

Overall Statistics for Published (or Accepted) Journal Papers

Total count = 141

Accident Analysis and Prevention: 2

Annals of Operations Research: 7

Computers and Industrial Engineering: 2

Computers and Operations Research: 18

Decision Sciences: 1

European Journal of Operational Research: 20

Geographical Analysis: 2

Human Factors and Ergonomics in Manufacturing: 1

IIE Transactions: 5

Information Systems and Operational Research: 1

Interfaces: 2

International Journal of Mathematics of Operations Research: 1

International Journal of Operational Research: 3

International Journal of Production Research: 4

Journal of Defense Modeling and Simulation: 1

Journal of Geographical Systems: 1

Journal of Simulation: 2

Journal of Intelligent Transportation Systems: 1

Journal of the Operational Research Society: 3

Journal of Transportation Security: 2

Management Science: 3

Military Operations Research: 5

Naval Research Logistics: 2

Networks: 4

Networks and Spatial Economics: 2

Operations Research: 8

OR Insight: 4

OR Letters: 1

Risk Analysis: 1

SIAM Journal on Applied Mathematics: 1

Socio-Economic Planning Sciences: 11

Sustainability: 1

Theoretical Issues in Ergonomics Science: 1

TOP: An Official Journal of the Spanish Society of Statistics and Operations Research: 1

Transport Policy: 1

Transportation Research B: 1

Transportation Research C: 3

Transportation Research Record: 1

Transportation Science: 11

Submitted Papers:

N. Ding, R. Batta and C. Kwon, "Locating Depots to Facilitate Routing a Mixed Fleet of Electric and Conventional Vehicles," first revision submitted to *TOP: An Official Journal of the Spanish Society of Statistics and Operations Research*. ELECTRIC VEHICLE ROUTING

M. Taslimi, R. Batta and C. Kwon, "Medical Waste Collection Considering Transportation and Storage Risk," first revision submitted to *Transportation Science*. HAZMAT ROUTING

A. Sadeghnejad-Barkousaraie, R. Batta and M. Sudit, "Maritime Escort Transportation: Tugboat Scheduling Problem," submitted to *Computers & Operations Research*. ESCORT TRANSPORTATION

M. Moskal and R. Batta, "Adaptive UAV Surveillance Using a Prize-Collecting Vertex Routing Model," submitted to *Computers & Operations Research*. UAV Routing

R. Yie, R. Batta, A. Ditta and G. Galindo, "An Efficient Road Network Simplification Method," submitted to *International Journal of Geographical Information Science*.

Papers in Press (not assigned a journal issue or page number yet):

J. Fetzer, H. Cacaes, Q. He and R. Batta, "A Multi-Objective Optimization Approach to the Location of Road Weather Information System in New York State," to appear in *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*. LOCATION MODELLING

H. Cacaes, R. Batta and Q. He, "Special Need Students School Bus Routing: Consideration for Mixed Load and Heterogeneous Fleet," to appear in *Socio-Economic Planning Sciences*. SCHOOL BUS ROUTING

T. Esfandeh, R. Batta and C. Kwon, "Time Dependent Hazardous Network Design Problem," to appear in *Transportation Science*. HAZMAT ROUTING

Paper Supplements:

Test instances for paper published in *Journal of the Operational Research Society* entitled "Convoy Movement Problem: A Civilian Perspective," by A. Sadeghnejad-Barkousaraie, R. Batta and M. Sudit, [ZIP](#)
MILITARY OR

PUBLISHED PAPERS

2017

R. Swamy, J. E. Kang, R. Batta and Y. Chung, "Hurricane Evacuation Planning using Public Transportation," *Socio-Economic Planning Sciences*, Vol. 59, (2017), pp. 43-55. HUMANITARIAN LOGISTICS

H. Caceres, R. Batta and Q. He, "School Bus Routing with Stochastic Demand and Duration Constraints," *Transportation Science*, Vol. 51, No. 4, (2017), pp. 1349-1364. SCHOOL BUS ROUTING

D. Sun, J. Kang, R. Batta and Y. Song, "Optimization of Evacuation Warnings Prior to a Hurricane Disaster," *Sustainability*, Vol. 9, No. 11, (2017), pp. 2152. HUMANITARIAN LOGISTICS

