

## R. Michael Robinson, Ph.D.

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Dr. Mike Robinson is the Director of the Old Dominion University Center for Innovative Transportation Solutions (CITS) and leads the transportation and evacuation research group at the ODU Virginia Modeling, Analysis, and Simulation Center (VMASC). He also leads the Virginia Cyber Alliance, a Commonwealth of Virginia funded effort to strengthen the cybersecurity industry and diversify the regional economy and is the Deputy Director of the Coastal Virginia Center for Cyber Innovation, a southeast Virginia effort focused on research and commercialization of cybersecurity applications in defense, maritime, and transportation domains. His work focuses on the use of computer modeling and simulation techniques to develop solutions in transportation related projects with an emphasis on partnerships with experts from multiple disciplines. Dr. Robinson joined VMASC in 2004, initially working in the homeland security area. He served as VMASC's Director of Program Advancement for two years where he was responsible for identifying and developing new research subject areas; he created the transportation and evacuation research group in October 2007. He has served as the principal investigator (PI) on projects with total funding of nearly \$8.8 million and as the co-principal investigator (co-PI) on projects with additional funding of over \$1.8 million.

Dr. Robinson chairs the National Academy of Sciences, Engineering, and Medicine Transportation Research Board Standing Committee on Emergency Evacuations, co-chairs the Standing Committee on Disaster Response, Emergency Evacuations, and Business Continuity, and is a member of the TRB Transportation Systems Resilience Executive Committee, the Joint Subcommittee on Emergency Response, the Pedestrian Modeling and Simulation Subcommittee, and the Cyber Security Subcommittee. He is the chair of Virginia's Commonwealth Center for Advanced Logistic Systems Technical Advisory Council. Prior to coming to ODU, Dr. Robinson served as a nuclear submarine officer in the U.S. Navy, receiving numerous awards for leadership and innovation.

### **Education:**

Ph.D., Modeling and Simulation, Old Dominion University  
M.S., Physics, Navy Postgraduate School, Monterey, CA  
B.S., United States Naval Academy, Annapolis, MD

## **Professional Experience:**

Deputy Director, Coastal Virginia Center for Cyber Innovation, Old Dominion University, Norfolk, VA, 2019-Present

Director, Center for Innovative Transportation Solutions, Old Dominion University, Suffolk, VA, 2013-Present

Associate Research Professor, Virginia Modeling, Analysis, and Simulation Center (VMASC), Old Dominion University, Suffolk, VA, May 2016 - Present

Assistant Research Professor, Virginia Modeling, Analysis, and Simulation Center (VMASC), Old Dominion University, Suffolk, VA, 2010 - May 2016

Director of Program Advancement/Business Development, VMASC, Old Dominion University, Suffolk, VA, 2005-2007

Senior Project Scientist, VMASC, Old Dominion University, Suffolk, VA, 2004-2010

U.S. Navy Officer, including two tours as commanding officer and management of multi-million dollar budgets for a broad range of areas, including research and development, maintenance, facility modernization, transportation, and marketing.

## **Research Grants**

“Advancing Real-time evacuation Planning Model (RtePM),” US Department of Homeland Security Hampton Roads Urban Area Working Group / Urban Area Security Initiative grant, 2020-2021, \$175,000, Principal Investigator.

“Coastal Virginia Maritime Advancement Programs (COVA MAP),” Commonwealth of Virginia GO Virginia grant, 2020, \$1,532,500, Principal Investigator.

“Coastal Virginia Center for Cyber Innovation (COVA CDI),” Commonwealth of Virginia, 2019, \$2,500,00, Principal Investigator and Center Deputy Director.

“Hampton Roads Cyber Collaboration (HRCYBER CO-LAB, Virginia Cyber Alliance),” Commonwealth of Virginia GO Virginia grant, 2018, \$1,287,570, Principal Investigator.

“HRPDC UASI Threat and Hazard Identification and Risk Assessment (THIRA) Review,” Hampton Roads Planning District Commission, \$20,000, 2017, Co-Principal Investigator.

“Critical Infrastructure Program Facilitated Workshops,” Virginia Department of Emergency Management, \$10,000, 2017, Co-Principal Investigator.

