NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

TRB Webinar: Resilient Freight Planning—Lessons from Ukraine and Puerto Rico

April 25, 2023

11:30 – 1:00 PM

PDH Certification Information

1.5 Professional Development Hours (PDH) – see follow-up email

You must attend the entire webinar.

Questions? Contact Andie Pitchford at TRBwebinar@nas.edu

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AICP Credit Information

1.5 American Institute of Certified Planners Certification Maintenance Credits

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Contact AICP, not TRB, with questions

Purpose Statement

This webinar will explore the unique recovery challenges in Ukraine during the Russian invasion and Puerto Rico in the aftermath of hurricanes Maria and Fiona and how they can inform the planning of resilient supply chains both nationally and internationally. Presenters will share current adaptation strategies, terminology and strategies used in freight resiliency planning, and the continuing needs of Ukraine and Puerto Rico.

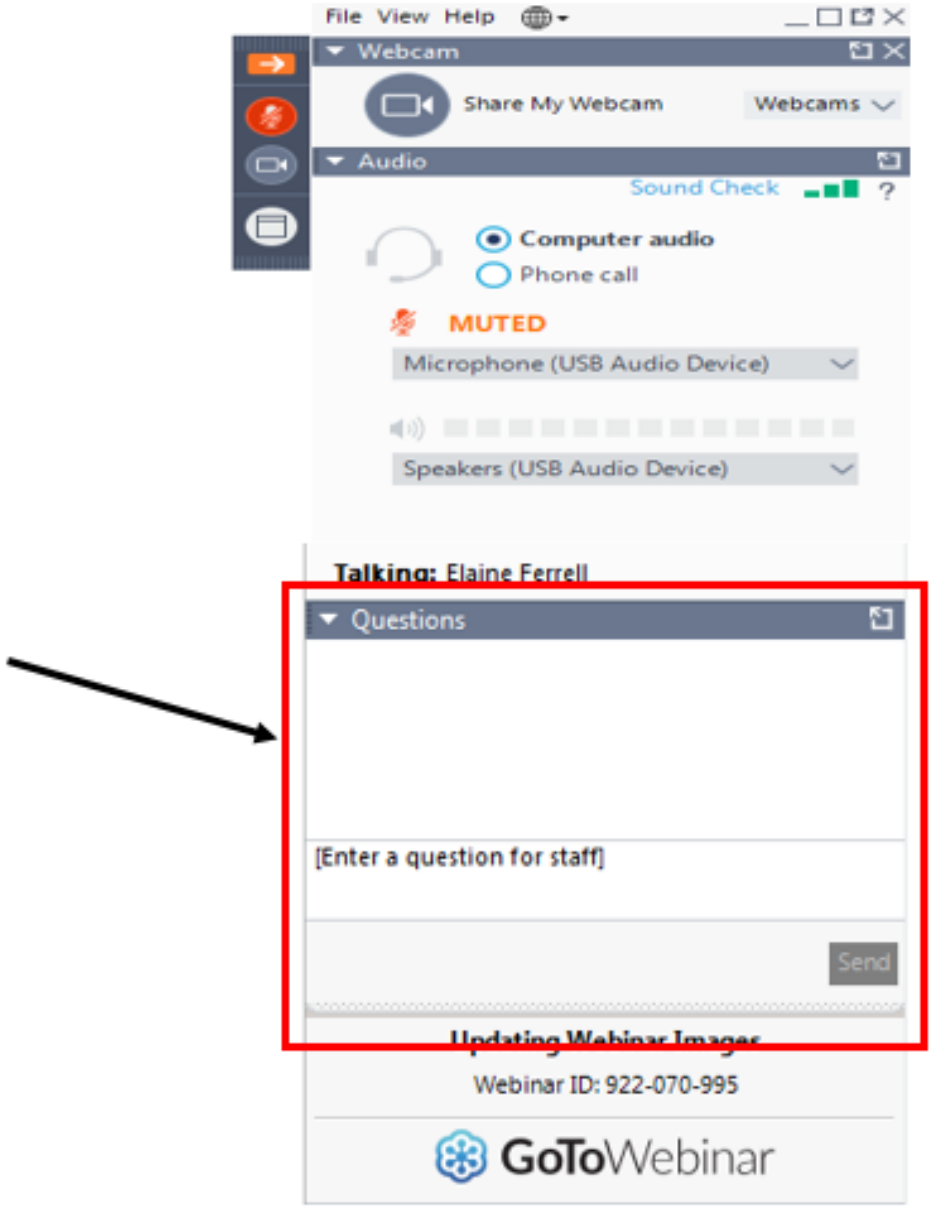
Learning Objectives

At the end of this webinar, you will be able to:

- Apply freight resiliency adaptation strategies to planning efforts
- Converse with the terminology and strategies used in freight resiliency planning
- Identify the continuing needs of Ukraine and Puerto Rico in the area of freight resiliency

Questions and Answers

- Please type your questions into your webinar control panel
- We will read your questions out loud, and answer as many as time allows



Today's presenters

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Considering Disruptions and Continuity

RESILIENT FREIGHT PLANNING – LESSONS FROM UKRAINE AND PUERTO RICO
TRANSPORTATION RESEARCH BOARD APRIL 2023 WEBINAR

RUTGERS
Edward J. Bloustein School
of Planning and Public Policy

ANNE STRAUSS-WIEDER

TR News 311 September-October 2017, p. 14.

THE IMPORTANCE OF BUSINESS & COMMUNITY CONTINUITY

- 30 percent of all companies that experience a catastrophic loss fail with in the first two years after the event.
- Another 29 percent shut down after this time.
- Severe and potentially permanent economic losses for communities.

