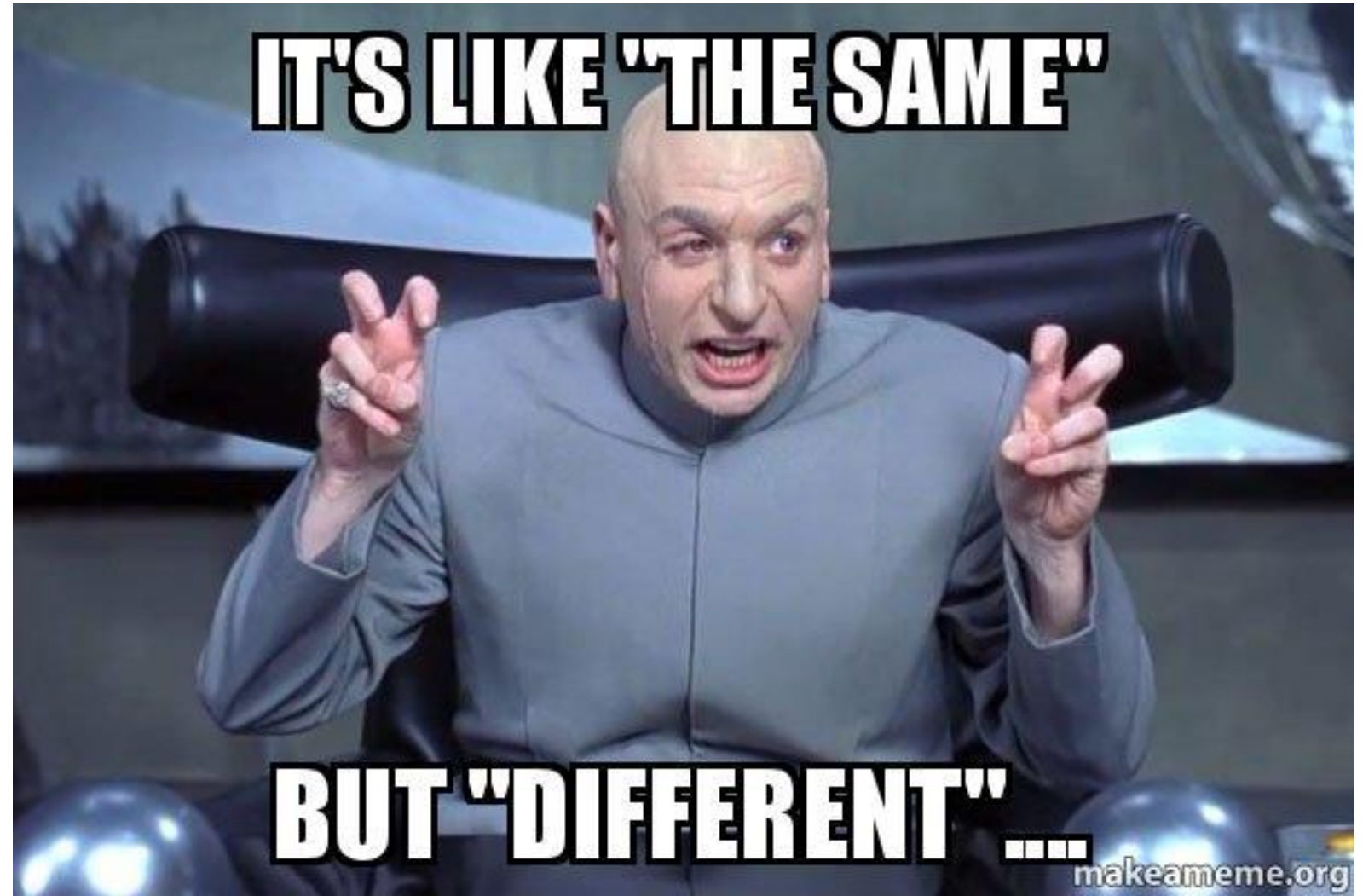




2022 Row Crop Short Course

Supply Chain In Crisis –
How did we get here?

Pandemic
Logistics (March
2020 to Present)
– Supply Chain
Problems Make
Headline News



Focus: Pre-Pandemic Global Supply Chain *Bottlenecks & Problems*

- Emergence of mega vessels & ocean carrier alliances
- Precision Scheduled Railroading (PSR)
- Labor Problems
- The Chassis Problem



Mega Vessels – 2000's The Big Boat Era

1. 2006 Maersk introduced Emma Maersk, a 15,000 TEU vessel
2. Ocean carriers pursued mega-vessels even as freight volumes declined after 2008 financial crisis
3. Largest mega-vessels carry up to 24,000 TEU, or 12,000 – 40' containers
4. Mega-vessels overwhelm ports leading to Port Congestion and longer dwell times
5. Port infrastructure hasn't kept pace with mega-vessel deployment; Many U.S. ports can't accept mega-vessels
6. Ocean carriers don't invest in port infrastructure
7. Bottom Line: Mega vessels haven't been a healthy development for the global supply chain...at least in the near term.

