

Amtrak Chicago Gateway Railway Capacity Constraints

An analysis of current National economic
effects and consequences of failure to act

September 2015

Findings Presented by:
Frost & Sullivan and MSY Analytics, Inc.



Executive Summary: Findings



- The seven-county Chicago metropolitan area handled nearly 41,000 carload and container movements each day in 2007.
 - This represented total car load value of about \$94.5 Billion for dedicated rail shipments, increasing to \$187 Billion when rail intermodal shipments are also included.
 - Overall rail tonnage is expected to grow by 62% between 2007 and 2040, demonstrating the continued growth of inbound rail volume to the Chicago region and emphasizing the significant national role the Chicago rail network continues to play in the US economy.
- The Chicago congestion problem creates pronounced, multi-sectorial potential economic vulnerability of \$656 to \$799 billion every year, impacting six key industries constituting 85% of US GDP.
- The congestion challenge in Chicago poses the largest potential economic vulnerability to the US economy of all the major rail hubs in the United States. Industry observers have referred to Chicago as America's rail traffic speed bump. As a result, many key players with dependency on this hub are beginning to explore alternative supply chain routings, which could ultimately impact the national competitiveness of the Chicago region as well as US global competitiveness.

Executive Summary: Findings



- Delays and congestion on rail cannot be fully mitigated by traffic shifts to other surface modes, which have similar degrees of congestion.
 - According to the most recent Urban Mobility Report, the Chicago region experienced **271 million hours** of highway delay in 2011, translating to **\$6.2 billion** in total congestion cost. This estimate is broadly consistent with other attempts to quantify the costs of highway congestion in Chicago - in 2008, the Metropolitan Planning Council estimated a total congestion cost of **\$7.3 billion**.
- Failure to act on the Chicago problem would increase freight delay from 46 to 143 minutes per 100 freight train-miles in 20 years
- Many companies are experiencing significant delay related costs from the Chicago congestion challenge, possibly placing domestic corporations at a competitive disadvantage to their foreign counterparts in Europe and Asia that may not be experiencing comparable logistical challenges.

National Competitiveness: Implications of Inaction



- Increased operating and capital costs for US industry
 - The Chicago congestion problem has already started increasing operating and inventory costs of many industry players who depend on shipping their parts and finished goods via Chicago. If nothing is done about the problem, some of these players may have to begin passing the costs to consumers or make alternative supply chain arrangements that will possibly favor foreign manufacturing sources.
- Just-in-time delivery business models could be constrained from additional growth
 - Extended time delivery due to Chicago congestion could impact the ability of many companies to maintain just-in-time delivery service due to increased inventory and warehousing costs.
- Potential loss of economics of scale
 - The Chicago congestion problem could potentially shrink the areas that can be served by principal manufacturing centers of key leading domestic companies that represent 80% of US GDP and reduce the ability to gain economies of scale.

The Chicago Rail Bottleneck Problem



“When it comes to rail traffic, Chicago is America’s speed bump. Shippers complain that a load of freight can make its way from Los Angeles to Chicago in 48 hours, then take 30 hours to travel across the city. A recent trainload of sulfur took some 27 hours to pass through Chicago — an average speed of 1.13 miles per hour, or about a quarter the pace of many electric wheelchairs.”

JOHN SCHWARTZ
New York Times

“The Chicago region has become capacity-constrained and this is a choke point for freight.”