M. Moskal and R. Batta, "Macrogrid Approach for Routing UAVs in Support of Information Gathering," *Military Operations Research*, Vol. 22, No. 4, (2017), pp. 35-54. UAV ROUTING

R. Auad and R. Batta, "Location-Coverage Models for Preventing Attacks to Interurban Transportation Networks," *Annals of Operations Research*, Vol. 258, No. 2, (2017), pp. 679-717. HOMELAND SECURITY APPLICATION

Y. Xia, R. Batta and R. Nagi, "Routing a fleet of vehicles for decentralized reconnaissance with shared workload among regions with uncertain information," *Operations Research*, Vol. 65, No. 3, (2017), pp. 674-692. UAV ROUTING

X. Li, R. Batta and C. Kwon, "Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster," *Socio-Economic Planning Sciences*, Vol. 57, (2017), pp. 25-34. HUMANITARIAN LOGISTICS

A. Sadeghnejad-Barkousaraie, R. Batta and M. Sudit, "Convoy Movement Problem: A Civilian Perspective," *Journal of the Operational Research Society*, Vol. 68, No. 1, (2017), pp. 14-33. MILITARY OR

M. Taslimi, R. Batta and C. Kwon, "A Comprehensive Modeling Framework for Hazmat Network Design, Hazmat Response Team Location, and Equity of Risk," *Computers & Operations Research*, Vol. 79, (2017), pp. 119-130. HAZMAT ROUTING

2016

T. Geetla, R. Batta, A. Blatt, M. Flanigan and K. Majka, "Clustering Intelligent Transportation Sensors using Public Transportation," *TOP: An Official Journal of the Spanish Society of Statistics and Operations Research*, Vol. 24, No. 3, (2016), pp. 594-611. INTELLIGENT TRANSPORTATION SYSTEMS

D. Myers, R. Batta and M. Karwan, "A Real-Time Network Approach for Including Obstacles and Flight Dynamics in UAV Route Planning," *Journal of Defense Modeling and Simulation*, Vol. 13, No. 3, (2016), pp. 291-306. UAV ROUTING

M. Kim, R. Batta and Q. He, "Optimal Routing of Infiltration Operations," *Journal of Transportation Security*, Vol. 9, (2016), pp. 87-104. MILITARY APPLICATION

T. Esfandeh, C. Kwon and R. Batta, "Regulating Hazardous Materials Transportation by Dual Toll Pricing," *Transportation Research Part B.*, Vol. 83, (2016), 20-35. HAZMAT ROUTING

G. Galindo and R. Batta, "Forecast-Driven Model for Prepositioning Supplies in Preparation for a Foreseen Hurricane," *Journal of the Operational Research Society*, Vol. 67, No. 1, (2016), pp. 98-113. HUMANITARIAN LOGISTICS

2015

S. Huang, Q. Wang, R. Batta and R. Nagi, "An Integrated Model for Site Selection and Space Determination of Distribution Centers," *Computers and Operations Research*, Vol. 62, (2015), pp. 169-176. WAREHOUSE LOCATION

M. Henchey, R. Batta, A. Blatt, M. Flanigan and K. Majka, "A Study of Situationally Aware Routing for Emergency Responders," *Journal of the Operational Research Society*, Vol. 66, No. 4, (2015), pp. 570-578. EMERGENCY RESPONSE

2014

R. Wei, A.T. Murray and R. Batta, "A Bounding Based Solution Approach for the Continuous Arc Covering Problem," *Journal of Geographical Systems*, Vol. 16, No. 2, (2014), pp. 161-182. LOCATION ANALYSIS

M. Henchey, R. Batta, M. Karwan and A. Crassidis, "A Flight Time Approximation Model for Unmanned Aerial Vehicles: Estimating the Effects of Flight Dynamics and Wind," *Military Operations Research*, Vol. 18, (2014) pp. 51-68. UAV ROUTING

T. Geetla, R. Batta, A. Blatt, M. Flanigan and K. Majka, "Optimal Placement of Omnidirectional Sensors in a Transportation Network for Effective Emergency Response and Crash Characterization," *Transportation Research Part C: Emerging Technologies* Vol. 45, (2014) pp. 64-82. INTELLIGENT TRANSPORTATION SYSTEMS

R. Batta, M. Lejeune and S. Prasad, "Public Facility Location Using Dispersion, Population, and Equity Criteria," *European Journal of Operational Research*, Vol. 234, No. 3, (2014) pp. 819-829. PUBLIC FACILITY LOCATION

