

301559

ENTERED
Office of Proceedings
January 29, 2021
Part of
Public Record

BEFORE THE SURFACE TRANSPORTATION BOARD

Ex Parte No. 704 (Sub-No. 1)

Review of Commodity, Boxcar, and TOFC/COFC Exemptions

COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS

Kathryn D. Kirmayer
Timothy J. Strafford
J. Frederick Miller Jr. (*admitted in MD*)
Association of American Railroads
425 Third Street, SW
Suite 1000
Washington, DC 20024
(202) 639-2100

Thomas H. Dupree Jr.
Cynthia E. Richman
Matt Gregory
Gibson, Dunn & Crutcher LLP
1050 Connecticut Avenue NW
Washington, DC 20036
(202) 955-8500

David L. Meyer
Law Office of David L. Meyer
1105 S Street, N.W.
Washington, DC 20009
(202) 294-1399

*Counsel for the Association of American
Railroads*

January 29, 2021

TABLE OF CONTENTS

INTRODUCTION AND EXECUTIVE SUMMARY	1
DISCUSSION	6
I. The Legal Framework that Should Guide the Board’s Decision	6
A. The Statutory Requirements for Granting and Revoking Exemptions	6
B. The Administrative Procedure Act’s Requirements for Reasoned Decisionmaking and Statistical Analysis	9
II. The Proposed Approach Correctly Seeks Data Related to Competitive Alternatives, but the Data Sources and Scope of Alternatives Could Be Improved	12
A. Better Data on Competitive Alternatives Is Available.	13
1. Available Data on Trucking Alternatives	13
(a) Data on Actual Truck Shipments	14
(b) Data on Intermodal Shipments	16
(c) Length-of-Haul Proxies	18
2. Available Data Concerning Geographic Competition	23
3. The GMIM Model Is a Valuable Resource, but Could Be Refined and Improved.	31
(a) Additional Rail Options	32
(b) The 30-Mile Transload Radius	34
(c) Water Movements Across Waterway System Boundaries	35
4. Changes in Traffic Volumes	36
B. The Board Should Not Rely on Data that Is Unlikely to Provide Evidence of Unconstrained Market Power.	37
1. Neither R/VC Ratios nor RPC Is a Rational Way to Identify Unconstrained Market Power.	37
(a) High or Increasing R/VC Ratios Do Not Imply Market Power....	38
(b) Inferences of Market Power from R/VC Ratios Below 180% Are Especially Inappropriate.	42
(c) Upward Trends in R/VC Ratios Would Be Expected from Improvements in Railroad Productivity	45
(d) The Substantial Overlap in the Distributions of R/VC Across Commodities Demonstrate that R/VC-Based Metrics Are Uninformative.	47
(e) Revenue Per Car Is an Even Worse Metric than R/VC.	51

2.	Snapshot Comparisons Between 1992 and 2018 Are Arbitrary and Uninformative.	53
III.	The Initial Screens Are a Smart Way to Conserve the Board’s Resources, and They Could Be Improved and Supplemented.	54
A.	Robust Initial Screens Are a Good Idea.	55
B.	Initial Screens Should Account for the Alternative of Partial Revocation.	56
C.	The Proposed Initial Screens Could be Improved.	57
1.	The Proposed R/VC Threshold Is Too Low.	57
2.	The Proposed Intermodal Threshold Is Too High.	58
D.	Initial Screens Based on Low Rail Share and Geographic Competition Would Assist the Board.	59
IV.	The Proposed Dashboard Is Seriously Flawed.	61
A.	The Dashboard Indicators Are Built on Flawed Inferences.	62
1.	EDA Is at Most a Way of Identifying Questions to Ask, Not Answering Them.	63
2.	Drawing Inferences from Changes in R/VC, RPC, and Length of Haul Would Unacceptably Yield “False Positive” Inferences of Potential Market Power Concern.	65
B.	The Design of the Indicator Dashboard Obscures the Data and Magnifies Flaws Built into Individual Indicators.	66
1.	Comparisons to All Carload Traffic Create an Improper Presumption in Favor of Regulation.	68
2.	The Proposed Signals and Numerical Scores Are Based on Arbitrary Thresholds.	69
3.	The Proposed Approach Arbitrarily Averages Independent Datapoints and Indicators.	71
C.	To Date, the Board Has Not Adequately Explained the Reasoning and Assumptions Underlying the Dashboard.	73
V.	The Board Should Make the Data Publicly Available and Allow Interested Parties to Propose Exemptions or Revocations.	74
	CONCLUSION.	75

INTRODUCTION AND EXECUTIVE SUMMARY

The Association of American Railroads (“AAR”) respectfully submits these comments in response to the Board’s new proposed approach for evaluating market conditions in the context of commodity exemption. *See* Ex Parte 704 (Sub-No. 1), *Review of Commodity, Boxcar, and TOFC/COFC Exemptions* (STB served Sept. 30, 2020) (“Request for Comments”). AAR appreciates the Board’s commitment to a “robust analysis” of the best available evidence bearing on “rail transportation competition.” *Id.* at 5–6. AAR also applauds the considerable work that Board Staff has put into the proposed approach. Elements of the proposed approach, including the GMIM Model, will prove useful to the Board and stakeholders in evaluating potential exemptions and revocations going forward. Without substantial changes and additional opportunity for public comment, however, the Board should not use the proposed approach in making any decisions concerning exemptions, including the exemptions at issue in this proceeding. The Board should improve and augment the body of data and related metrics it has compiled for purposes of the proposed approach, and then, instead of using that information directly to reach its own conclusions, simply publish it for review by all interested parties, who can then decide for themselves whether to petition for exemptions or revocations based on a more complete record.

The Board’s statutory mandates concerning exemptions are clear—the Board must exempt as much traffic as possible and may revoke an exemption only when no other options are available. 49 U.S.C. § 10502(a), (d); *see also* 49 U.S.C. §§ 10101(1), (2), (6). And the key question in making these decisions is whether railroads have unconstrained market power. The proposed approach correctly seeks to focus on “a variety of metrics related to or indicative of rail transportation competition,” Request for Comments at 6, although, as explained below, revisions are necessary to align the proposed approach with the Board’s statutory obligations.

Further, under the plain text of the governing statutory framework and basic principles of administrative law, any revocation of a commodity exemption would require consideration of the full range of evidence submitted by railroads and other interested parties. Thus, as the Board correctly recognizes, Request for Comments at 17 n.46, the proposed approach should not be applied mechanically and should not have determinative weight in any individual proceeding, including this one.

As explained by witnesses John Asker, Kostis Hatzitaskos, and Aviv Nevo, the Board deserves credit “for exploring a data-based tool for the evaluation of class exemption and revocation. Appropriately deployed, data-based screening tools are well accepted components of competition analysis and an important step toward adopting regulatory best practices.”¹ These witnesses are well positioned to evaluate the proposed approach, as they have deep experience examining issues of market power in competition and regulatory contexts, including, in Dr. Nevo’s case, as the chief economist at the Department of Justice Antitrust Division. As they explain, tools such as Board Staff has proposed should “examine and visualize data that are relevant, properly contextualized, and informative to the question at hand.” *Id.* Unfortunately, they, like AAR, have “reservations about the specifics of the Proposed Approach and its usefulness as a tool to aid the Board in its decision.” *Id.*

Data sources. In light of the Board’s goal of examining reliable and accessible data that reveals the potential for competition for shipments of individual commodities, the Board can expand and improve its data sources in at least four important ways. *First*, the Board should consider the best available data on trucking competition—starting with actual data showing

¹ Verified Statement of John Asker, Kostis Hatzitaskos, and Aviv Nevo (“Cornerstone V.S.”) at 7 (attached as Exh. A).

where trucks are already competing. The Board can also make use of better data on intermodal shipments and improve the proposed approach's length-of-haul metric to more accurately reflect the ability of trucks to compete. *Second*, the Board should incorporate analysis of geographic competition into its approach. The GMIM Model designed by Board Staff provides a creative and workable starting point for considering geographic competition. *Third*, the Board should adjust the GMIM Model so that it includes at least three years' worth of recent data on rail transportation alternatives and accurately reflects water competition in the Mississippi River, Gulf of Mexico, and Atlantic waterway systems. Both changes could easily be incorporated into the current approach and would provide the Board with a more accurate picture of rail and water competition. *Fourth*, the Board should consider changes in traffic volume over time.

Along similar lines, the Board should take care not to rely on flawed or otherwise misleading data. That includes R/VC ratios, which have too much influence in the proposed approach. As AAR and others have explained, R/VC ratios are not a reasonable way for the Board to determine whether railroads have market power outside of their limited statutory role as a jurisdictional screen. The Board's proposed substitute—revenue-per car ratios—is similarly flawed. Nor should the Board rely on changes between single-year snapshots of data from 1992 and 2018 in assessing current competitive conditions; instead, the Board should look at a more complete picture of market conditions that includes multiple years of data.

Initial screens. The proposed approach correctly recognizes that initial screens can help the Board preserve its limited resources by identifying commodities for which a more comprehensive analysis of market power is unnecessary. But the thresholds in the two Initial Screens in the proposed approach are too conservative, which limits their utility. For Initial Screen 1, the Board should revise the proposed R/VC threshold upward, from 5% of shipments

moving at an R/VC ratio above 180, to 50%. This will allow the Board to identify commodities for which a commodity-wide revocation would be inappropriate because a majority of the traffic is outside the Board's statutory authority. For Initial Screen 2, the Board should revise the proposed threshold for intermodal share down, from 40% to 15%. This change, too, will identify more traffic for which a fuller analysis would be a waste of resources. And the Board's approach should incorporate two additional screens based on truck share and geographic competition.

The Indicator Dashboard. The most serious flaw in the proposed approach is the Indicator Dashboard, which distorts real-world information on market conditions into a series of arbitrary numerical scores and color-coded signals, all of which are then combined to identify “strong,” “moderate,” or “weak” cases for revocation or exemption. The desire to summarize and simplify data on market conditions is certainly understandable. Yet the proposed Dashboard goes far beyond that by attempting to translate raw data into unwarranted (and unintended) assumptions about railroad market power and whether an exemption should be revoked or granted. Moreover, many of the assumptions built into the Dashboard will condemn the very pro-competitive forces unleashed by deregulation—exactly the opposite of the Board's Congressionally-imposed mandate.

Board Staff has explained that the Indicator Dashboard should not be the focus of the proposed approach. Board Staff has also confirmed that the Dashboard's signals and numerical scores, and the assumptions underlying them, are unsupported by any statistical validation and that “one should not place too much weight on the individual Indicators or the overall Dashboard signal.” January 15 Technical Conference at 54:40.² Whether the subjective inferences reflected

² We cite to the Board Staff's Technical Conferences in this matter by referencing the time stamp for the pertinent content in the video files available on the Board's website, at https://prod.stb.gov/wp-content/uploads/files/docs/audioMeetings/GMT20210115-145539_EP-

in the Dashboard's signals are intended or not, they will mislead the Board and undermine the validity of any decision that relies on the Dashboard or its scoring system. Put simply, the proposed Indicator Dashboard cannot be reconciled with the Board's statutory mandates or the general principles of reasoned decisionmaking. The Board should replace the Dashboard with an approach that simply reports and summarizes real-world data on market conditions.

The Board can also avoid the problems created by the Indicator Dashboard, and better conserve its limited resources, by collecting and publishing information on market conditions for all stakeholders to see rather than attempting to draw initial conclusions from the data by itself. Railroads and shippers could use the Board's data—*e.g.*, information about competitive alternatives revealed by the GMIM Model—to guide their own decisions whether to seek new exemptions or the revocation of existing exemptions, and then present their requests to the Board along with additional information in their possession. That would ensure that stakeholders can present meritorious cases for exemptions or revocations to the Board based on more complete data than is currently publicly available, while avoiding the need for the Board to sort through commodities on its own, without the benefit of the additional information in the possession of railroads and shippers.

* * *

In short, the proposed approach reflects a laudable effort to improve the Board's use of objective data in considering exemptions. But the approach requires substantial changes before

704--Su_1920x1080.mp4 (Jan. 15), and https://prod.stb.gov/wp-content/uploads/files/docs/audioMeetings/GMT20201218-145812_EP-704--Su_1920x1080.mp4 (Dec. 18).

the Board could rely on it in making any decisions about individual exemptions—including any decisions in this proceeding.³

DISCUSSION

I. THE LEGAL FRAMEWORK THAT SHOULD GUIDE THE BOARD’S DECISION

Board Staff’s proposed approach is a step in the right direction to the extent it seeks to provide the Board with relevant information about market conditions in the freight-rail industry. Any decision to grant or revoke an exemption must comply with the Board’s statutory mandates, including its mandate to exercise its exemption authority “to the maximum extent” possible, 49 U.S.C. § 10502(a), and general rules of administrative law. Thus, the Board should ensure that any approach it uses—and the manner in which it puts that approach to use—is consistent with these principles. Without substantial changes, the proposed approach does not satisfy that standard.

A. The Statutory Requirements for Granting and Revoking Exemptions

Section 10502 provides that the Board “shall” exercise its exemption authority “to the maximum extent” consistent with the statute. 49 U.S.C. § 10502(a). Congress added this language to make it “an explicit part of the agency’s statutory duty to utilize exemptions to the maximum extent permissible under the law.” H.R. Rep. No. 104-311, at 96 (1995), 1995 U.S.C.C.A.N. 793, 808. The Board “may” revoke exemptions, in whole or in part, but only when “necessary” to effectuate the goals in Section 10101. 49 U.S.C. § 10502(d). Those goals, in turn, similarly emphasize Congress’s policy judgment in favor of deregulation of the railroad

³ We offer several specific suggestions below for how the Board can improve its approach. These suggestions, and the more specific suggestions in the accompanying verified statements, would of course need to be implemented with care, including further validation where appropriate, before the Board deployed them in a new dashboard proposal or relied on them in a particular proceeding.

industry. Specifically, “it is the policy of the United States Government ... to allow, to the maximum extent possible, competition and the demand for services to establish reasonable rates for transportation by rail,” 49 U.S.C. § 10101(1), and “to minimize the need for Federal regulatory control over the rail transportation system,” *id.* § 10101(2).

All of these statutory requirements “anticipate[] deregulation of the entire railroad industry to the maximum extent possible in conformity with the national rail transportation policy.” *Brae Corp. v. United States*, 740 F.2d 1023, 1043 (D.C. Cir. 1984). And Congress’s “strong language favoring deregulation” in Section 10101 “manifests a preference for market-based rather than regulatory rate[-]setting.” *AAR v. STB*, 237 F.3d 676, 677, 680 (D.C. Cir. 2001). The Board’s predecessor agency, the ICC, recognized that “[t]he legislative history of the Staggers Act reveals a Congressional intention to have the Commission be liberal in granting exemptions and to correct problems with particular exemptions after the problems actually arise” and an interested party files “a petition seeking revocation or restriction of the exemption.” *See AAR Petition to Exempt Indus. Dev. Activities*, 8 I.C.C.2d 365, 377 (1992); *see also Santa Fe S. Pac. Corp. – Control – S. Pac. Transp. Co.*, 2 I.C.C.2d 709, 741 (1986) (“*SFSP*”) (“Exemption analysis takes a broad-brush approach to analysis of the competitive environment as a whole and looks to the remedy of partial revocation to address specific competitive situations should that become necessary.”).

For these reasons, the Board may revoke a class-wide exemption only where there is a concrete showing that regulation is necessary on a class-wide basis, and that condition can be satisfied only if the Board has compelling evidence that railroads have unconstrained market power. *See Mr. Sprout, Inc. v. United States*, 8 F.3d 118, 123 (2d Cir. 1993) (“The Commission properly found the initial inquiry in a reregulation case is whether the carrier has market

power.”). Congress stressed that “[w]hen considering a revocation request, the Board should continue to require demonstrated abuse of market power that can be remedied only by reimposition of regulation or that regulation is needed to carry out the national transportation policy.” H.R. Conf. Rep. 104-422, at 169 (1995), 1995 U.S.C.C.A.N. 850, 854; *cf. Comcast Cable Commc’ns, LLC v. FCC*, 717 F.3d 982, 990 (D.C. Cir. 2013) (Kavanaugh, J., concurring) (under antitrust principles incorporated into the FCC’s governing statute, “conduct generally can be considered unreasonable only if a firm, or multiple firms acting in concert, have market power”). Congress also emphasized that it “expects the Board to examine all competitive transportation factors that restrain rail carriers’ actions and that affect the market for transportation of the particular commodity or type of service for which revocation has been requested.” H.R. Conf. Rep. 104-422, at 169; *see also* S. Rep. No. 104-176, at 8–9 (1995) (same).

The Board itself has previously recognized that an “exemption will be revoked [only] where regulation is shown to be necessary,” and “[t]hat showing cannot be made” where a carrier “lacks market dominance over [the shipments] at issue.” *FMC Wyo. Corp. v. Union Pac. R.R.*, EP 346 (Sub-No. 29A), 2000 WL 33527851, at *5 n.17 (STB served May 12, 2000). And “[t]he Congressional admonition on exemptions” indicates that the Board should ““adopt a policy of reviewing carrier actions after the fact to correct abuses of market power.”” *SFSP*, 2 I.C.C.2d at 741 n.28 (citation omitted).⁴

⁴ The Board’s Request for Comments recognizes that “[u]nderstanding market conditions is important when considering commodity exemptions and revocation exemptions,” but asserts that the Board’s consideration of market power is “not required by statute.” Request for Comments at 5. That is incorrect. For the reasons explained above, if the Board were to revoke an exemption without finding that railroads have unconstrained market power, then the Board’s decision would be unlikely to survive judicial review.

In sum, the Board’s statutory obligations require it to focus on granting exemptions, not revoking them. The Board *must* exercise its authority to exempt traffic whenever the law allows it to do so. 49 U.S.C. § 10502(a). In contrast, Congress did not impose any similar compulsion for revocation, and limited the Board’s discretion to revoke exemptions to circumstances where there are no other options (including narrower options like partial revocation). *See id.*

§ 10502(d). Congress also made clear that those conditions can exist only when railroads have unconstrained market power. *See WTL Rail Corp. Pet. for Partial Revocation of Exemption*, EP 230 (Sub-No. 9) (“*WTL Rail Pet.*”), 2006 WL 392132, at *2 (STB served Feb. 17, 2006) (“Reconciling the RTP with the statutory admonition to be liberal in granting exemptions when regulation is not necessary to protect against market power, we have held that the extent of railroad market power is an essential issue in exemption revocation proceedings.”).

Here, to the extent that the Board is considering how to collect and analyze concrete data on market conditions for shipments of particular commodities and, more specifically, how to identify the potential for abuses of market power, the Board is on the right path. But as explained below, the proposed approach requires substantial changes and an additional opportunity for notice-and-comment before the Board could rely on it in making any decisions concerning exemptions.

B. The Administrative Procedure Act’s Requirements for Reasoned Decisionmaking and Statistical Analysis

As a threshold matter, the Board correctly “anticipate[s]” that it should not use Board Staff’s proposed approach to “provide a final conclusive answer on whether the commodity exemptions at issue [in this docket] should be revoked, or whether additional commodity exemptions should be adopted.” Request for Comments at 6. At most, a model similar to what Board Staff proposes would be a “new tool that could facilitate a more comprehensive analysis.”

Id. And under no circumstances could the proposed approach override the need for the Board to consider all available evidence before proceeding to revoke any commodity exemption.⁵

No other approach would survive scrutiny—“[n]ormally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, [or] offered an explanation for its decision that runs counter to the evidence before the agency.” *Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983). Thus, before the Board determines to grant or revoke any exemption, the Board must consider its statutory obligations, respond to commenters’ concerns, and consider all of the available evidence. The Board could not comply with these obligations if its decisions were based primarily on the rote application of a model that was not designed with any particular commodity in mind. And in this proceeding specifically, Board Staff’s proposed approach could not override the extensive evidence already in the record showing that re-regulating the five commodities at issue is unnecessary and inconsistent with the Board’s statutory obligations.

Moreover, D.C. Circuit precedent interpreting the APA imposes substantive and procedural requirements on an agency’s reliance on complex modeling. *See, e.g., Chem. Mfrs. Ass’n v. EPA*, 28 F.3d 1259, 1264–65 (D.C. Cir. 1994). *First*, an agency’s use of a model is arbitrary if that model “bears no rational relationship to the reality it purports to represent.”

⁵ As AAR has explained in EP 752, the Board is also required to consider the costs and benefits of its decisions. *See* Ex Parte No. 752, *Petition for Rulemaking* (March 14, 2019); *Michigan v. EPA*, 576 U.S. 743, 752 (2015). And the Congressional Review Act and related guidance from the Office of Management and Budget impose additional requirements on the Board to analyze the potential costs of their decisions and submit that analysis to OMB for review. *See* OMB, *Guidance on Compliance with the Congressional Review Act* (2019), <https://www.whitehouse.gov/wp-content/uploads/2019/04/M-19-14.pdf>. Any revocation decision that ignored these requirements would be subject to vacatur on judicial review.

Columbia Falls Aluminum Co. v. EPA, 139 F.3d 914, 923 (D.C. Cir. 1998) (quotation marks omitted). For example, courts will reverse an agency decision based on a model if the model relied on an unreasonable assumption or was inconsistent with the facts as the agency knew them to be. *See Chem. Mfrs.*, 28 F.3d at 1265.

Second, when an agency relies on a model during a rulemaking, the agency has a “duty to examine key assumptions” underlying the model “as part of its affirmative burden of promulgating and explaining a non-arbitrary, non-capricious rule.” *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 534 (D.C. Cir. 1983) (quotation marks omitted). The agency must “explain the assumptions and methodology used in preparing the model and, if the methodology is challenged, must provide a complete analytic defense.” *Id.* at 535 (quotation marks omitted). And the agency must provide “a reasoned explanation for . . . the methodology’s critical elements.” *Owner-Operator Independent Drivers Ass’n v. FMCSA*, 494 F.3d 188, 203 (D.C. Cir. 2007).

Third, an agency must fully explain its methodology and allow commenters an opportunity to respond to the agency’s key assumptions and technical analysis. “Public notice and comment regarding relied-upon technical analysis” are “the safety valves in the use of sophisticated methodology.” *Am. Radio Relay League v. FCC*, 524 F.3d 227, 236 (D.C. Cir. 2008) (quotation marks and alterations omitted). Accordingly, longstanding D.C. Circuit precedent holds that “[a]n agency commits serious procedural error when it fails to reveal portions of the technical basis for a proposed rule in time to allow for meaningful commentary.” *OOIDA*, 494 F.3d at 199 (quotation marks omitted); *see also, e.g., Chamber of Commerce v. SEC*, 443 F.3d 890, 902 (D.C. Cir. 2006).

As discussed below, Board Staff's current proposed approach and the accompanying explanations fail to satisfy D.C. Circuit precedent governing an agency's reliance on statistical analysis to support its decision. In particular, the proposed approach is not a reasonable way to answer an essential question in this proceeding—whether railroads have unconstrained market power. And Board Staff have not adequately explained the reasoning underlying the methodology, contradicting both the substantive principle that an agency must carefully examine the key assumptions built into its models and the procedural rule that agencies must fully explain their methodology and reasoning in time for commenters to respond. The Board should ensure that it complies with all of these requirements before it makes any use of a Dashboard-like tool in evaluating whether to revoke commodity exemptions.

II. THE PROPOSED APPROACH CORRECTLY SEEKS DATA RELATED TO COMPETITIVE ALTERNATIVES, BUT THE DATA SOURCES AND SCOPE OF ALTERNATIVES COULD BE IMPROVED.

The centerpiece of the Board's proposed approach is the examination of data that Board Staff believes is relevant to the Board's consideration of whether to revoke or grant exemptions under Section 10502, and specifically, "rail transportation competition." Request for Comments at 6.⁶ The Board's focus should be on data that indicates whether railroads can abuse unconstrained market power. If market outcomes are driven by the interplay of competitive forces, there can be no valid market power concern. And as the Board correctly recognizes, by far the best evidence of this is data reflecting the presence of effective competition for the shipments at issue.⁷ Accordingly, the Board's approach should make use of the best available

⁶ As discussed below, Board Staff has repeatedly emphasized that the heart of the proposed approach is simply the visualization of potentially relevant data. *E.g.*, January 15 Technical Conference 1:14:35–40.

⁷ *See also, e.g., WTL Rail Pet.*, 2006 WL 392132, at *1 ("The basis for the ICC's exemption of TOFC/COFC traffic from economic regulation was the agency's finding that

data on competitive alternatives. In particular, the Board should take advantage of available data on trucking competition and geographic competition.

Moreover, much of the data relied on in the proposed approach—in particular, R/VC and revenue-per-car (“RPC”) metrics—is unsuited to a market-power inquiry. By relying on data that is incapable of shedding light on the presence of potential market-power concerns, the proposed approach will likely mislead the Board in its assessment of commodity exemptions: Bad data on the front end will lead to bad inferences on the back end.

A. Better Data on Competitive Alternatives Is Available.

1. Available Data on Trucking Alternatives

The proposed consideration of data relating to truck competition is woefully inadequate. Trucking accounts for the large majority of all intercity freight shipments in terms of both weight and value,⁸ and the pervasive availability of trucking alternatives figured prominently in the ICC’s grant of the commodity exemptions in the 1980s and 1990s.⁹

transportation of these intermodal shipments is market-driven and subject to widespread and effective competition from both motor carriers and other railroads.”).

⁸ *Freight Shipments by Mode*, Bureau of Transportation Statistics, <https://www.bts.gov/topics/freight-transportation/freight-shipments-mode>.

⁹ For example, the ICC proactively initiated a broad exemption of hundreds of manufactured commodities based on its experience under the Staggers Act that “truck transportation for the named commodities was both widely available and sufficient to prevent railroads from abusing any market power they might possess.” *Rail General Exemption Authority—Miscellaneous Manufactured Commodities*, 6 I.C.C.2d 186, 186 (1989); *see also*, e.g., Ex Parte No. 346 (Sub-No. 34), *Rail General Exemption Authority—Exemption of Hydraulic Cement*, 1995 WL 438371, at *4 & n.9 (ICC served July 26, 1995) (granting exemption where “[t]rucks are the dominant mode”); Ex Parte No. 346 (Sub-No. 35), *Rail General Exemption Authority—Exemption of Ferrous Recyclables*, 1995 WL 294272, at *3 (ICC served May 16, 1995) (granting exemptions where “[i]ntermodal competition with trucks and barges ... exists in many markets”); *Rail General Exemption Authority—Petition of AAR to Exempt Rail Transportation of Selected Commodity Groups*, 9 I.C.C.2d 969, 976 (1993) (granting exemption where “trucks account for approximately 60–70% of the market”).

Despite the obvious importance of trucking to any analysis of railroad market power, the proposed approach inexplicably ignores the best available data on the extent to which trucking provides a competitive alternative for shippers—that is, data showing trucks’ share of shipments for a given commodity. Instead, the only explicit consideration of truck competition relies on the Waybill Sample and analyzes the average length of haul for shipments *that moved by rail*. And in addition to ignoring the *actual* role of trucking, the length-of-haul metric used in the proposed approach is flawed in its own right.

(a) Data on Actual Truck Shipments

The most obvious way to determine whether trucks are a competitive alternative to railroads is to look at available data showing where trucks are already competing. When the ICC created the commodity exemptions, it routinely evaluated available data concerning truck shipments. In 1988, for example, Board Staff examined Census of Transportation commodity flow survey data to determine truck and rail shares of movements in multiple corridors and mileage blocks.¹⁰ On the basis of this analysis, the ICC proposed to exempt 28 commodities or commodity groups “solely on the basis of sufficient intermodal competition,”¹¹ and then ultimately exempted 22 of them following more in-depth analysis.¹² Data showing that trucks accounted for a significant share of all movements repeatedly led the ICC to conclude that regulation was not necessary to protect shippers from market-power abuse.¹³

¹⁰ Ex Parte No. 346 (Sub-No. 24), *Rail General Exemption Authority — Miscellaneous Manufactured Commodities*, 1988 WL 225776, at *4, *8 (ICC decided Jan. 29, 1988).

¹¹ *Id.* at *2, *4 n.2.

¹² *Rail General Exemption Authority—Miscellaneous Manufactured Commodities*, 6 I.C.C.2d at 201–06.

¹³ *Id.* at 191–92; *Rail General Exemption Authority — Miscellaneous Manufactured Commodities*, 1988 WL 225776, at *7–8; *see also supra* at 13 n.9 (collecting decisions).

There are multiple sources for data concerning the truck transportation of commodities. Those sources include Commodity Flow Survey (“CFS”) data similar to that relied upon by the ICC in the 1980s and 1990s.¹⁴ The CFS data comes from surveys conducted by the United States Census Bureau every five years and measures the relative share of shipments for individual commodities by trucking, rail, intermodal, and other modes. FTI V.S. at 11. For example, CFS data shows that trucks hauled large proportions of the shipments for each of the five commodities at issue in the 2016 Notice of Proposed Rulemaking. Cornerstone V.S. at 21 n.40, 48 Ex. 6. Though the CFS data does not report commodity designations to the five- or seven-digit STCC level, it does break shipments down to a level of granularity equivalent to a 2-digit STCC, which offers considerable insights into the likely availability of truck alternatives. Cornerstone V.S. at 48 Ex. 6; *see also id.* at 21 n.40; FTI V.S. at 12–13.¹⁵ The CFS data can also be supplemented with additional insights from Freight Analysis Framework data produced by the Center for Transportation Analysis through a partnership with the Bureau of Transportation Statistics and the Federal Highway Administration, and the Transearch database, available for purchase from IHS Markit, as well as information on the modal alternatives shippers actually use that could be obtained from those stakeholders in appropriate regulatory contexts. FTI V.S. at 13–14.

¹⁴ Verified Statement of Michael Baranowski and Benton Fisher (“FTI V.S.”) at 11 (attached as Exh. B).

¹⁵ *See also Rail General Exemption Authority—Petition of AAR to Exempt Rail Transportation of Selected Commodity Groups*, 9 I.C.C.2d at 974 (presentation of market share data aggregated across specific commodities “permissible when, as here, the aggregated commodities are either substitutes or have similar transportation characteristics”).

To be sure, the Board identified “some concerns” about relying on CFS data in its decision adopting a 500-mile threshold as part of the prima facie case for market dominance in streamlined rate-reasonableness proceedings. Ex Parte No. 756, *Market Dominance Streamlined Approach*, at 11–12 (STB served Aug. 3, 2020). For example, the Board noted “differences in the mileage trends between the CFS data and the Carload Waybill Sample.” *Id.* at 12. Similarly, at the January 15 Technical Conference, Board Staff contended that the Waybill Sample includes more precise geographic and commodity information than CFS data. January 15 Technical Conference at 18:45–20:10. But those concerns would at most justify treating CFS data on trucking as one non-determinative part of the Board’s broader consideration of different kinds of data. There is no excuse for entirely ignoring CFS data (or similar data on trucking), as the proposed approach currently does. Given the undisputed importance of truck competition to the question whether railroads have unconstrained market power, the Board cannot make well-informed decisions concerning class-wide exemptions if it blinds itself to the best available data on trucking.

(b) Data on Intermodal Shipments

The proposed approach treats the viability of intermodal service as a strong indicator of the ability of trucking companies to compete directly with rail service (or of shippers’ ability to choose alternative intermodal rail terminals). *See* Request for Comments at 9–10 & n.29. Specifically, the proposed approach makes use of data on intermodal shipments as part of Initial Screen 2, which rules out market-power concerns when the portion of rail traffic that moves in intermodal service reaches 40%. *Id.* But if that threshold is not reached for a particular commodity, the proposed approach does not otherwise make use of this valuable data. Rather than assigning a bright-line threshold for considering the implications of data on intermodal

shipments, the Board should consider data on intermodal shipments in all cases, regardless of intermodal's share of traffic for a particular commodity.

The Board's consideration of data on intermodal shipments from the Waybill Sample should also recognize that the Sample significantly underreports the movement of commodities in intermodal service. The Waybill Sample identifies the specific commodity being moved for only 34% of all intermodal. FTI V.S. at 58. For the remaining portion, shippers can mask the identity of the commodity with a designator such as "freight all kinds."¹⁶ As a result, the percentage of a given commodity actually moving in intermodal service is much higher than the Waybill Sample will show—potentially in the range of three times the percentage suggested by the Sample (for example, the Waybill Sample might compute a 13.5% share when the actual share is closer to 40%).¹⁷

Applying this adjustment to selected commodities examined by the Board has a significant impact on the percentage of movements that take place in intermodal service, as shown in Table 1 below.

¹⁶ Though a "freight all kinds" or "FAK" designation can be used when there are multiple commodities in a mixed shipment, it can also be used when a container or trailer is loaded only with a single commodity and moved under FAK intermodal rates that do not differentiate based on the commodity being moved.

¹⁷ The math is straightforward: $100\%/33.8\% = 2.96$. Applying that adjustment factor to an observed intermodal percentage of 13.5% yields 40% ($2.96 * 13.5\% = 40\%$). *See also* FTI V.S. at 58–59 & nn. 54–55.

TABLE 1¹⁸
PERCENT OF WAYBILL SAMPLE SHIPMENTS MOVING IN INTERMODAL SERVICE

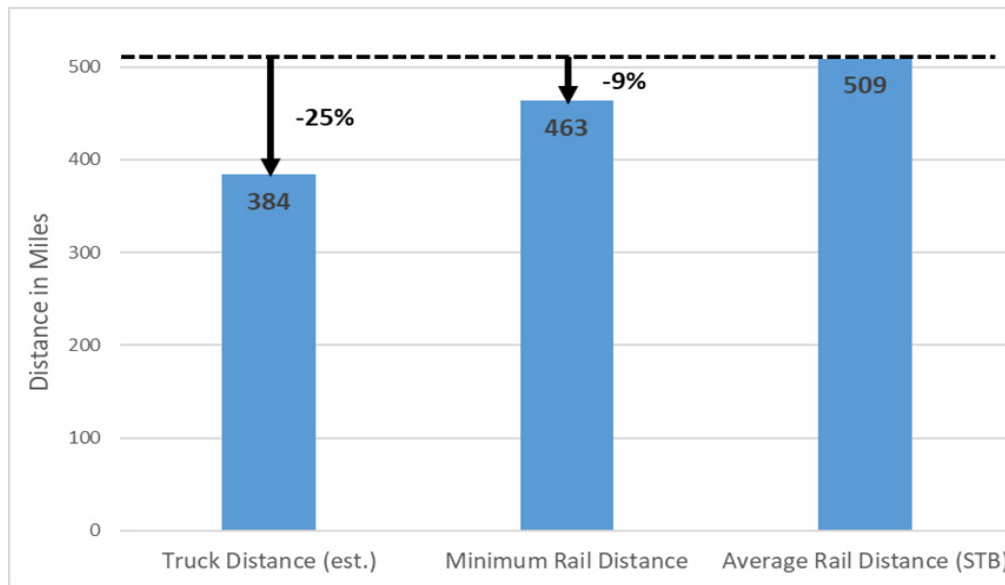
STCC	Description	As Reported (34% of Intermodal Volume)	Adjusted to include 100% of Intermodal Volume
40241	Paper Waste or Scrap	24.2%	48.5%
24321	Plywood or Veneer or Built-up Wood	12.1%	28.9%
33127	Tin Mill Products	7.2%	18.7%
33126	Iron or Steel Pipe, Tubes or Fittings	6.3%	16.6%
33123	Iron or Steel Sheet or Strip	4.9%	13.3%
40211	Iron or Steel Scrap, Wastes or Tailings	4.7%	12.8%
24211	Lumber, Rough or Dressed	4.1%	11.3%

(c) Length-of-Haul Proxies

The Board should also revise its consideration of length-of-haul proxies in three ways. *First*, the proposed length-of-haul metric uses rail mileage taken from the Waybill Sample. FTI V.S. at 27–29. Even for rail miles, the current metric overstates the distance between origins and destinations because it averages the rail distances assigned in the Waybill Sample rather than using the shortest rail distance between a given origin and destination. *Id.* Because the purpose of the metric is to measure the potential effectiveness of trucking competition, not the miles traveled on railroads, the metric could be improved easily by using the *shortest* rail distance between any origin and destination. The impact of this change is significant, as illustrated by hydraulic cement. As shown in Chart A below, using average rail miles between origins and destinations yields an overall average of 509 miles (exceeding Board Staff’s 500-mile threshold), whereas using the shortest rail mileage (for routes included in the Waybill Sample) yields an overall average of 463 miles (7.4 percent *below* the 500-mile threshold).

¹⁸ FTI V.S. at 59.

CHART A¹⁹
ALTERNATIVE APPROACHES TO CALCULATING “TRUCK MILEAGE”
(HYDRAULIC CEMENT, 2018)

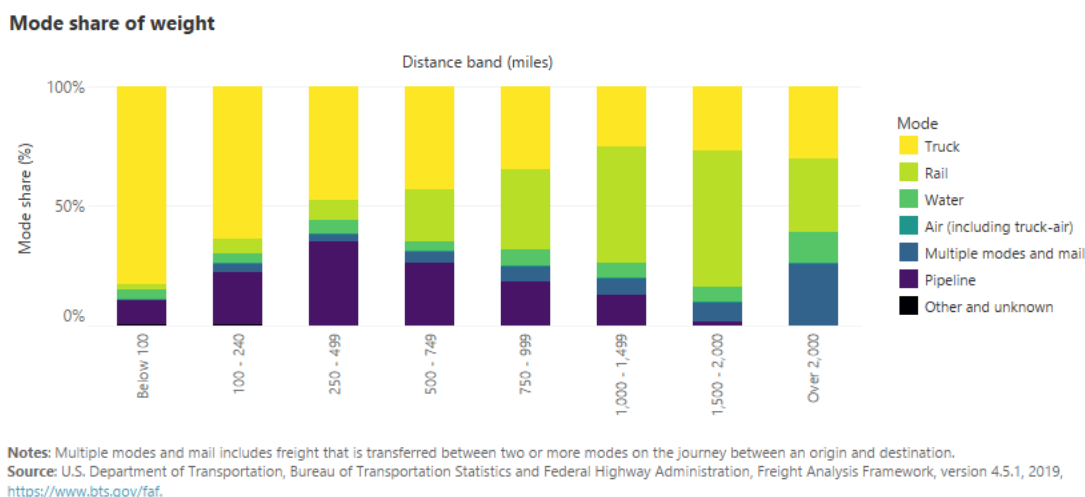


Second, given that the purpose of the length-of-haul metric is to assess the effectiveness of trucking as a competitive option for shippers, the relevant figure should be highway miles rather than rail miles. The nation’s rail network is considerably less dense than its highway network, and for that reason highway miles between any two points are very often considerably shorter than rail miles. Point-to-point distances via highways suitable for heavy haul trucks are readily computed using tools available to the trucking industry. *See* FTI V.S. at 29. Witnesses Baranowski and Fisher used this tool to compute actual highway miles for the 60 highest-volume lanes for the 2018 movements of hydraulic cement in the Waybill Sample (all with 1,000 or more carloads). The median difference for those origin-destination lanes was 25 percent below the average rail mileage for those same lanes. *Id.* at 30. That percentage difference from average rail miles is depicted in the left-hand column of Chart A. At a minimum, the Board

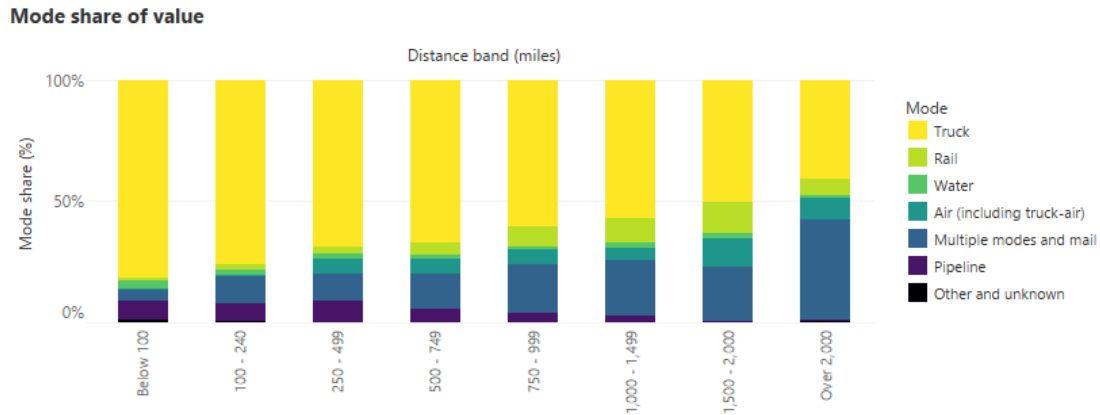
¹⁹ FTI V.S. at 30.

should account for the discrepancy between rail and highway miles by applying a reduction to lengths of haul when the Board uses rail mileage to evaluate the likelihood of available truck competition.

Third, the 500-mile threshold is too low. Although AAR supports the Board’s conclusion that trucking is generally competitive at ranges under 500 miles, available evidence shows that trucks can also be effective at distances well beyond 500 miles and even beyond 1,000 miles. Cornerstone V.S. at 21–23 & n.39.²⁰ As shown below, publicly available data from the Bureau of Transportation Statistics shows that trucking can provide effective competition over very long distances, with trucks accounting for significant shares of all intercity shipments (in terms of both weight and value) at every mileage block.



²⁰ See also, e.g., Ex Parte No. 756, *Market Dominance Streamlined Approach*, Comments of Canadian National (filed Nov. 12, 2019) at 3 (relying on 2012 Commodity Flow Survey data) (excerpts are Exh. C); Ex Parte No. 704, *Review of Commodity, Boxcar, and TOFC/COFC Exemptions*, Comments of Norfolk Southern Ry. (filed Jan. 31, 2011) at 30–31, 41 & Appendix Table 1 (relying on Commodity Flow Survey and Transearch data) (excerpts are Exh. D).



Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5.1, 2019, <https://www.bts.gov/faf>.

There is thus no question that trucks are a significant competitive alternative that cannot be ignored for longer-haul shipments. There simply is no reliable link between the length of haul and the absence of viable alternatives to rail transportation. The available data makes this clear for the specific commodities at issue in this proceeding, too. For all five, trucks accounted for at least 35% of all shipments between 500 and 1,000 miles. *Cornerstone V.S.* at 23 Ex. 1. For hydraulic cement, trucks accounted for more than 70% of all shipments between 500 and 1,000 miles. *Id.*; *see also* *Cornerstone V.S.* at 48 Ex. 6.

Thus, although it is sensible for the Board to conclude that trucking likely provides pervasive competitive alternatives for shorter-haul shipments, the Board should avoid drawing the opposite inference from longer lengths of haul (or increases in length of haul over time). Indeed, any model based on an assumption that trucks are not a viable competitive alternative at distances longer than 500 miles would be arbitrary because the best available data makes clear that this assumption is false.

Accordingly, when the Board evaluates the potential significance of data showing length of hauls beyond 500 miles in the exemption context, it should dispense with any bright-line

thresholds.²¹ Instead, the Board should simply include data on average length of haul in its reporting for each commodity. Doing so would avoid relying on the demonstrably false assumption that trucking is not competitive at distances greater than 500 miles, and have the added benefit of avoiding arbitrary cutoffs. The data could reveal, for example, that the average length of haul for a given commodity is 501 miles (just above the current threshold), without drawing any flawed conclusions from that information. And a revised approach that simply reports the data would avoid blurring the difference between that commodity and one for which the average length of haul is much longer. In contrast, under Board Staff’s proposed approach a commodity with an average length of haul of 500 miles would be lumped in with a commodity with an average length of haul of 1,500 miles—three times as long. That obscures the utility of the data and would mislead the Board—the exact opposite of the Board’s intent.²²

The proposed approach compounds the problems with the length-of-haul metric by looking to the *average* length of haul of a group of shipments, or changes in the average, which

²¹ AAR’s position here is consistent with its acceptance of a 500-mile threshold for use in streamlined market-dominance determinations. *See* Ex Parte No. 756, *Market Dominance Streamlined Approach*, AAR Comments (Nov. 12, 2019) at 8–9 (“AAR submits that the 500-highway-miles is a conservative threshold for use in these streamlined market dominance procedures. Of course, this threshold need not—and could not—identify the exact demarcation line whereby trucks do not provide effective competition to rail in every circumstance.”). In the streamlined market-dominance context, the Board has made clear that its 500-mile screen is just the starting point for purposes of finding market dominance, and that it will consider truck competition at greater distances when the evidence supports it. Ex Parte No. 756, *Market Dominance Streamlined Approach*, NPRM (served Sept. 12, 2019) at 8. AAR’s position here is the same: The Board may not re-regulate on a commodity-wide basis if there is evidence that truck competition is effective, regardless of the average length of haul. Moreover, the simplifying rationale of a bright-line threshold in the context of individual rate proceedings makes little sense here, where the Board is considering the potential re-regulation (or deregulation) of entire classes of commodities.

²² If the Board ultimately uses any mileage threshold as a proxy for truck competitiveness, it should use a higher threshold of 750 or 1,000 miles to reflect the fact that trucks routinely handle large volumes of traffic at these distances.

can be affected by the mix of individual shipments in the Waybill Sample. Changes in length of haul are driven by decisions by shippers about where to ship their wares, by receivers about where to source their goods, and the choices both make about the available transportation options. And no rail (or truck) shipment made by a shipper is an “average” one. And any assumption that a longer average length of haul—or an increase in the average over time—implies less propensity for effective truck competition is unsupported. For example, longer hauls could reflect railroads’ success in increasing long-haul traffic through favorable economic terms or improved service, such as the expanded single-line services that followed efforts by railroads to improve interchange efficiencies through mergers and other forms of interline cooperation.²³ Likewise, longer average rail hauls could reflect trucks’ success in winning all of the short-haul traffic away from railroads. *See* Cornerstone V.S. at 36–37. Neither explanation would indicate unconstrained market power; to the contrary, both would indicate a well-functioning and competitive marketplace.

2. Available Data Concerning Geographic Competition

The data marshalled in the proposed approach also misses two entire dimensions of competition that can prevent railroads from having unconstrained market power: namely, geographic and product competition. Geographic and product alternatives available to shippers translate into real transportation alternatives (*i.e.*, receivers finding alternative sources of supply via alternative transportation options, or sellers shipping to alternative destinations via alternative

²³ *See, e.g.,* Finance Docket No. 32549, *Burlington Northern Inc. & Burlington Northern R.R. — Control & Merger — Santa Fe Pacific Corp. & The Atchison, Topeka & Santa Fe Ry.*, 10 I.C.C.2d 661, 1995 WL 528184, at *55 (STB served Aug. 23, 1995) (noting that BN/Santa Fe merger would “bring about a significant number of new single-line BN/Santa Fe movements” and that “[i]ncreases in length of haul are expected, as more interline movements become single-line, as interchange costs are eliminated, and as equipment becomes more efficiently distributed and used”).

transportation options). Here, the data made available through Board Staff’s work on the GMIM Model provides important insights into the presence of geographic competition that should be incorporated into any Dashboard the Board implements.²⁴

Where present and effective, geographic and product competition can offer meaningful competitive alternatives for shippers. Cornerstone V.S. at 24–28. The Fifth Circuit concluded that failure to consider indirect competition would contradict Congress’s goal of “deregulat[ing] ... rail rates subject to effective competition.” *Western Coal Traffic League v. United States* (“WCTL”), 719 F.2d 772, 778 (5th Cir. 1983) (en banc). It observed that, “[u]ndoubtedly, if the ICC was required to ignore the effects of indirect competition, certain rates would become subject to regulatory intervention even though the rate is governed by market forces. Such a result flies in the face of Congress’ stated policy of deregulation of rates subject to effective market control.” *Id.* at 779. In economic substance, declining to consider geographic and product competition in considering an exemption is no different from declining to consider rail-to-rail, truck, water, or transload competition. It would be legal error to do so.

The Board has repeatedly and consistently acknowledged the presence and importance of these “indirect” forms of competition. *See, e.g.,* Ex Parte No. 627, *Market Dominance Determinations – Product & Geographic Competition* (served Dec. 21, 1998), at 6 (“In applying its revised market dominance guidelines, the ICC *in fact found that product or geographic competition provided effective competition for certain traffic in several cases.*”) (emphasis

²⁴ Board Staff explained that “the data and codes that we have given to stakeholders could be used to explore questions of geographic competition,” but Staff “did not do that as part of this model.” January 15 Technical Conference at 1:40:20-35. As to product competition, AAR recognizes that consideration of this form of indirect competition likely must await the development of a full record in an exemption or revocation proceeding, given the commodity-specific facts likely necessary to assess whether the option to supply or source substitute products constrains the exercise of transportation market power.

added).²⁵ In fact, both geographic and product competition were repeatedly cited by the ICC as support for commodity exemptions, including three of the five commodities at issue in this proceeding:²⁶

- **Coke:** “product competition from mini-mill steel produced without coke”²⁷
- **Iron & Steel Scrap:** “[e]xceptionally strong geographic competition also exists, which further inhibits the railroads from dominating market power”²⁸
- **Hydraulic Cement:** “evidence of extensive geographic competition, which inhibits the railroads from exercising market power.”²⁹

To be sure, the Board has declined to consider geographic competition when it evaluates qualitative market dominance in *individual* rate reasonableness cases. *See AAR v. STB*, 306 F.3d

²⁵ The Board has emphasized the importance of considering geographic competition in other regulatory contexts as well. *See, e.g.,* Finance Docket No. 32133, *Union Pacific Corp., Union Pacific R.R. & Missouri Pacific R.R.—Control—Chicago & North Western Transportation Co. & Chicago & North Western Ry.* (“UP/CNW – Control”), 1995 WL 141757 (I.C.C. served Mar. 7, 1995) at 77, (“[A]rbitrary limitations of the geographic market to the specific points and routes over which certain traffic moves ... overstates UP/CNW’s market power. These limitations artificially and inappropriately exclude viable competitive alternatives such as ... source competition. A valid market definition under the Merger Guidelines requires the identification of geographic areas and commodities that could provide substitutes for the product or service that would become operable within a specified time frame (usually one year). *All geographic competition ... which limits a railroad’s market power must be considered.*”) (emphasis added).

²⁶ This record is already replete with evidence of effective geographic competition. *See, e.g.,* Ex Parte No. 704 (Sub-No. 1), *Review of Commodity, Boxcar, and TOFC/COFC Exemptions*, CSX Opening Comments, Muldrow V.S. at 5–6 (July 26, 2016); CSX Reply Comments, Rutherford V.S. at 2–5 (Aug. 26, 2016); Union Pacific Opening Comments, Thrasher V.S. at 10 (July 26, 2016); NS Opening Comments Ex. G Schaaf V.S. at 8–9 (July 26, 2016, 2016).

²⁷ *Rail General Exemption Authority—Petition of AAR to Exempt Rail Transportation of Selected Commodity Groups*, 9 I.C.C.2d at 978.

²⁸ Ex Parte No. 346 (Sub-No. 35), *Rail General Exemption Authority—Exemption of Ferrous Recyclables*, 1995 WL 294272, at *3 (ICC served May 16, 1995).

²⁹ Ex Parte No. 346 (Sub-No. 34), *Rail General Exemption Authority – Exemption of Hydraulic Cement*, 1995 WL 438371, at *4 (ICC served July 26, 1995).

1108 (D.C. Cir. 2002). Unlike in individual rate cases, where the D.C. Circuit upheld the Board’s decision to decline consideration of geographic competition on administrability grounds, *see AAR v. STB*, 306 F.3d at 1111–12, there is no comparable interest in simplifying the Board’s consideration of commodity-wide exemptions. To the contrary, the statutory mandate compels the Board to conduct a probing inquiry of all potential competitive constraints and re-regulate—or continue regulating—only when necessary to prevent abuses of market power, and to exempt as much traffic as possible. *See supra* at 6–9; *WCTL*, 719 F.2d at 779. Congress specifically articulated its expectation that the Board would “examine all competitive transportation factors that restrain rail carriers’ actions and that affect the market for transportation” before revoking any commodity exemption. H.R. Conf. Rep. 104-422, at 169; *see also* S. Rep. No. 104-176, at 8–9 (same).³⁰ And the fact that the Board has decided not to consider indirect competition in individual cases makes it all the more vital that it do so when deciding whether to regulate at all. It would be legally unsustainable for the Board to both preclude consideration of geographic competition when it *does regulate* and also ignore it when it *decides whether to re-regulate* (or continue regulating).

³⁰ The Board has also suggested that shippers would be unlikely to bring rate cases if geographic and product competition disciplined rates. *See* Ex Parte No. 627, 2001 Decision at 7 & n.16 (decided Apr. 2, 2001); *id.* 1999 Decision at 10 (decided July 1, 1999). This rationale lacks substance, as it plainly would apply just as much to *all forms of competition* and obviate any evaluation of market dominance, contrary to statute. But it is also dubious on its own terms. As the D.C. Circuit observed, “it is certainly plausible that some shippers would consider regulators’ hands to be friendlier than invisible ones.” *AAR v. STB*, 306 F. 3d at 1111. And in any event, the possibility that a shipper might not bear the costs of a rate reasonableness challenge if competition is truly effective does not mean that it would refrain from invoking the “visible hand” of regulation in other contexts that Congress was equally adamant should be governed instead by market competition—including service levels, non-price terms, and many other aspects of rail transportation.

Board Staff acknowledges that the “data and codes that [it has] given to stakeholders could be used to explore questions of geographic competition,”³¹ and in fact Board Staff’s GMIM Model offers a concrete and administrable way to consider potential geographic competition. As explained in the Verified Statement of Baranowski/Fisher, one simple approach would yield meaningful information using the length-of-haul and alternative rail-route information drawn from the Waybill Sample. FTI V.S. at 15–23. With this information, the Board could assess for a given commodity whether (and the degree to which) there are alternative destinations reachable via alternative rail routes or transportation modes. Similarly, the Board could assess whether there are alternative origins that can deliver via alternative rail routes or transportation modes.

These are precisely the inquiries that the ICC deemed relevant in evaluating geographic competition. As the ICC explained in exempting hydraulic cement from regulation, “geographic competition[] ... inhibits the railroads from exercising market power. If a railroad were to raise its rates to one shipper, either the shipper could send the hydraulic cement to another market, or the receiver could buy its supply from another producer.” Ex Parte No. 346 (Sub-No. 34), *Rail General Exemption Authority—Exemption of Hydraulic Cement*, 1995 WL 438371, at *4.³²

Witnesses Baranowski and Fisher offer one possible way to present such data for individual commodities. Chart B, reproduced below, depicts two metrics revealing the presence

³¹ January 15 Technical Conference at 1:40:20–35.

³² See also Ex Parte No. 346 (Sub-No. 35), *Rail General Exemption Authority—Exemption of Ferrous Recyclables*, 1995 WL 294272, at *3 (“Geographic competition occurs because these commodities, particularly iron and steel scrap, are produced and consumed throughout the United States. If a railroad were to raise its rates to one shipper, either the shipper could send the recyclables to another market, or the receiver could secure its supply from another shipper, or both situations could occur. In any case, the railroad would be deprived of all of the revenue from those shipments.”).

of alternative destinations within the range of effective truck competition. In the left-hand panel, the chart shows the percentage of origins for which there are at least 10 alternative destinations for the same commodity revealed in the Waybill Sample data that are within 500 miles of the origin. In the right-hand panel, the chart shows the percentage of all originated traffic (whether or not there is an identified GMIM rail or water alternative) for which the originating shipper is within 500 miles of alternative destinations that receive (again, per the Waybill Sample), in the aggregate, at least 80% of the total volume shipped by rail from the origin.

CHART B³³
ORIGINS WITH ALTERNATIVE DESTINATIONS

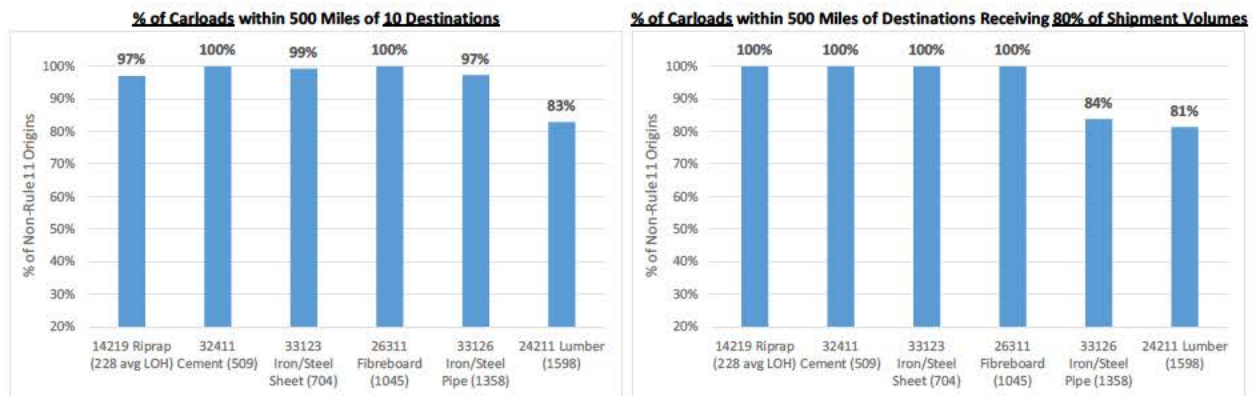
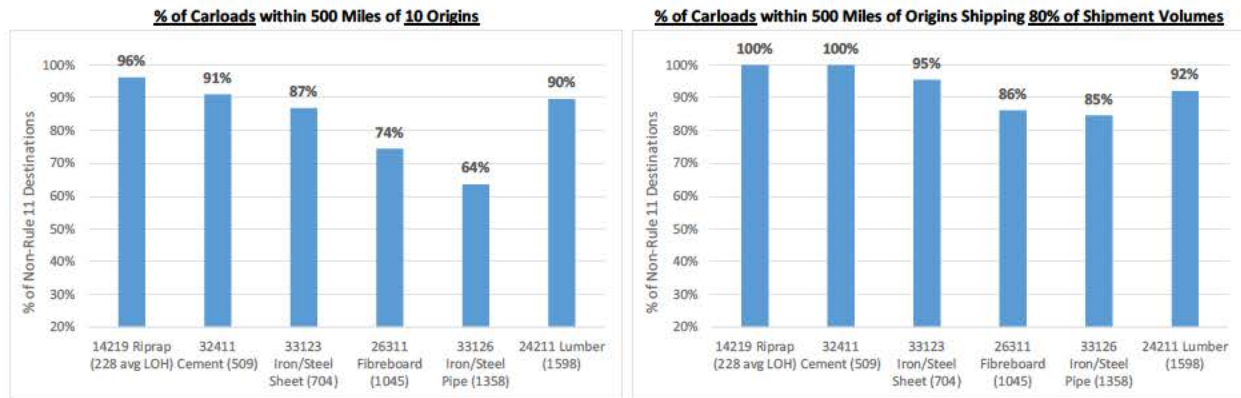


Chart C depicts comparable data from a destination perspective: *i.e.*, in the left-hand panel, the percentage of destinations that are within 500 miles of at least 10 separate origins of the same commodity, and in the right-hand panel the percentage of terminated traffic for which *the receiver* is within 500 miles of alternative *origins* that originate (per the Waybill Sample), in the aggregate, at least 80% of the volume received at the destination.

