



Arizona State Freight Plan

Freight Advisory Committee

October 12, 2021



Presentation Outline

- Welcome and Why Do We Need a Freight Plan?
- Introductions and Freight Advisory Committee Role
- Previous Freight Plan Findings
- Economic Context and Freight Trends
- Key Trends, Issues, Priorities, And Future Considerations
- Next Steps
- Re-Designation of the Primary Highway Freight System (PHFS)

Project Team

- Project Manager – Aleksandra Maguire, IHS Markit
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Previous Freight Plan Findings

Previous Freight Plan

- First Federal legislation to require a state freight plan
- Key Requirements
 - Renewal of State Freight Plan every 5 years
 - Identify trends, needs, and issues
 - Develop policy and performance measures guiding investment
 - Project investment plan, prioritized and financially constrained
- Carrot: Access to National Highway Freight Program – about ~\$23 million annually for Arizona (\$95M over 5 years)

Priority Projects

Route	Project	Funding Amount (\$million)	FY Programmed
I-40	I-40/US 93 System Interchange - Design	5	2018
I-10	I-10 West of Phoenix General Purpose Lane	33	2019
N/A	Statewide Truck Parking and Freight Operations	10	2019
SR 189	Traffic Flow Improvements (Interim) Mariposa LPOE to I-19	15	2019
I-40	I-40/US 93 System Interchange - Right of Way	10	2020
I-10	I-10/US 191 System Interchange Improvements (interim) Design	1	2020
I-10	I-10/US 191 System Interchange Improvements (interim) Construction	6	2021
US 191	US 191 Cochise RR Overpass Design	15.7	2022
	Total National Highway Freight Program Expenditures	95.7	

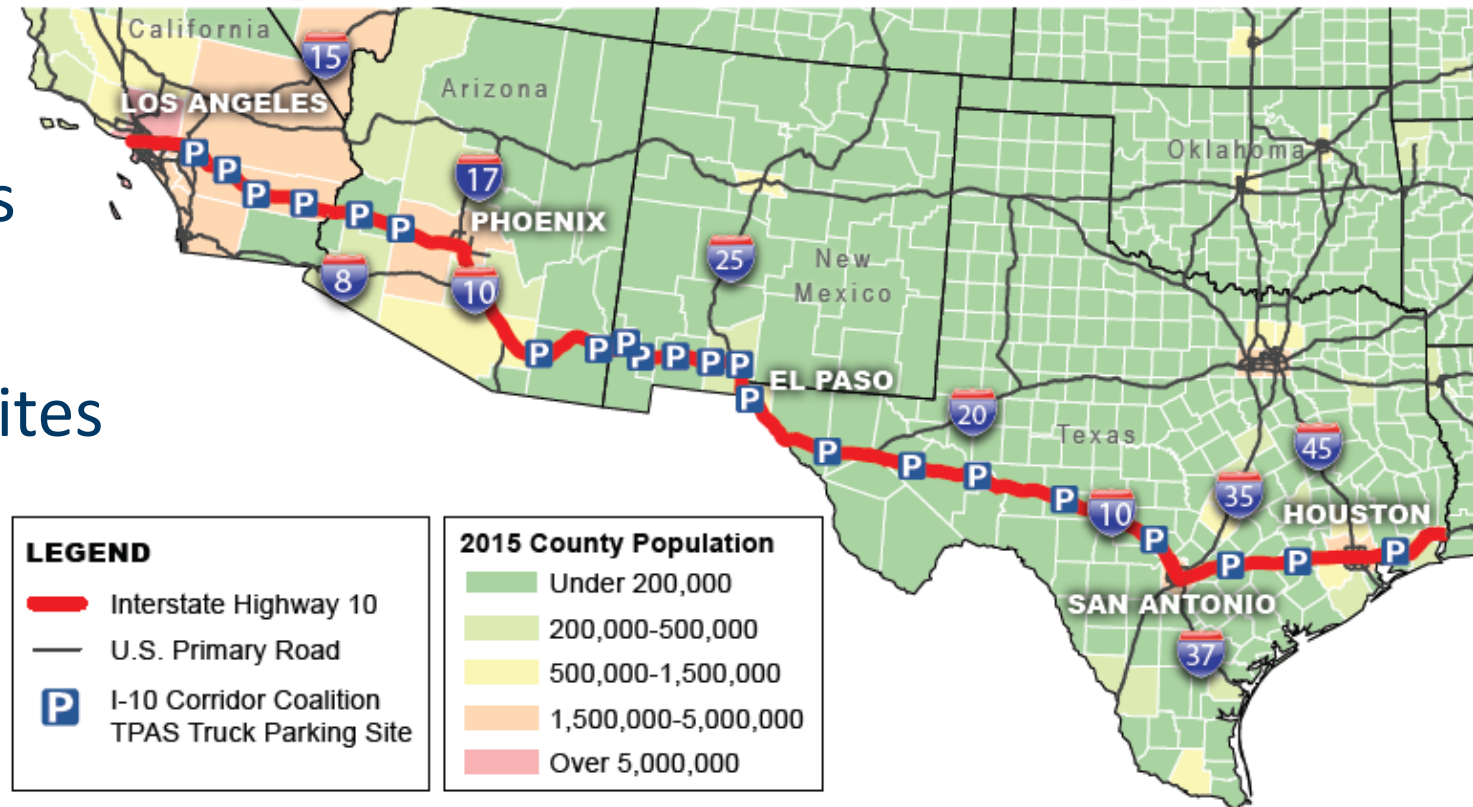
Truck Parking

Project (Current Capacity)	Additional Spaces	Project Cost (Cost/Space)	Rank 1 (Highest) to 7 (Lowest)
Haviland Rest Area Expansion – Location Ranked 1st			
Eastbound (7 spaces)	15	\$2.8m (~\$195k/space + land)	1 st
Westbound (7 spaces)	15	\$2.8m (~\$195k/space)	4 th (Tie)
Bouse Wash Rest Area Expansion Ramp Realignment – Near Location Ranked 10th			
Eastbound (12 spaces)	13*	\$2.0m (~\$285k/space)	2 nd
Westbound (12 spaces)	10*	\$1.5m (~\$375k/space)	4 th (Tie)
Meteor Crater Rest Area Paving and Striping – Location Ranked 7th			
Eastbound (33 spaces)	Formalize 15 Existing	\$1.5m (~\$100k/space)	6 th
Westbound (32 spaces)	Overflow Spaces	\$1.5m (~\$100k/space)	7 th
TPIMS Pilot – Location Ranked 1st, 4th, 9th, and Near 10th			
TPIMS Pilot – Add Sensors to Rest Areas & Dynamic Signs 5-20 miles before a Rest Area		\$300k-\$500k per rest area side Benefit/Cost Ratio of 4.7-5.6	3 rd

Truck Parking Availability System

- California 243 Miles 6 Sites
- Arizona 392 Miles 8 Sites
- New Mexico 164 Miles 5 Sites
- Texas 881 Miles 18 Sites
- Total 1,680 Miles 37 Sites

Figure 4: I-10 Corridor Coalition TPAS Truck Parking Sites



Arizona Freight Network Strengths & Weaknesses – Previous Freight Plan Findings

Strengths of the Arizona Freight Transportation System

- Ample capacity and performs well
- Extensive, robust, and reliable network of freight transportation facilities
- Extensive freight rail system
- Phoenix Sky Harbor International Airport has sufficient capacity, moving about 90% of Arizona air cargo
- Arizona's freight business clusters are generally well connected to the multimodal network
- Arizona's freight transportation system provides the vital links with Mexico, California, and Texas.

