2000; INFORMS 2000 Fall Conference, San Antonio, November 6, 2000; Health Policy Journal Club, Yale School of Medicine, December 11, 2000; Centers for Disease Control and Prevention, Conference on Cost-Effectiveness and Resource Allocation for HIV Prevention, February 5, 2001; Yale Seminar in Bioethics, Institute for Social and Policy Studies, February 14, 2001; Yale School of Management, Health Policy SIG/Q+ SIG, April 2, 2001; Centers for Disease Control, August 13, 2001; INFORMS National Meeting, Miami Beach, November 5, 2001.

*March Madness and the Office Pool*, Yale School of Management Faculty Seminar, March 1, 2000; University of Connecticut, School of Business, March 7, 2000; MIT Operations Research Center Seminar, March 9, 2000; Connecticut Lottery, March 31, 2000; INFORMS 2000 Spring Conference, Salt Lake City, May 7, 2000; School of Business, University of Cincinnati, May 26, 2000; Pinchas Naor Lecture, Operations Research Society of Israel, May 13, 2001; INSEAD, Fontainebleau, France, March 19, 2004; March 2, 2016; Prof. Mark Broadie's sports analytics course, Columbia Graduate School of Business

*Repeat Screening for HIV: When to Test and Why*, INFORMS 1999 Fall Conference, Philadelphia, November 9, 1999.

*Hold Everything! Holding Policies for Protecting Plasma Supplies*, MIT Operations Management Seminar, April 10, 2000; INFORMS 1999 Spring Conference, Cincinnati, May 3, 1999; Yale University AIDS Science Day, April 9, 1999; Yale School of Management Faculty Seminar, November 18, 1998.

*Operations Research and Public Housing: A Review of Some Early Models*, INFORMS 1999 Spring Conference, Cincinnati, May 4, 1999.

*10 Years of Needle Exchange Research: OR in the AIDS Epidemic*, INFORMS 1999 Spring Conference, Cincinnati, May 2, 1999.

*A New Approach to Allocating HIV Prevention Budgets*, 1999 HIV Prevention Community Planning Leadership Summit, Pittsburgh, March 27, 1999.

*Recent Studies of HIV Infection among Ethiopian Immigrants to Israel: Implicit Valuation of a Blood Exclusion Decision*, SIMS meeting on Quantitative Evaluation of HIV Prevention Programs, Divonne-les-Bains, France, July 7, 1998; 12<sup>th</sup> World AIDS Conference, Geneva, July 1, 1998; 1998 INFORMS International Conference, Tel Aviv, June 29, 1998; Center for AIDS Intervention Research, Medical College of Wisconsin, Milwaukee, April 16, 1998; Graduate School of Business, Stanford University, April 1, 1998; Rutgers Center for Operations Research, New Brunswick, New Jersey, February 26, 1998; Hebrew University of Jerusalem, Department of Statistics, December 15, 1997; MIT Club of Israel, Ramat Aviv, December 14, 1997; Hebrew University of Jerusalem, Hadassah Medical School-Braun School of Public Health, December 11, 1997; Yale School of Management, November 6, 1997; INFORMS national meeting, Dallas, Texas, October 26, 1997; Yale AIDS Colloquium Series, September 11, 1997; Center for Interdisciplinary Research on AIDS Summer Program in International AIDS Research, Yale University, June 24, 2003.

*Put the HIV Back in HIV Prevention*: Technion Israel Institute of Technology, Department of Industrial Engineering and Management (May 13, 1997), School of Public Health, Hebrew University-Hadassah Medical School, Jerusalem (March 20, 1997), Center for AIDS Prevention Studies, University of California, San Francisco (October 11, 1996), Robert Wood Johnson Clinical Scholars, Yale University (December 5, 1996).

*Snapshot Samples*. Israel Statistical Association National Meeting, University of Haifa (May 28, 1997).

*First Annual INFORMS Lecture of the UK Operational Research Society: Probability Models of Needle Exchange*, 38th National Meeting of the UK Operational Research Society, University of Warwick (September 4, 1996).

