

JAMES R. BROYLES

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Last Updated: February 2019

EDUCATION

- Ph.D. ARIZONA STATE UNIVERSITY, Industrial Engineering (Operations Research), 2009
Graduate Certificate in Statistics
Dissertation: Markovian Models of Patient Throughput in Hospitals: A Regression and Decision Process Approach
Committee Members: Jeffery Cochran, Co-chair; Douglas Montgomery, Co-chair; Gary Hogg; Michael Furukawa
- B.S.E. ARIZONA STATE UNIVERSITY, Industrial Engineering (Barrett Honors College), 2005
Certificate in International Business
Honors Thesis: Industrial Engineering in Hospitals: Framework, Practical Experience, and Resources
Committee Members: Jeffery Cochran, Chair; Gary Hogg; David Pickus

RESEARCH INTERESTS

Stochastic Modeling
Applied Statistics
Military Logistics
Military Personnel
Healthcare Operational Improvements
Supply Chain Systems and Logistics
Policy and Decision Making

RESEARCH AND WORK EXPERIENCE

SENIOR OPERATIONS RESEARCHER
RAND Corporation

2018-present
Santa Monica, CA

OPERATIONS RESEARCHER RAND Corporation	2013-2018 Santa Monica, CA
PARDEE RAND GRADUATE SCHOOL FACULTY RAND Corporation	2012-2013 Santa Monica, CA
ASSOCIATE OPERATIONS RESEARCHER RAND Corporation	2009-2013 Santa Monica, CA
GRADUATE RESEARCH ASSISTANT Arizona State University, Department of Industrial Engineering	2005-2009 Tempe, AZ
ENGINEERING INTERN Banner Health, Department of Management Engineering	Summers 2005, 2006, 2007 Phoenix, AZ
UNDERGRADUATE RESEARCHER Arizona State University, Department of Industrial Engineering	2004-2005 Tempe, AZ
PLANNING ENGINEERING INTERN Micron Technologies	Summer 2004 Boise, ID

PUBLICATIONS

RAND PEER REVIEWED PUBLICATIONS

- [1] Hussey PS, Ringel J, Ahluwalia S, Anhang Price R, Buttorff C, Concannon TW, Lovejoy SL, Martsof G, Rudin RS, Schultz D, Sloss EM, Watkins KE, Waxman DA, Bauman M, Briscoombe B, Broyles JR, Burns RM, Chen EK, DeSantis AS, Ecola L, Fischer SH, Friedberg MW, Gidengil CA, Ginsburg PB, Gulden T, Gutierrez CI, Hirshman S, Huang CY, Kandrack R, Kress A, Leuschner K, MacCarthy S, Maksabedian EJ, Mann S, Matthews LJ, May LW, Mishra N, Kraus L, Muchow AN, Nelson J, Naranjo D, O'Hanlon CE, Pillemer F, Predmore Z, Ross R, Ruder T, Rutter CM, Uscher-Pines L, Vaiana ME, Vesely J, Hosek SD, Farmer CM. (2015). Resources and capabilities of the Department of Veterans Affairs to provide timely and accessible care to veterans. Research Report. RR-1165/2-VA.
http://www.rand.org/pubs/research_reports/RR1165z2.html
- [2] Broyles JR, Glick P, Hu J, Lim Y. (2012). Cataract blindness and the cost-effectiveness of simulation-based training for cataract surgeons: an assessment of the HelpMeSee approach. Technical Report. TR-1303-HMI.
http://www.rand.org/pubs/technical_reports/TR1303.html.

- [3] Moore M, Wermuth M, Resnick AC, Green HD, Broyles JR, Hickey S, Ostwald J, Leuschner KJ, Biever K. (2012). Bridging the gap: prototype tools to support local disaster preparedness planning and collaboration. Technical Report. TR-764. http://www.rand.org/pubs/technical_reports/TR764z1.html.
- [4] Olmsted S, Luangkesorn L, Broyles J, Sama P. (2010) Modeling the capacity of the Laboratory Response Network. Restricted Distribution Report.