“Hampton Roads Maritime Area - Port of Virginia Risk Assessment II,” Virginia Department of Emergency Management, \$35,000, 2017, Principal Investigator.

“Data Analysis Support for Virginia Port Authority for Trucking Scheduling and Turnaround times – Phase I,” Virginia Port Authority, \$48,964, 2017, Principal Investigator.

- “Automation of Availability Risk Factor Assessment for Norfolk Naval Shipyard,” Naval Sea Systems Command, \$73,794, 2017, Co-Principal Investigator.
- “Workshop on Long-term Degradation of Interdependent Critical Infrastructures in Hampton Roads,” Virginia Department of Emergency Management, \$20,100, 2016, Principal Investigator.
- “Long term hosting of the Real-time evacuation Planning Model (RtePM),” Virginia Department of Emergency Management, \$27,000, 2015, Principal Investigator.
- “Add-On Freight Train Module to the Base Microscopic Portsmouth Transportation Model,” City of Portsmouth, VA, \$33,633, 2015, Principal Investigator.
- “Portsmouth City Base Model Calibration and Testing,” City of Portsmouth, VA, \$109,715, 2015, Principal Investigator.
- “TPID: National Center for Strategic Trans Policies, Investments, & Decisions,” U.S. Department of Transportation University Transportation Center, \$244,000, 2015, Co-Principal Investigator.
- “Southeastern Parkway & Greenbelt Assessment During Hurricane Evacuations and Traffic Incidents,” City of Virginia Beach, Virginia, \$739,762, 2014-2015, Principal Investigator.
- “Base Microscopic Transportation Model for the City of Portsmouth,” City of Portsmouth, Virginia, \$142,000, 2014-2015, Principal Investigator.
- “Real-time Evacuation Planning Model”, Virginia Department of Emergency Management/ DHS Grant: \$1,272,760, 2012-2013, Principal Investigator.
- “Evaluation of Volume-Delay Functions and Their Implementations in VDOT Travel Demand Models” Funded by Virginia Department of Transportation, \$195,000, 2009-2011, Co-Principal Investigator.
- “TransLIVE (Transportation for Livability by Integrating Vehicles and the Environment),” U.S. Department of Transportation Tier 1 University Transportation Center, 2011 – 2013, \$600,000, co-principal investigator (“Optimize Freight Routes and Minimize Environmental Impacts,” Principal Investigator, \$80,000; “Smart Phone Based Solutions to Monitor and Reduce Fuel Consumption and CO2 Footprint,” Co-Principal Investigator, \$150,000)
- “Development of Base Macro and Micro Models for the City of Virginia Beach,” City of Virginia Beach, Virginia, \$352,394, 2013-2014, Co-Principal Investigator.
- “Unmet Data Needs of Transportation Planners,” Virginia Department of Transportation, 8/1/11 – 5/1/13, \$94,408, Co-Principal Investigator.
- “Investigation of New Equilibrium Assignment Methods for the VDOT Transportation Demand Model,” Virginia Department of Transportation, 8/9/11-1/10/13, \$199,989, Co-Principal Investigator.

“Cyber Risk to Hampton Roads Transportation”, DHS Grant: \$127,149, 2012-2012, Co-Principal Investigator.

“Hampton Roads Full Scale Exercise”, Office of Veteran Affairs and Homeland Security: \$400,000, 2010-2011, Co-Principal Investigator.

“Hampton-Crater Planning Districts Multimodal Transportation and Distribution Study”, U.S. Department of Transportation, \$243,500, 2010-2011, Principal Investigator.

“A Decision-Support Model Addressing Issues Related to Sea Level Rise in Hampton Roads,” ODU Office of Research, \$45,000, 2011, Principal Investigator.

“Hampton Roads Transportation - Six Alternatives Study”, (Completed for Commonwealth of Virginia General Assembly, Hampton Roads Delegation), ODU Office of Research, \$250,000, 2008, Principal Investigator.

“Hampton Roads Transportation Alternatives”, (Completed for Commonwealth of Virginia General Assembly, Hampton Roads Delegation), ODU Office of Research, \$147,679, 2009-2010, Principal Investigator.