³³ See FTI V.S. at 19.

DESTINATIONS WITH ALTERNATIVE ORIGINS



Although these metrics show a tremendous amount of geographic competition, they present a highly conservative perspective. *First*, the information on the existence of alternative origins as potential sources of supply and destinations as potential alternative consumers (and the volumes those alternatives can supply or consume) is limited to the shipments by rail that happen to be in the Waybill Sample. There are likely many additional rail-served origins and destinations that are not sampled in a single year of Waybill data, many more truck-served origins and destinations, and additional truck- or rail-served volumes at the sampled origins and destinations. FTI V.S. at 18 n. 15, 22–23.

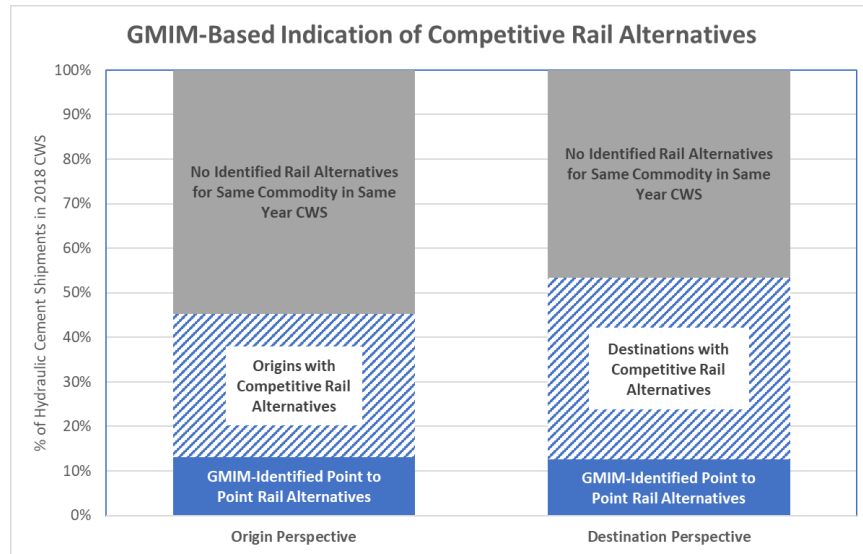
Second, the metrics depicted in Charts B and C primarily identify only the likely presence of pervasive competition from trucks carrying shorter-haul shipments to or from alternative destinations and origins. They do not attempt to identify the potential for trucking beyond 500 miles or the potential for transportation by rail via independent competitive rail routes, or via water, to alternative destinations or from alternative origins. *See* FTI V.S. at 17, 22–23.

³⁴ See FTI V.S. at 19.

Using the GMIM Model, however, it is possible to gain at least some insight into the intramodal dimension of geographic competition as well. Witnesses Baranowski and Fisher used the GMIM Model data to identify the availability of independent competitive rail routes connecting rail-served origins revealed by the Waybill Sample with alternative destinations receiving the same commodity, and vice versa.³⁵ This perspective on geographic competition is illustrated in Chart D, which shows for a single commodity (hydraulic cement) the significant degree to which competing rail routes are available to shippers to reach alternative destinations, and to rail receivers to source goods from alternative origins. Whereas the GMIM Model as configured by Board Staff indicates that approximately 13% of origin-destination pairs have alternative rail routes between the same specific origins and destinations, in fact shippers of close to 50% of all traffic, and receivers of more than 50% of all traffic, have the ability to use alternative rail options to fulfill their transportation needs. *See* FTI V.S. at 19–23.

³⁵ The GMIM data used in this analysis was that generated by the GMIM Model as configured by Board Staff, without the adjustments proposed by witnesses Baranowski and Fisher discussed below. *See infra* at 32–34.

CHART D³⁶
COMPETITIVE RAIL ALTERNATIVES BASED ON GMIM



Charts B, C, and D, and their underlying data, are just one possible way in which information relevant to the existence of geographic competition could be presented using the information in the GMIM Model. The approach set forth above would be a constructive addition to the array of data available to the Board and interested parties in assessing railroads’ ability to exercise unconstrained market power. The Board should therefore incorporate such data, or similar data measuring potential geographic competition, into any approach that it ultimately adopts for collecting data that is relevant to exemption decisions.

3. The GMIM Model Is a Valuable Resource, but Could Be Refined and Improved.

The new GMIM dataset is a constructive addition to the available pool of data potentially “indicative of rail transportation competition” (Request for Comments at 6), and it should be retained. But the Board should address several shortcomings in the GMIM Model as currently configured. First, as discussed above, the Board should incorporate information made available

³⁶ See FTI V.S. at 22.

by the GMIM Model about the presence of geographic competition. Second, when identifying competing rail transportation options between the same origins and destinations, the GMIM Model undercounts the available options by examining only a single-year snapshot of Waybill Sample data and ignoring alternative rail routes revealed by the movement of other commodities. Third, the Model misses additional rail and water competition by artificially limiting transload range to 30 miles. And, fourth, the Model misses water competition by ignoring movements between waterway systems.

(a) Additional Rail Options

Board Staff's proposed design of the Rail GMIM metric limits the metric to movements of the same commodity, from the same origin to the same destination, in the same calendar year. This results in underreporting rail alternatives for shipments between a given origin and destination for three reasons: First, the Waybill Sample's low rate of sampling means that many shipments (*i.e.*, a commodity moving from Origin A to Destination B via Route X) simply do not show up in the Sample. FTI V.S. at 25–26.³⁷ Second, the limitation to shipments in the same calendar year fails to capture alternative origin-destination rail routes that were available but that shippers did not use that particular year. Third, the limitation to movements of the same commodity at the 5- or 7-digit STCC level excludes movements by rail of similar commodities that reflect the availability of even more alternative rail routes.³⁸

These shortcomings have a significant impact on the effectiveness of the proposed GMIM Model for identifying shippers' alternative rail options. As shown in Chart E below,

³⁷ The Board has acknowledged these shortcomings in proposing to significantly expand the sampling rate for future years. *See* Ex Parte No. 385 (Sub-No. 8), *Waybill Sample Reporting* (NPRM served Nov. 29, 2019) at 8, 11.

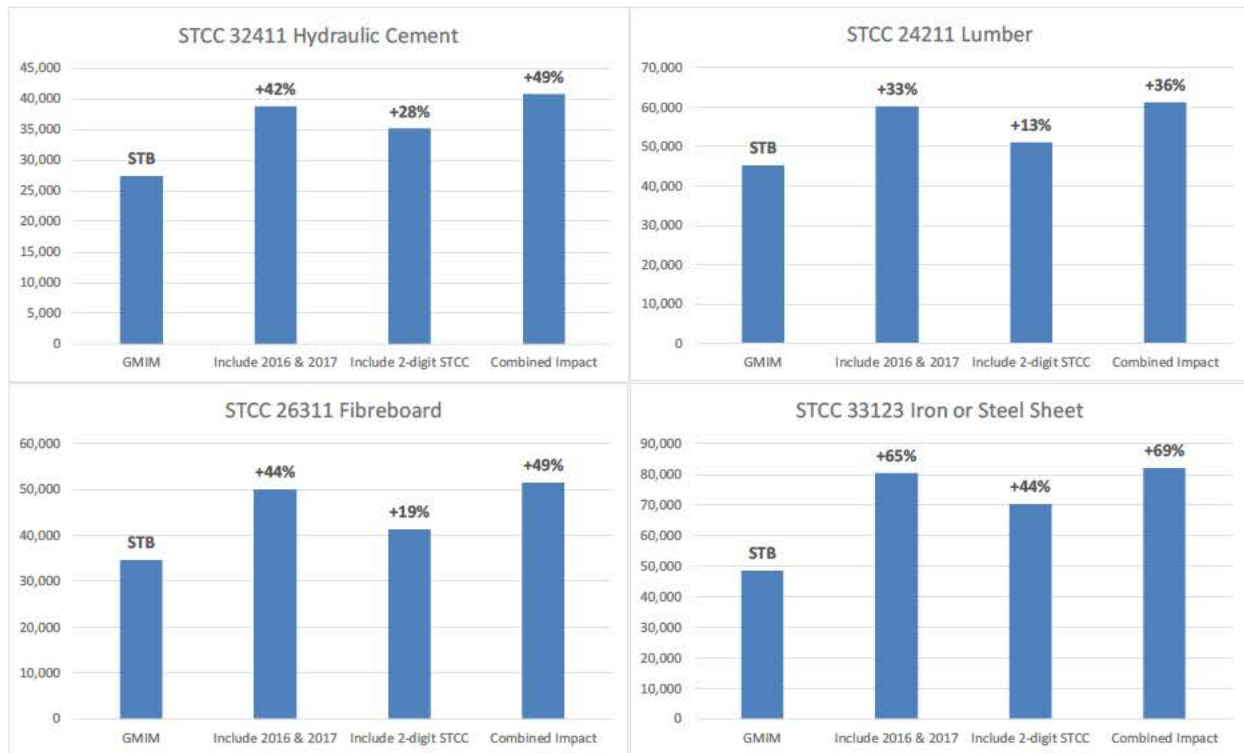
³⁸ *See* FTI V.S. at 32–34; Cornerstone V.S. at 26–28.

examining movements of the four commodities assigned an overall “strong” revocation signal across a three-year period (2016-2018)—rather than the one-year snapshot proposed by Board Staff—results in an increase in the percentage of shipments with competitive rail options by between 12 and 65 percent, with three of the four increasing by *over 40 percent*. FTI V.S. at 32–34. Similarly, relaxing the “same commodity” constraint (but looking only at a single year) to consider routes that handled the same 2-digit STCC commodity (rather than the 5-digit STCC in the proposed approach) for the four “strong commodities” increases the percentage of shipments with competitive rail options by up to 44 percent.³⁹

Taken together, examining movements across a three-year period and also looking to routes that handled the 2-digit STCC commodity reveals significantly more “rail competitive influence”—ranging from 13% to 69% for these four commodities—than the GMIM Model as implemented by Board Staff.

³⁹ Examination of data at the 2-digit STCC level (rather than relaxing the commodity limitation entirely) is likely conservative, given that alternative rail routes are generally capable of handling all kinds of railcars and commodities. In addition, even if not all of the specific commodities within a 2-digit STCC group would be identically well served by the loading or unloading facilities used by other commodities in that group, the facilities used for shipments of commodities outside the 2-digit STCC group could well facilitate the movement of such commodities.

CHART E⁴⁰
ADJUSTMENTS TO GMIM RAIL COMPETITIVE INFLUENCE METRIC



Accordingly, the Board should revise the Rail GMIM methodology to include at least three years of the Waybill Sample. The Board should also remove the constraint that the movement via an alternative route must be of the same 5- or 7-digit commodity.

(b) The 30-Mile Transload Radius

The Board should expand the 30-mile radius established by Board Staff as a measure of the range of effective transloading. Transload movements by truck of well beyond 30 miles are routine, especially outside of congested terminal areas. Moreover, many rail shipments *always* begin or end with a truck haul. Consider movements of grain to an elevator for storage and loading onto railcars: since grain must move by truck from the field to an elevator over distances

⁴⁰ FTI V.S. at 34.

that often exceed 30 miles, an elevator on one railroad need not be within 30 miles of an elevator on another for the two to be head-to-head competitive options for the farmer.⁴¹

The Board should expand the radius to at least 50 miles—the distance a truck can travel in an hour or so—which is consistent with widespread views of transportation analysts as to the range of effective transloading.⁴² And in any event, the Board should interpret GMIM data carefully with the knowledge that effective rail or water competition can exist with transloading distances far beyond the very short hauls reflected in the proposed approach or even a metric that used a 50-mile radius.

(c) Water Movements Across Waterway System Boundaries

Next, the Board should expand its consideration of competitive water alternatives to include movements between two sets of adjacent waterway systems: specifically, movements between the Mississippi River and the Gulf of Mexico system, and movements between the Gulf of Mexico and the Atlantic Ocean system. Publicly available data shows substantial flows of commerce between these systems, as shown in the green-shaded cells in Table 2 below. FTI V.S. at 35–35 (based on U.S. Army Corps of Engineers Waterborne Commerce Statistics Center data).

⁴¹ See *UP/CNW – Control*, 1995 WL 141757, at *59 (giving “particular attention” to “the role [of] intermodal competition (especially truck competition)” and “source competition as well,” “[b]ecause grain grown on the farm must necessarily be trucked somewhere, and because grain grown in Iowa competes with grain grown elsewhere (both in the United States and throughout the world)”).

⁴² For example, Iowa DOT’s Toolkit for potential rail shippers described transloading as involving a truck shipment to a transload facility “usually within 50 miles of origin.” Iowa DOT, *Selecting Rail as a Mode of Transportation*, at 19, https://iowadot.gov/iowarail/railroads/industry/iowatoolkit/Toolkit_Selectingpdf.pdf.

TABLE 2⁴³
2018 WATERBORNE TONNAGE BETWEEN SELECTED WATERWAY SYSTEMS
(MILLIONS OF TONS)

<i>Origin Region</i>	<i>Destination Region</i>					Intersystem Total
	Atlantic Ocean	Great Lakes	Gulf Coast	Mississippi River	Other	
Atlantic Ocean	79,667	14	536	329	2,453	3,333
Great Lakes	390	83,383	343	1,711	15,314	17,758
Gulf Coast	19,596	564	122,539	35,331	15,518	71,009
Mississippi River	6,775	3,624	35,841	358,359	3,757	49,997
Other	28,836	14,385	6,865	1,443	230	51,530
Intersystem Total	55,597	18,587	43,585	38,815	37,043	193,626

By limiting the GMIM water influence metric to movement within a single waterway system, Board Staff’s methodology would ignore viable and important transport options and, for example, exclude from consideration the potential for barge movements of lumber from Memphis to Florida Gulf ports, or movements of scrap steel from Louisiana ports to Charleston, South Carolina, on the Atlantic waterway system.

By expanding the GMIM Model’s consideration of water alternatives to include these intersystem movements, the Board can ensure that it is not ignoring the market realities for shipments on these water systems (and therefore the market realities for railroads shipping commodities that could travel on these water systems instead).

4. Changes in Traffic Volumes

Finally, the Board should give consideration to growth in rail traffic. As witnesses Asker, Hatzitaskos, and Nevo explain, expanding output may provide significant insight into whether markets are functioning competitively: “evidence that quantity is expanding, properly measured and benchmarked, might suggest procompetitive outcomes.” Cornerstone V.S. at 14. Growing volumes of rail traffic likely reflect investments by railroads in equipment, capacity and other resources that are needed to meet shippers’ needs, and is evidence that shippers are able to

⁴³ FTI V.S. at 36.

rely on railroad transportation in growing the volume of the commodities they ship.⁴⁴ Witnesses Baranowski and Fisher demonstrate that the volume of rail traffic increased dramatically for many of the commodities examined by Board Staff. FTI V.S. at 23–24.

B. The Board Should Not Rely on Data that Is Unlikely to Provide Evidence of Unconstrained Market Power.

In addition to making the most of the available data on the potential existence of actual competitive alternatives—which might rule out the presence of market power—the Board should also ensure that its models do not rely on fundamentally flawed data or data that would not support any inference of market power. To that end, the Board should eliminate its reliance on R/VC and RPC ratios to the extent the metrics in the proposed approach draw an inference of market power from these data points. When used for that purpose, these metrics are likely to mislead the Board.⁴⁵ Snapshots of data from 1992 and 2018 are similarly unhelpful.

1. Neither R/VC Ratios nor RPC Is a Rational Way to Identify Unconstrained Market Power.

Much of the data relied upon in the proposed approach is built from R/VC ratios, which in turn are calculated using Waybill Sample revenues and URCS-generated variable costs. The Board acknowledges the criticisms directed at reliance on R/VC data, and seeks to address them by examining whether comparable metrics based on revenue-per-car (“RPC”) data send consistent signals. Request for Comments at 10 n.30. But nothing about the proposed approach

⁴⁴ Of course, growing volumes may also reflect the level of economic activity in a particular sector, and thus traffic growth would not be dispositive in any market power inquiry. But because traffic levels will inevitably be affected by the ebb and flow of economic changes, it is also true that no negative inference can be drawn from declining traffic levels—no transportation mode moves many horse-drawn carriages today—especially for commodities that have shifted to truck in the past half-century.

⁴⁵ In contrast, low R/VC or RPC ratios might suggest the absence of unconstrained market power.

overcomes those criticisms. In fact, they apply with even greater force to the proposed RPC alternatives.

Comparisons of R/VC ratios or RPC drive four of the eight proposed Indicators.⁴⁶ This extensive reliance on R/VC ratios and RPC is inconsistent with the Board’s goal—to examine reliable data about market conditions for particular commodities so that the Board can identify potentially unconstrained market power. Any approach that relies so extensively on flawed metrics will mislead the Board, condemn pro-competitive and salutary improvements in the freight-rail industry, and ultimately make any decisions relying on the proposed approach vulnerable on judicial review. The Board should eliminate or significantly deemphasize R/VC ratios and RPC from the proposed approach, except to the extent the Board relies on low ratios as evidence of the *absence* of unconstrained market power.

(a) High or Increasing R/VC Ratios Do Not Imply Market Power.

The Board states that it views R/VC as “contributing to the analysis” of exemptions (Request for Comments at 10 n.30), but it is unclear what conclusions the Board expects to draw from R/VC ratios. That high ratios do not indicate market-power concerns is widely acknowledged. The 2009 Christensen Study, commissioned by the Board, specifically and repeatedly concluded that URCS-based R/VC calculations suffer from data problems, and do not correctly predict or reflect “the presence of market-dominant behavior.” Laurits R. Christensen Assocs., Inc., *A Study of Competition in the U.S. Freight R.R. Indus. and Analysis of Proposals*

⁴⁶ The proposed approach proposes to draw inferences from both R/VC ratios and changes in R/VC ratios from 1992 to 2018. These metrics are examined both in absolute terms and in comparison to the average for all commodities. *See, e.g.*, Request for Comments at 29 (showing R/VC distributions for hydraulic cement). And the proposed approach also examines the differences in the distribution of R/VC ratios (and the change in that distribution over time) with and without rail and water influence (per the GMIM model). *See, e.g.*, Request for Comments at 32–40 (same).

that Might Enhance Competition – Vol. 3, Policy Analysis and Future Directions for Research, 22-21 (Nov. 2009).⁴⁷ Specifically, R/VC ratios are “not very useful as an indicator of the presence of market structure factors that would increase a shipper’s ‘captivity’ to an individual railroad. The weak relationships between R/VC ratios and market[-]structure factors imply that correctly assessing the presence of market-dominant behavior requires direct assessment of relevant market structure factors.” *Id.* at 23-8; *see also id.* at 23-4, 23-10 to 23-11; Ex Parte No. 704 (Sub-No. 1), AAR Opening Comments at 22–29 (July 26, 2016) (“AAR 2016 Comments”) (explaining that R/VC is not a reliable indicator of market power).⁴⁸ The Christensen Study’s conclusions about the inappropriateness of relying on R/VC in assessing market power are well grounded in basic economics and an understanding of the URCS-based costing systems on which R/VC ratios depend.

Fundamentally, margins are a discredited means of assessing market power (or weak competitive conditions) in the field of competition economics. As explained by witnesses Asker, Hatzitaskos, and Nevo, information about the margins earned by a supplier of goods or services is not an economically reliable basis for assessing whether that supplier possesses market power. *See Cornerstone V.S.* at 14.

Moreover, as explained by witnesses Baranowski and Fisher, URCS costs are not a useful measure of shipment-specific (or even commodity-specific) marginal costs and thus URCS-

⁴⁷ Consistent with the analysis presented by witnesses Baranowski and Fisher (FTI V.S. at 44–45, 49–51), the Christensen Study found that URCS costs on which R/VC ratios are necessarily based “have limitations in adequately reflecting shipment-level, cost-causing factors.” *Id.* at 22-21 n.30.

⁴⁸ Likewise, a study by the Transportation Research Board (TRB), conducted in response to a 2005 request from Congress, concluded that R/VC lacks any “meaningful connection to a shipment’s rate or to the level of market power possessed by the railroad.” TRB Special Report 318: Modernizing Freight Rail Regulation (2015), at 4.

based R/VC ratios are not reliable measures of margins even if margins were a reasonable way to measure market power. FTI V.S. at 45; *see also* Cornerstone V.S. at 29–31. The proposed approach makes an additional mistake in comparing R/VC ratios “to an All Carload Traffic composite ratio that is weighted heavily by unit-train traffic that is not typical of shipments of the commodities at issue in this proceeding.” FTI V.S. at 46; *see also id.* at 49–51. This “will increase the influence of URCS distortions” in the proposed approach. FTI V.S. at 50.

AAR’s 2016 Comments cataloged many of these problems and provided concrete evidence that R/VC ratios do not reliably predict railroad market. For example:

- R/VC does not properly account for important elements relevant to determining rates, including quality, investment, or properly-measured marginal cost.⁴⁹
- The URCS-based costing underlying R/VC calculations provides at best a rough proxy based on system-average costs that does not accurately reflect the true cost of a given shipment.⁵⁰
- Changes in railroad operations and traffic mix since the development of the URCS costing model exacerbate these shortcomings: “a significant proportion of the changes observed by the Board are a function of the relative growth in intermodal traffic between 1992 and 2013 and the systematic over-assignment of costs to intermodal shipments by” URCS.⁵¹
- R/VC levels for shipments of a given commodity show wide variation on the basis of geographic and other factors, confirming that R/VC ratios cannot provide a reliable basis for assessing market power.⁵²

⁴⁹ AAR 2016 Comments at 23, Orszag/Israel Statement at 9.

⁵⁰ AAR 2016 Comments at 23, Orszag/Israel Statement at 3; Baranowski/Fisher Statement at 6–7.

⁵¹ AAR 2016 Comments at 26–27, Baranowski/Fisher Statement at 2; AAR Reply Comments (Aug. 26, 2016), Baranowski/Fisher Statement at 4.

⁵² AAR 2016 Comments at 27–28, Orszag/Israel V.S. at 12–14.

- R/VC levels often do not fall when the level of competition objectively increases, demonstrating that they are incapable of being used as a reliable indication of market power.⁵³

These flaws remain in the R/VC data that the Board proposes to use here. *See* FTI V.S. at 44.

At most, R/VC ratios might *prompt questions* about whether market power might play some role in explaining observed patterns—such as R/VC levels sometimes being higher on average in the absence of observed (GMIM Model) rail or water competitive influences—but the R/VC data *cannot answer any of those questions*. *See* Cornerstone V.S. at 30–31 & n.61.

It is no solution to these shortcomings to attempt to glean information about market power—or even market conditions—from *changes in* R/VC, or the *relative* level of R/VC (or the relative level of the change in R/VC) as compared to some group of other commodities or some other group of traffic of the same commodity. Relative comparisons do nothing to inject meaning into the underlying R/VC ratio that is the basis for the comparison. Saying that one railroad’s locomotives are “more yellow” than another’s does not tell you anything reliable about any aspect of that railroad’s performance or the marketplace in which it operates. R/VC ratios are no different. In addition, as discussed below, comparisons relative to the average of other commodities injects an impermissible bias toward the finding that certain market conditions warrant examination, even if there is no actual basis for concern. *See infra* at 68–69.

Further, even if R/VC had some reliable relationship to market power (it does not), differences in, or changes in, R/VC levels would remain uninformative. Changes can reflect a host of factors that influence rail revenues, system-wide costs, traffic mix, transportation-demand characteristics, and many other variables that say nothing about the question underlying the potential revocation of commodity exemptions: whether there is a need for regulation to guard

⁵³ AAR 2016 Comments at 28, Orszag/Israel V.S. at 14–16.

against the exercise of unconstrained market power. *See* Cornerstone V.S. at 30 & nn.58–59.⁵⁴

Reliance on such metrics would inevitably lead the Board astray, condemning procompetitive industry developments as a mistaken source of market power concern. *See infra* at 65–66.

(b) Inferences of Market Power from R/VC Ratios Below 180% Are Especially Inappropriate.

Conclusions drawn from R/VC data are all the more inappropriate when R/VC levels are *below* the jurisdictional threshold level established by statute. Congress directed that rates generating R/VC ratios below that level are conclusively outside the Board’s jurisdiction to regulate, and that R/VC ratios above 180% may not be used to establish any presumption of market dominance.⁵⁵ Consistent with those limitations, it would be inappropriate for the Board to infer unconstrained market power—or any “market conditions” warranting regulatory concern—from R/VC ratios below the statutory threshold of 180%, regardless of how they may have changed over time for a particular commodity and regardless of how an individual commodity’s R/VC ratios might compare to other sub-180% traffic.

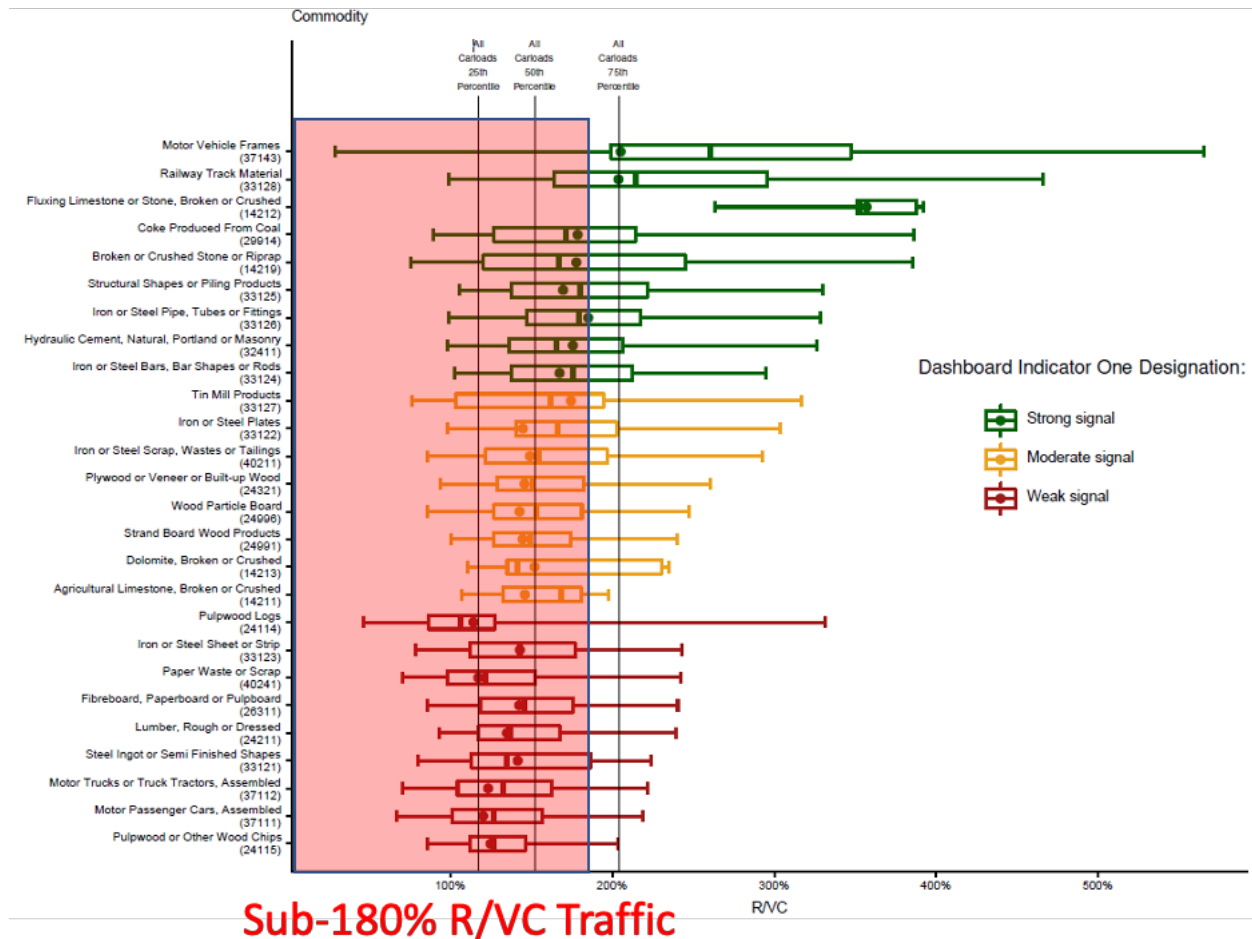
Here, however, the vast majority of the shipments of the commodities examined under Board Staff’s proposed approach have R/VC ratios below 180%— in many cases far below

⁵⁴ *See also, e.g.,* Ex Parte No. 704 (Sub-No. 1), *Review of Commodity, Boxcar, and TOFC/COFC Exemptions*, CSX Opening Comments at 3 (July 26, 2016) (“Higher RVCs are to be expected as length of haul increases, and that is precisely what has been happening at CSXT. By seeking out new opportunities to make more distant quarries located on CSXT competitive with local quarries delivering by truck, CSXT has developed highly efficient volume movements that have driven RVC ratios upward. This is not a sign of increasing market power. It is a sign of active competition and efficiency.”).

⁵⁵ The statute provides that, when assessing the reasonableness of a rail rate for those commodities that are regulated, “the Board shall find that the rail carrier . . . does not have market dominance” if the “revenue-variable cost percentage for such transportation . . . is less than 180 percent.” 49 U.S.C. § 10707(d)(1)(A). It also makes explicit that an R/VC ratio “equal to or greater than 180 percent *does not establish a presumption*” that a rail carrier possesses market power or that a rail rate is unreasonable. *Id.* § 10707(d)(2) (emphasis added).

180%. This is illustrated in the violin plots that are part of the approach's Data Visualization component. *See, e.g.*, Request for Comments at 29 (R/VC distribution for hydraulic cement). Well over half of all carload waybill movements are below 180% R/VC, including most of the studied commodities. *See* Cornerstone V.S. at 43–44. Witnesses Asker, Hatzitaskos, and Nevo have replotted the R/VC distributions for these commodities in Chart F below, which shades R/VC levels below 180% in red and vividly illustrates the degree to which the analytical focus of the proposed approach is impermissibly directed to sub-180% R/VC movements.

CHART F⁵⁶
R/VC DISTRIBUTION FOR POTENTIAL REVOCATION COMMODITIES, 2018



R/VC ratios at these levels cannot support an inference of market power, yet the proposed approach does precisely that. For example, the R/VC distributions portrayed in Board Staff’s data visualization appendices show that any inferences drawn from R/VC data were inevitably shaped by a large proportion (for most commodities a clear majority) of movements below 180% R/VC. *See, e.g.,* Request for Comments at 29–40.⁵⁷ The influence of sub-180% R/VC traffic is

⁵⁶ Cornerstone V.S. at 42 Ex. 4.

⁵⁷ In Board Staff’s data visualization appendix relating to hydraulic cement, the only observation that referred to R/VC levels *above* 180% was that there was more traffic above 180% R/VC in 2018 than in 1992, but Staff also observed that this increase was “similar to the increases observed for hydraulic cement overall.” *Id.* at 30. The fact that overall increases in the

even greater in the Indicator Dashboard, where the color-coded signals are driven by calculations of average (or median) R/VC ratios—or differences in R/VC ratios between rail or water competitive traffic and other traffic—for a given commodity that are based on Waybill Sample observations for which the absolute level of R/VC is below 180%. FTI V.S. at 46–49.

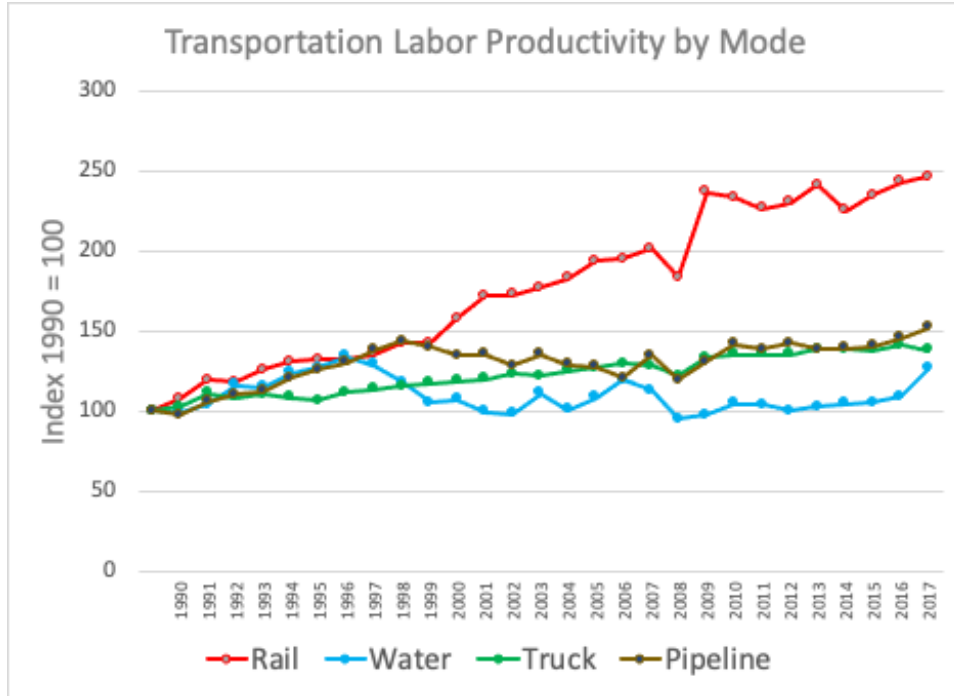
(c) Upward Trends in R/VC Ratios Would Be Expected from Improvements in Railroad Productivity.

In addition, growth in railroad productivity over time ensures that R/VC levels will rise regardless of any change in market conditions that is relevant to whether railroads have unconstrained market power. This compounds the potential for R/VC metrics based on higher R/VC ratios, or increases in R/VC ratios over time, to send misleading signals.

Railroad productivity growth since the 1980s has outstripped productivity gains in other relevant sectors, as data from the Bureau of Transportation Statistics shows vividly in Chart G below:

volume of traffic drive volumes up across the entire range of R/VC is a reflection of procompetitive traffic growth and should have been a strong sign that R/VC levels cannot provide a basis for considering this or any commodity for revocation.

CHART G⁵⁸



As witnesses Baranowski and Fisher explain, productivity growth drives R/VC levels upward as a simple function of math because it drives down costs—*i.e.*, the “VC” component of the ratio—relative to the generalized level of inflation that affects both the numerator (revenues) and denominator (costs). Board Staff’s approach used the Bureau of Economic Analysis Gross Domestic Product Implicit Price Deflator to adjust both revenues and variable costs from 1992 to 2018 values. Request for Comments at 16. But the productivity gains reflected in URCS costs drove variable costs down relative to revenue after both costs and revenue are adjusted for general inflation. FTI V.S. at 39–42. The proposed approach fails to account for the impact of these productivity gains, with the consequence that the resulting R/VC ratios in 2018 appear higher solely based on productivity gains (*i.e.*, the “R” increasing faster than the “VC”).

⁵⁸ Source: <https://data.bts.gov/stories/s/cksf-e5wx> (sourced from U.S. Department of Labor, Bureau of Labor Statistics, Major Sector Productivity, <http://www.bls.gov>).

And that would be true if 100% of the rail productivity gains were passed directly to shippers in the form of rate reductions or valuable service improvements.⁵⁹ One would therefore expect a 180% R/VC ratio in 1992 to have risen to 212% in 2018 even if all of the productivity-induced savings were passed directly to shippers. FTI V.S. at 41. In terms of actual figures, the average R/VC ratio for all carload traffic of 150.7% in 2018—a modest increase from the 143% level observed in 1992—in fact would be equivalent to an R/VC ratio of just 73% in 2018 if the productivity gains since 1992 were removed from observed levels of variable cost. FTI V.S. at 41–42.

In other words, the Board’s approach would infer an increase in unconstrained market power from an increase in R/VC ratios over time driven solely by productivity gains that benefitted shippers and railroads alike.

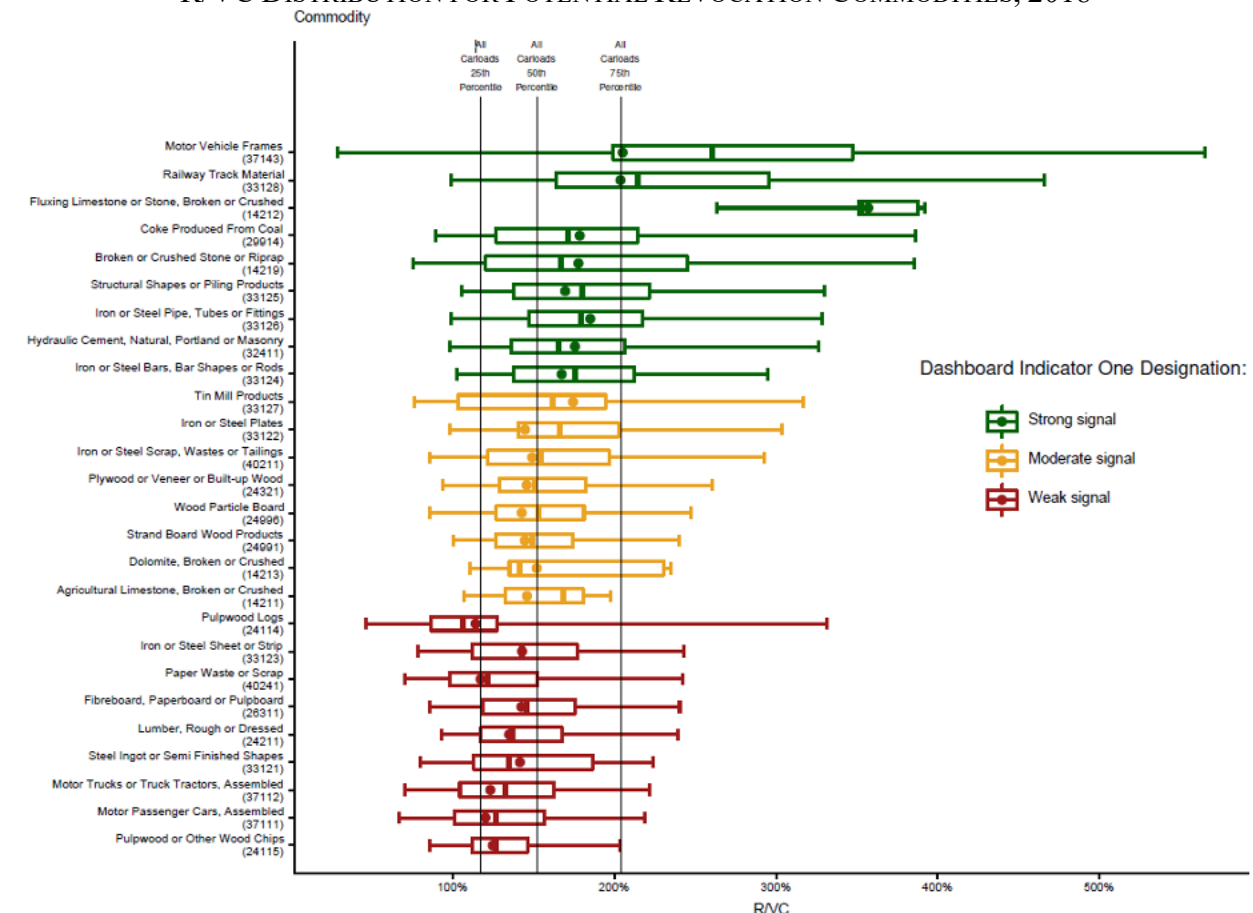
(d) The Substantial Overlap in the Distributions of R/VC Across Commodities Demonstrate that R/VC-Based Metrics Are Uninformative.

A further illustration of the futility of drawing reliable conclusions from R/VC-based metrics is the substantial overlap in R/VC ratios across commodities. Chart H below reproduces Chart F above (*supra* at page 44), but without the shading for traffic below 180 R/VC. Referred to as a “box-and-whiskers” plot, Chart H shows, for each of the commodities under examination in this proceeding, the range of R/VC ratios using a horizontal line between the 5th percentile and the 95th percentile and a box reflecting the 25th and 75th percentiles. The substantial overlap

⁵⁹ For R/VC ratios above 100%, even if revenues were reduced dollar-for-dollar by cost reductions reflecting increased productivity relative to inflation, inflationary increases in revenues (R) would outpace the level of variable costs (VC), driving R/VC ratios up. For example, starting with revenues of \$180 and variable costs of \$100 (for an R/VC ratio of 180%) and assuming no inflation but productivity gains yielding a \$10 reduction in costs, if all of that \$10 savings were given to the shipper, the R/VC ratio for that shipment would still increase to 189% (\$170/\$90 = 1.89). *Cf.* FTI V.S. at 40–41.

across commodities is apparent: with only a few exceptions, every commodity has very low R/VC ratios and relatively high ratios, and everything in between. The varying levels for each commodity undoubtedly reflect a wide array of factors, including movement-specific variations in cost, movement-specific variations in shipment characteristics (service levels, equipment types, etc.), and many others.

CHART H⁶⁰
R/VC DISTRIBUTION FOR POTENTIAL REVOCATION COMMODITIES, 2018



But nothing about the underlying reasons for the variation can be gleaned from comparisons of “average” values—in the form of means, medians, or 25th and 75th percentile values as Board Staff proposes. Such metrics are incapable of capturing the competitive factors

⁶⁰ Cornerstone V.S. at 42 Ex. 4.

affecting transportation for any given movement or group of movements. No movement is “average” or representative of any given percentile of the distribution for a commodity as a whole. For example, a particular movement may have precisely the 75th percentile R/VC ratio, but that movement might well be intensely competitive as a result of truck competition, rail competition, water competition, geographic competition, product competition, or some combination of those factors.

Similar inconsistencies arise even within the framework of Board Staff’s proposed Indicator Dashboard. For example, the proposed Dashboard identifies 17 commodities as generating “strong” or “moderate” signals for potential revocation based on Indicator 1, the metric reflecting the current level of R/VC. Yet those signals are utterly inconsistent with the signals for Indicator 3, which purports to show the current “Competitive Influence” and is thus designed to reflect directly the presence of *effective competition* (within the limits of Board Staff’s methodology). As shown in Table 3 below, a majority of the commodities for which the R/VC signal (Indicator 1) was “strong” or “moderate,” meaning relatively higher R/VC ratios, generated a “weak” signal for Competitive Influence, meaning *relatively more competition*. And for a majority of the commodities for which the Competitive Influence signal was strong or moderate, meaning relatively less competition revealed by the methodology in the proposed approach, the R/VC signal was “weak.” Given the objective relevance of competition metrics to the actual existence of competitive market conditions, this inconsistency confirms that R/VC ratios do not send reliable signals of potential market-power concern. *See* Cornerstone V.S. at 44–45; FTI V.S. at 62–63.

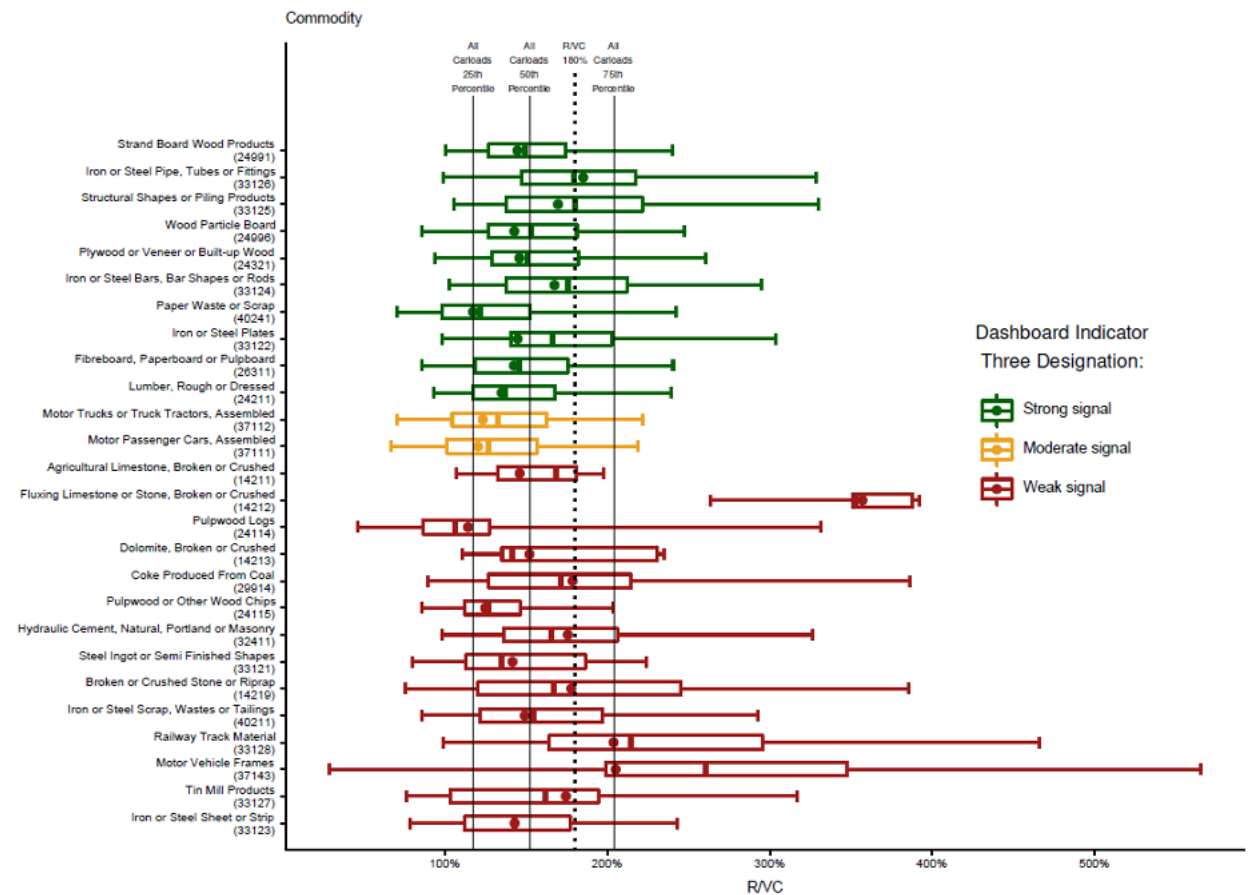
TABLE 3⁶¹
APPARENT CONTRADICTIONS BETWEEN INDICATOR 1 AND INDICATOR 3

Commodity		Indicator 1 Current R/VC	Indicator 3 Current Competitive Influence
26217	Special Industrial Paper	N/A	N/A
32412	Ready-mix Cement or Concrete, Dry	N/A	N/A
33129	Primary Iron or Steel Products, Nec	N/A	N/A
14212	Fluxing Limestone or Stone, Broken or Crushed	Strong	Weak
14219	Broken or Crushed Stone or Riprap, Nec	Strong	Weak
29914	Coke Produced From Coal	Strong	Weak
32411	Hydraulic Cement, Natural, Portland or Masonry	Strong	Weak
33124	Iron or Steel Bars, Bar Shapes or Rods	Strong	Strong
33125	Structural Shapes or Piling Products	Strong	Strong
33126	Iron or Steel Pipe, Tubes or Fittings	Strong	Strong
33128	Railway Track Material	Strong	Weak
37143	Motor Vehicle Frames	Strong	Weak
14211	Agricultural Limestone, Broken or Crushed	Moderate	Weak
14213	Dolomite, Broken or Crushed	Moderate	Weak
24321	Plywood or Veneer or Built-up Wood	Moderate	Strong
24991	Strand Board Wood Products	Moderate	Strong
24996	Wood Particle Board	Moderate	Strong
33122	Iron or Steel Plates	Moderate	Strong
33127	Tin Mill Products	Moderate	Weak
40211	Iron or Steel Scrap, Wastes or Tailings	Moderate	Weak
24114	Pulpwood Logs	Weak	Weak
24115	Pulpwood or Other Wood Chips	Weak	Weak
24211	Lumber, Rough or Dressed	Weak	Strong
26311	Fibreboard, Paperboard or Pulpboard	Weak	Strong
33121	Steel Ingot or Semi Finished Shapes	Weak	Weak
33123	Iron or Steel Sheet or Strip	Weak	Weak
37111	Motor Passenger Cars, Assembled	Weak	Moderate
37112	Motor Trucks or Truck Tractors, Assembled	Weak	Moderate
40241	Paper Waste or Scrap	Weak	Strong

The same inconsistency is revealed in even more stunning detail in Chart I, which reproduces the R/VC distributions of Chart H but grouped according to the signals associated with the Competitive Influence Indicator—with commodities having a “weak” signal (meaning more competition) showing in red at the bottom of the chart. The lack of any relationship between R/VC ratios and competitive conditions is palpable.

⁶¹ Cornerstone V.S. at 34 Ex. 2.

CHART I⁶²
R/VC DISTRIBUTION FOR POTENTIAL REVOCATION COMMODITIES, 2018
(GROUPED ACCORDING TO SIGNAL FOR INDICATOR 3 (COMPETITIVE INFLUENCE))



(e) Revenue Per Car Is an Even Worse Metric than R/VC.

The proposed approach attempts to account for the fundamental flaws in R/VC ratios by examining revenue-per car metrics to determine whether they generate “consistent signal[s]” compared to R/VC-based metrics (Request for Comments at 10 n.30). But RPC cannot cure the arbitrariness that results from the proposed approach’s reliance on R/VC ratios. To the contrary, RPC is an even worse metric than R/VC and will exacerbate the potential for the proposed approach to mislead the Board.

⁶² Cornerstone V.S. at 44 Ex. 5.

Although RPC is not distorted by productivity-induced reductions in variable cost in the way that R/VC is, it completely ignores other important factors that drive revenue per car upward over time. Those factors include increased railcar capacity, which increases revenue per car based on the simple fact that each railcar carries more freight (and therefore earns more revenue). *Cornerstone V.S.* at 31. Similarly, increases in length of haul will increase revenue per car based on the simple fact that the freight is being moved further.⁶³ Neither of these factors has anything to do with market power, and the RPC-based metrics in the proposed approach are incapable of controlling for them. Nor could RPC metrics control for causes like these absent sophisticated econometric analysis. These problems make RPC metrics useless for purposes of examining whether railroads have unconstrained market power.

* * *

In short, although low R/VC and RPC metrics are relevant to identifying the *absence* of unconstrained market power, high or increasing ratios simply are not probative of the questions that govern the Board’s consideration of exemptions. To the extent the Board continues to report R/VC- or RPC-based metrics at all, it should do so at most as one part of a broad array of datapoints that are assigned no predetermined role in any consideration of commodity exemptions, and the Board should not draw any inferences of market power from these metrics, as the proposed Indicator Dashboard currently does.

⁶³ See January 15 Technical Conference at 1:04:30–42 (“[R]evenue per carload has risen over time, at least in part due to heavier haul and longer lengths of haul, trends which can be observed in the data visualizations, particularly in the pair plots.”); see also, e.g., Ex Parte No. 704 (Sub-No. 1), *Review of Commodity, Boxcar, and TOFC/COFC Exemptions*, UP Reply Comments at 14 (Aug. 26, 2016) (average revenue per car “increases when shippers benefit from pro-competitive, efficient, single-line service that mergers create to move their products over longer distances without interchanges between railroads.”)

2. Snapshot Comparisons Between 1992 and 2018 Are Arbitrary and Uninformative.

A central feature of the proposed approach is a focus on the level of certain metrics—or the distribution of certain data—at two fixed points in time: 1992 and 2018. The approach undertakes no examination of data for years prior to 1992, when many of the exemptions were put in place, or changes over the intervening years beyond a comparison to the single, most-recent year (2018).⁶⁴ The Board’s consideration of changes in market conditions should take into consideration available information about periods prior to 1992 and changes between 1992 and 2018.

Examining only the two endpoints of a 26-year period provides a misleading picture of changes over time, and obscures the root causes of apparent changes. These snapshots ignore a host of background changes in market conditions that may have influenced the observed data in ways that have bearing on whether any of the apparent changes are relevant to the question whether railroads have unconstrained market power. Data reflecting changes during the intervening years could show, for example, (1) the presence of competitive alternatives that do not show up in a single year’s sampled rail movements, *see supra* at 32–34; (2) the emergence of new shipping patterns in response to new railroad offerings (such as those enabled by end-to-end mergers or new unit-train services); or (3) changes in traffic mix that affect observed performance metrics. *Cornerstone V.S.* at 38–40; *FTI V.S.* at 37–39. The Board should supplement the data it examines to include periods prior to 1992 and multiple years between 1992 and the most recent year. And rather than rely solely on a single year as the most-recent

⁶⁴ Presumably the proposed approach would examine data subsequent to 2018 in future years as newer data becomes available.

snapshot, the Board should look to the three most recent years to gain a better picture of current market conditions and to compensate for limitations in the Waybill Sample.⁶⁵

III. THE INITIAL SCREENS ARE A SMART WAY TO CONSERVE THE BOARD’S RESOURCES, AND THEY COULD BE IMPROVED AND SUPPLEMENTED.

The two proposed Initial Screens in the proposed approach rely on low R/VC ratios relative to all traffic and high proportions of intermodal traffic. Although the screens are presented as part of the proposed Indicator Dashboard, in substance they function independently. If they are satisfied, the proposed Initial Screens provide an overall signal that a commodity exemption does not warrant consideration for revocation.

AAR supports the Initial Screens with the improvements we discuss below. These initial screens could allow the Board and stakeholders to avoid spending resources on a more comprehensive analysis of commodities for which there is no realistic likelihood of unconstrained, class-wide market power. Agencies responsible for examining whether transactions threaten competition routinely deploy screens indicating a lack of any realistic market-power concern. Here, the metrics that the Board proposes to use as screens have promise, but are too conservative. The thresholds should be revised so that the screens can better serve their purpose by identifying more commodities for which further analysis would not be worth the effort. And the screens should be supplemented with additional metrics, including a screen that turns on railroads’ share of shipments for a commodity compared to competing forms of transportation, and a screen based on geographic competition.⁶⁶

⁶⁵ One approach would be to examine data at 5-year intervals and including at least a 3-year period of the most-recent data: *e.g.*, 1982, 1987, 1992, 1997, 2002, 2007, 2012, and 2016–2018).

⁶⁶ The proposed approach also provides for a counterpart set of Screens indicating that commodities are “weak” candidates for new exemptions. But any presumption against exemption based on these or any other metrics would run afoul of the governing statutory

A. Robust Initial Screens Are a Good Idea.

Agencies and courts charged with identifying and remedying potentially anticompetitive conduct routinely use a variety of initial screens to assess whether potentially anticompetitive conduct warrants in-depth investigation. The Board is correct to consider a similar approach in the context of considering exemptions.

The federal antitrust agencies apply screens identifying the absence of market power when they examine mergers and other forms of competitor collaborations. Under the Horizontal Merger Guidelines, for example, the Department of Justice and Federal Trade Commission identify whether a proposed merger will “create, enhance, or entrench market power or ... facilitate its exercise.”⁶⁷ If market concentration is low, or the transaction will increase concentration by a small amount only, a transaction “ordinarily require[s] no further analysis.”⁶⁸ Likewise, the DOJ and FTC Competitor Collaboration Guidelines explain that the agencies will “typically define relevant markets and calculate market shares and concentration as an initial step in assessing whether the agreement may create or increase market power or facilitate its exercise.”⁶⁹

Other agencies also screen for the presence of market power using market-structure thresholds. FERC, for example, applies a “Competitive Analysis Screen” based on market share

framework, which requires a presumption in favor of deregulation and requires the Board to exempt traffic to the maximum extent possible. *See supra* at 6–9.

⁶⁷ DOJ and FTC Horizontal Merger Guidelines (Aug. 19, 2010) at 2, *available at* <https://www.justice.gov/sites/default/files/atr/legacy/2010/08/19/hmg-2010.pdf>.

⁶⁸ *Id.* at 19.

⁶⁹ DOJ and FTC Antitrust Guidelines for Collaborations Among Competitors (Apr. 2000) at 4, *available at* https://www.ftc.gov/sites/default/files/documents/public_events/joint-venture-hearings-antitrust-guidelines-collaboration-among-competitors/ftcdojguidelines-2.pdf.

and concentration data in order to “identify mergers that clearly do not raise competitive concerns early in the process.”⁷⁰

Courts in antitrust cases similarly screen for the potential presence of market power where there is no evidence that a practice has already caused actual anticompetitive harm. Where an antitrust plaintiff cannot demonstrate such actual effects, “it must at least establish that defendants possess the requisite market power so that their ‘arrangement has the potential for genuine adverse effects on competition.’” *Capital Imaging Assocs., P.C., v. Mohawk Valley Medical Assocs., Inc.*, 996 F.2d 537, 546 (2d Cir. 1993) (quoting *FTC v. Indiana Fed’n of Dentists*, 476 U.S. 447, 460–61 (1986)). In the absence of demonstrated market power, the case will not proceed to a more probing assessment of other market circumstances or potential procompetitive effects of the alleged conduct. *Capital Imaging*, 996 F.2d at 546–47.

B. Initial Screens Should Account for the Alternative of Partial Revocation.

The Board’s screens should be designed to identify cases where costly and time-consuming inquiry into *market-wide* circumstances for a particular commodity would not be worthwhile, rather than to rule out any possibility that there might be some narrow set of circumstances warranting attention. Narrower problems can be addressed through partial revocation based on a petition brought by an affected shipper or group of shippers, and therefore the Board could not revoke (or decline to adopt) a class-wide exemption based on the potential for isolated abuses of market power. That is so even if the Board otherwise wanted to revoke an exemption in light of the statutory obligation to exempt as much traffic as possible. *See supra* at 6–9. To conclude that a commodity-wide revocation proceeding would be unwarranted, it

⁷⁰ Analysis of Horizontal Market Power under the Federal Power Act, Docket No. RM11-14-000, 138 FERC 61,109 (Feb. 16, 2012) at 61,452 ¶ 5.

should be enough that rates are *generally* low (or below the jurisdictional threshold), or that transportation alternatives are *broadly* available. As the ICC recognized, the agency “would be totally unable to exercise [its] powers to exempt a ‘class of persons’ or a ‘service’ ... if [it] were required to find that every person in the class (rather than the class as a whole) or every recipient of the service (rather than the recipients as a group) satisfied the requirements for an exemption.” *Exemption from Regulation – Boxcar Traffic*, 367 I.C.C. 425, 436 (1983). Rather, the proper course is to “make exemptions effective” and then deal with “special problems ‘after the fact,’ not on *a priori* possibilities.” *Id.* at 441. To the extent exceptions exist, they can be readily addressed through the partial revocation path.

This approach to class-wide exemptions is both mandated by statute and consistent with the fact that, as a matter of economics, an assessment whether market power is a concern is necessarily a market-wide (*i.e.*, class-wide) inquiry, rather than one that ought to be influenced by the possibility that individual shippers or groups of shippers have relatively fewer options or relatively less negotiating leverage.

