NATIONAL ACADEMIES Sciences Engineering Medicine

Optimizing Investments for Urban Sustainability Infrastructure

July 13, 20, and 27, 2022

Agenda
July 27th, 2022

Please navigate to the event page to watch the livestream of this event.

July 27th, 11:00 – 3:30 ET

Mini-Session 2: Digital and Physical Infrastructure for Public Safety

11:00 am – 12:00 pm ET

Digital, physical, and social infrastructure can have a significant impact on crime, violence, and public safety. Following a keynote and conversations on active research on public safety and infrastructure and public services, researchers and practitioners discuss opportunities for improved community safety.

11:00 am **Research to Improve Public Safety through Digital and Physical Infrastructure**
Speakers:

- *Chris Blattman*, The University of Chicago
- *John MacDonald,* The University of Pennsylvania
- *Renata Konrad*, Worcester Polytechnic Institute

11:30 am **A Joint Conversation**
Moderator: *John Birge*, The University of Chicago

Mini-Session 3: Moving Beyond Short Termism

12:00 – 1:00 pm

Decision-makers must balance urgent needs with long-term goals for sustainability. Speakers break down the risks of short-term thinking and identify practical tips for investing and planning for the future.

12:00 pm **Moving Beyond Short Termism**
Speakers:

- *Kim LaGrue*, City of New Orleans
- *Alex Pudlin,* Bloomberg Center for Public Innovation at Johns Hopkins University

NATIONAL ACADEMIES Sciences Engineering Medicine

12:30 pm **Joint Q&A and Conversation**
Moderator: *Sam Labi*, Purdue University

----------1:00 pm BREAK----------

Session 4: Building the Ideal Sustainable City

1:15 – 2:45 pm ET

What is sustainability? Researchers and practitioners around the country describe what sustainability means in their field, as well as ways in which their local communities strive for sustainability. This session closes with a panel in which keynote speakers talk more broadly about the idea of sustainability and where we go from here.

1:15 pm **Introductions**
Moderator: *Barbara Brown Wilson*, University of Virginia

1:20 pm **Keynote Address**
Brian Beach, Vanderbilt University

1:40 pm **Keynote Address**
Alice Hill, Council on Foreign Relations

2:00 pm **Keynote Address**
Lucia Athens, City of Austin

2:20 pm **Joint Panel: Sustainability & How to Get There**
Moderator: *Barbara Brown Wilson*, University of Virginia

Closing Discussions

2:50 – 3:30 pm ET

2:50 pm **Workshop Highlights & Audience Feedback**
Jared Cohon, Carnegie Mellon University

3:15 pm **Closing Remarks**
Jeanne Holm, City of Los Angeles

----------3:30 pm ADJOURN----------

NATIONAL ACADEMIES Sciences Engineering Medicine

Presenter Biographies

Chris Blattman, Ph.D.

Chris Blattman is an economist and political scientist who studies global conflict, crime, and poverty. He is the Ramalee E. Pearson Professor of Global Conflict Studies at The University of Chicago, in the Harris School of Public Policy and The Pearson Institute. Blattman also co-leads the university's Development Economics Center and the Obama Foundation Scholars Program.

The questions Blattman is most passionate about: Why are some people and societies violent, oppressive, and poor? And what can we do about it? He works in sub-Saharan Africa, Latin America, and the United States. Most of his current research is with armed groups, gangs, organized crime, and the people who join violent organizations. This work involves a blend of qualitative interviews, large-scale surveys, statistical analysis, and field experiments. Dr. Chris Blattman also wants to bring big ideas and research to a general audience, which is why he wrote *Why We Fight: The Roots of War and the Paths to Peace*.

John MacDonald, Ph.D.

Professor MacDonald studies crime and violence, race and ethnic disparities in criminal justice, and impact of public policy on safety. A current focus of his work is on examining how the science of urban planning can make our cities healthier, safer, and livable. This work is highlighted in his 2019 book Changing Places: The Science and Art of New Urban Planning. Princeton University Press. The National Institutes of Health, the Centers for Disease Control and Prevention, and private foundations helped support the research on changing places. He is also active studying racial disparities in criminal justice, and ways to reduce these disparities through policy and program reforms.

