



U.S. ARMY

Lack of Resilience in Transportation Networks: Balancing Efficiency and Resilience

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US Army Corps
of Engineers

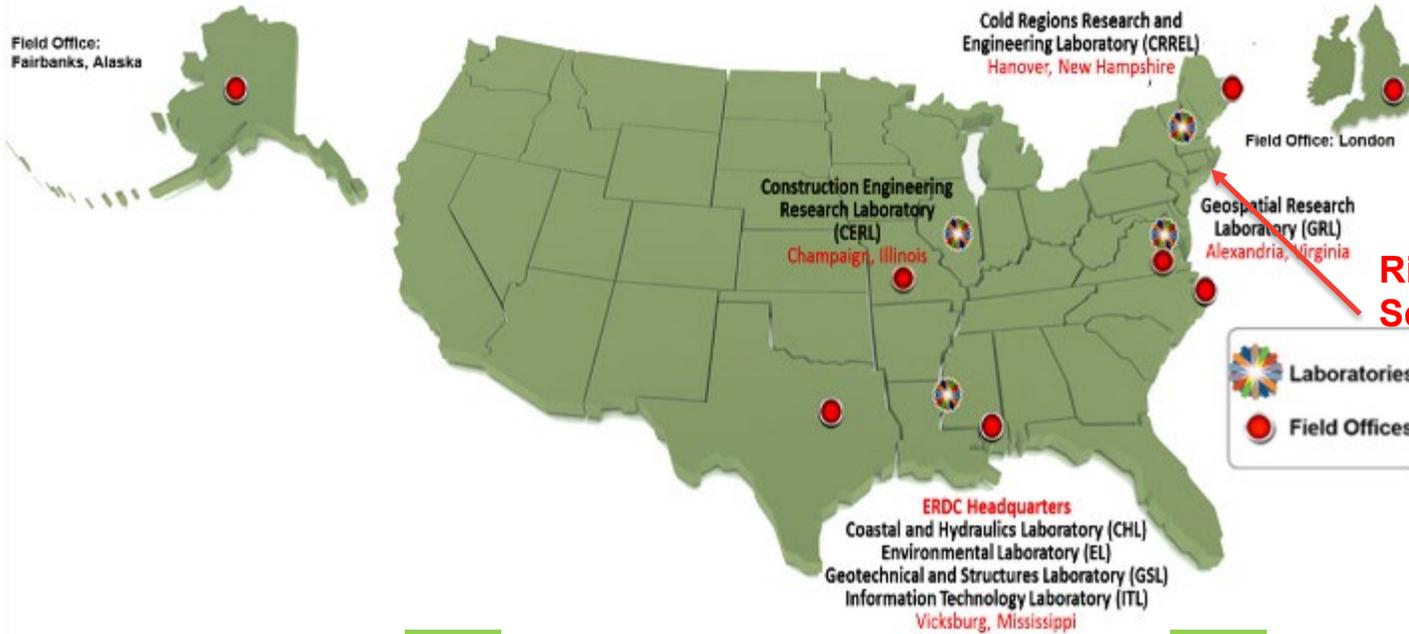
*This presentation does not necessarily reflect the views of the
United States Government, and is only the view of the author*



ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

DISCOVER | DEVELOP | DELIVER

About Army Engineer R&D Center



7 Laboratories

- Coastal and Hydraulics Laboratory (CHL)
- Cold Regions Research and Engineering Laboratory (CRREL)
- Construction Engineering Research Laboratory (CERL)
- Environmental Laboratory (EL)
- Geospatial Research Laboratory (GRL)
- Geotechnical and Structures Laboratory (GSL)
- Information Technology Laboratory (ITL)

**Risk and Decision
Science Team
Boston, MA**

Annual Research Program Exceeding
\$1.3 Billion

People

2100 Strong
61% E&S
71% of E&S with
Advanced Degrees
29% of E&S with PhD

Core Competencies

- Blast and Weapons Effects on Structures and Geo-Materials
- 3-D Mapping and Characterization
- Cold Regions Science and Engineering
- Civil and Military Engineering
- Computational Prototyping of Military Platforms
- Coastal, River, and Environmental Engineering
- Military Installations and Infrastructure

Partners

All DoD Services
Army, Navy, Air Force, NASA, DHS, FEMA, DIA, NGA
Academia
68 EPAs with top engineering schools
Industry
172 CRADAs
International
14 international agreements with 7 countries

Outline

What is Happening?

Lessons from COVID Response and Recovery

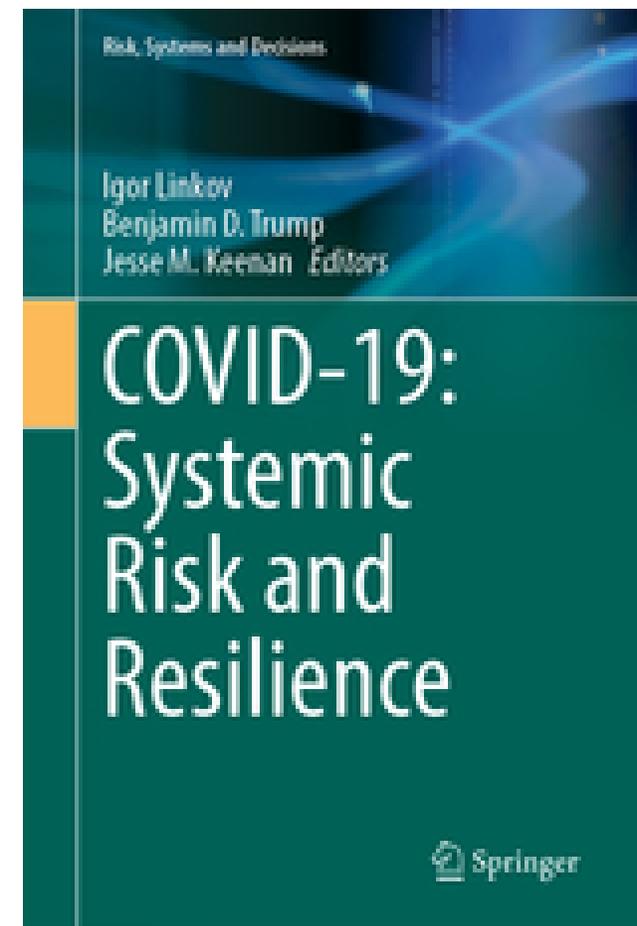
What Is Systemic Resilience?

One of many properties of System Affected by Threats
Differs from Risk

How Can it be Enhanced?

Refocusing from Efficiency towards Resilience
Resilience by Intervention and by Design

Future: Risk-based and Resilience-based approaches need to be integrated in comprehensive AI-enabled modeling framework to assure both efficiency and resilience in operation of complex systems we are relying on



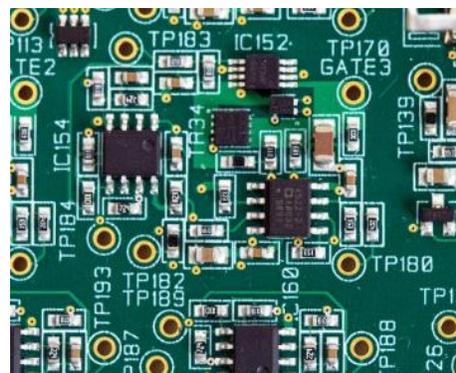


Supply chain interrupted: Here's everything you can't get now

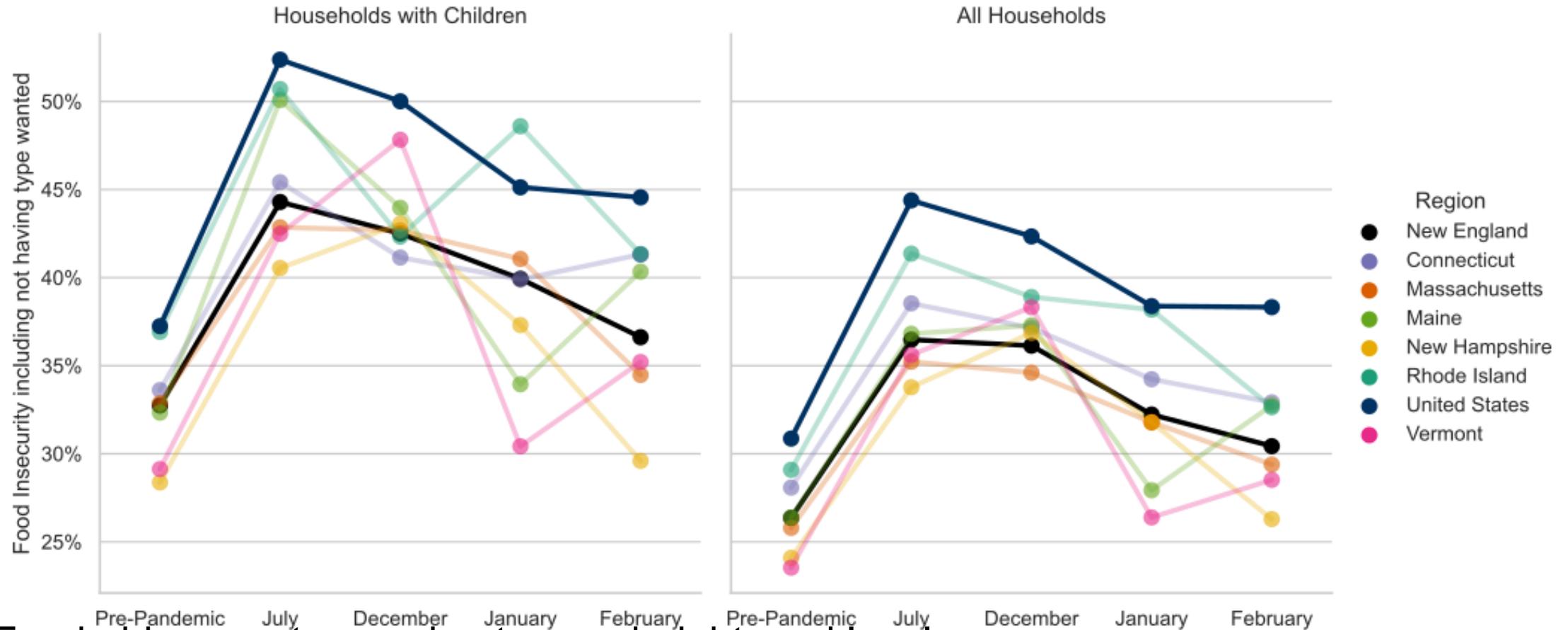


By [Jordan Valinsky](#), CNN Business

Updated 3:24 PM ET, Sun May 9, 2021

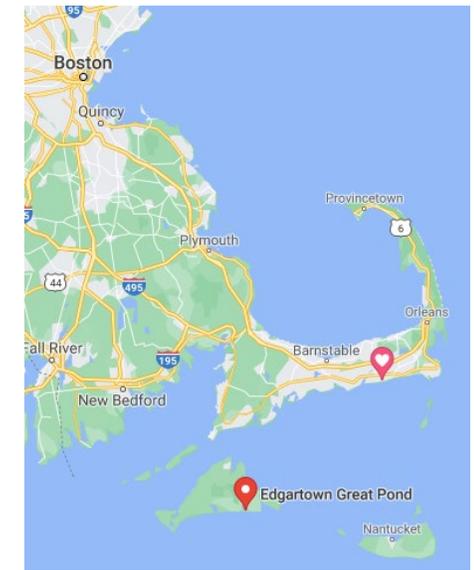
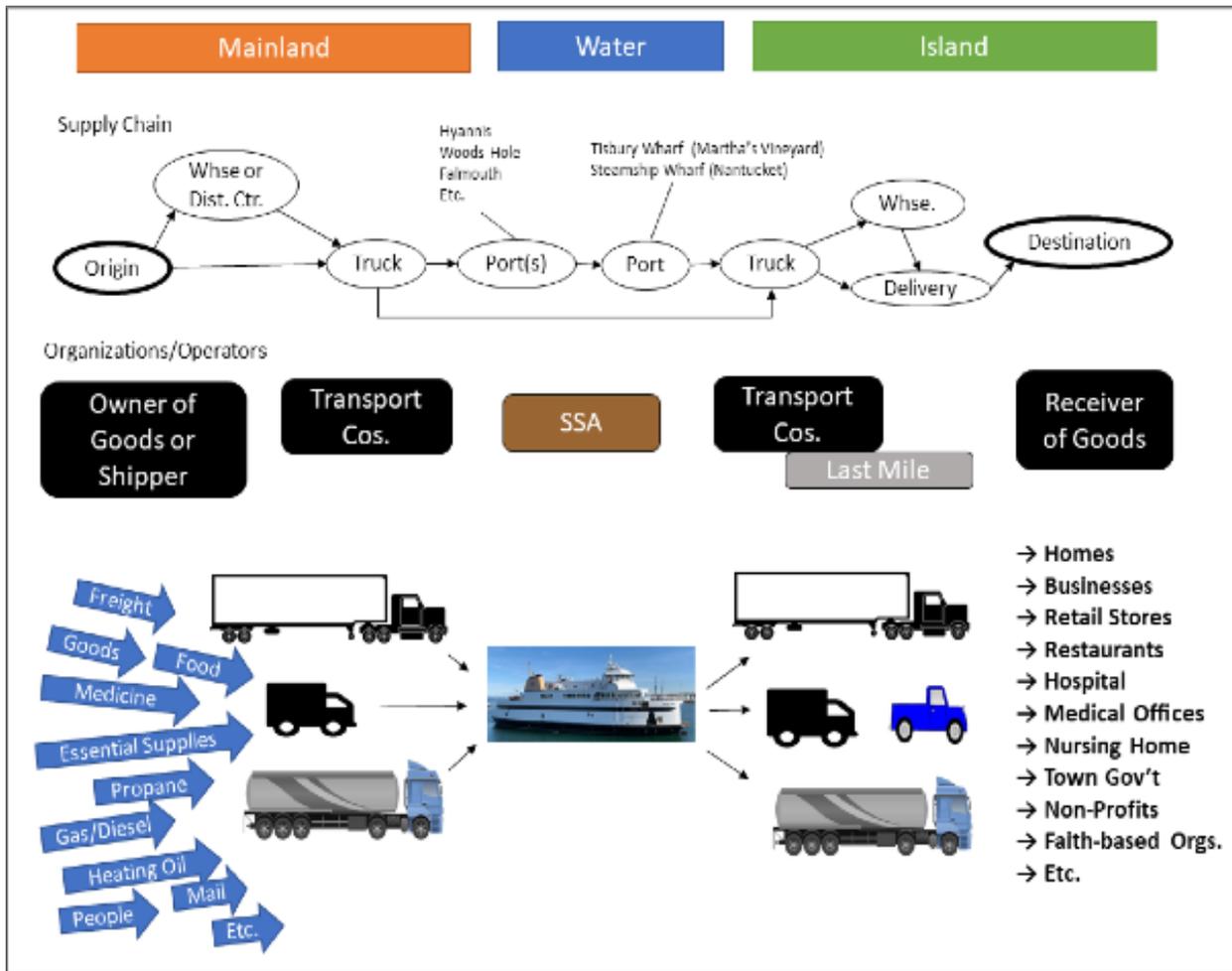


Nutritional or Caloric Deficiency in New England States



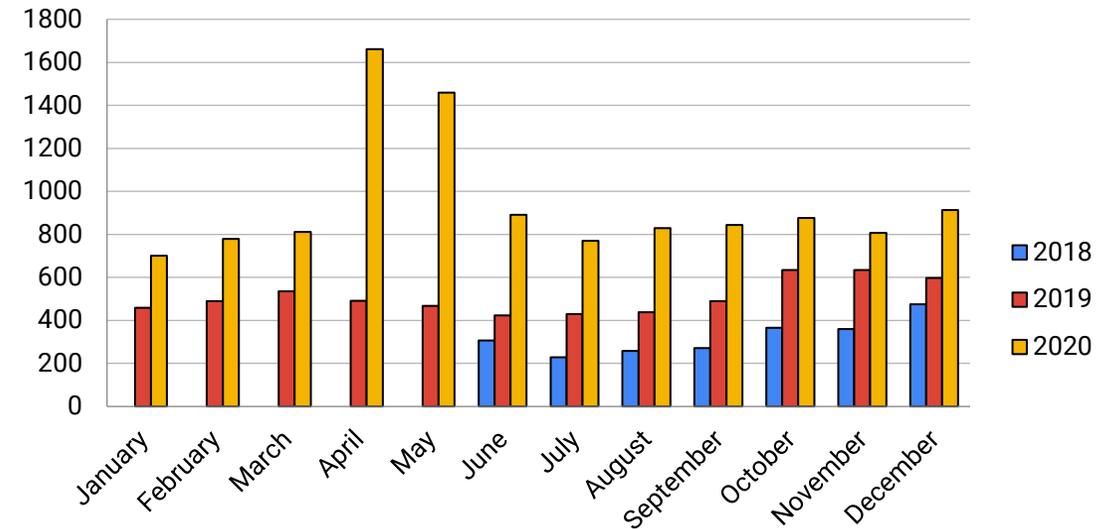
Food aid requests remain at same heightened level.

We're experiencing general, yet inconsistent, reduction in nutritional or caloric deficiency.



Food at Remote/Tribal Location

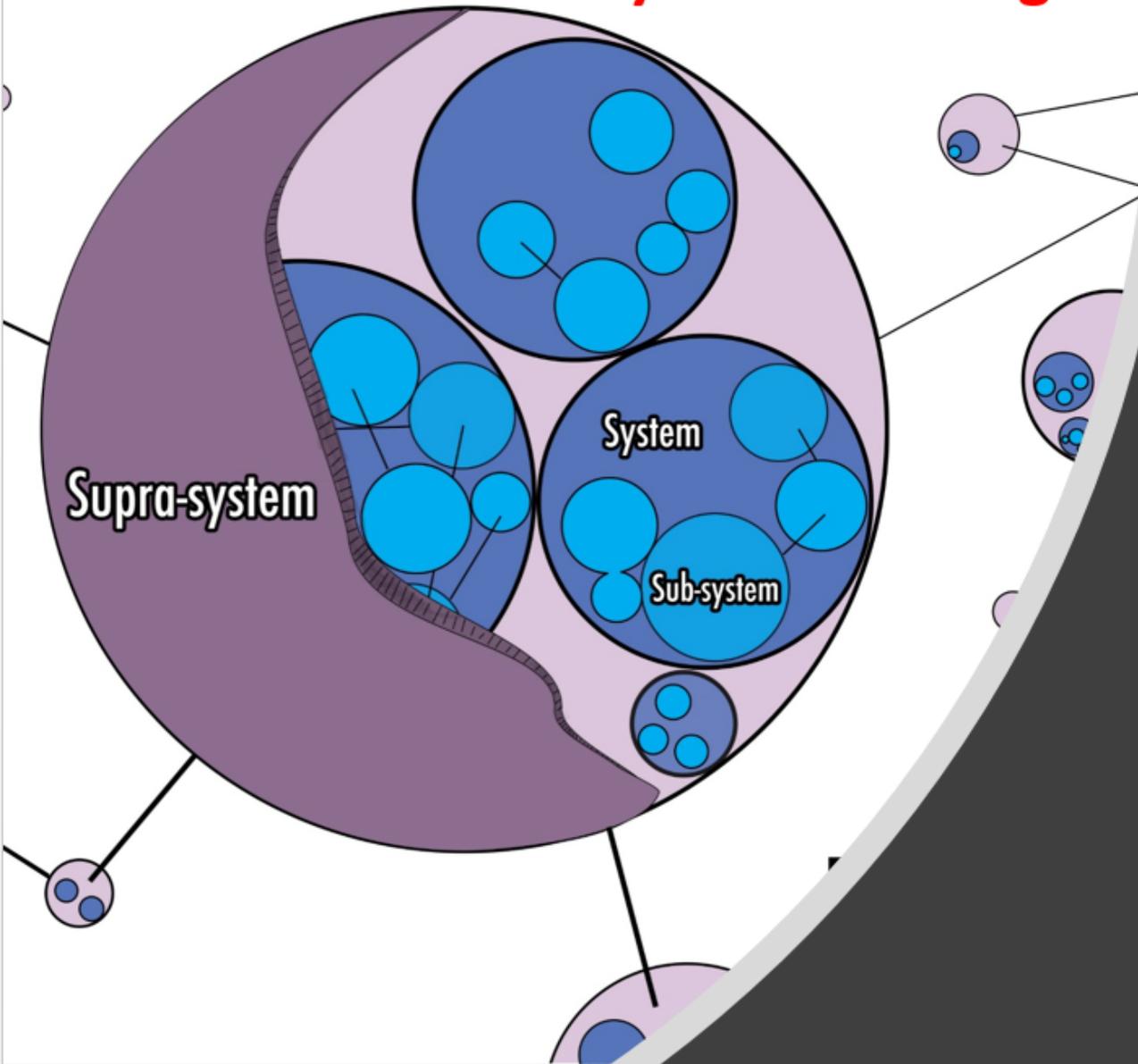
Martha's Vineyard: Monthly Pantry Visits



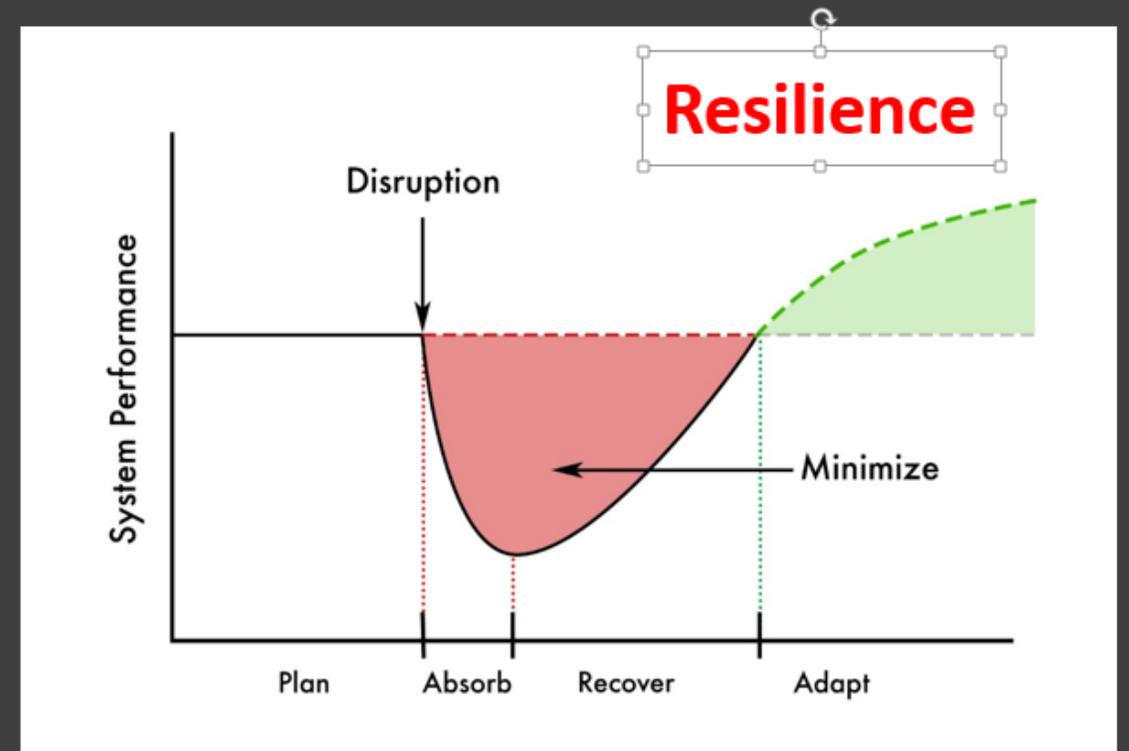
Pronounced need ongoing in remote, austere, or island communities – example includes Tribal communities on Martha's Vineyard.

