



Dr. Jimi B. Oke

Assistant Professor

Department of Civil and Environmental Engineering  
University of Massachusetts Amherst

**Title: Mobility and epidemics in urban typologies**

### **Abstract**

As our cities and communities continue to grow in complexity, smart solutions are required to promote accessibility, resilience and sustainability, particularly in mobility and energy networks. In this talk, I describe a novel study of over 300 cities which employs unsupervised learning to determine the driving factors of mobility and sustainability in today's urban areas. From several of these typologies, we develop prototype cities to analyse how future automated mobility-on-demand outcomes vary by city type. The dynamics of an epidemic can also be investigated across typologies. I discuss an agent- and activity-based fully-mechanistic epidemiological model which simulates the propagation of COVID-19 in US typologies. In this ongoing study, we analyse the activity-specific scaling properties of the highly spatio-temporally resolved contact networks of city populations. Our findings provide insights for understanding urban epidemic propagation and effective mitigation strategies in cities. Finally, I will discuss my academic journey and share insights in navigating the tenure-track faculty application.

### **Bio**

Dr. Jimi B. Oke is an Assistant Professor in the Department of Civil and Environmental Engineering at University of Massachusetts Amherst, where he directs the Networks for Accessibility, Sustainability and Resilience Laboratory. From 2016 to 2019, he was a Postdoctoral Associate at the Intelligent Transportation Systems Lab working on the MIT Energy Initiative's Future Mobility Study. Dr. Oke received his MSE and PhD in Civil Engineering from the Johns Hopkins University, where he studied from 2012 to 2016. Prior to graduate school, Dr. Oke taught mathematics at The Pennington School after graduating from Williams College with majors in Physics and Music in 2010. His current research interests lie in advancing big data, machine learning and network science for energy-efficient, smart and resilient communities.