Renata Konrad, Ph.D.

Renata Konrad is an Associate Professor of Industrial Engineering at Worcester Polytechnic Institute. Dr. Konrad's research focuses on the application of operations research methodologies to social justice issues and healthcare to improve the quality, timeliness, and efficiency of operations. This research includes using optimization and simulation to inform human trafficking awareness campaigns, to locate housing, to understand the relationship between illegal fishing and exploited labor, and to improve access to primary care. Dr. Konrad's research is funded by the National Science Foundation and was featured in the 2019 United Nations Report of the Special Rapporteur on Contemporary Forms of Slavery. She has served on the U.S. Department of Transportation Advisory

Committee on Human Trafficking and on the U.S. Department of Homeland Security – Science and Technology, Human Trafficking Advisory Committee, and in January 2022 returned from Ukraine where she was on a Fulbright Award. Dr. Konrad earned a PhD in Industrial Engineering from Purdue University, and her master's degree from the University in Toronto.

Kim LaGrue

Kimberly Walker LaGrue heads the Office of Information Technology & Innovation for the City of New Orleans. She and her team deliver stable, IT services to city government and develop strategies to ensure equitable growth of technology services throughout New Orleans. In 2018, she was appointed Chief Information Officer by Mayor LaToya Cantrell, and assigned to lead the City's digital equity and smart city strategies, driving the Mayor's goal to provide all residents equal access to technology and make New Orleans a connected, data-driven smart city.

A New Orleans native with over 25 years of IT experience, Kimberly has spent most of her career developing technology solutions for local government. She is the first President of the Cities Today Leadership Institute for North America, and an advisory board member of the Internet of Things Consortium. As fierce advocate for local broadband development, she is personally committed to digital equity, digital literacy and connecting the under-served communities of New Orleans.

Alex Pudlin

Alex is the Senior Advisor for Data and Insights at the Bloomberg Center for Public Innovation at Johns Hopkins University. Previously, Alex worked as the Director of Los Angeles Mayor Eric Garcetti's Innovation Team, where he led a team of designers, data scientists, and project managers who worked to address some of the region's most pressing challenges. Prior to this role, Alex worked as the Senior Data Scientist on the Innovation Team.

Before joining the Innovation Team in 2015, Alex worked as a Project Analyst for Xerox in Los Angeles, working on Los Angeles' smart-parking project, LA Express Park, which utilizes sensor technology to support demand-based meter rates in Downtown Los Angeles. In this role, he interpreted occupancy algorithms to determine where meter rates should change and determined patterns of disabled placard use in the project area.

Before Xerox, Alex graduated with a Masters in Urban Planning from UCLA, where he studied transportation planning/policy and community economic development. While at UCLA, he conducted research and produced reports that included a study on household workers'

commuting patterns and a geospatial analysis of exercise accessibility in Los Angeles neighborhoods.

Brian Beach, Ph.D.

Brian Beach is an Assistant Professor of Economics at Vanderbilt University and a Faculty Research Fellow at the National Bureau of Economic Research. Professor Beach earned his Ph.D. from the University of Pittsburgh in 2015 and his B.A. from the University of Washington in 2010. His research spans the fields of economic history, public economics, and health. Much of his work examines the extent to which government policies and institutions affect social welfare.

Alice Hill, JD

Alice C. Hill is an expert on building resilience to catastrophic risks. She previously served as Special Assistant to President Barack Obama and Senior Director for Resilience Policy on the National Security Council staff where she led the development of national policy, including executive orders related to natural disasters, national security, and climate change. Prior to this, Hill served as senior counselor to the Secretary of the U.S. Department of Homeland Security (DHS). At DHS, she led the formulation of the department's first-ever climate adaptation plan and the development of strategic plans regarding catastrophic biological and chemical threats, including pandemics. Hill currently serves as the David M. Rubenstein Senior Fellow for Energy and the Environment at the Council on Foreign Relations and was a Research Fellow at Stanford University's Hoover Institution. She is the author of The Fight for Climate After COVID-19 and co-author of Building a Resilient Tomorrow. She currently serves on the boards of the Environmental Defense Fund and Munich Re Group's U.S.-based companies. In 2020, Yale University and the Op-Ed Project awarded her the Public Voices Fellowship on the Climate Crisis. Earlier in her career, Hill was a supervising judge on both the Los Angeles Municipal and Superior Courts as well as a federal prosecutor and chief of the white-collar crime unit at the United States Attorney's Office in Los Angeles, California.