PEER REVIEWED JOURNAL AND CONFERENCE PUBLICATIONS

- [1] Cordova A, Eibner C, Vardavas R, Broyles JR, Girosi F. (2013). Modeling employer self-insurance decisions after the Affordable Care Act. *Health Services Research*. DOI: 10.1111/1475-6773.12027.
- [2] Broyles JR, Cochran JK, Montgomery DC. (2011). A Markov decision process to dynamically match hospital inpatient staffing to demand. *IIE Transactions on Health Systems Engineering*. 1(2): 116-130.
- [3] Broyles JR, Cochran JK. (2011). A queuing based statistical approximation of hospital emergency department boarding. *Proceedings of the International Conference on Computers and Industrial Engineering*.
- [4] Broyles JR, Cochran JK, Montgomery DC. (2010). A statistical Markov chain approximation of transient hospital inpatient inventory. *European Journal of Operational Research*. 207(3):1645-1657.
- [5] Cochran JK, Broyles JR. (2010). Developing nonlinear queuing regressions to increase emergency department patient safety: approximating renegeing with balking. *Computers and Industrial Engineering*. 59(3):378-386.
- [6] Broyles JR, Roche KT. (2008). Capacitating outpatient clinics using queuing theory. *IIE Industrial Engineering Research Conference*. 6 pages on CD-ROM, Vancouver, British Columbia, Canada.
- [7] Burdick T, Broyles JR. (2008). Faster and safer emergency care with queuing. *American Society for Quality Conference*. Houston, TX.
- [8] Broyles JR, Cochran JK. (2007). Estimating business loss to a hospital emergency department from patient renegeing by queuing-based regression. *IIE Industrial Engineering Research Conference*. 6 pages on CD-ROM, Nashville, TN.

PEER REVIEWED PUBLICATIONS IN PREPARATION

- [1] Broyles JR, McKay S, Robber AA, Van Abel K, DeYoreo M, Kenney C, Leuschner KJ. Staffing Models for U.S. Customs and Border Protection's Support Services: A Methodology and Specific Applications. Target: RAND Research Report.

- [2] Krull H, Hosek SD, Broyles JR, EmBree JD, Oguz M, Setodji CM, Nataraj S. Projecting Army disability evaluation caseload. Target: RAND Research Report.
- [3] Pearson M, Broyles JR, Arifkhanova A, Beckham R, Needleman J. Assessing the value of operational improvement in hospitals: evaluation of a patient throughput collaborative. Target: Milbank Quarterly.

BOOK CHAPTERS

- [1] Burdick TL, Cochran JK, Andrews R, Bucco ME, Broyles JR, Roche KT. (2009). Door to doc toolkit: planning ED capacity for delivering safe care. Managing ED and Hospital Systems. Ed. David Eitel. Taylor & Francis.
- [2] Roche KT, Broyles JR. (2009). Queuing theory in healthcare. Performance Improvement in Hospitals and Health Systems. Ed. James R. Langabeer II. Healthcare Information and Management Systems Society (HIMSS Publishing).
- [3] Roche KT, Broyles JR. (2009). Simulation modeling in healthcare. Performance Improvement in Hospitals and Health Systems. Ed. James R. Langabeer II. Healthcare Information and Management Systems Society (HIMSS Publishing).

SOLUTION MANUALS

- [1] Johnson RT, Broyles JR, Rigdon CJ. (2009). Student Solutions Manual to Accompany: Introduction to Time Series Analysis and Forecasting, Authors: Montgomery DC, Jennings CL, Kulahci M. Wiley. New York.

CONFERENCE PRESENTATIONS

- [1] Broyles JR, Oguz M(2015). A methodology for estimating caseload in the U.S. Army's disability rating process. *Institute For Operational Research and the Management Sciences Conference*. Philadelphia, PA.
- [2] Broyles JR, Resnick A. (2013). A prototype model for medical capabilities-based disaster preparedness. *Institute For Operational Research and the Management Sciences Conference*. Minneapolis, MN.
- [3] Broyles JR, Krull HM, Haugseth MT. (2012). A queuing network to improve the U.S. military service member disability rating process. *Institute For Operational Research and the Management Sciences Conference*. Phoenix, AZ.