Statistics source: https://www.nado.org/lessons-from-the-storm-case-studies-on-economic-recovery-and-resilience/

THREE SETS OF ACTIVITIES FOR FREIGHT MOVEMENT

Activities	Definitions and Examples
Physical Flows	• Any physical activity directly needed for freight movement • Vessels, terminals, railroads, trucks, pipelines, aircraft, warehouses and distribution centers
Communication & Information Flows	• Any information and transactional exchange needed for freight movement • Bills of lading, financial flows, customer notifications, delivery appointments, warehouse management systems, inter-agency communications, etc.
Regulatory Considerations	• Any gov't regulations, rules, and agency activities needed for or shaping freight movement • USCG, CBP, truck driver credentials, Jones Act

SUPPLY CHAIN RISK CATEGORIES

- Natural Disasters
- Manmade Disruptions
- Supplier Risks
- Cybersecurity and Information System Failures
- Transportation Failures
- Quality Failures

THE DISRUPTION SPECTRUM

Planned Disruptions	Predictable Disruptions	Rapid Disruptions	Abrupt Disruptions
Columbia River Closure	Winter Weather, Labor Actions	Hurricane Katrina, Superstorm Sandy, Pandemic	9/11, Howard Street Tunnel Fire, 2017 Maersk Cyberattack

Source of Chart: Anne Strauss-Wieder
Photos from various sources

THE DISRUPTION SPECTRUM REVISED

Planned Disruptions	Predictable Disruptions	Rapid Disruptions	Abrupt Disruptions	Continuing Disruptions
Columbia River Closure	Winter Weather, Labor Actions	Hurricane Katrina, Superstorm Sandy, Pandemic	9/11, Howard Street Tunnel Fire, 2017 Maersk Cyberattack	Ukraine War, Ongoing Humanitarian Relief

Source of Chart: Anne Strauss-Wieder
Photos from various sources

LESSONS FROM THE CSX HOWARD STREET TUNNEL FIRE

July 18, 2001 – CSX train derailed in the Howard Street Tunnel under downtown Baltimore, MD

- 11 cars derailed, 4 of which contained hazardous material
- Fire lasted five days
- Happened during evening rush hour as a baseball game was about to be played, caused a major water main break, disrupted Baltimore transit, caused public sirens to sound, caused power outages, and temporarily closed the Inner Harbor.
- No loss of life
- Freight train traffic resumed on July 24, 2001.

From: https://www.baltimoresun.com/maryland/bs-md-howard-street-tunnel-20110716-story.html

CSX HOWARD STREET TUNNEL FIRE

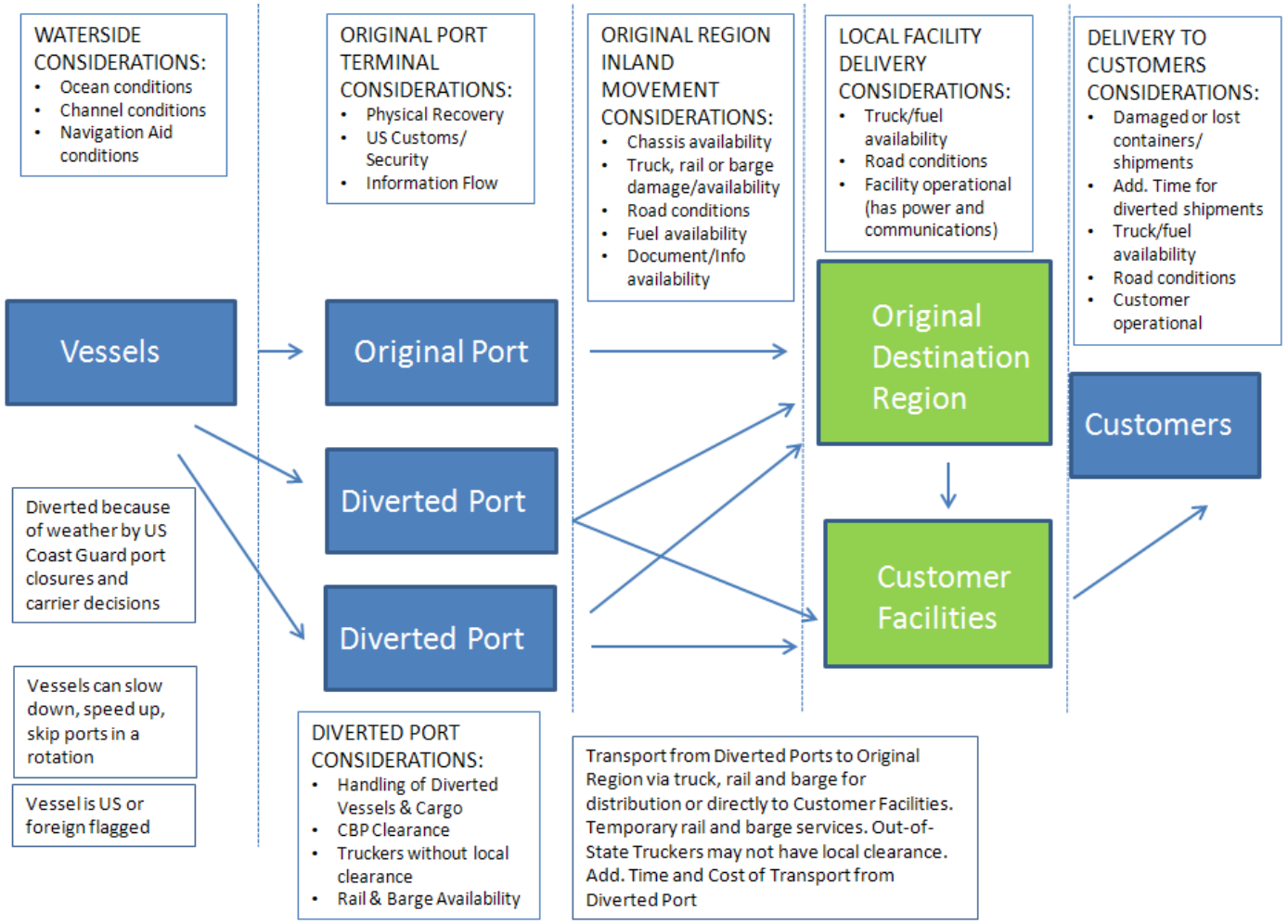
- Short-Term Impacts
  - CSX rerouted some trains and delayed others in yards along the eastern seaboard. Delays ranged from 18 to 35 hours.
  - The railroads worked together to reroute high priority/time sensitive trains, such as the Tropicana Orange Blossom Special.
  - Significant impacts on the community.
- Long-Term Impacts
  - No impact on rail freight movements
  - Led to significant discussions on the movement of haz mat materials.

