

Karen Smilowitz

James N. and Margie M. Krebs Professor in Industrial Engineering and Management Sciences
Northwestern University
2145 Sheridan Road, Room D239
Evanston, IL 60208
Phone: (847) 491-4693
email: ksmilowitz@northwestern.edu

Appointments

NORTHWESTERN UNIVERSITY
Professor, Industrial Engineering and Management Sciences, 2015 - present
Affiliate of the Northwestern University Transportation Center
Associate Professor, Industrial Engineering and Management Sciences, 2007 - 2015
Assistant Professor, Industrial Engineering and Management Sciences, 2001 - 2007

UNIVERSITY OF NEWCASTLE, AUSTRALIA
Visiting Associate Professor, School of Mathematical and Physical Sciences, January 2012 - June 2012

Education

UNIVERSITY OF CALIFORNIA, BERKELEY
Ph.D. Civil and Environmental Engineering: Transportation
M.S. Civil and Environmental Engineering: Transportation

PRINCETON UNIVERSITY,
B.S.E. Civil Engineering and Operations Research

Publications

- L. Zeng, S. Chopra and K. Smilowitz. The covering path problem on a grid. 2019. *Transportation Science*, forthcoming.
- M. Başdere, G. Caniglia, C. Collar, C. Rozolis, G. Chiampas, M. Nishi, and K. Smilowitz. 2019. SAFE: A Comprehensive Data Visualization System. *INFORMS Journal on Applied Analytics (formerly Interfaces)*, forthcoming.
- M. Cherkesly, M. Rancourt, and K. Smilowitz. 2019. Community healthcare network in underserved areas: design, mathematical models, and analysis. *Production and Operations Management*, forthcoming.
- S. Ansari, M. Basdere, X. Li, Y. Ouyang, and K. Smilowitz. 2018. Advancements in continuous approximation models for logistics and transportation systems: 1996 - 2016. *Transportation Research Part B: Methodological*, **107**, pp. 229-252.
- K. Sokat, I. Dolinskaya, K. Smilowitz, and R. Bank. 2017. Incomplete information imputation In limited data environments. *European Journal of Operations Research*, **269** 2, pp. 466-485.
- I. Dolinskaya, Z. Shi, and K. Smilowitz. 2017. Adaptive orienteering problem with stochastic travel times. *Transportation Research Part E*, **109**, pp. 1-19.
- V. Hemmelmayr, K. Smilowitz, and L. de la Torre. 2017. A periodic location routing problem for collaborative recycling. *IIE Transactions*, **49** 4, pp. 414-428.
- P. VonAchen, K. Smilowitz, M. Raghavan, and R. Feehan. 2016. Optimizing community health-care coverage in remote Liberia. *Journal of Humanitarian Logistics and Supply Chain Management*, **6** 3, pp. 352-371.
- T. Hanken, S. Young, K. Smilowitz, G. Chiampas, and D. Waskowski. 2016. Developing a data visualization system for the Bank of America Chicago Marathon. *Prehospital and Disaster Medicine*, **31** 5, pp. 572-577.
- K. Yagci Sokat, R. Zhou, I. Dolinskaya, K. Smilowitz, and J. Chan. 2016. Capturing real-time data in disaster response logistic. *Journal of Operations and Supply Chain Management*, **9** 1, pp. 23.
- M. Savelsbergh and K. Smilowitz. 2016. Stratified patient appointment scheduling for mobile community-based chronic disease management programs. *IIE Transactions on Healthcare Systems Engineering*, **6** 2, pp. 65-78.

