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TRB TRANSPORTATION RESEARCH BOARD

Critical Issues in Transportation 2023

New York State Association of
Metropolitan Planning Organizations

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Transportation Research Board

- **Mission**

- Provide leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based research, information exchange, and policy advice regarding all modes of transportation.

- **Convene**

- Annual Meeting - 14,000 attendees (in a non-COVID year)
- 177 standing technical committees
- 50+ conferences & workshops; 100+ webinars

- **Research**

- Highway, Transit, Airport, Behavioral Traffic Safety Cooperative Research Programs
- 800+ papers published annually
- TRID: 1.4 million records of transportation research citations

- **Advise**

- Independent, objective, evidence-based, thorough, non-partisan policy studies

Background

- *Critical Issues in Transportation* has been issued by the TRB Executive Committee an average of once every five years since 1976.
- The last *Critical Issues in Transportation* was issued at the 2019 TRB Annual Meeting; it contained 12 topic areas and 63 issues
- Two addenda were issued in 2021 on COVID-19 and racial equity issues.
- Given the rapid and significant changes taking place in transportation, the Executive Committee decided not to wait five full years for a new edition.
- It is underway with work on a new edition with the goal to issue a new *Critical Issues in Transportation* document in summer 2023.

Topics in *Critical Issues in Transportation 2019*

- Transformational Technologies & Services
- Serving a Growing and Shifting Population
- Energy/Sustainability
- Resilience/Security
- Safety/Public Health
- Equity
- Governance
- System Performance/Asset Management
- Funding/Finance
- Goods Movement
- Institutional and Workforce Capacity
- Research/Innovation



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New Edition Framed Around Societal Goals

Transportation helps support the following 5 broad societal goals:

- Mitigating and Becoming More Resilient to the Impacts of Climate Change
 - Advancing Societal Equity
 - Achieving Zero Transportation-Related Fatalities
 - Protecting and Improving Public Health
 - Strengthening the U.S. Economy and Global Competitiveness
- A thriving society is the ultimate outcome desired from achieving these 5 goals.
 - Improvements to transportation will be a key means to furthering these goals and their contribution to a thriving society
 - The Executive Committee is framing the next edition of *Critical Issues in Transportation* around these five societal goals.

Cross-Cutting Topics

All of these goals are interrelated, but all help support a thriving society. There are also several cross cutting topics that are related to all of the goals that raise a number of additional *important* issues, including:

- Financing and Governance
- Workforce
- Technology
- Physical Infrastructure
- Travel Demand

The five societal goals and five cross cutting topics will make up the ten sections of the next edition of *Critical Issues in Transportation*.

Proposed Framework for *Critical Issues in Transportation 2023*



A number of critical issues are related to each of the societal goals that transportation supports, and others are related to the cross-cutting topics.

Issues Related to Each Societal Goal

- There are a number of transportation-related issues associated with each of the five societal goals that transportation helps support. The five goals are also interrelated, so some of the issues are related to more than one of the goals.

Climate Change

Transportation is a major contributor to greenhouse (GHG) emissions that cause climate change. Not only must transportation change to limit GHG emissions, it must adapt to climate change that is already underway. However, as an industry with ingrained patterns and which is currently largely dependent on energy-dense petroleum products, change will not be easy or immediate.

Climate Change

- What are the most consequential and cost-effective public policy strategies to move the transportation sector toward net zero carbon emissions while taking into account the full life cycle environmental consequences?
- How can risk-based resilience management approaches be incorporated into transportation planning and decision making? What parts of the transportation system are most vulnerable to major disruptive events?
- How can results from climate models be translated into changes in design standards to address sudden severe weather events and those that are slow growing?

Equity

Transportation planning, operations, enforcement, and decisions affect all aspects of society, often in inequitable ways. Decisions about infrastructure and policy have too often reinforced structural racism or economic disparities and limited the opportunities for some people to thrive. However, transportation is also unique in its ability to provide access to opportunities and address inequities that exist in society.

Equity

- How can affordable mobility and accessibility options across multiple modes be cost-effectively provided to disadvantaged populations while accounting for differences across urban, suburban, exurban, and rural areas, and physical/cognitive ability?
- How can bias in data, analytical methods, governance, and decision making be recognized and addressed in a way that ensures that environmental justice is a decision factor rather than simply a procedural requirement?
- How should racial justice and remedying persistent inequities from past decisions be incorporated into current and future transportation decision making?