#### **Peer-Reviewed Publications (\*denotes graduate student co-authors)**

Collins, A. J., P. Foytik, E. Frydenlund, R. M. Robinson and C. A. Jordan. Generic Incident Model for Investigating Traffic Incident Impacts on Evacuation Times in Large-Scale Emergencies. Journal of the Transportation Research Board, Transportation Research Board, No. 2459, Washington, D.C., 2014, pp. 11-17.

Collins, Andrew J., Erika Frydenlund, Terra Elzie\*, and R. Michael Robinson, Do Groups Matter? An Agent-based Modeling Approach to Pedestrian Egress, The Conference in Pedestrian and Evacuation Dynamics 2014 (PED2014), Delft, the Netherlands, Transportation Research Procedia Vol. 2 (2014) pp. 430–435.

Collins, A. J., R. M. Robinson, C. A. Jordan, P. Foytik and B. C. Ezell (2016). “Integrating a Simple Traffic Incident Model for Rapid Evacuation Analysis.” International Journal of Transportation, 4(3), 15-32. ISSN: 2287-7940.

Collins, A. J., E. Frydenlund, R. M. Robinson and M. Cetin (2015). “Exploring a Toll Auction Mechanism Enabled By Vehicle-To-Infrastructure Technology.” Transportation Research Record: Journal of the Transportation Research Board, No. 2530, pp. 106-113.

Collins, A. J., R. M. Robinson, C. A. Jordan, and Asad Khattak. “Development of a Traffic Incident Model Involving Multiple Municipalities for Inclusion in Large Microscopic Evacuation Simulations.” International Journal of Disaster Risk Reduction, sent to production 22 December 2017.

- Collins, Andrew J., Craig A. Jordan, R. Michael Robinson, Caitlin Cornelius, and Ross Gore, "Exploring Good Cycling Cities with Multi-variate Statistics," *Environment Systems and Decisions*, ( ) November 2019, pp. 1-18, DOI 10.1007/s10669-019-09753-z..
- Duanmu, J., K. Taaffe, M. Chowdhury and R. M. Robinson. A simulation analysis for evacuation under congested traffic scenarios: a case study. *SIMULATION: Transactions of The Society for Modeling and Simulation International*, Volume 88 Issue 11, pp. 1379-1389, November 2012.
- Duanmu, J., P. Foytik\*, A. Khattak and R. M. Robinson. Distribution Analysis of Freight Transportation Using Gravity Model and Genetic Algorithm. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2269, Transportation Research Board, Washington, D.C., 2012, pp. 1–10.
- Elzie\*, Terra, Erika Frydenlund, Andrew Collins, and R. Michael Robinson, "Conceptualizing Intra- and Inter-Group Dynamics within a Controlled Crowd Evacuation," *Journal of emergency management (Weston, Mass.)* 03/2015; 13(2):109-20. DOI: 10.5055/jem.2015.0224.
- Elzie\*, Terra, Erika Frydenlund, Andrew J. Collins, and R. Michael Robinson, "Panic that Spreads: Sociobehavioral Contagion in Pedestrian Evacuations." *Transportation Research Record: Journal of the Transportation Research Board*, No. 2586, Transportation Research Board, Washington, D.C., 2016, pp. 1-8.
- Ezell, Barry C., R. Michael Robinson, Peter Foytik, and David Flanagan. Cyber risk to transportation, industrial control systems, and traffic signal controllers, *Environmental Systems and Decisions*, November 2013, pp. 508-516.
- Foytik, Peter and R. Michael Robinson, Weighting Critical Infrastructure Dependencies to Facilitate Evacuations, *International Journal of Disaster Risk Reduction*, sent for production 28 NOV 2017.
- Foytik, Peter and R. Michael Robinson, Integrating Truck Emissions Cost In Traffic Assignment, *Transportation Research Record: Journal of the Transportation Research Board*, No. 2503, Transportation Research Board, Washington, D.C., 2015, pp. 119-127.
- Frydenlund, Erika, Terra Elzie\*, Andrew J. Collins, and R. Michael Robinson, A Hybridized approach to validation: The role of sociological research methods in pedestrian modeling, *The Conference in Pedestrian and Evacuation Dynamics 2014 (PED2014)*, Delft, the Netherlands, *Transportation Research Procedia* Vol. 2 (2014) 697-705.
- Frydenlund, Erika, Andrew Collins, Christopher Lynch, R. Michael Robinson, Acceptance Sampling to Aid in Verification of Computational Simulation Models