- C. Ross, M. Başdere, J.L. Chan, S. Mehrotra, K. Smilowitz, and G. Chiampas. 2015. Data value in patient tracking systems at marathon events. *Medicine & Science in Sports & Exercise*, **47** 10, pp. 2014–2023.
- B. Balcik, S. Iravani, and K. Smilowitz. 2014. Multi-vehicle sequential resource allocation for a nonprofit distribution system. *IIE Transactions*, **46** 12, pp. 1279–1297.
- R. Lien, S. Iravani, and K. Smilowitz. 2014. Sequential resource allocation for nonprofit operations. *Operations Research*, **62** 2, pp. 301–317.
- M. Başdere, C. Ross, J.L. Chan, S. Mehrotra, K. Smilowitz, and G. Chiampas. 2014. Acute incident rapid response at a mass gathering event through comprehensive planning systems: a case report from the 2013 Shamrock Shuffle. *Prehospital and Disaster Medicine*, **29** 3, pp. 320–325.
- S. Deo, T. Jiang, S. Iravani, K. Smilowitz and S. Samuelson. 2013. Improving health outcomes through better capacity allocation in a community-based chronic care model. *Operations Research*, **61** 6, pp 1277–1294.
- K. Smilowitz, M. Nowak, and T. Jiang. 2013. Workforce management in periodic delivery operations. *Transportation Science*, **47** 2, pp. 214–230.
- M. Huang, K. Smilowitz, and B. Balcik. 2013. A continuous approximation approach for assessment routing in disaster relief. *Transportation Research Part B: Methodological*, **50** 2, pp. 20–41.
- L. de la Torre, I. Dolinskaya, and K. Smilowitz. 2012. Disaster relief routing: Integrating research and practice. *Socio-Economic Planning Sciences*, **46**, pp 88-97.
- J. Turner, S. Lee, T. Homem-de-Mello, M. Daskin, and K. Smilowitz. 2012. Dynamic fleet scheduling with uncertain demand and customer flexibility. *Computational Management Science*, **9** 4, 459-481.
- S. Lee, J. Turner, M. Daskin, T. Homem-de-Mello, and K. Smilowitz. 2012. Improving fleet utilization for carriers by interval scheduling. *European Journal of Operational Research*, **218** 1, pp. 261-269.
- M. Huang, B. Balcik, and K. Smilowitz. 2011. Models for relief routing: equity, efficiency and efficacy. *Transportation Research Part E*, **48** pp. 2-18.
- R. Lien, S. Iravani, K. Smilowitz, and M. Tzur. 2011. An efficient and robust design for transshipment networks. *Production and Operations Management*, **20** 5, pp. 699-713.
- M. Huang, T. Homem-de-Mello, K. Smilowitz and B. Drieger. 2011. Supply chain broker operations: a network perspective. *Transportation Research Record*, **2224**, pp. 1–7.
- G. Zhang, K. Smilowitz, and A. Erera. 2011. Dynamic planning for urban drayage operations. *Transportation Research E: Logistics and Transportation Review*, **47** 5, pp. 764–777.
- B. Balcik, B. Beamon and K. Smilowitz. 2008. Last mile distribution for humanitarian relief chains. *Journal of Intelligent Transportation Systems*, **12** 2, pp. 51–63.
- K. Smilowitz and C. Daganzo. 2007. Continuum approximation techniques for the design of integrated package distribution systems. *Networks*, **50** 3, pp. 183–196.
- N. Adler and K. Smilowitz. 2007. Hub-and-spoke network alliances and mergers: price-location competition in the airline industry. *Transportation Research Part B: Methodological*, **41** 4, pp. 394–409.
- P. Francis, K. Smilowitz, and G. Zhang. 2007. Improved modeling and solution methods for the multi-resource routing problem with flexible tasks. *European Journal of Operational Research*, **180**, pp. 1045-1059.
- P. Francis, K. Smilowitz, and M. Tzur. 2007. Flexibility and complexity in periodic distribution problems. *Naval Research Logistics*, **54** 2, pp. 136-150.
- P. Francis, K. Smilowitz and M. Tzur. 2006. The period vehicle routing problem with service choice. *Transportation Science*, **40** 4, pp. 439-454.

- C. Daganzo and K. Smilowitz. 2006. A note on asymptotic formulae for one-dimensional network flow problems. *Annals of Operations Research*, **144** 1, pp. 153-160.
- P. Francis and K. Smilowitz. 2006. Modeling techniques for periodic vehicle routing problems. *Transportation Research Part B: Methodological*, **40**, pp. 872-884.
- K. Smilowitz. 2006. Multi-resource routing with flexible tasks: an application in drayage operations. *IIE Transactions* **38** 7, pp. 577 - 590.
- C. Daganzo and K. Smilowitz. 2004. Bounds and approximations for the transportation problem of linear programming and other scalable network problems. *Transportation Science* **38** 3, pp. 343-356.
- K. Smilowitz, A. Atamtürk and C. Daganzo. 2003. Deferred item and vehicle routing within integrated networks. *Transportation Research E: Logistics and Transportation Review*. **39**, pp. 305-323.
- C. Neuman and K. Smilowitz. 2002. Strategies for coordinated drayage movements. *Proceedings of NSF Real Time Logistics Workshop, Long Beach, CA, April 2002*.
- K. Smilowitz and C. Daganzo. 2002. Reproducible features of congested highway traffic. *Mathematical and Computer Modeling* **35** 5-6, pp. 509-516.
- K. Smilowitz and C. Daganzo. 2000. Experimental Verification of Time-Dependent Accumulation Predictions. *Transportation Research Record* 1710, pp. 85-95.
- K. Smilowitz and S. Madanat. 2000. Optimal inspection, maintenance and rehabilitation policies for networks of infrastructure facilities under measurement and forecasting uncertainty. *Journal of Computer Aided Civil and Infrastructure Engineering* **15**, pp. 5-13.
- S. Madanat, K. Smilowitz, and A. Lago. 1999. Optimal inspection and maintenance policies for infrastructure systems: facility and network problems. *Transportation Research Record* 1667, pp. 1-7.
- K. Smilowitz, C. Daganzo, M.J. Cassidy and R.L. Bertini. 1999. Some observations of highway traffic in long queues. *Transportation Research Record* 1678, pp. 225-233.