JEFF SRIVER
Director, Transportation Planning and Programming
Chicago Department of Transportation

Executive Summary: Findings

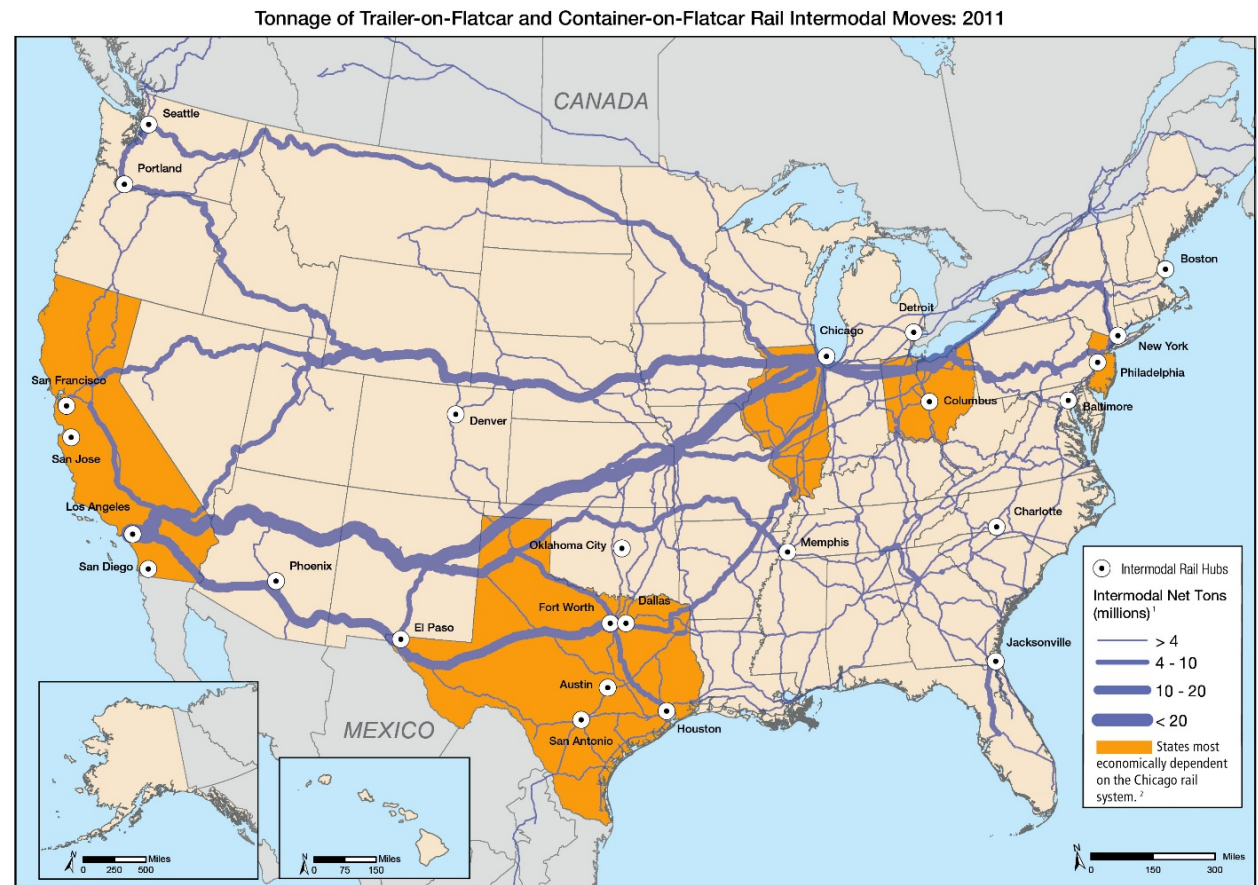
Chicago is the most densely-packed rail transfer point in the world, handling 33% of all US rail traffic and 60% of all US intermodal traffic

6 of the 7 largest rail carriers in North America access the Chicago area rail system.

30 hours on average, a train shipment spends traversing the Chicago region.

\$325 M in extra inventory needed to be maintained in-transit by shippers every day to compensate for Chicago congestion.

1-12 MPH of freight trains in the Chicago area.



¹ Source: U.S. Department of Transportation, Federal Railroad Administration, special tabulation, September 2013.

² Source: National Cooperative Highway Research Program, Return on Investment on Freight Rail Capacity Improvement, April 2005.

Compiled by Amtrak.