Y. Kang, R. Batta and C. Kwon, "Value-at-Risk Model for Hazardous Material Transportation," *Annals of Operations Research*, Vol. 222, (2014), pp. 361-387. HAZMAT ROUTING

Y. Kang, R. Batta and C. Kwon, "Generalized Route Planning Model for Hazardous Material Transportation with VaR and Equity Considerations," *Computers and Operations Research*, Vol. 43, (2014), pp. 237-247. HAZMAT ROUTING

N. Bednowitz, R. Batta and R. Nagi, "Dispatching and Loitering Policies for Unmanned Aerial Vehicles under Dynamically Arriving Multiple Priority Targets," *Journal of Simulation*, Vol. 8, (2014) pp. 9-24. UAV ROUTING

2013

M. Henchey, R. Batta, A. Blatt, M. Flanigan and K. Majka, "A Simulation Approach to Studying Emergency Response in an Advanced Transportation System," *Journal of Simulation* 8, (2013), pp. 115-128. EMERGENCY RESPONSE

G. Galindo and R. Batta, "Prepositioning of Supplies for Hurricanes under Demand Uncertainty," *Socio-Economic Planning Sciences*, Vol. 47, No. 1, (2013), pp. 20-37. HUMANITARIAN LOGISTICS

G. Galindo and R. Batta, "Review of Recent Developments in OR/MS Research in Disaster Management," *European Journal of Operational Research*, Vol. 230, No. 2, (2013), pp. 201-211. HUMANITARIAN LOGISTICS

2012

J. Wang, Y. Kang, C. Kwon and R. Batta, "Dual Toll Pricing for Hazardous Material Transport with Linear Delay," *Networks and Spatial Economics*, Vol. 12, No. 1, (2012), pp. 147-165. HAZMAT ROUTING

Y-H. Lin, R. Batta, P. Rogerson, A. Blatt and M. Flanigan, "Location of Temporary Depots to Facilitate Relief Operations after an Earthquake," *Socio-Economic Planning Sciences*, Vol. 42, No. 2, (2012), pp. 112-123. HUMANITARIAN LOGISTICS

F. Mufalli, R. Batta and R. Nagi, "Simultaneous Sensor Selection and Routing of Unmanned Aerial Vehicles for Complex Mission Plans," *Computers and Operations Research*, Vol. 39, No. 11, (2012), pp. 2787-2799. UAV ROUTING

X. Nie, G. Parab, R. Batta and L. Lin, "Simulation-Based Selectee Lane Queueing Design for Passenger Checkpoint Screening," *European Journal of Operational Research*, Vol. 219, No. 1, (2012), pp. 146-155. AIRPORT SECURITY

P. Berglund and R. Batta, "Placement of Warehouse Cross Aisles," *IIE Transactions*, Vol. 44, No. 2, (2012), pp.107-120. WAREHOUSE DESIGN

J. Yates, R. Batta, I. Casas and M. Karwan, "Establishing Public Policy to Protect Critical Infrastructure: Finding a Balance Between Exposure and Cost in Los Angeles County," *Transport Policy*, 24, (2012), pp. 109-117. HOMELAND SECURITY

2011

J.A. Paul and R. Batta, "Improving Hurricane Disaster Preparedness: Models for Optimal Reallocation of Hospital Capacity," *International Journal of Operational Research*, Vol. 10, No. 2, (2011), pp. 194-213. HUMANITARIAN LOGISTICS

M. Zhang, R. Batta and R. Nagi, "Designing Manufacturing Facility Layouts to Mitigate Congestion," *IIE Transactions*, Vol. 45, No. 4, (2011), pp. 132-145. LAYOUT DESIGN

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J. Yates, R. Batta and M. Karwan, "Optimal Placement of Sensors and Interception Resource Assessment for Protection of Regional Infrastructure from Covert Attack," *Journal of Transportation Security*, 4(2), (2011), pp. 145-169. HOMELAND SECURITY

2010

M. Flanigan, A. Blatt, M. Russell, R. Batta and K. Lee, "Emergency Response Technology and Integrated Active Transportation System," *Transportation Research Record*, No. 2189,(2010), pp. 26-36.