C. The Proposed Initial Screens Could be Improved.

Against that backdrop, the proposed Initial Screens should be revised. Although the proposed screens use objective and administrable benchmarks—R/VC ratios and intermodal shares based on the Waybill Sample—the thresholds are too conservative to operate as a meaningful screen for potential unconstrained market power.

1. The Proposed R/VC Threshold Is Too Low.

Initial Screen 1 applies only when 5% or fewer of the shipments of a commodity move at rates above 180% R/VC. As explained, the Board should not use R/VC ratios to identify the *presence* of potential unconstrained market power. *See supra* at 37–52. But the Board can use low R/VCs as an indication of an *absence* of unconstrained market power where R/VC levels are

below the 180% threshold set by Congress as a hard limit on the Board's regulatory authority. *See supra* at 42–45. Initial Screen 1 reflects that approach, but it applies a threshold that is too conservative and will reduce the screen's utility. Under the current threshold, a commodity exemption would potentially warrant further consideration for potential revocation even if almost all shipments—*e.g.*, 94%—were outside the Board's regulatory authority.

The Board should increase the applicable threshold to 50%, so the screen would kick in whenever half or more of all traffic for a given commodity moves at R/VC ratios below the statutory threshold under which Congress determined railroads lack market power. Where more than half of all shipments move at sub-180% R/VC ratios, demand for railroad services is likely either too weak or competitive alternatives are too pervasive to warrant regulatory attention on a commodity-wide basis. In these situations, the Board should retain (or grant) an exemption pursuant to its statutory obligation to exempt as much traffic as possible. Any concerns of individual shippers in narrower segments of the market could be addressed using the partial-revocation mechanism contemplated by Congress.

2. The Proposed Intermodal Threshold Is Too High.

For the reasons discussed above, the portion of rail traffic moving in intermodal service is a valid basis for concluding that rail shippers have competitive alternatives. But the 40% threshold for Initial Screen 2 is too high, for two reasons. *First*, as explained above, the Waybill Sample inherently underreports intermodal service for individual commodities by more than 50%. *See supra* at 16–18. The Board's analysis of the data should account for this problem by lowering the nominal threshold.

Second, if intermodal service accounts for *any* appreciable share of all rail shipments—certainly a share above 10–15%—that fact demonstrates the availability of the alternative and thus should be highly relevant in any assessment of potential market-power concerns. A

commodity's susceptibility to intermodal transportation is relevant to the Board's consideration of an exemption because of what it reveals about shippers' transport alternatives, not because any particular number of shippers actually choose intermodal service. *See* Cornerstone V.S. at 24.

In light of these two realities—the inherent underreporting in the Waybill Sample and the importance of intermodal shares much lower than 40%—the Board should use a 10 or 15% threshold based on Waybill Sample reported intermodal shares. Given the underreporting of commodity designations in the Waybill Sample for intermodal moves, such a threshold would translate into an actual intermodal share in the range of 15–22%,⁷¹ indicating that intermodal options (and the trucking at either end) provide effective competition for movements of these commodities.

D. Initial Screens Based on Low Rail Share and Geographic Competition Would Assist the Board.

The Board should also augment the initial screens in the proposed approach with two other screens that are also based on objective, administrable data with the potential to be dispositive on the question whether railroads have unconstrained market power.

For a new Initial Screen 3, the Board should harness available data on railroads' share of all shipments for a particular commodity. The availability and potential development of modal share data, including data on trucking, is explained above. *See supra* at 14–16. Such data could readily be used to establish a screen where the aggregate rail share is sufficiently low to make any further inquiry into commodity-wide market power unwarranted. One approach would be to examine the railroad share of movements in a variety of distance bands (*e.g.*, 0–500 miles, 500–

⁷¹ *See supra* at 17–18.

1,000 miles, and over 1,000 miles), and consider whether, in each of these bands that accounts for a material share of rail shipments (say, 20%), there is a meaningful presence of truck competition, as reflected by a significant share (say, at least 20% truck share) of the shipments in that band.⁷² Were such a screen satisfied as to a given commodity, the Board could reasonably conclude that there was no need to further assess whether, on a commodity-wide basis, railroads have unconstrained market power. Setting a screen at this level, moreover, would be sufficiently conservative to account for circumstances where publicly-available data on modal shares is not available at the 5-digit STCC level.

For a new Initial Screen 4, the Board should measure geographic competition using the metric discussed above. *See supra* at 23–31. This screen would identify commodities for which, on a class-wide basis, shippers generally have the option of receiving shipments from different origins or sending them from different destinations via truck or alternative rail routes. For example, a reasonable yet conservative screening tool might set an 80% threshold for the percentage of traffic lacking observed competitive transportation alternatives that could be shipped to alternative destinations via other means (truck or rail) and received from alternative origins via other means. Such a screen would indicate that—looking narrowly at the presence of geographic competition and no other competitive alternatives—the vast majority of shippers and receivers have ample alternatives for the movement of their goods. Any exceptional circumstances could be addressed through the partial revocation mechanism.

⁷² This approach is not dissimilar from that undertaken by the ICC when it granted many of the commodity exemptions. *See* Ex Parte No. 346 (Sub-No. 24), *Rail General Exemption Authority—Miscellaneous Manufactured Commodities*, 1988 WL 225776, at *4, *8 (ICC decided Jan. 29, 1988).

IV. THE PROPOSED DASHBOARD IS SERIOUSLY FLAWED.

The proposed Indicator Dashboard is well intended, but suffers from too many flaws to provide the Board with a useful tool for evaluating commodity exemptions. The purpose of the Dashboard is to “summarize” a chosen set of “key output metrics relevant to the qualitative and quantitative evaluation” of market conditions. Request for Comments at 9. At the January 15 Technical Conference, Board Staff similarly explained that the Dashboard is intended merely to simplify and summarize data. *E.g.*, January 15 Technical Conference at 49:30–50:01. The Dashboard draws proposed metrics from the GMIM Model and Board Staff’s own analysis of Waybill Sample data to create a set of “Indicators” to which, using a series of scoring techniques, it assigns a signal of “weak,” “moderate,” or “strong” (with “strong” implying a strong basis for considering revocation). It then rolls up the individual Indicator signals (again using scoring techniques) into an “Overall Dashboard Signal” of “weak,” “moderate,” or “strong.” Request for Comments at 9.

Although the desire to simplify and summarize voluminous data is understandable, the current form of the Dashboard imbeds analyses, inferences, and judgments, all unintended by Board Staff, that will distort the underlying data and mislead the Board. The Dashboard’s Indicators are incapable of providing sound guidance about market conditions in the rail industry or the potential existence of market power, and Board reliance on these metrics would lead to false positives, erroneously condemning procompetitive rail industry developments.

In addition to the choice of metrics, the specific methodologies the Dashboard uses to generate its “signals” will magnify the problem. The underlying math simply lacks any valid statistical or other linkage to the market-power concerns, and the resulting signals thus will not be helpful to the Board’s consideration of market conditions for purposes of evaluating commodity exemptions. All of this is contrary to the intent of the Dashboard, which is to find a

simple way to summarize objective data about market conditions without drawing any inferences about the meaning of the data.

A. The Dashboard Indicators Are Built on Flawed Inferences.

The foundation for the Dashboard and the individual Indicators on which it is based is a series of numerical scores and “signals” that are designed to “summarize” *substantive* inferences drawn from the underlying data. At the December 18 Technical Conference, Board Staff explained that those inferences arose from the Staff’s “Exploratory Data Analysis” (“EDA”) of the Waybill and GMIM data. Starting with the available data, Board Staff used EDA (including the data visualization tools summarized in the Request for Comments) to draw “insights” that guided construction of the proposed Indicator Dashboard.⁷³ But the inferences reflected in the Indicator Dashboard are unfounded and flawed, and the EDA approach taken by Board Staff provides no support for them. The Indicator Dashboard will obscure and distort the objective data that the proposed approach seeks to collect, and mislead the Board.

At the January 15 Technical Conference, Board Staff explained that the “data visualizations” are the “heart of the approach.”⁷⁴ The Dashboard Indicators, by contrast, use an “averaging approach” that can “obscure potentially relevant information.”⁷⁵ Board Staff highlighted a “consistent theme:” that “[o]ne should not place too much weight on the individual indicators or the overall dashboard signal.”⁷⁶ Given these limitations, the Dashboard would do more harm than good and should be discarded.

⁷³ At the December 18 Technical Conference, Board Staff explained that some of Board Staff’s “insights [we]re gathered into the indicator dashboard for summarization and ease of use.” December 18 Technical Conference at 11:10–25.

⁷⁴ January 15 Technical Conference 1:14:35–40.

⁷⁵ *Id.* at 54:35–55:00.

⁷⁶ *Id.* at 54:40–50.

1. EDA Is at Most a Way of Identifying Questions to Ask, Not Answering Them.

At most, EDA is a preliminary step that seeks to identify patterns revealed by data that may warrant closer examination using statistically and economically valid techniques.

Cornerstone V.S. at 9–12. EDA cannot establish the statistical reliability of any observed patterns in the data, much less the root causes for any of those patterns. As such, it would be inappropriate to draw substantive inferences based on EDA, much less use those inferences to design substantive “signals” based simply on patterns in the data. *See* Cornerstone V.S. at 10–12.

Nonetheless, the proposed approach jumps from visualization tools (*e.g.*, violin plots) to “insights” into the underlying causes of patterns in the data. Board Staff’s comments at the December 18 Technical Conference, and the specific design choices made by Board Staff in building the Indicator Dashboard, show that Board Staff’s goal was to “summariz[e]” subjective insights and inferences from the data visualizations.⁷⁷ Under the law, the concerns that matter most are those relating to the potential that railroads have—and are abusing—unconstrained market power. The inferences embedded in the Dashboard were neither intended to predict market power nor examined to assess their statistical or substantive validity. The lack of nexus between the Indicators and the Board’s necessarily market-power focused inquiry in the commodity exemption context is readily acknowledged by Board Staff:

⁷⁷ *See, e.g.*, December 18 Technical Conference at 10:55–11:20; *see also* Request for Comments at 14 (“For example, increased volumes of high-R/VC traffic might suggest that railroads are exercising greater pricing power over a commodity in 2018 than they did in 1992. Similarly, modest increases in lengths of haul and tons per car, coupled with significant increases in RPC, might indicate an increase in railroad market power over time. Furthermore, increases in the proportion of traffic without modal influences might also be consistent with railroads having increased market power.”).

[T]he screens and dashboard indicators are *not intended to identify the presence or absence of market power*, but rather to reflect the presence or absence of potential changes in market conditions over time. And as previously explained, the statistical technique employs exploratory data analysis, *not inferential or predictive statistics*.⁷⁸

Among the many examples:

- The proposed approach infers market power from an array of R/VC-related metrics without any validation showing that these metrics correlate with unconstrained market power. *See supra* at 37–52.
- The proposed approach infers market power from length-of-haul metrics, again with no validation showing that these metrics actually correlate with market power. *See supra* at 20–23.
- The proposed approach infers substantive meaning from relatively small differences (typically just five percentage points) for various metrics, without any validation of whether differences of this magnitude demonstrate unconstrained market power.

As explained above, data on R/VC, RPC, and length of haul are generally incapable of shedding meaningful light on the potential presence of market power. *See supra* at 20–23, 37–52. Board Staff’s visual analysis of these data and metrics (*i.e.*, its EDA step) is not a proper foundation for Indicators and signals that draw substantive inferences from raw data without any validation. By designing a Dashboard using numerical scores and signals that purport to indicate strong, moderate, and weak cases for exemptions or revocations, the proposed approach will imbed unfounded—and unintended—substantive inferences and assumptions into the Board’s ultimate conclusions. That obscures and distorts the underlying data rather than simplifying and summarizing it. The Board should abandon or substantially revise the Dashboard and focus its analysis on concrete data rather than arbitrary numerical scores and color-coded labels.

⁷⁸

January 15 Technical Conference at 1:00:00–32 (emphases added).

2. Drawing Inferences from Changes in R/VC, RPC, and Length of Haul Would Unacceptably Yield “False Positive” Inferences of Potential Market Power Concern.

The mistaken assumptions underlying the Dashboard are not merely uninformative, but affirmatively harmful. A “strong” signal for revocation would inevitably be construed as implying that metrics relating to higher R/VC or RPC ratios, or longer lengths of haul (or these things taken together) might be indicative of potential unconstrained market power. But these would be mistaken assumptions. Reliance on these metrics would falsely condemn procompetitive developments in the railroad industry rather than encouraging them—exactly the opposite of the Board’s goal.

The partial deregulation of the railroad industry put in motion by the Staggers Act—including the Board’s obligation to exempt as much railroad traffic as possible—unlocked market forces and led to massive benefits for railroads, shippers, and the economy at large. Those same market forces, and the responses of railroads to shippers’ needs, led positive outcomes for everyone. Ironically, the proposed approach would falsely imply that these changes indicate a need to re-regulate—treating the economic regulation of rail shipments as a pendulum that must swing back and forth, despite widespread agreement that deregulation benefitted all stakeholders and the national economy. Intentional or not, this approach cannot be reconciled with the Board’s statutory mandate to favor deregulation and market forces to the maximum extent possible. *See supra* at 6–9. And using pro-competitive improvements in the freight-rail market as evidence of unconstrained market power would also be arbitrary and capricious.

Below are a few examples of positive changes resulting from deregulation that the proposed approach treats as a reasons to consider revoking an exemption:

- Gains in productivity through better management, technology investments, and operational streamlining, all of which yield higher R/VC ratios. *See supra* at 40–42, 45–47.
- Growth in long-haul traffic through aggressive competition and interline efficiencies, which yields longer lengths of hauls (and higher R/VC and RPC ratios). *See supra* at 23.
- Higher shares of truck shipments for shorter-haul traffic, which yields longer average lengths of haul for rail shipments (and higher R/VC and RPC).⁷⁹
- Innovative, higher-quality services like just-in-time delivery and more reliable shuttle-like services between plants as shippers consolidate yield higher R/VC and RPC.⁸⁰
- Investments in larger railcars, which yields higher RPC. *See supra* at 51–52.
- Changes in traffic mix driven by market forces in the broader economy, which potentially drive longer length of haul, higher R/VC, and higher RPC.

In short, the Dashboard and its individual Indicators would condemn and deter rather than encourage the railroad renaissance that Congress set in motion in the 1980s by deregulating the industry, and requiring the Board to deregulate it further. If despite these foundational flaws the Board were to rely on the Dashboard or individual Indicators in revoking an exemption, then it would violate its statutory obligations and the general rules of reasoned decisionmaking.

B. The Design of the Indicator Dashboard Obscures the Data and Magnifies Flaws Built into Individual Indicators.

Apart from the Initial Screens, the proposed Indicator Dashboard is not a constructive approach to analyzing the question whether railroads have unconstrained market power or summarizing the information in the underlying data or the data visualizations. Rather than

⁷⁹ *See, e.g.,* Ex Parte No. 704 (Sub-No. 1), *Review of Commodity, Boxcar, and TOFC/COFC Exemptions*, BNSF Comments (July 26, 2016) at 5–6.

⁸⁰ *See, e.g.,* Ex Parte No. 704 (Sub-No. 1), *Review of Commodity, Boxcar, and TOFC/COFC Exemptions*, BNSF Comments (July 26, 2016) at 8 (shift to unit train movement of aggregates).

simply reporting relevant objective metrics—akin to the altitude, bearing, and speed dials on an aircraft’s instrument panel—the proposed Dashboard attempts to roll up the underlying data metrics into individual and overall “weak,” “medium,” or “strong” signals. These signals, their corresponding numerical scores, and the averaging methods and data manipulation on which they are based obscure the actual real-world market conditions for the commodities at issue. This will drive arbitrary and erroneous outcomes, lead to decisions that are inconsistent with the Board’s statutory obligations, and distract the Board from the most relevant information.

To illustrate how, consider a dashboard in a car that, in lieu of a speedometer, flashes a green light whenever the driver goes 5% below the average speed of all other traffic, a yellow light when the car travels at the average speed of other traffic, and a red light when the car travels 5% faster. If the average traffic is moving at 20 miles per hour, the dashboard would switch from yellow to red if the driver accelerates to just 21 miles per hour, and would not provide the driver with any additional information even if she accelerated all the way to 100. If other cars were traveling 40 miles per hour on a freeway with a speed limit of 65, the dashboard would flash a red light even if the driver were traveling 55 miles per hour—10 miles under the speed limit.

Nobody would design the dashboard of a car that way. But in practical effect, this is how the proposed Dashboard works. The Board should replace the Dashboard with a straightforward approach that simply presents the relevant data in an organized and transparent manner. The Board should not be deterred by the greater “complexity” associated with a dashboard that showed actual data rather than simple color-coding. As shown above, the Board could view real-world data for a particular metric, for every commodity, on charts that take up less than a single page. *See supra* at 48, 51 (Charts H and I). This is, after all, how real dashboards work: they

show the actual conditions and levels for metrics of direct relevance to the performance of the vehicle.

1. Comparisons to All Carload Traffic Create an Improper Presumption in Favor of Regulation.

A fundamental flaw in the Dashboard is that the Indicators calculate signals and numerical scores for each commodity based on the commodity's performance relative to the average for all railroad traffic. With the exception of Indicator 5 (average length of haul), each of the Indicators in the Dashboard generates a label and a score based on how the metric at issue for that commodity compares to "all carload traffic." Request for Comments 10–13, 18–20. Specifically, "if the commodity-specific metric is more than 5 percentage points below the metric for all carload traffic," the Indicators are "weak," with a numerical score of "0." *Id.* at 12, 18–20. If the commodity's metric "is within 5 percentage points above or below the metric for all carload traffic," the Indicators are "moderate," with a numerical score of "1." *Id.* And if the commodity's metric "is more than 5 percentage points above the metric for all carload traffic," the Indicators are "strong," with numerical scores of "2." *Id.*

This feature essentially ranks each commodity relative to benchmark—all carload traffic—that has no bearing on the question whether there is a valid concern about unconstrained market power. As witnesses Asker, Hatzitaskos, and Nevo explain, "[t]he all-commodities benchmark comprises a disparate collection of commodities that differ along a number of respects, including demand and supply conditions, regulatory constraints, and physical aspects that affect the viability of transportation alternatives." Cornerstone V.S. at 38. As a result, these comparative Indicators "obscure[] whether the level of the Indicator is due to something specific occurring in the commodity at issue or a change in the all-commodities comparison set," in turn raising the concern that the Board might explore revocation of an exemption "simply because

increases in the competitiveness of market conditions specific to that commodity are not occurring at the same rate as other, comparator, commodities.” Cornerstone V.S. at 38–39.

In essence, then, the Dashboard presumes that above-average commodities should be regulated without regard to actual market conditions. This approach directly contradicts the Board’s statutory mandate to apply a presumption *against* regulation and to exempt as much traffic as possible where railroads lack unconstrained market power. *See* 49 U.S.C. § 10502(a).

2. The Proposed Signals and Numerical Scores Are Based on Arbitrary Thresholds.

Even setting aside the inherent problem in drawing conclusions from comparisons to averages, the manner in which the proposed approach converts underlying data into an Indicator score that generates a “weak” or “strong” signal is unexplained, unvalidated, and otherwise arbitrary. In each case where a comparison is made, the Dashboard asks whether the commodity’s metric is 5 percentage points below or above the metric for all carload traffic. There is no support for these thresholds. No statistical analysis demonstrates the probability that a 5 percentage-point difference proves that the values are in fact meaningfully different from one another. Nor is there any analysis showing that a 5% difference below or above an average for all railroad traffic has any substantive significance with respect to the relevant question—whether railroads have unconstrained market power. To return to the speedometer analogy, *supra* at 67, there is no reason why a car moving at 21 miles per hour should flash a warning just because average traffic is moving at 20 miles per hour, regardless of the speed limit.

The bright-line tests used in the scoring system are similarly arbitrary and unsupported. For each Indicator, the Dashboard assigns a score of “0,” “1,” or “2,” and then computes a “signal” based on where the average score falls relative to hard-coded breakpoints of 0.67 and 1.33. Again, no statistical analysis supports these fine distinctions, much less establishes that the

difference between a score of, say, 0.5 and 1.0 is in any way germane to the question whether there is a threat of market-power abuse. The fact that very small changes in observed data can flip an indicator signal from weak to moderate or moderate to strong demonstrates the unreliability of the Dashboard, even if one assumed (contrary to fact) that a “strong” signal validly implied the presence of market power. In fact, errors in the data for the Board’s illustrative example of hydraulic cement—which the Board itself described as “minor”—flipped two Indicators from “weak” to “moderate” and nearly changed the overall signal for hydraulic cement from “moderate” to “strong.” FTI V.S. at 74–75.

These proposed signals and numerical scores also treat shipments of commodities with wildly different underlying data as though they were the same. For example, under the proposed “Competitive Influence in Most Recent Year Indicator,” if 19% of all carload traffic moved on trips that are longer than 500 miles, then a commodity with 25% of its traffic moving on similar trips would receive a numerical score of “2” (which potentially would drive a “strong” signal for potential revocation). But so would a commodity with 99% of its traffic moving on trips that are longer than 500 miles. (Meanwhile, a commodity with 23% would receive a numerical score of “1.”) That two commodities with wildly different underlying data would receive the same numerical score and potentially flash the same signal in the Dashboard demonstrates the extent to which Board Staff’s proposed approach obscures and distorts the information it purports to summarize. In practice, this will lead to arbitrary and mistaken decisions based on flawed assumptions about the market conditions for individual commodities.

Similarly, it is unclear why the proposed approach treats a commodity with metrics that are similar to the average for all railroad traffic as having a “moderate” signal for potential revocation. Even if comparisons to averages and thresholds based on 5% differences were a

rational way to measure market power, a commodity that appears similar to the average should receive a *weak* signal for market power. The proposed approach builds in an inadvertent and unwarranted presumption that there is at least a “moderate” case that railroads should be subject to regulation even if they are unexceptional compared to other traffic, contrary to the precise opposite presumption that the statute mandates. Thus, at minimum, the Board should adjust the thresholds upwards to align the Dashboard with the Board’s statutory obligations.

3. The Proposed Approach Arbitrarily Averages Independent Datapoints and Indicators.

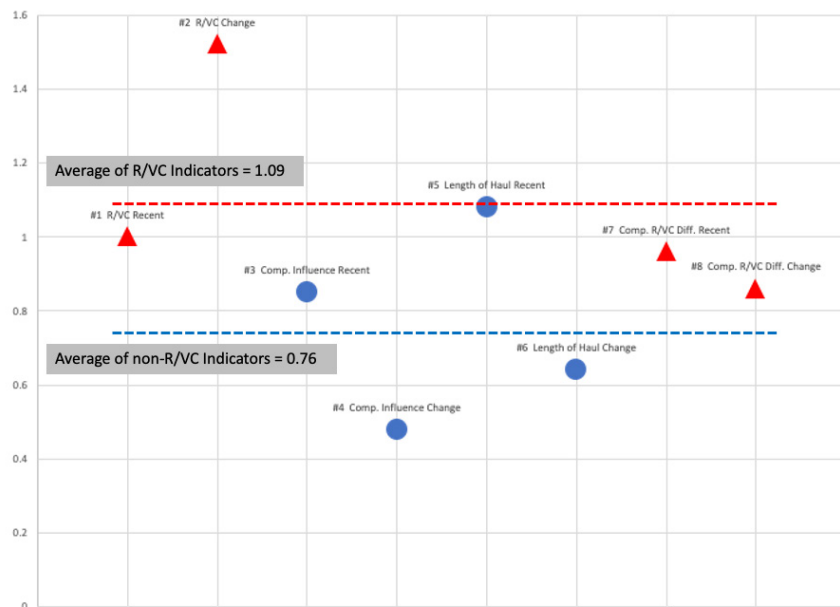
The proposed approach also arbitrarily averages independent datapoints to calculate signals and numerical scores, both for individual Indicators and for the overall score. This allows questionably-relevant information to cancel out potentially dispositive evidence of the absence of market power. For this and similar reasons, the Dashboard will indicate that railroads have unconstrained market power even where that is demonstrably false according to the same information the Dashboard purports to summarize.

For example, in the calculation of the scores for Dashboard Indicators 3 and 4, relating to “Competitive Influence,” one element of the scoring system could decisively indicate the lack of any concern (*e.g.*, virtually all traffic well under 500 miles) and receive a score of 0. But if the other elements (percent with no GMIM rail or water influence) were barely (5+%) above average, they would earn scores of 2 and cancel out the first element even though the data underlying the first score should have been decisive.

The manner in which the Dashboard rolls up each Indicator score into an overall signal of potential concern is equally unexplained, arbitrary, and unvalidated. Even if each Indicator were a valid independent source of information—pro or con—as to the potential presence of market power, the proposed Dashboard assigns each Indicator an equal one-eighth weight for the

purpose of calculating an overall signal for the commodity. There is no support for this purported weighting, and it is irrational. To give just one example, if the GMIM model shows that only a small percentage of shipments for a given commodity lack effective alternative shipping options, there is no rational reason the Dashboard should cancel out that dispositive signal based on, say, an “above average” increase in R/VC ratios. The arbitrariness of the proposed approach is magnified by the fact that not all of the Indicators are independent of one another. To the contrary, there is extensive correlation among the Indicators for reasons that are unrelated to the question whether railroads have unconstrained market power. In particular, the Dashboard gives equal and independent weight to four metrics that are directly based on R/VC ratios (or RPC in the RPC alternative version), dwarfing the effect of other metrics that are much more reliable. A commodity with a relatively high R/VC ratio—no matter the benign explanation—will be handicapped in the proposed scoring approach. This overweighting of R/VC compounds the mistake in relying on R/VC ratios in the first place. In fact, the 4 R/VC Indicators in the Dashboard account for 61% of the “strong” signals in the Dashboard results. FTI V.S. at 45, 51–53. Examining the numerical scores underlying those signals reveals the pattern even more starkly, as shown in Chart J below. Scores for the R/VC Indicators are shown with red triangles, those for other Indicators with blue circles. The average score for the four R/VC-related Indicators is 43 percent higher than that for the non-R/VC Indicators.

CHART J⁸¹
NUMERICAL SCORES UNDERLYING BOARD STAFF DASHBOARD INDICATORS



C. To Date, the Board Has Not Adequately Explained the Reasoning and Assumptions Underlying the Dashboard.

At minimum, the Board would need to do a better job of explaining the assumptions underlying the Dashboard and provide commenters an opportunity to respond. *See, e.g., OOIDA*, 494 F.3d at 199–206. Although Board Staff held two technical conferences for the stated purpose of explaining the Dashboard and answering questions about the proposed approach, Board Staff still has not explained many of its decisions beyond citing “modeling choice[s]” and downplaying the importance and reliability of the Dashboard. *E.g.*, January 15 Technical Conference at 54:40–50, 1:18:50–1:19:00. For example, neither the Board nor Board Staff have adequately explained why the Indicators in the Dashboard compare metrics for individual commodities to the average of all carload traffic, assign numerical scores based on

⁸¹ *See* FTI V.S. at 45 n.42.

particular predetermined thresholds, or use a scoring or averaging approach to derive an overall signal.

V. THE BOARD SHOULD MAKE THE DATA PUBLICLY AVAILABLE AND ALLOW INTERESTED PARTIES TO PROPOSE EXEMPTIONS OR REVOCATIONS.

The Board can avoid many of the flaws in the proposed approach by dispensing with the effort to craft “signals” suggesting that an exemption should be revoked (or granted), and instead simply collecting and publishing the data for all interested parties to see. This would allow interested parties to see how currently exempt commodities compare to others in terms of statistics for the metrics in the proposed approach (and other metrics like truck share and potential geographic competition), and also consider whether additional commodities should be exempted.

The Board need not use the data it collects and aggregates as the predicate for decisions whether affirmatively to pursue new exemptions or revocations of existing exemptions. Rather, interested parties could rely on the Board’s data—along with other information they have about market conditions affecting them—to decide whether to propose exemptions or revocations. For example, shippers could make informed decisions whether to press for a particular revocation in light of knowledge they might have about competitive alternatives that are not fully revealed in GMIM or other data. Or they might conclude that their concerns are more efficiently presented to the Board in a partial-revocation context, rather than in a proceeding seeking to re-regulate an entire commodity as a class. And if shippers pursued a request for a wholesale or partial revocation (or if railroads pursued a request for a new exemption), they could be required at the outset to provide the Board with additional information beyond that already available to the Board to guide its decision whether to pursue a revocation or exemption and thereby commit to a costly, full-blown proceeding. And in any ultimate proceeding, the parties and the Board would

be able to look to the Board's data, as a supplement to the more comprehensive evaluation of all of the marketplace realities for a particular commodity.

CONCLUSION

AAR applauds the Board's attempt to assess market power as an essential component of any decision to revoke a commodity exemption in this proceeding or any others. And AAR is encouraged by the Board's interest in looking at objective and verifiable data. But the proposed approach requires substantial changes to bring it into compliance with the Board's statutory obligations and general rules of administrative law if the Board intends to rely on the proposed approach in any individual exemption or revocation proceedings, including this one. Before relying on the proposed approach to make any decisions, the Board should address these problems and then allow stakeholders a further opportunity to comment on a revised approach. And the proposal that the Board ultimately adopts should be more akin to a real dashboard—reflecting actual data of direct relevance to market conditions—that stakeholders can use in deciding whether to propose new exemptions or the revocation of existing exemptions, rather than an arbitrary set of color-coded signals that pre-judges the question whether railroads have unconstrained market power, all based on flawed assumptions and incomplete information.

Dated: January 29, 2021

Respectfully submitted,

/s/ Cynthia E. Richman

Thomas H. Dupree Jr.

Cynthia E. Richman

Matt Gregory

Gibson, Dunn & Crutcher LLP

1050 Connecticut Avenue NW

Washington, DC 20036

(202) 955-8500

David L. Meyer

Law Office of David L. Meyer

1105 S Street, N.W.

Washington, DC 20009

(202) 294-1399

Kathryn D. Kirmayer

Timothy J. Strafford

J. Frederick Miller Jr. (*admitted in MD*)

Association of American Railroads

425 Third Street, SW

Suite 1000

Washington, DC 20024

(202) 639-2100

Counsel for the Association of American Railroads

EXHIBIT A

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

REVIEW OF COMMODITY, BOXCAR, AND TOFC/COFC EXEMPTIONS

Docket Ex Parte No. 704 (Sub-No. 1)

**VERIFIED STATEMENT OF
JOHN ASKER, KOSTIS HATZITASKOS, AND AVIV NEVO**

January 29, 2021

Table of contents

1. Introduction	3
1.1. Witness introduction.....	3
1.2. Background and assignment	4
1.3. Summary of opinions	7
2. The Proposed Approach should not be interpreted as anything more than an initial descriptive data visualization tool.....	9
2.1. The Proposed Approach is merely a data visualization tool	9
2.2. No economic basis or statistical validation has been provided for using the metrics in the Proposed Approach in the evaluation of class exemption and revocation	12
2.3. The Proposed Approach lacks important characteristics demonstrated by commonly used and accepted competition screens	17
3. The Proposed Approach's value is limited by the data it does, and does not, include ..	21
3.1. The Proposed Approach does not examine or visualize relevant data	21
3.2. The Proposed Approach does not examine viable substitutes available to shippers	24
3.3. The Proposed Approach does not appropriately account for the limitations of the data that it does use	28
3.4. The Proposed Approach does not rely on metrics with a clear interpretation for the purpose of evaluating competitive conditions.....	29
4. The proposed Dashboard Indicators are susceptible to false positives.....	35
4.1. The proposed Dashboard Indicators are susceptible to false positives due to a myopic focus on rail shipments.....	35
4.2. The proposed Dashboard Indicators rely on comparisons with a flawed benchmark	38
4.3. The proposed Dashboard Indicators are likely to penalize commodities for above-average productivity gains achieved by railroads or other procompetitive industry trends	39
4.4. The proposed Dashboard Indicators impose “bright lines” that obscure material differences between commodity metrics or introduce misleading distinctions.....	41
5. Conclusion.....	46
6. Appendix	47

1. Introduction

1.1. Witness introduction

1. **John Asker** is a Professor of Economics at the University of California, Los Angeles, where he holds the Armen A. Alchian Chair in Economic Theory. He received his Ph.D. in Economics from Harvard University in 2004. His research and teaching are in the field of industrial organization, which is the area of economics that addresses the behavior of firms, industries, and their markets. Within this area, Professor Asker maintains a specific focus on the economic analysis of competition policy issues. His research has been published in leading journals in economics, including the *American Economic Review*, the *Journal of Political Economy*, and the *Journal of Law and Economics*, among others. He serves as a co-editor of the *American Economic Journal: Microeconomics* and has served as an editor of the *RAND Journal of Economics* and the *Journal of Industrial Economics*. He is a Research Associate at the National Bureau of Economic Research.

2. Professor Asker has served as an expert in several antitrust matters. He was retained as an expert by counsel for SoftBank and Sprint Corporation in the T-Mobile/Sprint merger. He also served as an expert consultant to the U.S. Department of Justice (“DOJ”) and to the Federal Communications Commission (“FCC”) in other merger reviews. He has served as a consultant to the Federal Trade Commission (“FTC”) in an investigation of anticompetitive conduct. Professor Asker has also been retained in antitrust matters related to vertical restraints, horizontal mergers, group boycotts, predatory conduct, and price fixing. A full copy of Professor Asker’s curriculum vitae is included as Exhibit A.

3. **Kostis Hatzitaskos** is a Vice President at Cornerstone Research and co-heads the firm’s antitrust and competition practice. Dr. Hatzitaskos received his Ph.D. in economics from the University of California, Berkeley in 2007. He has extensive experience analyzing questions of market power in merger reviews and commercial litigation. This includes lead consultant roles on merger review trials on behalf of the government on *U.S. v. Aetna/Humana* and *FTC v. Wilhelmsen/Drew*, and on behalf of the merging parties in *T-Mobile/Sprint* and *FTC v. Sysco/U.S. Foods*. Dr. Hatzitaskos has submitted economic analyses of competition issues to the DOJ, FTC, FCC, as well as to competition authorities in Europe and Asia. He has coauthored multiple publications on economic methods and the role of experts in antitrust and competition matters,

including chapters in reference books and handbooks published by the ABA Section of Antitrust Law. He is currently a member of the editorial board of the ABA's *Antitrust Source*. A full copy of Dr. Hatzitaskos' curriculum vitae is included as Exhibit B.

4. **Aviv Nevo** is the George A. Weiss and Lydia Bravo Weiss Penn Integrates Knowledge University Professor at the University of Pennsylvania, with appointments in the Economics Department in the School of Arts and Sciences and the Marketing Department in the Wharton School. He received his Ph.D. in Economics from Harvard University in 1997. Professor Nevo's research and teaching have focused on estimating consumer demand and analyzing questions related to price competition, mergers, marketing, and consumer welfare. His work has been published in several leading economics journals, including the *American Economic Review*, *Econometrica*, and the *RAND Journal of Economics*. Professor Nevo currently serves as a co-editor of *Econometrica*, one of the top journals in the field of Economics, and is a member of the scientific advisory board of the *International Journal of Industrial Organization*. In the past, he served as an editor at the *RAND Journal of Economics* and *Journal of Industrial Economics*. He is a Research Associate at the National Bureau of Economic Research.

5. From 2013 to 2014, Professor Nevo served as the Deputy Assistant Attorney General for Economic Analysis (the chief economist) in the Antitrust Division at DOJ. As head of the Economic Analysis Group, he supervised the division's staff of Ph.D. economists and statistical analysts. The group works alongside the division's legal staff to investigate the likely competitive impact of proposed mergers and acquisitions, as well as to provide economic analysis on civil enforcement and competition advocacy issues.

6. Professor Nevo has been retained as an expert by the DOJ, FTC, and private parties numerous times in merger and antitrust cases, as well as other antitrust and competition matters. He testified in District Court as the U.S. government's economic expert in *U.S. v. Aetna/Humana*, *FTC v. Wilhelmsen/Drew*, and *U.S. v. Sabre/Farelogix*. A full copy of Professor Nevo's curriculum vitae is included as Exhibit C.

1.2. Background and assignment

7. We understand from counsel that Congress has directed the Surface Transportation Board ("Board") to exempt rail carriers from regulation except

where regulation is necessary to carry out “rail transportation policy,” which includes protecting shippers from abuse of market power.¹ We also understand that the Board has exercised this authority to exempt numerous commodities on a class-wide basis. In this docket, the Board seeks to examine whether certain of those exemptions warrant reevaluation. As part of that examination, the Board has requested comment on the proposed Office of Economics Staff Approach (“Proposed Approach”), which is designed to be used when considering class exemption and revocation issues.²

8. We have been asked by counsel for AAR to respond to the Board’s request for comment on this Proposed Approach. Specifically, we have been asked to assess the usefulness and appropriateness of the proposed tool from the point of view of economics.

9. In response, we have examined the Proposed Approach as delineated in the Board’s September 30 order and at the technical conferences the Office of Economics (“OE”) held on December 18, 2020 and January 15, 2021.³ Particularly, we evaluated the Carload Waybill Sample (“CWS”) data selected

¹ 49 U.S.C. § 10501. Surface Transportation Board Decision, Docket No. EP 704 (Sub-No. 1), September 30, 2020, pp. 1–68 (“EP 704 Dashboard Proposal”) at pp. 1–2 (“Congress gave the Board’s predecessor, the Interstate Commerce Commission (ICC), broad authority to exempt rail carriers from regulation. This statutory exemption standard was revised in the Staggers Rail Act of 1980 . . . provides that the agency shall exempt a person, class of persons, or a transaction or service when it finds that the application of a provision of 49 U.S.C. subtitle IV, part A, is not necessary to carry out the rail transportation policy of 49 U.S.C. § 10101 (RTP) and either (a) the transaction or service is of limited scope, or (b) the application in whole or in part of the provision is not needed to protect shippers from the abuse of market power.”).

² EP 704 Dashboard Proposal at p. 1 (“On March 23, 2016, the Board issued a notice of proposed rulemaking seeking public comment on its proposal to revoke the existing class exemptions under 49 C.F.R. part 1039 for (1) crushed or broken stone or rip rap; (2) hydraulic cement; (3) coke produced from coal; (4) primary iron or steel products; and (5) iron or steel scrap, wastes, or tailings . . . The NPRM also invited interested parties to file comments regarding the possible revocation of other commodity class exemptions . . . Following the feedback received during the course of this proceeding, the Board’s Office of Economics (OE) has developed an approach for possible use in considering class exemption and revocation issues. The Board requests that interested parties submit comments on the approach and its potential use here.”).

³ Surface Transportation Board, EP 704 (Sub-No. 1) Technical Conference, December 18, 2020, available at <https://prod.stb.gov/audio-meeting/ep-704-sub-no-1-technical-conference/> (“EP 704 First Technical Conference”); Surface Transportation Board, EP 704 (Sub-No. 2) Technical Conference, January 15, 2021, available at <https://prod.stb.gov/audio-meeting/review-of-commodity-boxcar-tofc-cofc-exemptions-docket-no-ep-704-sub-no-1/> (“EP 704 Second Technical Conference”).

for the task,⁴ the primary metrics that are the focus of the proposed analyses, and the ultimate deployment of the data and metrics in the Indicator Dashboard.

10. The Proposed Approach consists of a series of metrics, thresholds, and data visualization tools that attempt to describe and summarize market conditions for shipping particular commodities.⁵ There are three components to the Proposed Approach.

- The first component is the Geographic Modal Influence Model (“GMIM”), which identifies railroad and waterway alternatives for any given shipment observed in the CWS data.⁶
- The second component is the Indicator Dashboard, which uses two Initial Screens and eight Dashboard Indicators to assign a “weak,” “moderate,” or “strong” designation to a given commodity.⁷ These designations may be used as an initial step in evaluating whether to

⁴ “Carload Waybill Sample,” Surface Transportation Board, available at <https://prod.stb.gov/reports-data/waybill/> (accessed January 6, 2021).

⁵ The Board indicated that the Initial Screens and the Dashboard Indicators are “designed to summarize key output metrics relevant to the qualitative and quantitative evaluation of the market conditions governing a commodity.” It also explained that the data visualization tools are used to “illustrate market conditions and changes thereto for a given commodity over time.” See EP 704 Dashboard Proposal at pp. 9, 13.

⁶ The GMIM is “designed to aid in the assessment of the impact of intramodal and intermodal alternatives on the rail transportation market for the specific commodities at issue” by identifying “lanes in which the rail transportation market may be influenced by competitive pressure from water carriers or other rail carriers.” This component acts as an input to the Dashboard. See EP 704 Dashboard Proposal at pp. 7, 9.

⁷ The Indicator Dashboard proceeds in steps. It first uses two Initial Screens to evaluate market conditions for a given commodity. If the commodity is assigned a “weak” designation on one or both Initial Screens, the commodity is assigned a “weak” overall designation without considering the Dashboard Indicators. Otherwise the analysis proceeds to the next stage, where eight Dashboard Indicators are computed. These individual Indicators are then aggregated into a single overall designation of “weak,” “moderate,” or “strong.” See EP 704 Dashboard Proposal at p. 10, fn. 29 (“The strength designation threshold for Screen One has been set initially at 5% as a reasonable approximation of the point at which there would be so little R/VC 180 traffic that regulation of that commodity might be unnecessary. Similarly, the strength designation threshold for Screen Two has been set initially at 40% as a reasonable approximation of the point at which there is enough intermodal traffic to indicate that shippers of that commodity can readily avail themselves of other transportation alternatives and that regulation of that commodity might similarly be unnecessary.”); EP 704 First Technical Conference at 36:16–37 (“Except where one of the initial screens is tripped, the overall dashboard signal is generated by combining the signals from individual indicators and taking the mean of the 8 indicator scores. A mean of 1.33 or greater is labeled ‘strong.’ A mean of 0.67 or less is ‘weak.’ And everything in between is moderate.”).

revoke or retain the commodity's exemption status under the Staggers Act.⁸

- The third component is the Data Visualization, which uses a number of charts to “illustrate market conditions and changes thereto for a given commodity over time.”⁹

1.3. Summary of opinions

11. We commend the Board for exploring a data-based tool for the evaluation of class exemption and revocation. Appropriately deployed, data-based screening tools are well accepted components of competition analysis and an important step toward adopting regulatory best practices. As a general matter, it is useful to examine and visualize data that are relevant, properly contextualized, and informative to the question at hand.

12. However, we have several reservations about the specifics of the Proposed Approach and its usefulness as a tool to aid the Board in its decision.

13. First, the Proposed Approach should not be used or be interpreted as anything more than an initial descriptive data visualization tool.

- As we explain, and as OE staff confirms, the Proposed Approach is merely a data visualization tool, not a tool for drawing conclusions about the evaluation of class exemption and revocation (§ 2.1).

⁸ EP 704 Dashboard Proposal at p. 9, fn. 28 (“These designations could be used as an initial or partial step in evaluating whether an existing commodity class exemption should be revoked or whether a commodity should be exempted from regulation in the first instance . . . This designation, and those that follow, are used in the context of evaluating whether a commodity class exemption should be revoked, e.g., the assignment of a ‘weak’ Overall Dashboard Signal pursuant to Initial Screen One would indicate a seemingly weak evidentiary basis for revocation. The opposite logic would hold true in the context of evaluating whether a commodity should be exempted from regulation in the first instance.”), p. 1 (“Congress gave the Board’s predecessor, the Interstate Commerce Commission (ICC), broad authority to exempt rail carriers from regulation. This statutory exemption standard was revised in the Staggers Rail Act of 1980.”); EP 704 First Technical Conference at 36:37–37:05 (“We again point out that the overall dashboard signal does not, by itself, suggest that any particular recommendation – does not suggest any particular recommendation and is not intended as a mechanical rule used to dictate decisions about revocation or exemption for particular commodities. Rather, strong, moderate, and weak overall dashboard signals are merely suggestive of whether market conditions may have changed in the last quarter century.”).

⁹ EP 704 Dashboard Proposal at p. 13.

- The OE staff has not provided statistical validation or an economic basis for interpreting the metrics in the Proposed Approach and linking them to the Board's evaluation of class exemption and revocation (§ 2.2).
- The Proposed Approach also lacks important characteristics demonstrated by commonly used and accepted competition screens (§ 2.3).

14. Second, even as a data visualization tool, the Proposed Approach fails to describe data that are relevant to the revocation inquiry. Specifically, the Proposed Approach:

- Fails to incorporate all the data that are relevant on truck, waterway, and other railroad shipments. Such data are important to the evaluation of commodity class exemptions and their revocation. For example, trucks frequently command a large share of both tonnage and value even for the longer haul movements that the Proposed Approach assumes have no trucking influence (§ 3.1).
- Fails to examine viable substitutes available to shippers and thus underestimates the extent of geographic and product competition (§ 3.2).
- Does not appropriately account for the limitations of the data that it does use. It fails to account for the fact that the CWS is only a sample and evaluates changes over time relative to a single baseline year, with no economic justification or attempt to evaluate the significance of this choice (§ 3.3).
- Relies on four metrics—R/VC, RPC, length of haul, and the proportion of traffic subject to “competitive influences”—that have serious limitations as diagnostic tools. The metrics are affected by measurement issues and the approach is devoid of an economic basis that allows the analyst to distinguish between a lessening of competition and other, procompetitive, dynamics (§ 3.4).

15. Third, the data relied upon and the specific proposed Dashboard Indicators are susceptible to false positives.

- The omission of trucking data from the Proposed Approach, and the way trucking influence is measured in the Proposed Approach, can lead the Indicators to falsely assign a stronger signal to commodities that face greater rather than lesser trucking influence (§ 4.1).

- The proposed Dashboard Indicators may penalize commodities for which increases in the competitiveness of market conditions are not occurring at the same rate as other, comparator commodities, because they rely on comparisons with a flawed “all-commodities” benchmark (§ 4.2).
- The proposed Dashboard Indicators are likely to penalize commodities for above-average productivity gains achieved by railroads or other procompetitive industry trends, because they rely on flawed metrics (§ 4.3).
- The proposed Dashboard Indicators are likely to obscure material differences between commodity metrics or introduce misleading distinctions, because they impose “bright lines” on the underlying data (§ 4.4).

16. In summary, given the many conceptual, data, and implementation shortcomings of the Proposed Approach, we conclude that it should not be used as anything more than an initial, descriptive data visualization tool. Without substantial improvements, statistical validation, and an economic basis to aid interpretation and the drawing of conclusions, the Proposed Approach does not provide a reliable foundation for predicting the conclusions that may be drawn from the detailed, case-specific analyses that are needed in the context of exemption and revocation proceedings. These improvements are also necessary if the Board intends to use an amended and improved Approach as a competitive screen, which we support as the adoption of a best practice.

2. The Proposed Approach should not be interpreted as anything more than an initial descriptive data visualization tool

2.1. The Proposed Approach is merely a data visualization tool

17. As we described earlier, the Proposed Approach consists of a series of data metrics, thresholds, and data visualization tools including Initial Screens, Dashboard Indicators and several charts that aim to visualize market conditions. The Proposed Approach has been presented as a tool to describe and summarize key output metrics for the commodity rail shipments that the Board oversees.¹⁰

¹⁰ See § 1.2.

18. Descriptive analysis and visual inspection of data is an important first step in empirical work. As empirical researchers, we applaud the Board and OE staff for taking this first step. However, it is important to recognize that it is merely a first step and not a substitute for a more complete analysis.

19. The OE staff appear to agree with the characterization of the Proposed Approach as merely a data visualization tool. In the first technical conference, the OE staff described the Proposed Approach as a tool to conduct exploratory data analysis (“EDA”), citing the National Institute of Standards and Technology.¹¹ The staff explained that the Proposed Approach does *not* include any type of statistical hypothesis testing.

“So let’s talk about what our new approach is and what it is not. We received a number of questions about what hypotheses we’re testing with our various indicators. But this new approach does not test various null hypotheses because it is not an application of predicted or influential [sic] statistics. Rather the principal statistical technique used here is exploratory data analysis or EDA. The analysis of data sets and the summarization of their characteristics using visual methods.”¹²

20. In the second technical conference, the OE staff further confirmed that the element of the Proposed Approach that should be given more weight are the underlying visualizations, and not the Indicator Dashboard.¹³ OE staff also explained that Initial Screens and Indicators are merely a means to summarize

¹¹ EP 704 First Technical Conference at 9:55–10:21 (“Rather the principal statistical technique used here is exploratory data analysis or EDA. The analysis of data sets and the summarization of their characteristics using visual methods. As noted by the National Institutes of Standards and Technology, NIST, the EDA approach is precisely that – an approach, not a set of techniques, but an attitude, a philosophy about how data analysis should be carried out.”). See also “What is EDA?” Engineering Statistics Handbook, available at <https://www.itl.nist.gov/div898/handbook/eda/section1/eda11.htm> (accessed January 10, 2021) (“*Focus*: The EDA approach is precisely that--an approach--not a set of techniques, but an attitude/philosophy about how a data analysis should be carried out.”).

¹² EP 704 First Technical Conference at 9:36–10:07.

¹³ EP 704 Second Technical Conference at 21:51–22:10 (“We appreciate that some commodities routinely travel more than 500 miles by truck and that some do not. This was simply a modeling choice, a starting point, which is why it is important not to put too much emphasis on the dashboard indicators, but rather pay more attention to the data visualizations included within the new approach.”).

information included in the visualizations,¹⁴ and not meant to offer recommendations about exemptions and revocations or to explore questions about market power.¹⁵

21. At the same time, the OE staff also suggested that the Board might use the information from the Proposed Approach to evaluate changes in market conditions or to draw conclusions about market power.¹⁶

22. We encourage the Board to acknowledge, as the OE staff appropriately puts it, what the Proposed Approach is and what it is not. Doing so would limit the use of the Proposed Approach to a description of data rather than evidence for exemption or revocation.

23. To draw conclusions about class exemption and revocation from patterns observed in data, one needs appropriate statistical validation and an economic

¹⁴ EP 704 Second Technical Conference at 23:30–38 (“Our dashboards were designed to aggregate and summarize the information from the data visualizations drawn from the entire Waybill Sample.”).

¹⁵ EP 704 Second Technical Conference at 24:56–25:10 (“[N]either the indicator dashboards no [sic]—nor the overall approach should be viewed as generating a recommendation regarding revocation or exemption. The dashboards were designed to aggregate and summarize information from the data visualizations”), 52:17–33 (“[D]ashboards were designed to aggregate and summarize information drawn from our exploratory data analysis, which, in turn, was designed to address the potential presence of changes in market conditions, not to explore questions of market power.”).

¹⁶ EP 704 Second Technical Conference at 25:05–16 (“The dashboards were designed to aggregate and summarize information from the data visualizations, and those signals are more properly thought of as being suggestive of potential changes in market conditions.”), 52:33–46 (“That said, data generated by and reflected in the approach could potentially be considered as a part of the basis for a conclusion about market power, and it will be up to the Board to determine whether or how.”). Other OE staff statements from the first technical conference also appear to suggest that the Proposed Approach could be used as more than merely a visualization tool. See EP 704 First Technical Conference at 10:24–35 (“The approach is designed to *evaluate* the current state of commodities transportation market, as well as to *examine* questions—the questions as to whether market conditions for the commodity might have changed over the last quarter century.”) emphasis added. Certain statements from the initial proposal may be interpreted similarly. For example, see EP 704 Dashboard Proposal at p. 14 (“[T]he metrics reflected in the violin plots could be used to help draw inferences about increased or decreased influence from intermodal and intramodal competition over time. For example, increased volumes of high-R/VC traffic might suggest that railroads are exercising greater pricing power over a commodity in 2018 than they did in 1992. Similarly, modest increases in lengths of haul and tons per car, coupled with significant increases in RPC, might indicate an increase in railroad market power over time. Furthermore, increases in the proportion of traffic without modal influences might also be consistent with railroads having increased market power.”).

basis and validation for the way metrics are used. For example, looking at changes in R/VC to evaluate class exemption and revocation is meaningless unless one can understand whether changes are systematic or driven by statistical sampling.¹⁷ Furthermore, one needs to provide an economic basis and justification for interpreting changes in R/VC. As we will show below, levels of R/VC and changes in R/VC levels can be driven by a variety of factors. Without an economic basis, such metrics cannot be linked to conclusions regarding class exemption and revocation. As explained next, the Proposed Approach is insufficient to draw conclusions about the evaluation of class exemption and revocation.

2.2. No economic basis or statistical validation has been provided for using the metrics in the Proposed Approach in the evaluation of class exemption and revocation

24. Quantitative analyses of competitive conditions (a relevant element of any inquiry concerned with issues relating to market power) cannot, in isolation, provide a reliable basis for final decision making if they are limited to descriptions of patterns observed in data. Such analyses generally feature statistical validation and are built upon a basis of economic theory and industry-specific knowledge, which facilitate drawing statistical and economic inferences from the data. The Board is thus correct to note that the Proposed Approach—which does not have these attributes—cannot “fully answer the question of whether revocation or exemption is appropriate, given the market-specific issues, among other matters, that might also need consideration.”¹⁸

25. At a high level, to draw economic inferences from data, one needs to connect a principle of interest (for example a worsening of competitive conditions) to actionable metrics that can be applied to data (for example particular patterns in price and quantity changes).

¹⁷ OE staff explained that the Proposed Approach “does not test various null hypotheses.” See EP 704 First Technical Conference at 9:46–10:07 (“But this new approach does not test various null hypotheses because it is not an application of predicted or influential [sic] statistics. Rather the principal statistical technique used here is exploratory data analysis or EDA. The analysis of data sets and the summarization of their characteristics using visual methods”); EP 704 Second Technical Conference at 34:18–32 (“As we stated on December 18th, the statistical technique applied here was exploratory data analysis, and the approach does not use tools from the fields of inferential or predictive statistics. Thus, no hypotheses are tested.”).

¹⁸ EP 704 Dashboard Proposal at p. 9.

26. Economic research in competition economics, and agency experience, have shed light on what models and metrics may be appropriate to draw such inferences in certain industries and contexts and inappropriate in others.¹⁹

27. Decades of research and regulatory practice have also taught us that drawing valid economic inferences from changes in a particular outcome metric may be difficult if evaluated in isolation, without taking into account whether and how other outcome metrics are simultaneously changing.²⁰ For example, when attempting to draw conclusions about changes in competitive conditions within a market, one should consider the following:

- **Price.** All else equal, a lessening of competition will typically lead to increased prices that harm consumers.²¹ However, prices may also increase for procompetitive reasons, such as quality improvements or differentiated service (e.g., longer and heavier hauls). Thus, beyond controlling for drivers of price such as costs, analyses of competition require, for example, an evaluation based on quality-adjusted prices and demand conditions.

¹⁹ For example, Cournot models assume that products are homogeneous and firms compete by deciding whether to produce more or produce less; whereas differentiated Bertrand models assume that firms offer products that may be differentiated across multiple dimensions and that they compete by deciding whether to set prices higher or to set prices lower. For example, see Carvajal, Andres, Rahul Deb, R., James Fenske, J, and John K.-H. Quah. “Revealed Preference Tests of the Cournot Model.” *Econometrica*, 81 no. 6 (2013), pp. 2351–2379; Berry, Steven, James Levinsohn, and Ariel Pakes. “Automobile prices in market equilibrium.” *Econometrica*, 63 no. 4 (1995), pp. 841–890.

²⁰ Berry, Steven, Martin Gaynor, and Fiona Scott Morton. “Do increasing markups matter? Lessons from empirical industrial organization.” *Journal of Economic Perspectives* 33, no. 3 (2019): 44–68 at p. 48 (“In short, there is no well-defined ‘causal effect of concentration on price,’ but rather a set of hypotheses that can explain observed correlations of the joint outcomes of price, measured markups, market share, and concentration. As Bresnahan (1989) argued three decades ago, no clear interpretation of the impact of concentration is possible without a clear focus on equilibrium oligopoly demand and “supply,” where supply includes the list of the marginal cost functions of the firms and the nature of oligopoly competition.”). The Canadian Competition Bureau describes how it evaluates multiple dimensions of competition in concert, prioritizing price and output while also analyzing service, quality, etc. See Merger Enforcement Guidelines, Competition Bureau Canada, pp. 1–49 at p. 6 (“In general, when evaluating the competitive effects of a merger, the Bureau’s primary concerns are price and output. The Bureau also assesses the effects of the merger on other dimensions of competition, such as quality, product choice, service, innovation and advertising—especially in markets in which there is significant non-price competition.”).

²¹ 2010 Horizontal Merger Guidelines pp. 1–34 at p. 2 (“A merger enhances market power if it is likely to encourage one or more firms to raise price, reduce output, diminish innovation, or otherwise harm customers as a result of diminished competitive constraints or incentives.”).

- **Quantity.** All else equal, a lessening of competition may reduce the quantity demanded and supplied in the market, compared to a competitive outcome.²² In contrast, evidence that quantity is expanding, properly measured and benchmarked, likely suggest procompetitive outcomes.
- **Quality.** All else equal, a lessening of competition may lead to underinvestment, reducing quality and/or innovation in a way that is harmful to consumers.²³ In contrast, price increases explained by quality improvements likely are procompetitive (e.g., railroads making improvements in reliability, speed, ease of coordinating routes, and scheduling).
- **Margins.** A lessening of competition may lead to higher margins, yet margins can also increase for other reasons (e.g., cost declines that are only partially passed along to customers). Conversely, margins can fall even as prices increase, for example, reflecting cost increases or, in certain cases, capacity expansion. Economists generally do not consider high accounting margins, on their own, to constitute reliable evidence of weak competitive conditions. In fact, by the 1980s, empirical analyses of competition stopped examining margins as the main outcome of the competitive process and instead focused on other metrics that have a clearer interpretation (e.g., demand, costs, and prices).²⁴

²² Dennis Carlton and Jeffrey Perloff, *Modern Industrial Organization, Fourth Edition* pp. 1–822 at p. 92 (“The profit-maximizing monopoly output, Q_m , is smaller than the competitive output, Q_c , determined by the intersection of the demand curve with the marginal cost curve (which we assume would be the supply curve if the market were competitive) at price p_c . . . The properties of the demand curve determine the monopoly *overcharge*, the amount by which the monopoly price, p_m , exceeds the marginal cost or competitive price, p_c .”). Courts have also recognized this economic logic. For example, see *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. (1993), pp. 209–258 at p. 237 (“Where . . . output is expanding at the same time prices are increasing, rising prices are equally consistent with growing product demand.”).

²³ 2010 Horizontal Merger Guidelines, pp. 1–34 at p. 2 (“Enhanced market power can also be manifested in non-price terms and conditions that adversely affect customers, including reduced product quality, reduced product variety, reduced service, or diminished innovation.”).