Executive Summary - Potential Impact on US GDP

The congestion in the Chicago hub potentially impacts US economic activity worth \$657 to \$799 billion annually


Industry	Contribution to US GDP in %	Total Contribution to GDP in billion US\$	Potential Impact due to Congestion: Low Estimate	Potential Impact due to Congestion: High Estimate
Agriculture and Natural Resources	1.3%	230.10	7.73	9.41
Automotive	8.3%	1,469.10	49.36	60.06
Manufacturing	11.0%	1,947.00	65.42	79.59
Retail	15.0%	2,655.00	151.20	183.96
Services*	43.5%	7,699.50	258.7	314.76
Energy	5.9%	1,044.30	35.09	42.69
Other	15.0%	2,655.00	89.21	108.54
Total Potential Impact on US GDP			656.71	799.00

A photograph of the Chicago skyline, featuring the Willis Tower prominently in the center. The image is overlaid with a semi-transparent dark gray box containing white text. The text is centered and reads: "Quotes from various sector and industry stakeholders on the impact of Chicago railway congestion on their businesses".

Quotes from various sector and industry stakeholders on the impact of Chicago railway congestion on their businesses

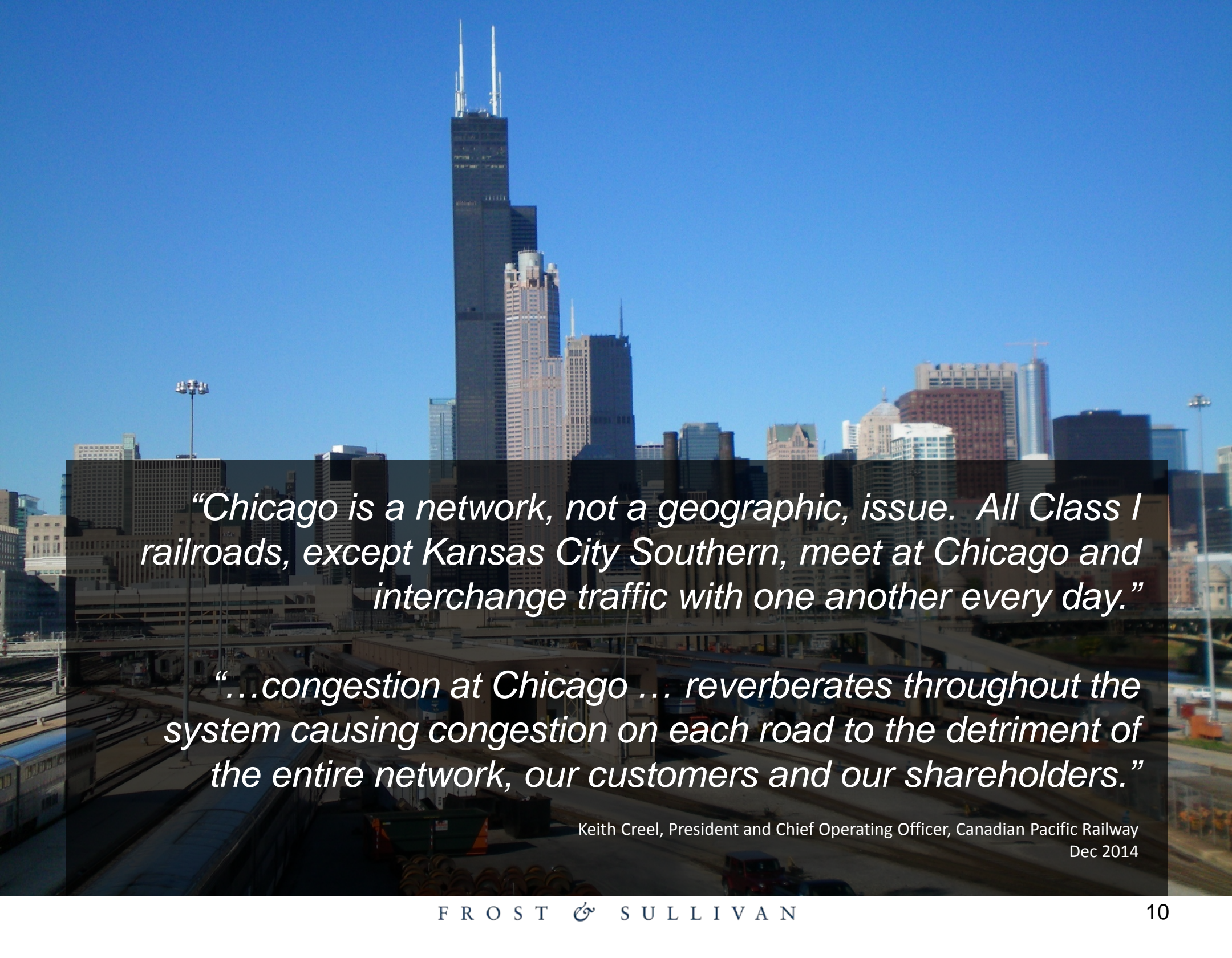
“Currently the nation’s railways are the busiest they’ve been in years, causing logjams at spots throughout Chicago – such as 63rd and State, and along 75th Street. The bottlenecks reverberate throughout the economy and across the country.”

