Public Health and Transportation
Innovation, Intervention, and Improvements
The National Academy of Sciences of Sciences·Engineering·Medicine

The National Academy of Sciences was established in 1863 by an Act of Congress, signed by President Lincoln, as a private, nongovernmental institution to advise the nation on issues related to science and technology. Members are elected by their peers for outstanding contributions to the sciences. Members are elected by their peers for extraordinary contributions to engineering. Dr. C. D. Mote, Jr., is president.

The National Academy of Engineering was established in 1964 under the charter of the National Academy of Sciences to bring the practices of engineering to advising the nation. Members are elected by their peers for extraordinary contributions to engineering. Dr. C. D. Mote, Jr., is president.

The National Academy of Medicine (formerly the Institute of Medicine) was established in 1970 under the charter of the National Academy of Sciences to advise the nation on medical and health issues. Members are elected by their peers for distinguished contributions to medicine and health. Dr. Victor J. Dzau is president.

The three Academies work together as the National Academies of Sciences, Engineering, and Medicine to provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine.

Learn more about the National Academies of Sciences, Engineering, and Medicine at www.national-academies.org.

The Transportation Research Board is one of seven programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board’s varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. www.TRB.org

TRANSPORTATION RESEARCH BOARD 2015 EXECUTIVE COMMITTEE*

Chair: Daniel Sperling, Professor of Civil Engineering and Environmental Science and Policy; Director, Institute of Transportation Studies, University of California, Davis

Vice Chair: James M. Crites, Executive Vice President of Operations, Dallas–Fort Worth International Airport

Executive Director: Neil J. Pedersen, Transportation Research Board

Victoria A. Arroyo, Executive Director, Georgetown Climate Center; Assistant Dean, Centers and Institutes; and Professor and Director, Environmental Law Program, Georgetown University Law Center, Washington, D.C.

Scott E. Bennett, Director, Arkansas State Highway and Transportation Department, Little Rock

Deborah H. Butler, Executive Vice President, Planning, and CIO, Norfolk Southern Corporation, Norfolk, Virginia

(Past Chair, 2013)

Jennifer Cohan, Secretary, Delaware Department of Transportation, Dover

Malcolm Dougherty, Director, California Department of Transportation, Sacramento

A. Stewart Fotheringham, Professor, School of Geographical Sciences and Urban Planning, University of Arizona, Tempe

John S. Hallikowski, Director, Arizona Department of Transportation, Phoenix

Michael W. Hancock, Secretary Kentucky Transportation Cabinet, Frankfort

Susan Hanson, Distinguished University Professor Emerita, School of Geography, Clark University, Worcester, Massachusetts

Steve Heminger, Executive Director, Metropolitan Transportation Commission, Oakland, California

Chris T. Hendrickson, Professor, Carnegie Mellon University, Pittsburgh, Pennsylvania

Jeffrey D. Holt, Managing Director, Bank of Montreal Capital Markets, and Chairman, Utah Transportation Commission, Huntsville, Utah

Roger Huff, Manager, Ford Global Customs, Material Export Operations, and Logistics Standardization, Ford Motor Company, Farmington Hills, Michigan

Geraldine Knatz, Professor, Sol Price School of Public Policy, Viterbi School of Engineering, University of Southern California, Los Angeles

Ysela Llori, Director, Miami–Dade Transit, Miami, Florida

Abbas Mohaddes, President and CEO, Iteris, Inc., Santa Ana, California

Donald A. Osterberg, President and CEO, The Task Force for Global Health, Inc., Decatur, Georgia

Sandra Rosenbloom, Professor, University of Texas, Austin (Past Chair, 2012)

Henry G. (Gerry) Schwartz, Jr., Chairman (retired), Jacobs/Sverdrup Civil, Inc., St. Louis, Missouri

Kumaras C. Sinha, Olson Distinguished Professor of Civil Engineering, Purdue University, West Lafayette, Indiana

Kirk T. Steudle, Director, Michigan Department of Transportation, Lansing (Past Chair, 2014)

Gary C. Thomas, President and Executive Director, Dallas Area Rapid Transit, Dallas, Texas

Paul Trombino III, Director, Iowa Department of Transportation, Ames


James C. Card (Vice Admiral, U.S. Coast Guard, retired), Maritime Consultant, The Woodlands, Texas, and Chair, TRB Marine Board (ex officio)

Alicia J. Conway, Assistant Professor, Department of Civil Engineering, City College of New York, New York, and Chair, TRB Young Members Council (ex officio)

T. E. Scott Darling III, Acting Administrator and Chief Counsel, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)

Sarah Feinberg, Acting Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)

David J. Friedman, Acting Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)