- [4] Broyles JR, Cochran JK. (2011). A queuing based statistical approximation of hospital emergency department boarding. *International Conference on Computers and Industrial Engineering*. University of Southern California, Los Angeles, CA.
- [5] Broyles JR, Cochran JK, Montgomery DC. (2008). Approximating inpatient census distributions with queuing based regression. *Institute For Operational Research and the Management Sciences Conference*. Poster.
- [6] Broyles JR, Roche KT. (2008). Capacitating outpatient clinics using queuing theory. *Institute of Industrial Engineers Research Conference*. The Westin Bayshore, Vancouver, British Columbia, Canada.
- [7] Burdick TL, Broyles JR. (2008). Faster and safer emergency care with queuing. *American Society for Quality Annual Conference*. Houston, Texas. 5-7.
- [8] Broyles JR, Cochran JK. (2007). Estimating business loss to a hospital emergency department from patient renegeing by queuing-based regression. *Institute of Industrial Engineers Research Conference*. Nashville Convention Center, Nashville, Tennessee.

GRANT AND CONTRACT PROPOSALS

- [1] Broyles JR. (2014). A methodology for cost-effective hospital nurse staffing. *National Science Foundation*. \$375,000.
- [2] Abir M, Broyles JR. (2013). Impact of ED length of stay and hospital operations on pediatric outcomes. *National Institute for Chile Health and Development*. \$517,000.
- [3] Pearson M, Needleman J, Broyles JR (2013). Evaluation of NJHA Hospital Engagement Network collaborative with the Institute for Healthcare Optimization. New Jersey Hospital Association. Awarded ~\$500,000.
- [4] Broyles JR. (2012). A model to estimate health progression and medical expenditures of obesity reduction interventions in California. *RAND Internal Research Proposal*.
- [5] Broyles JR, Jones S, Haims M. (2011). Measuring current wait times and creating performance metrics to reduce waiting for elected surgery. *Mexican Institute of Social Security*. \$159,891.
- [6] Broyles JR, Jones S, Haims M. (2011). Reducing waitlists and wait-times for elective surgery by strategically allocating surgical capacity. *Mexican Institute of Social Security*. \$158,480.

- [7] Moore M, Duarte F, Harris K, Kadiyala S, Broyles JR. (2011). Estimating the disease burden and risk factors of influenza in the southern hemisphere. *Center for Disease Control Influenza and Other Respiratory Diseases in the Southern Hemisphere*. \$1,000,000.
- [8] Glick P, Broyles JR, Vardavas R, Lim Y. (2010). Cataract blindness and the cost-effectiveness of simulation-based training for cataract surgeons. *Help Me See*. Awarded \$180,000.
- [9] Broyles JR. (2008). Conference travel grant. *Graduate and Professional Student Association, Arizona State University*. Awarded.
- [10] Broyles JR, Cochran JK. (2005). Undergraduate research grant. *Fulton School of Engineering, Arizona State University*. Awarded.

STUDENT DISSERTATION COMMITTEES, INVITED SEMINARS, AND MENTORSHIP OPPORTUNITIES

- [1] DISSERTATION COMMITTEE MEMBER 2012-2015
 Student: M. Tyler Haugseth
 Pardee RAND Graduate School, RAND Corporation Santa Monica, CA
- [2] INDEPENDENT STUDY FACULTY ADVISOR 2012
 Student: M. Tyler Haugseth
 RAND Corporation Santa Monica, CA
- [3] SUMMER ASSOCIATE ADVISOR 2012
 Summer Associate: Kenneth Chong
 RAND Corporation Santa Monica, CA
- [4] INVITED SPEAKER TO RAND EUROPE’S SEMINAR ON HEALTH AND INFORMATION TECHNOLOGY AND
 RAND’S PAYDAY LOGISTICS SEMINAR 2011
 RAND Corporation Santa Monica, CA
 Title: A prototype model for medical capabilities-based disaster preparedness
- [5] INVITED SEMINAR SPEAKER 2010
 University of Sonora, Department of Industrial Engineering Hermosillo, Son, Mexico
 Title: Modeling patient throughput in hospitals and other quantitative methods in
 health policy (1 session of approximately 15 students and 4 faculty)
- [6] GUEST LECTURER 2008
 Arizona State University, Department of Industrial Engineering Tempe, AZ
 ASU 101-FSE: The ASU Experience (for Engineers) (3 sessions of 19 students)