²⁴ See Berry, Steven, Martin Gaynor, and Fiona Scott Morton. “Do increasing markups matter? Lessons from empirical industrial organization.” *Journal of Economic Perspectives* 33, no. 3 (2019), pp. 44–68 at p. 44 (“There have been decades of research in industrial organization devoted to understanding how one can (and cannot) reliably learn about the causes and consequences of market power and markups—that is, a positive difference between price and marginal cost.”), pp. 46–47 (“Measuring economic outcomes was another problem for research in the structure-conduct-performance tradition. Most measures of profits use accounting measures, which are not economic profits. Markups are rarely directly

- **Other Factors.** Other potentially relevant factors to understand competitive conditions in a market include, but are not limited to, barriers to entry, substitution patterns, market concentration, regulatory constraints, and patterns of conduct.

28. A multipronged approach grounded in the knowledge accumulated by competition economists is therefore advisable when the goal is to draw reliable economic inferences about competition or changes thereof. This knowledge allows one to choose a set of metrics that are useful for addressing the question of interest and, along with appropriate statistical and econometric methods, provides a basis for drawing reliable economic inferences from the observed patterns.

29. This knowledge can also be used to make specific predictions about causal relationships, which can be formulated as hypotheses and tested using data. Wherever possible, statistical techniques are used to test these hypotheses. Hypothesis testing is important in confirming that observed patterns in the data are statistically valid and do not simply reflect sampling choices and other, spurious variation.²⁵

observed in firm-level data at all, in part because firms' accounting structures are not set up to measure the economic concept of product-level marginal cost (Fisher and McGowan 1983). Attempts to estimate marginal cost involved additional, difficult measurement problems with regard to the size of fixed costs, sunk costs, and depreciation. In a best-case scenario, measured markups involve the markup of price over average variable cost.”), p. 48 (“As Bresnahan (1989) argued three decades ago, no clear interpretation of the impact of concentration is possible without a clear focus on equilibrium oligopoly demand and ‘supply,’ where supply includes the list of the marginal cost functions of the firms and the nature of oligopoly competition.”). See also Bresnahan, Timothy F. “Empirical Studies of Industries with Market Power.” *Handbook of Industrial Organization*, Vol. II, Eds. R. Schmalensee and R. D. Willig, (1989), pp. 1011–1057 at pp. 1011–1012 (“This ‘new empirical industrial organization’ (NEIO) is clearly somewhat different than the previously dominant empirical method in the field, the structure-conduct-performance paradigm (SCPP). For the quarter century following the pioneering work of Bain (1951), the focus of the SCPP was the cross-section study of many industries. Industry and firm profits were predicted from various structural measures. The NEIO is partly motivated by dissatisfactions over three maintained hypotheses in the SCPP: (i) economic price-cost margins (performance) could be directly observed in accounting data, (ii) cross-section variation in industry structure could be captured by a small number of observable measures, and (iii) empirical work should be aimed at estimating the reduced-form relationship between structure and performance.”), p. 1012 (“the SCPP has been caught in a kind of gridlock over the question of whether high accounting profits are to be interpreted as a sign of good [lower marginal costs] or of bad performance [higher markups over marginal cost].”).

²⁵ Researchers estimate a relationship between variables of interest using an econometric model, and they can then test whether the estimated relationship is statistically significant

30. Hypothesis testing can be implemented in a variety of ways such as comparisons between summary statistics (e.g., means, medians, etc.) or as part of a multivariate regression analysis. However, simply using statistical tests and techniques that are accepted in certain contexts is usually not enough to draw conclusions from the data about causal relationships in non-experimental contexts. For example, as explained above, a lessening of competition can cause prices to increase and quantities to decrease. However, a finding in the data that an increase in prices and a decrease in quantities shipped of a given commodity are statistically different from zero is not enough to conclude that such changes were *caused* by a lessening of competition for the rail shipments of that commodity. As explained above, other procompetitive developments could have contributed to the observed pattern. To overcome these difficulties, it is necessary to *design* the statistical analysis in a way that the inferences drawn can be interpreted as indicative of causal relationships and not the product of confounding factors.

31. The field of econometrics has developed well-accepted methodologies and criteria that allow researchers to design statistical analyses for causal inference (a process economists refer to as “identification”).²⁶ A standard approach to determine whether an event (for example an increase in the minimum wage) has a causal impact on economic outcomes (for example employment levels) is to compare observations between two groups that were differentially exposed to the event. If it can be established that confounding factors that change

using hypothesis testing. See Jeffrey Wooldridge, *Introductory Econometrics, A Modern Approach*, (Cengage Learning, 2016), pp. 1–789 at pp. 2, 4–5 (“In some cases, especially those that involve the testing of economic theories, a formal economic model is constructed. An economic model consists of mathematical equations that describe various relationships . . . After we specify an economic model, we need to turn it into what we call an econometric model . . . Once an econometric model such as (1.3) or (1.4) has been specified, various hypotheses of interest can be stated in terms of the unknown parameters . . . An empirical analysis, by definition, requires data. After data on the relevant variables have been collected, econometric methods are used to estimate the parameters in the econometric model and to formally test hypotheses of interest.”).

²⁶ William H. Greene, *Econometric Analysis, Fifth Edition*, (Upper Saddle River, NJ: Pearson Education, 2003), pp. 1–1024 at p. 421 (“Identification involves both the statistical properties of estimators and the role of theory in the specification of the model. Once identification is established, there are numerous methods of estimation.”); Jeffrey Wooldridge, *Introductory Econometrics, A Modern Approach*, (Cengage Learning, 2016) pp. 1–789 at p. 10 (“In most tests of economic theory, and certainly for evaluating public policy, the economist’s goal is to infer that one variable (such as education) has a causal effect on another variable (such as worker productivity). Simply finding an association between two or more variables might be suggestive, but unless causality can be established, it is rarely compelling.”).

concurrently with the event are unlikely to have driven outcomes, then the changes observed between the two groups may be causally attributable to the event.

32. Per the OE staff's acknowledgments in the first and second technical conference, the Proposed Approach lacks statistical validation and, instead, merely visualizes certain types of data.²⁷ Moreover, the OE staff has not articulated an economic basis to justify interpreting the Proposed Approach's metrics as informative of competitive conditions (or changes thereof), nor has it outlined an analysis conducive to such causal inferences. The Proposed Approach is therefore insufficient as a tool that can be used to draw valid economic and statistical inferences about the evaluation of class exemption and revocation from the data.

2.3. The Proposed Approach lacks important characteristics demonstrated by commonly used and accepted competition screens

33. A possible alternative view of the Proposed Approach is as a screening tool that merely assists the Board in identifying those commodities that do not warrant further examination in the context of exemption and revocation proceedings.²⁸ In regulatory settings, screens refer to relatively simplified

²⁷ See § 2.1. See also EP 704 First Technical Conference at 10:49–11:12 (“And while the new approach—this approach consists of a number of moving parts at bottom this is really quite simple. We’re taking movements from the 1992, 2018 Waybill Sample and then placing those observations into buckets for lack of a better word. We use data visualization techniques to compare buckets hoping to gleam deeper insights into the data.”), 9:46–10:07 (“But this new approach does not test various null hypotheses because it is not an application of predicted or influential [sic] statistics. Rather the principal statistical technique used here is exploratory data analysis or EDA. The analysis of data sets and the summarization of their characteristics using visual methods.”); EP 704 Second Technical Conference at 45:40–57 (“Once more, our indicator dashboards are attempting to aggregate and summarize information drawn from the underlying visualizations. There are no hypotheses that we are testing, as this is an example of exploratory data analysis and not inferential or predictive statistics.”), 50:28–40 (“We appreciate that questions of causal or dependent relationships or multi- or co-linearity are very important in inferential and predictive statistics. But as we’ve explained, the approach here is an example of exploratory data analysis.”).

²⁸ EP 704 Dashboard Proposal at p. 9 (“These designations could be used as an initial or partial step in evaluating whether an existing commodity class exemption should be revoked or whether a commodity should be exempted from regulation in the first instance . . . This designation, and those that follow, are used in the context of evaluating whether a commodity class exemption should be revoked, e.g., the assignment of a “weak” Overall Dashboard Signal pursuant to Initial Screen One would indicate a seemingly weak evidentiary basis for revocation. The opposite logic would hold true in the context of evaluating whether a commodity should be exempted from regulation in the first instance.”);

analyses that deploy readily available data to detect (or screen for) data patterns that are consistent with outcomes of potential concern to regulators, such as the lessening of competition or the exercise of market power. Screens can be used to weed out instances where further inquiry is less likely to be valuable, or to detect cases where future analysis is needed.²⁹

34. A well-known and widely used example are screens based on the Herfindahl-Hirschman Index (“HHI”) that are used in merger analysis to screen for mergers that are likely to lessen competition. The screens are described in the joint FTC and DOJ 2010 Horizontal Merger Guidelines.³⁰ The screens are not a margin or profitability metric,³¹ but are rather based on a measure of concentration, namely, the post-merger level of the HHI and the change in the HHI due to the merger.³²

35. As a measure of concentration, the HHI sheds light on the extent of competitive alternatives available to the buyers of the merging firms’ products or services. Buyers in a highly concentrated market have few alternative

EP 704 Second Technical Conference at 1:15:09–27 (“Initial Screen 1 is based on the percentage of commodity-specific correlates that are jurisdictional traffic, that is, that have RBC ratios above 180. It is designed to identify those commodities for which there are so few movements at rates above the jurisdictional threshold that regulation of those commodities might be unnecessary.”), 1:17:5–20 (“[W]e designed Initial Screen 2 as a reasonable approximation of the point at which there is enough intermodal traffic to indicate that shippers of that commodity can readily avail themselves of other transportation alternatives and that regulation of that commodity might be unnecessary.”).

²⁹ 2010 Horizontal Merger Guidelines, pp. 1–34 at p. 19 (“The purpose of these thresholds is not to provide a rigid screen to separate competitively benign mergers from anticompetitive ones, although high levels of concentration do raise concerns. Rather, they provide one way to identify some mergers unlikely to raise competitive concerns and some others for which it is particularly important to examine whether other competitive factors confirm, reinforce, or counteract the potentially harmful effects of increased concentration.”).

³⁰ 2010 Horizontal Merger Guidelines, pp. 1–34 at pp. 18–19.

³¹ Margin metrics are often calculated based on accounting measures, which are not economic profits, or using average variable costs rather than marginal costs. For example, see Berry, Steven, Martin Gaynor, and Fiona Scott Morton. “Do increasing markups matter? Lessons from empirical industrial organization.” *Journal of Economic Perspectives* 33, no. 3 (2019), pp. 44–68 at pp. 46–47. For a more extended discussion of margin metrics see § 2.2 above.

³² The HHI is equal to the sum of the squared market share (measured in percentage points) of market participants and ranges from 0 to 10,000. See 2010 Horizontal Merger Guidelines, pp. 1–34 at p. 18, fn. 9. For example, an industry with four firms whose market shares are 10, 10, 30, and 50 and where the first two firms are merging will have pre-merger HHI of 3,600 ($= 10^2 + 10^2 + 30^2 + 50^2$), post-merger HHI of 3,800 ($= 20^2 + 30^2 + 50^2$), for a change in HHI of 200.

providers of the product or service in question, whereas buyers in less concentrated markets may have several alternative options. Similarly, the change in HHI captures the extent to which a proposed merger reduces the competitive alternatives available to buyers.

36. We do not suggest that the HHI used in the DOJ and FTC Guidelines is a metric that the Board should incorporate in the current proceeding, which evaluates class exemption and revocation actions and should focus on the identification of competitive alternatives.³³ Nevertheless, agencies' use of HHI-based screens demonstrate the characteristics of a good screen in the context (assessing the competitive effects of a proposed merger) in which it is deployed, which include the following:

- The HHI screens are applied to the relevant geographic and product markets. For screening purposes, the agencies may tentatively consider different plausible relevant markets.³⁴
- Conditional on market definition, the HHI screens are relatively simple to execute and interpret.³⁵

³³ HHIs are complicated to compute, and therefore unlikely to be helpful to the Board in the exemption context, because of the complexities associated with defining markets that would encompass all of the relevant substitutes for shipment observed in the CWS (including not only other rail options and alternative transportation modes but also geographic and production competition) and then calculating precise market shares.

³⁴ 2010 Horizontal Merger Guidelines, pp. 1–34 at p. 7 (“First, market definition helps specify the line of commerce and section of the country in which the competitive concern arises . . . Second, market definition allows the Agencies to identify market participants and measure market shares and market concentration.”); and Shapiro, Carl. “The 2010 horizontal merger guidelines: From hedgehog to fox in forty years.” *Antitrust Law Journal* 77 (2010): 49, pp. 49–108 at p. 69 (“Of course, HHIs can only be calculated after a relevant market has been defined, so uncertainty about the scope of the relevant market necessarily creates uncertainty about applicable levels and changes in the HHI.”), p. 90 (“Furthermore, since we are often trying, at least initially, to screen mergers based on market concentration, it is highly desirable to have relatively simple methods of defining the relevant market that do not require the econometric estimation of an entire demand system. Fortunately, we have learned a great deal over the past twenty years about how to exploit the information contained in pre-merger prices, costs, and diversion ratios to perform the HMT without full estimation of the demand system.”).

³⁵ 2010 Horizontal Merger Guidelines, pp. 1–34 at p. 18–19 (“The HHI is calculated by summing the squares of the individual firms’ market shares . . . When using the HHI, the Agencies consider both the post-merger level of the HHI and the increase in the HHI resulting from the merger. The increase in the HHI is equal to twice the product of the market shares of the merging firms . . . Highly Concentrated Markets: HHI above 2500 . . . Highly Concentrated Markets: Mergers resulting in highly concentrated markets

- The HHI screens rely on external benchmarks.
- The HHI screens focus on capturing the extent of and changes to competitive alternatives available to buyers.
- The HHI is well studied, with its role and limitations as a screen examined by academic research under different economic scenarios,³⁶ and its practical application informed by decades of agency experience and litigation in federal courts.³⁷

37. The Proposed Approach does have some characteristics of a good screen. The Initial Screens and the Dashboard Indicators rely on readily available data and are simple to execute. The Proposed Approach is also intended only as the first step of a more complex analysis, and in that way, the Proposed Approach may help the Board focus its attention on certain commodities.

38. However, its other shortcomings render the Proposed Approach inadequate as a screen for evaluating class exemption and revocation. The Indicators that are meant to explore the potential influence of transportation alternatives are at best incomplete and at worst misleading, potentially leading to a preponderance of false positives.³⁸ Without an appropriate economic basis to motivate and guide the interpretation of its Initial Screens and Dashboard Indicators, it is not possible to assess whether the Proposed Approach provides useful information about competitive conditions for the rail shipments of a

that involve an increase in the HHI of between 100 points and 200 points potentially raise significant competitive concerns and often warrant scrutiny.”).

³⁶ For example, see, Nocke, Volker, and Michael D. Whinston. “Concentration screens for horizontal mergers.” No. w27533. National Bureau of Economic Research, 2020; and Cowling, Keith, and Michael Waterson. “Price-cost margins and market structure.” *Economica* 43, no. 171 (1976), pp. 267-274.

³⁷ Shapiro, Carl. “The 2010 horizontal merger guidelines: From hedgehog to fox in forty years.” *Antitrust Law Journal* 77 (2010), pp. 49–108 at p. 52 (“The 1982 Guidelines introduced the Herfindahl-Hirschman Index (HHI) into merger analysis and established enforcement thresholds based on the post-merger HHI and the change in the HHI resulting from the merger.”), p. 68 (“The express acknowledgement [in the 2010 Horizontal Merger Guidelines that HHI levels typically are not very helpful diagnostics in these cases has led to concerns that the valuable screening role played by the HHI thresholds since 1982 has been reduced or lost. In fact, the 2010 Guidelines recognize the importance of these HHI thresholds to help identify mergers that are ‘unlikely to have adverse competitive effects and ordinarily require no further analysis.’ Indeed, the 2010 Guidelines not only retain HHI thresholds but raise them. DOJ continues to apply the HHI thresholds to all horizontal mergers.”).

³⁸ See § 4.

commodity (or changes thereof). As explained below, closer examination of its proposed metrics suggests that it does not.

3. The Proposed Approach's value is limited by the data it does, and does not, include

39. As noted earlier, the OE staff repeatedly stated that the Proposed Approach is primarily a data visualization tool that may assist in evaluating competitive conditions. For data analysis to best assist in any policy evaluation, however, it is important to (a) cast the net broadly for relevant data, (b) account for the limitations of the analyzed data, and (c) summarize the data using metrics that have a clear interpretation with respect to the policy evaluation question at hand. The Proposed Approach falls short in all these respects.

3.1. The Proposed Approach does not examine or visualize relevant data

40. The data, and associated measures, that the Proposed Approach relies upon provide an incomplete picture of the likely competitive forces faced by railroads. Improvements in this regard can be made by supplementing the Proposed Approach with publicly available data or by more appropriately processing the data the Proposed Approach already uses. In particular:

- **Competition from trucks.** The Proposed Approach does not examine or visualize any data on trucks, whether publicly available or available through shippers. It instead relies on a rule of thumb to proxy for competition from trucks (effectively assuming trucks do not adequately compete for hauls longer than 500 miles). This rule of thumb is inconsistent with the fact that, according to publicly available data, trucks transport a large share of freight in the U.S., including for hauls that exceed 500 miles.³⁹ While such data are available at a higher aggregation level than the data the Proposed Approach chooses to focus on, they are still informative about broader market conditions.⁴⁰ As we

³⁹ For example, the table entitled “Weight of freight by mode and distance” demonstrates that, in 2018, trucks transported the largest share of shipments for hauls less than 750 miles (and around the same share as rail for the 750-999 distance band). See Freight Facts and Figures, “Moving Goods in the United States,” 2018, available at <https://data.bts.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu>.

⁴⁰ Publicly available data on commodity shipments by mode of transport (truck, rail, water, etc.) include the Commodity Flow Survey and the Freight Analysis Framework. As explained in the Second Technical Conference, OE staff did not rely on these data sources because the commodity classifications used in these data sources are less granular and less precise than

show in Exhibit 1, the share of tonnage transported by truck varies substantially across commodities, indicating that even if used as a rule of thumb, the Proposed Approach's rule may not apply across all commodities.⁴¹

- **Competition from waterways.** The Proposed Approach only considers barge movements that occur over the same waterway and does not include Canadian ports. As explained by FTI, these limitations restrict the identification of variable barge alternatives.⁴²

the five- or seven-digit STCC codes recorded in the CWS. However, as we show in Exhibit 1 below, data from the Commodity Flow Survey can be used to gain insights about the relevance of trucking alternatives by commodity and length of haul based on commodity categories (defined with the SCTG and NAICS codes) which are more granular than those defined based on SCTG codes alone. See EP 704 Second Technical Conference at 18:51–19:15, 19:43–20:07 (“We are, of course, aware of the Commodity Flow Survey, or CFS, as well as the Freight Analysis Framework, or FAF. However, the Office of Economics made the modeling decision to rely on the Confidential Carload Waybill Sample. We chose to rely on the Waybill Sample because it gives us much greater precision geographically and with respect to commodity types than is available in either the CFS or the FAF . . . Both CFS and the FAF use 43 SCTG, Standard Classification of Transported Goods, codes, which are quite similar to two-digit STCC codes, Standard Transportation Commodity Codes that we use in the waybill. But our new analysis uses five- and seven-digit STCCs, which are much more precise descriptions of specific commodities.”). Commodity Flow Survey Data is available at <https://www.census.gov/programs-surveys/cfs.html>, while Freight Analysis Framework data is available at https://ops.fhwa.dot.gov/freight/freight_analysis/faf/. In addition to the Commodity Flow Survey and the Freight Analysis Framework, FTI identified other viable data sources that may shed light on truck competition. See Verified Statement of Michael Baranowski and Benton Fisher (“FTI V.S.”) at p. 13–14 (“Beyond the CFS, other potential sources of rail market share data were referenced in the 2016 comments filed by railroad stakeholders. For example, the Freight Analysis Framework, which is produced by the Center for Transportation Analysis through a partnership with the Bureau of Transportation Statistics and the Federal Highway Administration . . . the Transearch database, which is available commercially from IHS Markit, contains freight flow by origin, destination, commodity, and transportation mode for over 340 individual commodities . . . the Cement Industry Annual Yearbook provides detailed specifics of all facets of the cement industry including economic activity and key construction market drivers, cement consumption and funding initiatives.”).

⁴¹ See the Appendix for a version of the analysis that focuses on two-digit SCTG codes which also demonstrates that the share of tonnage shipped by trucks varies substantially across commodities for varying haul lengths, including those longer than 500 miles.

⁴² FTI V.S. at pp. 35–36 (“The GMIM’s limitation to the same waterway system understates the level of barge competition . . . The USACE source data, however, identifies ports in the United States only. As a result, the significant competition from barges to and from Canadian ports is not captured by the GMIM.”).

EXHIBIT 1**Share of tonnage of different commodities carried by truck across different distances**

Commodity [1] [2]	<500 Mile Haul	>=500 to <1,000 Mile Haul	>=1,000 Mile Haul
1. Crushed or Broken Stone or Rip Rap [3]	77.1%	80.9%	98.9%
2. Coke Produced From Coal	66.6%	35.3%	23.5%
3. Primary Iron or Steel Products (Plates, Pipes, and Rods)	87.1%	67.2%	46.1%
4. Hydraulic Cement	96.7%	73.6%	77.3%
5. Iron or Steel Scrap, Wastes, or Tailings	83.5%	41.4%	39.4%

Source: 2017 Commodity Flow Survey

Note: [1] A sensitivity excluding company-owned trucking from the sample was calculated. Truck market share decreased by a range of 7.1 percent to 14.2 percent for <500 mile hauls. The minimum decrease occurred for hydraulic cement, which had a market share of 89.6 percent for <500 mile hauls and the maximum decrease occurred for coke produced from coal, which had a market share of 52.4 percent for <500 mile hauls. The market shares are unchanged for hauls >=500 miles, as company trucks are largely used for shorter hauls. See our workpapers.

[2] Each STCC commodity code identified in the EP 704 Dashboard Proposal is matched to the nearest SCTG code and nearest NAICS codes within each matched SCTG code in the Commodity Flow Data. STCC No. 14-2, “crushed or broken stone or rip rap” uses SCTG No. 12, “gravel and crushed stone” and within that SCTG code the NAICS codes 327, “nonmetallic mineral product manufacturing” or 4233, “lumber and other construction materials;” STCC No. 29-914, “coke produced from coal” uses SCTG No. 19, “other coal and petroleum products not elsewhere classified” and within that SCTG code the NAICS codes 324, “petroleum and coal products manufacturing,” 327, “nonmetallic mineral product manufacturing,” or 4247, “petroleum and petroleum products merchant wholesalers;” STCC No. 33-12, “primary iron or steel products (plates, pipes, and rods)” uses SCTG No. 32, “base metal in primary or semi-finished forms and in finished basic shapes” and within that SCTG code the NAICS codes 331, “primary metal manufacturing,” 332, “fabricated metal product manufacturing,” or 4235, “metal and mineral (except petroleum) merchant wholesalers;” STCC No. 32-4, “hydraulic cement” uses SCTG No. 31, “non-metallic mineral products” and within that SCTG code the NAICS codes 327, “nonmetallic mineral product manufacturing” or 4233 “lumber and other construction materials;” STCC No. 40-211, “iron or steel scrap, wastes, or tailings” uses SCTG No. 41, “waste and scrap (excludes of agriculture or food)” and within that SCTG code the NAICS codes 331, “primary metal manufacturing,” 332, “fabricated metal product manufacturing,” 333, “machinery manufacturing,” 4235, “metal and mineral (except petroleum) merchant wholesalers,” or 4238, “machinery, equipment, and supplies merchant wholesalers.” See the appendix for a version of the exhibit that does not filter by NAICS code.

[3] Less than 1.0% of crushed or broken stone or rip rap is shipped on >500 mile hauls, which includes rail shipments. As indicated in the table, the majority of these shipments occur via truck.

- **Competition from other railroads.** By relying only on a one-year snapshot of the CWS, the Proposed Approach only captures routes selected during that specific year and not alternative routes that shippers selected in a different year.⁴³ Far from being a theoretical concern, FTI has shown that incorporating movements from additional years can make a substantial difference to the share of carloads that the Proposed Approach would flag as facing intramodal competition.⁴⁴ The sampling

⁴³ FTI V.S. at p. 31 (“The only shipments that the Board’s proposed approach consider subject to the competitive pressure of other railroads are those for which the same year’s CWS also sampled a record for a shipment of the same commodity, served by different railroads, for the same point-to-point geography.”).

⁴⁴ As an illustration for four commodities, FTI found that by including data from the 2016 and 2017 CWS, the percentage of carloads flagged as facing intramodal competition increased relative to the findings presented in the Proposed Approach. The increase was 33 percent for “Lumber, Rough or Dressed” (24211), 42 percent for “Hydraulic Cement, Natural, Portland or Masonry” (32411), 44 percent for “Fibreboard, Paperboard, or Pulpboard” (26311), and 65 percent for “Iron or Steel Sheet or Strip” (33123). See FTI V.S.,

criteria used to construct the CWS further limit its ability to capture railroad alternatives.⁴⁵

- **Quantity data.** While the CWS is but a sample, it could (with appropriate caveats and care in measurement and interpretation) be used to also examine patterns in quantity shipped. An analysis of quantities is a standard element of empirical analyses of competition. As explained above, evidence on such patterns may assist in interpreting patterns in other data and/or metrics.
- **Quality data.** Additional data sources may similarly be used to construct metrics to evaluate different dimensions of quality. These are also routinely examined in empirical analyses of competition and may assist in interpreting patterns in other data and/or metrics.

3.2. The Proposed Approach does not examine viable substitutes available to shippers

41. In addition to omitted data, the proposed metrics do not account for the full set of potential substitute routes, transportation options, and commodities that are available to shippers based on the data sources the Proposed Approach already considers. The presence of alternative routes or modes of transportation may represent a competitive alternative whether or not shippers already use them to transport specific commodities. Moreover, omitting substitute routes and modes, as well as ignoring viable substitute commodities, can distort any conclusions drawn from the Proposed Approach.

42. The Proposed Approach limits analyses for a given commodity to specific origin, destination pairs, and any competing waterways and railroads located

at p. 34, Figure 6 (“Impact of Expanding the Board’s Restriction of Direct Rail Competition to CWS Shipments of the Same Commodity in the Same Year”).

⁴⁵ FTI V.S. at pp. 25–26 (“The current sampling rate for single-car shipments (*i.e.*, waybills for shipment sizes of 1 to 5 cars, which account for the vast majority of shipments of the commodities at issue in this proceeding) is just 2.5%—one out of every 40 . . . if a competitive rail shipment of the same commodity, moving over the same lane, is not among the 2.5% of moves included in the sample, then the GMIM will show no rail-to-rail competition . . . the prevalence of Rule 11 shipments in the CWS data masks the location of the actual origins and destinations of many shipments . . . For example, a Rule 11 shipment from Los Angeles to New York with an interchange in Chicago will be reported in the CWS for only the portion of the through movement to or from Chicago, *i.e.*, the handling by the western carrier from Los Angeles to Chicago, or the handling by the eastern carrier from Chicago to New York . . . the low sampling rate makes it very unlikely that both portions of the shipment would be captured in the sample, and therefore for both portions to be matched to construct the end-to-end movement”).

within a proximately defined radius.⁴⁶ Thus, the Proposed Approach restricts substitute routes to alternatives with effectively the same origin and destination. This, however, understates the competitive options that are likely available to shippers. In fact, considering geographic and product competition is essential to a detailed case-specific analysis of competitive conditions that is needed for evaluating class exemption and revocation.

43. For example, a shipper based in Portland, Oregon that, in 2018, shipped a load of scrap steel to a steel mill in Atlanta, Georgia, may not only have considered shipping that load from and to locations within a 30-mile radius around Portland and Atlanta, respectively. The shipper may also have considered shipping that load to a different mill in Seattle, Washington or another one in Sacramento, California.

44. Similarly, receivers may not only consider alternative routes to source commodities from the same origin. They can also consider sourcing the same commodities from a different origin altogether. Continuing with the prior example, the steel mill in Atlanta may not only have considered alternative routes to obtain a load of scrap steel from Portland. It may have also considered sourcing a similar load of scrap steel from shippers located in Chattanooga, Tennessee or Mobile, Alabama.

45. Consistent with the illustrative example discussed above, FTI finds that geographic competition for hydraulic cement is substantial. For each location that originated a shipment of hydraulic cement in the 2018 CWS, FTI identified at least five destinations within a 500-mile radius that received a shipment of hydraulic cement by rail. They find that the total amount of hydraulic cement received by rail at these destinations exceeds the amount shipped from that originating location, suggesting that this considerable demand provides numerous alternative destinations for each originating location.⁴⁷ Similarly, for

⁴⁶ EP 704 Dashboard Proposal at pp. 8–9 (“The GMIM then uses these datasets to determine the presence of potential intramodal influence by compiling a list of alternative commodity-specific lanes (i.e., lanes with alternative origins and destinations that are both located within 30 miles of the original origins and destinations and that handled similar traffic in the relevant year of analysis) . . . Only commodity-specific lanes that have alternative commodity-specific lanes with carriers different from the incumbent at both origin and destination are presumed to have potential intramodal competitive effects for purposes of subsequent components of the approach.”).

⁴⁷ FTI V.S., p. 18 (“Our analysis determined that in 2018 every single rail origin of cement shipments was within 500 miles of at least 5 unique destinations that received cement. Importantly, for each of the 103 origins for hydraulic cement, the destinations that were

each location that received a shipment of hydraulic cement, FTI identified multiple locations within a 500-mile radius that originated shipments of hydraulic cement by rail. They find that the total amount of hydraulic cement shipped by rail from these locations exceeds the amount received from that receiving location, suggesting that this considerable supply provides numerous alternative origins for each receiving location.⁴⁸

46. The Proposed Approach further omits potentially viable shipping options because they evaluate commodities defined very granularly using five-digit commodity codes. For example, the Proposed Approach treats “iron or steel plates” (STCC code 33122) and “iron or steel sheets or strips” (STCC code 33123) as distinct commodities even though they fall under the broader, “metal products” (STCC code 33) commodity category.⁴⁹ To identify alternative railroad routes for shipment of “iron or steel plates” between point A and point B, the Proposed Approach only verifies whether there are other shipments of “iron or steel plates” travelling from an origin within a 30-miles radius of A to a destination within a 30-mile radius of B. The Proposed Approach assumes that no alternative routes exist if they do not appear in the CWS data as moving that specific (granularly defined) commodity. But, in reality, there may be alternative routes that are revealed in the data for a related commodity. To the extent that shipments of related commodities such as “iron or steel sheets or strips” are informative about viable railroad alternatives for the shipment of “iron or steel plates,” it would be important to include them among the set of alternative routes identified by the Proposed Approach.

47. OE staff has not provided an economic basis for treating commodities defined using five-digit codes as distinct, nor for considering shipments of related commodities uninformative.⁵⁰ The staff has also not examined how

within 500 miles received at least as many carloads in the aggregate as were shipped from that origin . . . The considerable demand for cement at alternative destinations within 500 miles therefore provides myriad geographic alternatives for every cement origin.”).

⁴⁸ FTI V.S., pp. 18–19 (“As with origins, in 2018 every single destination of cement shipments was within 500 miles of at least 5 unique origins that also shipped cement and were included in the 2018 Waybill Sample. And for all 284 destinations these alternative origins shipped volumes matching or exceeding the volume each destination received . . . the considerable alternative supply from origins within 500 miles of the receivers of cement again provides myriad geographic alternatives.”).

⁴⁹ “Indicator Dashboard.xlsx.”

⁵⁰ OE staff views evaluating commodities at the five- and seven-digit STCC codes as advantageous because the findings are more specific. See EP 704 Second Technical Conference at 28:29–37 (“One of the advantages of this new approach is that by looking at

sensitive the Proposed Approach results are to using less granular commodity categorizations. Analyses conducted by FTI demonstrate that including related commodities can substantially increase the number of railroad alternatives identified by the Proposed Approach.⁵¹ These results suggest that defining commodities at a too granular level may obscure competitive alternatives that are available to a commodity, even if that commodity does not currently use them extensively based on the 2018 CWS.

48. Finally, the Proposed Approach does not account for viable product substitutes, wherein buyers of a particular commodity may be able to substitute to alternative materials.⁵² It may not be possible to establish the set of alternative materials between which shippers can substitute without the full-scale, fact-specific analyses that the Board undertakes when evaluating

the five-digit and seven-digit STCC levels, we can obtain more granular insights regarding these commodities.”); EP 704 First Technical Conference at 8:10–9:13 (“As an initial matter the new approach is designed to increase the granularity of the commodity analysis. For example, instead of looking at cement at the four digit STCC level, the approach considers cement at the five digit STCC code level, where there are in fact two distinct commodities, hydraulic cement and ready-mix cement. The overwhelming majority of this is hydraulic cement but as we’ve looked at the data at the five digit STCC level, we noticed that ready-mix cement often moves in intermodal containers. A similar distinction is visible in the area of crushed stone, where clear differences can be seen with respect to agricultural limestone - STCC code 14211 and rip rap - STCC code 14218. The new approach looked at forty-four commodities at the five digit and four commodities at the even more refined seven digit STCC level.”).

⁵¹ As an illustration for four commodities, FTI found that, by expanding the analysis to consider commodities defined at the two-digit STCC level rather than the five-digit STCC level, the percentage of carloads flagged as facing intramodal competition increased relative to the findings presented in the Proposed Approach. The increase was 13 percent for “Lumber, Rough or Dressed” (24211), 19 percent for “Fibreboard, Paperboard, or Pulpboard” (26311), 28 percent for “Hydraulic Cement, Natural, Portland or Masonry” (32411), and 44 percent for “Iron or Steel Sheet or Strip” (33123). See FTI V.S., at p. 34, Figure 6 (“Impact of Expanding the Board’s Restriction of Direct Rail Competition to CWS Shipments of the Same Commodity in the Same Year”).

⁵² For example, see Mark Israel and Jonathan Orszag, “EP 704 Verified Statement (Sub-No. 1),” July 26, 2016, pp. 1-58 (“Israel Orszag V.S. (2016)”) at p. 18 (“Shippers who are able to use substitute products to meet their needs can use the threat of shifting away from rail transport for a given product to rail transport for a different, substitute product, to negotiate with railroads for favorable rates on shipments of the first product. Railroads must set rates at levels that are competitive with these alternatives or risk losing the business. Take, for example, a paper producer who is able to use either recycled paper or wood pulp in their production process. If the paper producer is faced with unattractive rail rates for wood pulp and they can shift to recycled paper, railroads will need to set rates at a level that is competitive with the shipper’s cost of obtaining the substitute product in order to win the business.”). See also Israel Orszag V.S. (2016) pp. 25–27, which qualitatively describes potential product substitutes that may exert pricing pressure on three of the commodities that are currently under evaluation by the Board.

exemption and revocations. However, the possibility that shippers substitute between different commodities indicates that the current focus of the Proposed Approach on narrowly defined commodities likely understates the extent of the “competitive influence” that railroads face along a given route for a given commodity.

3.3. The Proposed Approach does not appropriately account for the limitations of the data that it does use

49. Issues with the data that the Proposed Approach relies upon limit its use as a tool meant to understand competitive conditions for the shipment of a given commodity. First, it does not account for the fact that the CWS is only a sample. Second, the metrics that evaluate changes over time rely on a single baseline year, with no economic justification or attempt to evaluate the significance of this particular choice.

50. Not accounting for sampling variation. In addition to the aforementioned limitations in accounting for non-rail competition, the CWS captures only a sample of rail movements. As such, the data can be expected to show variation from year to year that is unrelated to changes in competitive conditions, but that arises entirely due to sampling. The Proposed Approach could be improved in various ways to at least attempt to partially account for these issues. For example:⁵³

- Statistical validation could help evaluate the uncertainty that sampling introduces, yet as noted above (and acknowledged by the OE staff) the Proposed Approach does not go beyond data visualization.⁵⁴
- Evaluating commodity movements over multiple years might reduce the error introduced by the sampling process, yet the Proposed Approach relies on a single year of data (and a single year of benchmark data, 1992, for proposed Dashboard Indicators that consider changes over time).

51. A single baseline year. The proposed Dashboard Indicators that consider changes over time all use 1992 as the baseline year against which current

⁵³ See also FTI V.S. § IV (“There are Limitations in the Carload Waybill Sample that Serves as the Basis for Most of the Dashboard’s Analyses”).

⁵⁴ Without accounting for this uncertainty using statistical methods, it is possible to reach erroneous conclusions about competitive conditions, potentially leading to a preponderance of false positives. See § 4.4.

metrics are compared. No economic justification has been provided to date for whether this choice of baseline year is appropriate,⁵⁵ or whether it might influence certain results one way or another.⁵⁶ Econometric best practices generally either rely on an economic basis to inform the choice of benchmarks, validate them using statistical analyses, or consider the sensitivity of the results to alternative benchmarks. This is especially relevant here, since data for other years are also readily available.

3.4. The Proposed Approach does not rely on metrics with a clear interpretation for the purpose of evaluating competitive conditions

52. As noted above, it is not possible to properly evaluate market outcomes in isolation and without economic basis. This difficulty is compounded by the fact that the Proposed Approach relies on metrics that may be more difficult to interpret than market outcomes such as price and quantity. No clear economic basis has been proposed for using these metrics as diagnostic tools for evaluating class exemption and revocation.

53. The Proposed Approach essentially uses four metrics throughout its various analyses: R/VC, RPC, length of haul (focused on trucking influence), and the proportion of traffic subject to “competitive influences” (from other railroads and waterways). Except for stating that the Indicator Dashboard provides insights into changes in market conditions,⁵⁷ OE staff has not provided an

⁵⁵ EP 704 First Technical Conference at 9:14–29 (“The new approach began with the 1992 carload way bill sample as our starting point. Some of you have asked why we made this choice. We did so to mirror the baseline used in the 2016 [N]PRM.”). See also EP 704 Second Technical Conference at 1:10:51–11:06, 1:11:36–59 (“What considerations led Board staff to compare figures for a single year, 1992 or 2018, rather than examining comparisons between averages over different 2- or 3-year periods, for example, 2016 through [2]018? . . . What considerations led Board staff to choose to compare the most recent period with 1992 specifically, rather than some other year or a group of years? . . . We have answered each subpart of this question in our responses to earlier questions as well, so I won’t repeat myself except to say that these were modeling choices made by the Office of Economics, and then 1992 was selected as the base year to be consistent with the 2016 NPRM. We recognize the possibility of sampling bias but believe it is unlikely to have material impact on our visualizations.”).

⁵⁶ Because results may be sensitive to the choice of baseline year, further investigation of the methodology may be warranted. For example, such a sensitivity could indicate that certain results are driven by sampling error.

⁵⁷ EP 704 Second Technical Conference at 52:17–32 (“As previously indicated, the dashboards were designed to aggregate and summarize information drawn from our exploratory data analysis, which, in turn, was designed to address the potential presence of changes in market conditions, not to explore questions of market power.”), 1:00:03-16 (“the screens and dashboard indicators are not intended to identify the presence or absence of

economic basis that justifies these metrics as useful to evaluate class exemption and revocation. In fact, each of these metrics has serious limitations if employed for this purpose.

54. R/VC. This metric is defined as revenue divided by variable cost. Therefore, it is a metric that is meant to capture the margin that railroads realize from a particular shipment or a series of shipments. R/VC is a diagnostic tool with limited utility for evaluating class exemption and revocation for several reasons. First, variable costs are computed based on accounting data.⁵⁸ The economics literature teaches that measuring economic margins using accounting data is difficult to begin with, and is particularly difficult for industries with high fixed costs such as railroads.⁵⁹ Moreover, the calculation includes components that

market power, but rather to reflect the presence or absence of potential changes in market conditions over time.”).

⁵⁸ For further discussion of the limitations of the Board’s calculation of margins using accounting data, see Israel Orszag V.S. (2016) at p. 3 (“It is well known that accounting costs are not economic costs and thus that accounting margins do not provide valid measures of market power. This is certainly the case with R/VC: The variable cost measure includes certain fixed costs (such as investments in road assets, for example) at a default 50 percent, does not include the required competitive return on capital investments (including investments in quality of service) that need to be reflected in a true economic cost, and includes variable costs that are not true measures of shipment-specific marginal costs . . . For example, it uses the average joint facilities costs for an entire railroad instead of the payments that a railroad makes for a specific movement, and it uses system average equipment rental for a car type rather than the actual per diem applicable to a shipment.”).

⁵⁹ Economic margins and profitability measures are comprised of prices and marginal costs, and the long-standing academic literature notes the difficulty and inherent assumptions required to approximate marginal costs using readily available accounting costs data. See Fisher, Franklin M., and John J. McGowan. “On the misuse of accounting rates of return to infer monopoly profits.” *The American Economic Review* 73, no. 1 (1983), pp. 82–97 at p. 82 (“Likewise, they recognize that accountants’ statements of assets, hence also stockholders’ equity, may fail to correspond to economically acceptable definitions, because accounting practices do not provide for the capitalization of certain activities such as research and development and do not incorporate allowances for inflation . . . accounting rates of return, even if properly and consistently measured, provide almost no information about economic rates of return.”); Corts, Kenneth S. “Conduct parameters and the measurement of market power.” *Journal of Econometrics* 88, no. 2 (1999), pp. 227–250 at pp. 227–228 (“The price-cost margin is the natural measure of a market’s competitiveness; however, while prices are often readily observable, marginal cost is rarely so easily measured. The shortcomings of accounting cost data for economic analysis are well-known; among the most salient issues are the somewhat arbitrary rules for the treatment of phenomena like depreciation and for the designation of costs as marginal and fixed.”). See also Berry, Steven, Martin Gaynor, and Fiona Scott Morton. “Do increasing markups matter? Lessons from empirical industrial organization.” *Journal of Economic Perspectives* 33, no. 3 (2019), pp. 44–68 at pp. 46–47; Schmalensee, Richard L., and Wesley W. Wilson. “Modernizing U.S. freight rail regulation.” *Review of Industrial Organization* 49, no. 2 (2016), pp. 133–159 (“The fixed and sunk network costs are enormous but generate no

are not shipment-specific, but rather are allocated based on system-wide variable cost values.⁶⁰ Second, variation in R/VC can be hard to interpret when evaluating competitive conditions (or changes thereof). For example, even if R/VC measured economic margins accurately, the metric may be higher for a given commodity than for other commodities because the costs to ship that commodity are lower than for other commodities. Lower costs suggest that railroads are more efficient at shipping that commodity relative to other commodities, not that they are charging supracompetitive prices. As explained above, high accounting margins are not considered, on their own, to constitute reliable evidence of changes in competitive conditions, and by the 1980s competition economists started focusing on other metrics.⁶¹

55. RPC. Revenue per car measures the average revenue per car for a shipment or a series of shipments. Increases in revenue are hard to interpret without taking into consideration simultaneous changes in quantity, quality, and other factors. For example, increases in RPC may result from railroad investments in larger cars that increase railroad capacity.⁶² To date the OE staff has not

revenue directly, and there can be tremendous differences in the marginal costs of each movement. The network costs must be paid for by markups on marginal costs; but origins, destinations, and commodities differ dramatically in terms of competitive pressures on markups.”).

⁶⁰ Israel Orszag V.S. (2016) at p. 11 (“The variable costs calculated for specific movements are allocations of system-wide variable costs and do not reflect the movement-specific characteristics relevant to setting rates . . . In addition, calculating a true economic marginal cost (and thus, true economic margin) for individual rail movements is likely impossible because there is no clear, non-arbitrary method for accurately allocating the shared costs of the network to individual movements.”); FTI V.S. at pp. 44–45 (“As URCS is used in the proposed approach here, URCS is not sufficiently granular to reflect commodity-specific costs. It cannot, for example, attribute the effects of railroads’ substantial capital investments for new and improved customer services to the specific commodities for which the investments are made. URCS is also not equipped to assess the relative density of the lanes over which individual commodities may traverse and, as such, cannot recognize the high costs per unit of operating on less dense portions of the railroad network. These and other aspects of URCS undermine the relevance of any comparisons of R/VC ratios to the ratios for all carload traffic.”).

⁶¹ See § 2.2 above. In particular, margins may fluctuate in response to changes in competitive conditions, but they may also move due to other factors. The existence of confounding factors, coupled with difficulty measuring economic margins, typically renders accounting margin measures uninformative, on their own, as reliable evidence of changes in competitive conditions.

⁶² FTI V.S. at p. 66 (“Some of the factors affecting RPC include the railroad, route, distance, shipment size, lading weight, type of railroad car, owner of the railroad car, number of railroads participating in the move, time of year in which the shipment occurred, fuel costs, and other surcharges . . . RPC is driven in part by lading weight, so increases in freight car capacity by themselves will result in higher RPCs over time even without any other changes.

provided an economic basis to justify this metric as useful to evaluate competitive conditions (or changes thereof).⁶³

56. Length of haul and trucking influence. The Proposed Approach effectively assumes the absence of competition from trucks for shipments longer than 500 miles.⁶⁴ No economic justification is offered for this assumption.⁶⁵ As shown in Exhibit 1, trucks in fact carry a sizeable share of tonnage for shipment over 500 miles, as well as shipments over 1,000 miles.⁶⁶ If the Proposed Approach misidentifies competitive alternatives, it may lead to misleading results. Moreover, we have seen no basis for believing that longer shipments are more likely to be associated with lesser competition just because of their length. For example, they may reflect efficiency gains on the part of

RPC is also influenced by length of haul. As revenue-per-carload is a measure of the absolute level of the charge for shipping from a particular origin to a particular destination, railroads will charge more to recover the higher costs of transporting longer distances.”).

⁶³ EP 704 Second Technical Conference at 1:04:28–5:02 (“I mentioned on December 18th that revenue per carload has risen over time, at least in part due to heavier haul and longer lengths of haul, trends which can be observed in the data visualizations, particularly in the pair plots. We have not suggested that these higher RPCs or RVCs necessarily imply market power, even if they might suggest potential changes in market conditions. That said, as has been explained in many past Board decisions, including the 2016 NPRM, RVC ratios have long been used by the Board as one indication of market power.”).

⁶⁴ EP 704 Dashboard Proposal at p. 13, fn. 38 (“The metrics assume that 500 miles represents a reasonable distance for direct trucking alternatives, and that 1,000 miles does not, and these mileages do not vary by commodity.”), p. 23 (“The approach assumes trucking becomes feasible enough to exert competitive pressure if the distance for the move in the waybill is under 500 miles.”). See also Israel Orszag V.S. (2016) at p. 20 (“The Board also repeatedly points to increases in average length-of-haul as a ‘possible indicator’ that intermodal competition less effective, but offers no analysis supporting this assertion.”).

⁶⁵ EP 704 Second Technical Conference at 21:33–22:10 (“Our analysis looked at the potential influence of motor carriers by drawing a distinction between shorter haul and longer haul movements at 500 miles. That standard has been proposed in other Board proceedings as a reasonable proxy for the demarcation point at which rail efficiencies begin to exert themselves. We appreciate that some commodities routinely travel more than 500 miles by truck and that some do not. This was simply a modeling choice, a starting point, which is why it is important not to put too much emphasis on the dashboard indicators, but rather pay more attention to the data visualizations included within the new approach.”).

⁶⁶ Trucks similarly carry a sizeable share of value at greater distances. For example, over 80 percent of hydraulic cement value is shipped via truck on hauls longer than or equal to 500 miles and 73 percent of iron or steel scrap value is shipped via truck on hauls between 500 (inclusive) and 1,000 (exclusive) miles and 70 percent on hauls longer than or equal to 1,000 miles. See our workpapers.

railroads that render long hauls more prevalent in the data,⁶⁷ or competition from trucks on shorter hauls.⁶⁸

57. Rail and waterway competitive influence. The Proposed Approach defines a competitive influence measure that identifies, for each shipment, the existence of particular rail and waterway alternatives located within 30 miles of the origin and destination rail stations.⁶⁹ Although these metrics are the closest the Proposed Approach comes to directly measuring competitive alternatives available in the marketplace, no economic justification has been offered to validate limiting the identification of competitive influence to such circumstances. Among other issues, competitive influence does not account for the shipments transported by truck.

58. Unsurprisingly, when visualized in concert, these metrics reveal inconsistent and counterintuitive patterns. For example, if high R/VC could properly be interpreted to indicate less competitive conditions, one would expect R/VCs to be lower on balance for commodities that are subject to stronger competitive influences from trucks (per the Proposed Approach's assumptions, as approximated by length of haul) and from other railroad and waterway alternatives. This is not the case.

59. As we show in Exhibit 2 below, there is no clear relationship between Indicator 3 designations (which are meant to capture the lack of competitive influence from trucks, other railroads, and waterways) and Indicator 1 designations (which compares the distribution of R/VC of a given commodity to the distribution of R/VC across all commodities). Many commodities that are interpreted by the Indicator Dashboard as facing more robust competitive

⁶⁷ FTI, for example, notes that, for hydraulic cement, the increased average length of haul has been accompanied by a substantial decrease in the proportion of interline traffic and the number of interchanges. See FTI V.S. at p. 65.

⁶⁸ See § 4.1.

⁶⁹ The EP 704 Dashboard Proposal describes how “competitive influence” measures are calculated by searching for waterway and rail competition located within 30 miles of specific origin-destination pairs. See EP 704 Dashboard Proposal at pp. 7–8, 22 (“The algorithm then applies a mileage screen, which has been tentatively set at 30 miles, to identify which ports are located within a distance that could reasonably serve . . . Potential railroad alternatives are evaluated under the ‘railroad influence model,’ in which the model’s algorithm identifies for each railroad freight station whether there are any other railroad freight stations that are within a mileage screen tentatively set at 30 miles and that handled similar traffic in the relevant years of analysis (1992 or 2018) . . . The approach assumes it is feasible to engage in a truck transload to get to a railroad or water carrier alternative within 30 miles of the original station.”).

influence (i.e., those that are designated as “weak” by Indicator 3) have higher R/VCs (i.e., those that are designated as “strong” by Indicator 1). Conversely, many interpreted by the Indicator Dashboard as facing less robust competitive influences (i.e., those designated as “strong” by Indicator 3) have lower R/VCs (i.e., those designated as “weak” by Indicator 1).

EXHIBIT 2

There is no apparent correlation between the extent of competitive influence (as measured by Indicator 3) and the level of R/VCs (as measured by Indicator 1)

Five-Digit STCC Code	STCC Comodity Name Name	Indicator 3 Designation	Indicator 1 Designation
33124	Iron or Steel Bars, Bar Shapes or Rods	Strong	Strong
33125	Structural Shapes or Piling Products	Strong	Strong
33126	Iron or Steel Pipe, Tubes or Fittings	Strong	Strong
24321	Plywood or Veneer or Built-up Wood	Strong	Moderate
24991	Strand Board Wood Products	Strong	Moderate
24996	Wood Particle Board	Strong	Moderate
33122	Iron or Steel Plates	Strong	Moderate
24211	Lumber, Rough or Dressed	Strong	Weak
26311	Fibreboard, Paperboard or Pulpboard	Strong	Weak
40241	Paper Waste or Scrap	Strong	Weak
37111	Motor Passenger Cars, Assembled	Moderate	Weak
37112	Motor Trucks or Truck Tractors, Assembled	Moderate	Weak
14212	Fluxing Limestone or Stone, Broken or Crushed	Weak	Strong
14219	Broken or Crushed Stone or Riprap	Weak	Strong
29914	Coke Produced From Coal	Weak	Strong
32411	Hydraulic Cement, Natural, Portland or Masonry	Weak	Strong
33128	Railway Track Material	Weak	Strong
37143	Motor Vehicle Frames	Weak	Strong
14211	Agricultural Limestone, Broken or Crushed	Weak	Moderate
14213	Dolomite, Broken or Crushed	Weak	Moderate
33127	Tin Mill Products	Weak	Moderate
40211	Iron or Steel Scrap, Wastes or Tailings	Weak	Moderate
24114	Pulpwood Logs	Weak	Weak
24115	Pulpwood or Other Wood Chips	Weak	Weak
33121	Steel Ingot or Semi Finished Shapes	Weak	Weak
33123	Iron or Steel Sheet or Strip	Weak	Weak
26217	Special Industrial Paper	-	-
32412	Ready-mix Cement or Concrete, Dry	-	-
33129	Primary Iron or Steel Products	-	-

Source: “Indicator Dashboard.xlsx”

Note: The table reports Indicator 3 and Indicator 1 designations for the 29 “commodities to consider for exemption revocation,” as presented on tab “Indicator Dashboard” of the “Indicator Dashboard.xlsx” spreadsheet made available by OE staff. Commodities are sorted by Indicator 3 and Indicator 1 designation, respectively, ordered from “strong” to “weak,” and, within designation, by ascending five-digit STCC code. Designations are not available for “Primary Iron or Steel Products” (33129) and “Special Industrial Paper” (26217) because these two commodities receive a signal of “weak” from Initial Screen One and Initial Screen Two, respectively. No data are available in “Indicator Dashboard.xlsx” for “Ready-mix Cement or Concrete” (32412).

60. While OE staff has acknowledged that different indicators will sometimes assign different designations,⁷⁰ they have not provided an economic explanation for the lack of any apparent correlation between R/VC and the metrics of competitive influence that they devised that we demonstrate in Exhibit 2.

4. The proposed Dashboard Indicators are susceptible to false positives

61. The Dashboard Indicators present several flaws that make them subject to finding false positives. Specifically, they: omit significant sources of competition, thereby understating competitive alternatives; rely on comparisons with a flawed benchmark; are likely to penalize commodities for above-average productivity gains achieved by railroads or other procompetitive industry trends; and impose “bright lines” that obscure material differences between commodity metrics or introduce misleading distinctions.

4.1. The proposed Dashboard Indicators are susceptible to false positives due to a myopic focus on rail shipments

62. Because the Proposed Approach examines only shipments that actually took place by rail and does not incorporate data on movements by truck and other modes, the Board may draw incorrect inferences about competitive conditions. Indicators 3 to 6 illustrate this problem. These Indicators measure whether shippers have viable railroad or waterway alternatives within a 30-mile radius of their origins and destinations,⁷¹ yet they incorporate only a simple rule of thumb to determine whether shippers have viable trucking alternatives. Under the current proposal, trucks are assumed to be available as an alternative only

⁷⁰ EP 704 Second Technical Conference, at 50:40–43 (“And while—and while [sic] there may be some interrelationship between indicators, each was chosen to capture different insights reflected in those visualizations.”), 1:01:23–40 (“So it’s certainly possible and only to be expected that different indicators will sometimes return different signals. But by assigning equal weights to each indicator and calculating the average, the approach ensures that no single indicator on the dashboard dominates the others.”).

⁷¹ For each origin-destination pair, the Proposed Approach determines whether there is a port or other station within 30 miles of the origin that travels to a port or other station within 30 miles of the destination. See EP 704 Dashboard Proposal at p. 17.

for shipments with length of haul below 500 miles, regardless of the commodity in question.⁷²

63. However, this 500-mile rule of thumb can lead the Board to erroneous conclusions. Suppose commodities A and B ship between the same origins and destinations. Suppose that both commodities have the same number of CWS shipments in a given year. However, commodity B is more amenable than commodity A to be shipped by truck on distances under 500 miles. Because commodity B has better trucking alternatives for shorter hauls, railroads face more competition for commodity B hauls under 500 miles and so the shipments that railroads win are predominantly those above 500 miles. In this scenario, commodity B will have both a higher proportion of rail shipments traveling over 500 miles and a longer average length of haul in the CWS. Commodity B facing more truck competition may then mean that the Board receives a “strong” designation for commodity B but not for A.

64. In Exhibit 3 below, we provide a numerical illustration of this example showing that Indicator 3 yields a “strong” designation of B but not A. Similarly, if the average length of haul exceeds 1,000 miles for commodity B but not A, Indicator 5 may yield a “strong” designation for B but not A.⁷³ Thus, Indicators 3 and 5 can signal that shipments of commodity B are less competitive than shipments of commodity A when the reality is the opposite; greater competition for shorter hauls may be driving commodity B’s longer rail shipments to be over-represented.

⁷² For example, Indicator 3 measures include the of share carloads on 500+ mile long-haul trips, which implies that these long-haul trips are not as viable for truck competitors. See also, EP 704 Dashboard Proposal at p. 12 (“The “Length of Haul in Most Recent Year Indicator” is given a “weak” designation if the average length of haul for the commodity-specific carload traffic is below 500 miles”), p. 13, fn. 38 (“The metrics assume that 500 miles represents a reasonable distance for direct trucking alternatives, and that 1,000 miles does not, and these mileages do not vary by commodity.”).

⁷³ Indicator 5 yields a “weak” designation if the average length of haul is below 500 miles, a “strong” designation if the average length of haul is over 1,000 miles, and a “moderate” designation if it is in between. See EP 704 Dashboard Proposal at p. 19.

EXHIBIT 3

Indicator 3 can yield a false positive strong designation to a commodity that, because of access to better short-haul trucking alternatives, has longer length of haul in the CWS

	All Carload Traffic ^[1]	Commodity A	Commodity B
Share of tonnage carried by truck			
Hauls under 500 miles	-	65%	85%
Percentages ^[2]			
Longer Haul Carloads	63%	50%	80%
Carloads without Alternate Railroad or Water Option	68%	68%	68%
Carloads without Any Modal Influence ^[3]	47%	34%	54%
Percentage Points Differences			
Longer Haul Carloads	-	-13%	17%
Carloads without Alternate Railroad or Water Option	-	0%	0%
Carloads without Any Modal Influence	-	-13%	7%
Scores ^[4]			
Longer-Haul Carloads	-	0	2
Carloads without Alternate Railroad or Water Option	-	1	1
Carloads without Any Modal Influence	-	0	2
Indicator 3 ^[5]			
Average Score	-	0.33	1.67
Designation	-	Weak	Strong

Source: "Indicator Dashboard.xlsx"

Note: [1] All carload traffic percentages are taken from the "Comp Influence Analysis" tab included in the "Indicator Dashboard.xlsx" spreadsheet made available by OE staff.

[2] Longer haul carloads refer to carloads which are longer haul moves exceeding 500 miles; carloads without alternate railroads or water influence refer to carloads which do not have GMIM modal influences; carloads without any modal influence refer to carloads which are longer haul moves exceeding 500 miles and which do not have GMIM modal influences.

[3] The percentage of carloads without any modal influences for all carload traffic is based on the 2018 CWS. For commodities A and B, it is assumed that the proportion of longer haul carloads (i.e., 500 miles or longer) is the same regardless of whether alternate railroad or water options are available. Therefore, the percentage of carloads without any modal influence is given by $60\% \times 67\% = 40\%$ for commodity A, while for commodity B, it is $80\% \times 67\% = 54\%$.

[4] A score of 0 is obtained if the percentage point difference relative to all carload traffic is lower than or equal to -5%; a score of 1 is obtained if the percentage point difference relative to all carload traffic is within +/- 5%; a score of 2 is obtained if the percentage point difference relative to all carload traffic is greater than or equal to +5%.