Sources:

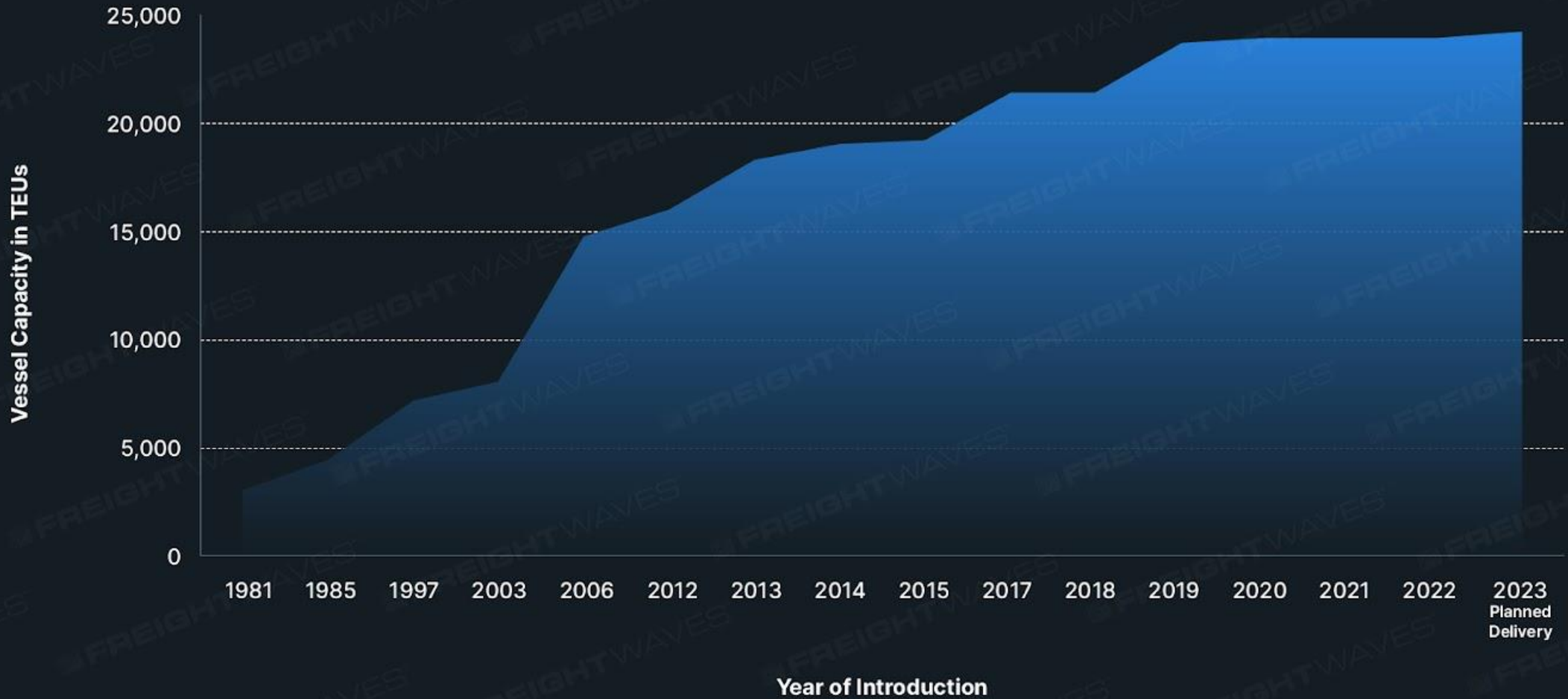
1. <https://www.freightwaves.com/news/big-boats-are-ruining-everything>
2. https://www.costamare.com/industry_containerisation#:~:text=Since

WHAT IS A TEU?...Twenty-foot equivalent unit



40' CONTAINER = 2 TEU

Largest Ships Delivered By Year



Ocean Alliances

1. Maersk's mega-vessels provided a massive competitive advantage and the strategy forced competition out of business or to consolidate.
2. Vessel sharing agreements via alliances allow carriers to offer more geographic sailing options with fewer vessels & lower costs
3. Alliances now more effectively control capacity through "blank sailings" which in turn allows them to more effectively control rates
4. Decreased competition, less capacity, higher ocean rates, larger vessels, fewer port options, port congestion, increased container dwell times, delays...