NATIONAL ACADEMIES Sciences Engineering Medicine

Lucia Athens, Ph.D.

Lucia Athens is the City of Austin's first Chief Sustainability Officer, a position she has served in for nearly 12 years. A leader in climate action and green building, she brings over 30 years of experience and wisdom to the sustainability table. Her latest book is entitled The Sustainability Revolutionists: Heroes and Hope for Our Common Future. Her previous book Building an Emerald City (Island Press) is a green building guide that is both inspirational and practical. A native Texan, Athens makes her home in Austin with her husband and two adorable rescue dogs.

NATIONAL ACADEMIES Sciences Engineering Medicine

Committee Member Biographies

Jeanne Holm, Ph.D. (Chair)

As a leader in open data, education, and civic innovation, Jeanne Holm empowers people to discover new knowledge and collaborate to improve life on Earth and beyond. Jeanne Holm is the Deputy Mayor for Budget and Innovation of the City of Los Angeles, addressing issues of technology, equity, digital inclusion, and fiscal transparency. She connects public-private partners for innovations ranging from improving digital equity to using data science for environmental justice to reimagining government work. She founded the Data Science Federation partnering universities and cities to create innovative solutions such as using artificial intelligence for traffic safety and machine learning to improve air quality. She was formerly the Evangelist for open data for the White House under President Obama, the leader for Africa open data for the World Bank, and the Chief Knowledge Architect at NASA. She is a Distinguished Instructor at UCLA, a Trustee of Claremont Graduate University, a Fellow of the United Nations International Academy of Astronautics, and an advisor to the U.N.'s Sustainable Development Solutions Network. She leads a startup that promotes equity, education, and social justice through technology and education programs for innovators throughout the world.

Katherine Bennett Ensor, Ph.D.

Katherine Bennett Ensor is the Noah G. Harding Professor of Statistics at Rice University where she serves as director of the Center for Computational Finance and Economic Systems (cofes.rice.edu) and creator of the Kinder Institute's Urban Data Platform (kinderudp.org). Ensor served as chair of the Department of Statistics from 1999 through 2013 and has shaped data science at Rice as a member of the campus-wide hiring committee. Her research focuses on the development of statistical and data science methods for practical problems. Her expertise is dependent data covering time, space, and dimension with applied interests in finance, energy, environment, health, and risk management. She is a fellow of ASA and AAAS and has been recognized for her leadership, scholarship, and mentoring. Ensor is the 2022 President of the American Statistical Association (ASA). She served as Vice President of ASA from 2016 to 2018 and as a member of the National Academies Committee on Applied and Theoretical Statistics from 2014 to 2020. Ensor holds a BSE and MS in Mathematics from

Arkansas State University and a Ph.D. in Statistics from Texas A&M University. Ensor is a member of the Texas A&M College of Science Academy of Distinguished Former Students.

John R. Birge, Ph.D.

John Birge is the Hobart W. Williams Distinguished Service Professor of Operations Management at the University of Chicago, Booth School of Business. Previously, he was Dean of the McCormick School of Engineering and Applied Science and Professor of Industrial Engineering and Management Sciences at Northwestern University. He also served as Professor and Chair of Industrial and Operations Engineering at the University of Michigan, where he also established the Financial Engineering Program. He is currently Editor-in-Chief of Operations Research, former Editor-in-Chief of Mathematical Programming, Series B, and former President of INFORMS. His honors and awards include the IIE Medallion Award, the INFORMS Fellows Award, the MSOM Society Distinguished Fellow Award, the Harold W. Kuhn Prize, the George E. Kimball Medal, the William Pierskalla Award, and election to the US National Academy of Engineering. He received M.S. and Ph.D. degrees from Stanford University in Operations Research, and an A.B. in Mathematics from Princeton University.

Leah Brooks, Ph.D.