Safety

Safety is a stated top priority for all modes of the transportation system, yet progress has been slow in recent years and has even reversed for traffic safety. Safety is inextricably intertwined with other goals, as the system is not equally safe for all, and crashes are a leading cause of death and injury for many age groups. Life-saving improvements have occurred in the last decades, but changes in technology and travel behavior present additional challenges for the future.

Safety

- What strategies can be most effective in reducing the growing number of vehicle occupant, pedestrian, and cyclist deaths and injuries? What transferable lessons can be learned from countries, states, and localities that have successfully reduced deaths and injuries (e.g., the safe systems approach)?
- How can the statutory and regulatory framework for transportation become more encouraging of safety performance and culture?
- How can the public sector foster technological innovation as it steers the transition to connected and automated vehicles (CAVs) while ensuring safety, especially during the transition period? How much improvement in safety will actually be achieved through CAVs and other technology improvements?

Public Health

Recent years have highlighted the importance of robust public health to a thriving society. Not only are infectious diseases relevant to societal health, but so are daily activity, clean air and water, and access to healthcare systems. The transportation system has the potential to affect all of these factors.

Public Health

- How can public health planning and outcomes, along with public health policy makers, be better incorporated into the transportation planning and decision making process? What are appropriate metrics for measuring health outcomes as part of the transportation planning process?
- Which transportation pollution mitigation measures can be implemented to reduce health risks for those living near major transportation facilities?
- How can access to public health services be more effectively provided through integrated transportation services or through technology strategies?

Economy and Global Competitiveness

Transportation networks are closely tied to economic productivity and the ability to safely and efficiently move both goods and people. In a closely-connected global economy, transportation's ability to provide the free flow of people, goods, and ideas affects social progress, safety, health, and equity.

Economy and Global Competitiveness

- How can evolving technologies help improve transportation efficiency and national productivity, as well as the United States economy? What labor issues arise as a result?
- How can financial, institutional, and competitive barriers be overcome to reduce nationally significant bottlenecks at large-scale, complex transportation facilities?
- How can the transportation network evolve to improve the resiliency and capacity of supply chains in a dynamic and evolving global economy?

Cross-Cutting Topics

Several topics have been identified that have issues that cut across the five societal goals that transportation helps support.

- Financing and Governance
- Workforce
- Technology
- Physical Infrastructure
- Travel Demand

Financing and Governance

Financing and Governance

- How do we transition to a new financing system that will work with low or zero emission vehicles, declining power of the gas tax, and increased financial needs to operate and maintain aging infrastructure?
- How can we best address decisions that affect a national network but that are often made at a state or local level, whether by government alone or as a partnership with the private sector?
- How can planning and funding decisions be changed from being largely modally-based programs to a multimodal systems basis?

Workforce

Workforce

- How do we make transportation an attractive option for those entering the workforce, given that we are facing shortages of both operators and professional staff in all modes?
- How do we learn from other fields and retrain the existing workforce to use, maintain, and deploy new technologies in transportation?
- What policy issues are raised and need to be addressed to respond to changes in labor dynamics that are happening across industries?

Technology

Technology

- How do we regulate new transportation-related technologies to ensure safety and cybersecurity, given the challenges that government regulators have in keeping up with changes in technology?
- How do we encourage development of new technology, data, and methods to improve transportation decision making and operations while still protecting privacy and safety for all users?
- Who should own data generated by vehicles and the transportation system, and how can the transportation industry keep up with IT development to ensure that existing systems' data storage and cybersecurity remain safe?

Physical Infrastructure

Physical Infrastructure

- How can we use new materials, construction methods, and management strategies to address the higher costs of building, maintaining, and operating infrastructure in the US compared to other nations?
- How do we integrate new technologies (e.g., CAVs, broadband, EV charging) into our existing and planned infrastructure?
- How do we rethink existing incentives and policies to ensure that adequate investment is made in maintaining existing infrastructure assets and ensuring resilience of the system?

Travel Demand

Travel Demand

- What will be long-term changes in travel demand in light of telemobility, changes in the location of economic activity, demographic changes, and new and evolving mobility options, and how should we deal with uncertainty associated with future travel demand?
- How can we best understand how telecommunications is changing demand today and the implications for future demand?
- How can we manage and accommodate demand to optimize and accommodate movement of people and goods, especially in rapidly growing areas, given societal goals?

How do these issues that are critical at the national and global level translate into critical issues that you must deal with at the metropolitan and regional level?

Transportation Research Board

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- TRB TRID database: www.trid.trb.org
- TRB Annual Meeting, Washington, DC, Jan. 7-11, 2024



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