From: https://www.baltimoresun.com/maryland/bs-md-howard-street-tunnel-20110716-story.html

DEFINING SUPERSTORM SANDY AS A SUPPLY CHAIN DISRUPTION

Characteristics	Superstorm Sandy
Geographical Scope Affected	• Extensive – the entire East Coast • At landfall – the New York-New Jersey Region
Freight Facilities Affected	• All • Ports closed along the East Coast in the storm's path • Railroads, trucking lines, airports and air cargo, pipelines (power outages, flooding, damage)
Commodities and Shipments Affected	• Occurred during peak delivery week • Multiple commodities and shipments affected
Recovery Time from Disruption	• Port of New York-New Jersey closed for nearly a week • Physical repairs to facilities took years

Categories from: Methodologies to Estimate the Economic Impacts of Disruptions to the Goods Movement System, NCHRP 732 (2012)



IMPORT CONTAINER DISRUPTION – SUPERSTORM SANDY

2017 MAERSK CYBER ATTACK

Characteristics	Information Disruption: 2017 NotPetya Cyber Attack
Geographical Scope Affected	• Global – All information systems went down
Freight Facilities Affected	• Vessels, terminals and company infrastructure around the world.
Commodities and Shipments Affected	• Multiple commodities and shipments affected
Recovery Time from Disruption	• 10 days involving “a complete new infrastructure of 4,000 new servers, 45,000 new PCs, and 2,500 applications.” • Estimated cost to company of the attack: $250-300 million.

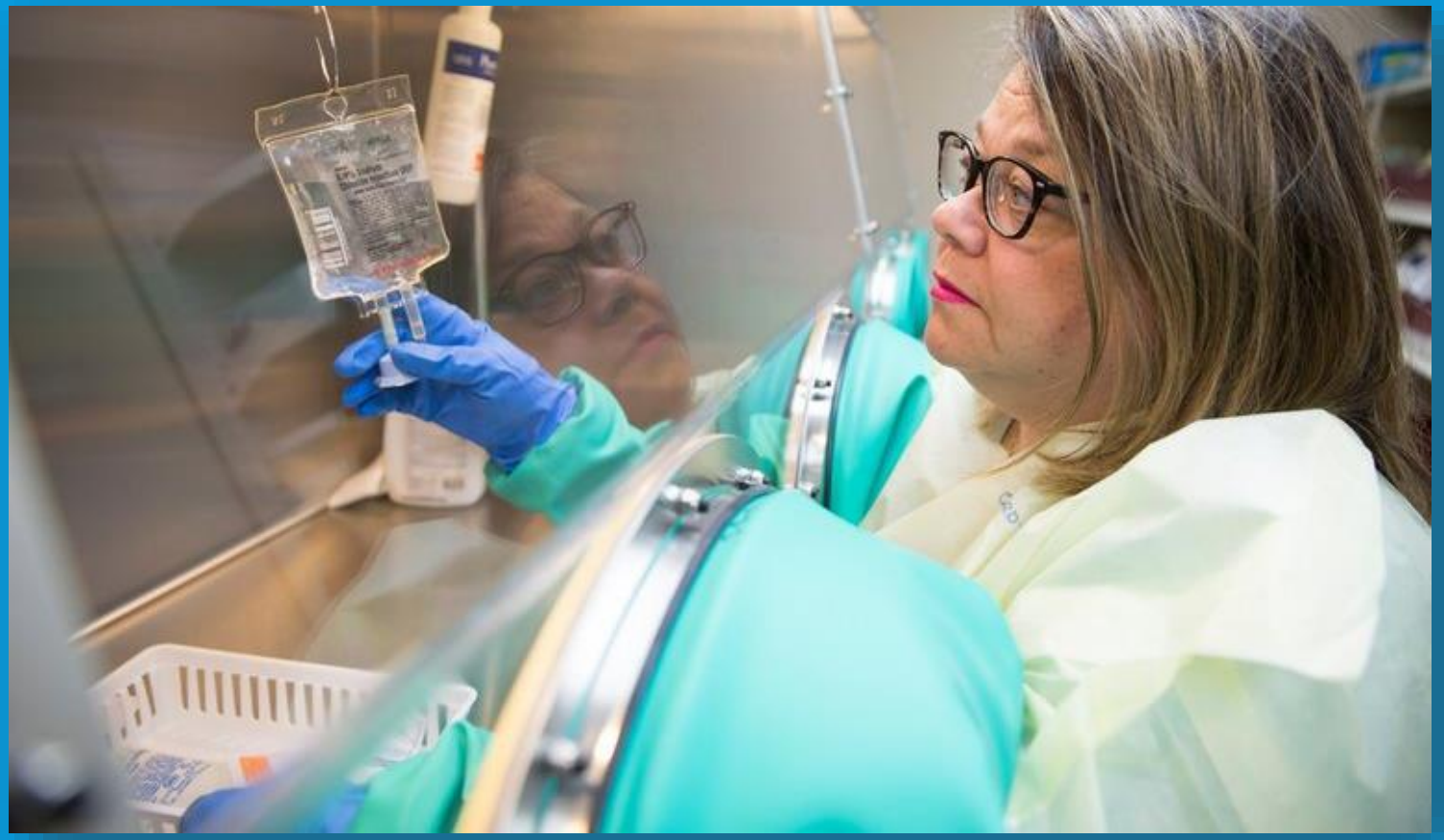
Source on Recovery Information:
https://www.theregister.co.uk/2018/01/25/after_notpetya_maersk_replaced_everything/