(April 16, 2019). Available at SSRN: <https://ssrn.com/abstract=3373344> or <http://dx.doi.org/10.2139/ssrn.337334>

Jordan\*, Craig, Mecit Cetin, and R. Michael Robinson. Path Clearance for Emergency Vehicles Through the Use of Vehicle-to-Vehicle Communication. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2381, Transportation Research, Washington, D.C., 2013, pp. 45-53.

Maina, Eugene Vida, Albert Forde, and R. Michael Robinson. Estimating the Safety Benefits of Red-Light Cameras at signalized Intersections in Urban Areas Case Study: The City of Virginia Beach. *International Journal of Transportation Engineering*, *International Journal of Transportation Engineering*, Vol 3, No. 1, Summer 2015, pp. 45-54.

Maina, Eugene Vida, Albert Forde, and R. Michael Robinson. Impact of Optimally Minimizing Delay Times on Safety at Signalized Intersections in Urban Areas. *International Journal of Transportation Engineering*, Vol.3, No.4, Spring 2016, pp. 277-288.

Robinson, R. Michael and Asad Khattak. Selection of Source and Use of Traffic Information in Emergency Situations. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2234, Transportation Research Board, Washington, D.C., 2011, pp. 71-78.

Robinson, R. Michael and Asad Khattak. Route Change Decision-Making by Hurricane Evacuees Facing Congestion. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2196, Transportation Research Board, Washington, D.C., 2010, pp. 168-175.

Robinson, R. Michael and Asad Khattak. Evacuee Route Choice Decisions in a Dynamic Hurricane Evacuation Context. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2312, Transportation Research Board, Washington, D.C., 2012, pp. 141–149.

Robinson, R. Michael, Barry Ezell, Peter Foytik\*, Craig Jordan\*, and Joseph Weiss. Cyber Risk to Transportation Industrial Control Systems. *Journal of Cyber Security and Information Systems* Volume 1 Issue 4, October 2013, pp. 2-8.

Robinson, R. Michael, Andrew Collins, and Asad Khattak, Modeling the Impact of Traffic Incidents During Hurricane Evacuations Using a Large Scale Microsimulation, *International Journal of Disaster Risk Reduction*, 9 September 2017, DOI: 10.1016/j.ijdr.2017.09.013.

Robinson, R. Michael and Barry Ezell, “Criticality Assessment for a Regional Maritime Economy,” *Journal of Emergency Management*, accepted for publication November 2019.

**Additional Papers and Conference Presentations (\*denotes graduate student co-authors):**

Collins, A.J., R.M. Robinson, C. Jordan, P. Foytik, and B.C. Ezell (2013). "Generic Incident Model for Use in Large-Scale Evacuation Simulations." 2013 IEEE International Conference on Technologies for Homeland Security, Waltham, MA, November 12-14, pp. 26-31.

Collins, A.J., R.M. Robinson, C. Jordan, and P. Foytik (2014). "Investigating the Impact of Traffic Incidents on Large-scale Emergency Evacuation Times using a Generic Incident Model." TRB 93rd Annual Meeting Compendium of Papers, 93rd Annual Meeting of the Transportation Research Board, Washington, D.C., January 12-16, 14-1735.

Collins, A. J., R. M. Robinson, C. A. Jordan, P. Foytik and B. C. Ezell (2014). "Exploring the Effects of Traffic Incidents within an Evacuation Simulation." 2014 National Evacuation Conference, New Orleans, LA.

Collins, A. J., R. M. Robinson, and M. Cetin, (2017). "Survey Results Comparing Value of Time Distributions for Future Auction Tolling." TRB 96th Annual Meeting Compendium of Papers, 96th Annual Meeting of the Transportation Research Board, Washington, D.C., January 8-12, 17-00977.

Foytik, Peter, Craig Jordan, R.M. Robinson, Weighting Critical Infrastructure Interdependencies to Facilitate Evacuations. 2016 National Evacuation Conference, New Orleans, LA, March 2016.