Weaknesses of the Arizona Freight Transportation System

- Shortage of passing and climbing lanes on KCCs (Key Commerce Corridors)
- Shortage of safe truck parking across Arizona
- Congestion in and around urban centers
- Limited LPOE (Land Ports of Entry) highway and rail capacity and limited roadway connections result in poor reliability at the Mexican border



Current Freight Issues

- COVID impacts on Ecommerce growth
- USMCA adoption and impact on cross-border trade with Mexico
- Current and potential future shortages and distribution limitations of essential cargo handling
- The effect of extreme climate events
- Technology issues and practices (data sharing, optimization, cybersecurity)

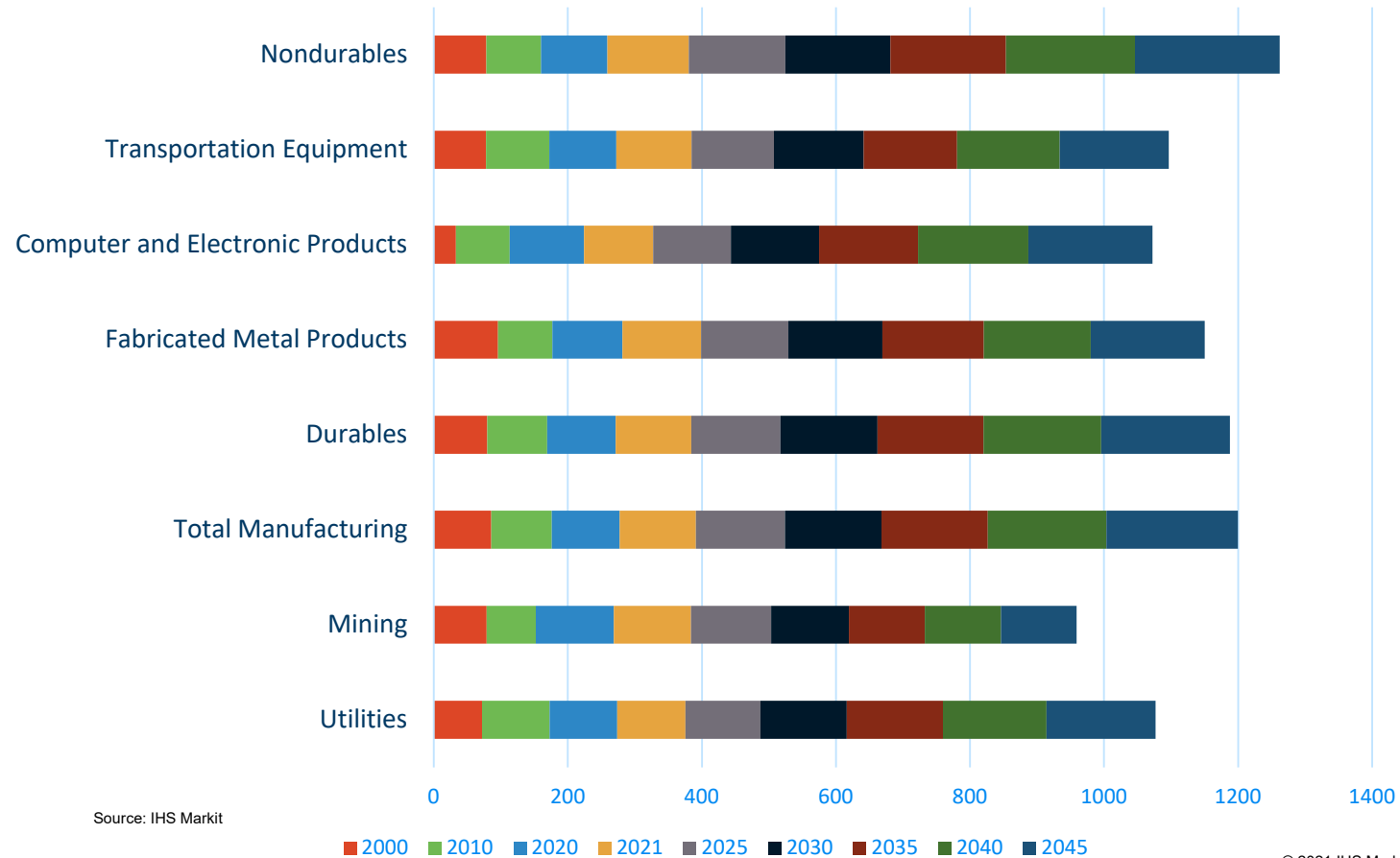


Economic Context

Arizona's Economy

- Over the last decade, Arizona has grown as a center of high-tech electronics and telecommunications manufacturing, attracting growth from California
- Strong population and household growth will be a driving force of economic expansion
- The state's population will rise at a 1.0% average annual pace through 2040. This is over twice the 0.4% rate for the whole U.S.
- Primary economic growth is forecast for: healthcare, 2.1%, construction, 5.1%, and business services, 3.7%.
- In the northwest corner of the state, the economy is dependent on the gaming industry in nearby Las Vegas
- Tucson's economy has strong links with Mexico

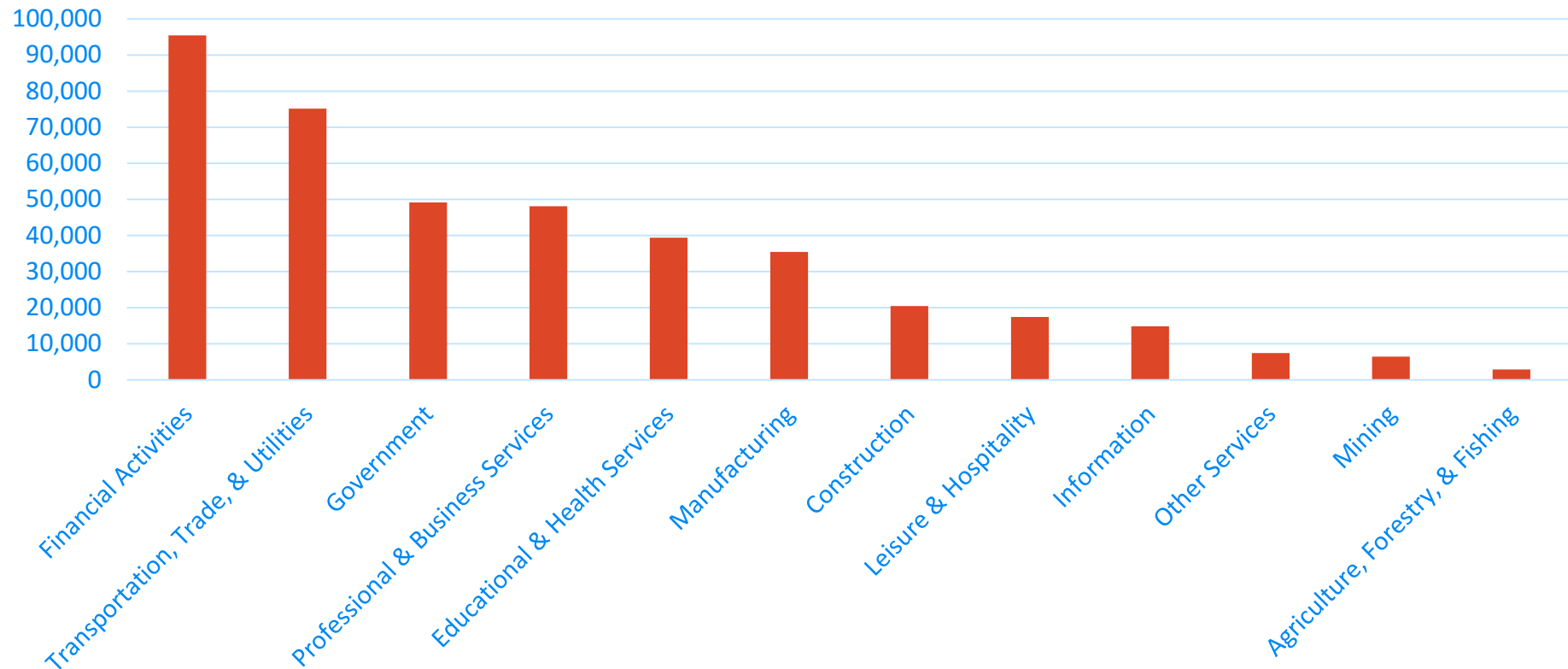
Industrial Production Forecast in Arizona*