THE IMPACTS ON DAILY LIVES AND BUSINESSES: IRMA AND FLORIDA ORANGES

- Damage: Over $760 million.
- Employment: 45,000 people in Florida plant, pick, fertilize and process the fruit.
- Market Share: Provides more than 60 percent of US orange juice.
- Potential Long-Term Loss: Major brands replacing Florida crops with overseas crops.

Sources: http://www.ocala.com/opinion/20171210/ellis-hunt-florida-agriculture-desperate-for-post-irma-aid and http://www.gainesville.com/news/20171213/citrus-industry-in-trouble-without-federal-aid

THE IMPACTS ON DAILY LIVES AND BUSINESSES



Source: https://www.nytimes.com/2017/10/23/health/puerto-rico-hurricane-maria-drug-shortage.html

"The medical products industry has a significant presence in Puerto Rico, and the disruption to this industry has had ramifications for patients both on the island and throughout the U.S. The FDA has been working closely with federal and Puerto Rican authorities to help stabilize the medical products manufacturing sector. We're taking steps to mitigate or avert product shortages but we've still seen shortages of certain medically important products, some of which are sourced primarily or only in Puerto Rico."

Statement by FDA Commissioner Scott Gottlieb, M.D., on efforts to address impact of IV fluid shortages following hurricane destruction and resolve manufacturing shortfalls, November 17, 2017