- [7] TEACHING INTERN 2008
 Arizona State University, Department of Industrial Engineering Tempe, AZ
 IEE598/498: Operations Research in Hospitals (2 sessions of 12 students)
- [8] SENIOR DESIGN PROJECT MENTOR 2007
 Arizona State University, Department of Industrial Engineering Tempe, AZ
 IEE490: Project in Design/Development (2 groups of 4 students)
- [9] GUEST INSTRUCTOR 2007
 Banner Health, Department of Management Engineering Phoenix, AZ
 Six Sigma Training: Queuing Theory (1 session of 25 students)
- [10] GUEST SPEAKER 2007
 Healthcare Information Management and Systems Society Web Seminar
 Title: The Science of Throughput (1 session of approximately 25 healthcare
 administrators and clinicians)

RESEARCH PROJECTS

- IMPLEMENTING IMPROVED SUPPORT FOR READINESS DRIVERS 2018-present
 RAND Corporation, National Defense Research Institute
 Sponsor: Office of Secretary of Defense
 Principal Investigators: James R. Broyles, Anthony DeCicco
- USING DATA ANALYTICS FOR PRESCRIPTIVE AND PROACTIVE ARMY SUSTAINMENT 2018-present
 RAND Corporation, Arroyo Center
 Sponsor: U.S. Army G-4
 Principal Investigators: Kenneth Girardini, James R. Broyles
- AUTHORIZED STOCKAGE LIST STANDARDIZATION 2017-2018
 RAND Corporation, Arroyo Center
 Sponsor: U.S. Army G-4
 Principal Investigators: Kenneth Girardini
- CBP WORKFORCE STAFFING MODELS 2017-2018
 RAND Corporation, Homeland Security Operations and Analysis Center
 Sponsor: Customs and Border Protection
 Principal Investigators: James R. Broyles

OCIE ALTERNATIVE DISTRIBUTION CONCEPT IMPLEMENTATION PROJECT 2016-2017
RAND Corporation, Arroyo Center
Sponsor: US Army Materiel Command
Principal Investigators: James R. Broyles, Bryan Boling

METHODS TO EVALUATE CHANGES TO TRAINING 2016-2017
RAND Corporation, Project Air Force
Sponsor: US Air Force, Air Education and Training Command
Principal Investigators: Lisa Harrington, Kathleen Reedy

IMPROVING SUPPORT FOR WEAPON SYSTEM READINESS DRIVERS 2016-2017
RAND Corporation, National Security Research Division
Sponsor: Office of the Secretary of Defense
Principal Investigators: Marc Robbins

ALIGNING FULL-TIME SUPPORT TO ACHIEVE DESIRED RESERVE COMPONENT READINESS LEVELS 2016-2017
RAND Corporation, Arroyo Center
Sponsor: US Headquarters Department of the Army G-8
Principal Investigators: Stephen Dalzell, Jennifer Kavanagh

REVIEW OF THE U.S. ARMY'S SUITABILITY FITNESS AND HOMELAND SECURITY PERSONNEL DIRECTIVE-12 SCREENING PROGRAMS 2015-2016
RAND Corporation, Arroyo Center
Sponsor: US Headquarters Department of the Army G-1
Principal Investigators: John Bordeaux, Radha Iyengar

ANALYZING THE EFFECT OF GCSS-A FORECASTING AND ERP SOLUTION EXCESS MANAGEMENT PROCESSES ON THE ARMY'S SUPPLY POSTURE 2015-2016
RAND Corporation, Arroyo Center
Sponsor: US Army Materiel Command
Principal Investigators: Kenneth Girardini, James R. Broyles

ALTERNATIVE ORGANIZATIONAL CLOTHING AND INDIVIDUAL EQUIPMENT DISTRIBUTION 2015-2016
RAND Corporation, Arroyo Center
Sponsor: US Army Materiel Command
Principal Investigators: James R. Broyles, Elvira N. Loredó

VETERANS ACCESS, CHOICE AND ACCOUNTABILITY ACT ASSESSMENT B: ESTIMATING SUPPLY 2014-2015
RAND Corporation, RAND Health
Sponsor: Centers for Medicare and Medicaid Services; MITRE Corporation
Principal Investigators: Carrie Farmer, Robin Weinick, Michael Greenberg, Jeanne Ringel, Heather Krull, Christine Eibner, Peter Hussey, Susan Hosek