Figure courtesy of Kayte Morris @ Island Food Pantry

System Thinking



What Makes Complex Systems (Communities) Susceptible to Threat?



After Linkov and Trump, 2019

Risk -- “a situation involving exposure to danger [threat].”

Security -- “the state of being free from danger or threat.”

Resilience -- “the capacity to recover quickly from difficulties.”

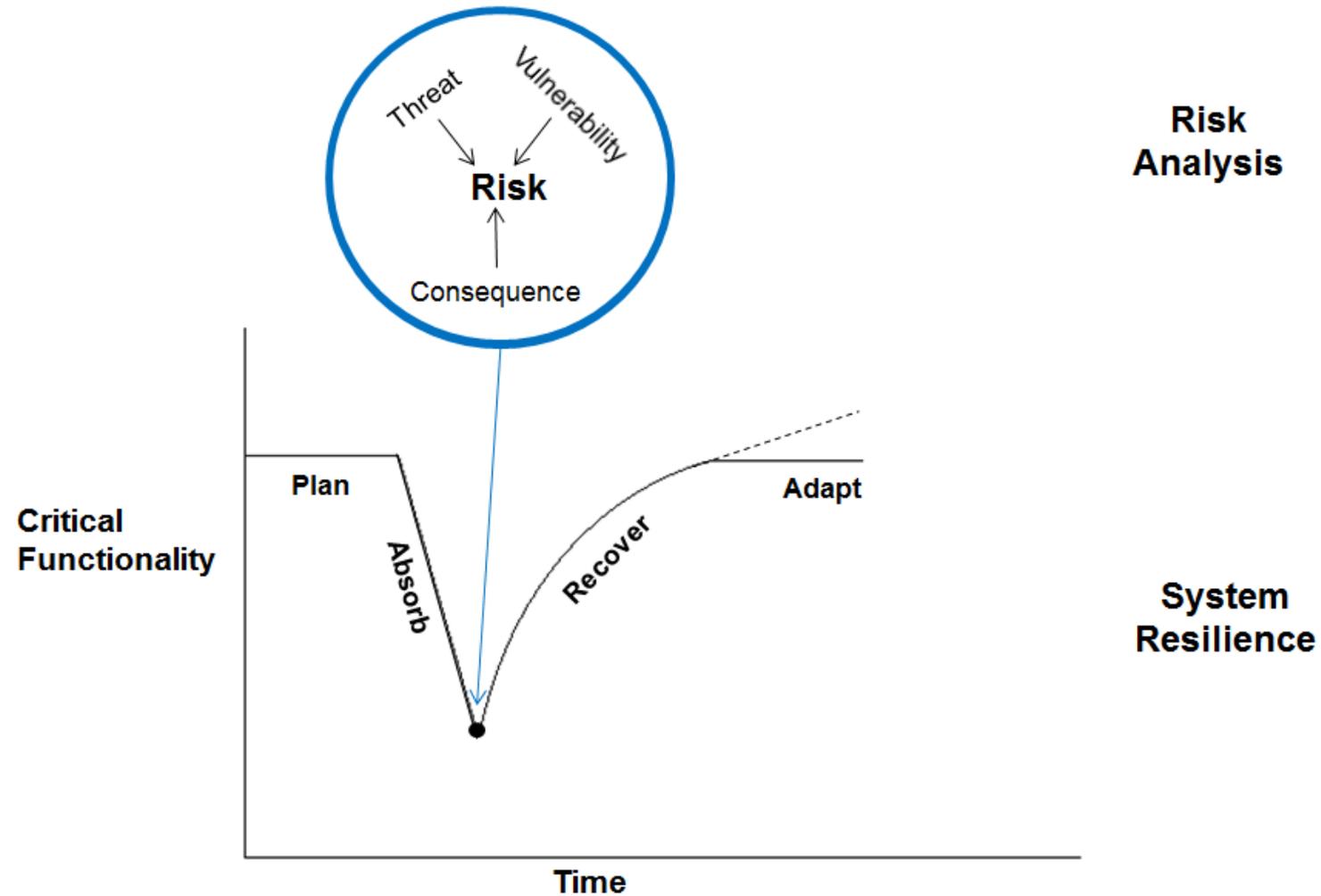
Don't conflate risk and resilience

'Risk' and 'resilience' are fundamentally different concepts that are often conflated. Yet maintaining the distinction is a policy necessity. Applying a risk-based approach to a problem that requires a resilience-based solution, or vice versa, can lead to investment in systems that do not produce the changes that

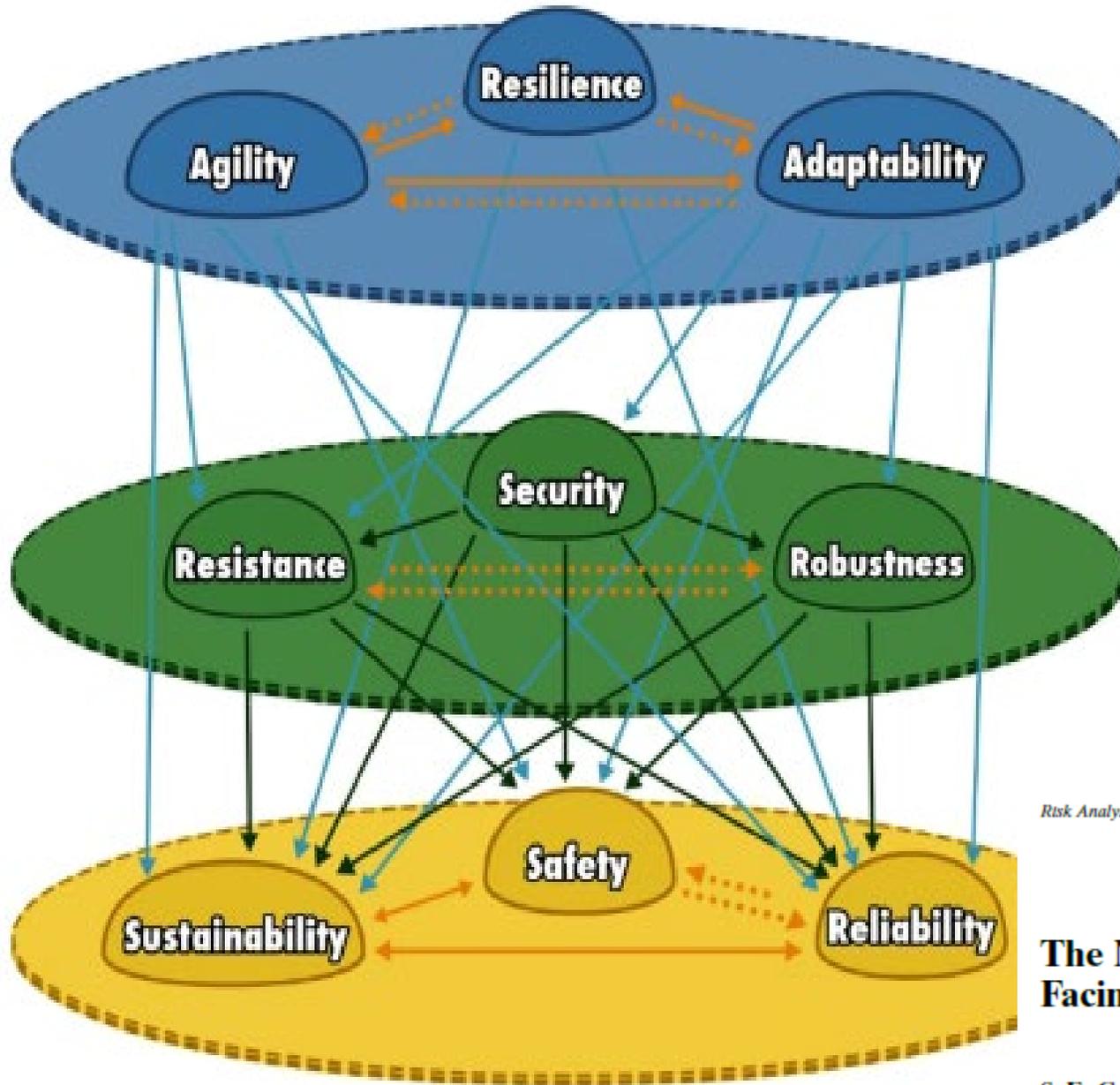
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Definitions by Oxford Dictionary

System Risk/Security and Resilience



After Linkov et al, Nature Climate Change 2014



System Affected by Threats: Taxonomy

Risk Analysts, Vol. 0, No. 0, 2020

DOI: 10.1111/risa.13577

The Need to Reconcile Concepts that Characterize Systems Facing Threats

S. E. Galaitsi ¹, Jeffrey M. Keisler ², Benjamin D. Trump ¹ and Igor Linkov ^{1,*}

Calls for Resilience

The White House
Office of the Press Secretary

For Immediate Release

October 31, 2013

Presidential Proclamation -- Critical Infrastructure Security and Resilience Month, 2013

CRITICAL INFRASTRUCTURE SECURITY AND RESILIENCE MONTH, 2013

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Over the last few decades, our Nation has grown increasingly dependent on critical infrastructure, the backbone of our national and economic security. America's critical infrastructure is complex and diverse, combining both cyberspace and the physical world -- from power plants, bridges, and interstates to Federal buildings and massive electrical grids that power our Nation. During Critical Infrastructure Security and Resilience Month, we resolve to remain vigilant against foreign and domestic threats, and work together to further secure our critical infrastructure systems, and networks.

(vi) Effective immediately, it is the policy of the executive branch to build and maintain a modern, secure, and more resilient executive branch IT architecture.

“Resilience” means the ability to anticipate, prepare for, and *adapt* to changing conditions and *withstand, respond to*, and *recover* rapidly from disruptions.

The White House
Office of the Press Secretary

For Immediate Release

May 11, 2017

Presidential Executive Order on Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure

EXECUTIVE ORDER

How to Enhance supply chain productivity and efficiency and be resilient?



Deloitte.

HDA RESEARCH FOUNDATION



Even small changes to build resilience have a cost, so organizational leaders should make decisions following detailed cost/benefit analysis. Determining the right level of investment requires understanding how vulnerable the organization is and identifying where opportunities for improvement exist.

nature

CORRESPONDENCE · 08 DECEMBER 2020

Combine resilience and efficiency in post-COVID societies

[publications/hda-role-of-distributors-in-the-us-health-care-industry.ashx](https://www.nature.com/articles/d41586-020-00000-0)

Poor Efficiency:

System cannot not accommodate a large volume of commuters driving at the same time.

Traffic congestions are predictable and are typically of moderate level.



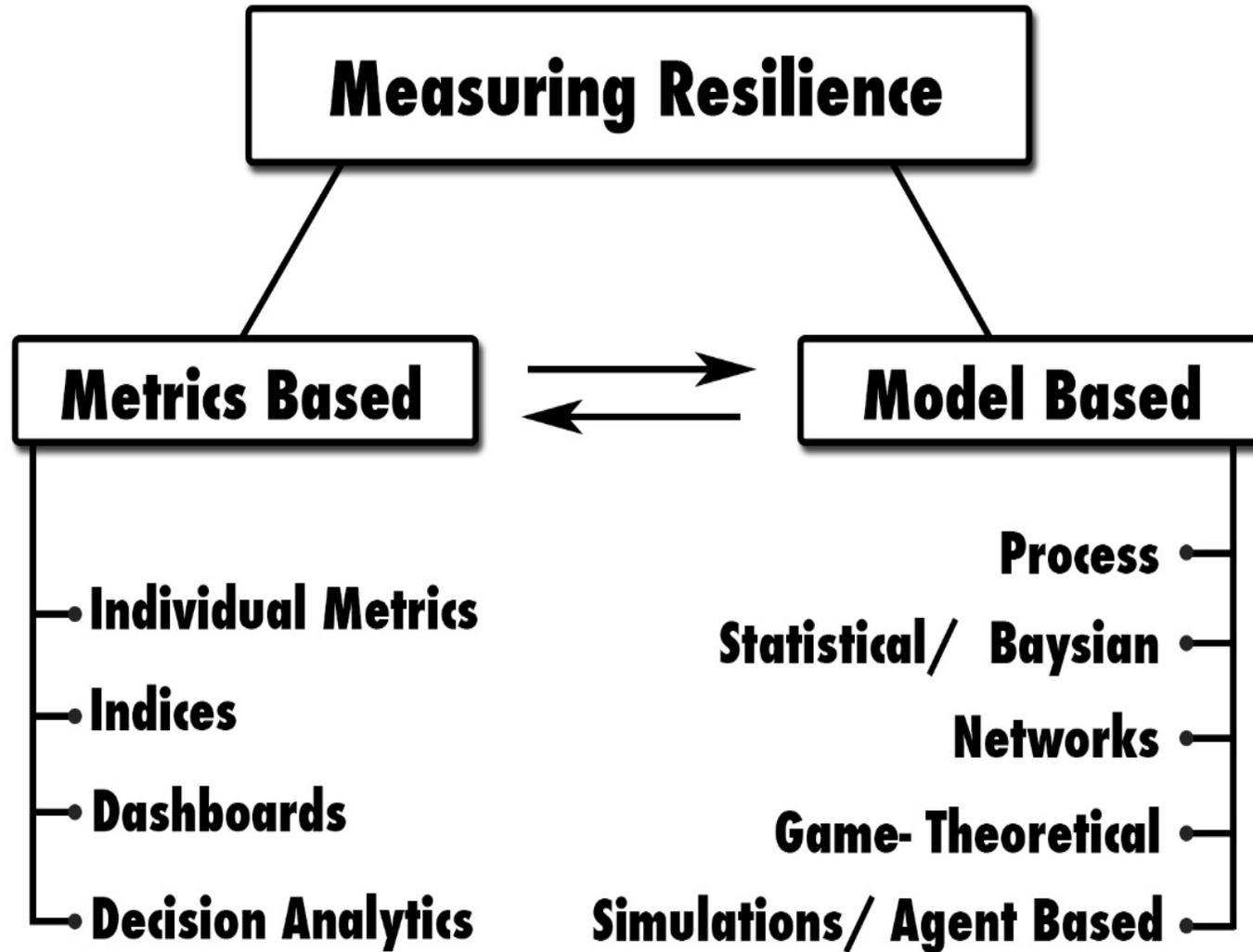
Lack of Resilience:

System cannot recover from adverse events
(car accidents, natural disasters)

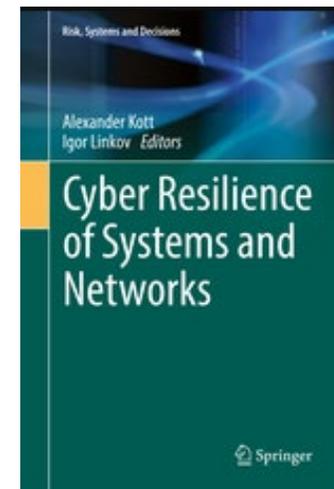
Traffic disruptions are not predictable and of variable scale.



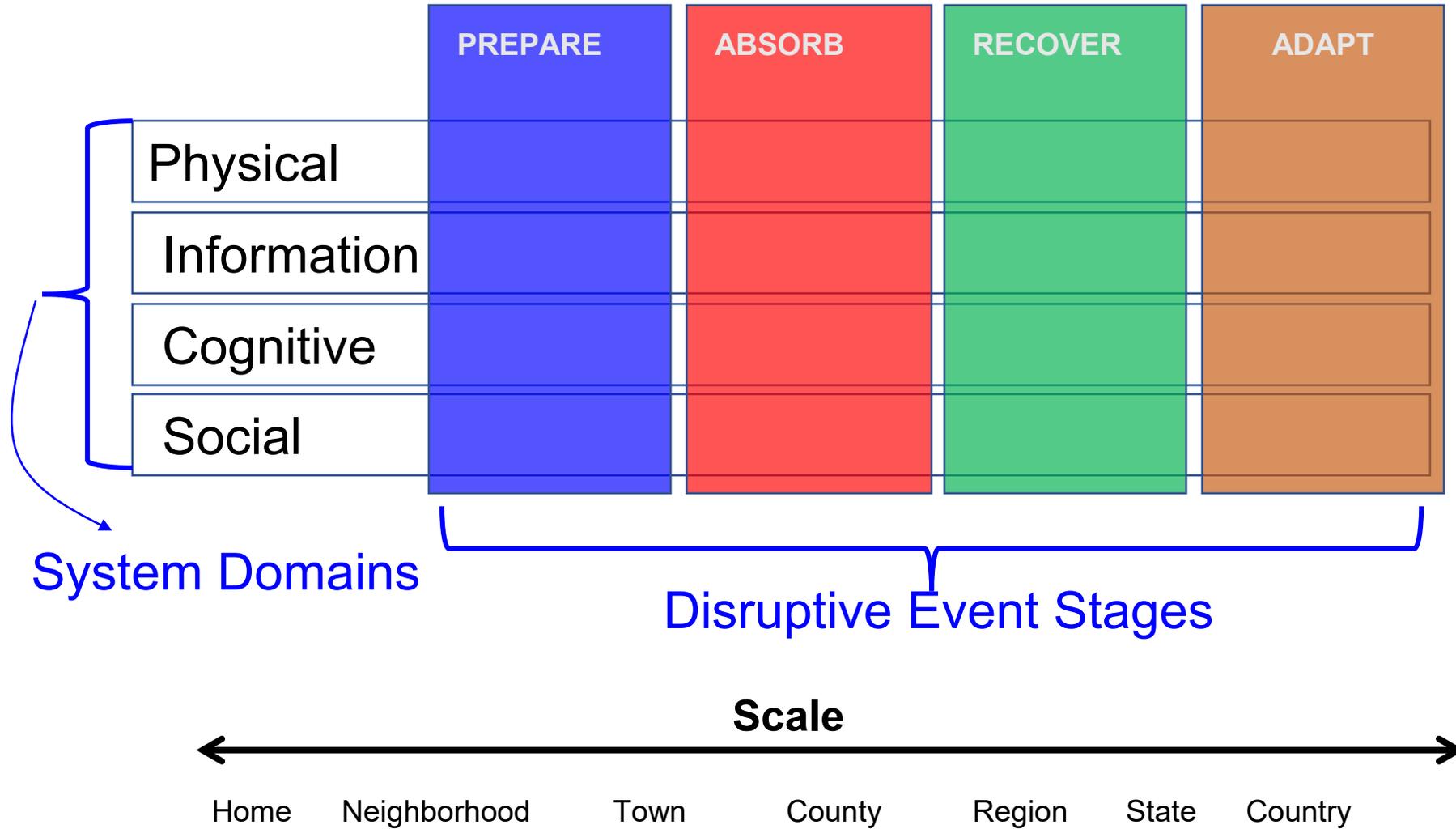
How to Quantify Resilience?