*Snapshot Estimators of Recent HIV Incidence Rates*: Yale University, Center for Systems Science (October 9, 1998), Operations Research Society of Israel Annual Meeting, Jerusalem (May 21, 1997), School of Mathematics, Tel Aviv University (May 20, 1997), Department of Statistics, Hebrew University (April 10, 1997), Technion Israel Institute of Technology, Department of Industrial Engineering and Management (March 25, 1997), Department of Mathematics and Computer Science, Bar Ilan University (March 6, 1997), School of Industrial and Systems Engineering, Georgia Institute of Technology (January 6, 1997), Department of Industrial Engineering and Management Science, Northwestern University (December 17, 1996), INFORMS national meeting, Atlanta (November 3, 1996); Department of Industrial Engineering and Operations Research, University of California, Berkeley (October 10, 1996); Braun School of Public Health, Hadassah Medical Center, Hebrew University of Jerusalem (June 17, 1996); Mathematical and Statistical Modeling of the AIDS Epidemic, Rome, Italy (June 1996); National Institute for Public Health and Environmental Protection, Bilthoven, The Netherlands (June 1996); Faculty Seminar, Yale School of Management, (April 23, 1996); MIT Operations Research Center, Cambridge, (April 11, 1996).

*Allocating HIV Prevention Resources*: U.S. Centers for Disease Control (February 22, 1996); National Institute for Public Health and Environmental Protection, Bilthoven, The Netherlands (July 6, 1995); Community Planning Group, Connecticut Department of Health (June 21, 1995); Robert Wood Johnson Health Policy Scholars Program, Yale University (October 21, 1994).

*Yale University Center for Substance Abuse: Methods for estimating HIV incidence* (January 3, 1995).

*Israel AIDS Steering Committee, Jerusalem, Israel: How many HIV infections are there in Israel?* (May 10, 1994).

*Hebrew University-Hadassah Medical Center - Braun School of Public Health (Jerusalem, Israel):* Snapshot Samples (December 12, 1995); How many HIV infections are there in Israel? (June 13, 1994); The epidemiological and economic consequences of AIDS clinical trials (April 25, 1994); Worst-case models of HIV/AIDS (April 11, 1994); HIV incidence among needle exchange participants (April 4, 1994); Operational modeling of needle exchange programs (March 15, 1994); To be or not to be? That is conception! (March 7, 1994); An overview of AIDS policy modeling (February 7, 1994); What can policy makers learn from AIDS models? (February 2, 1994).

*Osservatorio Epidemiologico, Regione Lazio, Rome, Italy:* Operational modeling of needle exchange programs (March 29, 1994); An overview of AIDS policy modeling (March 22, 1994).

*IXth International Conference on AIDS, Berlin, June 1993:* Client Shift or Needle Exchange: What Caused the HIV Prevalence Drop in Needles Returned to the New Haven Exchange? (with K. Khoshnood and R. Heimer).

*A Circulation Theory of Needle Exchange.* (Societal Institute for Mathematical Sciences/National Institute on Drug Abuse Conference on Quantitative Methods in AIDS, Blaubeuren, Germany, June 1993; National Institute on Drug Abuse Research and Practice Conference, Washington, D.C., July, 1993; National Academy of Sciences, Washington, D.C., September, 1993; Department of Biology, Yale University, October 1993; American Public Health Association, San Francisco, October, 1993; ORSA/TIMS Conference, Phoenix, November 1993; Yale School of Organization and Management, November 1993; Risk Analysis Seminar, Harvard School of Public Health, November 1993; Drug Policy Foundation, Washington, D.C., November 1993; Ben Gurion University of the Negev, Beersheba, Israel, May 1994; OSIRIS Operations Research Society of Israel, June 1994; Israel Statistical Association, June 1994; Department of Statistics, Yale University, October 1994; Congressional Seminar, Drug Policy Foundation, Washington, D.C. March 1995; 3rd Conference on Retroviruses and Opportunistic Infections, Washington DC, January 31, 1996), Department of Statistics, Hebrew University (May 8, 1997).

*VIII International Conference on AIDS, Amsterdam, July 1992:* Needle Exchange Evaluation Research is Changing Public Policy in the United States (with R. Heimer); Needle Exchange Lowers HIV Incidence in New Haven (with R. Heimer).