* Index where 2017=100

GSP by Sector

Gross State Product by sector in 2021 (in millions of \$)



Source: IHS Markit

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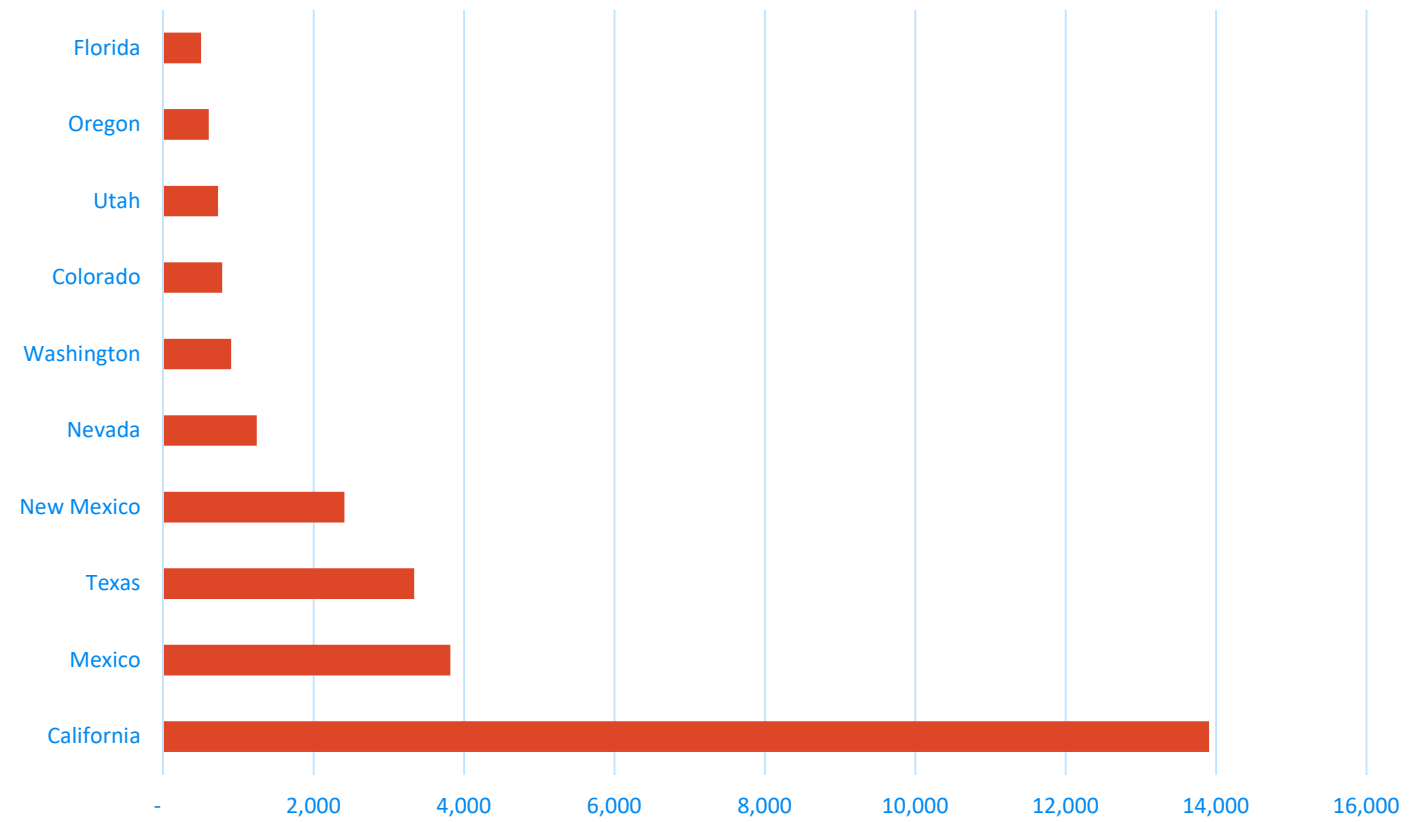
Arizona Total Truck, Air, and Rail– 2019 and 2045

	2019 Tons (000's)	2045 Tons (000's)	2019 Share of Total Tons	CAGR** 2019-2045	2019 Value (Million \$)	2045 Value (Million \$)	2019 Share of Total Value	CAGR** 2019-2045
Truck	284,928	407,502	54.0%	1.4%	395,213	647,998	30.2%	1.9%
Rail	242,761	341,788	46.0%	1.3%	854,422	1,285,245	65.3%	1.6%
Air	366	725	0.1%	2.7%	58,138	121,608	4.4%	2.9%
Total	528,055	750,015		1.4%	1,307,773	2,054,852		1.8%

**Compound Annual Growth Rate – mean annual growth rate from 2019 to 2045

Source: IHS Markit Transearch®

Top 10 Truck Inbound Traffic Flows into Arizona

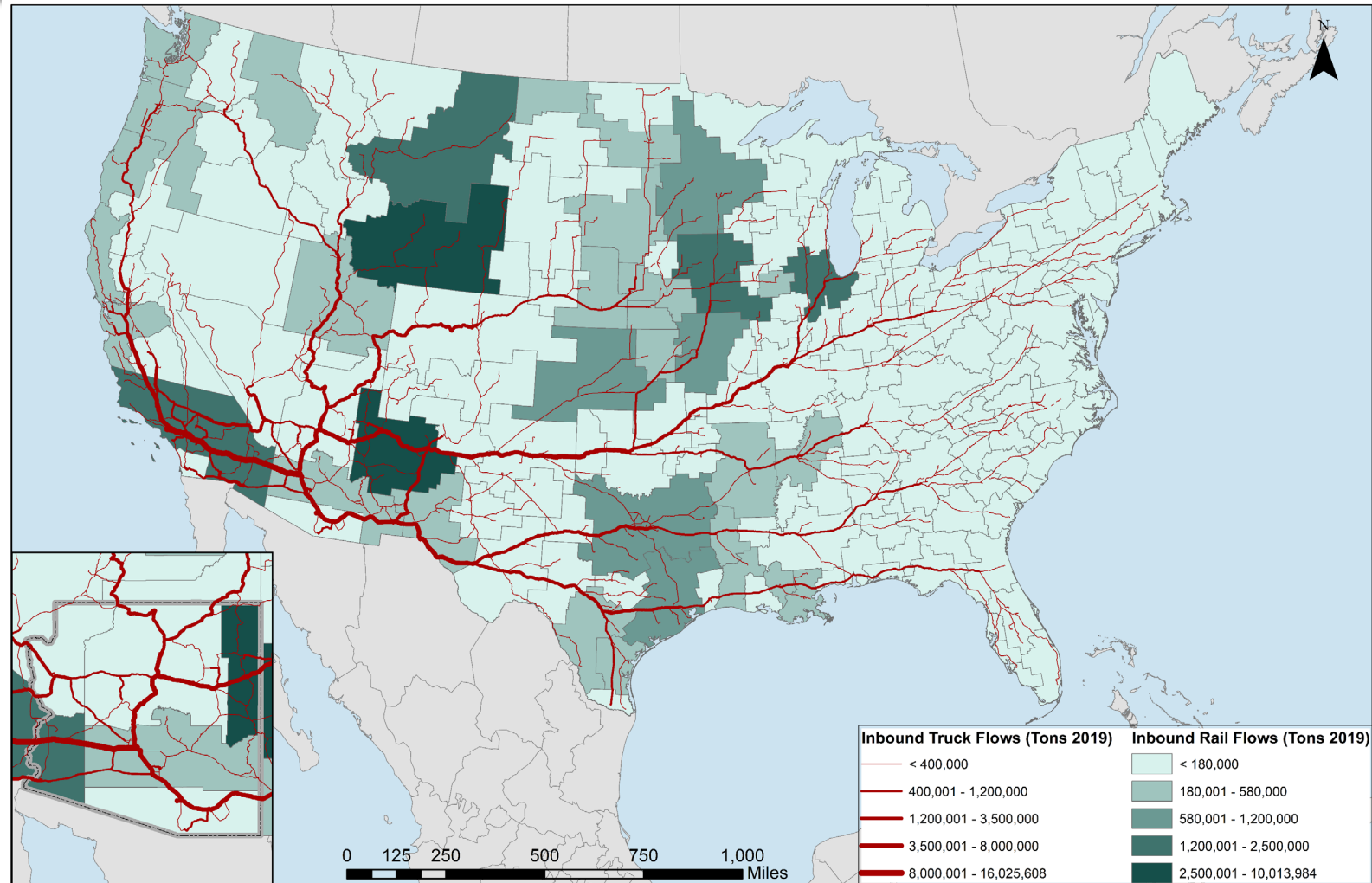


Origin State	Thousand Tons
California	13,910
Mexico	3,818
Texas	3,336
New Mexico	2,411
Nevada	1,247
Washington	904
Colorado	784
Utah	728
Oregon	606
Florida	506

