

TR NEWS

January–February 2021

NUMBER 331

Challenges of Truck Size and Weight

PLUS

What Will Airports Be Like
in 2040 and 2070?

Post-Hurricane Supply
Chain Resilience

Hawai'i Interstate
High-Tech Revamp

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

TRB

TRANSPORTATION RESEARCH BOARD

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

The **Transportation Research Board** is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to provide leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. The Board's varied activities annually engage about 8,000 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 departments of transportation, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

Learn more about the Transportation Research Board at www.TRB.org.



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* Membership as of February 2021.

3 Way of the Future: Airports at the Horizon of 2040 and 2070

Gaël Le Bris

By 2040 and 2070, U.S. and worldwide population increases will create interrelated megaregions and improved living conditions in emerging and developing countries that result in a demand for more air travel. The author describes how airports will change to meet those challenges.

12 Advancing Aerial Mobility: A National Blueprint

Dwayne Day

Electric and hybrid aircraft—aka advanced aerial mobility—used for urban, suburban, and rural operations have increased globally. The author shares how transformative technologies such as runway-independent, short-range, and highly automated aircraft will change the way goods—and people—are moved and will affect industries across the economy.

16 Strengthening Post-Hurricane Supply Chain Resilience: Observations from Hurricanes Harvey, Irma, and Maria

Laurie Geller, James G. Featherstone, and Steven Stichter

Charged with analyzing how Hurricanes Harvey, Irma, and Maria affected the supply chain network, a special National Academies of Sciences, Engineering, and Medicine committee identified key lessons from South Texas, South Florida, Puerto Rico, and the U.S. Virgin Islands. The authors report on those lessons and the committee's recommendations.

22 NCHRP RESEARCH REPORT 938 Evaluating Cost Effectiveness of Climate Adaptation Measures

Laurel McGinley

Ever-increasing—and often severe—weather events present state departments of transportation (DOTs) with potentially serious and costly infrastructure issues. Aging infrastructure and limited budgets add to the challenge. The author looks at the Federal Highway Administration's framework to help state DOTs manage pressing priorities.



25 Data Dive into Transportation Research Record Articles: Authors, Coauthorships, and Research Trends

Subasish Das

An increase in transportation research has resulted in a publications upsurge. But as transportation research becomes more complex and cross-cutting, transportation professionals face critical challenges when predicting future issues. Applying text mining and topic modeling techniques, the author analyzes 28,987 articles from the *Transportation Research Record* to identify publication trends.

32 Truck Size and Weight Research Challenges

Daniel Haake

The author examines the decades-long challenges of measuring the impacts against the benefits of truck size and weight limit policies.

38 Innovative Technologies and Precast Pavement Allow Rapid Replacement Along Hawai'i Interstate H-1

Mark B. Snyder

After years of temporary patches, the busiest stretch of Hawai'i's Interstate H-1 needed long-term repair. The Hawai'i Department of Transportation found a solution in design-build contracting and the use of innovative technologies such as precast concrete pavement, 3-D surface modeling, and ground-penetrating radar. The author chronicles the project from concept to completion.



COVER Trucks on I-84 in Oregon sit in stopped traffic, caused by bad weather and crashes on the highway. State crash databases often do not include data on individual truck weight; improved data can help states evaluate truck size and weight regulations, observes author Daniel Haake in this issue of *TR News*. (Photo: Oregon DOT)

Coming Next Issue

In the March–April 2021 issue of *TR News*, read highlights from the 2021 Transportation Research Board Annual Meeting and explore mobility and human trafficking, near-road air quality, and how to make safer roadway crossings for small wildlife.

Though efficient, these Canada geese are not crossing the road safely. An article in the upcoming issue of TR News examines the latest research on safe wildlife crossings.

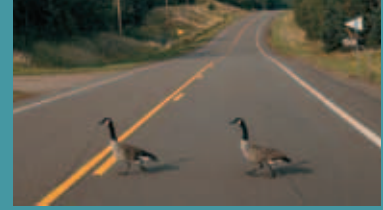


Photo: Tony Webster, Wikimedia Commons

46 Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System

Dan Blazer, Tracy Lustig, and Megan Kearny

Factors that influence social isolation and loneliness in older adults include housing displacement, access to broadband communication, gentrification, consequences of natural disasters, and lack of transportation. The authors look at this phenomenon and explore possible solutions.

50 Innovations in the Food System: Exploring the Future of Food

Melissa Maitin-Shepard

In August 2019, the National Academies' Food Forum convened a public workshop to discuss innovations for modern food systems and how they could be designed to optimize environmental, health, social, and economic outcomes. The author highlights parts of the proceedings that looked at transportation as related to the food system.

TRB COVID-19 Resources

Agencies and organizations can use TRB publications and online resources for useful and timely information to help address issues related to the novel coronavirus pandemic. To read about TRB's current research and activities, and for a list of relevant publications, visit www.nationalacademies.org/trb/blog/transportation-in-the-face-of-communicable-disease.

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TR NEWS

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.

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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.

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Subscriptions: North America: 1 year \$75; single issue \$19. Overseas: 1 year \$100; single issue \$19 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.

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Printed in the United States of America.

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