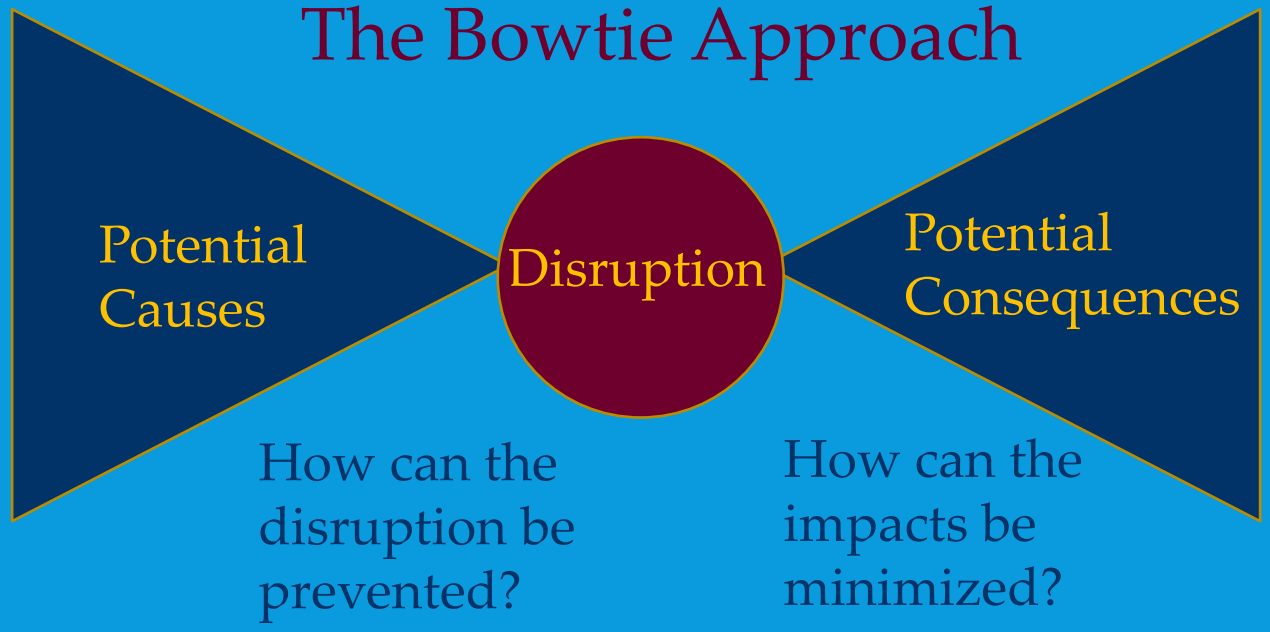
FUNCTIONAL DISRUPTION TOOLS AND PHASES

- Toolbox: Coordinate, Collaborate, Communicate
- Phases: React, Retool, Reshape

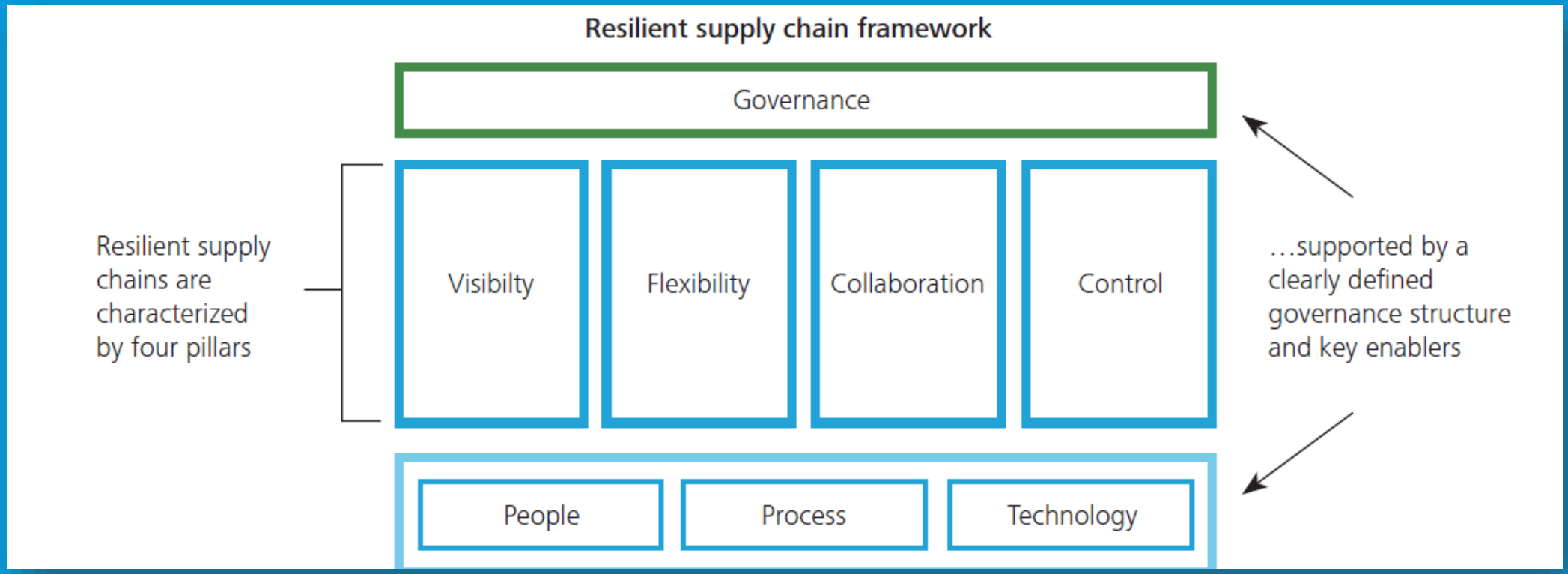
UNDERSTANDING THE CAUSES

Analyze using the "Bowtie Approach."

Develop a "Risk Register."



BUILDING RESILIENCE



Source: Deloitte, Supply Chain Resilience: A Risk Intelligent Approach to Managing Global Supply Chains, 2012, p. 5

COLLABORATE, COORDINATE, COMMUNICATE

- Activate and/or form public/private sector teams.
- Proactively and immediately address freight movement issues.
- Identify and address the range of resident and business needs.
- Understand and address the multi-state considerations and issues.

Port of New York & New Jersey
Council On Port Performance
A Collaborative Effort for a Collective Change

THE CONTINUITY TAKEAWAYS

- Identify potential risks, consequences and mitigations.
- Create approaches to manage and respond to disruptive events knowing that the unexpected can and will happen.
- Use visibility, flexibility, collaboration and control.
- Know that long term outcomes can be positive.
- Consider how to sustain area operations and businesses as part of overall resiliency strategies.

MOVING FORWARD TOGETHER

Sources: Schneider, UPS, ShareAmerica,, Amazon, Brookings Institute

Post-disaster Reconstruction and Freight Planning in Puerto Rico: Beyond Logistics