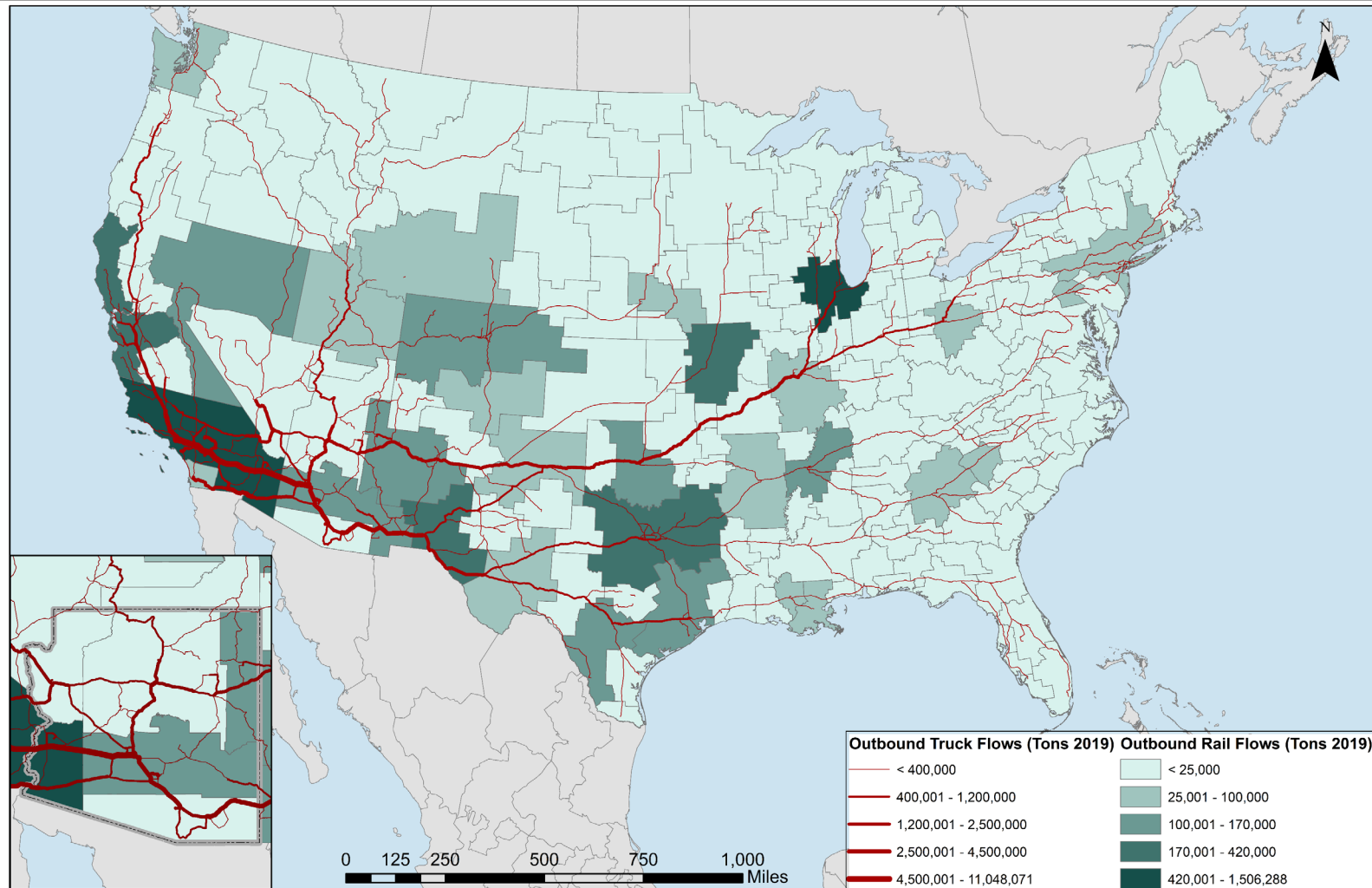
79.5% of truck inbound tons in 10 lanes

Source: IHS Markit Transearch®

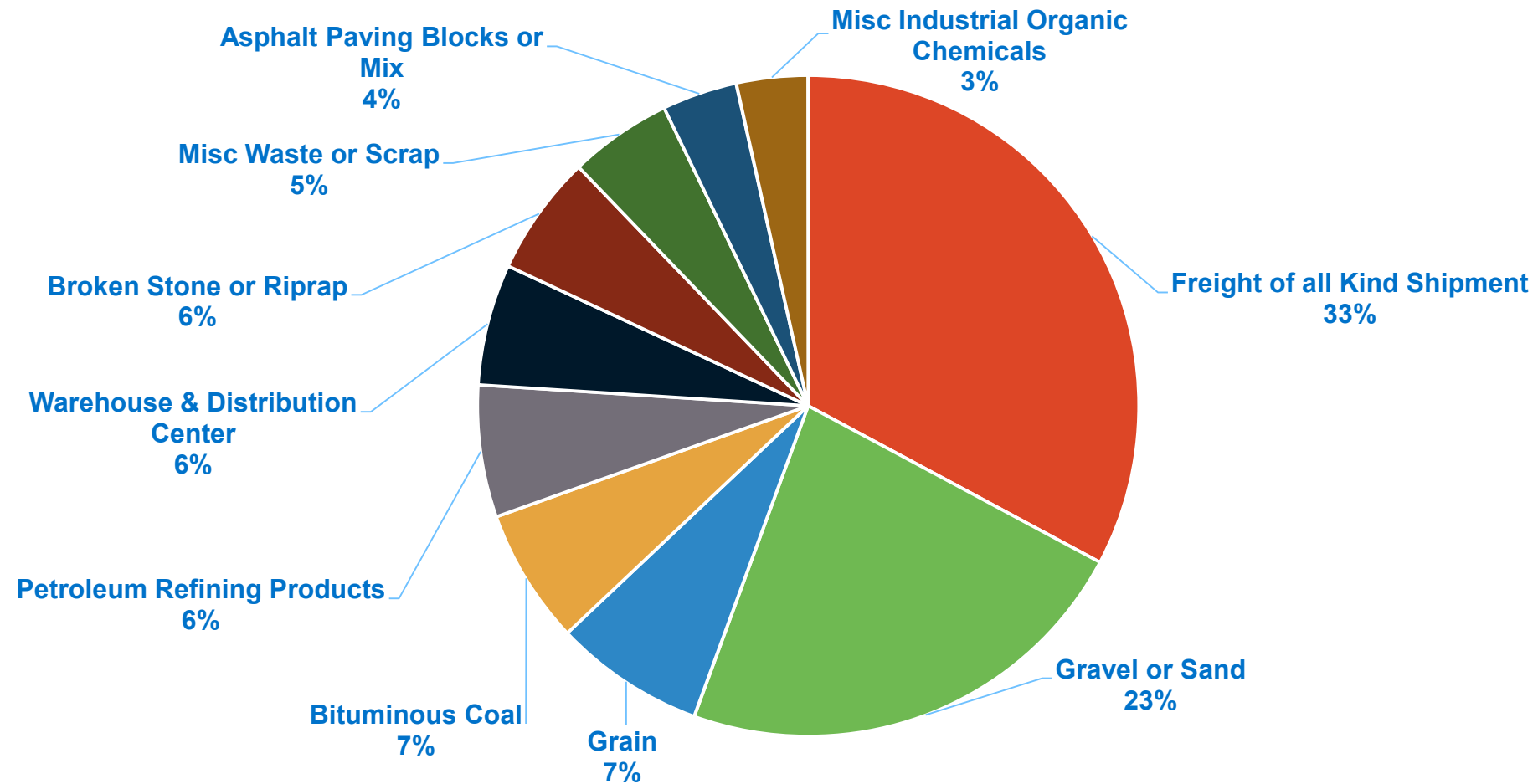
Inbound Truck and Rail Flows (2019 Tons)