*Evaluating the New Haven Needle Exchange Program* (New York City Department (Commissioner) of Health, August 1991; Medical Grand Rounds, Yale Medical School, August 1991; Robert Wood Johnson Clinical

Scholars Program, Yale Medical School, October 1991; San Francisco Treatment Research Unit, University of California at San Francisco, November 1991; Yale University Women's Organization, November 1991; Harvard School of Public Health, AIDS Institute and Department of Health Policy and Management, November 1991; Massachusetts Institute of Technology, Operations Research Center, November 1991; Robert Wood Johnson Foundation, December 1991; Combined HIV Rounds and Division of HIV/AIDS Research Seminar, United States Centers for Disease Control, December 1991; Martin Luther King Day Symposium, Yale Medical School January 1992; Statistics Seminar, Yale Department of Statistics, February 1992; Joint SIMS/NIDA Conference on AIDS Modeling, Blaubeuren, Germany, March 1992; Health Psychology Seminar, Yale Department of Psychology, April 1992; 21st Franz Edelman Award Competition, Orlando, Florida, April 1992; Netherlands National Institute of Public Health, Bilthoven, July 1992; Imperial College, London, July 1992; College on the Practice of Management Science, Williams College, August 1992; Yale AIDS Colloquium Series, September 1992; Heller School, Brandeis University, October 1992; Marschak Symposium, UCLA, October 1992; Joint ORSA/TIMS Meeting, San Francisco, November 1992; Substance Abuse Treatment Unit, Yale University Medical School, November 1992; Drug Policy Foundation, Washington DC, November 1992; AIDS and Society, Biology Department, Yale University, November 1992; Kaiser Foundation, Palo Alto, December 1992; APT Foundation, New Haven, January 1993; University of Toronto, January 1993; North American Syringe Exchange Conference, Boston, February 1993; Hill Health Center, New Haven, March 1993; Wharton School, University of Pennsylvania, April 1993; Villanova University, April 1993; Decision Sciences Department, Rennselaer Polytechnic Institute, April 1993; Department of Management Science and Engineering, Stanford University, February 2, 2012; Frontiers in Public Health (Prof. Albert Ko), Yale School of Public Health; Feb. 25, 2016; Centro de Modelaje Matematico, San Salvador

The National Research Council's Report on the Social Consequences of AIDS, Yale AIDS Colloquium Series, February 1993.

Model Based Representations of Human Sexual Behavior, Wenner-Gren Symposium, Cascais, Portugal, March 1993.

Operations Research and the AIDS Epidemic, 33rd Joint National TIMS/ORSA Conference, Orlando, Florida, April 1992 (with M. Brandeau).

VII International Conference on AIDS, Florence, Italy, 1991:  
Evaluating the New Haven Needle Exchange Program (with E. O'Keefe and R. Heimer); Detection of HIV Proviral DNA in the Needles of Intravenous Drug Users in the City of New Haven Needle Exchange Program (with R. Heimer and E. Cadman).

Let The Needles Do The Talking! (Rand Corporation, Santa Monica, CA, February 1991; UCLA Social Statistics Seminar, February 1991; Harvard Decision Sciences Colloquium, April 1991; Yale AIDS Colloquium, April 1991; Mixing Conference, University of Michigan, June 1991; Anaheim ORSA/TIMS meeting, November 1991).

To Be Or Not To Be? That Is Conception! (UCLA Anderson School of Management, February 1991; Reproductive Endocrinology Journal Club, Yale School of Medicine, December 1992; University of Toronto, January 1993).

Worst Case Analysis of Sexual Mixing Models of HIV Transmission, (Invited Talk, IIASA/INED Conference on the Global Social and Demographic Consequences of the AIDS Epidemic, Budapest, Hungary, November, 1989; Invited Talk, AIDS Modeling Workshop, Los Alamos National Laboratory and Society for Industrial and Applied Mathematics, April, 1990; 30th ORSA/TIMS Conference, Philadelphia, October, 1990).

How Bad Can It Get? Bounding Worst Case Endemic Heterogeneous Mixing Models of HIV/AIDS (presented at Department of Statistics, Yale University, September, 1989; Operations Research Seminar, Columbia University, October, 1989; Operations Research Seminar, Yale University, October, 1989; 29th ORSA/TIMS Conference, Las Vegas, Nevada, May 1990).