[5] The Average Score is calculated as the arithmetic mean of the individual score for longer-haul carloads, carloads without alternate railroad or water option, and carloads without any modal influence. A "weak" designation is assigned if the average score is lower than 0.67; a "moderate" designation is assigned if the average score is between 0.67 and 1.33 (inclusive); a "strong" designation is assigned if the average score is greater than 1.33.

4.2. The proposed Dashboard Indicators rely on comparisons with a flawed benchmark

65. With the exception of Indicator 5, all of the proposed Dashboard's Indicators compare a metric for a particular commodity with the same metric calculated across all commodities.⁷⁴ We applaud the Board's willingness to employ a data-based approach to arriving at thresholds against which commodity-specific metrics can be compared; however, we have concerns as to the details of the implementation in this instance.

66. The all-commodities benchmark comprises a disparate collection of commodities that differ along a number of dimensions, including demand and supply conditions, regulatory constraints, and physical aspects that affect the viability of transportation alternatives.⁷⁵ As currently implemented, the structure of these Indicators obscures whether the level of the Indicator is due to something specific about the commodity at issue or a change in the all-

⁷⁴ Dashboard Indicators that compare a commodity-specific metric to that metric calculated across all carloads includes Dashboard Indicators 1 and 2 (R/VC metric), 3 and 4 (competitive influence metric), 6 (percent change in length of haul), and 7 and 8 (R/VC metric by the presence of a competitive influence). See EP 704 Dashboard Proposal at pp. 18–20.

⁷⁵ The all-commodities benchmark aggregates information across all the commodities in the 2018 CWS that have non-intermodal shipments. Some of these commodities are exempt (e.g., the commodities that are part of this proceeding), others are not (e.g., “Crude Petroleum” (13111), “Grain” (01139), and “Natural gasoline” (13211)). As discussed above, different commodities may have more or less robust trucking alternatives (Exhibit 1), some can also ship by pipeline (e.g., oil, natural gas, and anhydrous ammonia). Commodities also differ along other dimensions: some are solid and other are liquid; some are finished goods while others are intermediate goods; some are hazardous materials, some are not; and so on. See “Indicator Dashboard.xlsx.” See also Schmalensee, Richard L., and Wesley W. Wilson. “Modernizing U.S. freight rail regulation.” *Review of Industrial Organization* 49, no. 2 (2016), pp. 133–159 at p. 136 (“The ICC quickly exempted entire categories of commodities and railroad car types from regulation—including, boxcars, intermodal, shipments of fruits and vegetable carried in refrigerated box cars—and the use of confidential contracts became widespread . . . As a result, only about 8 % in 2000 and 6 % in 2013 of shipments are subject to regulatory review. Higher percentages of carloads, ton-miles, and revenue are subject to regulatory review, which reflects the fact that exempt commodities are typically shipped in smaller quantities than are non-exempt commodities.”), p. 150, fn. 21 (“STB regulates interstate pipelines that carry products other than petroleum, natural gas, and water. In 2000, shippers of anhydrous ammonia successfully challenged the rates charged by a pipeline operator by using the revenue adequacy standard from the Coal Rate Guidelines.”); Liu, Xiang. “Risk comparison of transporting hazardous materials in unit trains versus mixed trains.” *Transportation Research Record* 2608, no. 1 (2017), pp. 134–142 at p. 134 (“Railroads extensively use unit trains (which may contain 50 to 120 loaded hazardous materials cars) to ship crude oil, sometimes hauling approximately 3 million gal of crude oil per train.”).

commodities comparison set. This raises the concern that a commodity may invite a subsequent revocation investigation simply because increases in the competitiveness of market conditions specific to that commodity are not occurring at the same rate as other, comparator, commodities.

4.3. The proposed Dashboard Indicators are likely to penalize commodities for above-average productivity gains achieved by railroads or other procompetitive industry trends

67. Railroads have become more productive since the early 1990s. They have been reducing their costs, as well as carrying more freight on longer haul distances and in higher capacity cars.⁷⁶ Yet these procompetitive changes can translate to higher R/VC, higher RPC, and longer average length of haul.

⁷⁶ FTI V.S. at p. 38 (“First, railroads’ total traffic volumes (as measured by Gross Ton-Miles) increased by 59% from 1992 to 2018 . . . During this period, the overall density of the U.S. rail network has nearly doubled, from 17.8 million to 34.7 million gross ton-miles per route mile. To achieve this traffic growth, railroads are constantly investing to expand the service they provide their customers, as volume grows and their customers’ needs and demand change—and to do so through increasingly more efficient and cost-effective means.”). See also Schmalensee, Richard L., and Wesley W. Wilson. “Modernizing U.S. Freight Rail Regulation.” *Review of Industrial Organization*, vol. 49, no. 2, April 2016, pp. 133–159 at p. 138 (“large railroads shed substantial amounts of low-volume branch lines and restructured labor agreements. These changes led to reductions in fuel, materials and labor costs per ton-mile and longer average lengths of haul, multiple (and contract) shipments, etc. As discussed below, there was also a tremendous consolidation of railroads, which reduces interchange, facilitates coordination, and allows economics of density to be realized.”); Mayo, John W., and David EM Sappington. “Regulation in a ‘deregulated’ industry: Railroads in the post-Staggers era.” *Review of Industrial Organization* 49, no. 2 (2016), pp. 203–227 at pp. 205–206 (“Rail carriers introduced new services and new pricing structures . . . For example, in the wake of Staggers, rail carriers were able to set rates that significantly accelerated the growth of piggybacking, wherein truck trailers are transported on flatbed rail cars . . . and substantial cost reductions and productivity gains were realized . . . Wilson (1997) estimates that costs were ‘up to 40 % lower than they would have been under regulation.’ The productivity gains achieved in the rail industry substantially exceeded the corresponding gains achieved in other transportation industries (including trucking, which also was deregulated in 1980) and in the broader economy.”); Wilson, Wesley W., and Frank A. Wolak. “Freight rail costing and regulation: The uniform rail costing system.” *Review of Industrial Organization* 49, no. 2 (2016), pp. 229–261 at p. 230 (“The impact of these changes on the industry has been dramatic, with significant reductions in operating costs and rail rates, the removal of uneconomic capacity, the introduction of many new services, and greater industry consolidation. Overall, these changes have resulted in a substantial improvement in the financial health of the freight rail sector, which is consistent with the goals of the Staggers Act.”); Martland, Carl D. “Introduction of Heavy Axle Loads.” *Journal of the Transportation Research Forum*, vol. 52, no. 2. (2013), pp. 103–126 at p. 103 (“In 1991, the industry decided to accept cars with 286,000 lb. gross vehicle weight (286k GVW) in interchange service. Since then, more than 90% of all bulk equipment acquired has been

68. The proposed Dashboard Indicators 2, 4, 6, and 8 measure changes in these metrics between 1992 and 2018 for a given commodity and compare them to the average changes that occurred across all commodities between these two years. Commodities that experience increases in R/VC, RPC, or length of haul that exceed the average changes by more than five percent receive “strong” designations from these Indicators.⁷⁷

69. To the extent that, for a given commodity, these above-average changes reflect above-average productivity gains and not a lessening of competition, the proposed Dashboard Indicators would incorrectly flag that commodity as potentially problematic. As FTI explains, for example, a reduction in costs can result in higher R/VC even if the cost reduction is fully passed-through to shippers.⁷⁸ Moreover, as explained above (§ 3.4) increases in car capacity can result in higher RPCs, while trains traveling longer distances would be reflected in higher average length of haul in the CWS.

70. Similarly, the Proposed Approach would penalize above-average improvements in service quality or changes in traffic patterns driven by market

rated for 286k GVW. By 2010, nearly 100% of coal traffic and 30% of general freight moved in 286k loads.”).

⁷⁷ For example, Dashboard Indicator 2 calculates the percentage point change in the average R/VC between 1992 and 2018 for a given commodity and compares it to the percentage point change in average R/VC for all carload traffic. If the commodity-specific change in average R/VC is less than the change for all carloads by more than five percent, the mean metric is designated as “weak” (and given a score of zero). If it is within five percent, then it is designated as “moderate” (and given a score of one), and if it is greater than the change for all carload traffic by more than five percent, it is designated as “strong” (and given a score of two). A similar comparison and categorization is carried out for the 25th, 50th, and 75th percentiles, as well. The four scores for the mean and the 25th, 50th, and 75th percentile comparisons are averaged to obtain a Dashboard Indicator designation for a particular commodity that is “weak” if the averaged value is below 0.67, “moderate” if it is between 0.67 and 1.33 (inclusive), and “strong” if greater than 1.33. Dashboard Indicator 6 measures the change in a commodity’s average haul length between 1992 and 2018 and compares it to the change for all carload traffic. If the commodity’s change in average haul length is greater than the change for all carload traffic by more than five percent, it is designated as “strong.” If the change in haul length is within five percent of that for all carload traffic, it is designated as “moderate,” and if the change in haul length is less than the change for all carload traffic by more than five percent, it is designated as “weak.” See EP 704 Dashboard Proposal at pp. 10–12, 18–20.

⁷⁸ See FTI V.S. at pp. 40–41 for an illustration.

forces (e.g., shipper consolidation or relocations) that result in above-average increases in R/VC, RPC, or length of haul.⁷⁹

4.4. The proposed Dashboard Indicators impose “bright lines” that obscure material differences between commodity metrics or introduce misleading distinctions

71. The Initial Screens and Dashboard Indicators categorize commodities according to “weak,” “moderate,” or “strong” (scored as “0,” “1,” or “2”) designations that are based on rigid thresholds. This approach draws “bright lines” between commodities that, in some cases, obscure material differences between commodities and, in other cases, introduce misleading distinctions. In so doing, the approach can lead to erroneous conclusions, potentially leading to a preponderance of false positives.

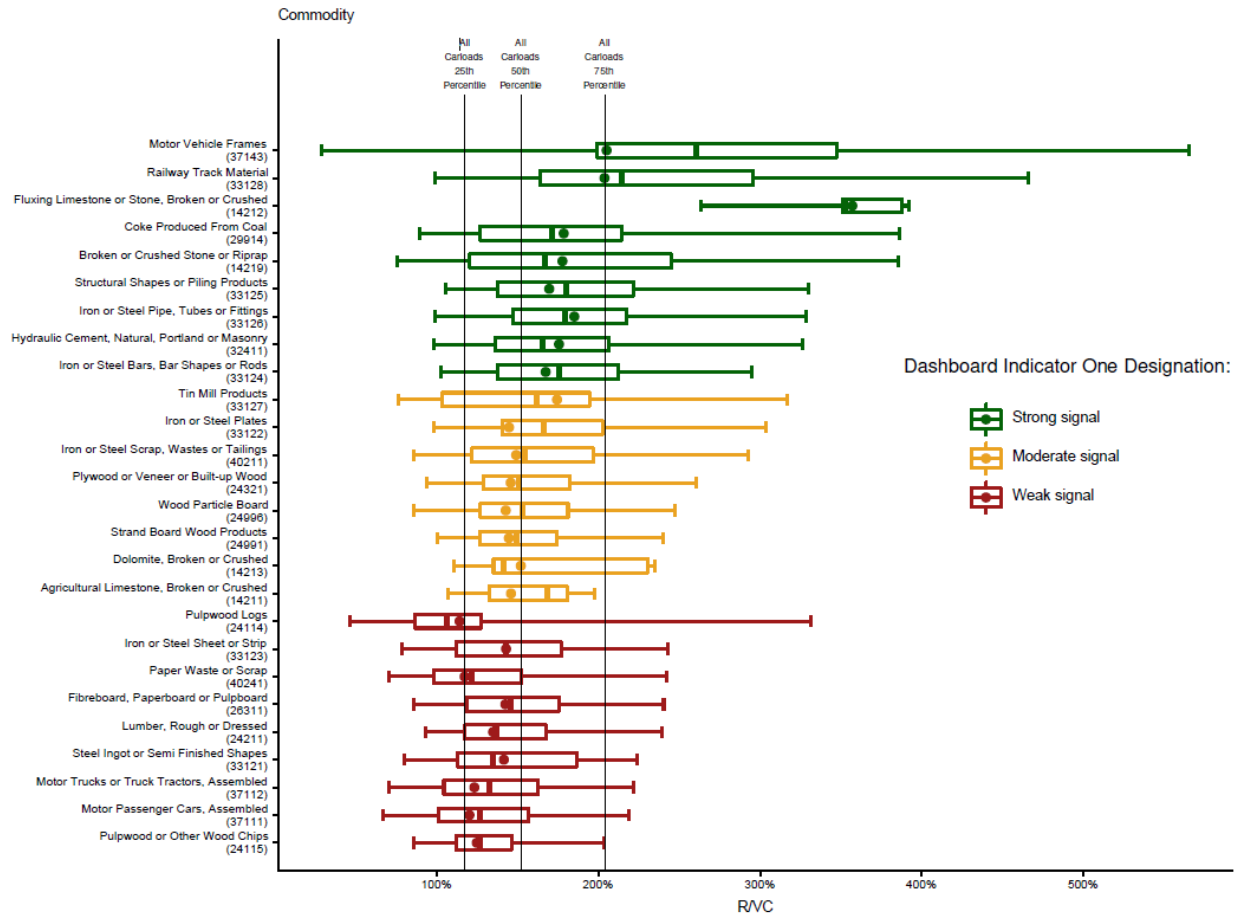
72. Consider Exhibit 4 below, where we visualize the distributions of R/VCs for 26 out of the 29 “commodities to consider for exemption revocation” for which data is available in the 2018 CWS.⁸⁰ We use a “box-and-whiskers” plot to describe, for each commodity, (a) the 5th and 95th percentiles of the R/VC distribution (the left and right-hand edges of the whiskers, respectively), (b) the 25th and 75th percentiles (the left and right-hand edges of the boxes, respectively), and (c) the mean and median (the dots and vertical lines in the middle of the boxes, respectively). In essence, in Exhibit 4 we present a visual rendition of Dashboard Indicator 1. Accordingly, we color-coded commodities based on the designations assigned to them by Dashboard Indicator 1—green for “strong,” yellow for “moderate,” and red for “weak.”

⁷⁹ As explained above (§ 2.2) price increases explained by quality improvements may be procompetitive. See also EP 704 First Technical Conference at 7:24–7:51 (“The Board observed that for coke and for the steel commodities there had been a fundamental technological change in the industry. The steel manufacturers moved from reliance on traditional blast furnaces located in the Great Lakes region to electric arc furnaces located in the south. The Board observed similar technological changes in cement lines. Today there are fewer but larger cement factories, implying that many cement movements traveled longer distances than before.”).

⁸⁰ “EP 704 Dashboard Proposal, at p. 65. “Primary Iron or Steel Products” (33129) and “Special Industrial Paper” (26217) are not included because these two commodities receive a signal of “weak” from Initial Screen One and Initial Screen Two, respectively. No data are available in “Indicator Dashboard.xlsx” for “Ready-mix Cement or Concrete” (32412). See EP 704 Dashboard Proposal, at p. 65. See also “Indicator Dashboard.xlsx.”

EXHIBIT 4

R/VC Distribution for Potential Revocation Commodities, sorted by Dashboard Indicator 1 designations



Source: "Indicator Dashboard.xlsx"

Note: R/VC is calculated by dividing "Total_Unmasked_Rev" by "Total_VC" from tab "AnalysisWaybills_NoIm_2018" of "Indicator Dashboard.xlsx." The box plots describe the distribution of R/VCs for each commodity. The left whisker edges mark the 5th percentiles, and the right whisker edges mark the 95th percentiles. The length of each box demarks the 25th to 75th R/VC percentiles. The vertical line in the middle of each box marks the median, while the dot marks the mean. The commodities are ordered by Dashboard Indicator 1 designation, then in descending order by 95th percentile. Dashboard Indicator 1 compares each commodity's R/VC metrics (25th percentile, 50th percentile, 75th percentile, and mean) to its corresponding metric for all carloads. The 25th percentile (117.4%), 50th percentile (152.2%), 75th percentile (204.0%), and mean (150.7%) of R/VC for all carloads are calculated using all carload traffic for all commodities, including but not limited to the 26 commodities presented in this exhibit. A mean dropline is not displayed due to its proximity to the 50th percentile for all carloads. A metric is designated as "strong" (score of 2) if it is more than 5% above the all carloads metric; "moderate" (score of 1) if it is within 5% (inclusive) of the all carloads metric; and "weak" (score of 0) if it is more than 5% below the all carloads metric. The scores of the four metrics (25th percentile, 50th percentile, 75th percentile, and mean) are then averaged for each commodity. A commodity is categorized as "strong" if the average score is above 1.33; "moderate" if it is between 0.67 and 1.33 (inclusive); and "weak" if it is below 0.67. "Primary Iron or Steel Products" (33129) and "Special Industrial Paper" (26217) are not included because these two commodities receive a signal of "weak" from Initial Screen One and Initial Screen Two, respectively. No data are available in "Indicator Dashboard.xlsx" for "Ready-mix Cement or Concrete" (32412).

73. Setting aside our hesitation to draw conclusions without statistical validation, the “box-and-whiskers” plots would illustrate that the “weak,” “moderate,” and “strong” designations impose artificial bright lines on the data.

- There is substantial overlap between the distribution of R/VC, regardless of their designations. For example, the majority of R/VCs observed in the data fall between 100 and 200 percent.
- The distribution of R/VC are close to one another for most of the commodities, so that even if two commodities have different designations, their distributions can be quite similar. For example, “Dolomite, Broken or Crushed” (14231) and “Iron or Steel Plates” (33122) both have a “moderate” designation, while “Iron or Steel Bars, Bar Shapes or Rods” (33124) has a “strong” designation. Yet the degree of overlap between their R/VC distributions is substantial.
- The distributions of some of the commodities that share the same designation can be quite different. For example, “Motor Vehicle Frames” (37143), “Fluxing Limestone or Stone, Broken or Crushed” (14212) and “Iron or Steel Bars, Bar Shapes or Rods” (33124) all have a “strong” designation even though their R/VC distributions are fairly different.

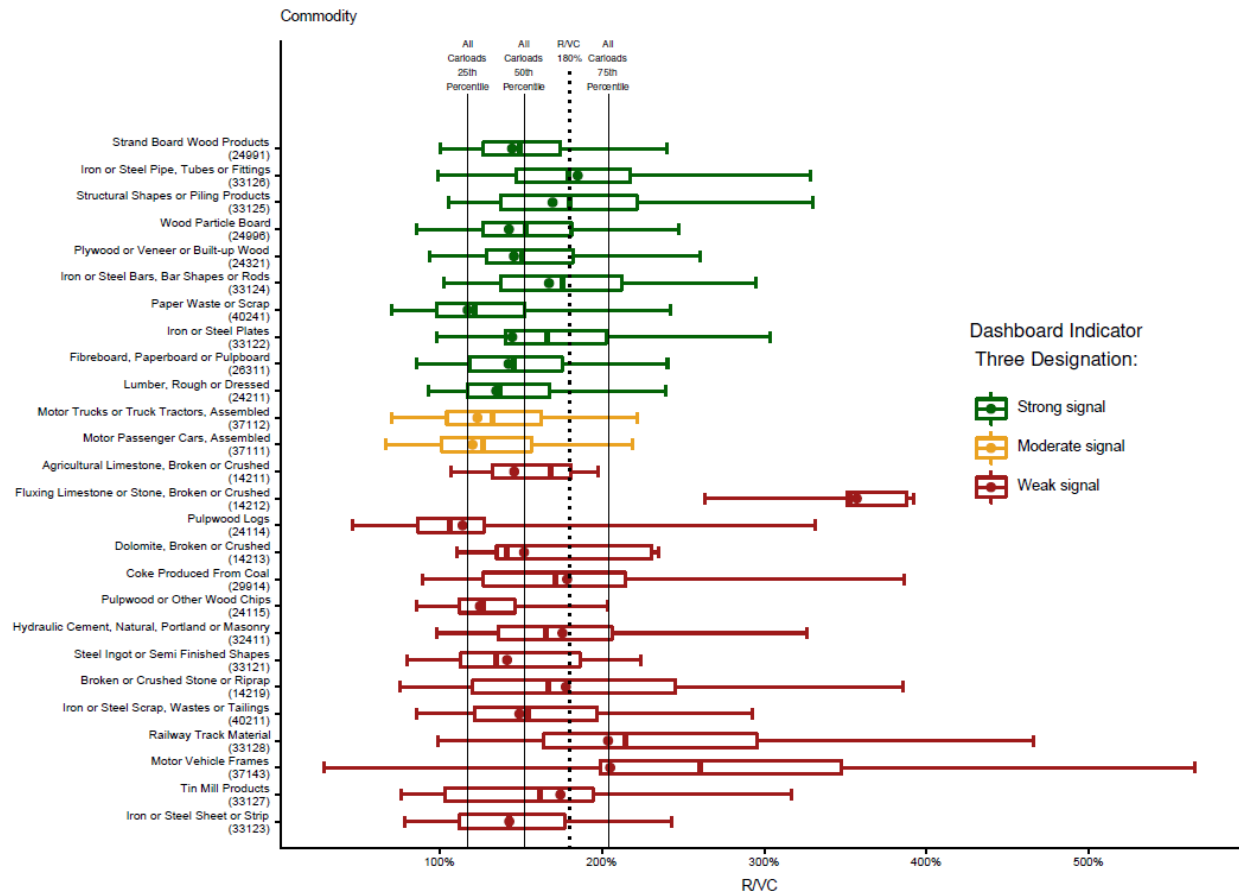
74. Imposing bright lines on the data is also inappropriate when the metrics on which they are based have no clear interpretation for the purpose of evaluating competitive conditions. In Exhibit 5 below we present once again the R/VC “box-and-whiskers” plots shown above. This time, however, we sort them based on Indicator 3 designations (which draw bright lines with respect to the extent of competitive influence), and, within designation, by the percentage of carloads without other railroad or waterway influence.⁸¹ We also indicated with a dashed line the location of the jurisdictional threshold of R/VC equal to 180 percent.⁸²

⁸¹ As discussed above, there is no correlation between the extent of competitive influence (as measured by Indicator 3) and the level of R/VCs (as measured by Indicator 1). See § 3.4.

⁸² The Board determines the presence of “market dominance” in rate reasonable cases by assessing the share of traffic with R/VCs greater than 180 percent. See EP 704 Dashboard Proposal, at p. 3 (“The Board stated that its preliminary assessment was supported by the fact that CCWS rate data for these commodities showed a substantial increase in revenue from potentially captive traffic (i.e., traffic with a revenue-to-variable cost (R/VC) ratio of 180% or more, the threshold ratio for market dominance determinations in rate reasonableness cases) over the previous 22 years.”).

EXHIBIT 5

R/VC distribution for Potential Revocation Commodities, sorted by Dashboard Indicator 3 designations



Source: "Indicator Dashboard.xlsx"

Note: R/VC is calculated by dividing "Total_Unmasked_Rev" by "Total_VC" from tab "AnalysisWaybills_NoIm_2018" of "Indicator Dashboard.xlsx." The box plots describe the distribution of R/VCs for each commodity. The left whisker edges mark the 5th percentiles, and the right whisker edges mark the 95th percentiles. The length of each box demarks the 25th to 75th R/VC percentiles. The vertical line in the middle of each box marks the median, while the dot marks the mean. The commodities are ordered by Dashboard Indicator Three designation, then in descending order by percent of shipments with no railroad or water carrier influence identified. According to Dashboard Indicator 3, each commodity's metric (percent of shipments with haul length exceeding 500 miles, percent of shipments with no railroad or water carrier influence identified, and percent of shipments meeting both prior criteria) is compared to its corresponding metric for all carloads. The percent of shipments with haul length exceeding 500 miles (63.0%), percent of shipments no railroad or water carrier influence identified (67.5%), and percent of shipments meeting both prior criteria (47.3%) for all carloads was calculated using all carload traffic for all commodities, including but not limited to the 26 commodities in the sample. A metric is designated as "strong" (score of 2) if it is more than 5% above the all carloads metric; "moderate" (score of 1) if it is within 5% (inclusive) of the all carloads metric; and "weak" (score of 0) if it is more than 5% below the all carloads metric. The scores of the four metrics (25th percentile, 50th percentile, 75th percentile, and mean) are then averaged for each commodity. A commodity is categorized as "strong" if the average score is above 1.33; "moderate" if it is between 0.67 and 1.33 (inclusive); and "weak" if it is below 0.67. "Primary Iron or Steel Products" (33129) and "Special Industrial Paper" (26217) are not included because these two commodities receive a signal of "weak" from Initial Screen One and Initial Screen Two, respectively. No data are available in "Indicator Dashboard.xlsx" for "Ready-mix Cement or Concrete" (32412).

75. Inspection of this "box-and-whiskers" chart demonstrates no clear relationship between R/VCs and competitive conditions, as measured by the proposed Dashboard Indicators. According to the Indicator 3 designations, "Iron or Steel Sheet or Strip" (33123) and "Fibreboard, Paperboard, or

Pulpboard” (26331) are subject to substantially different levels of competitive influence, yet their R/VC distributions are effectively identical. In contrast, while “Fluxing Limestone or Stone, Broken or Crushed” (14212) and “Iron or Steel Sheet or Strip” (33123) are subject to similar levels of competitive influence based on Indicator 3 designations, their R/VC distributions do not overlap. Finally, there does not appear to be an intuitive correlation between the extent of competitive influence and the proportion of shipments with R/VC above 180 percent, the jurisdictional threshold above which the Board can review rates charged to shippers.

76. In sum, imposing bright-line designations, as the proposed Dashboard Indicators do, is at odds with the goal stated by OE staff of aggregating and accurately summarizing information from the data visualizations,⁸³ in particular when even visualization of the data suggests that these bright lines do not exist or convey no meaningful information about competitive conditions.

77. Bright-line tests are also at odds with best practices used by competition economists. Consider for example the HHI screen we discussed before (§ 2.3). While the HHI screen relies on a threshold for the level of HHI post-merger and the change in HHI due to the merger, these thresholds are not used to draw bright lines. Regulators take into account whether the levels and changes in HHI are near or far from those thresholds. Typically, a level or change in HHI that is just above the threshold is less likely to draw as much scrutiny as one significantly above it, representing a potentially greater basis for concern about possible reductions in competition.

78. In the second technical conference, the OE staff stated that the designations should be given less weight than the visualizations.⁸⁴ We think that the OE staff

⁸³ EP 704 Second Technical Conference, at 46:16–47:21 (“What is OE intending to measure with the comparison of upper and lower quartile mean and median commodity-specific and carload RVCs? . . . This is a good example of what mean when I say the dashboards are trying to aggregate and summarize information from the data visualizations. One can visually inspect the violin plots and see the side-by-side comparisons. For example, this slide shows a simple violin plot where the quartiles for that commodity and for the all carload comparison and mark. From this, one can easily visualize how the distribution of carloads on an RVC basis has changed over time. For the purposes of the competitive influence indicators, the approach tries to represent this relationship, this pattern that you see here, by numericizing these side-by-side comparisons at the quartile and the mean level and importing those calculations into the indicator dashboards. Thus, the indicator dashboards can accurately be said to aggregate and summarize information drawn from the data visualizations.”).

⁸⁴ For example, see EP 704 Second Technical Conference, at 54:24–29 (“As discussed earlier, the dashboards were intended to provide the Board and the public with a quick and

and the Board should strip the use of the “weak,” “moderate,” and “strong” designations from the Proposed Approach. If they opt to retain them, we urge the OE staff and the Board to clarify that these designations do not impose bright lines on the underlying data and to explain how they would interpret them.

79. We also urge the OE staff and the Board to reconsider how the designations are implemented. As currently proposed, the designations rely on rigid thresholds that lack a statistical or economic basis—in the words of the OE staff they are based on common sense and introspection.⁸⁵ As such, these thresholds do not take into account the uncertainty that sampling introduces in the data, especially when the number of observations in the data is limited. Replacing the current rigid thresholds with accepted statistical methods would ensure that such uncertainty is taken into account appropriately and does not lead to misleadingly labeling a commodity as “strong,” potentially leading to a preponderance of false positives.⁸⁶

5. Conclusion

80. We commend the Board and the OE staff for exploring a data-based tool that may assist with evaluating class exemption and revocation using readily available data. The Proposed Approach is an important step toward adopting

digestible summary of the information reflected in the data visualizations. We recognize that an averaging approach like the one we adopted could either illumine or obscure potentially relevant information, which, again, highlights a consistent theme. One should not place too much weight on the individual indicators or the overall dashboard signal.”).

⁸⁵ EP 704 Second Technical Conference, at 1:45:09–23 (“We are not, as I said, using inferential predictive statistics here. So 5 percent was just a common-sense, introspective position that it was different from the all carload value.”).

⁸⁶ All Indicators, except for Indicator 5, compare a commodity of interest with an average across all commodities included in the CWS based on thresholds of plus or minus five percent. Deviations from the benchmark in excess of five percent lead to a “strong” or “weak” designation. See EP 704 Dashboard Proposal at pp. 18–20. These thresholds, however, do not account for sampling variation and small sampling sizes. Taking these considerations into account (as statistical tests would) may well indicate that two values have to differ by more (or less) than five percent in order to be considered statistically different from one another. For example, see DeGroot, Morris H. and Mark J. Schervish, *Probability and Statistics Fourth Edition* (Addison-Wesley, 2012), pp. 1–834 at p. 587 (“It is very common to compare two distributions to see which has the higher mean or just to see how different the two means are.”); see formula in DeGroot, Morris H. and Mark J. Schervish, *Probability and Statistics Fourth Edition* (Addison-Wesley, 2012), pp. 1–834 at p. 588.

regulatory best practices. Nonetheless, we have reservations about its specifics and its usefulness as a tool to aid the Board in its decision.

81. First, no economic basis or statistical validation has been provided for using the metrics in the Proposed Approach in the evaluation of class exemption and revocation. Moreover, the Proposed Approach does not have important characteristics demonstrated by commonly used and accepted competition screens. Second, even as a data visualization tool, the Proposed Approach fails to describe relevant data, does not examine viable substitutes available to shippers, does not appropriately account for limitations of the data it uses, and does not rely on metrics with a clear interpretation for the purpose of evaluating competitive conditions. Third, its Dashboard Indicators are susceptible to false positives.

82. Given these conceptual, data, and implementation shortcomings of the Proposed Approach, we suggest that it not be used as anything more than an initial, descriptive data visualization tool. Without substantial improvements, statistical validation, and an economic basis to aid interpretation and the drawing of conclusions, the Proposed Approach is uninformative as to the conclusions that may be drawn from the detailed case-specific analyses that are needed in the context of exemption and revocation proceedings, nor is it appropriate as a competitive screen.

6. Appendix

83. Exhibit 6 describes the share of tonnage transported by trucks across commodities classified by the two-digit SCTG commodity code. The sample is not filtered by NAICS codes, and, consequently, the exhibit summarizes a more aggregated sample of shipped commodities.

84. The aggregated truck shipment sample represented in Exhibit 6 results in tonnage shares that are similar to those reported in Exhibit 1, particularly for shipments hauled fewer than 500 miles. Within the 500-mile range, differences range from less than one percent to 15 percent.⁸⁷ Moreover, the data still

⁸⁷ The shares of tonnage share shipped by trucks for shipments hauled fewer than 500 miles in the filtered sample are: 77 percent for “crushed or broken stone or rip rap,” 67 percent for “coke produced from coal,” 87 percent for “primary iron or steel products (plates, pipes, and

support that trucks ship a significant tonnage share on longer hauls, e.g., SCTG categories that include hydraulic cement and primary iron or steel products.

85. The biggest differences between the exhibits are for “crushed or broken stone or rip rap” tonnage shares.⁸⁸ The tonnage shares for the filtered sample are 77 percent for hauls less than 500 miles, 81 percent for hauls between 500 and 1,000 miles, and 99 percent for hauls longer than 1,000 miles.

EXHIBIT 6

Share of tonnage of different commodities carried by truck across different distances (no NAICS filter)

Commodity [1] [2]	<500 Mile Haul	>=500 to <1,000 Mile Haul	>=1,000 Mile Haul
1. Crushed or Broken Stone or Rip Rap [3]	91.4%	17.1%	59.2%
2. Coke Produced From Coal	67.2%	37.7%	24.0%
3. Primary Iron or Steel Products (Plates, Pipes, and Rods)	87.9%	68.2%	50.2%
4. Hydraulic Cement	96.4%	69.8%	71.8%
5. Iron or Steel Scrap, Wastes, or Tailings	70.4%	28.6%	28.4%

Source: 2017 Commodity Flow Survey

Note: [1] A sensitivity excluding company-owned trucking from the sample was calculated. Truck market share decreased by a range of 3.6 percent to 13.9 percent for <500 mile hauls. The minimum decrease occurred for primary iron or steel products (plates, pipes, and rods), which had a market share of 84.3 percent for <500 mile hauls and the maximum decrease occurred for coke produced from coal, which had a market share of 53.2 percent for <500 mile hauls. The market shares are unchanged for hauls >=500 miles, as company trucks are largely used for shorter hauls. See our workpapers.

[2] Each STCC commodity code identified in the EP 704 Dashboard Proposal is matched to the nearest SCTG code in the Commodity Flow Data. STCC No. 14-2, “crushed or broken stone or rip rap” uses SCTG No. 12, “gravel and crushed stone;” STCC No. 29-914, “coke produced from coal” uses SCTG No. 19, “other coal and petroleum products not elsewhere classified;” STCC No. 33-12, “primary iron or steel products (plates, pipes, and rods)” uses SCTG No. 32, “base metal in primary or semi-finished forms and in finished basic shapes;” STCC No. 32-4, “hydraulic cement” uses SCTG No. 31, “non-metallic mineral products;” STCC No. 40-211, “iron or steel scrap, wastes, or tailings” uses SCTG No. 41, “waste and scrap (excludes of agriculture or food).”

[3] Less than 2.0% of crushed or broken stone or rip rap is shipped on >500 mile hauls, which includes rail shipments.

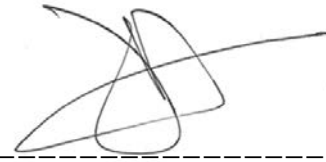
rods),” 97 percent for “hydraulic cement,” and 84 percent for “iron or steel scrap, wastes, or tailings.” See Exhibit 1.

⁸⁸ Exhibit 1 maps the STCC No. 14-2, “crushed or broken stone or rip rap” to SCTG No. 12, “gravel and crushed stone,” and within that SCTG code, it filters to the NAICS codes 327, “nonmetallic mineral product manufacturing” or 4233, “lumber and other construction materials.”

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct. I further certify that I am qualified and authorized to sponsor and file this testimony.

Executed on January 29, 2021

A handwritten signature in black ink, consisting of a large, stylized 'J' and 'A' intertwined, with a long horizontal stroke extending to the right.

John Asker

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct. I further certify that I am qualified and authorized to sponsor and file this testimony.

Executed on January 29, 2021

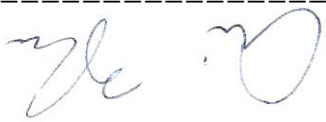


Kostis Hatzitaskos

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct. I further certify that I am qualified and authorized to sponsor and file this testimony.

Executed on January 29, 2021



Aviv Nevo

CONTACT INFORMATION	Department of Economics Bunche Hall 8363 405 Hilgard Avenue, UCLA Los Angeles, CA 90095-1477 USA	<i>E-mail:</i> johnasker@econ.ucla.edu johnasker@gmail.com <i>Web:</i> http://www.johnasker.com/
RESEARCH INTERESTS	Industrial Organization, Antitrust	
POSITIONS HELD	University of California, Los Angeles Armen A. Alchian Chair in Economic Theory Professor of Economics	7/2018 - present 9/2014 - present
	National Bureau of Economic Research Research Associate Faculty Research Fellow	4/2012 - present 4/2009 - 4/2012
	Columbia University Professor of Economics Visiting Professor of Economics	1/2019 - 6/2019 7/2018 - 1/2019
	New York University (Stern School of Business) Associate Professor of Economics Assistant Professor of Economics	9/2010 - 1/2015 9/2004 - 9/2010
	Other Board member, Industrial Organization Society (IOS) Senior Advisor, Cornerstone Research Senior Research Scholar, Yale Law School Chief of Staff to the Parliamentary Secretary to the P.M., Australia Leverett House, Harvard University, Resident Tutor in Economics Centre for International Economics, Canberra, Economist Reserve Bank of Australia, Cadet	1/2019 - present 3/2014 - present 7/2012 - 6/2013 3/2006 - 5/2006 2001 - 2004 3/1999 - 6/1999 12/1997 - 12/1998
EDUCATION	Harvard University, Ph.D. Australian National University, Bachelor of Economics (1st Class Hons & Univ. Medal)	2004 1999
EDITORIAL SERVICE	Co-Editor, American Economic Journal: Microeconomics Editor, RAND Journal of Economics Editor, Journal of Industrial Economics Associate Editor, RAND Journal of Economics Associate Editor, International Journal of Industrial Organization	9/2014 - present 3/2013 - 9/2014 6/2010 - 2/2013 1/2012 - 2/2013 8/2009 - 1/2012

- [21] Asker, John, Chaim Fershtman, Jihye Jeon, and Ariel Pakes (2020), A Computational Framework for Analyzing Dynamic Auctions: The Market Impact of Information Sharing, *RAND Journal of Economics*, 51(3), 805-839.
Robert F. Lanzillotti Prize for Best Paper in Antitrust Economics, 2017
- [20] Asker, John and C. Scott Hemphill (2020), A Study of Exclusionary Coalitions: The Canadian Sugar Combination, 1887–1889, *Antitrust Law Journal*, 83(1), 99-126.
- [19] Asker, John and Heski Bar-Isaac (2020), Vertical Information Restraints: Pro- and Anti-Competitive Impacts of Minimum Advertised Price Restrictions, *Journal of Law and Economics*, 63(1), 111-148.
- [18] Asker, John, Allan Collard Wexler and Jan De Loecker (2019), (Mis)Allocation, Market Power and Global Oil Extraction, *American Economic Review*, 109(4), 1568-1615.
- [17] Asker, John and Heski Bar-Isaac (2018), Advertising and Related Restraints, *CPI Antitrust Chronicle*, January 2018.
- [16] Asker, John (2016), Diagnosing Foreclosure due to Exclusive Dealing, *Journal of Industrial Economics*, 64(3), 375-410.
Concurrences Antitrust Writing Awards - Best Academic Paper, Economics, 2017
- [15] Asker, John, Joan Farre-Mensa and Alexander Ljungqvist (2015), Corporate Investment and Stock Market Listing: A Puzzle?, *Review of Financial Studies*, 28(2), 342-390.
- [14] Asker, John and Selvin Akkus-Clemens (2014), Tomorrow's antitrust rulings on conditional pricing, *Monopoly Matters*, 12(1), 8-12.
- [13] Asker, John, Allan Collard Wexler and Jan De Loecker (2014), Dynamic Inputs and (Mis)Allocation, *Journal of Political Economy*, 122(5), 1013-1063.
- [12] Asker, John and Heski Bar-Isaac (2014), Raising Retailers' Profits: On Vertical Practices and the Exclusion of Rivals, *American Economic Review*, 104(2), 672-686.
Jerry S. Cohen Memorial Fund Writing Award for Antitrust Scholarship, Best Economics Article of 2014
- [11] Asker, John and Shannon Seitz (2013), Vertical Practices and the Exclusion of Rivals Post Eaton, *CPI Antitrust Chronicle*, July 2013.
- [10] Asker, John (2010), A Study of the Internal Organization of a Bidding Cartel, *American Economic Review*, 100(3), 724-762.
Association of Competition Economics Prize: Best Paper in Competition Economics published in 2010.
Reprinted in Greene, William (Ed.), *Applied Econometrics* (Volume III), Routledge, 2016.
- [9] Asker, John and Alexander Ljungqvist (2010), Competition and the Structure of Vertical Relationships in Capital Markets, *Journal of Political Economy*, 118(3), 599-647.
- [8] Asker, John and Mariagiovanna Baccara (2010), Subsidies, Entry and the Distribution of R&D Investment, *International Journal of Industrial Organization*, 28(3), 254-270.

- [7] Asker, John and Estelle Cantillon (2010), Procurement When Both Price and Quality Matter, *RAND Journal of Economics*, 41(1), 1-34.
- [6] Asker, John (2010), Bidding Rings, *New Palgrave Dictionary of Economics Online*, 2010.
- [5] Asker, John (2010), Leniency and Post-Cartel Market Conduct: Preliminary Evidence from Parcel Tanker Shipping, *International Journal of Industrial Organization (Papers and Proceedings of E.A.R.I.E. Conference 2009)*, 28(4), 407-414.
- [4] Asker, John (2008), Subsidizing (and Taxing) Business Procurement, *Journal of Public Economics*, 92(7), 1630-1643.
- [3] Asker, John and Estelle Cantillon (2008), Properties of Scoring Auctions, *RAND Journal of Economics*, 39(1), 69-85.
- [2] Asker, John, Brit Grosskopf, Carl N. McKinney, Muriel Niederle, Alvin E. Roth and Georg Weizsacker (2004), Teaching Auction Strategy using Experiments administered via the Internet, *Journal of Economic Education*, 35(4), pp 330-342, 2004.
- [1] Asker, John (2000), Bidding up, Buying out and Cooling-off: An examination of auctions with withdrawal rights, *Economic Theory*, v16(3), 585-611.
Reprinted in Cason, T. and C. Noussair (Eds), *Advances in Experimental Markets*, Springer-Verlag, 2001.

WORK
IN PROGRESS

- [4] Asker, John, Mariagiovanna Baccara, and SangMok Lee (2020), Patent Auctions and Bidding Coalitions: Structuring the Sale of Club Goods, mimeo.
- [3] Asker, John, Chaim Fershtman, and Ariel Pakes (2021), Competition, Learning and Equilibrium in Pricing Games played by Artificial Intelligence, mimeo.
- [2] Asker, John, Allan Collard Wexler, and Jan De Loecker (2021), The Welfare Impact of Market Power: The OPEC Cartel, mimeo.
- [1] Asker, John, and Volker Nocke (2021), Collusion, Mergers and other Antitrust Issues, mimeo.

OTHER
WRITING

- [4] Contributor: American Bar Association (2017), *Proving Antitrust Damages: Legal and Economic Issues*, 3rd Edition, American Bar Association, ISBN: 9781634259750.
- [3] Contributor: Panel discussion on advanced empirical methods, *Annual Proceedings of the 42nd Fordham Competition Law Institute Conference on International Antitrust Law and Policy 2015*, ed. James Keyte (2016), Fordham Competition Law Institute.
- [2] Review of: *The Economics of Collusion: Cartels and Bidding Rings*, by Robert C. Marshall and Leslie M. Marx, *Concurrences* N° 2-2013, (2013), art. N° 52089, p. 224.
- [1] Review of: *An Introduction to Auction Theory* by Flavio M. Menezes and Paulo K. Monteiro, *Economic Record*, (2007), 83, pp.104-05.

AMICUS BRIEFS

[4] *Amicus Curiae* Brief of Economists and Professors in Support of Petitioner for Writ of Certiorari in *Motorola Mobility LLC vs. Au Optronics Corp.*, US Supreme Court, Case No. 14-1122, filed 4/16/2015.

[3] *Amicus Curiae* Brief of Economists and Professors in Support of Appellant in *Motorola Mobility LLC vs. Au Optronics Corp.* 7th Circuit Court of Appeals, Case No. 09-cv-6610, filed 12/17/2014.

[2] *Amicus Curiae* Brief of Economists and Professors in Support of Appellant's Petition for Rehearing En Banc in *Motorola Mobility LLC vs. Au Optronics Corp.* 7th Circuit Court of Appeals, Case No. 09-cv-6610, filed 04/24/2014.

[1] *Amicus Curiae* Brief of 118 Law, Economics, and Business Professors and the AAI in Support of Petitioners in *Federal Trade Commission v. Watson Pharmaceuticals*, US Supreme Court, Case No. 12-416, filed 1/29/2013.

TEACHING

PhD Students: (Graduation Year, Institution, Initial Placement)

Ali Yurukoglu (2009, NYU Stern, Stanford Graduate School of Business)

Matthew Grennan (2010, NYU Stern, U. Toronto, Rotman School of Business)

Anna Ingster (2010, NYU FAS, Auburn University)

Hong Luo (2011, NYU Stern, Harvard Business School)

Joan Farre Mensa (2011, NYU FAS, Harvard Business School)

Lai Jiang (2012, NYU Stern, UBC Sauder School of Business)

Selvin Akkus-Clemens (2013, NYU Stern, Bates White LLC)

Bernardo S. da Silveira (2013, NYU FAS, Washington U. St Louis Olin School of Business)

Krzysztof Wozniak (2013, NYU Stern, FRB Board of Governors)

Jason Hong (2014, NYU Stern, U.S.D.O.J. Antitrust Division)

Sandy Yu (2015, NYU Stern, Post-Doc UC Berkeley Haas School of Business)

Joseph Kuehn (2015, UCLA, California State East Bay)

Laura Nurski (2015, KU Leuven, KBC Bank N.V.)

Dennis Kuo (2016, UCLA, Institute for Defense Analyses)

Malika Krishna (2016, NYU Stern, Cornerstone Research)

Tobias Salz (2016, NYU FAS, Columbia University)

Jihye Jeon (2017, NYU Stern, Boston University)

Wenshu Guo (2018, UCLA, Jinan University)

Vasily Korovkin (2018, UCLA Anderson, CERGE-EI)

Richard Domurat (2018, UCLA, Analysis Group)

Alec Davidson (2019, UCLA, Uber)

Ryan Martin (2019, UCLA, Bank of Canada, Research Department)

Pavel Andreyanov (2019, UCLA, National Research University Higher School of Economics)

Renato Giroldo (2019, UCLA, Cornerstone Research)

Ksenia Shakhgildyan (2019, UCLA, Cornerstone Research)

El Hadi Caoui (2019, UCLA, University of Toronto Rotman/Mississauga)

Felipe Carrera (2020, UCLA, Reed College)

Other

NYU Stern ExecEd J-15, 'Great Professor' Award

2014

GRANTS

NSF: “Market power and resource allocation” (with Allan Collard Wexler and Jan De Loecker)
\$448,875. 2016 - 19
US-Israel Binational Science Foundation: “Collusion in auctions” (with Chaim Fershtman and Ariel
Pakes), \$80,400 2013 - 17

Kostis Hatzitaskos, Ph.D.

Vice President

Cornerstone Research
181 West Madison St., Fl. 43 • Chicago, IL 60602-4558
Direct 312.345.7311 • Fax 312.345.7399
kostis@cornerstone.com

EDUCATION

Ph.D., Economics and M.A., Statistics	University of California at Berkeley	2001–2007
B.Sc., Economics, <i>first class</i>	University of Warwick, UK	1998–2001

PROFESSIONAL EXPERIENCE

Cornerstone Research, Vice President 2007–Today
Chicago, IL

- Co-head of the firm’s Antitrust practice (2019–today).
- Focuses on antitrust matters, with an emphasis on merger investigations.
- Submitted economic white papers to DOJ, FCC, MOFCOM, DG COMP, and other competition agencies on behalf of merging parties.
- Consulted for DOJ, FTC, and international competition agencies.
- Lead support roles for the government on *U.S. v. Aetna/Humana* and *FTC v. Wilhelmsen/Drew*; and for merging parties in *State of New York et al. v. T-Mobile/Sprint* and *FTC v. Sysco/US Foods*.
- Civil litigation experience across class certification, liability, and damages for antitrust matters and intellectual property matters, including the *Apple v. Samsung* cases and the landmark *Microsoft v. Motorola* trial regarding Reasonable and Non-Discriminatory royalty rates.
- Experience across multiple industries, including high-tech consumer products, semiconductors, information technology, telecommunications, health insurance, healthcare, distribution, shipping, food and agriculture, renewable energy, and financial services.

AWARDS AND SERVICE

- American Bar Association *Antitrust Source* editorial board, 2018–Today
- Who’s Who Legal Competition: Future Leaders – Economists, 2017–Today

REPRESENTATIVE CASE EXPERIENCE

1. *FTC v. Methodist/St. Francis*, 2020. Supported the FTC in evaluating the proposed merger. Merger abandoned after FTC initiated litigation.
2. *Clippers/Forum* merger, 2020. Supported John Asker in evaluating potential competitive effects on behalf of merging parties. Merger cleared without a second request.

3. *T-Mobile/Sprint* merger, 2014, 2017–2019. With John Asker and Tim Bresnahan, analyzed competitive effects, filed numerous white papers, and presented to agencies in FCC, DOJ, and State AG investigations on behalf of merging parties. Lead support for Tim Bresnahan at CPUC hearings and for John Asker in litigation at SDNY against a group of State AGs.
4. *U.S. v. Sabre/Farelogix*, 2019–2020. Supported Aviv Nevo in expert reports as an expert witness for the DOJ.
5. *US Foods/SGA Food Group* transaction, 2019. Supported Nate Miller in FTC investigation on behalf of FTC. Merger cleared with divestitures.
6. *CMC/Gerdau* transaction, 2018. Supported Aviv Nevo in DOJ investigation on behalf of merging parties. Transaction cleared.
7. *Disney/Fox* transaction, 2018. Supported Aviv Nevo in DOJ investigation on behalf of merging parties. Transaction cleared with divestitures.
8. *FTC v. Wilhelmsen/Drew*, 2018. Lead support for Aviv Nevo in expert reports and at trial as an expert witness for the FTC.
9. *Matthew Edwards et al. v. National Milk Producers Federation et al.*, *Kristie Tessandori v. Dairy Farmers of America*, *Belle Foods Trust et al. v. National Milk Producers Federation et al.*, and *Winn-Dixie Stores and Bi-Lo Holdings v. Southeast Milk et al.*, 2014–2018. Cases alleging quantity restrictions and price fixing in the dairy industry. Class certification, liability, and damages analysis. Supported Bryan Ricchetti, Mike Hanssens, David Kaplan, and Kevin Murphy.
10. *OneStim* joint venture between Weatherford and Schlumberger, 2017. Assisted counsel for both firms with DOJ investigation of competitive effects.
11. Renewable energy merger, 2017. Analyzed vertical issues in DOJ investigation on behalf of third party.
12. Potential infrastructure merger, 2017. Lead support for Greg Rosston in preliminary assessment of regulatory risk on behalf of potential buyer.
13. *Analog Devices/Linear Technology* merger, 2016–2017. Filed white papers on market definition and competitive effects with MOFCOM.
14. *U.S. v. Aetna/Humana*, 2016. Lead support for Aviv Nevo in expert reports and at trial as an expert witness for the DOJ.
15. High-tech merger, 2016. With Andrea Shepard, analyzed vertical concerns before DG COMP on behalf of third parties.
16. *Ball/Rexam* merger, 2015–2016. Lead support for Aviv Nevo in analysis of competitive effects on behalf of FTC. Merger cleared with divestitures.
17. *FTC v. Sysco/US Foods*, 2015. Supported Timothy Bresnahan in expert reports and at the preliminary injunction hearing as an expert witness for the merging parties.
18. *Fernanda Garber v. Office of the Commissioner of Baseball and Thomas Laumann v. National Hockey League*, 2014–2015. Cases alleging anticompetitive bundling. Class certification analysis. Supported Ariel Pakes.
19. Potential horizontal merger in automobile parts industry, 2014. Lead support for John Asker in preliminary assessment of regulatory risk on behalf of buyer.
20. *Alice H. Allen et al. v. Dairy Farmers of America et al.* and *Sweetwater Valley Farm et al. v. Dean Foods et al.*, 2009–2014. Cases alleging price fixing and monopsonization in the dairy industry. Class certification, liability, and damages analysis. Supported Ken Elzinga and Joe Kalt.

21. *Microsoft v. Motorola*, 2012–2013. Alleged breach of contract case regarding patents subject to RAND licensing commitments. Determination of RAND compliant royalty rates. Supported Matt Lynde in submitting reports and at trial as an expert witness on behalf of Microsoft.
22. *Apple v. Samsung* ('630 and '1846), 2012–2013. Alleged patent infringement cases regarding smartphone and tablet computer devices. Feature valuation analysis based on choice-based conjoint Hierarchical Bayes methods. Supported John Hauser.
23. Alleged price fixing and price manipulation in the LIBOR-related matters for a global bank, 2012–2013.
24. *Intel/McAfee* merger, 2010–2011. Supported Tim Bresnahan in analysis of vertical issues before the FTC and DG COMP on behalf of the merging parties.
25. *Rambus v. Micron et al.*, 2007–2011. Case alleging that large semiconductor firms implemented a group boycott that was alleged to have the effect of artificially restricting industry support for a new product. Liability analysis. Supported Ken Elzinga.
26. *Apple v. Psystar*, 2009. Alleged copyright infringement, breach of contract, and violation of the Digital Millennium Copyright Act. Damages analysis. Supported Matt Lynde.
27. *Apple iPod iTunes Anti-Trust Litigation*, 2009. Alleged anticompetitive tie between Apple's iPod and iTunes products. Class certification analysis. Supported Michelle Burtis.
28. Arbitration examining the competitive effects of the terms imposed on signatories to the 1998 Master Settlement Agreement on subsequent market structure in the cigarette industry, 2008–2009. Analysis of multiple large data sets using sophisticated econometric models. Supported Peter Reiss, Igal Hendel, and Rob Porter.

PUBLICATIONS AND PRESENTATIONS

Book chapters

1. “How and When Economic Submissions Help Decision Makers in Merger Control Proceedings,” with Peter Davis, in *Merger Control*, 24th edition, ed. Thomas Janssens, 2019.
2. “Mergers and Collaborations,” with Brad Howells, Holden Brooks, Melissa Hill, Patrick Greenlee, Paul Denis, Vandy Howell, and Vince Chadick, in *ABA Section of Antitrust Law, Agriculture and Food Antitrust and Consumer Protection Handbook*, 2019.
3. “Unique Characteristics of the Market Segments: Dairy,” with Bryan Ricchetti and Vandy Howell, in *ABA Section of Antitrust Law, Agriculture and Food Antitrust and Consumer Protection Handbook*, 2019.
4. “The Aetna-Humana Proposed Merger,” in *Antitrust Revolution, Seventh Edition*, 2018, eds. John Kwoka and Lawrence White, with Denrick Bayot, Brad Howells, and Aviv Nevo.
5. “Specifying and Estimating an Econometric Model,” in *ABA Section of Antitrust Law, Econometrics: Legal, Practical, and Technical Issues, Second Edition*, March 2014, eds. Charles Biggio and Lawrence Wu, with Stanley Watt and Marshall Yan.
6. “Economic Expert Testimony,” in *ABA Section of Antitrust Law, Proof of Conspiracy under the Federal Antitrust Law*, 2010, eds. Daniel Ferrel McInnis, Jeffrey B. Korn, Jennifer A. Carmassi, with Rosa M. Abrantes-Metz, Mark W. Frankena, Dina Older Aguilar, and David T. Scheffman.

Monographs, articles, and white papers

7. “Comments on the January 2020 Draft Vertical Merger Guidelines,” with W. Robert Majure, Ana McDowall, and Aviv Nevo, February 2020, available at https://www.ftc.gov/system/files/attachments/798-draft-vertical-merger-guidelines/vmg13_hatzitaskos_majure_mcdowall_nevo_comment.pdf.
8. “An Initial Comparison of the Draft US Vertical Merger Guidelines with the EU Non-Horizontal and the UK Merger Assessment Guidelines,” with Peter Davis and Bob Majure, January 2020, available at https://www.ftc.gov/system/files/attachments/798-draft-vertical-merger-guidelines/vmg12_davis_hatzitaskos_majure_comment.pdf.
9. “Economics and the regulation of Abuse of a Superior Bargaining Position,” *ABA Spring Meetings*, March 2019.
10. “Aetna-Humana and algorithmic market definition in the Guidelines,” *Antitrust Source*, October 2017, with Nicholas Hill and Brad Howells.
11. “Trends in Merger Investigations and Enforcement at the U.S. Antitrust Agencies: FY 2005-2014,” *Cornerstone Research Report*, June 2016, with Joseph Breedlove and Cagatay Koc.
12. “Antitrust Impact in Indirect Purchaser Class Actions: The Need for Rigorous Analysis of Pass-Through,” in *Distribution, ABA Section of Antitrust Law Distribution and Franchising Committee*, Vol. 19, No.1, April 2015, pp. 3–8, with Bryan Ricchetti and Daniel Schmierer.
13. “Guidelines on Quantitative Techniques for Competition Analysis,” *Regional Competition Center for Latin America*, May 2013, with David Card and Vandy Howell.
14. “Merger Review in Technologically Dynamic Industries: An Analysis of Google-AdMob,” in *The Threshold, ABA Section of Antitrust Law Mergers and Acquisitions Committee*, Vol. XII, No. 1, Fall 2011, pp. 52–64, with Neill Norman and Andrea Shepard.
15. “Why Does the Average Price Paid Fall During High Demand Periods?” *NBER Working Papers 11572*, May 2006, with Professor Aviv Nevo.

Trade press

16. “Comparing Vertical Merger Guidelines Across Jurisdictions,” with Peter Davis and W. Robert Majure, *Law360*, February 25, 2020.

Conference presentations

17. ABA Spring Meetings 2019, “Abuse of Superior Bargaining Position: Avoiding Trouble,” with Sanghoon Shin, Ingrid Vandenborre, and Kaori Yamada, moderated by Joy Fuyuno, organized by Shelley Webb, March 27, 2019.
18. Global Competition Review Live 5th Annual New York, panelist on “When the crystal ball cracks: Why are divestitures failing?” with Debbie Feinstein, Melanie Aitken, and Keith Waehrer, moderated by Kevin Arquit, September 28, 2017.
19. George Washington University Competition Law Center’s Corporate Antitrust Roundtable, co-presented “Merger Litigation: Economics and Ordinary Course Documents, Lessons from the Trenches” with Jon Gowdy and Aviv Nevo, March 28, 2017.
20. Concurrences and Searle Center on Law, Regulation, and Economic Growth at Northwestern Pritzker School of Law conference on Global Antitrust Economics, panelist on “International Mergers: Working Across Multiple Jurisdictions,” with Alexandre Cordeiro Macedo, Camilla Holtse, and William E. Kovacic, moderated by James Tierney, October 7, 2016.

21. Fordham University 42nd Annual Conference on International Law and Policy, Antitrust Economics Workshop, moderator of “Choosing and Hiring an Economic Expert,” with Damian G. Didden, Bryan Gant, and Jonathan B. Pitt, September 21, 2016.
22. Stanford Institute for Economic Policy Research and Cornerstone Research conference on Competition and IP Policy in High-Technology Industries, moderator of “The On-Demand Economy and Challenges to Existing Regulatory and Competition Frameworks,” with Marina Lao, Jonathan Levin, and Justin McCrary, April 19, 2016.
23. George Washington University Competition Law Center’s Corporate Antitrust Roundtable, co-presented “Litigation: Selecting and Working with Fact and Economic Witnesses in Antitrust Litigation and Investigations – Do’s, Don’ts, and Best Practices” with David Cross, April 5, 2016.
24. Fordham University 42nd Annual Conference on International Law and Policy, Antitrust Economics Workshop, moderator of “Applying Advanced Empirical Methods” panel, with Hillary Burchuk, Jeff Jaeckel, and Aviv Nevo, September 30, 2015.