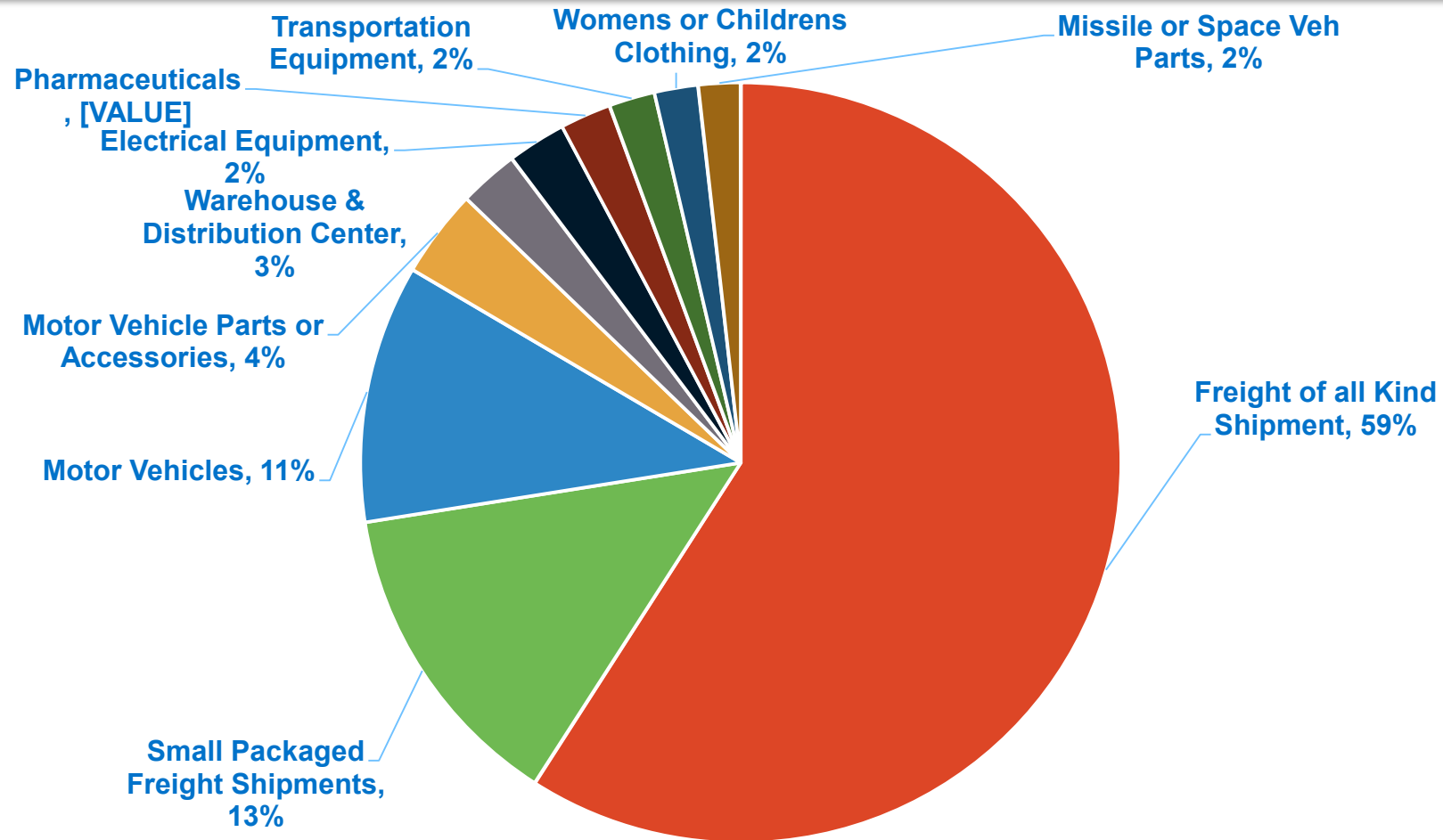
Outbound Truck and Rail Flows (2019 Tons)



Core Commodities in Arizona – Truck, Rail and Air by Total 2019 Weight



Core Commodities in Arizona – Truck, Rail and Air by Total 2019 Value





Bottlenecks

What is a Truck Bottleneck?

- Locations where trucks experience delays due to:
 - ✓ High congestion
 - ✓ Steep grades or sharp curves that lower speed
 - ✓ Bridges/roads with weight and/or height restrictions that results in significant detours for trucks
 - ✓ Re-occurring safety issues
 - ✓ Border crossings
 - ✓ Local circulation and congestion

Top 100 Truck Bottlenecks List in United States

I-10/US 60 Interchange:

- Not in Top 100 in Y2021

I-17/I-10 Interchange:

- Ranking dropped to #71 in Y2021 (higher avg. and peak speeds)

Why is this?

Reduced travel during 2020?

South Mountain Freeway opened providing alternative route?

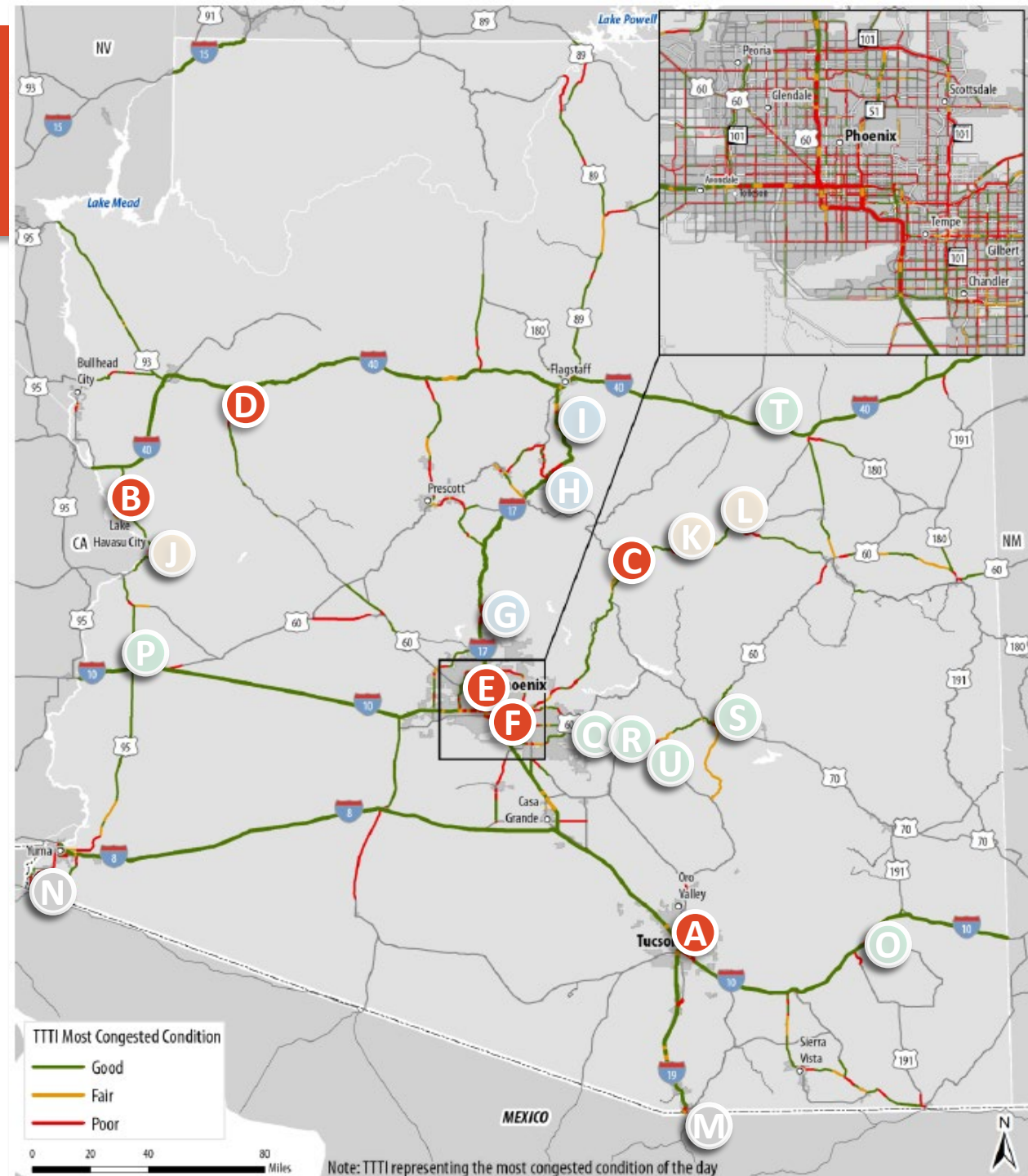
Year	Location	Rank	Average Speed	Peak Average Speed
2015	I-17 / I-10	57	51	42
2017	I-17 / I-10	40	49	39
2018	I-10 / US 60	28	51	43.1
	I-17 / I-10	43	47.3	35.7
2019	I-17 / I-10	33	4.3	31.8
	I-10 / US 60	85	49.4	39.6
2020	I-17 / I-10	30	42.8	29.6
	I-10 / US 60	69	47.7	37.8
2021	I-17 / I-10	71	51.3	46.1