What Can Policy Makers Learn From AIDS Models, School of Urban and Public Affairs, Carnegie Mellon University, March 1989; McGill University, November, 1989.

Control of HIV Epidemics, Wharton School/Health Policy Group, University of Pennsylvania, March, 1989; 28th ORSA/TIMS meeting, New York, October, 1989.

Nonrandom Mixing Models of HIV Transmission, Survey Research Center, University of California at Berkeley, Dec. 2, 1988; Harvard School of Public Health; March 13, 1989; 27th ORSA/TIMS meeting, Vancouver, British Columbia, May 8, 1989.

Invited Participant; The Global Social Consequences of HIV/AIDS, Social Science Research Council, New York, October, 1988.

Tutorial: An Overview Of AIDS Modeling (Department of Decision Sciences and Engineering Systems Seminar, Rensselaer Polytechnic Institute, October, 1988; Operations Research Seminar, The Rand Corporation, Santa Monica, October, 1988; 26th Joint National TIMS/ORSA Meeting, Denver, October, 1988; College of Management Seminar; University of Massachusetts at Boston, Boston, MA, October, 1988; Stanford University Medical School, November, 1988; Boston TIMS Seminar, January, 1989; MIT Operations Research Seminar, February 1989; McGill University, Montreal, November, 1989).

26th Joint National TIMS/ORSA Meeting, Denver, October 1988, OR Hits The Heights (with O. Berman); Equity Maximizing Facility Location Schemes (with O. Berman).

25th Joint National TIMS/ORSA Meeting, Washington, D.C., April 1988, What Are The Risks Of Risky Sex; Housing Is Their Middle Name;

Teaching Operations Research To Public Policy Students.

What Are The Risks Of Risky Sex? (Yale Operations Research Seminar, January 1988)

23rd Joint National TIMS/ORSA Meeting (New Orleans, May, 1987)  
Allocating Government Housing Expenditures; The Representation of

Operations Research In Schools Of Public Policy; Operations Research  
And Public Housing Policy.

22nd Joint National TIMS/ORSA Meeting (Miami, October, 1986)  
Public Housing Queues With Reneging And Task-Specific Servers.

28th Annual CORS Meeting (Toronto, Canada, June) A Fast  
Feasibility Test For Relocation Problems (with A. Amir).

21st Joint National TIMS/ORSA Meeting (Los Angeles, April, 1986)  
Analyzing Tenant Assignment Policies; A Fast Feasibility Test For  
Relocation Problems (with A. Amir).

19th Joint National TIMS/ORSA Meeting (Boston, April/May, 1985)  
Tenant Assignment Models.

**CONSULTING EXPERIENCE:**

1995: Big Apple Circus, New York. Evaluate research proposals to  
study the clinical/psychological impact of the Clown Care Unit.

1990 - 1995: New Haven Health Department, AIDS Division (pro bono);  
Principal Investigator, Evaluation of New Haven Needle Exchange  
Program; Member, Protocol Committee and Advisory Committee, New Haven  
Needle Exchange Program.

1992: U.S. Department of Housing and Urban Development; modeled the  
"alternate feed" tenant assignment policy proposed by the Boston  
Housing Authority (BHA); determine the impacts of this policy on the  
racial composition of BHA housing projects (with Todd Strauss).

1989: United Nations (pro bono); assist in a study identifying the  
consequences of the AIDS epidemic in Zambia, with special reference  
to the copper industry.

1987: Boston Housing Authority; conducted relocation feasibility  
studies using newly derived models.

1986: Consultant to Mt. Auburn Associates; statistical support to a  
study of revolving loan funds and their impact on job creation.

1984-85: Human Resources Agency; New York City. Part of Kennedy  
School team charged with evaluating HRA. Analyzed the problem of

providing shelter for New York City's homeless population.

1982-84: Boston Housing Authority; conducted construction sequencing and relocation studies for two public housing modernization programs using original models. Analyzed tenant assignment policies using queuing models.

1983-84: Federal Trade Commission; statistical analysis of credit requests and approvals in a study of credit discrimination.

1979-80: Public Systems Evaluation, Inc.; evaluation of various urban policing programs with an emphasis on police patrol.