Bryce Gray, “Working on the Railroad: Chicago copes with worst rail congestion in years”
Medill School of Journalism, Northwestern University



“While the spike in rail traffic is a national phenomenon, Chicago shoulders a big share of the burden with its prominence as a rail hub where six of the nation’s seven largest railroads converge.”

Medill Reports Chicago
Feb 2015
ANALYTICS

A photograph of the Chicago skyline under a clear blue sky. The Willis Tower is the most prominent building. In the foreground, there are some industrial or construction elements, possibly related to a railway yard. A semi-transparent dark box is overlaid on the middle of the image, containing two quotes in white text.

“Chicago is a network, not a geographic, issue. All Class I railroads, except Kansas City Southern, meet at Chicago and interchange traffic with one another every day.”

“...congestion at Chicago ... reverberates throughout the system causing congestion on each road to the detriment of the entire network, our customers and our shareholders.”

Keith Creel, President and Chief Operating Officer, Canadian Pacific Railway
Dec 2014

A large combine harvester is shown in a field of golden grain, likely corn, during sunset. The harvester is positioned in the foreground, angled towards the right. The sun is low on the horizon, creating a bright, warm glow that silhouettes the machine and casts long shadows. The sky is filled with soft, white clouds. The overall scene conveys a sense of agricultural activity and the beauty of the harvest season.

AGRICULTURE

“The sheer gravity, magnitude, and scope of rail service disruptions now being experienced are unprecedented, and have rippled through all sectors of grain-based agriculture.”

Kevin Thompson - Assistant VP, Cargill Inc. and
Chairman, National Grain and Feed Association Rail Shipper Committee

AGRICULTURE

“There are industries that are most affected by rail congestion and these industries are almost always primary and secondary industries. Industries that this nation is built on.”

Engineer, Cargill

A combine harvester is shown in a field at sunset. The harvester is the central focus, with its red and silver components clearly visible. The sun is low on the horizon to the right, creating a warm, golden glow and casting long shadows. The sky is filled with soft, white clouds. The overall scene is peaceful and evokes a sense of rural life and agriculture.

AGRICULTURE

“A number of issues have disrupted rail service across our state, and South Dakota’s agricultural producers, many who are limited to a single rail carrier, have been hit particularly hard by rail service backlogs.”

Hon. John Thune, U.S. Senator

A large combine harvester is shown in a field of golden grain, likely corn, during sunset. The sun is low on the horizon, creating a warm, golden glow and long shadows. The sky is filled with soft, white clouds. The harvester is the central focus, with its red and silver components clearly visible. The overall scene conveys a sense of agricultural activity and the beauty of the rural landscape.