Bottlenecks Identified in Previous Freight Plan

MAJOR CONTRIBUTING FACTOR

Congestion

- A** I-19 Traffic Interchange in Tucson
- B** SR 95 Within Lake Havasu City
- C** SR 87 Within Payson at SR 260
- D** US 93 South of I-40
- E** I-10/I-17 Interchange
- F** I-10/US 60 Interchange



Bottlenecks Identified in Previous Freight Plan

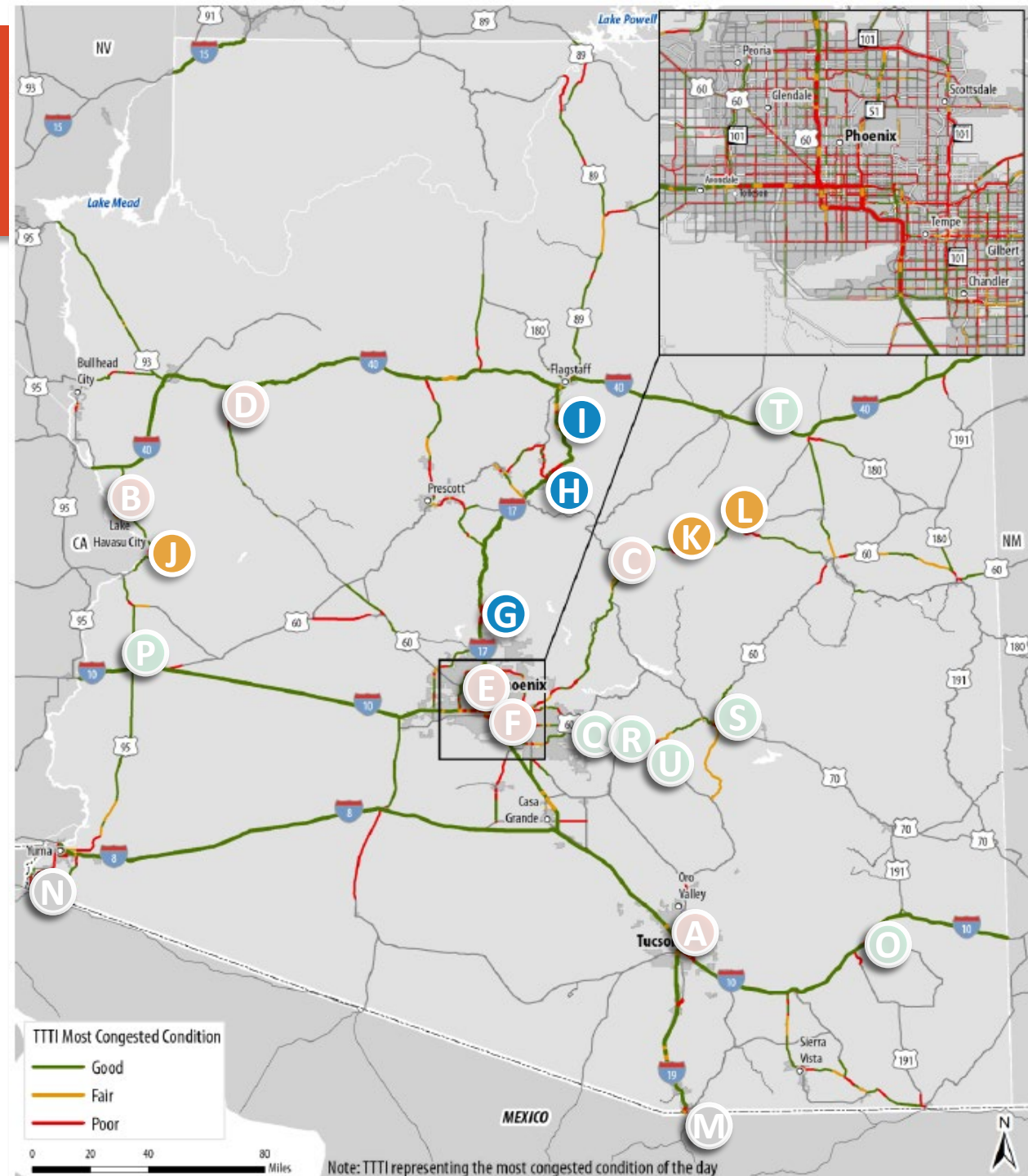
MAJOR CONTRIBUTING FACTOR

Steep Grades

- G** I-17 MP232 to MP242 @ Black Canyon City
- H** I-17 MP298 to MP306 @ SR 179/Stoneman Lake Rd
- I** I-17 MP329 to MP331 South of Flagstaff

Curves

- J** US 95 Parker Dam Area
- K** SR 260 MP 274 to 282 @ Christopher Creek Area
- L** SR 260 MP 303 to 313 @ Heber Area