PERSONAL

Date of birth: March 1981. Married to Anna Elizabeth Tuchman. Greek and U.S. citizen.

January 2021

AVIV NEVO

Department of Economics and Department of Marketing, Wharton School,
University of Pennsylvania
3730 Walnut Street, Philadelphia, PA 19104
Phone (215) 898-0232 Fax (215) 898-2534
e-mail: anevo@wharton.upenn.edu

Education

B.Sc. Mathematics and Economics, with Special Honors, Tel-Aviv University, Tel-Aviv, Israel, 1991
A.M. Economics, Harvard University, Cambridge, MA, 1994
Ph.D. Economics, Harvard University, Cambridge, MA, 1997

Current Appointments

George A. Weiss and Lydia Bravo Weiss University Professor, Wharton School of Business and
Department of Economics, University of Pennsylvania, Philadelphia, PA, 2016-present
Director, Competition and Policy Initiative, University of Pennsylvania, Philadelphia, PA, 2016-present
Senior Fellow, Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia,
PA, 2017-present
Research Associate, National Bureau of Economic Research, Cambridge, MA, 2003- present
International Research Fellow, Institute for Fiscal Studies, London, UK,

Past Positions

Robert E. and Emily King Professor in Business Institutions, Department of Economics, Northwestern
University, Evanston, IL, 2015-2016
Professor, Marketing Department, Kellogg School of Business, Northwestern University, Evanston, IL,
2008-2016
Senior Distinguished Fellow of Searle Center on Law, Regulation, and Economic Growth, Pritzker School
of Law, Northwestern University, 2015-2016
Professor, Department of Economics, Northwestern University, Evanston, IL, 2004- 2015
Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, Department of Justice,
Washington, DC, 2013-2014
HSBC Research Professor, Department of Economics, Northwestern University, Evanston, IL, 2009-2011
Visiting Associate Professor, Sloan School of Business and Department of Economics, MIT, Cambridge,
MA, Fall 2003-Spring 2004
Associate Professor, Department of Economics, University of California, Berkeley, CA, 2003-2004
Visiting Assistant Professor, Center for Study of Industrial Organization, Northwestern University,
Evanston, IL, Fall 2000-Spring 2001
Faculty Research Fellow, National Bureau of Economic Research, Cambridge, MA, 1997- 2003
Assistant Professor, Department of Economics, University of California, Berkeley, CA, 1997-2003

Fellowships and Awards

Fellow of the Econometric Society, elected 2013
Sloan Research Fellowship, 2003
Alfred P. Sloan Doctoral Dissertation Fellowship, 1996-1997
Graduate Fellowship, Harvard University 1992-1994

Graduate Society Fellowship Term Time Award, Harvard University 1995-1996

Grants

NSF grant SES-1324851, “An Empirical Study of Broadband Internet Service,” 2013-2017 (joint with John Turner and Jonathan Williams)
NSF grant SES-1130382, “A Framework for Demand and Pricing Dynamics,” 2011-15 (joint with Igal Hendel)
Co-Op agreement USDA ERS, 2005-2014
NSF CAREER grant SES-0093967, “Empirical Studies of Dynamics in Industrial Organization,” 2001-6
University of Wisconsin at Madison, Food System Research Group Grant, 2002 (joint with Igal Hendel)
UC Berkeley, Career Development Grant, 2001
Intel Corporation Millennium Grant, 1997-2000
UC Berkeley, Junior Faculty Research Grant, 1997-1998, 1998-1999, 1999-2000, 2000-2001

Lectures and Mini-Courses

Session on “Merger Simulations” in ICN/OECD conference for antitrust authorities, Seoul, Korea, May 2018
Training course on “Economic Methods in Merger Analysis”, Israeli Antitrust Authority, Jerusalem, Israel, February 2018
Session on “US perspective. The use of empirical work in litigation: a few case studies” in Barcelona GSE Intensive Course on the Competitive Effects of Mergers, Barcelona, Spain, October 2017; October 2018
Session on “Unilateral Effects Analysis: Experiences Using Different Methods” in ICN Chief/Senior Economists Workshop held at the University of British Columbia, Vancouver, Canada, September 12-13, 2016
Course on Applications of Empirical Industrial Organization methods, Royal Economic Society, Essex, UK, April 2017
Course on Industrial Organization, American Economic Association Continuing Education, Chicago January 2017
Keynote lecture, *Advances in the Analysis of Competition Policy and Regulation*, Rhodes, Greece, July 2016.
Course on Empirical Analysis of Imperfectly Competitive Markets, CEMFI Summer School, Madrid, Spain, August 2012
Course on Topics in Empirical IO, Tel-Aviv University, Tel-Aviv, Israel, August 2012
Annual "Econometrics Methods Lectures," NBER Summer Institute, July 2012
Invited talk, Econometric Society World Congress, Shanghai, China, August 2010.
Lectures on Econometric Methods for Antitrust, FTC, Spring 2010
Master class in Empirical IO, Center for Microdata Methods and Practice, University College London, London, UK, November 2004
Mini-course in Empirical IO, Research Institute of Industrial Economics, Stockholm, Sweden, December 2002
Smith Chair Lecturer, Brigham Young University, February 2001
Visiting Senior Lecturer, Tel-Aviv University, Tel-Aviv, Israel, June 1999
Review of Economic Studies European Tour Speaker, May 1997

Published and Forthcoming Papers

- “The Elasticity of Substitution between Time and Market Goods: Evidence from the Great Recession” (joint with Arlene Wong), *International Economic Review*, 60 (1), February 2019, 25-51
- “Usage Based Pricing and Demand for Residential Broadband,” *Econometrica*, 84(2), March 2016, 411-443 (joint with John Turner and Jonathan Williams)
- “Mergers When Prices Are Negotiated: Evidence from the Hospital Industry”, *American Economic Review*, 105(1), January 2015, 172-203 (joint with Gautam Gowrisankaran and Bob Town). Awarded the Antitrust Writing Award 2016 for Best Antitrust Academic Article Mergers Category.
- “Do Prices and Attributes Explain International Differences in Food Purchases?”, *American Economic Review*, 104(3), March 2014, 832-67 (joint with Pierre Dubois and Rachel Griffith)
- “Intertemporal Price Discrimination in Storable Goods Markets”, *American Economic Review* 103(7), December 2013, 2722-51 (joint with Igal Hendel)
- “Recent Developments in Empirical IO: Dynamic Demand and Dynamic Games” *Advances in Economics and Econometrics: Theory and Applications: Tenth World Congress*, 2013 (joint with Victor Aguirregabiria)
- “Identification with Imperfect Instruments”, *Review of Economics and Statistics*, August 2012, Vol 94(3), 659-671 (joint with Adam Rosen).
- “Empirical Models of Consumer Behavior”, *Annual Review of Economics*, Volume 3 (2011), 51-75
- “Taking the Dogma Out of Econometrics: Structural Modeling and Credible Inference”, *The Journal of Economic Perspectives*, Spring 2010, 69-82 (joint with Michael Whinston)
- “Recording Discrepancies in Nielsen Homescan Data: Are They Present and Do They Matter?”, *Quantitative Marketing and Economics*, Volume 8, Issue 2 (2010), 207-239 (joint with Liran Einav and Ephraim Leibtag)
- “The Relative Performance of Real Estate Marketing: MLS versus FSBOMadison.com”, *American Economic Review* 99 (5), December 2009, 1878-98 (joint with Igal Hendel, and Francois Ortalo-Magne)
- “Consumer Shopping Behavior: How Much Do Consumers Save?” *The Journal of Economic Perspectives* 23(2), Spring 2009, 99-120 (joint with Rachel Griffith, Andrew Leicester and Ephraim Leibtag)
- “An Approach for Extending Dynamic Models to Settings with Multi-Product Firms”, *Economics Letters*, 100 (2008), 49-52 (joint with Federico Rossi)
- “Empirical Models of Imperfect Competition: A Discussion”, *Advances in Economics and Econometrics: Theory and Applications: Ninth World Congress*, 2007 (joint with Liran Einav)
- “Measuring the Implications of Sales and Consumer Inventory Behavior”, *Econometrica*, 74(6), 1637-1673, 2006 (joint with Igal Hendel). Awarded the *Compass Prize* 2007 (prize for the paper making

the most significant contribution to the understanding and implementation of competition policy.)

“Sales and Consumer Inventory”, *The RAND Journal of Economics*, 37(3), 543-561, 2006 (joint with Igal Hendel)

“Academic Journal Pricing and the Demand of Libraries”, *American Economic Review*, 447-452, 2005 (joint with Daniel L. Rubinfeld and Mark McCabe)

“Inter-temporal Substitution and Storable Products”, *Journal of the European Economic Association*, 2(2), 536-547, 2004 (joint with Igal Hendel)

“The Post-Promotion Dip Puzzle: What Do the Data Have to Say?,” *Quantitative Marketing and Economics*, 1(4), 409-424, 2003 (joint with Igal Hendel)

“New Products, Quality Changes and Welfare Measures Computed from Estimated Demand Systems”, *The Review of Economics and Statistics*, 85(2), 266-275, 2003

“Using Weights to Adjust for Sample Selection When Auxiliary Information is Available”, *Journal of Business and Economics Statistics*, 21(1), 43-52, 2003

“Why Do Manufacturers Issue Coupons? An Empirical Analysis of Breakfast Cereals”, *The RAND Journal of Economics*, 33(2), 319-339, 2002 (joint with Catherine Wolfram)

“Sample Selection and Information-Theoretic Alternatives to GMM”, *Journal of Econometrics*, 107(1), 149-157, 2002

“Measuring Market Power in the Ready-to-Eat Cereal Industry”, *Econometrica*, 69(2), 307-342, 2001

“A Practitioner’s Guide to Estimation of Random Coefficients Logit Models of Demand”, *Journal of Economics & Management Strategy*, 9(4), 513-548, 2000

“Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry”, *The RAND Journal of Economics*, 31(3), 395-421, 2000. Reprinted in P. Joskow and M. Waterson ed., *Empirical Industrial Organization*, Edward Elgar, 2004.

“Identification of the Oligopoly Solution Concept in a Differentiated Products Industry”, *Economics Letters*, 59(3), 391-395, 1998

Working Papers

“Empirical Models of Demand and Supply in Differentiated Products Industries” (joint with Amit Gandhi), chapter in Ali Hortascu, Kate Ho and Alessandro Lizzeri, eds, *Handbook of Industrial Organization, Volume 4*.

“Implications of Cord-Cutting for Net Neutrality” (joint with Jacob B. Malone, Zachary Nolan and Jonathan W. Williams)

“Steering Incentives of Platforms: Evidence from the Telecommunications Industry” (joint with Brian McManus, Zachary Nolan and Jonathan W. Williams)

“The Tragedy of the Last Mile: Economic Solutions to Congestion in Broadband Networks” (joint with Jacob B. Malone and Jonathan W. Williams)

“Why Does the Average Price Fall During High Demand Periods?,” (joint with Kostis Hatzitaskos)

Other Papers

“Marketing and Public Policy”, chapter in JP Dube and Peter Rossi, eds, *Handbook of Economics and Marketing, Volume 1*. 2019

“The Aetna-Humana Proposed Merger”, chapter in the John Kwoka and Larry White, eds. *Antitrust Revolution*, 7th edition. 2018.

“The Year in Review: Economics at the Antitrust Division 2013-2014,” *Review of Industrial Organization*, 45: 379, 2014 (joint with Aditi Mehta, Oliver Richard and Jeffery Wilder)

“Mergers that Increase Bargaining Leverage,” January , 2014 (available at <https://www.justice.gov/atr/file/517781/download>)

“The Year in Review: Economics at the Antitrust Division 2012-2013,” *Review of Industrial Organization*, 43:291, 2013 (joint with Ron Drennan and Matt Magura)

“Merger Simulation,” *The New Palgrave Dictionary of Economics*, 2008

Professional Activities

Scientific Advisory Board, International Journal of Industrial Organization, 2018 – present

Co-Editor, *Econometrica*, 2017 – present

Advisory Board, CRESSE, 2017 – present

Co-Editor, *The RAND Journal of Economics*, 2011 – 2017

Editor, *The Journal of Industrial Economics*, 2009 – 2011

Editorial Board, *Quantitative Economics*, 2009 – 2013

Board of Editors, *American Economic Journal: Microeconomics*, 2009 – 2013, 2016 –

Foreign Editor, *Review of Economics Studies*, 2007 – 2013

Associate Editor, *The RAND Journal of Economics*, 2007 - 2011

Associate Editor, *Journal of Industrial Economics*, 2002 – 2009

Associate Editor, *Quantitative Marketing and Economics*, 2002 – 2013

Editorial Board, *Marketing Science*, 2002 – 2010

Advisory Board, *Journal of Agricultural & Food Industrial Organization*, 2002 - 2013

Conference organization:

Program Co-Chair, 2019 QME Conference, Philadelphia, October 2019

Program Chair, Econometric Society North American Winter Meetings, January 2019

Co-organizer, NBER Industrial Organization Summer Meeting, July 2017

Co-organizer, NBER Price Dynamics Workshop Summer Institute, July 2012-2016

Program Committee, EARIE 2012, Rome, Italy

Program Committee, 2010 Econometric Society World Congress
Program Committee, AEA meeting, Atlanta, GA, January 2010
Scientific Committee, FTC-Northwestern Conference, 2009, 2010, 2011
Program Coordinator, *Review of Economic Studies* European Tour Speaker, May 2009
Program Committee, EC² meeting, Roma 19-20 December 2008
Program Committee, 2007 QME Conference, Chicago, IL
Co-organizer, IO, Marketing and Macro Conference at the Chicago Fed, December 2006
Program Committee, 2005 Econometric Society World Congress
Co-organizer, SITE Workshop, July 2004
Program Committee, 2004 Winter Econometric Society Meetings
Organizer, NBER Productivity Fall Meeting, December 2003
Co-organizer, NBER Industrial Organization Winter Meeting, January 2000
Co-organizer, Econometrics in Tel-Aviv Conference, June 1999

Dissertation Supervision (completion year, first job, **bold** if chair)

University of California, Berkeley

Eric Emch (1999, DOJ);
 Chris Knittel (2000, Boston University);
 Allison Evans Cuellar (2001, Columbia University);
 Ying Zhao (2001, Hong Kong Science and Technology);
 Sharon Horsky (2001, The Interdisciplinary Center Herzliya);
Rene Kamita (2002, DOJ);
 Erin Mansur (2002, Yale University);
 Simone Peart Boyce (2002, Analysis Group);
Sofia Berto Villas-Boas (2002, University of California, Berkeley);
 Marta Wosinska (2002, Harvard Business School);
Rebecca Hellerstein (2003, New York Fed);
Hyun Jin Lee (2003);
Pinar Karaca (2004, RAND);
Jorge Tovar (2004, Los Andes University, Bogotá, Colombia);
 Fernando Ferreira (2004, Wharton);
 Matt Lewis (2004, Ohio State University);
 Celeste Saravia (2004, Cornerstone Research);

Northwestern University

Allan Collard-Wexler (2006, New York University);
 Ambarish Chandra (2006, University of British Columbia);
Joao Macieira (2007, Virginia Tech);
 Federico Rossi (2008, NC State);
Steve Kryukov (2008, Carnegie Mellon);
 Min Chen (2008, Charles River Associates);
Thor Sletten (2008, Criterion Economics);
 Yongbae Lee (2008, Barclays Global Investors);
 Kanishka Misra (2009, London Business School);
 James Roberts (2009, Duke University);
Paul Grieco (2010, Penn State);
Mateo Caronia (2010, Deloitte Transfer Pricing);
Ryan McDevitt (2010, University of Rochester);

Jason O’Conner (2010, FTC);
Kei Kawai (2011, NYU);
Andre Trindade (2011, Bates White);
Ketan Patel (2012, Getgo);
Javier Donna (2012, The Ohio State University);
Joseph Goodman (2012, Compass-Lexecon);
Jose-Miguel Abito (2013, Wharton);
Mark Chicu (2013, Bates-White);
Marit Hinnosaar (2013, Collegio Carlo Alberto);
Tiago Pires (2013, University of North Carolina);
Guillermo Marshall (2014, University of Illinois);
Fernando Luco (2014, Texas A&M);
Chris Lau (2015, FTC);
Esteban Petruzzello (2015, University of Miami);
Arlene Wong (2016, Princeton);
Matt Schmitt (2016, UCLA Anderson School of Management);

University of Pennsylvania

Evan Saltzman (2018, Emory);
Takeaki Sunada (2019, University of Rochester);
Qi Pan (2020, Chinese University of Hong Kong);
Minshen Li (2020, JD.com);
Kian Samaee (2020, Charles River Associates);
Sumedh Ambokar (2020, Capital One);
Mallick Hossain (2020, Philadelphia Fed);
Joao Granja De Almeida (2021, expected);
Ruizhi Ma (2021, Analysis Group);
Vladimir Pavlov (2021, expected);
Craig Stuart (2021, Yale Psot-doc);
Gorkem Bostanci (2021, expected);
Amandeep Singh (2022, expected);
Michael Kurish (2022, expected);

EXHIBIT B

PUBLIC VERSION

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

REVIEW OF COMMODITY, BOXCAR, AND TOFC/COFC EXEMPTIONS

Docket No. EP 704 (Sub-No. 1)

VERIFIED STATEMENT OF

Michael R. Baranowski

and

Benton V. Fisher

January 29, 2021

TABLE OF CONTENTS

I.	Introduction/Overview	4
a.	Witness Background	4
b.	Scope of Effort.....	4
c.	Preliminary Observations.....	5
II.	Background of the Exemptions Proceeding.....	7
III.	The Proposed Approach Omits Key Data.....	9
a.	Rail Market Share	10
b.	Geographic Competition.....	15
i.	Geographic Alternatives within 500 Miles	16
ii.	Geographic Alternatives Served by Other Railroads.....	19
c.	Traffic Volume Growth.	23
IV.	There are Limitations in the Carload Waybill Sample that Serves as the Basis for Most of the Dashboard’s Analyses	25
a.	The Confidential Carload Waybill Sample.....	25
V.	The Proposed Approach Views Truck, Rail, and Water Competition Too Narrowly	26
a.	Truck Competition	26
b.	Rail Competition.....	31
c.	Barge Competition.....	34
i.	The GMIM’s limitation to the same waterway system understates the level of barge competition.....	35
ii.	The GMIM model does not consider competition from international ports.	36
VI.	There Have Been Significant Changes to the Railroad Industry that can Confound Comparisons to 1992 Data.....	37
VII.	The Proposed Approach’s Reliance on R/VC Ratios Should Be Altered	39
a.	Higher R/VC ratios are not related to changes in market conditions and are the result of rail productivity gains	39
b.	The Proposed Approach Continues to Rely Heavily on Interpretations of the Level of R/VC Ratios and their Change Since 1992 (Indicators Nos. 1-2 and 7-8).....	45

i.	The vast majority of R/VC Indicators are based on observations for shipments with R/VC<180.....	46
ii.	R/VC ratios for the commodities at issue in this proceeding are compared to all carload traffic totals that include unit trains.....	49
iii.	The R/VC Change Indicator (Indicator No. 2) is further flawed due to a failure to consider the effects of productivity and the limitations of the URCS costing system	51
VIII.	The Board’s “Initial Screen” Concept Should be Refined and Expanded.....	53
a.	Initial Screen One: “Percentage of Shipments Below R/VC 180”	53
b.	Initial Screen Two: “Percent of all CWS Shipments in Intermodal Equipment”	57
c.	Additional screen for traffic that moves more than 500 miles and has an R/VC ratio of more than 180%.	60
IX.	Many of the Dashboard Indicators Could Lead to Misinterpretation	61
a.	The Results of the GMIM’s Proposed Measures of Competitive Influence Are in Direct Conflict with the R/VC Indicators.....	62
b.	The Evaluation of Length of Haul is Overly Simplistic and Fails to Consider the Effects of Changes in Methodology, Increased Competition, and Efficiency Gains (Indicators Nos. 5-6)	63
X.	The Dashboard’s Results Are Also a Function of Specific Assumptions Used to Calculate and Score the Data Being Analyzed.....	67
a.	The proposed +/-5% buffers are arbitrary, amplify narrow distinctions, and group together disparate performance	68
b.	The proposed approach overrides the specific calculations to determine the Overall Signal	71
c.	The combination of +/-5% buffer thresholds and the 0, 1, 2 scoring system is also sensitive to small differences driving the results	73

I. Introduction/Overview

a. Witness Background

We are Michael R. Baranowski and Benton V. Fisher, Senior Managing Directors in the Network Industries Strategies practice of FTI Consulting, with offices at 8251 Greensboro Drive, McLean VA. We previously submitted two Verified Statements (“VS”) in this proceeding during the 2016 comment period.¹ Those statements accompanied the Comments of the Association of American Railroads, and were submitted on July 26, 2016 and August 26, 2016 (collectively, “2016 Comments”).

We have each spent more than 25 years involved in various aspects of transportation consulting, including economic studies of costs and revenues, traffic and operating analyses, and work with costing and financial systems. We have each testified before the Board in scores of proceedings involving the regulation of railroad transportation, and have participated in virtually all rate-reasonableness cases and Ex Parte proceedings regarding the evaluation of the rates and costs for individual movements, traffic groups, and entire rail networks. Much of our work requires a detailed understanding of the data sources, the costing approaches, and the models and tools that are used by the Board for a range of regulatory purposes. Details of our background and experience are set forth in Exhibits 1 and 2 to this statement, respectively.

b. Scope of Effort

We have been asked by the AAR to submit this Verified Statement in response to the Board’s September 30, 2020 Decision (“2020 Decision”) requesting comments on a new, multi-

¹ Ex Parte No. 704 (Sub-No. 1) Review of Commodity, Boxcar, and TOFC/COFC Exemptions (“EP 704”).

faceted approach “for evaluating market conditions governing a commodity, including changes in such conditions over time.” (2020 Decision at 15.)² In performing our evaluation, we relied upon the Board’s 2020 Decision, the confidential workpapers underlying that Decision to which we were provided access, and the 2016 and 2017 Confidential Carload Waybill Sample (CWS) files to which we were previously provided access for use in this proceeding.³ We also participated in two Technical Conferences that the STB convened after releasing its 2020 Decision, which were held on December 18, 2020 and January 15, 2021.

c. Preliminary Observations

In evaluating the Board’s proposal,⁴ we first present the Board’s description of this new approach, and provide three general observations in response:

The Board views the approach as a potentially important new tool that could facilitate a more comprehensive analysis in this docket and finds it would benefit from public comment. As a general matter, the approach focuses on (1) developing a snapshot of the current state of a commodity’s rail transportation market, (2) identifying changes in market conditions, and (3) considering certain potential influences from alternative transportation modes that could impact that market. The Board does not anticipate that the approach would necessarily provide a final conclusive answer on whether the commodity exemptions at issue should be revoked, or whether additional commodity exemptions should be adopted. Those determinations are complicated and multi-factored, and the approach has limitations (as does any model) and relies on certain assumptions (described below). . . . Most fundamentally, the approach does not seek to answer

² On December 11, 2020, the Board issued a Decision that identified revisions to certain source data, calculations, and results. Our reference to “2020 Decision” incorporates both the September and December decisions. Throughout this verified statement we refer to “the Board” or “STB,” which includes the staff of the Board’s Office of Economics.

³ The 1992 and 2018 confidential CWS files on which the Board relied were included in the workpapers. We were initially provided access to the Board’s underlying workpapers in October, and then were provided access to a revised set of workpapers in December.

⁴ We note that throughout this statement we refer to “the Board” or “STB,” which includes the staff of the Board’s Office of Economics who have worked on this proposal.

the ultimate qualitative question of whether a commodity's regulation is necessary to carry out the RTP.

(2020 Decision at 6.)

As an initial matter, we applaud the Board for expanding the scope of its analytical metrics beyond the measurements it used in its 2016 proposal, and specifically the Board's goal of improving its understanding of competitive influences in the transportation market. The Board states that it "is committed to ensuring that a robust analysis be conducted," and as many parties in the 2016 round of comments expressed concerns about the Board's primary reliance on one measure—Revenue-to-Variable Cost ("R/VC") ratios—the expansion of the source data and metrics that the Board is evaluating is a positive step towards a "more comprehensive analysis." (2020 Decision at 5-6.) We caution, however, that the proposed approach still falls far short of considering the most important factors affecting market conditions in the freight rail industry, thus restricting the ability of the proposed approach to identify potential market-power influences for shipments of particular commodities.

We see merit in developing a robust tool that can synthesize relevant data about market conditions for individual commodities, which can then be used to help the Board prioritize the use of its resources and avoid unnecessarily broad inquiries into potential exemptions or revocations. We can envision a series of tools similar to the proposed approach that could organize and summarize key data and assist the Board and stakeholders in assessing "the current state of a commodity's rail transportation market." (2020 Decision at 6.) The concept of "Initial Screens," under which specific thresholds related to the potential presence of railroad market power must be met before commencement of a more detailed inquiry, has particular value. Such screens can be effective in evaluating key data and providing an initial assessment, without

needlessly consuming additional resources or exploring situations that exhibit no meaningful potential for exercised rail market power, or where regulation is unnecessary for other reasons.⁵

We also agree with the Board that any approach similar to the one proposed here should be at most only a “an initial or partial step” in analyzing market conditions for a particular commodity and the potential for railroads to exercise market power. (2020 Decision at 9.) A standardized approach is no substitute for the more rigorous analysis that would be necessary to assess market conditions accurately for a particular commodity and perform a proper evaluation of the “question of whether a commodity’s regulation is necessary.” (2020 Decision at 6.)

Still, we question the utility of the proposed Indicator Dashboard and its “signals,” especially in light of the manner in which individual Indicators are developed, weighted, and “scored.” In addition, we are concerned that the proposed approach omits critical data, and that the incompleteness and other flaws in the data that the approach does include will frequently lead to false positives and potentially misguided conclusions about market conditions for the commodities being evaluated. These concerns, and potential solutions that would assist the Board in its goal of a more comprehensive and robust analysis, are described more fully below.

II. Background of the Exemptions Proceeding

On March 23, 2016, the Board issued a notice of proposed rulemaking (“NPRM”) proposing to revoke class exemptions under 49 C.F.R. part 1039 for the following five commodity groups:

- STCC No. 14-2, crushed or broken stone or rip rap;

⁵ In Section VIII. below, we review the Board’s proposed Initial Screens, and recommend the addition of others.

- STCC No. 29-914, coke produced from coal;
- STCC No. 33-12, primary iron or steel products (plates, pipes, and rods);
- STCC No. 32-4, hydraulic cement; and
- STCC No. 40-211, iron or steel scrap, wastes, or tailings.

After reviewing largely anecdotal oral and written comments from shippers and considering R/VC and length-of-haul trends from 1992 to 2013, the Board contended that the dynamics of the transportation markets for those five commodity groups had changed significantly. The Board stated that its assessment was supported by the fact that CWS data showed a substantial increase in revenue from potentially captive traffic (which the Board interpreted to mean traffic with an R/VC ratio of 180% or higher) over the previous 22 years.

As explained by commenters in 2016, the original decisions granting the exemptions at issue in this proceeding relied in substantial part on the Interstate Commerce Commission's ("ICC's") assessment of potential sources of competition, but similar analyses were largely missing from the proposal to revoke the exemptions. The new proposed approach would expand the information that the Board considers, but key data on potential competition remains missing. Table 1 summarizes a number of the factors evaluated by the ICC in the proceedings granting the exemptions, the factors evaluated by the Board in the 2016 NPRM, the factors identified by railroads as necessary for a proper evaluation of competition, and the factors considered in the Board's new proposed approach. As shown in the table, the proposed approach is an improvement, but still omits key elements that the ICC considered in granting the original exemptions—most notably railroad market share, geographic competition, and product competition. We discuss these omissions in the next section.

Table 1
Comparison of Factors Considered When Evaluating Exemptions

	ICC's Consideration When Granting Original Exemptions	Included in STB's 2016 NPRM	Addressed in AAR's 2016 Opening Comments (Israel / Orszag VS)	Included in STB's 2020 Proposed Approach
Geographic Competition	Yes	No	Yes	No
Product Competition	Yes	No	Yes	No
Market Share	Yes	No - 1/	Yes	No
Market Structure	Yes	No - 2/	Yes	No
Intermodal Competition	Yes	No	Yes	Partial
Intramodal Competition	Yes	No	Yes	Partial
R/VC Levels	No - 3/	Yes	No	Yes
Rate Trends	Yes	No	Yes	Yes
Haul Length	Yes	Yes	Yes	Yes
Contract Share	Yes	No	Yes	No
Cost Characteristics	Yes	No	n/a	No
Shipper Views	Yes	Yes	n/a	No
Exempt Car Types	Yes	No	n/a	No
1/ - The STB made passing reference to low railroad market shares but did not rely on this 2/ - The STB noted a decrease in hydraulic cement production facilities from 179 to 100 and geographic shifts in steel production 3/ - The ICC did not rely on absolute R/VC levels but did consider R/VC in the context of observing that a very small percentage of cement shipments moved within reach of its jurisdiction				

III. The Proposed Approach Omits Key Data

As indicated above, we have concerns about key data that were omitted from the Board's proposal, the data that are being examined, and the approaches used to interpret the data—any of which could lead the Board astray in considering exemptions. We first identify three critical sources of data that are missing: rail market share, geographic alternatives, and changes in traffic volumes. Any meaningful examination of the market conditions for shipping a particular commodity would need to consider all three.

a. Rail Market Share

A major shortcoming with the proposed approach is that it looks at volume, revenue, and cost relationships for railroad movements only and omits data about all other modes of transportation, with the exception of limited data concerning the locations of ports that are near particular railroad origins and destinations. As importantly, the proposed approach omits information about railroads' relative market share for shipments of particular commodities. Railroads compete vigorously with other transportation modes, and the prices that railroads can charge for any given commodity are influenced directly by the prices charged by competitive alternatives like trucks and barges. By looking only at the revenues that railroads have been able to generate relative to one another over time, the proposed approach ignores key metrics of broader competition that affect railroad market share.

Indeed, railroad market share was a vital component of the original commodity exemption proceedings, and is an especially problematic omission for the commodities evaluated in the Board's 2020 Decision because intense competition from other modes, primarily trucks, has kept market shares low for railroads. For example, in the initial exemption proceedings, the rail share of the market in 1992 for hydraulic cement—the illustrative commodity for the proposed approach—was estimated at 20.4%. Railroads' market share in 1990 for crushed stone and aggregates was in the single digits, and railroads' market share for primary forest or wood raw materials was 16.2%. The exemptions were granted based in part on these measures of market share. It would be a mistake to rely on an approach today that purports to assess market conditions but does not consider relative railroad market shares.

Market share data at the disaggregated commodity level may not always be readily available in the public domain. There are, however, some useful publicly available sources. For

example, the U.S. Census Bureau conducts its Commodity Flow Survey (“CFS”) every five years. The Census Bureau describes the Commodity Flow Survey as follows:

The Commodity Flow Survey was initiated in 1993 and since 1997, has been conducted every five years as part of the Census Bureau’s economic census. The survey, a partnership with the U.S. Department of Transportation, Bureau of Transportation Statistics, is the primary source of national, state and selected metropolitan area statistics on domestic freight shipments. It provides information on the origin and destination, value, weight, mode of transportation, distance, and ton-miles of commodities shipped.

<https://www.census.gov/newsroom/press-releases/2020/commodity-flow.html>.

Highlights from the most recent study in 2017 include the following:

U.S. shipments of goods in 2017 reached 12.5 billion tons, an increase of 1.2 billion tons or 10.4% since the previous Commodity Flow Survey was conducted in 2012. For the first time, the 2017 Commodity Flow Survey included three new tables detailing the breakdown of tonnage by mode of transportation—by truck, by rail and by water. There were 9.4 billion tons of goods shipped using a truck for any part of the distance, with 8.8 billion tons or 93.7% traveling exclusively by truck and not by a combination of truck and other modes. There were 1.9 billion tons shipped by rail, with 1.3 billion tons or 66.8% traveling entirely by rail. Of the 1.1 billion tons shipped by water, 0.8 billion tons or 75.4% traveled solely by water.

<https://www.census.gov/newsroom/press-releases/2020/commodity-flow.html>.

These figures, taken from the 2017 CFS highlights, confirm that overall rail market shares remain low.

Tonnage moving exclusively by rail represented only 10.0% of all 2017 transported tonnage. When shipments that move in multi-modal service in which one mode is rail (primarily intermodal shipments that move by truck and rail) are included, total rail market share is still less than 16%. Thus, the vast majority of freight in the United States is shipped by methods other than rail. Any analysis of market conditions that looks only at railroad shipments will therefore miss most of the picture.

At a more disaggregated, commodity-by-commodity level, we recognize that the CFS commodity-code breakdowns do not align exactly with the STCC codes in the Waybill Sample, including for the commodities at issue in this proceeding. For most commodities, the CFS codes are less granular than the 5-digit STCC levels on which the proposed approach relies to measure rail-to-rail competition, for example. Indeed, at its second Technical Conference, Board Staff acknowledged the existence of CFS data but noted that CFS data captures commodities at a lower level of granularity.

Yet for many of the commodities in the Dashboard, the information in the CFS is sufficiently granular to provide the Board important information about the market for shipments of those commodities and the competitive alternatives that are available to shippers. The exemptions for crushed stone and hydraulic cement, for example, were granted at the 3-digit STCC level. In the proposed approach, however, the Board makes a more granular assessment at the 5-digit STCC level. In doing so, the Board has effectively created its own impediment to using the CFS data about the market for these commodities.

Even when the level of granularity in the CFS data is not directly aligned with data from the Waybill Sample, meaningful comparisons can still be drawn from the data, because the CFS commodity codes still group products with similar transportation characteristics together. Table 2 compares the rail share identified in the initial exemption proceedings in the early 1990s with the rail market share for the commodity or relevant commodity grouping from the CFS.

Table 2
Rail Market Share Comparisons

STCC	Commodity	c. 1992	CFS Code	Commodity Description	2017
14-1	Dimension stone, quarry	2.7%	133/139	Dolomite and other non-metallic minerals	4.3%
14-2	Crushed or broken stone or riprap	4.6%	1201	Limestone and chalk (calcium carbonate)	6.0%
14-411/2	Sand and Gravel	1.0%	1201	Limestone and chalk (calcium carbonate)	6.0%
24-1	Primary forest or wood raw materials	16.2%	2501/2502/2509	Logs for pulping and lumber	10.6%
29-914	Coke produced from coal	79.7%	1991	Coke and semi-coke of coal, lignite, or peat, and retort carbon, and petroleum coke (includes calcined)	9.6%
29-915	Distillate or residual fuel oil from coal	0.0%	1991	Coke and semi-coke of coal, lignite, or peat, and retort carbon, and petroleum coke (includes calcined)	9.6%
32-4	Hydraulic cement	20.4%	311/312	Hydraulic cements and ceramic products	2.9%
32-952-15	Cinders, clay, shale, slate	37.8%	311/312	Hydraulic cements and ceramic products	2.9%

As Table 2 indicates, the relative rail market shares for commodities that were identified in the initial exemption proceedings were low in the early 1990s and remain low through 2017. This confirms that railroads still face substantial competition from other transportation modes, and that on a commodity-wide basis railroads have little, if any, opportunity to exercise market power. A meaningful evaluation of market conditions for these and other commodities cannot ignore this critical information.

Beyond the CFS, other potential sources of rail market share data were referenced in the 2016 comments filed by railroad stakeholders. For example, the Freight Analysis Framework, which is produced by the Center for Transportation Analysis through a partnership with the Bureau of Transportation Statistics and the Federal Highway Administration, expands the scope of the information provided in the CFS to incorporate information from the agriculture, extraction, utility, construction, service, and other sectors to produce estimates for tonnage, value

and ton-miles by regions of origin and destination, commodity type, and mode.⁶ And the Transearch database, which is available commercially from IHS Markit, contains freight flow by origin, destination, commodity, and transportation mode for over 340 individual commodities.⁷ For cement, the Cement Industry Annual Yearbook provides detailed specifics of all facets of the cement industry including economic activity and key construction market drivers, cement consumption and funding initiatives.⁸ Each of these sources could provide meaningful information concerning market conditions and competitive alternatives to railroads. And in addition to publicly available modal share data, the Board should solicit rail modal share data from the shippers who make use of alternative transportation modes so that the Board and other parties can make use of that information as a potential preliminary screen or for a broader evaluation of competitive conditions in any exemption-related inquiry.⁹

We propose that the Board incorporate an Initial Screen that evaluates the commodity's railroad market share, and requires a certain level in order to continue the investigation of potential candidates for revocation.

⁶ <https://faf.ornl.gov/fafweb/>.

⁷ <https://ihsmarkit.com/products/transearch-freight-transportation-research.html>.

⁸ <https://www.cement.org/morereports/2018-us-cement-industry-annual-yearbook>. In addition, verified statements submitted in support of the AAR's 2016 comments presented estimates of railroad market shares for the commodities at issue. See July 26, 2016 Verified Statement of Mark Israel and Jonathan Orszag, at pp. 22-25.

⁹ Because shippers are responsible for arranging transportation of their products, they are uniquely positioned to possess information related to the rail market share of their shipments. Although in the 2016 NPRM the Board specifically sought information on relative market share, to our knowledge no shipper came forward and provided such information. It is within the Board's purview to solicit modal share data from shippers to assist the Board in assessing market conditions for particular commodities.

b. Geographic Competition

In addition to omitting modal share data, the proposed approach does not account for geographic competition. The Board has previously concluded that the burden of examining geographic alternatives is not warranted in individual rate-reasonableness cases.¹⁰ But broad-sweeping, commodity-wide regulation or exemption from regulation is very different from, for example, an individual dispute between a particular shipper and carrier. Geographic competition is a critical part of any complete analysis of shippers' competitive alternatives. And the Board would benefit from including a preliminary assessment of geographic competition based on the information that it already has at its disposal to avoid incurring the time, effort, and costs of a more comprehensive investigation where shippers have extensive geographic alternatives.

The availability of alternative sources and destinations for shipments of particular commodities can be easily identified from the CWS records on which the Board relies for most of the other metrics in the proposed approach. In fact, the Board can incorporate a method similar to the method for assessing potential intramodal and intermodal alternatives in its Geographic Modal Influence Model ("GMIM") presented in the proposed approach.¹¹

The Board could use the GMIM model to assess geographic competition in at least two ways. First, the GMIM model has already identified the origins and destinations of shipments and determined the geographic coordinates of those locations. The Board could use that information to calculate distances to *other* origins and destinations to identify CWS shipments of the same commodities, and corresponding shipment volumes, that originate or terminate at

¹⁰ See, e.g., *AAR v. STB*, 306 F.3d 1108 (D.C. Cir. 2002).

¹¹ The GMIM is described in the 2020 Decision at pp. 7-9 and 16-17.

locations within a reasonable distance. Second, the Board could use the information developed by the GMIM model concerning direct rail competition to identify alternative origins and/or destinations that are reached via independent rail routes and which would therefore provide shippers geographic alternatives. Below we demonstrate how the Board could employ both of these options.

i. Geographic Alternatives within 500 Miles

Our first demonstration involves assessing geographic alternatives within 500 miles of origins and destinations of individual shipments. We use the broad universe of origins and destinations in the Waybill Sample and evaluate their relative proximity to each other, which allows us to identify the location and volume of alternative sources of supply and demand for a given commodity. To provide an example, we examined the records for carload shipments in the 2018 CWS of the illustrative commodity for the proposed approach: STCC 32411 Hydraulic Cement. Our analysis shows that in 2018 the CWS included cement shipments from 103 different origins, which went to 284 different destinations.¹²

Figure 1 plots the individual origins and destinations, displaying the breadth of sources and receivers in the 2018 CWS.¹³ The figure also shows a 500-mile radius around each of the three largest origins, highlighting the many alternative destinations that are within 500 miles of

¹² For the purposes of focusing on the actual sources and receivers of the cement shipments, we excluded CWS records for Rule 11 shipments as those records reflect only a portion of the move.

¹³ It merits noting while there could be nearly 30,000 different shipment lanes if every origin shipped to every destination – or even 2,900 if only 10% of the potential total were used – the 2018 dataset on which the Board relies sampled fewer than 450 shipment lanes. More than 15% of these lanes were sampled only once; we do not know how many other lanes actually shipped and were not sampled, thus limiting the scope of the analysis.

each. For these alternative destinations, rail transportation is likely subject to competitive pressure from trucks using the Board’s own length-of-haul presumptions, in addition to any additional competition from rail or water options.

{{BEGIN HIGHLY CONFIDENTIAL**

****END HIGHLY CONFIDENTIAL}}**

To determine the proximal sources or receivers for the cement shipments, we calculated the distances between each combination of origin and destination using the same latitude and longitude information that the Board proposes using in the GMIM model.¹⁴ Most of these specific origin-destination pairs did not show up in the 2018 CWS as having actual rail

¹⁴ For this analysis, we use the calculated distance between the origins and destinations, *i.e.*, “as the crow flies,” or the “air distance.” As discussed in a later section, the actual distance that trucks travel between an origin and destination is typically closer to the air distance than the rail distance reported in the CWS.

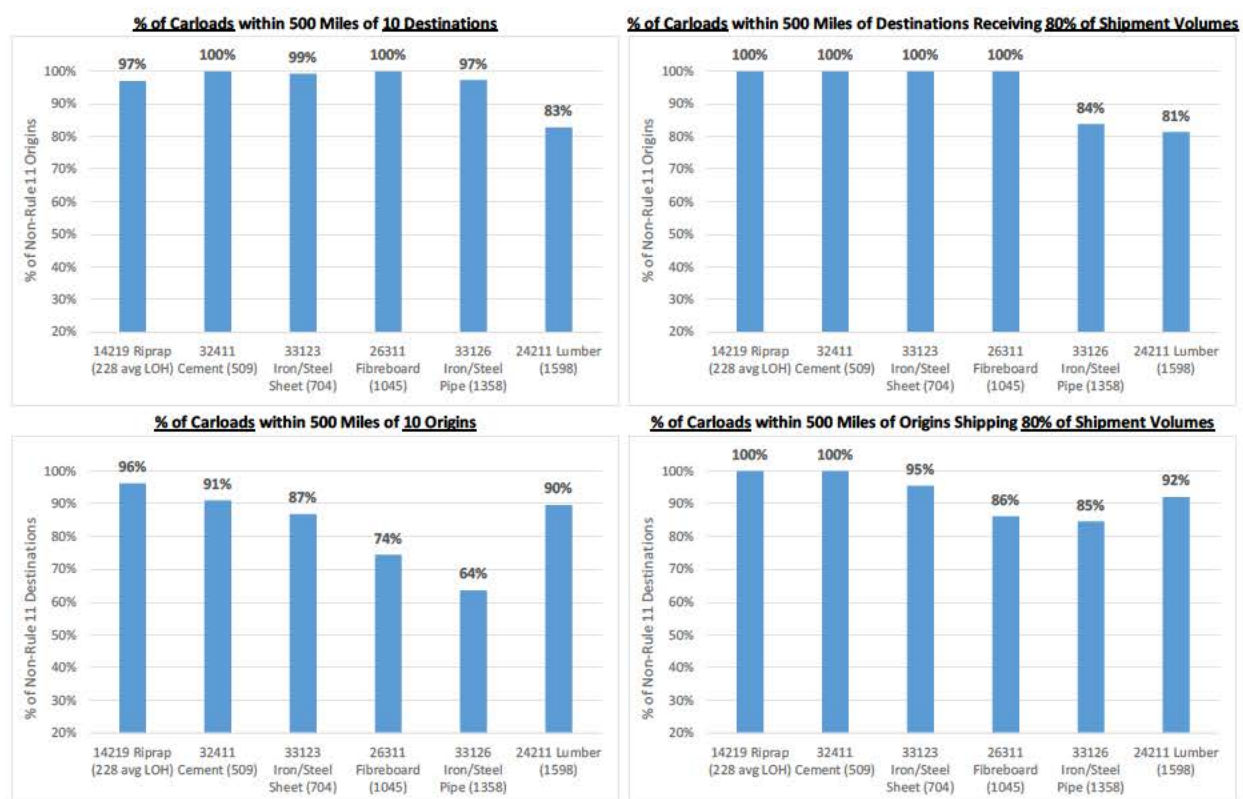
shipments, but all of these origins and destinations could be (and likely are) served by other forms of transportation, especially trucks. Our analysis determined that in 2018 every single rail origin of cement shipments was within 500 miles of at least 5 unique destinations that received cement.¹⁵ Importantly, for each of the 103 origins for hydraulic cement, the destinations that were within 500 miles received at least as many carloads in the aggregate as were shipped from that origin. Thus, these alternative destinations had sufficient demand to handle all of the shipments from each origin, confirming that they are viable competitive alternatives. In fact, we found that the destinations within 500 miles of an individual origin typically received 10 times the volume of cement that was shipped from that origin in 2018. The considerable demand for cement at alternative destinations within 500 miles therefore provides myriad geographic alternatives for every cement origin.

We also performed a mirror-image analysis to analyze potential alternative sources for each destination. As with origins, in 2018 every single destination of cement shipments was within 500 miles of at least 5 unique origins that also shipped cement and were included in the 2018 Waybill Sample. And for all 284 destinations these alternative origins shipped volumes matching or exceeding the volume each destination received. The vast majority of the alternative origins for each individual destination shipped 10 times that destination's volume. This considerable alternative supply from origins within 500 miles of the receivers of cement

¹⁵ Our analysis is limited to locations that can be identified from records of rail shipments that were sampled for inclusion in the CWS. That is necessarily an incomplete assessment of potential alternatives, as it does not consider the full universe even of railroad traffic, let alone the broader universe of destinations that are served by other modes (*e.g.*, trucks). Thus, the real number of alternative proximal destinations – and delivered volumes – is likely much higher.

again provides myriad geographic alternatives. Figure 2 summarizes these results for six of the commodities at issue of varying lengths of haul.

Figure 2
Significant Alternatives Exist within 500 Miles across Commodities



ii. Geographic Alternatives Served by Other Railroads

Identifying alternative origins and destinations using location data is just one way among many in which the Board could use readily available data in the CWS to incorporate information about geographic alternatives into its analysis. As another example, the Board could use information in the CWS to identify geographic alternatives that can be reached by alternative rail routes. To do so, the Board could use the same basic approach it has already developed to identify direct rail competition for shipments between individual origin-and-destination pairs.

To demonstrate in real-world terms the extent to which the GMIM can be used to assess potential geographic competition from other railroads, we can again turn to 2018 hydraulic

cement shipments as an example, specifically cement shipments that originate *****BEGIN
HIGHLY CONFIDENTIAL**

¹⁶ For ease of presentation, this example was limited to the network of cement shipments from *****BEGIN HIGHLY CONFIDENTIAL
END HIGHLY CONFIDENTIAL** stations originate shipments to many other states that are reported in the 2018 CWS, even they provide additional alternative sources for local and interline shipments of cement. Expanding this illustration – and also presenting

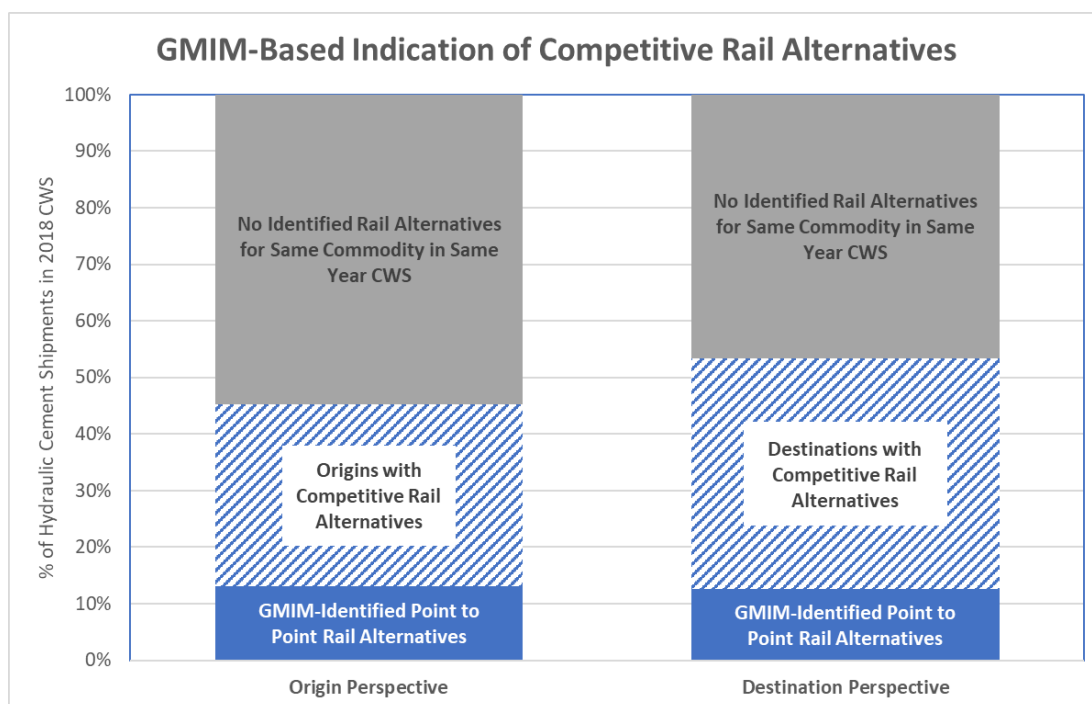
****END HIGHLY CONFIDENTIAL}}**

As this example shows, the Board can use its proposed GMIM model to identify geographic competition—all the Board has to do is relax the requirement of a match at both the origin and destination of a shipment. We replicated the proposed GMIM step of evaluating the commodity-specific lanes for rail alternatives (2020 Decision at 17), performing separate analyses for the origins and destinations of the hydraulic cement shipments in the 2018 CWS. First, we identified for each origin whether there were cement originations by other railroads within 30 miles. This analysis determined that 45% of the total cement shipments originated from locations with competitive rail alternatives, 3.5 times the “Rail-Competitive” volumes that the GMIM identified. We also conducted a similar analysis to identify the competitive rail

examples from the perspective of the receivers at destinations – would readily demonstrate the numerous geographic alternatives that exist even from the subset of rail shipments in the CWS.

alternatives at the destination end, quantifying the other proximal receivers of cement shipments delivered by other railroads. The sampled subset in the 2018 CWS revealed competitive alternatives at the destination for 53% of cement shipments, more than 4 times the level of the GMIM’s “Rail-Competitive” volumes. Figure 4 summarizes the impact of applying that approach to cement shipments reported in the 2018 CWS.

Figure 4



We note that this approach to measuring geographic competition, like any method based on the Waybill Sample, understates shippers’ and receivers’ potential alternatives in the real world. Any model based on a sampled subset of railroad traffic inherently misses other, unsampled alternatives that are available to shippers. And even if all traffic were sampled, the model would still identify only shipments that actually occurred. More competitive alternative origins and destinations exist even if railroads did not pick up or deliver shipments to those locations in any particular year. One solution to identify unsampled alternatives would be to

query the Centralized Station Master (“CSM”) to identify railroads that are operating in the same vicinity, as has been considered in other proceedings.¹⁷ This would reveal additional alternatives that would provide competitive influence on the shipments identified in the CWS.¹⁸

In summary, we propose that the Board incorporate into its approach an analysis of geographic competition that evaluates the commodity’s geographic competition alternatives. The Board should also employ an Initial Screen that determines whether available geographic alternatives are below a certain level before continuing the investigation of a potential candidate for revocation.

c. Traffic Volume Growth.

A major feature of the proposed approach is comparisons of metrics for a particular commodity in 2018 to the same metrics in 1992. But the proposed approach does not consider traffic growth, which is an important datapoint. Increased output is typically not associated with anticompetitive behavior, as the separate verified statement from Cornerstone explains. Accordingly, we propose that the Board include a metric that measures the change in a commodity’s carload traffic volumes over time.

When we examined the CWS shipment data for 1992 and 2018, we found that for half of the commodities at issue in this proceeding carload volumes have increased by more than 20% since 1992. Table 3 identifies nine commodities that are included in the analysis in the 2020

¹⁷ See, e.g., STB July 27, 2016 Decision in *Ex Parte No. 711 (Sub-No. 1) Reciprocal Switching*.

¹⁸ Other methods to address (at least to some extent) the understatement of competitive railroad alternatives involve expanding the scope of the CWS analysis to include shipments 1) from other years and 2) for other commodities. In our discussion of the GMIM’s identification of “point-to-point” rail competition in Section V.b below, we show the impact of these types of refinements.

Decision for which shipments have doubled, and six other commodities for which volumes have increased by between 20 and 100% over the same period.

Table 3
Potential Revocation Commodities with Significant Traffic Growth since 1992

<u>Commodities with >100%+ Traffic Growth Since 1992</u>	<u>Commodities with 20-100% Traffic Growth Since 1992</u>
14211-Agricultural Limestone, Broken or Crushed	14219-Broken or Crushed Stone or Riprap, Nec
14213-Dolomite, Broken or Crushed	24211-Lumber, Rough or Dressed
24991-Strand Board Wood Products	32411-Hydraulic Cement, Natural, Portland or Masonry
26217-Special Industrial Paper	33122-Iron or Steel Plates
33123-Iron or Steel Sheet or Strip	33128-Railway Track Material
33126-Iron or Steel Pipe, Tubes or Fittings	37112-Motor Trucks or Truck Tractors, Assembled
33129-Primary Iron or Steel Products, Nec	
37111-Motor Passenger Cars, Assembled	
37143-Motor Vehicle Frames	

Finally, we recognize that expanding the scope of the analytical effort to incorporate additional data for an “initial or partial” assessment involves evaluating the trade-offs and weighing the difficulty of compiling the data vs. the benefits of doing so. We believe that in inquiries relating to the potential for broad, industry-wide revocations, additional data is necessary and worth the effort. The Board’s proposal seeks to prioritize potential areas of further investigation for commodity-wide regulation that will dictate the commitment of resources from the Board, and also from railroads, shippers, and potentially other government agencies as well. As such, it is worth eliminating up front the potential for false positives and other misinterpretations by incorporating all of the required relevant available data. “A stitch in time saves nine”: the expense of exploring data to which the STB has access will likely be less than the cost of pursuing a commodity for exemption, only to find out down the road after more time and effort have been expended, that such revocation is not warranted.¹⁹ In particular, the Board

¹⁹ Cf. Petition for Rulemaking, Ex Parte No. 752 (STB-served March 14, 2019).

should incorporate into its approach data concerning rail market share, geographic competition, and changes in traffic volume.

IV. There are Limitations in the Carload Waybill Sample that Serves as the Basis for Most of the Dashboard's Analyses

a. The Confidential Carload Waybill Sample

The primary data source for the proposed approach is the confidential Carload Waybill Sample. The CWS contains detailed shipment characteristics and financial information, and is a critical tool for the Board in carrying out many of its regulatory obligations. However, because the CWS solely focuses on commodity shipments moving by rail, it is a poor tool for assessing the broader market conditions for particular commodities. In particular, the CWS cannot provide the Board an accurate picture of alternative transportation options—*e.g.*, trucking—that are outside the CWS's scope. Although the proposed approach supplements the CWS with information about water-based alternatives, it still lacks any meaningful information about trucking or other competitive alternatives, as explained above.

Even for rail-to-rail competition, the CWS's utility is limited. In the *Ex Parte No. 385 Waybill Sample Reporting* proceeding, the Board has acknowledged that current waybill sampling rates are too low and has ordered increased sampling rates beginning with the 2021 sample.²⁰ The current sampling rate for single-car shipments (*i.e.*, waybills for shipment sizes of 1 to 5 cars, which account for the vast majority of shipments of the commodities at issue in this proceeding) is just 2.5%—one out of every 40. For purposes of the GMIM model, this

²⁰ See November 29, 2019 NPRM and September 3, 2020 Decision in STB *Ex Parte No. 385 (Sub-No. 8) Waybill Sample Reporting*.

means that if a competitive rail shipment of the same commodity, moving over the same lane, is not among the 2.5% of moves included in the sample, then the GMIM will show no rail-to-rail competition. And by considering only a single year's worth of data at each end of the period under review (here, 1992 and 2018), the proposed approach locks in the undersampling in a manner that could be alleviated if the Board examined multiple years and thereby decreased the inherent risk of missing unsampled competitive movements.

In addition to undersampling, the prevalence of Rule 11 shipments in the CWS data masks the location of the actual origins and destinations of many shipments. Rule 11 shipments are interline shipments for which the participating carriers bill independently for their charges. For example, a Rule 11 shipment from Los Angeles to New York with an interchange in Chicago will be reported in the CWS for only the portion of the through movement to or from Chicago, *i.e.*, the handling by the western carrier from Los Angeles to Chicago, or the handling by the eastern carrier from Chicago to New York. While Rule 11 shipments can theoretically be identified in the CWS by using the Rebill flag, the low sampling rate makes it very unlikely that both portions of the shipment would be captured in the sample, and therefore for both portions to be matched to construct the end-to-end movement.

V. The Proposed Approach Views Truck, Rail, and Water Competition Too Narrowly

a. Truck Competition

As discussed above, the presence of truck alternatives is extensive, and prior exemption analyses routinely looked to actual data on trucking. Here, the Board's proposal seeks to measure the competitive influence from truck transportation using a length-of-haul metric that is based on data on railroad shipments. Specifically, in determining the likelihood of truck competition, and the extent to which trucking's influence has changed since 1992, the Indicator

Dashboard uses a threshold of 500 miles as a proxy for whether trucking is likely to be competitive.²¹

The Board's goal of attempting to measure potential truck competition makes abundant sense, as trucks are the primary intermodal alternative to railroads. But determining the approximate length-of-haul for trucks based on data from the CWS will lead to erroneous results. The highway distance between most points is shorter for trucks than the distance traveled by rail, which effectively means that the Board's threshold of 500 *rail* miles installs a much lower limit on the range at which the Indicator Dashboard treats trucks as potentially competitive. There are two separate factors contributing to the understatement of truck competition in the proposed length-of-haul metrics.

First, the proposed approach uses the distance assigned in the CWS for each individual rail shipment in the CWS to calculate average length of haul. In 2016, the methodology used to assign miles to individual shipments in the CWS changed and began to capture the actual distances traversed.²² Due to a variety of factors, the actual route an individual shipment may take may vary, even between the same origin and destination point. By using real-world data on the actual routes taken by some shipments, the mileages in more recent CWS data produce a better reflection of the usage of the carriers' networks, a better match between the CWS and

²¹ The Indicator Dashboard uses the 500-mile threshold for the Competitive Influence Indicators (Indicators Nos. 3-4), Length of Haul Indicators (Indicators Nos. 5-6), and Competitive Influence R/VC Difference Indicators (Indicators Nos. 7-8).