AGRICULTURE

“The Chicago bottleneck creates delays where cars are waiting for days ... The prices of cars in the secondary market skyrockets. You end up paying double to make your commitments.”

Bruce Lindholm, State of South Dakota, Department of Transportation



AUTOMOTIVE & MANUFACTURING

“As a result of rail service disruption, auto manufacturers are spending tens of millions of dollars a month to find other means of moving stranded vehicles or to store them until rail service is available.”

Mitch Bainwol – President & CEO, Alliance of Automobile Manufacturers

A photograph of an automotive assembly line. Several silver car bodies are positioned on a yellow overhead crane system. The cars are in various stages of assembly, with some doors open. The background shows the industrial structure of the factory with white beams and lights.

AUTOMOTIVE & MANUFACTURING

“The reasons to use rail: more economical, safer, perfect for heavy machinery and tools. The reasons not to use rail: Delays and congestion that pretty much erases all the stated benefits.”

Manager, Precision Tools



MANUFACTURING

“Some of our products are so big that we have to use rail to transport them and container size is the biggest factor. So there are industries where the efficiency of rail services directly impacts productivity.”

Senior Engineer, Caterpillar



ENERGY, OIL & GAS, COAL

“Chicago is the epicenter of the nation’s rail system....Crude Oil shipments by rail mushroomed from approximately 30 million barrels in 2010 to nearly 270 million barrels in 2014, adding stress to a system that has been trying to keep pace with years of heightening consumer demands amidst the country’s economic recovery.”

Ed Greenberg, Association of American Railroads



ENERGY, OIL & GAS, COAL

“The 2014 year-to-date round-trip transit times to our markets in the U.S. East Coast have increased from 12 days to as many as 20 days...which have resulted in our plants operating at about 85% of our normal operating levels.”

Kenneth A. Applegate – Senior VP Transportation, Valero Corporation



ENERGY, OIL & GAS, COAL

“The people who suffer are not in Chicago. The people who are shipping are ones who suffer. Such as in New York or Detroit, these are the people who suffer. This impacts the end user and impacts the entire value chain.”

Financial Controller, Schlumberger



RETAIL

"The Chicago congestion problem leads to pain for everyone, trickling down the supply chain and ultimately resulting in highest costs that are passed down to the end customers. For example, during one of the most recent delays, one retail company reported that almost half of its time sensitive valentines products did not make it to the shelf causing huge price mark downs and product write-offs which significantly impacted the economics of the retailer."

Kelly Kolb, Vice President for Government relations of the Retail Industry Leaders Association



RETAIL

“For our bulky lumber items it is more economical to use rail then over-the-road carriers. We have had issues with product coming to the Midwest (Michigan) using Chicago and it has taken 3 days longer to have freight arrive...”

Operations Manager, Lowes

Specialized Retail Sector Supply Chain Impact

Implications of delayed shipping



Nike spends \$4 million/week to carry an extra 7 to 14 days of inventory to compensate for shipping delays.



Unreliable and delayed shipping requires businesses to have:



*more operators
and equipment*



*more inventory
in stock*



*more distribution
centers*

UPS loses \$100 million annually for every five minutes of daily network freight delays

Already, delays hamper the existing rail freight network. A lone train stopped in Chicago can force other trains to stop or slow as far away as Los Angeles or Baltimore. *“It's a ripple effect - everything in my system backs up.”*

Scott Haas, a Vice President for United Parcel Service, which uses 3,000 freight rail cars every day - more than any other U.S. business.





ALTERNATIVES



“Other modes of transport can't take up the slack: Trucking faces its own congestion problems, a shortage of drivers and high fuel prices. Ships and barges can't reach large parts of the country. Airplanes couldn't begin to carry the millions of tons of coal, waste, chemicals, grain and cars hauled by trains.”

USA Today

Amtrak Chicago Gateway Railway Capacity Constraints

**CHICAGO AND MIDWEST REGION
SUPPLEMENT**
September 2015

Findings Presented by:
Frost & Sullivan and MSY Analytics, Inc.