Bottlenecks Identified in Previous Freight Plan

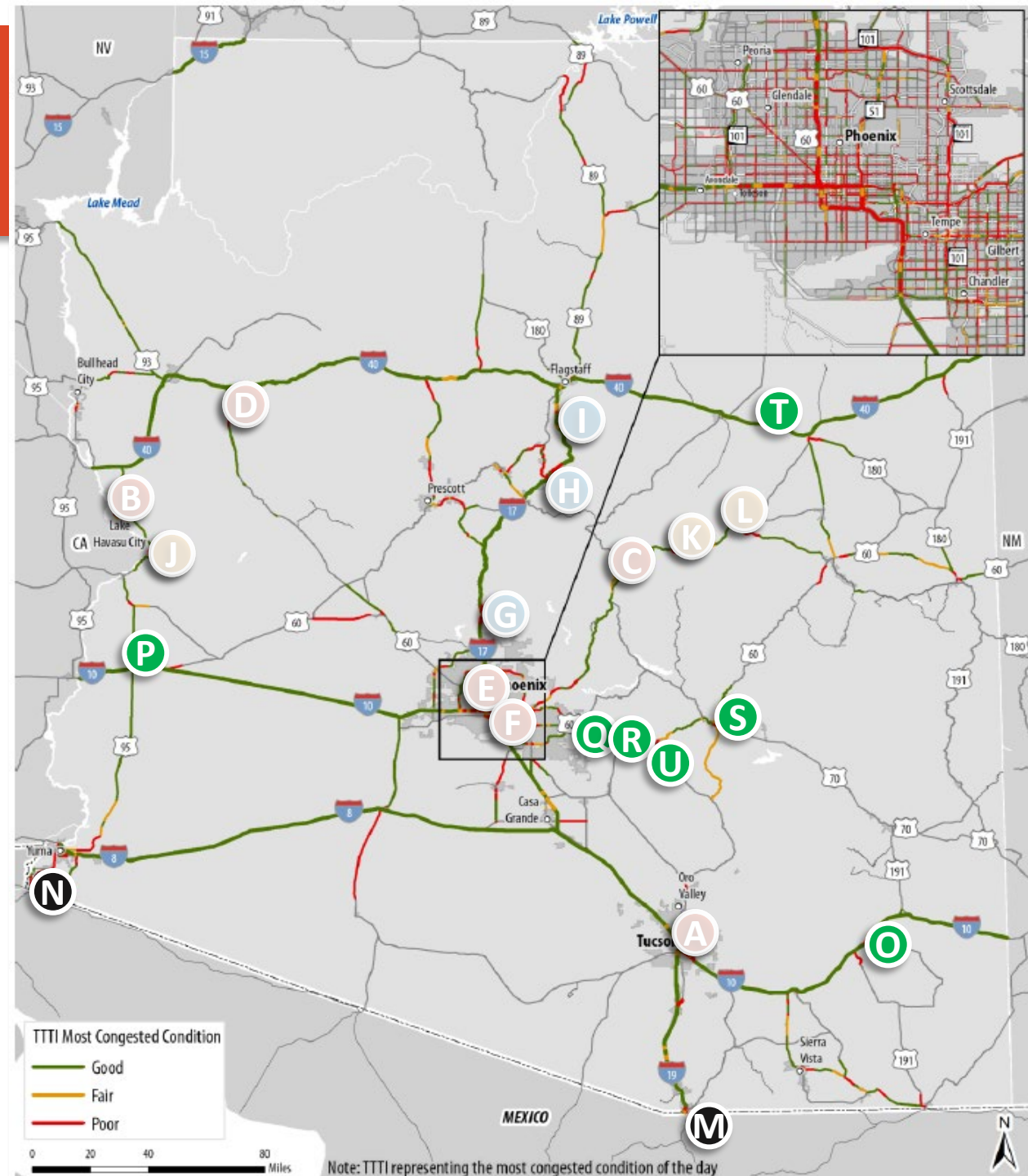
MAJOR CONTRIBUTING FACTOR

Border Crossings

- M** Nogales Port of Entry
- N** San Luis Port of Entry

Truck / Local Activity

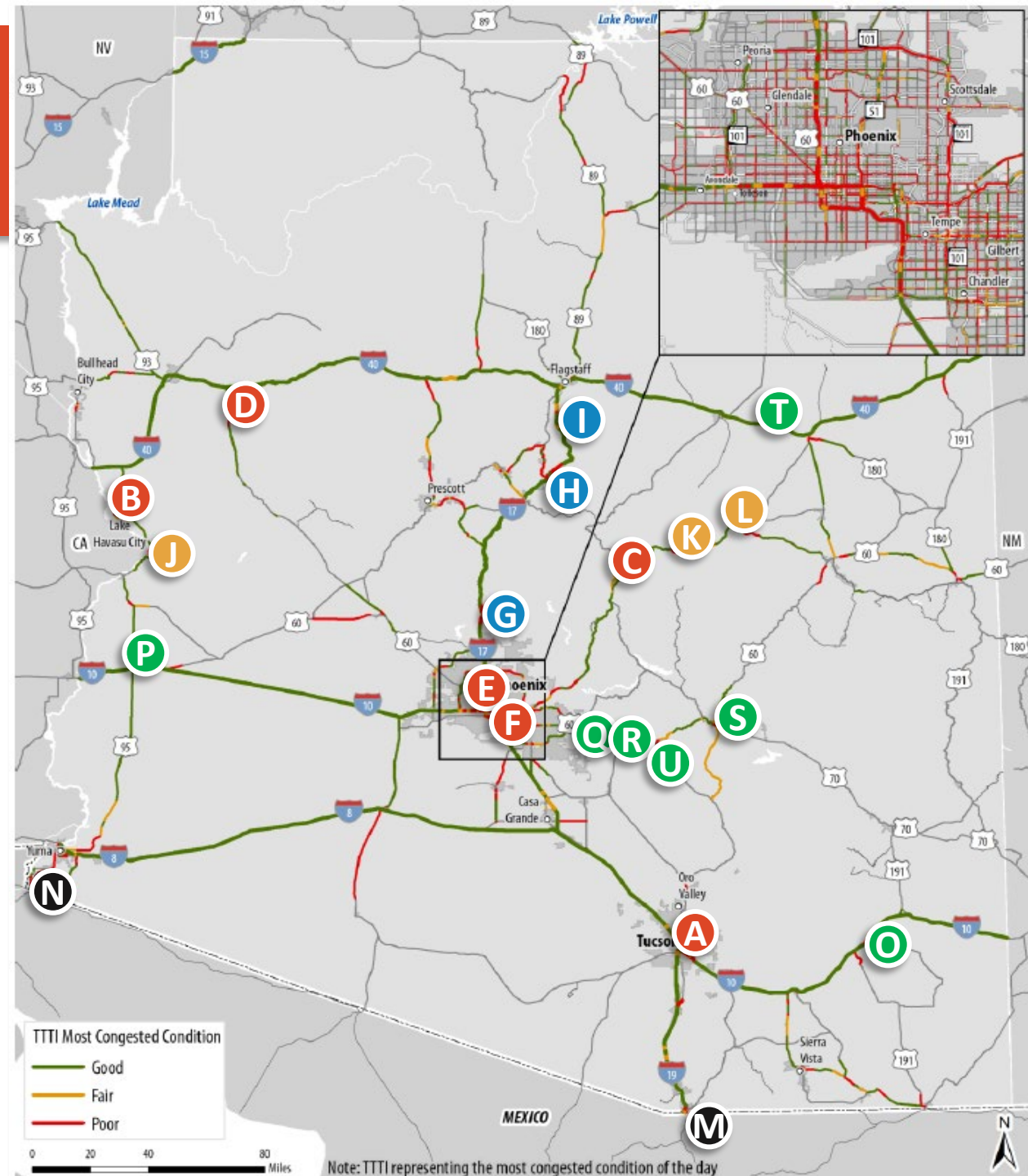
- O** I-10 Withing Wilcox Area, MP36 to MP40
- P** US 95 North of I-10
- Q** US 60 Within Gold Canyon Area
- R** US 60 at SR 79 Junction
- S** US 70 East of Globe
- T** I-40 East of Winslow Area
- U** US 60 at SR 177