After
2019



Resilience Matrix



Assessment using Decision Maker Values

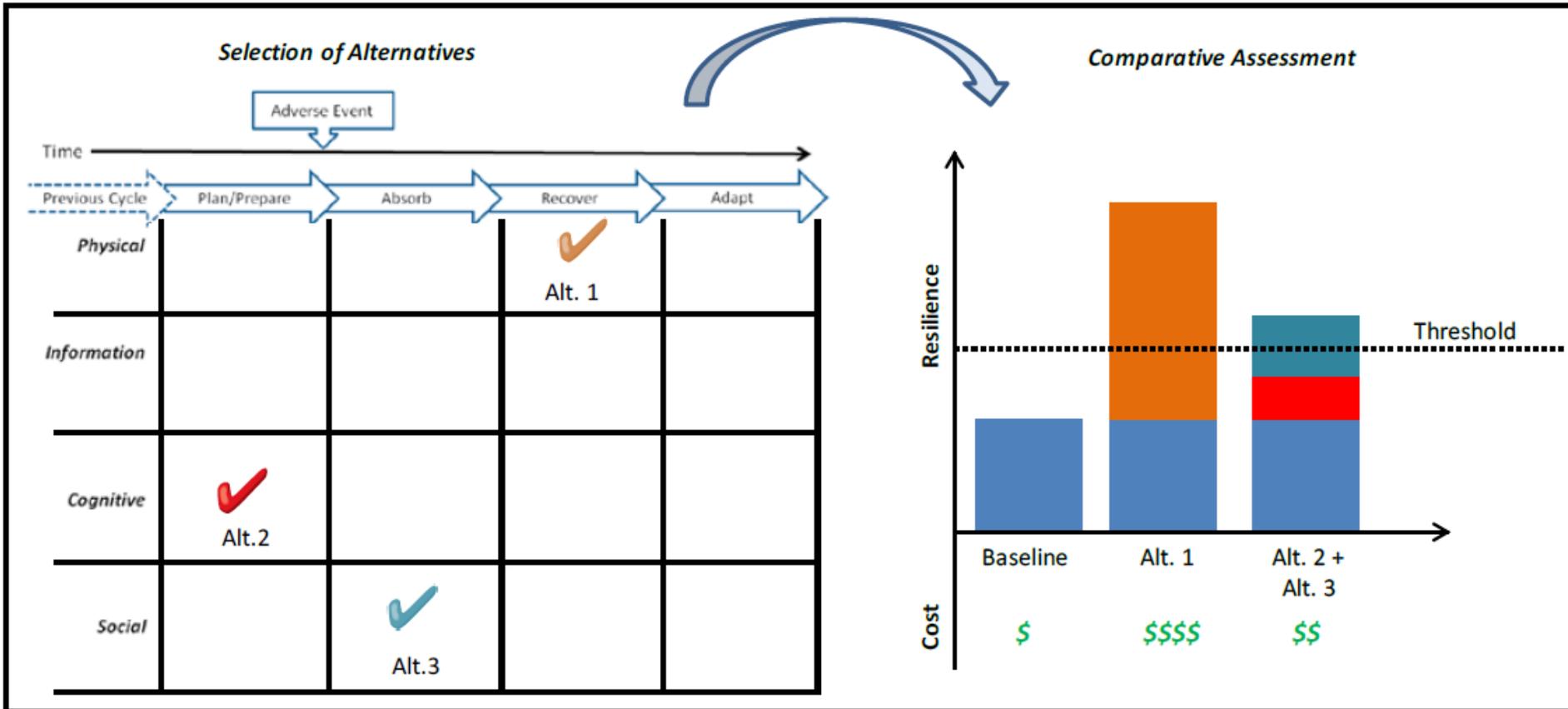


Figure 5: Comparative Assessment of Resilience-Enhancing Alternatives

Use developed resilience metrics to comparatively assess the costs and benefits of different courses of action

After Fox-Lent et al. (2015)

Network-based Resilience Theory?

System's *critical functionality* (K)

Network topology: *nodes* (\mathcal{N}) and *links* (\mathcal{L})

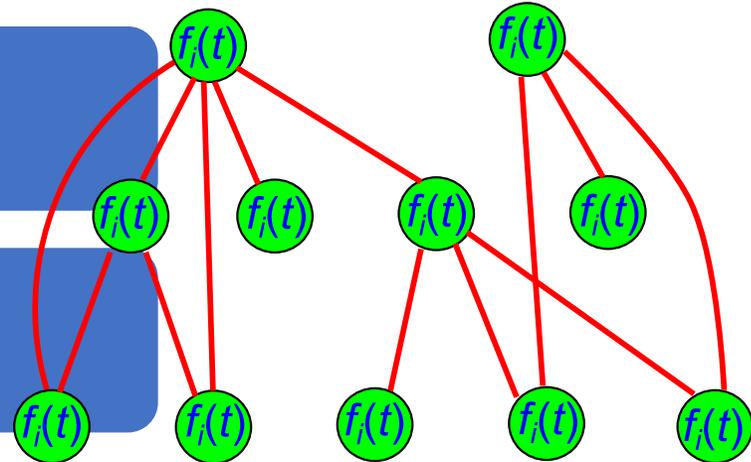
John K. Baker, P.E.

1st degree connection1st

Director of Operations (G-3/5/7) at U.S.Army Installation Management Command

Network *adaptive algorithms* (\mathcal{C}) defining how nodes' (links') properties and parameters change with time

A *set of possible damages* stakeholders want the network to be resilient against (E)



After Ganin et al., 2016

$$R = f(\mathcal{N}, \mathcal{L}, \mathcal{C}, E)$$

Case Study:

Transportation Network Model

+

Regional Economic Models, Inc.

Science

Decision
Analysis

Business
Case

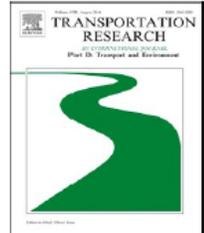


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Transportation Research Part D

journal homepage: www.elsevier.com/locate/trd



Lack of resilience in transportation networks: Economic implications



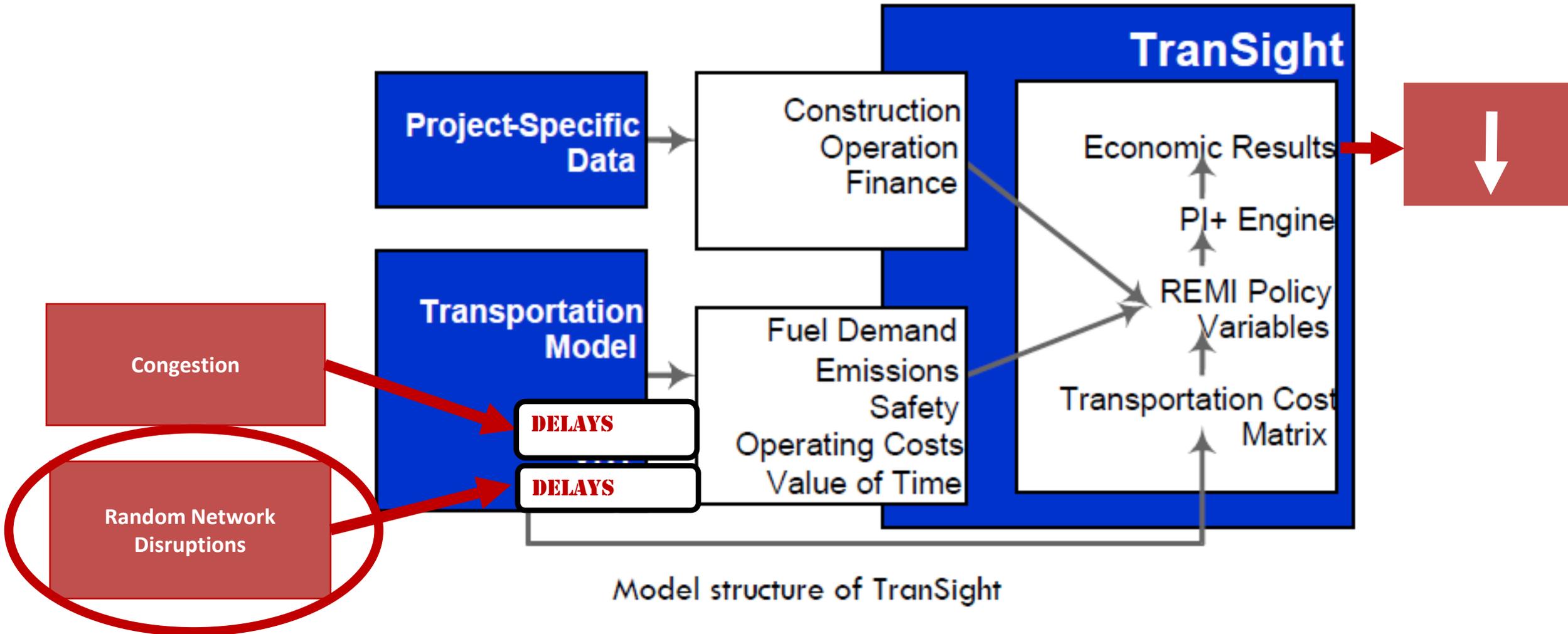
SCIENCE ADVANCES | RESEARCH ARTICLE

NETWORK SCIENCE

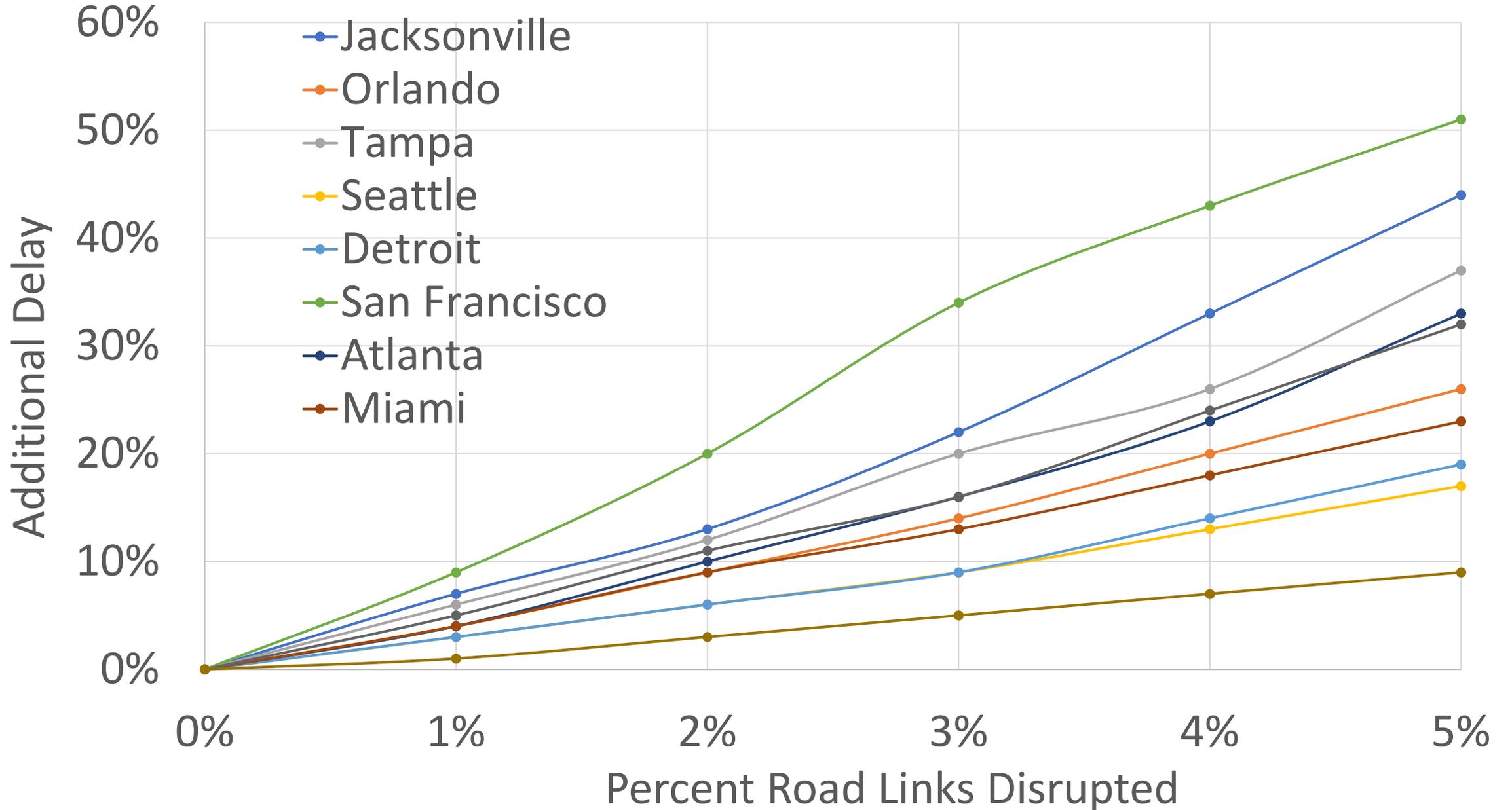
Resilience and efficiency in transportation networks

Alexander A. Ganin,^{1,2} Maksim Kitsak,³ Dayton Marchese,² Jeffrey M. Keisler,⁴
Thomas Seager,⁵ Igor Linkov^{2*}

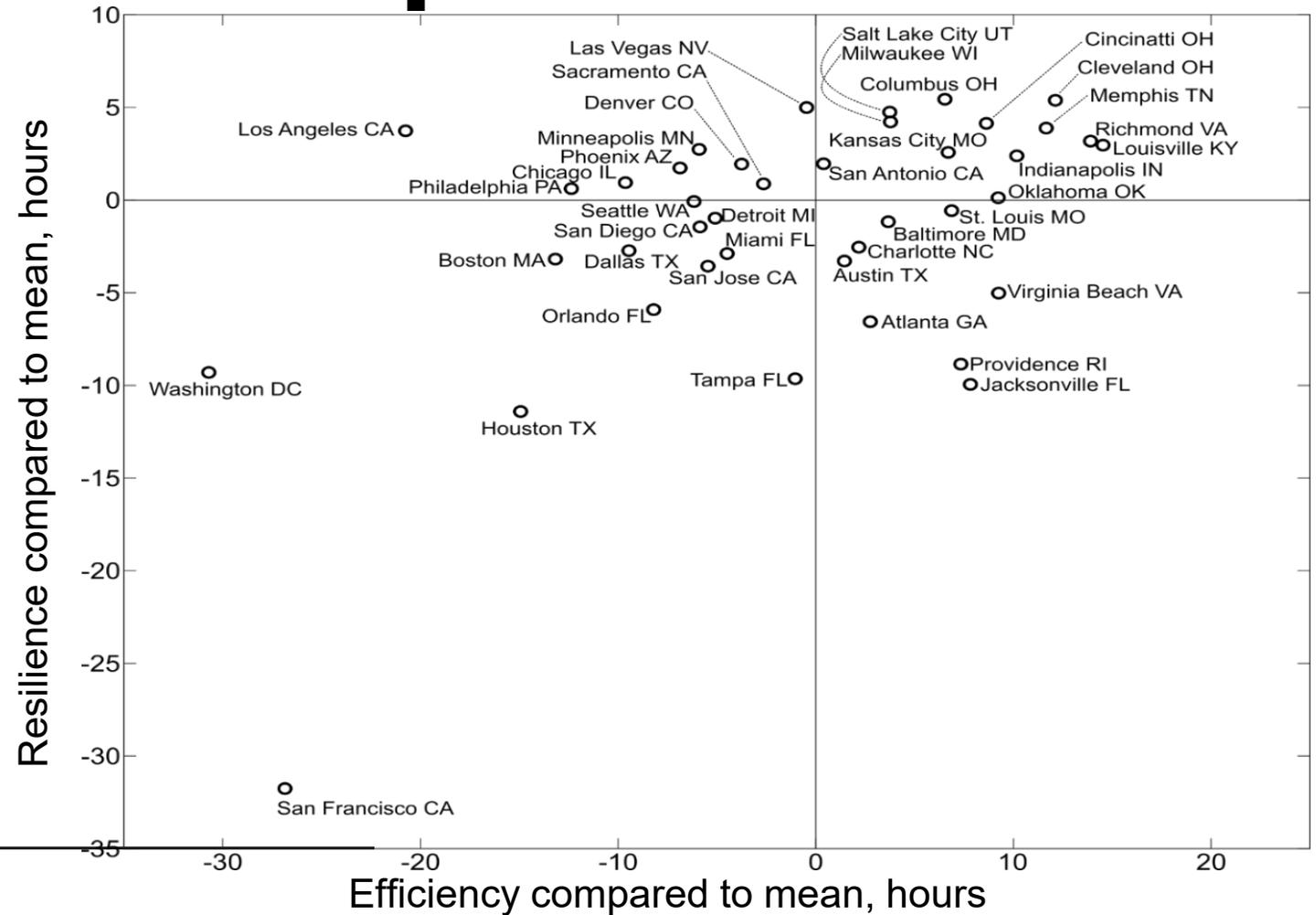
Integrating Resilience and Regional Economic Modeling



Impact of Transportation Network Disruptions on Travel Time



Resilience vs Efficiency at 5% disruption



SCIENCE ADVANCES | RESEARCH ARTICLE

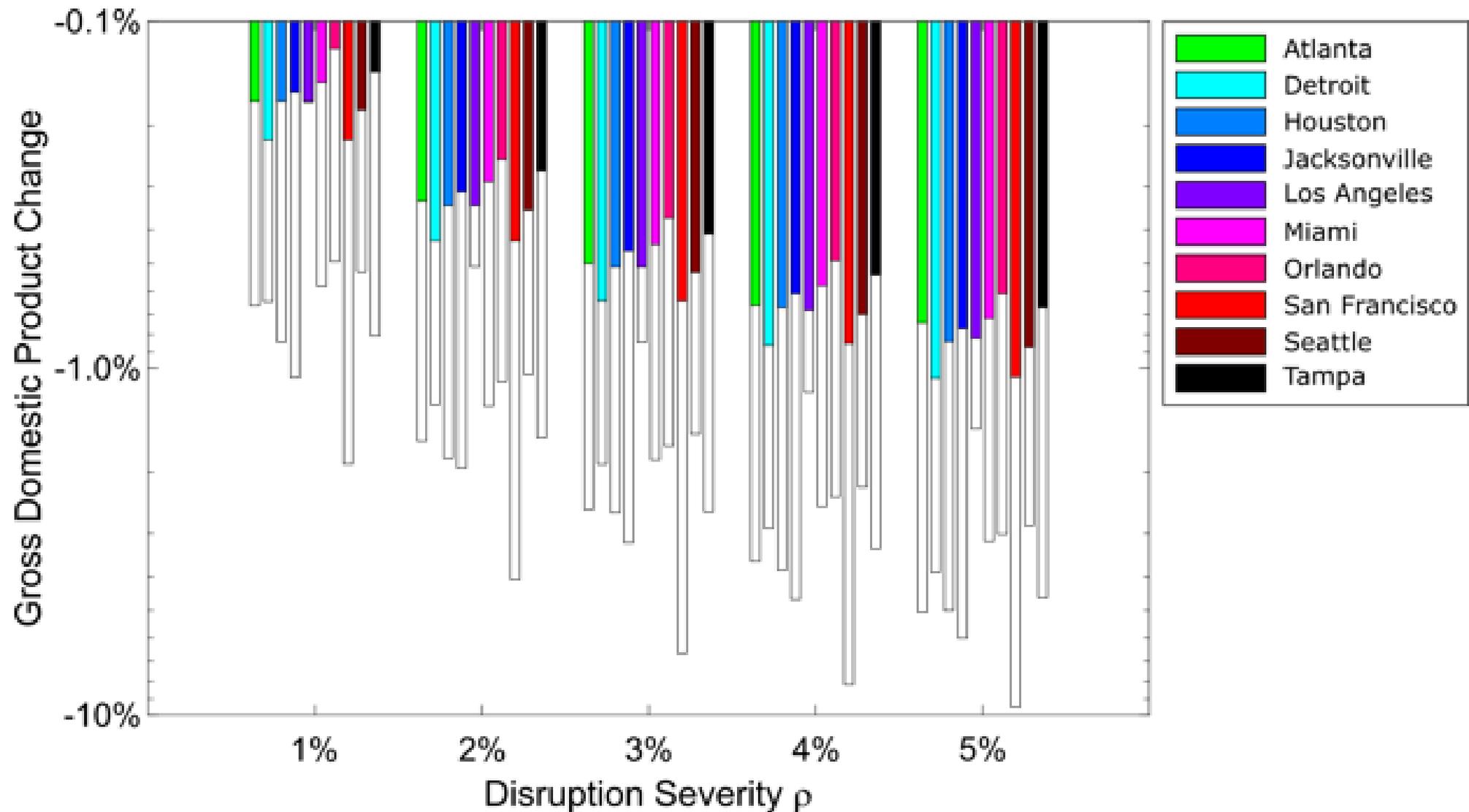
NETWORK SCIENCE 2017

Resilience and efficiency in transportation networks

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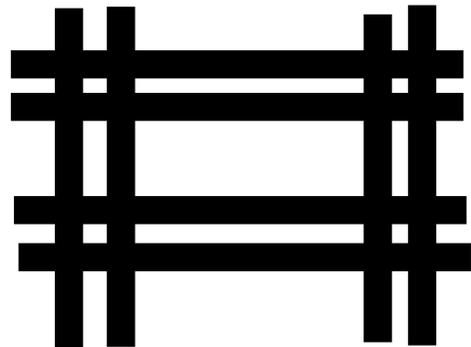
Lack of Resilience: Impact on GDP