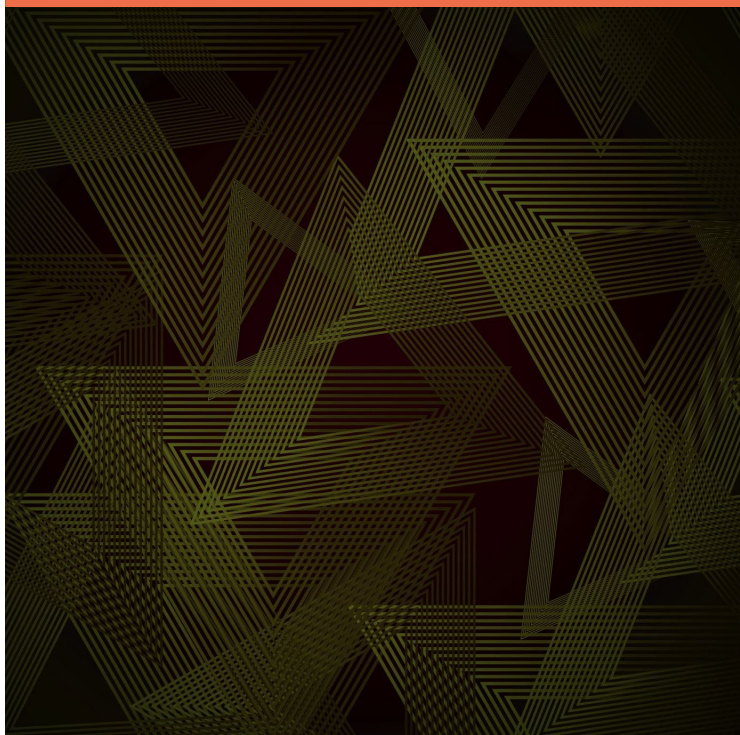
Raúl Santiago Bartolomei

Assistant Professor

Graduate School of Planning

University of Puerto Rico, Río Piedras

April 25, 2023

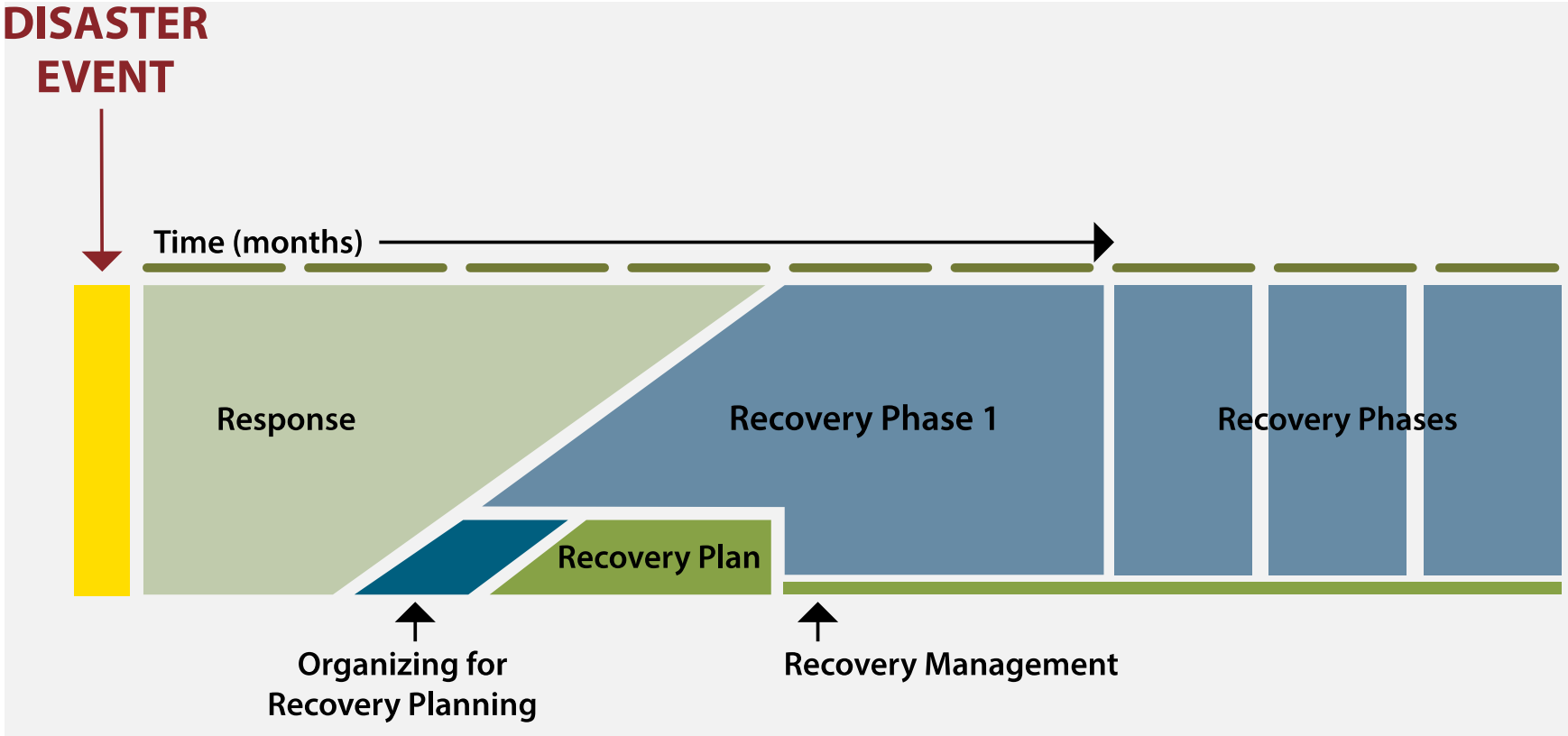


Agenda

- Introduction
- Hurricane María in Puerto Rico
- Lessons in disruptions in freight systems in Puerto Rico
- Additional considerations for the future

Introduction

- Disaster recovery timeline



Introduction

- Disruptions in freight systems
  - Direct impacts to freight infrastructure
  - Cascading failures
  - Logistics
  - Reconstruction program design
  - Programming and coordination
  - Institutional constraints

Hurricane María in Puerto Rico (2017)

- Overview of impacts and damages

  Category 4 hurricane (120 mph winds and record rainfalls)

  3000 deaths

  Over $90 billion in damages

  More than 700,000 housing units suffered damages

  More than 40,000 landslides

  Energy and telecom infrastructure was decimated

Lessons in disruptions in freight systems in Puerto Rico

- Direct impacts to freight infrastructure

  Roads, highways, ports, and airports

- Cascading failures

  Island-wide blackout

  Lack of redundancies in information technology infrastructure

Lessons in disruptions in freight systems in Puerto Rico

- Logistics
  - Location of ports and freight systems
    - Most supplies and materials enter through port in San Juan
  - Difficulties in reaching rural areas in mountainous regions
- Reconstruction program design
  - Retail vs place-based approach
  - How can supplies reach the most in need when they've been deemed ineligible for aid and reconstruction funds?
- Programming and coordination between agencies (State and Federal)
  - Parallel efforts and programs that bottlenecked each other

Lessons in disruptions in freight systems in Puerto Rico

- Institutional constraints
  - Fiscal policy
    - Tax on inventory
    - Austerity regime
    - Infrastructure quality prior to storms
- Institutional capacity
  - Austerity regime
  - Lack of in-house expertise and reliance on outside consultants
- International policy
  - Jones Act

Additional considerations for the future

- Additional considerations for the future

  Cumulative disaster context

    2020 earthquakes

    COVID-19 Pandemic

    Hurricane Fiona (2022)

Questions?