²² The change in the way that rail distances are measured for the CWS is discussed in the Board's February 14, 2017 decision in Ex Parte No. 290 (Sub-No. 4), and the specific approach that is employed is detailed in Section 5 to the 2018 CWS Reference Guide.

carriers' reported R-1 performance, and a more accurate estimation of the costs of service by the URCS costing system.

As a result of the CWS's use of actual distances, however, the length-of-haul metrics in the proposed approach overstate the distances trucks must travel between origins and destinations even assuming rail miles and highway miles are identical. That is because the actual rail route used for a particular shipment in the sample might be longer than the *shortest* rail distance between two points. For example, the 2018 CWS includes more than a dozen records for shipments of STCC 32411 Hydraulic Cement from *****BEGIN HIGHLY CONFIDENTIAL** ****END HIGHLY CONFIDENTIAL****. The individual records for shipments for this origin-destination pair report five different distances, ranging from 463 to 536 miles. Under the proposed approach, only the records that report less than 500 miles are considered truck competitive—representing only a quarter of the carloads for this origin-destination pair. As a result, despite the fact that the rail distance between these points is less than 500 miles, three-quarters of the shipments are wrongly considered not to be truck-competitive even though they travel from the same origin to the same destination as shipments that are considered to be truck competitive. The impact of these longer rail routings is further reflected in the calculation of the average length of haul for cement shipments. The Dashboard uses the actual rail shipment distances to calculate an average length of haul of 509 miles. If, rather than the longer routings, the shortest distance for each origin-destination pair in the CWS were used, then the average rail distance would fall by 9%, to 463 miles.²³ To avoid

²³ We note that this resulting average minimum rail distance for all cement shipments of 463 miles is the same distance as the shortest distance that was reported in the CWS for the illustrative origin-destination pair selected above.

this disconnect, the Board should use the shortest distance for each origin-destination pair when it calculates its length-of-haul metrics, assuming the Board continues to rely on rail miles from the CWS rather than looking to the actual highway mileages, as discussed below.

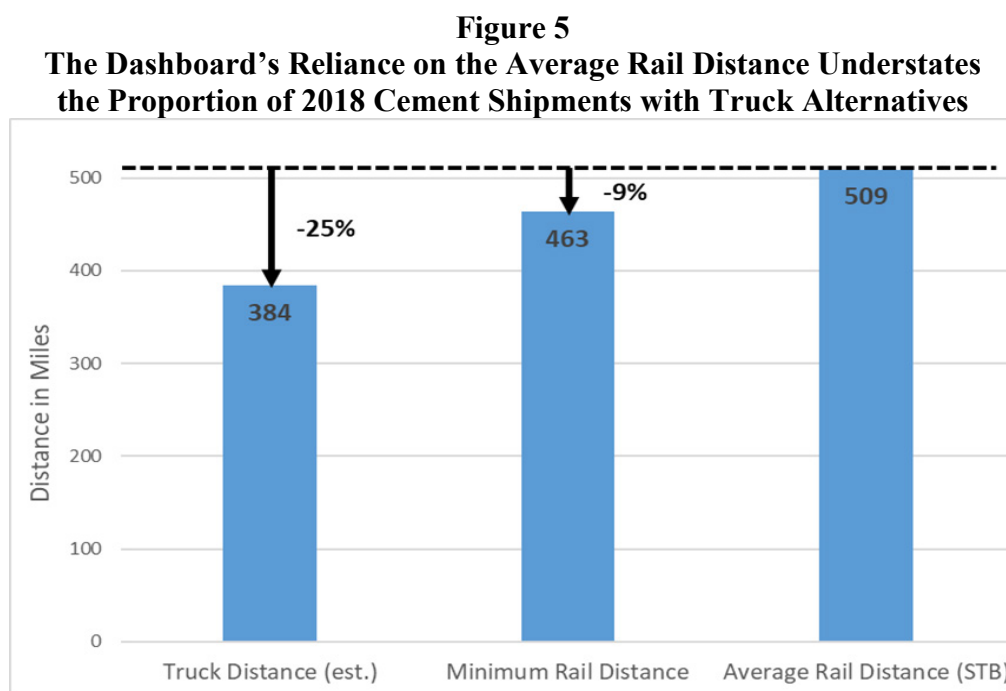
Second, and more fundamentally, the highway distance between most origins and destinations is shorter than the rail distance. Put differently, even the more accurate rail distances reported in the 2018 CWS overstate the actual distances that trucks would need to travel to compete.

To illustrate the scope of the differences between rail and truck miles, we examined the 60 highest-volume origin-destination pairs for cement, each of which reported more than 1,000 carloads. We used the rail distances reported in the CWS, and compared them to the actual miles trucks would travel using a publicly available source specific to heavy trucks.²⁴ Of the 60 lanes, 54 (or 90%) of them showed shorter truck distances than the minimum rail distance reported in the 2018 CWS. Nearly half of the 60 lanes (45% of the total) were more than 25% shorter. Across these 60 cement lanes, the median difference indicated that the truck distance was 17% shorter than the minimum rail distance.

The combination of these problems in the current approach's calculations leads to a dramatic undercounting of the amount of shipments that are likely susceptible to truck competition using the Board's own 500-mile threshold. The combined effect of the proposed approach's reliance on actual miles traveled for individual shipments (as opposed to the shortest rail distance between an origin and destination) and the fact that rail miles are virtually always

²⁴ <http://truckmiles.com/default.asp> ("the #1 leading heavy truck routing and mileage website available in the trucking industry today").

longer than actual highway miles is to overstate truck distances by more than 25%. As shown in Figure 5, the proposed approach for 2018 cement shipments has the effect of considering trucks as competing only when the highway distance is less than 400 miles.²⁵



In sum, the length-of-haul metrics in the proposed approach systematically overstate the distances that trucks must travel to compete for rail shipments, which has the effect of distorting all of the Dashboard Indicators that rely on these metrics. The Board should account for the problem by using air or highway miles to measure length of haul, or, at minimum, calculating length of haul using the shortest rail distance between any given origin and destination and

²⁵ $463 \text{ minimum rail distance} / 509 \text{ average rail distance} = 0.91$, or 9% lower. Applying the 17% median difference from the minimum rail to truck distances is $463 \times (1 - 0.17)$, or 384 truck miles. $384 / 509 = 0.75$, or 25% lower.

applying a downward adjustment of 15% to account for the difference between rail miles and highway miles.

b. Rail Competition

The Board's proposal seeks to identify the influence of intramodal competition, *i.e.*, from other railroads, by using the Carload Waybill Sample. Specifically, the GMIM model determines individual traffic lanes for each year 1992 and 2018 based on the specific commodity, origin location, origin railroad, destination location, and destination railroad. For each of those lanes, the model searches for other CWS shipments of that same commodity that are served by different railroads between locations that are within 30 miles of both the origin and destination. The only shipments that the Board's proposed approach consider subject to the competitive pressure of other railroads are those for which the same year's CWS also sampled a record for a shipment of the same commodity, served by different railroads, for the same point-to-point geography. This approach is overly limiting, and serves to understate the presence of intramodal competition for a host of reasons.

First, we discussed previously that relying upon a 2.5% sample will unavoidably hamper the identification of competitive alternatives. Not only has the Board acknowledged this limitation, it has done something about it, and modified its rules to increase sampling rates to *8 times the current levels* used for the types of shipments that account for most of the commodities at issue in this proceeding.²⁶ The low probability of being included in the CWS, however, is not the only shortcoming. Even if the CWS sampled 100% of railroad shipments in an individual year, the GMIM's approach would still fall short of identifying the traffic lanes subject to

²⁶ STB September 3, 2020 Decision in *Ex Parte No. 385 (Sub-No. 8) Waybill Sample Reporting*.

intramodal competition. Customers may switch between competing railroads from one year to the next, and even when they do not switch, can provide the threat of doing so when railroad alternatives exist.²⁷ The other limitation is that the GMIM requires not only that the CWS includes a shipment in the same year, but that it be of the same commodity, at the 5-digit STCC level. This is a particularly limiting aspect of the Board's proposal, as the movement of other types of traffic between the same origin and destination locations by other railroads is clearly evidence that there are efficient rail routes between those points that provide intramodal competition worthy of consideration.²⁸

We can use the CWS files to demonstrate at least a portion of the impact of the constraints set forth above. While the CWS does not allow evaluation of shipments that were not sampled, or situations involving the threat of diversions to other carriers where no shipments occurred, we can examine the impact of limiting the alternatives to (1) shipments that were sampled in the same year, and (2) shipments of the same commodity. First, we followed the GMIM's approach of identifying the traffic lanes from the 2018 CWS for which to search for competitive alternatives and then, rather than search only in the 2018 CWS, we expanded the potential universe to include shipments from the 2016 and 2017 CWS files, too.²⁹ Merely

²⁷ The Board recognized this point in identifying the potential "Under-inclusive" aspects of its proposed approach: "Under-inclusive since stations without traffic may still be functional if there was any demand for traffic, and there may even have been traffic in the year preceding or following the year of the study." (2020 Decision at 23.)

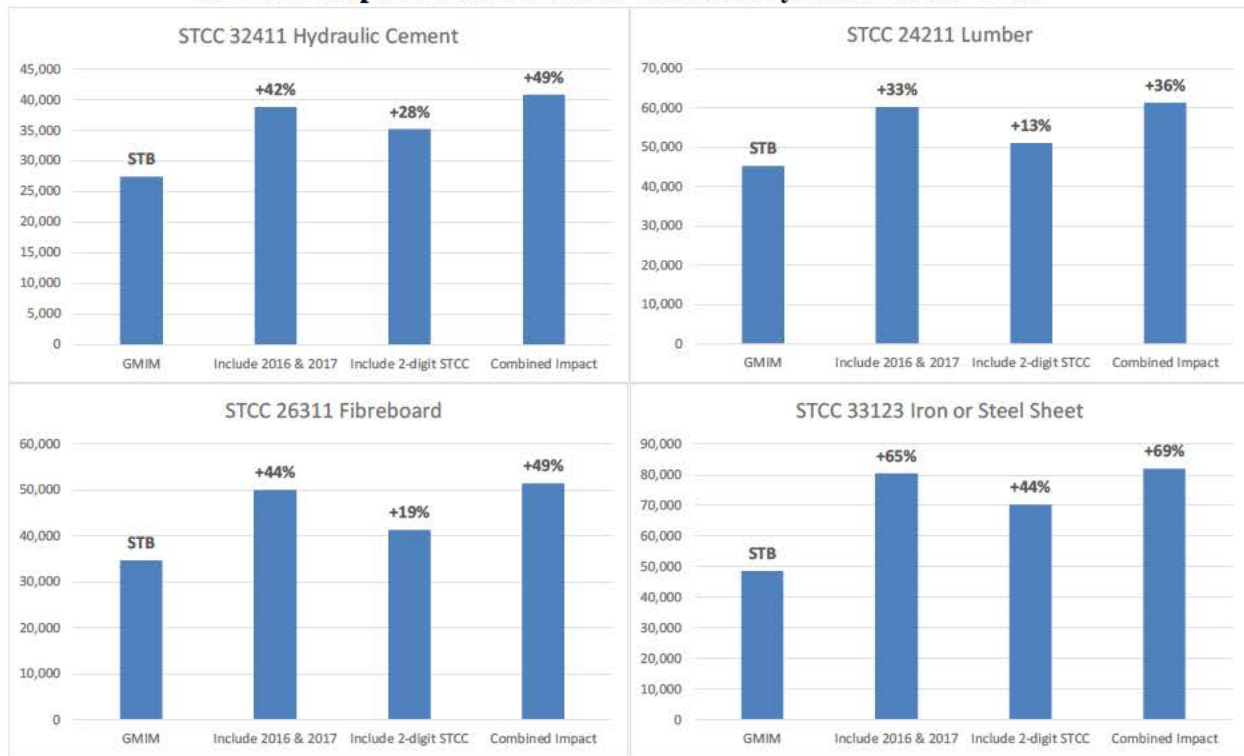
²⁸ This point also merited discussion as "Under-inclusive," as the Board recognized "there are likely cases where any traffic moving would signify a viable route, regardless of what commodity is being moved." (2020 Decision at 23.) Also, railroad transload facilities are typically capable of handling a wide variety of commodities.

²⁹ We have been provided access to the Board's confidential Carload Waybill Samples for 2016 and 2017 for use in this proceeding.

casting a broader net to consider competitive alternatives that were sampled in other years – while still limiting to the same 5-digit STCC – resulted in significant increases in the number of instances of direct rail “point-to-point” competition. As summarized in Figure 6, expanding from the Board’s one-year snapshot to utilize three years’ samples increased the number of 2018 shipments subject to competitive influence by 33% or more for a representative sample of four of the commodities at issue. Second, to test the Board’s proposed commodity restriction, we expanded the analysis to consider as evidence of potential competitive alternatives shipments of the same commodity at the 2-digit STCC level, rather than the 5-digit STCC.³⁰ This resulted in increases to the “Rail Competitive” volumes of 13% or more for all four of the commodities, and 28% or more for two of them. Incorporating these two modest expansions to the proposed GMIM model represent steps that would be straightforward to implement and would better reflect the competitive influence presented by other railroads.

³⁰ The other constraints remained unchanged, that the movements had to be served by different railroads between locations within 30 miles of both the origin and destination. Expanding only to the 2-digit STCC still presents a narrow perspective of intramodal competition, as it does not capture the presence of other carriers’ shipping other commodities on the same lanes, that could ship the commodities at issue.

Figure 6
Impact of Expanding the Board's Restriction of Direct Rail Competition
to CWS Shipments of the Same Commodity in the Same Year³¹



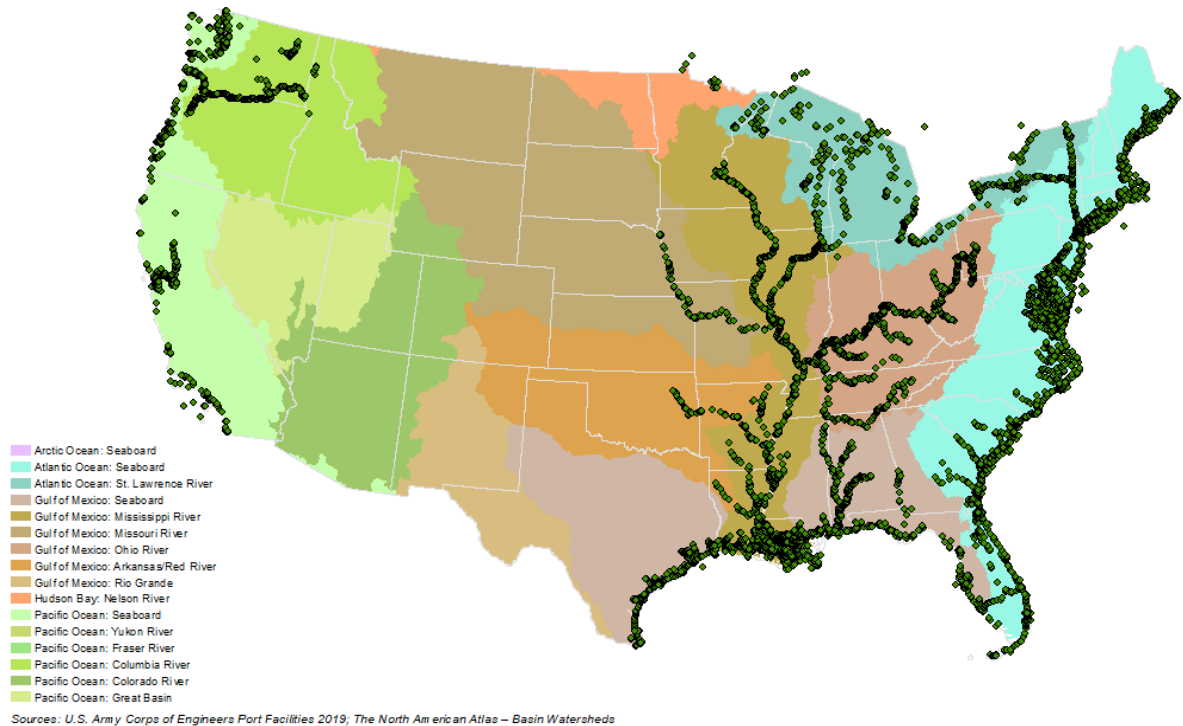
c. Barge Competition

The GMIM model also attempts to identify and incorporate the potential impact of competitive pressure from water carriers. (2020 Decision at 7-8 and 16-17.) Specifically, the proposed approach uses information about the national waterway network compiled by the U.S. Army Corps of Engineers (“USACE”) to determine which ports are within 30 miles of rail stations, and the performs a similar “point-to-point” matching method as that employed to determine direct rail competition. In classifying rail-shipment lanes as barge-competitive, the GMIM does not require that the ports shipped the same commodities—a less-restrictive criteria

³¹ The “Combined Impacts” that are presented reflect the total volumes for which competitive alternatives were identified from a 3-year CWS analysis of commodities within the same 2-digit STCC, and does not double-count any shipments.

than that used to identify rail-competitive lanes.³² Figure 7 is a map of the ports accounted for in the GMIM model.

Figure 7
U.S. Waterway Systems and Port Locations



- i. The GMIM’s limitation to the same waterway system understates the level of barge competition.

The Board’s proposed GMIM model identifies shipments as barge-competitive only where a shipment’s origin and destination are both located within 30 miles of ports that are on the same waterway system.³³ The Board should revisit this constraint, as there are many

³² The Board acknowledged this distinction in the 2020 Decision (pages 22-23), and Board staff discussed the limitations of the commodity reportings at the second Technical Conference.

³³ 2020 Decision at 16-17, identifying the following five waterway systems: (1) Atlantic Ocean, (2) Pacific Ocean, (3) Great Lakes, (4) Mississippi River, and (5) Gulf of Mexico.

shipments that occur between locations on different waterway systems.³⁴ The publicly available USACE data makes this clear. For example, Table 4 summarizes the waterway tonnage flows in the Eastern and Midwestern United States as reported by the U.S. Army Corps of Engineers, and shows that in 2018 nearly 200 million tons moved between different waterway systems.

Table 4
2018 Tonnage Flows between Eastern and Midwestern Waterways (000s)

<i>Origin Region</i>	<i>Destination Region</i>					Intersystem Total
	Atlantic Ocean	Great Lakes	Gulf Coast	Mississippi River	Other	
Atlantic Ocean	79,667	14	536	329	2,453	3,333
Great Lakes	390	83,383	343	1,711	15,314	17,758
Gulf Coast	19,596	564	122,539	35,331	15,518	71,009
Mississippi River	6,775	3,624	35,841	358,359	3,757	49,997
Other	28,836	14,385	6,865	1,443	230	51,530
Intersystem Total	55,597	18,587	43,585	38,815	37,043	193,626

- ii. The GMIM model does not consider competition from international ports.

The CWS includes many shipments that originate or terminate in Canada. The USACE source data, however, identifies ports in the United States only. As a result, the significant competition from barges to and from Canadian ports is not captured by the GMIM – and many of the Canadian rail shipments to and from points on either U.S. coast are mis-coded as non-competitive. This is a particularly glaring omission for shipments that move to or from Vancouver, British Columbia, which is routinely identified as one of the busiest ports in North America.³⁵ As the commodities at issue in this proceeding involve many railroad shipments to

³⁴ The Board recognized the limiting aspect of this assumption (2020 Decision at 22.), and we recommend closer examination of the waterway system definitions.

³⁵ See, e.g., <https://www.csatransportation.com/blog/largest-ports-in-the-us-canada>, https://nowthatslogistics.com/top-15-ports-in-the-americas-2019/?doing_wp_cron=1611425560.4222660064697265625000.

and from Vancouver, BC as well as other stations in Canada, potential barge alternatives for those shipments should be considered.³⁶

VI. There Have Been Significant Changes to the Railroad Industry that can Confound Comparisons to 1992 Data

In addition to the limitations of the data in the proposed approach, the approach does not sufficiently account for significant changes in the railroad industry since 1992. The Board should be wary of misinterpreting observed changes in the metrics relied on in the proposed approach, which could attribute pro-competitive actions by railroads or independent actions taken by shippers as evidence of railroad market power.

The Board’s measurement of changes in the railroad industry over the past quarter century is one of the main factors driving the proposed approach. In fact, 4 of the Board’s 8 Indicators are based on changes over the 26-year period from 1992 to 2018—contributing half of the Overall Signal in the Indicator Dashboard. Specifically, the proposed approach includes a series of metrics to calculate changes in R/VC ratios, length of haul, and intramodal and intermodal competition, and then compares those changes to the corresponding change it calculates for an “All Carload Traffic” composite over the same period. Before the Board

³⁶ We note an apparent technical error in the GMIM’s identification of railroad freight station locations, and that the apparent error has the result of understating barge competition for railroad lanes in the United States. Instead of testing for proximal locations using the latitude and longitude coordinates for Vancouver, Washington, however, the GMIM used the coordinates for Vancouver, *British Columbia*. This hiccup prevents the identification of water alternatives for rail shipments to or from Vancouver, Washington, which includes its own deep-water port on the Columbia River, and is also within 30 miles of Portland, Oregon. As a result of the GMIM’s omission of Canadian ports, the Dashboard’s calculations incorrectly conclude that there are no ports within 30 miles of Vancouver, Washington, and thus do not account for the influence of barge competition on the corresponding rail shipments that originate or terminate there.

attempts to draw conclusions from these metrics, it is important to recognize the significant evolution that has transpired in the industry over that 26-year period.

First, railroads' total traffic volumes (as measured by Gross Ton-Miles) increased by 59% from 1992 to 2018.³⁷ That represents a compound annual growth rate slightly less than 2%, but these figures include the sharp decline in one of the railroads' primary traffic groups—utility coal—during this timeframe. During this period, the overall density of the U.S. rail network has nearly doubled, from 17.8 million to 34.7 million gross ton-miles per route mile.

To achieve this traffic growth, railroads are constantly investing to expand the service they provide their customers, as volume grows and their customers' needs and demand change – and to do so through increasingly more efficient and cost-effective means.³⁸ Railroads have made significant investments in new technologies to achieve these goals.³⁹ As the Board's proposal seeks to evaluate – and potentially differentiate among – a group of commodities that were exempted from regulation more than two decades ago, it merits considering the patterns

³⁷ The figures in this section reflect the totals for all U.S. Class I railroads in each year, as reported in AAR's annual "Analysis of Class I Railroads" publication.

³⁸ In 1992, the U.S. freight railroads combined to invest \$3.6 billion; in 2018 that figure was 3.4 times higher, or \$12.4 billion. Even after adjusting 1992's annual investments by the GDP-IPD inflation factor that the Board used for revenues and costs the railroads invested more than twice as much in 2018.

³⁹ Locomotive technology presents one example of railroads' significant investments in innovation. In 1992, the average horsepower of a locomotive was 2,689; that average increased 40% over the next 26 years, to 3,753. As a result, railroads are able to power heavier and longer trains, moving their customers' freight more efficiently. Other innovations include increasing track and freight car capacities to handle heavier loads and operating and mechanical practices that support longer hauls – either of which could lead to counter-intuitive results from the Dashboard Indicator measurements.

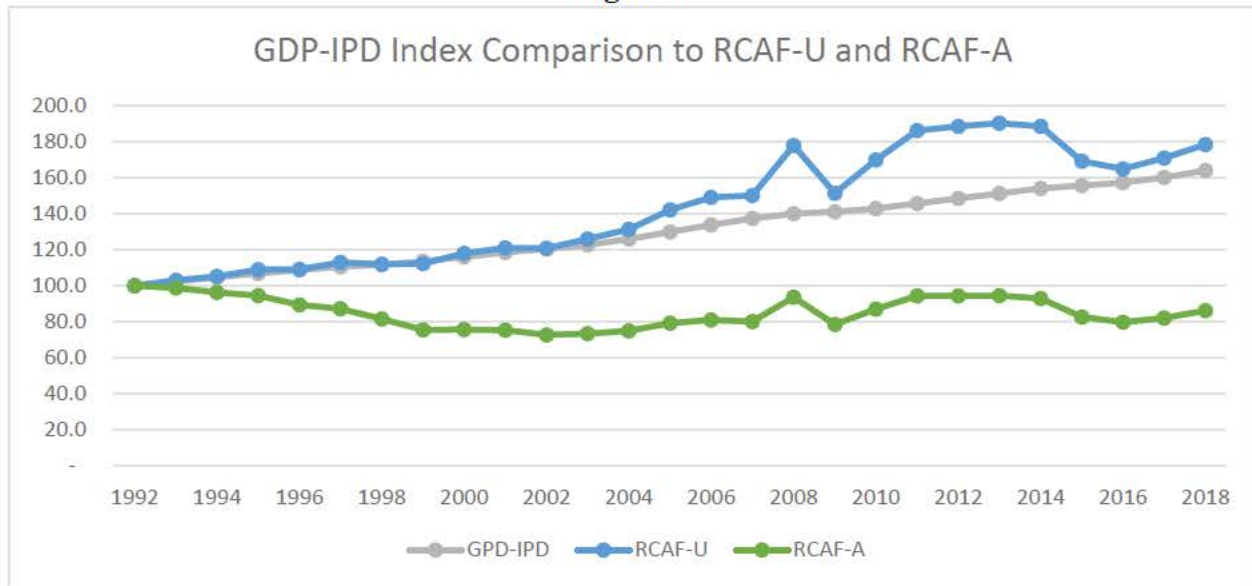
underlying the overall evolution of the industry, and avoiding misinterpreting any observations for the subset of traffic represented by the commodities at issue in this proceeding.

VII. The Proposed Approach's Reliance on R/VC Ratios Should Be Altered

a. Higher R/VC ratios are not related to changes in market conditions and are the result of rail productivity gains

The Board's proposed approach mistakenly interprets higher R/VC ratios as suggestive of potential concern. Half of the Board's proposed screens and Indicators for the Dashboard are based on R/VC ratios. Those metrics include comparisons of R/VC ratios from 1992 to 2018. To compare the 1992 and 2018 R/VC ratios, the Board adjusts the revenues and costs comprising the ratios to account for inflation, for which it relies on observed historical changes in the Gross Domestic Product-Implicit Price Deflator (GDP-IPD). The GDP-IPD measures changes in the prices of goods and services produced in the United States. But the GDP-IDP fails to sufficiently account for increases in railroad productivity, as shown below. Figure 8 compares the GDP-IPD index from 1992 to 2018 with the Rail Cost Adjustment Factor (RCAF) unadjusted for railroad industry productivity (RCAF-U), as well as the RCAF adjusted for railroad industry productivity (RCAF-A). This comparison shows that the GDP-IPD aligns more closely with the RCAF-U, *i.e.*, that GDP-IPD is missing the impact of increased railroad productivity.

Figure 8



The consequence is that the proposed approach fails to account for the impact of productivity on R/VC ratios. Because of productivity, railroad R/VC ratios will rise over time, even if all of the productivity-related savings are passed through to the shipper. By failing to recognize the impact of increased productivity on its comparisons of R/VC ratios over time, the proposed approach will mistakenly associate increases in nominal R/VC ratios with a change in railroad market power.

Consider, for example, a carload shipment in 1992 with a rate of \$3,600 and a variable cost of \$2,000, yielding an R/VC ratio of 180%. Assume that inflation is 3.0 percent annually, or for simplicity 75 percent in total over 25 years. Under these assumptions, the rate 25 years later is \$6,300 and the variable cost is \$3,500. The R/VC ratio remains at 180%. But now consider the impact of increased productivity on the same comparison. Now assume a productivity increase of 2.0 percent annually, so that railroad costs increase on average 1.0 percent annually or 25 percent over 25 years. The inflation-adjusted rate in year 25 remains \$6,300, as above, but the variable cost in year 25 is now just \$2,500, resulting in an R/VC ratio of 252%. And even if all of the productivity savings (*i.e.*, \$1,000, or \$3,500 minus \$2,500) are passed through to the

shipper in the form of a reduced rate, the same phenomenon would occur. With all productivity savings passed along to the shipper, the year 25 rate becomes \$5,300, which when compared to a year 25 railroad cost of \$2,500 produces an R/VC of 212%. Thus, even if the railroad passed along all of the benefits of productivity to shippers in the form of low rates—an indisputably pro-competitive action—the proposed approach would show the R/VC ratio for that shipment as increasing from 180% to 212%. That would trigger two aspects of the Board’s proposed approach—the Indicators measuring increased R/VC ratios and the Initial Screen’s measuring higher amounts of traffic with R/VC ratios above 180%—even though the reality is that market conditions for shippers are getting better over time, not worse.

As Figure 8 above demonstrates, the railroads have achieved significant productivity relative to both the RCAF-U and the GDP-IPD over the 1992 to 2018 time period. Absent a detailed market study for each commodity, there is no way to determine on a commodity-specific basis the precise amount of productivity gains that have been passed through to shippers in the form of reduced rates. Instead, Table 5 approximates the impact of productivity on individual commodities by adding back to the 2018 URCS variable costs half of the 1992 to 2018 productivity-related cost savings, and then, alternatively, *all* of the 1992 to 2018 savings.

Table 5
R/VC Comparison Sensitivity Based on Different Productivity Adjustments,
All Carload Shipments

Productivity Assumption	1992 Avg R/VC	2018 Avg R/VC
Unadjusted R/VCs from CWS	142.3%	150.7%
R/VC with One-Half of 1992 to 2018 Productivity Savings Added Back to URCS Costs	142.3%	111.7%
R/VC with All 1992 to 2018 Productivity Savings Added Back to URCS Costs	142.3%	72.8%

Figure 9 illustrates how the failure to take account of railroad productivity of productivity impacts the observed R/VC levels. The chart deconstructs the observed average all carload R/VC ratios from the Waybill Sample assuming that VC was \$1,000 in 1992 and R was thus \$1,423 (for an R/VC ratio of 142.3%). With both VC and R adjusted for inflation from 1992 to 2018, we can assume VC stayed constant and R increased to \$1,507 (for an R/VC ratio of 150.7%). This trend is depicted in the red lines (for VC) and bars (for R/VC) in Figure 9. In fact, however, the VC was influenced by railroad productivity. The impact of that productivity on R/VC can be seen by removing it from observed VC levels – which results in inflation-adjusted VC increasing from \$1,000 in 1992 to \$2,071 in 2018 (as shown by the green line in Figure 9). Had there been no productivity, therefore, average R/VC levels would have fallen from 142% to 73% (as shown by the green bars). The Board’s proposed approach considers increases in R/VC ratios as potentially reflective of the exercise of market power. The above example demonstrates that any such R/VC comparisons should recognize that when the railroads’ productivity gains are considered, comparable R/VC levels in 2018 are more than 30% points lower than in 1992.

Figure 9
Impact of Productivity on R/VC Levels



Considering and accounting for the effects of productivity in this way adds crucial perspective to observed changes in R/VC ratios from 1992 to 2018 and would help prevent the Board from jumping to the erroneous conclusion that increases in R/VC over time are the result of other market conditions that might be cause for concern. There are a variety of ways that the Board could recognize and incorporate the impact of increases in railroad productivity on R/VC ratios. One option would be for the Board to account for the likelihood that productivity-related savings are driving higher R/VC ratios by adjusting upward the Indicator Dashboard threshold at

which changes in R/VC ratios are deemed to provide relevant information about market conditions and cause for potential concern. For example, in the hypothetical above, a shipment in 1992 with an R/VC of 180% for which the railroad passes through all the benefits of productivity savings to the shipper would have an R/VC of 212% in 2018. The Board could account for this phenomenon by adjusting the thresholds to consider the relative percentage of shipments in 2018 with an R/VC above 212%, and comparing that percentage with the percentage of shipments with an R/VC of 180% in 1992.

The proposed approach's evaluation of the relative change in R/VC ratios for a specific commodity relative to the overall change in R/VC ratios for all carload shipments introduces an additional flaw related to the impact of productivity. Specifically, the Board's approach assumes that URCS captures accurately at the individual commodity level the effects of changes in railroad productivity from 1992 to 2018. But that assumption is incorrect.

As we explained in our 2016 statement, substantial changes in railroad operating practices and traffic mix since 1992 have rendered many of the causal relationships in URCS obsolete.⁴⁰ In 2016, our criticisms focused primarily on the effects of substantial increases in intermodal shipments on overall railroad efficiencies. As URCS is used in the proposed approach here, URCS is not sufficiently granular to reflect commodity-specific costs. It cannot, for example, attribute the effects of railroads' substantial capital investments for new and improved customer services to the specific commodities for which the investments are made. URCS is also not equipped to assess the relative density of the lanes over which individual commodities may traverse and, as such, cannot recognize the high costs per unit of operating on

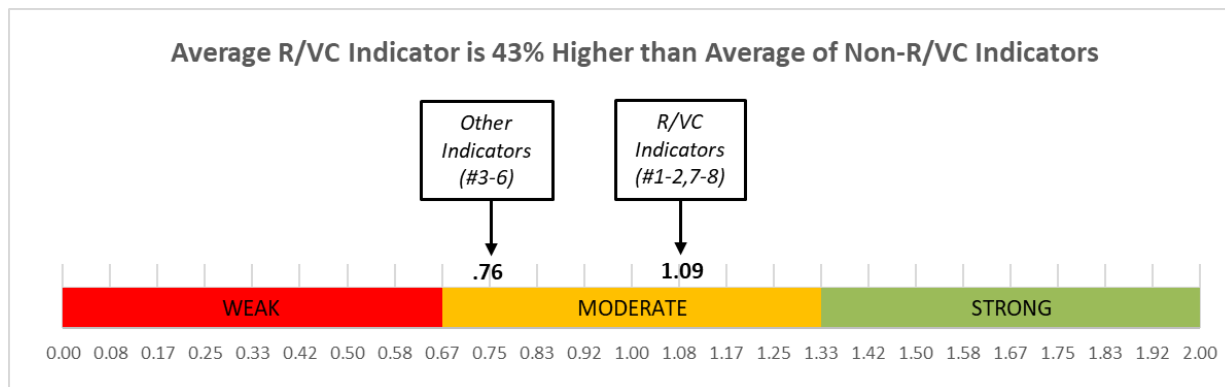
⁴⁰ See Baranowski/Fisher July 2016 VS at 4-18.

less dense portions of the railroad network. These and other aspects of URCS undermine the relevance of any comparisons of R/VC ratios to the ratios for all carload traffic.⁴¹

b. The Proposed Approach Continues to Rely Heavily on Interpretations of the Level of R/VC Ratios and their Change Since 1992 (Indicators Nos. 1-2 and 7-8)

The manner in which the proposed Indicator Dashboard uses R/VC ratios compounds the problems with R/VC as a metric. Although the Board’s proposed approach considers other metrics, R/VC ratios are the primary driver of the results in the Indicator Dashboard. R/VC ratios are directly calculated and used to determine half of the Indicators, and as shown below, disproportionately contribute to the “Strong” signals for potential revocation. Figure 10 demonstrates that for the commodities at issue in this proceeding, the average score for the four R/VC Indicators is 1.09, compared to 0.76 for the other four Indicators.⁴²

Figure 10



⁴¹ As we discuss in Section VII.b.2 below, an additional factor affecting the proposed comparisons of R/VC ratios relates to traffic mix and widely differing proportions of unit trains between the commodities at issue in this proceeding and the overall traffic base.

⁴² See STB workpaper “Indicator Dashboard.xlsx,” tab “Indicator Dashboard.” The averages for each of the R/VC-related Indicators are 1.00, 1.52, 0.96, and 0.86, and the averages for each of the other Indicators are 0.85, 0.48, 1.08, and 0.64.

We advise caution and careful consideration of the factors that could explain differences between R/VC levels of shipments of different commodities. These factors include the varying demand, geography, service requirements, and competitive alternatives for different commodities, just to name a few. Some of these are factors that the proposed approach attempts to identify, while others are not considered. And we are particularly concerned about comparisons of R/VC ratios across 26 years. As we referenced in prior sections, the market dynamics and limitations of the URCS costing system across a dynamic period of shifts in demand, investment, and expansion for the U.S. freight railroad industry (as described previously) all serve to heighten the potential for mis-interpretation of any observed measures or comparisons. In addition to the problems noted above, below are three of our largest concerns with the proposed approach's reliance on R/VC ratios:

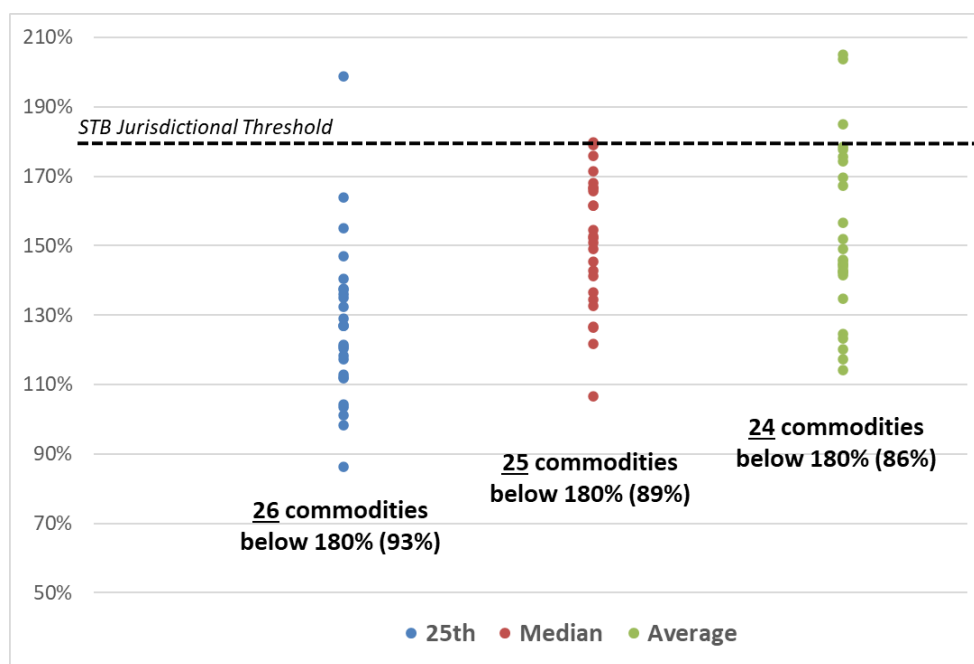
- The vast majority of the proposed approach's R/VC metrics are based on R/VC ratios that are below 180%, which are outside the Board's jurisdiction and are not evidence of market power;
- The R/VC ratios are compared to an All Carload Traffic composite ratio that is weighted heavily by unit-train traffic that is not typical of shipments of the commodities at issue in this proceeding; and
- The R/VC Change Indicator (Indicator No. 2) fails to consider the effects of increased productivity over time, the limitations of the URCS costing system, and the use of a broad inflation index, and as a result will yield false positives that distort the Dashboard and Overall Signal.
 - i. The vast majority of R/VC Indicators are based on observations for shipments with R/VC<180.

In calculating the Dashboard's first two Indicators, the proposed approach compares the R/VC ratios for individual commodities to the composite R/VC ratio for all carload traffic. In performing that comparison, the Board examines four different R/VC levels: (1) the upper quartile, (2) the lower quartile, (3) the median, and (4) the average. (2020 Decision at 18.) We

appreciate the desire to avoid basing an assessment on one R/VC measure—particularly an average R/VC ratio, which can be especially misleading in light of differences in lengths of haul, shipment weights, types of freight cars, types of train service, product markets, and other factors.

But the Board’s workpapers show that for more than 85% of the commodities at issue, three of the four 2018 R/VC measures used to calculate the R/VC Indicators are below the Board’s 180% jurisdictional threshold, as shown in Figure 11.⁴³

Figure 11
2018 R/VC Indicator Calculations Are Based on Ratios Outside the Board’s Jurisdiction for the Vast Majority of the Commodities at Issue



It is difficult to explore the potential exercise of railroad market power or draw any meaningful conclusions about market conditions (other than the likely absence of market power) by examining R/VC ratios that are below 180%. There should be no debate that low R/VC ratios

⁴³ See STB workpaper “Indicator Dashboard.xlsx,” tab “RVC Analysis.”

suggest no evidence of market power even if other traffic (or even the average for all carload traffic) has even lower ratios.

For example, the “R/VC Recent” Indicator (Indicator No. 1) incorporates a comparison between the lower quartile (*i.e.*, 25th percentile) R/VC ratio for the commodities at issue with the lower quartile R/VC ratio for all carload traffic. For 2018, the lower quartile for All Carload Traffic was 117.4%.⁴⁴ Each commodity’s lower quartile is compared to this benchmark, and if it exceeds it by more than 5%, then that yields a score of 2 (the equivalent of a Strong signal for potential revocation), which then goes into the average score for the different R/VC metrics. If a commodity’s lower quartile falls short of the All Traffic benchmark by more than 5%, a score of 0 (the equivalent of a Weak signal) is used. Although the difference between a 25th percentile R/VC ratio of 123% or 111% says nothing about railroad market power, the Board’s proposal would place two such commodities in the extreme opposite categories.

And even lesser differences between these lower quartile measures will receive different scores. For example, the lower quartiles for STCC 33121 Steel Ingots and 33123 Iron or Steel Sheets are 112.7% and 112.1%—a difference of just 0.6%. Under the Board’s proposal, Steel Ingots would receive a score of 1 (Moderate) because it is within 5% of the All Traffic benchmark (4.6%), while Iron or Steel Sheets would receive a 0 (Weak), because it is 5.3% below the benchmark. Such miniscule differences between R/VC ratios that are far from Board jurisdiction do not meaningfully inform an analysis of commodity exemptions, and certainly should not be interpreted as suggesting a stronger or weaker case for potential revocation.

⁴⁴ See STB workpaper “Indicator Dashboard.xlsx,” tab “RVC Analysis.”

Similar ranges of close differences receiving different treatment exist in the other R/VC Indicators too.

- ii. R/VC ratios for the commodities at issue in this proceeding are compared to all carload traffic totals that include unit trains.

Rather than evaluate specific R/VC levels, the proposed approach compares R/VC ratios for individual commodities to an “All Carload Traffic” benchmark. While that benchmark excludes intermodal traffic—and therefore avoids some of the distorting effects of URCS variable costs—it includes carload traffic shipments of all sizes, which prevents apples-to-apples comparisons for the commodities at issue. Specifically, the All Traffic benchmark is weighted heavily by shipments that move in unit train service, *i.e.*, a bulk commodity shipped in dedicated trains, typically containing 100 cars or more for the same customer. Unit trains account for 47% of the “All Traffic” group. From a cost, and therefore R/VC, standpoint, however, unit train service contrasts sharply with the “single-car” shipments that comprise more than 85% of the traffic for the commodities at issue.⁴⁵ Single-car shipments are frequently gathered from origins and delivered to destinations by local trains or yard / industry jobs that make multiple pick-ups and drop-offs at other stops along the way, and are transported between classification yards by manifest or merchandise trains that carry a wide variety of different commodities for multiple customers.

An additional problem created by comparison to an All Traffic benchmark that is overweighted towards unit-train shipments flows from differences in how URCS variable costs

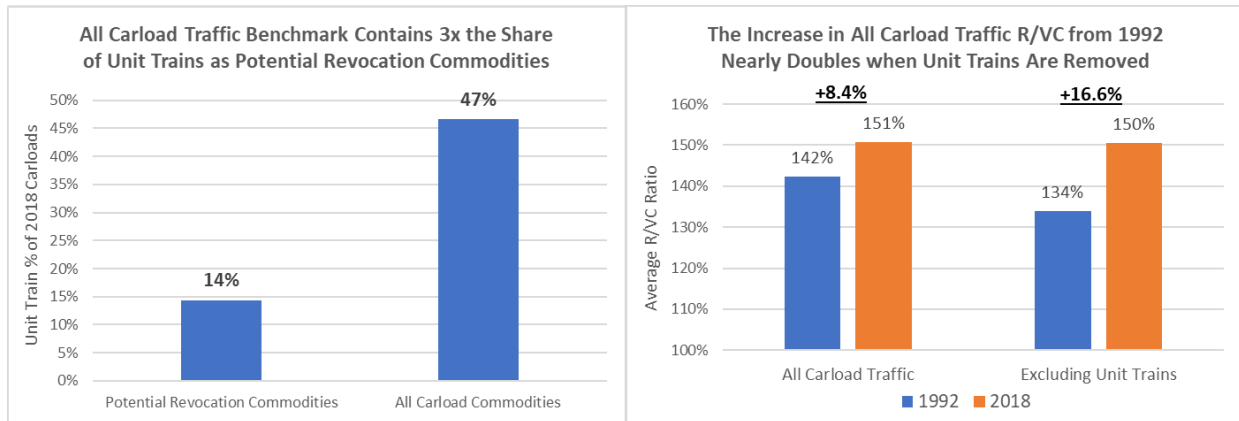
⁴⁵ In fact, while unit trains comprise 14% of the total 2018 volume for these commodities in aggregate, their share is 2% or less for 22 of the commodities. This is in sharp contrast to the Board’s proposed All Carload Traffic benchmark, for which unit trains account for nearly half (47%) of total 2018 volume.

are assigned to individual shipments. For unit trains, the relatively greater efficiency is reflected in URCS by what is known as a series of “make-whole adjustments.” These adjustments reduce the costs that are assigned to unit trains and increase the costs assigned to single-car shipments. The make-whole adjustments have received extensive review and debate regarding their accuracy. Although the Board has attempted to address these concerns and proposed modifications, these efforts revealed the challenges in accurately accounting for the lower costs of unit trains, and were not widely embraced.⁴⁶ Our point here is that comparing the R/VC ratios for the single-car shipments that make up the bulk of shipments for the analyzed commodities to an All Carload Traffic benchmark that is heavily weighted by unit trains will increase the influence of URCS distortions in the approach proposed by the Board to calculate the Indicators.

For example, when unit-train traffic is removed, the overall (non-unit train) “All Traffic” average R/VC benchmark, the increase in the average R/VC levels since 1992 is much greater. Figure 12 summarizes the relative mix of unit-train traffic in the commodities at issue compared to the All Carload Traffic average, and shows the impact on the R/VC Change benchmark of performing an apples-to-apples comparison. As a result, comparing R/VC level increases for a commodity that, like the commodities at issue in this proceeding, is primarily transported in single-car shipments, with an All Carload benchmark will inaccurately skew the result towards a finding of potential concern simply because unit-train movements suppress the benchmark.

⁴⁶ See, e.g., STB June 6, 2019 Decision in *Ex Parte No. 431 (Sub-No. 4) Review of the General Purpose Costing System*.

Figure 12



- iii. The R/V Change Indicator (Indicator No. 2) is further flawed due to a failure to consider the effects of productivity and the limitations of the URCS costing system

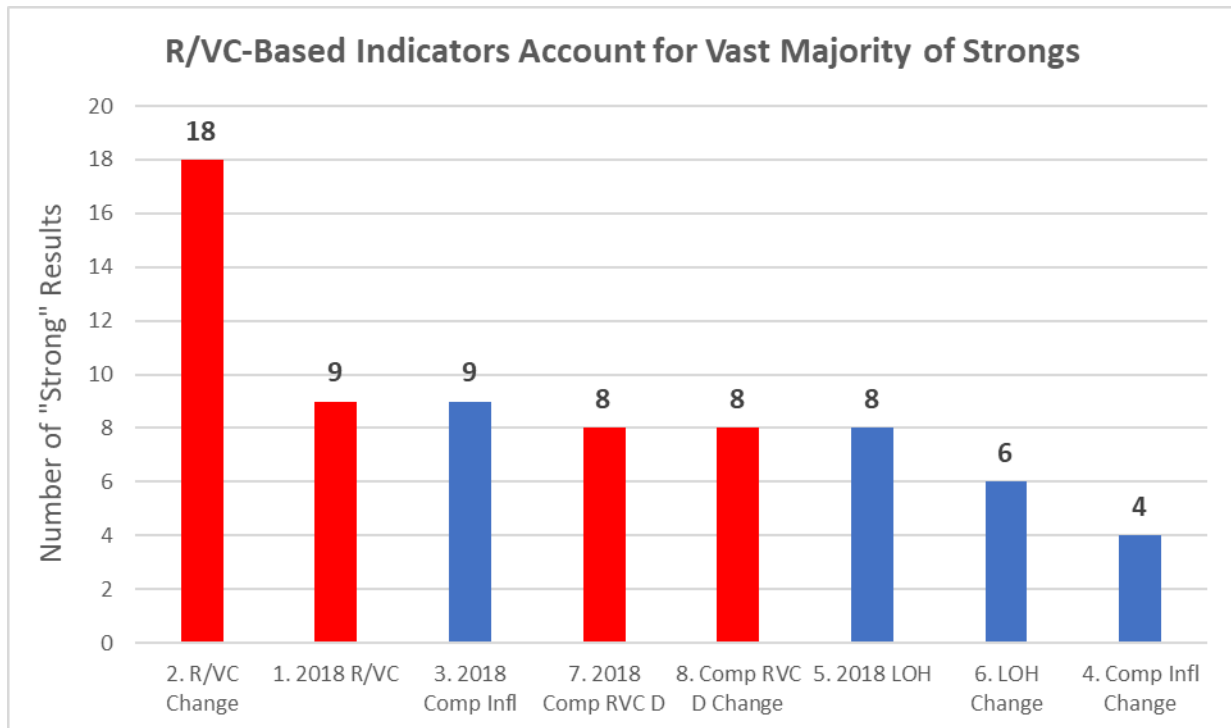
As shown above, there are many different factors that contribute to changes in R/V ratios over time. And some of these factors are procompetitive initiatives and outcomes, which could easily be misinterpreted by the proposed approach as indications of market power where none exists. Although it is difficult to isolate the specific impact of each of the factors that contributes to “R/V Changes,” one way to identify the scope of the potential distortion is by viewing the “Complete Indicator Dashboard Results” in Appendix C to the 2020 Decision. Those results show that the Board calculated the R/V Change metric for 25 commodities and returned a finding of “Strong” for 18 of them, or 72%.⁴⁷

Figure 13 summarizes the Board’s results, indicating that the 18 “Strong” signals for “R/V Change” is twice the next highest number of Strong signals for any of the other

⁴⁷ See Appendix C, Dashboard Results, “All Traffic RVC Change” column at page 65 of the 2020 Decision. The Board’s color-coding buttresses this demonstration, as the abundance of green and paucity of yellow and red in this column are in contrast to other Indicators.

Indicators.⁴⁸ Notably, the next highest is another R/VC-based indicator, “R/VC Current” (Indicator No. 1), which resulted in 9 “Strong” signals. In total, the four R/VC Indicators account for 43 Strongs, or 61% of all of the Strong signals across all Dashboard Indicators.

Figure 13



In summary, the “R/VC Change” Indicator is flawed for many reasons, including its failure to account for productivity, the limitations of the URCS costing system’s assumptions, and the impact of unit trains on the All Carload Traffic benchmark. All of these factors indicate

⁴⁸ Further evidence of the impact of the R/VC Change Indicator is revealed by examination of the Dashboard scoring for the five commodities for which the Overall Signal was Strong. For each of the five, the R/VC Change Indicator was determined to be Strong. If that single Indicator were removed from the average, two of the five would receive a Moderate Overall Signal (STCC 24996 Wood Particle Board and 29914 Coke Produced From Coal).

that the proposed approach overstates the Dashboard's observed increases in R/VC levels since 1992 for the commodities at issue in this proceeding.

VIII. The Board's "Initial Screen" Concept Should be Refined and Expanded

A feature of the Board's approach that is especially meritorious is the idea of initial threshold screens. As we discussed previously, there is value in using thresholds that could avoid wasted time looking more closely at commodities for which there is no realistic prospect of market-wide exercise of market power. We believe that the two initial screens that the Board proposed can be refined to provide a more meaningful assessment and better serve their intended purpose. As described above, the Board should also add two additional screens based on: (1) rail market share relative to other forms of transportation; and (2) geographic competition.

a. Initial Screen One: "Percentage of Shipments Below R/VC 180"

The first proposed initial screen drops from further consideration any commodity for which less than 5 percent of its 2018 shipments have R/VC ratios above 180%. This makes sense conceptually—while high R/VC ratios do not indicate the exercise of railroad market power, low R/VC ratios can be informative about the *impossibility* of railroad market power, and also provide information about traffic that is not subject to the Board's jurisdiction.

The Board describes its selection of a 5% threshold for its initial screen as follows: "The strength designation threshold for Screen One has been set initially at 5% as a reasonable approximation of the point at which there would be so little R/VC 180 traffic that regulation of that commodity might be unnecessary." (2020 Decision at 10, n. 29.) But that threshold is far too low, and the Board should increase it.

First, while the jurisdictional threshold represents the point at which a shipment is subject to Board regulation, it says nothing about the competitive landscape that drives whether a

shipment should actually be subject to regulation as a matter of policy. Indeed, many commodities that are currently subject to Board regulation have R/VC ratios above 180% for more than 50% of their shipments, yet the commodities have never been the subject of any rate complaints or Board rate prescriptions. Thus, the fact that a much smaller number (say, 15 or 20%) of a commodity's shipments have R/VC ratios above 180% says little about whether regulation might be necessary.

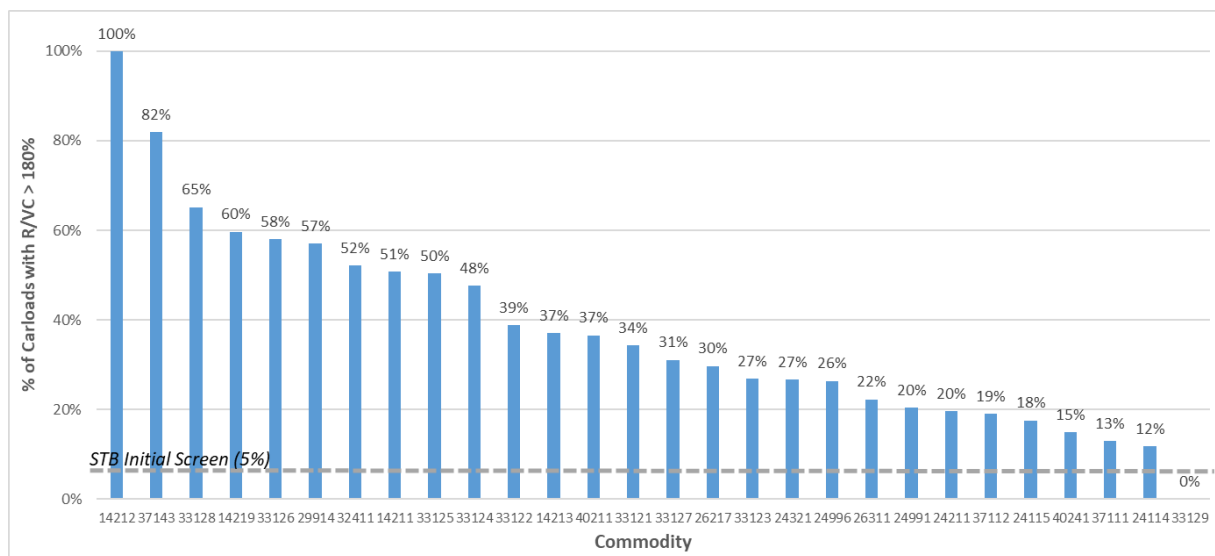
Further, shippers can petition the Board for partial revocation. As such, there is little reason to consider revoking an exemption on a commodity-wide basis if only one-third or even one-half of that commodity's shipments are moving at R/VC ratios above the jurisdictional threshold. For those shipments (the only ones over which the Board would have jurisdiction), whatever narrow potential disputes emerge can still be addressed through the partial-revocation mechanism. The potential costs of an overly conservative threshold, *e.g.*, pursuing a commodity-wide revocation and evaluating the wide array of other market-specific factors that would also require consideration, are not justified when other remedies are available to the limited number of shipments for which re-regulation might be worth considering.

For these reasons, the threshold should be adjusted upwards to make them more effective. As shown in Figure 14, the Board's Initial Screen One calculations indicate that many of the commodities analyzed in the proposed approach have a minority of their shipments moving at R/VC ratios above 180%.⁴⁹ Even a threshold of 50% of shipments with R/VC ratios over 180

⁴⁹ The "2018 % of Cars RVC 180" column in the table at page 65 of the 2020 Decision reports <33% for 14 of the 28 commodities with values (one is reported "Indeterminate").

(compared to the current threshold of 5%) would provide a meaningful screen, removing the need for further investigation of half the commodities.

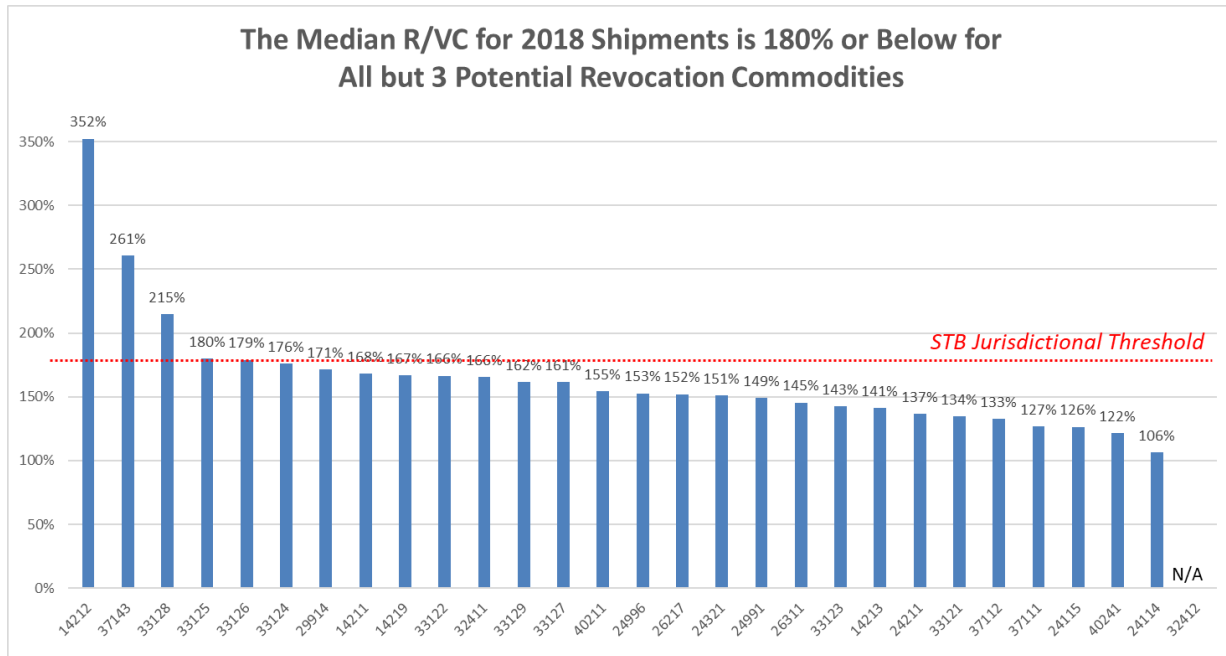
Figure 14
Portion of Carload Shipments Above 180% R/VC



Further, as described above, in evaluating the R/VC ratios and changes in R/VC ratios over time, the proposed approach considers the distribution of R/VC ratios by assessing the 25th percentile, median, and 75th percentile, as well as the mean. The Board’s workpapers indicate that the median R/VC ratio is currently 180% or lower for 25 of the 28 commodities, as shown in Figure 15.⁵⁰ Put differently, the median R/VC ratio is above the Board’s jurisdictional threshold for only 1 out of every 10 of the commodities at issue in this proceeding.