Source:

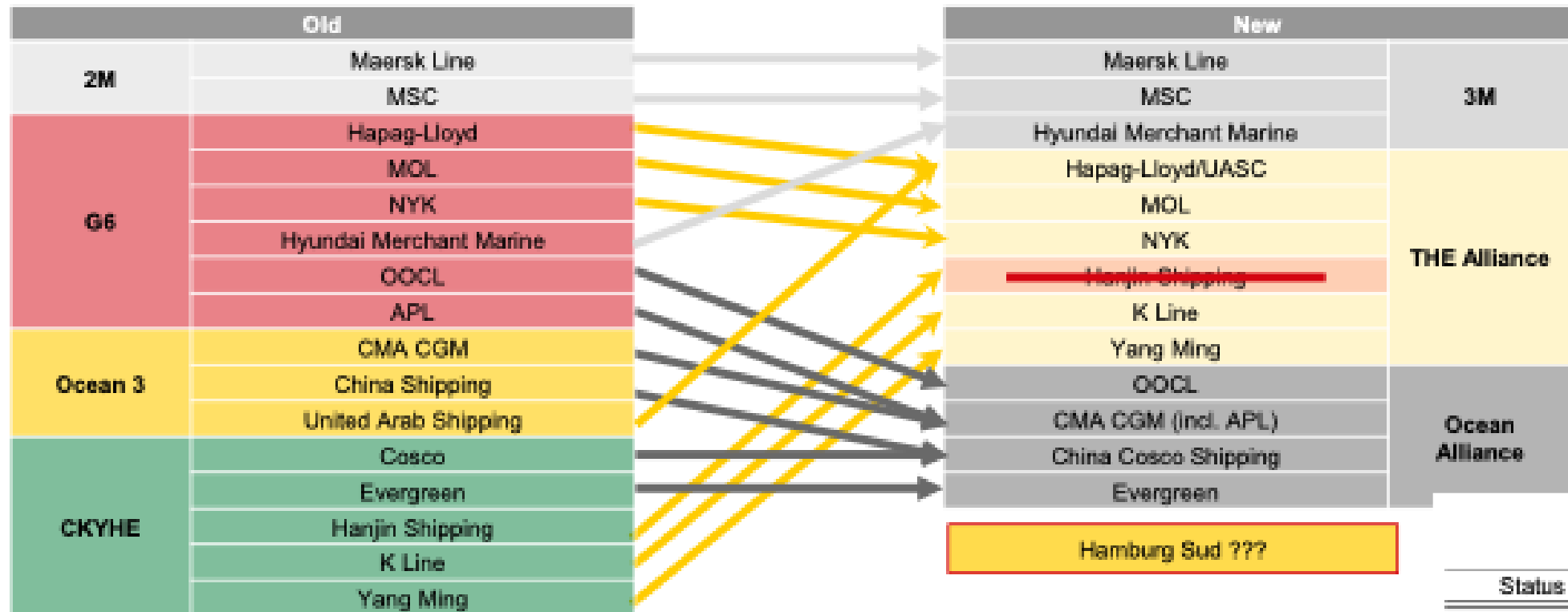
<https://www.flexport.com/blog/what-are-ocean-alliances/>

Vessel

April 2017 - Ocean Alliances: 16 Carriers & 4 Alliances to 12 Carriers & 3 Alliances

Carrier Alliances

- With the latest mergers & acquisitions amongst container lines the G6, O3 and CHKYE alliances will terminate by Mar 2017 and the new "Ocean Alliance" and "THE Alliance" be formed



Status 9 Sept 2016

Ocean Alliances Today: Further Consolidation

10 Carriers & 3 Alliances control 85% of global shipping capacity



Sources:

1. <https://www.flexport.com/blog/what-are-ocean-alliances/>
2. https://www.logisticsmgmt.com/article/top_30_ocean_carriers_2021_pricing_heads_up_as_shippers_fight_for_space