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E. Tokar Erdermir, R. Batta, P. Rogerson, A. Blatt and M. Flanigan, "Joint Ground/Air EMS Coverage Models," *European Journal of Operational Research*, 2072, (2010), 736-749. EMERGENCY RESPONSE

M. A. Akella, E. Delmelle, R. Batta, P. Rogerson and A. Blatt, "Adaptive Cell Tower Location Using Geostatistics," *Geographical Analysis*, 42:3, (2010), 227-244. CELL TOWER LOCATION

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S. Huang, R. Batta and R. Nagi, "Simultaneous Siting and Sizing of Distribution Centers in the Plane," *Annals of Operations Research*, 167:1, (2009), 157-170. WAREHOUSE LOCATION

X. Nie, R. Batta, C. Drury and L. Lin, "The Impact of Joint Responses of Devices in an Airport Security System," *Risk Analysis*, 29:2, (2009), 298-311. AIRPORT SECURITY

A. Jotshi and R. Batta, "Search for Two Immobile Entities on a Network," *International Journal of Mathematics of Operations Research*, 1:1/2, (2009), 37–75. SEARCH THEORY

A. Jotshi, Q. Gong and R. Batta, "Dispatching and Routing of Emergency Vehicles in Disaster Mitigation Using Data Fusion," *Socio-Economic Planning Sciences*, 43:1, (2009), 1-24. HUMANITARIAN LOGISTICS

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A. Sarkar, R. Batta and R. Nagi, "Finding Rectilinear Least Cost Paths in the Presence of Convex Polygonal Congested Regions," *Computers & Operations Research*, 36, 3, (2009), 737-754. LAYOUT PATH PLANNING

M. Zhang, S. Savas, R. Batta and R. Nagi, "Facility Placement with Sub-Aisle Design in an Existing Layout," *European Journal of Operational Research*, 197, 1 (2009), 154-206. FACILITY LAYOUT

M. Zhang, R. Batta and R. Nagi, "Modeling of Workflow Congestion and Optimization of Flow Routing in a Manufacturing/Warehouse Facility," *Management Science*. 55, (2009), 267-280. VEHICLE ROUTING IN A FACTORY

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J. Paul and R. Batta, "Models for Hospital Location and Capacity Allocation for an Area Prone to Natural Disasters," *International Journal of Operational Research* 3, (2008), 473-496. HUMANITARIAN LOGISTICS

A. Jotshi and R. Batta, "Search for an Immobile Entity on a Network," *European Journal of Operational Research*, 191, (2008), 347-359. SEARCH THEORY

I. Casas, R. Garrity, D. Mandloi, M. Sunm, J. Weaver, R. Nagi and R. Batta, "A Spatial Decision Support System Combining GIS and OR Tools to Optimize District Boundaries and Bus Routes for a Suburban School District," *OR Insight*, 21, 2, (2008) 3-16. SCHOOL DISTRICTING

M. R. Akella, R. Batta, M. Sudit, P. Rogerson and A. Blatt, "Cellular Network Configuration with Co-channel and Adjacent Channel Interference Constraints," *Computers and Operations Research*, 35, (2008), 3738-3757. CELLULAR APPLICATIONS

E. T. Erdemir, R. Batta, S. Spielman, P. Rogerson, A. Blatt and M. Flanigan, "Evaluating the Performance of Aeromedical Base Locations of New Mexico by Considering Nodal and Path Demand," *Accident Analysis and Prevention*, 40, (2008), 1105-1114. EMERGENCY RESPONSE

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X. Nie, R. Batta, C. Drury and L. Lin, "Optimal Placement of Suicide Bomber Detectors," *Military Operations Research*, 12, (2007), 65-78. HOMELAND SECURITY

I. Casas, A. Malik, E. Delmelle, M. Karwan and R. Batta, "An Automated Network Generation Procedure for Routing of Unmanned Aerial Vehicles (UAVs) in a GIS Environment," *Networks and Spatial Economics*, 7, (2007), 153-176. UAV ROUTING

C. Marin, C. Drury, R. Batta and L. Lin, "Server Adaptation in an Airport Security System Queue," *OR Insight* 20, (2007), 22-31. AIRPORT SECURITY

Q. Gong and R. Batta, "Allocation and Reallocation of Ambulances to Casualty Clusters in a Disaster Relief Operation," *IIE Transactions* 39, (2007), 27-39. HUMANITARIAN LOGISTICS