Executive Summary: Chicago Region Findings



- Results from a regional economic analysis show that addressing the problem by bypassing freight around Chicago would, by 2020, reduce GRP for the city by \$1 to 3 billion annually while eliminating 5,000 to 15,000 jobs. Further analysis suggests the annual GRP economic impact losses could potentially be as high as \$2.5 - \$3.5 billion by 2025 and job losses reaching 30,000 if Chicago congestion issues remain unaddressed.
- The link between an efficient freight system and international economic competitiveness is especially pronounced in industries that rely on the frequent shipment of inputs and/or outputs, including manufacturing, construction, and retail trade. Collectively, these three freight-dependent industries represent nearly one-quarter of all jobs in the Chicago region and add over \$115 billion per year to the regional economy.

The Chicago Rail Bottleneck Problem



“Chicago’s rail congestion has threatened the city’s once vaunted reputation as the country’s premier rail crossroads”

Washington Times



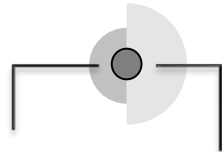
INSTITUTIONS

Amtrak trains serving the Chicago hub are critical to the educational sector in the Midwest US

Selected Universities Served by Amtrak Chicago Hub Services

Some cities and towns have ridership that exceeds residential population, suggesting disproportionate dependence of students and the local economy on Amtrak Chicago hub services.

Midwest population vs. ridership 2014



Left half-circle **Right half-circle**

Proportional to US census community population Proportional to Amtrak ridership in FY2014

Right half-circle larger than left indicates Amtrak utilization is high (greater than local population); **left half-circle larger than right** indicates possible market for service expansion



Star

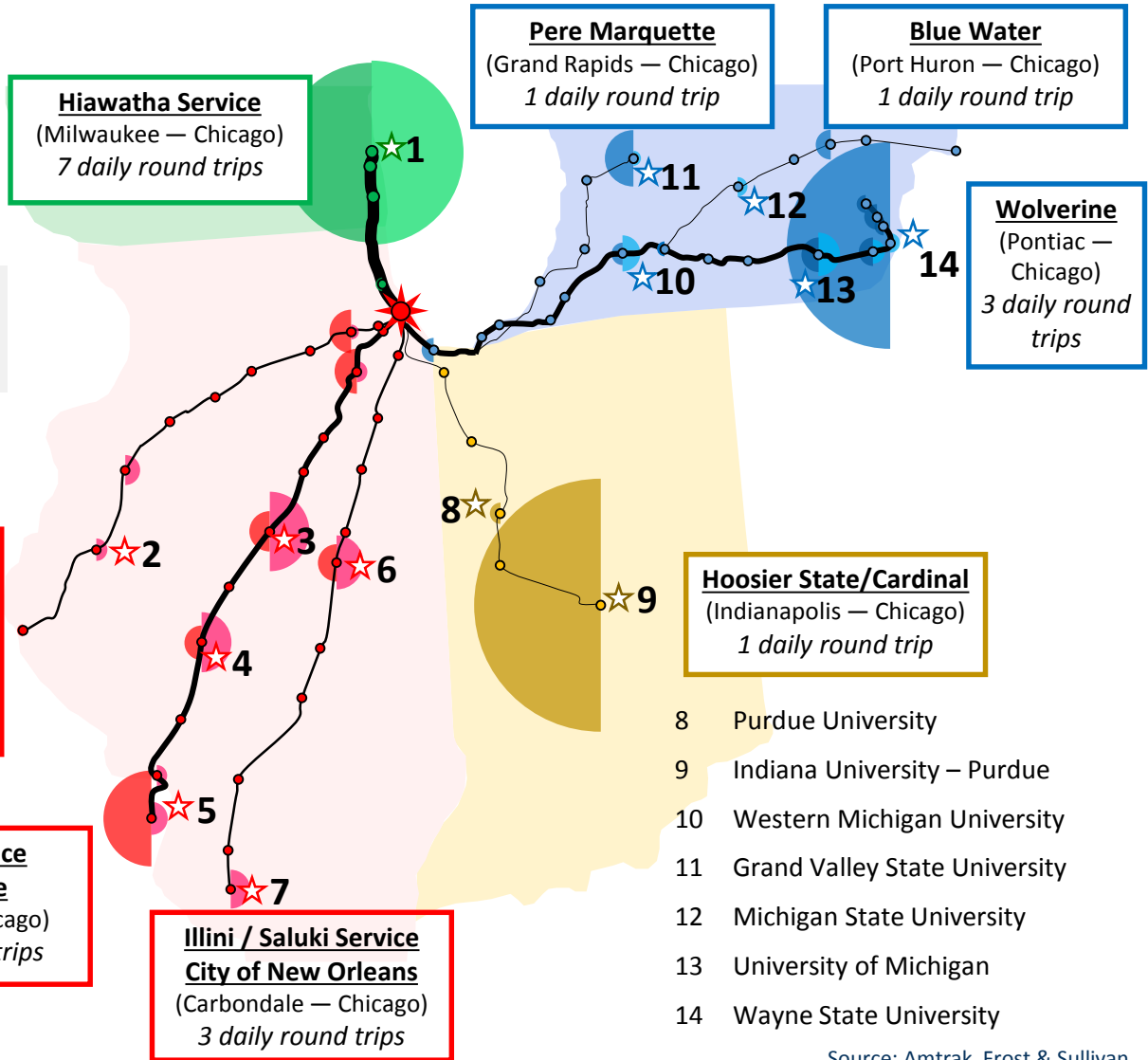
Appears for stations that serve a 4-year institution with 6,000+ in students/faculty