Precision Scheduled Railroading

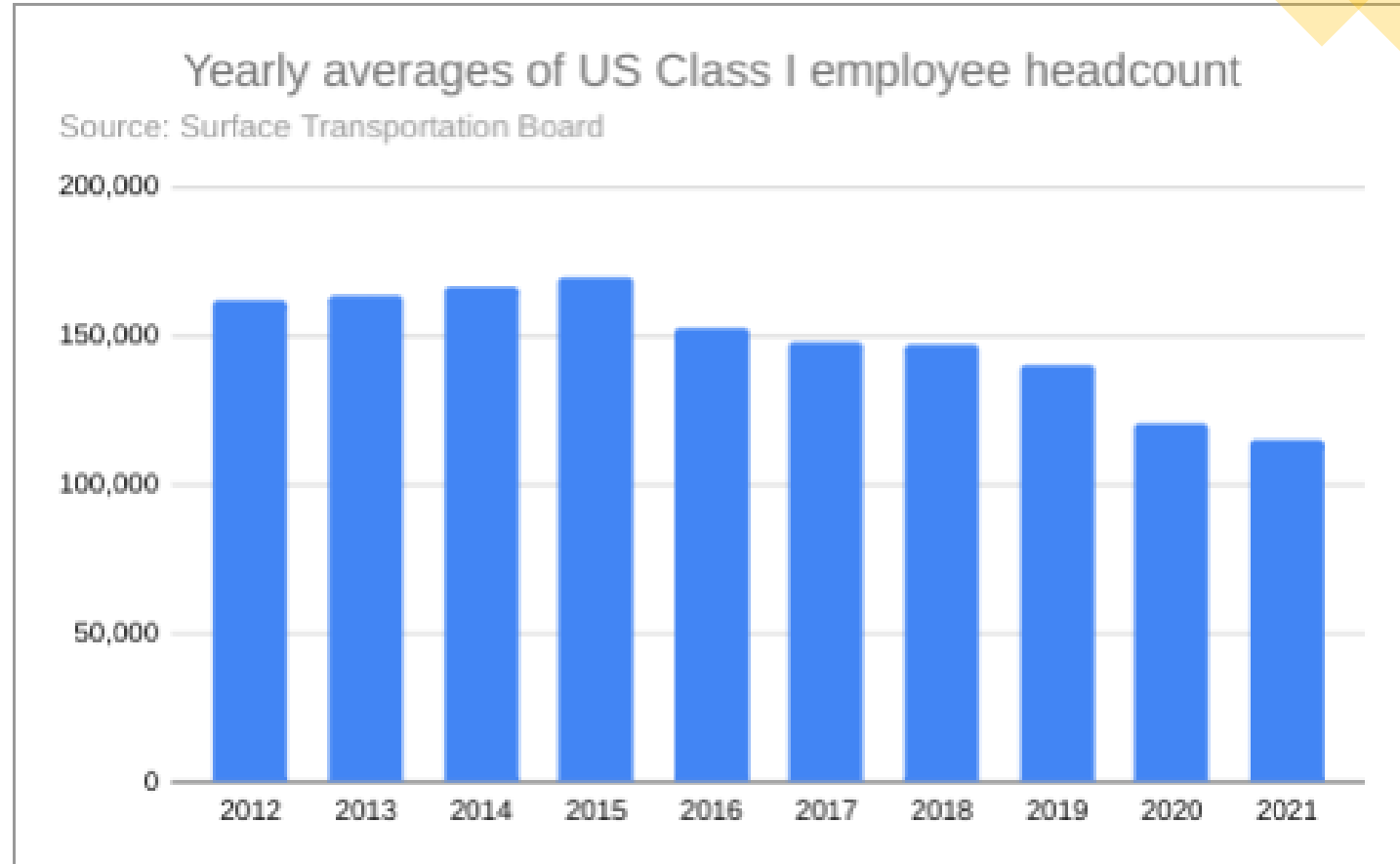
1. Precision Scheduled Railroading or “PSR” – Shifts the business focus from moving “trains” to rail cars
 - A. Trains don’t have to reach a certain length in order to move
 - B. Service becomes more “truck-like”
 - C. Unit Trains (trains with a single commodity) and Manifest Trains (trains with a variety of commodities) could be combined to meet PSR schedules
 - D. 6 of 7 Class I railroads have adopted PSR
 - I. Proponents of PSR argue:
 - a. It offers less wait time for shippers
 - b. More reliable & predictable service schedules
 - c. Reduces costs & streamlines operations

Sources:

1. <https://www.up.com/customers/track-record/tr091019-precision-scheduled-railroading.htm>

PSR Cont'd.