Random Disruptions are Much More Consequential



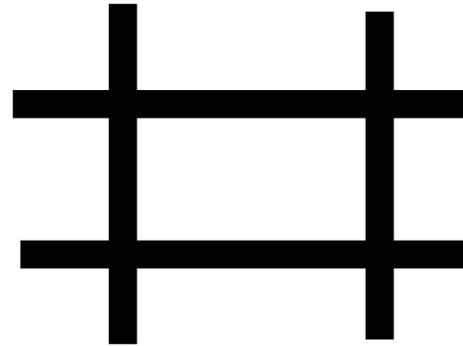
Managing Resilience is Different than Efficiency

Design to Maximize Efficiency



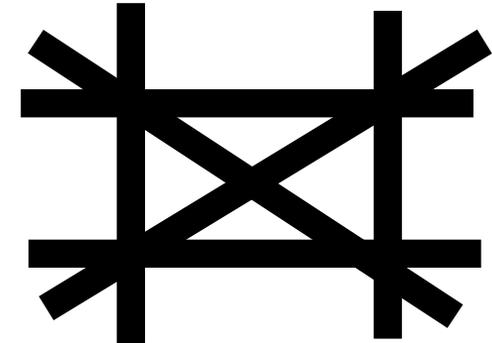
Efficiency

- the ability to move quickly when the network is functioning as designed
- cost effectively improved by increasing capacity on existing and highly utilized right of ways



Current System

Design to Maximize Resilience

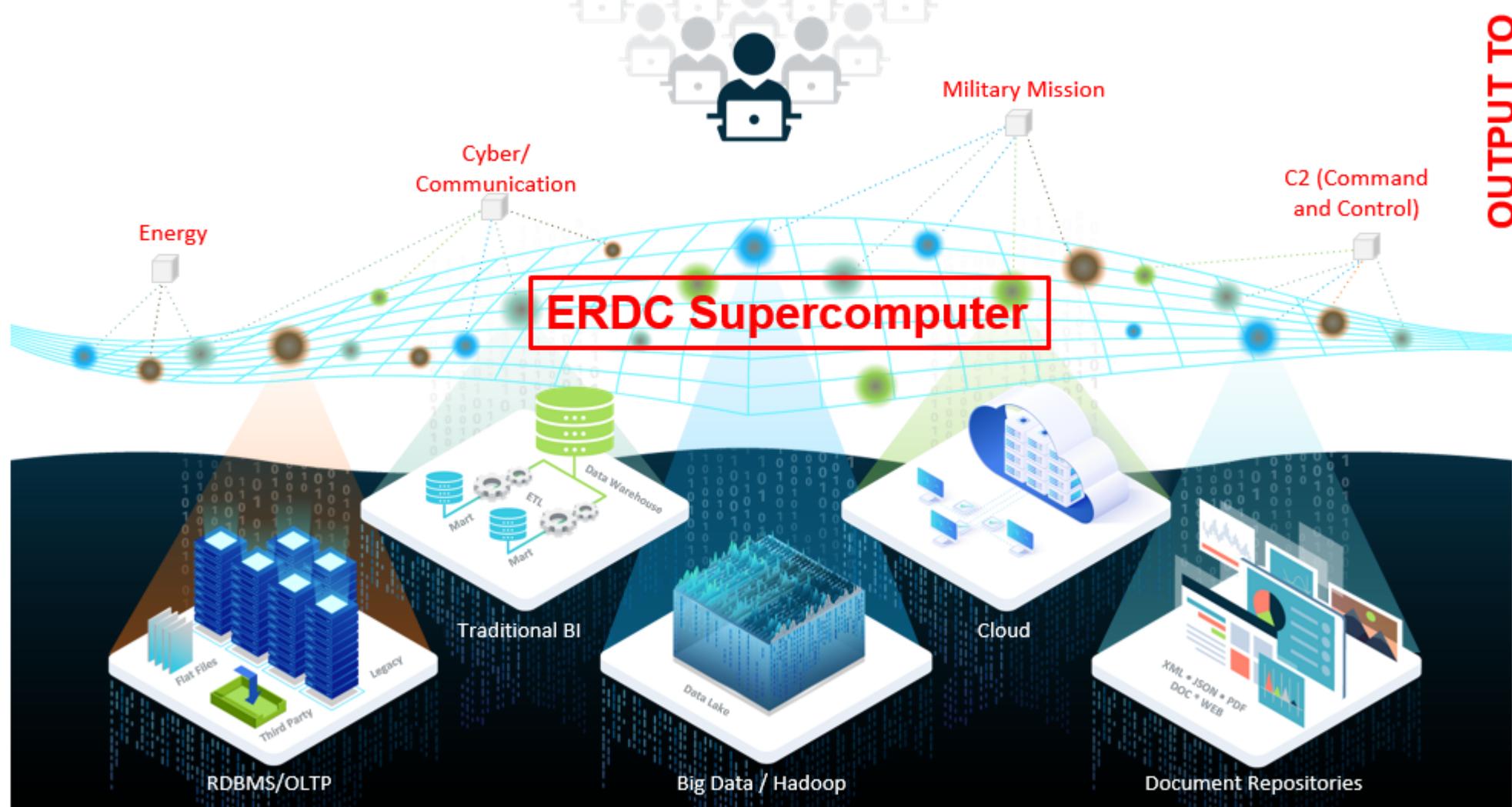


Resilience

- the ability to limit delays from network component failures
- improved by providing alternative route capacity when failure does occur

APPROACH: AI-DRIVEN DATA FABRIC ARCHITECTURE TO MAP INSTALLATION NETWORKS

Installation Managers



Data from
Installation and
Models

OUTPUT TO
NETWORK
RESILIENCE
MODEL

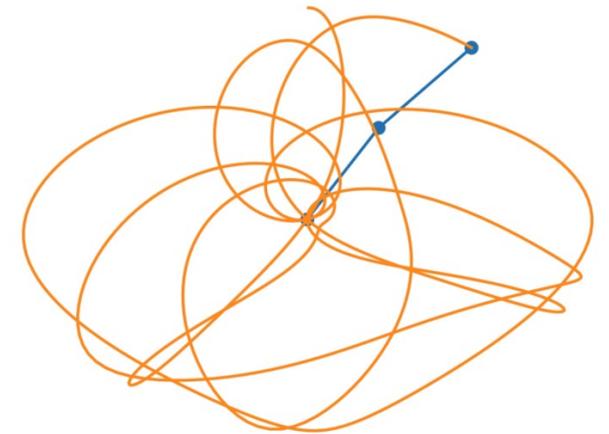
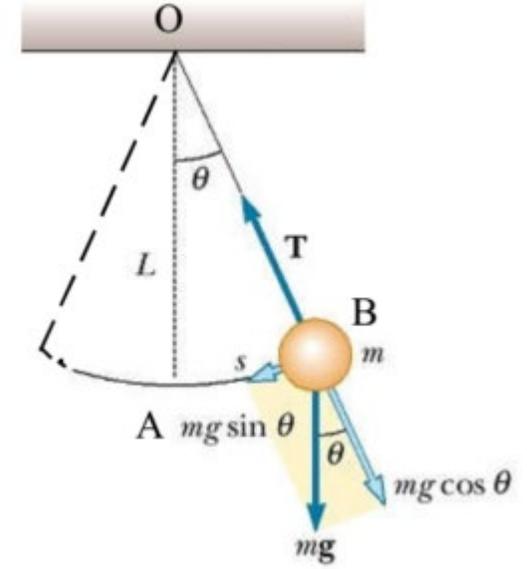
After Cambridge Semantics

US Army Corps
of Engineers.



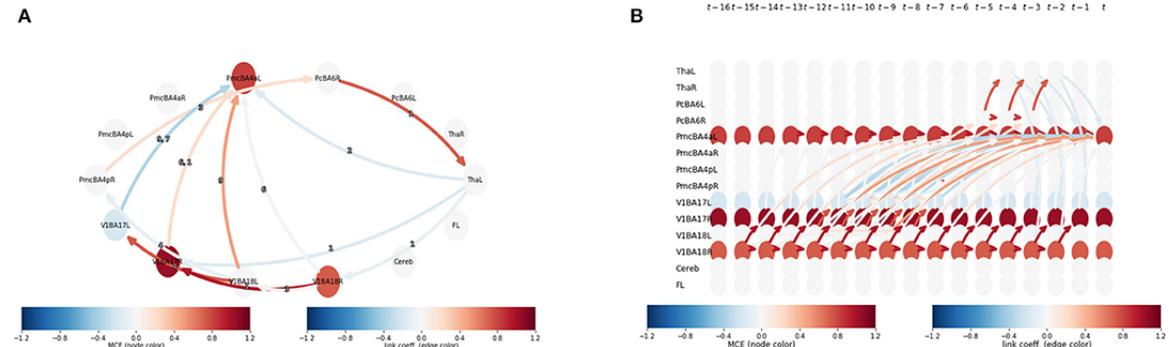
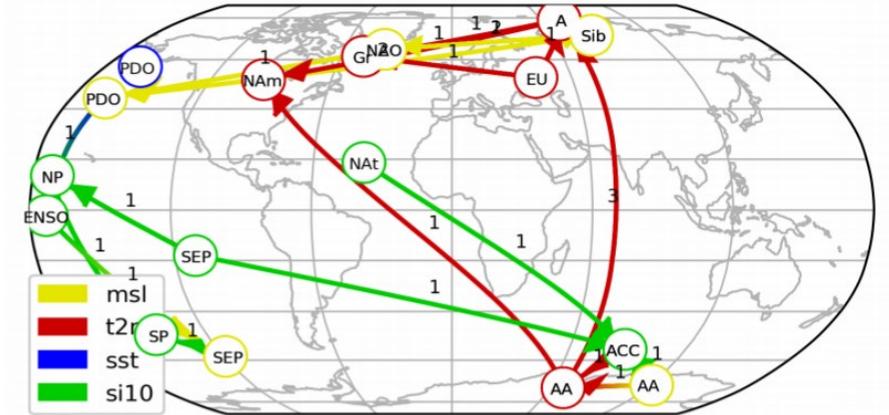
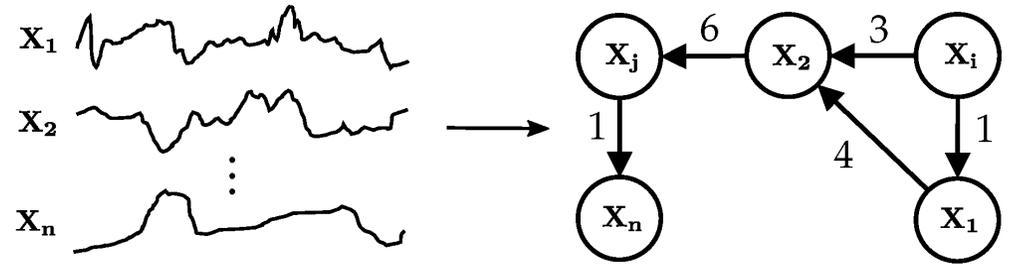
Why Machine Learning (ML)

- Many systems models are built from abstract mathematical principles and relationships. Real World systems are always more complex and data for real systems is usually problematic, **How do we assess resilience in the real world?**
 - Relationship chains may be unclear
 - Most valuable data will be private and may need to be inferred indirectly
 - Data may be too large for traditional visualization methods
- Plan for Success: How do we protect valuable information embedded in our models?



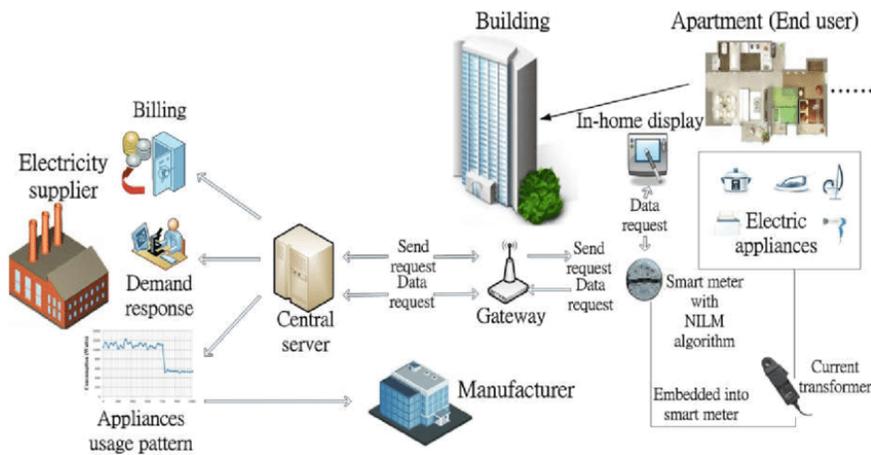
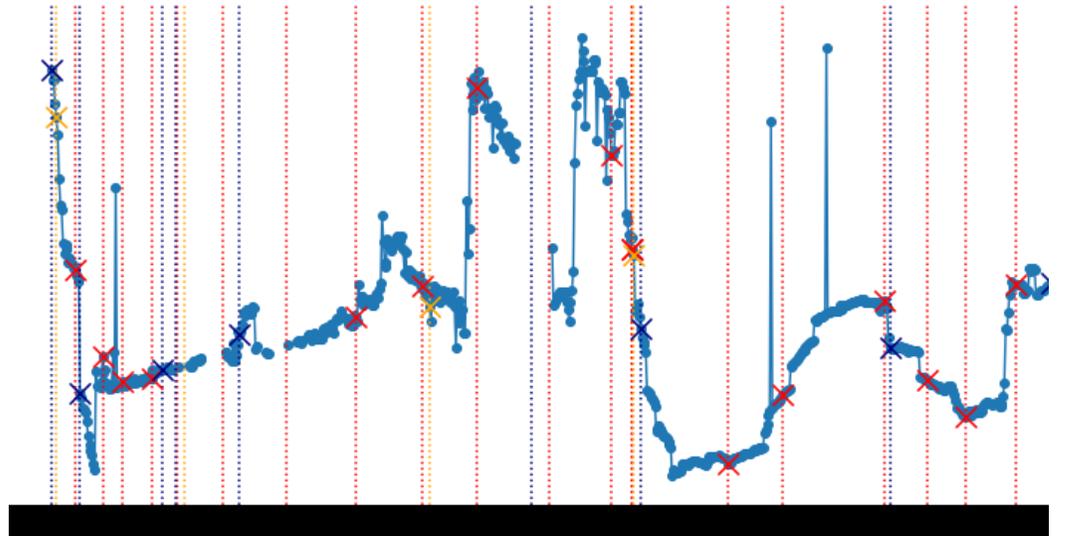
ML-based Causal Process Discover

- Given system measurements (for example, transactions, sensor readings or inventory levels) **infer network(s) of relationships**
- How do we differentiate between Correlation and Causation?
- Important trend in ML is ML-based Causal Analysis
- Can we infer sub-suppliers from inventory levels?

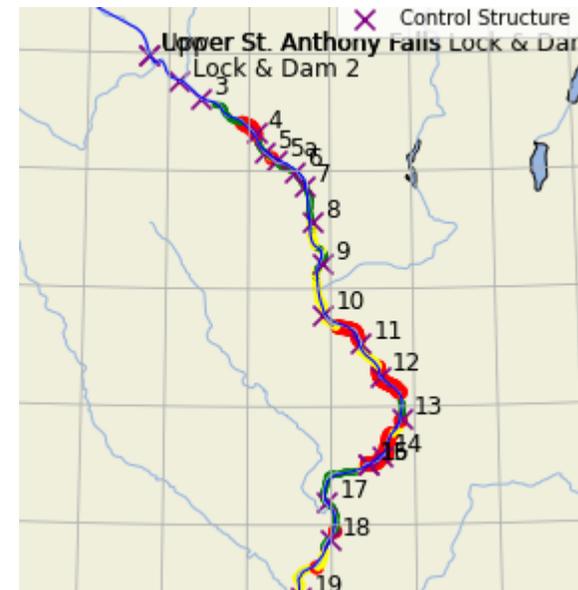
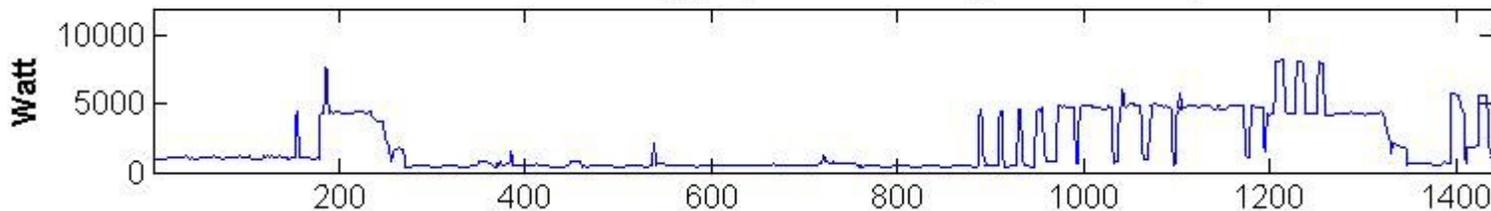


Standoff ML Inference

- Use of indirect measures to infer data we can't get directly

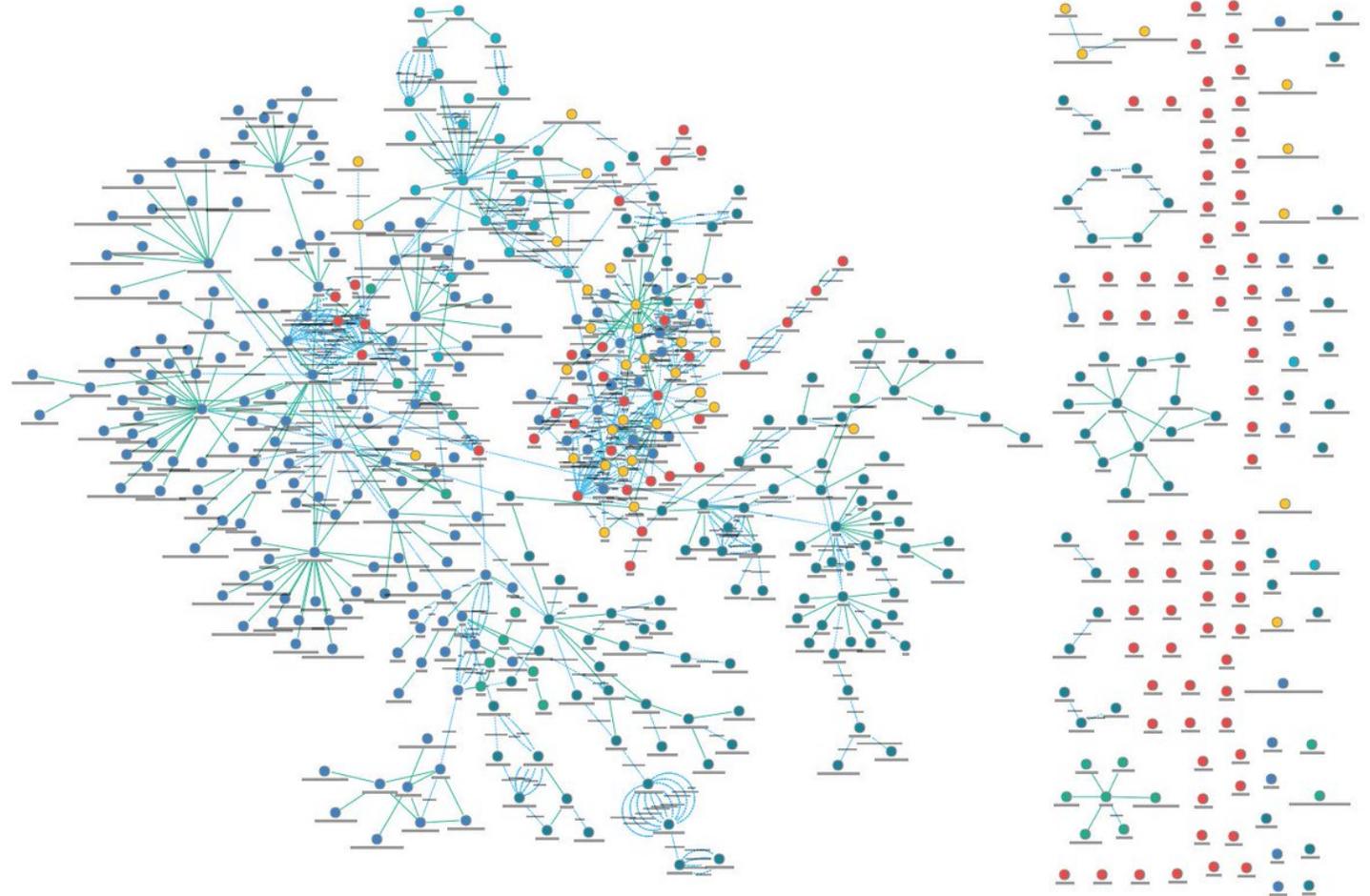


Whole-house Aggregated Power Signal of One Day



Real World Data Will be Very Large

- Exploration of Solutions for Visualization and First-cut Analysis of Very Large Data
- CambridgeSemantics “ANZO” Tool
- Current model includes detailed BEA, CFS & BLS data
- Adding Worldwide IN_OUT Tables



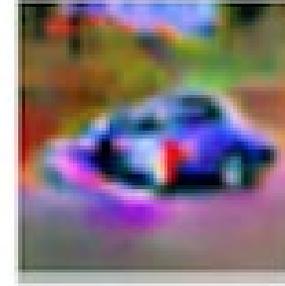
Protect our ML Models

Model Inversion Attack

- ML-based Real world Systems Models will be very Useful (Dangerous!)
- Defense in Depth
- Homomorphic Encryption