Foytik, P., R. M. Robinson and A. J. Collins (2014). "Exploring Evacuee Rate of Arrival with Varying Response Time for Large Scale Vehicle Evacuations." 2014 National Evacuation Conference, New Orleans, LA.

Foytik\*, Peter and R. Michael Robinson, "Implementing and Simulating Dynamic Traffic Assignment with Intelligent Transportation Systems in Cube Avenue," MODSIM World, Virginia Beach, VA, 2009.

Frydenlund, Erika, Andrew J. Collins, Terra Elzie\*, and R. Michael Robinson, Group Dynamics and Exit-Blocking Behaviors: A look at pedestrian modeling, evacuations, Compendium of Papers, 88th Annual Meeting of the Transportation Research Board, Washington, D.C., January 11-15, 2015.

Jordan, C.A., P. Foytik, R. M. Robinson, and A.J. Collins (2017). "Development of a Future Year Large-Scale Microscopic Traffic Simulation Model." TRB 96th Annual

Meeting Compendium of Papers, 96th Annual Meeting of the Transportation Research Board, Washington, D.C., January 8-12, 17-05850.

Robinson, R. Michael, Andrew Collins, and Asad Khattak, Modeling the Impact of Traffic Incidents During Hurricane Evacuations Using a Large Scale Microsimulation, 2016 National Evacuation Conference, New Orleans, LA, March 2016.

Robinson, R. Michael, Asad Khattak, John A. Sokolowski, Peter Foytik\*, and Xin Wang\*, "What is the Role of Traffic Incidents in Hampton Roads Hurricane Evacuations?" Compendium of Papers, 88th Annual Meeting of the Transportation Research Board, Washington, D.C., January 13-17, 2008.

Robinson, R. Michael, Asad Khattak, and Peter Foytik\*, "Forecasting Driver Decision-Making During Catastrophic Event Evacuations," National Evacuation Conference, New Orleans, LA, 2010.

Robinson, R. Michael, P. Foytik, and C.A. Jordan (2017). "17-06460, "Review and Analysis of User Inputs to Online Evacuation Modeling Tool," TRB 96th Annual Meeting Compendium of Papers, 96th Annual Meeting of the Transportation Research Board, Washington, D.C., January 8-12, 17-06460.

Zheng\*, Libing, R. Michael Robinson, Asad Khattak, and Xin Wang\*, "All Accidents are Not Equal: Using Geographically Weighted Regressions Models to Assess and Forecast Accident Impacts," 3rd International Conference on Road Safety and Simulation, Indianapolis, IN, 2011.

## **BOOK CHAPTER**

Robinson, R. Michael (2010). Transportation in Handbook of Real-World Applications in Modeling and Simulation, Wiley publishing, 2012. ISBN-13: 978-1118117774.

## **ADVISING EXPERIENCE (Old Dominion University)**

### **Thesis Committee Member**

Anuar, Khairul (2013). "Integrating probe vehicles and stationary detector data to construct accurate cumulative curves to study bottlenecks" Master's Thesis, Batten College of Engineering, Old Dominion University, Norfolk, VA

Foytik, Peter (2013). "Development of a Genetic Algorithm to Calibrate Volume Delay Function Parameters" Master's Thesis, Batten College of Engineering, Old Dominion University, Norfolk, VA

Jordan, Craig (2012). "Clearing Paths for Emergency Vehicles Using Shock Wave Theory and Vehicle-to-Vehicle" Master's Thesis, Batten College of Engineering, Old Dominion University, Norfolk, VA



**Doctoral Thesis: Director**

Elzie, Terra. Modeling, Simulation and Visualization Engineering, Ph.D. Dissertation, Ongoing

**Doctoral Thesis: Member**

Wang, Xin (2012). "Spatial analysis of travel behavior and response to traveler information" Ph.D. dissertation, Civil and Environmental Engineering Batten College of Engineering, Old Dominion University, Norfolk, VA

Zhang, Hongbing (2012). "Analysis of primary-secondary incident events on urban freeways" Ph.D. dissertation, Civil and Environmental Engineering Batten College of Engineering, Old Dominion University, Norfolk, VA