- II. Critics of PSR contend:
 - Employee headcount reduced too much resulting in service degradation due to insufficient crews & locomotive power
 - Trains getting longer—nearly 3 miles long in some cases; More difficult to inspect and pose a public safety risk
 - Inspections are neglected & maintenance deferred
 - PSR has difficulty adapting to economic shocks and changes in shipping patterns



Sources:

1. <https://fortune.com/2021/07/21/peter-defazio-precision-scheduled-railroading-problems/>
2. <https://www.freightwaves.com/news/the-perils-of-precision-scheduled-railroading>

Labor – Railroads, Ports, & Truck Drivers

Periodic contractual disputes between business management & organized labor jeopardize freight movement

- Last Thurs, Dec 1st, the country narrowly avoided a disastrous railroad strike
- The International Longshore & Warehouse Union (ILWU) & International Longshoreman's Association (ILA) often threaten freight flows.
- 2002 – An 11-day lockout cost the U.S. economy major delays and an estimated \$11 Billion.
- ILWU blamed for a 9 month port “slowdown” in 2015 due to contract negotiations.
- The last contract expired 7/1/22, and ILWU & PMA are currently in talks

The “Great American Truck Driver Shortage” – Not so much of a shortage as it is a driver retention problem

- 10 million Americans held commercial driver's licenses in 2019 - nearly triple the 3.7 million trucks requiring a driver to hold that certification.
- Turnover rate for truck drivers in fleets with more than \$30 million of annual revenue was 92% at the end of 2020
- Conversely, Less-Than-Truckload trucking carriers whose drivers made \$100,000 or more per year and enjoyed more time at home averaged only a 14% turnover rate

Sources:

1. <https://www.nytimes.com/2022/06/30/business/economy/ports-workers-union-california.html>
2. <https://prospect.org/economy/we-were-warned-about-the-ports/>
3. <https://www.nytimes.com/2022/02/09/business/truck-driver-shortage.html>

The Chassis Problem

- Container chassis are a linchpin of the international intermodal supply chain.
- **Problem:** Chassis are often not available when and where they are needed to timely move intermodal containers – Effectively reduces trucking capacity to the amount of available chassis.



The Chassis Problem – Causes

- 1. 2009 – “The Roadability Rule” - Federal Motor Carrier Safety Administration (FMCSA)**
- 2. 2010 Maersk divests chassis ownership & management. All other carriers follow suit.**
- 3. Chassis equipment is acquired & managed by a small number of 3rd party chassis pool companies - Direct Chassis Link, Trac Intermodal, Flexi Van Leasing, & NACPC.**
- 4. Lack of interoperability between chassis pools**
- 5. Differences in shipping volumes between port terminals lead to imbalances in chassis availability.**
- 6. 2015 – Actual shortage in the overall amount of chassis vs demand**
- 7. 2018 Sections 301 Tariffs on imported Chinese chassis appear to have disrupted trade flows of chassis**

- <http://www.globeconfreight.com/blog/causes-chassis-shortage-mean-freight-forwarders/>
- University of New Orleans Transportation Institute - White Paper on International Chassis

The Chassis Problem – Real World Scenarios



Trucker tendered container load

Cycle could repeat; Demurrage & Dry Run Fees incurred, Delays Mount; Shippers & Consumers bear costs

Pick-Up Appointment Scheduled at Terminal 10:00PM

Scenario 1 – “Missed Appointments”

Pick-up Appointment Can't be rescheduled until 24-48hrs later based on appointment & driver availability

Trucker is instructed to pull Chassis from Chassis Pool A

No chassis available; 10PM Pick-Up appointment missed

The Chassis Problem – Real World Scenarios

Scenario 2 – “Volume Surge”

Inbound Intermodal Trains to Rail Ramp

```
graph TD; A[Inbound Intermodal Trains to Rail Ramp] --> B[Train needs to be unloaded and all available chassis at terminal are utilized by mounted containers; All remaining containers are "grounded" in stacks as they are unloaded]; B --> C[Containers become buried in grounded stacks; Trucker can't pull container due to the lack of chassis & grounded containers]; C --> D[Containers are pulled out on a "Last In, First Out" basis, Oldest containers delayed most; Demurrage Charges Incurred, Delays Mount, Shippers & Consumers Bear Costs];
```

Train needs to be unloaded and all available chassis at terminal are utilized by mounted containers; All remaining containers are “grounded” in stacks as they are unloaded

Containers become buried in grounded stacks; Trucker can't pull container due to the lack of chassis & grounded containers

Containers are pulled out on a "Last In, First Out" basis, Oldest containers delayed most; Demurrage Charges Incurred, Delays Mount, Shippers & Consumers Bear Costs

Questions?

Daniel Booth, daniel@bookstraightline.com

(901) 494-9531

www.bookstraightline.com

Freight to the Point