Leah Brooks is Associate Professor in the Trachtenberg School of Public Policy and Public Administration at the George Washington University and Director of the university's Center for Washington Area Studies. After receiving her PhD from UCLA in 2005, she taught at the University of Toronto and McGill University, and worked at the Federal Reserve Board of Governors. Her work to date includes examination of Business Improvement Districts and land assembly to understand the resolution of collective action problems, analysis of the Community Development Block Grant program to understand the political economy of grant giving at the municipal and sub-municipal levels, an investigation of the long-run impacts of streetcar investments in Los Angeles on urban form, and an analysis of whether and why US infrastructure costs have increased. She is currently working on understanding the long-run impacts of Washington, DC's 1968 civil disturbance and the impact of ecommerce on how retail

establishments cluster. She serves on the editorial boards of the Journal of Urban Economics, the National Tax Journal, and Real Estate Economics.

Jared L. Cohon, Ph.D.

Jared Cohon (NAE) is university professor of Civil and Environmental Engineering and Engineering and Public Policy and President Emeritus at Carnegie Mellon University in Pittsburgh. At NASEM, he chairs the Board on Energy and Environmental Systems. Among previous committees on which he served, he chaired the Committee on Fuel Economy Technologies for Light-Duty Vehicles and the Committee that produced "The Hidden Costs of Energy." He was a Professor of Geography and Environmental Engineering at Johns Hopkins University from 1973 to 1992, where he also served as Vice Provost for Research from 1986 to 1992, Associate Dean of Engineering from 1983 to 1986, and Assistant Dean of Engineering from 1981 to 1983. Following his tenure at Johns Hopkins, he was Dean of the School of Forestry and Environmental Studies and Professor of Environmental Systems Analysis at Yale University from 1992 to 1997. He served as president of Carnegie Mellon from 1997 to 2013. Dr. Cohon also served as Legislative Assistant for Energy and Environment on the staff of U.S. Senator Moynihan from 1977 to 1978. In January 1995, President Bill Clinton appointed Dr. Cohon to the Nuclear Waste Technical Review Board. In 1997, he assumed the role of Chairman of the Board, a position he held until 2002. President George W. Bush appointed him in 2002 and President Barack Obama reappointed him to serve on the Homeland Security Advisory Council. Dr. Cohon co-chaired the Commission to Review the Effectiveness of the National Energy Laboratories from 2014 to 2016. He serves on the Boards of Trane Technologies and four non-profit organizations, including the Health Effects Institute. He holds a Bachelor of Science degree in Civil Engineering from the University of Pennsylvania, and a Master's degree and Ph.D. in Civil Engineering from Massachusetts Institute of Technology.

Samuel Labi, Ph.D.

Dr. Labi is a professor of transportation and infrastructure systems engineering at Purdue University's Lyles School of Civil Engineering. He received a B.S. degree from the University of Science and Technology, Ghana in 1987, and M.S. and Ph.D. degrees from Purdue University in 1998 and 2001, respectively. Dr. Labi has served as Principal Investigator for 40 research projects sponsored by or affiliated with the U.S. Federal Highway Administration and the Indiana Department of Transportation, the National Academy of Sciences, the World Bank, Nextrans Transportation Center, and the State of Illinois Auditor General's Department. He is the author or co-author of over 96 scientific articles in technical journals, 180 conference presentations, and 2 textbooks used in universities worldwide: Transportation Decision Making (Wiley), and Introduction to Civil Engineering Systems (Wiley). His research awards include ASCE's Frank Masters Award in 2014 for outstanding and innovative work in advancing the area of transportation systems. He

recently received AASHTO's 2014 award for best high-value research for investigating the impacts of a proposed legislation on truck operations (the senate subsequently passed this bill into law).

Kristin Lauter, Ph.D.