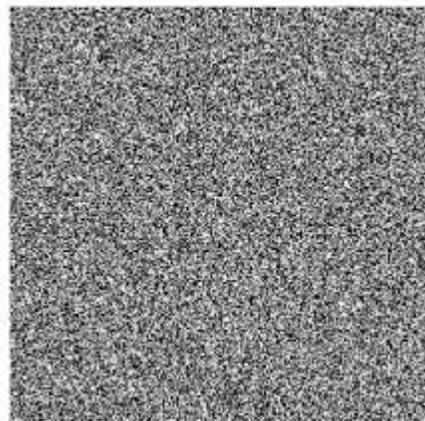
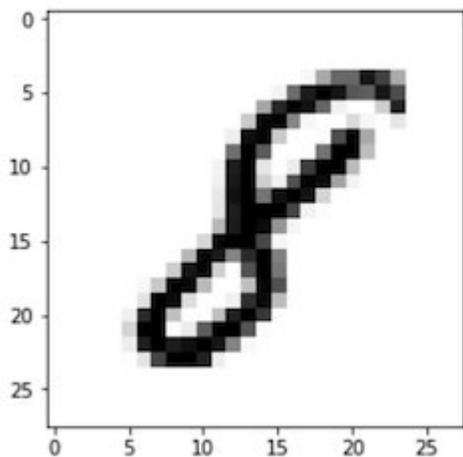
Airplane



Automobile



Bird



H.E. ML Model

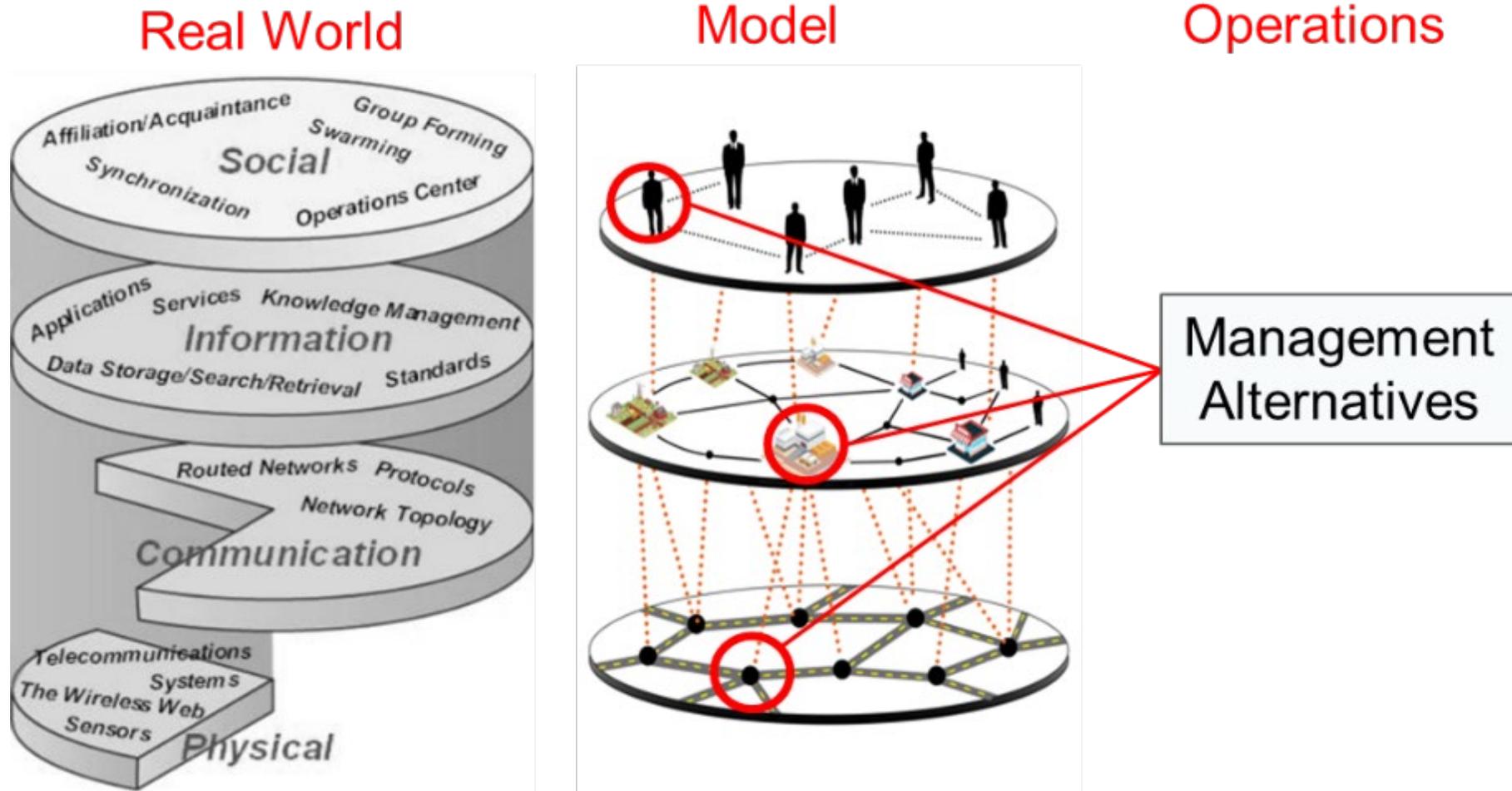
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Decryption

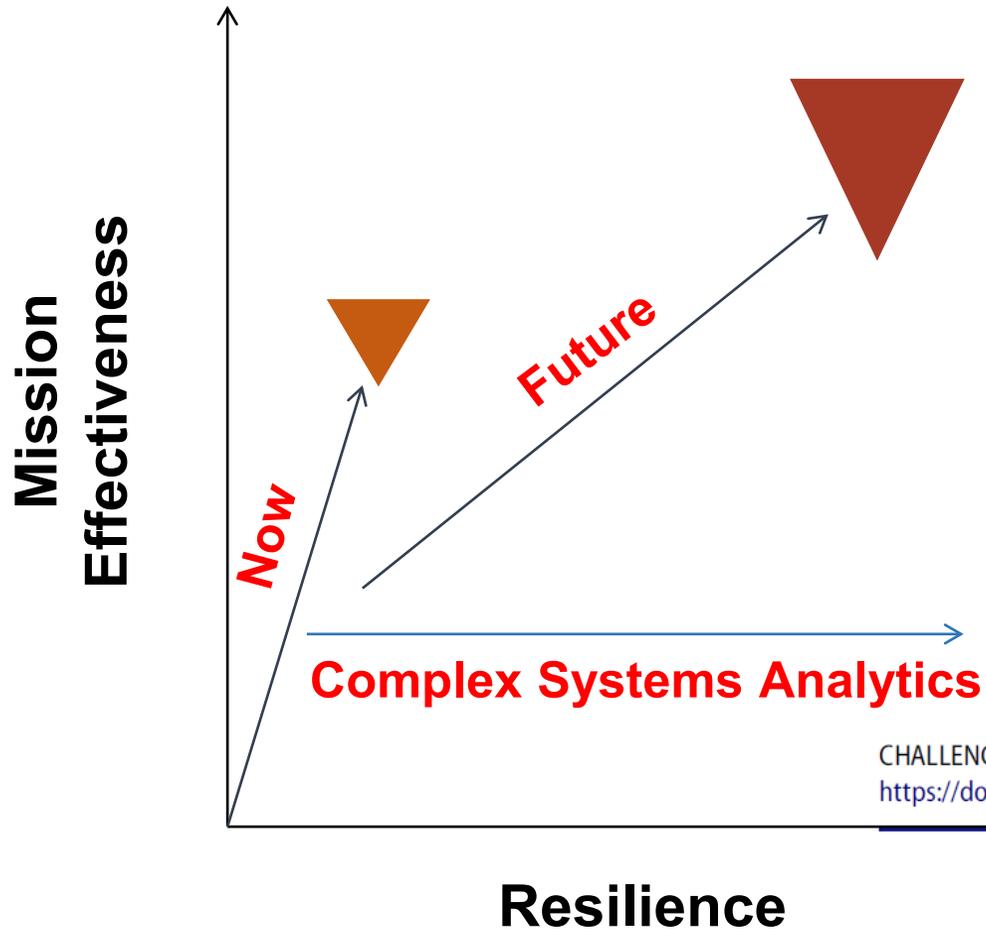
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Vision for System Resilience

31



Balancing Resilience and Efficiency

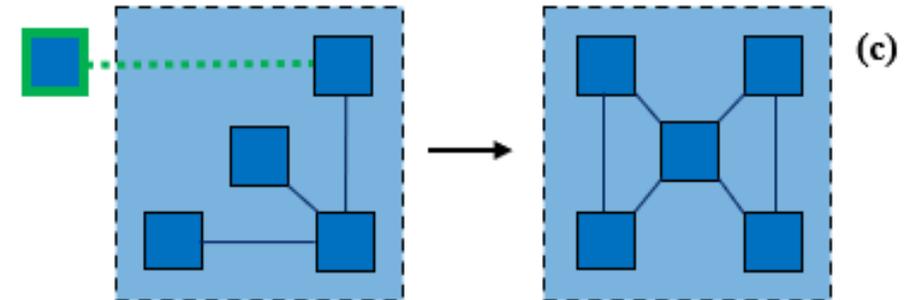
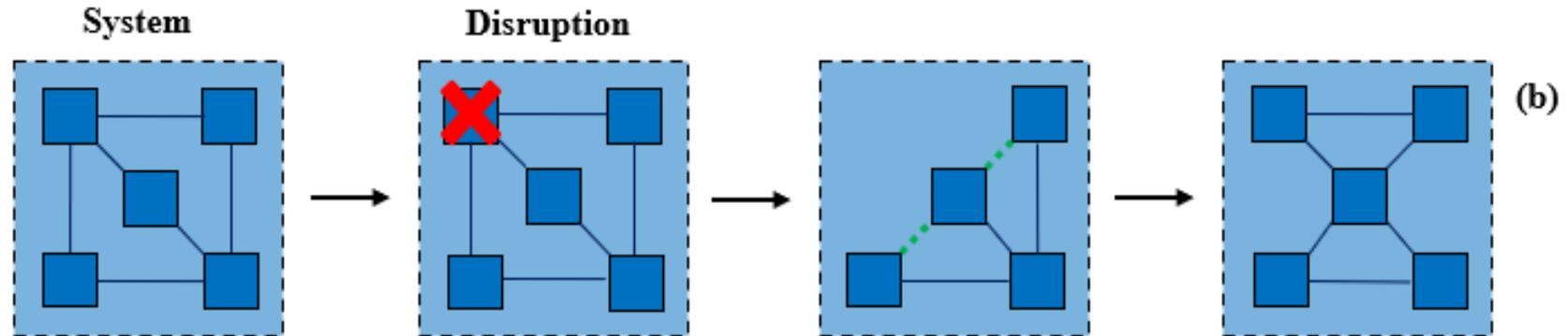
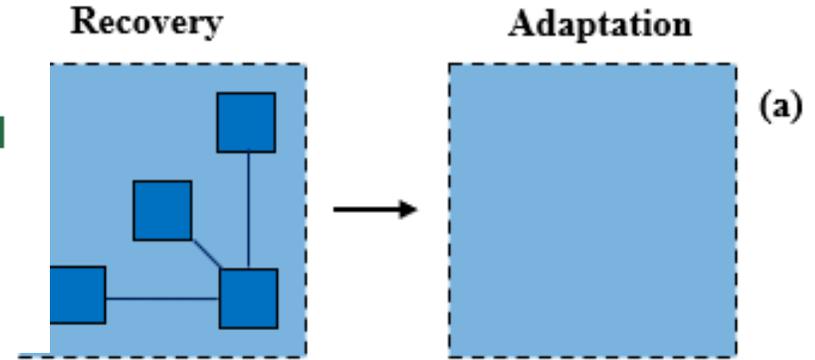


Resilient Financial Systems Can Soften the Next Global Financial Crisis

William Hynes, Benjamin D. Trump, Patrick Love, Alan Kirman, Stephanie E. Galaitis, Gabriela Ramos, and Igor Linkov

1 Enhancing Resilience in Post-COVID Societies: By Design or By Intervention?

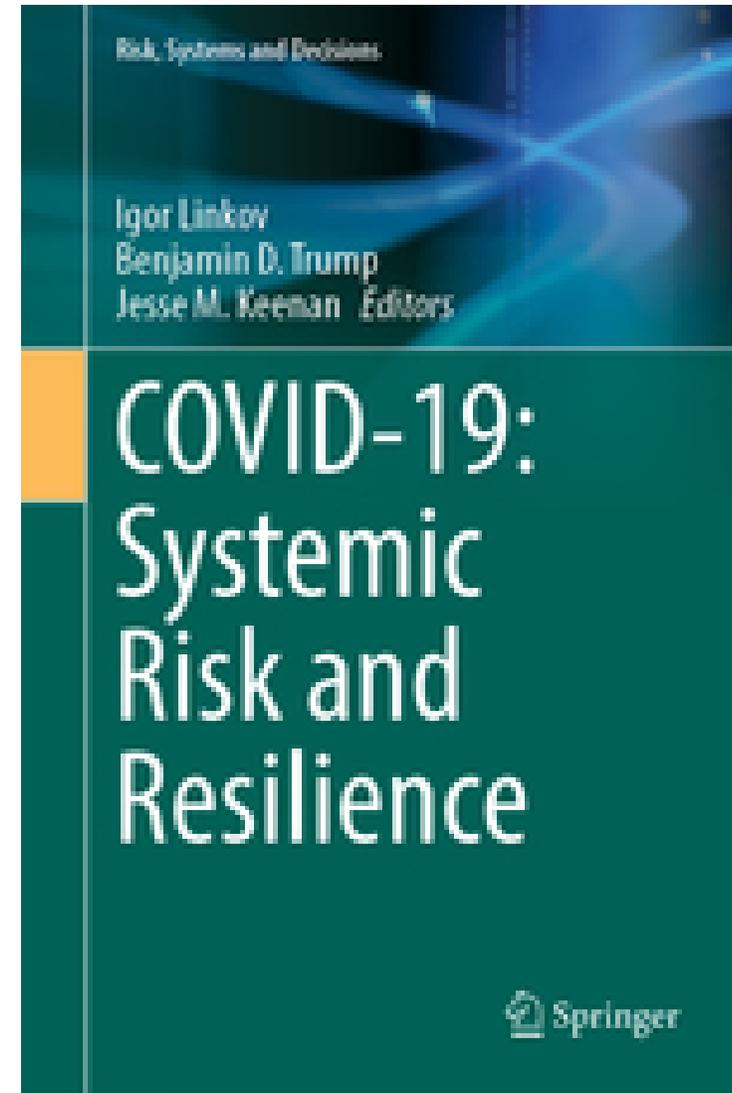
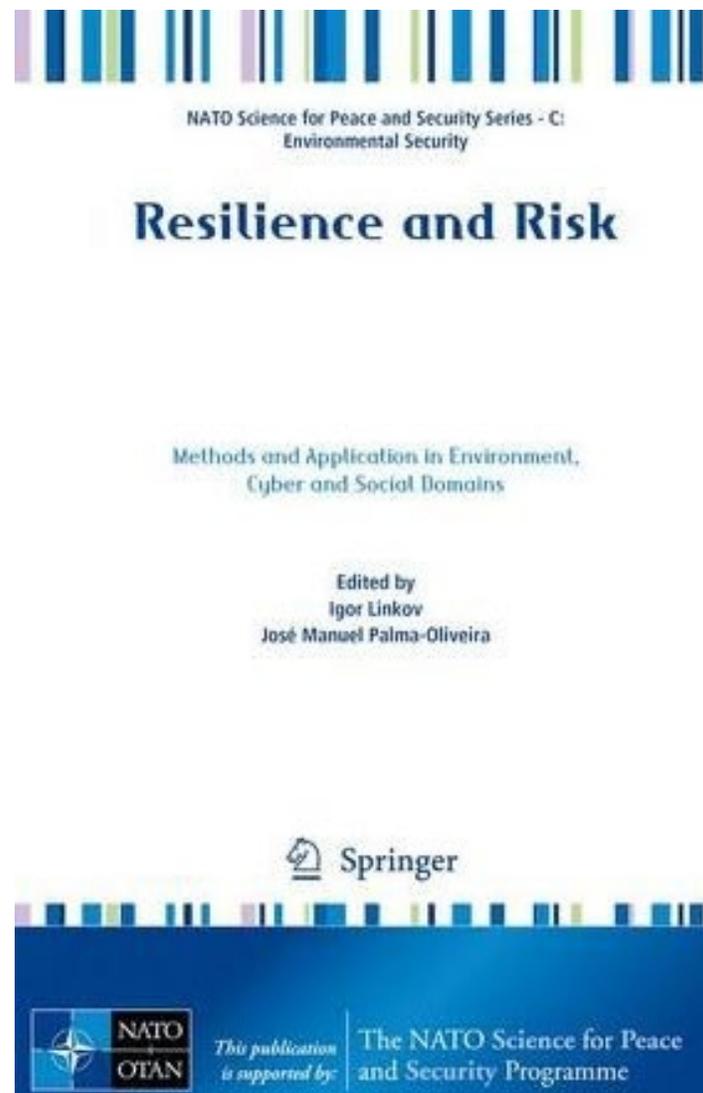
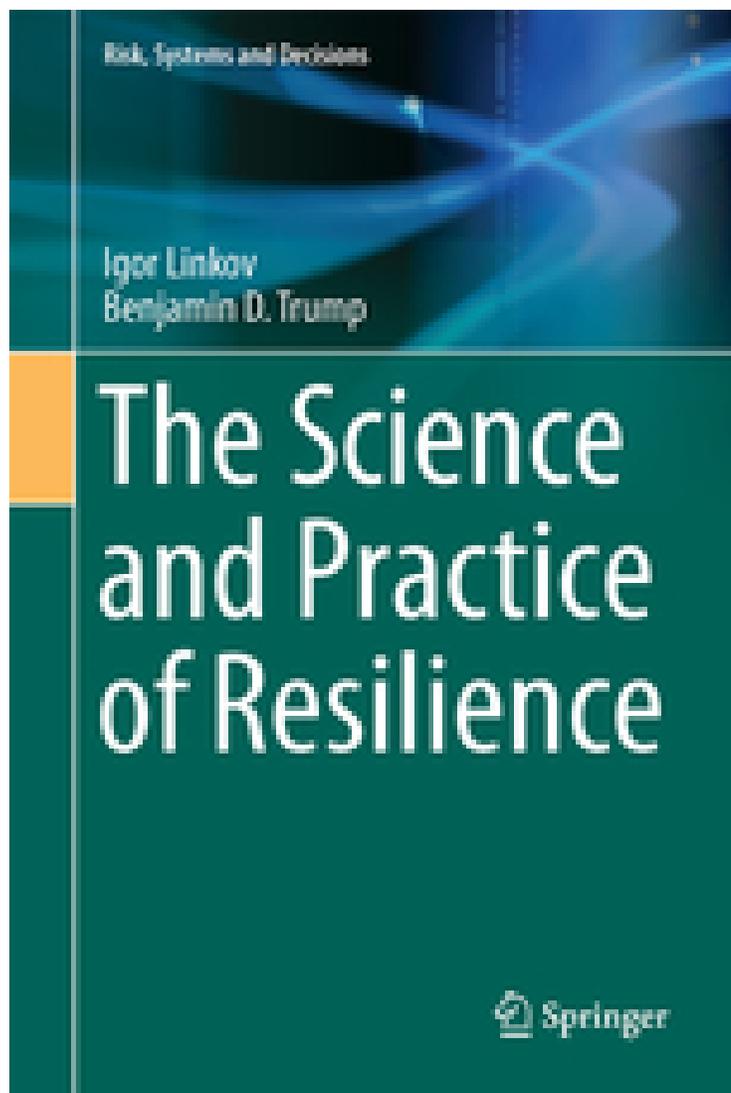
2
3 Igor Linkov,* Benjamin D. Trump, Maureen Golan, and Jeffrey M. Keisler



Resilience by Design vs. Resilience by Intervention

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- 28) Roegel, P., Collier, Z.A., Mancillas, J., McDonagh, J., Linkov, I. (2014). **Metrics for Energy Resilience**. *Energy Policy* 72:249
- 29) Park, J., Seager, T, Linkov, I., (2013). **"Integrating risk and resilience approaches to catastrophe management in engineering systems,"** *Risk Analy.*, 33(3), pp. 356.