- 1 University of Wisconsin – Milwaukee
- 2 Western Illinois University
- 3 Illinois State University
- 4 University of Illinois – Springfield
- 5 St. Louis University
- 6 University of Illinois – Urbana-Champaign
- 7 Southern Illinois University

Illinois Zephyr
Carl Sandburg
Southwest Chief
California Zephyr
 (Quincy – Chicago)
 2-4 daily round trips

Lincoln Service
Texas Eagle
 (St. Louis – Chicago)
 5 daily round trips

Illini / Saluki Service
City of New Orleans
 (Carbondale – Chicago)
 3 daily round trips



Source: Amtrak, Frost & Sullivan

Selected Universities Served by Amtrak Chicago Hub Services

Some cities and towns have ridership that exceeds residential population, suggesting disproportionate dependence of students and the local economy on Amtrak Chicago hub services.

Rail Market: Midwest University, local resident populations and Amtrak ridership (2014)

	State	City	Educational Institution	University Population*	City Population	Amtrak ridership
1	Wisconsin	Milwaukee	University of Wisconsin–Milwaukee	34,584	594,833	596,415
2	Illinois	Macomb	Western Illinois University	11,458	19,265	72,550
3	Illinois	Normal / Bloomington	Illinois State University	24,973	129,107	261,631
4	Illinois	Springfield	University of Illinois - Springfield	7,268	116,250	194,762
5	Missouri	St. Louis	St. Louis University	13,505	318,416	350,866
6	Illinois	Champaign	University of Illinois at Urbana-Champaign	54,869	125,176	178,487
7	Illinois	Carbondale	Southern Illinois University	17,989	26,363	129,446
8	Indiana	West Lafayette	Purdue University (main campus)	60,305	30,875	23,609
9	Indiana	Indianapolis	Indiana University – Purdue University Indianapolis	38,251	843,393	33,033
10	Michigan	Kalamazoo	Western Michigan University	29,265	74,262	120,920
11	Michigan	Grand Rapids	Grand Valley State University	25,094	192,294	47,874
12	Michigan	East Lansing	Michigan State University	57,748	48,544	66,402
13	Michigan	Ann Arbor	University of Michigan	66,375	117,025	144,120
14	Michigan	Detroit	Wayne State University	41,565	688,701	62,827

* On-line enrolment excluded

Source: Amtrak, Frost & Sullivan

A photograph of a large, multi-story stone building with a prominent tower, likely a part of Western Illinois University. The building is made of light-colored stone and has several windows, some with decorative elements. There are trees in front of the building and a clear blue sky in the background.