Kristin Lauter is the Director of West Coast Research Science for Meta AI Research (FAIR). She was the President of the Association for Women in Mathematics from 2015-2017. Her mathematical research focuses on the interface between machine learning and cryptography, with a focus on cloud security and health and genomic privacy. She is particularly known for her work on homomorphic encryption, elliptic curve cryptography, and post-quantum cryptography. Dr. Lauter was a researcher at Microsoft Research in Redmond, Washington, from 1999–2021 and Partner Research Manager of the Cryptography and Privacy Group from 2008–2021; her group developed Microsoft SEAL, an open source library for homomorphic encryption. In 2018 she also co-founded and led the Urban Innovation Initiative at Microsoft Research, with projects on Clean Air for All, and AI for Cities. Lauter is an elected fellow of the American Mathematical Society (AMS), the Association for Women in Mathematics (AWM), the Society of Industrial and Applied Mathematics (SIAM) and the American Association for the Advancement of Science (AAAS), and an elected Honorary Member of the Royal Spanish Mathematical Society (RSME). Lauter received her B.A., M.S., and Ph.D. degrees in Mathematics from the University of Chicago, in 1990, 1991, and 1996. She was a Hildebrandt Research Assistant Professor of Mathematics at the University of Michigan (1996-1999). She has published more than 100 papers and holds more than 50 patents.

Robert J. Lempert, Ph.D.

Robert Lempert is a principal researcher at the RAND Corporation and Director of the Frederick S. Pardee Center for Longer Range Global Policy and the Future Human Condition. His research focuses on risk management and decision-making under conditions of deep uncertainty. Dr. Lempert's work aims to advance the state of art for organizations managing risk in today's conditions of face-paced, transformative, and surprising change and helping organizations adopt these approaches to help make proper stewardship of the future more commonly practiced. Dr. Lempert is a Fellow of the American Physical Society, a member of the Council on Foreign Relations, a coordinating lead author for Working Group II of the United Nation's Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, a chapter lead for the Fourth US National Climate Assessment, chair of the peer review panel for California's Fourth Climate Assessment, a member of California's Climate-Safe Infrastructure Working Group, and has been a member of numerous study panels for the U.S. National Academies, including America's Climate Choices and Informing Decisions in a Changing Climate. Dr. Lempert was the Inaugural EADS Distinguished Visitor in Energy and Environment at the

American Academy in Berlin and the inaugural president of the Society for Decision Making Under Deep Uncertainty (http://www.deepuncertainty.org). A Professor of Policy Analysis in the Pardee RAND Graduate School, Dr. Lempert is an author of the book *Shaping the Next One Hundred Years: New Methods for Quantitative, Longer-Term Policy Analysis*.

Sue McNeil, Ph.D.

Sue McNeil is professor of civil and environmental engineering and of urban affairs and public policy at the University of Delaware. She is also director of the University Transportation Center and the Disaster Research Center. Dr. McNeil was formerly director of the Urban Transportation Center and professor in the College of Urban Planning and Public Affairs and the Department of Civil and Materials Engineering at the University of Illinois at Chicago (UIC). Prior to joining UIC, she was a professor of civil and environmental engineering and of engineering and public policy at Carnegie Mellon University. Her research and teaching interests focus on transportation infrastructure management, with emphasis on the application of advanced technologies, economic analysis, analytical methods, and computer applications. Dr. McNeil is a former member of the TRB Executive Committee and the Board on Infrastructure and the Constructed Environment. She served on the NRC committees on Review of the National Transportation Science and Technology Strategy and Study of the Regulation of Weights, Lengths, and Widths of Commercial Motor Vehicles, and chaired the TRB Committee on Transportation Asset Management from 2004 to 2010. She is a founding associate editor for the American Society of Civil Engineers' Journal of Infrastructure Systems, and currently serves as its editor-in-chief. Dr. McNeil earned bachelor's degrees in mathematics and civil engineering from the University of Newcastle, Australia, and M.S. and Ph.D. degrees in civil engineering from Carnegie Mellon University.

Monica Sanders, JD, LL.M.