⁵⁰ See STB workpaper “Indicator Dashboard.xlsx,” tab “RVC Analysis,” column H “2018 Median.”

Figure 15



And even for the subset of shipments that would be within the Board’s jurisdiction, examination of the Board’s detailed workpapers reveals that many of these shipments move at R/VC ratios that are only slightly above 180%. For 18 of the 28 commodities at issue, the upper quartile (“75th percentile R/VC”) is 180% or higher; this means that at least one-quarter of the shipments of these commodities move at R/VCs above the jurisdictional threshold. But for half of these 18 commodities, the 75th percentile R/VC falls between 180 and 206%. This indicates that for 19 of the 28 commodities – these 9 plus the 10 for which the 75th percentile is below 180% – at least three-quarters of the shipments move at R/VCs that either are below the jurisdictional threshold or exceed it by less than 15%.⁵¹ Careful consideration should be given

⁵¹ See STB workpaper “Indicator Dashboard.xlsx,” tab “RVC Analysis,” column I “2018 75th.” In fact, even 206% is below the productivity-adjusted R/VC of 212% that we presented in Section VII.a. above.

before launching a broad inquiry and committing resources to revisiting exemptions for commodities like these, where a super-majority of shipments are below or only slightly exceed the statutory threshold.

In addition, in our 2016 Comments we identified many ways that the inputs and assumptions of the URCS costing system have not evolved to match the dramatic changes in railroad traffic mix and operating practices since the early 1990s, especially the dramatic increase in double-stack container volumes, which represent the single largest traffic group for most railroads.⁵² We estimate that \$1.6 billion in annual URCS variable costs were mis-assigned to intermodal shipments, and that correcting this problem would result in an overall 5% increase to carload variable costs.⁵³ For illustrative purposes, we examined the effect of increasing by 5% the URCS variable costs that the Board used to calculate Screen One and found that after making this adjustment only 10 of the 28 commodities would have more than one-third of its shipments moving at R/VC ratios above 180%. This further indicates that the current threshold is too low and is influenced by limitations in the URCS costing system that the proposed approach should not ignore.

b. Initial Screen Two: “Percent of all CWS Shipments in Intermodal Equipment”

The Board’s proposed Initial Screen Two evaluates another aspect of the commodities at issue in this proceeding that could help avoid unnecessary additional effort in the review of commodity exemptions. This Screen calculates for each commodity the percentage of total

⁵² See Baranowski/Fisher July 2016 VS at 4-18.

⁵³ See Baranowski/Fisher July 2016 VS at 19-20. We note that this testimony has not been specifically addressed.

shipments that are transported in intermodal equipment (*i.e.*, containers or trailers). If 40% or more of a commodity's shipments are in intermodal equipment, the commodity is assigned an Overall Signal of "Weak," and "there is no need to consider the [Dashboard] indicators in Step 2." (2020 Decision at 18.)

We offer two observations in response to the Board's proposal. First, as noted above, the railroads' market share for the commodities at issue is a vital part of any exemption assessment but is a key omission from the Board's proposal. While the Board may have intended for this Screen to acknowledge the need for market shares in undertaking a proper evaluation, the Screen as calculated is incomplete. First, as it is based on shipments that were sampled for the CWS, it reflects only the subset of truck traffic that actually made part of its move on an intermodal flatcar. The universe of potential truck alternatives is clearly much larger.

Second, the Board's calculation of the intermodal share of a commodity's traffic is only as good as the ability to identify shipments of that commodity in the source data. The majority (66%) of records for intermodal shipments in the CWS do not specify an actual commodity, but rather report the generic STCC 46 "Miscellaneous Mixed Shipments." As a result, the Board's Initial Screen Two is evaluating the *absolute minimum share* that moved in intermodal equipment and ignoring substantial numbers of movements for which the shipper opted to report STCC 46 instead of identifying the actual commodity being shipped. Shipments of the commodity for which the shipper assigned STCC 46 (perhaps to benefit from a railroad's FAK intermodal rate) are hidden in the data. We present in Table 6 an illustrative demonstration of an adjustment to correct for this underreporting of commodity information. Assuming that the commodities moving under shipment records lacking specific commodity identifiers are in proportion to the specific commodity identifiers actually reported in the Sample, we estimate that

the true intermodal shares for these commodities are two- to three-times greater.⁵⁴ The Board should make such adjustments before applying any screen based on intermodal share.⁵⁵

Table 6
Impact of Adjusting Intermodal Shares to Account
For Absence of Actual STCC Reporting in CWS

STCC	Description	As Reported (34% of Intermodal Volume)	Adjusted to include 100% of Intermodal Volume
40241	Paper Waste or Scrap	24.2%	48.5%
24321	Plywood or Veneer or Built-up Wood	12.1%	28.9%
33127	Tin Mill Products	7.2%	18.7%
33126	Iron or Steel Pipe, Tubes or Fittings	6.3%	16.6%
33123	Iron or Steel Sheet or Strip	4.9%	13.3%
40211	Iron or Steel Scrap, Wastes or Tailings	4.7%	12.8%
24211	Lumber, Rough or Dressed	4.1%	11.3%

⁵⁴ In the 2018 CWS, intermodal shipments reporting STCC 46 accounted for roughly twice as many shipments as those reporting the specific commodities. Thus, the portion actually reported needs to be increased by nearly a factor of 3 in order to account for the total intermodal volumes in the CWS. These adjusted shares are based on the formula $2.96 \times \text{Reported Intermodal Share} / (2.96 \times \text{Reported Intermodal Share} + \text{Reported Carload Share})$.

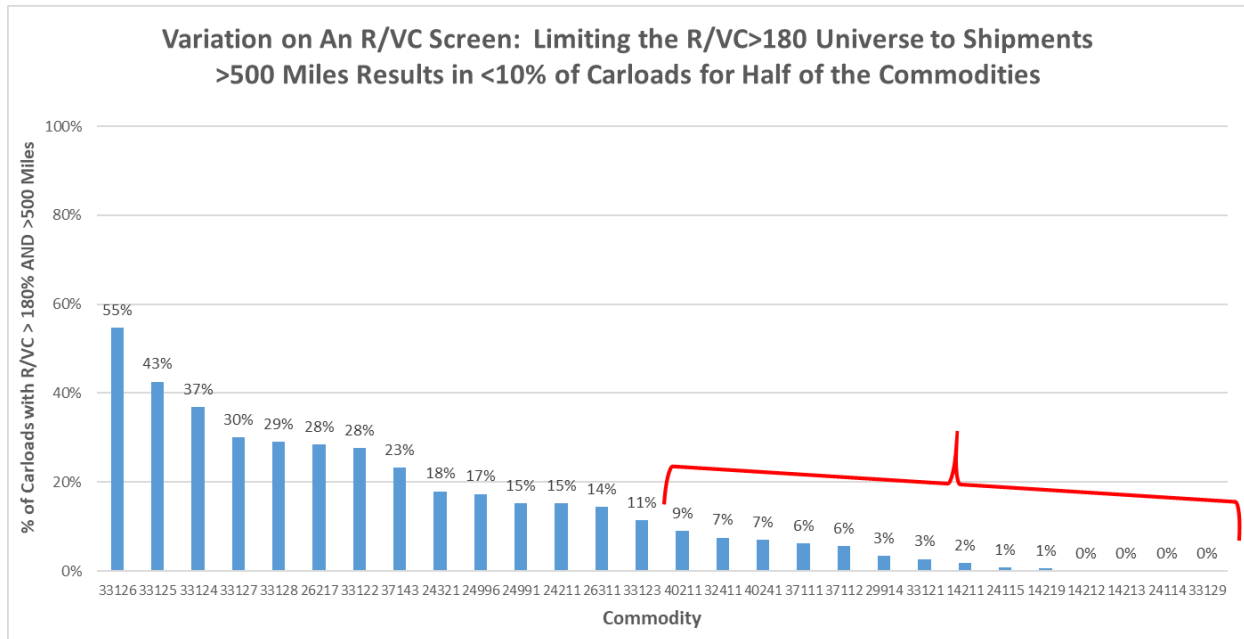
⁵⁵ An arithmetic example of how this adjustment would work might help. If for a given commodity the CWS included records for 25 carloads in intermodal equipment and 75 carloads in carload equipment, the proposed Initial Screen Two would calculate a 25% share, and the “next step” of calculating the Dashboard Indicators would continue. If, as we determined for the 2018 CWS, the intermodal shipments reporting the generic STCC 46 outnumbered those with actual commodity reportings by two-to-one, then an adjustment would consider that there were 50 other carloads of that commodity shipped in intermodal equipment, which were missed by the Board’s proposed calculation (25 assigned intermodal / 75 (25 assigned + 50 unassigned) reflects the one-third proportion that is assigned). Including the additional 50 carloads for this commodity produces a measure of the intermodal share that accounts for all intermodal shipments. For this example, that share would be 50%, as the 75 shipments in intermodal equipment now match the 75 in carload equipment, and the commodity would receive a Weak Overall Signal using the 40% threshold proposed by Board Staff.

c. **Additional screen for traffic that moves more than 500 miles and has an R/VC ratio of more than 180%.**

The Board should also incorporate a screen based on the amount of traffic that moves more than 500 miles at R/VC ratios above 180%. Specifically, we propose an additional initial screen to identify the share of traffic that is above 180% and moving more than 500 miles.⁵⁶ By limiting this screen to shipments above 500 miles, we are eliminating a conservative subset of the traffic for which truck competition likely exists, as well as controlling for R/VC differences that exist across different lengths of haul. As shown on Figure 16, shipments that travel more than 500 miles with R/VC ratios above the jurisdictional threshold account for at most 10% of the total rail volume for half of the commodities, and there are only 3 for which longer-haul traffic that is above the threshold accounts for more than 30% of the total volume. Further pursuit of a broad commodity exemption should require that a higher proportion of volume be potentially subject to unconstrained market power.

⁵⁶ As discussed in in Section V.a above, the Board's use of the average rail miles understates the available truck alternatives, as the truck distances for a given origin-destination pair are typically much shorter than the rail distances. While we encourage the Board to recognize the difference and account for it in the manner described above, for the sake of simplicity the figures in this section are based on the method for calculating mileages in the Board's proposal.

Figure 16



IX. Many of the Dashboard Indicators Could Lead to Misinterpretation

A key element of the Board’s proposed approach is the evaluation of eight Dashboard Indicators that display color-coded signals based on numerical scores of 0, 1, or 2, which are then used to determine an Overall Signal. We note that at the second Technical Conference (on January 15, 2021), Board staff identified the Data Visualizations as the “heart of this new approach,” and characterized the Indicator Dashboard as merely an attempt to aggregate and summarize insights from the Visualizations. While it was helpful to hear an explanation of the origin and limited purpose of the Indicators, we remain concerned that the proposed Indicators could prove to be misleading.

The Board explained the data and approach used to determine each of the Indicators in its Decision, and its underlying workpapers contain the detailed calculations.⁵⁷ The eight Indicators

⁵⁷ See 2020 Decision at 9-13 and 17-21 and workpaper “Indicator Dashboard.xlsx.”

reflect four metrics that are each evaluated for two time periods: one is a “Recent” calculation based entirely on the 2018 CWS, the other a “Change” calculation that evaluates the change from the 1992 CWS to the 2018 CWS. Of the eight Indicators, all but one are determined based on a comparison of an individual commodity to the average (or average change) for an All Carload Traffic composite that, as its name suggests, includes the CWS records for all shipments in carload equipment.⁵⁸

Proposing multiple metrics relating to actual competitive conditions represents an encouraging development in the Board’s evaluation of exemptions: namely, recognition that more factors should be considered than R/VC ratios and that any initial assessment or conclusions must be followed-up by a more robust analysis of the “market-specific issues.” As we have explained, two important further steps in the right direction would be to (a) broaden the scope of the data being evaluated and (b) limit its direct use without further examination in the context of all available evidence. With those overall objectives in mind, we present observations and concerns about the specific calculations of the Dashboard Indicators.

a. The Results of the GMIM’s Proposed Measures of Competitive Influence Are in Direct Conflict with the R/VC Indicators

The Dashboard’s “Competitive Influence Change” Indicator (Indicator No. 4) seeks to evaluate the change in the competitive landscape since 1992. It does so by determining the proportion of carloads without any modal influences in each year (1992 and 2018), and

⁵⁸ The lone Indicator that is not evaluated with respect to the All Carload Traffic composite is No. 5 “Length of Haul in the Most Recent Year.” Rather than a comparison to other shipments, the average length of haul for each commodity’s shipments in the 2018 CWS is scored based on its relation to fixed thresholds proposed by the Board of 500 and 1,000 actual rail miles.

comparing the change since 1992 to the change calculated for the All Carload Traffic composite over the same period. The Competitive Influence Change Indicator designated 17 of the commodities at issue with a “Weak” signal for potential revocation.⁵⁹ That result suggests that two-thirds of the commodities showed above-average increases in the amount of competition. As discussed above, however, the Board’s R/VC Change Indicator (Indicator No. 2) designated 18 of the analyzed commodities as “Strong,” thus suggesting that recent above-average increases in R/VC ratios merit additional examination. Eleven of the commodities at issue received a Weak signal for the Competitive Influence Change Indicator, and a Strong signal for the R/VC Change Indicator.⁶⁰ Findings like these are difficult to reconcile, and suggest problems in the reliability of the data, measures, and comparisons selected for the proposed approach.

b. The Evaluation of Length of Haul is Overly Simplistic and Fails to Consider the Effects of Changes in Methodology, Increased Competition, and Efficiency Gains (Indicators Nos. 5-6)

The railroad length of haul is related to every Indicator in the Board’s proposal. Differences in lengths of haul over time or across groups of commodities can explain variations in R/VC ratios in many cases, and short lengths of haul are certainly indicative of the pervasive presence of truck competition. In addition to contributing to these other measures discussed elsewhere in this statement, the Board also proposed two Indicators that evaluate the length of haul directly. The “Recent” Indicator (Indicator No. 5) compares the average railroad length of haul from the CWS for each commodity at issue to assumed thresholds of 500 and 1,000 miles,

⁵⁹ See Appendix C to 2020 Decision at p. 65.

⁶⁰ *Id.* The conflicting results for these Indicators are revealed visually by the plethora of green cells in the R/VC Change column juxtaposed against the red cells in the Competitive Influence Change column.

and the “Change” Indicator (Indicator No. 6) calculates the percentage change in the length of haul from the 1992 CWS to the 2018 CWS for each commodity, and compares that change to the change in the length of haul for the All Carload Traffic composite over the same period. We identify a handful of respects in which the Board’s length of haul metrics could lead to misinterpretation.

First, we explained above in the discussion of Truck Competition that the STB changed the mileage source for CWS shipments from 1992 to 2018. While there are many benefits of reflecting the actual distances for a much greater proportion of the sampled shipments, some portion of the changes that the Board’s Indicator is measuring is purely a function of the change in the source for these data. As this potential distortion applies to the commodities at issue as well as the All Carload Traffic composite used to assign scores, the Board should exercise caution when comparing the average distances.

Second, increases in the average length of haul over the last 26 years could reflect improved service or competition. In its 2016 Comments in this proceeding, BNSF presented a series of charts that indicated how shifts in traffic mix could affect an evaluation.⁶¹ While that presentation was focused on the impact of truck competition on the R/VC ratio, the same competitive developments – more intense competition from trucks, especially at shorthaul distances – would affect observed average rail length of haul as well. As the Board has acknowledged the presence of truck competition at distances up to 500 miles (at least), if a railroad were to lose business to trucks, the average length of haul for its remaining traffic would likely be higher – despite that fact that its market power was clearly not increasing.

⁶¹ See July 26, 2016 Opening Comments of BNSF Railway Company, at pp. 4-6.

Next, another explanation for longer lengths of haul since 1992 is the expanded market reach of the railroads. This expanded reach is a function of railroads offering expanded single-line services, improving their interline services, making investments, and working with their customers to develop and deliver more efficient service offerings over longer distances. For example, in the case of STCC 32411 Hydraulic Cement, the increased average length of haul has been accompanied by a significant decrease in the proportion of interline traffic. The CWS records indicates that interline shipments fell from 32% to 22% from 1992 to 2018. Thus, cement customers could receive shipments from longer distances, which railroads delivered with 36,000 fewer interchanges. Assessments of changes in the length of haul should also consider the benefits of such efficiency gains.

Finally, we offer comment on the specific mechanics of the Board’s proposed “Length of Haul Change” Indicator (Indicator No. 6). As described above, the Indicator is calculated as the percentage change in the length of haul from 1992 to 2018, which can distort the comparison. For cement, that change is determined to be +40%, based on an increase from 364 to 509 miles. Cement is assigned a “Strong” score of 2 for this Indicator, as its 40% increase exceeds by more than 5% the 30% increase measured for the All Carload Traffic composite. But when the change is measured in absolute miles, the increase experienced by all carload traffic is nearly 50% higher.⁶² In light of the myriad challenges involving the measurement and comparison of the distances and the interpretation of the results, the Length of Haul Indicators do not provide a

⁶² See STB workpaper “Indicator Dashboard.xlsx,” tab “Traffic Feature Analysis.” Since 1992, the average length of haul for all carload traffic increased from 712 to 924, a difference of 212 miles. As indicated above, cement’s average increased by only 145 miles. This outcome – where an individual commodity’s percentage difference exceeds the benchmark’s increase, while its absolute mileage difference falls short – also applies to 5 of the other commodities at issue.

clear metric for an exemptions assessment. This is another respect in which presenting the actual data on the length-of-haul distribution could avoid misinterpretations that might arise from the Indicators as proposed.

c. Revenue per Carload (RPC, Alternate Dashboard)

The Board proposed an “alternate version” of the Indicator Dashboard that substitutes revenue-per-carload (“RPC”) measures (and changes in RPC) for the R/VC metrics.

Specifically, RPC is substituted for R/VC in Indicators Nos. 1, 2, 7, and 8. Indicators Nos. 3-6 are the same in this alternative Dashboard as they are in the Dashboard that uses R/VC ratios.

The RPC-based Indicators are an acknowledgment of criticisms of the use of R/VC ratios from parties in this proceeding. But the Board does not explain why the substitution of RPC addresses any of those criticisms or the basis for selecting RPC.

RPC is driven by myriad factors, most of which provide no insight on market conditions for shipments of particular commodities. Some of the factors affecting RPC include the railroad, route, distance, shipment size, lading weight, type of railroad car, owner of the railroad car, number of railroads participating in the move, time of year in which the shipment occurred, fuel costs, and other surcharges. None of these factors is indicative of market power.

Similarly, changes in RPC over time are not associated with changes in railroad market power or shippers’ competitive alternatives. RPC is driven in part by lading weight, so increases in freight car capacity by themselves will result in higher RPCs over time even without any other changes. RPC is also influenced by length of haul. As revenue-per-carload is a measure of the absolute level of the charge for shipping from a particular origin to a particular destination, railroads will charge more to recover the higher costs of transporting longer distances. As discussed previously, because of geographic competition, increases in lengths of haul may not

necessarily be indicative of changes in market conditions relevant to the Board’s consideration of exemptions. So while increased lengths of haul can result in higher RPCs, the magnitude of the change in RPC may not provide insights useful to an exemption-related evaluation.

Moreover, it is not clear how the Board would assess consistency between the Indicator Dashboard results using RPC and the results using R/VC ratios.⁶³ For example, 8 commodities received a “Strong” Overall Signal on either the R/VC Dashboard or the RPC Dashboard. But only a minority of those (3) were Strong on both. The fact that most of the Strong signals appeared in one version of the Indicator Dashboard but not the other highlights the importance of understanding how the separate calculations for the RPC and R/VC Indicators will be used. And it underscores the likely challenge in relying on these metrics by demonstrating the disproportionate impact that they have on the Indicator Dashboard results.

X. The Dashboard’s Results Are Also a Function of Specific Assumptions Used to Calculate and Score the Data Being Analyzed

The Indicator Dashboard seeks to distill a wide variety of data from different sources into a single assessment—or Overall Signal—of Weak, Moderate, or Strong.⁶⁴ The process to get from the data selected for evaluation to an Overall Signal involves a series of assumed buffers, thresholds, and scores, many of which frame their comparisons to All Carload Traffic benchmarks. We understand from Board Staff’s presentations that the purpose of the Dashboard

⁶³ The 2020 Decision states that “[t]he results of the two versions of the Indicator Dashboard are compared to determine whether they generate a consistent signal.” (2020 Decision at 10 n.30.)

⁶⁴ While we understand the Board’s desire to establish categories that summarize the results relative to one another, the term “Strong” invites presumptions that are disproportionate to the simple fact that a given commodity’s dynamics observed in this limited, initial assessment may be “above average.”

is to aggregate, summarize, and communicate more granular information in the raw data and data visualizations. While that is a reasonable goal, it is important to consider the steps by which the data are interpreted, compared, and scored, particularly if the outcome will guide the Board's consideration of exemptions and prioritization of further investigation.

In particular, it is important to identify suspect or otherwise arbitrary assumptions built into the scoring system. Similarly, it is crucial that the Board test and validate the assumptions and inferences underlying the leap from raw data to subjective numerical scores and signals. This is necessary to ensure that the proposed approach will clarify the quantitative and qualitative information that the proposed approach seeks to gather, rather than obfuscate real-world information about market conditions (and especially potential market power). As explained below, the proposed assumptions and mechanics of the Indicator Dashboard are not sufficient to allow it to serve as a useful tool.⁶⁵

a. **The proposed +/-5% buffers are arbitrary, amplify narrow distinctions, and group together disparate performance**

The proposed approach classifies each comparison to the All Carload Traffic average—or in the case of the Length of Haul, to fixed mileage thresholds—as a Strong, Moderate, or Weak signal for potential revocation. In determining to which category each metric is assigned, the approach incorporates a 10% range around the All Carload Traffic average. Specifically, when the result for an individual commodity is less than 5% above the average and less than 5% below the average (*i.e.*, within 5% of the average, up or down), the comparison is assigned a Moderate

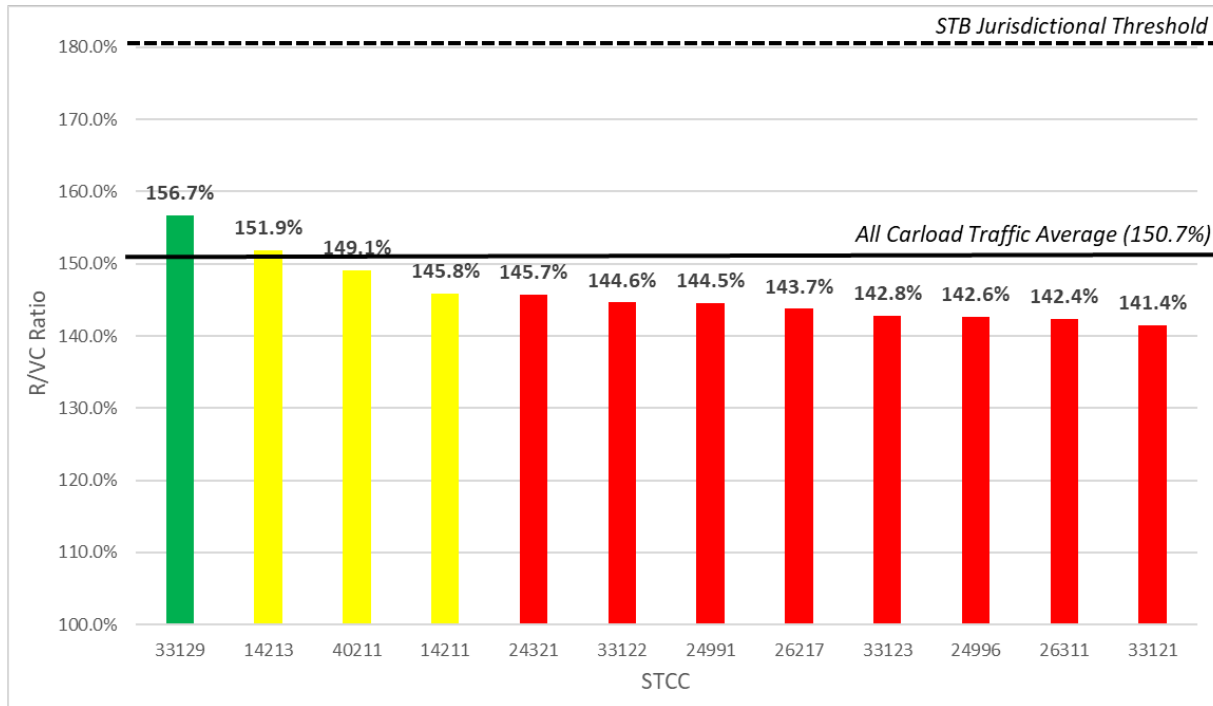
⁶⁵ At the second Technical Conference, Board Staff responded to many questions about its process by referring to “modeling choices” and “reasonable starting points,” without further explanation of the support or analysis underlying the methods proposed to construct and score the Dashboard's assessment.

designation. When the individual commodity's result exceeds the benchmark by more than 5%, a Strong designation is assigned, and when it falls short of the benchmark by more than 5%, a Weak is assigned. By creating these thresholds, and then accompanying the designations with an absolute score of 0, 1, or 2, the Indicator calculations introduce "tipping points" that arbitrarily separate similar traffic even though the difference between values on each side of the threshold could be quite small.

The following example demonstrates how application of the 5% buffer sorts into different categories commodities with similar measures (with corresponding weaker or stronger signals for potential revocation), while lumping together commodities with much broader differences as though they were the same. The Board's workpapers indicate that 12 of the commodities—more than 40% of the commodities at issue in this proceeding—have an average R/VC ratio that is within 10% of the All Carload Traffic composite R/VC of 150.7%. Figure 17 presents the average R/VC ratios for each of these commodities, showing that 9 of them have ratios between 141% and 146%. As the 8 between 141% and 145.7% are at least 5% below the All Traffic composite, they each receive a score of 0 (Weak),⁶⁶ while the commodity at 145.8% receives a score of 1 (Moderate). Despite being only 0.1% closer to the benchmark than the commodity with an average ratio of 145.7%, it is within 5% of the composite, and therefore it receives a different score and signal.

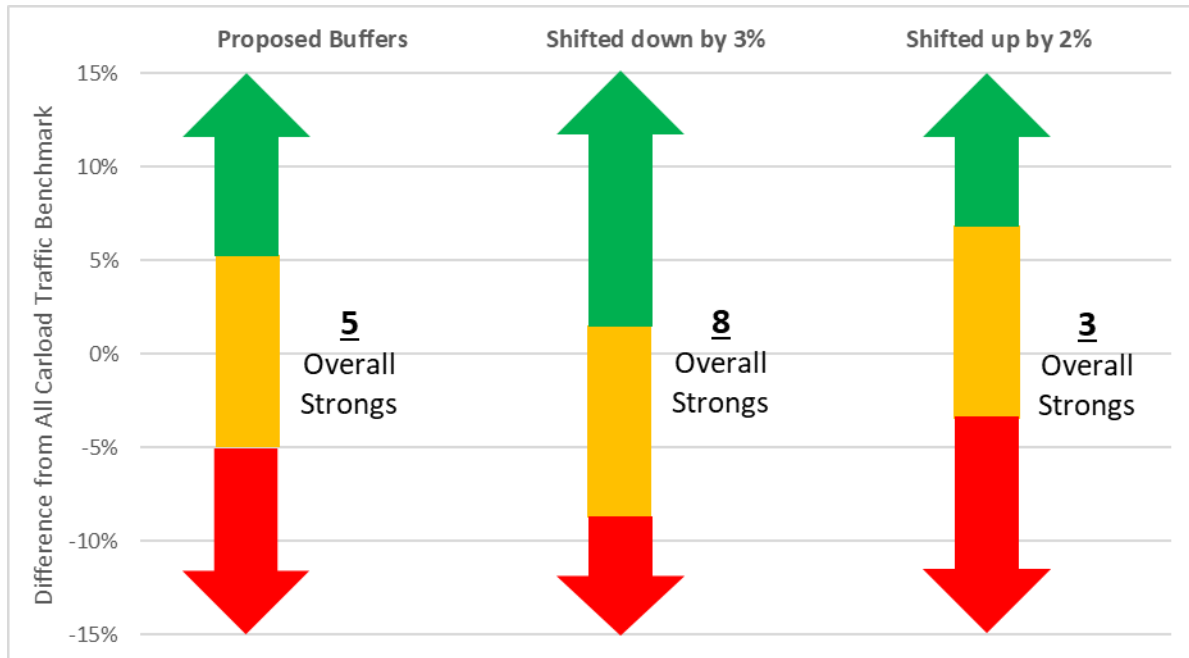
⁶⁶ Notably, in addition to the 8 commodities shown in red to the right of Figure 17 with average 2018 R/VC ratios between 141% and 145.7%, there are 6 other commodities with R/VC ratios between 114% and 135% that also receive a 0 for the Indicator calculation. Thus, the commodity that averages 145.7% is treated the same as other commodities that have R/VC ratios 20-30% lower, and treated differently than the commodity with an R/VC that is 0.16% higher.

Figure 17
Average 2018 R/VC Ratios Receive Different Scores Based on Minor Differences



As noted, the Board’s proposal incorporates a 10% range around the All Carload Traffic benchmark, and any value that falls within it is designated Moderate. Merely shifting that 10% range down by 3%—*i.e.*, changing the lower buffer from -5% to -8%, and the upper buffer from +5% to +2%—would increase the number of commodities with a Strong Overall Signal by more than 50%, from 5 to 8. Shifting the 10% Moderate territory in the other direction by only 2% (to the range from -3% to +7%) would cut the number of Strong Overall Signals nearly in half, from 5 to 3. These results are summarized in Figure 18.

Figure 18
Modest Changes to the Buffer Thresholds Swing the Results



Even if the Board’s objective is a relative ranking of metrics or commodities, it is unnecessary to employ arbitrary tipping points that have not been statistically validated. Continuous measures can retain relative orders of magnitude, and statistical analysis can be employed to quantify any actual variation across the commodities, and to identify and examine any outliers. The use of buffers and scoring system in the proposed approach leads to arbitrary results like those identified above, and should be abandoned.

b. The proposed approach overrides the specific calculations to determine the Overall Signal

While specific values are calculated for each of the 8 individual Indicators, the Dashboard then overrides those Indicator values in favor of averaging their corresponding 0-1-2 numerical scores to determine an Overall Signal. This again leads to “tipping points” that obscure important information, in some cases masking the relative impact of individual Indicators (or multiple Indicators that overlap, as with the four R/VC Indicators), while in others

creating step functions by rounding average scores of multiple metrics down or up to calculate a signal for an individual Indicator, and then using the lower (or higher) number associated with that signal to calculate the Overall Signal. This further distorts the results of the Indicator Dashboard and ignores more accurate and meaningful measures.

An example illustrates the point. All but two of the Indicators are based on an average of multiple values.⁶⁷ In the case of the “R/VC Recent” Indicator (Indicator No. 1), the proposed approach averages 4 separate scores– the upper quartile, median, lower quartile, and mean R/VC ratios. For STCC 32411 Hydraulic Cement, the sum of those 4 scores totaled 7, resulting in an average of 1.75 for that Indicator. When compiling the results for each of the Indicators to calculate the simple average that determines the Overall Signal, however, the Dashboard does not use 1.75. Instead, the Dashboard translates a score of 1.75 to a “Strong” (as it exceeds 1.33), and then rounds it up to a “2” when the Dashboard assigns the Indicator a corresponding numerical score. Thus, any calculated Indicators between 1.34 and 2.00 are replaced with a 2 for determining the Overall Signal. Similarly, any Indicators that are calculated to be between 0.67 and 1.34 are translated to “Moderate” and then overridden with a 1 for the subsequent calculation of the Overall Signal, and any Indicators that score in the range of 0.00 to 0.33 are translated to “Weak” and overridden with a 0. Setting aside our separate concerns about the underlying Indicators and the process by which they are evaluated, replacing calculated measures that the Board believes contain relative insights is an unnecessary step that distorts the Overall Signal.

⁶⁷ The exceptions are the Length of Haul Indicators (Indicators Nos. 5-6).

c. **The combination of +/-5% buffer thresholds and the 0, 1, 2 scoring system is also sensitive to small differences driving the results**

The proposed approach relies on two buffers (+/- 5%) and three scores (0, 1, and 2) to calculate each of the eight Indicators individually, and then overrides the specific Indicators with less-precise, rounded scores (once again, 0, 1, 2) to calculate a simple average⁶⁸ that determines the Overall Signal. This proposed scoring system produces subjective conclusions (in the form of scores and signals) that are susceptible to minor changes. For example, whether a commodity's performance is 4% or 6% above the All Carload Traffic benchmark results in different designations that change the numerical scores and the Overall Signal in the Dashboard.

The Board's December revision to its calculations for the illustrative STCC 32411 Hydraulic Cement commodity shows how much the Dashboard's results can be affected by minor adjustments. On December 11, the Board released a decision in this proceeding ("December Decision") indicating that changes were necessary to its programming queries.⁶⁹ These changes included fixing two errors that the Board identified as having "a minor impact on the assignment of movements to particular categories," affecting slightly less than 1% of the

⁶⁸ By using the simple average, the Overall Signal ascribes equal weighting to the outcomes of each of the 8 Indicators. The Board acknowledged this assumption, and noted that it was "not meant to imply that the Board would view each indicator, or any other factor it may consider, as providing equivalent evidence in deciding on exemption and revocation issues." (2020 Decision at 13, n. 39.) As discussed above, this results in the 4 "Change" Indicators that measure aggregate performance since 1992 exhibiting as much influence as the 4 "Recent" Indicators that measure the current dynamics.

⁶⁹ STB December 11, 2020 Decision in Docket No. EP 704 (Sub-No. 1).

records.⁷⁰ The Decision referred to the errors as “minor in nature,” and “necessitat[ing] several minor adjustments.” (December Decision at 2.)

These minor adjustments resulted in a significant change in the calculation of the Overall Signal for cement. After concluding in the September Decision that cement’s Overall Signal was smack in the middle of the Moderate category—its score equidistant from a Weak or Strong Overall Signal—the minor adjustments in the December Decision result in cement’s receiving the highest possible score in the Moderate range, now *7 times closer to Strong than Weak*. We explain below how the Board’s proposed buffers and thresholds produced such a wide swing.

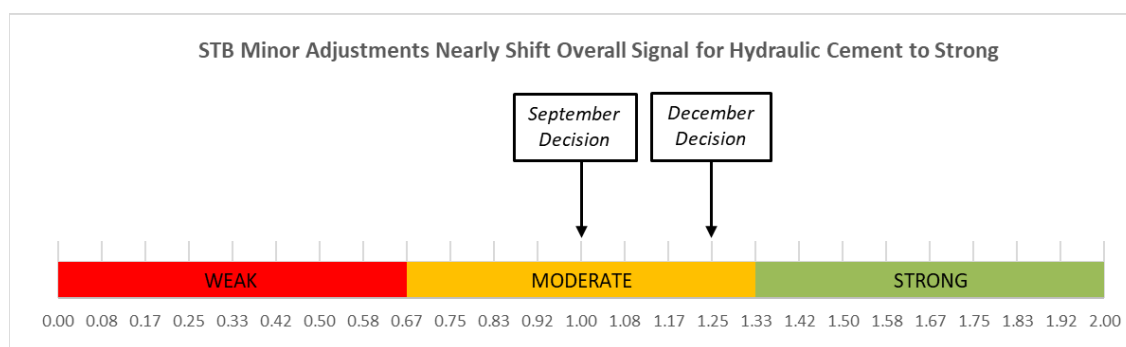
Appendix B to the Board’s September decision summarized the Indicator Dashboard calculations for cement, and calculated an average of 1.00.⁷¹ Under the Board’s 0, 1, 2 scoring system, cement received a Moderate Overall Signal, and the numerical score fell at exactly the midpoint between the threshold for a Weak Overall Signal (0.67) and the threshold for a Strong Overall Signal (1.33). The Board’s workpapers underlying the September and December decisions indicate that of the more than 400 traffic lanes for cement in the 2018 CWS, the GMIM’s revisions changed only 3 from the “Rail Competitive” to “Non-Competitive” category. This change affected 0.6% of total cement shipments in the 2018 CWS, which in turn resulted in a corresponding, and slight, increase in the share of 2018 cement shipments without competitive influence from rail or water, from 77% to 78%.

⁷⁰ December Decision at 1 (“affected . . . 10,086 records, out of the 1,071,897 total records in the 1992 and 2018 CCWS.” This represents 0.9%).

⁷¹ September Decision at 25-26, n. 48.

As indicated in the December Decision, this adjustment didn't affect any of the "Current" Indicators (*i.e.*, those calculated solely on the 2018 figures). But it did shift two of the four "Change" Indicators (*i.e.*, those that compared cement's changes since 1992 to the changes for all carload traffic). In the September Decision, cement's change in the percentage of shipments without competitive influence was 5.2% below the overall change, which returned a Weak designation for that metric.⁷² When the Board's estimate of the share of 2018 cement traffic without competitive influence increased by just 1% (from 77% to 78%), the change from 1992 was now only 4% below the overall change. Thus, the Indicator shifted to a Moderate designation.⁷³ Re-assigning that 0.6% of traffic similarly changed the "Competitive Influence R/VC Difference Change" Indicator, which also shifted from a Weak to a Moderate designation. (December Decision at 2.) This change in 2 of the 8 Indicators—based on a minor change in the underlying data—increases the result of the Overall Signal calculation by 25%, nearly pushing it from Moderate to Strong, as shown in Figure 19.

Figure 19



⁷² See "Indicator Dashboard.xlsx", tab "Comp Influence Analysis" in September workpapers.

⁷³ See "Indicator Dashboard.xlsx", tab "Comp Influence Analysis" in December workpapers.

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct. I further certify that I am qualified and authorized to sponsor and file this testimony.

Executed on January 29, 2021

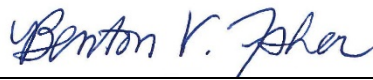


Michael R. Baranowski

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct. I further certify that I am qualified and authorized to sponsor and file this testimony.

Executed on January 29, 2021

A handwritten signature in blue ink that reads "Benton V. Fisher". The signature is written in a cursive style with a large initial 'B'.

Benton V. Fisher

EXHIBIT C

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

248963

STB Ex Parte No. 756

ENTERED
Office of Proceedings
November 12, 2019
Part of
Public Record

MARKET DOMINANCE STREAMLINED APPROACH

COMMENTS OF CN

On September 11, 2019, the Surface Transportation Board promulgated its Market Dominance Streamlined Approach Notice of Proposed Rulemaking.¹ The U.S. rail operating subsidiaries of Canadian National Railway Company (“CN”) understand and appreciate the Board’s efforts to simplify the market dominance inquiry in “smaller cases.”² CN supports the comments by the Association of American Railroads, and offers these supplemental comments regarding one of the Board’s proposed *prima facie* factors: movement length greater than 500 highway miles. As described below, the Board should rely on publicly available real-world data to determine an appropriate *prima facie* factor for truck competitive movements.

In the NPRM, the Board proposes a threshold that movements in excess of 500 highway miles would not likely be competitive for trucks because such movements could not be completed in one day.³ The Board requests comment on the proposal, including “detailed quantitative and qualitative information in support of

¹ *Market Dominance Streamlined Approach*, STB Ex Parte No. 756, *Notice of Proposed Rulemaking* (STB served Sept. 11, 2019) (“NPRM”).

² *Id.* at 6.

³ *Id.* at 7-8.

any alternative mileage threshold.”⁴ Through these comments and the attached verified statement from Dr. Michael W. Tretheway, Chief Economist and Executive Vice President of InterVISTAS Consulting, CN offers such information.

In particular, CN observes that the 500-mile figure lacks data in the NPRM to support its use as a threshold for a *prima facie* determination regarding the competitiveness of truck versus rail. Using publicly available federal data, however, the Board can set a higher and supportable threshold for its *prima facie* factor of 750 miles or less for when trucking is likely to provide effective competition. Use of a *prima facie* factor based on data supports the Board’s practice of relying on “evidence-based policy and program decision-making,” including in “substantive matters of case adjudication.”⁵ The Board has wisely pledged to Congress that it will use “historical data” to evaluate its initiatives.⁶ Such data is available for application by the Board here.

Since 1993 and every five years thereafter, the United States Census Bureau has conducted the Commodity Flow Survey, a data set that captures information on shipments originating in all 50 states and the District of Columbia. The commodity flow data includes 20 variables for each shipment record in the data set, including sufficient data to analyze the share of shipments by traffic mode and distance. The data can be analyzed in different ways, but the method shown here is by tons carried by each mode for different distance bands.

⁴ *Id.* at 8.

⁵ Surface Transportation Board, Budget Request Fiscal Year 2020, at 10, <https://www.stb.gov/stb/docs/Budget/STB%20FY%202020%20Budget.pdf>.

⁶ *Id.*

The most recent complete Commodity Flow Survey data set available is from 2012 and is displayed in Table 1, and for 2007 in Table 2.⁷

Table 1

U.S. Traffic Share by Mode by Distance				
2012				
Distance Block	Truck	Rail	Rail-Truck Intermodal*	Other Modes
< 50 miles	82%	4%	0%	13%
50 - 99 miles	77%	10%	1%	12%
100 - 249 miles	70%	15%	3%	13%
250 - 499 miles	55%	29%	4%	12%
500 - 749 miles	39%	43%	4%	14%
750 - 999 miles	28%	57%	7%	8%
1,000 - 1,499 miles	29%	61%	6%	4%
1,500 - 1,999 miles	50%	34%	10%	6%
2,000+ miles	69%	13%	8%	10%
<i>* Other includes water, air, pipeline, parcel, truck/water, rail/water, other multiple modes, other</i>				
<i>* "Intermodal" is truck/rail.</i>				
<i>* "other modes" also includes other intermodal (e.g., truck-barge)</i>				
traffic share based on tons carried				
source: 2012 Commodity Flow Survey, US Census Bureau. Table CF1200A11				

⁷ Complete data for 2017 will be available in 2020.

Table 2

U.S. Traffic Share by Mode by Distance				
2007				
Distance Block	Truck	Rail	Rail-Truck Intermodal*	Other Modes
< 50 miles	83%	4%	0%	13%
50-99 miles	76%	8%	2%	14%
100-249 miles	61%	22%	2%	15%
250-499 miles	51%	32%	4%	13%
500-749 miles	38%	42%	5%	15%
750-999 miles	26%	56%	5%	14%
1,000-1,499 miles	27%	60%	7%	7%
1,500-1,999 miles	52%	26%	13%	9%
2,000+miles	59%	9%	16%	16%
* Other includes water, air, pipeline, parcel, truck/water, rail/water, other multiple modes, other				
* "Intermodal" is truck/rail.				
* "other modes" also includes other intermodal (e.g., truck-barge)				
traffic share based on tons carried				
source: 2007 Commodity Flow Survey, US Census Bureau. Table CF0700A11				

As shown in both the 2007 and 2012 data, trucks have the lion's share of tons of traffic that moves less than 500 miles. However, it also shows that using 500 miles as the cutoff is too conservative. Truck and rail have equal market shares for tons moved between 500 and 750 miles, a feature that is consistent between 2007 and 2012. In 2012, 39% of tons shipped between 500 to 749 miles were by truck and 43% of such tonnage was shipped by rail. In 2007, 38% of tons shipped between 500 and 749 miles were by truck and 42% of such tonnage was shipped by rail. In other words, at this mileage band, the data in the Commodity Flow Survey demonstrates that rail and truck compete on equal terms. And after 750 miles, rail's market share has an almost 2-1 margin over trucking.⁸

⁸ There is an unexpected feature of the data, where the market share of trucking increases dramatically for movements of over 1500 miles. However, the number of observations in the Commodity Flow Survey in that range is very small compared to the number of observations in the bands below 1500 miles. For example, for 2007 there are approximately 60 million tons for which data is available for shipments

The real world marketplace data demonstrates at what distances shippers find truck and rail modes competitive with one another. While there is some attraction to the simplification that assumes that trucking is “less viable” if a trip cannot be completed in one day, the data of real-world shipments suggest this is not the case given how evenly distributed tons shipped between 500 and 750 miles are over rail and truck.

The Board should rely on publicly available real-world data to set an appropriate *prima facie* factor for truck competitive movements.

Respectfully submitted,

Kathryn J. Gainey
Counsel, US Regulatory Affairs
CN
601 Pennsylvania Ave, NW
Suite 500, North Building
Washington, DC 20004
(202) 347-7840
Kathryn.gainey@cn.ca

/s/ Raymond A. Atkins
Raymond A. Atkins
Matthew J. Warren
Marc A. Korman
Sidley Austin LLP
1501 K Street, N.W.
Washington, DC 20005
(202) 736-8000
ratkins@sidley.com

Dated: November 12, 2019

that move over 2,000 miles, compared to almost 620 million tons for which data is available for trips between 500 and 749 miles.

EXHIBIT D

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

EX PARTE NO. 704

**REVIEW OF COMMODITY, BOXCAR,
AND TOFC/COFC EXEMPTIONS**

**COMMENTS OF
NORFOLK SOUTHERN RAILWAY COMPANY**

James A. Hixon
John M. Scheib
Greg E. Summy
Christine I. Friedman
Norfolk Southern Railway Company
Three Commercial Place
Norfolk, VA 23510

David L. Meyer
Nicholas A. Datlowe
Morrison & Foerster LLP
2000 Pennsylvania Avenue, N.W.
Suite 6000
Washington, D.C. 20006

Attorneys for Norfolk Southern Railway Company

Dated: January 31, 2011

recognizing that it could deal with isolated pockets of market power using its revocation authority when those situations were brought to its attention by complaining shippers in need of protection.⁵⁸ This focus is reflected in the kinds of evidence of competition that figured most prominently in the decisions by the ICC and Board to grant the exemptions: *general* shipping characteristics; *widespread* availability of other modes of transportation providing both direct alternatives and indirect disciplining force (in the form of geographic and product competition); *aggregate* data on the percentage of shipments handled by railroad and other modes; and data on the *average* profitability of rail traffic.

There is no reason to believe that any of these general conditions has changed materially. To the contrary, the competitive forces relied upon by the ICC and Board to grant the exemptions remain as powerful today as they were 10, 20 or 30 years ago.

B. The Competition Relied on By the ICC and the Board in Granting the Exemptions Has Not Diminished

Given the continued prevalence of competition in the pertinent transportation markets, revoking the exemptions is not necessary to prevent the abuse of market power. In fact, absent a particularized showing of some “specific problem” that confronts a shipper or group of shippers with the threat of market power abuse, any revocation would be inconsistent with the evidence relied upon by the agency in granting the exemptions.

⁵⁸ See, e.g., *id.* (recognizing that there could “exist[] a specific commodity that for some reason can be transported only by boxcar and on which the rate levels, being uncontrolled by intramodal competition or other market forces would rise to very high levels in the absence of regulation,” but concluding that such “specific problems” should be dealt with “‘after the fact,’ not on a priori possibilities”).

1. *Indirect Evidence of Pervasive Competition*

The decisions granting the commodity exemptions relied heavily on two types of evidence demonstrating that railroads faced pervasive competitive constraints for the commodities under review: (i) the railroads' typically small market share for such transportation and (ii) the railroads' relatively low profit margins, as reflected in average revenue-to-variable cost ratios.

These same metrics point in the same direction today. As a general matter, though railroads have worked hard to compete against trucks, they have not dramatically increased their market share of the exempt commodities, and – at least in NS's experience – rates for those commodities generally remain below the jurisdictional threshold. This evidence, NS submits, would support granting the exemptions all over again today. More importantly for present purposes, any movement towards a revocation of the exemptions could not be squared with the agency's reliance on such evidence in granting the exemptions.

At the most general level, railroads' share of the overall transportation marketplace has not grown in the last quarter-century. As DOT explained when it released its 2002 Commodity Flow Survey:

Trucking continued its dominance of our nation's freight transportation system. In 2002, trucks hauled about 64 percent of the value, 58 percent of the tonnage, and 32 percent of the ton-miles of total shipments . . . , a slightly lower percentage of the value than in 1993, but more of the tons and ton-miles.⁵⁹

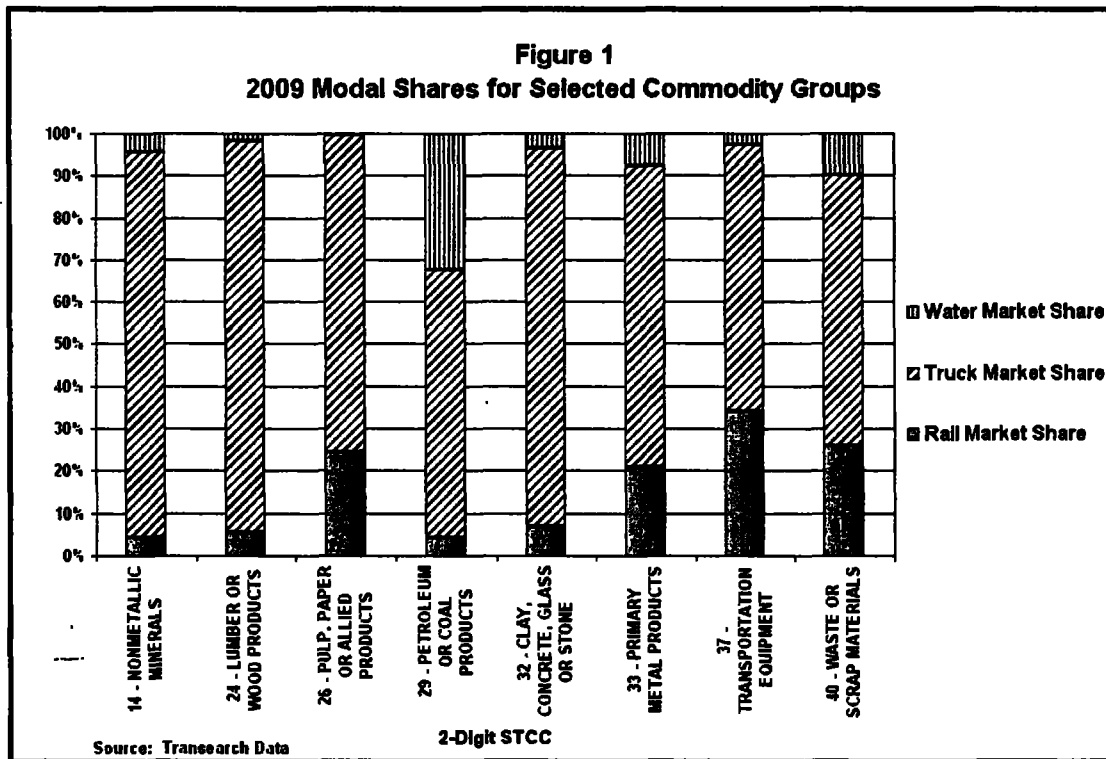
⁵⁹ Bureau of Transportation Statistics, U.S. Department of Transportation, Freight Shipments in America: Preliminary Highlights from the 2002 Commodity Flow Survey 10 (2004).

Since then, despite challenges posed by higher fuel costs, driver shortages, and additional safety restrictions, trucks handled 11 percent more tons in 2007 than in 2002, while the tonnage handled by railroads actually declined slightly over the same period.⁶⁰

This broad trend is reflected in more recent data concerning movements of the exempt commodities. NS examined data for several of the commodity groups (at the 2-digit STCC level) for which a substantial portion of the individual commodities are exempt under Board regulations. Specifically, NS examined STCCs 14 (Nonmetallic Minerals); 24 (Lumber/Wood Products); 26 (Pulp/Paper); 29 (Petroleum/Coal Products); 32 (Clay/Concrete/Glass/Stone); 33 (Primary Metal Products); 37 (Transportation Equipment); 40 (Waste or Scrap).⁶¹ For each of these commodity groups, railroads account for only a small minority of such shipments, as shown in Figure 1 below (and in the data set forth in Appendix Table 1).

⁶⁰ Compare Bureau of Transportation Statistics, U.S. Department of Transportation 2002 Commodity Flow Survey Table 1a (2004) with Bureau of Transportation Statistics, U.S. Department of Transportation et. al., 2007 Commodity Flow Survey, Table 1c (2010).

⁶¹ Approximately 80% of NS's exempt traffic is in one of these eight commodity groups.



As the ICC and Board have long observed, relatively low railroad margins is another indicator of the presence of pervasive competitive constraints, precluding the exercise (much less abuse) of market power. Based on NS's experience handling exempt traffic, the vast majority of such traffic continues to move at rate levels well below 180 percent of variable cost.⁶²

⁶² Of course, these metrics do not prove definitively that no railroad possesses market power with respect to any exempt traffic – any more than the same kinds of data established that fact when the exemptions were granted. Such an analysis could only be made based on particularized evidence in a revocation proceeding. It is telling, however, that shippers have not brought many such challenges, and nearly all of those they have brought have resulted in a conclusion that competition justifies applying the exemption to their circumstances. *Miscellaneous Manufactured Commodities Exemption Decision*, 6 I.C.C.2d at 191 n.8 (commenting that as of late 1989 the ICC was aware of “fewer than a handful of petitions for revocation”).

2. Trucks Remain Omnipresent Competitors

Another theme of many of the decisions granting the exemptions is the ready access of most shippers to efficient truck transportation.⁶³ In the years since the exemptions were granted, railroads have become more efficient and improved their service, but trucks have kept pace. Trucks today offer the same transportation options that they did when the exemptions were first established.

Motor carriers are physically able to serve each and every shipper facility that has rail access, whereas rail carriers are not able to serve directly many of the shipper locations reached by motor carriers. When shippers choose among alternative transportation providers, the characteristics that steer many of them to truck transportation are well known. Sometimes trucks may appear more expensive, but offer perceived service or other advantages that offset the rate differential and yield higher value.⁶⁴ On the other hand, sometimes rail may provide the best economic proposition. In all of these circumstances, however, attempts by railroads to raise rates or otherwise exploit shippers' preferences for rail movement would change the shippers' calculus and risk diversion of rail traffic to truck.⁶⁵ The vibrant competition that trucks offer thus is

⁶³ See, e.g., *Boxcar Exemption Decision*, 367 I.C.C. at 433 ("The fundamental premise underlying the proposal for a boxcar exemption is that truck competition for the transportation of boxcar commodities is pervasive and limits the railroads' pricing freedom. . . .").

⁶⁴ See, e.g., Brian A. Weatherford, et al., *The State of U.S. Railroads: A Review of Capacity and Performance Data*, RAND Supply Chain Policy Center 59 (2008) ("Despite the direct cost advantage of long-haul rail over long-haul truck, it is clear from the prevalence of national trucking firms that many companies find trucking to be more competitive or reliable."); see also AASHTO, *Freight-Rail Bottom Line Report*, pp. 13-14.

⁶⁵ As the Board explained in the *Boxcar Exemption Decision*: "Virtually anything that can be transported in a boxcar can be transported in a truck. Motor carriage tends to be faster, more accessible, more convenient, and sometimes less damaging to freight than rail service, meaning that boxcar transportation generally must be priced to reflect these service differences to compete

(footnote continued on next page ...)

not fully reflected in a static view of trucks' share of transportation flows, or even in a comparison of the relative cost of rail and truck transportation.⁶⁶

Trucks offer especially attractive economics for shorter hauls, which in many cases account for the lion's share of all movements of exempt commodities. Trucks can compete effectively for various long-haul movements as well.⁶⁷ Even when trucks are not the preferred option for a given shipment, the widespread availability of truck transportation for other shippers of the same commodity disciplines rail transportation rates even for those shipments that would most naturally move by rail.

One railroad success story of the past several decades has been the growth in intermodal traffic, which has overtaken coal as the number one source of railroad revenue.⁶⁸ Needless to say, all exempt intermodal traffic moves via rail. However, railroads have tapped only a tiny fraction of the over-the-road transportation marketplace with their intermodal offerings. Over-the-road movement remains a viable (and often dominant) competitive option for both shorter and longer hauls:

(... footnote continued from previous page)

successfully. Thus, the market itself places an effective ceiling on rail rates for boxcar transportation, and regulation is unnecessary to assure that boxcar rates do not rise to unreasonably high levels." 367 I.C.C. at 433 (emphasis added).

⁶⁶ As highlighted in the Comments in this proceeding of the Washington State Potato Commission (filed Jan. 14, 2011), potato shippers in Washington ship 93% of their potatoes by truck despite the fact that rail rates are supposedly lower than truck rates. They presumably make this choice because of other perceived advantages that trucks offer. In any event, these statistics confirm that rail has no market power that could be abused.

⁶⁷ See, e.g., National Cooperative Highway Research Program, No. 586, Rail Freight Solutions to Roadway Congestion – Final Report & Guidebook 7 (2007) ("There is no hard-and-fast distance that demarcates rail and trucking zones. Trucks provide some transcontinental service, while rail provides some local and regional services.").

⁶⁸ See *id.* at G-40.

For shorter hauls, all-truck movements tend to have cost advantages over intermodal movements, despite relatively high per-mile costs for trucks, as all-truck movements avoid “drayage” costs associated with hauling the container or trailer to and from railroad terminals, as well as the costs of loading and unloading the railroad flat cars. For longer hauls, truck shipments may have more desirable service qualities despite higher costs, although railroads have developed and expanded higher-speed and scheduled services in competition with trucking.⁶⁹

In sum, the widespread and fierce truck competition that justified the exemptions originally remains a powerful constraint that prevents railroads from attaining or abusing market power.

3. *Railroad Competition*

For certain of the exempt commodities – including TOFC/COFC service, finished automobiles, and others – another critical factor in the grant of broad commodity-based exemptions was the existence of pervasive competition between railroads (both direct and via transloading). That competition is stronger than ever.⁷⁰

Some critics of the Board’s regulatory policies have suggested that modal competition has diminished as a result of the numerous major mergers approved by the Board and ICC in past decades. It is true that there are now fewer Class I carriers,⁷¹ but it is not true that competition is less effective. Railroad consolidation in fact enhanced

⁶⁹ Laurits R. Christensen Assoc., Inc., *A Study of Competition in the U.S. Freight R.R. Indus. and Analysis of Proposals that Might Enhance Competition*, Prepared for the Surface Transportation Board, 15-1 (Nov. 2009) (“Christensen Study”).

⁷⁰ See, e.g., Lawrence H. Kaufman, “Competition is alive and well,” *Journal of Commerce*, May 21, 2007, at 27 (“Not only are railroads competing with trucks, they are competing vigorously with each other. Competition is alive and well.”).

⁷¹ Although there are fewer Class I railroads than when the Staggers Act was passed, “the total number of railroads has *increased* from about 490 in the mid-1980s to the current 559.” Christensen Study, ES-8 (emphasis added).