INSTITUTIONS

"So many students from the metropolitan area of Chicago rely, absolutely rely on Amtrak to get to and from Western Illinois University. Whether they go home every weekend or every month or every two months or whatever. In many cases, it's their only reliable form of transportation to get to and from home. Not having Amtrak service could make Western Illinois University less appealing when it comes to recruiting students"

Mayor Michael J. Inman, Macomb Illinois

INSTITUTIONS

“There is also great potential benefit of reinvented intermodal travel to improve domestic social and business connectivity. The Midwest, when considered collectively, is home to substantial industrial clusters of economic activity, such as pharmaceuticals.

Chicago is well positioned to be the hub of this growth engine. Other social benefits of intermodal travel, intermodal freight, and freight rail must also be considered. There is a significant opportunity cost of congestion, including lost wages, reduction of business profits and unwanted CO₂ emissions from idling vehicles, both passenger and freight. Improved intermodal connectivity options and network planning can mitigate growing congestion. Outside the major cities, another opportunity exists to rethink the travel connections in smaller urban communities such as Normal and Springfield, Illinois.”

Northwestern University Transport Center



References

- 1 *Economic Impact of the Public Transportation Investment. Prepared for the American Public Transportation Association*
- 2 *Current Rail Capacity Issues. Surface Transportation Board, Washington DC. October 2014*
- 3 *CREATE at Ten Years- The Past, Present and Future of the Chicago region railroads*
- 4 *Surface Transportation Board Decision- Docket No. EP724. United States Rail Service Issues. Performance Data Reporting.*
- 5 *Freight facts and figures 2013. US Department of Transportation, Bureau of Transportation Statistics.*
- 6 *Vehicles and Commercial Trucks for use in Urban Mobility Study.*
- 7 *The Impact of Freight Delivery delay to economic productivity. Regional Goods Movement. Pg6*
- 8 *Federal Highway Administration, Office of Freight Management and Operations. Measuring Travel time in Freight Significant corridors*
- 9 *Federal Highway Administration, 2013 Status of the Nations Highways, Bridges and Transit: Conditions and Performance*
- 10 *US Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics*
- 11 *US Department of Commerce, Census Bureau, 2007 Commodity Flow Survey: United States Final release*
- 12 *National Rail Freight Infrastructure Capacity and Investment study- Prepared for the Association of American Railroads by Cambridge Systematics Inc.*
- 13 *NCHRP Study- Rail Freight Solutions to roadway congestion. Report 586*
- 14 *US Department of Transportation Study- Report to Congress on Status of National Highways*
- 15 *National Chamber Foundation Study. The Transportation Challenge. Moving the US Economy 2009*
- 16 *AASHTO Study- ROI of Freight Rail Capacity Improvements 2005*
- 17 *Surface Transportation Board filings from Shipper- Government Stakeholders regarding US Rail Service issues*
- 18 *Freight Train Late? Blame Chicago, New York Times. John Schwartz*
- 19 *US Freight Rail Congestion concern. AP Writer, Michael Tarm. May 2008*
- 20 *Chicago Metropolitan Agency for Planning (CMAP), Freight Volumes for the Rail System, 2014*
- 21 *Regional Freight Leadership Task Force CMAP, Chicago Metropolitan Agency for Planning (CMAP), 2014*
- 22 *Working on the Rail Road: Chicago Copes with Worst Rail Congestion in Years. Feb 24, 2015. <http://news.medill.northwestern.edu/chicago/working-on-the-railroad-chicago-cope-with-worst-rail-congestion-in-years>*