H. Kelachankuttu, R. Batta and R. Nagi, "Contour Line Construction for a New Rectangular Facility in an Existing Layout with Rectangular Departments," *European Journal of Operational Research*, 180, 1, (2007), 149-162. LAYOUT ANALYSIS

A. Sarkar, R. Batta and R. Nagi, "Placing a Finite Size Facility with a Center Objective on a Rectilinear Plane with Barriers," *European Journal of Operational Research*, 179, 3, (2007), 1160-1176. LAYOUT ANALYSIS

S. Naik and R. Batta, "Propagated Delay Estimation and its Use in the Development of an Effective Aircraft Ground Delay Strategy." *International Journal of Operational Research* 12, (2007) 1-25. AIRLINE SCHEDULING

V. Akgun, A. Parekh, R. Batta and C. Rump, "Routing of a Hazmat Truck in the Presence of Weather Systems," *Computers & Operations Research*, 34, (2007) 1351-1373. HAZMAT ROUTING

R. Batta, O. Berman and Q. Wang, "Balancing Staffing and Switching Costs in a Call/Service Center," *European Journal of Operational Research*, 177, (2007) 924-938. CALL CENTER APPLICATIONS

A. Sarac, R. Batta and C. G. Drury, "Extension of the Visual Search Models of Inspection," *Theoretical Issues in Ergonomics Science*, 8, (2007), 531-556. VISUAL SEARCH APPLICATION

2006

Q. Gong and R. Batta, "A Queue-Length Cutoff Model for a Preemptive Two Priority M/M/1 System," *SIAM Journal on Applied Mathematics* 67, (2006), 99-115. QUEUEING THEORY

L. Babu, L. Lin and R. Batta, "Passenger Grouping Under Constant Threat Probability in an Airport Security System," *European Journal of Operational Research*, 168, (2006), 633-644. AIRLINE SECURITY

A. Sarac, R. Batta and C. M. Rump, "A Branch-and-Price Approach for Operational Oriented Aircraft Maintenance Routing," *European Journal of Operational Research*, 175, (2006) 1850-1869. AIRCRAFT ROUTING

K. Holness, C.G. Drury and R. Batta, "A Systems View of Personnel Assignment Problems," *Human Factors and Ergonomics in Manufacturing* Vol. 16, Number 3, Summer 2006, 285-307. PERSONNEL ASSIGNMENT

2005

K. Thyagarajan, R. Batta, M. H. Karwan and R. J. Szczerba, "Planning Dissimilar Routes for Military Units," *Military Operations Research*, 10, 1, (2005), 25-42. MILITARY OR

D. J. Patel, R. Batta and R. Nagi, "Clustering Sensors in Wireless *Ad hoc* Networks Operating in a Threat Environments," *Operations Research*, 53, (2005), 432-442. MILITARY OR

A. Sarkar, R. Batta and R. Nagi, "Planar Area Location/Layout Problem in the Presence of Generalized Congested Regions with the Rectilinear Distance Metric," *IIE Transactions*, 37, (2005), 35-50. LAYOUT APPLICATIONS

Q. Wang, R. Batta and R. J. Szczerba, "Sequencing the Processing of Incoming Mail to Match and Outbound Truck Delivery Schedule," *Computers & Operations Research*, 32, 7, (2005) 1777-1791. MAIL SORTING APPLICATION

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S. J. Wang, R. Batta and C. M. Rump, "Stability of a Crime Equilibrium Level," *Socio-Economic Planning Sciences*, 39, 3, (2005), 229-244. CRIMINAL JUSTICE APPLICATION

S. Huang, R. Batta and R. Nagi " Distribution Network Design: Selection and Sizing of Congested Connections," *Naval Research Logistics*, 52, 8, (2005), 701-712. NETWORK DESIGN

S. Huang, R. Batta, K. Klamroth and R. Nagi, "k-Connection Location Problem in the Plane," *Annals of Operations Research*, 136, (2005), 193-209. LOCATION THEORY

2004

S. Mishra, R. Batta and R. J. Szczerba, "A Rule-Based Approach for Aircraft Dispatching to Emerging Targets," *Military Operations Research*, 9, 3, (2004), 17-30. MILITARY OR