Book chapters

- B. Balcik and K. Smilowitz. 2019. Contributions to humanitarian and non-profit operations: equity impacts on modeling and solution approaches. A. Smith, editor, *Women in Industrial and Systems Engineering: Key Advances and Perspectives on Emerging Topics* Springer, forthcoming.
- B. Balcik, S. Iravani, and K. Smilowitz. 2010. Equity in nonprofit and public sector: A vehicle routing perspective. J. Cochran, editor, *Wiley Encyclopedia of Operations Research and Management Science*.
- A. Erera and K. Smilowitz. 2008. Intermodal drayage truck routing and scheduling. P. Ioannou, editor, *Intelligent Freight Transportation*, Automation and Control Engineering Series, CRC Press, pp. 171 – 188.
- P. Francis, K. Smilowitz, and M. Tzur. 2008. The period vehicle routing problem and its extensions. B. Golden, S. Raghavan, and E. Wasil, editors, *The Vehicle Routing Problem: Latest Advances and New Challenges*, Springer, pp. 73–102.
- M. Johnson and K. Smilowitz. 2007. Community-based operations research. *INFORMS Tutorials in Operations Research*, pp. 102–123.

Honors and Awards

- First place, Innovative Applications of Analytics Award, 2018
 Honorable Mention, Best Application Paper, *IIE Transactions Focus Issue on Scheduling and Logistics*, 2018
 Second place, Best Paper Award, *IIE Transactions on Healthcare System Engineering*, 2017
 Award for the Advancement of Women in OR/MS, 2016
 Second place, Best Paper Award, POMS Humanitarian Operations and Crisis Management College, 2017
 Charles Deering McCormick Professor of Teaching Excellence, 2015-2017
 CIC Academic Leadership Program Fellow, 2015-2016
 William A. Patterson Junior Chair in Transportation, 2006-2012

Faculty Appreciation Award, Sigma Lambda Gamma, Northwestern University 2009
Alfred P. Sloan Industry Studies Fellowship, 2005-2007
National Science Foundation CAREER Award, 2004-2009
National Academy of Engineering Frontiers of Engineering Participant, 2004
Searle Junior Faculty Fellow, Northwestern University, 2003-2004
University of California Transportation Center Student of the Year, 2000
Dwight D. Eisenhower Fellowship for Graduate Study in Transportation, 1998-2001
Eno Transportation Fellow, 1999
Women's Transportation Seminar Bay Area Graduate Scholarship, 1999
Institute of Transportation Engineers Bay Area Graduate Scholarship, 1999
Princeton University Cane Scholar, 1991-1995

Selected Professional

Activities

President, INFORMS Transportation Science and Logistics Society, 2017-2018
Associate Editor, *Transportation Science, Operations Research*
Co-chair, Provosts Academic Calendar Advisory Group, 2018-present. Provost's Faculty Diversity and Excellence Committee, Northwestern University
Provost's Provost's Advisory Council on Women Faculty, Northwestern University
Co-chair, ISTTT Symposium, Evanston, IL 2017
Northwestern University Transportation Center, Co-Chair, 60th Anniversary Academic Symposium, 2014
Scientific Committee, Transportation Science and Logistics Workshop, Chicago, IL, July 2014
Finance Committee, INFORMS, 2015-2017
Committee Member, INFORMS Doing Good with Good OR Prize Committee, 2015-Present
Symposium Co-organizer, "Doing Good with Good O.R." Annual Meeting of the American Association for the Advancement of Science (AAAS)
Vice President of Programs, INFORMS Section on Public Programs, Service & Needs, 2011-2012
Freight Special Interest Group Chair, Transportation Science and Logistics Section, 2007-2009
Editorial Advisory Board, *Transportation Research B* and *IIE Transactions*
IEMS Undergraduate Program Committee, 2001 - present; program chair, 2006 - 2012
Curriculum committee, McCormick School of Engineering, 2006-2011
ABET accreditation committee, McCormick School of Engineering, 2006-2012