July 21, 2021

Talking Freight Webinar: For-Hire Truck Transportation

Jason Miller, PhD

Associate Professor of Supply Chain Management

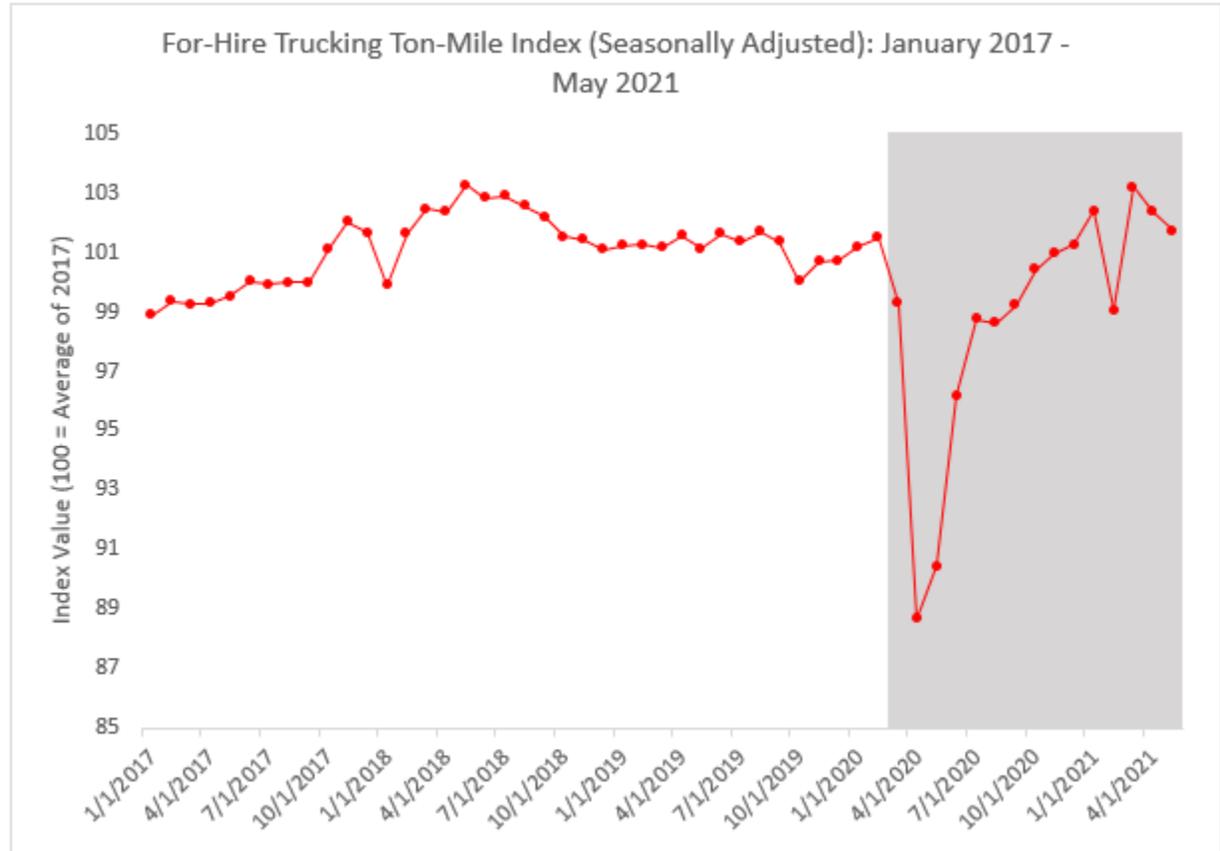
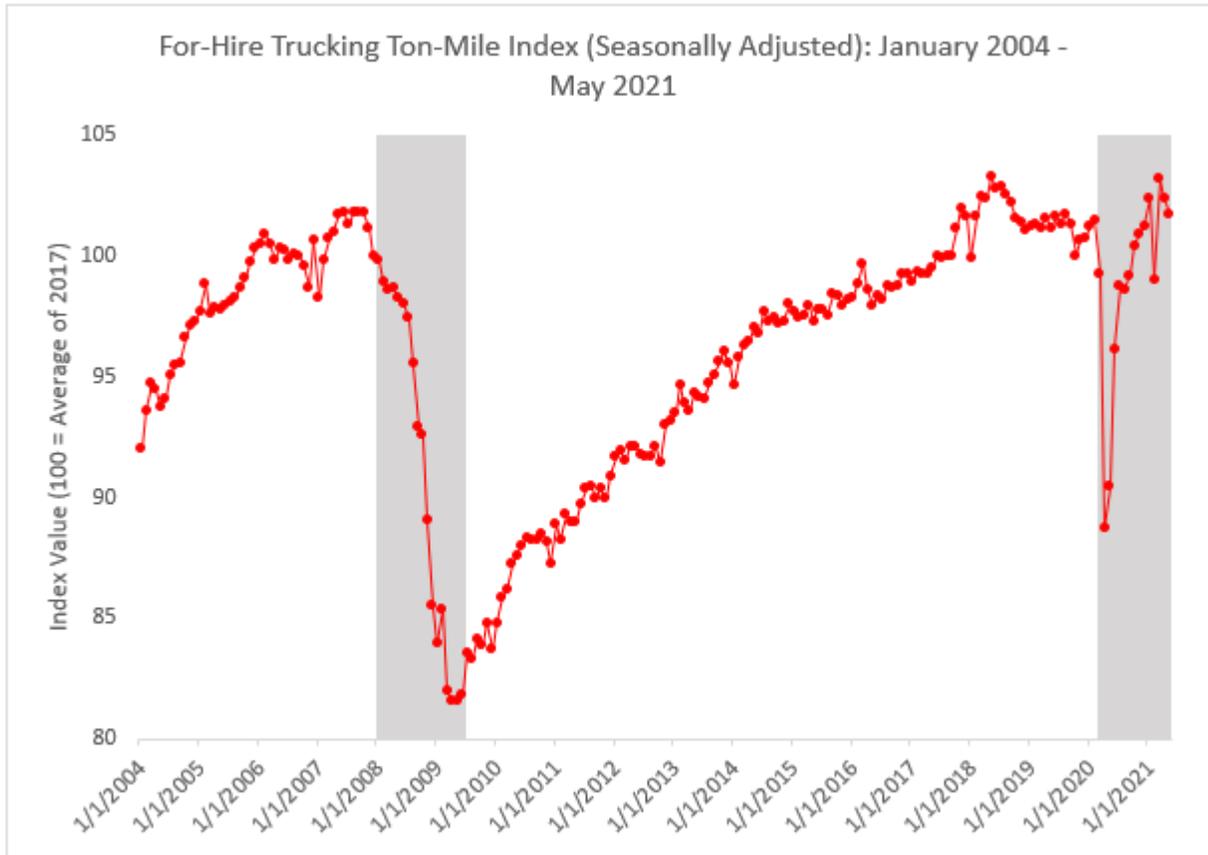
BROAD COLLEGE *of* BUSINESS

Agenda

- ▶ For-hire Trucking Ton-Mileage Index
 - ▶ Historical, more recent
 - ▶ Freight mix change
- ▶ Employment
- ▶ Rates
- ▶ System resiliency: possibility



For-Hire Trucking Ton-Mileage Index



Freight Mix (I)

★ Industrial Production: Durable Manufacturing Excluding Computers, Communications Equipment, and Semiconductors (IPX5HTK2S)

DOWNLOAD 

Observation:
Jun 2021: 96.8869 (+ more)
Updated: Jul 15, 2021

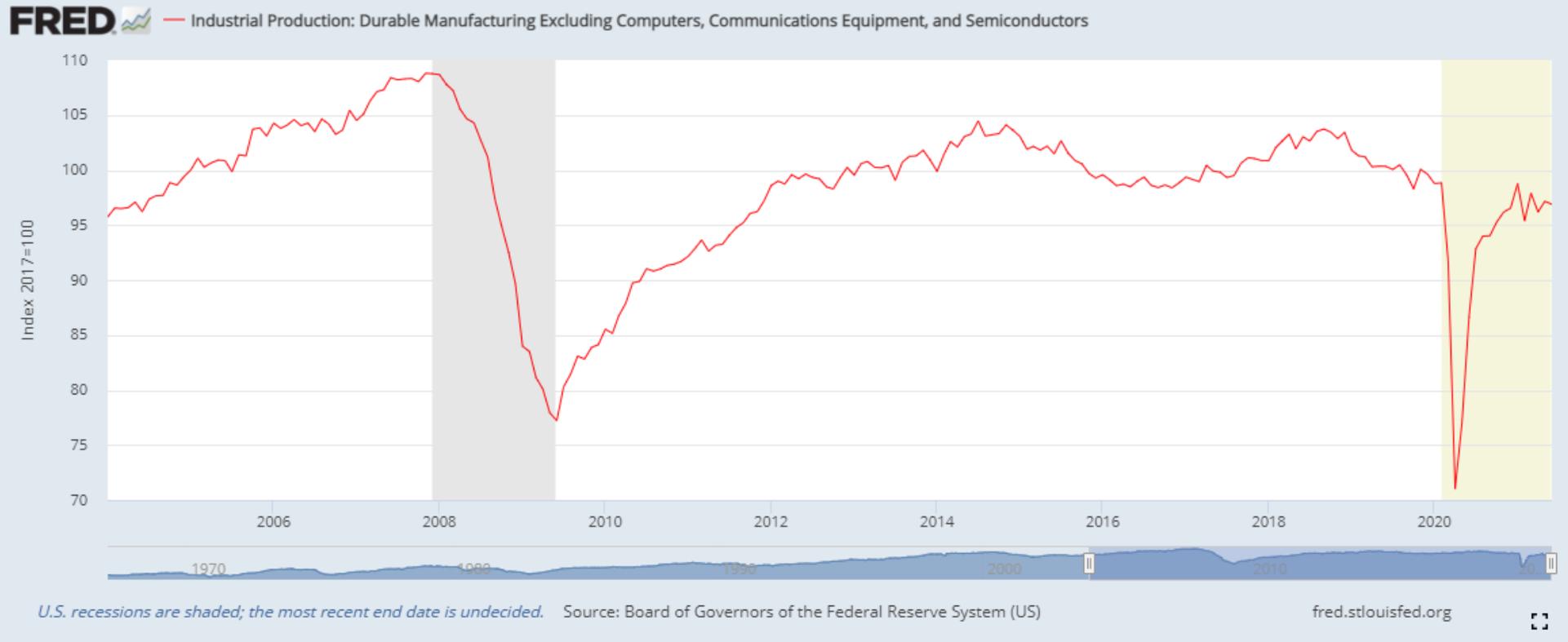
Units:
Index 2017=100,
Seasonally Adjusted

Frequency:
Monthly

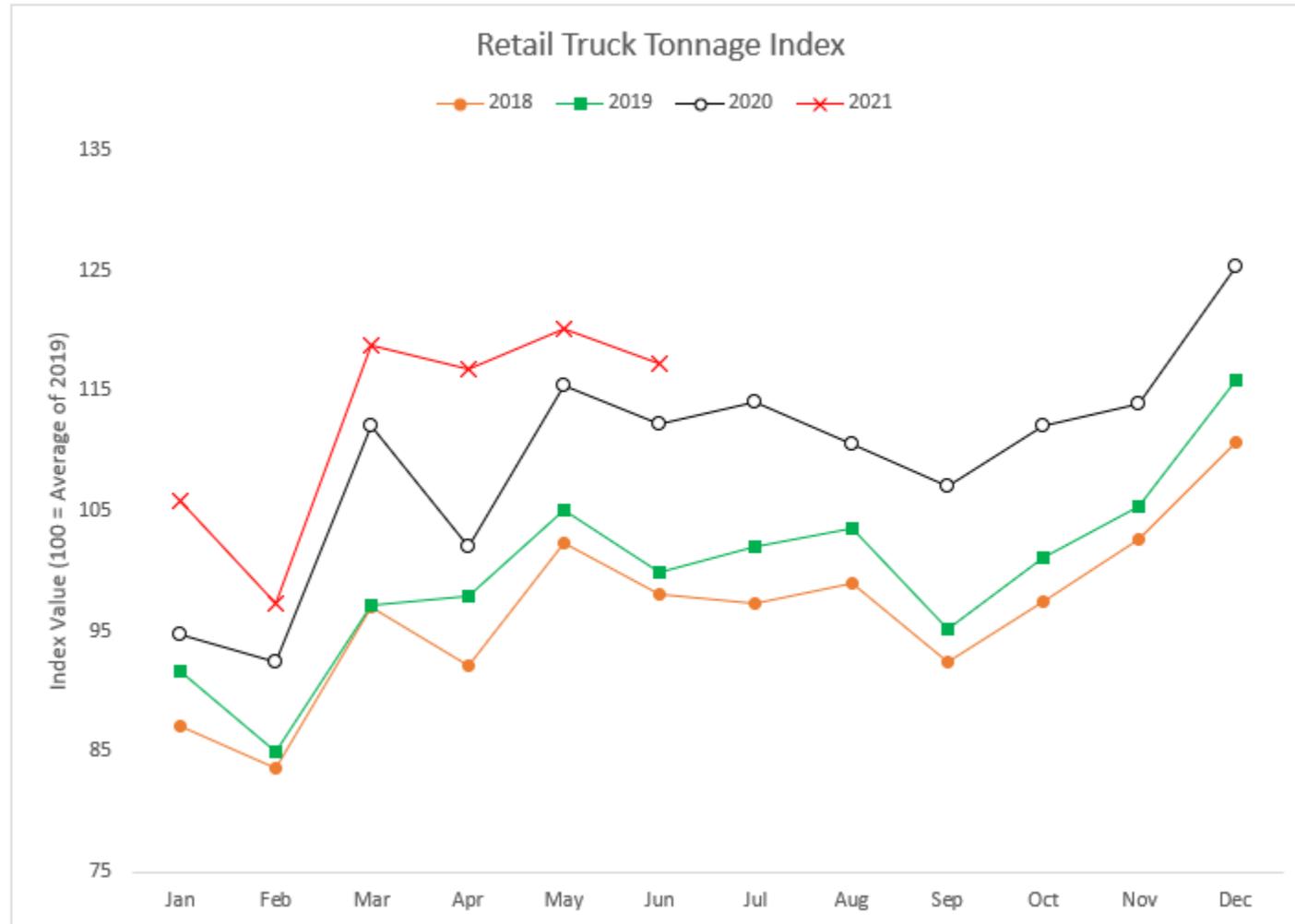
1Y | 5Y | 10Y | Max

2004-01-01 to 2021-06-01

EDIT GRAPH 

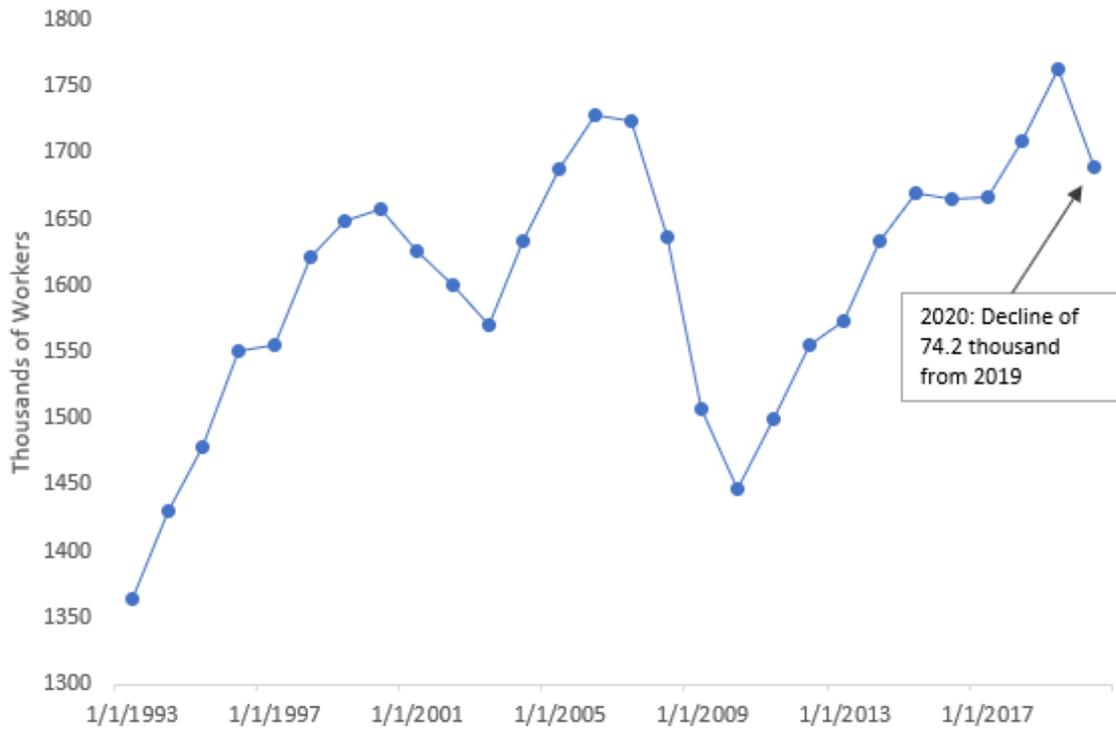


Freight Mix (II)