Monica Sanders JD, LL.M, is founder of "The Undivide Project", an organization dedicated to creating climate resilience in underserved communities via Internet infrastructure and service centered IoT solutions. She also holds a faculty appointment at the Georgetown University Law Center and a Senior Fellow at the Tulane University Disaster Resilience Leadership Academy. Professor Sanders' homeland practical experience includes serving as a Senior Committee Counsel for both the House of Representatives and Senate Committees on Homeland Security. In those roles, she focused on oversight of disaster response and recovery programs, cybersecurity, and critical infrastructure protection. She also served as the Senior Legal Advisor for International Response and Programs at the American Red Cross, and as an attorney for the Small Business Administration during the Hurricane Maria and western wildfires responses. Previously, she studied security and defense–civilian coordination in the European Union

Visitor's Program and remains involved in crisis response operations as part of the Team Rubicon USA and UNDP rosters. Twitter: @Monica_DRRProf

Karen Seto, Ph.D.

KAREN SETO (NAS) is the Frederick C. Hixon Professor of Geography and Urbanization Science at Yale University. An urban and land change scientist, she is one of the world's leading experts on contemporary urbanization and global change. She uses satellite remote sensing, field interviews, and modeling methods to understand how urbanization will affect the planet, including land change, food systems, biodiversity, and climate change. She has pioneered methods to reconstruct urban land use with satellite imagery and has developed novel methods to forecast urban expansion. She has conducted urbanization research in China for twenty years and in India for more than ten. She has extensive fieldwork experience in Asia, especially China and India, where she has conducted research for over 20 and 10 years, respectively. Dr. Seto has served on numerous national and international scientific bodies. She lead the urban mitigation chapter for the IPCC 6th (2022) and 5th (2014) Assessment Reports. She was co-editor-in-chief of the journal, Global Environmental Change. From 2000 to 2008, she was faculty at Stanford, where she held joint appointments in the Woods Institute for the Environment and the School of Earth Sciences. She has received many awards for her scientific contributions, including the Outstanding Contributions to Remote Sensing Research Award from the American Association of Geographers. Dr. Seto is an elected member of the U.S. National Academy of Sciences, the Connecticut Academy of Science and Engineering, and the American Association for the Advancement of Science. She received a Ph.D. in Geography from Boston University.

Sarah Slaughter, Ph.D.

Dr. Sarah Slaughter the founder and CEO/President of the Built Environment Coalition, a research and education nonprofit (501c3) focused on community resilience and sustainability. She is a subject-matter-expert on community resilience, and currently advises government agencies on strategies for improving resilience and sustainability. Dr. Slaughter is a member of the National Academy of Engineering, and the National Academy of Construction. She currently serves on the Green Building Advisory Committee (GBAC) to advise the U.S. General Services Administration and the Federal government, and is Co-Chair of the Resilient America Roundtable in the National Academies of Science, Engineering, and Medicine (NASEM). Previously, Dr. Slaughter was a Visiting Lecturer on resilience in the MIT Department of Urban Studies and Planning, the Associate Director for Buildings and Infrastructure in the MIT Energy Initiative (MITEI), and was co-founder and faculty head of the Sustainability Initiative in the MIT Sloan School of Management. Before those positions, Dr. Slaughter was founder and CEO of MOCA Systems, Inc., a software-enabled construction program management company, and before founding MOCA, she was a MIT professor in the Department of Civil and Environmental Engineering, and earlier, a professor of

Civil and Environmental Engineering at Lehigh University. She has served on many several regional, national, and international advisory committees, and editorial boards of professional publications. She previously served on the Board of Directors for the Charles River Watershed Association, Retroficiency, Inc., Eastern Research Group/AEA Technology, Inc., and MOCA Systems, Inc. She received her Doctorate, Master, and Bachelor degrees from the Massachusetts Institute of Technology.

Barbara Brown Wilson, Ph.D.

Barbara Brown Wilson is an associate professor of urban and environmental planning at the UVA School of Architecture, and co-founder and faculty director at the UVA Democracy Initiative Center for the Redress of Inequity through Community-Engaged Scholarship (aka The Equity Center). Her research and teaching focus on the history, theory, ethics, and practice of planning for climate justice, and on the role of urban social movements in the built world. Dr. Wilson writes for both academic and mainstream audiences, and is the author of Resilience for All: Striving for Equity through Community-Driven Design (Island Press: 2018), and co-author of Questioning Architectural Judgement: The Problem of Codes in the United States (Routledge: 2013). Her research is often change-oriented, meaning she collaborates with community partners to identify opportunities to move our communities, and the field of urban planning, toward social and environmental justice.