MAINTAINING DEPLOYMENT CLINICAL PROFICIENCY DURING PEACETIME 2014-2016
RAND Corporation, Arroyo Center
Sponsor: Assistant Secretary of the Army for Manpower and Reserve Affairs; The Office of the Surgeon General
Principal Investigators: Edward W. Chan, Heather Krull

ANALYSIS TO SUPPORT FIELDING OF GLOBAL COMBAT SUPPORT SYSTEM— ARMY 2014-2016
RAND Corporation, Arroyo Center
Sponsor: US Headquarters Department of the Army G-4
Principal Investigator: Kenneth Girardini

IMPLEMENTING AN ALTERNATIVE OCIE DISTRIBUTION SYSTEM 2014-2015
RAND Corporation, Arroyo Center
Sponsor: US Army Materiel Command
Principal Investigators: Elvira N. Loreda, James R. Broyles

LEVERAGING AND EXTENDING THE ARMY’S LOGISTICS ERPS 2014-2015
RAND Corporation, Arroyo Center
Sponsor: US Army
Principal Investigator: Kenneth Girardini

DETERMINING ALTERNATIVE DISTRIBUTION FOR ARMY ORGANIZATION CLOTHING AND INDIVIDUAL EQUIPMENT 2013-2014
RAND Corporation, Arroyo Center
Sponsor: US Army
Principal Investigators: Elvira N. Loreda, James R. Broyles

ERP DEVELOPMENT AND METRICS FOR LOGISTICS ERP 2013-2014
RAND Corporation, Arroyo Center
Sponsor: US Army
Principal Investigator: Kenneth Girardini

EVALUATING THE EFFECTIVENESS OF NEW JERSEY HOSPITAL OPERATIONAL IMPROVEMENT EFFORTS 2013-2014
RAND Corporation, RAND Health
Sponsor: New Jersey Hospital Association
Principal Investigators: Marge Pearson, Jack Needleman

INTEGRATED DISABILITY EVALUATION CASELOAD PROJECTION 2012-2013
RAND Corporation, Arroyo Center
Sponsor: US Army
Principal Investigator: Heather Krull

UNDERSTANDING ARMY CASELOADS AND STAFFING FOR THE INTEGRATED DISABILITY EVALUATION SYSTEM
2012-2013

RAND Corporation, Arroyo Center

Sponsor: Office of the Surgeon General/U.S. Army Medical Command, Deputy Chief of Staff, G-1, U.S. Army

Principal Investigator: Susan D. Hosek

IMPROVING THE SOLDIER DISABILITY RATING PROCESS 2012

RAND Corporation, National Security Research Division, National Defense Research Institute

Sponsor: RAND Corporation (internal research)

Principal Investigator: Heather M. Krull

MAXIMIZING COST AVOIDANCE OF A CONUS OCIE REPAIR SYSTEM 2011-2013

RAND Corporation, Arroyo Center

Sponsor: Tank and Automotive Command Life Cycle Management Command Integrated Logistics Support Center

Principal Investigators: James R. Broyles, Elvira N. Loreda

IDENTIFYING EFFICIENCIES IN OCIE INVENTORY MANAGEMENT FOR REGIONAL WAREHOUSES
2011-2012

RAND Corporation, Arroyo Center

Sponsor: Tank and Automotive Command Life Cycle Management Command Integrated Logistics Support Center

Principal Investigators: James R. Broyles, Carol Fan

IMPROVING ARMY END-TO-END SUPPLIER CHAIN MEASUREMENT AND PERFORMANCE 2011-2012

RAND Corporation, Arroyo Center

Sponsor: Assistant Secretary of the Army for Acquisition, Logistics, and Technology; Deputy Chief of Staff, G-4

Principal Investigator: Yun Kang

SIMULATING THE EFFECTS OF THE AFFORDABLE CARE ACT ON HEALTH INSURANCE COVERAGE
2011-2012

RAND Corporation, RAND Health

Sponsor: U.S. Department of Labor, Assistant Secretary for Planning and Evaluation