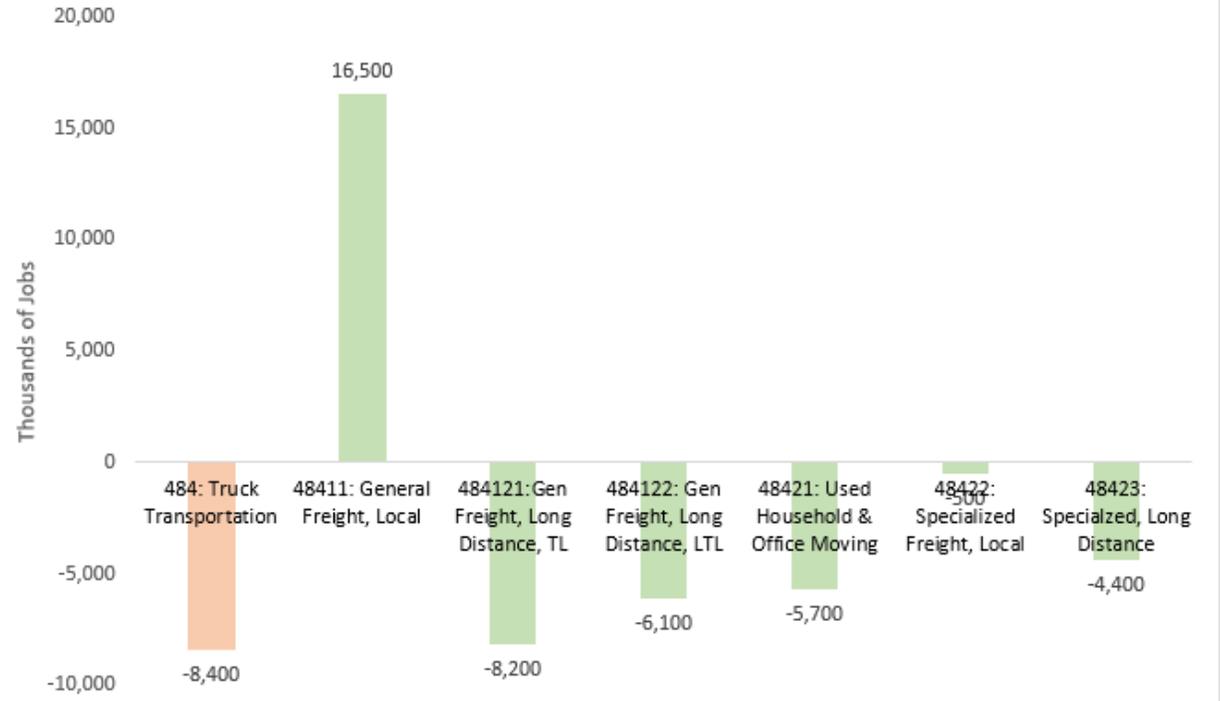


Trucking Employment

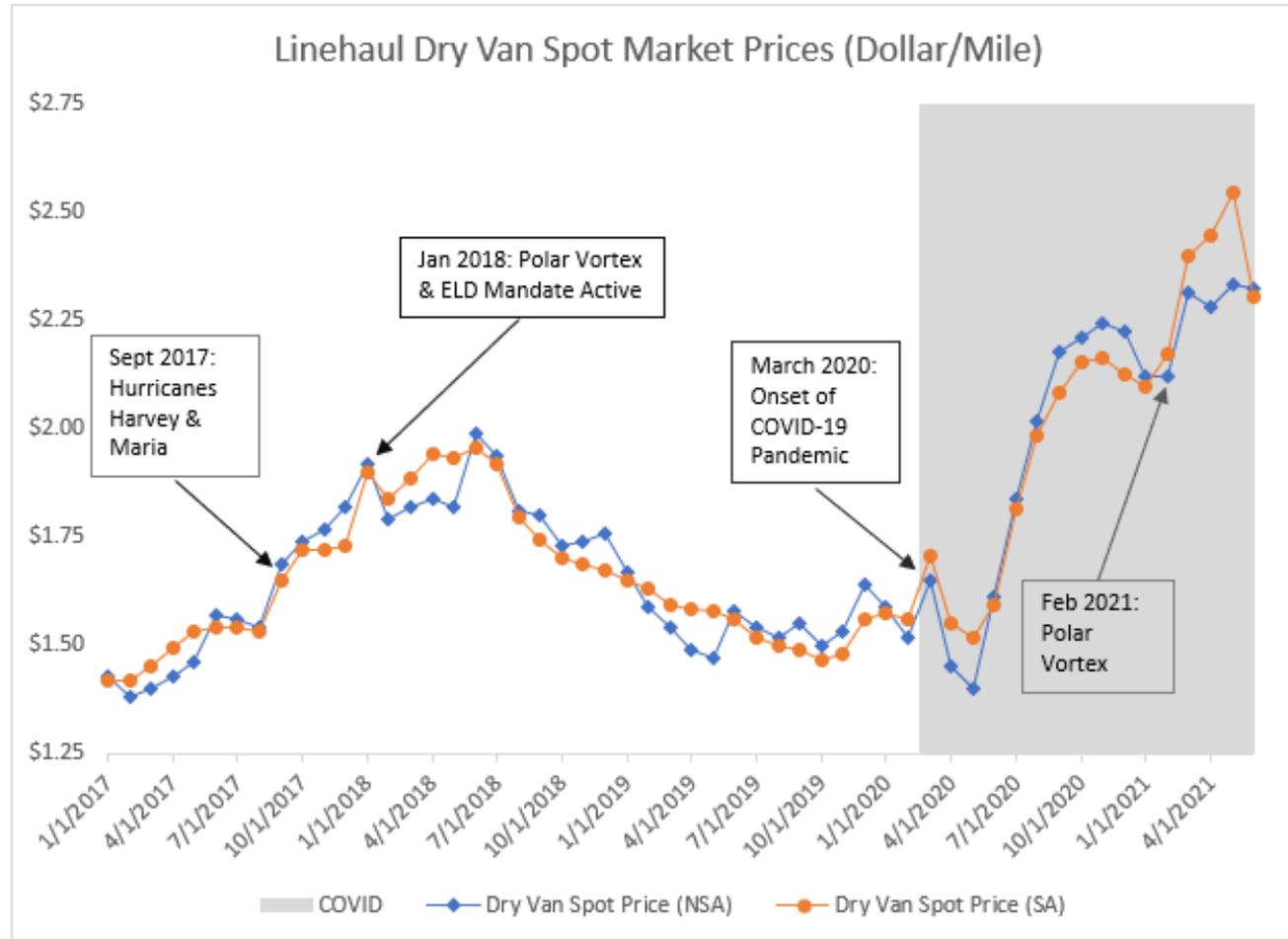
Truck Transportation Employment



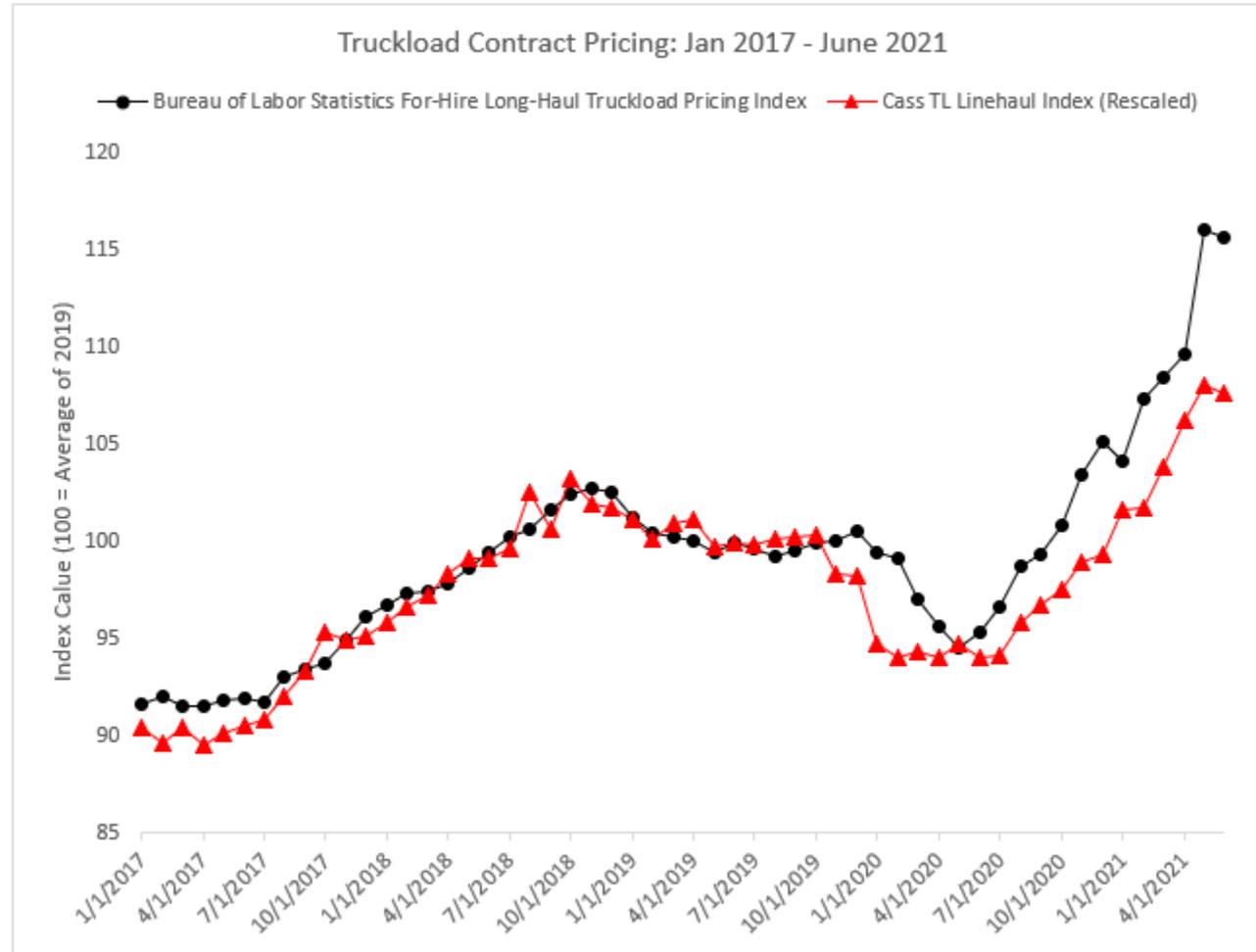
Change in Employment for Truck Transportation Sectors: May 2021 Relative to May 2018 (Not Seasonally Adjusted)



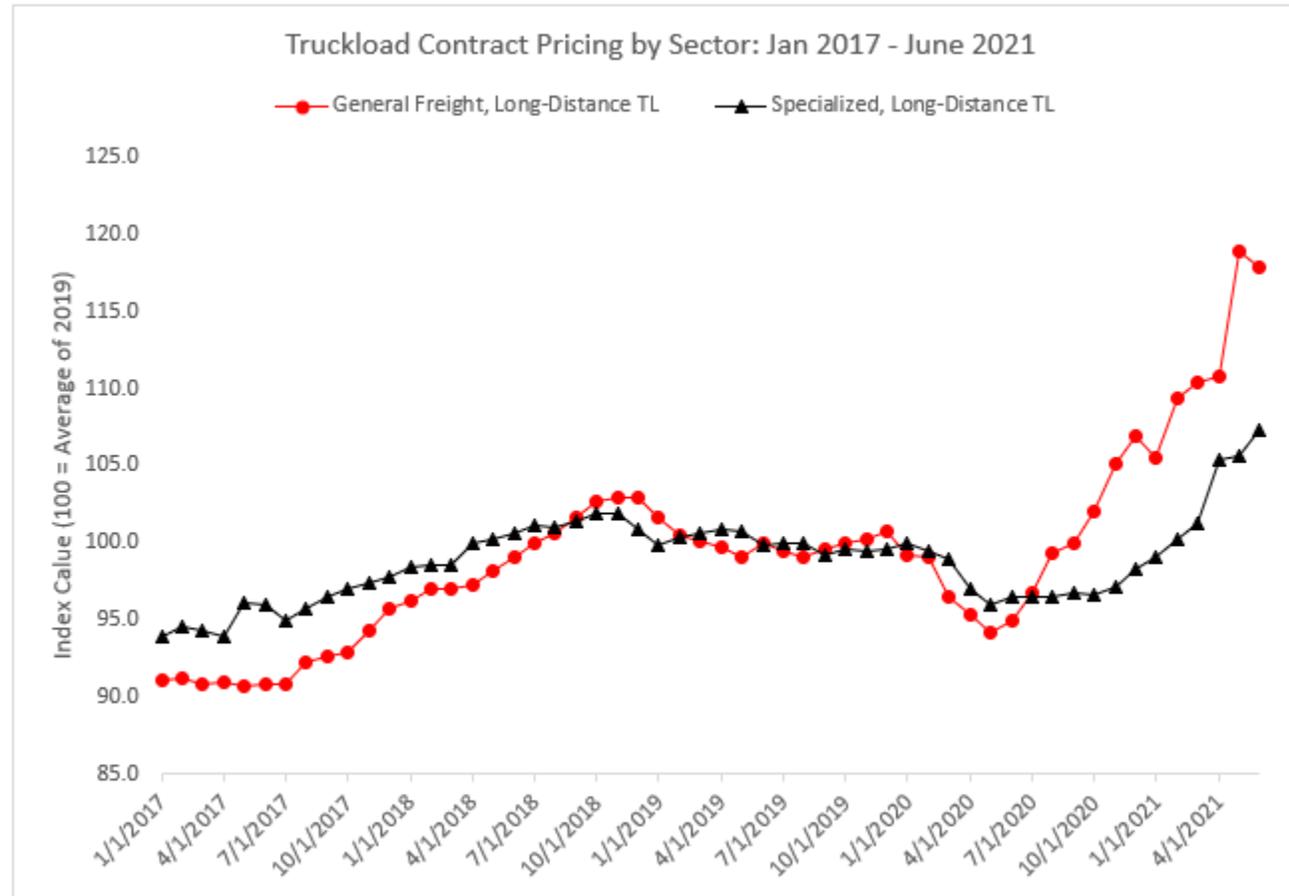
Spot Prices



Truckload Contract Prices – Aggregate



Truckload Contract Prices – Sector



Resiliency Considerations?

- ▶ Thin profit margins preclude maintaining excessive capacity
- ▶ Existence of economies of scope in the truckload sector further compounds adding resiliency
 - ▶ When shocks occur that exacerbate existing imbalances of freight flows, it is difficult to reallocate capacity without incurring substantial costs (see March 2020)
- ▶ Carriers tend to be slow to add capacity when capacity is tight
 - ▶ Time to onboard drivers, other sectors competing with the labor pool, risk aversion of incurring costs when duration of tight market conditions is uncertain



Q&A



THANK YOU!

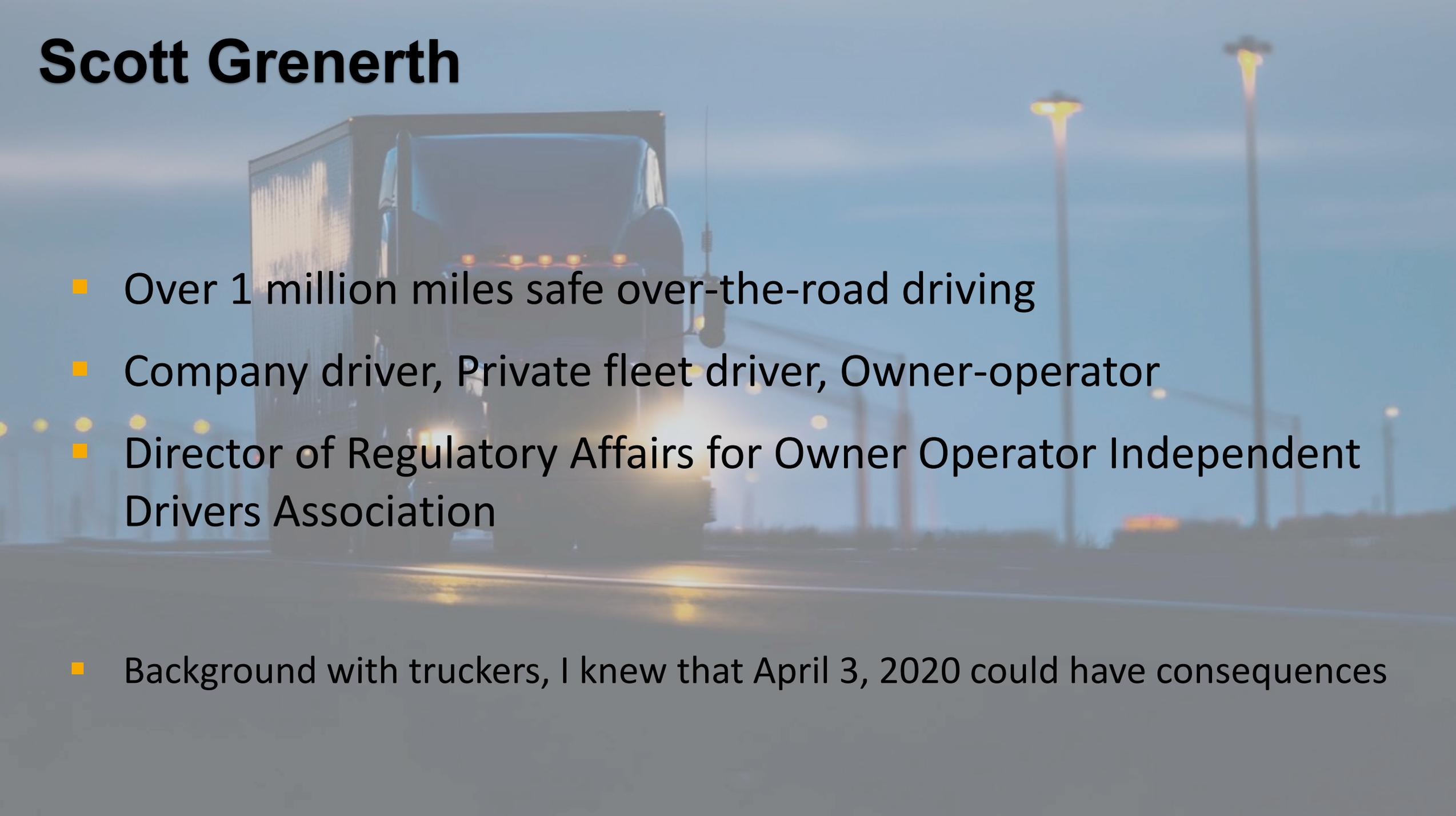
EDWARD J.
MINSKOFF PAVILION
BROAD COLLEGE OF BUSINESS





***Finding a Food Truck
Responses by State DOTs
Realities Truckers Experienced
Opportunities to Adjust for Future Responses***

Scott Grenerth



- Over 1 million miles safe over-the-road driving
- Company driver, Private fleet driver, Owner-operator
- Director of Regulatory Affairs for Owner Operator Independent Drivers Association

- Background with truckers, I knew that April 3, 2020 could have consequences

COVID 19 Impact - Broadly

- Shortages of some items
- Stores cutting back on hours
- State, county, and city level closures of food service

Over-The-Road Trucker Impact

May 5

TravelCenters of America is slowly reopening dine-in restaurants at its travel plazas where allowed, but some changes forced by the COVID-19 pandemic may never be reversed.

"We have already undertaken rolling some locations on and we're doing it in a prudent and self-disciplined way," TA CEO Jon Pertchik said on a first-quarter earnings call on Tuesday.

That means fewer hours, about half as many menu items, and as little as 25% occupancy based on state-by-state guidelines.

Freight Waves: Alan Adler, Tuesday, May 5, 2020

Aug 5

After reopening some of its restaurants in May, TravelCenters of America Inc is in the process of closing restaurants again due to the "recent increase in COVID-19 infections in several states," it reported in its second-quarter 2020 earnings press release.

Yahoo Finance: Aug 5, 2020

Over-The-Road Trucker Impact

- Prepared meals and even a cup of coffee are harder to purchase
 - Drive thru only- NOT in a semi
 - Walk up to the drive thru- NO “liability”
- Limited stock at stores impacts ability for trucker to restock
 - Even coffee to make in the truck
- Some food service hours at truck stops are cut back substantially
 - Cannot rely on restaurant/fast food service 24/7
 - Evening/late evening service cut at many locations

Over-The-Road Trucker Impact

- Truckers are at the mercy of shippers and receivers to impact their schedule/planning
 - End up unexpectedly searching for food later in the day/evening, closed now
- Truckers with smaller cabs, and those not permitted to have plug-in coolers are more reliant upon outside sources for food



Truckers
don't have
this



Even if you
do, how to
restock it?

Rest Areas Status Before April 3

- Since 1930s, prohibition on commercialization of rest areas along federal aid highway system
- Randolph-Sheppard Act only permits vending machines, operated by visually impaired



April 3, 2020

- Notice of Enforcement Discretion which stated that through the duration of the National Emergency the FHWA would not enforce the prohibition against commercial activity in order to allow states, which choose to participate in this program, to allow food trucks in rest areas.
- My words: You still aren't allowed to do this, but we won't stop you.
- No end date to the Notice, as long as National Emergency declared

Reaction? Some immediate

- Arkansas
- Indiana
- Ohio
 - Free application
 - Basically one rule, not compete with the aforementioned vending machine operators. Not permitted to sell canned sodas but were very explicitly told they could sell freshly made coffee.

- Ohio: Approximately 275 applications were submitted to ODOT by food truck operators to set up in Ohio's 86 rest areas.



Michael Tater, WTOL, April 16: **Bowling Green, OH, I-75 Northbound**



Ohio Dept of Transportation

@ODOT_Statewide · Apr 10, 2020



Food truck operators can now set up at ODOT-maintained rest areas. This is an effort to better serve the truck drivers who play a vital role in helping [#FlattenTheCurve](#). Permits are available here: transportation.ohio.gov/wps/portal/gov... [#InThisTogetherOhio](#)



**Ohio rest areas
are now open
to food truck
operators**



Capture data

- July/September

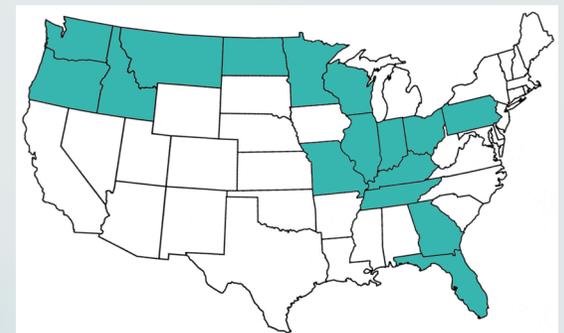
What Did I Hear From OTR Truckers?

- Direct feedback from friends
- Sirius/XM radio trucker program guest appearances
- Moderated Facebook trucker forums.

- I asked:
 - Have you seen any food trucks?
 - Has this effort been helpful to you?

Kari and Lee Fisher
July 31

“We did see food being handed out for free in Florida, but **no** food trucks in: GA, TN, KY, MO, IL, IN, OH, NY, PA, WI, MN, MT, ND, ID, WA, OR.”



Jeff Barker
July 31

“It was harder to find food a couple of months ago. I utilized Door Dash at least once and ordered a few days worth of food at a time.”

“I did see at least one food truck in Arkansas at some point.”



Greg Huggins
July 14

“Saw one food truck along I-40 CA to AZ, middle of nowhere. Only notice was a small sign propped up at entry to rest area. About two months ago.”



Sandy and Stephen Goche
July 14

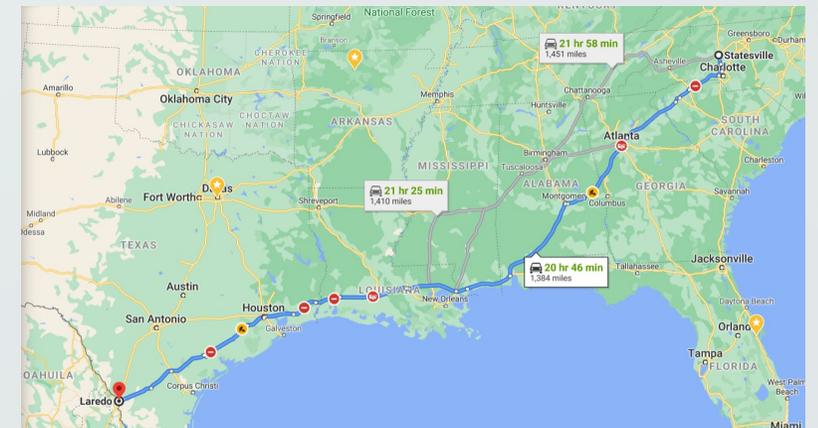
“Saw some early on across I-70 IN and OH, no signage to let you know ahead. They were all being utilized every time. It looked like they were all possibly from the same company operating the food trucks across that area.”



Henry Albert
July 14

“I had a some more difficulty finding some food, a little bit harder to find a cup of coffee. Seemed like there was a lot of hype that it was worse.”

“I have not seen a food truck.”



Shane Rizzuto

July 14

“At my favorite truck stop in Washington State the Subway has been closed, the Iron Skillet restaurant has had very limited options.”

“No food trucks, Colorado to Canada is my run.”



Melissa Bird Kropf

July 10

“I saw them in a **few** states. California, Arizona and can't recall the 3rd. Maybe Oregon? They were only at a couple though. We were hoping to see more. With the restaurants all closed down being on the road for 4 weeks was rough to say the least. I run all 48 states as a team. The ones I saw were not marked so we didn't see them until we were driving by. One did have a sign. I believe it was one in California on I-5.”



Bryan Spoon
July 7

“I saw one in Indiana on I-74 coming out of Cincinnati.

Indiana Governor Eric Holcomb mentioned the food trucks in a broadcast. I think he said IN had 20 of them at different locations.”

“We needed this 3 weeks before it actually started.”