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RESILIENT FREIGHT PLANNING – LESSONS FROM UKRAINE AND PUERTO RICOTRANSPORTATION RESEARCH BOARD APRIL 2023 WEBINAR

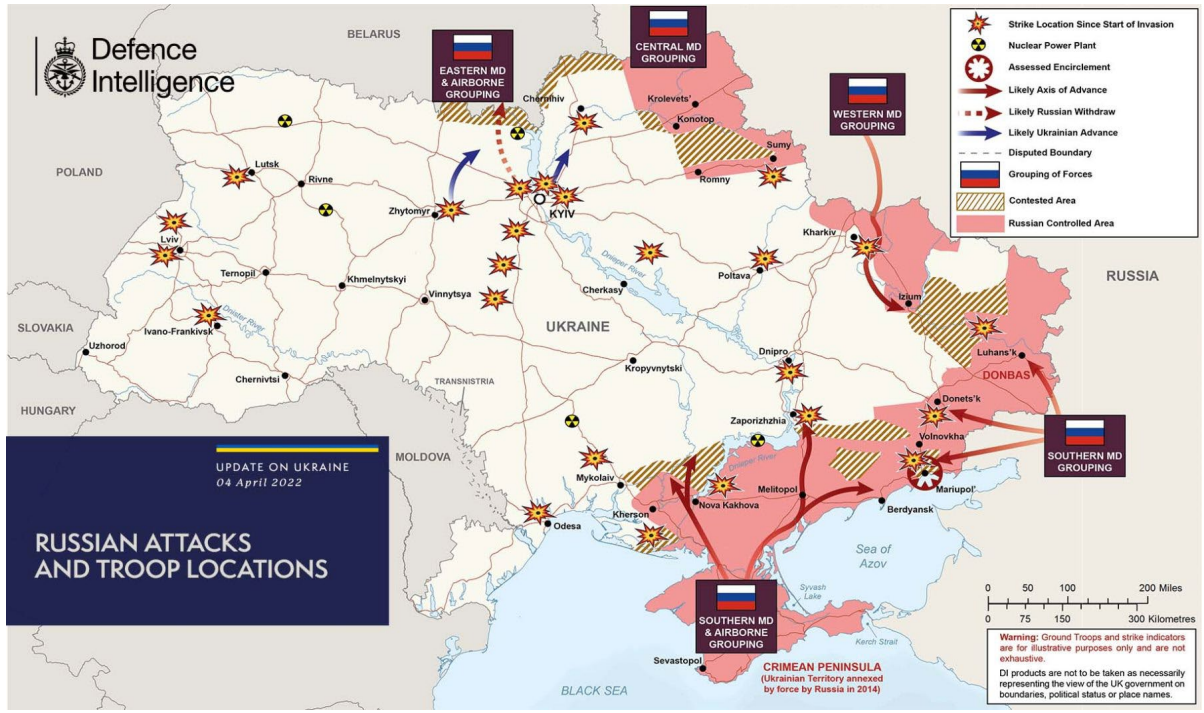
Andrey Sokolov, Tully logistics, Ukraine

TULLY
Logistics

Before war

- Company profile before war: port agency, forwarding services
  - Over 800 port calls per annum
  - 50+ personnel

- Offices in:
  - Odessa
  - Yuzhne
  - Nikolaev
  - Kherson
  - Chornomorsk

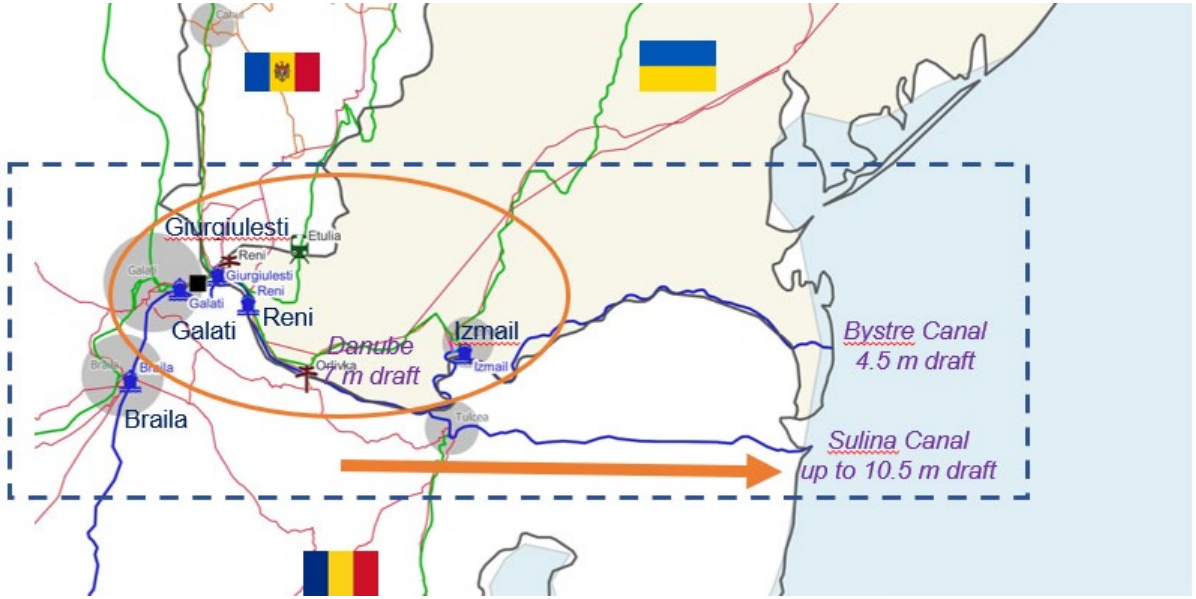


First days of war

- You are frustrated
- No one knows what will happen next
- People start running from country
- Business completely stopped
- You don’t know whether tomorrow you shall be able to buy food