Principal Investigator: Christine Eibner

IMPROVING INVENTORY MANAGEMENT OF OCIE AT SIERRA ARMY DEPOT 2010-2011
RAND Corporation, Arroyo Center
Sponsor: Army Integrated Logistics Support Center, TACOM LCMC
Principal Investigators: Carol Fan, Elvira Loredo

ASSESSING THE EFFECTIVENESS OF A SIMULATOR TRAINED CATARACT SURGERY DELIVERY METHOD 2010-2011
RAND Corporation, RAND Health
Sponsor: Help Me See
Principal Investigator: Peter J. Glick

REDUCING ARMY TRANSPORTATION COST THROUGH EFFECTIVE FORWARD POSITIONING 2010-2011
RAND Corporation, Arroyo Center
Principal Investigator: Kenneth Girardini

MANAGING SUPPLIER RELATIONSHIP THROUGH DRAW DOWN 2010-2011
RAND Corporation, Arroyo Center
Sponsor: Army Material Command, Army G-4
Principal Investigators: Edward G. Keating

BRIDGING THE GAP: PROTOTYPE TOOLS TO SUPPORT LOCAL DISASTER PREPAREDNESS, PLANNING, AND COLLABORATION 2009-2011
RAND Corporation, Center for Military Health and Policy Research
Sponsor: Department of Defense Office of the Assistant Secretary for Health Affairs
Principal Investigators: Melinda Moore, Michael A. Wermuth

ORGANIZATIONAL CLOTHING AND INDIVIDUAL EQUIPMENT (OCIE) 2009-2010
RAND Corporation, Arroyo Center
Sponsor: Army G-4
Principal Investigators: Carol E. Fan, Elvira Loredo

MODELING THE LABORATORY RESPONSE NETWORK 2009-2010
RAND Corporation, RAND Health
Sponsors: Association of Public Health Laboratories, Centers for Disease Control and Prevention
Principal Investigator: Stuart Olmsted

COMPARE: PROVIDER MODULE ON BUNDLED PAYMENTS 2009-2010
RAND Corporation, RAND Health

DOOR-TO-DOC 2005-2009
Arizona State University, Department of Industrial Engineering
Sponsor: The Agency for Healthcare Research and Quality (AHRQ)
Principal Investigators: Twila L. Burdick, Jeffery K. Cochran

UNDERGRADUATE RESEARCH 2004-2005
Arizona State University, Department of Industrial Engineering

SERVICE

RAND CORPORATION SERVICE

RAND REPORT REVIEWER 2009-present
RAND CONFERENCE RECRUITER 2012, 2013, 2015
OPERATIONS RESEARCH APPLICANT REVIEWER 2012-2016

PEER REVIEWED JOURNAL REFEREEING

Annals of Operations Research
European Journal of Operational Research
Foundations of Computing and Decision Sciences
Health Care Management Science
International Journal of Industrial and Systems Engineering
International Journal of Production Economics
Journal of the Operational Research Society

OTHER LEADERSHIP

SECRETARY 2008-2009
Arizona State University, Department of Industrial Engineering Tempe, AZ
Organization: The Institute for Operations Research and the Management Sciences (INFORMS) Student Chapter

PRESIDENTIAL MENTOR 2006-2007
Arizona State University, Department of Industrial Engineering Tempe, AZ
Organization: The Institute for Industrial Engineers (IIE) Student Chapter

PRESIDENT 2005-2006
Arizona State University, Department of Industrial Engineering Tempe, AZ
Organization: The Institute for Industrial Engineers (IIE) Student Chapter

AWARDS AND HONORS

Outstanding Graduate Award Arizona State University, Arizona State Alumni Association	2009 Tempe, AZ
Gilbreth Memorial Fellowship The Institute of Industrial Engineers (IIE)	2007-2008, 2008-2009 Norcross, GA
Fulton Fellow Arizona State University, Fulton School of Engineering Fellowship Program for Outstanding Ph.D. Students	2005-2007 Tempe, AZ
Excellence in Leadership Award Arizona State University, Fulton School of Engineering	2004, 2005 Tempe, AZ

PROFESSIONAL MEMBERSHIPS

The Institute for Operations Research and the Management Sciences (INFORMS)
Omega Rho, INFORMS Honors Society
The Institute of Industrial Engineers (IIE)
Alpha Pi Mu, Industrial Engineering Honors Society