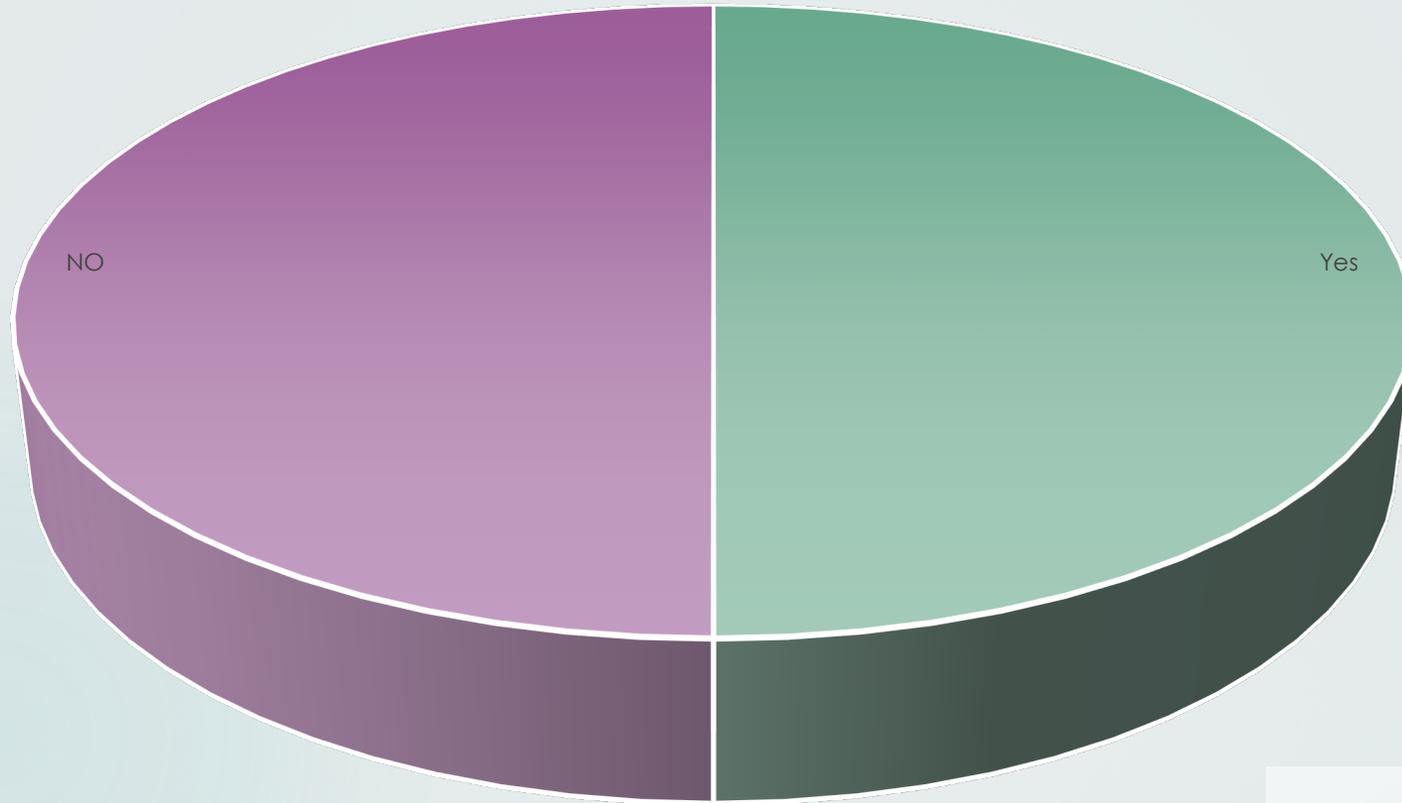
Johanne Couture
July 7

“I only saw one on I-75 in Ohio. When I woke up at 10 am about every second truck driver I saw utilized it. It was parked on the car side of rest area. The truckers took the time to walk over to it.”



56

Questioned



Did you see at least one food truck?

Yes

NO

Since April, have you seen and/or visited a food truck operating out of a public rest area along your routes?

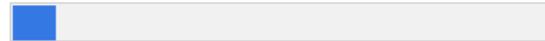
No, I've not seen any food trucks at rest areas

73.14% (207 votes)



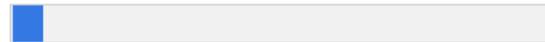
Yes, I've seen a few but never visited

8.13% (23 votes)



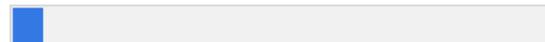
Yes, I've eaten at a rest-area food truck numerous times

5.65% (16 votes)



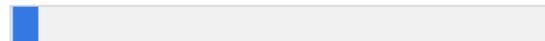
Yes, I've eaten at a food truck a few times

5.65% (16 votes)



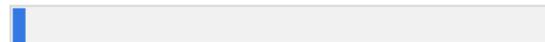
Yes, I've seen several but never tried one

4.95% (14 votes)



Yes, I've eaten once at a food truck

2.47% (7 votes)



Total Votes: 283

Overdrive Online: Todd Dills,
Retrieved September 2020

No 50 %
Yes 50 %

?

No 73 %
Yes 27 %

My questions- to people I know with zero bias

Overdrive poll- replies from those interested in the topic

Question was, at least –one- food truck,...over many tens of thousands of miles across multiple states.

Feedback from survey

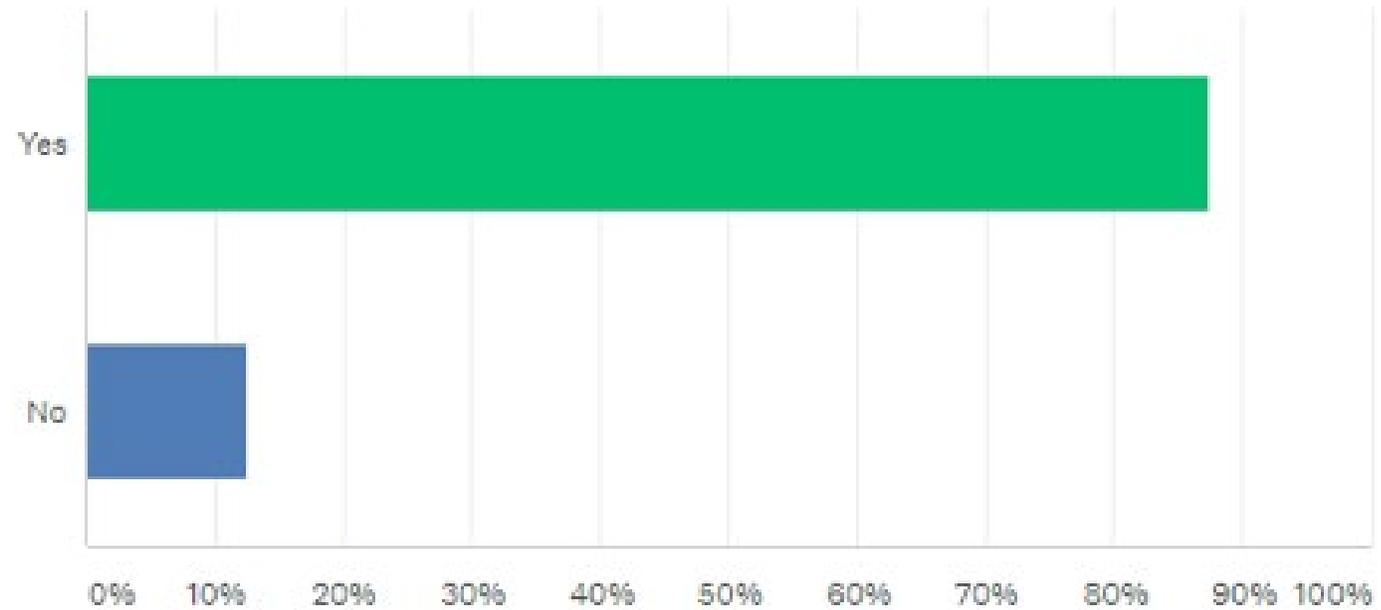


- 7 Question survey was sent out via AASHTO Committee on Transportation System Operations, Working Group on Freight Operations members at state DOTs in late October of 2020.
- 16 responses

1

Did your state evaluate allowing food truck operations in rest areas following the FHWA Notice of Enforcement Discretion?

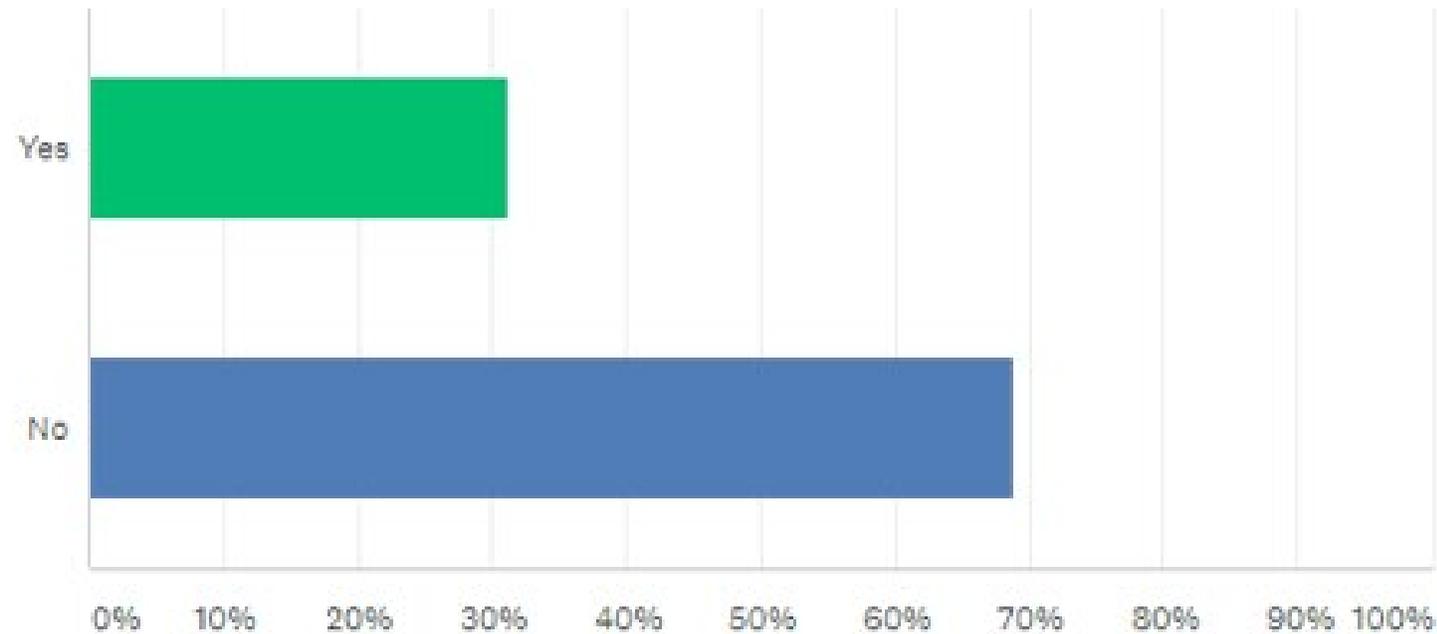
Answered: 16 Skipped: 0



ANSWER CHOICES	RESPONSES
Yes	87.50% 14
No	12.50% 2
TOTAL	16

Did you ultimately allow food trucks to operate in your rest areas?

Answered: 16 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	31.25%	5
No	68.75%	11
TOTAL		16

If you did allow food trucks to operate in your rest areas, when did you terminate the operation?

Answered: 3 Skipped: 13

ANSWER CHOICES	RESPONSES
Date	100.00% 3

RESPONSES (3) TAGS (0)

Showing 3 responses

07/11/2020
10/21/2020 2:57 PM [View respondent's answers](#) [Add tags](#)

05/17/2020
10/19/2020 4:49 PM [View respondent's answers](#) [Add tags](#)

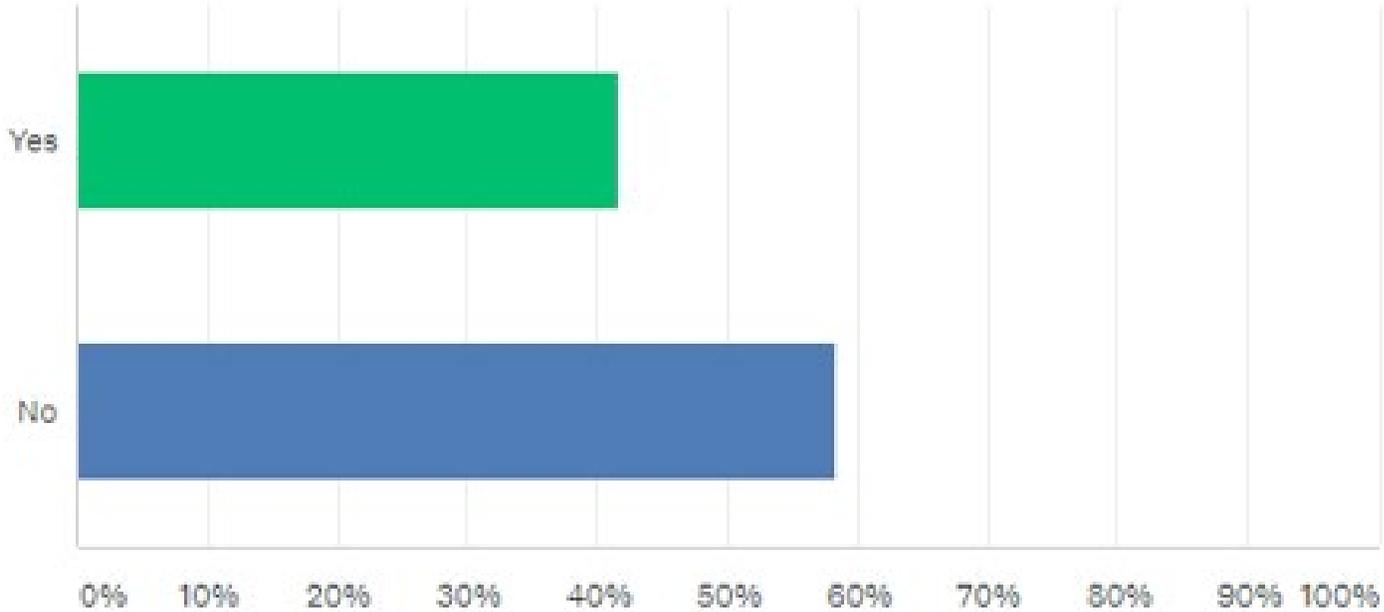
06/01/2020
10/19/2020 1:12 PM [View respondent's answers](#) [Add tags](#)

CalTrans

“The program ended in August after food-truck operators said that business was not that profitable anymore. During the last week of this temporary program, there were 13 active permits issued to eight food truck operators to serve 11 rest areas.”

Was there an approval process to authorize individual food trucks to operate?

Answered: 12 Skipped: 4



ANSWER CHOICES	RESPONSES
Yes	41.67% 5
No	58.33% 7
TOTAL	12

What was the process, was there a fee to apply?

Answered: 9 Skipped: 7

Showing 9 responses

Single point of contact established with District offices issuing the necessary permit.
10/21/2020 2:57 PM [View respondent's answers](#) [Add tags](#) ▼

N/A
10/20/2020 11:05 AM [View respondent's answers](#) [Add tags](#) ▼

We are still issuing permits (that's why there's no date in #3). There is no fee for the permit. Vendors apply via specific application, I review the applications, verify they have insurance and issue the permit with instructions on how to reserve a location at a rest area. Then the vendor contacts our Rest Area Manager and he reserves the slot at the rest area for the vendor.
10/19/2020 6:29 PM [View respondent's answers](#) [Add tags](#) ▼

Yes. Food truck vendors had to submit an application and provide a certificate of liability listing MnDOT as an additional insurer.
10/19/2020 4:49 PM [View respondent's answers](#) [Add tags](#) ▼

What was the process, was there a fee to apply?

Answered: 9 Skipped: 7

N/A
10/19/2020 1:12 PM [View respondent's answers](#) [Add tags](#) ▼

n/a
10/19/2020 12:32 PM [View respondent's answers](#) [Add tags](#) ▼

No
10/19/2020 12:27 PM [View respondent's answers](#) [Add tags](#) ▼

Permit application. No fee.
10/15/2020 12:17 PM [View respondent's answers](#) [Add tags](#) ▼

No fee, simple application, no limit on # of participants.

Did you receive feedback from truckers on the availability of food trucks?

Answered: 10 Skipped: 6

Showing 10 responses

No
10/21/2020 2:57 PM [View respondent's answers](#) [Add tags](#) ▼

Yes
10/20/2020 11:05 AM [View respondent's answers](#) [Add tags](#) ▼

A few. They appreciate the ability to get a hot meal at the rest area where they can safely park. Most of the feedback has come from vendors and they have told some pretty cool stories about their positive interaction with some drivers.
10/19/2020 6:29 PM [View respondent's answers](#) [Add tags](#) ▼

No.
10/19/2020 4:49 PM [View respondent's answers](#) [Add tags](#) ▼

Did you receive feedback from truckers on the availability of food trucks?

Answered: 10 Skipped: 6

Minimal feedback
10/19/2020 3:26 PM [View respondent's answers](#) [Add tags](#) ▼

no
10/19/2020 1:12 PM [View respondent's answers](#) [Add tags](#) ▼

No
10/19/2020 12:32 PM [View respondent's answers](#) [Add tags](#) ▼

No
10/19/2020 12:27 PM [View respondent's answers](#) [Add tags](#) ▼

Indirectly from other States.



GET LOADED FT @FtLoaded · Apr 12, 2020



Replying to [@ODOT_Statewide](#)

Is there a way to notify the truckers that there's a food truck at certain rest stops if we set up?



Ohio Dept of Transportation  @ODOT_Statewide · Apr 12, 2020



Unfortunately, there is not. We don't want to turn the rest areas into a destination for people to leave their homes and visit. When truck drivers stop, they'll be able to see you.



Were trucks notified of the presence of a food truck with enough time to exit the mainline into a rest area? If yes, how so?

Answered: 10 Skipped: 6

See #8
10/21/2020 2:57 PM [View respondent's answers](#) [Add tags](#) ▼

N/A
10/20/2020 11:05 AM [View respondent's answers](#) [Add tags](#) ▼

We did not authorize signage on the mainline. Knowledge was by blast to website (which has notifications sent to those that enroll their email) , twitter, instagram, facebook, word of mouth.
10/19/2020 6:29 PM [View respondent's answers](#) [Add tags](#) ▼

No.
10/19/2020 4:49 PM [View respondent's answers](#) [Add tags](#) ▼

Were trucks notified of the presence of a food truck with enough time to exit the mainline into a rest area? If yes, how so?

Answered: 10 Skipped: 6

N/A
10/19/2020 3:26 PM [View respondent's answers](#) [Add tags](#) ▼

yes
10/19/2020 1:12 PM [View respondent's answers](#) [Add tags](#) ▼

n/a
10/19/2020 12:32 PM [View respondent's answers](#) [Add tags](#) ▼

No
10/19/2020 12:27 PM [View respondent's answers](#) [Add tags](#) ▼

Were trucks notified of the presence of a food truck with enough time to exit the mainline into a rest area? If yes, how so?

Answered: 10 Skipped: 6

N/A
10/15/2020 12:17 PM [View respondent's answers](#) [Add tags](#) ▼

No
10/13/2020 11:01 AM [View respondent's answers](#) [Add tags](#) ▼

What advice do you have for future emergency declarations?

Answered: 9 Skipped: 7

Showing 9 responses

-
- There was only one food truck that showed interest and held a meal giveaway on two occasions with MDOT assistance.
- 10/21/2020 2:57 PM [View respondent's answers](#) [Add tags](#) ▼
-
- Truckers did not feel a need for food trucks.
- 10/20/2020 11:05 AM [View respondent's answers](#) [Add tags](#) ▼
-
- Unsure what you're looking for here, Trying to keep up with declarations, timeframes etc is always a bit tricky when multiple agencies are involved. Communication on this one was pretty straight forward.
- 10/19/2020 6:29 PM [View respondent's answers](#) [Add tags](#) ▼
-
- Better advertise the program and include signage on the mainline in advance of the rest areas that offered food truck vending.
- 10/19/2020 4:49 PM [View respondent's answers](#) [Add tags](#) ▼

What advice do you have for future emergency declarations?

Answered: 9 Skipped: 7

-
- Let industries know that some state laws may prohibit the activity.
- 10/19/2020 3:26 PM [View respondent's answers](#) [Add tags](#) ▼
-
- None
- 10/19/2020 2:53 PM [View respondent's answers](#) [Add tags](#) ▼
-
- The Department of Public Health has recommended against such a practice due to concerns about crowding during this pandemic and the potential for exposure to the public and rest area staff. There also are safety considerations, given the likelihood of increased pedestrian foot traffic and the like.
- 10/19/2020 12:32 PM [View respondent's answers](#) [Add tags](#) ▼
-
- We did not get questions from industry on wanting food trucks in rest areas so we did not pursue it.
- 10/19/2020 12:27 PM [View respondent's answers](#) [Add tags](#) ▼
-

How was participation?

- Example: It is clear that not all of the 275 applicants in OH actually set up in a rest area. What is known is that by the time Ohio permitted the reopening of restaurants in mid-June only 2 food trucks were still set up in rest areas for that final week when they were permitted.
 - Ohio choose to end the program when restaurants were reopened mid-June.
- CA and CO extended their programs at least through July.

Overview

- Depending upon the state, county or municipality, food could be more difficult to find (both prepared food and groceries).
- Other locations were not impacted to the same degree
- Some states were able to react quickly to the Notice
- Others hit snags
- Truckers largely had no advance notice of locations with food trucks



YOUR MESSAGE HERE

Sing-a-long time 

Signs Signs Everywhere Signs

70's version, or 90's version

No judgment

Maybe next time ?

Future implications

- Areas hit hard by hurricanes, severe flooding, large scale wildfire that can lead to damaged food service facilities, lack of needed utilities to facilities?
- Same response in future would again require action such as the Notice of Enforcement Discretion by FHWA.

Your input

- What did you learn?
- What did others learn that was not captured in the survey?

Thank You

- Dan Haake



- AASHTO Committee on Transportation System Operations, Working Group on Freight Operations.



- Pat Zelinski
- Dave Huft



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