A. Sarkar, R. Batta and R. Nagi, "Commentary on Facility Location in the Presence of Congested Regions with the Rectilinear Distance Metric," *Socio-Economic Planning Sciences*, 38, (2004), 291-306. FACILITY LOCATION

M. Vamanan, Q. Wang, R. Batta and R. J. Szczerba, "Integration of COTS Software Products ARENA & CPLEX for an Inventory/Logistics Problem," *Computers & Operations Research*, 31, (2004), 533-547. SOFTWARE INTEGRATION

P. Rogerson, E.M. Delmelle, R. Batta, M.R. Akella, A. Blatt and G. Wilson, "Optimal Sampling Design for Variables with Varying Spatial Importance," *Geographical Analysis*, 36, (2004), 177-194. SAMPLING DESIGN

Q. Wang, R. Batta and C. M. Rump, "A New Class of Facility Location Models with Congestion," *Naval Logistics Research*, 51, (2004), 137-152. FACILITY LOCATION WITH CONGESTION

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M.R. Akella, C.W. Bang, R. Beutner, E.M. Delmelle, R. Batta, P. Rogerson, A. Blatt and G. Wilson, "Evaluating the Reliability of Automated Collision Notification Systems", *Accident Analysis and Prevention*, 35, 3, (2003), 349-360. INTELLIGENT TRANSPORTATION SYSTEMS

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Q. Wang, R. Batta, J. Bhadury and C. M. Rump, "The Budget Constrained Location Problem with Opening and Closing of Facilities," *Computers & Operations Research*, 50, (2003), 2047-2069. FACILITY LOCATION

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S.J. D'Amico, S.J. Wang, R. Batta and C.M. Rump, "A Simulated Annealing Approach to Police District Design", *Computers & Operations Research*. 29, 6, (2002), 667-684. POLICE DISTRICTING

J.H. Jaramillo, J. Bhadury and R. Batta, "On the Use of Genetic Algorithms to Solve Location Problems," *Computers & Operations Research*, 6, (2002), 761-779. LOCATION THEORY

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A. Sarac, R. Batta, J. Bhadury and C. M. Rump, "Reconfiguring Police Reporting Districts in the City of Buffalo," *OR Insight*, Vol. 12, Issue 3, July-September 1999, 16-24. POLICE DISTRICTING

P. Zhao and R. Batta, "Analysis of Centroid Aggregation for the Euclidean Distance p-Median Problem," *European Journal of Operational Research*, 113, (1999) 147-168. AGGREGATION IN LOCATION MODELS

C. Oboth, R. Batta and M.H. Karwan, "Dynamic Conflict-Free Routing of Automated Guided Vehicles," *International Journal of Production Research*, 37, 9, (1999) 2003-2030. AGV ROUTING

R. Narasimhan, R. Batta and M.H. Karwan, "Routing Automated Guided Vehicles in the Presence of Interruptions," *International Journal of Production Research*, 37, 3, (1999) 653-681. AGV ROUTING

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1996

H. Jin, R. Batta and M.H. Karwan, "On the Analysis of Two New Models for Transporting Hazardous Materials," *Operations Research*, 44, 5 (1996) 710-723. HAZMAT ROUTING

A.V. Naik, A. Baveja, R. Batta and J.P. Caulkins, "Scheduling Crackdowns on Illicit Drug Markets," *European Journal of Operational Research*, 88, 2 (1996) 231-250. CRIMINAL JUSTICE APPLICATIONS

G. Vemuganti, R. Batta and Y. Zhu, "A Note on 'An Approximate Solution to Deterministic Kanban Systems'," *Decision Sciences*, 27, 4, (1996) 817-826. MANUFACTURING SYSTEM DESIGN

D. Sun and R. Batta, "Scheduling Larger Job Shops: A Decomposition Approach," *International Journal of Production Research*, 34, 7, (1996) 2019-2033. SCHEDULING

R.F. Dell, R. Batta and M.H. Karwan, "The Multiple Vehicle TSP with Time Windows and Equity Constraints over a Multiple Day Horizon," *Transportation Science*, 30, 2 (1996) 120-133. VEHICLE ROUTING

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R.A. Sivakumar, R. Batta and M.H. Karwan, "A Multiple Route Conditional Risk Model for Transporting Hazardous Materials," *Information Systems and Operational Research*, 33, 1, (1995) 20-33. HAZMAT ROUTING

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