LeRoy Gishi, Chief, Division of Transportation, Bureau of Indian Affairs, U.S. Department of the Interior, Washington, D.C. (ex officio)

John T. Gray II, Senior Vice President, Policy and Economics, Association of American Railroads, Washington, D.C. (ex officio)

Michael P. Huerta, Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)

Paul N. Jaenichen, Sr., Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)

Therese W. McMillan, Acting Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)

Michael P. Melaniphy, President and CEO, American Public Transportation Association, Washington, D.C. (ex officio)

Gregory G. Nadeau, Acting Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)

Peter M. Rogoff, Under Secretary for Transportation Policy, Office of the Secretary, U.S. Department of Transportation (ex officio)

Mark R. Roeskind, Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)

Craig A. Rutland, U.S. Air Force Pavement Engineer, Air Force Civil Engineer Center, Tyndall Air Force Base, Florida (ex officio)

Vanessa Sutherland, Acting Deputy Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation (ex officio)

Larry G. Wallerstein, Executive Officer, South Coast Air Quality Management District, Diamond Bar, California (ex officio)

Gregory D. Winfree, Assistant Secretary for Research and Technology, Office of the Secretary, U.S. Department of Transportation (ex officio)

Frederick G. (Bud) Wright, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)

Paul F. Zulkunft (Admiral, U.S. Coast Guard), Commandant, U.S. Coast Guard, U.S. Department of Homeland Security (ex officio)

* Membership as of October 2015.
INTRODUCTION
Public Health and Transportation: Innovation, Intervention, and Improvements
Ed Christopher and Eloisa Raynault
The connections between the worlds of public health and transportation are manifold, built on a growing base of evidence encompassing safety, air quality impacts, physical activity, noise pollution, and access to the goods and services that support health. The issues are complex and multidisciplinary, and collaborations are under way.

Why Public Health and Transportation: Setting the Stage
Andrew L. Dannenberg and Ipek N. Sener
Integrating health-enhancing choices into transportation policy has the potential to save lives and money by preventing chronic diseases, reducing motor vehicle–related injury and deaths, and improving environmental health, while stimulating economic development and ensuring access to opportunity and to goods and services for all.

Glossary of Public Health Terms

Health Impact Assessment: Considering Health in Transportation Decision Making in the United States
Megan L. Wier, Michael Schwartz, and Andrew L. Dannenberg
The health impact assessment is a tool for considering the potential health effects of policies, programs, and projects before implementation, to mitigate the adverse impacts and to leverage the health benefits. The authors present characteristics of the process in the United States, as well as lessons learned from an interdisciplinary collaboration.

The Health Impact Project: Fostering Safer, Healthier Communities
Bethany Rogerson

Measuring the Health Benefits of Walking and Bicycling: Nashville Area Metropolitan Planning Organization Applies the Findings
Leslie Meehan
The Nashville Area Metropolitan Planning Organization has addressed chronic public health problems stemming from physical inactivity by shifting the transportation policy focus to public transit, walking, and bicycling. The systematic approach included a scoring and selection system for transportation projects, household surveys, and more.

Integrating Health and Transportation in the Rural Context
Don Kostelec

Incorporating Health into a Metropolitan Planning Organization’s Technical Process: Innovative Approaches for San Francisco Bay Area Projects
Sean Co
The San Francisco Bay Area Metropolitan Transportation Commission developed performance metrics for its 2040 Regional Transportation Plan that included measures of the effects of physical activity and transportation. The author describes the measures, the findings, and the outcomes.

Better Corridors for Healthier Communities: Project Investigates Best Practices
Sara Hammerschmidt

TRB STANDING COMMITTEE PERSPECTIVES
Coordinating Research on Transportation and Health: Cross-Cutting, Multidisciplinary Approach
Ed Christopher and Eloisa Raynault
According to a survey, more than one-third of TRB technical standing committees have a direct interest in public health. Representatives of the parent committees of the Joint Subcommittee on Health and Transportation present their research interests and perspectives.

Urban Data and Information Systems: Inventories, Sample Surveys, and Baselines to Inform Policies
Nancy McGuckin
features articles on innovative and timely research and development activities in all modes of transportation. Brief news items of interest to the transportation community are also included, along with profiles of transportation professionals, meeting announcements, summaries of new publications, and news of Transportation Research Board activities.