Bottlenecks Identified in Previous Freight Plan

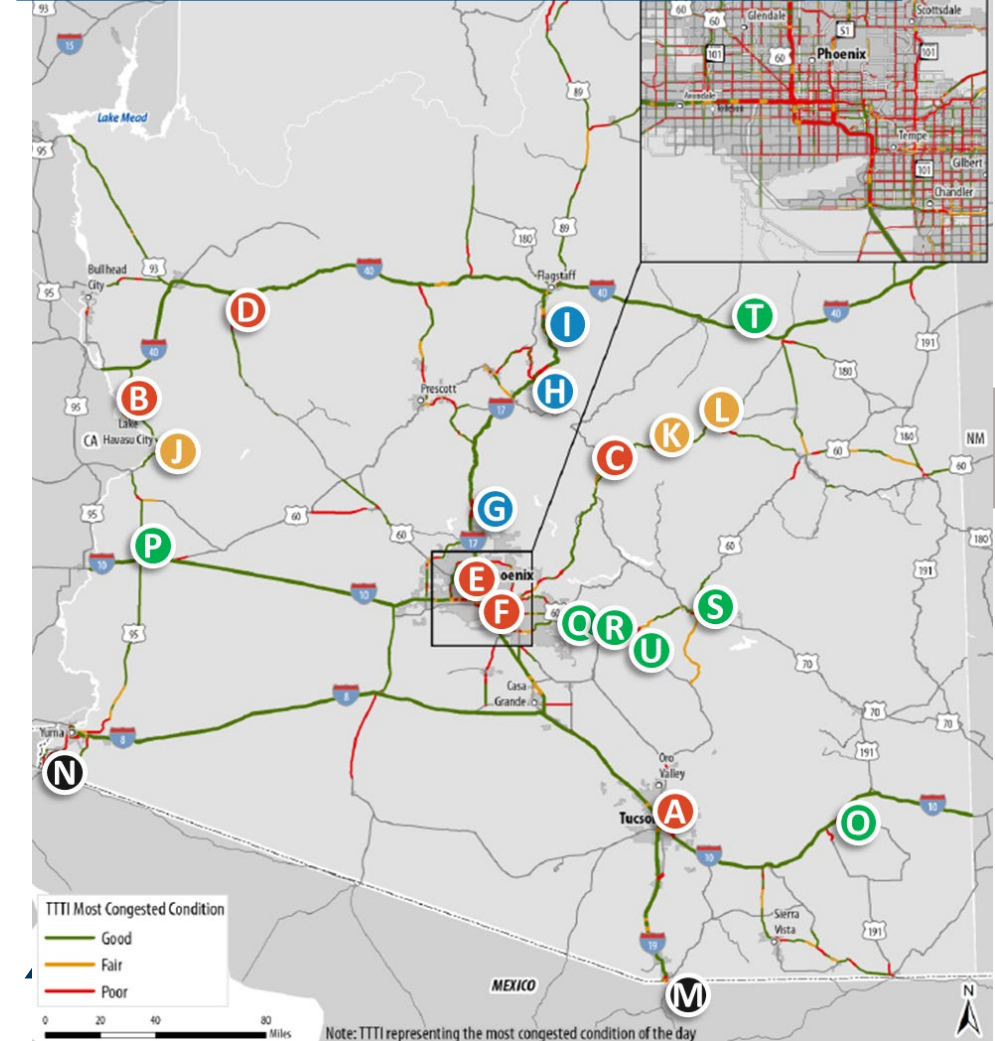
Which of these are no longer bottlenecks today?

Any new bottlenecks?

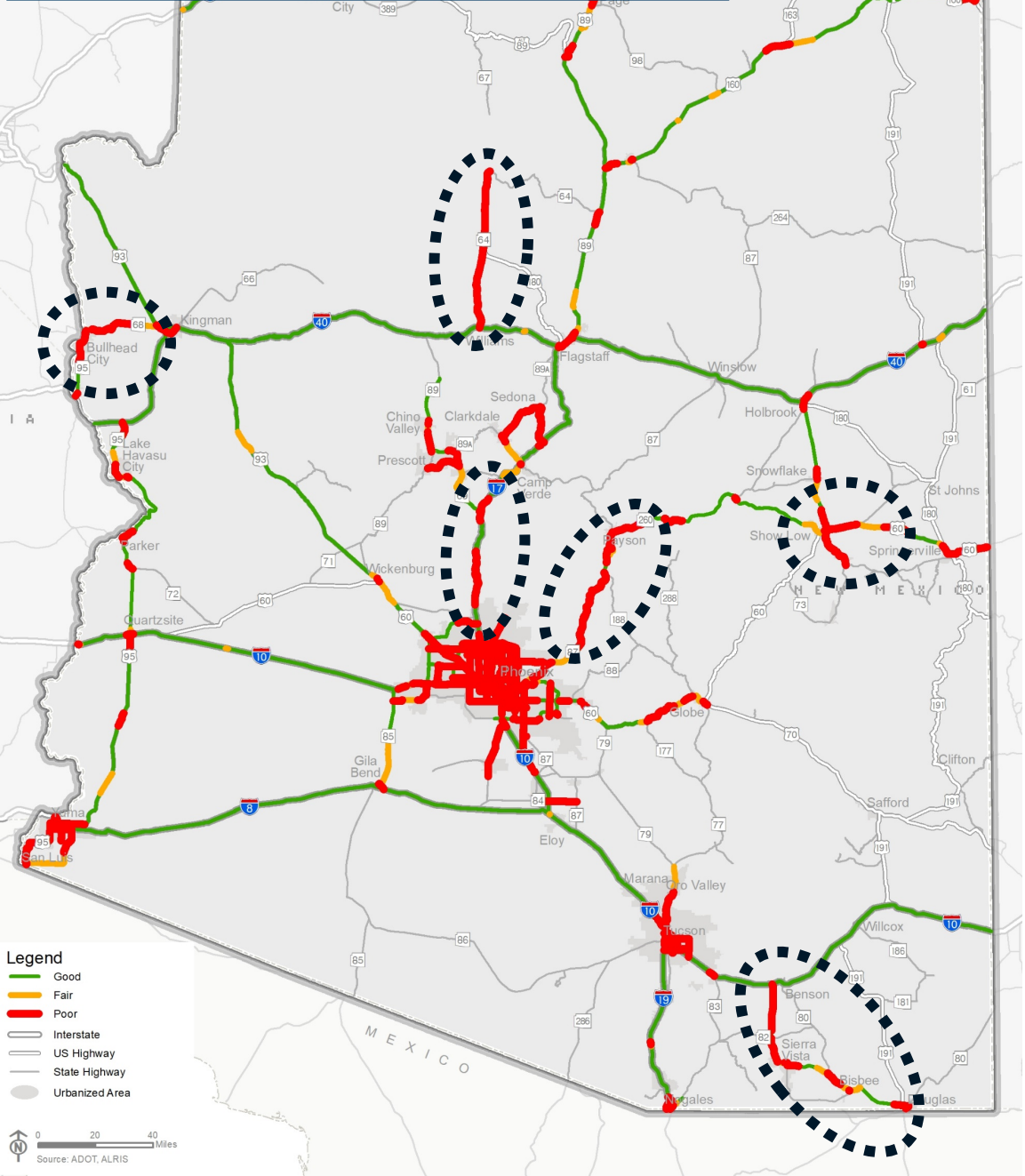


Truck Travel Time Reliability

Previous Plan Congestion Conditions



Year 2019 Congestion Conditions





Next Steps

Next Steps

- Identify and prioritize emerging trends and issues with the help of FAC
- Arizona's position in regional and international freight markets
- Major commodities and origins and destinations
- Update inventory of state freight transportation assets
- Freight performance measures update
- Freight Advisory Committee #2 (December 2021)



Re-Designation of the Primary Highway Freight System (PHFS)

PHFS Re-Designation Overview

- 2015 FAST Act designated PHFS and provided for an update every 5 years
- Each re-designation may increase the mileage on the PHFS by not more than 3% of the total system mileage
- Current PHFS is 41,518 centerline miles and is component of National Highway Freight Network (NHFN)
- Re-designation may add up to 1,246 miles
 - 286 centerline mile increase due to an assessment of changes in HPMS data
 - 960 miles available for consideration

Options

1. Equal allocation of 960 miles to each State
 - 18 miles of potential new PHFS for each State, DC, PR
2. Accommodate States that have greater restrictions on the use of Interstate Highway System routes to gain eligibility for funding under the NHFP and INFRA.
 - 53 miles of new PHFS for AK, AZ, CA, FL, GA, IL, IN, MO, MT, NM, NY, NC, OH, PA, TN, TX, UT, VA
3. Add to the PHFS any routes newly flagged as Interstate Highway System since the development of the Comprehensive PFN
 - However, 1,500 miles of new Interstate have been designated between 2011-2018

ADOT

Q/A?