Adoptation

- In a 1,5 months of doing nothing, first activities are about to happen
- Shock is decreasing
- You are not afraid of going to the street
- Agri export started first shipments from Danube river ports



Development

- Companies adapt to new circumstances
- Nikolaev area was stabilized
- First tankers with vegoil were chartered for Danube ports
- Start of transshipment of agri-products from Danube ports by many companies

Current state

- Reni and Izmail ports increased turnover almost to 1 mio of products per month
- A lot of private transshipment companies appeared every corner
- Sulina channel become congested
- Ukraine dredged channel Bystroe
- Container cargoes started to be transshipped in Danube ports (to/from Constanta)
- All traffic routes being changed to Danube ports or inland
- Grain initiative was implemented in Summer 2022, with very limited amount of vessels in/out due to joint inspections
- Only three deep-sea ports were included in Grain initiative

TULLY
Logistics

Today's presenters

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Upcoming events for you

February 8, 2023

TRB Webinar: Truck Parking Strategies, Technologies, and Partnerships

June 28, 2023

TRB Webinar: The Future of Supply Chains for Transportation Users and Providers

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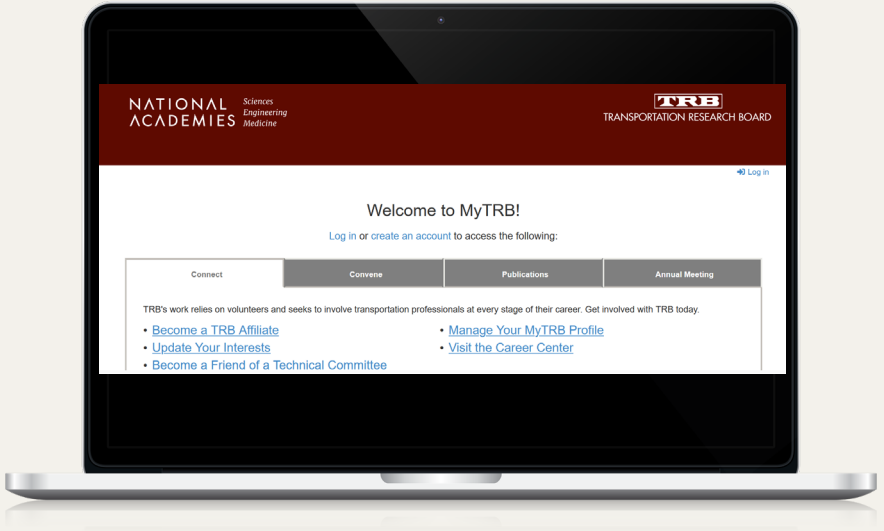

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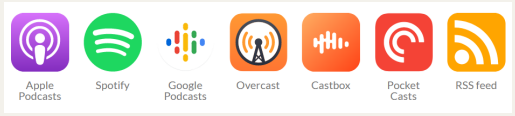

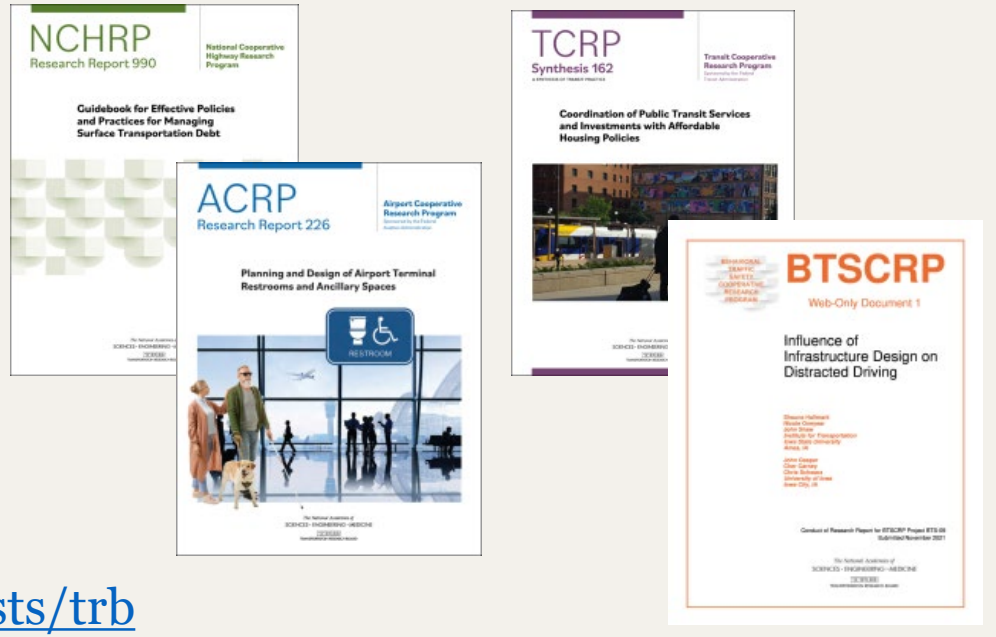

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