TR News is produced by the Transportation Research Board Publications Office
Javy Awan, Editor and Publications Director
Lea Camarda, Associate Editor
Jennifer J. Weeks, Photo Researcher
Juanita Green, Production Manager
Michelle Wandres, Graphic Designer

TR News Editorial Board
Frederick D. Hejl, Chairman
Christine L. Gerench
Edward T. Harrigan
Christopher J. Hedges
Russell W. Houston
Katherine Kortum
Thomas R. Menzies, Jr.
G. P. Jayaprakash, Research Pay Off Liaison

Transportation Research Board
Neil Pedersen, Executive Director
Mark R. Norman, Director of Program Development and Strategic Activities
Russell W. Houston, Assistant Executive Director
Ann M. Brach, Director, Technical Activities
Stephen R. Godwin, Director, Studies and Special Programs
Gary J. Walker, Director, Administration and Finance
Christopher W. Jenks, Director, Cooperative Research Programs

TR News (ISSN 0738-6826) is issued bimonthly by the Transportation Research Board, 500 Fifth Street, NW, Washington, DC 20001. Internet address: www.TRB.org.

Editorial Correspondence: By mail to the Publications Office, Transportation Research Board, 500 Fifth Street, NW, Washington, DC 20001, by telephone 202-334-2972, by fax 202-334-3495, or by e-mail jawan@nas.edu.

Subscriptions: North America: 1 year $60; single issue $12. Overseas: 1 year $85; single issue $12 plus shipping. Inquiries or communications concerning new subscriptions, subscription problems, or single-copy sales should be addressed to the Business Office at the address below, or telephone 202-334-3216, fax 202-334-2519. Periodicals postage paid at Washington, D.C.

Postmaster: Send changes of address to TR News, Transportation Research Board, 500 Fifth Street, NW, Washington, DC 20001.

Notice: The opinions expressed in articles appearing in TR News are those of the authors and do not necessarily reflect the views of the Transportation Research Board. The Transportation Research Board and TR News do not endorse products or manufacturers. Trade and manufacturers' names appear in an article only because they are considered essential. Printed in the United States of America.

Copyright © 2015 National Academy of Sciences. All rights reserved. For permissions, contact TRB.

32 Traveler Behavior and Values: Establishing Associations with Public and Individual Health
Kourosh Mohammadian

34 Transportation and Sustainability: Strengthening the Connections with Health
John MacArthur and Michelle Oswald Beiler

36 Environmental Justice in Transportation: Addressing Adverse Health Effects on Minority and Low-Income Populations
Anne C. Morris and David Kuehn

38 Collaborating in Transportation and Health Research: National Academies Program Units Share Expertise

39 Looking at Policies Through a Health Lens

40 Halting the Travels of Infectious Disease: Lessons Learned from the Ebola Epidemic
Mark Gendreau

As with many of the emergent diseases in the past decade, the challenge of the Ebola epidemic in Western Africa highlights the need for a new strategy to address emerging infectious disease threats of international concern and pandemic potential. The transportation industry plays a pivotal role in mitigating the threat.

43 Modeling the Risk of Infectious Disease Spread Through Transport Systems: Emerging Research
Lauren M. Gardner

44 Getting Rid of Unwelcome Transit Riders: IDEA Project Develops Device to Halt Airborne Pathogens
Lee Huston and Jon Williams

An invention harnessing ultraviolet germicidal irradiation to the air conditioning system of transit vehicles reduced airborne pathogens that cause such diseases as tuberculosis, influenza, pneumonia, and Legionnaires' disease by 99 percent.

46 TRB Publications Related to Transportation and Public Health: Select Titles, 2010–2015

47 Assessing Active Transportation and Health: Conference Highlights Innovative Practices and Research
Robert Schneider, Eloisa Raynault, and Ralph Buehler

Sessions and workshops at a 2015 conference provided opportunities for those working on the connections between active transportation and public health to share emerging research, network with peers across disciplines, and identify research gaps and next steps for practice and research.

48 How to Connect with the Public Health Community

49 Related Conferences and Events

ALSO IN THIS ISSUE:

50 Profiles
Transportation planner and project manager Gregory P. Benz and archaeologist and cultural resources manager Antony F. Opperman

52 Research Pays Off
Pavement Recycling: An Effective Reuse of Resources
Brian K. Dieffenderfer and Ann M. Overton

56 TRB Highlights
Webinar Programs, 56

59 News Briefs

60 Calendar

61 Bookshelf

COMING NEXT ISSUE

TR News reaches a milestone with its 300th issue, and the feature articles present the results of pioneering research. One examines commercial spaceports and the endeavor of building the foundation for a commercial space transportation network; another presents an overview of the first year of research using the vast and valuable databases from the historic Naturalistic Driving Study conducted under the second Strategic Highway Research Program. Also included are the first in a series of articles on research to mitigate transportation’s contributions to climate change, insights from a volume in the National Cooperative Highway Research Program’s series Strategic Issues Facing Transportation—and more.